

Assessor's guidelines for the SVQs in Process Engineering Maintenance at levels 2 and 3

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About this guide

This guide provides some practical examples of how to assess your candidates for the **SVQs in Process Engineering Maintenance at levels 2 and 3**. You may be able to think of other ways of assessing your candidates and recording your decisions about their competence.

Using assessments based on these examples does not guarantee successful verification — it is still your responsibility to ensure that internal quality assurance procedures are followed.

Introduction

This introduction provides a brief overview of SVQs and how they are assessed in the workplace. If you are already familiar with the concept of SVQs, you may wish to go to the next section.

About SVQs

Scottish Vocational Qualifications (SVQs) are work-based qualifications which set the level of occupational competence for each sector of the economy. The qualifications have been designed by standards-setting bodies made up of experienced practitioners who represent employers, professional bodies, trade unions, education and voluntary organisations.

Each standards-setting body is responsible for developing national occupational standards which define *what* employees (or potential employees) must be able to do, *how well*, and *in what circumstances*, to show that they are competent in their work.

Each SVQ which a standards-setting body develops has to fit into a broad framework which allows qualifications in the UK and throughout Europe to be compared. SVQs are specified at five levels which reflect the various technical and supervisory skills knowledge and experience, which employees should have as they progress in their industry.

Explanation of levels

- Level 1** Defines competent performance in a range of activities which are largely routine and predictable.
- Level 2** Specifies that competent performance must be shown in a broader range of work activities which are less routine and predictable. The employee will have more autonomy and responsibility, and may have to work as part of a team.
- Level 3** Specifies that competent performance must involve the employee in carrying out a broad range of varied work activities, most of which are complex and non-routine. There is considerable autonomy and responsibility, including the possibility of controlling or guiding others.
- Level 4** Specifies competence as complex technical or professional work activities which require a substantial degree of personal autonomy or responsibility. Managing staff and other resources is often involved.
- Level 5** Specifies competent performance as involving the employee in carrying out a significant range of activities in a wide variety of situations which are often unpredictable. Substantial responsibility and autonomy is involved in the work, which requires decision-making in the allocation of resources and the work of others. This will require complex skills such as analysis, design and evaluation.

How are standards defined in SVQs?

All SVQs consist of standards which can be broken down into various parts.

Units define the broad functions carried out in the sector, and are made up of a number of **Elements**. These **Elements** describe the activities which employees have to perform, and will require candidates to demonstrate certain skills or knowledge and understanding.

The quality of performance in what people must be able to do — how well they have to perform — is described in this SVQ by **Performance Standards**. **These may also be called statements of competence or what candidates should do.**

The section on **knowledge and understanding** says what candidates must know and understand, and how this knowledge applies to their jobs.

You may also come across standards containing statements on **scope**. These statements could, for example, list the equipment that candidates are expected to be familiar with and use in their occupational area.

You will find that information on the context, nature and amount of evidence which is required to prove competence is now defined in the **assessment guidance (or in this SVQ — assessment strategy statements)** for the qualification. Assessment guidance is drawn up by the awarding body and is packaged along with the standards to form the SVQ.

Who is involved in SVQs?

There are several roles:

- ◆ **the candidate:** the person who wants to achieve the SVQ (eg an employee)
- ◆ **the assessor*:** the person who assesses the candidates and decides if they are competent (eg supervisor)
- ◆ **the internal verifier*:** an individual nominated by the centre (eg a company) who ensures that assessors apply the standards uniformly and consistently (eg supervisor's line manager)
- ◆ **the external verifier*:** an individual appointed by SQA who ensures that standards are being applied uniformly and consistently across all centres offering the SVQ

*Assessors and verifiers in centres will be asked by SQA to prove they have the appropriate occupational competence to assess and verify the SVQ. Occupational competence has been defined by the standards-setting body in the assessment strategy for these SVQs — see Appendix 2.

Assessors and verifiers are also expected to obtain an appropriate qualification in assessment and verification — this can be the Assessor/Verifier Units (the national standards for assessment and verification) either in their current format or as ‘D-Units’, or an alternative qualification which SQA also recognises.

The steps involved in assessing a candidate for an SVQ

In deciding whether a candidate should get an SVQ, you will go through these stages:

- ◆ planning for assessment
- ◆ generating and collecting evidence of the candidate’s competence in the Units
- ◆ judging the evidence of the candidate’s ability and making an assessment decision based on the evidence
- ◆ recording the assessment decision and the candidate’s achievement

1 The SVQs in Process Engineering Maintenance

The SVQs in Process Engineering Maintenance have been developed by Cogent SSC Limited and are intended for people in the Oil and Gas Extraction, Chemicals Manufacturing and Petroleum Industries. These particular standards incorporate Units that are specific to the three disciplines of electrical, instruments and mechanical technicians.

These people may be working as maintenance technicians or production technicians. They will require skills and knowledge in the maintenance and operation of process engineering plant and equipment.

The SVQs are designed to be assessed in the workplace, or in conditions of the workplace. Examples of the settings or centres in which the SVQs are likely to be delivered include: chemicals manufacturing plants, petrochemical plants, oil refineries, oil and gas terminals and offshore installations.

Structure of the SVQs

This section lists the Units which form the SVQs in Process Engineering Maintenance. The SVQs have been designed to identify competences specific to each of the maintenance disciplines: Electrical, Instruments, and Mechanical.

Level 2 Process Engineering Maintenance (Electrical) G7RP 22

Mandatory Units

Each candidate must achieve all **five** of the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM9N 04 | C2.1 | Reinstate the Work Area after Completing the Maintenance of Process Plant and Equipment |
| DM8X 04 | C2.2 | Hand Over Process Plant and Equipment |
| DM9V 04 | C2.3 | Deal with Hazards |
| DM9M 04 | C2.4 | Contribute to Effective Working Relationships in Process Engineering Maintenance |
| DM97 04 | E2.1 | Carry Out Planned Maintenance Procedures on Electrical Process Plant and Equipment |

Optional Units A

Candidates must also complete **one** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DN1C 04 | C2.5 | Prepare Work Areas for the Maintenance of Process Plant and Equipment |
| DN10 04 | E2.2 | Prepare Materials for the Maintenance of Electrical Process Plant and Equipment |
| DN17 04 | E2.3 | Prepare Process Plant and Equipment in Support of Electrical Engineering Activities |
| DN0X 04 | C2.6 | Prepare Loads for Moving |
| DN0G 04 | C2.7 | Move Loads |

Optional Units B

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM8W 04 | E2.4 | Assemble Components of Electrical Process Plant and Equipment |
| DM9W 04 | E2.5 | Remove Components from Electrical Process Plant and Equipment |
| DN08 04 | E2.6 | Replace Components in Electrical Process Plant and Equipment |

Level 2 Process Engineering Maintenance (Instrument and Control) G7RT 22

Mandatory Units

Each candidate must achieve all **five** of the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM9N 04 | C2.1 | Reinstate the Work Area after Completing the Maintenance of Process Plant and Equipment |
| DM8X 04 | C2.2 | Hand Over Process Plant and Equipment |
| DM9V 04 | C2.3 | Deal with Hazards |
| DM9M 04 | C2.4 | Contribute to Effective Working Relationships in Process Engineering Maintenance |
| DM98 04 | I2.1 | Carry Out Planned Maintenance Procedures on Instrument and Control Plant and Equipment |

Optional Units A

Candidates must also complete **one** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DN1C 04 | C2.5 | Prepare Work Areas for the Maintenance of Process Plant and Equipment |
| DN12 04 | I2.2 | Prepare Materials for the Maintenance of Instrument and Control Process Plant and Equipment |
| DN18 04 | I2.3 | Prepare Process Plant and Equipment in Support of Instrument and Control Engineering Activities |
| DN0X 04 | C2.6 | Prepare Loads for Moving |
| DN0G 04 | C2.7 | Move Loads |

Optional Units B

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM8Y 04 | I2.4 | Assemble Components of Instrument and Control Process Plant and Equipment |
| DM9X 04 | I2.5 | Remove Components from Instrument and Control Process Plant and Equipment |
| DN0C 04 | I2.6 | Replace Components in Instrument and Control Process Plant and Equipment |

Level 2 Process Engineering Maintenance (Mechanical) G7RM 22

Mandatory Units

Each candidate must achieve all **five** of the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM9N 04 | C2.1 | Reinstate the Work Area after Completing the Maintenance of Process Plant and Equipment |
| DM8X 04 | C2.2 | Hand Over Process Plant and Equipment |
| DM9V 04 | C2.3 | Deal with Hazards |
| DM9M 04 | C2.4 | Contribute to Effective Working Relationships in Process Engineering Maintenance |
| DM9H 04 | M2.1 | Carry Out Planned Maintenance Procedures on Mechanical Process Plant and Equipment |

Optional Units A

Candidates must also complete **one** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DN1C 04 | C2.5 | Prepare Work Areas for the Maintenance of Process Plant and Equipment |
| DN15 04 | M2.2 | Prepare Materials for the Maintenance of Mechanical Process Plant and Equipment |
| DN19 04 | M2.3 | Prepare Process Plant and Equipment in Support of Mechanical Engineering Activities |
| DN0X 04 | C2.6 | Prepare Loads for Moving |
| DN0G 04 | C2.7 | Move Loads |

Optional Units B

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM91 04 | M2.4 | Assemble Components of Mechanical Process Plant and Equipment |
| DN02 04 | M2.5 | Remove Components from Mechanical Process Plant and Equipment |
| DN0M 04 | M2.6 | Replace Components in Mechanical Process Plant and Equipment |

Level 3 Process Engineering Maintenance (Electrical) G7RR 23

Mandatory Units

Each candidate must achieve all **eight** of the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|---------|------------|---|
| DM8V 04 | C3.1 | Hand Over Process Engineering Plant and Equipment |
| DM9J 04 | C3.2 | Reinstate the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment |
| DM9T 04 | C3.3 | Minimise Risks to Life, Property and the Environment |
| DN14 04 | C3.4 | Work Safely, Minimise Risk and Comply with Emergency Procedures |
| DM9K 04 | C3.5 | Contribute to Effective Working Relationships |
| DM95 04 | E3.1 | Carry Out Planned Maintenance Procedures on Electrical Plant and Equipment |
| DM9Y 04 | E3.2 | Deal with Variations and Defects in Electrical Plant and Equipment |
| DN0H 04 | E3.3 | Diagnose and Determine the Cause of Faults in Electrical Plant and Equipment |

Optional Units A

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DN1A 04 | C3.6 | Prepare Work Areas for the Maintenance of Process Engineering Plant and Equipment |
| DN0P 04 | E3.4 | Prepare Equipment in Support of Electrical Engineering Activities |
| DN0Y 04 | E3.5 | Prepare Materials for the Maintenance of Electrical Plant and Equipment |
| DM8N 04 | E3.6 | Adjust Electrical Plant and Equipment to meet Operational Requirements |
| DM9R 04 | E3.7 | Remove Components from Electrical Plant and Equipment |
| DN06 04 | E3.8 | Replace Components in Electrical Plant and Equipment |
| DN07 04 | E3.9 | Determine the Feasibility of Repair of Components from Electrical Plant and Equipment |

Optional Units B

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DM9G 04 | E3.10 | Interpret Detailed Electrical Information from Technical Sources |
| DN1D 04 | E3.11 | Read and Extract Information from Electrical Engineering Drawings and Specifications |
| DM90 04 | E3.12 | Identify and Suggest Improvements to Working Practices and Procedures on Electrical Plant and Equipment |
| DN0N 04 | E3.13 | Establish that an Electrical Engineering Process has been Completed to Specification |
| DN0V 04 | E3.14 | Test the Performance and Condition of Electrical Plant and Equipment |
| DN05 04 | E3.15 | Monitor the Performance and Condition of Electrical Plant and Equipment |
| DM92 04 | E3.16 | Assess the Performance and Condition of Electrical Plant and Equipment |
| DM99 04 | E3.17 | Inspect Electrical Plant and Equipment |

Level 3 Process Engineering Maintenance (Instrument and Control) G7RL 23

Mandatory Units

Each candidate must achieve all **eight** of the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DM8V 04 | C3.1 | Hand Over Process Engineering Plant and Equipment |
| DM9J 04 | C3.2 | Reinstate the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment |
| DM9T 04 | C3.3 | Minimise Risks to Life, Property and the Environment |
| DN14 04 | C3.4 | Work Safely, Minimise Risk and Comply with Emergency Procedures |
| DM9K 04 | C3.5 | Contribute to Effective Working Relationships |
| DM9C 04 | I3.1 | Carry Out Planned Maintenance Procedures on Instrument and Control Systems |
| DN03 04 | I3.2 | Deal with Variations and Defects in Instrument and Control Systems |
| DN0J 04 | I3.3 | Diagnose and Determine the Cause of Faults in Instrument and Control Systems |

Optional Units A

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DN1A 04 | C3.6 | Prepare Work areas for the Maintenance of Process Engineering Plant and Equipment |
| DN0W 04 | I3.4 | Prepare Equipment required for Maintaining Instrument and Control Systems |
| DN16 04 | I3.5 | Prepare Materials required for Maintaining Instrument and Control Systems |
| DM8R 04 | I3.6 | Adjust Instrument and Control Systems to Meet Operational Requirements |
| DN00 04 | I3.7 | Remove Components from Instrument and Control Systems |
| DN0F 04 | I3.8 | Replace Components in Instrument and Control Systems |
| DN0A 04 | I3.9 | Determine the Feasibility of Repair of Components from Instrument and Control Systems |

Optional Units B

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DM9L 04 | I3.10 | Interpret Detailed Instrument and Control Information from Technical Sources |
| DN1E 04 | I3.11 | Read and Extract Information from Instrument and Control Engineering Drawings and Specifications |
| DM93 04 | I3.12 | Identify and Suggest Improvements to Working Practices and Procedures whilst Maintaining Instrument and Control Systems |
| DN0N 04 | I3.13 | Establish that an Engineering Maintenance Process has been Completed to Specification |
| DN11 04 | I3.14 | Test the Performance and Condition of Instrument and Control Systems |
| DN09 04 | I3.15 | Monitor the Performance and Condition of Instrument and Control Systems |
| DM94 04 | I3.16 | Assess the Performance and Condition of Instrument and Control Systems |
| DM9A 04 | I3.17 | Inspect Instrument and Control Systems |

Level 3 Process Engineering Maintenance (Mechanical) G7RN 23

Mandatory Units

Each candidate must achieve all **eight** of the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DM8V 04 | C3.1 | Hand Over Process Engineering Plant and Equipment |
| DM9J 04 | C3.2 | Reinstate the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment |
| DM9T 04 | C3.3 | Minimise Risks to Life, Property and the Environment |
| DN14 04 | C3.4 | Work Safely, Minimise Risk and Comply with Emergency Procedures |
| DM9K 04 | C3.5 | Contribute to Effective Working Relationships |
| DM9F 04 | M3.1 | Carry out Planned Maintenance Procedures on Mechanical Plant and Equipment |
| DN04 04 | M3.2 | Deal with Variations and Defects in Mechanical Plant and Equipment |
| DN0L 04 | M3.3 | Diagnose and Determine the Causes of Faults in Mechanical Plant and Equipment |

Optional Units A

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DN1A 04 | C3.6 | Prepare Work Areas for the Maintenance of Process Engineering Plant and Equipment |
| DN0T 04 | M3.4 | Prepare Equipment in Support of Engineering Activities |
| DN13 04 | M3.5 | Prepare Materials for the Maintenance of Mechanical Plant and Equipment |
| DM8T 04 | M3.6 | Adjust Mechanical Plant and Equipment to meet Operational Requirements |
| DN01 04 | M3.7 | Remove Components from Mechanical Plant and Equipment |
| DN0K 04 | M3.8 | Replace Components in Mechanical Plant and Equipment |
| DN0E 04 | M3.9 | Determine the Feasibility of Repair of Components from Mechanical Plant and Equipment |

Optional Units B

Candidates must also complete **two** of the following Units in addition to the mandatory Units.

| SQA Ref | Cogent Ref | Title |
|----------------|-------------------|---|
| DM9P 04 | M3.10 | Interpret Detailed Mechanical Information from Technical Sources |
| DM9D 04 | M3.11 | Read and Extract Information from Mechanical Engineering Drawings and Specifications |
| DM96 04 | M3.12 | Identify and Suggest Improvements to Working Practices and Procedures whilst Maintaining Mechanical Plant and Equipment |
| DM8P 04 | M3.13 | Establish that an Engineering Maintenance Process has been Completed to Specification |
| DN0R 04 | M3.14 | Test and Monitor the Performance and Condition of Mechanical Plant and Equipment |
| DN0D 04 | M3.15 | Monitor the Performance and Condition of Mechanical Plant and Equipment |
| DN1F 04 | M3.16 | Assess the Performance and Condition of Mechanical Plant and Equipment |
| DM9E 04 | M3.17 | Inspect Mechanical Plant and Equipment |

An assessment strategy for the SVQ

As part of its review of the SVQ(s), the standards-setting body Cogent SSC Limited has developed an assessment strategy which defines a range of requirements:

- ◆ the occupational expertise of assessors and verifiers
- ◆ a definition of simulation
- ◆ definition of the workplace
- ◆ information on a model of independent assessment or external quality control

The relevant parts of the assessment strategy are given in Appendix 2, and both SQA and centres must comply with these requirements.

Why would people be interested in the SVQ?

People will take SVQs for a variety of reasons: to gain promotion, to prove their job competence, or for personal development. There will be other reasons too. One of the first things to do is to find out why your candidates want to do the SVQ, and to advise them of the appropriateness of the qualification. If anyone is acting as a coach or mentor to your candidates, they might help you to do this.

As an assessor for the SVQ in Process Engineering Maintenance you need to take into account the experience of different candidates as this could impact on the amount and types of evidence required. Candidates could range in experience from the inexperienced trainee technician to a very experienced technician (experienced practitioner) with a proven track record and substantial accredited prior learning (APL).

How do candidates begin?

Choosing the SVQ

Experienced Technician

An ‘experienced practitioner candidate’ would typically be a maintenance technician who has been employed for a minimum of three years in their current location/organisation, with access to maintenance history records to use as evidence.

Example

Duncan is a very experienced technician. He has worked as a mechanical technician for ten years, but does not possess any formal qualifications. He wanted to do a qualification which would give him national recognition of the skills he already had. As he had a lot of experience in performing maintenance tasks, the Training and Competence Officer in his company advised him to consider an SVQ in Process Engineering Maintenance at level 3.

When the Training and Competence Officer matched Duncan’s job remit and existing skills and experience with the SVQ, it emerged that Duncan should be able to generate sufficient evidence to meet the requirements of the following SVQ Units:

- ◆ Carry Out Planned Maintenance Procedures on Mechanical Plant and Equipment
- ◆ Deal with Variations and Defects in Mechanical Plant and Equipment
- ◆ Diagnose and Determine the Causes of Faults in Mechanical Plant and Equipment
- ◆ Remove Components from Mechanical Plant and Equipment
- ◆ Replace Components in Mechanical Plant and Equipment

- ◆ Test and Monitor the Performance and Condition of Mechanical Plant and Equipment
- ◆ Inspect Mechanical Plant and Equipment

The Training and Competence Officer arranged for an assessor within the company to provide Duncan with guidance on how to collect evidence and construct a portfolio to achieve these Units.

Duncan also had some experience in relation to five further Units, though some planning was required to provide him with the opportunity to demonstrate competence in these areas.

The Units were:

- ◆ Hand Over Process Engineering Plant and Equipment
- ◆ Reinstate the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment
- ◆ Minimise Risks to Life, Property and the Environment
- ◆ Work Safely, Minimise Risk and Comply with Emergency Procedures
- ◆ Contribute to Effective Working Relationships

The assessor explained to Duncan that he would observe and assess him for these five Units whilst he was being assessed for the other seven Units. A simulated emergency situation was set up to complete the assessment of the fourth Unit, *Work Safely, Minimise Risk and Comply with Emergency Procedures* and plans were made to supplement the assessment of the fifth Unit, *Contribute to Effective Working Relationships* through a combination of questioning and witness testimonies.

As Duncan was considered an ‘experienced practitioner’, the assessor was satisfied that he could use a lot of his accredited prior learning and proven knowledge and skills as evidence of his competence. The assessor asked Duncan to provide evidence in support of this and suggested that the following typical types of evidence would be appropriate:

- ◆ detailed CV incorporating areas of experience with appropriate dates and locations
- ◆ copies of apprentice papers (indentures or similar)
- ◆ copies of formal qualifications (relevant NC/HNC/HND/City & Guilds etc)
- ◆ details of relevant training courses, preferably with a competence-assessed outcome (vendor training/specialist maintenance techniques/specific training required to comply with industry guidance or regulatory requirements)
- ◆ other relevant in-house technical skills and aptitudes and/or qualifications that would also provide evidence to be assessed by the assessor

The assessor would then use a more holistic approach to using observations thereby effectively reducing the number of assessment observation occasions required. In this instance, the assessor suggested that Duncan provide evidence for each Unit from at least one maintenance task. This would inevitably require Duncan to collect evidence from two or three different tasks over a period of time to ensure that all Units were covered. The assessor also suggested that evidence from one complex task would likely cover several Units. For example:

- ◆ evidence of jobs including work permits, risk assessments, job cards/work orders, handover notes, written reports, logs etc
- ◆ a brief front sheet for each job containing a bullet point outline of the task
- ◆ signature on front sheet from Duncan confirming that it is his own work and all evidence was generated by himself
- ◆ signature on front sheet from Duncan's team leader/supervisor or assessor confirming authenticity of his evidence and that the work was carried out satisfactorily. Input from qualified assessors to this requirement would strengthen the value and validity of the evidence
- ◆ signature and comments on front sheet from OIM or Plant Manager as internal auditor of the pack

Duncan would also provide the assessor with a detailed report/checklist on the different types of equipment and systems that he has experience of carrying out maintenance activities on. The assessor could then if necessary access maintenance records to confirm that Duncan had sufficient and appropriate maintenance experience across a range of equipment. Appendix 4 provides a checklist format example that could be used to record the range of different equipment that maintenance work has been carried out on.

The assessor could also use witness testimonies provided by Duncan's supervisors that confirmed his claims. Other relevant skills and aptitudes and/or qualifications that Duncan has would also be provided as evidence to be assessed by the assessor. (Refer to Appendix 4: Equipment Lists and Skills).

All these arrangements were agreed by everyone involved and then written up in an assessment plan for Duncan.

On completion of the agreed assessment plan, the assessor would then be able to evaluate all the evidence Duncan had provided to ensure that there was sufficient to confirm his competence.

Trainee or Less Experienced Technician

'Less experienced candidate' would typically apply to candidates in similar circumstances to the following examples:

- ◆ trainee technician who has completed a college course and is now working as a trainee technician on a two-year work placement
- ◆ a relatively inexperienced technician who has come from another industry and is new to the oil and gas extraction industry
- ◆ an inexperienced technician who is new to the installation/plant and has no historical evidence or record as such with his current employer
- ◆ a technician who has been involved in construction and commissioning work with very little exposure to carrying out complex maintenance activities

Example

David is a trainee technician. He completed a college course and is now working as an electrical technician on a two-year work placement. He is now required to work towards completing the SVQ in Process Engineering Maintenance at level 3.

As David has little experience in performing maintenance tasks he needs to generate sufficient evidence within the two-year work placement period to meet the requirements of the following SVQ Units:

- ◆ Carry Out Planned Maintenance Procedures on Mechanical Plant and Equipment
- ◆ Deal With Variations and Defects in Mechanical Plant and Equipment
- ◆ Diagnose and Determine the Causes of Faults In Mechanical Plant and Equipment
- ◆ Remove Components from Mechanical Plant and Equipment
- ◆ Replace Components in Mechanical Plant and Equipment
- ◆ Test and Monitor the Performance and Condition of Mechanical Plant and Equipment
- ◆ Inspect Mechanical Plant and Equipment

Arrangements were made for an assessor within the company to provide David with guidance on how to collect evidence and construct a portfolio to achieve these Units.

David will also need to gain experience in relation to five further Units, however, some further planning was required in order to provide him with the opportunity to demonstrate competence in these areas.

The Units were:

- ◆ Hand Over Process Engineering Plant and Equipment

- ◆ Reinststate the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment
- ◆ Minimise Risks to Life, Property and the Environment
- ◆ Work Safely, Minimise Risk and Comply with Emergency Procedures
- ◆ Contribute to Effective Working Relationships

The assessor explained to David that he would observe and assess him for these five Units (listed above) whilst he was being assessed for the other seven Units.

A simulated emergency situation was set up to complete the assessment of the fourth Unit, *Work Safely, Minimise Risk and Comply with Emergency Procedures* and plans were made to supplement the assessment of the fifth Unit, *Contribute to Effective Working Relationships* through a combination of questioning and witness testimonies.

As David was considered to be an ‘inexperienced practitioner’, the assessor needed him to provide all evidence by carrying out a variety of maintenance tasks on a range of equipment and systems. This would allow the assessor to assess competence during naturally-occurring observation occasions. In this instance, the assessor suggested that David provide evidence for each Unit from at least **three** maintenance tasks. This would inevitably require David to collect evidence from a range of tasks to ensure that all Units were adequately covered.

David would also need to provide the assessor with a detailed report/checklist on the different types of equipment and systems that he has carried out maintenance activities on, so that he could demonstrate that he has had exposure to a wide range of equipment. The assessor could then if necessary access maintenance records to confirm that David had sufficient and appropriate maintenance experience across a range of equipment. Appendix 4 provides a checklist format example that could be used to record the range of different equipment that maintenance work has been carried out on.

The assessor could also use witness testimonies provided by David’s supervisors to confirm his claims. Other relevant skills and aptitudes and/or and qualifications that David has would also be provided as evidence to be assessed by the assessor. (Refer to Appendix 4: Equipment Lists and Skills).

All these arrangements were agreed by everyone involved and then written up in an assessment plan for David.

On completion of the agreed assessment plan, the assessor would then be able to evaluate all the evidence David had provided to ensure that it was sufficient to confirm his competence. It would be expected that the evidence would consist of the following, as a minimum:

- ◆ At least **three** ‘job packs’ covering each technical Unit, incorporating appropriate observation/activity reports and supporting documents. One job

pack could cover several Units depending on the type and range of maintenance activity carried out.

- ◆ A checklist of other equipment and systems that David claims he has experience of carrying out maintenance activities on over his two-year work placement.
- ◆ Copies of maintenance and training records to support David's claims. Copies of any other relevant skills and aptitudes and/or qualifications that David has would also be useful.
- ◆ Witness testimonies to support David's claims. (These would be used to support maintenance and training records if the assessor deemed that these were insufficient on their own.)

2 Preparing to assess the SVQ

This section offers practical advice on how to begin to go about assessing your candidates for the SVQ. This advice is offered as examples of good practice — you may develop your own approaches to assessing your candidates which also work well.

Your role and your candidate's role

Assessing the SVQ will involve several stages. Both you and the candidate should be clear on your roles in the assessment process before you begin.

Your role

- ◆ ensure candidates understand what is to be assessed and how it is to be assessed
- ◆ ensure the conditions and resources required for assessment are available
- ◆ help candidates to identify and gather evidence
- ◆ observe and record candidates carrying out the activities described in the standards — records should say what has been observed, how it was carried out, and what it demonstrates
- ◆ assess products of the candidate's own work
- ◆ question candidates and record results
- ◆ help candidates to present evidence
- ◆ authenticate the evidence candidates provide
- ◆ judge evidence and make assessment decisions
- ◆ identify gaps or shortfalls in candidates' competence
- ◆ provide feedback to candidates throughout the assessment process
- ◆ record achievement

Candidates' role

- ◆ prepare for assessment — become familiar with the standards, what is to be assessed and how it is to be assessed
- ◆ help to identify sources of evidence and how these could be assessed
- ◆ carry out activities, and/or produce products of own work, and/or answer questions
- ◆ gather and present evidence
- ◆ receive and act on feedback from the assessor

Planning

In planning for assessment, you will find it helpful to meet with your candidate and plan what is to be assessed, in what way, and when and where the assessment is to take place. This discussion can be confirmed in the form of an agreed assessment plan between you and your candidate.

You should treat assessment plans as working documents — they can be updated and changed as you review progress with your candidate.

As you are planning an assessment, don't forget to make the most of opportunities to *integrate* assessment. This means planning to assess an activity which draws on the contents of different Units or Elements. It can be a practical and cost-effective way of assessing your candidate's competence.

If you are a new assessor working towards your A/V Units or 'D-Units' (the national standards in assessment and verification) you will need copies of completed assessment plans as part of your evidence.

To help you plan for assessment, we have produced an assessment plan which covers Units C3.6; M3.4; M3.5*. You will notice that we have included spaces to enter dates when the assessment plan has been reviewed. Any gaps identified during these reviews should be discussed with your candidates and noted for action in the assessment plan.

***Note:** Where reference in this document is made to discipline-specific Units (the Units whose numbers are prefixed with M, E, or I), we will use the Mechanical Unit numbers as illustrated above. Any information and guidance provided for these Units will apply equally to the equivalent Electrical and Instrument Units.

Assessment plan

| Units: C3.6; M3.4; M3.5 | | | | | |
|---|---|---|--------------------|----------------------------|---|
| Activities | PCs | Method of assessment/Sources of evidence | Date of assessment | Evidence already available | Links to other Units (PCs and range) |
| Preparing the work area, equipment and materials in order to carry out the maintenance of plant and equipment. | C3.6 b, c, d, g C3.6 a C3.6 a, e, f | Observation Witness testimony Work Permit | 30/10/2005 | Ref 6 Ref 4 | M3.4 a, b, c, f, M3.5 a, b, c, d M3.4 a, M3.5 a M3.4 a, d, e, M3.5 a, e |
| Questioning for knowledge and understanding not apparent from performance to be identified from 2nd review | a, g | Questions | 01/11/2005 | | M3.4 a, g M3.5 a, g |

Assessor's signature: *David Gannon*

1st review due: *28/10/2005*

Candidate's signature: *Duncan Campbell*

2nd review due: *30/10/2005*

Date of agreement: *25/10/2005*

Date of completion: *01/11/2005*

Selecting methods of assessment

The methods of assessment you use should be valid, reliable and practicable.

- ◆ by valid we mean that the assessment method should be appropriate to the standards
- ◆ by reliable we mean that the assessment method should ensure consistent results when used with different candidates, different assessors and on different occasions
- ◆ by practicable we mean that the method ensures that the assessment makes best use of available resources, equipment and time

Before you assess a candidate, you must make sure that the methods of assessment you have chosen to use, along with any assessment materials (such as questions and sample answers) have been agreed within your centre through its system of internal quality assurance. This system is often called *internal verification* — its purpose is to help to ensure that assessment methods are valid, reliable and practicable.

There are both benefits and challenges when you are assessing SVQs in the workplace, or in conditions in the workplace. When you select methods of assessment, you should try to offer the candidate the benefits of workplace assessment and minimise any potential difficulties.

The benefits might include:

- ◆ assessments being conducted in the candidate's workplace under naturally occurring conditions
- ◆ the candidate's familiarity with the equipment and facilities
- ◆ the assessment process is conducted at a pace that is comfortable for the candidates
- ◆ your observations can be totally unobtrusive as you work alongside your candidate
- ◆ your candidate can produce supporting documentary evidence such as logs, records, reports etc, as part of their daily work
- ◆ assessment plans can be arranged and/or modified as operational circumstances dictate

The challenges could include:

- ◆ ensuring that normal work routines are not unnecessarily disrupted or delayed by the assessment process
- ◆ co-ordinating assessments with candidates doing shiftwork
- ◆ preventing candidates from being subjected to undue extra stress or pressure brought about by the assessment process
- ◆ assessments being conducted in the presence of the candidate's colleagues

- ◆ the task and assessment process could be made more difficult by ambient conditions, such as darkness or adverse weather conditions

An example

You may agree with a level 3 candidate who has to demonstrate how to *Diagnose and Determine the Causes of Faults in Mechanical Plant and Equipment* (Unit M3.3), that this will be carried out by observation as and when an opportunity arises. If you are an assessor, either working alongside or supervising the candidate, you would be well-placed to observe the candidate's performance using a prepared 'observation checklist' and to question the candidate during the observation. Your questions might cover the candidate's knowledge of different diagnostic methods and the range of typical faults that could occur in this piece of equipment.

Methods of assessment

Assessment can involve a range of assessment methods. For SVQs, some of the most commonly used methods are observation, product evaluation, and questioning.

Observation

Observation by an assessor is considered to be the most valid and reliable method of assessment. It can be organised in a variety of ways:

- ◆ working alongside the candidate
- ◆ arranging to visit when naturally-occurring activities are carried out by the candidate
- ◆ arranging for activities to take place

Observation by the assessor can often be supplemented by other types of assessment methods such as questioning. For example, it may be appropriate to ask oral questions of candidates as they carry out naturally-occurring activities.

You might agree with a level 3 candidate who is preparing to carry out a planned maintenance routine on a section of plant that you will observe them preparing the worksite, equipment and materials (Units C3.6, M3.4, M3.5). This would be a naturally-occurring opportunity to observe your candidate carrying out a planned activity and to assess them against the standards. You could also allow your candidate to provide evidence of knowledge of how they would 'deal promptly and effectively with problems within their control and report those that cannot be resolved' (Unit C3.6 g).

More examples

- ◆ A technician needs to *Carry out Planned Maintenance Procedures on Mechanical (Process) Plant and Equipment* (Units M2.1 and M3.1). You

could observe this candidate carrying out a planned maintenance routine on a gas compressor. The opportunity to use observation to assess for other Units (integrated assessment opportunity) should also be discussed with the candidate and covered in the assessment plan — Units such as C2.1, C2.5 and M3.6, M3.2 would be ideal. Remember that it is not necessary to observe the candidate throughout the entire duration of the task — indeed, this is not always possible or practical. Instead, you would question the candidate where performance evidence did not fully demonstrate competence against all performance standards.

- ◆ Observation would also be ideal to assess candidates *Remove Components from Mechanical (Process) Plant and Equipment* (Units M2.5 and M3.7). Again, the opportunity for integrated assessment could be taken if this activity was identified in the assessment plan as part of a planned maintenance routine. Assuming that the components will need to be replaced again, you could also observe the candidate *Replace Components in Mechanical (Process) Plant and Equipment* (Units M2.6 and M3.8). As with all observation occasions, you would use questions to ensure that all performance standards were met.

Product evaluation

As candidates work towards achieving the SVQ, they will produce evidence in the form of products of their work. The nature of this evidence can vary widely depending on what the candidate's job entails, but examples of product evidence include:

- ◆ Maintenance history records: you could inspect maintenance history records produced and maintained by the candidate. These records would provide evidence for standards which require the candidate to 'complete relevant maintenance records accurately and pass them on to the appropriate person' (M2.1f and M3.1f).
- ◆ Daily logs, reports and other documents produced and maintained by candidate: where a candidate is being assessed for Units C2.2 and C3.1 *Hand Over Process (Engineering) Plant and Equipment* and is required to 'Produce and maintain records of the hand over in accordance with organisational procedures' (C2.2.1e and C3.1.1e), logs, reports and records produced by the candidate would make ideal evidence.

Questioning

Candidates have to show that they can meet the knowledge specifications for the SVQs. For these SVQs, knowledge and understanding is specified for each Unit and in most cases for Elements also. Much of a candidate's knowledge and understanding will be apparent from what they do or produce as part of their work, but this will not always be the case, and questioning can be a useful way of confirming what candidates know and understand.

Questions can be asked in a variety of forms, such as oral questions, short answer written questions, and multiple choice.

You should be careful that the method of questioning does not go beyond the competence required for the SVQ and become a barrier to fair assessment. For example, some candidates will feel more comfortable with oral questions than written.

Example 1 (level 2 SVQ) Unit 2.3 Deal with Hazards

This Unit requires that candidates have a working knowledge and understanding ‘of the **relevant regulations** and the safe working **practices and procedures** required within your work area’. Some evidence of this knowledge may have been demonstrated during observations, but you may still need to ask some questions, such as:

Question 1 If you were working with a hazardous substance, where would you be able to access information on how to deal with spills or treatment to be provided if someone has inhaled/ingested some of the substance?

Answer 1 Control of Substances Hazardous to Health (COSHH) assessment sheets and/or Health and Safety Data Sheets for the particular substance.

Question 2 What Safe Operating Procedures (SOP) would you access for information and guidance when working with electrical equipment/pressurised systems?

Answer 2 Candidate’s response would be relative to their Mechanical, Electrical or Instrument disciplines, but they should be able to identify the title and reference number of the appropriate SOP. Examples could be:
SOP 105 — Working with Pressurised Systems
SOP 125 — Working with Electricity

Example 2 (level 3 SVQ) Unit 3.4 Work Safely, Minimise Risk and Comply with Emergency Procedures

This Unit requires that candidates have a working knowledge and understanding ‘of the **evacuation procedures** from the work site to a safe area’. Again, some evidence of this knowledge may have been demonstrated during observations, but you might still need to ask some questions, such as:

Question 3 If you are working in the gas compression module/area and an alarm is sounded indicating that there is a gas release in that location, what action would you take?

Answer 3 Make the work site safe, evacuate to the assigned assembly point/muster station and await further announcements/instructions.

Question 4 Where would you find information on emergency evacuation procedures?

Answer 4 The answer to this question would be site-specific. However, an example would be the ‘Emergency Response Stations Bill’ which is available on offshore installations.

Other methods of assessment

These methods, like questioning, are often used for authentication. See section 3 for more about authenticating candidates' evidence.

Personal statements

You might sometimes find it helpful to ask a candidate to give an account of why they did an activity in a certain way or how they produced a product of their work. This is often referred to as a *personal statement*. You should take care to ensure that by asking candidates to produce such statements, you are not asking them to demonstrate competence beyond what is required by the standards. You should also be selective in the use of personal statements, and make sure they have not been produced as a substitute to a more valid, reliable and practical method of assessment.

In instances where it is not possible or practical for you to observe an activity, candidates can provide personal statements on how the task was carried out, describing what they did by referring to the standards of the Unit(s) covered. You could also use questions to support the statement where there are any gaps.

Candidates should write personal statements in a way that makes it obvious which parts of the statement refer to which part of each Unit or Element being covered. It might not be necessary for a personal statement to cover the entire task from start to finish, as there may already be evidence provided for the preparation work (Units M2.5, C2.2, C2.3 and C3.6, M3.4, M3.5). For instance, if the task involves the removal and replacement of components (Units M2.5, M2.6 and M3.7, M3.8), the candidate would not have to go into great detail about the preparatory work carried out, as this will be covered when writing reports for the tasks used to satisfy Units M2.5, C2.2, C2.3, C3.6, M3.4, M3.5.

Witness testimony

For practical reasons, you may not be able to observe all the activities carried out by your candidates, but might feel that other people may be able to provide a statement on what your candidates have been doing or producing as part of their work. Statements of this kind are called *witness testimony*, and are often used to support other evidence produced by candidates. If witness testimony is used, you should, ideally, identify witnesses and opportunities for using their testimony as part of assessment planning.

You should bear in mind that the weight of the evidence will vary, depending on the knowledge and expertise of the person providing the witness testimony. You will have to take these factors into account as you make your judgement.

| | |
|---|--|
| Strongest | Someone with considerable occupational expertise in the candidate's area of work and who is familiar with the standards. This person may also be an assessor or internal verifier qualified with the A/V Units or 'D-Units'. |
|  | Someone with considerable occupational expertise in the candidate's area of work and who is familiar with the standards. |
| | Someone with considerable occupational expertise in the candidate's area of work, but with no knowledge of the standards. |
| | Someone who may be a colleague of the candidate, but with no knowledge of the standards. |
| | Weakest |

Witness testimony is unlikely to be sufficient in itself for a decision about the candidate's competence, and would normally be supplemented by questioning candidates.

In the assessment plan provided earlier in this document, it was agreed that Witness Testimony would be provided as evidence for Unit C3.6, performance statement a) 'Work safely at all times, complying with health and safety and other relevant regulations and guidelines'.

This testimony would be provided by a supervisor or colleague who has worked with the candidate over a period of time. The testimony could also be used to cover other Units incorporating a similar performance statement, though it would need to be supplemented with other evidence, possibly including questioning, that was specific to the Unit being assessed.

Simulation

Simulation is any structured assessment exercise involving a specific task which reproduces real-life situations.

On some occasions, it may not be practical to assess a candidate in real work. Examples might be where the standards require candidates to carry out emergency or contingency procedures, or where client confidentiality is an issue, or where a candidate's job role does not cover all aspects of the qualification.

Cogent has defined what it regards as simulation, and has specified in the standards when simulation is and is not acceptable. The standards also specify which competences must be demonstrated in the workplace. For more details on simulation and what constitutes performance in the workplace, look at the assessment strategy in Appendix 2.

An obvious example of where simulation can be useful for this SVQ is for the level 3 Unit C3.4 '*Work Safely, Minimise Risk and Comply with Emergency Procedures*'. We cannot create a real emergency situation for the purposes of

assessment, though we can observe our candidate's performance during a simulated exercise. It is important that the simulated circumstances are as realistic as possible, and that the candidate is using equipment and facilities that replicate the workplace as closely as possible.

It is also possible and acceptable to allow simulation to be used by candidates where naturally-occurring occasions are few and far between. An example of this would be for the level 2 Unit C2.7 '*Move Loads*'. Your candidate could simulate the rarely-occurring operation of moving loads by demonstrating competence during a simulation either at the worksite or in an appropriately-equipped offsite training facility.

Other sources of evidence

Other sources of evidence can be previous experience or learning, case studies or assignments.

SQA's *Guides to Assessment and Quality Assurance* (see section 5) have more advice on methods of assessment and how to ensure that your assessment is valid, reliable and practicable.

3 Generating evidence

The methods of assessment you use should generate sufficient evidence to demonstrate the candidate's competence.

We described earlier the circumstances in which you might choose to use different methods of assessment. Starting on the next page, this section gives you examples of forms which you can use to record and present evidence of:

- ◆ observation (by the assessor)
- ◆ questions and candidate responses
- ◆ personal statement (produced by the candidate)
- ◆ witness testimony

There are blank forms which you can copy and use in assessment in Appendix 1.

Observation

For observation, note that the form asks you to record the skills and activities observed. This helps you to make a judgement on how the activity was carried out and what it demonstrates.

Observation record

Unit/Element(s): C3.6 Prepare Work Areas for the Maintenance of Process Engineering Plant and Equipment
Candidate: Duncan Campbell **Date of observation:** 31/10/2005
Evidence index number: 20

| Skills/activities observed: | Performance Statements |
|--|--|
| <p>Candidate preparing the work area for the maintenance of gas compressor CX0301A</p> <p>The candidate ensured that the work environment was suitable for the work activities to be undertaken by inspecting the work site and discussing the task with the Area Authority. A risk assessment was conducted by the candidate and the control measures recommended included that the area be barriered off to ensure that there were no other conflicting activities being carried out at the same time. It was also identified by the candidate that the work could not commence until access scaffolding was erected; therefore a request was made to the Area Authority to have this done.</p> <p>These control measures were reviewed by the candidate and discussed and agreed with the Area Authority prior to a work permit being issued to him. Completion of the preparations was recorded in the Daily Log and referenced in the work permit.</p> <p>The candidate ensured that temporary lighting facilities were available and that the plant air system was operational in the work location.</p> <p>The candidate worked safely at all times and wore the appropriate PPE for the task. He also complied with appropriate health and safety procedures and adhered to regulations regarding risk assessment and work permit requirements. This observation was supported by witness testimony from the candidate's supervisor who testified that the candidate maintained this approach to working safely on all occasions.</p> | <p>b, d, e</p> <p>g</p> <p>f</p> <p>c</p> <p>a</p> |

Knowledge and understanding apparent from this observation:

The candidate's knowledge of the PTW system, Risk Assessment procedure and Operational Work Instructions were apparent from the way that he used them. His awareness of other health and safety requirements and issues demonstrated his knowledge and understanding of relevant regulations and guidelines.

Other Units/Elements to which this evidence may contribute:

C3.4, M3.4, M3.5

Assessor's comments and feedback to candidate:

Sufficient performance evidence was provided during this observation to meet all the assessment criteria for this Element.

Although some knowledge evidence was demonstrated during this observation, it will be necessary to conduct a questioning session to obtain further knowledge evidence.

I can confirm the candidate's performance was satisfactory.

Assessor's signature: *David Gannon*

Date: *31/10/2005*

Candidate's signature: *Duncan Campbell*

Date: *31/10/2005*

Questions and candidate responses

This form can be used to record any questions you might ask the candidate to establish what they know and understand. You should note the candidate's responses on this form too.

Note that there is a space near the top of the form for you to record when, where, how and why you asked the questions.

Where you want to give the candidate written questions, this form could also be used.

Record of questions and candidate's answers

| | |
|--|-------------------------|
| Unit: C3.3 Minimise Risks to Life, Property and the Environment | Element(s): |
| Evidence index number: 21 | |
| <p>Circumstances of assessment: Candidate was being assessed whilst carrying out planned maintenance procedures (Unit M3.1) on a gas compressor. The opportunity was also taken to assess the candidate for Unit C3.3. However it was not obvious from observation that there was sufficient evidence of the candidate's knowledge and understanding of how to 'identify hazards, assess the risks involved, minimise the risks by implementing control measures and providing ongoing monitoring'. The candidate gave oral answers to the following questions which were asked at the time of the assessment. Appropriate Performance Statements are indicated against each question.</p> | |
| <p>List of questions and candidate's responses:</p> <p>Q: What formally recorded procedures/systems are available to assist you to identify hazards and assess risks in the workplace? (<i>Performance Statement a, e</i>) A: The Safe Systems of Work procedures provide a formal 'electronic' risk assessment procedure which must be completed prior to any task commencing.</p> <p>Q: Explain how this procedure is utilised to identify hazards and assess risks associated with carrying out a maintenance procedure on a gas compressor. (<i>Performance Statements b, c, f</i>) A: I would first of all complete a 'Jobsite Check sheet' by visiting the worksite to identify any hazards. I would then use this information to assess the risks associated with these hazards and identify and implement appropriate precautions and control measures. I would use the information provided on the Risk Assessment document to ensure that all precautions and control measures were applied prior to commencement and maintained throughout the task.</p> <p>Q: What particular hazards are associated with using electrically-powered tools for this task and what control measures would be implemented to reduce risks? (<i>Performance Statement b, c</i>) A: Hazards: Sparks from non intrinsically safe equipment could be an ignition source if gas were present. Poorly maintained equipment could have a potential for causing electrical shock. Control Measures: A portable gas monitor would need to be at the worksite at all times. All tools and equipment to be examined daily/before use and defects rectified immediately. Refer to Safe Operating Procedure 504: Portable electrically-operated equipment. Equipment to be isolated when left unattended.</p> <p>Q: How would you inform all those who are affected of the risk control measures in place and clarify any implications for them as required? (<i>Performance Statement d, e</i>) A: Discuss the Risk Assessment at the 'tool box talk' and have all relevant personnel read and sign the risk assessment.</p> | |
| Assessor's signature: <i>David Gannon</i> | Date: <i>31/10/2005</i> |
| Candidate's signature: <i>Duncan Campbell</i> | Date: <i>31/10/2005</i> |

Candidate's personal statement

If a personal statement is being used as evidence, it should be completed by the candidate. The statement should record what they did, how and why they chose to carry out an activity or produce work in a certain way. Where other people may have been present during an activity and they may be able to provide witness testimony, the candidate should record how the statement links to other evidence in the column provided.

Personal statement

| Date | Evidence index number | Details of statement | Links to other evidence (enter numbers) | Unit, Elements, PCs covered |
|----------|-----------------------|--|---|--|
| 31/10/05 | 22 | <p>This statement provides evidence of my competence to ‘Adjust Mechanical Plant and Equipment to meet Operational Requirements’. This was achieved by carrying out the task of adjusting speed control on an emergency generator diesel engine.</p> <p>I carried out a task risk assessment which was reviewed by the Area Authority following discussions with myself. He then issued me with a work permit prior to commencing the task.</p> <p>I obtained specifications from the vendor’s maintenance manual for this engine to ensure that I had the correct information and settings for this task.</p> <p>The scope of work for this task only required that I check the speed control mechanism and adjust it as necessary as I was not yet competent to carry out any intrusive maintenance work on the engine.</p> <p>I started the engine and allowed it to run for five minutes before checking the idling speed as per the vendor’s manual instructions. As the speed was about 100rpm faster than the recommended 1,000rpm, I adjusted the throttle control mechanism until the speed was at the correct rpm. I allowed the engine to run for another five minutes before checking the speed to ensure that the adjustment was correct.</p> <p>During this period, the speed crept back up to the original 1,100rpm, therefore I attempted to adjust the throttle mechanism once again. During this operation I noticed that the threads on the adjusting screw were worn and this was the likely reason that the adjustment could not be maintained. I replaced the adjusting screw, adjusted the speed to 1,000rpm and observed that it maintained this speed over the five minute test duration.</p> <p>Having successfully completed this task, I then recorded my findings and test results in the maintenance history records and the mechanical daily log, making mention of the fact that the adjusting screw was replaced.</p> | <p>23 (Risk assessment)</p> <p>24 (Work permit)</p> <p>25 (Page from Vendor’s manual)</p> <p>26 (Job Card)</p> <p>25 (Page from Vendor’s manual)</p> <p>27 (Copy of maintenance history report)</p> <p>28 (Copy of daily log)</p> | <p>M3.6</p> <p>a</p> <p>b</p> <p>c</p> <p>d</p> <p>f</p> <p>e</p> <p>g</p> |

Signed (candidate):

Duncan Campbell

Date: *25/10/2005*

Witness testimony

Remember when you to use witness testimony that it must be capable of being authenticated — even if the testimony itself is being used to authenticate a candidate's claim to competence.

To make sure the witness testimony is genuine, you must ensure that you have a record of who is acting as a witness, their relationship to the candidate (eg supervisor, client) address, telephone number and the date. There are spaces for this information in the form.

Witness testimony

| | |
|---|---|
| SVQ title and level: | Process Engineering Maintenance level 3 |
| Candidate's name: | Duncan Campbell |
| Evidence index no: | 23 |
| Index no of other evidence which this testimony relates to (if any): | |
| Element(s): | C3.5 Contribute to Effective Working Relationships |
| Date of evidence: | 30 October 2005 |
| Name of witness: | William Hood |
| Designation/relationship to candidate: | Maintenance Team Leader (Immediate line supervisor) |
| Details of testimony: | |
| <p>I have worked with Duncan as his team leader for over three years, and can testify to all the following statements.</p> <p>I have always found Duncan to be a conscientious worker who gets on well with all his colleagues. He makes a major contribution in co-ordinating the day-to-day operations within his responsibility, and is a valued member of the team.</p> <p>Productive working relationships are established and maintained with all colleagues, supervision and visitors (C3.5a)</p> <p>Any disagreements with other team members are dealt with in an amicable and constructive way so that good relationships are maintained (C3.5b)</p> <p>Other team members are kept informed about work plans or activities which affect them (C3.5c)</p> <p>Assistance is sought from other team members in a polite and courteous way without causing undue disruption to normal work activities (C3.5d)</p> <p>Responds in a timely and positive way when others ask for help or information (C3.5e)</p> | |
| I can confirm the candidate's evidence is authentic and accurate. | |
| Signed by witness: <i>William Hood</i> Date: <i>30/10/2005</i> | |

Witness (please tick the appropriate box):

- Holds A1/A2 Units or D32/D33 Award
- Is familiar with the SVQ standards to which the candidate is working

Filling the gaps

There may come a time when your candidate has provided evidence for most of the Unit (or SVQ), but there are some gaps. For example, you may find that certain situations, such as handling contingencies, have not arisen during assessment. Often these will relate to dealing with health and safety issues, or unexpected problems with workflow like delays in receiving information from another part of the organisation.

In this SVQ, such gaps are likely to occur in generating evidence for the following two Units which are almost identical:

Level 2 Unit C2.3 Deal with Hazards

Level 3 Unit C3.4 Work Safely, Minimise Risk and Comply with Emergency Procedures

Both these Units contain performance statements that require your candidate to demonstrate their response when there is a need for them to:

- ◆ call for expert help in the event of contingencies occurring, using warning systems as appropriate
- ◆ take prompt and appropriate action to personal and third party injury as a first priority, and then to minimise risk of damage to property and equipment
- ◆ follow shutdown and evacuation procedures promptly and correctly
- ◆ deal safely with dangers that can be contained using appropriate equipment and materials, in accordance with organisational policy and procedures

You may be able to overcome these by asking your candidates to prepare a personal statement outlining how they would deal with each of these situations, thereby demonstrating their competence. Alternatively you may wish to produce pre-set questions specifically aimed at prompting your candidate to provide appropriate responses that are relevant to these statements. An example question and expected response for the fourth statement above could be:

Question What action would you take if you were working on equipment that has been isolated from the hydrocarbon gas process and you detected gas leaking from a flanged joint you have just started to break?

Answer I would immediately tighten the flange back up, using the proper tools and then adhering to the appropriate procedures. I would then make the work site safe, ensure that the area is vacated by all affected personnel and then inform the Area Authority.

Guidance and support to candidates

At all times during the assessment process — from planning through to making your assessment decision — feedback should be on-going, clear and constructive. Feedback should be given against the national standards by relating it to the evidence provided, including the knowledge specifications.

Where there are any shortfalls in a candidate's competence, you should discuss these with your candidate and make plans for re-assessment.

Judging candidate evidence and making an assessment decision

In judging candidate evidence, you must be satisfied that your candidates can work consistently to the required standard, and that the evidence they have produced is their own. You must consider whether your candidate understands and applies the knowledge evidence and how this links to performance evidence.

Evidence must:

- ◆ be relevant to the SVQ
- ◆ be authentic
- ◆ show current competence
- ◆ be sufficient to help you form a decision about the candidate's competence

Insufficient evidence

You have to judge whether the candidate has produced enough evidence required by the standards for you to reach a decision about their evidence.

Where there is insufficient evidence, you should say this to your candidate. You should tell them that it is not that they are not yet competent — there is simply not enough evidence on which to make a decision.

In this situation, your feedback to your candidates must help them produce more evidence and/or plan for further assessment.

Authenticating candidates' evidence

Authentication is required where you have not observed candidates' performance at first hand.

You can check whether a candidate has produced evidence which they claim shows their competence by questioning them or, if this is appropriate, asking them to produce a personal statement, using witness testimony, or seeking peer reports from other colleagues of the candidate.

An example

If your candidate has provided copies of daily logs and maintenance records that have been produced on a PC, you could request that these documents are countersigned by an appropriate person stating that these documents are attributable to the candidate. Such persons would normally be the candidate's team leader/supervisor or similar.

4 Recording achievement

You should retain all evidence — clearly referenced — for internal and external verification.

The candidate's evidence is normally kept in a file, often called a *portfolio*. These documents help you and your candidates to collect, present and cross-reference the evidence to the national standards. They are also a means of recording your assessment decisions, and they tell an external verifier what stage a candidate has reached in achieving the SVQ.

Recording documents do not need to be paper-based — it is possible to use an electronic format for collecting and structuring the evidence. Whatever format you and your candidates choose to use, the documents must show what evidence was generated, the assessment decisions you made, how the evidence meets the standards, and where the evidence can be located. You should avoid photocopying items simply to put them in a portfolio — a clear explanation of where the evidence can be found (for example, in a filing cabinet) may be sufficient for the external verifier to follow it up and include it in the visit.

There are various reasons why record-keeping is so important:

- ◆ it provides a way of tracking a candidate's progress in achieving an SVQ
- ◆ it helps candidates to make claims for certification of their competence
- ◆ internal verifiers and external verifiers use the records to sample assessment decisions
- ◆ it helps us to monitor the quality assurance of our qualifications

If your candidates' evidence is incomplete, or cannot be located, or if there is inaccurate cross-referencing to the standards, there is a risk that an internal verifier or external verifier will be unable to confirm your assessment decisions.

To help you and your candidate present evidence and record your assessment decision, we have provided examples of the forms which you and your candidate might use to compile the portfolio.

- ◆ Completing the Unit progress record
- ◆ Using the evidence index
- ◆ Completing the Element achievement record

These forms are also used in SQA's portfolio.

Completing the Unit progress record

You should complete this form each time your candidate achieves a Unit from the SVQ by adding your signature and the date next to the relevant Unit.

At this stage, candidates should make sure they have completed the recording documents correctly and that their evidence can be easily located. Only then should they circle the relevant Unit number at the top of the form. This enables both of you to see at a glance what stage the candidate is at in their SVQ.

Unit progress record

Qualification and level: **Process Engineering Maintenance (Mechanical) level 2**

Candidate: **Duncan Campbell**

To achieve the whole qualification, you must prove competence in 5 **mandatory** Units and 3 **optional** Units.

Unit Checklist

| | | | | | | | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|--|--|
| Mandatory | C2.1 | C2.2 | C2.3 | C2.4 | M2.1 | | | | | | |
| Optional | C2.5 | C2.6 | C2.7 | M2.2 | M2.3 | M2.4 | M2.5 | M2.6 | | | |

Mandatory Units achieved

| Unit Number | Title | Assessor's Signature | Date |
|-------------|---|----------------------|--------------|
| Unit C2.1 | Reinstate the Work Area after Completing the Maintenance of Process Plant and Equipment | <i>David Gannon</i> | 12 Sept 2005 |
| Unit C2.2 | Hand Over Process Plant and Equipment | <i>David Gannon</i> | 12 Sept 2005 |
| Unit C2.3 | Deal with Hazards | <i>David Gannon</i> | 10 Nov 2005 |
| Unit C2.4 | Contribute to Effective Working Relationships in Process Engineering Maintenance | <i>David Gannon</i> | 10 Nov 2005 |
| Unit M2.1 | Carry Out Planned Maintenance Procedures on Mechanical Process Plant and Equipment | <i>David Gannon</i> | 31 Oct 2005 |
| | | | |
| | | | |

Optional Units achieved

| | | | |
|-----------|---|---------------------|-------------|
| Unit C2.5 | Prepare Work Areas for the Maintenance of Process Plant and Equipment | <i>David Gannon</i> | 31 Oct 2005 |
| Unit M2.5 | Remove Components from Mechanical Process Plant and Equipment | <i>David Gannon</i> | 10 Nov 2005 |
| Unit M2.6 | Replace Components in Mechanical Process Plant and Equipment | <i>David Gannon</i> | 10 Nov 2005 |
| | | | |
| | | | |

Using the index of evidence

The purpose of the index of evidence is to help you locate and work through the candidate's evidence. It should give you a summary of what evidence the candidate has collected, and where (eg in a portfolio) it can be found.

The index of evidence should be completed by entering:

- ◆ the index number for each piece of evidence
- ◆ a description of each piece of evidence
- ◆ the place or location where it can be found
- ◆ the initials of the internal verifier and the date (if they have sampled the candidate's evidence)

Ideally, it should be candidates themselves (with your support and encouragement) who complete the index.

You must make sure that the information in the evidence index is accurate when your candidates' portfolios are presented for assessment and verification — particularly the information about where the evidence can be located. This is important because we suggest that anything which has been produced as day-to-day work is kept in its normal location, but anything which has been produced through assessment for the SVQ, eg observation checklists, is filed in the candidate's portfolio. In this way, your candidate can avoid having to photocopy work products just for the sake of including them in a portfolio. It also means that evidence produced as a result of assessment is kept safely in a central file.

If the index of evidence is not completed with an accurate description and location of the evidence, there is a risk that an internal verifier or external verifier might be unable to confirm your assessment decisions.

Completing the Element achievement record

To help you and your candidates cross-reference the evidence to the standards of the SVQs, we have provided records similar to those produced in the SQA portfolio. Use one record for each Element. The grids should be completed by:

- ◆ entering the evidence index number in the first column
- ◆ giving a brief description of the evidence in the second
- ◆ ticking the relevant boxes for the Performance Criteria (or statements of competence as they are sometimes known)
- ◆ entering the areas of knowledge and understanding the piece of evidence covers

If integrated assessment is used (linking PCs or Elements across different Units) the evidence should be cross-referenced back to the relevant Units.

We have provided a completed example to show how to use the record.

Element achievement record

Unit: M3.6 Adjust Mechanical Plant and Equipment to Meet Operational Requirements

Element:

| Evidence Index No | Description of Evidence | PCs | | | | | | | Areas of knowledge and understanding | | | | | | | | | | | | | | |
|-------------------|----------------------------|-----|---|---|---|---|---|---|--------------------------------------|----|-----|----|---|----|-----|--|--|--|--|--|--|--|--|
| | | a | b | c | d | e | f | g | i | ii | iii | iv | v | vi | vii | | | | | | | | |
| 22 | Personal Statement | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | |
| 23 | Risk Assessment | ✓ | | | | | | | ✓ | | | | | | | | | | | | | | |
| 24 | Work Permit | ✓ | | | | | | | ✓ | | | | | | | | | | | | | | |
| 25 | Page from vendor's manual | | ✓ | | ✓ | | | | | ✓ | ✓ | | ✓ | | | | | | | | | | |
| 26 | Job Card | | | | ✓ | | | | | | | ✓ | | ✓ | ✓ | | | | | | | | |
| 27 | Maintenance History Report | | | | | | | ✓ | | | | ✓ | | | ✓ | | | | | | | | |
| 28 | Daily Log | | | | | | | ✓ | | | | ✓ | | | ✓ | | | | | | | | |
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Unit: M3.6 Adjust Mechanical Plant and Equipment to Meet Operational Requirements

Element:

Notes/Comments

Some of the evidence provided for this Unit has been used for Units C3.4, M3.4 and M3.5.

The candidate has satisfied the Assessor and Internal Verifier that the performance evidence has been met.

Candidate: *Duncan Campbell*

Date: *31/10/05*

Assessor: *David Gannon*

Date: *31/10/05*

Internal Verifier: *Roland Grayson*

Date: *10/11/05*

5 Further information

What else should I read?

The publications listed here provide additional information on how to implement SVQs. Details of these and other SQA publications are available on our website at **www.sqa.org.uk** on the 'Publications, Sales and Downloads' section. They can be ordered from SQA's Customer Contact Centre — telephone 0845 279 1000. Please note that there may be a charge for some of these publications.

Assessor/Verifier Units: assessment guidance

External Assessment Moderation in National Qualifications and Higher National Qualifications: a guide for centres

Guide to Assessment and Quality Assurance for Colleges of Further Education

Guide to Assessment and Quality Assurance for Employers and Training Providers

Arrangements for Candidates with Disabilities and/or Additional Support Needs in Examinations and Assessments

Quality Assurance Principles, Elements and Criteria

Operational Help Centres

The Operational Guide for Centres has been replaced by the online Operational Help Centre on **www.sqa.org.uk**

Appendix 1: Blank recording forms

Unit:

Element:

Notes/Comments

The candidate has satisfied the Assessor and Internal Verifier that the performance evidence has been met.

Candidate:

Date:

Assessor:

Date:

Internal Verifier:

Date:

Personal statement

| Date | Evidence index number | Details of statement | Links to other evidence (enter numbers) | Unit, Elements, PCs covered |
|------|-----------------------|----------------------|---|-----------------------------|
| | | | | |

Signed by candidate:

Date:

Observation record

Unit/Element(s):

Candidate:

Date of observation:

Evidence index number:

| Skills/activities observed: | PCs covered: |
|-----------------------------|--------------|
| | |

Knowledge and understanding apparent from this observation:

Other Units/Elements to which this evidence may contribute:

Assessor's comments and feedback to candidate:

I can confirm the candidate's performance was satisfactory.

Assessor's signature:

Date:

Candidate's signature:

Date:

Record of questions and candidate's answers

| | |
|---|--------------------|
| Unit: | Element(s): |
| Evidence index number: | |
| Circumstances of assessment: | |
| List of questions and candidate's responses: | |
| Assessor's signature: | Date: |
| Candidate's signature: | Date: |

Appendix 2: Assessment strategy (extract)

2 Mandatory use of evidence from workplace performance

- a. In the award-specific assessment requirements there shall be clear statements associated with each standard that define where evidence from workplace performance and clear underpinning knowledge of candidate competence is required.
- b. Under these circumstances, there must be evidence of candidates demonstrating competence in the real (or, at least, realistic) work environment. (Note: In this context, realistic means in specialist centres which replicate the workplace in terms of equipment and environment, it reflects normal working situations and uses relevant industrial or commercial standards and procedures).
- c. For most candidates this means the assessment will be completed in his/her normal place of work. Short work placements or non-realistic work environments which do not replicate the pressures and requirements of normal commercial or industrial activities will not be acceptable. The bulk of the candidate's evidence should be drawn from their normal working activity and not consist of artificially contrived opportunities for one-off demonstration of competence. Similarly equipment must be that used in current commercial and industrial contexts. Procedures and standards used should be those which are nationally or internationally recognised or devised by specific companies as standard operating procedure.
- d. Knowledge and Understanding will be assessed via (pre-set and/or free form) questions, or by inference from performance, which cover three primary types of knowledge:
 - ◆ knowledge of facts and procedures
 - ◆ understanding of principles and concepts underpinning procedures
 - ◆ how to apply principles and procedures in specific contexts

All questions must be asked by the assessor at appropriate moments throughout the assessment process, preferably linked to observed activity and/or review of documentary evidence. The questions asked of, and answers provided by, the candidate may be recorded and used as the basis for a useful question/answer bank. This could then be used to determine, say, training needs of future candidates. The order in which the candidate provides the response is not material. Where the candidate fails to provide a complete answer, the assessor should carry out further questioning to check whether or not the candidate has the necessary knowledge and understanding. This can take the form of further open questioning or providing a guided opportunity to acquire the missing knowledge and re-present for assessment.

There must be some form of verification that the questions have been asked either by detailed cross-referencing to other forms of evidence, by a sample selection of candidate's responses provided in writing or by an assessor report on when and how the questions were asked. The precise form of verification must be agreed between the assessor, the internal verifier and the external verifier applying specific Awarding Body procedures.

3 Use of Simulation

- a. In the award-specific assessment requirements there shall be clear statements associated with each standard that define where evidence from simulation is acceptable. Where currently this is not specified, the following shall apply:
- b. Simulations can be used to demonstrate particular competences that would be difficult or dangerous to demonstrate directly (eg in dealing with emergencies). They should be used only where direct evidence of candidate performance cannot be obtained and reasons for the use of simulation should be made clear to and agreed by the external verifier. The details of assessment using simulation should be provided to the external verifier and should include the following details:
- ◆ which competence (and standards) the simulation was designed to assess;
 - ◆ the kind of equipment, facilities and physical environment proposed for the simulation of performance. It is unlikely that the External Verifier will approve a simulation if it does not involve real plant and equipment;
 - ◆ how the simulated activity relates to the candidate's normal work context in terms of the pressures of time, access to resources and access to information, and the communication media; and
 - ◆ how the simulation was set up and conducted, preferably supported by physical evidence such as photographs or inspection of a test rig

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

- c. Therefore simulations are reserved for aspects of competence illustrated by the following contexts:
- ◆ where demonstration of emergency shutdown and related safety procedures would be; **dangerous and/or disruptive** to plant/environment/individuals; **too costly** such as total plant shutdown or dealing with spillage of dangerous substances; where **issues of confidentiality** restrict access to real work opportunities
 - ◆ demonstrating specific aspects of the operation which rarely or never occur due to effective QA systems
 - ◆ the capacity to integrate disparate knowledge to cope with unforeseen events and to solve problems or

- ◆ aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of candidate performance

4 Occupational competence of assessor and verifiers

a Assessors must be:

- ◆ Able to demonstrate they possess practical and up-to-date knowledge of current working practices appropriate to the sector in which they are carrying out assessment practices OR they must be working in the appropriate sector itself.
- ◆ Competent in the Units they are assessing. This is shown through the assessor having achieved the award they are assessing OR provide quality evidence to the external verifier that they are able to make valid judgements of the competence of candidate's. This could be done through a combination of a) personal interview, b) review of employment histories and/or c) examination of the assessor's judgement during assessments.
- ◆ Must be appointed by an approved centre.
- ◆ Must have a working knowledge of awards and a full understanding of that part of the award for which they have responsibility.
- ◆ In possession of the appropriate assessor award(s). As a minimum requirement, the assessor must be in possession of or actively working towards the Units A1 (or equivalent qualifications).

b Internal verifiers must be:

- ◆ either working in the appropriate sector itself OR they must be able to demonstrate they possess practical and up-to-date knowledge of current working practices appropriate to the sector in which they are carrying out verification practices; and
- ◆ appointed by an approved centre
- ◆ must have a working knowledge of the awards they are internally verifying
- ◆ in possession of or actively pursuing the Unit V1 (or equivalent qualification)

c External Verifiers must be:

- ◆ familiar with the industry, and have an understanding of the technical processes and terminology used. The Awarding Body (or in the case of joint awarding arrangements, cogent), through examination of relevant CVs and references will confirm this.

5 External Quality Control

- a The external quality control of assessment is to be provided, in this highly regulated and safety-critical sector, by the use of competent external verifiers.
- b External quality control will be undertaken by one of two methods to be selected at the choice of the Awarding Body. These are:
- ◆ *Statistical Monitoring* in which the risk rating of centres is determined through the collection of a range data types. Awarding Bodies delivering the awards should provide arrangements for fulfilling these requirements.
 - ◆ *Enhanced External Verification* in which one critical Unit (identified by the standards-setting and accreditation bodies) is to be sampled at all external verification events. Where there have been no candidates assessed in a centre for this Unit, the external verifier will duly record this fact. This enhanced external verification model will cover the evidence assessed by each assessor involved in the assessment of the safety-critical Unit over a twelve month period.

Addendum to the Assessment Strategy

Please note this award will be implemented in accordance with the overarching Cogent Assessment Strategy. The following information should be read alongside the Strategy document as it is intended to complement it.

1 External Quality Control (Section 7 of the Cogent Assessment Strategy refers)

Should the Enhanced External Verification method of achieving External Quality Control be adopted then it has been agreed by industry that the Unit requiring 100% External Verification for level 3 will be Unit C3.4 (Work safely, Minimise Risk and Comply with Emergency Procedures) and for level 2 will be C2.3 (Deal with Hazards).

2 Simulation (Section 3 of the Cogent Assessment Strategy refers)

It has been agreed that NO Units are suitable for complete assessment by simulation. In the event of a candidate being unable to generate workplace evidence for a particular performance statement for Units C2.3, C2.4, C3.3, C3.4 & C3.5 then simulation will be permissible.

In the National Occupational Standards there are clear statements associated with each standard that specify where simulation is permissible.

3 Workplace Assessment (Section 2 of the Cogent Assessment Strategy refers)

It has been agreed that ALL the Units are suitable for Workplace Assessment. See Simulation (above).

4 Assessors must be: (Section 6.o of the Cogent Assessment Strategy refers)

Where used, expert witness testimonies must be kept to a minimum with the majority of assessments in any portfolio observed by a qualified assessor. When witness testimonies are used it should be documented why the assessor was not able to observe at the time the work took place. In addition, the assessment documentation should provide evidence to establish the validity of the testimony, this should include items like the name and job role of the person providing the testimony and his/her relationship with the candidate.

Internal Verifiers must be: (Section 6.p of the Cogent Assessment Strategy refers)

External Verifiers must be: (Section 6.q of the Cogent Assessment Strategy refers)

5 Consultation

All the relevant bodies (including industry, related industry, PAA/VQSET, SQA, QCA and City & Guilds) have been consulted and have contributed either directly or indirectly.

Appendix 3: Evidence Requirements

Electrical level 2

C2.1: Reinstatement of the Work Area after Completing the Maintenance of Process Plant and Equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently reinstate the work area.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

C2.2: Hand Over Process Plant and Equipment

Element C2.2.1: Hand over process plant and equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently hand over plant and equipment.

Competence should be demonstrated across all areas of the scope

Element C2.2.2 Accept and confirm responsibility for the control of process plant and equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently accept and confirm their responsibility for the control of process plant and equipment.

Competence should be demonstrated across all areas of the scope.

C2.3: Deal with Hazards

Evidence Requirements

The assessor must be satisfied that the candidate can, over a period of time, demonstrate competence under working conditions.

- 1 Identification, rectification and reporting of hazards:
 - ◆ faults in equipment, premises, tools
 - ◆ obstructions to safe passage of materials, equipment, personnel
 - ◆ faulty storage of materials and equipment
 - ◆ electrical supply (overhead, underground, exposed)
- 2 Selecting and using protective clothing and safety equipment:
 - ◆ dealing with hazardous substances
 - ◆ dealing with hazardous malfunctions
 - ◆ normal work activities

C2.4: Contribute to Effective Working Relationships in Process Engineering Maintenance

Evidence Requirements

The assessor must be satisfied that the candidate can competently contribute to effective working relationships to include:

- ◆ one to one situations
- ◆ working with others
- ◆ giving and receiving feedback from others

All areas of the scope must be covered

E2.1: Carry out Planned Maintenance Procedures on Electrical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ competently carry out planned maintenance procedures, to include maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

C2.5: Prepare Work Areas for the Maintenance of Process Plant and Equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently prepare the work area, to include planned maintenance activities and breakdown maintenance conditions.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

E2.2: Prepare Materials for the Maintenance of Electrical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ competently prepare materials, to include maintenance activities and breakdown maintenance activities

All areas of the scope must be covered.

E2.3: Prepare Process Plant and Equipment in Support of Electrical Engineering Activities

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ competently prepare plant and equipment, to include maintenance activities and breakdown maintenance activities

All areas of the scope must be covered.

C2.6: Prepare Loads for Moving

Evidence Requirements

The assessor must be satisfied that the candidate can competently prepare loads for moving.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

C2.7: Move Loads

Evidence Requirements

The assessor must be satisfied that the candidate can competently move loads.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

E2.4: Assemble Components of Electrical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence assembling components, to include planned maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets

All areas of the scope must be covered.

E2.5: Remove Components from Electrical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence restoring components, to include planned maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

E2.6: Replace Components in Electrical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence replacing components, to include planned maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

Electrical level 3

C3.1: Hand Over Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will also ask you to provide the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence of competence in exchanging responsibility for the control of products/assets.

This should include handovers during operational conditions; and handovers to colleagues in the same work group.

In addition, as you work with your assessor you will be able to:

- ◆ show entries in handover logs
- ◆ provide organisational records

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

Element C3.1.1: Hand over plant and equipment

C3.2 Reinstatement the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence in the reinstatement of work area:

- ◆ including types of work area
- ◆ including the storing of resources in enclosures

In addition, as you work with your assessor you will be able to:

- ◆ show work areas after reinstatement
- ◆ show stored engineering resources
- ◆ show materials that have prepared

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.3: Minimise Risks to Life, Property and the Environment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence of competence in contributing to health, safety and the environment:

- ◆ including the use of a hazard checking methods
- ◆ including the identification of a hazard from the immediate working environment
- ◆ including the removal of hazards

In addition, as you work with your assessor you will be able to:

- ◆ demonstrate the health and safety procedures followed
- ◆ provide health and safety records
- ◆ provide safety reports following accidents and incidents

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.4: Work Safely, Minimise Risk and Comply with Emergency Procedures

Evidence Requirements

Provide evidence competence in working safely, minimising risk and complying with emergency procedures:

- ◆ including the use of safety equipment
- ◆ including dealing with accidents
- ◆ including minimising risk of personal injury or damage to equipment
- ◆ including dealing with hazardous malfunctions
- ◆ including the following of an evacuation procedure

In addition, as you work with your assessor you will be able to:

- ◆ demonstrate the health and safety procedures followed
- ◆ provide health and safety records
- ◆ provide safety reports following accidents and incidents

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.5: Contribute to Effective Working Relationships

Evidence Requirements

Provide evidence of:

Seeking advice from relevant people.

Contributing to working relationships in the same group and in a different group.

Describe/demonstrate how to give/receive constructive feedback.

Present proposals in oral or written form to others.

Describe what actions to take to minimise conflict and disruption in your team.

Explain the implications of not keeping others informed of his/her progress and any difficulties experienced which might affect their work.

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.1: Carry out Planned Maintenance Procedures on Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in maintaining equipment in line with manufacturers and organisational practices and procedures.

In addition, as you work with your assessor, you will be able to:

- ◆ show organisational records
- ◆ show adjusted assets

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions, these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.2: Deal with Variations and Defects in Electrical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in identifying, assessing and dealing with variations in the products/assets:
 - including the reporting of recommendations to the appropriate people

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions, these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.3: Diagnose and Determine the Causes of Faults in Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in diagnosing and finding faults within plant and equipment:
 - including selecting the most appropriate fault finding technique and tools
 - including locating the fault and notifying the appropriate people;
 - including recording the results

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the diagnostic procedures followed
- ◆ provide organisational reports and records

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.6: Prepare Work Areas for the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing the work area for maintenance including clearing materials and equipment from the work site
 - including providing service supplies and completing isolations

In addition, as you work with your assessor you will be able to:

- ◆ show preparatory work
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

E3.4: Prepare Equipment in Support of Electrical Engineering Activities

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing equipment in support of engineering activities
 - including the obtaining and preparing of equipment
 - including ensuring safety arrangements are in place
 - including reporting to the appropriate authority when completed

In addition, as you work with your assessor, you will be able to:

- ◆ show preparatory work
- ◆ show equipment that has been prepared
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.5: Prepare Materials for the Maintenance of Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing materials in order to carry maintenance of plant and equipment:
 - including checking the quality and quantity of materials
 - including determining how the materials should be prepared

— including reporting on completion.

In addition, as you work with your assessor, you will be able to:

- ◆ show preparatory work
- ◆ show materials that have been prepared
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.6: Adjust Electrical Plant and Equipment to Meet Operational Requirements

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in adjusting equipment according to manufacturers and organisational parameters:
 - including identifying the equipment to be adjusted
 - including carrying out the adjustment
 - including completing the appropriate documentation

In addition, as you work with your assessor, you will be able to:

- ◆ show organisational records
- ◆ show adjusted assets

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.7: Remove Components from Electrical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in removing components from equipment using manufacturer's procedures:
 - including ensuring suitable precautions are taken to prevent escape of liquids or gases
 - including the labelling of components and their storage

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.8: Replace Components in Electrical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in replacing components in plant and equipment
 - including ensuring the replaced components meet the required specifications
 - including protecting the components from damage
 - including using the appropriate tools and techniques and making final adjustments.

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.9: Determine the Feasibility of Repair of Components from Electrical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in determining the feasibility of repairing components
 - including establishing the deviation from required tolerances
 - including determining what action has to be taken to bring the component back into service

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.10: Interpret Detailed Electrical Information from Technical Sources

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in interpreting information from drawings, diagrams and technical manuals
 - including ensuring the information is accurate, up to date and complete
 - including identifying and dealing with any problems that may arise

In addition, as you work with your assessor, you will be able to:

- ◆ provide written evidence of the details of the technical requirements
- ◆ provide records of the information sources used
- ◆ demonstrate the recording arrangements that were followed
- ◆ provide any drawings, technical procedure sheets, planning sheets, parts lists and other details you have generated

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.11: Read and Extract Information from Electrical Engineering Drawings and Specifications

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in extracting information from technical drawings and publications before starting maintenance work

In addition, as you work with your assessor, you will be able to:

- ◆ provide written evidence of the details of the technical requirements
- ◆ provide records of the information sources used
- ◆ demonstrate the recording arrangements that were followed
- ◆ provide any drawings, technical procedures sheets, planning sheets, parts lists and other details you have sourced

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.12: Identify and Suggest Improvements to Working Practices and Procedures on Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in identifying and suggesting improvements to working practices and procedures:
 - including collecting and assessing information on current working practices
 - including suggesting opportunities for improvements

In addition, as you work with your assessor, you will be able to:

- ◆ show the information obtained on improvements
- ◆ demonstrate inputs into discussions
- ◆ show formal reports
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.13: Establish that an Electrical Engineering Process has been Completed to Specification

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in ensuring maintenance has been completed according to company and/or manufacturers standards

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the checking methods that are used
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.14: Test the Performance and Condition of Electrical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in testing the performance and condition of plant and equipment
 - including referring to manufacturers manuals and following company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ explain how to test for faults
- ◆ provide test reports and records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.15: Monitor the Performance and Condition of Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence for competence in completing performance condition monitoring
 - including monitoring on operational and static plant and equipment
 - including setting-up, monitoring and recording the results in accordance with company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.16: Assess the Performance and Condition of Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in assessing the performance and condition of plant and equipment using all available sources of information
 - including checking all the necessary data is available
 - including completing the assessment and analysing the results using norms and historical records
 - including recording the results following company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ show assessments that have been made
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

E3.17: Inspect Electrical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in completing checks on plant and equipment following company procedures
 - including carrying out routine and non-routine checks
 - including recording the results according to company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the checking methods that are used
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

Instrument and Control level 2

C2.1: Reinstatement of the Work Area after Completing the Maintenance of Process Plant and Equipment

Evidence Requirements:

The assessor must be satisfied that the candidate can practically demonstrate reinstating the work area on at least four different occasions.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered

C2.2: Hand Over Process Plant and Equipment

Element C2.2.1: Hand over process plant and equipment

Evidence Requirements:

The assessor must be satisfied that the candidate can practically demonstrate hand over of plant and equipment on at least four different occasions.

Competence should be demonstrated across all areas of the scope

Element C2.2.2: Accept and confirm responsibility for the control of process plant and equipment

Evidence Requirements:

The assessor must be satisfied that the candidate can practically demonstrate their responsibility for the control of process plant and equipment on at least four different occasions.

Competence should be demonstrated across all areas of the scope.

C2.3: Deal with Hazards

Evidence Requirements:

The assessor must be satisfied that the candidate can over a period of time, practically demonstrate competence under working conditions.

1 Identification, rectification and reporting of hazards:

- ◆ faults in equipment, premises, tools
- ◆ obstructions to safe passage of materials, equipment, personnel
- ◆ faulty storage of materials and equipment
- ◆ electrical supply (overhead, underground, exposed)

- 2 Selecting and using protective clothing and safety equipment:
- ◆ dealing with hazardous substances
 - ◆ dealing with hazardous malfunctions
 - ◆ normal work activities

C2.4: Contribute to Effective Working Relationships in Process Engineering Maintenance

Evidence Requirements:

The assessor must be satisfied that the candidate can contribute to effective working relationships on at least four different occasions to include:

- ◆ one to one situations
- ◆ working with others
- ◆ giving and receiving feedback from others

All areas of the scope must be covered.

I2.1: Carry Out Planned Maintenance Procedures on Instrument and Control Plant and Equipment

Evidence Requirements:

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate carrying out planned maintenance procedures on at least four occasions, to include at least two maintenance activities and two breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

C2.5: Prepare Work Areas for the Maintenance of Process Plant and Equipment

Evidence Requirements:

The assessor must be satisfied that the candidate can practically demonstrate preparing the work area on at least four different occasions, to include two planned maintenance activities and two breakdown maintenance conditions

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

I2.2: Prepare Materials for the Maintenance of Instrument and Control Process Plant and Equipment

Evidence Requirements:

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate preparing materials on at least four occasions, to include at least two maintenance activities and two breakdown maintenance activities

All areas of the scope must be covered.

I2.3: Prepare Process Plant and Equipment in Support of Instrument and Control Engineering Activities

Evidence Requirements:

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate preparing plant and equipment on at least four occasions, to include at least two maintenance activities and two breakdown maintenance activities

All areas of the scope must be covered.

C2.6: Prepare Loads for Moving

Evidence Requirements:

The assessor must be satisfied that the candidate can practically demonstrate preparing loads for moving on at least four different occasions. Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

C2.7: Move Loads

Evidence Requirements:

The assessor must be satisfied that the candidate can practically demonstrate moving loads on at least four different occasions.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

I2.4: Assemble Components of Instrument and Control Process Plant and Equipment

Evidence Requirements:

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence assembling components on at least four occasions, to include at least two planned maintenance activities and two breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets

All areas of the scope must be covered.

I2.5: Remove Components from Instrument and Control Process Plant and Equipment

Evidence Requirements:

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate restoring components on at least four occasions, to include at least two planned maintenance activities and two breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

I2.6: Replace Components in Instrument and Control Process Plant and Equipment

Evidence Requirements:

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate replacing components on at least four occasions, to include at least two planned maintenance activities and two breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

Instrument and Control level 3

C3.1 Hand Over Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will also ask you to provide the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence of competence in exchanging responsibility for the control of products/assets.

This should include handovers during operational conditions; and handovers to colleagues in the same work group.

In addition, as you work with your assessor you will be able to:

- ◆ show entries in handover logs
- ◆ provide organisational records

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

Element C3.1.1: Hand over plant and equipment

C3.2 Reinstatement the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence in the reinstatement of work area:

- ◆ including types of work area
- ◆ including the storing of resources in enclosures

In addition, as you work with your assessor you will be able to:

- ◆ show work areas after reinstatement
- ◆ show stored engineering resources
- ◆ show materials that have prepared

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.3 Minimise Risks to Life, Property and the Environment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence of competence in contributing to health, safety and the environment:

- ◆ including the use of a hazard checking methods
- ◆ including the identification of a hazard from the immediate working environment
- ◆ including the removal of hazards

In addition, as you work with your assessor you will be able to:

- ◆ demonstrate the health and safety procedures followed
- ◆ provide health and safety records
- ◆ provide safety reports following accidents and incidents

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.4: Work Safely, Minimise Risk and Comply with Emergency Procedures

Evidence Requirements

Provide evidence competence in working safely, minimising risk and complying with emergency procedures:

- ◆ including the use of safety equipment
- ◆ including dealing with accidents
- ◆ including minimising risk of personal injury or damage to equipment

- ◆ including dealing with hazardous malfunctions
- ◆ including the following of an evacuation procedure

In addition, as you work with your assessor you will be able to:

- ◆ demonstrate the health and safety procedures followed
- ◆ provide health and safety records
- ◆ provide safety reports following accidents and incidents

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.5: Contribute to Effective Working Relationships

Evidence Requirements

Provide evidence of:

Seeking advice from relevant people.

Contributing to working relationships in the same group and in a different group.

Describe/demonstrate how to give/receive constructive feedback.

Present proposals in oral or written form from others.

Describe what actions to take to minimise conflict and disruption in your team.

Explain the implications of not keeping others informed of his/her progress and any difficulties experienced which might affect their work.

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.1 Carry out Planned Maintenance Procedures on Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in maintaining equipment in line with manufacturers and organisational practices and procedures.

In addition, as you work with your assessor, you will be able to:

- ◆ show organisational records
- ◆ show adjusted assets

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions, these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.2 Deal with Variations and Defects in Instrument and Control Systems

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in identifying, assessing and dealing with variations in the products/assets:
 - including the reporting of recommendations to the appropriate people

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions, these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.3 Diagnose and Determine the Causes of Faults in Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in diagnosing and finding faults within plant and equipment:
 - including selecting the most appropriate fault finding technique and tools
 - including locating the fault and notifying the appropriate people;
 - including recording the results

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the diagnostic procedures followed
- ◆ provide organisational reports and records

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.6: Prepare Work Areas for the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing the work area for maintenance including clearing materials and equipment from the work site
 - including providing service supplies and completing isolations

In addition, as you work with your assessor you will be able to:

- ◆ show preparatory work
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

I3.4 Prepare Equipment Required for Maintaining Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing equipment in support of engineering activities
 - including the obtaining and preparing of equipment
 - including ensuring safety arrangements are in place
 - including reporting to the appropriate authority when completed

In addition, as you work with your assessor, you will be able to:

- ◆ show preparatory work
- ◆ show equipment that has been prepared
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.5 Prepare Materials Required for Maintaining Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing materials in order to carry maintenance of plant and equipment:
 - including checking the quality and quantity of materials
 - including determining how the materials should be prepared
 - including reporting on completion.

In addition, as you work with your assessor, you will be able to:

- ◆ show preparatory work
- ◆ show materials that have been prepared
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.6 Adjust Instrument and Control Systems to Meet Operational Requirements

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in adjusting equipment according to manufacturers and organisational parameters:
 - including identifying the equipment to be adjusted
 - including carrying out the adjustment
 - including completing the appropriate documentation

In addition, as you work with your assessor, you will be able to:

- ◆ show organisational records
- ◆ show adjusted assets

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.7 Remove Components from Instrument and Control Systems

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in removing components from equipment using manufacturer's procedures:
 - including ensuring suitable precautions are taken to prevent escape of liquids or gases
 - including the labelling of components and their storage

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.8 Replace Components in Instrument and Control Systems

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in replacing components in plant and equipment
 - including ensuring the replaced components meet the required specifications
 - including protecting the components from damage
 - including using the appropriate tools and techniques and making final adjustments.

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.9 Determine the Feasibility of Repair of Components from Instrument and Control Systems

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in determining the feasibility of repairing components
 - including establishing the deviation from required tolerances

- including determining what action has to be taken to bring the component back into service

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

13.10 Interpret Detailed Instrument and Control Information from Technical Sources

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in interpreting information from drawings, diagrams and technical manuals
 - including ensuring the information is accurate, up to date and complete
 - including identifying and dealing with any problems that may arise

In addition, as you work with your assessor, you will be able to:

- ◆ provide written evidence of the details of the technical requirements
- ◆ provide records of the information sources used
- ◆ demonstrate the recording arrangements that were followed
- ◆ provide any drawings, technical procedure sheets, planning sheets, parts lists and other details you have generated

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

13.11 Read and Extract Information from Instrument and Control Engineering Drawings and Specifications

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in extracting information from technical drawings and publications before starting maintenance work

In addition, as you work with your assessor, you will be able to:

- ◆ provide written evidence of the details of the technical requirements
- ◆ provide records of the information sources used
- ◆ demonstrate the recording arrangements that were followed
- ◆ provide any drawings, technical procedures sheets, planning sheets, parts lists and other details you have sourced

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

13.12 Identify and Suggest Improvements to Working Practices and Procedures whilst Maintaining Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in identifying and suggesting improvements to working practices and procedures:
 - including collecting and assessing information on current working practices
 - including suggesting opportunities for improvements

In addition, as you work with your assessor, you will be able to:

- ◆ show the information obtained on improvements
- ◆ demonstrate inputs into discussions
- ◆ show formal reports
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.13 Establish that an Engineering Maintenance Process has been Completed to Specification

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in ensuring maintenance has been completed according to company and/or manufacturers standards

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the checking methods that are used
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.14 Test the Performance and Condition of Instrument and Control Systems

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in testing the performance and condition of plant and equipment
 - including referring to manufacturers manuals and following company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ explain how to test for faults
- ◆ provide test reports and records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.15 Monitor the Performance and Condition of Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence for competence in completing performance condition monitoring
 - including monitoring on operational and static plant and equipment
 - including setting-up, monitoring and recording the results in accordance with company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.16 Assess the Performance and Condition of Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in assessing the performance and condition of plant and equipment using all available sources of information
 - including checking all the necessary data is available
 - including completing the assessment and analysing the results using norms and historical records
 - including recording the results following company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ show assessments that have been made
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

I3.17 Inspect Instrument and Control Systems

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in completing checks on plant and equipment following company procedures
 - including carrying out routine and non-routine checks
 - including recording the results according to company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the checking methods that are used
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

Mechanical level 2

C2.1 Reinstatement of the Work area after Completing the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently reinstate the work area.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

C2.2: Hand Over Process Plant and Equipment

Element C2.2.1: Hand over process plant and equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently hand over plant and equipment.

Competence should be demonstrated across all areas of the scope

Element C2.2.2 Accept and confirm responsibility for the control of process plant and equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently accept and confirm their responsibility for the control of process plant and equipment.

Competence should be demonstrated across all areas of the scope.

C2.3 Deal with Hazards

Evidence Requirements

The assessor must be satisfied that the candidate can, over a period of time, demonstrate competence under working conditions.

1 Identification, rectification and reporting of hazards:

- ◆ faults in equipment, premises, tools
- ◆ obstructions to safe passage of materials, equipment, personnel
- ◆ faulty storage of materials and equipment
- ◆ electrical supply (overhead, underground, exposed)

2 Selecting and using protective clothing and safety equipment:

- ◆ dealing with hazardous substances
- ◆ dealing with hazardous malfunctions
- ◆ normal work activities

C2.4 Contribute to Effective Working Relationships in Process Engineering Maintenance

Evidence Requirements

The assessor must be satisfied that the candidate can competently contribute to effective working relationships to include:

- ◆ one to one situations
- ◆ working with others
- ◆ giving and receiving feedback from others

All areas of the scope must be covered

M2.1: Carry out Planned Maintenance Procedures on Electrical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ competently carry out planned maintenance procedures, to include maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

C2.5: Prepare Work Areas for the Maintenance of Process Plant and Equipment

Evidence Requirements

The assessor must be satisfied that the candidate can competently prepare the work area, to include planned maintenance activities and breakdown maintenance conditions.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

M2.2 Prepare Materials for the Maintenance of Mechanical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ competently prepare materials, to include maintenance activities and breakdown maintenance activities

All areas of the scope must be covered.

M2.3 Prepare Process Plant and Equipment in Support of Mechanical Engineering Activities

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ competently prepare plant and equipment, to include maintenance activities and breakdown maintenance activities

All areas of the scope must be covered.

C2.6 Prepare Loads for Moving

Evidence Requirements

The assessor must be satisfied that the candidate can competently prepare loads for moving.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

C2.7 Move Loads

Evidence Requirements

The assessor must be satisfied that the candidate can competently move loads.

Competence should be demonstrated both in the workshop and on the plant.

All areas of the scope must be covered.

M2.4 Assemble Components of Mechanical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence assembling components, to include planned maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets

All areas of the scope must be covered.

M2.5 Remove Components from Mechanical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence restoring components, to include planned maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

M2.6 Replace Components in Mechanical Process Plant and Equipment

Evidence Requirements

The candidate should:

- ◆ describe how to carry out those areas of the scope not demonstrated practically
- ◆ demonstrate competence replacing components, to include planned maintenance activities and breakdown maintenance activities
- ◆ implement maintenance procedures for engineering assets
- ◆ adjust engineering assets to meet operating requirements

All areas of the scope must be covered.

Mechanical level 3

C3.1 Hand Over Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will also ask you to provide the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence of competence in exchanging responsibility for the control of products/assets.

This should include handovers during operational conditions; and handovers to colleagues in the same work group.

In addition, as you work with your assessor you will be able to:

- ◆ show entries in handover logs
- ◆ provide organisational records

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

Element C3.1.1: Hand over plant and equipment

C3.2 Reinstatement of the Work Area after Completing the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence in the reinstatement of work area:

- ◆ including types of work area
- ◆ including the storing of resources in enclosures

In addition, as you work with your assessor you will be able to:

- ◆ show work areas after reinstatement
- ◆ show stored engineering resources
- ◆ show materials that have prepared

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.3 Minimise Risks to Life, Property and the Environment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

Provide evidence of competence in contributing to health, safety and the environment:

- ◆ including the use of a hazard checking methods
- ◆ including the identification of a hazard from the immediate working environment
- ◆ including the removal of hazards

In addition, as you work with your assessor you will be able to:

- ◆ demonstrate the health and safety procedures followed
- ◆ provide health and safety records
- ◆ provide safety reports following accidents and incidents

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.4 Work Safely, Minimise Risk and Comply with Emergency Procedures

Evidence Requirements

Provide evidence competence in working safely, minimising risk and complying with emergency procedures:

- ◆ including the use of safety equipment
- ◆ including dealing with accidents
- ◆ including minimising risk of personal injury or damage to equipment
- ◆ including dealing with hazardous malfunctions

- ◆ including the following of an evacuation procedure

In addition, as you work with your assessor you will be able to:

- ◆ demonstrate the health and safety procedures followed
- ◆ provide health and safety records
- ◆ provide safety reports following accidents and incidents

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.5 Contribute to Effective Working Relationships

Evidence Requirements

Provide evidence of:

Seeking advice from relevant people.

Contributing to working relationships in the same group and in a different group.

Describe/demonstrate how to give/receive constructive feedback.

Present proposals in oral or written form from others.

Describe what actions to take to minimise conflict and disruption in your team.

Explain the implications of not keeping others informed of his/her progress and any difficulties experienced which might affect their work.

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.1 Carry out Planned Maintenance Procedures on Mechanical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in maintaining equipment in line with manufacturers and organisational practices and procedures.

In addition, as you work with your assessor, you will be able to:

- ◆ show organisational records
- ◆ show adjusted assets

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions, these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.2 Deal with Variations and Defects in Mechanical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in identifying, assessing and dealing with variations in the products/assets:
 - including the reporting of recommendations to the appropriate people

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions, these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.3 Diagnose and Determine the Causes of Faults in Mechanical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in diagnosing and finding faults within plant and equipment:
 - including selecting the most appropriate fault finding technique and tools
 - including locating the fault and notifying the appropriate people;
 - including recording the results

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the diagnostic procedures followed
- ◆ provide organisational reports and records

Your assessor will also ask you questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

C3.6 Prepare Work Areas for the Maintenance of Process Engineering Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing the work area for maintenance including clearing materials and equipment from the work site
 - including providing service supplies and completing isolations

In addition, as you work with your assessor you will be able to:

- ◆ show preparatory work
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

M3.4 Prepare Equipment in Support of Engineering Activities

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing equipment in support of engineering activities
 - including the obtaining and preparing of equipment
 - including ensuring safety arrangements are in place
 - including reporting to the appropriate authority when completed

In addition, as you work with your assessor, you will be able to:

- ◆ show preparatory work
- ◆ show equipment that has been prepared
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.5 Prepare Materials for the Maintenance of Mechanical plant and Equipment

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in preparing materials in order to carry maintenance of plant and equipment:
 - including checking the quality and quantity of materials
 - including determining how the materials should be prepared
 - including reporting on completion.

In addition, as you work with your assessor, you will be able to:

- ◆ show preparatory work
- ◆ show materials that have been prepared
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.6 Adjust Mechanical Plant and Equipment to Meet Operational Requirements

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in adjusting equipment according to manufacturers and organisational parameters:
 - including identifying the equipment to be adjusted
 - including carrying out the adjustment
 - including completing the appropriate documentation

In addition, as you work with your assessor, you will be able to:

- ◆ show organisational records
- ◆ show adjusted assets

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.7 Remove Components from Mechanical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in removing components from equipment using manufacturer's procedures:
 - including ensuring suitable precautions are taken to prevent escape of liquids or gases
 - including the labelling of components and their storage

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.8 Replace Components in Mechanical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in replacing components in plant and equipment
 - including ensuring the replaced components meet the required specifications
 - including protecting the components from damage
 - including using the appropriate tools and techniques and making final adjustments.

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.9 Determine the Feasibility of Repair of Components from Mechanical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in determining the feasibility of repairing components
 - including establishing the deviation from required tolerances

- including determining what action has to be taken to bring the component back into service

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.10 Interpret Detailed Mechanical Information from Technical Sources

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in interpreting information from drawings, diagrams and technical manuals
 - including ensuring the information is accurate, up to date and complete
 - including identifying and dealing with any problems that may arise

In addition, as you work with your assessor, you will be able to:

- ◆ provide written evidence of the details of the technical requirements
- ◆ provide records of the information sources used
- ◆ demonstrate the recording arrangements that were followed
- ◆ provide any drawings, technical procedure sheets, planning sheets, parts lists and other details you have generated

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.11 Read and Extract Information from Mechanical Engineering Drawings and Specifications

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in extracting information from technical drawings and publications before starting maintenance work

In addition, as you work with your assessor, you will be able to:

- ◆ provide written evidence of the details of the technical requirements
- ◆ provide records of the information sources used
- ◆ demonstrate the recording arrangements that were followed
- ◆ provide any drawings, technical procedures sheets, planning sheets, parts lists and other details you have sourced

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.12 Identify and Suggest Improvements to Working Practices and Procedures whilst Maintaining Mechanical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in identifying and suggesting improvements to working practices and procedures:
 - including collecting and assessing information on current working practices
 - including suggesting opportunities for improvements

In addition, as you work with your assessor, you will be able to:

- ◆ show the information obtained on improvements
- ◆ demonstrate inputs into discussions
- ◆ show formal reports
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.13 Establish that an Engineering Maintenance Process has been Completed to Specification

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must

- ◆ provide evidence of competence in ensuring maintenance has been completed according to company and/or manufacturers standards

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the checking methods that are used
- ◆ provide organisational records.

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.14 Test and Monitor the Performance and Condition of Mechanical Plant and Equipment

Evidence Requirements

Your assessor will also ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in testing the performance and condition of plant and equipment
 - including referring to manufacturers manuals and following company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ explain how to test for faults
- ◆ provide test reports and records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.15 Monitor the Performance and Condition of Mechanical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence for competence in completing performance condition monitoring
 - including monitoring on operational and static plant and equipment
 - including setting-up, monitoring and recording the results in accordance with company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.16 Assess the Performance and Condition of Mechanical plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in assessing the performance and condition of plant and equipment using all available sources of information:
 - including checking all the necessary data is available
 - including completing the assessment and analysing the results using norms and historical records
 - including recording the results following company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ show assessments that have been made
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

M3.17 Inspect Mechanical Plant and Equipment

Evidence Requirements

Your assessor will ask you to produce the following practical evidence to help him or her judge whether you are competent in this area. You must:

- ◆ provide evidence of competence in completing checks on plant and equipment following company procedures:
 - including carrying out routine and non-routine checks
 - including recording the results according to company procedures

In addition, as you work with your assessor, you will be able to:

- ◆ demonstrate the checking methods that are used
- ◆ provide organisational records

Your assessor will also ask your questions to assess your understanding. The assessor will decide which questions to ask. The knowledge and understanding requirements listed in the standards for each Unit are intended to act as a prompt for extra questions; these will be based on your situation and the type of activities in which you are involved for assessment.

You must keep a written or audio record of your answers that can be audited at a future date.

Appendix 4: Equipment Lists and Skills

- 1. Mechanical Technician**
- 2. Instrument Technician**
- 3. Electrical Technician**

| Candidate Name: | % Completed | Date Skill/Training Completed | | | | | | | | | | | | |
|--|-------------|-------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| Additional skills held by candidate (Electrical Technician) | | | | | | | | | | | | | | |
| PTW Performing Authority | | | | | | | | | | | | | | |
| PTW Authorised Gas Tester Level 2 | | | | | | | | | | | | | | |
| PTW Authorised Electrical Person or Registered Competent Person (Electrical) | | | | | | | | | | | | | | |
| Appropriate Prior Learning identified by candidate and assessor | | | | | | | | | | | | | | |
| Ex Hazardous Areas — Competence Based Course | | | | | | | | | | | | | | |
| Emergency Response Team Member and/or coxswain or other appropriate ER roles | | | | | | | | | | | | | | |
| The above additional skills are provided as examples and should be modified to reflect appropriate location-specific skills. | | | | | | | | | | | | | | |