ENERGY & UTILITIES
INDEPENDENT
ASSESSMENT SERVICE

# EPA Specification
# Maintenance and Operations Engineering Technician
## Control and Instrumentation technician

# Contents

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## EPA Specification Section 1 – Introduction

### Contacts

**This specification has been designed to provide all the advice and guidance you need to prepare yourself and your apprentices for end-point assessment. However, if you have any further questions please contact the EUIAS Help Desk using one of the following:**

**Help Desk email: enquiries@euias.co.uk**

**Help Desk telephone: 0121 713 8310**

# About the Energy and Utilities Independent Assessment Service (EUIAS)

The EUIAS is an independent end-point assessment organisation (EPAO) approved by the Education and Skills Funding Agency (ESFA) (number EPA0009) to offer and carry out the end-point assessments (EPA) for the Level 3 Maintenance and Operations Engineering Technician Apprenticeship Standard (ST0154).

The EUIAS was established in 2014 and is part of Energy & Utility Skills Limited. The EUIAS delivers rigorous and robust apprenticeship end-point assessment services for the energy and utilities sector, and for technical and safety-critical sectors. In May 2016, The EUIAS became the first end-point assessment provider to have achievers on the English Trailblazer apprenticeship standards.

# About end-point assessment

End-point assessment is the term given to the assessments taken by apprentices at the end of their apprenticeship, and which must be passed in order for the apprentice to be awarded a certificate of achievement. Apprentices must be trained by training providers approved by the ESFA and their end-point assessments must be carried out by an end-point assessment organisation approved by the ESFA. The assessment is designed, delivered, assessed and quality assured by the EPAO, with further external quality assurance provided by and external quality assurance (EQA) provider.

The EPA typically consists of three assessment components each of which must be passed in order to achieve an overall pass. For the MOET standard, the assessments are a knowledge test, a practical observation and a technical interview.

End-point assessment is based on two documents that have been written by an employer group – the Standard and the Assessment Plan, both of which can be found on the website of the Institute for Apprenticeships and Technical Education, www.instituteforapprenticeships.org.

The EPAO designs the assessments to cover the standard, while complying with the assessment plan.

It is important for training providers supporting apprenticeships:

- to ensure their training programmes cover all the elements required by the standard
- to have access to suitable premises, plant, machinery and equipment for the practical observation

# How to Use This EPA Specification for Maintenance and Operations Engineering Technician

Welcome to the EUIAS EPA Specification for the Maintenance and Operations Engineering Technician (MOET) Apprenticeship Standard – Electrical specialism.

The EUIAS internally quality assures all end-point assessments in accordance with its IQA process and IfATE requirements. This standard is externally quality assured by Open Awards on behalf of the IfATE.

This Specification is available from the EUIAS website (www.euias.co.uk) as a complete document, and also in its individual sections to allow customers to download what they require. **Important: the web site will always contain the latest version of this document so please check back to ensure you are using the latest version.**

This Specification outlines what you need to know about the end-point assessments for this standard and provides details of the on-programme delivery requirements. It provides advice and guidance for trainers on how to prepare apprentices for the end-point assessment.

The Specification provides end-to-end details of the how the EUIAS works with customers, from initial engagement to the completion of end-point assessment.

**Audience:**

Section 2 will be of interest mainly to the external quality assurance body to ensure the assessment methods cover the standard.

Section 3 will be of interest mainly to administrators and those responsible for planning and scheduling end point assessments.

Section 4 will be of interest to those ensuring that apprentices have covered all the required elements of the standard during their apprenticeship, and to apprentices themselves.

Sections 5 and 6 will be of interest to those who support apprentices in preparing for the end-point assessments, and to apprentices themselves.

## At a glance

**Apprenticeship standard:** Maintenance and Operations Engineering Technician

**Assessment Plan:** ST0154/AP02

**Level:** 3

**On-programme duration:** Typically 36 months

**Grading:** Pass/merit/distinction

**End-point assessment duration:** Typically 6 months

**End-point assessment methods:**

- Knowledge assessment
- Practical observation
- Technical interview supported by evidence portfolio/worklog

**Option to use employer-nominated assessors for the practical observation (nuclear and power generation only)**

### Quality Assurance:

Quality assurance of the end-point assessment is designed in accordance with the Assessment Plan. The main features of EUIAS quality assurance are:

- Assessments carried out by assessors standardised by EUIAS
- Ongoing internal quality assurance
- Moderation and final grading by EUIAS

External quality assurance is provided by Open Awards on behalf of the IfATE.

### In this guide, you will find:

- Detailed Amplification and Guidance of the standard and guidance on how to prepare the apprentice for gateway
- detailed information on which part of the standard is assessed by which assessment method
- a section focused on the end-point assessment method where the assessment criteria are presented in a format suitable for carrying out 'mock' assessments
- suggestions on how to prepare the apprentice for each part of the end-point assessment
- a practice test that you can use with apprentices

## Is this the right standard for you?

The MOET standard has been designed by the trailblazer group of employers for technicians specifically engaged in maintenance operations in a variety of settings.  A substantial part of the assessment activity is the practical observation where the apprentice carries out various tasks on complex plant or machinery and it is important that the setting provides the opportunity to cover all the requirements of the standard. It is really important that the employer and provider check that they have the right site with the right opportunities for the apprentice to cover all the requirements. The apprentice will not be assessed on the job that they do but on the requirements of the standard.

## Standard overview

Maintenance & Operations Engineering Technicians covers 7 roles:

- Eectrical Technician;
- Mechanical Technicians;
- Control & Instrumentation Technicians
- Wind Turbine Technicians
- Electrical System and Process Control Technicians
- Electromechanical Technicians;
- Plant Operations Technicians.

**This specification covers the Control and Instrumentation technician specialism.**

They will maintain the safety, integrity and effective operation of plant and equipment in one or more of the following Industries that are part of or have activities that are part of the broader national infrastructure Engineering Sector:

- the electricity generating environment, which may use a range of different fuels including coal, gas, nuclear, wind and other renewable sources;
- telecommunications;
- power plants;
- oil and gas refining;
- nuclear waste reprocessing;
- processing and production of chemicals;
- pharmaceuticals;
- human and animal food;
- cosmetics;
- petrochemicals;
- sewerage;
- the exploration and exploitation of oil and gas.

Control and Instrumentation technicians will work on various types of plant and equipment commonly found throughout the Engineering Industry sectors and the Technicians can be expected to migrate through these sectors during the course of their careers. Dependent upon the sector that they are employed in there may be subtle differences in terms of the composition and application of the plant and equipment. However, the fundamental principles of operation will be the same regardless of the engineering sector.

These Technicians will undertake installation, testing, servicing, removal, replacement, maintenance and repair of a range of equipment, sometimes complex, as part of planned preventative and reactive maintenance programmes. They may also undertake decommissioning activities when plant is being removed from service.

They will be responsible for the quality of their own work, possibly others' and ensuring the work is completed safely, meets stakeholder quality, time and budget requirements, whilst maintaining the efficient running of plant and equipment.

### On-programme requirements

The employer/training provider should ensure that they have developed and can deliver a programme of training and learning that will enable the apprentice to develop the knowledge, skills and behaviours that will be assessed as part of this standard. The programme must cover all the knowledge, skills and behaviours of the standard.

The planning, organisation and delivery of the on-programme element of the apprenticeship is the responsibility of the employer/ training provider and it is their responsibility to ensure they are compliant with all applicable regulations.

It is recommended that throughout the period of learning and development, and at least monthly the apprentice should meet with the on- programme assessor to record their progress against the standard. At these reviews, the employer should:

- set learning and development goals
- track the apprentice's progress
- coordinate 20% of the apprentice's time being spent in off-the-job training

Once the apprentice is deemed competent, the relevant section(s) of the standard should be signed off by the on-programme assessor and employer.

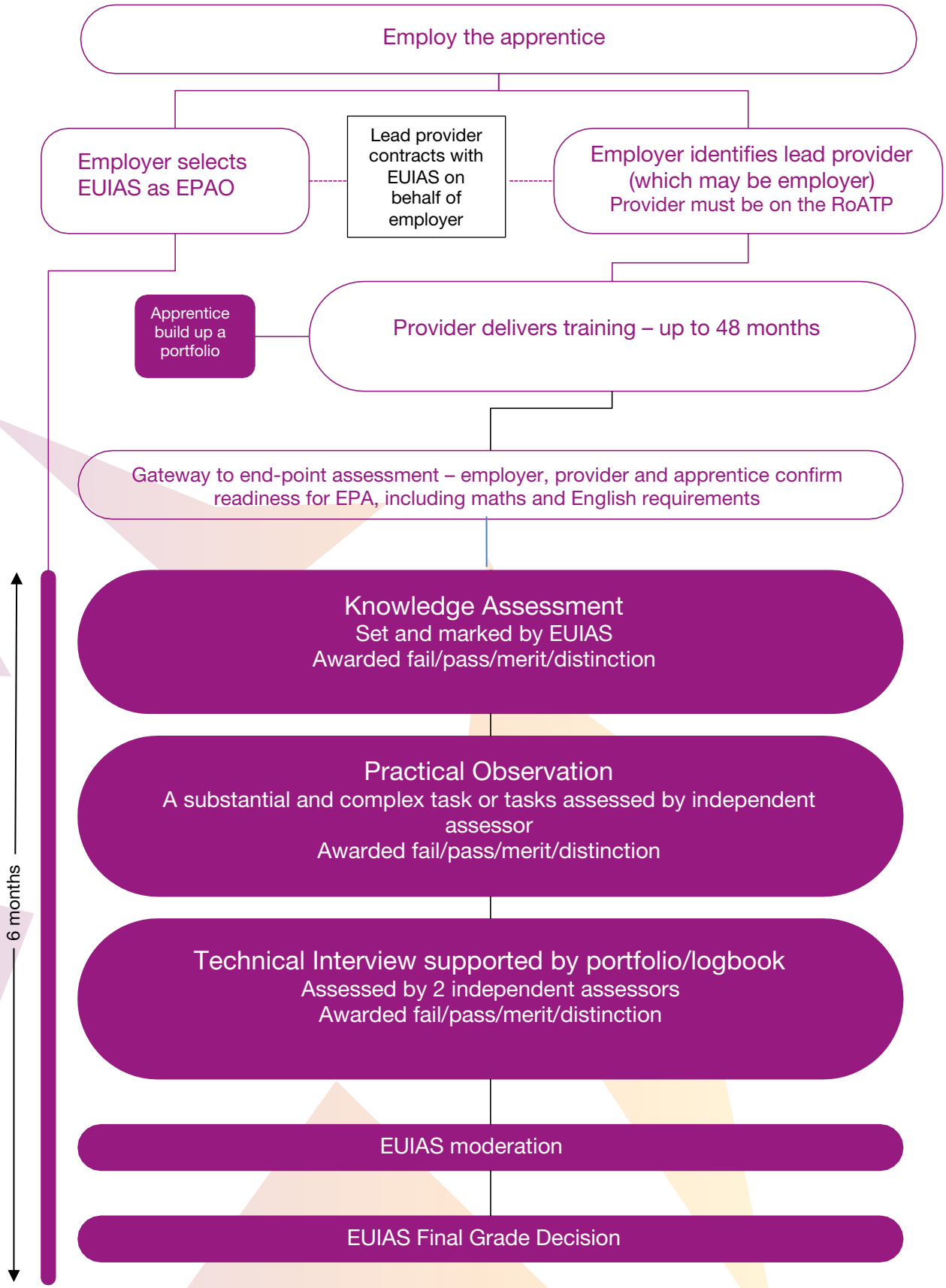
### Readiness for end-point assessment

For an apprentice to be ready for the end-point assessments:

- the Level 2 English and maths components of the apprenticeship must be successfully completed by the apprentice; the EUIAS requires copies of the certificates before end-point assessment can take place
- the employer, training provider and apprentice must be confident that the apprentice has developed all the knowledge, skills and behaviours defined in the apprenticeship standard. To ensure this, the apprentice must attend a formal meeting with their employer to complete the Gateway Eligibility Report
- the apprentice and the employer must engage with the Service Delivery team at EUIAS to agree a schedule for each assessment activity to ensure all components can be completed within a 6-month assessment window. Further information about the gateway process is covered later in this guide
- the evidence portfolio must be completed and available for review at the Technical Interview
- the Practical Observation approval form must be completed and submitted to EUIAS

### Order of end-point assessments

The Knowledge Assessment and Practical Observation can be taken in any order. The Technical Interview assessment component must be the final component.




**Overview of the EPA process – EPA-related activities in purple**

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## EPA Specification Section 2 – Mapping the Standard

### Contacts

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**Help Desk email: enquiries@euias.co.uk**

**Help Desk telephone: 0121 713 8310**

## Purpose

The purpose of this section is to introduce the elements of the standard and the referencing system used by the EUIAS. It provides and 'at-a-glance' view of which parts of the standard are assessed by which assessment method.

## The Standard

The standard is divided in Knowledge, Skills and Behaviours. It has

- Core Knowledge
- Core Skills
- Behaviours
- Control and Instrumentation technician Specialist Skills

## Core Knowledge:

CK1 First principles relating to the operation and maintenance of appropriate plant and equipment

CK2 Relevant industry health and safety standards, regulations, and environmental and regulatory requirements CK3 Maintenance and operational practices, processes and procedures covering a range of plant and equipment

CK4 The relevant engineering theories and principles relative to their occupation

## Core Skills:

**CS1** comply with industry health, safety and environmental working practices and regulations

**CS2** communicate with and provide information to stakeholders in line with personal role and responsibilities

**CS3** prepare work areas to undertake work related activities and reinstate those areas after the completion of the work-related activities

**CS4** assess and test the performance and condition of plant and equipment

**CS5** locate, and rectify faults on plant and equipment

**CS6** read, understand and interpret information and work in compliance with technical specifications and supporting documentation

**CS7** inspect and maintain appropriate plant and equipment to meet operational requirements

**CS8** communicate, handover and confirm that the appropriate engineering process has been completed to specification Behaviours:

**Behaviours:**

**B1** Health & Safety – follows health & safety policies and procedures and be prepared to challenge unsafe behaviour using appropriate techniques to ensure the protection of people and property when working alone and/or with appropriate supervision

**B2** Quality focused – ensures that work achieves quality standard both occupationally and personally

**B3** Working with others – works well with people from different disciplines, backgrounds and expertise to accomplish an activity safely and on time

**B4** Interpersonal skills – gets along well with others and takes into account their needs and concerns

**B5** Critical reasoning – uses resources, techniques and obtained facts to develop sound solutions while recognising and defining problems

**B6** Sustainability and ethical behaviour – behaves ethically and undertakes work in a way that contributes to sustainable development

**B7** Risk awareness – demonstrates high concentration, the desire to reduce risks, ability to be compliant and awareness of change, through regular monitoring and checking of information

**Control and Instrumentation technician Specialist Skills**

**CI1** Position, assemble, install and dismantle plant and equipment which will include instrumentation and control of temperature, pressure and flow systems, to agreed specifications

**CI2** Carry out planned, unplanned and preventative maintenance procedures on plant and equipment

**CI3** Replace, repair and/or remove components in plant and equipment and ensure its return to operational condition

**CI4** Diagnose and determine the cause of faults in plant and equipment

**CI5** Calibrate and configure instrument and control systems

The standard mapped to the assessment methods:

| | |
|---|---|
| Knowledge test: | All core knowledge (CK1, CK2, CK3, CK4) |
| Technical Interview: | All core knowledge (CK1, CK2, CK3, CK4) |
| | PLUS Selected core skills (CS5, CS6, CS7 CS8) |
| | PLUS One behaviour (B5) |
| | PLUS All Specialist skills (CI1, CI2, CI3, CI4 and CI5) |
| Practical Observation: | All core skills (CS1, CS2, CS3, CS4, CS5, CS6, CS7, CS8) |
| | PLUS Selected behaviours (B1, B2, B3, B4, B6, B7) |
| | PLUS **One** specialist skill selected from CI1, CI2, CI3, CI4 and CI5 |

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 3** – Service Delivery and Gateway Eligibility

- EUIAS Service Delivery
- How to prepare for gateway
- The Gateway meeting
- Timeline

## Contacts

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Help Desk email: enquiries@euias.co.uk

Help Desk telephone: 0121 713 8310

# EUIAS Service Delivery

Whether you are an employer or a training provider (or both) your initial engagement will probably be with a business development manager who will introduce you to this document and take you through the EPA service that we offer. Our aim is to make the experience as straight-forward and easy to engage with as possible.

The key to a successful EPA experience is early identification of requirements to enable proper planning to take place and this section explains the requirements for preparing for the MOET EPA.

All the requirements discussed below are important, but some of them are critical, in particular the Gateway Eligibility Requirements. It is important to note that the end-point assessments cannot proceed without the Gateway Eligibility requirements being met. A completed Gateway Eligibility Report with supporting documents is required for each apprentice before EPA.

### The EPA Window

All end-point assessments have a 'window' during which the end-point assessment must be completed, to avoid apprentices 'timing out'. The EPA window for the MOET standard is 6 months. The EPA window for each apprentice commences on the date they take the first element of their EPA, for example, the day of the Knowledge Assessment. All EPA activities must be completed within this 6-month window and EUIAS will work with you to schedule the EPA as close to the beginning of the window as possible to allow for re-sits if necessary.

### Service Level Agreement (SLA) and Cohort Registration Form

EUIAS uses three documents to capture the details of the end-point assessment agreement:

- Service Level Agreement form – signed by employer and provider
- Cohort Registration form – signed by employer and provider; this form identifies the apprentices in the cohort
- Learner submission form (spreadsheet of learner names with ULN)

The Cohort Registration Form includes a section where the employer formally appoints the EUIAS as their end-point assessment organisation for the named apprentices.

In some cases, it may not be possible to have the employer and the lead-provider together at the same time. In this case, EUIAS will work initially with the lead provider then circulate copies of the two forms to the employer(s) to allow them to add their signatures.

### Initial Engagement

Initial engagement with EUIAS will usually take place well before the EPA is due to take place and sometimes before the apprentices start their programme. The initial engagement meeting will cover:

- The numbers of apprentices in the cohort
- Any Reasonable Adjustments you want to apply for
- The relevant specialist pathways; it is very important that this apprenticeship, and the pathway within it, is the right one for your requirements. The apprentice will be assessed against the requirements of the standard and not what they actually do within their job role
- The expected date(s) of EPA
- The employer/lead provider for each apprentice

- The EUIAS operates a two-stage payment schedule:
  - Stage One applies at the registration stage when the initial registration fee is due.
  - Stage Two applies at Gateway, when the balance of the agreed fee is due.
- For nuclear/power generation, employers may provide assessors for the Practical Observation (not the Technical Interview); if so, this should be flagged at this stage as it affects pricing, and assessors must be standardised and approved by EUIAS before they can carry out any assessments
- Completion of the Service Level Agreement
- Arrangements for 'site review' to confirm that the proposed location for the Practical Observation provides all the opportunities for the apprentice to cover the standard. Where possible, all assessment sites should be identified at this stage. The practical observation normally takes 5 to 6 hours per apprentice, and must involve working on a complex task; the location and the tasks must be appropriate
- The Technical Interview – these normally last two hours; where they will take place and how the portfolios will be shared with EUIAS
- Compiling the portfolio of evidence that is reviewed during the Technical Interview – what to put in the portfolio and how to signpost it
- The Knowledge Assessment – where it will take place and who will invigilate

Further details of the assessment methods are in Section 5 of this EPA Specification.

During the initial engagement, we will also cover the support that is available employers/training providers. We are confident that most, if not all the answers you need are contained within this Specification, but we are always available to provide answers to specific queries using the Help Desk email enquiries@euias.co.uk.

**Appointment/Registration**

The appointment stage is the first formal stage of working with EUIAS. This stage must involve both the employer and the training provider (if applicable).

Successful appointment involves the completion of all the following:

- Completion of the Cohort Registration Form, officially appointing EUIAS as the EPAO for this cohort. The form contains
- Details of the training provider (if applicable)
- Confirmation of learner numbers and specialist pathways
- Confirmation of expected EPA dates
- Confirmation of the level of service agreed with EUIAS, with pricing
- Confirmation that you will give a minimum of three months' notice of apprentices being ready for EPA (especially important if you bring forward the completion date)
- Signatures from both the employer and the training provider (if applicable)
- Completion of the Learner Submission form listing each learner in the cohort
- A purchase order from the lead-provider to EUIAS to the value agreed

If it has not already taken place, the details of the EPA will be discussed (as described in the Initial Engagement Section above) with the employer and training provider (if applicable) to agree roles and responsibilities.

## On programme

It is the responsibility of the training provider to create and deliver the apprentice training programme, ensuring you comply with the relevant ESFA rules. The EUIAS has no formal involvement in the 'on-programme' aspect of the apprenticeship. However, we DO provide guidance on how to put together the portfolio that is required for the Technical Interview. This can be found in Section 5.

We do appreciate that circumstances change so please notify us if:

- Expected end-dates change, giving at least three months' notice of readiness for end-point assessment
- Any cohort details change, especially if an apprentice drops off the programme
- Any anticipated changes in venues for the end-point assessments

## Standardisation of employer-assessors (nuclear/power generation only)

For the nuclear/power generation sector, the employer may opt to nominate their own assessors to carry out the Practical Observation. This will be covered during the Initial Engagement meeting. Names will be requested nearer the time of the EPA so that they can be approved and standardised by EUIAS before they carry out any assessments. They will be required to provide up to date CVs including details of their continuing professional development and must not be involved in the training or line management of any apprentices they assess. This information can be sent in to enquiries@euias.co.uk.

## Scheduling the end-point assessment

The EPA for MOET is very resource intensive, both in terms of availability of specialist settings for the Practical Observation and specialist assessors that are required. It is imperative that the apprentices must be available for all assessments, which seems obvious, but can prove problematic if communications are not as clear as they should be. Employer, training provider and EUIAS must keep in touch and notify each other of any changes as soon as they occur.

To help things run smoothly, you must inform EUIAS between 3 and 6 months before you expect to have your Gateway meetings with the cohort. The EUIAS Service Delivery team will be making contact with you during this time, to facilitate two-way communication. Your proposed EPA date may be sooner than was originally anticipated at the time of registration, which is OK so long as the apprentice(s) has been on programme for at least a year. We cannot confirm any EPA arrangements until we have confirmation of Gateway Eligibility, as discussed in the next section, but we will put together a provisional plan and share it with you. As a customer, you probably want to confirm gateway Eligibility on one day and have the first end-point assessments the next day. The reality is that scheduling takes time and can take varying periods of time. The early notification helps us put together a provisional schedule, but we can only confirm it after Gateway Eligibility requirements are all met. The fewer changes you make to the information you give us three months before Gateway, the sooner it will be before we can start the EPA. We too commit to making last-minute changes as rare as possible.

For nuclear/power generation employers using their own EUIAS-approved assessors, we will work with you on scheduling to ensure that Practical Observations and Technical Interviews are scheduled in an efficient manner.

We always aim to accommodate your requirements when scheduling, taking account of availability of apprentices, location and availability of assessment venues, availability of assessors and also ensuring that we have evidence of the pre-requisites, in particular the L2 English and mathematics.

As soon as possible after Gateway, EUIAS will confirm with you the end-point assessment arrangements for each apprentice in the cohort.

We will always try to schedule as soon as possible within the 6-month window, to allow time for any re-sits before the window closes.

# How to prepare for gateway

On completion of their on-programme learning apprentices should be ready to pass through 'gateway' to their end-point assessment.

At this point, the employer, training provider and apprentice should hold a Gateway Eligibility meeting. The purpose of this meeting is to confirm that all parties agree the apprentice has met the requirements of the apprenticeship standard and is ready for end- point assessment. Note that the EUIAS is **NOT** present at this meeting. It is your sole responsibility to assure yourself, along with the training provider (if applicable) that the apprentice is ready for end-point assessment.

You are advised that the apprentice should prepare for this meeting by bringing along work-based evidence, including:

- Portfolio of evidence
- mid and end-of-year performance reviews
- feedback to show how they have met the apprenticeship standard during the on-programme:
- achieved Level 2 English
- achieved Level 2 maths

Apprentices should be advised by employers and providers to gather this evidence throughout their on-programme training, **copies or scans of certificates WILL be required by EUIAS** before the apprentice can start EPA. Typically, these will be functional skills qualifications at Level 2 or GCSEs at grade C or above, or grade 4 and above.

It is recommended that employers and providers complete regular checks and reviews of this evidence to ensure the apprentice is progressing and achieving the standards before the gateway meeting is arranged.

### The Gateway meeting

TTo comply with end-point assessment rules, EUIAS is not present at the Gateway meeting. Ideally it would be conducted with the apprentice, training provider and the employer present. Gateway meetings last about an hour and are completed on or after the apprenticeship on-programme end date. It should be attended by the apprentice and the relevant people who have worked with the apprentice on-programme, such as the line manager/employer or mentor and the on-programme trainer/training provider.

During the meeting, the apprentice, employer and training provider will discuss the different aspects of the apprenticeship standard and confirm that the apprentice has met the full criteria of the apprenticeship standard during their on-programme training. A copy of standard and the assessment plan (ST0154/AP02) should be available at the meeting. In addition, the apprentice should be informed that EUIAS will be conducting the end-point assessment and that copies of the following policies are available on the EUIAS web site at euias.co.uk:

- appeals Policy
- complaints Policy

At the meeting, the apprentice should be informed that they are required to have proof of their identity with them for each end- point activity. EUIAS will accept the following as proof of identity:

- a valid passport
- a UK driving licence
- a valid warrant card issued by HM forces or uniformed services
- other photographic ID card such as an employee ID card or travel card

At the meeting, the Gateway Eligibility Report (GER) below must be completed, agreed and signed by all 3 parties* and submitted to EUIAS at enquiries@euias.co.uk with the subject line "GER – apprentice name – provider name".

A completed GER form is required for every apprentice you want to enter for end-point assessment.

*Where possible. We recognise that some meetings will take place at distance in which case an email agreement from the apprentice should be appended to the GER form.

The current MOET assessment plan (ST0154/AP02) does not prescribe the Gateway meeting, although it is good practice. The Gateway Eligibility Report IS a requirement of the EUIAS. If it is not possible to have the employer present at the time the Gateway Eligibility Form is completed by the apprentice and training provider, EUIAS will contact the employer to gain their signature.

### Reasonable adjustments

If you wish to apply for reasonable adjustments on behalf of any of your apprentices, please do so at the same time as submitting the GER form, using the EUIAS Reasonable Adjustment Policy and Application that can be found at euias.co.uk

### Re-sits and Re-takes

Any component that is failed can be re-sat within the EPA window. It is not possible to re-sit outside of the EPA window. If an apprentice is not successful, they can undertake a period of further training and re-take the failed components within a new EPA assessment window.

### Timeline

Typical timeline in months, before and after the Gateway.

**Initial engagement - 36 months before Gateway**

Initial engagement, informal meeting between EUIAS and to agree:

- The numbers of apprentices in the cohort
- Any Reasonable Adjustments you want to apply for
- The relevant specialist pathways
- Expected location(s) for the Practical Observation
- The expected date(s) of EPA
- The Training Provider
- The payment schedule
- For the nuclear/power generation sector, the use of employer-assessors
- Completion of Service Level Agreement (employer AND lead provider)

**36 months before Gateway to 6 months before Gateway**

The apprentice is on-programme, and compiling their portfolio of evidence to support the Technical Interview Formal Appointment/registration using the Cohort Registration form (Triggers Stage 1 payment)

EUIAS:

- EUIAS will issue the Privacy Notice which must be shared with every apprentice in the cohort

Employer/training provider:

- Complete the Cohort Registration form, signed jointly by employer and TP, with:
- Confirmation of learner numbers and specialist pathways
- Confirmation of expected EPA dates
- Confirmation of the level of service agreed with EUIAS, with pricing
- Confirmation that you will give three months' notice of apprentices being ready for EPA
- Completion of the Learner Submission form including each learner in the cohort
- A purchase order from the lead provider to EUIAS to the value agreed

**36 months before Gateway to 6 months before Gateway**

Update calls (as agreed)

- EUIAS will periodically call designated contact to enquire about progress towards EPA
- EUIAS provides on-going support via enquiries@euias.co.uk
- Employer/training provider will give at least 6 months' notice of any proposed change to EPA dates

**6 months before Gateway to Gateway**

- Employer/training provider provides details of Practical Observation to EUIAS ie. venue, type of plant/ equipment; which specialist skills to be covered by each apprentice

**3 months before Gateway to Gateway**

- If applicable, employer supplies names and details of employer assessors to EUIAS, who will arrange their standardisation (nuclear/power generation sector only)
- Employer/provider to compile evidence of meeting eligibility requirements (English and maths)
- Employer/provider should also be arranging practice assessments for apprentices

## Gateway

Employer/training provider:

- Provide completed Gateway Eligibility Report for each apprentice
- Ensure ALL eligibility requirements are met for each apprentice going forward to EPA
- Purchase order for Stage 2 payments

## Gateway, and the 6 month EPA window

End-point Assessment window (6 month window for each assessment commences on the date of their first EPA activity)

The Knowledge Assessment and the Practical Observation can be undertaken in any order, but we strongly recommend the knowledge test is carried out first. Our pricing is based on being able to test every apprentice in the cohort at the same time (knowledge test). The Technical Interview must the final assessment component.

EUIAS

- Schedule the assessments, in discussion with the employer/training provider
- Provides assessors for all assessment activities (unless otherwise agreed)
- Provides invigilator for Knowledge Assessment (if agreed in the price)
- Arranges re-sits within the 6 month EPA window, if required
- Carries out a final moderation to confirm grading decisions
- Will provide results of EPA with 11 days of final moderation

Employer/training provider

- Ensures apprentices are briefed and prepared for EPA, including location and timings of assessments
- Provides venue for the knowledge assessment (and re-sits if required)
- Provides access and details of venue for Practical Observation, as previously agreed with EUIAS
- Submit the apprentice portfolio to EUIAS at least 2 weeks prior to the technical interview

A re-take will be arranged, with the agreement of all parties, for apprentices who have failed a component or components and are deemed to require further training before being ready for end-point assessment.

# Time-line summary for Employers and training provider; refer to previous section for details

**36 months before Gateway**

- Complete SLA (employer and provider) and Learner submission form
- Completion of Employer Appointment and Cohort Registration form
- Raise purchase order for registratrion fees (Stage 1 payment)

**6 months before Gateway**

- Notify EUIAS of any changes to EPA dates
- Confirm arrangements for practical assessment tasks with EUIAS; this will include EUIAS approval of proposed Observation task
- Apprentices completing their portfolios

**3 months before Gateway**

- Identify employed assessors and notify to EUIAS for initial standardisation (nuclear/power generation sector only)
- Employer/training provider compiling eligibility documents (English/maths) for all apprentices
- Carry out practice assessments with apprentices

**Gateway**

- Gateway meeting between apprentice, provider and employer to comfirm Gateway readiness
- Return completed Gateway Eligbility Report, with required docuemntation, to EUIAS, one per apprentice

**The 6 month EPA window**

- Ensure apprentices are available for their EPA activities
- Knowledge Assessment is usually first, Technical Interview must be last

# EUIAS Level 3 End-point Assessment for Maintenance Operations Engineer Technician - Electrical

## Gateway Eligibility Report

(Standard Version: ST0154 version 1, 2016; Assessment Plan Version: ST0154/AP02)

**Apprentice's details**

| Apprentice's name: | Apprentice's job title: |
|---|---|
| | |
| Name of Employer: | Name of Training provider: |
| | |
| Employer representatives present: | Training provider representatives present: |
| | |
| Apprenticeship start date: | Apprenticeship on-programme end date: |
| | |
| Gateway meeting date: | |
| Has the apprentice taken any part of the end-point assessment for this apprenticeship standard with any other End Point Assessment Organisation? | Y / N |
| If "Yes" please give details: | |

**Eligibility requirements for MOET**

The apprentice must confirm their achievement of the following:

| Eligibility requirement | Achieved by the apprentice? Y/N | Evidence (scans of certificates MUST be included) |
|---|---|---|
| Achieved English level 2 | | |
| Achieved maths level 2 | | |

## Gateway Eligibility Declaration

The apprentice, the employer and the training provider must sign this form to confirm that they understand and agree to the following:

1. The apprentice has completed the required on-programme elements of the apprenticeship and is ready for end-point assessment with EUIAS
2. The apprentice will only submit their own work as part of end-point assessment
3. All parties agree that end-point assessment evidence may be recorded and stored by EUIAS for quality assurance purposes
4. The apprentice has been on-programme for a minimum duration of 365 days
5. The apprentice has achieved the mathematics and English requirements as detailed in this document
6. The apprentice, if successful, gives permission for EUIAS to request the apprenticeship certificate from the ESFA who issue the certificate on behalf of the Secretary of State
7. The apprentice has been directed to the EUIAS Appeals Policy and Complaints Policy
8. The employer/training provider has given the EUIAS at least three months' notice of requesting this EPA for this apprentice
9. If the Gateway Eligibility Report is not completed in full, meeting all requirements, and submitted to EUIAS, the end-point assessment cannot take place

| Signed on behalf of the employer (print name): | Signature: | Date: |
|---|---|---|
| | | |
| Signed on behalf of the training provider (print name): | Signature: | Date: |
| | | |
| Apprentice's name (print): | Signature: | Date: |
| | | |

| EUIAS use only: | |
|---|---|
| EUIAS Sign off: | |
| Comments/actions: | |

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 4** – The MOET standard with Amplification and Guidance

### Contacts

**This specification has been designed to provide all the advice and guidance you need to prepare yourself and your apprentices for end-point assessment. However, if you have any further questions please contact the EUIAS Help Desk using one of the following:**

**Help Desk email: enquiries@euias.co.uk**

**Help Desk telephone: 0121 713 8310**

# The MOET standard in detail

The MOET standard consists of:

- Core knowledge (4 elements)
- Core skills (4 elements)
- Behaviours (7 elements)
- Specialist skills for electrical specialism (4 elements)

The following pages list each of the elements of the standard, the assessment method(s) required and additional Amplification and Guidance from EUIAS on the range and depth expected.

## Core Knowledge

**Assessed in Knowledge Test AND Technical Interview**

CK1 **First principles** relating to the operation and maintenance of appropriate plant and equipment

CK2 Relevant industry **health and safety standards, regulations, and environmental and regulatory requirements**

CK3 **Maintenance and operational practices, processes and procedures** covering a range of plant and equipment

CK4 The **relevant engineering theories and principles** relative to their occupation

**Core Knowledge: Amplification and Guidance**

**CK1 First principles**

- Purpose of the plant/equipment
- Impact of plant/equipment malfunction or failure
- Interaction with other process plant/equipment
- Normal operating conditions such as temperatures, speeds, pressures, loads, as appropriate

**CK2 Health and safety standards, regulations, and environmental and regulatory requirements**

- Control of Substances Hazardous to Health procedures
- Working at Height Regulations
- Risk assessment procedures
- Personal protection equipment
- Manual handling and lifting and rigging
- Isolation procedures
- Site safety signage
- Confined space entry
- Compliance with site safe systems of work

**CK3 Maintenance and operational practices, processes and procedures**

- Selection and use of tools, equipment & materials
- Engineering calculations
- Testing & inspection activities
- Condition monitoring
- Fault-finding skills
- Use of technical drawings
- Root cause analysis

**CK4 Engineering theories and principles**

**Electrical**

- Basic theories and principles of process control including pressure, flow, level, temperature, and feedback
- Pressure measurement devices including transmitters, switches, gauges
- Temperature measurement devices including transmitters, switches, RTD's, thermocouples, thermometers, temperature gauges
- Level measurement devices including transmitters, switches, displacement, RF Probe, ultrasonic
- Flow measurement devices including transmitters, switches, turbine, magmeter, ultrasonic, rotameters

## Core Skills

**Assessed in Practical Observation alone**

CS1 Comply with industry **health, safety and environmental working practices and regulations**

CS2 Communicate with and provide information to **stakeholders** in line with personal role and responsibilities

CS3 Prepare work areas to undertake work related activities and reinstate those areas after the completion of the work-related activities

CS4 Assess and test the performance and condition of plant and equipment

**Assessed in Practical Observation AND Technical Interview**

CS5 **Locate, and rectify faults** on plant and equipment

CS6 Read, understand and interpret **information** and work in compliance with **technical specifications and supporting documentation**

CS7 Inspect and maintain appropriate plant and equipment to meet operational requirements

CS8 Communicate, **handover** and confirm that the appropriate engineering process has been completed to specification

## Core Skills: Amplification and Guidance

### CS1 Health, safety and environmental working practices and regulations

- Roles and responsibilities in relation to the HSE Regulations
- Site safety systems, including communicating with others
- Site safety signage
- Risk assessment procedures
- Correct use of personal protection equipment

### CS2 Stakeholders

- Team members
- Colleagues at handover
- Line managers
- Internal and external safety personnel

### CS5 Locate, and rectify faults

- Systematic and effective approaches to fault finding
- Isolation/overrides/inhibits
- Use of historical operational data

### CS6 Information, technical specifications and supporting documentation

- Company procedures for the control of work
- Operating specifications and maintenance records

### CS8 Handover

- Verbal handovers
- Handover documentation

| Behaviours |
| --- |
| **Assessed in Technical Interview** |
| B1 Critical reasoning – uses resources, techniques and **obtained facts to develop sound solutions** while recognising and defining problems |
| **Assessed in Practical Observation** |
| B2 Health and Safety – follows health and safety policies and procedures and be prepared to challenge unsafe behaviour using appropriate techniques to ensure the protection of people and property when working alone and/or with appropriate supervision<br><br>B3 Quality focused – ensures that work achieves quality standard both occupationally and personally<br><br>B4 Working with others – has the ability to work well with people from different disciplines, backgrounds and expertise to accomplish an activity safely and on time<br><br>B5 Interpersonal skills – gets along well with others and takes into account their needs and concerns<br><br>B6 Sustainability and ethical behaviour – **behaves ethically** and undertakes work in a way that contributes to sustainable development<br><br>B7 Risk awareness – demonstrates high concentration, the desire to reduce risks, ability to be compliant and awareness of change, through **regular monitoring and checking of information** |

| Behaviours: Amplification and Guidance |
|---|
| B5 Obtained facts, sound solutions<br>• autonomous work related decisions based on accurate and reliable information<br>B1 Appropriate techniques<br>• following site and company procedures<br>B6 Behaves ethically<br>• Honesty<br>• Fairness<br>• Respecting the rights of individuals<br>B7 Regular monitoring and checking of information<br>• Noticeboards<br>• Supervisor briefings<br>• Intranet<br>• Briefing sessions |

## Specific Skills – Control and Instrumentation technicians

| Assessed in Practical Observation AND Technical Interview |
|---|
| **CI1 Position, assemble, install and dismantle plant** and equipment to agreed specifications<br>**CI2** Carry out **planned, unplanned and preventative** maintenance procedures on plant and equipment<br>**CI3** Replace, repair and/or remove components in plant and equipment and ensure its return to operational condition<br>**CI4** Diagnose and determine the **cause of faults** in plant and equipment<br>**CI5** Calibrate and configure instrument and control systems<br>*** Note that only one of the above skills needs to be assessed during the Practical Observation *** |

## Control and Instrumentation technicians: Amplification and Guidance

### CI1 Position, assemble, install and dismantle

- Positioning could include the fitting of new or replacement complex control and instrumentation devices including but is not limited to process measurement transmitters, switches, regulators, control valves, analysers etc. These activities are completed in logical and progressive stages
- Assembling activities are commonly part of the positioning work and could involve but is not limited to the assembly of associated control and instrument equipment such as small-bore tubing, glands, clamps, brackets.
- Installation activities could include but is not limited to the installation of transmitters, gauges, switches, detectors.
- Dismantle activities could involve the isolation of equipment followed by the removal of devices or complex components that interact with other parts of the device. This could include but is not limited to process measurement transmitters, switches, regulators, control valves, analysers.

### CI2 Planned, unplanned, preventative

- Planned maintenance is commonly described as work that is facilitated as part of the company maintenance philosophy. Typical work could include function tests, inspections, condition monitoring etc. This work is normally carried out when the equipment is offline or in planned shutdown periods
- Unplanned maintenance is commonly describes as work that is commonly the result of a breakdown of equipment and/or systems
- Preventative maintenance is commonly described as work that is carried out on a predetermined period to reduce the risk of breakdown or failure. It can involves the inspection, repair, replenishment, replacement of components, cleaning and adjustments

### CI4 Cause of faults

Fault-finding techniques including but not limited to:

- Visual
- Compliance
- Condition monitoring
- Historical data
- Third party input
- Root cause analysis
- Function tests
- Measurement

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 5** – Assessment

- Assessment summary
- Retake and resit information
- Overall grading
    - 5.1 Knowledge test and component grading
    - 5.2 Practical Observation and component grading
    - 5.3 Technical Interview and component grading

## Contacts

**This specification has been designed to provide all the advice and guidance you need to prepare yourself and your apprentices for end-point assessment. However, if you have any further questions please contact the EUIAS Help Desk using one of the following:**

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# Assessment summary

The end-point assessment for maintenance operations engineering technician (MOET) consists of three components:

### Knowledge Test

- 30 multiple choice questions in a 45-minute test

### Practical Observation

- Normal duration of 4-6 hours, including time for questioning

### Technical Interview

- based on an evidence portfolio produced by the apprentice on-programme, **submitted before the assessment**
- Normal duration of 2 hours to a maximum of 2.5 hours

### Roles and responsibilities

EUIAS will provide the assessors for the Practical Observation and for the Technical Interview. Exceptions can be made for assessors carrying out the practical observation in the Nuclear and Power Generation sectors. In these sectors the practical observation assessor may be recruited from the employer and they must not be involved in the training or line-management of the apprentice.

EUIAS will provide the invigilator, or the employer can provide the invigilator in accordance with EUIAS Invigilation guidelines. This will be agreed at the Registration stage (see Section 3)

# Overall Grading

The overall grade for the MOET standard is based on the grades in individual components as follows:

| Knowledge Test Grade | Practical Observation Grade | Technical Interview Grade | Final grade |
|---|---|---|---|
| Pass, Merit or Distinction | Pass | Pass | Pass |
| Pass, Merit or Distinction | Pass or Merit | Pass | Pass |
| Pass, Merit or Distinction | Pass | Pass or Merit | Pass |
| Pass, Merit or Distinction | Merit | Merit | Merit |
| Pass, Merit or Distinction | Distinction | Merit | Merit |
| Pass, Merit or Distinction | Merit | Distinction | Merit |
| Pass | Distinction | Distinction | Merit |
| Merit or Distinction | Distinction | Distinction | Distinction |

Where an apprentice does not achieve a pass grade, they will be deferred with the option to re-sit or re-take at the discretion of the employer/provider.

The employer/training provider will provide the venues for the assessments, including settings for the Practical Observation suitably equipped to allow the apprentice to attempt all aspects of the practical task. The employer/ training provider will provide all necessary tools and equipment for the apprentice.

EUIAS will confirm that the proposed venue for the Practical Observation offers opportunities for sufficiently complex tasks to enable the apprentice to attempt all required aspects of the standard.

The employer/training provider will adequately prepare apprentices for the end-point assessments and will ensure the evidence portfolio for each apprentice is submitted to EUIAS prior to end-point assessment at an agreed date.

### Re-take and re-sit information

Apprentices may re-sit one or more failed components within the six-month end-point assessment window. Components may be re-sat more than once, with the support of the training provider. Apprentices who are not successful within the 6-month window may re-take the whole end-point assessment provided a period of further study/training is undertaken

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 5.1** – The Knowledge Assessment

- Criteria
- Grading

## Contacts

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## Introduction

The knowledge assessment consists of 30 multiple choice questions sampling the core knowledge (listed below as CK1, CK2, CK3 and CK4) of the MOET standard. Some questions in the test are specific to each specialist pathway and some questions will be common across assessments. The practice test supplied as part of this document illustrates the format and style of the assessment.

Preparing for the Knowledge Assessment

- While on-programme, the employer/training provider should ensure the apprentice is familiar with all areas assessed by the knowledge assessment
- The employer/training provider should support the apprentice to complete a practice test and provide them with formative feedback to enable them identify areas of further learning

## Knowledge Assessment Criteria

The criteria that are covered in the Knowledge Assessment are listed below. In each assessment, questions will cover each of the areas; not every aspect of every area will be covered in every assessment. Bold font indicates that Amplification and Guidance is provided below.

CK1 **First principles** relating to the operation and maintenance of appropriate plant and equipment

CK2 Relevant industry **health and safety standards, regulations, and environmental and regulatory requirements**

CK3 **Maintenance and operational practices, processes and procedures** covering a range of plant and equipment

CK4 The relevant **engineering theories and principles** relative to their occupation

### Amplification and Guidance

#### CK1 First principles

- Purpose of the plant/equipment
- Impact of plant/equipment malfunction or failure
- Interaction with other process plant/equipment
- Normal operating conditions such as temperatures, speeds, pressures, loads, as appropriate

#### CK2 Health and safety standards, regulations, and environmental and regulatory requirements

- Control of Substances Hazardous to Health procedures
- Working at Height Regulations
- Risk assessment procedures
- Personal protection equipment
- Manual handling and lifting and rigging
- Isolation procedures
- Site safety signage
- Confined space entry
- Compliance with site safe systems of work

**CK3 Maintenance and operational practices, processes and procedures**

- Selection and use of tools, equipment & materials
- Engineering calculations
- Testing & inspection activities
- Condition monitoring
- Fault-finding skills
- Use of technical drawings
- Root cause analysis

**CK4 Engineering theories and principles**

- Basic theories and principles of process control including pressure, flow, level, temperature, and feedback
- Pressure measurement devices including transmitters, switches, gauges
- Temperature measurement devices including transmitters, switches, RTD's, thermocouples, thermometers, temperature gauges
- Level measurement devices including transmitters, switches, displacement, RF Probe, ultrasonic
- Flow measurement devices  including transmitters, switches, turbine, magmeter, ultrasonic, rotameters

In accordance with the MOET assessment plan, aspects of these elements are also assessed in the Technical Interview.

### Knowledge Assessment Grading

This component is graded as follows:

| Minimum grade for: | Graded |
|---|---|
| Fail | <18 |
| Pass | 18 - 22 |
| Merit | 23 - 25 |
| Distinction | 26 - 30 |

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 5.2** – The Practical Observation

- Introduction
- Preparing for the Practical Observation
- Practical Observation Grading
- Grading Criteria

## Contacts

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## Introduction

Apprentices will complete a practical observation during which they will also be asked questions by the assessor to confirm their understanding of the rationale for actions taken and choices made during the practical observation. The content of this practical observation will relate to the specific role they are working towards. The duration of this activity will typically be no longer than one day, and the actual time allowed will be based on the comparable time that an industry competent worker would take to achieve successful task(s) completion. The employer/training provider must devise a practical observation task(s) sufficiently complex to allow the apprentice to demonstrate the required knowledge and skills. The employer/training provider must send EUIAS details of the proposed Practical Observation for prior approval.

**Note that the apprentice is only required to demonstrate one of the specific skill requirements, and the observation task must be chosen carefully to ensure that the apprentice has opportunity to cover all aspects of the skill.**

The observation will be managed and marked by an assessor appointed by EUIAS, which may or may not be one of the assessors who conducts the technical interview – see below. The exception is for the Nuclear and Power Generation sectors where the assessor may be recruited from the employer.

As part of the observation the apprentice will be asked standardised questions, with follow up questions as appropriate, to confirm their understanding of the rationale for actions taken and the choices made to complete the tasks.

This observation provides the opportunity for the apprentice to synoptically demonstrate core and specific knowledge, skills and behaviours as detailed in Section 4, on actual plant and equipment in a realistic work situation. This provides the opportunity to bring together and apply their learning.

Apprentices are assessed to confirm that they can apply their knowledge of plant and systems to safely perform maintenance and operational activities with minimum supervision.

The apprentice can achieve a Pass, a Merit or Distinction. If they do not achieve a pass, they will be deferred. The criteria for marking the practical observation are shown below.

## Preparing for the Practical Observation

Apprentices should be prepared for the Practical Observation with the opportunity to carry out large scale complex practical tasks under assessment conditions. They should be questioned either before or during the practice tasks, as outlined in Section 6 “Guidance – setting up a practice Practical Observation”. In particular, apprentices should be made aware of the grading criteria for pass, merit and distinction to enable them to achieve to their full potential.

The EUIAS Service Delivery team will get in touch with the agreed point of contact at the employer or training provider to schedule the practical observation(s) as required. This task requires sufficient notice to take account of availability of the availability of the apprentice, the assessor and the venue staff for the duration of the Observations. Typically, only one apprentice per day can be assessed on the Practical Observation, per assessor.

## Grading the Practical Observation

The grading criteria are described in the following pages. **All pass criteria must be achieved in order to achieve a Pass.**

The criteria for Merit and Distinction carry different weightings depending on which element of the standard they relate to. These weightings are applied using marks, as described in the following table. A minimum of two criteria must be achieved for each element of the standard in order to achieve the available marks.

**The Merit and Distinction for the Practical Observation are determined by the total number of marks achieved**

## Practical Observation Grading

The Practical Observation is graded by an independent assessor (technical expert) appointed by the EUIAS. The following tables explain the criteria that are applied in order to get a Pass, a Merit and a Distinction.

To achieve a **PASS for the Practical Observation,** a Pass is required in ALL relevant elements, including the chosen specialist pathway skill

| Relevant Element: | CS1 | CS2 | CS3 | CS4 | CS5 | CS6 | CS7 | CS8 | All behaviours except B5 | **One** specialist role skill chosen from those available (either CI1, CI2, CI3, CI4 or CI5) |
|---|---|---|---|---|---|---|---|---|---|---|
| ALL Pass criteria must be achieved | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

To achieve a **MERIT or DISTINCTION for the Practical Observation**, all Pass criteria must be achieved PLUS a minimum number of merit and distinction marks as described in the below

| Relevant Element: | CS1 | CS2 | CS3 | CS4 | CS5 | CS6 | CS7 | CS8 | All behaviours except B5 | **One** specialist role skill chosen from those available |
|---|---|---|---|---|---|---|---|---|---|---|
| ALL Pass criteria must be achieved | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Marks achieved for 2 or more Merit criteria | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | No criteria above Pass | 3 |
| Marks achieved for 2 or more Distinction criteria | 2 | 2 | 2 | 2 | 2 | N/A | 2 | 2 | No criteria above Pass | 2 |

**Merit is achieved by achieving all Pass criteria PLUS a further 15 Merit and Distinction marks, in any combination.**

**Distinction is achieved by achieving all Pass criteria PLUS a further 25 Merit and Distinction marks, in any combination.**

# Grading criteria for pass, merit and distinction, for the Observation

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS1 Comply with industry health, safety and environmental working practices and regulations | • Demonstrate a clear understanding of their own HS&E responsibilities and that of others<br>• Comply with the required HS&E working practices and regulations<br>• Conduct a suitable risk assessment and proactively identify workplace hazards<br>• Inspect and wear the correct PPE required to carry out the activity<br>• Inform other relevant parties of matters affecting them where required<br>• Comply with and apply safe systems of work and maintain a safe working environment<br>• Inspect and use the appropriate tools and equipment<br>• Regularly re-assess the site conditions and take action when necessary to maintain site safety<br>• Check to ensure the site is left in a safe / secure condition for others | • Demonstrate a deeper understanding of the HS&E implications of the work e.g. potential effect of failure to comply, environmental, social, financial, company impact<br>• Take a lead role in managing the site safety of self and others<br>• Consistently demonstrate compliance with safety requirements and make suggestions to reduce risks<br>• Identify poor / bad practice in relation to work activities and address the situation | • Demonstrate exemplary HS&E knowledge and performance throughout the activity<br>• Identify HS&E deficiencies and implement appropriate solutions<br>• Challenge unsafe behaviour / practices using appropriate techniques<br>• Pre-empt risks prior to task commencement and puts actions in place to prevent them occurring<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to improve safety standards |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS2 Communicate with and provide information to stakeholders in line with personal role and responsibilities | • Read and correctly interpret a range of technical information provided to plan and conduct the work<br>• Demonstrate a clear understanding of the purpose and use of the technical information provided for the work<br>• Use and refer to the technical information provided to check / confirm the work conducted meets the required company standards / specifications<br>• Where necessary, question / clarify any information which is not clearly understood<br>• Complete any technical or supporting documentation in line with company policies / procedures | • Demonstrate a detailed knowledge of the range and purpose of the technical information available<br>• dentify inaccuracies / deficiencies in the technical information provided and resolve / report the situation<br>• Challenge in a professional manner any areas of concern to clarify understanding<br>• Identify / suggest methods of improving the system / use of information | • Demonstrate their ability to effectively communicate technical information across a wide range of stakeholders e.g. colleagues, management, briefings / meetings, external clients<br>• Consult and involve team members and / or other relevant persons to achieve greater understanding and improved performance<br>• Demonstrate the ability to build positive relationships and actively address conflict with positive outcomes |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS3 Prepare work areas to undertake work related activities and reinstate those areas after the completion of the work-related activities | • Demonstrate an understanding of the importance of good preparation and the potential outcomes of poor preparation<br>• Inspect and prepare the work area and equipment to be worked on in line with company policies / procedures<br>• Identify and implement any special precautions required by the work activity or environment, where required<br>• Maintain good housekeeping practices and a safe working environment throughout the activity<br>• Store tools, equipment, materials in a suitable / secure position and dispose of waste products in line with company policies and HS&E regulations<br>• Reinstate the work area to ensure it is left in a safe and secure condition e.g. locks, notices, documentation | • Take a lead role in the preparation of the work area proactively informing others on matters which affect them<br>• Produce a detailed work plan to support the organisation of the work, including measures to deal with contingencies<br>• Demonstrate their ability to develop positive professional relationships with individuals to support the work activity<br>• Make valid suggestions / recommendations to improve the planning / preparation of the work activity | • Demonstrate a deeper understanding of the implications of good and poor work preparation. e.g. In terms of cost, time, value, company reputation etc.<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS4 Assess and test the performance and condition of plant and equipment | • Demonstrate a clear understanding of the company polices / procedures for the assessment and testing of plant and equipment to be worked on<br>• Demonstrate a clear understanding of the types and purpose of testing procedures for the plant and equipment to be worked on<br>• Assess and test the plant / equipment to be worked on in line with company procedures<br>• Use the correct tools, equipment and techniques to conduct testing in line with company procedures<br>• Accurately interpret the results of the tests conducted<br>• Record / report the results of the testing in line with company procedures | • Demonstrate a detailed technical knowledge of the range of tests available and their specific purpose<br>• Take a pro-active, leading role in the testing activity providing clear guidance on the results obtained<br>• Make recommendations / suggestions to improve testing efficiencies<br>• Demonstrate a detailed technical knowledge of the outcome of testing procedures and the implications of results obtained | • Demonstrate a deeper technical understanding of testing procedures and the analysis of results. e.g. testing parameters, performance indicators etc.<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS5 Locate, and rectify faults on plant and equipment | • Demonstrate a clear understanding of their role and responsibilities for the fault location and rectification activity to be undertaken<br>• Provide an accurate technical explanation of the company's fault location methods, processes and / or procedures<br>• Competently use the correct tools, equipment and methods to locate the rectify the fault/s in a timely manner<br>• Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures<br>• Complete the required tests / checks to confirm the fault rectification has been successful<br>• Record the results / outcomes of rectification work in line with company requirements | • Demonstrate a detailed understanding of the theory and principles of fault location and rectification operations<br>• Demonstrate a detailed understanding of cause and effect of faults and preventative measures<br>• Pro-actively works with others to identify areas for improvement and follows through on agreed implementation<br>• Make recommendations / suggestions to improve the location / rectification work activity | • Demonstrate deeper technical knowledge of fault location and fault prevention e.g. costs, lost time, sustainability of equipment, company reputation<br>• Identify and implement tangible changes that improve the efficiency of the work being conducted<br>• Identify and take action to report or deal with issues of non-conformity / compliance<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS6 Read, understand and interpret information and work in compliance with technical specifications and supporting documentation | • Read and correctly interpret a range of technical information provided to plan and conduct the work<br>• Demonstrate a clear understanding of the purpose and use of the technical information provided for the work<br>• Use and refer to the technical information provided to check / confirm the work conducted meets the required company standards / specifications<br>• Where necessary, question / clarify any information which is not clearly understood<br>• Complete any technical or supporting documentation in line with company policies / procedures | • Demonstrate a detailed knowledge of the range and purpose of the technical information available<br>• Identify inaccuracies / deficiencies in the technical information provided and resolve / report the situation<br>• Challenge in a professional manner any areas of concern to clarify understanding<br>• Identify / suggest methods of improving the system / use of information | NONE |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS7 Inspect and maintain appropriate plant and equipment to meet operational requirements | • Demonstrate a clear understanding of the company polices / procedures for the inspection of plant and equipment to be worked on<br>• Demonstrate a clear understanding of the company polices / procedures in relation to achieving the safe isolation of equipment from relevant sources of energy<br>• Identify and inspect the plant / equipment to be worked on in line with company procedures<br>• Correctly use tools, equipment and techniques to achieve the quality standards required by company policies / procedures<br>• Demonstrate consistent application of policies and procedures during the work activity<br>• Record / report the results of the inspection in line with company procedures | • Demonstrate a detailed technical knowledge of the range of required inspections and maintenance procedures and their specific purpose<br>• Pro-actively works with others to identify areas for improvement and follows through on agreed implementation<br>• Demonstrate the ability to develop positive professional relationships with individuals to support the work activity<br>• Identify areas for work improvement and implement actions to improve work efficiencies | • Demonstrate a deeper technical understanding of inspection / maintenance operations. e.g. In terms of cost, time, environmental impact, sustainability etc<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Core Skills | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria | Distinction criteria |
| CS8 Communicate, handover and confirm that the appropriate engineering process has been completed to specification | • Demonstrate a clear understanding of their role and responsibilities in returning the system / equipment back to operational service<br>• Provide an accurate technical explanation of the company's handover procedure<br>• Complete the required checks / tests to confirm the equipment meets the company operational requirements for handover<br>• Conduct the handover in compliance with all relevant policies and procedures<br>• Clearly communicate the details of the handover including any additional requirements to the relevant parties<br>• Complete all relevant reporting / recording documentation in line with company procedures<br>• Leave the work area in a safe / secure condition for others | • Demonstrate a detailed understanding of the factors which can support and influence a smooth handover of equipment<br>• Take a pro-active lead in effectively communicating the detail of handover arrangements with stakeholders<br>• Demonstrate their ability to develop positive professional relationships with individuals to support handover process<br>• Confidently lead the handover process taking charge of the operation and resolving any issues within their role responsibility<br>• Adapts the method and style of communications to changing circumstances and need | • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the handover process<br>• Consult and involve team members and / or other relevant persons to achieve greater understanding and improved performance<br>• Demonstrate the ability to build positive relationships and actively address conflict / resolve problems with positive outcomes<br>• Demonstrate their ability to effectively communicate technical information across a wide range of stakeholders e.g. colleagues, management, briefings / meetings, external clients |

| Behaviours | | | |
|---|---|---|---|
| Standard | Pass criteria | Merit criteria | Distinction criteria |
| B1 Health and Safety | • follows health and safety policies and procedures and be prepared to challenge unsafe behaviour using appropriate techniques to ensure the protection of people and property when working alone and/or with appropriate supervision | NONE | NONE |
| B2 Quality focused | • ensures that work achieves quality standard both occupationally and personally | NONE | NONE |
| B3 Working with others | • has the ability to work well with people from different disciplines, backgrounds and expertise to accomplish an activity safely and on time | NONE | NONE |
| B4 Interpersonal skills | • gets along well with others and takes into account their needs and concerns | NONE | NONE |
| B6 Sustainability and ethical behaviour | • behaves ethically and undertakes work in a way that contributes to sustainable development | NONE | NONE |
| B7 Risk awareness | • demonstrates high concentration, the desire to reduce risks, ability to be compliant and awareness of change, through regular monitoring and checking of information | NONE | NONE |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on one of the specialist pathway skills during the observation | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI1 Position, assemble, install and dismantle plant and equipment which will include instrumentation and control of temperature, pressure and flow systems to agreed specifications | • Demonstrate a clear understanding of their role and responsibilities in relation to the work to be conducted<br>• Provide an accurate technical explanation for the purpose of the work activity<br>• Demonstrate a clear plan for the work to be undertaken and an understanding of any safety / technical information given<br>• Use tools and equipment to competently achieve the quality standards required by the company in a timely manner<br>• Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures<br>• Deal effectively with any issues within their role responsibilities, where necessary<br>• Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required | • Demonstrate a detailed technical knowledge of the methods and processes used to conduct the work<br>• Pro-actively works with others to identify areas for improvement and follows through on agreed implementation<br>• Make recommendations / suggestions to improve work efficiencies<br>• Produce a detailed work plan to support the work delivery including measures to deal with contingencies | • Demonstrate deeper technical / commercial knowledge of the equipment / operation e.g. installation costs, technical requirements planning, sustainability of equipment etc.<br>• Identify and implement tangible changes that improve the efficiency of the work being conducted<br>• Identify and take action to report or deal with issues of non-conformity / compliance<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on one of the specialist pathway skills during the observation | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI2 Carry out planned, unplanned and preventative maintenance on plant and equipment | • Demonstrate a clear understanding of their role and responsibilities in relation to the work to be conducted<br>• Provide an accurate technical explanation for the purpose of the maintenance work<br>• Demonstrate a clear plan for the work to be undertaken and an understanding of any safety / technical information given<br>• Use tools and equipment to competently achieve the quality standards required by the company in a timely manner<br>• Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures<br>• Deal effectively with any issues within their role responsibilities, where necessary<br>• Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required | • Demonstrate a detailed understanding of the process and principles of preventative maintenance<br>• Pro-actively works with others to identify areas for improvement and follows through on agreed implementation<br>• Make recommendations / suggestions to improve work efficiencies<br>• Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies | • Demonstrate deeper technical / commercial knowledge of the maintenance operation being undertaken e.g. installation costs, technical requirements, planning, corrective / preventative<br>• Identify and implement tangible changes that improve the efficiency of the work being conducted<br>• Identify and take action to report or deal with issues of non-conformity / compliance<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on one of the specialist pathway skills during the observation | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI3 Replace, repair and/or remove components in plant and equipment and ensure its return to operational condition | • Demonstrate a clear understanding of their role and responsibilities in relation to the work to be conducted<br>• Provide an accurate technical explanation for the purpose of the maintenance work<br>• Demonstrate a clear plan for the work to be undertaken and an understanding of any safety / technical information given<br>• Use tools and equipment to competently carry out the removal / replacement of components in a logical sequence and timely manner<br>• Conduct the work in compliance with all relevant regulatory requirements and company procedures<br>• Deal effectively with any issues within their role responsibilities, where necessary<br>• Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required | • Demonstrate a detailed understanding of the causes and principles of component degradation<br>• Demonstrate a detailed understanding of the limits / restrictions of component replacement or repair e.g. In terms of reliability, certification of instruments / systems etc.<br>• Pro-actively works with others to identify areas for improvement and follows through on agreed implementation<br>• Make recommendations / suggestions to improve work efficiencies<br>• Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies | • Demonstrate deeper technical / commercial knowledge of the repair / replacement work being undertaken e.g. costs, effect on maintenance periods, equipment sustainability<br>• Identify and implement tangible changes that improve the efficiency of the work being conducted<br>• Identify and take action to report or deal with issues of non-conformance/ compliance<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on one of the specialist pathway skills during the observation | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI4 Diagnose and determine the cause of faults in plant and equipment | • Demonstrate a clear understanding of their role and responsibilities in relation to the fault diagnosis to be conducted<br>• Provide an accurate technical explanation for the purpose and process of the fault's activity<br>• Demonstrate a clear plan for the diagnosis to be undertaken and an understanding of any safety / technical information given<br>• Competently use the correct tools, equipment, technical data and diagnostic techniques to identify, locate and diagnose fault/s in a timely manner<br>• Correctly analyse and interpret the results of the fault-finding techniques conducted<br>• Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures<br>• Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required | • Demonstrate a detailed understanding of the theory / principles of relevant diagnostic techniques<br>• Able to identify the root cause of the fault and preventative measures<br>• Pro-actively works with others to identify areas for improvement and follows through on agreed implementation<br>• Make recommendations / suggestions to improve work efficiencies<br>• Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies | • Demonstrate deeper technical / commercial knowledge of the effect of fault diagnosis and repair e.g. fault analysis, costs, prevention, lost time<br>• Identify and implement tangible changes that improve the efficiency of the work being conducted<br>• Identify and take action to report or deal with issues of non-conformity / compliance<br>• Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken |

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 5.3** – The Technical Interview

- Preparing the evidence portfolio
- Preparing for the Technical Interview
- Criteria and Grading

## Contacts

This specification has been designed to provide all the advice and guidance you need to prepare yourself and yourapprentices for end-point assessment. However, if you haveany further questions please contact the EUIAS Help Desk using one of the following:

Help Desk email: enquiries@euias.co.uk

Help Desk telephone: 0121 713 8310

## Introduction

The Technical Interview is the final stage of the end-point assessment. It will last approximately two hours and no longer than two and a half hours. It is based on the contents of the evidence portfolio which may be compiled throughout the apprenticeship. The evidence should be sufficient to demonstrate that the apprentice can apply the knowledge, skills and behaviours required, namely:

- All core knowledge CK1, CK2, CK3 and CK4
- Core skills CS4, CS6, CS7 and CS8
- All the control and instrumentation technician specific skills CI1, CI2, CI3, CI4 and CI5
- Behaviour B5, critical reasoning

(see Section 4 for the references to the standard)

Please note that the portfolio is NOT assessed, but the apprentice can use it to support themselves in answering the interview questions. The interview questions will focus on each of the elements of the standard listed above so it is important that the apprentice is completely familiar with each of them. The portfolio must be submitted to EUIAS at least two weeks prior to the technical interview.

Typically, the portfolio will be based on 3-5 substantial jobs completed towards the end of their training. Prior to the technical interview, the assessor will review the portfolio. Although questioning will cover ALL the elements of the standard listed above, they will prioritise areas according to what they see in the portfolio.

The apprentice can achieve a Pass, a Merit or Distinction. If they do not achieve a pass, they will be failed. Thecriteria for marking the technical interview are shown below.

## Preparing for the Technical Interview

Apprentices should be prepared for the technical interview with 'mock interview' opportunities (see section 6). This should take place near or at the end of their training programme when they are finalising their portfolio. Apprentices should beguided to index their portfolios, referencing each part of their evidence to the relevant part of the standard. The reference should direct the assessor to the relevant page, and page section within the portfolio.

The interview will focus on each knowledge and skill area as listed in the grading criteria table below, and each question will relate to one of the scenarios listed:

- Scenario 1 – Position, assemble, install and dismantle plant and equipment including calibration and configuration
- Scenario 2 – Carry out planned, unplanned and preventative maintenance procedures including calibration and configuration
- Scenario 3 – Diagnose and determine the cause of faults and Replace, repair and/or remove components and ensure it is returned to operational condition

The assessor will ask you a set of questions to explore your levels of skills, knowledge and behaviours when completing activities in each scenario. You can support your answers with reference to your evidence portfolio.

Guidance for preparing for the Technical Interview is outlined in Section 6 "Guidance – setting up a practice Technical Interview". In particular, apprentices should be made aware of the grading criteria for Pass, Merit and Distinction to enable them to achieve to their full potential.

## Grading the Technical Interview

The grading criteria are described in the following pages. All pass criteria must be achieved in order to achieve a Pass.

The criteria for Merit and Distinction carry different weightings depending on which element of the standard they relate to. These weightings are applied using marks, as described in the following table. A minimum of two criteria must be achieved for each element of the standard in order to achieve the available marks.

The Merit and Distinction for the Practical Observation are determined by the total number of marks achieved.

## Technical Interview Grading

The Technical Interview is graded by an independent assessor (technical expert) appointed by the EUIAS. The following tables explain the criteria that are applied in order to get a Pass, a Merit and a Distinction.

To achieve a PASS for the Technical Interview, a Pass is required in ALL relevant elements, including all skills from the specialist pathway

| Relevant Element: | Core Knowledge CK1 | Core Knowledge CK2 | Core Knowledge CK3 | Core Knowledge CK4 | Core Skill CS5 | Core Skill CS6 | Core Skill CS7 | Core Skill CS8 | Behaviour B5 | ALL specialist role skills CI1 – CI5 |
|---|---|---|---|---|---|---|---|---|---|---|
| ALL Pass criteria must be achieved | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

To achieve a **MERIT or DISTINCTION for the Technical Interview**, all Pass criteria must be achieved PLUS a minimum number of merit and distinction marks as described in the below

| Relevant Element: | Core Knowledge CK1 | Core Knowledge CK2 | Core Knowledge CK3 | Core Knowledge CK4 | Core Skill CS5 | Core Skill CS6 | Core Skill CS7 | Core Skill CS8 | Behaviour B5 | ALL specialist role skills CI1 – CI5 |
|---|---|---|---|---|---|---|---|---|---|---|
| ALL Pass criteria must be achieved | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Marks achieved for 2 or more Merit criteria | 1 | 3 | 1 | 1 | 5 | 1 | 5 | 2 | None | 1 mark for each, maximum 5 |
| Marks achieved for 2 or more Distinction criteria | 1 | 2 | 1 | 1 | 2 | None | 2 | 2 | None | 1 mark for each, maximum 5 |

**Merit is achieved by achieving all Pass criteria PLUS a further 15 Merit and Distinction marks, in any combination.**

**Distinction is achieved by achieving all Pass criteria PLUS a further 25 Merit and Distinction marks, in any combination.**

The following section contains the detailed grading criteria for Pass, Merit and Distinction, for the Technical Interview.

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CK1 First principles relating to the operation and maintenance of appropriate plant and equipment | • A working knowledge of the principles of operation for the range of plant/equipment they are responsible for<br>• The primary purpose of the range of plant / equipment worked on e.g. what the plant / equipment worked on does<br>• How the plant / equipment interacts within the overall system<br>• The typical characteristics of healthy and unhealthy operation for the range of plant/equipment worked on and how to identify the difference<br>• How they have used their knowledge of plant and equipment operating / maintenance principles to support their work decisions / activities | • A detailed understanding by explaining additional technical detail of the operating principles of the plant/equipment they are responsible for e.g. operating limits, tolerances, restrictions, effects on system<br>• A detailed understanding by explaining additional technical detail of the function / interaction of the plant / equipment within the overall system e.g. synchronisation, effects on system<br>• How they have used their knowledge of plant and equipment operating / maintenance principles to improve or enhance operational activities | • An excellent knowledge and thorough understanding of the relevant engineering principles relative to the operation and maintenance of plant and equipment encountered in their job role<br>• Evidence of conducting supporting technical analysis to gain a greater understanding of (a or b)<br>• the operating principles of plant/ equipment worked on<br>• the function / effect of the plant / equipment within the overall system<br>• Conducting technical research into the effects of new technologies on current / future maintenance requirements/methodologies |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CK2 Relevant industry health and safety standards, regulations, and environmental and regulatory requirements | • A working knowledge of the relevant HS&E regulations and standards and how they impact the overall operation<br>• A clear understanding of their responsibilities and those of others under the relevant Company policies and procedures which apply to the range of work undertaken and describe why they are required<br>• A knowledge of the Company process/s and/ or procedures for achieving and maintaining safety when working on systems within their work role and how they impact the work e.g. safe systems of work, documentation<br>• A clear understanding of the purpose of conducting risk assessments and the factors which affect the critical reasoning when making risk assessment decisions<br>• A knowledge of the Company procedure/s for reporting safety concerns and emergencies | • A detailed understanding of the relevant HS&E regulations and standards by explaining additional technical detail e.g. how they influence how the work is planned and/or conducted<br>• Conducting reviews of work HS&E arrangements and their applicability and adapting them for changing circumstances whilst still maintaining safety<br>• How they have readily accepted additional HS&E responsibility / autonomy to maintain / improve work safety standards | • Excellent and thorough HS&E knowledge and understanding in relation to the wider impact of relevant industry working practices and regulations for their work activities<br>• How they have taken a leading role in identifying HS&E deficiencies and then implementing the appropriate solution/s in line with<br>• Company policies / procedures<br>• How they have challenged unsafe behaviour / practices using appropriate techniques |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CK3 Maintenance and operational practices, processes and procedures covering a range of plant and equipment | • A working knowledge of the maintenance requirements for the range of plant/ equipment worked on within their job role<br>• A working knowledge of the Company's operational processes and procedures and how these have affected / influenced their maintenance work<br>• Their planning process for conducting maintenance operations and the factors which have influenced their critical reasoning / decision making when planning their work<br>• A working knowledge of the range and type of test procedures which they have used to confirm their work has met with Company operational requirements and standards<br>• A knowledge of how their maintenance activities have impacted plant / equipment / others | • A detailed knowledge of the Company maintenance practices by explaining additional technical detail for maintenance procedures on plant/equipment<br>• A detailed knowledge of the Company operational processes and procedures which affect maintenance operations by explaining additional operational detail<br>• A detailed knowledge of the range of testing procedures and the implications of the results obtained | • An excellent and thorough knowledge and understanding of relevant maintenance and operational practices / procedures for their job role<br>• An ability to analyse and provide valid justification for the Company's maintenance procedures and/or operational practices for maintenance work on plant and equipment<br>• A detailed technical / commercial understanding of the effects of conducting maintenance procedures on Company plant / equipment e.g. cost, reliability, availability, sustainability |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CK 4 The relevant engineering theories and principles relative to their occupation | • A working knowledge of the range of relevant operational theories and principles which underpin their work<br>• A working knowledge of the basic effect / influence of the relevant operational theories and principles which directly underpin their work activities<br>• The benefits of being able to identify and apply the differing operational theories and principles in relation to their job role e.g. maintenance inspections, fault finding<br>• A working knowledge of how to apply the relevant operational formulae which can be used to support their work activities | • A detailed knowledge of the relevant operational theories and principles which have supported and/or influenced their work activities<br>• How they have used relevant operational theories and principles to support / influence their work decisions / activities<br>• Their inclusion of operational formulae / theories / principles to support their technical explanations in relation to their work activities | • An excellent and thorough knowledge and understanding of the relevant operational theories and principles relative to plant and equipment in their job role<br>• How they have used their understanding of relevant operational theories and principles to make suggestions which have influenced or led to an improved performance<br>• How they have conducted further technical research which is based on relevant operational theories and principles to support the effects of current or future technologies |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CS5 Locate, and rectify faults on plant and equipment | • A working knowledge of the Company policies and procedures for the location of faults on plant and equipment worked on<br>• A clear understanding of the Company policies and procedures in relation to achieving the safe isolation of equipment from relevant sources of energy and maintaining safety from the system<br>• How they have used tools / equipment / techniques to inspect and identify faults on plant/ equipment and develop sound solutions while recognising and defining problems<br>• How they have used tools / equipment / techniques to repair faults and confirm the rectification to the quality standards required by Company policies / procedures<br>• How they have recorded / reported the results of fault-finding activities in line with Company procedures | • A detailed knowledge of the Company processes and procedures by explaining additional technical detail for the fault location methods / procedures conducted on plant/ equipment/systems<br>• A detailed understanding of the tools and equipment that can be used to identify and locate faults on plant/equipment/systems<br>• Their ability to take a lead in fault finding/ rectification activities and accept additional responsibility / autonomy for the fault work undertaken | • An excellent knowledge / understanding in relation to fault location / rectification procedures within their job role<br>• How they have used a range of methods to locate, and rectify faults on plant and equipment, with a detailed explanation / justification of their chosen methods<br>• How they have used their knowledge of fault location / rectification to improve / influence work outcomes |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CS6 Read, understand and interpret information and work in compliance with technical specifications and supporting documentation | • A working knowledge of the range of information which can be gained from Company policies and procedures which affect their work<br>• A working knowledge of the range and type of technical information / specifications available and how they are used to support work activities<br>• How they have used Company work information and technical specifications to conduct / support their work activities<br>• Describe how they have used Company information to record/ report the results of work carried out in line with Company procedures | • How they have taken a lead in interpreting / relaying technical information to progress work or support others understanding<br>• How they have questioned / clarified information which was unclear or incorrect<br>• How they have reported / updated information which was not technically correct / accurate | NONE |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CS7 Inspect and maintain appropriate plant and equipment to meet operational requirements | • How they have planned inspection and maintenance operations and the factors which influenced their critical reasoning / decisions during their planning process<br>• How they have implemented / complied with Company operational processes and procedures during their conducted inspection and maintenance work<br>• How they have used tools / techniques / equipment to conduct maintenance inspection and maintenance procedures on a range of plant / equipment to meet Company standards<br>• How they have used test equipment / procedures on plant / equipment to confirm that the work completed met with Company operational requirements<br>• How they have reported / recorded the outcome of their inspection and maintenance operations | • Their ability to explain in detail the range of skills, knowledge and behaviours they have used to support their conducted inspection / maintenance operations<br>• How they have pro-actively worked with others to resolve problems during inspection / maintenance operations which supported work progression / performance<br>• How they have taken action to report or deal with issues of non-conformity or non-compliance during inspection / maintenance work operations | • An excellent knowledge / understanding in relation to inspection / maintenance procedures within their job role<br>• Their ability to explain / justify the Company inspection and maintenance procedures used for a range of plant and equipment<br>• How they have taken a lead in accepting additional responsibility / autonomy to improve the outcome of inspection / maintenance operations |

| Core Knowledge | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CS8 Communicate, handover and confirm that the appropriate engineering process has been completed to specification | • A working knowledge of their role and responsibilities in the handover of the system / equipment / plant back to operational service<br>• A working knowledge of the Company process for the handover of plant / equipment which has been worked on<br>• How they have completed the required checks / tests to confirm the plant / equipment / system worked on meets operational requirements before conducting the handover process<br>• How they have completed the handover of plant / equipment in line with relevant Company policies and procedures<br>• How they have confirmed the recipient/s of the handover process fully understand any critical information given<br>• How they have completed the Company process for reporting / recording the handover of plant / equipment back into service in line with Company procedures | • How they have taken a pro-active lead in the handover process by effectively communicating the detail of handover arrangements with stakeholders<br>• Their ability to develop positive professional relationships with individuals to support the handover process and resolve any issues within their role responsibility<br>• How they have adapted their communication method / style to better suit the changing circumstances / needs of the work | • How they have consulted / involved team members / other relevant persons to achieve greater understanding and improved performance<br>• Their ability to actively address conflict / resolve problems with positive outcomes to build positive relationships and<br>• Their ability to effectively communicate technical information across a wide range of stakeholders e.g. colleagues, management, briefings/meetings, external clients |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on **all** the specialist pathway skills during the Interview | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI1 Position, assemble, install and dismantle plant and equipment which will include instrumentation and control of temperature,pressure and flow systems to agreed specifications | • A working knowledge of their responsibilities for the range of work activities within their job role<br>• How they have used Company policies / procedures / specifications to conduct a range of position, assemble, install and dismantle work activities<br>• How they have used tools and equipment to conduct a range of position, assemble, install and dismantle activities in compliance with specifications and regulatory requirements<br>• How they have conducted the required checks / test procedures to confirm the completed work meets Company / operational requirements<br>• How they have used critical reasoning to identify and resolve technical problems within their control effectively during their range of work activities<br>• How they have reported / recorded the work conducted & returned the work area to a safe condition in line with Company procedures | • A detailed understanding of the range and technical requirements of the plant and equipment worked on<br>• A detailed technical understanding for the range of methods / techniques used for their position, assemble, install and dismantle work activities<br>• A detailed technical understanding for the factors which can affect their critical reasoning when making decisions to resolve technical problems<br>• How they have taken a pro-active lead in organising / controlling their conducted work activities which has led to a successful completion | • An excellent knowledge and understanding in relation to the range and technical requirements of the plant and equipment worked on<br>• Their ability to explain / justify the Company methods /processes / procedures used for the range of plant and equipment worked on<br>• How they have taken a lead in accepting additional responsibility / autonomy to improve the outcome of their position/ assemble / install / dismantle work activities |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on **all** the specialist pathway skills during the Interview | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI2 Carry out planned, unplanned and preventative maintenance on plant and equipment | • A working knowledge of their responsibilities for the range of work activities within their job role<br>• How they have used Company policies / procedures / specifications to conduct a range of maintenance procedures work activities<br>• How they have used tools and equipment to conduct a range of maintenance procedures in compliance with all Company health, safety and environmental processes, policies and regulatory requirements<br>• How they have conducted the required checks / test procedures to confirm the completed maintenance work meets Company requirements<br>• How they have used critical reasoning to identify & resolve technical problems within their control effectively during their range of work activities<br>• How they have reported / recorded the work conducted & returned the work area to a safe condition in line with Company procedures | • A detailed understanding of the range and technical requirements of the plant and equipment worked on<br>• A detailed technical understanding for the range of methods / techniques used for maintenance work undertaken<br>• A detailed technical understanding for the factors which can affect their critical reasoning when making decisions to resolve technical problems<br>• How they have taken a pro-active lead in organising / controlling their conducted work activities which has led to a successful completion | • An excellent knowledge and understanding in relation to the range and technical maintenance requirements of the plant and equipment worked on<br>• Their ability to explain / justify the Company maintenance methods / processes / procedures used for the range of plant and equipment worked on<br>• How they have taken a lead in accepting additional responsibility / autonomy to improve the outcome of their maintenance work activities |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on **all** the specialist pathway skills during the Interview | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI3 Replace, repair and/or remove components in plant and equipment and ensure its return to operational condition<br><br>AND<br><br>CI4 Diagnose and determine the cause of faults in plant and equipment | • A working knowledge of their responsibilities for the range of replace / repair activities undertaken<br><br>• How they have used Company policies / procedures / specifications to conduct a range of replace / repair work procedures<br><br>• How they have used tools and equipment to conduct a range of replace / repair procedures in compliance with all Company health, safety and environmental processes, policies and regulatory requirements<br><br>• How they have conducted the required checks / test procedures to confirm the plant / equipment worked on can be returned to operational service<br><br>• How they have used critical reasoning to identify and resolve technical problems within their control<br><br>• How they have returned plant / equipment worked on to operational service in line with Company procedures | • A detailed understanding of the methods and technical requirements for the range of plant and equipment replaced / repaired<br><br>• A detailed technical understanding for the range of causes and effects which lead to plant and equipment being replaced / repaired<br><br>• A detailed technical understanding for the factors which can affect their critical reasoning when making decisions to resolve technical problems<br><br>• How they have taken a pro-active lead in organising / controlling their conducted replace / repair work activities which has led to a successful completion | • An excellent knowledge and understanding in relation to the range and technical requirements of the plant and equipment replaced / repaired<br><br>• Their ability to explain / justify the Company methods /processes / procedures used for the range of plant and equipment replaced / repaired<br><br>• How they have taken a lead in accepting additional responsibility / autonomy to improve the outcome of their replace / repair work activities |

| Specialist Pathway Skills: Control and Instrumentation technician – apprentice is assessed on **all** the specialist pathway skills during the Interview | | | |
|---|---|---|---|
| Standard | Pass criteria – all to be met | Merit criteria – two to be met | Distinction criteria – two to be met |
| CI5 Calibrate and configure instrument and control systems | • A working knowledge of their responsibilities for the range of diagnostic activities undertaken<br>• How they calibrated instruments to a given specification<br>• How they planned calibration activities to minimise operational conditions<br>• How they selected the appropriate tools and equipment for specific calibration and/or configuration activities<br>• A working knowledge of the company procedures and regulatory requirements that must be followed when calibrating and/ or configuring instruments<br>• How they applied a calibration that was both accurate and consistent<br>• How they recorded the outcomes of calibration and/or configuration activities | • A detailed knowledge of the principles of calibration and/ or configuration of plant and equipment<br>• Detailed knowledge of the ways to minimise risk of all planned shutdowns during calibration and/ or configuration activities<br>• How they would work with in a team to identify improvements on calibration and/or configuration activities<br>• How they would report any potential improvements associated with calibration and/or configuration activities | • A deeper and knowledge of equipment parameters, tolerances and operational specifications<br>• How they would identify and implement potential changes to improve the efficiency of calibration and/or configuration activities<br>• How they reported or dealt with instruments that failed to meet calibration and/or configuration compliance<br>• How they took an autonomous role during calibration and/or configuration activities |

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation Technician

## **EPA Specification Section 6** – Practice Assessments and guidance

- Knowledge Assessment
- Guidance
- Practice Test (in the Annex)
- Practical Observation
- Guidance for setting up a practice Observation
- Technical Interview

## Contacts

This specification has been designed to provide all the advice and guidance you need to prepare yourself and your apprentices for end-point assessment. However, if you have any further questions please contact the EUIAS Help Desk using one of the following:

Help Desk email: enquiries@euias.co.uk

Help Desk telephone: 0121 713 8310

# The Knowledge Assessment

### Guidance – preparation for the knowledge test

While on-programme, the employer/training provider should brief the apprentice on the areas to be assessed by the knowledge test, as detailed in Section 5.1. These are the Core Knowledge elements of the standard, CK1, CK2, CK3 and CK4. It is good practice to identify the areas within the learning programme where the relevant knowledge is delivered and ensuring that apprentices are aware that these areas "might come up in the test".

Be aware that the knowledge test relates to the standard, as opposed to the specific job role that the apprentice carries out. The questions have been written to reflect the technician role as a whole and cannot be focussed on specific plant, machinery, or employer-specific processes.

In readiness for end-point assessment, the apprentice should complete a sample test, which is included as an Annex to this specification. This should be undertaken in advance of the Knowledge Assessment, with enough time to mark the assessment, and provide feedback to learners.

For maximum effect, ensure the test is taken in exam conditions similar to those that will be experienced in a live test.

# Practical Observation

### Guidance for setting up a practice observation

The Practical Observation focuses on **ONE** of the Control and Instrumentation technician skills area; either CI1, CI2, CI3, CI4 or CI5.

While it is not permitted to brief the apprentice as to the specific task they will be given during the live Practical Observation, it is permitted to set up tasks of similar complexity and duration and ask the apprentice to carry them out under live assessment conditions. To make the practice more realistic, a tutor or supervisor should adopt the role of assessor and use the appropriate grading criteria from Section 5 to 'assess' the apprentice.

A practice Task Brief should be prepared that focusses on the specific control and instrumentation technician skills area. The practice task brief should provide instructions for the apprentice to be able to:

- Plan the job
- Select the appropriate tools and materials
- Focus on the skill
- Work safely

For example, to focus on skill CI1, the task would reference specific control and instrumentation plant or equipment, and instruct the apprentice to dismantle, and install parts, consistent with a realistic working task. The task must allow opportunity for the apprentice to position and assemble parts, in accordance with CI1. Note that the expectation is that task takes several hours, and up to a day, and therefore must be sufficiently complex to match this duration.

The live Practical Observation also includes questioning from the assessor designed to confirm the apprentice's understanding of the rationale for actions taken and choices made to complete the task. To carry out this aspect of the practice Practical Observation, it is recommended to prepare some open-ended questions that focus on the rationale for each part of the task.

The tutor or supervisor carrying out the practice assessment should record their assessment of how the apprentice performed and provide feedback to the assessor with guidance on what to do to improve their performance, taking note of the grading descriptors for pass, merit and distinction in Section 5.

# Technical Interview

## Preparing the evidence portfolio

The Technical Interview covers a large part of the standard and therefore, the portfolio has the potential to become very large. It is important to understand that the portfolio is NOT assessed, even though the assessor will view the portfolio prior to the technical interview.

The purpose of the portfolio is to support the apprentice in providing evidence of their achievements when asked about them in the Technical Interview. It is particularly useful in supporting apprentices in achieving merit or distinction. For example, the Distinction grading criteria for Core Skills CS7 (see Section 5.3) make reference to “taking a lead in accepting additional responsibility” – the portfolio may contain witness testimony describing thecircumstances, and the apprentice would be able to refer to this testimony when answering questions during theTechnical Interview.

Top tips for the portfolio:

- Include evidence from major maintenance tasks carried out towards the end of the apprenticeship; a continuous narrative through a small number of major tasks is easier to produce and map than a large number of small tasks that have limited coverage of the standard. In many cases, 3-5 substantial tasks should be sufficient to cover all the required elements of the standard

- Organise the evidence for each job according to the following three scenarios:
    - Scenario 1 - Position, assemble, install and dismantle plant and equipment
    - Scenario 2 – Carry out planned, unplanned and preventative maintenance procedures
    - Scenario 3 – Diagnose and determine the cause of faults and Replace, repair and/or remove components and ensure its return to operational condition

- Index the portfolio with clear references to all the required elements, as listed in Section 5.3. Use the MOET Portfolio Index document to summarise all the references, including the portfolio page number, and page section, so the assessor can find the evidence easily

- Evidence can include extracts from work logs, photographs, witness testimony from supervisors, write-ups by the apprentice

- Ensure the apprentice is completely familiar with the portfolio contents and can find particular sections with confidence during an interview situation

- Some apprentices will be aiming for Merit or Distinction - ensure the portfolio addresses the relevant grading criteria

- You can use e-portfolio but you must be able to provide access to the EUIAS assessors

- Use the MOET Portfolio Readiness Checklist as a top-level check list to ensure coverage of all elements of the standard required in the technical interview

## Preparing and carrying out a practice Technical Interview

When the evidence portfolio is complete, towards the end of the formal training period is a good time to schedule a practice interview. It must be done with enough time to provide feedback to the apprentice that they can learn from, before the live end-point assessment. A period of two weeks or more is recommended, depending on the circumstances. The key is that the apprentice has time to act on the feedback they get at the end of the practice.

A period of at least two hours should be set aside for each practice interview, and a set of open-ended questions prepared to cover each of the areas of the standard covered by the Technical Interview.

A tutor or supervisor should play the part of the assessor carrying out the Technical Interview, asking the questions in a ‘live test environment’. They should record their assessment of the apprentice performance, using the grading descriptions in Section 5 as a guide, and provide the apprentice with feedback, focussing on areas of improvement.

The technical interview questioning should synoptically examine the knowledge, skills and behaviours by the apprentice through their on-programme experience. The questioning should be contextualised to the apprentice’s specific job role. The tutor or supervisor must:

- prepare some interview questions around each of the three question scenarios described in section 5.3, and focused on each of the relevant knowledge or skills covered by the technical interview
- don't forget to ask questions relating to merit and distinction criteria
- use various questioning techniques to confirm the depth of knowledge and or range of skills
- record the technical interview or provide a clear narrative if the interview is not recorded. The narrative must describe the apprentice’s responses to each of the questions asked. The narrative must capture the depth and breadth of the apprentice’s response
- ensure the apprentice has provided evidence in their responses to cover all the relevant elements of the standard
- provide feedback to the apprentice focusing on any areas of the standard missed, or where appropriate, to give guidance on achieving the merit or distinction grades

# EPA Specification Maintenance and Operations Engineering Technician – Control and Instrumentation technician

## **EPA Specification Section 7** – Supporting documents

- Gateway Eligibility Report
- Cohort Registration Form
- Practice Knowledge Assessment, with Answer Scheme
- MOET Portfolio Checklist and Portfolio Index
- **Practical Observation Approval Form Guidance**

# EUIAS Level 3 End-point Assessment for Maintenance Operations Engineer Technician - Control and Instrumentation

## Gateway Eligibility Report

(Standard Version: ST0154 version 1, 2016; Assessment Plan Version: ST0154/AP02)

**Apprentice's details**

| Apprentice's name: | Apprentice's job title: |
|---|---|
| | |
| Name of Employer: | Name of Training provider: |
| | |
| Employer representatives present: | Training provider representatives present: |
| | |
| Apprenticeship start date: | Apprenticeship on-programme end date: |
| | |
| Gateway meeting date: | |
| Has the apprentice taken any part of the end-point assessment for this apprenticeship standard with any other End Point Assessment Organisation? | Y / N |
| If "Yes" please give details: | |

**Eligibility requirements for MOET**

The apprentice must confirm their achievement of the following:

| Eligibility requirement | Achieved by the apprentice? Y/N | Evidence (scans of certificates MUST be included) |
|---|---|---|
| Achieved English level 2 | | |
| Achieved maths level 2 | | |

## Gateway Eligibility Declaration

The apprentice, the employer and the training provider must sign this form to confirm that they understand and agree to the following:

1. The apprentice has completed the required on-programme elements of the apprenticeship and is ready for end-point assessment with EUIAS
2. The apprentice will only submit their own work as part of end-point assessment
3. All parties agree that end-point assessment evidence may be recorded and stored by EUIAS for quality assurance purposes
4. The apprentice has been on-programme for a minimum duration of 365 days
5. The apprentice has achieved the mathematics and English requirements as detailed in this document
6. The apprentice, if successful, gives permission for EUIAS to request the apprenticeship certificate from the ESFA who issue the certificate on behalf of the Secretary of State
7. The apprentice has been directed to the EUIAS Appeals Policy and Complaints Policy
8. The employer/training provider has given the EUIAS at least three months' notice of requesting this EPA for this apprentice
9. If the Gateway Eligibility Report is not completed in full, meeting all requirements, and submitted to EUIAS, the end-point assessment cannot take place

| Signed on behalf of the employer (print name): | Signature: | Date: |
|---|---|---|
| | | |
| Signed on behalf of the training provider (print name): | Signature: | Date: |
| | | |
| Apprentice's name (print): | Signature: | Date: |
| | | |

| EUIAS use only: | |
|---|---|
| EUIAS Sign off: | |
| Comments/actions: | |

# Cohort Registration Form (v2)

## Section 1 Main Details

| | |
|---|---|
| Standard and AP number | |
| Number in cohort, by pathway | |
| Cohort start date | |
| Expected Gateway date | |

| | |
|---|---|
| Employer Name | |
| Lead Provider Name* | |

* (this may be the employer).

| | |
|---|---|
| Employer Contact Name | |
| Employer Contact Details (address, phone and email) | |
| Employer Reference Number (ERN) | |
| Lead Provider Contact Name | |
| Lead Provider Contact Details (address, phone and email) | |
| Lead Provider Reference Number (UKPRN) | |
| Date of Service Level Agreement between EUIAS and Lead Provider (EUIAS to complete) | |

| |
|---|
| EUIAS Unique Cohort Identifier (UCI) Number: |

# Section 2 Service Details

The scope of the end-point assessment service is listed in Section 4 of the Service Level Agreement agreed with the lead provider.

EUIAS end-point assessment policies can be found at www.euias.co.uk

The agreed pricing is detailed below.

| | | |
|---|---|---|
| End-point Assessment Price per apprentice | Stage 1 - Registration | |
| | Stage 2 – Gateway / End-point | |
| | TOTAL | |

| | |
|---|---|
| Cancellation price for EPA element 1 (specify): | £ |
| Cancellation price for EPA element 2 (specify): | £ |
| Cancellation price for EPA element 3 (specify): | £ |

| | |
|---|---|
| Re-sit / re-take price for EPA element 1: | £ |
| Re-sit / re-take price for EPA element 2: | £ |
| Re-sit / re-take price for EPA element 3: | £ |

| Cancellation charges (these are in line with section 10.9 of the Service Level Agreement) | |
|---|---|
| Less than 48 hours | Payment in full for the specific end-point assessment activity plus any travel and subsistence costs incurred and any additional assessment(s) that cannot be rescheduled due to the assessment plan stage requirements |
| More than 48 hours but less than 5 days | 50% payment of the full payment for the specific end-point assessment activity and any travel and subsistence costs incurred that cannot be cancelled |
| Greater than 6 days but less than 10 days | 25% payment of the full payment for the specific end-point assessment activity and any travel and subsistence costs incurred that cannot be cancelled |
| More than 10 days | No additional charge for the specific end-point assessment activity |
| Other (if applicable) | |

Additional Service Charges (insert details as applicable):

| | |
|---|---|
| EUIAS – supplied assessors/technical experts:<br><br>Assessors supplied by employer | £ |

| | |
|---|---|
| Invigilation: | £ (per invigilator) |

| | |
|---|---|
| EUIAS approval of additional/alternative assessment facilities: | £ (per site) |

| | |
|---|---|
| Learner/employer workshops, technical briefings etc: | £ (per briefing, plus travel expenses) |

| | |
|---|---|
| | |

| | |
|---|---|
| | |

# Section 3 - Account Registration for Finance and Invoicing (if not provided in a previous Cohort Registration Form)

To be completed by the main provider (the organisation on the Register of Apprenticeship Training Providers (RoATP), that will be contracting with the EUIAS on the employer's behalf).

| | |
|---|---|
| Use details already provided: | Yes / No |

Or complete the information below:

| | | | |
|---|---|---|---|
| Lead Provider Name | | | |
| Address and Postcode | | | |
| Contact Name | | Telephone No. | |
| Email Address | | Company No | |
| Email Address for Statement | | VAT no. | |

## Invoice Details – if different from above

| | | | |
|---|---|---|---|
| Contact Name | | Telephone No. | |
| Invoice Address and Postcode | | | |

## Account Payable Details – if different from above

| | | | |
|---|---|---|---|
| Contact Name | | Telephone No. | |
| Invoice Address and Postcode | | | |

## Purchase order number/details for Stage 1 payment

| |
|---|
| |

# Section 4 - Declarations

| Employer Declaration | |
|---|---|
| This is to confirm that the [employer] has selected the Energy & Utilities Independent Assessment Service (EUIAS) as their end-point assessment organisation for the stated apprenticeship standard and cohort, and that the details supplied in this form are correct. | |
| Employer Name | |
| Contact Name: | |
| Job Title: | |
| Signature: | |
| Date: | |

| Lead Provider Declaration (this may be the employer) | |
|---|---|
| This is to confirm that the [Lead Provider] is approved on the Register of Apprenticeship Training Providers and will contract with and pay Energy & Utility Skills Limited (trading as Energy & Utilities Independent Assessment Service) on behalf of the employer for the delivery of end-point assessment. This is also to confirm that the details supplied in this form are correct. | |
| Lead Provider Name | |
| Contact Name: | |
| Job Title: | |
| Signature: | |
| Date: | |

# MOET Practice Assessment

| Please write clearly in block capitals below | |
|---|---|
| Company Name | |
| Forename (s) | |
| Surname (s) | |
| Date of Birth | |
| Apprentice Number | |
| Apprentice signature | |
| Date of Knowledge Test | |

**Level:** **3**
**Standard:** **Maintenance and Operations Engineering Technician**
**Pathway:** **Control and Instrumentation**
**Duration:** **45 minutes**

## Materials

For this paper you must have:

- Pens
- Calculators and reference documents are not required

## Instructions

- Use black or blue ink or black ball-point pen
- Fill in the boxes at the top of this page
- Answer **all** questions
- There are questions, possible answers as well as a column for you to mark your answer

- Mark your answer with an ☒ against the possible answer you think is correct- if you wish to change your answer please put a line through ~~☒~~ and re-select with another ☒
- Only one answer per question allowed. Answers which do not follow the rules of selection will be disallowed. This may impact on the grade awarded
- Do all rough work in this answer book, spare paper is provided in this answer booklet and can be used but **MUST NOT** be removed
- Additional spare paper will not be provided
- All questions are closed book

## Sample:

London is the capital of….

| **Example Question** | | |
|---|---|---|
| London is the capital of… | | |
| **Possible answers** | | **Answer** |
| a) | Wales | ~~**X**~~ |
| b) | Scotland | |
| c) | Northern Ireland | |
| d) | England | **X** |

## Information

- There are 30 questions in total
- All questions should be attempted

## Advice

- You are not permitted to leave the examination room for the duration of the assessment
- Do not spend too long on one question
- Read all questions thoroughly before starting your examination
- Mobile phones and watches must not be taken into the examination room. The examination must be conducted under examination conditions i.e. you

may not speak to other candidates, if you have a problem raise your hand and the invigilator will attend

- Cheating: you will be asked to leave the examination room and will be classified an automatic fail and referred to your employer

## Do not turn over the page or commence the knowledge test until the invigilator instructs you to

# DO NOT DETACH

Spare paper for to use for calculations or working out

## (A) First principles relating to the operation and maintenance of appropriate plant and equipment (7 Questions)

| **Question 01** | | | |
|---|---|---|---|
| On what type of installation would you fit this design of washer? | | | |
| **Possible answers** | | **Answer** |  |
| a) | High corrosion | | |
| b) | High temperature | | |
| c) | High vibration | | |
| d) | High pressure | | |

| **Question 02** | | |
|---|---|---|
| Maximum and or minimum values that are permitted for specific maintenance operations are commonly described as: | | |
| **Possible answers** | | **Answer** |
| a) | Factors of safety | |
| b) | Rules of thumb | |
| c) | Margins | |
| d) | Tolerances | |

| Question 03 | | |
|---|---|---|
| Safety critical equipment should be maintained ……. | | |
| **Possible answers** | | **Answer** |
| a) | as safety critical equipment does not need testing | |
| b) | more frequently that non safety critical equipment | |
| c) | less frequently that non safety critical equipment | |
| d) | at the same period as safety non-critical equipment | |

| Question 04 | | |
|---|---|---|
| Which statement best describes what is meant by the terminology “specification”? | | |
| **Possible answers** | | **Answer** |
| a) | The capacity to endure continuous force | |
| b) | The standard when measured against another object of similar design | |
| c) | Detailed description of the design and materials of an object | |
| d) | The specified point beyond which certification is invalid | |

| Question 05 | | |
|---|---|---|
| What type of maintenance is applied when something stops working? | | |
| **Possible answers** | | **Answer** |
| a) | Planned | |
| b) | Preventative | |
| c) | Corrective | |
| d) | Shutdown | |

| Question 06 | | |
|---|---|---|
| What do the initials IP followed by 2 numbers refer to when seen on a piece of equipment? | | |
| **Possible answers** | | **Answer** |
| a) | Internal pressure | |
| b) | Integrity protection | |
| c) | Ingress protection | |
| d) | Increased pressure | |

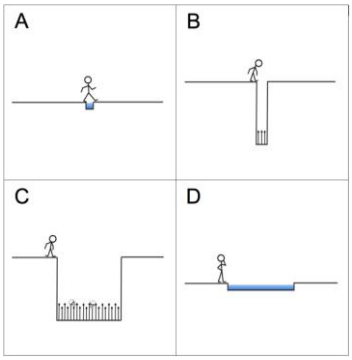
| Question 07 | | |
|---|---|---|
| Which of the following is commonly classed as safety critical? | | |
| **Possible answers** | | **Answer** |
| a) | Control valve | |
| b) | Fuse | |
| c) | Steam trap | |
| d) | Drain valve | |

## (B) Relevant industry health and safety standards, regulations, and environmental and regulatory requirements (9 Questions)

| Question 08 | | |
|---|---|---|
| What does the coloured tag on a piece of rigging equipment mean? | | |
| **Possible answers** | | **Answer** |
| a) | Certification period | |
| b) | Safe working load | |
| c) | Maximum working load | |
| d) | Safe to use | |

| Question 09 | | |
|---|---|---|
| When seen on site, what does a green safety sign signify? | | |
| **Possible answers** | | **Answer** |
| a) | Mandatory | |
| b) | Prohibited | |
| c) | Information | |
| d) | Warning | |

| Question 10 | | |
|---|---|---|
| What document should be fixed to a scaffold before you use it? | | |
| **Possible answers** | | **Answer** |
| a) | Risk assessment | |
| b) | Safety certificate | |
| c) | Approved Scafftag | |
| d) | Permit to work | |

| Question 11 | | | |
|---|---|---|---|
| Looking at the image provided and taking into consideration risk, which task would you say is low probability and low in impact? | | | |
| **Possible answers** | | **Answer** |  |
| a) | A | | |
| b) | B | | |
| c) | C | | |
| d) | D | | |

| Question 12 | | |
|---|---|---|
| When personal protection equipment is identified on the work control document, identify which statement is correct? | | |
| **Possible answers** | | **Answer** |
| a) | PPE is recommended | |
| b) | PPE is advised | |
| c) | PPE is good practice | |
| d) | PPE is mandatory | |

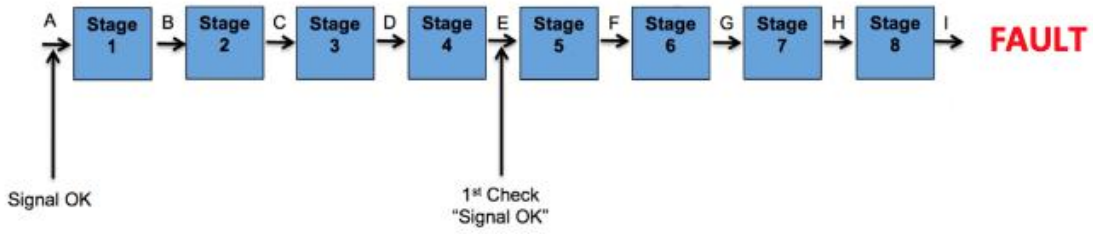
| Question 13 | | |
|---|---|---|
| In accordance with HSE regulations, how would you know if a substance was regarded as hazardous? | | |
| **Possible answers** | | **Answer** |
| a) | The container will be coloured red | |
| b) | It will be contained in a glass receptacle | |
| c) | It will have a label identifying the hazard | |
| d) | It will give off a strong odour | |

| Question 14 | | |
|---|---|---|
| According to the Confined Space Regulations 1997, which of the following locations is not regarded as a confined space? | | |
| **Possible answers** | | **Answer** |
| a) | Storage tank | |
| b) | Termination cabinet | |
| c) | Floor void | |
| d) | Pipe trench | |

| Question 15 | | |
|---|---|---|
| In accordance with HSE guidelines, isolations can only be applied by …. | | |
| **Possible answers** | | **Answer** |
| a) | Lead technicians | |
| b) | Authorised people | |
| c) | Skilled people | |
| d) | Experienced people | |

| Question 16 | | |
|---|---|---|
| Which manual handling statement is true? | | |
| **Possible answers** | | **Answer** |
| a) | Correct manual handling prevents all accidents | |
| b) | Correct manual handling prevents damage to equipment | |
| c) | Correct manual handling reduces the risk of human injury | |
| d) | Correct manual handling should only be applied in the workplace | |

## (C) Maintenance and operational practices, processes and procedures covering a range of plant and equipment (5 Questions)

| Question 17 | | |
|---|---|---|
| Using the half split principal and referring to the information provided in the image, at which position should you logically make the next check when fault finding? | | |
|  | | |
| **Possible answers** | | **Answer** |
| a) | Point C | |
| b) | Point F | |
| c) | Point G | |
| d) | Point I | |

| Question 18 | | |
|---|---|---|
| What regulation provides guidance on the use of handheld tools? | | |
| **Possible answers** | | **Answer** |
| a) | PUWER | |
| b) | COMAH | |
| c) | LOLER | |
| d) | COSHH | |

| Question 19 | | |
|---|---|---|
| What is being measured in this image? | | |

| **Possible answers** | | **Answer** |
|---|---|---|
| a) | Temperature | |
| b) | Vibration | |
| c) | Pressure | |
| d) | Speed | |

| Question 20 | | |
|---|---|---|
| When seen on a British Standard convention drawing, what does this symbol represent? | | |
|  | | |
| **Possible answers** | | **Answer** |
| a) | Electrical signal | |
| b) | Pneumatic line | |
| c) | Hydraulic line | |
| d) | Instrument signal | |

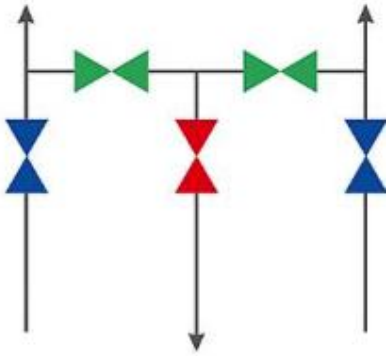
| Question 21 | | |
|---|---|---|
| What type of maintenance can be applied to check the long-term performance of equipment to identify problems before they occur? | | |
| **Possible answers** | | **Answer** |
| a) | Preventative | |
| b) | Risk based | |
| c) | Condition based | |
| d) | Corrective | |

## (D) The relevant engineering theories and principles relative to their occupation (9 Questions)

| **Question 22** | | |
|---|---|---|
| A pressure transmitter with a range of 0-200 mbar is showing a feedback signal of 16mA. Assuming that the transmitter is calibrated correctly what is the actual line pressure? | | |
| **Possible answers** | | **Answer** |
| a) | 100 mbar | |
| b) | 120 mbar | |
| c) | 150 mbar | |
| d) | 160 mbar | |

| **Question 23** | | |
|---|---|---|
| Complete the sentence. A _____ measurers a change in process conditions. | | |
| **Possible answers** | | **Answer** |
| a) | Sensor | |
| b) | Microprocessor | |
| c) | PLC | |
| d) | Convertor | |

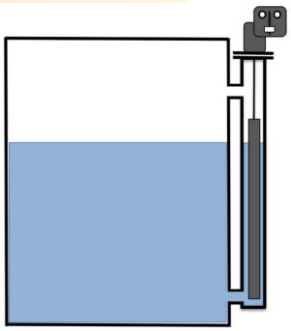
| Question 24 | | |
|---|---|---|
| What is the most common output range of a pneumatic transmitter? | | |
| **Possible answers** | | **Answer** |
| a) | 0 to 1.9 bar | |
| b) | 0.2 to 1.0 bar | |
| c) | 0 to 15 bar | |
| d) | 2 to 20 bar | |

| Question 25 | | |
|---|---|---|
| On this differential pressure manifold, what is the purpose of the red handle valve? | | |
|   | | |
| **Possible answers** | | **Answer** |
| a) | Isolating pressure to transmitter | |
| b) | Isolating mains pressure | |
| c) | Venting pressure | |
| d) | Equalising pressure | |

| Question 26 | | |
|---|---|---|
| What does the third wire on a 3 wire Resistance Temperature Device do? | | |
| **Possible answers** | | **Answer** |
| a) | Compensates field wire resistance | |
| b) | It acts as a spare sensor wire | |
| c) | It is the power supply wire | |
| d) | Increases lifespan of device | |

| Question 27 | | |
|---|---|---|
| What effect would a loose connection have on a Resistance Temperature Device temperature loop? | | |
| **Possible answers** | | **Answer** |
| a) | Low reading | |
| b) | Static signal | |
| c) | Fluctuating signal | |
| d) | No effect | |

| Question 28 | | |
|---|---|---|
| What principal of level measurement is depicted in this image? | | |
| **Possible answers** | | **Answer** |
| a) | Capacitance Probe (RF) | |
| b) | Displacement | |
| c) | Ultrasonic | |
| d) | Differential pressure | |



| Question 29 | | |
|---|---|---|
| A Manometer consists of a | | |
| **Possible answers** | | **Answer** |
| a) | "U" shaped tube, open to atmosphere on one side and open to the fluid to be measured on the other side | |
| b) | Metal tube that extends as pressure builds up | |
| c) | A vertical tube, filled with mercury and open to the atmosphere | |
| d) | A series of bourdon tubes connected in series | |

| Question 30 | | |
|---|---|---|
| What type of sensing device is used on this flow installation? | | |
|  | | |
| **Possible answers** | | **Answer** |
| a) | RF probe | |
| b) | Orifice plate | |
| c) | Venturi tube | |
| d) | Turbine meter | |

## End of Practice Assessment

# Answers

| Question | Answer | Question | Answer |
|---|---|---|---|
| 1 | C | 16 | C |
| 2 | D | 17 | C |
| 3 | B | 18 | A |
| 4 | C | 19 | B |
| 5 | C | 20 | B |
| 6 | C | 21 | C |
| 7 | B | 22 | C |
| 8 | A | 23 | A |
| 9 | C | 24 | B |
| 10 | C | 25 | C |
| 11 | A | 26 | A |
| 12 | D | 27 | C |
| 13 | C | 28 | B |
| 14 | B | 29 | A |
| 15 | B | 30 | B |

# MOET Portfolio Readiness Checklist – Control and Instrumentation Technician Pathway

Use this form to check your portfolio covers the required parts of the standard

| Apprentice Name | Company/Location |
|---|---|
| | |

| Brief description of the work-based tasks |
|---|
| |

| Core Knowledge | | | | | |
|---|---|---|---|---|---|
| CK1 | First principles relating to operation and maintenance of plant and equipment | ☐ | CK2 | Relevant industry health and safety standards, regulations and environmental and regulatory requirements | ☐ |
| CK3 | Maintenance and operational practices, processes and procedures | ☐ | CK4 | Relevant engineering theories and principles | ☐ |
| **Core Skills and Behaviour** | | | | | |
| CS5 | Read, understand, interpret and work to technical information | ☐ | CS6 | Locate and rectify faults on plant & equipment | ☐ |
| CS7 | Inspect and maintain plant & equipment | ☐ | CS8 | Communicate, handover & confirm that the appropriate engineering process has been completed | ☐ |
| B5 | Critical reasoning | ☐ | | | |
| **Specific Skills** | | | | | |
| CI1 | Position/assemble/install and dismantle plant & equipment | ☐ | CI2 | Planned, unplanned & preventative maintenance | ☐ |
| CI3 | Replace/repair and or remove components | ☐ | CI4 | Diagnose and determine the cause of faults | ☐ |
| CI5 | Calibrate and configure instrument and control systems | ☐ | | | |

The apprentice's manager/mentor is required to complete the details below to confirm the authenticity of the evidence portfolio

| By signing below I confirm that the evidence in the apprentice's portfolio is his/her own work. | | |
|---|---|---|
| Witness Name | Witness Signature | Date |

# MOET Portfolio Index

| Evidence ref, including portfolio page number | Short description of evidence | Standard(s) covered |
|---|---|---|
| **eg. Job 2, page 4, Ref. 1** | | **eg. CK3** |
| | | |
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Continue index as required

# Practical Observation Approval Form Guidance

**Guidance**

The purpose of the Practical Observation Approval Form is to ensure that the activity, proposed for the apprentice to complete during the MOET Practical Observation Assessment, is sufficiently complex to allow the apprentices to demonstrate the widest range of knowledge, skills and behaviours against the mandatory elements of the MOET EPA Standard.

Details of the mandatory elements are in Section 4 of the Specification.

Unless the site and tasks have previously been approved by EUIAS, the Approval Form should be completed and submitted to EUIAS a minimum of 20 working days before the expected date of the first practical observation. The form should be accompanied by photographs of the plant/ machinery which the apprentice will be working on.

A “complex” activity is defined as one that is completed in a number of individual stages in order to complete the activity. As an example, these stages could be broken down into the following sequence:

- Comply with industry health, safety and environmental working practices and regulations
- Prepare work areas to undertake work related activities and reinstate those areas after the completion of the work-related activities
- Communicate with and provide information to stakeholders in line with personal role and responsibilities
- Read, understand and interpret information and work in compliance with technical specifications and supporting documentation
- Inspect and maintain appropriate plant and equipment to meet operational requirements
- Locate, and rectify faults on plant and equipment
- Assess and test the performance and condition of plant and equipment
- Communicate, handover and confirm that the appropriate engineering process has been completed to specification

The above sequence comprises of the Core Skills elements of the MOET EPA, which closely reflects the practices and processes of facilitating work activities in the industry sectors, which are identified in the MOET Assessment Plan.

In addition to the Core Skill elements detailed above, the proposed activity must also allow the apprentice to demonstrate their knowledge, skills and behaviours against one of the Specific Skill elements detailed in Section 4 of the Specification.

It is important to note that if, during the assessment, any aspect of the performance that needs to be assessed does not occur naturally, the independent assessor (technical expert) will ask the apprentice questions to give them the opportunity to cover the area of the standard.

The time taken to complete the proposed activity(s) should typically take no longer than one day. However, the actual time allowed should be based on the comparable time that an industry competent worker would take to achieve successful activity(s) completion.

As a rule of thumb, an activity(s) that would take only 2 hours to complete would be considered to be insufficiently complex and would likely restrict the opportunity for the apprentice to demonstrate their full range of knowledge, skills and behaviours.

# MOET Practical Observation Approval Form

Return completed form to enquiries@euias.co.uk

| | |
|---|---|
| Apprentice Name | |
| MOET Pathway | |
| Employer/provider and Site Address: | |
| Contact name for the Practical Observation, with contact details | |
| PPE Required for the Assessor | |
| Site-specific access/induction arrangements | |
| Plant/machinery photographs included? | YES/NO |
| Description of the proposed task(s) | |