

EPA Specification Maintenance and Operations Engineering Technician – ES&PC technician



EPA Specification Section 5.2 – The Practical Observation

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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 745 1310 option 2

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 EP1, EP2, EP3, EP4 or EP5)
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	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their own HS&E responsibilities and that of others • Comply with the required HS&E working practices and regulations • Conduct a suitable risk assessment and proactively identify workplace hazards • Inspect and wear the correct PPE required to carry out the activity • Inform other relevant parties of matters affecting them where required • Comply with and apply safe systems of work and maintain a safe working environment • Inspect and use the appropriate tools and equipment • Regularly re-assess the site conditions and take action when necessary to maintain site safety • Check to ensure the site is left in a safe / secure condition for others 	<ul style="list-style-type: none"> • 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 • Take a lead role in managing the site safety of self and others • Consistently demonstrate compliance with safety requirements and make suggestions to reduce risks • Identify poor / bad practice in relation to work activities and address the situation 	<ul style="list-style-type: none"> • Demonstrate exemplary HS&E knowledge and performance throughout the activity • Identify HS&E deficiencies and implement appropriate solutions • Challenge unsafe behaviour / practices using appropriate techniques • Pre-empt risks prior to task commencement and puts actions in place to prevent them occurring • 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	<ul style="list-style-type: none"> Read and correctly interpret a range of technical information provided to plan and conduct the work Demonstrate a clear understanding of the purpose and use of the technical information provided for the work Use and refer to the technical information provided to check / confirm the work conducted meets the required company standards / specifications Where necessary, question / clarify any information which is not clearly understood Complete any technical or supporting documentation in line with company policies / procedures 	<ul style="list-style-type: none"> Demonstrate a detailed knowledge of the range and purpose of the technical information available Identify inaccuracies / deficiencies in the technical information provided and resolve / report the situation Challenge in a professional manner any areas of concern to clarify understanding Identify / suggest methods of improving the system / use of information 	<ul style="list-style-type: none"> Demonstrate their ability to effectively communicate technical information across a wide range of stakeholders e.g. colleagues, management, briefings / meetings, external clients Consult and involve team members and / or other relevant persons to achieve greater understanding and improved performance 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	<ul style="list-style-type: none"> • Demonstrate an understanding of the importance of good preparation and the potential outcomes of poor preparation • Inspect and prepare the work area and equipment to be worked on in line with company policies / procedures • Identify and implement any special precautions required by the work activity or environment, where required • Maintain good housekeeping practices and a safe working environment throughout the activity • Store tools, equipment, materials in a suitable / secure position and dispose of waste products in line with company policies and HS&E regulations • Reinstate the work area to ensure it is left in a safe and secure condition e.g. locks, notices, documentation 	<ul style="list-style-type: none"> • Take a lead role in the preparation of the work area proactively informing others on matters which affect them • Produce a detailed work plan to support the organisation of the work, including measures to deal with contingencies • Demonstrate their ability to develop positive professional relationships with individuals to support the work activity • Make valid suggestions / recommendations to improve the planning / preparation of the work activity 	<ul style="list-style-type: none"> • Demonstrate a deeper understanding of the implications of good and poor work preparation. e.g. In terms of cost, time, value, company reputation etc. • 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	<ul style="list-style-type: none"> • Demonstrate a clear understanding of the company policies / procedures for the assessment and testing of plant and equipment to be worked on • Demonstrate a clear understanding of the types and purpose of testing procedures for the plant and equipment to be worked on • Assess and test the plant / equipment to be worked on in line with company procedures • Use the correct tools, equipment and techniques to conduct testing in line with company procedures • Accurately interpret the results of the tests conducted • Record / report the results of the testing in line with company procedures 	<ul style="list-style-type: none"> • Demonstrate a detailed technical knowledge of the range of tests available and their specific purpose • Take a pro-active, leading role in the testing activity providing clear guidance on the results obtained • Make recommendations / suggestions to improve testing efficiencies • Demonstrate a detailed technical knowledge of the outcome of testing procedures and the implications of results obtained 	<ul style="list-style-type: none"> • Demonstrate a deeper technical understanding of testing procedures and the analysis of results. e.g. testing parameters, performance indicators etc. • 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	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities for the fault location and rectification activity to be undertaken • Provide an accurate technical explanation of the company's fault location methods, processes and / or procedures • Competently use the correct tools, equipment and methods to locate the rectify the fault/s in a timely manner • Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures • Complete the required tests / checks to confirm the fault rectification has been successful • Record the results / outcomes of rectification work in line with company requirements 	<ul style="list-style-type: none"> • Demonstrate a detailed understanding of the theory and principles of fault location and rectification operations • Demonstrate a detailed understanding of cause and effect of faults and preventative measures • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Make recommendations / suggestions to improve the location / rectification work activity 	<ul style="list-style-type: none"> • Demonstrate deeper technical knowledge of fault location and fault prevention e.g. costs, lost time, sustainability of equipment, company reputation • Identify and implement tangible changes that improve the efficiency of the work being conducted • Identify and take action to report or deal with issues of non-conformity / compliance • 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	<ul style="list-style-type: none"> • Read and correctly interpret a range of technical information provided to plan and conduct the work • Demonstrate a clear understanding of the purpose and use of the technical information provided for the work • Use and refer to the technical information provided to check / confirm the work conducted meets the required company standards / specifications • Where necessary, question / clarify any information which is not clearly understood • Complete any technical or supporting documentation in line with company policies / procedures 	<ul style="list-style-type: none"> • Demonstrate a detailed knowledge of the range and purpose of the technical information available • Identify inaccuracies / deficiencies in the technical information provided and resolve / report the situation • Challenge in a professional manner any areas of concern to clarify understanding • 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	<ul style="list-style-type: none"> • Demonstrate a clear understanding of the company policies / procedures for the inspection of plant and equipment to be worked on • Demonstrate a clear understanding of the company policies / procedures in relation to achieving the safe isolation of equipment from relevant sources of energy • Identify and inspect the plant / equipment to be worked on in line with company procedures • Correctly use tools, equipment and techniques to achieve the quality standards required by company policies / procedures • Demonstrate consistent application of policies and procedures during the work activity • Record / report the results of the inspection in line with company procedures 	<ul style="list-style-type: none"> • Demonstrate a detailed technical knowledge of the range of required inspections and maintenance procedures and their specific purpose • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Demonstrate the ability to develop positive professional relationships with individuals to support the work activity • Identify areas for work improvement and implement actions to improve work efficiencies 	<ul style="list-style-type: none"> • Demonstrate a deeper technical understanding of inspection / maintenance operations. e.g. In terms of cost, time, environmental impact, sustainability etc • 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	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities in returning the system / equipment back to operational service • Provide an accurate technical explanation of the company's handover procedure • Complete the required checks / tests to confirm the equipment meets the company operational requirements for handover • Conduct the handover in compliance with all relevant policies and procedures • Clearly communicate the details of the handover including any additional requirements to the relevant parties • Complete all relevant reporting / recording documentation in line with company procedures • Leave the work area in a safe / secure condition for others 	<ul style="list-style-type: none"> • Demonstrate a detailed understanding of the factors which can support and influence a smooth handover of equipment • Take a pro-active lead in effectively communicating the detail of handover arrangements with stakeholders • Demonstrate their ability to develop positive professional relationships with individuals to support handover process • Confidently lead the handover process taking charge of the operation and resolving any issues within their role responsibility • Adapts the method and style of communications to changing circumstances and need 	<ul style="list-style-type: none"> • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the handover process • Consult and involve team members and / or other relevant persons to achieve greater understanding and improved performance • Demonstrate the ability to build positive relationships and actively address conflict / resolve problems with positive outcomes • 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> ensures that work achieves quality standard both occupationally and personally 	NONE	NONE
B3 Working with others	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> gets along well with others and takes into account their needs and concerns 	NONE	NONE
B6 Sustainability and ethical behaviour	<ul style="list-style-type: none"> behaves ethically and undertakes work in a way that contributes to sustainable development 	NONE	NONE
B7 Risk awareness	<ul style="list-style-type: none"> 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: ES&PC 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
EP1 Position, assemble, install and dismantle integrated electrical apparatus, systems and process control equipment	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities in relation to the work to be conducted • Provide an accurate technical explanation for the purpose of the work activity • Demonstrate a clear plan for the work to be undertaken and an understanding of any safety / technical information given • Use tools and equipment to competently achieve the quality standards required by the company in a timely manner • Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures • Deal effectively with any issues within their role responsibilities, where necessary • Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required 	<ul style="list-style-type: none"> • Demonstrate a detailed technical knowledge of the methods and processes used to conduct the work • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Make recommendations / suggestions to improve work efficiencies • Produce a detailed work plan to support the work delivery including measures to deal with contingencies 	<ul style="list-style-type: none"> • Demonstrate deeper technical / commercial knowledge of the equipment / operation e.g. installation costs, technical requirements planning, sustainability of equipment etc. • Identify and implement tangible changes that improve the efficiency of the work being conducted • Identify and take action to report or deal with issues of non-conformity / compliance • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken

Specialist Pathway Skills: ES&PC 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
EP2 Carry out planned, unplanned and preventative maintenance procedures on integrated plant and equipment	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities in relation to the work to be conducted • Provide an accurate technical explanation for the purpose of the maintenance work • Demonstrate a clear plan for the work to be undertaken and an understanding of any safety / technical information given • Use tools and equipment to competently achieve the quality standards required by the company in a timely manner • Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures • Deal effectively with any issues within their role responsibilities, where necessary • Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required 	<ul style="list-style-type: none"> • Demonstrate a detailed understanding of the process and principles of preventative maintenance • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Make recommendations / suggestions to improve work efficiencies • Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies 	<ul style="list-style-type: none"> • Demonstrate deeper technical / commercial knowledge of the maintenance operation being undertaken e.g. installation costs, technical requirements, planning, corrective / preventative • Identify and implement tangible changes that improve the efficiency of the work being conducted • Identify and take action to report or deal with issues of non-conformity / compliance • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken

Specialist Pathway Skills: ES&PC 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
EP3 Replace, repair and/or remove components within integrated plant and equipment and ensure its return to operational condition	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities in relation to the work to be conducted • Provide an accurate technical explanation for the purpose of the maintenance work • Demonstrate a clear plan for the work to be undertaken and an understanding of any safety / technical information given • Use tools and equipment to competently carry out the removal / replacement of components in a logical sequence and timely manner • Conduct the work in compliance with all relevant regulatory requirements and company procedures • Deal effectively with any issues within their role responsibilities, where necessary • Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required 	<ul style="list-style-type: none"> • Demonstrate a detailed understanding of the causes and principles of component degradation • Demonstrate a detailed understanding of the limits / restrictions of component replacement or repair e.g. In terms of reliability, certification of instruments / systems etc. • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Make recommendations / suggestions to improve work efficiencies • Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies 	<ul style="list-style-type: none"> • Demonstrate deeper technical / commercial knowledge of the repair / replacement work being undertaken e.g. costs, effect on maintenance periods, equipment sustainability • Identify and implement tangible changes that improve the efficiency of the work being conducted • Identify and take action to report or deal with issues of non-conformance/ compliance • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken

Specialist Pathway Skills: ES&PC 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
EP4 Diagnose and determine the cause of faults within integrated plant and equipment	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities in relation to the fault diagnosis to be conducted • Provide an accurate technical explanation for the purpose and process of the fault's activity • Demonstrate a clear plan for the diagnosis to be undertaken and an understanding of any safety / technical information given • Competently use the correct tools, equipment, technical data and diagnostic techniques to identify, locate and diagnose fault/s in a timely manner • Correctly analyse and interpret the results of the fault-finding techniques conducted • Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures • Complete the required checks and tests to confirm the work meets the accuracy, finish and quality standards required 	<ul style="list-style-type: none"> • Demonstrate a detailed understanding of the theory / principles of relevant diagnostic techniques • Able to identify the root cause of the fault and preventative measures • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Make recommendations / suggestions to improve work efficiencies • Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies 	<ul style="list-style-type: none"> • Demonstrate deeper technical / commercial knowledge of the effect of fault diagnosis and repair e.g. fault analysis, costs, prevention, lost time • Identify and implement tangible changes that improve the efficiency of the work being conducted • Identify and take action to report or deal with issues of non-conformity / compliance • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken

Specialist Pathway Skills: ES&PC 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
EP5 Calibrate and configure integrated electrical apparatus, systems and process control equipment	<ul style="list-style-type: none"> • Demonstrate a clear understanding of their role and responsibilities for the calibration/configuration activity to be undertaken • Provide an accurate technical explanation for the purpose and process of the calibration work • Demonstrate a clear plan which takes into consideration the effects of calibration on the operation of interacting systems • Competently use the correct tools, equipment and technical data to calibrate and configure instruments and / or systems in a timely manner • Complete the required tests / checks to confirm the consistency and accuracy of calibrated instruments / systems • Conduct the work in compliance with all relevant regulatory requirements and company policies and procedures • Record the results / outcomes of calibration work in line with company requirements 	<ul style="list-style-type: none"> • Demonstrate a detailed understanding of the theory / principles of system/equipment calibration • Demonstrate a detailed understanding of methods to prevent unplanned shutdown of interacting equipment when conducting calibration • Pro-actively works with others to identify areas for improvement and follows through on agreed implementation • Make recommendations / suggestions to improve work efficiencies • Produce a detailed work plan to support the maintenance operation including measures to deal with contingencies 	<ul style="list-style-type: none"> • Demonstrate deeper technical knowledge of equipment calibration and configuration e.g. system / equipment parameters, tolerances, settings • Identify and implement tangible changes that improve the efficiency of the work being conducted • Identify and take action to report or deal with issues of non-conformity / compliance • Demonstrate the ability to take a lead in accepting additional responsibility and autonomy to achieve / improve the work being undertaken