Institute for Apprenticeships & Technical Education

End-point assessment plan for Aircraft certifying technician apprenticeship standard

Apprenticeship standard reference number	Apprenticeship standard level	Integrated end-point assessment
ST0019	4	No

Contents

Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Aircraft certifying technician apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Aircraft certifying technician apprentices, their employers and training providers.

Full time apprentices will typically spend 45 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices must spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is deemed to be consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and can be evidenced to an EPAO.

As a gateway requirement and prior to taking the EPA, apprentices must achieve all approved qualifications mandated in the Aircraft certifying technician occupational standard.

These are:

- Level 2 Diploma in Aerospace and Aviation Engineering (Foundation Competence) Level 4 EASA Part 66 B licence modules or equivalent military authorisation
- Level 4 Aerospace and Aviation (Development Competence)

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and mathematics minimum requirement is Entry Level 3. British Sign Language (BSL) qualifications are an alternative to English qualifications for those who have BSL as their primary language.

The EPA must be completed within an EPA period lasting typically three-months, after the EPA gateway.

The EPA consists of three discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Demonstration by task

- fail
- pass

Assessment method 2: Technical interview

- fail
- pass

Assessment method 3: Professional interview underpinned by a portfolio of evidence

- fail
- pass
- distinction

Performance in the EPA will determine the overall apprenticeship standard grade of:

- fail
- pass
- distinction

EPA summary table

On-programme (typically 45 months)	• Training to develop the occupation standard's knowledge, skills and behaviours (KSBs). • Training in English and mathematics to level 2, if required • Training towards mandated qualifications • Compilation of a portfolio of evidence
End-point assessment gateway	The employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. Apprentices must achieve the following approved qualifications mandated in the occupational standard: • Level 2 Diploma in Aerospace and Aviation Engineering (Foundation Competence) • Level 4 EASA Part 66 B licence modules or equivalent military authorisation • Level 4 Aerospace and Aviation (Development Competence) • English and mathematics Level 2 For the demonstration by task, the EPAO must liaise with the employer to establish where the assessment method will be conducted. For the professional interview, apprentices must submit a portfolio of evidence to support the professional interview.
End-point assessment (which will typically take three months)	Assessment method 1: Demonstration by task With the following grades: • fail

	• pass Assessment method 2: Technical interview With the following grades: • fail • pass Assessment method 3: Professional interview underpinned by a portfolio of evidence With the following grades: • fail • pass • distinction Overall EPA/apprenticeship graded: • fail • pass • pass with distinction
Professional recognition	Aligns with recognition by: a Professional Engineering Insitute (PEI) licensed by the Engineering Council: Engineering Technician (EngTech)

Length of end-point assessment period

The EPA will be completed within an EPA period lasting typically three-months, after the EPA gateway.

Order of assessment methods

The assessment methods can be delivered in any order. The result of one assessment method does not need to be known before proceeding to the next.

Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they are deemed to have achieved occupational competence. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

In addition, an apprentice must have completed the following gateway requirements prior to beginning EPA.

Achieved English and mathematics level 2, as a minimum. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

Apprentices must achieve the following approved qualifications as mandated in the occupational standard:

- Level 2 Diploma in Aerospace and Aviation Engineering (Foundation Competence)
- Level 4 EASA Part 66 B licence Modules or equivalent Military authorisation
- Level 4 Aerospace and Aviation (Development Competence)

For the demonstration by task, the following requirements apply:

- the EPAO must liaise with the employer to establish where the assessment method will be conducted
- the environment for the location of the assessment must be Civil Aviation Authority (CAA) or Military Aviation Authority (MAA) approved
- there must be multiple aircraft options available in order to reduce predictability

The demonstration by task can take place in an emulated, simulated or employer environment. The aircraft can be live, decommissioned (emulated) or simulated. See delivery section of assessment method 1 for details.

For the technical interview, no specific requirements.

For the professional interview, the apprentice will be required to prepare and submit a portfolio of evidence. The portfolio of evidence itself is not assessed; it is used to inform the questioning during the professional interview. See requirements below:

- Apprentices must compile a portfolio of evidence during the on-programme period of the apprenticeship.
- The employer must sign off the portfolio of evidence, thereby authenticating the work it contains.
- It must contain evidence of competence for the KSBs mapped to the professional interview.
- Each piece of evidence may map to more than one KSB.
- It will typically contain 10 pieces of evidence.
- Employers/training providers are free to devise their own version of the portfolio of evidence, but the portfolio of evidence would typically contain the following information:
    - the name of the apprentice
    - details of the apprentice's workplace

- evidence which can be provided through a range of sources, for example:
    - performance review documentation
    - witness statements
    - training records/certificates
    - work products such as risk assessments, reports, meeting records, plans etc.
    - examples of completed task cards
    - logbook certificates
    - employer or training provider signed logbook pages
    - photographic evidence used in conjunction with above
    - copies of technical log entries used in conjunction with above
    - CAA or MAA approved logbook or equivalent (e.g. CAP741)

  This is not a definitive list; other evidence sources are possible.

- Evidence cannot include self-assessment narrative but may include reflective accounts when evidencing B12.
- Feedback from line managers, customers, stakeholder etc. can be provided; any employer contributions should focus on direct observation of evidence (for example, witness statements) of competence rather than opinions.
- The portfolio of evidence must not include unverified or self-verified work.
- All evidence must be of sufficient detail as to clearly demonstrate the task completed, data used to carry out the task, any special tooling required and the method testing if appropriate.
- The portfolio of evidence must be fully completed by the gateway point.
- The portfolio of evidence is not assessed but will be used to underpin the professional interview. The independent assessor should review the portfolio to inform questioning and the apprentice should refer to it to support their responses.

Assessment methods

Assessment method 1: Demonstration by task

Overview

This assessment method has two components.

The following activities must be observed during the demonstration by task and without these tasks being assessed, would seriously hamper the opportunity for the apprentice to demonstrate occupational competence in the KSBs assigned to this assessment method:

1. Pre-flight or post-flight activity with questions
2. Maintenance activity with questions

The two components must be carried out in the order as set out above, as the pre-flight or post flight activity with questions needs to take place before the maintenance activity with questions takes place according to aviation sector regulation. If the apprentice fails the pre-flight or post flight activity with questions, they will not be allowed to proceed to the maintenance activity with questions and this will result in the entire demonstration by task being failed. The EPAO must determine activities that complements the apprentice's real job.

It is expected that apprentices will be assessed in the workplace to ensure they are able to demonstrate competence on live aircraft in the real work environment. Only where it is not possible to work on a live aircraft, the demonstration by task may be completed in an emulated, simulated or employer environment. The EPAO is responsible for reducing predictability when a live environment is not used, the employer is responsible for providing multiple aircrafts to facilitate this.

The aircraft can be live, decommissioned (emulated) or simulated.

The EPAO will arrange for the demonstration by task to take place, in consultation with the employer.

One independent assessor must observe one apprentice at any one time, to allow for quality and rigour.

The rationale for this assessment method is:

- this is a practical role, best assessed through demonstration
- the apprentice will be assessed in a familiar environment using familiar tools and equipment, which is likely to enable the apprentice to perform at their best
- the demonstration by task is a cost-effective assessment method, as it makes use of the employer's premises where possible
- the tasks chosen reflect duties that would typically be completed by an Aircraft certifying technician on a regular basis
- the questioning component enables the checking of underpinning knowledge, skills and behaviours
- it is a holistic assessment method

Delivery

Apprentices must be observed by an independent assessor completing the demonstration by task under normal working conditions using equipment and tools with which they are familiar.

An independent assessor must conduct the demonstration by task. The EPAO must arrange for the demonstration by task and questioning to take place, taking into account workplace operations and schedules. The independent assessor must be familiar with the employer's local protocols, safety and security arrangements. The EPAO should liaise with the employer in advance to ensure compliance with their individual security and safety protocol requirements (for example the independent assessor may need to be accompanied).

The EPAO may also liaise with the employer to understand the apprentice's typical duties and responsibilities to ensure that the demonstration by task closely relates to the environment in which they work, e.g. new build aircraft environment, maintenance environment, servicing environment etc. The EPAO will set the demonstration by task and neither the employer nor the apprentice will have any details until the apprentice is briefed on the day of assessment.

If any part of the demonstration by task is carried out on live aircraft, the employer must have an employer representative in attendance, due to Civil Aviation Authority or Military Aviation Authority requirements. The employer representative is only there to ensure that the airworthiness of the aircraft is not affected by the demonstration by task being completed and is not allowed to ask questions, make comments or influence the grading in any way.

Should the apprentice put either themselves others at risk, either the employer representative or the independent assessor can terminate the demonstration by task resulting in a fail of this assessment method.

The independent assessor must be unobtrusive whilst observing the apprentice. All questioning must take place at the end of each component.

The demonstration by task may be split into discrete sections held over a maximum of one working day. The length of a working day is typically considered to be 7.5 hours. This could be to allow the apprentice to move to different parts of the workplace, for meal/comfort breaks or to inform site management of the location to release equipment for assessment, without the movement time counting towards the assessment duration. The apprentice must not communicate with anyone else during these times and must be supervised by the independent assessor or someone from the EPAO.

The demonstration by task and questioning must take three hours, following the structure outlined in each component. The independent assessor has the discretion to increase the time of all components by up to 10% to allow the apprentice to complete the task or questioning. Immediately in advance of each component, apprentices must be provided with verbal and written information on the format of the assessment, including timescales. This briefing time is exclusive of assessment period.

Apprentices are expected to understand and use relevant occupational language that would be typical of an Aircraft certifying technician.

All components include questioning. The purpose of the questioning is to assess underpinning knowledge, skills and behaviours. The EPAO must use a range of question types, e.g.

scenario-based questions, competence-based questions to achieve this. The questioning can assess those KSBs that did not naturally occur although these must be kept to a minimum. Follow up questions can be asked for clarification purposes. Questioning must be conducted under controlled conditions i.e. quiet space, free of distractions and influence. Independent assessors must use the EPAO's question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately. Independent assessors are responsible for generating suitable follow-up questions in line with the EPAO's training and standardisation process.

KSBs observed, and answers to questions, must be documented by the independent assessor, using EPAO documentation. Evidence from the demonstration by task must be assessed holistically using the grading criteria for this assessment method. The independent assessor must make all grading decisions.

EPAOs must ensure that apprentices have a different tasks and questions in the case of re-sits/re-takes.

Component 1 – Pre-flight or post-flight activity with questions

- pre-flight or post-flight activity: 60 minutes
- pre-flight or post-flight activity questioning: 10 minutes

The following activities MUST be observed during the pre-flight or post-flight activity:

- identifying and following specified airworthiness regulatory procedures
- performing functional check or fault diagnosis
- interpreting test result data to determine next steps in aircraft maintenance

The pre-flight or post-flight activity will typically be covered within one task but can be covered in two tasks if required to provide coverage of the KSBs.

Typical tasks include but are not limited to:

- check the technical log for defects and maintenance required
- general inspection of the exterior of the aircraft for damage, corrosion or deformation; check exterior lights for operation
- inspection of the landing gear for correct oleo extension, check for damage to and condition of tyres and brakes
- assess condition of flying control surfaces for damage
- inspect hydraulic systems for correct levels, leaks and filter pop outs
- check engines APU for damage to compressors / turbines, check engine oil levels and check for leaks
- check cabin for damage and correct operation of lights
- carry out built in tests if applicable and record results
- helicopters only – inspect main and tail rotors for condition, inspect gearboxes for condition, check for leaks, check oil levels and filter pop outs

The independent assessor must ask a minimum of two open questions. Questions must be asked after the pre-flight or post flight activity (maximum 10 minutes).

Component 2 – Maintenance activity with questions

- Maintenance activity: 90 minutes
- Maintenance activity questioning: 20 minutes

The following activities MUST be observed during the maintenance activity:

- selecting and correctly using hand/machine tools and equipment
- conducting maintenance task(s) and inspection to industry standards
- working safely and efficiently throughout the task(s)
- completing appropriate documentation ensuring that it is saved and stored correctly

The maintenance activity will typically be covered within one task but can be covered in two tasks if required to provide coverage of the KSBs.

The independent assessor must ask a minimum of five open questions. Questions must be asked after the maintenance activities (maximum 20 minutes).

Assessment location

It is expected that the apprentice will be assessed in the workplace. Where this is not possible, in exceptional circumstances due to aviation sector regulation, the EPAO is responsible for ensuring that the apprentice is assessed under normal conditions, in a familiar environment, using familiar resources/equipment that are representative of the apprentice's workplace. It must an approved CAA or MAA facility that provides at least two different types of aircraft to reduce predictability.

The External Quality Assurance provider will measure the impact of using an alternative location on the validity and comparability of end-point assessments as part of any External Quality Assurance activity for this apprenticeship standard.

Civil Aviation Authority or Military Aviation Authority guidelines do not permit the use of video during this assessment method.

Where access to an employer’s site requires the independent assessor to be accompanied by a facility escort, the employer is responsible for liaising with the EPAO to ensure that this is provided.

Questions and resources development

EPAOs will produce specifications to outline in detail how the demonstration by task will operate, what it will cover and what should be assessed. It is recommended that this be done in consultation with employers. EPAOs should put in place measures and procedures to maintain the security and confidentiality of their specifications if employers are consulted. Specifications must be standardised by the EPAO.

EPAOs will create and set open questions to assess related underpinning KSBs.

EPAOs must develop ‘demonstration tasks bank’ and ‘question banks’ of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure the tasks

and questions, are fit for purpose. The questions relating to underpinning KSBs must be varied yet allow assessment of the relevant KSBs.

EPAOs will produce the following material to support this assessment method:

- independent assessor training materials
- assessment specifications
- grading guidance
- a bank of tasks
- a question bank
- assessment recording documentation
- guidance materials for the apprentice

Assessment method 2: Technical interview

Overview

This assessment method has one component.

A technical interview consists of an independent assessor asking an apprentice a series of technical questions to assess their competence against the knowledge elements assigned to this assessment method. The independent assessor's role is restricted to asking set questions, and it is not a discussion. The independent assessor leads this process to obtain information from the apprentice to enable structured assessment decision-making to occur.

The rationale for this assessment method is:

- to test the underpinning knowledge that may not be demonstrated naturally through the other assessment methods
- it allows for a variety of right answers
- it is a verbal method considered more appropriate than written paper, as allows the independent assessor the opportunity to ask follow-up questions

Delivery

The independent assessor will conduct and assess the technical interview.

The technical interview must last for 60 minutes. The independent assessor has the discretion to increase the time of the technical interview by up to 10% to allow the apprentice to complete their last answer.

The technical interview will have a minimum of 10 questions. During this method, the independent assessor must combine questions from the EPAO's question bank and those generated by themselves. Follow-up questions may be asked to seek clarification. The EPAO must use scenario-based and knowledge-based questions.

The purpose of the questions will be to test aircraft fundamentals, mathematical techniques and scientific theories relating to the theory of flight, aerodynamics and aviation maintenance processes.

The technical interview must be appropriately structured to draw out the best of the apprentice's competence and cover the knowledge statements assigned to this assessment method.

The independent assessor will make all grading decisions.

Assessment location

The technical interview should take place in a quiet room, free from distractions and influence.

The technical interview can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises)

Civil Aviation Authority or Military Aviation Authority guidelines do not permit the use of video conferencing to conduct the technical interview.

Where access to an employer's site requires the independent assessor to be accompanied by a facility escort, the employer is responsible for liaising with the EPAO to ensure that this is provided.

Question and resource development

A question bank must be developed by EPAOs. The question bank must be of sufficient size to prevent predictability and the EPAO must review it regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs. Independent assessors must use the question bank as a source for questions and are expected to use their professional judgment to tailor those questions appropriately. Independent assessors are responsible for asking suitable questions in line with the EPAO's training and standardisation process. KSBs met and answers to questions, must be recorded by the independent assessor.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

EPAOs will produce the following material to support this assessment method:

- question bank
- structured specification
- outline of the assessment method's requirements
- assessment recording documentation
- marking materials including a discussion plan, possible outcomes and grading, note taking
- guidance for the apprentice and employer

Assessment method 3: Professional interview underpinned by a portfolio of evidence

Overview

This assessment method has one component.

A professional interview consists of an independent assessor asking an apprentice a series of questions to assess their competence against the KSBs. The independent assessor leads this process and their role is restricted to asking questions to obtain information from the apprentice to enable a structured assessment decision-making process. It is not a discussion.

The rationale for this assessment method is:

- it is cost effective as apart from the venue does not need additional resources
- the professional interview is underpinned by a portfolio of evidence, enabling the apprentice to demonstrate the application of skill and behaviours as well as knowledge
- it allows for assessment of KSBs that do not occur on predicable or regular basis
- it allows for testing of responses where there are a range of potential answers that can't be tested through a written test
- it is a holistic assessment method

Delivery

The independent assessor will conduct and assess the professional interview underpinned by a portfolio of evidence.

Apprentices are expected to understand and use relevant occupational language that would be typical of an Aircraft certifying technician.

The independent assessor will conduct and assess the professional interview on a one-to-one basis.

The professional interview will have a minimum of 10 questions (covering the four themes below). They may ask follow-up questions where clarification is required. The independent assessor must combine questions from the EPAO's question bank and those generated by themselves.

The professional interview must last for 60 minutes. The independent assessor has the discretion to increase the time of the professional interview by up to 10% to allow the apprentice to complete their last answer.

The purpose of the questions will be to cover the following themes:

- communication
- hazard and risk management
- aircraft maintenance principles, methods and applications
- behavioural expectations

The professional interview will be conducted as follows:

- the independent assessor must have a minimum of one week to review the portfolio ahead of the professional interview

- the portfolio of evidence must be available to the independent assessor and the apprentice during the professional interview
- the apprentice will have 5 working days' notice of the professional interview

KSBs met and answers to questions, must be recorded by the independent assessor.

The independent assessor will make all grading decisions. Evidence from the questioning must be assessed holistically using the grading criteria for this assessment method.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional interview.

Assessment location

The professional interview should take place in a quiet room, free from distractions and influence.

The professional interview can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises)

Civil Aviation Authority or Military Aviation Authority guidelines do not permit the use of video conferencing to conduct the professional interview.

Where access to an employer's site requires the independent assessor to be accompanied by a Facility Escort, the employer is responsible for liaising with the EPAO to ensure that this is provided.

Question and resource development

A 'question bank' must be developed by EPAOs. The 'question bank' must be of sufficient size to prevent predictability and the EPAO must review it regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs. Independent assessors must use the question bank as a source for questioning and are expected to use their professional judgment to tailor those questions appropriately. Independent assessors are responsible for generating suitable questions in line with the EPAO's training and standardisation process.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

EPAOs will produce the following material to support this assessment method:

- question bank
- outline of the assessment method's requirements
- marking materials
- guidance document for employers and apprentices on the process/timescales for the professional interview underpinned by a portfolio of evidence as well as a description of the purpose
- guidance document for independent assessors on how to carry out the assessment

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for reasonable adjustment and what reasonable adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA grade.

Grading

Assessment method 1: Demonstration by task

Assessment area/KSBs	Pass: Apprentice meets all pass criteria
Maintenance activities **(K2, K11, S1, S2, S12)**	Uses engineering data to complete task as outlined in the specification. Makes recommendations on how data can be improved and the impact of that improvement. Selects and safely uses hand, mechanical tools and equipment to complete task as outlined in the specification. For example, when using a torque wrench, they understand how to check and set this tool and ensure it is correctly calibrated. Applies appropriate techniques for the inspection, repair and prevention of further damage, fatigue and corrosion on aircraft systems. For example, assess any damage or corrosion, outline the types of repair could be carried out and explains the possible effects of a poor or incorrect report on the airworthiness of the aircraft. Applies their understanding of the structure, properties and characteristics of materials when completing the maintenance activity.
Application of Organisation procedures, appropriate legislation and consideration of human factors **(K5, K6, S3, S6, B11, B13)**	Identifies and follows specified company procedures and controls. Identifies and reports any discrepancies to company reporting system. Establishes due consideration of human factors that affect performance while performing aircraft maintenance activities e.g. tiredness, external influence such as weather conditions or noise, and mitigates those risks. Applies and ensures others comply with the statutory military and/or civil air legislation, quality and organisational requirements for aviation safety and occupational health and safety while carrying out aircraft maintenance techniques. Safely uses ground equipment required in the support of aircraft maintenance. For example, uses aircraft ground power appropriately and selects aircraft jacks appropriate to the task.
Testing and Troubleshooting	Uses trouble shooting techniques and test results obtained from test equipment, both mechanical and electronic against the specified data, to determine next steps in aircraft maintenance activities. For example, using

(K10, K13, S4, S5)	basic test equipment such as a multi-meter and aircraft wiring diagrams demonstrates how electrical faults can be troubleshot and identified. Undertakes aircraft functional checks and fault diagnosis. For example, electrical bonding and earthing; flight control rigging and adjustment. Where appropriate, explain how they supervise aircraft functional checks and fault diagnosis.
Fail: apprentices will fail if they do not meet all the pass criteria	

Assessment method 2: Technical interview

Assessment area/KSBs	Pass: Apprentice meets all pass criteria
Aircraft Maintenance fundamentals **(K1, K3, K7, K8, K9, K14)**	For a given scenario, as determined by the independent assessor, the apprentice: • Explains the mathematical techniques, algebraic expressions, formulae, calculation and physics to demonstrate understanding of the theory of flight, aerodynamics and aviation maintenance processes. • Explains the fundamental methods of electrical, electronic, digital, analogue, aircraft systems and maintenance practices. • Explains the fundamental principles of aircraft propulsion systems including auxiliary power units. • Explains the fundamental principles of aircraft flight control systems including hydraulic systems. • Explains the fundamental principles of aircraft auxiliary systems including undercarriage, doors, cabin interiors, pressurisation and air conditioning. • Explains the fundamental principles of aircraft power and / or electrical power generation systems.
Fail: apprentices will fail if they do not meet all the pass criteria	

Assessment method 3: Professional interview underpinned by a portfolio of evidence

	Pass: Apprentice meets all pass criteria	Distinction: Apprentice meets all pass criteria and fully achieves all distinction criteria
Communication **(S10, B5)**	Explains the range of communication methods they have used and how they adapt their approach/style depending on the stakeholder and situation.	Explains the approach they have used when having difficult conversations and outlines the impact of that.
Hazard and Risk management **(K12)**	Describes the fundamentals of hazard and risk management systems to determine critical issues where safety incidents may occur for products and services including safety management systems used within the aviation sector.	Describes how they have educated others on mitigating risks and outlines the impact of that.
Aircraft Maintenance Principles, Methods and Applications **(K4, S7, S8, S9)**	Explains how they have applied the correct techniques and following engineering fundamentals of the inspection, repair, removal of and replacement of aircraft major assemblies, components, sub-assemblies and systems. Describe how they determine appropriate bonding, joining and assembly techniques and use appropriate bonding/joining materials. Describe how the drill and finish holes to a tight specification.	Compares the different approaches/options for the inspection, repair or removal/ replacement of aircraft major assemblies, components, sub-assemblies and systems and justify their choices. Describes more advanced techniques used in aircraft inspection. Describes more advanced techniques used in the repair and maintenance of aircraft, e.g. how damage to a primary structure would be assessed and the correct techniques and processes used in the repair of this structure.
Behavioural Expectations	Describes how they take responsibility for their tasks and completes them in a timely manner	Explains how they have used a range of approaches to support colleagues, e.g. mentoring/coaching.

(S11, B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B12)	showing a commitment to overcome barriers to success. Describes how they have supported others and outlined the impact it has on the individual and the business. Describes how they maintain a strong work ethic which respects the values of the organisation. Describes how they work methodically and accurately when facing tight deadlines. Explains how they have ensured that their contribution to team activities makes a difference to the business. Explains how they have personally committed to the industry by their adherence to the organisation's management systems including environmental, health and safety, equality and diversity and social and economic sustainability. Explains how they apply a safety-first mind set and explains the impact of that. Explains how they have adapted to changing priorities and how they have assumed full responsibility for their own professional development, seeking opportunities to enhance knowledge, skills and experience. Explains how they act with honesty and integrity during aircraft maintenance, for example the reporting of their errors during maintenance and the consequences of not doing so. Explains how their reflective practice has improved their outcomes over time.	Explains the importance of continuous improvements to organisation and how these affect business outcomes. Explains how poor performance, poor attitude or a lack of commitment reflects on themselves, their team and describes the impact on the business. Compares and contrasts the benefits and disadvantages of different communication techniques and justifies their choices. Describes the impact of not having a safety-first mind-set in a given scenario as determined by the independent assessor.

	Describes how they have provided recommendations for improvement in organisational planning and delivery of working practices to optimise performance.	
Fail: apprentices will fail if they do not meet all the pass criteria		

Overall EPA grading

Performance in the EPA will determine the apprenticeship grade of fail, pass, or distinction.

Independent assessors must individually grade each assessment method, according to the requirements set out in this plan.

EPAOs must combine the individual assessment method grades to determine the overall EPA grade.

Apprentices who fail one or more assessment method will be awarded an overall EPA fail.

Apprentices must gain a pass or higher in all assessment methods to gain an overall pass. Apprentices must gain a distinction in the professional interview and a pass in both the demonstration by task and the technical interview to gain an overall pass with distinction for the apprenticeship.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment method 1 demonstration by task	Assessment method 2 technical interview	Assessment method 3 professional interview underpinned by a portfolio of evidence	Overall grading
Pass	Pass	Pass	Pass
Pass	Pass	Distinction	Pass with Distinction
Fail	Any grade	Any grade	Fail
Any grade	Any grade	Fail	Fail
Any grade	Fail	Any grade	Fail

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit or re-take any failed assessment methods only.

The timescale for a resit/retake is agreed between the employer and EPAO. It is in the interest of the employer and apprentice that a resit is carried out as soon as possible and typically within 2 months of the original EPA outcome notification. The timescale for a retake is dependent on the amount and level of re-training required and is typically taken 6 months of the original EPA outcome notification. All EPA assessment methods shall be within a 6-month period, otherwise the entire EPA needs to be resat/retaken.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to distinction.

Where any assessment method has to be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of pass, unless the EPAO determines there are exceptional circumstances requiring a re-sit or re-take.

Roles and responsibilities

Role	Responsibility
Apprentice	As a minimum, apprentices should: • participate in and complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • undertake 20% off-the-job training as arranged by the employer and EPAO • understand the purpose and importance of EPA • undertake the EPA including meeting all gateway requirements
Employer	As a minimum, employers should: • select the EPAO and training provider • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support a minimum of 20% off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the occupational standard and so is ready for EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • remain independent from the delivery of the EPA • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner (including providing access to any employer-specific documentation as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allow appropriate opportunity for the KSBs to be met • ensure the apprentice is well prepared for the EPA • ensure the apprentice is given sufficient time away from regular duties to prepare for and complete all post-gateway elements of the EPA, and that any required supervision during this time (as stated within this EPA plan) is in place

	• where the apprentice is assessed in the workplace, ensure that the apprentice has access to the resources used on a daily basis • pass the certificate to the apprentice
EPAO	As a minimum, EPAOs should: • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the Register of End-Point Assessment Organisations (RoEPAO) • conform to the requirements of the external quality assurance provider (EQAP) for this apprenticeship standard • understand the occupational standard • make all necessary contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • appoint suitably qualified and competent independent assessors • appoint administrators (and invigilators where required) to administer the EPA as appropriate • provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading • provide adequate information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • arrange for the EPA to take place, in consultation with the employer • where the apprentice is not assessed in the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • develop and provide appropriate assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders • have no direct connection with the apprentice, their employer or training provider. In all instances, ensure there must be no conflict of interest

	• have policies and procedures for internal quality assurance (IQA), and maintain records of regular and robust IQA activity and moderation for external quality assurance (EQA) purposes • deliver induction training for independent assessors, and for invigilators and/or markers (where used) • undertake standardisation activity on this apprenticeship standard for all independent assessors before they conduct an EPA for the first time, if the EPA is updated and periodically as appropriate (a minimum of annually) • manage invigilation of apprentices in order to maintain security of the assessment in line with the EPAO's malpractice policy • verify the identity of the apprentice being assessed • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard • provide details of the independent assessor's name and contact details to the employer • have and apply appropriately an EPA appeals process • request certification via the Apprenticeship Service upon successful achievement of the EPA
Independent assessor	As a minimum, independent assessors should: • have the competence to assess the apprentice at this level and hold any required qualifications and experience in line with the requirements of the independent assessor as detailed in the IQA section of this EPA plan • understand the occupational standard and the requirements of this EPA • have, maintain and be able to evidence up-to-date knowledge and expertise of the subject matter • deliver the end-point assessment in-line with the EPA plan • comply with the IQA requirements of the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider; in all instances, including when the EPAO is the training provider (i.e. HEI) • attend induction training

	• attend standardisation events when they begin working for the EPAO, before they conduct an EPA for the first time and a minimum of annually on this apprenticeship standard • assess each assessment method, as determined by the EPA plan, and without extending the EPA unnecessarily • assess against the KSBs assigned to each assessment method, as shown in the mapping of assessment methods and as determined by the EPAO, and without extending the EPA unnecessarily • make all grading decisions • record and report all assessment outcome decisions, for each apprentice, following instructions and using assessment recording documentation provided by the EPAO, in a timely manner • use language in the development and delivery of the EPA that is appropriate to the level of the occupational standard
Facility Escort	As a minimum, the facility escort should: • follow a brief provided by the independent assessor • accompany the independent assessor to ensure safety and security requirements are maintained • be at the assessment venue and be in situ prior to the assessment • be briefed prior to assessment by the independent assessor • adhere to confidentiality about all aspects of the assessment and the brief they have been provided with • not ask questions that indicate how to complete the practical assessment successfully • not provide guidance or influence the assessment outcome in any way • provide a written statement to confirm that all of the task is attributable to the apprentice
Training provider	As a minimum, training providers should: • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as listed in the occupational standard

	• conduct training covering any knowledge, skill or behaviour requirement agreed as part of the Commitment Statement (often known as the Individual Learning Plan). • monitor the apprentice's progress during any training provider led on-programme learning • advise the employer, upon request, on the apprentice's readiness for EPA • remain independent from delivery of the EPA. Where the training provider is the EPA (i.e. a HEI) there must be procedures in place to mitigate against any conflict of interest
Invigilator	As a minimum, invigilators should: • attend induction training as directed by the EPAO • have no direct connection or conflict of interest with the apprentice, their employer or training provider • invigilate and supervise apprentices during tests and in breaks during assessment methods to prevent malpractice in accordance with the EPAO's invigilation procedures
Employer representative (if required for the demonstration by task)	As a minimum, the employer representative should: • follow a brief provided by the independent assessor • observe the demonstration by task if it is completed on a live aircraft • only terminate the EPA if the apprentice but either themselves or others at risk • be at the assessment venue and be in situ prior to the assessment • be briefed prior to assessment by the independent assessor • adhere to confidentiality about all aspects of the assessment and the brief they have been provided with • not communicate with the apprentice unless they are terminating the EPA due to health and safety reasons • not provide guidance or influence the assessment outcome in any way • provide a written statement to confirm that all of the task is attributable to the apprentice

Internal Quality Assurance (IQA)

Internal quality assurance refers to the strategies, policies and procedures that EPAOs must have in place to ensure valid, consistent and reliable end-point assessment decisions. EPAOs for this EPA must adhere to all requirements within the roles and responsibilities section and:

- have effective and rigorous quality assurance systems and procedures that ensure fair, reliable and consistent assessment across employers, places, times and independent assessors
- appoint independent assessors who have knowledge of the following occupational areas:
    - aviation maintenance
    - quality assurance
    - compliance
    - management

- appoint independent assessors who have recent relevant experience of the occupation/sector at least the same level as the apprentice gained in the last three years or significant experience of the occupation/sector.
- appoint independent assessors who are competent to deliver the end-point assessment and who meet the following minimum requirements:
    - have at least 3 years post apprenticeship aviation industry experience in aircraft maintenance
    - can demonstrate a broad level of experience in aviation maintenance across the subjects delivered within this standard i.e. as a Licenced engineer or verified by their CV have been involved in or have overseen aircraft maintenance activities
    - understand and can demonstrate an understanding of human factors and safety related training
- operate induction training for independent assessors, markers and invigilators
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- where appropriate:
    - provide ongoing training for markers
    - provide ongoing training for invigilators
- undertake standardisation activity on this apprenticeship standard for all independent assessors:
    - before they conduct an EPA for the first time
    - if the EPA is updated
    - periodically as appropriate (a minimum of annually)
- conduct effective moderation of assessment decisions and grades
- conduct appeals where required, according to the EPAO's appeals procedure, reviewing and making final decisions on assessment decisions and grades

Value for money

Affordability of the EPA will be aided by using at least some of the following practice:

- using an employer's premises
- using a training providers premises

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as an Engineering Technician (EngTech) with a Professional Engineering Insitute (PEI) licensed by the Engineering Council

The experience gained and responsibility held by the apprentice on completion of the apprenticeship standard will wholly satisfy the requirements for registration with the professional body. For more details on the requirements and application process, please contact the professional body directly.

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Demonstration by task

Knowledge
K2 Structure, properties and characteristics of materials used in the construction, maintenance and repair of aircraft components, whole structures and sub-assemblies
K5 Statutory military and/ or civil air legislation, quality and organisational requirements for aviation safety and occupational health and safety while carrying out aircraft maintenance techniques
K6 Human factors and how they affect human performance and aircraft maintenance activities
K10 Specialist test equipment used within aircraft maintenance
K11 Fundamentals of methods of aircraft inspection techniques including the identification, control, repair and prevention of damage, fatigue and corrosion
K13 Troubleshooting techniques and the use of test equipment and fault analysis tools i.e. smart troubleshooting trees used in this process

Skills
S1 Read, interpret, explain and suggest improvements to engineering data; drawings, specifications, maintenance manuals, computer generated information and aircraft documentation
S2 Safe selection and use of hand and mechanical tools and equipment while carrying out maintenance of aircraft
S3 Complying with and ensuring others comply with statutory military and/or civil air legislation, quality and organisational requirements for aviation safety and occupational health and safety while carrying out aircraft maintenance techniques
S4 Use, analyse and interpret the results obtained from test equipment, both mechanical and electronic while carrying out aircraft maintenance activities
S5 Undertake and where appropriate supervise aircraft functional checks and fault diagnosis e.g. electrical bonding and earthing; flight control rigging and adjustment
S6 Correct use of ground equipment required in the support of aircraft maintenance
S12 Identification, control, repair and prevention of damage, fatigue and corrosion

Behaviours
B11 Accountability: follows the specified company procedures and controls and be responsible for their monitoring review and development
B13 Demonstrate due consideration of human factors in performing aircraft maintenance activities

Assessment method 2: Technical interview

Knowledge
K1 Mathematical techniques, algebraic expressions, formulae, calculation and physics to understand the theory of flight, aerodynamics and aviation maintenance processes
K3 Fundamentals of electrical, electronic, digital, analogue, aircraft systems and maintenance practices
K7 Fundamentals of aircraft propulsion systems including auxiliary power units
K8 Fundamentals of aircraft flight control systems including hydraulic systems
K9 Fundamentals of aircraft auxiliary systems including undercarriage, doors, cabin interiors, pressurisation and air conditioning
K14 Fundamentals of aircraft power and / or electrical power generation systems

Assessment method 3: Professional interview underpinned by a portfolio of evidence

Knowledge
K4 Appropriate bonding and assembly techniques e.g. in composite assembly
K12 Hazard and risk management systems to determine critical issues where safety incidents may occur for products and services including safety management systems used within the aviation sector

Skills
S7 Inspect, repair, remove and replace aircraft major assemblies, components, sub-assemblies and systems. To include the Identification and installation of mechanical fasteners, measuring and marking out and the selection of the correct materials
S8 Apply sealing and jointing techniques in a wide range of applications

S9 Precisely drill and finish holes in aircraft assemblies
S10 Communicate effectively within the working environment with a range of stakeholders at different levels
S11 Support and encourage the development of others

Behaviours
B1 Strong work ethic: motivated, proactive, committed
B2 Dependability and responsibility: punctual, reliable
B3 Positive attitude: constructive thinking, motivated to succeed, committed to equality and diversity, environmental, social and economic sustainability, safety mind-set
B4 Team player: able to work and interact effectively within a team
B5 Promote effective written, verbal and non-verbal communication
B6 Adaptability: able to adjust to change
B7 Honesty and integrity: truthful, sincere and ethical
B8 Self-motivation: self-starter, able to make appropriate decisions and lead their own professional development
B9 Personal commitment: prepared to make a personal commitment to the industry
B10 Leadership: delivers reliable and dependable results in work outputs, quality, work ethics and self-development, as well as encouraging and supporting the development of others
B12 Reflective: reflects on current and past performance and provides information and recommendations for improvements in planning, delivery of working practices as well as training and development