SEMAE3061

Testing aircraft assisted escape systems

Overview

This standard identifies the competences you need to test aircraft assisted escape systems, in accordance with approved procedures. It includes the testing of units and components associated with ejection seats, canopy jettison and fragmentation systems, parachute assemblies, evacuation chutes, armed emergency doors and other systems, as applicable to the aircraft type. You will be required to select the appropriate tools and equipment to use, based on the operations to be performed and the systems to be tested.

Your responsibilities will require you to comply with organisational policy and procedures for the aircraft assisted escape system tests undertaken, and to report any problems with the testing activities that you cannot personally resolve or that are outside your permitted authority, to the relevant people. You will be expected to work with a minimum of supervision and instruction, taking personal responsibility for your own actions and for the quality and accuracy of the tests that you carry out.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying test procedures for aircraft assisted escape systems. You will understand the escape system under test, and its application, and will know about the test equipment and test techniques, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the tested system performs to the required specification.

You will understand the safety precautions required when testing the aircraft assisted escape systems, in particular those associated with explosive devices for which personnel must be authorised and fully conversant. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. follow the appropriate procedures for use of tools and equipment to carry out the required tests
3. set up and carry out the tests using the correct procedures and within agreed timescales
4. record the results of the tests in the appropriate format
5. review the results and carry out further tests if necessary
6. leave the aircraft and work area in a safe and appropriate condition, free from foreign object debris on completion of the activities

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that you need to observe when testing aircraft assisted escape systems and associated explosive devices (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
2. the health and safety requirements of the work area where you are carrying out the activities and the responsibility these requirements place on you
3. the safety procedures that must be carried out before work is started on the aircraft
4. the protective clothing and equipment (PPE) to be worn and where it may be obtained
5. hazards associated with checking and testing aircraft assisted escape mechanisms and how to minimise them and reduce any risks
6. the correct operating procedures of the system being tested
7. electrical bonding specifications and their importance
8. how to extract and use information from engineering drawings and related specifications (to include symbols and conventions to appropriate BS, ISO or BSEN standards) in relation to work undertaken
9. how to obtain the required test schedules and specifications for the aircraft type being tested and how to check their currency and validity
10. how to read and interpret the test schedules and specifications and from whom you can seek assistance if you have problems or issues regarding the test schedules or specifications
11. the methods and procedures to be used to carry out the various tests on the assisted escape mechanisms and system components
12. test equipment to be used and its selection for particular tests
13. calibration of test equipment (where applicable) and the currency/issue checks to be done
14. the fault finding techniques to be used if the system fails the tests
15. why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the activities
16. the principle of operation of the system under test and the function of the individual components within the system
17. the need to carry out the tests in the specified sequence

18. how to record the results of each individual test and the documentation that must be used
19. from whom to seek authorisation if you need to alter or change the test procedures
20. how to analyse the test results and how to make valid decisions about the acceptability of the aircraft
21. problems that can occur with the testing activities and how they can be overcome
22. the items that may cause errors or discrepancies in/with the test results, and how to avoid these
23. any required environmental control relating to the testing
24. the documentation to be completed at the end of the testing activities
25. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

1.

Carry out all of the following during the testing of the aircraft assisted escape systems:

1.1 obtain and use the appropriate documentation (such as job instructions, aircraft assisted escape equipment test procedures, quality control documentation, history sheets, flight logbook, aircraft standards and specifications)
1.2 adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
1.3 provide and maintain a safe working environment for the testing activities
1.4 obtain the correct tools and equipment for the activity and check that they are in a safe, tested and usable condition and within current calibration date
1.5 obtain clearance to work on the aircraft and observe all relevant safety procedures
1.6 ensure that isolation procedures are followed and that safe working distance procedures are set up
1.7 carry out the tests, using the specified techniques and procedures
1.8 return all tools and equipment to the correct location on completion of the testing activities

2.

Carry out specified checks to one of the following aircraft assisted escape systems, to ensure that correct procedural operation will occur:

2.1 ejection seats
2.2 canopy jettison/fragmentation systems
2.3 parachute assemblies
2.4 evacuation chutes
2.5 armed emergency doors
2.6 other specific escape system

3.

Test aircraft assisted escape systems and equipment, using three of the following tools or test equipment:

3.1 safety ohmmeter
3.2 `special-to-type' test rigs
3.3 connecting equipment
3.4 multimeter
3.5 air pressure gauges
3.6 other specific test devices

4.

Carry out all of the following types of test:

4.1 `no volts' check
4.2 system components tests
4.3 visual Inspection
4.4 continuity checks
4.5 pressure leakage checks
4.6 other specific test

5.

Deal with two of the following levels of complexity during the testing activities:

5.1 equipment with no faults
5.2 equipment with faults
5.3 equipment with intermittent faults

6.

Use three of the following fault finding techniques:

6.1 six point
6.2 input-to-output
6.3 equipment self-diagnostics
6.4 half-split
6.5 function testing
6.6 emergent problem sequence
6.7 injection and sampling
6.8 unit substitution

7.

Review and record fault symptoms and history of problems using four of the following:

7.1 data sheets
7.2 log cards/history sheet
7.3 fault records
7.4 calibration records
7.5 aircraft documentation
7.6 maintenance records
7.7 other specific recording method

8.

Carry out tests in accordance with one of the following standards:

8.1 Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
8.2 Ministry of Defence (MoD)
8.3 Military Aviation Authority (MAA)
8.4 Aerospace Quality Management Standards (AS)
8.5 customer standards and requirements
8.6 Federal Aviation Authority (FAA)
8.7 company standards and procedures
8.8 BS, ISO or BSEN standards and procedures
8.9 specific equipment requirements
8.10 manufacturers standards and procedures

Behaviours

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment

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