SEMAE3192

Implementing aeronautical engineering activities

Overview

This standard identifies the competences you need to implement aeronautical engineering activities, in accordance with approved procedures. You will be required to apply appropriate methods and procedures to ensure that the resources and systems available to you are used effectively and efficiently. You will also be required to identify any opportunities to improve the engineering processes during implementation, such as a new or changed assembly process which involves activities and resources from design office or production engineering.

Your responsibilities will require you to comply with organisational policy and procedures for the implementation of the aeronautical engineering activities, and to report any problems 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, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

You will be expected to have underpinning knowledge that will include resource management principles. Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to implementing aeronautical engineering activities. You will understand your organisation's methods of operation and quality assurance systems in sufficient detail to enable you to make informed decisions and to carry out the implementation activities to the required standard.

You will be aware of any company, legislative or regulatory health, safety and environmental requirements applicable to the engineering activity being implemented. 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. confirm that conditions are suitable to implement engineering activities
2. provide clear and accurate instructions to all the relevant people
3. obtain accurate information on the engineering activities being undertaken
4. ensure that quality assurance systems are correctly implemented
5. ensure that engineering support systems are operating correctly
6. control the use of resources to achieve the most effective results
7. identify opportunities to improve the engineering activities
8. prepare and present report in accordance with organisational requirements
9. ensure that the implementation of engineering activities complies with all relevant regulations and guidelines

Knowledge and understanding

You need to know and understand:

1. how to access information on health and safety regulations and guidelines relating to the engineering activities to be implemented
2. the implications of not taking account of legislation, regulations, standards and guidelines when implementing the engineering processes
3. the requirements and importance of understanding and applying human factors as defined by the regulatory requirements and the potential impact if these are not adhered to
4. the personal protective equipment (PPE) that is required for the work area and process being implemented
5. how to obtain information on the engineering requirements and the type of information that is available (such as customer order requirements and instructions, quality control requirements, product specification, manufacturing methods)
6. how to access and use the appropriate information and documentation systems
7. the engineering methods and procedures that could be used for different types of engineering activity
8. how to identify if conditions are suitable, or not suitable, for different types of engineering activities
9. how and where to obtain details of the engineering activities being undertaken
10. the types of data that you will require to implement the engineering activity (such as activities to be carried out, sequence in which they must be carried out, time scales, resource requirements, health and safety issues)
11. how to extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate BS, ISO or BSN standards) in relation to work being planned
12. the materials, formats, codes and conventions that are used in the drawings and plans
13. the factors to be taken into account when implementing the engineering activity, especially those covering working conditions and safety
14. the main types of resource involved with different types of engineering activity and the typical timescales for providing them
15. how to verify that resources are suitable and available within or to the organisation
16. the timescales for carrying out specific engineering activities and why they must be adhered too
17. the use of the engineering plans (such as both master documents and working instructions, along with their purpose, content and status)
18. the procedures for changing the plans to take account of changed

circumstances or improvements in the process
19. how to present observations and recommendations in the appropriate formats
20. the importance of maintaining records, what needs to be recorded and where records are kept
21. the quality assurance systems that are being used
22. the engineering support systems that are available
23. why contingency plans need to be drawn up
24. whom to inform about the plans
25. the different ways of presenting information to different people
26. the importance of providing the right information at the right time
27. the roles and responsibilities of key personnel in your organisation
28. the problems that can occur during the implementation of the engineering activity and how these problems can be rectified
29. the extent of your own authority and to whom you should report in the event of problems that you cannot resolve
30. the sources of technical expertise if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out all of the following when implementing the aeronautical engineering activities:

    1. use the correct issue of company information
    2. check that all essential information and data needed to implement the engineering activity are available
    3. collect relevant information on the engineering requirements, operations and methods
    4. use the information collected to determine an implementation plan
    5. identify potential problems which may influence the implementation of the engineering activity
    6. check that the appropriate resources will be available at the time they are required
    7. ensure that health and safety regulations and safe working practices are taken into account
    8. ensure that the influence of working conditions is recognised and included in the implementation plans

2. Select two aeronautical engineering activities to implement from the following:

    1. manufacturing activities (such as machining, detail fitting, fabrication of components, moulding)
    2. material processing activities (such as heat treatment, annealing)
    3. finishing activities (such as stripping finishes, painting, plating, anodising)
    4. assembly activities (such as mechanical, structural, fluid power, electrical/electronic)
    5. installation activities (such as mechanical equipment installation, electrical/avionic installation)
    6. modification and repair activities
    7. operational activities (such as movement of materials, quality systems and audit, scheduled safety audits and risk assessments)
    8. equipment capability/performance measurement
    9. commissioning/decommissioning
    10. lifting and moving large components/assemblies (including transportation/delivery)

    11. materials handling (such as movement of materials, materials storage, removal of waste)

12. plant and equipment (such as plant layout, equipment changeover, equipment replacement)

13. research and development
14. maintenance activities
15. testing and trialling
16. capability studies

3. Obtain details of activities and resources from two of the following:

    1. design office
    2. operations office
    3. industrial engineering
    4. quality engineering
    5. production engineering
    6. process engineering
    7. plant engineering
    8. other specific area

4. Confirm that you have the appropriate authorisation for implementing the aeronautical engineering activities and that all of the following conditions are suitable:

    1. appropriate plant and equipment is available
    2. health and safety requirements can be met
    3. materials and components are ready for use
    4. environmental conditions are suitable
    5. required resources are available
    6. work area/site is suitably prepared
    7. time scales for undertaking the activities are as planned

5. Check that clear and accurate information/instructions have been provided to all parties, using the following method:

    1. verbal report

plus one more method from the following:
2. written instructions
3. demonstration
4. written or typed report
5. specific company documentation
6. electronic mail
7. computer based presentation

6. Ensure that quality assurance systems are implemented correctly and confirm that support systems are operating effectively, including one of the following:

1. resource supply (such as materials, equipment and people)
2. transport
3. logistics
4. procurement
5. utilities

7. Prepare and present a report on the implementation activities, including all of the following, using appropriate formats, to the relevant people:

    1. a record of the implementation process
    2. suggested improvements to your process of implementation (if required)
    3. recommendations for improvements or changes to the engineering process that was implemented
    4. an appraisal of the support and quality assurance systems

8. Ensure that implementation methods and procedures used comply with relevant regulations and guidelines, from two of the following:

    1. Civil Aviation Authority (CAA)/European Aviation Safety Agency (EASA)
    2. Ministry of Defence (MoD)
    3. Military Aviation Authority (MAA)
    4. Aerospace Quality Management Standards (AS)
    5. Federal Aviation Authority (FAA)
    6. BS, ISO or BSEN standards and procedures
    7. company policy and procedures
    8. customer policy and procedures
    9. aircraft manufacturer's requirements.

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

SEMAE3192

Implementing aeronautical engineering activities

Developed by	Enginuity
Version Number	3
Date Approved	30 Mar 2021
Indicative Review Date	01 Mar 2024
Validity	Current
Status	Original
Originating Organisation	Enginuity
Original URN	SEMAE3192
Relevant Occupations	Engineer, Engineering, Engineering and Manufacturing Technologies, Engineering Technicians
Suite	Aeronautical Engineering Suite 3
Keywords	implementing; aeronautical; engineering activities; methods and procedures; resources and systems