SEMBIT2-17 - SQA Unit Code F9JJ 04

Contributing to the application of failure modes and effects analysis (FMEA)

Overview

This unit covers the competences required for carrying out failure modes and effects analysis (FMEA). It involves adhering to the principles and processes of FMEA, contributing to the process and supporting the key features of FMEA required for the activity under investigation. The activities will include concepts, designs, systems, products, processes and machines.

You will be required to contribute, as part of a team activity, to the recording of the information gathered in an appropriate format and to the making of valid judgements about the activity, using FMEA principles. This will include calculating risk priority numbers (RPNs), identifying high RPNs and developing actions to improve them. Once actions have been completed, you will need to contribute to the reassessment of the activity and re-scoring of severity, occurrence and detection.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken, and to report any problems with the activities that you can not solve, or that are outside your responsibility, to the relevant authority. You will need to ensure that all the necessary documentation is completed accurately and legibly. You will be expected to take responsibility for your own actions within the activity, and for the quality and accuracy of the work that you produce.

Your underpinning knowledge will provide a good understanding of FMEA, and will provide an informed approach to the techniques and procedures used. You will need to understand the principles and application of FMEA, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

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Performance criteria

You must be able to:

P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines

P2 identify the key features of failure modes and effects analysis required for the activity under investigation

P3 carry out, as a team member, the production of a failure modes and effects analysis

P4 record the information gathered in an appropriate format

P5 contribute to making valid judgements about the activity using failure modes and effects analysis principles

P6 contribute to calculating risk priority numbers (RPNs), identification of high RPNs, and develop actions to improve them

P7 make recommendations for the reassessment of an failure modes and effects analysis once actions have been completed, and to re-scoring severity, occurrence and detection

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Knowledge and understanding

You need to know and understand:

K1 the health and safety requirements of the area in which you are conducting the failure modes and effects analysis

K2 the main features and benefits of carrying out a failure modes and effects analysis

K3 who should be part of a team that constructs and updates a failure modes and effects analysis

K4 the meaning of a failure mode, failure effect or failure cause

K5 the rating scale used in failure modes and effects analysis projects (to include the severity rating scale, the occurrence rating scale and the detection rating scale)

K6 how to calculate a risk priority number (RPN)

K7 how to use the risk priority numbers

K8 the structured approach to risk reduction

K9 when to start a failure modes and effects analysis

K10 when to update a failure modes and effects analysis

K11 the roles of individuals within a failure modes and effects analysis team

K12 the extent of your own authority within the project, and to whom you should report in the event of problems that you cannot resolve

Additional Information

Scope/range related to performance criteria

You must be able to:

1. contribute to the application of a failure modes and effects analysis on **two** of the following:
   - 1.1. concept
   - 1.2. product
   - 1.3. design
   - 1.4. process
   - 1.5. system
   - 1.6. machine
2. contribute to identifying, for the activities analysed, **all** of the following:
   - 2.1. the potential failure modes
   - 2.2. the potential effects from failure modes
   - 2.3. the potential causes of failure modes
3. contribute to establishing rating tables for **all** of the following:
   - 3.1. occurrence
   - 3.2. severity
   - 3.3. detection
4. contribute to identifying and scoring of **all** of the following:
   - 4.1. the likely occurrence of a potential failure modes
   - 4.2. the severity of the potential failure modes
   - 4.3. the likely hood of detection of the potential failure modes

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