
Overview

This unit is about examining technical equipment and interpreting the results of the examinations carried out. It covers determining the case requirements, establishing the continuity and integrity of the items submitted, preparing the test equipment and work area, examining and comparing the items and interpreting the results obtained from the examinations.

You will need knowledge and understanding of the implications of and potential effects of operational constraints; the factors involved in storage and packaging of items; how to select which examination(s) to carry out and how to carry them out; which test equipment to use and how to prepare and use it; how to prepare the work area; health and safety implications and work practices; how to adapt work procedures and practices to cope with different types of item; how to deal with insufficient and suspect results; established best practice in relation to interpreting the results of examinations; how to make balanced decisions and judgements in forming conclusions.

There are four elements

- 1 Determine case requirements on the investigation
- 2 Prepare test equipment and work area
- 3 Carry out examinations and comparisons
- 4 Interpret the results of examinations

Target Group

This unit is aimed at technical support practitioners.

Examine technical support items and interpret findings

Performance criteria

Determine case requirements on the investigation

You must be able to:

- P1 **establish details of the circumstances** and consider these against the exhibits received and the examinations requested
- P2 identify operational constraints which could affect the examinations and clarify these with relevant personnel
- P3 check that items submitted are appropriate for the work to be undertaken and where inappropriate, advise the client of the decision
- P4 establish the best means of storing potential evidence and make arrangements for safe, secure and clean storage facilities
- P5 provide a reliable estimate of resource requirements to relevant personnel
- P6 modify the proposed ways of working to cope with resource constraints in accordance with the advice received
- P7 agree and prioritise the sequence of the various aspects of the work with relevant personnel to enhance the effectiveness of the investigation
- P8 record relevant information accurately, legibly and comprehensively and establish the continuity of potential evidence

Prepare test equipment and work area

You must be able to:

- P9 select and prepare an appropriate work area for the examinations to be carried out
- P10 check that an adequate supply of the necessary materials and personal protective equipment is available for the work to be undertaken and rectify any deficiencies
- P11 check that the **test equipment** required is available, functional and safe in accordance with the specification
- P12 identify and **rectify** non-conforming test equipment in line with the specification
- P13 carry out preparations of work area and **test equipment** safely in accordance with operational constraints

Carry out examinations and comparisons

You must be able to:

- P14 carry out relevant examinations and comparisons safely and in a manner appropriate to the item being examined and the location of the examination
- P15 maintain appropriate procedures throughout the examination and comparison process
- P16 adapt work procedures and practices to allow for different circumstances and conditions and record these adaptations accurately
- P17 identify insufficient and suspect results and take remedial actions in

Examine technical support items and interpret findings

- accordance with best practice(s)
- P18 seek **specialist advice** in instances where additional information is required which is relevant to the investigation
- P19 **record** the examination and comparison results accurately, comprehensively and contemporaneously in accordance with operational constraints
- P20 maintain accuracy and integrity of results by **checking** and verifying them, where necessary
- P21 maintain the continuity of items throughout the examination process in accordance with operational constraints and without jeopardising the integrity of the potential evidence

Interpret the results of examinations

You must be able to:

- P22 use complete, comprehensive and accurate results in the interpretation
- P23 **interpret the results** accurately
- P24 support the interpretation by established best practice(s) and other documented reliable **sources of information**
- P25 identify and evaluate insufficient and suspect results and take remedial actions in accordance with best practice
- P26 identify and record conclusions which do not support a particular hypothesis
- P27 document and submit **conclusions** drawn, in accordance with operational constraints

Examine technical support items and interpret findings

Knowledge and understanding

You need to know and understand:

Determine case requirements on the investigation

- K1 why it is important to establish the details of the case
- K2 how to make balanced decisions and judgements and give advice
- K3 what information to record and the importance of keeping accurate records
- K4 the potential effects of operational constraints and the need to clarify these with relevant personnel
- K5 the implications of working within operational constraints including ethical considerations, legal considerations, resource availability, quality assurance requirements and health and safety requirements
- K6 what resources can be used and how to estimate requirements including finance, personnel, equipment and accommodation
- K7 how to recognise relationships between the case and items received
- K8 the factors involved in the storage and packaging of items
- K9 how to sequence and prioritise the work
- K10 the extent and range of organisation capabilities
- K11 how to establish the continuity and integrity of submitted items

Prepare test equipment and work area

You need to know and understand:

- K12 your responsibilities under Health and Safety Regulations and the implications of non-compliance
- K13 the operational and scientific factors which need to be considered when preparing to carry out different types of examinations
- K14 the implications of working within operational constraints including ethical considerations, legal considerations, resource availability, quality assurance requirements and health and safety requirements
- K15 how to identify and source the types of testing equipment which may be necessary
- K16 how to select the appropriate type of examination to be undertaken
- K17 the importance of knowing the work area and material requirements
- K18 how and when to apply requirements regarding safety arrangements and safety equipment
- K19 how to prepare the work area, test equipment and materials taking account of operational constraints

Carry out examinations and comparisons

You need to know and understand:

- K20 the established best practice(s) in relation to carrying out examinations and comparison
- K21 the implications of working within operational constraints including ethical considerations, legal considerations, resource availability, quality

Examine technical support items and interpret findings

- assurance requirements and health and safety requirements
- K22 what information to record and the importance of recording accurate information
- K23 your responsibilities under the Health and Safety Regulations and the implications of non-compliance
- K24 how to recognise your own limitations and the importance of so doing
- K25 when and how to seek specialist advice
- K26 the operational and scientific factors which need to be considered when performing different types of examinations
- K27 the use and relevance of the types of examinations which need to be undertaken
- K28 what considerations need to be given to the different types of examinations and comparisons
- K29 the importance of identifying insufficient and suspect results and how to deal with these
- K30 how to adapt work procedures and practices to allow for different circumstances and conditions including item size, location of the examinations, condition of the item, time constraints, emergency and risk of contamination

Interpret the results of examinations

You need to know and understand:

- K31 the established best practice(s) in relation to interpreting the results of examinations and comparisons
- K32 what information to record and the importance of recording accurate information
- K33 the implications of working within operational constraints including ethical considerations, legal considerations, resource availability, quality assurance requirements and health and safety requirements
- K34 how to make balanced decisions and judgements in forming conclusions
- K35 how to access and use relevant databases
- K36 the principles and factors involved in processing, evaluating and interpreting the results of the examinations

Additional Information

Scope/range related to performance criteria

Determine case requirements on the investigation

1. **establish details of the circumstances from**
 - 1.1. written
 - 1.2. oral
 - 1.3. drawing

Prepare test equipment and work area

2. **test equipment**
 - 2.1. electrical
 - 2.2. optical
 - 2.3. electronic
 - 2.4. mechanical
3. **rectify** using the following methods
 - 3.1. report
 - 3.2. record
 - 3.3. isolate
 - 3.4. remedy
 - 3.5. replace
 - 3.6. request specialist assistance

Carry out examinations and comparisons

4. **specialist advice**
 - 4.1. internal personnel
 - 4.2. external personnel
 - 4.3. documentation
5. **record**
 - 5.1. written
 - 5.2. photographic
 - 5.3. drawings
 - 5.4. recording devices
6. **checking** results
 - 6.1. written
 - 6.2. drawings
 - 6.3. computer print out
 - 6.4. image processing devices

Interpret the results of examinations

- 7. **interpret** results from the following formats
 - 7.1. written
 - 7.2. drawings
 - 7.3. computer print out
 - 7.4. image processing devices

- 8. **sources of information**
 - 8.1. books
 - 8.2. journals
 - 8.3. reports
 - 8.4. databases
 - 8.5. manufacturer's literature

- 9. **conclusions**
 - 9.1. supporting a single hypothesis
 - 9.2. supporting more than one hypothesis
 - 9.3. not supporting any particular hypothesis

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Examine technical support items and interpret findings

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