Unit:
Unit: Level 3 Fire Detection and Alarm Advanced Maintainer Date Completed: 17 Feb '17
Development Group: FD&A Development Group Revised 13/02/2019

Guided Learning Hours (GLH) 16 Directed Learning (DL) 8 Invigilated Assessment Hours (IA) 2 Total Qualification Time (TQT) 26

Assessment Method: Multi Choice and Short Answer

Learning Outcomes: This is the advanced unit specialising in the role of the Systems Maintainer for the Fire Detection and Alarm Sector. Before completing this unit, learners should already have successfully completed the Level 2 Foundation in Fire Detection and Alarm.

Learners who have successfully completed this unit along with;

- Level 2 Foundation in Fire Detection and Alarm
- Level 2 Environmental for Field Service Technicians
- Level 2 Health and Safety for Field Service Technicians

Will be awarded the FIA AO Level 3 in Fire Detection and Alarm Maintenance, Theory and Regulatory Requirements.

Learners completing this unit will have gained an advanced knowledge and understanding of the legislative requirements, Codes of Practice and Guidance for Systems Maintainers in the FD&A sector of the Fire Industry. They will also have gained best practice methodology, maintenance methodology, false alarm management, communication and documentation

Subject	Knowledge Criteria	Performance Criteria
A. BS 5839/IS 3218	Learners will have knowledge and understanding of: 1. The code of practice (CoP) applicable 2. The service schedules required to comply with CoP 3. Requirements for routine inspections and servicing with respect to: a. Types of detector b. Siting of detectors c. Inspection/Test of detectors d. Inspection/Test of call points e. Inspection/Test of alarm devices f. Inspection/Test of power supplies g. Inspection/Test of part 6 systems h. Inspection/Test of the CIE i. Inspection/Test connections to ARC j. Inspection of cabling k. Verification of cause and effect programming l. Radio signal strength tests m. Analogue detector signal levels 4. Requirements for non-routine attention: a. A new site/contract b. Arrangements for repair of faults or damage c. System modifications d. Unacceptable rate of false alarms e. Following a fire f. Following a long period of disconnection	Learners will be able to: 1. Recognise and apply the relevant, applicable, sections of the CoP according to; a. Type of system b. Country/ Region 2. Recognise and apply schedules for service visits a. Routine Inspection and Servicing i. Types ii. Frequency b. Non- Routine Attention i. Types ii. Necessity 3. Identify and apply the requirements for routine inspections and servicing a. Suitability of detector type b. Siting of detectors c. Routine inspection and performance testing of detection devices as applicable i. Appropriate to detector/system ii. Selection of suitable tools and equipment iii. Appropriate/correct use of test equipment d. Manual call points e. Alarm devices i. Audible devices ii. Visual Alarms iii. Tactile f. Power supplies i. Normal supply

		ii. Chargers iii. Standby supply iv. Labelling and marking v. Appropriate/correct use of tools and equipment vi. Safe working practices g. Part 6 systems h. CIE i. Connections to ARC j. Cabling k. Cause and effect programming l. Radio signal strength on wireless and/or hybrid systems m. Analogue detector levels 4. Identify and apply requirements for non-routine attention a. Type of non-routine inspection i. A new site/contract ii. Arrangements for repair of faults or damage iii. Modifications iv. Unacceptable rate of false alarms v. Following a fire vi. Long period of disconnection b. Selection and use of suitable tools and equipment

	Explanatory Notes Maintenance technicians might have several different levels of skill within a typical company. This means that some might only be able to do regular servicing, whereas others might be able to do special inspections and even modifications. It is important that all maintenance technicians have an understanding of those skill levels, so that the technician knows when they are competent to do certain tests and when they need to pass the work to a colleague.

Subject	Knowledge Criteria	Performance Criteria
B. Documentation	Learners will have knowledge and understanding of: 1. Log book 2. As fitted Drawings 3. Operation and Maintenance (O&M) manuals 4. Zone Plans 5. Completing maintenance documentation 6. Non-Compliance of documentation	Learners will be able to: 1. Review, interpret and complete the log book a. Understand and interpret previous activity b. Identify any areas/parts of the system where a fault may be present c. Calculate the level and record false alarms/unwanted fire signals for the system and identify further investigation if required d. Update the logbook to record the results of the service visit. 2. Review and understand the as fitted drawings as applicable for type of maintenance visit 3. Review and understand the O&M manuals as applicable for the type of maintenance visit 4. Confirm accurate and appropriate provision of zone plan(s) a. Requirements for provision of the zone plan b. Interpret the zone plan as appropriate for the maintenance visit 5. Complete maintenance documentation as appropriate to the maintenance visit a. Identify any/which documentation requires completion b. Enter appropriate information as required following the maintenance visit

		c. Identify and report any outstanding issues making suitable record where required 6. Recommend remedial actions to be taken following non-compliance of documentation
	Explanatory Notes Maintenance technicians need to appreciate the importance of accurate documentation, to them, to their colleagues and to their customers. They will need to use and understand the documentation to get essential information and to be able to record what they have done on site, so that other technicians will be able to pick up where they left off, or at least know what has been tested already and what still needs to be done. It is unlikely that all technicians will have been trained on all of the equipment that they will be required to operate; therefore, they need to be able to get the information necessary from the system documentation.	

Subject	Knowledge Criteria	Performance Criteria
C. Maintenance Methodology	Learners will have knowledge and understanding of: 1. System inspection and testing methods 2. Selection and operation of test equipment 3. Interpreting inspection and test results 4. Fault finding, remedial actions, repair and recommendations 5. Modifications 6. Records	Learners will be able to: 1. Identify and recognise the inspection and testing requirements according to equipment or device under test a. Preparing the system for inspection and test b. Provide an explanation of the inspection and/or test being carried out c. Provide an explanation of any potential risks to operational effectiveness equipment and/or device and any actions required for mitigation d. Restoring the system for use following inspection and test 2. Selection and use of appropriate tools and equipment for inspection and test a. Correct tools/equipment for the task b. Calibration c. Pre-use inspections d. Safe operation 3. Recognise, interpret and verify inspection and test results as applicable a. Recognise inspection and test results as being in line with expected b. Understand inspection and test results c. Verify inspection and test results against pre-defined limits if applicable d. Identify when further/remedial steps are required following verification of inspection and test results

		4. Recognise and identify system, equipment and device faults and any remedial actions/repairs required a. recognise and identify faults in systems, equipment and devices b. Recommend any remedial actions required including escalation/referral c. Provide an explanation of/describe any repairs that may be carried out 5. Recognise where a modification is required and make recommendations if applicable a. Recognise and identify the type of modification required b. Recognise and make recommendations for escalation and referral if required c. Recognise and understand the inspection and testing requirements following completion of modifications 6. Identify the need for accurate recording of work completed during maintenance visits a. Recognise and record activity required for completion of documentation b. Recognise and record activity as best practice over and above that required by the COP

	Explanatory Notes Understanding how to carry out suitable and applicable inspection and testing of the system is a requirement of maintenance and in order to do this the maintenance technician must understand the inspection and test being conducted, how it should be completed, the equipment and tools required and actions to be taken following interpretation of any results. After completion of inspection and testing maintenance technicians will be required to demonstrate what remedial actions may be required and where such remedial actions will need escalation and/or referral to other persons or where such remedial actions are within the skills and scope of the maintenance technician.

Subject	Knowledge Criteria	Performance Criteria
D. False Alarm Management	Learners will have knowledge and understanding of: 1. Categories of false alarms 2. Reviewing false alarm records and calculating false alarm rates 3. Typical causes of false alarms 4. Investigating false alarms 5. Measures to limit false alarms and unwanted fire signals	Learners will be able to: 1. Identify and list the categories of false alarms 2. Understand and interpret false alarm records and carry out calculations for false alarm rate a. Obtain appropriate records of false alarms b. Using records carry out calculations for false alarm rate c. Identify when the false alarm rate is outside of acceptable levels d. Identify when the number of false alarms (excluded from calculations for false alarm rate) or unwanted fire signals are outside of acceptable levels 3. Recognise and identify typical causes of false alarms according to category and local environmental conditions a. Identify the cause of false alarms from symptoms presented b. Identify the causes of false alarms that may be presented according to detector type 4. Recognise and identify the requirements for false alarm investigations and provide an explanation of the requirements for and process of investigation a. With reference to false alarm records identify the requirement for and level of investigation if applicable b. Identify and provide a description of the steps required when carrying out an investigation

		c. Understand and interpret the results of a false alarm investigation 5. Identify and make recommendations for actions which may be taken, to reduce false alarms and prevent unwanted fire signals a. Selection of detector type b. Siting of detectors c. Filtering d. Management and maintenance e. Escalation and referral
	Explanatory Notes False alarms waste money and resource, but they also cause complacency, which can put lives and property at risk. It is essential that false alarms are recorded and reviewed and reduced to acceptable levels	

Subject	Knowledge Criteria	Performance Criteria
E. Premises Management	Will have knowledge and understanding of: 1. The duties of the premises manager, with respect to legislation, testing and keeping the fire alarm system in good order 2. Training the premises manager in the operation of the fire alarm system 3. Communicating non-compliances and faults in the fire alarm system and suggesting/recommending remedial actions 4. Assisting the premises manager in the reduction of false alarms and unwanted fire signals 5. Communicating system status during and following inspection and testing	Learners will be able to: 1. Provide an overview and explanation of the duties of the premises manager, as defined in the applicable Code of Practice 2. Provide an overview and explanation of system functionality a. Confirm the operation and functionality of the CIE b. Confirm the process for completion of user responsibilities (e.g. weekly testing, completion of the log book) c. User replacement of consumables 3. Provide an explanation of identified non-compliances and faults in a system a. How they might affect the overall performance of the system b. Critical failure of the whole or part of the system c. Suggestions for remedial actions d. Preparing premises management for further works 4. Provide an explanation of false alarms, possible causes and recommendations for remedial actions a. Possible causes identified following investigation b. Recommended preventative action c. Recommended remedial action if appropriate

		5. Provide an explanation of the information required by premises management and occupants before, during and after system inspection and test
	Explanatory Notes Premises managers can vary considerably with respect to their knowledge, ability and attitude to safety of employees. The maintenance technician must therefore be skilled in communication so that they are able to effectively relate to all types of manager, to ensure that appropriate understanding is achieved, and that appropriate action is being taken. This unit is not linked to any specific manufacturer and therefore descriptions of functions or features of FD&A systems will be generic and concentrate largely on those commonly available.	

Subject	Knowledge Criteria	Performance Criteria
F. Waste Management	Learners will have knowledge and understanding of: 1. Legal and environmental disposal of equipment, materials and packaging 2. Equipment and materials requiring disposal in accordance with environmental legislation 3. Requirements for transport of hazardous waste to point of disposal 4. Requirements for disposal of hazardous waste	Learners will be able to: 1. Identify and explain the requirement for disposal of equipment, materials and packaging according to legislation and environmental impact a. Identify the environmental legislation according to equipment/materials requiring disposal b. Explain the implications of improper disposal 2. Recognise and identify equipment and materials requiring disposal according to environmental legislation and guidance 3. Recognise special requirements that are applicable for the transport of hazardous waste 4. Recognise special requirements for the disposal for hazardous waste and sources of further information/disposal instructions if required
	Explanatory Notes Some items of equipment are classed as hazardous, such as ionisation detectors and lead acid batteries. There are specific regulations relating to the disposal of such items at end of life, other equipment such as optical detectors and CIE come under the general WEEE directive. Learners will understand general requirements for safe disposal of equipment and packaging and where specified, disposal requirements for equipment and materials classed as hazardous	