EM163 Carry out preventative planned maintenance on instrumentation and control equipment used in food and drink operations		
SQA Unit Code	**HD6A 04**	
Level 3	**SCQF Level 6**	**Credit value 51**

Unit Summary
This standard identifies the competences you need to carry out preventative planned maintenance activities on instrumentation and control equipment used in food and drink operations, in accordance with approved procedures. You will be required to carry out the planned maintenance activities on instrumentation and control equipment including pressure, flow, level and temperature instruments; fiscal monitoring equipment; smoke, heat, gas, water, chemical and metal detection and alarm systems; industrial weighing systems; linear and rotational speed measurement and control; vibration monitoring equipment; photo-optic instruments; analysers recorders and indicators; telemetry systems; emergency shutdown systems and other specific instrumentation. This will involve checking and maintaining a range of equipment and components including valves, actuators, sensors, switches, transmitters, transducers, transponders, wires/cables, pipework and hoses, in order to minimise down time, and to ensure that the instrumentation and control equipment perform at optimum level and function to specification. Food and drink operations is a term used in this standard to cover the following sub sectors of Meat, Drinks, Confectionery, Fresh Produce, Bakery, Seafood and Dairy.

You must ensure that all tools, equipment and materials used in the maintenance activities are removed from the work area on completion of the activities, and that all necessary job/task documentation is completed accurately and legibly.

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.

In order to be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements set out below. Your performance evidence must include at least one observation by your assessor.

You must be able to:	You need to show: Evidence must be work-based, simulation alone is only allowed where shown in ***bold italics***
1. Carry out preventative planned maintenance on instrumentation and control equipment used in food and drink operations This means you:	Evidence of carrying out preventative planned maintenance on instrumentation and control equipment used in food and drink operations as part of your role in accordance with workplace procedures

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Work safely at all times, complying with health and safety and other relevant food and drink regulations, directives and guidelines Follow the relevant maintenance schedules to carry out the required work Carry out the maintenance activities within the limits of your personal authority Carry out the maintenance activities in the specified sequence and in an agreed timescale Report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule Complete the relevant maintenance records accurately and pass them on to the appropriate person Dispose of waste materials in accordance with safe working practices and approved procedures	and within the limits of your own responsibilities.

You need to know and understand: Evidence of knowledge and understanding should be collected during observation of performance in the workplace. Where it cannot be collected by observing performance, other assessment methods should be used.
1. the health and safety requirements of the area in which the maintenance activity is to take place, and the responsibility these requirements place on you not to compromise food safety 2. the isolation and lock-off procedure or permit-to-work procedure that applies to the system, including the critical control points 3. the specific health and safety food and drink precautions to be applied during the maintenance activity, and their effects on others 4. the requirements of the British Retail Consortium (BRC) guidelines and standards in relationship to the maintenance activities 5. the specific requirements of your customer/client specifications in relationship to the maintenance activities 6. your responsibilities in relationship to Hazard Analysis and Critical Control Points (HACCP, TACCP, VACCP) during the maintenance activities 7. what constitutes a hazardous voltage and how to recognise victims of electric shock 8. how to reduce the risks of a phase to earth shock (including insulated tools, rubber

mating and isolating transformers)

9. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance activities
10. hazards associated with carrying out maintenance activities on instrumentation and control systems (including handling fluids, stored pressure/force/temperature, electrical supplies, process controller interface, using damaged or badly maintained tools and equipment, not following laid- down maintenance procedures), and how to minimise these and reduce any risks
11. how to make sensory checks (by sight, sound, smell, touch)
12. where to obtain, and how to interpret drawings, schematic and physical diagrams, specifications, flow charts, manufacturers' manuals, maintenance schedules and other documents required for the maintenance activities
13. the various planned maintenance schedules that are generally used (including condition based maintenance, scheduled maintenance and total preventative maintenance (TPM)
14. the schedules and methods to be followed, in compliance with company procedures for planned maintenance on instrumentation and control equipment
15. the basic principles of how the system functions, its operating sequence, the working purpose of individual units/components and how they interact
16. the principles of the equipment's design features for safe operation in a food or drink environment including minimising the chance of contaminates or foreign bodies in the final product
17. the equipment operating and control procedures, and how to apply them along with the planned maintenance procedures
18. the reasons for making sure that control systems are isolated or put into manual control, and appropriate trip locks, keys or program overrides are inserted, before removing any sensors or instruments from the system
19. the identification of instrument sensors (including how to identify their markings, calibration information, operating parameters and working range)
20. methods of checking and calibrating instruments, and the type and range of equipment that can be used
21. the testing methods and procedures to be used to check that the system conforms within acceptable limits
22. the procedure for obtaining consumables and `lifed' or consumable items that will require replacing during the planned maintenance activity
23. company policy on the repair/replacement of components during the maintenance process
24. how to make adjustments to components/assemblies to ensure that they function to specification
25. the processes in place to segregate the tools and equipment used into high or low risk areas
26. the checks required to ensure that all tools, materials and components are all accountable before operating the equipment
27. the cleaning requirements/policies in place before returning the equipment into full operational production
28. how to compile planned maintenance records/logs/reports, which comply with company policy and procedures
29. the problems that can occur whilst carrying out planned maintenance activities, and how they can be avoided
30. the organisational procedure to be adopted for the safe disposal of waste of all types of materials including any spoilt food or drink products
31. the extent of your own authority and to whom you should report if you have

problems that you cannot resolve

Evidence of performance may employ examples of the following assessment:

- observation
- written and oral questioning;
- evidence from company systems (e.g. Food Safety Management System)
- reviewing the outcomes of work
- checking any records of documents completed
- checking accounts of work that the candidate or others have written

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