

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water



Overview

This unit is about operating swimming pool plant. The unit covers start-up and shut-down, routine maintenance and ensuring that the water quality, clarity and temperature are safe and within the recommended ranges. The purpose of operating the plant could be to carry out routine maintenance to ensure:

- plant efficiency
- plant effectiveness
- plant economy.

The unit is divided into three parts. The first part gives some examples and explanations of some words we use in the unit. The second part describes the three things you have to do. The third part describes the knowledge and understanding you must have.

The unit is intended mainly for Sport and Leisure Centre and Health Club staff who have some responsibility for plant operation. You should have had training and experience relevant to plant operation. The unit is not for engineers who carry out more than routine maintenance.

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

Performance criteria

You must be able to:

- P1 Make sure the **systems** are correctly set for start-up and shut-down
- P2 Begin the start-up and shut-down sequences following the manufacturer's instructions
- P3 Monitor the **systems** for faults and alarms
- P4 Take the correct action to deal with any faults and alarms promptly and according to guidelines
- P5 Follow the emergency action plan in the event of any emergencies
- P6 Complete all the necessary **records** accurately and legibly, and make them available to the responsible colleague when required
- P7 Ensure plant operates within the recommended parameters and standards laid down by the manufacturer or installer and in accordance with nationally accepted guidelines
- P8 Follow all relevant legislation and other safety requirements at all times
- P9 Carry out regular **tests**, visual and audible **checks** and **routine maintenance** according to the prescribed maintenance schedule and log sheet requirements
- P10 Identify any items which need repair and report these to the responsible colleague
- P11 Take the appropriate action when the normal operating procedures are not being met
- P12 Log and report energy and water usage figures, taking appropriate action to deal with wasteful losses and leaks maintain the efficiency and safety of the **plant**
- P13 Monitor the alarms and respond to them following normal operating procedures and the emergency action plan
- P14 Complete all the necessary records and make them available to the responsible colleague when required
- P15 Follow all relevant legislation and meet recommended operating conditions-at all times
- P16 Carry out the regular **tests, monitoring** and **sensory inspections** according to prescribed water test procedures
- P17 Ensure the water remains in optimum condition
- P18 Pay careful and ongoing attention to the alarms which monitor water quality
- P19 Make sure that test equipment is free from contamination
- P20 Take water **samples** in a way that conforms to Normal Operating Procedures -
- P21 Take corrective action when normal operating procedures are not being

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

met and in response to bacteriological test results including:

- faecal
- diarrhoeal
- vomit
- blood
- microbiological

P22 Complete all the necessary records accurately and legibly, and make them available to the responsible colleague when required

P23 Follow all relevant legislation and other safety requirements at all times

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

Knowledge and understanding

You need to know and understand:

- K1 The manufacturer's instructions and the normal operating procedures for the plant
- K2 The chemicals commonly used in pool plant, their effects and the hazards associated with them and the control measures that must be put in place to ensure safe use
- K3 The emergency action plan for the plant
- K4 The records concerning the operation of the plant which need to be kept up
- K5 How to complete the necessary records
- K6 Who is the responsible colleague to make records available to and report equipment needing repair
- K7 The basic requirements of the Health and Safety at Work Act and COSHH regulations as they apply to the operation of plant
- K8 The importance of following instructions for the operation of the plant
- K9 How to set the systems in preparation for start up and shut down
- K10 How to begin start up and shut down sequences
- K11 How to monitor the plant operation during start up and shut down
- K12 How to take corrective action when the normal operating procedures are not met during start up and shut down
- K13 The faults and alarms which may occur during start up and shut down
- K14 The importance of maintaining plant in good working order
- K15 The basic principles of filtration, disinfection, circulation, storage, boilers and heating equipment - and associated measuring and control equipment
- K16 The requirements of the maintenance schedule and logsheets
- K17 Normal rates of energy use and flow, levels of pressure and temperature
- K18 How to carry out the routine tests and maintenance required
- K19 How to calculate, monitor and record energy and water usage figures
- K20 How to identify items needing repair and what to do when they are found
- K21 How to identify when the plant is not running properly
- K22 How to test alarms
- K23 The importance of maintaining the quality and temperature of the water
- K24 The basic principles involved in maintaining water quality

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

- K25 The tests and checks which need to be carried out in order to check the quality and temperature of the water and how to do so
- K26 The remedial actions required for a range of chemical contaminants and biological releases into the pool.
- K27 The importance of uncontaminated test equipment and how to ensure equipment is not contaminated
- K28 How to take the samples required
- K29 The water temperatures which are appropriate for - a range of activities
- K30 The types of corrective action to take when water quality and temperature does not meet standards

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

Scope/range related to performance criteria

a systems

- 1 circulation
- 2 filtration
- 3 disinfection
- 4 heating
- 5 coagulation
- 6 pressure
- 7 measuring
- 8 control

b records

- 1 start up and shut down times
- 2 inlet and outlet pressures
- 3 water and air temperatures
- 4 results of chemical tests
- 5 variations from normal start-up and shut-down procedures
- 6 suggestions for improving normal operating procedures
- 7 chemical levels

a tests and checks

- 1 rates of energy use
- 2 rates of flow
- 3 levels of pressure
- 4 levels of temperature
- 5 measuring and control
- 6 alarms
- 7 energy saving devices
- 8 levels of chemicals in storage and dosing tanks

b plant systems

- 1 filtration
- 2 disinfection
- 3 heating
- 4 pressure
- 5 measuring and control

c routine maintenance to ensure

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

- 1 plant efficiency
- 2 plant effectiveness
- 3 plant economy

a tests and monitoring

- 1 pH
- 2 free and combined disinfectant levels
- 3 air and water temperatures
- 4 relative humidity
- 5 fresh water dilution
- 6 pool loading
- 7 plant running time
- 8 microbiological

the following types of:

b sensory inspections

- 1 water clarity
- 2 water quality
- 3 algae
- 4 foaming
- 5 dissolved particulate matter
- 6 scum lines
- 7 the cleanliness of the pool surround

and the following types of:

c samples

1. the calibration of automatic controls
2. water balance
3. total dissolved solids
4. alkalinity
5. calcium hardness
6. bacteria

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

Glossary

Chemical levels

bulk and day tank levels and gas pressures where appropriate

Circulation systems

including pumps

Coagulation systems

including dosing tanks and pumps

Control systems

including calibration and control

Corrective action

what the candidate should do when there are faults, alarms or variations in the operation of the plant

Disinfection systems

including storage and dosing tanks and pumps

Emergency action plan

the written plan which has been developed by the facility to deal with any emergencies which may occur

Filtration systems

including strainers and filters

Guidelines

those developed by the manufacturer or professional or regulatory bodies and possibly adapted by the facility

Health and safety legislation

mainly the Health and Safety at Work Act but also other pieces of legislation or regulations which may be relevant to the plant, for example the Control of Substances Hazardous to Health regulations

Heating systems

including calorifiers and heat exchangers

Maintenance schedule

the manufacturer's guidelines (possible adapted by the facility) for routine maintenance

SKAC25 (SQA Unit Code - FA4L 04)

Operate plant to maintain the quality of pool water

Measuring systems

including automatic dosing and testing

Normal operating procedures

the procedures which have been developed by the facility to cover normal (non-emergency) working

Plant effectiveness

the plant's ability to maintain optimum operating conditions - and quality as required

Plant efficiency

the plant's ability to maintain water temperature and quality whilst using the minimum amount of energy under the circumstances

Plant economy

maintaining the overall plant running costs to an acceptable level

Pressure systems

including pressure gauges

Responsible colleague

the person with overall responsibility for the plant and the quality of the pool water - usually the line manager or supervisor

This unit links to SKAC28.

**Links to other
NOS**

SKAC25 (SQA Unit Code - FA4L 04)

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