

# Unit of Competency CPCPFS3042

## Conduct annual routine service of complex water-based fire-suppression systems

### Application

This unit specifies the skills and knowledge required to conduct annual routine service procedures to verify that complex water-based fire-suppression system equipment functions as designed for a Class 2-9 building greater than 5000 square metres.

It includes isolating systems to visually inspect and identify non-compliance defects and resetting systems.

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

### Prerequisite Unit

CPCPCM2043 Carry out WHS requirements

### Elements and Performance Criteria

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| 1. Plan the work.                          | <p>1.1 Determine and apply annual routine service operations requirements from AS 1851 Routine service of fire protection systems and equipment (section 1) and appropriate legislative and industry codes.</p> <p>1.2 Identify and apply workplace policies and procedures, work health and safety (WHS) and environmental requirements.</p> <p>1.3 Arrange and confirm appropriate time for conducting the annual routine service with the site contact.</p> <p>1.4 Select and check tools, equipment and personal protective equipment (PPE) for serviceability and report any faults.</p>   |
| 2. Conduct inspections and record results. | <p>2.1 Confirm attendance on site with site contact and follow workplace and organisational procedures for signing in.</p> <p>2.2 Follow site procedures for notifying occupants and/or staff of annual routine service.</p> <p>2.3 Isolate control and indicating equipment (CIE), system interfaces and other plant according to site requirements.</p> <p>2.4 Apply appropriate workplace procedures and risk control measures when inspecting water-based fire-suppression systems.</p> <p>2.5 Identify key control valves and determine their functions regarding installation drawings to conduct routine inspection and tests.</p> <p>2.6 Identify all defects and non-conformances and report according to AS 1851 Routine service of fire protection systems and equipment requirements.</p> <p>2.7 Perform and record visual inspections on complex components.</p> <p>2.8 Perform visual installation and design survey inspections.</p> <p>2.9 Prepare installation and design survey report.</p> |

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| 3. Conduct full function test on water-based components only. | <p>3.1 Confirm appropriate time to conduct full function test with client and discuss the process and shutdowns likely to occur during test.</p> <p>3.2 Confirm coordination of other trades and technicians required to conduct full function test.</p> <p>3.3 Determine from system interface diagram the interfaced system required to operate.</p> <p>3.4 Isolate alarm signalling equipment.</p> <p>3.5 Perform annual testing according to AS 1851 Routine service of fire protection systems and equipment requirements.</p> <p>3.6 Conduct test and confirm operation of all required water-based fire protection system according to the system interface diagram.</p> <p>3.7 Reinstate systems.</p> <p>3.8 Identify and document all defects and non-conformances and report according to AS 1851 Routine service of fire protection systems and equipment requirements.</p> <p>3.9 Prepare and forward to persons for action.</p> |
| 4. Clean up.  | <p>4.1 Clear the work area, and dispose of, reuse or recycle materials in accordance with state and territory legislation and workplace policies and procedures.</p> <p>4.2 Clean tools and equipment, check for serviceability reporting any damage, store and secure according to workplace procedures.</p>  |

## Foundation skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Unit Mapping Information

Supersedes and is equivalent to CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems.

## Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

# Assessment Requirements for CPCPFS3042

## Conduct annual routine service of complex water-based fire- suppression systems

### Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria for this unit by:

- conducting relevant an annual routine service (other than water flow testing) on water-based fire suppression systems with complex components for all the following systems:
  - o a general sprinkler system with pumpset system
  - o a combined sprinkler and hydrant systems
  - o a deluge system
  - o a pre-action system
  - o a pressure reducing valve
  - o a pressure relief valve
- performing two installation and design surveys, one physical and one desktop survey (e.g. plans, specifications, photographic evidence, case studies) on a Class 2-9 building greater than 5000 square metres to produce an inspection report on the following elements:
  - o pipework external condition
  - o sprinkler head condition
  - o sprinkler head obstructions
  - o sprinkler head location and spacing
  - o sprinkler head compatibility and ambient conditions (response time index (RTI) and sprinkler head and spray pattern)
  - o external sprinkler requirements
  - o design standard suitable for current building occupation requirements, such as classification and storage height.

### Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- definitions of basic principles of operation and purpose of components of complex water-based fire protection systems
- general operation of a gauge
- general operation of complex water-based fire-suppression systems
- metric and imperial pressure gauge readings

- system components:
  - air compressors fitted to systems
  - circulation and system pressure relief valves
  - flow switches and associated testing equipment
  - isolating valves associated with water-based fire-suppression system
  - pressure gauges
  - pressure reducing equipment
  - pumpsets associated with water-based fire-suppression system
  - pump starting switches
  - purpose and key requirements of system block plan for installations installed since 1972
  - suction inlet strainers and screens on a static water supply for water-based fire-suppression system
  - system main alarm bell and/or alarm strobe indicating building entry point for emergency personnel
  - system pressure gauge schedules, where required
  - water-based fire-suppression system control and alarm valves and ancillary equipment for control and alarm operation indication/interface
  - water supply tanks, water level indicators and automatic inflow valves
  - water supply underground key-operated valve location
- controls on the pumpset controller panel:
  - fuel gauges
  - indicators
  - main isolating switch
- terminology used in relation to water-based fire-suppression systems
- water-based fire-suppression system applications as defined in AS 2118 Automatic fire sprinkler systems or AS 2419 Fire hydrant installations - System design, installation and commissioning
- legislative and industry requirements:
  - dangerous goods regulations
  - licensing arrangements
  - environmental regulations
  - work health and safety (WHS) legislation, regulations and codes
  - relevant Commonwealth and state or territory building acts, regulations and codes, such as National Construction Code (NCC)
  - AS 1851 Routine service of fire protection systems and equipment
- organisational requirements, including:
  - client-specific contractual requirements
  - documentation and information systems and processes
  - legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations
  - use of electronic job scheduling and communication devices

- system interfaces, including:
  - flow switches
  - pressure switches
  - tamper switches
  - valve positioning switches
- devices that operate signals between the water-based fire-suppression system and other services such as:
  - building heating, ventilation and air conditioning (HVAC) services
  - fire brigade monitoring providers
- other life safety systems, including:
  - warning systems
  - fire indicator panel (FIP)
- applying inspections, tests and survey requirements to equipment and systems, according to relevant Australian standards, to determine that they are:
  - capable of operating as intended when originally installed
  - still suitable for the fire hazard or risk being protected, as no change in occupancy or use of the area protected has occurred since the equipment or system was installed or last modified
  - providing the coverage and protection needed to meet original design and performance requirements
- reviewing documentation to verify that installed systems comply with legislative and industry requirements such as:
  - building's essential services or fire safety measures listing
- annual routine service, inspection, testing and surveying as referred to in AS 1851 Routine service of fire protection systems and equipment, including:
  - annual frequency inspection, testing and surveying activities, except water flow proving testing
  - operating pressure reducing valves to verify operation is at required pressures
  - operating pressure relief valves to verify operation is at required pressures
  - operating accelerator/exhauster and double interlock valves to verify operation is at required pressures and delivery time on dry pipe or pre-action systems
- complex components of a water-based fire-suppression systems, including:
  - double interlock systems
  - pressure reducing systems
  - accelerator/exhauster systems
- key control valves which may include those specified in AS 2118 Automatic fire sprinkler systems installed in:
  - associated control valve trim
  - activation small bore pipework to the alarm and control valve assembly
- water-based fire-suppression systems, including:
  - alternate wet or dry systems
  - combined sprinkler or hydrant systems

- o deluge systems
  - o dry systems
  - o pre-action or recycle systems
  - o residential and domestic systems
  - o tail-end systems
- installation and design survey information which may include the annual survey required by AS 1851 Routine service of fire protection systems and equipment, to determine that water-based fire-suppression systems design and installation are not impaired by changes to:
  - o building structure
  - o occupant use
  - o environment
- installation and design surveys conducted from floor level to identify design standard suitable for current building occupation requirements:
  - o building classification
  - o storage heights
  - o external sprinkler requirements
  - o pipework corrosion or damage
- installation and design surveys conducted from floor level to identify design standard suitable for current building occupation:
  - o sprinkler head requirements
  - o compatibility and ambient conditions
  - o head condition
  - o head location and spacing
  - o head obstructions
  - o spray pattern
  - o temperature rating and RTI
- methods of applying sustainability principles and concepts
- testing procedures for:
  - o checking desiccant condition (air dryer or crystals, water separator bowl) and cleaning or replacing as required
  - o checking oil level and visually assessing condition of oil on air compressor
- routine service frequency schedules:
  - o reference to AS 1851 Routine service of fire protection systems and equipment schedules of work conducted at regular frequencies that relate to the work scope for weekly, monthly, and six-monthly inspection and testing activities
- how to access relevant information, including codes and standards
- tools, materials and equipment used for conducting routine services of complex water-based fire-suppression systems
- WHS requirements for conducting routine services of complex water-based fire-suppression systems.

## Assessment Conditions

Assessors must satisfy the requirements for assessors listed in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

## Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>