



Australian Government

**Assessment Requirements for CPCSF8002
Analyse, design and evaluate complex
special hazard fire systems**

Release: 1

Assessment Requirements for CPCSF8002 Analyse, design and evaluate complex special hazard fire systems

Modification History

Release 1.

This version first released with CPC Construction, Plumbing and Services Training Package Version 1.

Replaces superseded equivalent CPCSF7002A Analyse, design and evaluate complex special hazard fire systems.

Performance Evidence

A person demonstrating competency in this unit must satisfy all of the elements, performance criteria and foundation skills of this unit. The person must analyse, design and evaluate complex special hazard fire systems for two different types of projects.

In particular the person must:

- apply a knowledge of fire and related sciences when designing compliant and effective systems that address the specific conditions of the projects being undertaken
- calculate system capacities and performance
- read and interpret a range of design documents, including concept briefs, design briefs, drawings, plans and specifications from the following specialist fields:
 - architectural
 - electrical
 - fire engineer or estimator
 - hydraulic
 - mechanical
 - structural
- use computer software packages and systems relevant to special hazard fire systems design projects, including:
 - project management software
 - hydraulic calculation software
 - estimating software
 - parametric modelling software
- apply project management strategies to ensure contractual obligations are met
- apply legislation, codes, standards, and regulatory and insurance requirements that may apply to special hazard fire systems design projects, including Australian and United States National Fire Protection Association (NFPA) standards
- research appropriate special hazard fire detection and warning systems
- produce and edit special hazard fire systems design drawings using industry standard software that specify:

- layouts
- sections
- details
- external references
- freezing layers
- create detailed hand-drawings and sketches to convey information to on-site workers
- design integrated solutions encompassing fire detection, warning and suppression components for special hazard fire systems as they apply to at least two different types of special hazards requiring the application of different technical solutions.

Knowledge Evidence

A person demonstrating competency in this unit must be able to demonstrate knowledge of:

- characteristics and limitations of products and materials used in fire systems and issues relating to material capability
- contractual processes
- financial management, including:
 - budgeting
 - cost-effectiveness
- fire engineering principles, including:
 - engineered solutions
 - fire modelling
 - innovative fire systems
- fire science sufficient to ensure the design of compliant and effective systems that address the specific conditions of the projects being undertaken, including:
 - fire behaviour and dynamics
 - impact of fire on structures and materials
 - products of combustion
 - fire control strategies
 - fire retardants
 - fire detection technologies
 - fire suppression technologies
 - fire containment
- fire systems' technology and components
- fluid mechanics and hydraulics relating to:
 - pipe range
 - pressure
 - pressure vessels
 - pump selection
 - tank selection
 - water supply

- interconnection of fire systems, including:
 - cause and effect matrix
 - interface with other services
- passive fire safety elements, including:
 - fire modelling
 - identification of passive elements
 - impact of fire systems design on passive elements
 - innovative fire systems
 - specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
- principles of basic physics, including an understanding of:
 - Boyle's Law
 - Charles' Law
 - Dalton's Law
 - Henry's Law
- principles of electrical and electronics theory, including:
 - acoustics and speech intelligibility for occupant warning systems
 - basic operation of common electronic and electrical components used in fire detection and warning systems
 - basic operation of communication protocols on addressable systems, peripheral devices (printers) and high-level interfaces to other communication devices used in fire detection and warning systems
 - definition of voltage ratings as defined in communication and electrical safety regulations, including extra low voltage, low voltage and hazardous voltages
 - effects of AC and DC current in series and parallel circuit paths that includes resistive, inductive and capacitive loads
 - layout of electrical wiring systems to meet communication and electrical safety regulations applicable to fire detection and warning systems
 - relationship between voltage drops around a circuit and applied voltage
 - units used to measure current (AC and DC), power, capacitance, inductance and sound attenuation
- principles of organic and inorganic chemistry, including basic chemical substances and reactions
- principles of thermodynamics, including:
 - effects of heat
 - stratification of gases
 - smoke and heat dynamics
- project management strategies
- protection requirements for different buildings, including the existence of special zones, the egress requirements of occupants, and the construction materials used
- purpose and operation of fire systems, including:
 - layout

- maintenance standards
- performance requirements
- special products and hazards
- system activation and operation
- system operation
- relevant current legislation, codes and standards specific to complex special hazard fire systems, including:
 - building Acts and regulations
 - infrastructure supply regulations
 - Australian and international standards for fire systems
 - National Construction Code (NCC)
 - other fire system standards commonly required by building insurers
- requirements for installation:
 - access requirements
 - work health and safety requirements
- sustainability requirements relevant to the system:
 - energy conservation
 - water conservation
- water supplies, including:
 - booster configurations
 - common water sources
 - conservation requirements
 - in-ground reticulation
- workplace design tools and processes, including the use of software.

Assessment Conditions

Assessment must be conducted in the workplace or a close simulation of the workplace.

Suitable assessment of performance would require:

- equipment:
 - computer with internet and email access
 - software: word processing and spreadsheet functionality; parametric modelling; and proprietary estimating, project management, and hydraulic calculation
- materials:
 - access to current legislation, codes and standards relevant to the jurisdiction and the project being undertaken, including:
 - Australian and international standards for fire systems
 - building Acts and regulations
 - infrastructure supply regulations
 - NCC

- other fire system standards commonly required by building insurers
- project documentation for two special hazard fire systems design projects, including design briefs, design drawings, specifications, construction schedules, product information and other supporting documents.

Assessor requirements

Assessors must satisfy the assessor requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

Links

Companion Volume implementation guides are found in VETNet -

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