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**FIRE AND RESCUE SERVICES -  
STRUCTURAL AND INDUSTRIAL**  
**Demonstrate knowledge of elements of  
construction and loads in fixed and  
mobile property fires**

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<b>level:</b>	<b>4</b>
<b>credit:</b>	<b>8</b>
<b>final date for comment:</b>	March 2008
<b>expiry date:</b>	December 2009
<b>sub-field:</b>	Fire and Rescue Services
<b>purpose:</b>	People credited with this unit standard are able to: demonstrate knowledge of: building construction and services in relation to fire; ship construction, cargoes and services in relation to fire; and vehicle construction, cargoes and services in relation to fire.
<b>entry information:</b>	Prerequisite: Unit 4651, <i>Apply knowledge of structural fire behaviour</i> or demonstrate equivalent knowledge and skills.
<b>accreditation option:</b>	Evaluation of documentation and visit by NZQA and industry.
<b>moderation option:</b>	A national moderation system of moderation networks has been established by the Fire and Rescue Services Industry Training Organisation.
<b>special notes:</b>	<ol style="list-style-type: none"><li>1 Compliance with the fire and rescue service provider's Health and Safety policy and procedures is mandatory.</li><li>2 The primary references for this unit standard are:<ol style="list-style-type: none"><li>a <i>Fire and rescue service provider's requirements</i> refer to the approved training that will include the policies and procedures on safety and operation set down by each fire service employer.</li><li>b Fire Service Manual of Operations and NZ Fire Service training notes. These are available from the NZFS, PO Box 2133, Wellington.</li></ol></li></ol>

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## **Elements and Performance Criteria**

### **element 1**

Demonstrate knowledge of building construction and services in relation to fire.

#### **performance criteria**

- 1.1 Construction types are identified and their effect on fire behaviour is described in accordance with the reference standards.
- Range: residential, commercial, industrial, multi-storey.
- 1.2 Methods of controlling and utilising building services to support incident management strategies are described in accordance with the reference standards.
- Range: heating, ventilation, air conditioning, electrical system, gas systems, lifts.
- 1.3 Methods of controlling and utilising fixed fire detection and protection systems to support fire fighting are described in accordance with the reference standards.
- Range: smoke and heat detectors, sprinkler systems, risers, gas flooding, automatically controlled reaction devices, air sampling systems, communication systems.
- 1.4 Common fire engineering design features are described in accordance with the reference standards.
- Range: protected paths, open paths, safe paths, fire cells, fire compartments.

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**element 2**

Demonstrate knowledge of ship construction, cargoes and services in relation to fire.

**performance criteria**

- 2.1 The effect of bulk cargoes on fire behaviour is described in accordance with the reference standards.
- Range: grain, sulphur, coal, cement, chemicals, petroleum products.
- 2.2 The fire behaviour of vessel types and their construction features are described in accordance with the reference standards.
- Range: tankers, cargo and container vessels, passenger vessels, roll-on-roll-off vessels, fishing vessels, military vessels.
- 2.3 Methods of controlling ship's services for fire fighting are described in accordance with the reference standards.
- Range: heating, ventilation, air conditioning, electrical system, lifts.
- 2.4 Fixed fire detection and protection systems are identified and methods of controlling them for fire fighting are described in accordance with the reference standards.
- Range: smoke and heat detectors, sprinkler systems, risers, gas flooding, automatically controlled reaction devices, communication systems, air sampling systems
- 2.5 Impact of fire fighting operations on ship stability is described in accordance with the reference standards.
- Range: metacentric height, free surface water, fire fighting water.

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**element 3**

Demonstrate knowledge of vehicle construction, cargoes and services in relation to fire.

**performance criteria**

- 3.1 The effect of bulk cargoes on fire behaviour is described in accordance with the reference standards.
- Range: grain, sulphur, coal, chemicals, livestock, petroleum products, passenger.
- 3.2 Construction features of vehicle types are described in terms of their effect on fire behaviour in accordance with the reference standards.
- Range: truck, truck and trailer, bus, railway rolling stock.
- 3.3 Vehicle's fuel type is identified, and its effect on fire behaviour is described in accordance with the reference standards.
- Range: petrol, diesel, liquefied petroleum gas, compressed natural gas.
- 3.4 Procedures for isolating vehicles' electrical systems are described in accordance with the reference standards.
- 3.5 Special hazards associated with vehicles are described in accordance with the reference standards.
- Range: auxiliary power units, air and brake lines, air conditioning, biohazards, electrical systems.

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**Comments on this unit standard**

Please contact the Fire and Rescue Services Industry Training Organisation [info@frsito.org.nz](mailto:info@frsito.org.nz) if you wish to suggest changes to the content of this unit standard.

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**Please Note**

Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0039 which can be accessed at <http://www.nzqa.govt.nz/site/framework/search.html>.