



Fire & Rescue Services ITO

**Assessor Assessment Guide**  
**Unit Standard 16944**  
**Apply knowledge of advanced fire development in structures and**  
**compartments**  
**(Level 5, Credit 10, Version 2)**

In order to achieve competency in this unit standard a candidate must display an understanding of the knowledge components by completing an oral or written assessment and practically demonstrate the performances required to classify the processes and conditions governing ignition and flame spread; analyse the fundamentals of advanced fire development; and demonstrate knowledge of fire severity in structure fires.

This assessment may take place at a real or at a simulated practical event.

The assessor may elect to question candidates during completion of the practical assessment to ensure theoretical knowledge can be applied during practice. This technique also provides the assessor with reinforcement that knowledge has been retained.

Where a candidate is being assessed on the basis of a RCC process evidence must be produced that indicates a candidate has successfully directed operations at a defensively controlled fire at both structure and vehicle fires in a safe manner without causing avoidable environmental or equipment damage.

**Assessors may use this guide to record evidence of a candidates overall performance but should be aware that this may not, on its own be an adequate record for moderation purposes without appropriate notes or appendices. Notes should include a summary of the process used and a statement about the quality of the candidate's performance.**

**ASSESSORS SHOULD ALWAYS REVIEW THE REQUIREMENTS CONTAINED IN THE UNIT STANDARD DOCUMENT PRIOR TO CONDUCTING ASSESSMENTS**

For this unit the following resources are available from FRSITO to assist Learners, Instructors and Assessors:

- Assessor Assessment Guide
- Learner Assessment Guide

Assessors: General Notes:

- Candidate is recommended to gain Unit Standard 4651, *Apply knowledge of structural fire behaviour* before attempting this Unit Standard
- Candidate must hold Unit Standard 16943, *Identify principles of fire development in structures and compartments*, before this Unit Standard can be registered on their NZQA Record of Learning

Assessors Name	_____	Assessor No.	_____
Candidate Name	_____	NZQA No.	_____
Date of Assessment	_____	Final Result	_____

**Level Descriptor**

Level	Process	Employing	Responsibility
5	<b>Carrying out processes that:</b> <ul style="list-style-type: none"> <li>Require a wide range of specialised technical or scholastic skills</li> <li>Involve a wide choice of standard and non-standard procedures</li> <li>Are employed in a variety of routine and non-routine contexts</li> </ul>	<b>Employing:</b> <ul style="list-style-type: none"> <li>A broad knowledge base with substantial depth in some areas</li> <li>Analytical interpretation of a wide range of data</li> <li>The determination of appropriate methods and procedures in response to a range of concrete problems with some theoretical elements</li> </ul>	<b>Applied:</b> <ul style="list-style-type: none"> <li>In self-directed and sometimes directed activity</li> <li>with broad general guidelines or functions</li> <li>With full responsibility for the nature, quantity and quality of outcomes</li> <li>With possible responsibility for the achievement of group outcome</li> </ul>

	Information or actions that may provide support for competency	
General	<b>Has the candidate:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Gained Unit Standard 16943?</li> <li><input type="checkbox"/> Satisfactorily completed a pre course self test?</li> <li><input type="checkbox"/> Satisfactorily completed an oral or written on course or post knowledge assessment?</li> <li><input type="checkbox"/> Satisfactorily completed simulation exercises?</li> <li><input type="checkbox"/> Attend a course covering the Unit Standard subject matter?</li> <li><input type="checkbox"/> Provided proof of experience through records?</li> <li><input type="checkbox"/> Practically demonstrated in a practical scenario?</li> <li><input type="checkbox"/> Other (please list)?</li> </ul> <hr/> <hr/>	Assessor Notes:

Element and PC	Evidence Typical answer/product/performance expected from the learner/candidate(s)	Judgement Statement (A statement that defines the standard to be achieved)	Result C/NYC
1	<b>Classify the processes and conditions governing ignition and flame spread.</b>		
1.1	Candidate must classify the typical sources of ignition according to interacting factors at the point of fire origin.  <b>Did the candidate:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Classify the sources of ignition?</li> </ul> <b>Assessor notes:</b>	<b>Typical sources of ignition are classified according to interacting factors at the point of fire origin.</b>	

Element and PC	Evidence Typical answer/product/performance expected from the learner/candidate(s)	Judgement Statement (A statement that defines the standard to be achieved)	Result C/NYC
1.2	<p>Candidate must identify heat transfer processes dominant in different types of fire spread in relation to structural properties of the compartment of origin.</p> <p><b>Did the candidate:</b></p> <p><input type="checkbox"/> Identify dominant heat transfer processes?</p> <p><b>Assessor notes:</b></p>	<p><b>Heat transfer processes dominant in different types of fire spread identified in relation to structural properties of the compartment of origin</b></p>	

Element and PC	Evidence Typical answer/product/performance expected from the learner/candidate(s)	Judgement Statement (A statement that defines the standard to be achieved)	Result C/NYC
<b>2</b>	<b>Analyse the fundamentals of advanced fire development.</b>		
2.1	<p>Candidate must apply temperature and time curves describing fire development are applied to typical variables in fuel type, fuel load, and construction configuration.</p> <p><b>Did the candidate:</b></p> <p><input type="checkbox"/> Apply temperature and time curves to fire development?</p> <p><b>Assessor notes:</b></p>	<p><b>Temperature and time curves describing fire development are applied to typical variables in fuel type, fuel load, and construction configuration.</b></p>	
2.2	<p>Candidate must identify the effects that variables in fuel types, fuel loads, and construction configurations have on fire development</p> <p><b>Range:</b> fuel types may include but not limited to-</p> <p><input type="checkbox"/> cellulose</p> <p><input type="checkbox"/> plastic</p> <p><input type="checkbox"/> liquid</p> <p><b>Did the candidate:</b></p> <p><input type="checkbox"/> Satisfy the requirements of the range?</p> <p><b>Assessor notes:</b></p>	<p>Effects that variables in fuel types, fuel loads, and construction configurations have on fire development are identified</p>	

Element and PC	Evidence Typical answer/product/performance expected from the learner/candidate(s)	Judgement Statement (A statement that defines the standard to be achieved)	Result C/NYC
2.3	<p>Candidate must identify the effects that ventilation characteristics have on developing fires</p> <p><b>Range:</b> may include but is not limited to –</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> fire development</li> <li><input type="checkbox"/> fire control</li> <li><input type="checkbox"/> smoke funnelling</li> <li><input type="checkbox"/> smoke training</li> <li><input type="checkbox"/> heat control</li> </ul> <p><b>Did the candidate:</b></p> <p><input type="checkbox"/> Satisfy the requirements of the range?</p> <p><b>Assessor notes:</b></p>	<p><b>Effects that ventilation characteristics have on developing fires identified</b></p>	

Element and PC	Evidence Typical answer/product/performance expected from the learner/candidate(s)	Judgement Statement (A statement that defines the standard to be achieved)	Result C/NYC
<b>3</b>	<b>Demonstrate knowledge of fire severity in structure fires.</b>		
3.1	<p>Candidate must identify the differences between fuel controlled and ventilation-controlled fires across various fuel and construction types.</p> <p><b>Did the candidate:</b></p> <p><input type="checkbox"/> Identify differences appropriately?</p> <p><b>Assessor notes:</b></p>	<p><b>The differences between fuel controlled and ventilation-controlled fires across various fuel and construction types identified.</b></p>	
3.2	<p>Candidate must factor in the main heat transfer processes in a fully developed compartment fire with structural decomposition and structural integrity losses.</p> <p><b>Did the candidate:</b></p> <p><input type="checkbox"/> Factor in heat transfer?</p> <p><b>Assessor notes:</b></p>	<p><b>The main heat transfer processes in a fully developed compartment fire are factored into structural decomposition and structural integrity losses.</b></p>	

<b>Element and PC</b>	<b>Evidence</b> <b>Typical answer/product/performance expected from the learner/candidate(s)</b>	<b>Judgement Statement</b> <b>(A statement that defines the standard to be achieved)</b>	<b>Result</b> <b>C/NYC</b>
3.3	Candidate must apply the principles of smoke flows inside and outside of compartments to fire development rates and fire intensity rates.  <b>Did the candidate:</b>  <input type="checkbox"/> Apply smoke flow principles?  <b>Assessor notes:</b>	<b>The principles of smoke flows inside and outside of compartments are applied to fire development rates and fire intensity rates.</b>	