Australian Government

DEFEO607C Determine the properties of explosive ordnance

Release 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

DEFEO607C Determine the properties of explosive ordnance

Modification History

Release	TP version	Comments
2	DEF12 V2	Layout adjusted.
1	DEF12 V1	First release.

Unit Descriptor

This unit covers the competency required to determine the properties of explosive ordnance through the process of measuring and recording during initiation or firing, in a research environment.

Application of the Unit

This competency normally applies to the individual who is required to determine the properties of explosive ordnance through the process of measuring and recording during initiation or firing, in a research environment.
This unit may apply to an individual who will determine the properties of explosive ordnance independently or may contribute to the determination of the properties of explosive ordnance as a member of a collaborative team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. **Plan for explosive ordnance testing**	1.1 Type of ***explosive ordnance*** and required test or analysis are identified and confirmed in accordance with ***organisation*** policy and procedures 1.2 Nature and type of ***effects or properties to be determined*** are identified 1.3 Appropriate ***methods of measuring and recording*** the desired effects or properties are investigated and selected 1.4 Appropriate firing or initiation techniques and methods are investigated and selected 1.5 ***Work health and safety*** (***WHS***) principles and requirements are identified, incorporated in the plan and observed throughout the testing process 1.6 The test plan is prepared and reviewed
2. **Prepare for explosive ordnance testing**	2.1 Models, simulation and/or prototypes are tested and validated in accordance with established engineering principles 2.2 Modifications or alterations are incorporated into the testing processes based on validation results 2.3 Necessary equipment is either acquired or built given project constraints and available skills and materials 2.4 Experimental designs are developed in liaison with other staff and checked to ensure they meet WHS regulations and standards 2.5 Apparatus is assembled, set up and calibrated 2.6 Routine standardisation procedures are performed prior to the test, and results are recorded in accordance with engineering procedures
3. **Perform explosive ordnance test**	3.1 ***Instrumentation*** required for data collection is tested for functionality in accordance with test requirements 3.2 Explosive ordnance initiation or firing mechanisms are prepared and tested in accordance with Range Standing Orders and organisation policy
4. **Recover equipment and validate results**	4.1 Measurement and recording equipment are recovered and required data is extracted 4.2 Data is analysed for anomalies and 'out of control' conditions and either accepted or rejected 4.3 Data is assessed for validity against required

ELEMENT	PERFORMANCE CRITERIA
	information, known previous test results and/or relevant reference materials
	4.4 Test procedures are recorded and, if necessary, modifications to test procedures are recommended

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- access, interpret and apply technical information related to explosive ordnance
- access, interpret and apply technical information related to explosives
- access, interpret and apply technical information related to measuring and recording
- apply explosive testing processes and techniques
- apply WHS requirements
- develop and use computer programs related to testing
- develop explosive ordnance testing processes and techniques
- maintain documentation and records
- participate in the team
- use testing equipment

Required Knowledge

- analysis processes and techniques
- characteristics, technical capabilities and limitations of explosive ordnance
- characteristics, technical capabilities and limitations of measuring and recording equipment
- composition of teams and roles and responsibilities of team members
- documentation and records requirements
- physics of explosions
- planning
- principles of team work and team aims and objectives
- properties and characteristics of relevant explosives
- relevant WHS requirements
- validation processes

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessment must confirm the ability to:

- adhere to relevant WHS and operational safety requirements
- safely handle explosives and explosive ordnance
- plan tests
- prepare for tests
- carry out tests and measurements
- document procedures
- record and validate results

Consistency in performance

Competency should be demonstrated in a range of actual or simulated explosive ordnance contexts.

Context of and specific resources for assessment

Context of assessment

Competency should be assessed in the workplace or under conditions which accurately simulate a realistic workplace.

Specific resources for assessment

Access is required to:

- facilities and resources used in the research, development and proof of explosive ordnance, including a licensed explosive site and appropriate firing/test range

Method of assessment

This unit may be assessed with the following unit:

- DEFEO101D Work safely with explosive ordnance.

In a public safety environment assessment is usually conducted via direct observation in a training environment or in the workplace via subject matter supervision and/or mentoring, which is typically recorded in a competency workbook.

Assessment is completed using appropriately qualified assessors who select the most appropriate method of assessment.

Assessment may occur in an operational environment or in an industry-approved simulated work environment. Forms of assessment that are typically used include:

- direct observation
- interviewing the candidate
- journals and workplace documentation
- third party reports from supervisors
- written or oral questions

Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the Performance Criteria is detailed below.	
Explosive ordnance may include:	• Actuated devices • Aerial delivered ordnance • Demolition stores • Free flight rockets • Grenades • Guided weapons • Gun ammunition • Missile and rocket motors • Mortars • Propellants • Pyrotechnics and countermeasures • Small arms ammunition • Warheads
Organisation may include:	• Defence organisation • Enterprises that research explosive ordnance • Other government departments or instrumentalities that research explosive ordnance
Effects or properties to be determined may include:	• Explosive patterns • Firing sequences • Flight characteristics • Human factors • Initiation effects • Pressures • Terminal effects • Trajectories • Velocities
Methods of measuring and recording may include:	• Flash x-ray photography • High speed video/photography • Infra red spectrophotometry • Nuclear magnetic resonance spectrophotometry • Spectrophotometry (UV, VIS)
Occupational health and safety requirements may include:	• Calculation and maintenance of net explosive quantity • Calculations of safety distances • Maintaining compatibility • Monitoring environmental conditions • Safe handling of explosives and explosive

	ordnance
Instrumentation may include:	• Electronic sensors • Optical sensors • Pneumatic and hydraulic sensors • Specialised photographic equipment • And may require the development of specialised computer programs to synchronise all instrumentation

Unit Sector(s)

Not applicable.