

Developing & Maintaining Skills in the Explosives Sector in the UK

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Agenda

- ❑ Occupational Standards
- ❑ Qualifications
- ❑ Education & Training

Work in the UK

- ❑ **Occupational map**
- ❑ Functional map
- ❑ Competencies drafted and edited
- ❑ Competencies validated
- ❑ Awarding body
- ❑ Qualifications designed
- ❑ Launch of NVQs

Occupational Map

- ❑ Special effects
- ❑ Quarrying
- ❑ Mining
- ❑ Fireworks
- ❑ Oil & gas
- ❑ Escape mechanisms
- ❑ Demolition/construction
- ❑ Seismology
- ❑ Armed Forces
- ❑ EOD/IED disposal
- ❑ Avalanche control
- ❑ Motor industry
- ❑ Research/testing
- ❑ Training/education
- ❑ Transport and logistics
- ❑ Defence manufacturing
- ❑ Police
- ❑ Forensics
- ❑ Fire prevention/firefighting

Sector	Manage	Supervise	Technical	Operate	Other	Total
Armed forces	4841	5410	2921	27,884	2	41,058
MoD	412	274	358	548		1,592
DSTL	17	46	15	152	16	246
QinetiQ	138	120	178	237	65	738
Air bags (255,000), transport and storage (367,000), disposal, defence manufacturing, quarrying, fireworks etc						632,508

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Functional Map

LEVEL 1 – 12 KEY ROLES

1. Research, design and development
2. Safety management
3. Test and evaluation
4. Manufacture
5. Maintenance
6. Procurement
7. Storage
8. Transport

Functional Map

LEVEL 1 – 12 KEY ROLES

9. Engineering and entertainment
10. Enable the public and armed services to continue their regular activities in peace and war by controlling and removing munition threats
11. Disposal
12. Generic

Functional Map

Level 1

1. Research & Develop Explosive Substances & Articles

Level 2

1.1 Create Complex Specification for Explosives Substances / Articles

1.2 Create Specification

1.3 Gather & Interpret Information

1.4 Prepare Research Programme

1.4.1 Gather and Interpret Information

1.4.2 Interpret & Present

1.4.2 Carry out Testing Operations

Level 3

1.4.2.1 Establish Testing Requirements

1.4.2.1 Prepare for Testing

1.4.2.3 Prepare Test Samples

1.4.2.4 Conduct Routine Tests

1.4.2.5 Record Test Results

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Competencies

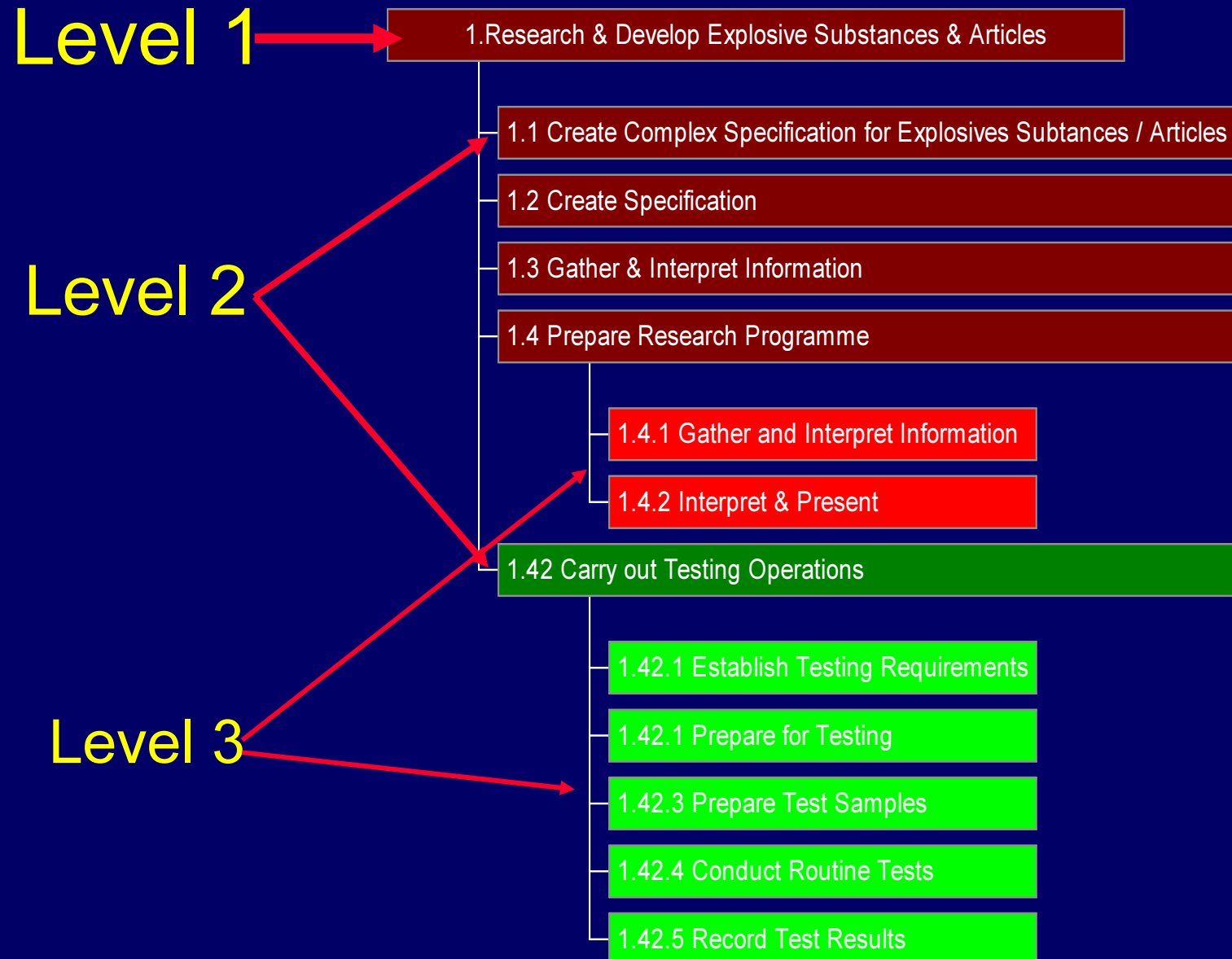
- ❑ **Criteria** - You need to
- ❑ **Knowledge** - You need to know and understand
- ❑ **Context** – in the environment the text is to be carried out

Competencies

Example - Driving a car

- ❑ **Criteria** - You need to drive a car
- ❑ **Knowledge** - You need to know and understand the rules and regulations of the road
- ❑ **Context** – you need to drive in rain, snow, fog and dry conditions

Functional Map



Functional Map

Level 2

1. Research & Develop Explosive Substances & Articles

1.1 Create Complex Specification for Explosives Substances / Articles

1.2 Create Specification

1.3 Gather & Interpret Information

1.4 Prepare Research Programme

1.4.1 Gather and Interpret Information

1.4.2 Interpret & Present

1.42 Carry out Testing Operations

1.42.1 Establish Testing Requirements

1.42.1 Prepare for Testing

1.42.3 Prepare Test Samples

1.42.4 Conduct Routine Tests

1.42.5 Record Test Results

Unit 1.1 - Create the complex specification for explosives substances/articles

Criteria – You need to:

1. identify or confirm accurately the customer's underlying needs
2. assess objectively the feasibility of the customer's requirement
3. determine objectively the best methods by which these needs can be addressed

Unit 1.1 - Create the complex specification for explosives substances/articles

Knowledge – You need to know and understand:

1. your organization's strategic and operational policies and objectives
2. how to carry out a feasibility study
3. how to establish appropriate success criteria
4. alternative options for meeting the customer's needs

Unit 1.1 - Create the complex specification for explosives substances/articles

Contexts

Customer requirements: where a complex detailed technical requirement is provided; where a general description of requirements is provided

Constraints: resource limitations; possible conflicts of interest

Solutions for addressing customer needs: existing; adaptations to existing solutions; novel

Unit 1.1 Create the complex specification for explosives substances/articles

Contexts

- Requirements: where a complex detailed technical requirement is provided; where a general requirement is provided
- Constraints: resource limitations; possible conflicts of interest
- Solutions for addressing needs: existing; adaptations to existing solutions; novel solutions

Performance Criteria

You need to:

- a.i. work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines
- b.ii. identify or confirm accurately the underlying needs of the customer
- c. assess objectively the feasibility of the customer's requirement
- d.iii. determine objectively the best methods by which these needs can be addressed
- e.iv. explain fully and clearly to the customer, and any other relevant people, the basis for any decisions
- f.v. identify accurately any operational constraints that could affect the research and development of the explosive substance and/or article
- vi. provide relevant advice to the customer,

Knowledge Requirements

You need to know and understand:

- i.i. the health, safety and environmental and other statutory legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work
- ii.ii. the relevance of personal protective equipment (PPE)
- iii.iii. the nature, characteristics, hazards and risks of the explosive substances and/or articles
- iv.iv. the actions to be taken in response to an unplanned event
- v.v. your organisation's strategic and operational policies and objectives
- vi.vi. how to carry out a feasibility study
- vii.vii. how to establish success criteria
- viii. alternative options for meeting the customer's needs

Competencies

- ❑ 440 competencies have been written
- ❑ They can be found at
<http://www.ukstandards.org/>

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Validation Industries in UK

- ❑ Leafields
- ❑ QinetiQ
- ❑ MoD
- ❑ Cranfield University
- ❑ MBDA
- ❑ AWE
- ❑ Army
- ❑ BAE Systems
- ❑ Insys
- ❑ Royal Air Force
- ❑ Royal Navy
- ❑ Skyburst Fireworks
- ❑ Offshore
- ❑ Merseyside Fire & Rescue

Validation

- ❑ Validation took place in March 2005
- ❑ 11 validation trials at 54 sites
- ❑ Standards validated in UK by April 2005

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Awarding Body

The Qualifications Curriculum Authority (QCA) is the awarding body in the UK and in December 2005 they endorsed these competencies.

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Qualifications Design

D	(Doctoral) Doctorates	8		Vocational Dips			
M	(Masters) Masters degrees, Postgraduate certificates & diplomas	7	Key skills	Vocational Certs & Dips		[NVQ 5]	5 Higher Levels
H	(Honours) Bachelors degrees, Graduate certificates & diplomas	6		Vocational Certs & Dips			
I	(Intermediate) Diplomas of HE & FE, Foundation degrees, Higher National Diplomas	5	Key skills	Vocational Certs & Dips		[NVQ 4]	4 Higher Levels
C	(Certificate) Certificates of Higher Education	4		Vocational Certs & Dips			
		3	Key skills	Vocational Certs & Dips	A Levels	NVQ 3	3 Advanced
		2	Key skills	Vocational Certs & Dips	GCSE (Grades A* - C)	NVQ 2	2 Intermediate
		1	Key/ Basic skills	Vocational Certs & Dips	GCSE (Grades D - G)	NVQ 1	1 Foundation
		Entry	Basic skills	Certificates of achievement			Entry

Manager

Supervisor

Operator

Qualifications Design

- ❑ 24 National Vocational Qualifications (NVQs) were developed for workers in the explosives sector from operator to manager.

Qualifications Design

Key Role	Description	NVQ level
Research, Design and Development	Research into Explosive Substances and/or Articles	Level 4
	Design and/or Development of Explosive Substances and/or Articles	Level 4
	Research, Design and Development of Explosive Substances and/or Articles	Level 3
Safety Management	Explosives Safety Management and/or Advice and/or Regulation	Level 4
Test & Evaluation	Test and Evaluation Management of Explosive Substances and/or Articles	Level 4
	Test and Evaluation Supervision of Explosive Substances and/or Articles	Level 3
	Test and Evaluation Operations of Explosive Substances and/or Articles	Level 2

Qualifications Design

Key Role	Description	NVQ level
Manufacture	Explosive Substances and Articles Manufacturing Management	Level 4
	Explosive Substances and Articles Manufacturing Supervision	Level 3
	Explosive Substances and Articles Manufacturing Operations	Level 2
Maintenance	Explosives Maintenance Management	Level 4
	Explosives Maintenance Supervision	Level 3
	Explosives Maintenance Operations	Level 2
Procurement	Explosive Substances and/or Articles Procurement Management	Level 4
	Explosive Substances and Articles Procurement	Level 3
	Explosives Road Transport Operations	Level 2

Qualifications Design

Key Role	Description	NVQ level
Storage	Explosives Storage Management	Level 4
	Explosives Storage Supervision	Level 3
	Explosives Storage Operations	Level 2
Transport	Explosives Transport Supervision	Level 3
	Explosives Road Transport Operations	Level 2

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Launch of NVQs 16th May 2006



Work to be done in EUExcert

- ❑ Validate competencies
- ❑ Design EU qualifications
- ❑ Create on-line educational material
- ❑ Exchange of students and workers
- ❑ Create glossary
- ❑ <http://vle.defac.ac.uk>