



52 Ickburgh Road
London E5 8AD
Telephone: 020 8806 4910
Mobile: 0780 8296278
Email: denise@deniseclarke.co.uk

Project: **EU ExCert conference, Lisbon, Portugal**

Paper: **Using UK National Occupational Standards in Explosive Substances and Articles**

Date: **21 September 2011**

Introduction

This presentation aims to explain what the UK's National Occupational Standards¹ are and how they can be used for a range of different Human Resources (HR) purposes. The paper explains the background to the development of the standards as well as describing Homeland Security Qualifications' (HSQ) explosive-related, competence-based qualifications that are designed to be assessed in the workplace.

History

The Standards Setting Body for Explosives, Munitions and Search Occupations (SSB for EMSO) was established in 2000 to develop National Occupational Standards (NOS) and National Vocational Qualifications (NVQs) for those involved in munition clearance (ie bomb disposal – both EOD and IEDD) and search activities. This work was published in 2001. The SSB for EMSO was then asked by the Ministry of Defence (MoD) to specify the competence of those who work with explosives. These became known as the Explosive Substances and Articles (ESA) standards.

¹ referred to here simply as "standards"

The work was developed by senior representatives of those organizations involved in ESA activities including the Ministry of Defence (MoD), Army, Royal Navy, Royal Air Force, Dstl, QinetiQ, AWE, Leaffield Engineering and MBDA.

In the years that followed, the SSB has continued to update its existing work and to augment it where gaps were identified.

What is "competence"?

The UK has adopted the Mansfield and Matthews model of competence when developing National Occupational Standards ie:

competence is the ability to perform consistently to occupational standards

The relationship between the ESA standards and other performance-related specifications can be described by the following model:

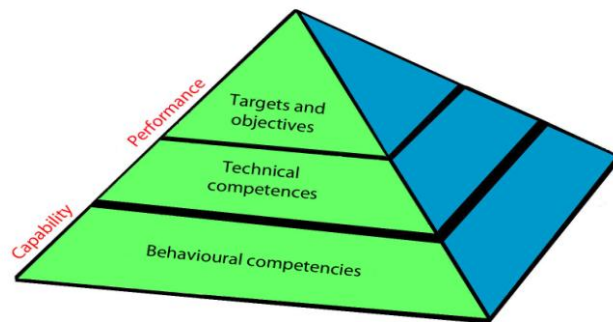


Diagram 1

There are three drivers to performance: targets and objectives, technical competencies and behavioural competencies. The pyramid explains the relationship between these. Targets and objectives are agreed at performance appraisals and state the quantified annual expectations of staff. These will probably change every year ie these are annuals.

However, in addition to achieving specific targets and objectives, people need to maintain the organization's good practice in what they *do*: in other words, they need to achieve the requirements of technical competencies. The technical competencies describe what people do in their jobs and the standards that they should maintain continuously. These are sometimes also known as *functional competences* or *standards*. The ESA standards are of this type and utility. These quality expectations are permanent – ie they are perennials.

In order to help achieve their targets and objectives and maintain the required quality expectations, people also need to exhibit

certain personal qualities – what people *are* ie behavioural competencies (also often known as *personal qualities*). For example, if you are a sales assistant, it would be helpful to develop the quality of *customer focus*. To continue the gardening analogy, the behavioural competencies are the compost that helps the annuals and perennials grow and bloom.

The uses of standards

Standards lie at the heart of all HR processes. There are in fact many possible uses of standards in a range of HR processes as described by the diagram below.

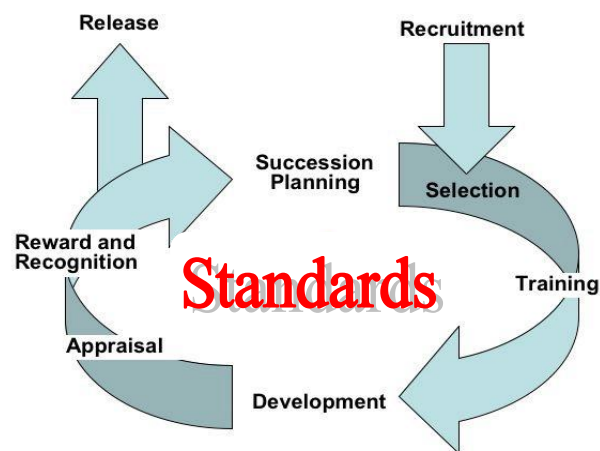


Diagram 2

Descriptions as to how standards can be used are given in more detail later in this paper.

Benefits of standards and qualifications

For individuals, working to standards-based qualifications provides a range of benefits including:

- the acknowledgement and accreditation of competence;
- transferable recognition of achievement;
- clarification of employers' expectations.

For employers, working to standards and standards-based qualifications provide significant business benefits including:

- ensuring consistency of working practices;
- the assurance of employee competence;

- usefulness of management and development tools.

Coverage of the ESA standards

The ESA standards cover the use of explosives in the following areas:

- research, design and development
- safety management
- test and evaluation
- manufacture
- maintenance
- procurement
- storage
- transport
- facilities management
- entertainment
- logistic disposal
- munition clearance and search
- semi-generic supporting activities.

Structure of standards

The standards describe what people need to be able to do to carry out their job well. If someone is “competent”, it means that they are able to carry out their work tasks to a prescribed standard. In other words, they achieve the expected results. Competence is usually a mixture of three things: skills, knowledge and approach. For example, *13.11 Hand over explosive substances and articles* which involves:

- skills (eg confirming the identify of the explosives, exchanging information that is accurate, up to date and complete etc);
- knowledge (eg characteristics of the explosive substance or article, what to do in the event of problems arising, any related limitations or specific requirements eg transport storage, applicable health and safety requirements etc);

- attitude (eg conducting the procedure in a manner consistent with organizational values and goals, protecting life and property, observing health and safety requirements, ensuring tools and equipment are well-maintained).

If competence is defined as the ability to do something “well”, the word “well” suggests that a certain standard has been reached. This is something that can usually be observed directly by an assessor, but other relevant forms of evidence may also be assessed. Taking the above example, someone assessing this competence should have no difficulty in recognizing the competence in this function or task. The assessor would observe that the task had been carried out efficiently in accordance with both the standard and organizational procedures.

The "skills" described above are expressed in the standards as the "performance criteria" ie the outcomes by which someone's competence would be measured.

The "knowledge" described above is expressed in the "knowledge requirements" of the standards. These represent the critical, minimum knowledge and understanding needed to fulfil the performance criteria but which cannot be inferred from competent performance alone.

The standards also contain “contexts”. These describe the critical parameters of competent performance, which may include internal and external factors, options or situations. Personnel cannot be deemed to be competent unless they can meet the relevant performance criteria in all the situations described in the “contexts”. Furthermore, proof of all critical knowledge and understanding is essential to meet performance requirements against the standards.

The "attitude" described above is embedded in the performance criteria and the way that an individual approaches their job and may sometimes be expressed in an organizational behavioural competence framework or a published statement of organizational values.

The full standard *13.11 Hand over explosive substances and articles* is set out on the following page.

Unit 13.11 Hand over explosive substances and/or articles

Contexts

- Hand over: issuing; receiving
- Hand over condition: when in an acceptable condition; when not in an acceptable condition

Performance Criteria

You need to:

- work safely at all times, complying with health and safety, environmental and other relevant regulations, legislation and guidelines
- confirm the identity of explosive substances and/or articles against the specification/documentation
- confirm that the condition of the explosive substances and/or articles is in an acceptable handover condition
- ensure that the information exchanged at handover is accurate, up to date and complete
- obtain additional information if there are any areas of doubt or lack of clarity to complete the handover
- ensure that handover recipients are authorised and qualified to receive the explosive substances and/or articles
- ensure that safety and quality requirements are met
- report any problems beyond your level of authority to the appropriate person
- ensure that complete, clear and accurate records are made of the handover, and are exchanged

Knowledge Requirements

You need to know and understand:

- the health, safety and environmental legislation, regulations and safe working practices and procedures governing explosives, and their implications for your area of work
- the relevance of personal protective equipment (PPE)
- the nature, characteristics, hazards and risks of the explosive substances and/or articles
- the specification and classification of the explosive substances and/or articles
- the actions to be taken in response to an unplanned event
- the limitations, and any specific requirements, of the explosive substances and/or articles (eg transport, storage, etc)
- labelling requirements
- any environmental considerations affecting or prohibiting handover
- any operational considerations affecting or prohibiting handover
- how to carry out a risk assessment
- the moment of transfer of responsibility
- the information needed to complete the handover
- the possible courses of action open to you (eg locating sources of information, refusal of handover)
- recipients' qualification requirements
- the requirements of handover documentation
- reporting lines and procedures

Using standards for HR purposes

By describing what an organization expects of its staff, standards can be used for many different purposes such as the following applications.

Recruitment and selection

For example, standards can be used to create job adverts, interview aide memoires, job descriptions and role profiles. Role profiles can be mapped to the standards so that they describe in detail what is expected of an individual and may also list qualifications that are relevant to the role. The role profiles themselves can be used to recognize common functions across a sector or industry and can be used to create bespoke qualifications.

Appraisal

The standards amplify an organization's expectations so that appraisals can be more objective and evidence-based. When appraising against a role profile, managers and appraisees can discuss achievements and development needs against the components of relevant standards.

Training needs analysis

Training needs can be identified through self-assessment, development discussions and appraisals, 360° feedback systems and audits of team strengths and development needs. The agreed, identified training and development needs can be transferred to a Personal Development Plan (PDP) in which managers and individuals agree development objectives and what will be done to achieve those objectives.

Training syllabus design

Trainers (both internal and external) can use standards to create training interventions that meet the requirements of the standards.

Career management

By specifying the competence, skills and knowledge needed in different roles (ie the role profiles), standards can be used by an organization to manage the careers of its workforce. Conversely, individuals can plot out their own careers, knowing the combination of skills, experiences and qualifications needed for their chosen career path. So, the standards can be used to create career maps and career planning tools.

Succession planning

Following on from career management, the systematic use of standards in an organization can lead to effective approaches to talent management based on an organization's analysis of development needs. Organizations can carry out audit of their skills needs in every role and identify long-term and short-term succession plans.

The use of standards also provides a demonstration of organizational commitment both to the investment in its workforce and externally, as proof of its commitment to quality standards. The use of standards, and more particularly, the implementation of qualifications, provide incontrovertible proof of the training and assurance of competence of personnel where the ability to comply with legislation, regulation and codes of practice is critically important. The ability to provide such proof may also assist organizations in competing in the marketplace and defending against claims made in an increasingly litigious and regulated world.

These are just a few examples but standards can be used in many more ways within each part of the HR cycle.

The assessment process

Assessment of workplace competence is different from traditional assessment. As it concerns the assessment of someone carrying out their job, it does not have to involve any examinations (because passing an examination does not prove that you can do the job).

If an organization wishes to implement qualifications based on the ESA standards, it applies to HSQ for approval as an assessment centre. The criteria for approved assessment centres are contained in the "Centre Guidance Pack" which can be downloaded from our website. HSQ carries out a visit and confirms that the centre (ie the part of the organization where the qualifications are to be delivered) meets our requirements.

The centre identifies the candidates for the qualification and appoints and trains Assessors. In fact, the organization will probably already have done this before they make their application.

HSQ does not deliver assessor training but has contact with other organizations that specialize in this area. The requirements for Assessors are set out in our assessment strategy which is available to approved centres. Essentially, Assessors must be occupationally competent in their area of expertise eg explosives manufacturing or test and evaluation (or

whatever their specialism is) and they have been trained in the assessment process.

So, an organization (or part of an organization) gains HSQ's approval to operate as an assessment centre. It has already identified the candidates and the qualifications that it wants to deliver.

Assessors help the candidate plan their assessment ie what evidence will they collect that shows their competence. The candidates assemble their evidence of competence, put it in a portfolio and index it. It might be that – for example, for security reasons – the evidence cannot be placed in the candidate's portfolio. In this case, a note will be placed in the portfolio, directing the Assessor to the evidence². When the Assessor feels that the candidate is ready to be assessed, they make arrangements and the Assessor carries out the assessment. This normally includes reviewing the candidate's portfolio, observing them carrying out tasks and questioning their knowledge against the specification in the standards. The Assessor then decides whether or not the candidate is competent. If they are considered not yet competent, then the candidate continues to build their portfolio, gets more practice or does whatever is agreed in their action plan.

The assessment process needs to ensure that all assessors are assessing people to the same standard. People inevitably have slightly different interpretations of the standards or qualification specification. It is the Internal Verifier's (IV) responsibility to verify the quality and consistency of assessment among Assessors by carrying out sample checks. Internal Verifiers are appointees of the assessment centre and they must also be occupationally competent and trained in the internal verification process. The Internal Verifier may overturn an Assessor's decision. A large assessment centre might have networks of Assessors and Internal Verifiers who will, as part of their role, to exchange of best practice, clarify areas of concern and raise issues that need resolution.

As the awarding body, HSQ needs to check that the assessment centre - its Internal verifiers (there might be several) and its assessors (there might be dozens) - are operating the system correctly, fairly and consistently. HSQ has a network of External Verifiers (EVs) to carry out this function. EVs need some occupational competence but not as much as Assessors and Verifiers. They are more akin to Systems Auditors ie their role is to ensure that the assessment system in the centre is working properly and that everyone is adhering to the same standards. EVs may also sample assessment decisions and may overturn

² In certain circumstances, HSQ may agree that some evidence may be "sanitized" for security reasons.

those made by Assessors and/or Internal Verifiers. In this way, HSQ assures the quality of assessment within an assessment centre.

However, HSQ has several assessment centres and needs to ensure the consistency of assessment among all its centres. By confirming that different assessment centres are interpreting the assessment requirements in the same way, HSQ is assuring the quality and integrity of the qualifications across all HSQ-approved assessment centres.

Evidence of competence

Evidence for vocational qualifications (whether nationally accredited, industry-recognized or bespoke) must be:

- valid - evidence must be proof of competence (eg passing an examination in riding a bicycle does not prove that you can ride a bicycle – only observation will do this);
- authentic – it must be the candidate’s own work. If evidence from teamwork is offered, HSQ must be able to identify the candidate’s contribution;
- sufficient – it must cover the full requirements of the qualification (NB: 1 piece of evidence might yield proof of competence for different components of the qualification);
- current – the candidate’s competence must be current (proof of competence 2 years ago is not usually acceptable);
- auditable – there must be a record of the evidence (eg the verbal answers to an Assessor’s questions must be recorded either in writing or by an audio recording);
- reliable - the work is consistent across all students, over time and the required level.

Evidence can be obtained by:

- direct observation of the candidate (by the assessor or a witness);
- photographic, audio, video or other electronic recording of candidate activity;
- the presentation of work produced by the candidate;
- previous recorded achievement;

- questioning the candidate to assess the underpinning knowledge and understanding and/or to authenticate the validity of other evidence.

HSQ's explosives vocational qualifications

The use of standards for personal development purposes and as management tools has already been described. However, where they are used within qualifications, they have a further use ie to accredit the competence of people in their jobs. Implementing qualifications will provide organizations with independent, external validation of internally assessed competence. This is the sort of assurance of competence that the Health & Safety Executive is seeking in the UK.

HSQ offers three different types of vocational qualification:

- Qualifications and Credit Framework (QCF) Awards, Certificates and Diplomas (ie nationally regulated qualifications);
- industry recognized vocational qualifications;
- Bespoke qualifications.

These are described in more detail below.

HSQ's QCF qualifications

HSQ has developed the following nationally regulated, QCF qualifications:

- Movement of Explosives - for those who transport explosives manually, using equipment or vehicles but who are not required to hold an ADR licence;
- Defence Range Safety - for those who manage the safety of defence ranges (applicable to managing safety on military training ranges and defence trials, evaluation, research and proofing ranges);
- Munition Clearance and Search - 10 qualifications have recently been accredited nationally. This is the start of the process of converting the ESA standards into QCF-compliant format. These qualifications accredit the competence of a range of different roles and levels of personnel working in munition clearance and search functions.

HSQ's industry-recognized vocational qualifications

HSQ's industry-recognized vocational qualifications are all built on nationally accredited ESA standards. They comprise a

number of standards and are written in terms of the competence needed for a particular function which is measured by achieving the performance criteria; specifications of the critical minimum knowledge and understanding needed to fulfil the performance criteria and descriptions of the parameters of competent performance – the “contexts”.

They involve an occupationally competent, qualified assessor to assess the candidate and they require internal and external verification of assessment processes as described earlier in this paper.

HSQ's industry recognized vocational qualifications are immediately available in the following areas:

- Explosives safety management and/or advice/and/or regulation (L4)
- Test and Evaluation Management of ESA (L4)
- Test and Evaluation Supervision of ESA (L3)
- Test and Evaluation Operations of ESA (L2)
- Explosives Maintenance Operations (L2)
- Explosives Storage Management (L4)
- Explosives Storage Supervision (L3)
- Explosives Storage Operations (L2)
- Explosives Road Supervision (L3)
- Explosives Road Transport Operations (L2)
- ESA Disposal Management (L4)
- ESA Disposal Supervision/Operations (L3)
- ESA Disposal Operations (L2)
- Planning and Management of Munition Clearance Operations (L4)
- Planning and Management of Specified Target Search Operations (L4)
- Supervisory Management of Munition Clearance and/or Specified Targets Search Operations (L3)
- Search for and Disposal of Munitions (L3)
- Search for Munitions and/or Specified Targets (L3)
- Contribute to the Search and/or Disposal Function (L2)

- Provide Support for Search or Munition Clearance Operations (L1)
- General Explosives Operations (L2).

Bespoke qualifications

Unlike QCF qualifications, bespoke qualifications are not part of a national framework and cannot be used for exemption from, say, college entrance requirements. However, for some employers and groups of employers, such awards are a useful tool for the selection, training and advancement of personnel and, where employers are in a collaborative community, may have credibility amongst them all, providing transferable skills records.

Bespoke qualifications may be linked to standards or national qualifications and are likely to recognize approved in-house training, role profile matching or other records of experience, skills and knowledge in employment.

Summary

In summary, there are many significant benefits to assuring the competence of people against objective and detailed descriptions of competence, particularly in safety-critical industries. The achievement of explosives qualifications not only provides proof of competence but, if embedded in HR systems, provides organizations with systematic processes for capacity-building (both knowledge and competence) and the better targeting of resources, quality enhancement, risk avoidance, collaborative working and gaining a competitive edge.

HSQ has started delivering explosives-related vocational qualifications in the UK and plans to continue expanding the range of qualifications offering and client base, both at home and abroad.

UK regulators are taking an increasing interest in the explosives area to the point of seeking assurance that organizational policies meet competence requirements. The award of independently validated, competence-based vocational qualifications provides such assurance.

Denise Clarke

8 September 2011