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News in Short

1. National Nodes established and operative

The European EUExcert Association is now formally registered in Sweden. Initially the EUExcert association represents a Network of National EUExcert nodes in Sweden, Norway, Estonia, The Czech Republic, Ireland, United Kingdom, Portugal, Germany and Italia If You wish to get in contact with your national EUExcert association find the contact address at www.EUExcert.org.

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2. Introducing Explosives Occupational Standards

by

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The authors are all associated with *EUExcert*. *EUExcert* is a project that plans to establish a firm stable framework for vocational education of people in the explosives sector. The project outcome will be a tool for competence and career planning that training and education institutions as well as social partners can use. As a result new training methods can be developed all with the view to reduce the number of accidents in the explosives business. *EUExcert* Associations are now established in 10 European Countries; Sweden, Norway, United Kingdom, Latvia, Portugal, Italy, Ireland, Germany, Czech Republic and

The importance of the explosives sector in modern society

In the Year of 2011 we are all aware of the global arena and the transnational need of skilled specialists for building a sustainable society

The Explosives sector now has to Educate and train a new and skilled generation of Explosive specialists.

However Explosives accidents have claimed the lives of more than a thousand people around the world since the turn of the Millennium. Many of the accidents have been caused not by failure of design, but by human failure. Much of this can be attributed to the lack of competence, skills and adequate training of the people concerned.

These accidents have happened in many areas: the explosion of an ammunition dump; an explosive incident aboard a Russian submarine; misuses of fireworks and an explosion in France involving ammonium nitrate in an industrial facility. These accidents, therefore, have significant consequences in terms of human tragedy, strategic defence capability, economic and political disruption.

Effective explosives safety depends upon people making the right decisions at the right time – i.e. performing their jobs competently.

The sector is however experiencing a situation where the stock of people with sufficient skills and competences are on a decrease. In practical terms this means there is an increase of hazards and accidents due to people lacking skills and the knowledge of everyday work practice. Looking at the system of education within the sector there has been a dramatic change. The huge firms which all had their training offices in place, ensured education and skills transfer between workers and professional staff which resulted in secure and safe jobs. Walking down memory lane shows that the reality of today is quite different; the infrastructure of education and training in the civil explosives sector has dissolved. Stakeholders are left with a huge responsibility to navigate among the disparate and unorganised suppliers of education and training in order to provide sufficient training for their employees.

Since the sector has experienced decades of restructuring there have been extremely few job opportunities. This has led to firms and organisations losing the tradition of effective methods for skills transfer between generation of workers. It has also resulted in the younger generation not regarding the sector with a career in mind. In 2011 the average age of the workers is high and many workers are now in the midst of planning for their retirement. Therefore, the firms and companies are finding it extremely difficult to attract employees who are willing to step into the older workers' shoes.

The European Union supported the Leonardo da Vinci project EUExcert which started in 2003 (www.euexcert.org) as a reaction to the perceived decline in explosive competence in many European countries. The EUExcert project has established the need to collaborate between European nations in order to replenish the workers skills and to find ways to influence the infrastructure of education and training. By collaborating between nations it is possible to create a framework for competence development and skills transfer, based on occupational standards. It is also possible to influence the younger generation of workers to seek work in the sector as a step in their career path. By developing a framework for skills enhancement and skills transfer this European project can contribute to develope a European infrastructure for education and training and contribute towards safer jobs. It is anticipated that the explosives sector will increasingly become an attractive career choice for the younger generation workers.

The EUExcert partnership closely followed the activities which were started at the same time in UK and it was easy to accept them as best practices in the area of explosives competence

By 2003, the UK's Ministry of Defence (MoD) faced particular problems:

- a need to assure competence as one means of avoiding accidents by providing an objective method of assessment of training inputs;
- recruitment difficulties: explosive substances and articles (ESA) competence is a shrinking specialism within the MoD and a high level of commitment is required of applicants who will need to fulfil their training programme;
- a need to put in place objective criteria by which contracts placed with commercial companies can be assessed and managed;
- a desire to provide formal accreditation for individuals' competence;
- the imperative of enhancing and maintaining safety standards.

The European Union-supported Leonardo da Vinci project - EU ExCert - started in 2003[1] as a reaction to the decline in explosives competence in many European countries. The EUExCert partnership followed developments in the UK closely (see below).

Defining the explosives sector

The explosives industry is defined as those industries where explosives are used i.e.:

- coal mine (deep or drift);
- gas extraction (natural gas);
- oil extraction service activities;
- quarrying;
- explosives manufacture/firework manufacture;
- explosives wholesalers;
- demolition contracting/blasting & associated rock removal;
- mine sinking;
- fireworks (commissioning agent);
- motion picture production on film or videotape;
- television programme production;
- live theatre presentation.

In 2004, the total population of UK's explosives industry was estimated[2] to be 5,237,997 of which 676,142 people were identified as needing competence in working with explosives.

The UK National Occupational Standards in Explosive Substances and Articles (ESA)

The Standards Setting Body for Explosives, Munitions and Search Occupations (SSB for EMSO) was established in 2000 to develop National Occupational Standards[3] and National Vocational Qualifications (NVQs) for those involved in munition clearance (i.e. bomb disposal – both EOD and IEDD) and search activities. At the request of the MoD (for the reasons explained above), the SSB then went on to specify the competence of those who work with explosives. These became known as the Explosive Substances and Articles (ESA) standards. This work is described in more detail in the PARARI paper for 2009[4]

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[1] www.euexcert.org

[2] *Occupational Map Explosive Substances and Articles (ESA) Occupations*, 6 August 2004, available at www.deniseclarke.co.uk

[3] Referred to here simply as “standards”

[4] This can be downloaded from: http://www.deniseclarke.co.uk/news_review.html

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

ESA standards

The key outcomes of the project were:

- an occupational map i.e. a descriptive report of the industry, its size and composition; skills and training issues; roles employed; numbers employed and other notable related issues;
- a functional map which describes all the explosives-specific functions carried out in the explosives industry and the most common generic functions;
- a suite of around 450 standards (of which around 260 are explosives-specific), describing the measures by which someone's performance would be measured (performance criteria), descriptions of the parameters of competent performance (contexts) and the critical minimum knowledge and understanding (knowledge requirements) needed to fulfil the performance criteria and contexts – all written as outcomes;
- a total of 35 qualifications designs (including subsequent developments) at levels 1 – 4 (effectively, basic support, operator, supervisor/technician and operational manager).

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.

The standards are written so as to describe the competence of people working at different levels within these areas i.e. level 1 (basic support); level 2 (operator); level 3 (supervisor/technician) and level 4 (operational manager).

The structure of an ESA standard

The ESA standards comprise three components:

- performance criteria;
- contexts;
- underpinning knowledge and understanding.

The "performance criteria" describe the measures by which someone's competence would be judged. They are written as outcomes so as to be achievable by anyone, irrespective of their employer or industry sub-sector. As outcomes, this means that they are objective and unequivocal. The "performance criteria" must also be demonstrated by performance i.e. through the conduct of the job: merely answering questions as to what someone might do in such circumstances is not a sufficient demonstration of competence.

The "contexts" 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 National Occupational Standards.

A great deal of someone's knowledge and understanding is implicit if they have performed competently. However, other knowledge and understanding cannot necessarily always be inferred. So, the standards list the critical, minimum knowledge and understanding that cannot be inferred from competent performance.

Workplace assessment

Assessment of workplace competence is different from the 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).

Based in the UK, Homeland Security Qualifications (HSQ)[5] is an awarding body that was set up specifically to award qualifications that accredit competence in working with explosives. If an organization wishes to implement qualifications

[5] www.homelandsecurityqualifications.co.uk

based on the ESA standards, it should apply 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 the website. HSQ carries out a visit and confirms that the centre (i.e. the part of the organization where the qualifications are to be delivered) meets the 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. Assessors must be occupationally competent in their area of expertise e.g. explosives manufacturing or test and evaluation (or whatever their specialism is) and they must 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.

The role of Assessors and Internal Verifiers

There are three roles in the workplace assessment process: the Assessor, the Internal Verifier (IV) and the External Verifier (EV). Assessors and IVs are appointees of the organization operating as an approved assessment centre and EVs are appointees of the awarding body i.e. HSQ.

Assessors help candidates plan their assessment i.e. 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 evidence[6]. When the Assessor feels that the candidate is ready to be assessed, they carry 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 IV's responsibility to verify the quality and consistency of assessment among Assessors by carrying out

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

sample checks. IVs must also be occupationally competent and trained in the internal verification process. The IV may overturn an Assessor's decision. A large assessment centre might have networks of Assessors and IV's 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 IVs and Assessors - are operating the system correctly, fairly and consistently. HSQ has a network of EVs to carry out this function. EV's need some occupational competence but not as much as Assessors and IV's. They are more akin to Systems Auditors i.e. their role is to ensure that the assessment system in the centre is working properly and that everyone is adhering to the same standards. EV's may also sample assessment decisions and may overturn those made by Assessors and/or IV's. In this way, HSQ assures the quality of assessment within an assessment centre.

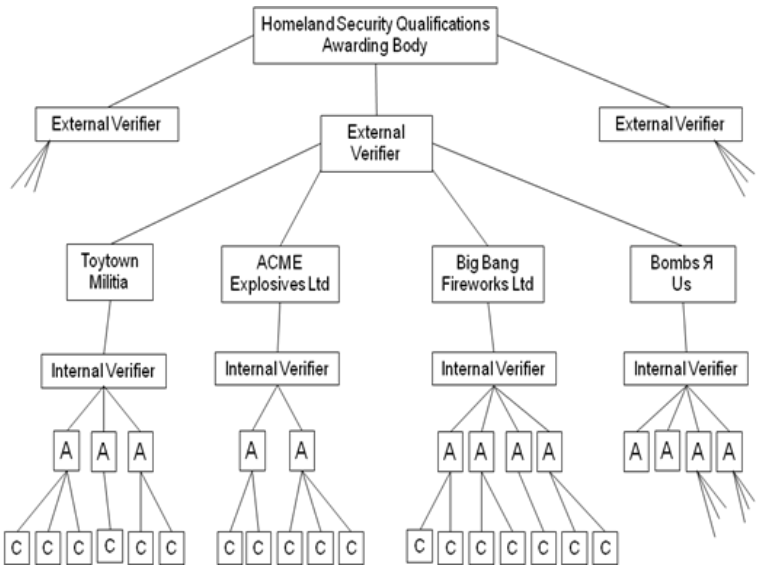
However, HSQ has several assessment centres and needs to ensure the consistency of assessment among all its centres. By confirming that different assessment centres are interpreting the assessment requirements in the same way, HSQ is assuring the quality and integrity of the qualifications across all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

In summary, the assessment process may be summed up by the diagram on the next page

The European Union has supported the partnership projects EUExcert and EUExNet and during the project work we have followed, studied and validated the ESA and NOS standards

The partnership has found that the ESA standards are the best practice for the explosives sector. The EUExcert partnership support the work and find that the UK National Occupational Standards is an open and transparent system that gives a fundament for creating a safe industrial sector. Please visit http://www.ukstandards.co.uk for more information

The Newly formed European EUExcert Association invites you to an International Conference on Explosives education and Certification of skills. For more Information visit www.euexcert.org



C: Candidate A: Assessor

3. Summary : The National Latvian EUExcert node by Olga Muter, Andris Melkers and Janis Jakuss-Kreituss

In August and September 2011, Latvian EUExCert association members and nodes were convened the first meeting for stakeholders within the Latvian explosives and fireworks market and informing them of the EUExCert project.

In the meeting participated two public organisations:

- Latvijas Atmīnētāju un Spridzināšanas Inženieru Federācija *(Federation of Latvian Deminers and Blasting Engineers)* (LASIF), representing 3 companies in explosive sector;

- Association of Experts and Specialists for Highly Energetic materials (AEMESA), Latvian node in EUExCert project and representing 15 companies in explosive and fireworks sector, more than 15 working and retired military and police specialists and experts in explosive and fireworks sector.

EUExNET LV National Node introduced the representatives with the aim and goals of the project.
The representatives described the structures of the companies, the amount of the work and the problems concerning further education of the specialists and the certification.

The representatives also were interested to involve the EUExCert and in the near future they will register on www.euexcert.org to recieve the information of the activities by EUExCert.

It was agreed that for the development / adoption of explosives competence Standards into Latvia a greater understanding of the offered Standards by the stakeholders is necessary.

AEMESA reported that a new training center for pyrotechnic staff and blasters in the near future will be created and that it is possible to get some help and consultations on this issue.

4. Explosive education and legal aspects in Estonia

Ingo Valgma, Department of Mining TUT

Kaimar Eilo, Estonian Technical Surveillance Authority,

Rein Voog, Estonian Association of Mining Enterprises

The main institutions dealing with explosives in Estonia are explosive companies, Estonian Technical Surveillance Authority, Estonian Association of Mining Enterprises, Pyrotechnic Association, Deprtment of Mining of Tallinn University of Technology and Estonian Qualifications Authority plus military institutions.

Development and educational is done together with EUExNet National Node of Estonia, that meets regularly having meetings, seminars and networking in the frame of activities of Association of Estonian Mining Enterprises and Estonian Mining Society. Currently discussions of profession awarding, safety regulations, and safety measures are being carried on.

According to the Technical Surveillance Authority, no accidents occurred in the handling of explosive substances (including pyrotechnical products) in 2010. Competency examinations in the field of pyrotechnics and explosive substances are carried out regularly. The regulations of the Explosive Substances Act, on regulation of staff certification and keeping of explosive substances and pyrotechnic articles, were analysed in 2010, and motions to amend were prepared and submitted to the Ministry of Economic Affairs and Communications. As a result, instead of the previous two regulations, only one was prepared for conservation of explosive substances and pyrotechnic products. In 2011 two important changes occurred in Estonia. Professional qualification body for explosives handling and blasting in mining and demolishing was issued. Another professional qualification activity is preparation by Estonian Mining Society for starting mining engineering professional qualification awarding. For that mining engineering standard has been accepted and curricula has been opened according to this standard in the Department of Mining of Tallinn University of Technology. Drilling, blasting and explosive handling education has been regularly given in the Department of Mining since 1938 in Estonia. In addition regular scientific and practical analyse of the influences of mine and other blasting is carried out by the Department of Mining of Tallinn University of Technology. On the bases of these analyses, regulatory and safety regulations will be corrected in near future.

The main activities in seismic monitoring and analyses include cross country seismic analyses for large seismic events as blasting in oil shale open casts, limestone and dolostone quarries, construction blasting and military events. Small scale seismic monitoring and analysing is done in small scale blasting in quarries, construction, military and underground mining application. The main problem related to underground blasting in oil shale mines is related to the fracturing of support pillars, weakening of immediate roof layers causing danger of roof collapsing, pillar collapsing, mine section collapsing and land subsidence. Large scale blasting needs mainly optimisation analyses for even fragmentation of rocks, low seismic, dust and noise affect.

Figure 1 One of the regular meetings of Estonian Mining Society for discussions of professional standards in the Depatrment of Mining of TUT

References

EUExNet web page in Estonia- http://mi.ttu.ee/euexnetestonia/

Estonian Technical Surveillance Authority, http://tja.ee/

5. EUExcert National Node in Ireland By Ashley Haslett

The EUExCert program appointed Irish Industrial Explosives Ltd. as the Irish Partner in September 2010. Ashley Haslett, the I.I.E. Operations Director attending the first meeting in October 2011 has represented the company at all subsequent meetings.

An initial task was to establish an Irish website, promoting the aims and objectives of the EUExCert program and to create a focal point for other interested parties within the Irish explosives industry. The website www.euexcert.ie was established in November 2010.

With explosives being a small industry in Ireland, it was relatively easy to identify the stakeholders. The explosives industry stakeholders in Ireland are;

Department of Justice	Regulator responsible for explosives Licencing
Health & Safety Authority	Regulator responsible for workplace safety
FAS	Irish National Training & Employment Authority
Irish Concrete Federation	Employer representative organisation
SIPTU	Employee representative organisation
I.M.Q.S.	Institute representing mining & quarrying industry
Defence	National Defence Forces
Manufacturers	I.I.E., Orica, Exsol
Fireworks	Black Powder Monkeys
Mines	Tara Mine
Education	Carlow IT

Many of the above organisations were prepared to send representatives for an initial meeting on 25th November 2010, during which time other stakeholders were identified and invited to participate.

Further meetings were convened in January and March 2011, by which time the Articles of Incorporation for EUExCert Ireland were formalised and signed by all participants.

The description and aim of EUExCert Ireland has been established as;

"EUExCert is a European wide initiative to improve competence within the explosives industry.

To this end, "EUExCert Ireland" has been established, representing all interested parties and sectors in Ireland to progress using the existing vocational framework within which explosives competence Standards and qualifications can be adopted and developed.

The overall aim being to have a safer European explosives industry and a common standard of competence throughout the EU and the industry."

Promotion activities to heighten awareness of the EUExCert project have been conducted and continue to be considered.

To assist EUExCert Ireland members to understand how the UK explosives competence Standards had been developed and applied, Denise Clarke of Homeland Security Qualifications was invited to present at a meeting in March, providing an improved understanding of the UK explosives competence standards.

Ireland has a clearly established system for the certification of competence, operating under the name of "Further Education & Training Awards Council", more commonly known as FETAC. Within the current system, a competence certification scheme exists for Explosives Shotfirers.

At the May 2011 meeting, it was agreed that the group would initially consider how closely matched the Irish system was to the UK system prior to determining how to progress further and seeking EUExCert certification for the existing Irish Shotfiring system. A sub group has been established to undertake the initial work. The opportunity was also taken to establish a second working group to consider explosives competence standards and how they relate to the existing QSCS scheme. This work is currently ongoing following a meeting in October, with the next planned in November.

6. The Swedish EUExcert Node By Hans Wallin

The Swedish EUExcert node (www.euexcert.se) is operative since March 2011, consists of 10 persons and have had 2 ordinary meeting.

The Swedish EUExcert node is an important reference group for the different education programmes that runs in Sweden.

Education and appointment of assessors will be an important task during 2012

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