

## **VOCATIONAL QUALIFICATIONS FOR MEASUREMENT TECHNICIANS AND ENGINEERS**

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### **1 INTRODUCTION**

This paper outlines:

- Background History of the MPA
- The Structure and Administration of NVQ's/SVQ's
- Relationship with Formal Qualifications
- NVQ/SVQ Occupational Standard
- The Benefits of NVQ's/SVQ's in Metering and Measurement
- World-Wide Recognition and Acceptance of the NVQ/SVQ

### **2 BACKGROUND HISTORY OF THE MPA**

Between 1991 and 1993 a number of major incidents involving Meter Proving happened in the UK. These incidents were investigated by the UK Health & Safety Executive.

An Institute of Petroleum working group was set up to consider Meter Proving Safety. The committee recommended that a mechanism was needed to ensure Meter Proving personnel were adequately trained. A method had to be established to assess and certify competence of individuals undertaking related work activities.

Industry specialists quickly responded and under the guidance the Petroleum Employers Skills Council (PESC) a trade organisation was formed then known as the Meter Proving Association (MPA), now renamed as Measurement Processes Association.

The MPA was incorporated into a Limited Company during June/July 1995. They were soon to recognise that although Safety was a key driver, Industry and Service providers alike required evidence of Competence. With this shared vision, along with support from the Department of Energy Oil/Gas Office, Standards were produced.

### **3 DEPARTMENT FOR EDUCATION AND EMPLOYMENT**

In the UK vocational education and training is not compulsory, but, recognising the need for a well-trained workforce, the UK Government has set up a framework for providing "Vocational Education and Training System".

This System includes developing and monitoring qualifications and defining occupational standards.

The way that Training is provided and taken up is continually monitored, and if the quality of delivery is not keeping up with changing circumstances, or too few people are taking part, the framework is altered.

The Government's key objective in relation to vocational qualifications is to oversee and promote the development of occupational standards so that the UK's workforce and industries can compete effectively in the world market.

It is left to employers to see that their workforces have the skills required, which is not always seen to be the case in practice.

### **3.1 National Training Organisation (NTO)**

An NTO is an organisation which deals with education, training, qualifications and competitiveness issues from the employers perspective within an employment sector and a defined occupational grouping.

They have authority from the Secretary of State for Education and Employment. NTO's replace the older Industry Lead Bodies and Industry Training Organisations.

Where occupations occur in all sectors, a separate all sector NTO is recognised, e.g. Management, Transport, Energy etc.

### **3.2 Standards Setting Body**

Is responsible for formulating standards of competence for an occupational grouping and reviewing the standards in the light of employers needs.

These are mainly NTO's but may be other regulatory or professional bodies who have been given authority from the Secretary of State for Education and Employment to carry out these functions.

National Vocational and Scottish Vocational Qualifications (NVQ's and SVQ's) are a radically different approach to vocational or work based education and training.

Based on **occupational standards** set by employers to meet the needs of their particular industry. They respond to changing needs in business and industry. They are also an integral part of the wider UK qualifications system.

Employers everywhere, in our case Petrochemical industries, are looking for hard-working staff with well developed skills who can make a real impact on their businesses.

Flexible, adaptable and transferable skills are crucial to every economy in the world. Skills need to be updated to keep pace with technological change.

The greater emphasis shown by companies in recognising the skills and competence's that people actually need to do their jobs highlights their importance.

World-wide organisations realise that it makes good business sense to train people to demanding occupational standards set by industry.

The ability to use knowledge, understanding, practical and thinking skills to perform effectively to the national standards required in employment.

They identify what people have to do to show that they are competent in a job.

Most occupational standards have been developed in the following way.

- Establish the purpose of the job or occupation
- Gather knowledge and skills required using group workshops, questionnaires etc
- Set performance criteria for judging people's performance.

This process is in stages, and suggestions made in the later stages of the process often alter what has been decided earlier.

This means that the standards will more closely match what is expected in the real world.

Education and training providers have to change the way they work for NVQ'S/SVQ'S, putting candidates at the centre instead of dealing with "batches" of students.

When a new candidate starts, their assessor will usually help them to:

- Identify what they can do already, agree on the standard and level they are aiming for, analyse what they need to learn. Choose and agree on activities which would allow them to learn what they need.
- Candidates compare their performance with the standards as they learn.
- They look at what they have achieved, how much they still need to do and how they should go about it, until they are assessed as competent for a unit or a whole NVQ/SVQ.
- The system is right for workers who already have skills and want to increase them, but also for those who are starting from the beginning.

Rigorous standards for competence in each employment sector form the cornerstone of the NVQ/SVQ system.

These standards are identified and updated by standard setting bodies which are usually NTO's who specify the principles of assessment.

NTOs are responsible for defining the general principles of assessment but awarding bodies provide the detail.

The principles of assessment are enshrined in the assessment guidance which pertains to the quality of assessment required. How the assessment process is to be operated and maintained.

Key roles of the assessment are carried out by Assessors, Internal Verifiers and External Verifiers, Approved centres and awarding bodies.

Assessment, tests the candidates underpinning knowledge, understanding and work-based performance to make sure they can demonstrate competence in the workplace.

### **3.3 Qualifications and Curriculum Authority (QCA)**

Was set up to develop and regulate curriculum, assessment and qualifications from basic schooling to higher level vocational qualifications in England and Wales.

### **3.4 Scottish Qualifications Authority (SQA)**

SQA was set up to bring together the functions of the Scottish Examination Board and the Scottish Vocational Education Council (SCOTVEC). SQA is the accrediting body for SVQ's and the national awarding body for Scottish qualifications except degrees.

### **3.5 Awarding Bodies**

Awarding bodies help to develop NVQ's and SVQ's (working with the NTO's), approve assessment centres and send external verifiers to make sure all the centres assess candidates consistently. The awarding bodies are answerable to QCA or SQA for the quality of assessment. The SQA accrediting and awarding functions are clearly separated.

Designing Qualifications a vocational qualifications is based on National occupational standards of competence.

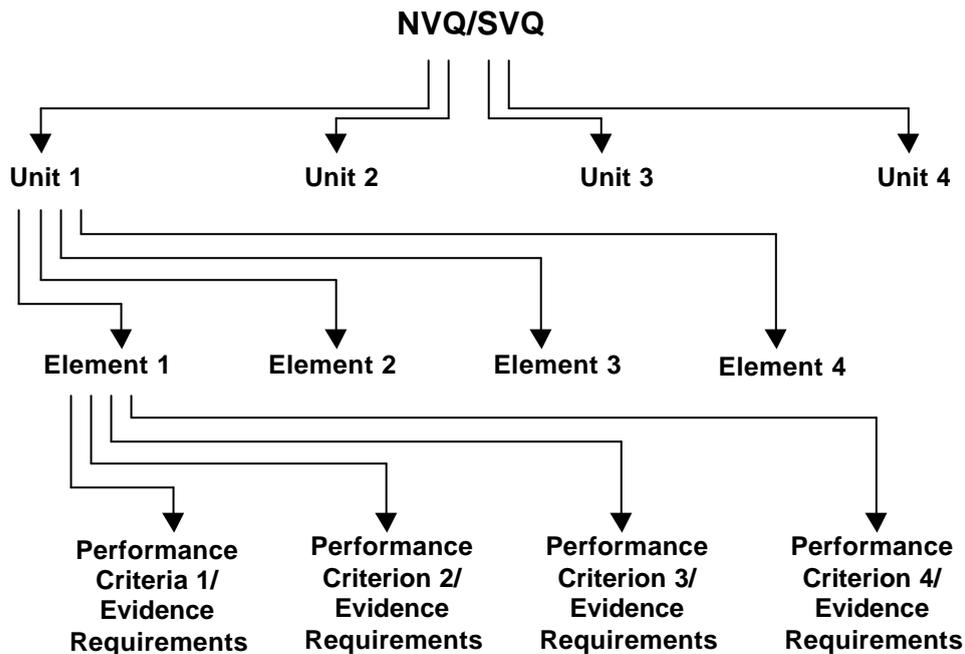
They describe what people need to achieve to be fully competent in a particular occupational area.

This includes essential knowledge and understanding.

Candidates are awarded an NVQ/SVQ when they have successfully demonstrated competence against the occupational standards which make up the whole NVQ/SVQ.

Standards consist of elements of competence which build into units and finally into in an NVQ/SVQ.

Each element describes an action, behaviour or outcome that a candidate has to perform to demonstrate they are competent in that element.



***Fig. 1***

Designing the assessment system for NVQ's and SVQ's, determines they have to be framed around competence at work and assessment under workplace conditions.

Generally, larger employers are able to offer NVQ's and SVQ's in-house (with internal and external verifiers checking the quality).

Smaller employers usually find it easier to form partnerships with training and assessment providers, rather than trying to do it all themselves.

Their partners are often colleges of further education, but sometimes employers team up with private training providers.

The process by which NVQ's and SVQ's are achieved is two fold assessment and training.

These are monitored and the quality assured in several ways.

The quality of assessment is monitored to ensure a consistent approach and to maintain the quality of performance.

The accrediting and awarding bodies ensure occupational and assessment standards are verifiable, flexible and simple.

Local training providers ensure quality through internal verifiers and assessors who work directly with candidates.

The quality of training is monitored by:

- National inspectors who report direct to Government (in England these inspectors are appointed by the Training Standards Council or the Further Education Funding Council; parallel arrangements exist in Wales and Northern Ireland).
- Scottish Quality Management System and the quality assurance management system of the Training and Enterprise Councils (TECs) in England and Wales.
- Local training providers self assessment of their own performance.

Qualifications produced by colleges and employers are presented to the awarding bodies for review and approval.

Qualifications must follow the standard setting bodies layout.

There are specific do's and don'ts which must be followed in the structure of any standard.

Part of any qualification structure requires an approved centre. Approved Centres are organisations approved to assess and verify qualifications.

They are mainly places of employment or providers of vocational education and training, such as Further Education (FE) colleges and offer NVQ/SVQ assessment.

They must have effective internal procedures to ensure the quality and consistency of assessments.

QCA is the regulatory body responsible for accrediting NVQ's in England, Wales and Northern Ireland.

In Scotland, the SQA both awards and accredits SVQ's. City and Guilds are another awarding body in the UK.

Accrediting Bodies are organisations appointed by the government to develop national standards for qualifications and make sure they are maintained.

They award specific qualifications. They verify that assessment in approved centres is being carried out systematically, validly and to National Standards.

They certify Candidates as and when they complete Unit qualifications.

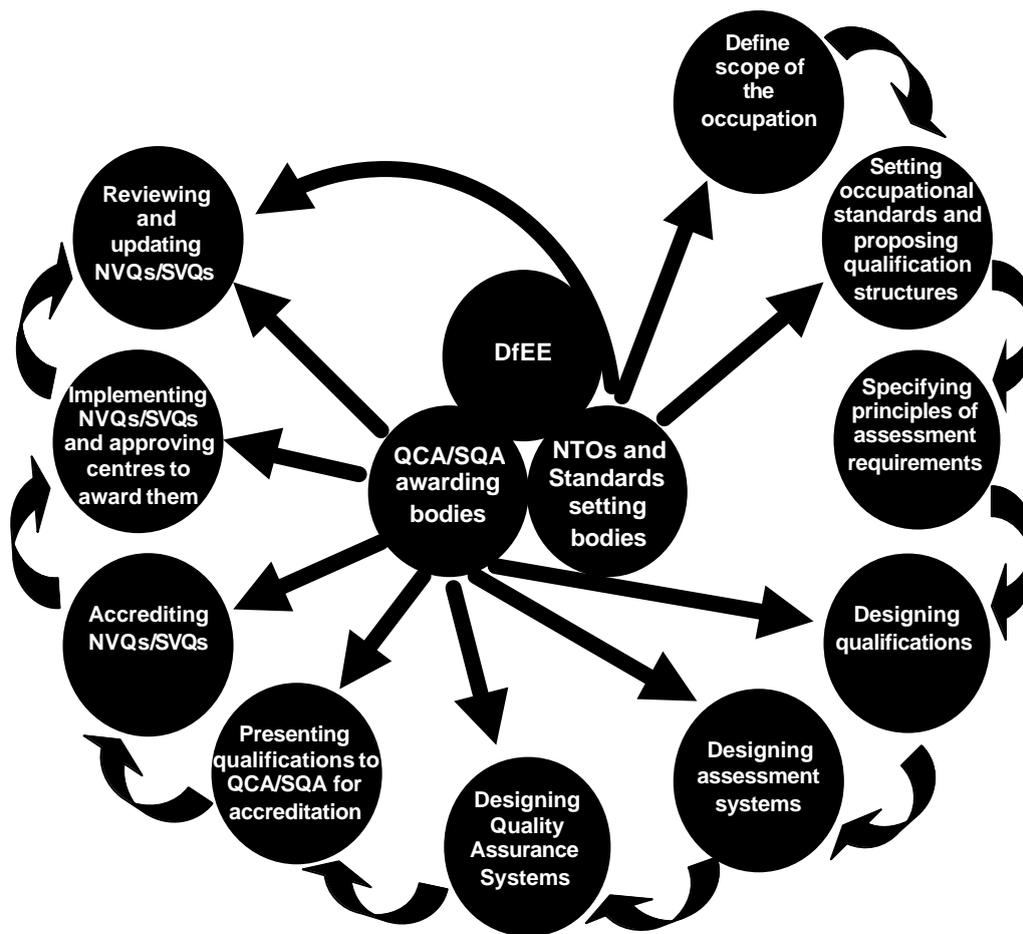
Approved centres are organisations approved to assess and verify qualifications.

They must have effective internal procedures to ensure the quality and consistency of assessment.

They help to set occupational standards through the NTO for their Industry.

They also have direct links with local and regional organisations such as Training and Enterprise Councils (Local Enterprise Companies in Scotland) which bring together training, education and employment interests across their regions.

Employers are represented on the boards of national and regional Government agencies, and on the governing bodies of further education colleges and schools.



***Fig. 2***

The standards are defined and kept up to date by NTO's and other standards setting bodies, and are recognised by QCA and SQA.

Vocational standards must be reviewed and updated through out the course of their existence to ensure they are relevant to the changing needs of any particular job based competence.

As it can be seen from Fig. 2 there are many interrelationships between the various functions and vocational bodies for Occupational Standards which must be in place before the candidate can participate.

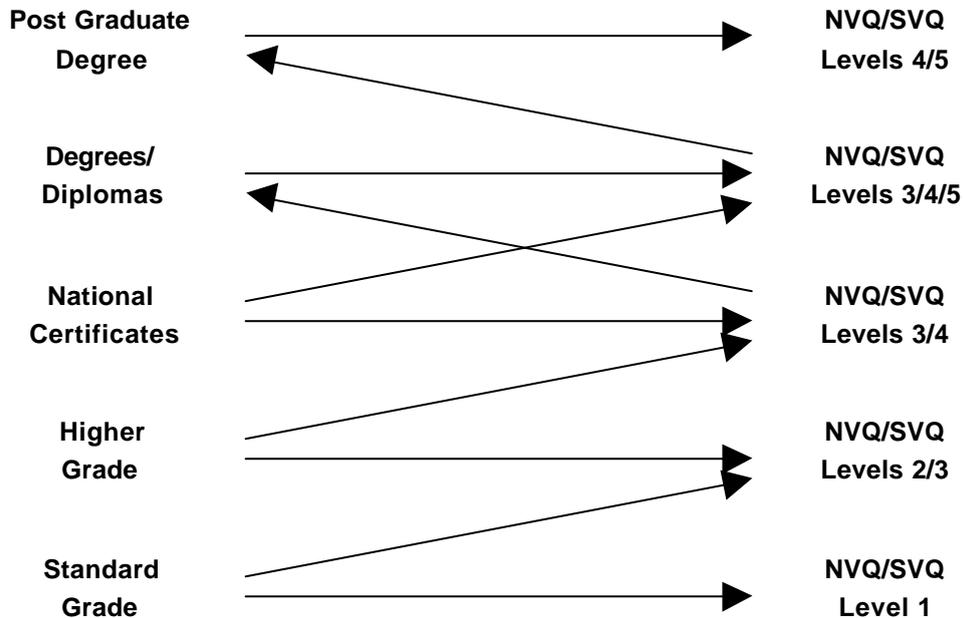
As previously stated, the specific standards of competence candidates are expected to reach a particular occupational area, include knowledge, understanding and performance. These criteria also provide the basis for assessment, which is crucial to their use in NVQ/SVQ's.

NVQ's and SVQ's are work related, competence based qualifications. They are divided into five levels. In the world of work these equate to:

- Level 1 - Foundation skills in occupations
- Level 2 - Operative or semi-skilled occupations
- Level 3 - Technician, craft, skilled and supervisory occupations
- Level 4 - Technical and junior management occupations
- Level 5 - Chartered, professional and senior management occupations

#### 4 THE RELATIONSHIP BETWEEN NVQ'S AND SVQ'S LEVELS AND ACADEMIC QUALIFICATIONS

Attempts to equate different types of qualifications are not always constructive and some say equivalences like these deny the very essence of NVQ's and SVQ's. The purposes of qualifications are often very different and it is not possible to define equivalence. However, Fig. 3 conveys the sense of the level of achievement associated with a variety of qualifications and shows their position in relation to each other.



**Fig. 3**

#### 5 THE BENEFIT OF NVQ'S/SVQ'S IN METERING MANAGEMENT

- Candidates who undertake competence NVQ's/SVQ's can be assessed whilst undertaking their normal duties this goes hand in hand with formal training plans already in place.
- Qualified assessors who carry out an assessment, will either deem the candidate competent or not yet competent. The assessor has to judge the candidates competence against the approved standards of Performance, Knowledge, and Physical Evidence.
- Candidates build a portfolio of evidence for each Unit of the NVQ/SVQ and this builds into a complete qualification. If a Candidate does not complete all the required units in the Standard, the Candidate will be credited with the Units that they achieve.
- This competence Portfolio forms the Candidates formal Training Pack from which employers can monitor their staff's and their Sub-Contractors performance.
- NVQ's/SVQ's are National Qualifications, recognised throughout the UK, across Europe and World-Wide. This makes recruitment so much easier, and means that your staff can be seen as competent to the widest possible audience.
- Because they are assessed in the Workplace, NVQ's/SVQ's can minimise the time people need to spend away from their work.
- NVQ's/SVQ's are available no matter what age the candidate is, or at what stage their career is at. There are no entry qualifications.
- NVQ's/SVQ's offer opportunities for personal as well as career development. They can help improve confidence and self-esteem.
- NVQ's/SVQ's provide a guarantee of a persons ability to do a job. They also provide transferable skills valued by many employers. Because of this, having an NVQ/SVQ improves a persons employability and career prospects.

## **6 WHAT ABOUT THE CUSTOMER**

The requirements of the customer are usually very simple, the down time on the equipment must be kept to a minimum and the task should require minimal supervision.

By supplying a customer, staff with a recognised qualification, your ensuring they receive a higher quality of service, improved morale, fewer costly errors and an improved turn over.

When a customer puts out a tender for a specific task, if the returns show that a company has actively trained their staff and can show SVQ qualifications, it will be seen as a demonstration of reputation management and quality of service. It will be an important consideration in the final award process. It potentially gives a company a better market image and perhaps more importantly resultant improvements in market share.

Providing a service is only one element, all companies should look within. The benefits obtained when hiring in help can be achieved by investing in the training of ones own staff, feedback has shown less wastage, a drop in absenteeism and consequent improvement in production performance. The SVQ is proving to be a meaningful badge of quality.

By undertaking an SVQ an individual is forced to look at all aspects of a task in more depth, from safety implications, communications and not just the actual physical activity - it is one complete package. This ensures that the people interfacing with the equipment are trained to do so, thus requiring less supervision, having an understanding of the systems.

It gives the manager a guarantee on a individuals level of knowledge. The question to ask is "can we afford **not** to undertake a training program" and not "should we be implementing or undertaking this training program".

## **7 THE FIRST OF THE MPA STANDARDS**

Accreditation of a Qualification by City and Guilds of London Institute (CGLI) and PESC for Meter Proving at Level 3 was awarded 7 July 1998. This qualification is now available to Industry, world-wide.

The MPA are currently producing an NVQ / SVQ for Measurement Technicians & Engineers involved in other aspects of Metering. The Standards have been submitted to the Training Bodies for final comment and approval and it is believed that an Accreditation of this Qualification at Level 3 will be awarded before the end of this year.

## **8 NEARING THE END**

The MPA's work will continue with further standards development and Accreditation of Qualifications to Level 4 and Level 5 for Metering Auditors and Flow Measurement Consultants/Engineers.

However we need your support to make this possible.

## 9 ACKNOWLEDGEMENTS

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## References

[1] Paper presented at the North Sea Flow Measurement Workshop, a workshop arranged by NFOGM & TUV-NEL

Note that this reference was not part of the original paper, but has been added subsequently to make the paper searchable in Google Scholar.