



Higher National Qualifications

And

Scottish Vocational Qualifications

Senior Verifier Report

2007

Subject: Electrical Installation, Electrical Principles and Electrical Plant

Sector Panel: Engineering, Science and Mathematics

The purpose of this report is to provide feedback to centres on verification which has taken place within Higher National and Scottish Vocational Qualifications in this subject.

HIGHER NATIONAL UNITS

FEEDBACK TO CENTRES

General comments:

A single report is presented for the Electrical Installation, Electrical Principles and Electrical Plant verification groups mainly because the technical content of the three subjects areas are closely related. Units in the Electrical Principles group provide much of the underpinning knowledge and understanding for the other two verification groups. There are also at least three external verifiers who verify across all three verification groups. A table showing verification activities, at HN level, in all three cognate groups is shown below.

Verification Group	Number of centres where verification activity took place	Number of HN units verified	Number of HN units accepted	Number of HN units where a hold was placed on the unit
Electrical Installation	4	10	8	2
Electrical Principles	4	12	12	0
Electrical Plant	3	8	8	0
Total	11	30	28	2

It will be noted from the above table that verification group activities have been quite significant involving six different verifiers across the three verification groups. External Verification activity has involved a mixture of verifying old style units developed in the mid-nineties and new style units developed under the current SQA, HN Design Principles.

Advice on good practice and areas for further development:

External Verifiers identified a number of good practice points while engaging in their external verification activities. These include the following:

As part of the delivery of the new Electrical Safety unit one centre took its candidates on a site visit. This visit helped to enhance candidate assessment responses. At the same centre candidates considerably enhanced their portfolios for the unit Sub-Station Layout and Equipment by incorporating digital photographs of equipment used in substations in their portfolios.

At another centre candidates were encouraged to perform and record all the calculations as part of the Electrical Installation Design unit. Doing the calculations helped to reinforce basic electrical installation concepts and principles and strengthened candidates' numeracy skills.

One centre made extensive use of simulation software to analyse electrical network problems accurately and rapidly. Centre staff backed this up by allowing candidates to use the Internet to see real electrical components. They further backed this up by getting candidates to perform practical work so that they could see the difference between the 'real' and 'virtual' worlds.

In another centre candidates undertaking the DC Motors unit were provided with an extensive list of websites relating to DC electrical motors so that they could undertake an in-depth investigation of motors as part of their formal assessment. Centre staff believe that the provision of a large number of websites to explore also allows candidates to develop their Internet search skills.

In general, verifiers reported that centre staff were operating the IV systems in their centres effectively with evidence of minutes of meetings, IV records etc readily available. Unit folders were in the main comprehensive which made the external verification task a lot simpler. In most centres staff were providing good feedback to candidates.

In the centre where the two holds were placed, the units were being delivered and assessed by a member of staff who had little knowledge and understanding of the requirements of HN unit specifications. It is crucial that centres employing new staff to deliver and assess units ensure that they are appropriately trained for this task.

HIGHER NATIONAL GRADED UNITS

TITLES/LEVELS OF HN GRADED UNITS VERIFIED

Information is presented for the following two Graded Units:

DN3V 34 Electrical Engineering: Graded Unit 1

DN3X 35 Electrical Engineering: Graded Unit 2

FEEDBACK TO CENTRES

General comments:

The Graded Unit DN3V 34 is in the form of a 3 hour written examination sat under controlled, supervised conditions in which candidates are not allowed to bring any notes, text books, tutorials etc into the assessment. Candidates are allowed to use a scientific calculator. The QST for Electrical Engineering again agreed for 2007 to produce a single examination paper which was sat by all candidates on the same day. Details of the 2007 overall results for the Graded Unit DN3V 34 are presented below (nb these are based on the sample submitted by centres for the central verification event in June):

Number of centres presenting candidates	Total number of candidates sitting the Examination	Number passing the Examination	Number failing the Examination	Number of A grades	Number of B grades	Number of C Grades
5	76	51	25	28	8	15

The QST in Electrical Engineering was very pleased by the rise in the number of centres presenting candidates in 2007 and by the increase in the pass rate over the previous year. It is pleasing to note the number of candidates who achieved a Grade A. This persuaded both the external verifiers verifying the paper and the QST that the paper was 'entirely do-able' and that candidates who were willing to work hard and revise extensively could score a good mark.

The Graded Unit DN3X 35 is a 2 credit Engineering Project. One centre presented candidates for this Graded Unit in 2007. Eight candidates completed their projects and there were 7 Grade 'C' and 1 Grade 'B' results. The verifiers confirmed the grades proposed by the centre.

Advice on good practice and areas for further development:

The results from this year's Electrical Engineering Examination have persuaded the QST in Electrical Engineering of the benefits of producing a single paper to be used by all centres on the same day.

This was the first session that a centre presented candidates for the graded unit DN3X 35 Electrical Engineering Graded Unit 2 and the external verifiers learned some very important lessons from verifying candidates' work which they would wish to pass onto centres. Some of these lessons were as follows:

- (1) All candidate projects were in the form of an investigation. The Electrical Engineering: Graded Unit 2 specification contained no information on assessing investigations (it was thought candidates would do a practically based project). However, centre staff were able to adapt the specification to deal with the assessment of investigations. The Qualifications Manager, Engineering has agreed that the Graded Unit should be updated to include information on investigations for session 2007/8. The Senior Verifier for Electrical Engineering has now completed this task.
- (2) More guidance needs to be given on the structure, content, style and word length of project reports. For example, candidates need to learn the discipline of writing in a correct reporting style and avoid filling their reports with unnecessary materials.
- (3) Greater emphasis needs to be given to the full and accurate completion of assessor back-up sheets and candidate log books since these contain information that is very important to the external verification process.
- (4) While it is acknowledged that the Internet can provide useful information on subject matter it is important that candidates do not over rely on it at the expense of investigating information from other sources. Candidates need, as far as is practicable, to validate the accuracy of information from different sources. External Verifiers found significant technical inaccuracies in one report.
- (5) Better guidance is required to be given to candidates on how to evaluate different sources of information and how to draw up meaningful and accurate conclusions.

In light of these findings SQA has decided to produce a Guidance Document to cover a range of issues associated with the delivery and assessment of all Graded Unit 2 Engineering Projects in the new suite of HND Engineering awards.

NATIONAL UNITS

(i.e. Freestanding units which contribute to NPAs or NCs etc.)

TITLES/LEVELS OF NATIONAL UNITS VERIFIED

A Number of NC Units in the Electrical Installation, Electrical Principles and Electrical Plant verification groups, at SCQF levels 5 and 6, were externally verified in session 2006 - 07.

FEEDBACK TO CENTRES

General comments:

A single report is also presented for the Electrical Installation, Electrical Principles and Electrical Plant verification groups at NC level for the same reasons as given under the HN unit section. A table showing verification activities, at NC level, in the three verification groups is shown below.

Verification Group	Number of centres where verification activity took place	Number of NC units verified	Number of NC units accepted	Number of NC units where a hold was placed on the unit
Electrical Installation	5	17	17	0
Electrical Principles	2	7	7	0
Electrical Plant	0	0	0	0
Total	7	24	24	0

It can be seen from the above table that external verification activity took place in the Electrical Installation and Electrical Principles verification groups but not in the Electrical Plant group. All units externally verified were accepted.

Advice on good practice and areas for further development:

External verifiers noted the following good practice points during their visits:

At one centre the external verifier saw evidence of high quality learning and teaching notes. These notes were not over dense in content, were pitched at the right level for candidates and made very effective use of photographs and diagrams to reinforce learning. One learning and teaching pack contained a very well developed risk assessment.

With the exception of one centre, assessment instruments were very well presented and contained clear instructions of what candidates were to do to complete assessment tasks. In general, centres were carrying out internal verification effectively with good records of IV meetings (including action points), IV records etc. Feedback to candidates was normally good. Unit folders were comprehensive and well maintained.