

-SQA- SCOTTISH QUALIFICATIONS AUTHORITY
NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION
GENERAL INFORMATION

-Module Number- 3251093 **-Session-1993-94**
-Superclass- WA
-Title- **OPERATIONAL PROCEDURES - BASIC
PROCESSING**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Carrying out operational procedures and recording operational data for a given process unit or service.

OUTCOMES

1. carry out operational procedures for a given process unit or service;
2. record and process operational data.

CREDIT VALUE: 1 NC Credit

ACCESS STATEMENT: There is no access statement for this module.

For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

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NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**STATEMENT OF STANDARDS****UNIT NUMBER:** 3251093**UNIT TITLE:** OPERATIONAL PROCEDURES - BASIC PROCESSING

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. CARRY OUT OPERATIONAL PROCEDURES FOR A GIVEN PROCESS UNIT OR SERVICE

PERFORMANCE CRITERIA

- (a) The use of start-up procedures is in accordance with given operational procedures.
- (b) The adjustments made are in accordance with the given specifications.
- (c) The use of shut-down procedures is in accordance with given operational instructions.

RANGE STATEMENT

The range statement for this outcome is specified within the performance criteria.

EVIDENCE REQUIREMENTS

Practical evidence of the ability to use start-up procedures, make appropriate adjustments and use shut-down procedures.

OUTCOME

2. RECORD AND PROCESS OPERATIONAL DATA

PERFORMANCE CRITERIA

- (a) The recorded measurements and observations are accurate and structured in a format appropriate to the procedure.
- (b) The assessment of the reliability of results is correct with respect to the degree of accuracy of the procedure.
- (c) The graphical presentation of measurements or observations is/are appropriate to the results.
- (d) The calculations from measurements are correct.

RANGE STATEMENT

The range statement for this outcome is specified within the performance criteria.

EVIDENCE REQUIREMENTS

Written evidence of the ability to record measurements, assess their reliability, produce a graphical presentation and complete calculations.

ASSESSMENT RECORDS

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of Support Notes.

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NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**SUPPORT NOTES****UNIT NUMBER** 3251093**UNIT TITLE** OPERATIONAL PROCEDURES - BASIC PROCESSING

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE This module will enable the candidate to further devise the practical skills required to operate a range of process units and services. This module would be suitable for candidates on a full-time course.

SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

This module will enable you to carry out operational procedures for a given process unit or service and record and process operational data.

CONTENT/CONTEXT

N.B. Industrial plant or pilot plant could be used to demonstrate these competences. Industrial Units would also be redeveloped. Start-Up/Shut-Down/Adjustments for some of the following equipment (including safety equipment) to specification. Correct use of Units and appreciation of range and accuracy.

Services

Water	Rain Storm Mains Process	- - - -	Identification of unit. Use of control. Valves. Cleaning of grids and filters etc. Recording from simple measuring devices. including pH check, conductivity measurements.
Steam	High/low Pressure	-	Choice or services, control of supply to specification, use of wet/dry steam control valves. Steam traps. Escape valves. Steam used for heating, cleaning, pumping, trade heating. Record of temp., pressure and quantity used.

Vacuum	High Low	-	Appropriate to transfer, drying, refrigeration. Control to preset level. Records from measuring devices. Bourdon Gauge, etc. Manometer, etc.
Electricity	AC/DC Low/Higher	-	identification of type of supply. Use of measurement - control devices as specified.
	Voltage	-	Voltmeter, ammeter, ohmmeter. Measurements. Supplies from same. Calculation of power, quantity, etc.
Refrigeration		-	Small and large scale units. Levels of refrigeration required. Hazards (safety requirements).

Process Units

Distillation		-	Simple, flash. Continuous operation/batch operation. Steam, vacuum, packed/plate towers. Reflux control. Feed rate, reflux rate - top - bottoms. Take off control temperature. Pressure measurement and control.
Extraction Equipment		-	Batch and multistage units. Agitation method. Solvent recovery method.
Gas Absorption Equipment		-	Activated charcoal, molecular sieves, etc.
Evaporation and Crystallisation		-	Plate and tube evaporators. Flow rate and temperature measurements. Cooling and evaporative crystallisers batch and continuous type tray driers etc. Flow rate, temperature and pressure measurements.

Heat Exchangers

Shell & Tube, plate		-	Temperature and flow rate measurement and control.
Mixing and Blending		-	Use of sparge. Pressure measurement. Blenders, type, sigmablade. Anchor paddle, etc. Speed of rotation. Torque.
Size Reduction		-	Crushing and grinding equipment. Use of fluids. Size classification equipment.

		Measurement and calculation of average size.
Gas Cleaning	-	Wet/dry methods. Settling tanks. Cyclones. Electrostatic precipitators. Bag filters, scrubbers. Pressure, flow ratio temperature control. Effect of static.
Gas Compression	-	Gas liquefaction, refrigeration units.

APPROACHES TO GENERATING EVIDENCE A candidate-centred, resource-based learning approach is recommended. The outcomes in this module need to be taught separately and it is likely that an integrated approach will be used. The outcomes do not need to be tackled in the order shown.

During the work of the module, candidates should have several opportunities to develop practical and problem-solving skills. Each candidate should be assessed at appropriate points throughout the module. Where a candidate is unsuccessful in achieving an outcome, provision should be made for remediation and reassessment.

ASSESSMENT PROCEDURES Centres may use instruments of assessment which are carried out by tutors/trainers to be most appropriate. Examples are as follows:

Outcomes 1 & 2 It is recommended that an assignment is set here whereby the candidate carries out practical exercises and produces evidence of recording and processing the relevant data.

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised and Recommended Groupings'.

REFERENCES

1. Guidelines for Module Writers.
2. SQA's National Standards for Assessment and Verification.
3. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment.
4. Procedures for special needs statements are set out in SQA's guide 'Students with Special Needs'.

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