Repair and overhaul valves

Level  
4

Credits  
5

Purpose  
People credited with this unit standard are able to: demonstrate knowledge of the principles of operation, analyse and plan, repair and overhaul, test, and report the repair and overhaul of valves.

Subfield  
Electricity Supply

Domain  
Electricity Supply - Power System Maintenance

Status  
Registered

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Entry information  
Open.

Accreditation  
Evaluation of documentation and visit by NZQA and industry.

Standard setting body (SSB)  
Electricity Supply Industry Training Organisation

Accreditation and Moderation Action Plan (AMAP) reference  
0120

This AMAP can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Special notes

1 This unit standard is intended for, but not restricted to, workplace assessment. The range statements within the unit standard can be applied according to industry specific equipment, procedures and processes.

2 Safety of personnel and plant must be a priority throughout the assessment. If the safety requirements are not met the assessment must stop.

4 ‘Industry requirements’ include all industry and documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.

5 The term ‘repair and overhaul’ includes fault finding, corrective work and minor modifications to generation plant and equipment.

6 This unit standard includes valve actuator and drive mechanism where drive is manual, hydraulic, or pneumatic.

7 This unit standard excludes electrical actuator and controls when part of a control or protective system, hydro control valves of 450mm diameter and above, and porter valves used in hydraulic and pneumatic control systems.

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### Elements and performance criteria

#### Element 1

Demonstrate knowledge of the principles of operation of valves.

**Range** includes but is not limited to - regulating, non-return and relief safety valves; gate, globe, cock, needle, butterfly ball, minimum flow, plug, multi-port, parallel slide, shuttle, and diaphragm valves; flow control, isolating, pressure reducing, temperature control, three way diverting valves.

**Performance criteria**

1.1 The principles of valve operation are described and defined in accordance with manufacturers’ specifications.

1.2 The types and characteristics of valves are described in accordance with industry requirements.
Element 2

Analyse and plan valve repair and overhaul requirements.

Range  maintenance records, scope of work, resources, specifications, work plan, drawings, identification of hazards.

Performance criteria

2.1 The need to repair and overhaul is determined in accordance with industry requirements.

Range  includes but is not limited to - defect notification, condition monitoring, failure, trip, loss of performance.

2.2 Work plans are prepared in accordance with industry requirements.

2.3 Prepared plans identify all necessary procedures and resources required for the service in accordance with industry requirements.

2.4 Work plans and specifications are complete, concise, and legible, and reflect identified risk with hazards being identified and eliminated, isolated, or minimised in accordance with industry requirements.

2.5 Work plans and specifications are made available for all personnel involved in implementing the plans within the scheduled time frame and in accordance with industry requirements.

Element 3

Repair and overhaul valves.

Range  includes but is not limited to - regulating, non-return and relief safety valves; and choose three from the following – gate, globe, cock, needle, butterfly ball, minimum flow, plug, multi-port, parallel slide, shuttle, diaphragm valves, flow control, isolating, pressure reducing, temperature control, three way diverting valves.

Performance criteria

3.1 Isolation of plant and equipment is checked in accordance with industry requirements.

3.2 Valves and components requiring repair and overhaul are identified, analysed, and condition determined in accordance with industry requirements.
3.3 Valves and components are repaired and overhauled in accordance with industry requirements.

Range includes but is not limited to - disassemble valves into component parts, inspect component parts for defects, locate, identify and diagnose defects; assess the need for repair and/or replacement, adjust, rectify, repair defective components, manufacture and/or install replacement components, clean, re-assemble components into valves; includes – lap and reseat valve, check for operation, reset and adjust safety valves.

3.4 Repair and overhaul activities and resources are co-ordinated throughout the duration of the work to minimise disruption to personnel, plant, electricity generation, and the environment in accordance with industry requirements.

Element 4

Test valves.

Range exercise valves as per schedules, function test valve and actuator operation, check for isolation or passing under pressure or flow, vibration, temperature, noise, calibration, test readings, alignment, limit switches, indications, test and set relief valve lift pressure.

Performance criteria

4.1 Tests are carried out in accordance with the prepared work plan and industry requirements.

4.2 Test equipment is used in accordance with industry requirements.

Element 5

Report repair and overhaul.

Range repair and overhaul report, job sheet, daily diary, log book, test reports and results, plant history, authorisations, ‘as built’ drawings.

Performance criteria

5.1 Reported information is completed in accordance with industry requirements.

5.2 Maintenance information is recorded in the format required by the asset owner and filed within scheduled timeframe in accordance with industry requirements.

5.3 Any further action required for plant and equipment is identified, recorded, and communicated to appropriate personnel in accordance with industry requirements.
Please note

Providers must be accredited by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the Electricity Supply Industry Training Organisation info@esito.org.nz if you wish to suggest changes to the content of this unit standard.