

Title	Test and repair a SCADA system		
Level	5	Credits	6

Purpose	People credited with this unit standard are able to: prepare for inspection, servicing, and testing of a SCADA system; carry out diagnostic, sub-system, and 'end-to-end' tests on a SCADA system; and interpret and analyse test results and complete compliance documentation for a SCADA system.
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Classification	Electricity Supply > Electricity Supply - Testing
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Available grade	Achieved
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Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.
- 2 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of the Health and Safety at Work Act 2015; and any subsequent amendments and replacements; Electricity Act 1992; Electricity (Safety) Regulations 2010; Electricity supply industry codes of practice and documented enterprise procedures, including *Safety Manual – Electricity Industry* (SM-EI) (2015) Wellington: Electricity Engineers' Association, available at www.eea.co.nz.
- 3 Definitions
Asset owner refers to a participant who owns or operates assets used for generating or conveying electricity.
Industry requirements include all asset owner requirements; manufacturers' specifications; and enterprise requirements which cover the documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
SCADA is Supervisory Control and Data Acquisition.

Outcomes and performance criteria

Outcome 1

Prepare for inspection, servicing, and testing of a SCADA system.

Performance criteria

- 1.1 All equipment connected to the SCADA system is identified and its function described.
- Range may include but is not limited to – identification of the boundaries of data acquisition, data monitored, displayed and stored, master stations and satellite units.
- 1.2 The function specification of the SCADA system and its operation are described.
- Range may include but is not limited to – as-built design changes, customer design needs, operational configuration requirements, operating modes, time adjustment tuning, software loading.
- 1.3 The servicing and test methods are identified and described.
- Range may include but is not limited to – tests for all functional modes; equipment alignment and performance levels database management and functions.

Outcome 2

Carry out diagnostic and sub-system tests on a SCADA system.

Performance criteria

- 2.1 An access permit, or its approved equivalent, is obtained and a safe work zone is identified.
- 2.2 The required test and diagnostic equipment is identified prior to conducting the tests.
- Range may include but is not limited to – primary signal monitoring instruments, oscilloscopes, spectrum analysers, power meters, distortion meters, modulation meters, frequency counters, fibre optic level meters, light source.
- 2.3 The input and output signals are measured for compliance with specifications.
- Range may include but is not limited to – open-closed, voltage, current, abnormal conditions, equipment availability, load limits.

Outcome 3

Carry out 'end-to-end' tests on a SCADA system.

Performance criteria

- 3.1 The selected procedures and plans are followed.

3.2 The results of the tests and inspections are recorded.

Range may include but is not limited to – client requirements, values and signal functional relationships captured for analysis and interpretation.

3.3 Repairs are completed.

Range may include but is not limited to – equipment specifications, manufacturer's operational safety regulations, personnel, equipment.

3.4 Equipment component and system operation are restored to the specified level of technical performance.

Range may include but is not limited to – manufacturer's specifications.

Outcome 4

Interpret and analyse test results and complete compliance documentation.

Performance criteria

4.1 All recorded test results are analysed.

Range may include but is not limited to – reference to design specifications, schematic diagrams, manufacturer's requirements, client standards, previous test results, ensuring results are within given specifications.

4.2 All non-compliant test results are investigated, and corrective action is taken.

Range may include but is not limited to – rewiring, repair, investigation at remote external signal sources, adjustments, recommendations for further corrective action.

4.3 Handover documentation and servicing reports are completed.

Range may include but is not limited to – documentation completed with summary of diagnostic tests, sub system tests, servicing and/or commissioning, recommendations for improvement.

4.4 Client post-repair needs are identified, and prompt action is taken to meet client requirements.

Range may include but is not limited to – training, user familiarisation, user documentation, satisfaction, feedback, quality control monitoring, preventative measures and/or procedures.

4.5 Documentation relating to the repair of equipment components is completed.

Range may include but is not limited to – invoices, histories, project reports, stock reordering, sign-offs, warranties, contractual obligations.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 April 1998	31 December 2012
Revision	2	11 February 2004	31 December 2012
Review	3	19 May 2006	31 December 2012
Review	4	08 December 2011	31 December 2022
Review	5	23 April 2020	N/A

Consent and Moderation Requirements (CMR) reference	0120
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Connexis – Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.