

Domain	Control and Instrumentation
Title:	Maintain instrumentation and control equipment
Level: 3	Credits: 4

Purpose

This unit standard specifies the competencies required to maintain instrumentation and control equipment. It includes carry out risk assessment, performing equipment checks, service pressure, temperature, level and flow devices, repair pressure, temperature, level and flow devices, perform equipment start up and Record equipment deviations. This unit standard is intended for those who work in instrumentation industry.

Special Notes

1. Entry information:
 - Prerequisite
 - *Unit I&C01 - Demonstrate basic knowledge of workplace health and safety*
 - *Unit I&C02 - Plan and organise work in instrumentation work environment*
2. Assessment evidence may be collected from a real or an appropriate simulated workplace in which Instrument and Control operations are carried out.
3. To demonstrate competence, minimum evidence of All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' and operational guidelines
4. Typical maintenance includes but is not limited to pressure, level, density, flow measurement instruments and control system equipment
4. Glossary of terms:
 - *specifications'* refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements
5. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act 2007, No. 11, 2007
 - IEEE 518
 - Regulations relating to the health & safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007
 - And all subsequent amendments
6. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications

Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Carry out Risk Assessment

Range

Hazards Identification may include but are not limited to moving Machinery and Equipment, Dust, Manual handling of equipment and obtaining permit to work.

Performance Criteria

- 1.1 Safety requirements are followed in line with safety plans and policies.
- 1.2 Hazards in the work area are identified, assessed and appropriate personnel notified in line with workplace procedures.
- 1.3 Identified Hazards are recorded and managed.

Element 2: Perform equipment checks

Range

Equipment checks may include but is not limited to inspections on cleanness of equipment, checks for loose parts, loose wiring, Cables, Glands and equipment integrity

Performance Criteria

- 2.1 Equipment is inspected for visible deviation.
- 2.2 Equipment is inspected for loose connections, damaged cables and physical condition and verifying the presence of signal - and source of energy.
- 2.3 Equipment brackets are inspected for rust, damage and alignment.
- 2.4 Equipment moving parts inspected for wear and tear.
- 2.5 Cables and glands are inspected for loose connections, physical damage and secured onto cable racks.

Element 3: Service pressure, temperature, level and flow devices

Range

Service includes and is not limited to cleaning, lubrication and replacement of worn parts

Performance Criteria

- 3.1 Inspection to detect abnormalities is performed according to the workplace procedures

- 3.2 Device operations and functions are checked for functionality according to manufacturers' specifications.
- 3.3 Devices sensing lines and taps are cleared, isolated, equalized or blown down to ensure lines are not plugged according to workplace procedures.
- 3.4 Devices are cleaned according to workplace procedures.
- 3.5 Device calibration performed before returning to service.
- 3.6 Calibration of devices verified according to maintenance specifications.

Element 4: Repair pressure, temperature, level and flow devices

Range

Repairs include but not limited to fault diagnosis, problem fixing, testing, commissioning and job documentation and recommendations

Performance Criteria

- 4.1 Diagnostic tools and equipment are selected and prepared
- 4.2 Fault detection and inspections are performed according to workplace procedures
- 4.3 Device functions are checked and faulty ones isolated according to workplace procedures
- 4.4 Calibration and functional checks of device are performed
- 4.5 Fault root causes are determined according to workplace procedures
- 4.6 Faulty equipment are identified according to workplace procedures
- 4.7 Repair tools and equipment are selected and used according to workplace procedures
- 4.8 Components are selected according to codes and manufacturers' specifications
- 4.9 Faulty components are replaced according to workplace procedures
- 4.10 Plugged lines are cleared using pressurized liquids or air according to workplace procedures
- 4.11 Process-wetted components are inspected and cleaned
- 4.12 Devices are calibrated according to manufacturers' specifications
- 4.13 All repaired equipment are tested and commissioned according to workplace procedures.

Element 5: perform equipment start up and Record equipment deviations

Range

Equipment start up may include but is not limited to powering equipment, verifying minimum and maximum operation parameters and verifying with test references.

Recording of equipment deviation may include but is not limited to capturing of major faults, abnormal wear and tear, errors recorded and corrections carried out.

Performance Criteria

- 5.1 Equipment is energized or powered up.
- 5.2 Minimum and Maximum process variables are verified and where applicable loop functionality is verified.
- 5.3 Equipment major deviations are recorded onto log sheet.
- 5.4 Equipment abnormal wear and tear is recorded.
- 5.5 Errors and corrections carried out are recorded.

Registration Data

Subfield:	Electrical Engineering
Date first registered:	
Date this version registered:	
Anticipated review:	
Body responsible for review:	Namibia Training Authority