



Australian Government

Department of Education, Employment and Workplace Relations

NWP348B Monitor, operate and control sedimentation and clarification processes

Revision Number: 2

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Modification History

NWP348B Release 2: Layout adjusted. No changes to content.

NWP348B Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to monitor, operate and control sedimentation and clarification plant; and to measure and report on system performance and process quality control. The ability to identify faults, determine and apply technical adjustments, conduct chemical dosing procedures and produce technical reports are essential to performance.

Application of the Unit

This unit supports the attainment of skills and knowledge required for operational staff with a specific responsibility for ensuring that sediment and clarification processes in water treatment plants conform to organisational standards and comply with statutory requirements.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency. Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Monitor sedimentation and clarification plant performance.	1.1 Monitor test results and <i>processes</i> to maintain the parameters of operation. 1.2 Identify and report process faults and the operational condition of plant according to <i>organisational and statutory requirements</i>.
2 Control chemical use.	2.1 Use, handle and store chemicals according to organisational procedures and statutory requirements. 2.2 Prepare and apply chemical dosing according to plant processes and organisational procedures and statutory requirements. 2.3 Maintain chemical supply and usage records according to statutory requirements.
3 Operate and control sedimentation and clarification processes.	3.1 Carry out <i>routine plant inspections</i> according to organisational and plant requirements. 3.2 Collect process samples and conduct standard <i>tests</i>. 3.3 Perform <i>process calculations</i> associated with sedimentation and clarification processes. 3.4 Carry out <i>system adjustments</i> to enhance system performance according to organisational procedures and statutory requirements.
4 Compile sedimentation and clarification process records.	4.1 Compile reports from plant and system data to meet organisational and statutory requirements. 4.2 Report observations outside defined parameters for further action.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- identify and correct operational problems
- produce reports and logs
- use safety and personal protective equipment
- interpret plans, charts and instructions
- interpret policies, procedures and standards
- communicate with employees and various customers
- perform process calculations
- use communication equipment
- give and receive instructions
- prepare and apply chemical dosing
- operate computerised equipment
- identify control system faults
- sample and test products

Required knowledge:

- system layout
- lock out procedures for mechanical and electrical installations
- policies, procedures and legislation
- relevant utilities and service bodies
- communication systems
- settling aids
- hazardous materials handling
- environment, landscape and ground structure of work area
- risk factors and potential hazards related to water and/or wastewater treatment
- chemical dosing processes
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- pumping and valving systems
- control systems' policies and procedures for storing and handling dangerous goods and chemicals
- interpretation of material safety data sheets
- chemical and/or biological principles that form the basis of sedimentation and clarification processes

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The candidate should demonstrate the ability to monitor, operate and control sedimentation and clarification processes, including:

- conducting routine plant inspections
- taking samples and performing basic tests
- preparing and applying chemical dosing according to instructions
- identifying and reporting system faults
- making basic system adjustments according to instructions
- completing required documentation

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- relevant codes, standards, and government regulations

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence only taken at the point when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency

demonstrated over a period of time

- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Processes may include:

- sludge blanket clarifiers
- conventional clarifiers
- tube settlers
- high rate plate settlers
- recirculating contact clarifiers
- pulsator clarifiers
- ballasted sedimentation

Organisational and statutory requirements may include:

- by-laws and organisational policies
- standard operating procedures
- Australian Drinking Water Guidelines
- National Water Quality Management strategy
- environment protection
- occupational health and safety, including use of personal protective equipment
- chemicals
- dangerous goods
- lifts and cranes
- World Health Organisation standards
- Environment Protection Authority regulations
- licensing agreements
- electrical standards

Routine plant inspections may include:

- interaction and communication with other employees, other authorities and the general public
- visual observation
- identification of corrosion damage
- the use of equipment, including:
 - electronic monitoring and metering systems
 - recording systems
 - basic hand tools
 - sampling and laboratory testing equipment
 - control equipment
 - communication equipment
 - personal protective equipment

Tests may include:

- settling velocity tests
- pH

- Process calculations** may include:
- jar tests
 - turbidity and solids concentration (% v/v)
 - tank volumes
 - weir overflow rates
 - detention times
 - rise rates
 - surface loading rates
 - settling velocity
 - calculations associated with sludge settling tests
- System adjustments** may include:
- pH correction
 - chemical addition
 - sludge withdrawal rates
 - recirculation rates
 - flow rates
- Reports** may include:
- plant performance data
 - chemical usage

Unit Sector(s)

Not applicable.

Competency field

Treatment.