



Australian Government

Department of Education, Employment and Workplace Relations

FPPWAS340A Troubleshoot and rectify water systems

Release: 1

FPPWAS340A Troubleshoot and rectify water systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to troubleshoot and rectify water systems in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk and small boat licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to operators who troubleshoot and rectify water systems in the pulp and paper industry

This unit generally applies to those who:

- identify and analyse causes of faults
- rectify plant and equipment faults
- rectify water quality faults, and
- record and report water system information

to meet safety, quality and productivity requirements

It does not include starting up, monitoring and controlling or shutting down water systems

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills 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 performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

1. Identify and analyse causes of faults

- 1.1. Causes of faults are identified and analysed within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements
- 1.2. Visual checks are conducted
- 1.3. Alarms and visual checks are interpreted to determine fault type
- 1.4. Sampling and testing results are interpreted to identify variations from specifications
- 1.5. Cause and source of problem is identified and located using appropriate analysis
- 1.6. Relevant sources of information are accessed to assist analysis

ELEMENT	PERFORMANCE CRITERIA
2. Rectify plant and equipment faults	<p>2.1. Plant and equipment faults are rectified within OHS, housekeeping, SOP, environmental and safe working requirements and practices</p> <p>2.2. Equipment is shut down and isolation procedures are implemented prior to fault rectification as required</p> <p>2.3. Faulty equipment is identified and repaired or replaced</p> <p>2.4. Running adjustments and operator level maintenance are carried out</p> <p>2.5. Plant and equipment are returned to normal operation</p> <p>2.6. Restoration to normal operation is verified and communicated to relevant personnel</p>
3. Rectify water quality faults	<p>3.1. Water quality faults are rectified within OHS, housekeeping, SOP, environmental and safe working requirements and practices</p> <p>3.2. Quality faults or variations are identified by observation, systematic sampling and testing</p> <p>3.3. Samples for a range of tests are taken</p> <p>3.4. Test results are interpreted and operational adjustments made as required</p> <p>3.5. Faults are rectified or recommendations made for further action as required</p> <p>3.6. Out-of-specification water is actioned as required</p>
4. Record and report water system information	<p>4.1. Water system information is recorded and reported within OHS, housekeeping, SOP, environmental and safe working requirements and practices</p> <p>4.2. Variations from specification are documented</p> <p>4.3. Performance variations are documented</p> <p>4.4. Causes of deviation and corrective action undertaken is recorded as required</p> <p>4.5. Relevant information is communicated to appropriate personnel</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

REQUIRED SKILLS AND KNOWLEDGE

Required skills

- Uses required forms of communication in troubleshooting and rectifying water systems
- Communicates effectively with personnel to assist with analysis and resolution of operational problems
- Reads and interprets required documentation, procedures and reports
- Accesses, navigates and enters computer-based information
- Interprets instruments, gauges and data recording equipment
- Identifies and actions systems, quality and equipment faults within level of responsibility
- Assists others to identify and resolve operational problems in the workplace
- Takes samples, conducts tests, interprets and records results if required
- Identifies causes and effects of faults and corrective action on associated processes
- Selects and uses appropriate troubleshooting methods
- Takes timely corrective action to maximise safety, quality and productivity
- Undertakes necessary calculations to aid troubleshooting as required
- Identifies, accesses and interprets relevant historical and operational data and information
- Follows procedures for the handling of chemicals and hazardous materials
- Uses measuring equipment as required
- Maintains water quality to specification
- Maintains situational awareness in the work area
- Operates a small boat as required
- Operates high risk equipment as required
- Analyses and uses sensory information to adjust process to maximise safety, quality and productivity
- Uses electronic control and other systems to control equipment and processes as required

Required knowledge

- Procedures, regulations and legislative requirements relevant to troubleshooting and rectifying water systems including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Use and handling requirements of chemicals used; their purpose, effects, MSDS and SOP
- Relevant forms of communication
- Detailed knowledge of water system plant, processes and associated services sufficient to troubleshoot including:
 - plant layout
 - theory of operation

REQUIRED SKILLS AND KNOWLEDGE

- causes and effects of adjustments made to water systems and processes
- relationships between water system, plant and associated services
- An appropriate range of troubleshooting methods
- Sampling and testing process for plant and system operations, and process monitoring - purpose, standards and procedures as per site agreements
- Causes and effects of unplanned shutdown and appropriate responses
- Sensory information that indicates a deviation from standard operating parameters
- Application of small boat operation requirements
- Application of high risk equipment as required
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control the water system, within level of responsibility

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

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

Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of:

- the required knowledge and skills tailored to the needs of the specific workplace
- applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements
- applicable aspects of the range statement
- practical workplace demonstration of skills in troubleshooting and rectifying water systems

Context of and specific resources for assessment

A workplace assessment must be used to assess:

- the application of required knowledge on the job
- the application of skills on the job, over time and under a range of typical conditions that may be experienced in operating water systems

Access to the full range of equipment involved in integrated continuous operation of water systems in a pulp or paper mill is required

Method of assessment

A combination of assessment methods should be used. The following examples are appropriate for this unit:

- observation of applied skills and knowledge on the job
- workplace demonstrations via a mock-up or simulation that replicate part/s of the job
- answers to written or verbal questions about specific skills and knowledge
- third-party reports from relevant and skilled personnel
- written evidence e.g. log sheet entries, checklist entries, test results

Assessment processes and techniques must be culturally appropriate and in keeping with the language and literacy capacity of the learner and the work being

EVIDENCE GUIDE

performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

Range Statement

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. 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) may also be included.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product
- machine/process production rate

RANGE STATEMENT

Water system may include:

- de-alkalinisation plant
- de-mineralisation plant
- water softening plant
- chemical treatment plant
- reverse osmosis plant
- clarifier plant
- chillers
- water storage systems
- filtration systems
- cooling towers
- condensers
- potable water plant

Water sources may include:

- raw water
- mains water
- recycled water

Water types may include:

- fresh water
- treated water
- de-mineralised water
- softened water
- filtrate-clarified water
- potable water
- dilution water (filtrate) ex-vacuum system
- waste water (effluent)
- white water (ex-machine)
- cloudy water

Materials and supplies may include:

- chemicals
- filtering mediums

Equipment may include:

- flow control and metering devices
- pumping systems
- electronic and digital monitoring and metering
- valving systems
- recording systems
- pipes
- fittings
- chemical testing and analysis equipment
- chemical dosing equipment
- tanks and chests
- cranes and hoists
- communication equipment
- aeration ponds

RANGE STATEMENT

- chemical handling equipment
 - hand and power tools
 - pest control equipment
 - load shifting equipment
 - small boat
 - computer systems
 - electronic screens and alarms
 - process control systems
 - fully automated, semi-automated, manually operated plant and equipment appropriate to water processes and systems
 - analogue and digital instrumentation
- Electronic control systems may include:
- Digital Control System (DCS)
 - touch screens
 - robotics
- Hazards and risks in water systems may include:
- confined space
 - hazardous chemicals and materials
 - biological hazards
 - environmental hazards
 - heat
 - height
 - slippery surfaces
 - pressures
 - fumes
 - electrical
 - compressed air
 - nip points
 - flooding
- Legislation, regulatory, licensing and certification requirements may include:
- OHS and environmental requirements (local, state and commonwealth)
 - activity or task specific high risk and small boat licensing requirements
 - water and chemical legislation and regulations
 - safety instructions
- Documentation, procedures and reports may include:
- SOP
 - site policy and procedures
 - environmental sustainability requirements/practices
 - plant manufacturing operating manuals
 - confined space requirements
 - vendor documentation

RANGE STATEMENT

- reference manual
- quality procedures
- oil or chemical spills and disposal guidelines
- plant isolation documentation
- housekeeping
- safe work documentation e.g. plant clearance, job safety analysis, permit systems
- maintenance logs
- job sheets
- operating log
- production instructions
- Materials Safety Data Sheets (MSDS)
- process and instrument diagrams

RANGE STATEMENT

Maintenance may include:

- operator level maintenance as per site agreements
- operator maintenance schedules
- maintenance systems
- maintenance suppliers
- pro-active maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)

Sampling and testing may include checks of:

- sludge consistency
- pH
- conductivity
- flocculation
- colour
- suspended solids
- caustic strength
- alkalinity
- impurities
- brine
- bacteria
- colour
- acid strength

Communications may include

interaction with:

- team members
- production/service co-ordinators
- internal/external customers and suppliers
- maintenance services
- operational management
- statutory authorities
- internal/external customers and suppliers

Situational awareness may include

awareness of:

- traffic
- pedestrians
- location of equipment
- product
- hazards
- obstructions
- unexpected movement

RANGE STATEMENT

Sensory information may include:

- visual
- sound
- feel
- touch
- smell
- vibration
- temperature

Forms of communications may include:

- written e.g. log books, emails, incident and other reports, run sheets, data entry
- reading and interpreting documentation e.g. standard operating procedures, manuals, checklists, drawings
- verbal e.g. radio skills, telephone, face to face, handover
- non-verbal e.g. hand signals, alarms, observations
- signage e.g. safety, access

Unit Sector(s)

Not Applicable