



Australian Government

RIIARO407 Optimise automated fixed plant operations

Release: 1

RIIARO407 Optimise automated fixed plant operations

Modification History

Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 9.0. Newly created unit.
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Application

This unit describes the skills and knowledge required to optimise the performance of automated fixed plant operations to meet performance targets relating to quality, efficiency, and safety. It includes optimising the performance of automated fixed plant control systems, monitoring processes and outcomes, and responding to abnormal situations.

The unit applies to controllers who oversee automated fixed plant operations at locations remote from the control centre. They control systems for a fixed plant, such as crushers, conveyors, screening units, stackers, reclaimers, and train loadout.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Coal mining

Metalliferous mining

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element
1. Optimise performance of automated fixed plant control systems	1.1 Confirm availability and operational status of fixed plant as required by the plan of the day 1.2 Optimise product throughput by maintaining a clear path through the system in accordance with the plan of the day 1.3 Identify and address factors preventing optimal performance of plant and make adjustments to control variations in accordance with organisational protocols 1.4 Identify possible impact on upstream and downstream processes and communicate with the site regarding information and solutions before making changes to

ELEMENT	PERFORMANCE CRITERIA
	maintain optimal performance of fixed plant 1.5 Control access to work areas in accordance with entry and exit procedures to ensure the safety of people and efficiency of equipment operating within automated fixed plant operations
2. Monitor automated fixed plant processes and outcomes	2.1 Monitor status of individual pieces of equipment and machines to optimise dynamic interactions within fixed plant operations 2.2 Monitor and address environmental factors, safety, progress against targets and any constraints that may potentially impact processing outcomes 2.3 Monitor quality and quantity of product to assure continuing supply that meets planning priorities 2.4 Undertake stockpile modelling and management to enable customers' needs to be met for required product as scheduled in plan of the day 2.5 Monitor rejects, tailings, and dust and water management
3. Respond to abnormal situations	3.1 Use plan of the day, alarm screens and trend data to prioritise and resolve faults in accordance with organisational procedures 3.2 Confirm data from fixed plant detection systems is within normal operating limits and notify site personnel when data is outside required parameters 3.3 Use real time and/or trend data to adjust or compensate for actual or potential adverse situations within designated scope of responsibility 3.4 Respond to changed conditions in designated area/s of control in line with organisational protocols and follow escalation protocols according to the situation 3.5 Maintain a running log of resolved faults and items requiring attention and update delay accounting and trend databases following organisational protocols

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	Interprets and uses a range of mathematical information relating to

Skill	Description
	data and databases required to optimise automated fixed plant operations

Unit Mapping Information

No equivalent unit. Newly created unit.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>

Assessment Requirements for RIIARO407 Optimise automated fixed plant operations

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- optimise automated fixed plant operations, or aspects thereof, on at least 2 different occasions.

During the above, the candidate must:

- interpret plans and targets
- ensure machinery/equipment is available and operational to meet the plan of the day
- maintain a clear path for product flow
- control access to fixed plant operations
- prioritise and resolve faults in line with organisational protocols
- update databases and maintain a log of resolved faults and items requiring attention.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standards and guidelines relating to safety in own role, including or equivalent to:
 - IEC 61508 / AS 61508 Functional Safety of electrical/electronic/programmable electronic safety-related systems
 - ISO 17757 Earth moving machinery and mining – Autonomous and semi-autonomous machine system safety
 - legislation and standards required in operational jurisdiction
- fundamentals of fixed plant control systems in an automated environment relating to:
 - organisational protocols, daily plans and targets
 - factors that impact quality, quantity, and productivity
 - instruments and warnings
 - isolation protocols as per organisational work practices

- inhibitors
- interlocks/permisives
- downtime accounting
- trending/data analysis
- key components of process control, including:
 - system architecture, operating parameters and integrity limits, such as those for crusher pressures
 - human-machine interface (HMI)
 - programmable logic controllers (PLCs) and proportional integral derivative controllers (PIDs)
 - sequences
 - modes of operation
 - advanced control features
 - decision rights
 - when to intervene
- key elements of process flow through the plant that are relevant to own role
- RACI (responsible, accountable, consulted, informed) methodology where assigned tasks have pre-determined levels of responsibility that guide communication, actions and reporting requirements
- communication and task requirement protocols using RACI methodology that must be followed at interface points:
 - between pit and crusher
 - rail and train loadout
- major components and parts, characteristics, functions, typical malfunctions, technical capability, safety devices and limitations for fixed plant, including:
 - crushers
 - conveyors
 - chutes
 - transfers
 - screening units
 - stackers
 - reclaimers
 - sampling stations
 - train loadout
 - tailings
 - rejects
 - thickeners
 - cyclones
 - belt filter presses
 - flotation
 - pumps

- services – pressurised air, water and waste
- electrical systems
- key elements of stockpile management, including:
 - stacking
 - reclaiming
 - blending
 - tanking
 - bulking
 - stockpile limits
 - managing contamination
 - restrictions
 - anti-collision systems between machines
 - slumping stockpiles for wet material
 - product classification
- stacking and reclaiming methods, including:
 - chevron
 - pilgrim
 - cones
 - stacking outside stockpile limits
 - trenching
 - windrow
- safety requirements, including:
 - environmental controls, including dust and water management
 - conditions relating to licence to operate
 - functional safety requirements, including those for interacting with site personnel on isolations procedures relevant to own role
 - personal protective equipment (PPE)
 - entry/exit to designated areas
- protocols for recognising and responding to abnormal situations, including:
 - instrument, mechanical, electrical failures and malfunctions
 - control system malfunction
 - utility disruption: water, power, and communications
 - trending/ early warning signs
 - delays
 - unplanned requirements, including maintenance.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:

- PPE
- automated fixed plant control system/s
- communications technology
- be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with legislative and regulatory requirements and using policies, procedures and processes directly related to the industry sector for which the unit is being assessed; and,
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations 2015/Australian Quality Training Framework mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements.

This includes:

- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector/Unit sector	AQF indicator level	Required assessor or industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure***	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil	3-6	3 years

Industry sector/Unit sector	AQF indicator level	Required assessor or industry subject matter expert experience
Infrastructure***		
Units coded 'RIIARO' (Autonomous and Remote Operations)	Given that this is an emerging industry area, assessors are required to demonstrate vocational competencies at least to the level being assessed, and current industry skills directly relevant to the assessment being provided.	
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the Companion Volume Implementation Guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

***Excluding units coded 'RIIARO' (Autonomous and Remote Operations).

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