



Australian Government

RIIARO303 Operate equipment in autonomous environments

Release: 2

RIIARO303 Operate equipment in autonomous environments

Modification History

Release	Comments
Release 2	This version first released with RII Resources and Infrastructure Industry Training Package Version 9.0. Minor changes to the two knowledge evidence items.
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to operate equipment in autonomous environments in the resources and infrastructure industries, including preparing for and safely carrying out work activities using manual equipment in proximity to autonomous systems and components.

It applies to those working in site-based roles, including those working in the scope of water cart operator, grader operator and service crew roles. They generally work under minimal supervision to undertake a broad range of tasks, in proximity to ground based mobile or fixed autonomous and semiautonomous systems and components, using some discretion and judgement in selecting equipment, services or contingency measures.

This unit alone does not provide sufficient skill to undertake the associated manual mobile plant and/or equipment operations. To perform this activity safely, it is intended that users have successfully completed relevant training for the associated manual mobile plant and/or equipment operations.

Licensing, legislative and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Users must check requirements with relevant body before applying the unit.

Unit Sector

Coal mining

Metalliferous mining

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the</i>	<i>Performance criteria describe the performance needed to demonstrate</i>

ELEMENT	PERFORMANCE CRITERIA
<i>essential outcomes.</i>	<i>achievement of the element.</i>
1. Plan and prepare to operate equipment in autonomous environments	1.1 Obtain, interpret, confirm and clarify work instructions 1.2 Identify and confirm autonomous systems and components in proximity to work activity 1.3 Access, interpret and apply documentation required to operate equipment in proximity to autonomous systems and components and confirm work activity is compliant 1.4 Identify and confirm own role and responsibility in autonomous operations value chain according to organisational requirements 1.5 Select and wear personal protective equipment according to site requirements 1.6 Select and obtain tools and equipment required to operate equipment in proximity to autonomous systems and components 1.7 Obtain permits and clearances according to job and site requirements 1.8 Identify potential risks and hazards, implement control measures within scope of own role, and escalate where required 1.9 Obtain and interpret emergency procedures and identify steps required to respond to emergencies
2. Carry out equipment operations in autonomous environments	2.1 Carry out pre-start and start-up equipment checks according to manufacturer specifications and site requirements 2.2 Check and confirm work area is in safe proximity to autonomous systems and components according to manufacturer specifications and site requirements 2.3 Enter work area according to autonomous system and component manufacturer specifications and site requirements 2.4 Identify requirements for, and implement personal protective zone according to manufacturer specifications and site requirements 2.5 Coordinate and communicate activities with others according to site requirements within scope of own role 2.6 Operate equipment in required proximity to autonomous systems and components according to manufacturer specifications and site requirements 2.7 Monitor risks and hazards, implement control measures within scope of own role, and escalate where required 2.8 Report on monitoring systems and alarms according to site requirements and respond within scope of own role, and escalate where required 2.9 Complete equipment operation according to job requirement 2.10 Exit work area according to autonomous system and component manufacturer specifications and site requirement 2.11 Carry out park-up and shut down procedures and secure equipment

ELEMENT	PERFORMANCE CRITERIA
	according to manufacturer specifications and site requirements
3. Conduct housekeeping activities	3.1 Complete records and documentation according to site requirements 3.2 Report potential risks and hazards according to site requirements and escalate where required

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
Oral communication	• Uses listening and questioning to clarify and confirm understanding
Self-management	• Monitors and minimises own exposure to worksite risks and hazards during work activities
Technology	• Uses digital technologies and applications to access, organise and share information

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume implementation guides is found on VETNet -

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

Assessment Requirements for RIIARO303 Operate equipment in autonomous environments

Modification History

Release	Comments
Release 2	This version first released with RII Resources and Infrastructure Industry Training Package Version 9.0. Minor changes to the two knowledge evidence items.
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 7.0.

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:

- operate equipment in proximity to autonomous systems and components on at least two occasions.

During the above, the candidate must:

- locate and apply, documentation, policies and procedures required to operate equipment in autonomous environments
- implement the requirements, procedures and techniques to operate equipment in autonomous environments, including:
 - interpreting and applying work health and safety requirements and work instructions
 - interpreting and applying hierarchy road rules
 - monitoring and confirming safe positioning of equipment relative to autonomous systems and components
 - identifying, monitoring and reporting risks and hazards
 - responding to or reporting on monitoring systems and alarm faults
- work with others to operate equipment in autonomous environments in a way that meets required outcomes, including:
 - communicating with others to receive and clarify work instructions and convey work progress
 - coordinating work activity with others using multiple communication devices.

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:

- legislation required to operate equipment in autonomous environments
 - policies, procedures and documentation required to operate equipment in autonomous environments, including those relating to:
 - Australian and international standards for autonomous systems
 - autonomous system and component manufacturer specifications
 - entering and exiting autonomous operating zones
 - functional safety standards
 - hazard, incident and emergency response procedures
 - hierarchy road rules
 - obtaining permits and clearances
 - personal protective zones including roles and responsibilities
 - pre-start, start-up, park-up, shut down and isolation procedures for requirement equipment
 - risk management
 - site requirements
 - site safety signage, alarms and systems
 - work health and safety
 - workplace recording and reporting requirements
- types, characteristics, technical capabilities and limitations of autonomous systems and components, including:
 - operating procedures
 - digital communications
 - emergency signals and procedures
 - key operational states of autonomous systems
 - exclusion zones
 - remote stop functionality
 - safe distances for work activity
 - system perception and control functionalities
- key aspects of autonomous equipment interactions in different environmental conditions and load states, including braking and stopping functions
- principles and techniques for risk and hazard management in autonomous environments, including those relating to:
 - adverse operating conditions for autonomous systems and components
 - risk management, including risks relating to operator fatigue
 - limitations of electrical sensory and digital communication systems
- techniques for operating equipment in proximity to autonomous systems, including those for:

- determining safe working distances and exclusion zones from autonomous systems and components
- determining and verifying personal protective zones
- identifying abnormal operations of autonomous systems and components
- identifying and safely crossing autonomous vehicle paths
- using global positioning systems
- roles and responsibilities of personnel in the autonomous environment value chain, including those relating to:
 - budget
 - product quality
 - productivity
 - safety
 - interdependencies with other roles
- key terminology for autonomous systems, components and operations, including those specific to relevant sector, organisation and manufacturer
- techniques for coordinating and communicating work activities with others.

Assessment Conditions

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

- include access to:
 - personal protective equipment
 - equipment required to operate in autonomous environments
- be conducted in a safe environment; and,
- be assessed in the context of this sector's work environment; and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures and processes directly related to the industry sector for which it 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:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided

- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- 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 Infrastructure****	3-6	3 years
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.

***While a unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

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

Links

Companion Volume implementation guides is found on VETNet -

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