



Australian Government

RIIARO401 Supervise autonomous operations

Release: 2

RIIARO401 Supervise autonomous operations

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 supervise autonomous operations in the resources and infrastructure industries, including monitoring interactions between personnel, manual equipment, autonomous systems and components and implementing controls.

It applies to those working in supervisory roles. They are generally responsible for the output of on-site autonomous operations, contribute to the development of technical solutions to non-routine problems and apply management plans to the workplace.

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 essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Plan and prepare to supervise autonomous operations	1.1 Obtain, interpret, confirm and clarify work instructions 1.2 Identify and confirm autonomous systems and components involved in work activity 1.3 Access, interpret and apply documentation required to supervise

ELEMENT	PERFORMANCE CRITERIA
	autonomous operations 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 for work activity 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. Prepare personnel to execute autonomous operations	2.1 Check and confirm available resources meet job and site requirements 2.2 Communicate and clarify instructions with involved personnel according to job requirements 2.3 Identify training needs for personnel involved in work activity and make arrangements to meet identified needs
3. Oversee autonomous operations	3.1 Monitor entry to work area according to autonomous system and component manufacturer specifications, site requirements and within scope of own role 3.2 Monitor risks and hazards, implement control measures within scope of own role, and escalate where required 3.3 Act or report on monitoring systems and alarms according to site requirements 3.4 Supervise work activity according to job and site requirements and within scope of own role 3.5 Monitor and control interactions between personnel, manual equipment, and autonomous system and components according to manufacturer specifications, job, scope of own role and site requirements 3.6 Implement controls for autonomous operations according to manufacturer specifications, job, scope of role, and site requirements 3.7 Confirm work plan is completed according to manufacturer specifications and job and site requirements 3.8 Monitor exit of work area according to autonomous system and component manufacturer specifications and site requirements
4. Conduct housekeeping activities	4.1 Complete records and documentation according to site requirements 4.2 Report potential risks and hazards according to site requirements and escalate where required 4.3 Identify opportunities to optimise safety, efficiency, effectiveness and change management of autonomous operations, and escalate

ELEMENT	PERFORMANCE CRITERIA
	where required, within scope of own role

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
Technology	• Uses digital technologies and applications to access, organise and share information
Writing	• Completes workplace documentation using sector-specific vocabulary, grammatical structures and conventions

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 RIIARO401 Supervise autonomous operations

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:

- supervise autonomous operations on at least two occasions.

During the above, the candidate must:

- locate and apply legislation, documentation, policies and procedures required to supervise autonomous operations
- implement the requirements, procedures and techniques to supervise autonomous operations, including:
 - interpreting and applying legislation, work health and safety requirements and work instructions
 - monitoring and controlling safe interactions between personnel, manual equipment, and autonomous systems and components
 - identifying, monitoring and reporting risks and hazards and implementing control measures, including autonomous system and component performance issues
- work with others to supervise autonomous operations in a way that meets required outcomes, including:
 - communicating with others to convey and clarify work instructions and monitor work progress
 - identifying individual training needs
 - providing support to team members where tasks require problem solving
 - communicating learnings from previous incidents, upgrades and introduced technologies relating to autonomous operations and change management.

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 supervise autonomous operations
- policies, procedures and documentation required to supervise autonomous operations, including those relating to:
 - Australian and international standards for autonomous systems
 - autonomous system and component manufacturer specifications
 - functional safety standards
 - hazard, incident and emergency response procedures
 - hierarchy road rules
 - obtaining permits and clearances
 - 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:
 - digital communications
 - emergency signals and procedures
 - key operational states
 - operating procedures
 - exclusion zones
 - remote stop functionality
 - sensing modalities
 - 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 and human machine interface (HMI) fatigue
 - limitations of electrical sensory and digital communication systems
- principles and techniques for implementing and monitoring primary and contingency controls, including those relating to:
 - change management
 - monitoring and using human-machine-interface (HMI)
 - interactions between personnel, manual equipment, and autonomous system and components

- key tools and processes
- work area security and control
- 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 identifying individual training needs
- techniques for coordinating and communicating work activity with others.

Assessment Conditions

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

- include access to:
 - personal protective equipment
 - plant and equipment required to supervise autonomous operations
- 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>