# Assessment Requirements for RIIARO202 Use data and technology to complete work in autonomous operations

**Australian Government**

# Assessment Requirements for RIIARO202 Use data and technology to complete work in autonomous operations

## Modification History

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

## 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:

- identify at least 3 examples of process control units/systems on a piece of autonomous equipment
- on at least 3 occasions source data relevant to a process-control system used in own work role
- complete at least 2 work tasks generated by using data gathered from automated equipment according to provided work instructions.

## 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:

- applications of process control systems in autonomous operations relevant to own work role
- vocabulary and terms used for technology in workplace procedures that apply to own work role, which will reflect the latest published version of relevant industry standards, including or equivalent to:
  - IEC 61511 Safety instrumented systems for the process industry sector
  - IEC 61508 / AS 61508 Functional safety of electrical/electronic/programmable electronic safety-related systems
  - ISO 17757:2017 Earth-moving machinery and mining – Autonomous and semi-autonomous machine system safety
  - National Highway Transport Safety Administration (NHTSA) Automation levels – levels 1-5
- types of hardware system technology and how they relate to the use of machine guidance systems in own role, including:
  - global navigation satellite system (GNSS)
  - global positioning system (GPS)

PwC's Skills for Australia

- perception systems, such as RADAR and LiDAR
- sensors, actuators, and encoders
- gyros - pitch and roll
- cameras
- drones
- operational procedures for communication devices used in own work role, including for radios, telephones, tablets, screens, and computers
- types of controllers encountered in own work role, including:
  - programmable logic controller (PLC)
  - electronic control unit or engine control unit (ECU)
  - personal computer
- procedures for interacting with types of software systems, including:
  - shutdown systems
  - distributed shutdown systems
- operating features of hardware equipment used in autonomous operations, including:
  - interlocks and related interfaces
  - actuators
  - sensors
  - motors
  - drives
  - pistons
  - valves
  - screens
- control loops and control systems, including:
  - physical components and control functions
  - inputs and outputs of a control system
  - expected behaviours of equipment due to changes of input to control system
- impact of emergency/safety measures on the process control system
- factors that influence GNSS and GPS signals
- impact/s of signal quality on performance
- procedures for interpreting and responding to signals and alarms in the process control system
- modes of operation and expected behaviours of autonomous equipment
- techniques to collect, interpret, and transmit different data types in own role, including at least 1 of the following:
  - payload
  - computer-aided earthmoving systems
  - product quality
  - production throughput
- intellectual property requirements relating to data, including awareness of privacy and protocols

- organisational data security measures and protocols
- communication protocols for:
  - radios
  - telephones
  - email
  - group instant messaging application.

## Assessment Conditions

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

- include access to:
  - personal protective equipment
  - equipment and systems required for safely interacting with data in 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 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 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.

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


# Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272