



Australian Government

Department of Education, Employment and Workplace Relations

RIIEGS301A Operate and maintain instruments and field equipment

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the operation and maintenance of instruments and field equipment in the metalliferous mining industry. It includes planning and preparing for the use of instruments and field equipment, testing instruments and field equipment, calibrating instruments and field equipment, operating instruments and field equipment, mainlining instruments and field equipment, identifying faults in instruments and field equipment, and commissioning new instruments and equipment. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for use of <i>instruments and field equipment</i>	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity 1.2. Plan and prepare work 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment pre-start checks to ensure <i>equipment</i> is ready for operation 1.7. Identify, address and report <i>potential risks and hazards</i> 1.8. Identify, address and report <i>environmental issues</i> 1.9. Adhere to emergency procedures to ensure safety of personnel and plant
2. Test <i>instrument/field equipment</i>	2.1. Perform safety checks 2.2. Identify potential faults and/or malfunctions of <i>instruments/field equipment</i> 2.3. Label and report damaged or unsafe <i>instruments/field equipment</i> and remove from service 2.4. Ensure operational log books are up dated
3. Calibrate <i>instruments/field equipment</i>	3.1. Closely follow calibration schedules 3.2. Label out calibration <i>instruments/equipment</i> and advise other operatives promptly 3.3. Identify cause/s of incorrect calibration 3.4. Perform new base calibration 3.5. Recommission instrument/equipment 3.6. Prepare compliance and calibration report as required
4. Operate instruments/field equipment	4.1. Optimise instrument/equipment settings for the particular measurement or analysis 4.2. Perform measurements with the optimum precision given field and technical

	<p>constraints</p> <p>4.3. Use time and materials efficiently and perform measurements in priority order</p> <p>4.4. Assess data against quality control information, known standards and references for accuracy and precision</p> <p>4.5. Repeat measurements where non-standard results are obtained</p>
5. Maintain instruments/field equipment	<p>5.1. Perform preventative <i>maintenance</i></p> <p>5.2. Identify and report equipment wear and faults</p> <p>5.3. Perform minor repairs within limits of authorisation</p> <p>5.4. Replace defective parts and makes adjustments</p> <p>5.5. Seek expert help where difficulties are encountered</p> <p>5.6. Update <i>maintenance</i> and calibration records</p>
6. Identify faults in instruments/field equipment	<p>6.1. Identify and clarify the nature of the fault</p> <p>6.2. Determine and rank likely causes of fault</p> <p>6.3. Apply simple checks and tests</p> <p>6.4. Obtain suitable tools and equipment to test faults</p> <p>6.5. Apply fault finding methodology</p>
7. Commission new instruments and equipment	<p>7.1. Arrange commissioning procedures with manufacturer's agent as required</p> <p>7.2. Unpack, check and assemble <i>instruments/equipment</i> according to manufacturer's warranty requirements</p> <p>7.3. Calibrate instrument/equipment to meet manufacturer's specifications</p> <p>7.4. Check instrument/equipment performance against specifications prior to acceptance of item</p> <p>7.5. Prepare and make operating instructions available</p>

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to operate and maintain instruments and field equipment:

- apply legislative, organisation and site requirements and procedures for operating and maintaining instruments and field equipment
- use hand and power tools
- use calibration equipment
- use test equipment
- employ fault finding procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to operate and maintain instruments and field equipment:

- manufacturer's operating requirements for instruments and equipment
- manufacturer's calibration procedures
- company and site policy and procedures regarding instrument and equipment use
- instrument and equipment test methods

Evidence Guide

<p>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.</p>	
<p>Overview of assessment</p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for operating and maintaining instruments and field equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of instrument and field equipment operation and maintenance • working with others to undertake and complete the operation and maintenance of instruments and field equipment that meets all of the required outcomes • consistent timely completion of instrument and field equipments operation and maintenance that safely, effectively and efficiently meets the required outcomes
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

	<p>assessment should not be greater than those required on the job.</p> <ul style="list-style-type: none"> • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the operation and maintenance of instruments and field equipments
Guidance information for assessment	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

Range Statement

<p>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.</p>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • instrument/equipment manual • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Instruments and field equipment may include:</p>	<ul style="list-style-type: none"> • motors • generators • two way radios • mobile communications equipment • theodolite • satellite navigation system • memory magnetometer • gravity meter • IP transmitter and receiver • tem transmitter and receiver • gamma spectrometer • seismograph • well logger • data logger • portable PC
<p>Operating conditions may include:</p>	<ul style="list-style-type: none"> • day and night • laboratory • field environment • dry and wet • stable ground • broken ground • various natural landscapes • working over old underground workings and voids
<p>Potential risks and hazards may</p>	<ul style="list-style-type: none"> • abandoned equipment

include:	<ul style="list-style-type: none"> • adverse weather conditions (electrical storms, floods, fires, extreme heat) • chemicals • contaminants (dust, noise, etc) • equipment • fences • materials • personnel • pot holes • unsafe ground • vehicles • old workings
Maintenance of instruments/equipment may include:	<ul style="list-style-type: none"> • replacing 'remove and replace' components • lubrication • working adjustments to tolerances • cleaning and storing • completing usage records
Legislation may include Acts and Regulation dealing with:	<ul style="list-style-type: none"> • mining safety and health • mine inspection • OHS • explosives
Environmental issues may include:	<ul style="list-style-type: none"> • drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality

Unit Sector(s)

Exploration and Field Work

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.