



Australian Government

PMAOPS101 Read dials and indicators

Release: 1

PMAOPS101 Read dials and indicators

Modification History

Release 1. Supersedes and is equivalent to PMAOPS101C Read dials and indicators

Application

This unit of competency covers the skills and knowledge required to make readings and/or take measurements using common types of plant instrumentation.

This unit of competency applies to operators who are required to identify the units and scales to use, perform the measurements and record the results in prescribed format, level of detail and according to procedures.

This unit of competency applies to reading process instrumentation in any plant or related situation. Readings may need to be made at heights, in wet or restricted conditions, or close to hot or moving equipment and across sites and plants.

In a typical scenario an operator patrols the plant taking a range of readings to complete logs and check on the operation of the plant. The operator needs to interpret the display on the instrument and record the appropriate reading. As part of this process, they will need to check that the instrument is within calibration (where appropriate) and make a judgement as to whether the reading is 'reasonable' or whether some action needs to be taken.

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

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Contribute to controlling hazards in work area	1.1	Identify hazards in work area
		1.2	Take appropriate action to control risks according to procedures

2	Identify appropriate measuring device readings	2.1	Confirm the calibration of the measuring device, where appropriate
		2.2	Select appropriate units on the measuring device
		2.3	Select appropriate scales on the measuring device
3	Perform measurements	3.1	Identify the range of results that could be obtained
		3.2	Identify and take account of relevant external factors
		3.3	Perform measurements using appropriate techniques
		3.4	Identify measurements outside the range of expected results
		3.5	Take action on measurements outside expected range according to procedures
4	Record results	4.1	Record readings accurately in the appropriate format
		4.2	Record the results to the appropriate level of detail

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework	The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:
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- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

Hazards

Hazards include one or more of the following:

- smoke, darkness and heat
- dust or other atmospheric hazards
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts, smoke, vapours or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Dials and indicators

Dials and indicators include one or more of the following:

- analogue dials, such as:
 - pressure gauge
 - rev counter
 - temperature dial
- digital readouts, such as:
 - pH meter
 - temperature probe
 - ammeter
 - flow meter

- weigh scales

Calibration checks

Calibration checks include one or more of the following:

- checking the date that the next calibration is required (e.g. weigh scale and pressure gauge)
- using a calibration button on the instrument (e.g. zero button on an ammeter and calibration button on an electronic meter)

Problems

Problems must be reported and corrective action taken according to relevant procedures.

Problems include one or more of the following:

- measuring instrument not fit for use (e.g. not within calibration)
- appropriate measuring device not available
- deviations from normal range of readings
- effect of temperature on material properties

Corrective actions include one or more of the following:

- reporting to an appropriate person
- taking action specified in the procedure

Appropriate personnel

Appropriate personnel include one or more of the following:

- supervisor
- more senior operator
- other designated personnel

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets

- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS101C Read dials and indicators

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>

Assessment Requirements for PMAOPS101 Read dials and indicators

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include the ability to:

- accurately perform and record measurements according to procedures
- recognise readings which are out of range or unusual and take action according to procedures
- identify hazard and control risks
- check accuracy of own work and complete workplace forms.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- basic units of measurement and where they apply
- types and application of measuring devices typically used in the job/work environment and problems that can arise
- graphs and scales relevant to the readings being taken
- organisation procedures relevant to the readings being taken
- hazards that may arise in the job/work environment, and:
 - their possible causes
 - potential consequences
 - relevant controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:
 - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
 - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
 - must include the use of an appropriate industrial item of equipment

- may use industry-based simulation for all or part of the unit where safety, lack of opportunity or significant cost is an issue.
- Assessment should occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from one or more of:
 - walk-throughs
 - pilot plant operation
 - demonstration of skills
 - industry based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment
 - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
 - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed
 - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures

- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work

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