



Australian Government

MSMWJ301 Operate a high pressure water jetting system

Release: 1

MSMWJ301 Operate a high pressure water jetting system

Modification History

Release 1. Supersedes and is equivalent to MSAPMWJ301A Operate a high pressure water jetting system

Application

This unit of competency covers the skills and knowledge required to operate a high pressure water jetting system which may be used to clean, prepare, abrade, cut or demolish concrete, steel or other plant, equipment, vessels or infrastructure.

This work is undertaken in compliance with AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance, or its authorised replacement and Safe Work Australia Guide for Managing Risks from High Pressure Water Jetting December 2013, its state/territory equivalent (where one exists) or the authorised replacement.

Work will be undertaken on a worksite which may be a client's site or a site belonging to the organisation.

AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance defines this work as work with:

- (a) High pressure water jetting systems pressurised by positive displacement pumps with an output capability greater than 800 bar litres per minute.
- (b) High pressure water jetting operations carried out at pressures above 800 bar litres per minute and includes jetting operations involving the use of additives and abrasives.
- (c) Water jetting operations below 800 bar litres per minute where there is a foreseeable risk of injury to operators.

It further defines:

High pressure water jetting systems with an output capability greater than 800 bar litres per minute and less than 5600 bar litres per minute are identified as Class A and systems with an output capability in excess of 5600 bar litres per minute are identified as Class B.

The competent operator as defined by this unit of competency will be able to operate independently. Operators who are not competent to operate independently should be competent to operate under supervision (refer to MSMWJ201 Use high pressure water jetting equipment).

Operators will also need to be competent in a range of other units of competency in order to be allowed to operate independently on site. Work will be undertaken on a worksite which may be a client's site or a site belonging to the organisation.

AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance states that 'Verification of competency or refresher training on high pressure water jetting operations shall be carried out and documented at appropriate intervals not exceeding two years to ensure the continued competency of operators'.

No other 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

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| 1 | Prepare for work | 1.1 | Obtain required job details |
| | | 1.2 | Complete site access and work control requirements |
| | | 1.3 | Identify site hazards and required hazard controls |
| | | 1.4 | Select, check and load equipment and personal protective equipment (PPE) required for the job |
| | | 1.5 | Ensure the adequate quantity of fuel and other consumables have been filled/loaded |
| | | 1.6 | Lead tool box meeting as required |
| | | 1.7 | Check work team members comply with site and job competency requirements |
| | | 1.8 | Complete required pre-work paperwork |
| 2 | Complete on-site preparation | 2.1 | Check job scope, location and requirements with job owner |
| | | 2.2 | Obtain required permits/work authorities |
| | | 2.3 | Interpret and follow job related documentation |

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| | | 2.4 | Check that the required quantity and quality of water is available |
| | | 2.5 | Check available waste disposal is adequate for all wastes generated by the job |
| | | 2.6 | Recognise and control job and site-specific hazards |
| | | 2.7 | Communicate needs back to base |
| 3 | Set up job in accordance with procedures | 3.1 | Prepare worksite to comply with job and safety requirements |
| | | 3.2 | Inspect, assemble, check and flush water jetting equipment to procedures |
| | | 3.3 | Liaise with other work groups as appropriate to ensure safe and efficient operation |
| | | 3.4 | Identify competency of other team members and the degree and means of required supervision |
| | | 3.5 | Establish appropriate means of communication between operators |
| | | 3.6 | Ensure hazard controls are operational and adequate |
| | | 3.7 | Liaise with job owner to confirm details, as required |
| | | 3.8 | Select key equipment variables required for job |
| | | 3.9 | Check and use required PPE |
| | | 3.10 | Test emergency shut-off and have equipment repaired if not functional |
| 4 | Undertake water jetting job in accordance with procedures | 4.1 | Start up high pressure water jetting system |
| | | 4.2 | Communicate with/supervise other operator as required by job |
| | | 4.3 | Operate equipment to meet job requirements |
| | | 4.4 | Monitor hazards and activate emergency stop, as required |

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| | | 4.5 | Maintain required line of sight |
| | | 4.6 | Monitor the job, conditions and equipment |
| | | 4.7 | Recognise and diagnose problems |
| | | 4.8 | Take appropriate action to respond to problems |
| | | 4.9 | Complete required paperwork |
| 5 | Complete job in accordance with procedures | 5.1 | Shut down equipment |
| | | 5.2 | Advise job owner of job completion and any relevant observations during the job |
| | | 5.3 | Clean job site and equipment |
| | | 5.4 | Service and inspect equipment |
| | | 5.5 | Store equipment |
| | | 5.6 | Restock running spares and consumables |
| | | 5.7 | Report any issues or incidents, as required |
| | | 5.8 | Debrief relevant stakeholders |
| | | 5.9 | Complete required paperwork |

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
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local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include one or more of the following:

- *AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance*
- work health and safety (WHS) legislation, codes of practice and guidance material
- environmental regulations and guidelines
- other relevant government legislation, regulations and codes
- Australian and other standards
- other relevant codes and standards
- licence and certification requirements

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:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- temporary instructions
- any similar instructions provided for the smooth running of the job

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through federal or state/territory legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Site access requirements Site access requirements include one or more of the following:

- site induction
- other site/client requirements

Equipment Equipment includes one or more of the following:

- pump
- pump motor/driver

- hoses
- guns, lances and nozzles
- PPE
- other equipment, plant, tools and hazard control devices required by the job

Equipment variables

Equipment variables include:

- nozzle type
- pressure/flow required
- additives to be used
- other items under the control of the operator

Non-routine problems

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Non-routine problems are unexpected problems, or variations of previous problems and include one or more of the following:

- equipment not operating at desired conditions
- equipment malfunction
- jobs is not as described in the scope
- job owner wants a scope variation
- other unplanned event or unexpected consequence from a planned event

Operational knowledge includes one or more of: the following

- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Job owner

Job owner includes one or more of the following:

- client or their representative
- site manager or their representative
- production manager or their representative
- maintenance manager or their representative
- other person with prime responsibility for the plant/plant area which is the subject of the water jetting job

Equipment operation

Equipment operation includes one or more of the following:

- manually on the worksite
- using local controller on the worksite
- using the control system which may be remote from the jetting equipment
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Job paperwork

Job paperwork is electronic, hard copy or other format, and includes one or more of the following:

- tool storeroom records
- equipment loaded records
- maintenance/inspection records/checklists
- tag out/reports for failed equipment
- hazard controls
- work control system requirements

PPE

PPE includes one or more of the following:

- PPE as specified in:
- Section 4 *AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance*, or its authorised replacement
- Section 5 *Safe Work Australia Guide for Managing Risks from High Pressure Water Jetting December 2013*, or its authorized replacement
- medical alert card as specified in Section 9.5 of *AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance*, or its authorised replacement
- other equipment as required

Communication

Communication includes one or more of the following:

- hand signals
- radio headphones
- other means appropriate to the job/site

Hazards

Hazards include one or more of the following:

- hazards from high/extreme pressure and or velocity
- hazards arising from the materials used in/generated by the water jetting job
- hose set up and hose run
- hazards specific to the site/process
- slip/trip hazards
- PPE is unavailable or not functional
- emergency equipment is unavailable
- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment is in safe condition with hazard controls functional
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- limited head spaces or overhangs
- working where there is a reasonable risk of a fall, in restricted or confined spaces, or in environments subjected to heat, noise, dusts, vapours, smoke, or other atmospheric hazards
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions, swarf and scrap
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Hazard controls

Hazard controls include one or more of the following:

- controls required by *AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance, or its authorised replacement*
- controls identified in the relevant permits to work
- use of PPE
- other appropriate controls consistent with the hierarchy of control

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

Assessment Requirements for MSMWJ301 Operate a high pressure water jetting system

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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 demonstrate the ability to:

- assemble and operate equipment which meets the requirements of a Class B system as defined by *AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance* or its authorised replacement, including:
 - at least one (1) gun operation AND
 - at least one (1) of:
 - pipe cleaning
 - heat exchanger/tube cleaning
 - surface preparation
 - vessel (interior) cleaning using a cleaning head AND
 - use at least two (2) different types of nozzles/heads.
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Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to operate independently and to solve routine and non-routine problems, including:

- hazards and hazard controls specific to the operation of water jetting equipment
- principles of operation and science (physics) of water jetting equipment and its component items
- types and duties of water jetting equipment and its component plant items
- correct methods of starting up, shutting down, operating and controlling water jetting equipment and its component plant items by type and duty
- relevant communication systems, including hand signals
- operational parameters and limits
- types and causes of known problems for water jetting and its components
- corrective action appropriate to the problem cause
- the importance of monitoring and controlling job conditions
- methods, purpose (and appropriate corrective action) of monitoring job variables
- situations requiring:
 - activating emergency stop

- stopping work until a situation is resolved
- raising alarm (when, how, who to)
- responding to injury.
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Assessment Conditions

- Competency must be achieved before performing this work unsupervised. Therefore this unit will typically be assessed off the job. Where assessment is undertaken on the job appropriate supervision and safety precautions must be provided.
- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- While water jetting equipment meeting the requirements of Class B must be used, the plant/job requiring water jetting may be a realistic simulation of an industry plant/application/situation.
- All appropriate tools, equipment, paper work/permits and safety gear required will be available and used as required. The assessor should only intervene if it would be unsafe to allow the assessment to continue. It is expected that one assessor would not observe a group larger than ten persons at the one assessment event.
- Off-the-job assessment must sufficiently reflect realistic operational workplace conditions that 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
 - demonstration of skills
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence will be collected independently of the above practical assessment and may use workbooks, written assessments, interviews (provided a record is kept) or other methods.
- 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.
- Persons seeking verification of competence/retraining to comply with AS/NZS 4233.1:2013 High pressure water jetting systems - Safe operation and maintenance or its authorised replacement must meet the same evidence requirements as above.
- 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.
- As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>