



Australian Government

Department of Education, Employment and Workplace Relations

FPIFGM3215 Perform complex 4x4 operations

Release: 1

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Modification History

Version	Detail
1	Unit replaces FPIFGM3208B Perform complex 4x4 operations

Unit Descriptor

This unit describes the outcomes required to perform complex four-wheel drive (4x4) vehicle operations, including operations over rugged terrain and water crossings.

Application of the Unit

The unit involves performing complex 4x4 operations in a variety of work settings. The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority.

Licensing/Regulatory Information

Compliance with licensing, legislative, regulatory or certification requirements may be required in various jurisdictions.

Pre-Requisites

Not Applicable

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1) 1. Prepare for 4x4 operations	1.1 Identify and follow <i>occupational health and safety</i> (OHS), <i>environmental</i> , <i>legislative</i> and <i>organisational requirements</i> relevant to performing complex 4x4 operations 1.2 Identify and assess types of <i>water crossings</i> and <i>terrain</i> being accessed for safe operating conditions 1.3 Check that <i>4x4 vehicle</i> being used is appropriate to conditions and operationally effective in line with manufacturer specifications 1.4 Identify appropriate range of <i>personal protective equipment</i> (PPE) to be carried for the trip conditions 1.5 Establish <i>communication</i> with others and choose required safety <i>mechanisms</i> in line with organisational requirements
2. Prepare 4x4 vehicle for water crossing	2.1 Place <i>cover</i> securely across the front of the vehicle when required by water depth 2.2 Spray water repellent on electrical connectors, battery terminals and electrical components 2.3 Check wheel hubs to engage/lock position 2.4 Select appropriate gear for water crossing 2.5 Allow vehicle to cool down before entering water to reduce ingress of water through seals
3 Negotiate water crossing	3.1 Assess <i>hazards and risks</i> associated with water crossings 3.2 Determine safety of water crossing 3.3 Establish and select <i>entry and exit points</i> for crossing in line with current flow and risk assessment 3.4 Access water crossing to determine <i>depth of water</i> at intended crossing point 3.5 Monitor the track continually to identify hazards and assess risks 3.6 Perform water crossing by maintaining a constant bow wave
4 Perform check of vehicle operations on completion of water crossing	4.1 Drain water from 4x4 vehicle back into the water crossing 4.2 Dry brakes off by gentle application while moving 4.3 Check engine oils for contamination 4.4 Check air cleaner elements for water intrusion and assess air intake operational effectiveness

ELEMENT**PERFORMANCE CRITERIA**

- 4.5 Check differential and gear box oils after prolonged periods in the water
- 5 Operate vehicle in rugged terrain
- 5.1 Determine intended route prior to departure
 - 5.2 Inspect intended vehicle path prior to negotiation of rugged terrain
 - 5.3 Put contingency plan in place to deal with unexpected hazards
 - 5.4 Inspect, position and secure vehicle load to maximise traction for 4x4 driving
 - 5.5 Set *vehicle controls* in line with *manufacturer specifications* and for operation in the rugged terrain
 - 5.6 Negotiate terrain in line with requirements for *specific driving conditions*
6. Recover vehicle from loss of traction while ascending
- 6.1 Determine intended route backwards
 - 6.2 Use correct brake and engine techniques to reverse vehicle
 - 6.3 Ensure vehicle comes to a safe stop
7. Perform post-trip tasks
- 7.1 Notify relevant personnel of trip completion
 - 7.2 Document trip in line with organisational procedures
 - 7.3 Apply maintenance procedures for allocated vehicle

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Required skills:

- Technical skills to:
 - use and maintain relevant tools, machinery and equipment
 - assess depth and speed of water for safe crossing
 - safely perform water crossings
 - safely negotiate steep and uneven terrain
 - conserve vehicle energy with appropriate throttle use
 - perform minor emergency repair of vehicle
 - use correct techniques to safely stop and start on steep terrain
- Communication skills to use appropriate communication and interpersonal techniques with colleagues and others
- Literacy skills to:
 - record and report workplace information
 - maintain documentation
- Numeracy skills to measure, estimate and calculate journey time, water depths, fuel consumption and other variables required to complete task
- Problem-solving skills to identify problems and equipment faults

Required knowledge:

- Applicable federal, state or territory legislation, regulations, standards, codes of practice and established safe practices relevant to the full range of processes for performing complex 4x4 operations
- Environmental protection requirements relating to 4x4 operation, speed, acceleration, and exiting water crossings that minimise carbon emissions and environmental impact
- Environmental risks and hazards relevant to complex 4x4 operations
- Organisational and site standards, requirements, policies and procedures for performing complex 4x4 operations
- Road rules, regulations, permit and licence requirements of the relevant state or territory
- Operational knowledge of 4x4 vehicle, including controls, instruments and indicators and their use
- Four-wheel drive techniques, including to safely cross water and operate 4x4 vehicle in rugged terrain
- Water-crossing methods, including associated hazards and risks
- Vehicle maintenance requirements following water crossings
- Established communication channels and protocols
- Vehicle problem identification and resolution strategies, and common vehicle fault-finding techniques

- Types of tools and equipment, and procedures for their safe use and maintenance
- Organisational procedures for fleet management

Evidence Guide

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.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can perform 4x4 operations over water crossings and rugged terrain safely and in line with organisational requirements

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements of this unit and include demonstration of:

- following applicable federal, state or territory legislative and regulatory requirements and codes of practice relevant to performing complex 4x4 operations
- following organisational policies and procedures relevant to performing complex 4x4 operations
- assessing the safety of planned water and rugged terrain crossings
- performing 4x4 operations over a range of rugged terrain and water crossings in line with the circumstances and 4x4 OHS operating regulations
- selecting correct gear/range to negotiate terrain
- engaging and disengaging freewheel hubs in line with driving conditions
- identifying safe locations for entry into and out of a waterway
- identifying and preparing supplies and resources appropriate to the journey

Context of and specific resources for assessment

- Competency is to be assessed in the workplace or a realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of required knowledge, other than confirmatory questions, will usually be conducted in

an off-site context

- Assessment is to follow relevant regulatory requirements and Australian standards
- The following resources should be in place:
 - workplace location or simulated workplace
 - materials and equipment relevant to undertaking work applicable to this unit
 - specifications and work instructions
 - 4x4 vehicle

Method of assessment

- Assessment methods must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required knowledge
- Assessment must be by direct observation of tasks, with questioning on required knowledge and it must also reinforce the integration of employability skills
- Assessment methods must confirm the ability to access, interpret and apply the required knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

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.

OHS requirements:

- are to be in line with federal, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:
 - PPE and clothing
 - safety equipment
 - current first aid equipment in vehicle
 - current vehicle firefighting equipment
 - hazard and risk control
 - fatigue management
 - elimination of hazardous materials and substances
 - safe forest practices, including required actions relating to forest fire
 - techniques for manual handling, including shifting, lifting and carrying

Environmental requirements may include:

- legislation
- organisational policies and procedures
- workplace practices

Legislative requirements:

- are to be in line with federal, state or territory legislation, regulations, certification requirements and codes of practice and may include:
 - award and organisational agreements
 - industrial relations
 - Australian standards
 - confidentiality and privacy
 - OHS
 - the environment
 - equal employment opportunity

- anti-discrimination
- relevant industry codes of practice
- duty of care

Organisational requirements
may include:

- legal compliance documentation
- organisational and site guidelines
- policies and procedures relating to own role and responsibility
- procedural manuals
- quality and continuous improvement processes and standards
- OHS, emergency and evacuation procedures
- ethical standards
- recording and reporting requirements
- equipment use, maintenance and storage requirements
- environmental management requirements, including waste minimisation and disposal, recycling and re-use guidelines

Assessed may include:

- using local knowledge relating to types of water crossings, terrain or environmental issues
- estimation of water depth in the waterway by indicators
- local markings
- wading activities by a colleague or operator with suitable precautions taken that may include the ability to swim and use flotation devices or rope
- throwing rock into water to indicate depth

Water crossings may include:

- rivers
- streams
- creeks
- fords
- channels
- wash outs
- causeways
- flooded roads and terrain
- other shallow water bodies

Terrain may include:

- rough
- uneven
- slippery
- wet
- boggy
- sandy
- steep or hilly
- rock
- icy
- snow
- mud, including:
 - brown clay
 - black silt
 - salt pan mud
 - red
- hard ground
- water

4x4 vehicle may include:

- manual and automatic four-wheel drive
- all-wheel drive

Personal protective equipment may include:

- boots
- gloves
- eye protection
- long pants

Communication may include:

- verbal and non-verbal language
- radio protocols

Mechanisms may include:

- personal location beacon (PLB)
- flares
- markers
- phone
- radio
- V-Sheet

Cover may include:

- tarp
- blind

- plastic sheet
- fitted covers

Hazards and risks may include:

- speed of flowing water (moving at greater than one metre a second)
- underwater hazards
- debris in water
- rocks and other unexpected obstacles
- variable water depth and width of crossing
- risk of vehicle being swept down the waterway
- tidal influences
- wet and iced terrain
- flooded terrain
- fire in vehicle
- faulty brakes
- leaking fuel
- faulty steering mechanism on vehicle
- animals and objects in vehicle path
- crocodiles and snakes in some areas
- windy or foggy sections of terrain
- steep slopes
- slippery surfaces
- land slides
- tree limbs
- black ice
- trailers
- poor visibility

Entry and exit points must include:

- safe locations for entry into and out of a waterway, with shallow run-ins and exits and a firm base
- locations that minimise the impact on the environment

Depth of water is:

- the maximum height that may be crossed safely in line with vehicle manufacturer specifications

Vehicle controls must include:

- selecting correct gear/range to negotiate

terrain

- engaging and disengaging freewheel hubs in line with driving conditions

and may include:

- where used, fitting traction aids to vehicle in line with manufacturer specifications as required by terrain

Manufacturer specifications may include:

- engine characteristics
- system's warning functions
- four-wheel drive operation
- radius of turning circle
- safety procedures
- instructions relating to engine air intake

Specific driving conditions may include:

- ascent
- descent
- cross-slope operation

Unit Sector(s)

Forest Growing and Management

Competency field

Not applicable