Australian Government

Department of Education, Employment and Workplace Relations

SFISHIP208C Operate low powered diesel engines

Release: 1

SFISHIP208C Operate low powered diesel engines

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency involves routinely operating low powered diesel engines within normal parameters. Licensing, legislative, regulatory or certification requirements may apply to this unit. Therefore it will be necessary to check with the relevant state or territory regulators for current licensing, legislative or regulatory requirements before undertaking this unit.

Application of the Unit

Application of the unit	This unit has application to the operation of low powered diesel engines on a small vessel as may be used in aquaculture, fishing operations or fisheries compliance work where a maritime regulatory certification is not required. For advice on certifications refer to the current TDM07 Maritime Training Package. All enterprise or workplace procedures and activities are carried out according to ***relevant government regulations***, ***licensing and other compliance requirements***, including ***occupational health and safety*** (***OHS***) ***guidelines*** and ***ecologically sustainable development*** (***ESD***) ***principles***. Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate ***personal protective equipment*** (***PPE***) is selected, checked, used and maintained. Vessels must follow the International Convention for the Prevention of Pollution from Ships (MARPOL) requirements.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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. Initiate start-up and shutdown ***operations*** of low powered diesel engines	1.1. Timing and degree of preparation of engine and systems is appropriate to the intended operation. 1.2. Sequence and timing of start-up and shutdown of engine and systems meets the requirements for safe and efficient operation. 1.3. ***Engine parameters*** and instrument readings are maintained within defined levels during start-up and shutdown operations. 1.4. Deviations from the norm are promptly identified, rectified and reported. 1.5. Adjustments are made to achieve a safe, efficient and environmentally responsible operation, within own responsibility. 1.6. Sufficient notice of operations is given to enable other relevant personnel to carry out their responsibilities safely and efficiently. 1.7. Inability to start up or shut down engine as required is reported promptly and accurately to an appropriate authority.
2. Maintain output of low powered diesel engines	2.1. Engine is ***monitored*** according to ***schedules***, operating parameters and instructions. 2.2. Engine system condition is assessed accurately in light of information available from local and remote indicators and physical inspection. 2.3. Engine output meets notified demand conditions throughout normal operation. 2.4. Engine parameters are maintained within defined limits during normal running. 2.5. Sequence and timing of adjustments to engine maintain optimum safety and efficiency in achieving the desired condition.
3. Respond to irregularities	3.1. Deviations from the norm are correctly identified, rectified and reported. 3.2. ***Action taken in the event of irregularities***, defects and damage is appropriate to their significance and optimises the safety and efficiency of operations.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- carrying out emergency shutdown and normal shutdown for short and long-term periods, including checks and isolation to organisational requirements
- carrying out the start-up from both warm and cold conditions to standby or full operating condition, including pre- and post- start-up checks
- monitoring aspects of the engine and system condition, including:
  - abnormalities
  - emissions
  - expansion
  - flows
  - fuel efficiency
  - fuel or oil leaks
  - levels
  - noise
  - pressure
  - speeds
  - temperatures
  - vibrations
- operating high, medium and slow speed diesel engines, including the associated systems:
  - battery power generation and use
  - control
  - cooling
  - fuel, such as diesel oil or marine diesel oil
  - lubrication
  - purification, transfer and storage
  - starting and stopping
- operating the engine in various modes, including:
  - emergency modes of operation
  - local manual operation
  - monitoring and setting restrictions on remote operation.

Literacy skills used for:

- reading and completing documents for enterprise and authorities
- reading and recording operating parameters
- reading manufacturer technical information

REQUIRED SKILLS AND KNOWLEDGE
• reading statutory regulations. **Numeracy skills used for**: • reading pressure, temperature and fluid levels.
Required knowledge

• alarm and emergency shutdown parameter values
• different types of diesel engines and their variations likely to be encountered
• engine and system operating instructions
• factors to optimise fuel efficiency
• government requirements affecting operations and MARPOL compliance
• method of operation of control systems,
• operating parameters and values
• principles relating to:
  • operation of marine diesel engines sufficient to recognise malfunction, implement initial corrective action and seek advice
  • safe operation and propulsion of a vessel
• procedures relating to:
  • sequence and timing of operations and adjustments
  • response to alarms and emergencies affecting engines, including contingency plans
  • fuel isolation procedures and likely hazards.

Evidence Guide

EVIDENCE GUIDE	
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.	
Overview of assessment	
Critical aspects for assessment evidence required to demonstrate competence in this unit	Assessment must confirm the ability to: • operate, start up and shut down low powered diesel engines and respond appropriately to irregularities • ensure that preparations for the operations are complete • start up, shut down, monitor and operate engines in a safe manner • maintain steady running of the engine and comply with alarm acceptance procedures • carry out adjustment and regulation of engine, including to achieve optimal fuel efficiency • carry out alteration of output as required. Assessment must confirm knowledge of: • principles of operation of marine diesel engines sufficient to recognise malfunction, implement initial corrective action and seek advice.
Context of and specific resources for assessment	Assessment is to be conducted at the workplace or in a simulated work environment. Resources may include: • operational diesel engine and system • operation procedures and policies.
Method of assessment	The following assessment methods are suggested: • observation of practical demonstration • practical exercises • project work • written or oral short-answer testing.
Guidance information for assessment	This unit may be assessed holistically with other units within a qualification.

Range Statement

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.	
Relevant government regulations, ***licensing and other compliance requirements*** may include:	• business or workplace operations, policies and practices • ESD principles, environmental hazard identification, risk assessment and control • OHS hazard identification, risk assessment and control.
OHS guidelines may include:	• appropriate workplace provision of first aid kits and fire extinguishers • codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector • enterprise-specific OHS procedures, policies or standards • hazard and risk assessment of workplace and maintenance activities and control measures • induction or training of staff, contractors and visitors in relevant OHS procedures and/or requirements to allow them to carry out their duties in a safe manner • OHS training register • safe lifting, carrying and handling techniques, including manual handling, and the handling and storage of hazardous substances • sea survival, fire fighting at sea and first aid techniques • safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace • systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts

RANGE STATEMENT	
	• the appropriate use, maintenance and storage of PPE.
ESD principles may include:	• applying animal welfare ethics and procedures • controlling effluents, chemical residues, contaminants, wastes and pollution • improving energy efficiency • increasing use of renewable, recyclable and recoverable resources • minimising noise, dust, light or odour emissions • reducing emissions of greenhouse gases • reducing use of non-renewable resources • reducing energy use • reducing interactions with native and protected flora and fauna, marine or land parks or areas • undertaking environmental hazard identification, risk assessment and control.
PPE may include:	• buoyancy vest or personal floatation device (PFD) • hearing protection (e.g. ear plugs and ear muffs) • non-slip and waterproof boots (gumboots) or other safety footwear • personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB) • protective outdoor clothing for tropical conditions • safety harness • sun protection (e.g. sun hat, sunscreen and sunglasses) • uniforms, overalls or protective clothing (e.g. mesh and waterproof aprons) • waterproof clothing (e.g. wet weather gear).
Operations may include:	• emergency shutdown to minimise damage • fuelling and lubrication requirements are met • operate under direct instruction for malfunctioning engine system • manual adjustment of controls to correct minor deviation • monitoring of remote operation • start-up and shutdown of engine as a routine with the system functioning correctly.

RANGE STATEMENT	
Engine may include:	• diesel engines burning diesel oil or marine diesel oil as the power source for the propulsion of the vessels, and the power source for an auxiliary system.
Parameters may include:	• flow • levels • pressure • speeds • temperature.
Monitored may include:	• checks • frequency • fuel requirements, including energy efficiency • inspections • noise • oil or fuel leaks • scope • tests • timing.
Schedules may include:	• enterprise requirements and procedures • manufacturer information • onboard management requirements • parameters and instructions.
Action to be taken in the event of irregularities includes:	• adjustment of engine and systems • appropriate investigative techniques and safety procedures • fuel and lubrication transfer contained and disposed meeting MARPOL requirements • informing authority.

Unit Sector(s)

Unit sector	Vessel operations

Co-requisite units

Co-requisite units		

Competency field

Competency field	