



OFFSHORE CRANE OPERATOR COMPETENCE GUIDE





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This guide is not intended to be a legal document or to provide legal advice. This document is intended to be a guide only as to the application of uniform arrangements for the training and assessment of offshore crane operators in the Australian oil and gas industry. This document should not be relied on as a complete statement of the law. Anyone who may be affected by the application of legislation covering operation of offshore cranes should seek their own legal advice.

This guide is aimed at meeting the industry's requirements for the training and assessment of offshore crane operators working in the Australian oil and gas industry. The guide takes into account the specialised nature of the offshore crane operator's role. It recognises the varied nature of the learning environments that contribute to developing crane operators' competence while aiming to provide a more uniform approach to that development.

1 Introduction

Provides background to the development of the Crane Operator Competence Guide and history of development.

Contains information about the participants who developed the document.

Contains information on how the guide should be used.

Offshore crane operations are an essential and potentially hazardous part of the Australian oil and gas industry and are often conducted in harsh environments. It is therefore vital that the industry has a consistent approach to ensuring that these operations are conducted safely and that only competent people undertake these activities. This guide has been prepared to help the offshore oil and gas industry in Australia to achieve that objective.

The development of this document reflects the industry's desire to have workable practices in place to ensure the competency of offshore crane operators and to provide guidance on those practices.

In 2008, the industry developed a unit of competency for offshore crane operators in consultation with various stakeholders, including experienced crane operators and assessors, unions, and registered training organisations (RTOs). The unit of competence has been endorsed and included in the Process Manufacturing training package (PMA08) under the Australian Quality Training Framework (AQTF) as unit PMASUP305A Operate Offshore Cranes (see Addenda Item 1). A draft assessment tool for this unit of competence has been developed by the industry (see Addenda Item 2). Under the AQTF, formal training and assessment for this unit *must* be performed by an RTO.

In 2009, APPEA prepared notes in consultation with the industry to take to a NOPSA Crane Competency Working Group set up to advise the Minister for Resources and Energy, Martin Ferguson. The Crane Competency Working Group recommended an industry guideline that focused on the process for ensuring competency and appropriate supervision, rather than the technical standards around lifting operations.

In 2011 Minister Ferguson formally asked the industry to proceed with "the development of performance-based, industry-wide guidelines or a code of practice focussing on the process for ensuring competency through training and appropriate supervision, rather than the technical aspects of craning, (which) will align with the duty of care provisions which underpin the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*".

Oversight

To oversee the development of this guide APPEA established a representative Industry Advisory Group drawn from APPEA's member companies, comprising people with recognised wide experience in responsibility for crane operations across the oil and gas industry. The guide was then reviewed by a broad industry group through the APPEA Health, Safety and Operations Committee.

Using this guide

This guide should be used to enable organisations in the Australian oil and gas industry to standardise their observations and supervision of competent crane operator behaviour. It is not intended to provide guidance on training course content or to establish a 'one size fits all' direction to skill and knowledge development.

This is because:

- crane operations differ from workplace to workplace
- different types of cranes are in use (although the safe behaviour demonstrated by all operators should be similar)
- many organisations have invested time and money in developing in-house programs and systems for knowledge and skills development that enable them to operate safely within their safety cases
- any external direction would impose on their duty of care. Hence the basis of this guide is a performance-based guide, fulfilling what the minister has requested of the industry.

It is expected that organisations will employ these notes in both working and training environments to provide consistency in outcomes. This will apply to operators, supervisors and trainers across the board.



2 Key features

This section provides a clear description of the guide and what it contains. Rather than being an index, this is a specific description of significant aspects of the guide.

This guide describes examples of the observable characteristics of competent offshore crane operation and processes for assessing, supervising and recording individual performance. It describes examples of the conditions for observations and assessment of operators and the minimum conditions that should be applied to those processes. The guide also considers and comments on desirable characteristics for the training environment and the personnel who provide training for offshore crane operators.

The document has been designed to provide guidance in three ways:

- To assist the industry to make observations of its offshore crane operators based on nationally expected competent behaviour on individual facilities.
- To allow the industry to compare its existing in-house and off the job practices against nationally expected practices for trainers and supervisors; and
- To provide behavioural benchmarks for facilities and resources to support skills and knowledge development for offshore crane operations.

It does not provide a 'one size fits all' specification and recognises the individual duty of care obligations of the organisations responsible for offshore crane operations.

3 Application

This section provides information about critical aspects of crane operation such as operating in two three-dimensional environments (rig or platform deck and boat/ barge deck).

It provides information concerning the development and demonstration of crane competence and requirements for assessment.

It also contains information about limitations or prohibited aspects relative to the use of the guide.

Limitations

This guide is not intended to replace the training and assessment requirements in place at individual oil and gas companies' operations or to prescribe the full scope of expertise. The guide does, however, provide clear industry-wide expectations on the process required to achieve competent crane operators. Duty of care obligations are placed on all oil and gas industry workplaces and facilities, both offshore and onshore, and, under the modern safety case regime applying to offshore oil and gas operations, offshore operators must also set clear performance standards in their safety case and show how they meet these standards.

Offshore crane operations can take place under significantly different circumstances and must take into account variations in weather and sea conditions. Lifting operations can occur under a wide range of circumstances and can include both stable and unstable work environments. Examples of these include fixed facilities such as production platforms and rigs, a variety of barges, supply vessels, work boats, drilling vessels, and Floating Production Storage and Offloading (FPSOs) and similar vessels. Often both the crane and the unloading vessel will be moving considerably.

In many instances, crane operations are conducted across two three-dimensional workspaces—the workspace dominated by the operation of the crane and the workspace dominated by the load before and during lifting. Either or both of these workspaces may be in a state of constant movement, fully testing the competence of operators to safely complete the lift.

There are also times when simultaneous crane operations are conducted. Simultaneous operations require a high degree of coordination and competence. This guide should be used to assist with such operations. The guide provides a formal process for the development and ongoing assessment of competence for all personnel involved in these operations.

Developing crane operator competence

Developing the knowledge and skills for competent and safe operation of offshore cranes is complex and requires both initial training and further developmental training. Initial training can cover the basic operations of cranes and lay the foundations for competent performance. It cannot in itself produce a competent crane operator nor can it enable full testing of the required behaviours.

This guide provides fundamental information about how the process of training and assessment should operate and includes information on:

- duration of training
- the types of training that are considered appropriate
- personnel used in the training process
- recognition of that training
- equipment and facilities.

Training can be conducted in a variety of settings, but any training should meet this guide's requirements.

Assessment requirements

Under the requirements of this guide the assessment of offshore crane operators has two components that must be achieved before a person can be formally assessed for competency:

- Assessment of behaviours that must be demonstrated during training.
- Assessment of behaviours that must be demonstrated in the workplace during further training and crane operations.

Assessment involves observing the individual demonstrating the required behaviours and using questioning or written tests to assess the knowledge underpinning those behaviours. Further information on this aspect is provided at Sections 6 and 7 of this guide.

To support the assessment process under this guide, periodic skills refresher training in crane operations should be undertaken within a reasonable period after initial declaration of competence. This depends on the person being actively involved in offshore lifting operations for a reasonable period during that time.

No trainer or assessor should assess any person that they themselves have trained.

4 Development of knowledge and skill



This section provides guidance about the nature of the learning environment, as opposed to the demonstration environment (workplace); and identifies permissible and non-permissible aspects such as use of simulators.

Training for offshore lifting should be relative to the type of crane on which the person is expected to conduct operations. The development of knowledge and skill is vital to successful operations, but being able to demonstrate appropriate safe behaviours applicable to any crane operation is equally important.

Duration of training

No time frame is specifically stated for developing knowledge and skills for offshore crane operations. While 'attendance' is not the critical factor (the foremost objectives being the achievement and demonstration of the required knowledge and skills that underpin competence, and the demonstration of the appropriate behaviours) it is important that organisations understand the nominal requirement for off-the-job training in terms of hours of attendance.

Generally, crane operator training courses for inexperienced people are about 40 hours duration. It is widely accepted by industry that this is the minimum amount of time necessary to develop the essential basic knowledge and skill. However, this is based on the premise that the trainee will have had some previous exposure to the lifting environment and will have rigging and dogging experience. The overriding duty of care is to ensure no one operates a crane without close supervision until they can demonstrate full competency for the operating environment. It is expected that all prospective offshore crane operators will spend a considerable time in a workplace offshore crane developmental process before being permitted to undertake supervised and then unsupervised offshore crane operations.

Training materials

RTOs and workplaces seeking to conduct training activities for offshore crane operations must have a comprehensive suite of training materials specific to the type of crane and environment that the trainees will be operating in the workplace/facility.

Wherever possible, training materials from all sources should demonstrate relationships with the areas of behaviour specified in this guide.

The learning environment

The learning environment should be capable of supporting the development of the necessary knowledge and skills in offshore crane operations. The learning environment must engage the learner, but do so in a manner that realistically replicates workplace conditions and allows the participant to gain as much hands-on exposure as possible. Therefore classroom-based activities must not comprise the bulk of crane operator training.

Participants in offshore crane operator skills development must be able to use lifting equipment that can replicate as closely as practicable the variety of lift conditions likely to be encountered in offshore operations.

Demonstration environment

The nature of demonstration of appropriate knowledge and skills and the required safe behaviours depends on an individual's level of skills development. There should be at least four stages of demonstration including:

- Standardised observations of initial training behaviour in a simulated work environment. This should be accompanied by written and verbal assessments of associated knowledge.
- Standardised observations of supervised and limited workplace crane operations demonstrating all required behaviours. Knowledge assessment should be designed to address the requirements of the particular cranes in use and the nature of the workplace.
- Standardised observations of applied knowledge and skills and required safe behaviours in unsupervised crane operations in the workplace.
- Workplace compliance demonstration of ongoing competence after a specified period of workplace offshore crane operations by an organisation-nominated assessor.

Final sign-off of any individual must be done only in an operating workplace. Prior to workplace demonstration the participant should provide documented proof that they have undertaken off-the-job training and that they have been formally assessed as having completed the requirements of that off-the-job training.

Knowledge and skill

A crane operator's knowledge and skill must be commensurate with the needs of the particular worksite's crane operations based on a clear understanding of the nature of the conditions in which the person will work. Crane operation trainees should have existing industry experience in precursor activities such as dogging or rigging.

Safe behaviours

Safe behaviours demonstrate the ability of offshore crane operators to bring together all the requirements for safe crane operation. All participants in offshore crane operations must be able to demonstrate, in the appropriate environment, at least the range of safe behaviours nominated in Section 5. This is to ensure a consistent standard of performance across the industry and to provide a basis for ongoing performance observation as operators expand the experience, knowledge and skills within the industry.

Safe behaviour demonstration has the added advantage of being a product of the acquisition of knowledge and skills irrespective of how they are developed. This focus on outputs of the process can provide an observable benchmark using the least complicated assessment techniques.

Simulators

A variety of crane simulators are available for training purposes and these can contribute much to the safe development of expertise in crane operations. Simulators bridge much of the gap between learning and real situations, but they cannot replicate the responsibility and accountability that apply to workplace operations.

Simulators can help trainees deal with situations that are too dangerous to try to replicate in an actual workplace and they can help make operators aware of the circumstances in which they may find themselves without the attendant risk of over or under-reacting to the situation. Simulators are also an excellent screening tool for prospective crane operators.

Facilities

It would be difficult to set up appropriate offshore crane training facilities across Australia. There are many types of offshore cranes and no one training organisation is likely to be able to replicate this wide range of equipment. The industry understands that in many instances an off-the-job training environment will only be able to deal with basic crane skills.

Offshore lifting often occurs simultaneously within two associated but different three-dimensional environments. As closely as possible, training facilities should replicate circumstances that allow personnel to experience and understand the basics of crane operation and that prepare them for additional learning in the workplace.

In particular, all training organisations should aim to develop behaviours that demonstrate a thoughtful application of knowledge and skill. Facilities should be capable of assisting the demonstration and assessment of underpinning knowledge.

4 Development of knowledge and skill *(cont)*

Offshore crane operator trainers

Trainers/instructors of potential offshore crane operators should meet similar requirements as assessors with some minor modifications to the specification.

Trainers should be able to demonstrate:

- no less than five years of competent and relevant offshore crane operations experience
- possession of a workplace training and assessor qualification at Certificate IV or higher; and qualifications or units of competency for the cranes and crane operations on which they are providing training
- continuous engagement in offshore crane training operations for no less than the two previous years, and with the variety of crane types used at their facility for training purposes and the environments in which they operate
- that they are fit and healthy for work.

Management and supervision of training

Arrangements must be in place to ensure competent supervision of trainees at all times. Training providers should also ensure that the program or course being offered is appropriately managed.

The sorts of criteria that would apply in determining 'appropriately managed' might include:

- Who manages the provision of training on a day to day basis?
- Are training supervisors competent in crane operations and how should they prove this?
- How long have training supervisors been involved in crane training or offshore lifting operations?
- Who has been involved in designing the program and developing resources?
- Who is responsible for delivering the course and recording outcomes?
- Has the organisation an appropriate attitude to its duty of care obligations and how is this demonstrated?
- Have appropriate risk analyses been undertaken and is the program capable of providing realistic training without putting learners or others at risk?
- Are systems in place to ensure accurate recording of performance data and who is responsible for their maintenance?

5 Competence criteria

Demonstrating crane operator competence

This guide emphasises the observation of crane operator behaviour as the prime means of determining competence. Crane operators must demonstrate they can:

- plan and prepare for lifting
- conduct checks of the crane before, during and after lifting
- communicate with the work group
- operate cranes offshore to the standard required in the workplace
- park, stow and shut down the crane and review operations after completing lifting duties
- take appropriate emergency action.

Crane operators should be required to verify that they have undertaken formal learning with an experienced and competent training organisation before being permitted to demonstrate competence offshore. Some of this demonstration will include demonstrating appropriate knowledge through both practical application and routine questioning.

The role of workplaces in this process is critical. Workplaces used in the development and demonstration of trainee competence need to meet the requirements set out in Section 4 of this guide.

The demonstration of competence requires knowledge and skill to be demonstrated during training and in the workplace.

This section of the guide covers the basic indicators or 'typical' examples of the demonstration of competence expected from the offshore crane operator both in training and during workplace operations.



Typical knowledge

Typical knowledge that should be demonstrated in the workplace and during training includes but is not limited to:

- organisational lifting procedures
- relevant legislative and statutory requirements and codes of practice
- equipment operation, limitations and procedures
- crane safety systems
- safe operating principles
- safe working loads
- the impact of weather or climatic conditions on lifting practices
- emergency shutdown procedures
- cargo planning
- operator maintenance.

Typical behaviours

Typical behaviours that could be expected to be demonstrated in the workplace and during training could include but not be limited to:

- conducting accurate appraisals of lift requirements and making appropriate preparations for lifting
- developing an effective lift plan and communicating this to the work group
- checking the work location for potential threats prior to the lift occurring
- checking that the load to be lifted is within lift parameters before starting the lift
- having a contingency plan as a back-up in case of lift difficulties
- ensuring that safety and environmental requirements are followed in accordance with site specific procedures
- conducting pre-operational checks before starting lifting operations
- applying correct start-up procedures and checking crane controls for correct operation and ease of movement
- checking emergency safety devices to ensure they are fully operational
- checking the load destination and integrity of the landing area
- accommodating changes to the lifting schedule when operational reasons warrant
- successfully lifting, moving and placing the load safely at the required destination
- taking appropriate actions in the event of changes in circumstances, including equipment malfunction
- demonstrating a clear understanding that the crane operator has the final say in lifting safety.

6 Assessor details

This section provides information concerning the criteria to be applied to assessors and any special requirements they must meet, such as experience, knowledge or skills.

Trainee crane operators can only be officially deemed competent following formal workplace assessment, and no trainer is permitted to conduct assessments on the people that they have trained.

No assessments should take place without clear evidence that the assessor can meet the requirements of this guide.

The generally accepted approach to assessing offshore crane operations supports four distinct stages of assessment. These are:

- 1 During training where behaviours, skills and knowledge can be judged in preparation for further deployment to a workplace learning environment.
- 2 During workplace learning and behaviour demonstration in which the practical fundamentals of offshore crane operation can be learned and demonstrated.
- 3 As part of the deployment of individuals to supervised offshore crane operations.
- 4 Periodic observation and evaluation of performance in the workplace in unsupervised situations embracing the full spectrum of lifting events and operations.

It is imperative that all decisions made as to the competence of the trainee operator at each stage of the four stages are made by an experienced and qualified assessor. That assessor must be an experienced offshore crane operator with no less than five years of competent experience and who can meet the following criteria as a minimum:

- possesses a workplace training and assessor qualification at Certificate IV or higher
- possesses a qualification in crane operations
- is fit and healthy for work
- has been continuously engaged with offshore crane operations for no less than the two previous years
- has experience on all types of cranes used for assessment.

The person who undertakes the final assessment of competence of a trainee crane operator can only do this in the workplace itself. For training purposes, RTOs can use trainers as the person who assesses whether a trainee crane operator has met the requirements of the training, but this person cannot be the final arbiter of competence.

7 Assessment conditions

This section provides guidance about the nature of the environment in which performance is to be gauged and any special conditions or criteria that must be applied to the process of determining competence.

Assessment of competent performance in offshore crane operations must be demonstrated at two levels—off the job and on the job—but can only be signed off in the workplace. In preparing to demonstrate competent performance two preconditions must be met before that assessment can take place.

Firstly, the participant must demonstrate the required knowledge and behaviour during training on a typical offshore crane in a simulated work environment, and if available a variety of tasks on a crane simulator. In this case, the training environment must replicate as closely as is practicable a working environment and the knowledge must include aspects of safe crane preparation, start-up, operation, emergency shutdown and safe shut-down at the conclusion of normal operations.

The behaviours associated with these activities should be in line with those specified in Section 5 of this guide.

Secondly, the participant must demonstrate the required knowledge and behaviours in a supervised workplace situation using the offshore lifting equipment specific to that workplace. A change of site and lifting equipment will necessitate a new assessment of knowledge and demonstration of behaviours typically required for that specific site. The behaviours attached to these activities should be in line with those specified at Section 5 of this guide.

Given the nature of offshore crane operations, and the risks involved, the assessment of competence should only be conducted by people who meet the requirements of Section 6 of this guide.

8 Timeframes or limitations

This section addresses any factors that may impinge on the time intervals between individuals' preparation and demonstrated performance. Any special conditions that might apply to existing personnel or conditions for demonstration are also mentioned.



Time intervals between learning and operational behaviour demonstration

A close relationship between the learning process, workplace learning and behaviour demonstration is essential. There should be no loss of knowledge or skill between the time that critical behaviours are first demonstrated in training and their demonstration in the workplace.

Only people who have already had experience around lifting equipment should undertake offshore crane training. These trainees should also be able to progress immediately into a workplace learning situation. There should be no lag between events, nor should there be any delay or interruption to the process.

Reviewing existing personnel

To maintain the highest standards of safety and maximise the quality and efficiency of crane operations, existing personnel should attend refresher training. While experienced personnel have demonstrated skills and knowledge, familiarity and repetition over time can impair their competence.

Experienced crane operators should undertake refresher training from time to time. This should be done using competent trainers and assessors as described in this guide, and under simulated workplace conditions. Workplace knowledge, skills and behaviours can be reinforced by through a formal process of observation and review—one approach to this process is set out in the “DRAFT Assessment Tool for PMASUP305 Operate offshore cranes” provided as Addenda Item 1.

9 Recognition

This section describes the form of recognition earned when competent safe performance is demonstrated and how that is achieved.

Within the Australian oil and gas industry there are various means of demonstrating the competence of offshore crane operators. Under this guide the industry aims to promote a single means of recording demonstration in a manner that can give the industry confidence in operators' abilities.

Whatever the means agreed at a workplace for recording formally assessed competence, all crane operators will undergo supervised crane operation in each new workplace before being allowed to operate without supervision. The observations undertaken at that time will include the criteria mentioned in Section 5.

10 Revision details

This section contains information concerning documentary history and details of any amendments.

11 Addenda

Documentation that underpins the guide:

- **assessment documentation**
- **the competency standard.**

Addenda Item 1

PMASUP305A Operate offshore cranes—see APPEA website
www.appea.com.au/oil-a-gas-in-australia/safety-and-health/guidelines-and-reports

Addenda Item 2

Draft Assessment Tool for PMASUP305 Operate offshore cranes—see APPEA website
www.appea.com.au/oil-a-gas-in-australia/safety-and-health/guidelines-and-reports

An overview of Safety Legislation that Relates to Crane Driver Competencies can be found at the following webpages:

- NOPSEMA's legislation and regulations section (www.nopsema.gov.au/legislation-and-regulations) provides numerous links, including Recent Changes to Legislation and an Offshore OHS Legislative Framework Information Paper that summaries the law applying to OHS in offshore petroleum operations.
- NOPSEMA's National Program on Lifting webpage provides a report on lifting operations by the International Regulators Forum (www.nopsema.gov.au/safety/national-programs/lifting-operations) that identified some widespread problems. A series of prompt sheets were used by NOPSA during planned inspections, and links to these prompt sheets are provided.
- The ComLaw website provides information on the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGSA 2006) at www.comlaw.gov.au/Series/C2006A00014

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