

WorkSafe Training Centre

Assessment & Training Service

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Name

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ASSESSMENT INSTRUMENT

CRANES & HOISTS

BRIDGE and GANTRY



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need a ticket, or refresher training,
we have the expertise and experience you need

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Cranes

Bridge and Gantry

ASSESSMENT

Part 1	Performance
Part 2	Oral/Written
Part 3	Written

May 1994

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Note:

Part three—Written Assessment for Cranes
—provided as a separate
document.

Assessor guidelines—general

1. Introduction

1.1 Scope

These general guidelines apply to all the assessment instruments for the certificates of competency prescribed by Schedule B of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment*.

Assessors should also be familiar with the publication *Assessment guidelines for National Occupational Health and Safety Certification Standard for users and operators of industrial equipment*.

1.2 Additional guidelines

Guidelines which provide additional specific information to certificate assessors are also included in each assessment instrument. Included, where appropriate, are specific instructions on the usefulness of training records (such as log books) and other certificates with overlapping competencies.

1.3 Evidence of competence

Evidence of competence is established in a number of ways. The methods used in the following instruments involve:

- assessment of practical performance
- written and/or oral answers to questions on underpinning knowledge.

2 Preparing for the assessment

2.1 Study the instruments

You need to read the assessment instruments and specific instructions carefully before beginning an assessment.

2.2 Confirm appointments

Prior to an assessment, you need to confirm the date, time and location of the assessment with the applicants and any other relevant people.

2.3 Equipment availability

The availability of equipment, materials and a suitable working area must be organised and confirmed, prior to the assessment.

2.4 Workplace factors

Because procedures and processes vary greatly between workplaces, it is important for assessors to plan their approaches to meet the requirements of the individual workplace.

Make sure you take the timeframe into account when planning the assessment and also make applicants aware of any time limits.

2.5 Selecting questions

Questions for the written/oral assessment should be randomly selected, either by hand or using the computer system, if applicable.

3 Conducting the assessment

3.1 Provide an explanation

Begin by explaining clearly to the applicants what is required of them. Check that applicants have provided (or have been provided with) the necessary tools and equipment.

3.2 Practical performance

Complete the performance checklist, as the applicant works through the required tasks. Wherever possible, this should be done in a normal working environment. Do not ask the applicant questions while he or she is performing a task, as this can be distracting, and may affect the time taken to complete the assessment.

If, at any time, the applicant is endangering himself/herself or others, stop the assessment immediately.

This indicates that the applicant is not yet competent and may require further training, before being reassessed.

Assessments should also be stopped, if equipment or property are likely to be damaged.

3.3 Knowledge

The knowledge assessment covers both oral and written exercises. The model answers provided with the knowledge assessment instruments are not necessarily exhaustive. Use your own judgement when scoring alternative answers.

3.4 Recording responses

Each item and question on the assessment forms you use is accompanied by a box. Assessors must complete every box as follows:

CORRECT PERFORMANCE/ANSWER

NOT YET ACHIEVED

NOT APPLICABLE

If a box is marked incorrectly, cross out the mistake, mark the correct response alongside, and initial the change.

4 Determining competencies

4.1 Assessment summary

A specific assessment summary is given for each certificate class. This is to be filled in and signed by the assessor, and countersigned by the applicant.

The original and duplicate are given to the applicant. The applicant provides the original to the certifying authority. The triplicate is retained by the assessor.

4.2 Competency requirements

In order for you to deem an applicant competent, he or she must have completed each section of the assessment to the standard required. You should note any time constraints when arriving at your decision.

The standard required for each instrument is specified in the specific guidelines and/or on the summary page at the end of each assessment.

In the case of a repeat assessment, the assessor can decide to apply the whole or only part of the assessment.

4.3 Additional comments

Where an applicant fails to meet the standard of competence, you should add a written comment on the Assessment Summary, which briefly explains the problem.

Advice to the applicant, on the appropriate remedial action should also be included. This will also assist the certificate assessor, in the event that the applicant undergoes future reassessment.

Likewise, if an applicant demonstrates outstanding or remarkable performance, this should be noted.

4.4 Further investigation

As a certificate assessor, it is your role to determine whether or not an applicant has achieved the standard necessary for the certifying authority to be able to grant a certificate of competency.

Whenever you are unsure of the applicant's performance or knowledge or performance, ask additional questions, and obtain additional evidence, before making your final decision.

National OHS Certification Standard

Cranes and Hoists

Bridge and Gantry

Performance Assessment

May 1994

BRIDGE AND GANTRY CRANES

Assessor Guidelines - Specific

1. The performance assessment comprises 9 items covering the following operating areas-
 - 1) Pre-operational checks
 - 2) Site/job planning
 - 3) Start up crane
 - 4) Operate crane
 - 5) Shut down crane

The applicant must undertake all performance items. All critical components must be demonstrated/ answered correctly.

An assessor must use his/her discretion in assessing competence of non-critical items, at least 75% being ticked for a competent person.

2. The answers provided are only typical of this type of equipment, eg. in shutdown, the sequence varies between different types of crane.
3. The assessment should be conducted in an area -
 - 1) With sufficient space to operate freely, without obstruction.
 - 2) With desirably undisturbed and level ground conditions.
4. The applicant should provide (or be provided with) appropriate personal protective equipment and clothing.

PRE-OPERATIONAL CHECKS:

1. Demonstrate checks that should be made prior to entering the operators cabin.

Note:
Especially those travelling gantries which run outside of buildings.

- Mains isolation switch to ensure that there are no danger tags affixed to it.
- Electric collector wires:
- none broken and all are on the insulators.
- - nothing leaning on the collector wires such as ladders, scaffolding etc.
- Crane runway beams to ensure no obstruction to long travel.
- Crane bridge beams that there are no obstructions.
- SWL notices.
- All access ways clear.
- Storm brakes (where applicable).
- Hoist wires, anchorages, sheaves, winch drums, and lifting assembly where practicable.
- Collector basket/buzz bars - if visible.
- Hydraulic system (where applicable).
- Isolating panels/circuit breakers.
- Safety chains/gates must be in place at exits.

- Lubricate crane (where applicable).

Note:
Check from below and above as appropriate. Not all points will be relevant to remote control/pendant control cranes.

2. Demonstrate the checks upon entering the operators cabin and switching on the main switch.
 - Cabin isolation switch is off and no safety tag on it.
 - Switch on isolation switch.
 - Drivers cabin clean - no rubbish fouling the controls.
 - Appropriate fire extinguisher located in the cabin (where applicable).
 - All controls in neutral position.
 - Visibility clear.
 - Controls identified and use explained.
3. What is the function of the service log book?
It explains the service maintenance carried out and any defect found and repaired.
4. Produce the service logbook and explain critical entries.
Log book produced and explained.

SITE/JOB PLANNING:

Covered in knowledge assessment.

START UP CRANE:

- 5. Demonstrate the start up procedure and perform all operational checks on all motions.
 - Control panel lights for correct function.
 - Area clear.
 - All motions operated.
 - Emergency device/alarms.
 - Brakes.
 - All limits.
 - Communication system operative.

OPERATE CRANE:

- 6. Demonstrate all of the following signals.
 - Stop - hand
 - Stop - whistle
 - Hoist up - hand
 - Hoist up - whistle
 - Hoist down - hand
 - Hoist down - whistle
 - Creep - hand
 - Travel - hand
 - Traverse

- 7. The crane has broken down at a position away from the access ladder/platform. Explain the procedure for raising the alarm and for evacuating from the crane if necessary.

Note:
The applicant should explain procedures applicable to his/her workplace.

- 8. Demonstrate all crane movements (where applicable).
 - Secure load
 - Load correctly slung
 - Conduct trial lift
 - Lift conforms with SWL
 - Hook/lifting assembly positioned over load correctly
 - Hoist
 - Travel with load
 - Lower
 - Tag line used (where applicable)
 - Communications interpreted correctly (where applicable)
 - Load placed correctly
 - Load unslung
 - Hook/lifting attachment raised to safe height

Note:

All movements smooth/adequate speed.

SHUT DOWN CRANE:

9. What must you do if you leave the crane for an extended period of time?

- *Ensure that the hook/lifting assembly is raised clear of obstructions.*
- *Ensure hoist brake is applied*
- *Crane to be driven to designated position*
- *Ensure that all controllers are in neutral (where applicable)*
- *Cabin exit/access ladder to be in line with exit/access platform*
- *Isolate cabin with main switch*
- *Switch off main isolating switch (where applicable)*
- *Apply storm brake/clamps (where applicable)*

Bridge and Gantry Cranes - Performance

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The items in the practical performance assessment are intended to assess the competencies of the applicant in the safe use of Bridge and Gantry Cranes as described in Schedule B of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment*.

These are as follows:

- 1.0 Assess and secure equipment and work area.
- 2.0 Secure and transfer load.

Each unit of competence is subdivided into elements of competence, for which performance criteria are prescribed. The questions in each section of the assessment cover the following competencies.

1. Pre-operational checks

Performance Criteria 1.1.1, 1.1.2, 1.1.3, 1.3.1, 1.3.2, 1.3.3.

2. Site/job planning

Covered in knowledge assessment

3. Start up crane

Performance Criteria 1.2.1, 1.2.2, 1.2.3, 1.2.6.

4. Operate crane

Performance Criteria 1.2.1, 1.2.2, 1.2.4, 1.2.6, 1.2.7, 1.3.1, 1.3.2, 1.3.5, 2.1.1, 2.1.2, 2.1.3, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5.

5. Shut down crane

Performance Criteria 1.4.1, 1.4.2, 1.4.3, 1.4.6.

THE RANGE STATEMENT

The performance assessment takes into account factors described in the range statements, including relevant standards and relevant State/Territory occupational health and safety legislation.

National OHS Certification Standard

Cranes and Hoists

Bridge and Gantry

Oral/Written Assessment

May 1994

BRIDGE AND GANTRY CRANES

Assessor Guidelines - Specific

1. The knowledge assessment consists of 36 questions, with 17 compulsory questions. The compulsory questions are identified under each operational area heading.

Compulsory questions have part or all of the answers identified as critical. All critical components must be answered correctly, and at least 75% of other components answered correctly, for the applicant to be assessed as competent.

2. 13 questions from the other 19 questions are to be randomly selected (manually or by computer) with at least one question from each of the following operational areas -
 - 1) Pre-operational checks
 - 2) Site/job planning
 - 3) Start up crane
 - 4) Operate crane
 - 5) Shut down crane (covered in performance assessment)

The number of questions asked from each operational area should be in proportion to the overall number of non-critical questions in each area, as follows –

Operational area	No. critical questions	No. non-critical questions to select	Total questions selected
1	2	0	2
2	6	1	7
3	2	2	4
4	7	10	17
Total	17	13	30

3. The knowledge assessment may be given orally, or as a mixture of oral and written.
4. In the Site/job planning section the questions, including compulsory questions, are grouped in general subject areas.

PRE-OPERATIONAL CHECKS:

Questions 1 and 2 are compulsory

- 1. You are conducting the pre-operational checks and find a danger tag. Are you allowed to remove the safety tag and start the crane by turning on the main switch?
No

- 2. If you observed a defect in one of the main controls, who would you report this to for rectification and who would be responsible for rectification work?
To an authorised person, who would then arrange for corrective action.

SITE/JOB PLANNING:

Questions 3, 4, 5, 6, 8 and 10 are compulsory

- 3. What procedures should you follow in preparing an operational plan for cranes?
Job requirements, priorities, workplace rules, procedures, identified hazards and hazard control measures.

- 4. What type of hazards would you consider for incorporation into your work plan?
 - *Overhead services*
 - *Surrounding structures*
 - *Obstructions*
 - *Facilities*
 - *Other equipment*

- *Dangerous materials*

- 5. What hazard control strategies would need to be included in the plan for the crane procedures?
 - *Task being performed*
 - *Any site hazard*
 - *PPE required by crane personnel*
 - *Warning signs*
 - *Barriers*
 - *Traffic control*
 - *Lighting*
 - *Dangerous/hazardous materials*

- 6. A person dogging a load puts a hand on the hook and starts to jump as though they are getting an electric shock. What should you do?
If possible lift the hook clear of the person dogging the load to break contact with the earth. Follow relevant first aid procedure as required. If possible, get somebody to assist.

- 7. During a check of the work area you notice a truck directly under the travel path of your crane. As the operator of the crane, what is your responsibility?
You must wait until the area is clear before travelling with a load over that area.

8. There is a fire involving electrical equipment on your crane. What type of extinguisher can you use? *Carbon dioxide (CO₂), halon, BCF or dry chemical extinguishers are the only accepted extinguishers to be used on electrical/equipment fires.*

9. What should be provided for the crane operation at night or in darkened areas? *There should be sufficient lighting over the whole work area.*

10. Why should loose materials never be put on the resistance bank cover? *Any flammable material left on the cover could catch on fire.*

START UP CRANE:

Questions 12 and 15 are compulsory

11. Who would be responsible for checking all lifting gear for example chains and slings? *The crane driver, person dogging a load or another competent person.*

12. Why is it important to separate defective equipment? *To eliminate the possibility of further re-using the faulty or defective equipment.*

13. What action would you take if you found any defective equipment? *Report the situation to the relevant authorised person for action ie replacement or repair.*

14. Explain why it is good practice to tag defective equipment. *If they are not tagged they could be reused.*

15. What limits are on the hoist and how do they work? *Hoist up and hoist down limits are usually hit to be actuated. The hoist down limit should stop the hoist hook from hitting the ground but should also stop the motion when there are two full turns on the drum. The hoist up limit prevents the spreader or hook from hitting the carriageway and thereby overstressing the wires.*

OPERATE CRANE:

Questions 21, 27, 29, 31, 32, 33 and 36 are compulsory

16. When interference (tampering) is identified to whom should the crane driver report any faults? *To an authorised person.*

17. Explain the use of packing or dunnage when slinging a load.
- *To protect the load*
 - *To facilitate the connection/disconnection of lifting gear*
 - *To prevent damage to lifting gear.*

18. Why is it important to have the crane positioned correctly over the hook and load? *To reduce the risk of overloading or damage to crane and prevent load from swinging of lift.*

19. When should the mass (weight) of the load be assessed? *Prior to the lift.*

20. What is the maximum mass (weight) a crane is permitted to lift?
The maximum mass (weight) is not the exceed maximum safe working load of the crane.
21. State three reasons why you are not permitted to drag or snig a load.
- *Could cause structural damage to crane by exceeding the SWL of the crane*
 - *could cause load to swing*
 - *Could cause load to topple*
22. What type of loads commonly require the use of tag lines?
Long loads usually require tag lines.
23. What is the minimum size diameter hand held tag line to be used for controlling loads?
16mm minimum diameter, dry and of a non conductive material.
24. What factors should also be considered when using tag lines? Give at least four examples.
Weather conditions, electrical hazards, tag line change over may be required at designated point in the lift, regarding scheduled works so as not to lift overhead. Person holding tag line should wear PPE and ensure that the line is not fouled.
25. If a signal is given but is unclear, what should the crane driver do?
Stop all motions of the crane, ask the person dogging the load to clarify last signal. If signal is still unclear, then a face to face meeting with the person dogging the load is required.
26. Are you permitted to allow a person to ride upon the lifting hook, sling attachment or suspended load?
No, unless a person is secured in a suspended work box which meets all necessary requirements.
27. Explain the requirements that would permit you to lift personnel using the crane?
- *Any requirements specified by crane manufacturer.*
 - *Any requirements covered by workplace conditions.*
 - *Applicant to explain requirement for the work box - refer Clause 7.16.2 of AS 2550 - Part 1.*
- Note
Statutory Authorities may have other conditions.
28. You are operating the crane and lose power. What should you do?
Remain at the controls and seek a qualified person to re-establish the power.
29. You are travelling a crane along the runway. The crane shudders and a loud noise is heard. What action would be appropriate?
- *The crane could be crabbing.*
 - *Fault with the rails.*
 - *Obstruction on runway.*
 - *Collision.*
 - *Secure crane, check and report incident.*

30. Explain why you are not permitted to continually use the hoist limit switch as the means of stopping the hoist motion.
If the limit switch is actuated under load continuously, the switch will burn out and you could "two block" the hoist. If the limit switch is hit while the crane is under load there is an electrical arcing effect as the limit is actuated.

31. You come in to start work and there is a safety tag on the main switch. Are you allowed to remove the safety tag and start the crane by turning on the main switch?
 No

32. Who is the only person that can remove a danger tag?
The person who put it on, or in accordance with workplace safety procedures.

33. What is the danger of working in a single notch for long periods?
It will overheat the resistance bank.

34. Are there alarms for long travel? How do they work?
There is usually a continuous bell or alarm which rings while the crane is long travelling on gantry cranes not necessarily bridge cranes.

35. As the crane has an automatic audible alarm for long travel motion. If you are operating from the cabin of a gantry crane, is it safe/permissible for you to travel without a person dogging the load/spotter on the ground?

- *In accordance with workplace procedures.*

- *Only if you have a clear view of the whole operating area.*

36. If any defects are observed through warning lights/alarms/gauges what action would you take to have the defect rectified?
Cease all operations, investigate where the problem is and report problem to an authorised person, for action.

SHUT DOWN CRANE:

Covered in performance assessment.

Bridge and Gantry Cranes - Oral/Written

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

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Performance Criteria 1.1.1, 1.1.2, 1.1.3, 1.3.1, 1.3.2, 1.3.3.

2. Site/job planning

1.2.1, 1.2.2, 1.2.3, 1.2.5, 1.3.4.

3. Start up crane

Performance Criteria 1.2.1, 1.2.2, 1.2.3, 1.2.6, 1.3.5, 1.3.6, 1.4.4, 1.4.5, 2.1., 2.1.2, 2.2.1.

4. Operate crane

Performance Criteria 1.2.1, 1.2.2, 1.2.4, 1.2.6, 1.2.7, 1.3.1, 1.3.2, 1.3.5, 2.1.1, 2.1.2, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.3.2, 2.3.3, 2.3.5.

5. Shut down crane

Covered in performance assessment.

THE RANGE STATEMENT

This part of the knowledge assessment takes into account factors described in the range statements, including relevant standards and relevant State/Territory occupational health and safety legislation.

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WorkSafe Training Centre

Assessment & Training Service

ABN: 85 066 339 110 EWPA & Worksafe Victoria



Mobile service - we come to you!

We will help fulfil your training needs for:-

C2 Slewing Mobile Cranes (up to 20 tonnes)

C6 Slewing Mobile Cranes (up to 60 tonnes)

CN Non-Slewing Mobile Cranes

CV Vehicle Loading Cranes

DG Dogging

HM Hoists - Material Hoists

HP Hoists - Personnel & Materials

LF Forklift Truck

RA Advanced Rigging

RB Rigging Basic

RI Rigging Intermediate

SA Advanced Scaffolding

SB Basic Scaffolding

SI Intermediate Scaffolding

WP Boom-type Elevated Work Platforms

- VL - Vertical Lift
- SL - Scissor Lift - Self Propelled
- TL - Trailer Lift
- BL - Boom Lift - Self Propelled
- TM - Truck Mounted Boom Lift

Height Safety Regulations

Red Card

Boat Licence

Earth Moving -

- Bobcat
- Excavator
- Backhoe
- Dozer
- Frontend Loader

Refresher Training - individuals and small groups

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