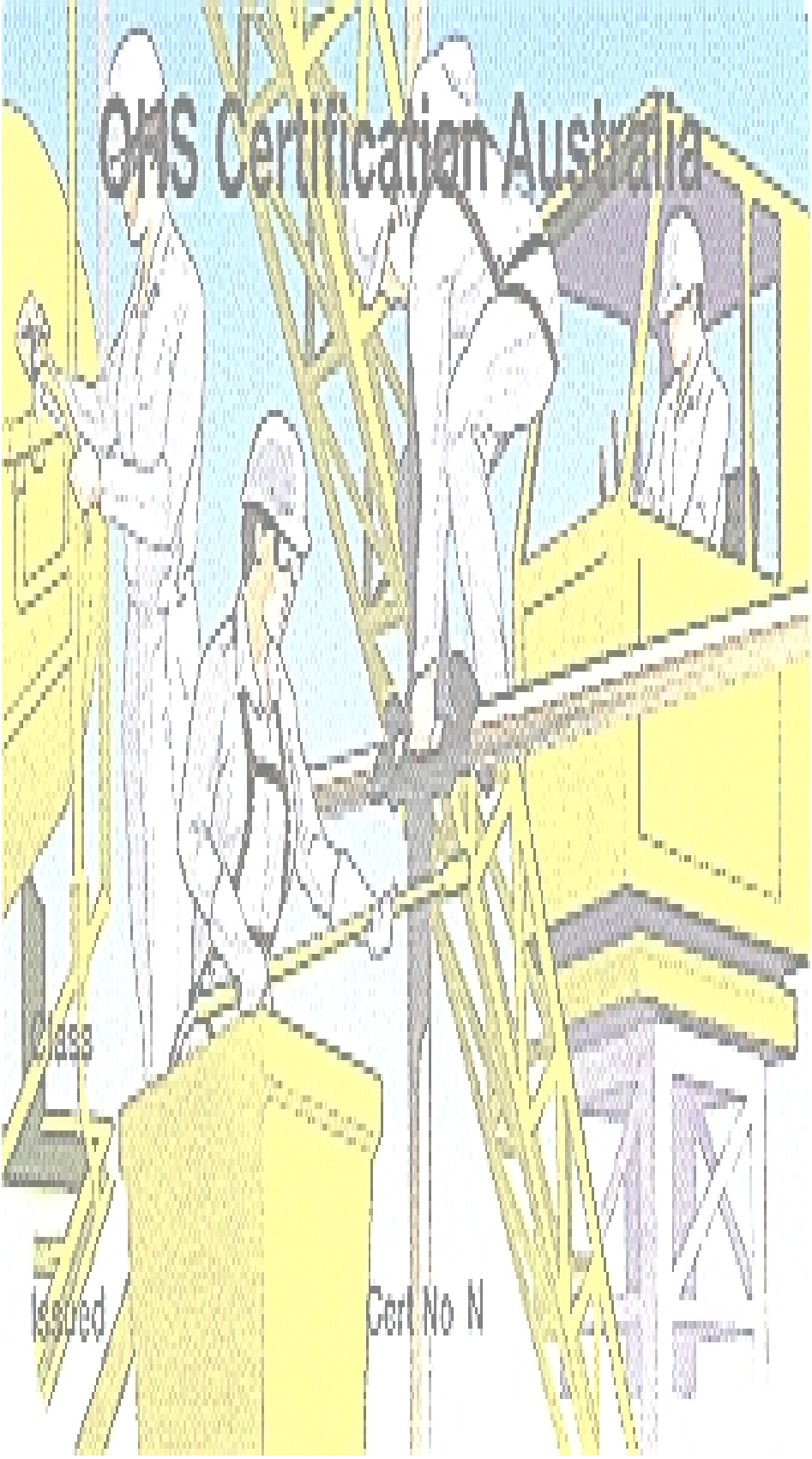

Mobile Slewing Cranes

August 2000

OHS Certificates of Competency
National Assessment Instrument

OHS Certificates of Competency
National Assessment Instrument

Slewing Mobile Cranes

C2, C6, C1, CO

August 2000

(Revision 1)

Cranes and Hoists

Slewing Mobile Cranes

(Up to 20 tonnes, Up to 60 tonnes,
Up to 100 tonnes and Over 100 tonnes)

ASSESMENT

Part 1 Performance
Part 2 Oral/Written
Part 3 Written

AUGUST 2000

Contents

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. (NOHSC: 1006)*

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 logbooks) 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 applicant 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 applicant aware of any time limits.

2.5 Selecting questions

Questions for the written/oral assessment should be randomly selected from each unit as indicated, 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 applicant what is required of them. Check that applicant 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 been reassessed.

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

3.3 Knowledge

The oral/written assessment determines the applicants under pinning knowledge. The model answers provided with the oral/written assessment instruments are not necessarily exhaustive. Use your own judgement when scoring alternative answers.

3.4 Written Assessment

Refer to the Written assessment instrument for cranes.

3.5 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
X	NOT YET ACHIEVED
NA	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 re-assessment, the assessor can decide to apply the whole or only the part of the assessment that was not achieved.

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, ask additional questions, and obtain additional evidence, before making your final decision.

National OHS Certification Standard

Slewing Mobile Cranes

(Up to 20 tonnes, Up to 60 tonnes,
Up to 100 tonnes and Over 100 tonnes)

Part 1
Performance Assessment

AUGUST 2000

ASSESSOR GUIDELINES SPECIFIC (Performance)

1. The full assessment consists of 6 operational areas covering the following operating, competencies-

    1) Pre-operational checks
    2) Site/job planning
    3) Set up crane
    4) Operate crane
    5) Shut down and pack up crane
    6) Special operations

    The applicant must undertake all performance criteria. An assessor must use his/her discretion in assessing competence under each criteria. The elements under each criteria must be marked with the appropriate tick, cross or n/a to indicate an applicant's competence level for that element.

    Assessors Note: All performance criteria marked with a star ☆ are compulsory/ critical. To determine a person's competence under each performance criteria, a prescribed number of elements are required to be demonstrated/answered under that criteria. The applicant must achieve the minimum specified number or more, of the performance elements to achieve competence for those criteria. To record the applicant's competence for the criteria a tick must be placed in the star.

2. Where a performance element cannot be performed the assessor can simulate or ask a question. The response must be recorded.

3. The answers provided are only typical of this type of equipment, e.g. in shutdown, the sequence varies between types of cranes.

4. The assessment should be conducted in an area –
    - With sufficient space to operate freely, without obstruction.
    - With desirably undisturbed and level ground conditions.

5. The applicant should provide (or be provided with) appropriate personal, protective equipment and clothing.

6. In unit 4B, the assessor is to use the load chart for the crane being used for the assessment, and to select either:

    - The working conditions of the crane including number of counterweights and ask the applicant to determine the maximum permissible load, or,

    - The load and crane configuration and ask for number of counterweights, or,

    - Another load chart problem typically encountered, for four different crane configurations that cover the scope of operations for that crane. The applicant should be able to identify whether the load is limited by structural strength or stability.

7. In unit 3A and 5, the assessor shall review the applicant's record of training to ensure that adequate training/experience has been gained in the set-up and preparation of a crane for road travel.

8. The full performance assessment can take up to 1 hour.

OPERATIONAL AREA 1: PRE-OPERATIONAL CHECKS:

A **Demonstrate checks that should be made before you start the motor (walk around check on carrier and machine deck). (At least 18 elements checked)** ☆

- ❑ Visual check if motor is OK
- ❑ Radiator water
- ❑ Fuel level
- ❑ All oil levels eg. Motor, gearbox, hydraulic
- ❑ Lubrication (grease)
- ❑ Battery water/connection and security
- ❑ Oil/water leaks on machinery deck and carrier
- ❑ Communication system
- ❑ All notices, e.g. SWL and manufactures data plate of crane, power lines warning
- ❑ Load radius indicator
- ❑ Load chart
- ❑ All ropes, wires, anchorages, splices and hooks
- ❑ All lifting gear
- ❑ Outriggers and packing
- ❑ Any structural damage to crane
- ❑ Rope drums
- ❑ Examine all brake mechanisms
- ❑ Tyre condition, pressure and obstructions between wheels
- ❑ Access to machinery deck
- ❑ Tracks and mechanisms
- ❑ Fire extinguisher

B **Demonstrate checks that should be made after you start the motor. (At least 6 elements checked)** ☆

- ❑ Controls identified and use explained
- ❑ Throttle control
- ❑ Communication system
- ❑ Steering if mobile
- ❑ Travel brakes if mobile
- ❑ Hand brake if mobile
- ❑ Horn/lights/ drive indicator
- ❑ Clear vision

C **Knowledge of where to locate the service logbook and of its function.**
(Select 1) ☆

- ❑ The applicant explains where to locate the service logbook and states the function of the service logbook is to record all maintenance, services and repairs

OPERATIONAL AREA 2: SITE/JOB PLANNING:

Covered in knowledge assessment.

OPERATIONAL AREA 3: SET UP CRANE

Set up and prepare your crane as if this was a new site. (At least 10 elements demonstrated). ☆

- ❑ The position of the crane is satisfactory, in relation to the task to undertaken
- ❑ Outriggers extended and set up as per manufacturer's specifications
- ❑ Crane level
- ❑ Tyres clear of ground
- ❑ Outriggers correctly packed
- ❑ Counterweight adequate as per load chart requirements
- ❑ Slew brake/lock
- ❑ Hoist brake
- ❑ Hoist up limit
- ❑ Hoist down limit
- ❑ Maximum radius
- ❑ Luff up limit
- ❑ Luff down limit
- ❑ Boom assembly checked
- ❑ Warning systems/devices

Note:
Record of training shows set up of crane.

OPERATIONAL AREA 4: OPERATE CRANE:

A **Demonstrate all of the following signals. (Demonstrate 'ALL' signals)** ☆

- ❑ Stop – hand
- ❑ Stop – whistle
- ❑ Hoist up – hand
- ❑ Hoist up – whistle
- ❑ Hoist down – hand
- ❑ Hoist down - whistle
- ❑ Luff boom down – hand
- ❑ Luff boom down – whistle
- ❑ Luff boom up – hand
- ❑ Luff boom up – whistle
- ❑ Slew left – hand
- ❑ Slew left – whistle
- ❑ Slew right - hand
- ❑ Slew right – whistle
- ❑ Travel – hand
- ❑ Telescope – in (hand)
- ❑ Telescope – in (whistle)

❑ Telescope – out (hand)

❑ Telescope – out (whistle

❑ Creep - hand

Note: Alternate approved signalling methods may be used where appropriate eg. Lights and buzzers.

B **Using the load chart determine the cranes capabilities at the following 4 boom angles/configuration. (at least 3 achieve)** ☆

LOAD

Working Radius
Angle
Boom/Jib Configuration
Mass (weight) of Counterweight ❑

LOAD

Working Radius
Angle
Boom/Jib Configuration
Mass (weight) of Counterweight ❑

LOAD

Working Radius
Angle
Boom/Jib Configuration
Mass (weight) of Counterweight ❑

LOAD

Working Radius
Angle
Boom/Jib Configuration
Mass (weight) of Counterweight ❑

Note: Assessor can give the load and ask for the other items to be calculated or else give the working radius boom and jib configurations and ask for the load to be calculated. Ensure understanding of structural and stability aspects of the load chart are covered.

C **Demonstrate crane operations. (at least 14 operations demonstrated)** ☆

❑ Secure load

❑ Load correctly slung

❑ Conduct trial lift

❑ Lift conforms with load chart

❑ Hook positioned over load correctly

❑ Hoist load

❑ Lower load

❑ Luff up load

❑ Luff down load

❑ Slew load

❑ Telescope boom (where applicable)

❑ Travel with load (where possible)

❑ All movements smooth/adequate speed

❑ Tag line used (where applicable)

❑ Signals interpreted correctly

❑ Load placed correctly on dunnage(where applicable)

❑ Load unslung

❑ Raise hook and attachment to safe height.

OPERATIONAL AREA 5: SHUT DOWN AND PACK UP CRANE:

Demonstrate preparing a crane for road travel. (Demonstrate 3) ☆

- ❑ Lowering/retracting boom in accordance with the manufacturer's specifications
- ❑ Retracting outriggers
- ❑ Stow packing on vehicle
- ❑ Prepare for road travel

Note:
Record of training shows preparing the crane for road travel.

OPERATIONAL AREA 6: SPECIAL OPERATIONS

Covered in oral/written assessment.

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The units in the performance assessment are intended to assess the competencies of the applicant in the safe use of Slewing Mobile Cranes as described in Schedule B of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment. (NOHSC: 1006)*

These are as follows:

1.0 Access and secure equipment and work area.
2.0 Secure and transfer load
3.0 Set up and pack up Mobile Crane
4.0 Carry out special operations with Mobile Crane.

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. Set up crane

Performance Criteria 1.2.1, 1.2.2, 1.2.3, 1.2.6, 3.1.1, 3.1.2, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4.

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, 4.2.3.

5. Shut down and pack up crane

Performance Criteria 1.4.1, 1.4.2, 1.4.3, 1.4.6, 3.1.1, 3.1.2, 3.1.4, 3.3.1, 3.3.2, 3.3.3.

6. Special operations

Covered in oral/written assessment

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

Slewing Mobile Cranes

(Up to 20 tonnes, Up to 60 tonnes,
Up to 100 tonnes and Over 100 tonnes)

Part 2
Oral/Written Assessment

AUGUST 2000

ASSESSOR GUIDELINES – SPECIFIC (Oral/Written)

1. The oral/written assessment consists of a bank of 107 questions, with 19 critical questions. The critical questions are identified under each operational area heading.

   To satisfy the requirements for competency the applicant must correctly answer (either in writing or orally) all critical questions as indicated by a star and a minimum of 75% of the non-critical questions from each operational area.

   Assessor note: The assessment summary specifies the appropriate number of non-critical questions to be achieved.

2. 16 questions from the other 88 questions are to be randomly selected (manually or by computer) as indicated from each of the following operational areas –

   1) Pre-operational checks
   2) Site/job planning
   3) Set up crane
   4) Operate crane
   5) Shutdown and pack up crane
   6) Special operations

3. 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	1	3
2	8	3	11
3	0	3	3
4	7	7	14
5	1	1	2
6	1	1	2
Total	19	16	35

4. In the Site/job planning section, the questions including critical questions are grouped in general subject areas.

5. Oral/Written assessment can take up to 1 hour.

OPERATIONAL AREA 1

PRE OPERATIONAL CHECKS:

(Select 3 questions including 2 with a Star).

1 Why should the maintenance service logbook be used? ☆

2 If you found a defect in one of the main controls that would place the crane and/or personnel at risk, what would you do? ☆

3 On checking the hydraulic systems, you notice a leak at one of the hose connections, to whom would you report the defect? ❑

4 On a pre-inspection, you discover the boom pawl has engaged the ratchet, what does this signify? ❑

5 Explain why the clutch and brakes need to be dry before operating? ❑

OPERATIONAL AREA 2

SITE/JOB PLANNING:

(Select 11 questions including 8 with a Star)

6 List four job and/or site procedures that should be considered before you set up a crane? ☆

7 You are about to set up on site, List 6 hazards that you would need to take into account in your crane set up plan? ☆

8 List 5 methods of reducing hazards on site. ☆

9 Why is it important to consult with relevant workplace personnel, OHS officers, before commencing work on sites? ❑

10 What is the importance of having workplace emergency procedures? ❑

11 What precautions must be observed when working near powerlines? ☆

12 What is the minimum distance any part of a crane or load is permitted near: ☆

a) Distribution powerlines
b) High voltage transmission lines

NOTE: Assessors must ensure that the applicant is aware of State/Territory Authority regulations.

13 If you want to work closer than these distances what can you do? ☆

14 List four essential actions which must be followed if the crane was to come into contact with the power lines? ☆

15 A person dogging a load puts a hand on the hook and receives an electric shock. What would be your initial action and what would you do to ensure the hazard is investigated? ☆

16 You are operating a crane which is to lift an object out of the water. State any special precautions to be taken? ❑

17 Your Mobile Crane is set up on a ground floor suspended concrete slab. What precautions should be made prior to undertaking any lifts? ❑

18 List four factors involved in mobiling a load down a hill? ❑

19 What should be provided for a crane working at night or in darkened areas? ❑

20 What communication methods does the operator have other than the two way radio? ❑

21 Who should be involved in the process of assessing the load? ❑

22 What is the minimum size diameter of a hand-held tag line? ❑

23 In the case of an emergency why is it important to communicate with a person dogging a load prior to leaving the crane? ❑

24 What is the importance of taking lighting of the workplace into account when planning your job? ❑

25 You noticed that one of the boom section connection pins was loose, what should you do? ❑

26 What factors should be considered when using tag lines? Give at least four factors. ❑

27 When a mobile crane is to be set up in a confined area, list three considerations that must be taken into account? ❑

OPERATIONAL AREA 3

SET UP CRANE:

(Select 3 questions)

28 Why is it important to check the hoist limit or cut out switch? ❑

29 How would you make sure that the crane is set up level? ❑

30 Why is it important to separate defective equipment? ❑

31 Should a crane be set up next to an open trench or excavation? (explain your answer). ❑

32 What general rule would apply to setting up next to an open trench/excavation? ❑

33 What is the general formula used to determine the area of packing required under outriggers? ❑

34 If the stabiliser/outrigger footplates sink into the ground or surface, what has the crane operator failed to do prior to commencing work? ❑

35 Who would be responsible for checking all lifting gear? ❑

36 List five points that should be considered when setting up outriggers? ❑

37 How do you know when multiple load line falls are required? ❑

38 Why must the crane be set up level? ❑

39 A mobile crane is required to remove a large steel tank from the top of a structure. What precautions must be taken to ensure a safe lift? ❑

40 What effect does uneven ground have on the capacity of a crawler crane? ❑

41 Where would you identify the operating zone of the crane? (e.g. over the rear) ❑

42 When can extra counter-weight be added to the crane? ❑

43 An outrigger pad sinks when lifting a load by the crane. What immediate action should be taken? ❑

44 Explain the use of a bumper weight on a lattice boom crane? ❑

45 What procedures must be followed when setting up a crane on a sloping surface? ❑

46 When setting up a crane where outrigger packing is to be used what precautions would need to be taken? ❑

47 What risks occur when packing is placed halfway along the outrigger beam to support the crane? ❑

48 Identify the correct procedure when using a front stabiliser (incorporated under the front of the chassis)? ❑

OPERATIONAL AREA 4

OPERATE CRANE:

(Select 14 questions including 7 with a Star).

49 When interference (tampering) is identified, to whom should the crane operator report any faults? ❑

50 Give 3 different ways in which the mass (weight) of a “load” can be determined? ☆

51 When mobiling a crane in gusting wind conditions what measures would you ensure are undertaken to control the load? ❑

52 What is the maximum wind speed that mobile cranes can work in? ❑

53 When crane operations are effected by extreme winds what should you do? ❑

54 If you heard abnormal noises coming from the crane what would you check? ❑

55 If any signals are observed through warning lights, cut outs or alarms, what action would you take? ❑

56 How do you disengage the pawl? ❑

57 Why do you have to luff out with extreme care when you have the luff pawl engaged? ❑

58 Why do you have to hold in the luff pawl button if you wish to engage the pawl when luffing out? ❑

59 What is the mass (weight) of a cubic metre of hardwood? ❑

60 What is the mass (weight) of a cubic metre of water? ❑

61 What is the mass (weight) of a cubic metre of aluminium? ❑

62 What is the mass (weight) of a cubic metre of dry beach sand? ❑

63 What is the mass (weight) of a cubic metre of concrete? ❑

64 Why is it important to mobile a crane on firm and level surfaces wherever possible? ❑

65 Should you mobile a crane across the side of a hill? Explain your answer. ❑

66 When mobiling a load up a hill which direction should the load face ❑

67 You are operating a lattice boom crane and have to reverse up a hill, boom first. The boom is at a 70^{O} angle. What is the danger? ❑

68 When mobiling a crane with a long or extended boom, what speed would you travel at? ❑

69 How close to the ground would you keep the load when mobiling? ❑

70 If you heard a loud noise and felt vibration coming from the boom section, what would you do? ☆

71 What happens if you override the luff up limit? ☆

72 What considerations are important when operating a mobile crane with a long boom near an airfield ? ❑

73 State three reasons why you are not permitted to drag or snig a load? ☆

74 When slewing a crane operating at its maximum limits what precautions would you take? ❑

75 List three reasons why packing or dunnage is used when slinging a load? ❑

76 With the load suspended just off the lifting surface, what three checks need to be made? ❑

77 Why is it important to have the boom head positioned correctly over the hook and load? ❑

78 Your crane is required to remove a large object of unknown mass (weight) which is partially buried. Would you conduct the lift? Explain your answer. ❑

79 Where is the correct position of the hook and boom head immediately prior to commencing to lift a load? ❑

80 You have formwork shutters, to lower from the top of a building, a strong wind blows up. What are the hazards? ❑

81 Can you use the jib of a mobile crane as a ladder to access a worksite or as a work platform? Explain your answer. ☆

82 Are your permitted to allow a person to ride upon the lifting hook and/or sling attachment? Explain you answer. ☆

83 Explain the requirements that would permit you to lift personnel, using the crane? ☆

84 How can you maintain speed control of the boom motion on a lattice boom crane when handling a heavy load? ❑

85 Identify the risk of releasing a capacity load with the lattice boom hard against the backstops? ❑

86 During crane operation the lattice boom luffing rope suddenly goes into free fall. What action would you take to control the free fall? ❑

87 List 3 reasons why a lattice boom may free fall? ❑

88 What situation could arise if you face a long lattice boom into a strong wind? ❑

89 What are the risks when operating a friction clutch crane in wet weather? ❑

90 When carrying out maintenance on hydraulic booms, how may sections may be extended in the horizontal position? ❑

91 How would you determine whether the main hook can be utilised or installed whilst the boom extension or fly jib is erected on the crane? ❑

92 What is load swing and what effect does it have on the crane? ❑

93 If the hook has landed on the ground, causing a slack rope condition, what would be the correct procedure when re-spooling the rope? ❑

94 What happens to the crane's capacity when slewing from the front to the rear operating zone? ❑

95 If given a stop signal by someone other than the person dogging the load, what would you do? ❑

96 List six precautions which should be taken when mobiling a load? ❑

97 What is the function of the axle lockouts on rough terrain cranes? ❑

98 Explain the dangers of luffing up to the minimum radius whilst working 'on rubber' ❑

99 Explain the procedure for mobiling a crane up and down a steep incline? ❑

100 Explain the risks of mobiling a loaded crane down an incline? ❑

101 If you suspect the crane's computer is not functioning correctly, what action would you take? ❑

102 During operation of the crane the on board computer has displayed the load as been in normal SWL parameters but an outrigger starts to lift. List three possible causes? ❑

OPERATIONAL AREA 5

SHUT DOWN AND PACK UP CRANE:

(Select 2 question including 1 with a Star).

103 Can any load remain suspended from the hook following shut down or when the crane is unattended? Explain your answer. ☆

104 How should a hydraulic extension boom crane be left unattended overnight? ❑

OPERATIONAL AREA 6

SPECIAL OPERATIONS:

(Select 2 questions including 1 with a Star).

105 List five key elements involved in AS2550.1 relating to multiple crane lifts? ☆

106 You are involved in a dual crane lift. The load share for each crane is 10 tonne. What is the minimum capacity crane that would be required at the calculated radius? (calculations to be shown) ❑

107 You are involved in a three crane lift. The load share for each crane is 30 tonne. What is the minimum capacity crane that would be required at the calculated radius? (calculations to be shown) ❑

Slewing Mobile cranes – Oral/Written

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The operational areas in this part of the oral/written assessment are intended to assess the competencies of the applicant in the safe use of Slewing Mobile Cranes as described in Schedule B of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment. (NOHSC: 1006)*

These are as follows:

1.0 Assess and secure equipment and work area.
2.0 Secure and transfer load.
3.0 Set up and pack up Mobile Crane.
4.0 Carry out special operations with Mobile Crane.

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

Performance Criteria 1.2.1, 1.2.2, 1.2.3, 1.2.5.

3. Set 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, 2.1.1, 2.1.2, 2.2.1, 3.1.2, 3.2.2, 3.2.3.

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, 4.2.1, 4.2.2, 4.2.3.

5. Shut down and pack up crane

Performance Criteria 1.4.1, 1.4.2, 1.4.3, 1.4.6, 3.3.1.

6. Special Operations

Performance Criteria 4.3.1, 4.3.2, 4.3.3.

THE RANGE STATEMENT

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

ANSWERS TO ORAL/WRITTEN QUESTIONS

OPERATIONAL AREA 1

PRE OPERATIONAL CHECKS:

1. **To record an accurate account of all services, maintenance and repairs of the crane.**

2. **Secure area and the machine and report to an authorised person.**

3. To the supervisor or authorised person.

4. The boom brakes may be creeping due to moisture, brake condition or mechanical failure.

5. The clutch and brake will slip if they are not dry.

OPERATIONAL AREA 2

SITE/JOB PLANNING:

6.
   - ❑ **Job requirements.**
   - ❑ **Priorities.**
   - ❑ **Workplace rules.**
   - ❑ **Procedures.**
   - ❑ **Identified hazards.**
   - ❑ **Hazard control measures.**

7.
   - ❑ **Powerlines.**
   - ❑ **Trees.**
   - ❑ **Overhead service lines.**
   - ❑ **Bridges.**
   - ❑ **Surrounding structures.**
   - ❑ **Obstructions.**
   - ❑ **Facilities.**
   - ❑ **Other equipment.**
   - ❑ **Dangerous materials.**
   - ❑ **Underground services.**
   - ❑ **Soil conditions, e.g. Recently filled trenches.**
   - ❑ **Vehicle traffic.**

8.
   - ❑ **Identify/detect site hazard.**
   - ❑ **Ensure PPE is worn by crane personnel.**
   - ❑ **Erect warning signs.**
   - ❑ **Erect barriers.**
   - ❑ **Organise traffic control.**
   - ❑ **Ensure good lighting.**
   - ❑ **Ensure storage of dangerous or hazardous materials.**

9. To ensure that the operator is aware of any workplace and site rules and procedures.

10. To lay out a sequence that should be followed in case of an emergency.

11.
   - ❑ **Never work closer than the minimum distance specified in AS2550.1 and State Regulations.**
   - ❑ **Ensure the crane is correctly earthed.**
   - ❑ **Ensure barriers, barricades are erected around the work area for public safety.**
   - ❑ **Safety helmets need to be worn.**
   - ❑ **Traffic signs/cones should be placed around the work site.**

12.
   - ❑ **At least 2 metres from distribution powerlines.**

   - ❑ **At least 6 metres from high voltage transmission lines.**

Note: Applicants must be aware of State/Territory Authority Regulations.

13. **Must seek an exemption from the relevant authority.**

14.

- ❑ **Try to move the crane away from conductors using crane controls.**
- ❑ **Warn all other people nearby.**
- ❑ **Remain in crane cabin until power is disconnected.**
- ❑ **If you have to leave the crane in an emergency, jump clear avoiding contact with ground and crane at same time.**
- ❑ **Machine checked prior to future use.**

15.

- ❑ **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 required, get somebody to assist.**
- ❑ **Report the hazard to an authorised person.**

16.

- ❑ The working surface on which the crane is to drive and set up on must be adequate in strength to support the crane and the load.
- ❑ Assess the load and sling attachments.
- ❑ Be aware that water tension can double the weight of the load.
- ❑ Weather conditions.
- ❑ Water conditions (swell, current and tide).

17.

- ❑ Propping should be as per engineers specification.
- ❑ Position of crane on slab should be as per engineers specification.
- ❑ Verify position of propping is in accordance with specifications.
- ❑ Ensure that loads imposed on the slab do not exceed specifications.

18.

- ❑ Mobile the crane with the load facing up the hill.
- ❑ Ground conditions.
- ❑ Load swing.
- ❑ Load as close to the ground as possible.
- ❑ Speed of travel.
- ❑ Minimum radius and boom angle.

19. There should be sufficient artificial lighting over the whole work area.

20.

- ❑ Hand signals.
- ❑ Whistles, hooters.
- ❑ Telephones.
- ❑ Light signals.

21. The crane operator and associated personnel eg; dogger or rigger.

22. 16mm diameter.

23.

- ❑ To be made aware of areas that may be unsafe.
- ❑ To be advised of the nature of the emergency.
- ❑ To ensure that someone is aware that you are making your way to a pre-designated assembly point.
- ❑ To be advised if it is safer to stay in the crane cabin.

24.

- ❑ To make sure work can be undertaken safely.
- ❑ To make sure artificial light sources are available at night.
- ❑ Access and regress.
- ❑ To make sure adequate natural or artificial lighting is provided to work safely (under all conditions).

25. Immediately stop work and contact the authorised person.

26.

- ❑ Weather conditions.
- ❑ Electrical hazards.
- ❑ Tag line change over may be required at designated point in the lift.
- ❑ Person holding tag line should wear PPE.
- ❑ Ensure that the line is not fouled.
- ❑ Tag lines should be held correctly.

27.

- ❑ Access – will the crane fit.
- ❑ Area is clear of obstructions and personnel.
- ❑ Use a guide.
- ❑ Can outriggers be fully extended, if not can "on rubber ratings be used".
- ❑ Can the boom be slewed safely.

OPERATIONAL AREA 3

SET UP CRANE:

28. To ensure that it is operating correctly so that double blocking does not occur.

29. Using a bubble level indicator or a spirit level.

30. To eliminate the possibility of further use of unsafe equipment.

31. No. The crane should not be set up close to a trench or an excavation as the weight of the crane causes added pressure to the adjoining soil and can cause the trench or excavation to collapse and result in the crane overturning.

32. As a general rule, the distance of the crane from the edge of the excavation/ trench should be at least the same as the depth of the hole. In other words, one meter of depth equals one meter from the edge (1.1).

33.

$$\sqrt{\frac{W \times R}{B \times N \times V}}$$

W = weight of load + ½ weight of boom
R = distance from load to back wheel support in metres.
B = Distance from support centres (outrigger end to back wheel) in metres
N = Number of outriggers on the loaded side.
V = Soil value in pressure tonnes per square meter.

34.

- ❑ Failed to assess the site hazards.
- ❑ Failed to identify unstable soil, backfilled trenches or excavations.
- ❑ Failed to use sufficient packing under stabilisers/outriggers to ensure load is distributed over a larger area.

35. The crane operator, person dogging the load or rigger.

36.

- ❑ All outriggers must be used if the "on outriggers" load chart is to apply. When using only one or two, capacity and stability losses are huge and the "on rubber" ratings must apply.
- ❑ All beams must be fully extended. If they are not capacity drops sharply and the "on rubber" chart must be used. The size of this capacity loss is significant when beams are retracted.
- ❑ All wheels must be clear of the ground. If they are not the crane has an inside tipping axis on its tyres. Capacity is lost and the "on rubber" chart must be used.
- ❑ Each outrigger pad must be correctly secured.
- ❑ Engage lock pins or cams on each outrigger to ensure hydraulics do not creep.
- ❑ The outriggers on the low side must be set first.

- ❑ Correct selection of footplate or packing.

37. As per load chart specifications, or when the load to be lifted exceeds the single line capacity.

38. To ensure the crane is stable and the crane can operate at its rated capacity.

39.
- ❑ Ensure rigger and person dogging the load are involved in planning stage of lift
- ❑ Have adequate supply of packing handy when grounding load to protect slings.
- ❑ Position crane on stable work surface, packing outrigger to help distribute load of crane and loads being applied.
- ❑ Estimate the weight of the tank, ensuring it is empty and the thickness and constructions of the walls are taken into account.
- ❑ Identify what substance was contained in the tank prior to its removal, eg flammable to toxic substances.
- ❑ Ensure all tank connection points have been disconnected prior to lift.
- ❑ Trial lift where possible.
- ❑ Allow for boom deflection when load is raised.
- ❑ Progress with lift slowly and do not slew until crane has full control and weight of the load.

40. There could be a decrease in capacity.

41. On the applicable load chart.

42. As per manufacturer's recommendations that applies to the crane.

43. Operator must decrease the radius or lower the load or slew the load into a different operating zone to gain stability.

44. The use of bumper weight is usually for travelling with long booms or assisting balance when lifting long booms from the horizontal position. Refer to manufacturer's specifications.

45.
- ❑ The crane must be level.
- ❑ Outriggers on the lowest side to be set up first.
- ❑ Ensure the slew brake is engaged and not released until the crane is level.
- ❑ When set up, all crane tyres must be clear of the ground.

46.
- ❑ Calculate the bearing area required.
- ❑ Check for subsidence before lifting.
- ❑ Ensure the footing is constantly checked; if there is any movement, repack the outrigger.

47. This creates an inside tipping point and reduces stability dramatically.

48. The front stabiliser must be retracted first and extended last to prevent the hydraulic ram been overloaded.

OPERATIONAL AREA 4

OPERATE CRANE:

49. To an authorised person.

50.
- ❑ **Delivery dockets.**
- ❑ **Public weigh bridge.**
- ❑ **The manufacturer's information.**
- ❑ **Weight may appear on the "load" itself.**
- ❑ **Calculate.**

51. Load must be attached to tag lines and tied back to crane.

52. As per manufacture's recommendations.

53.

- ❑ Lower the load to the ground.
- ❑ Put counter weight to the wind.
- ❑ Anchor the crane.
- ❑ Apply the slew lock.
- ❑ Shut the crane down.
- ❑ If Hydraulic Mobile Crane – retract boom and stow in cradle.

54. Check all lifting gear, boom, outriggers and mechanical components.

55. Identify the problem and take appropriate corrective action.

56. By depressing the luff pawl button and luffing up extremely slowly to disengage the pawl before luffing out.

57. If you luff out too quickly the pawl could be broken or bent by the impact as it engages the ratchet.

58. The luff pawl button overrides the action of the pawl being raised as the luff motor is actuated.

59 1.1t or 1,100 kg.

60. 1t or 1,000 kg.

61. 2.7t or 2,700 kg.

62. 2t or 2,000 kg.

63. 2.4t or 2,400 kg.

64. To minimise load swing and maintain stability of the crane.

65. No.

- ❑ Severe load swing.
- ❑ Possibility of it overturning.
- ❑ Side pull on the boom.

66. Up hill.

67. There is a danger that the boom angle will become too high or near vertical. The boom will overturn backwards.

68. At the slowest speed possible.

69. As close as possible.

70. **Lower the load, cease operation immediately and notify the person dogging the load. Have an inspection carried out to identify whether damage has occurred during the lift.**

71. **Boom may strike boom back stops, causing the boom to bend, structural damage may be caused to the crane.**

72.

- ❑ Be aware of glide paths and obtain appropriate clearance.
- ❑ The head of the crane will show up on radar in the tower.
- ❑ Expect a visit from the police or air traffic emergency control personnel.
- ❑ Hazard warning lights on boom head.

73.

- ❑ **Could cause structural damage to crane by exceeding the SWL of the crane.**
- ❑ **Could cause load to swing.**
- ❑ **Could cause load to topple.**

74. Ensure that the crane is slewed smoothly by avoiding jerky movements of the controls.

75.

- ❑ To protect the load.
- ❑ To facilitate the connection/disconnection.
- ❑ To prevent damage to lifting gear.

76.

- ❑ That the load is correctly slung.
- ❑ All crane equipment is functioning correctly.
- ❑ Stabiliser/outrigger footing is secure.

77. To reduce the risk of overloading or collapsing the crane and prevent load from swinging on lift.

78. No. Not until the mass of the load has been accurately determined and all other precautions taken.

79. The boom head should be vertically above the hook and the hook should be vertically above the load.

80. Shutters are large in area but light in weight, therefore they could flap/spin around in the wind so will need to be secured. Also, the wind loading with such a large surface area could destabilise the crane.

81. **No, Under no circumstance must the jib of a crane be used as a method of accessing a job, or as a work platform because it is against Regulations and is unsafe.**

82. **No, unless a person is secured in a suspended workbox which meets all necessary requirements.**

83.

- ❑ **Any requirements specified by crane manufacturer.**
- ❑ **Any requirements covered by workplace conditions**
- ❑ **Any requirements specified by State Authorities**
- ❑ **In accordance with relevant Australian Standards.**

84. Engage the torque converter which allows complete control of the luffing motion

85. Releasing a capacity load may cause the boom to deflect, that may result in boom damage.

86. Reverse the clutch in the up position and engage the brake then the pawl.

87.

- ❑ The brakes and clutches are glazed up.
- ❑ The brakes and clutches have been affected by oil, grease or water
- ❑ The master clutch has disengaged
- ❑ The gearbox has neutralised
- ❑ The brake cylinder has malfunctioned
- ❑ The brakes or clutches are not adjusted properly

88. The boom could be tipped over backwards.

89. Rainwater or moisture could affect the clutches or brakes causing an uncontrolled free fall of the boom or hoist.

90. As per manufacturer's recommendations.

91. Refer to the applicable load chart.

92. Load swing applies when the crane is slewing or luffing at high speed causing the load to swing. This can cause excessive loading on the boom and also cause the crane to tip due to the load exceeding the specified radius.

93. The weight of the hook or overhauling weight must be on the rope when re-spooling, this can be achieved by luffing the boom up or telescoping the boom outwards. The dogger assists by pulling out the slack rope.

94. The crane's capacity may vary considerably (Refer to the load chart.)

95. Stop operations and await further directions

96.

- ❑ Check tyres for correct operating pressures and condition.
- ❑ Jib to be retracted as far as possible and the load as close to the ground as practical.
- ❑ Understand backward stability and the dangers.
- ❑ Be aware of changing operating zones when slewing the crane.
- ❑ Ensure travel-path clear of personnel.
- ❑ Boom to be pointed in the direction of motion and in line with the centreline axis of the crane.
- ❑ Lifts are applicable to 'on rubber' ratings only.
- ❑ Load as close to crane as possible and secured with taglines to avoid unnecessary swing.
- ❑ Minimum speeds.
- ❑ Watch out for any hazards (eg: powerlines, service lines).

97. The system provides a static fixed suspension when working 'on rubber' allowing the crane to reach its specified 'on rubber' capacities. As per manufacturer's specifications.

98. The crane could lose its backward stability causing the crane to fall backwards.

99.

- ❑ Prepare to mobile up the incline by facing the boom in direction of travel and lower the boom to prevent the boom collapsing backwards.
- ❑ Start mobiling up the incline.
- ❑ Reaching the top of the rise start to luff the boom up, to counteract the movement back on to a horizontal surface.
- ❑ Mobiling down, use the reverse procedure always keeping the counterweight on the lower side.

100.

- ❑ The working radius of the crane could be exceeded.
- ❑ Centre of gravity moves forward which could cause an overload situation.
- ❑ The brakes may not be strong enough to stop the crane.

101. Report to relevant personnel and await advice regarding action.

102.

- ❑ The wrong code has been entered into the computer.
- ❑ The crane is not level.
- ❑ The crane does not have the appropriate counter weights.
- ❑ Computer malfunction.

OPERATIONAL AREA 5

SHUT DOWN AND PACK UP CRANE:

103. **No. Load should be removed from the hook prior to shut down. If during the course of a lift the crane driver must leave the controls, the load should be placed on the ground and crane shut down in the prescribed manner. (No driver, No load).**

104.

- ❑ Load to be removed.
- ❑ Crane packed up to manufactures specifications.

OPERATIONAL AREA 6

SPECIAL OPERATIONS:

105.

- ❑ **The size and characteristics of the load.**
- ❑ **Mass of the load.**
- ❑ **Centre of gravity.**
- ❑ **Mass of lifting gear.**
- ❑ **Number of cranes involved.**
- ❑ **Calculated share of the load to be handled by each crane.**
- ❑ **Synchronisation of the crane motions.**
- ❑ **Pick and carry.**
- ❑ **Instrumentation.**
- ❑ **Wind/weather conditions.**
- ❑ **Supervision – one person to be in overall control of the operation.**
- ❑ **Communications.**
  As per AS 2550 part 1.

106. 12 tonne per crane.
Minimum Crane Capacity = Load + 20% for each Crane.

107. 40 tonne per crane.
Minimum Crane capacity = Load + 33% for each Crane.

ORAL/WRITTEN ASSESSMENT

OPERAT-IONAL AREA	Number of critical criteria required	Number of critical criteria achieved	Number of non-critical criteria	Number of non-critical criteria achieved	Competent? (tick) YES	NO
1	2	☐	1	☐	☐	☐
2	8	☐	3	☐	☐	☐
3	0	☐	3	☐	☐	☐
4	7	☐	6	☐	☐	☐
5	1	☐	1	☐	☐	☐
6	1	☐	1	☐	☐	☐
Assessment start time:		: am/pm	Finish time:	: am/pm		
Oral/Written Assessment completed within time allowed - approx 1 hour					☐	☐

WRITTEN ASSIGNMENT

SECTION	Number of critical criteria required	Number of critical criteria achieved	Number of non-critical criteria	Number of non-critical criteria achieved	Competent? (tick) YES	NO
A	0	☐	6	☐	☐	☐
B	0	☐	3	☐	☐	☐
C	0	☐	3	☐	☐	☐
D	0	☐	2	☐	☐	☐
E	0	☐	1	☐	☐	☐
F – CN / C1	5	☐	3	☐	☐	☐
F – CT / CP	2	☐	2	☐	☐	☐
F - CB	2	☐	1	☐	☐	☐
F - CV	4	☐	2	☐	☐	☐
Assessment start time:		: am/pm	Finish time:	: am/pm		
Written Assessment completed within time allowed - approx 1 hour					☐	☐

PERFORMANCE ASSESSMENT

OPERATIONAL AREA	Number of criteria required in each operational area	Number of criteria achieved	Competent? (tick) *YES*	*NO*
1	**3**			
2	**nil**			
3	**1**			
4	**3**			
5	**1**			
6	**nil**			
Assessment Start time:		: am/pm		
Assessment Finish time:		: am/pm		
Performance Assessment completed within time allowed - approx 1 hour				

Applicant is: **COMPETENT**

(tick or circle the result obtained) **NOT YET COMPETENT**

Name of Assessor:…… **Name of Applicant**:……..…….

Signature:…… **Signature**:……

Date: …./…./….

Comments/Feedback (Assessor to make additional comments which clarify the assessment results)

