

BSBWHS508

Manage WHS hazards associated with plant



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ASSESSMENT FOR BSBWHS508

Student name	Shaun Coffey
Date of assessment submission	7/01/2019

Trainer/Assessor's name	
Date of assessment marking	Click here to enter a date.
Outcome for unit	☐ Competent ☐ Not Yet Competent

TASK INSTRUCTIONS

- The assessment for this unit of competency consists of the following:
 - A series of activities:** Some of these activities will require you to provide a response within this document, others will require you to gather evidence to demonstrate your knowledge and skills (overview below)
 - Quiz:** You will be required to complete a series of questions to demonstrate your knowledge and skills.
 - Practical task:** You will be required to have an observer attest to your knowledge and skills and sign a report to this effect.
- At times, you will be provided with a specific business context to which you must respond, otherwise it is anticipated that you will use a workplace of your choosing (your own, or hypothetical) to provide the context to the task.
- At all times, the responses in your assessment must reference **Australian** (Queensland or Federal) documentation, including legislation, regulations, codes of practice, standards and guidance publications.

ACTIVITY OVERVIEW	REQUIRED FOR SUBMISSION
1. Legislative obligations regarding plant	Workbook response (below)
2. Identifying/assessing plant hazards and risks	Workbook response (below)
3. Implementation and evaluation of risk controls	Workbook response (below)
4. Registration, licensing and certification	Workbook response (below)

ACTIVITIES

For the following activities, name a workplace that you wish to examine.

Name of workplace	Dyno Nobel Moranbah
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ACTIVITY 1

Explain their duties, rights and obligations of PCBU's (and their officers) and workers regarding operation and maintenance of plant (including hazard management) as found in:

- a) *Work Health and Safety Act 2011* (Qld)
- b) *Work Health and Safety Regulations 2011* (Qld)
- c) A code of practice relevant to your chosen workplace
- d) An example of guidance material from the regulator (e.g. plant hazard checklists)
- e) Organisational policies
- f) Organisational procedures
- g) Organisational processes
- h) Organisational systems

a) <i>Work Health and Safety Act 2011</i> (Qld)	PCBUs are required to ensure, under Sections 19(3)(b) and 19(3)(d) the provision, safe use, and maintenance of plant and structures. Sections 21 to 26 outline further risks relative to plant and structures that PCBUs are required to address. Part 5 of the Act also requires PCBUs to consult with duty holders, and as a significant part of operations, plant would be a focal point of such consultation. Section 27 requires officers to be informed on WHS matters, understand risks associated with operation of plant, ensure that there are process/resources to appropriately reduce risks, record, notify and comply holistically with WHS duties. Section 28 requires workers to comply with systems, procedures, policies, or reasonable instructions of PCBUs including those related to plant.
b) <i>Work Health and Safety Regulations 2011</i> (Qld)	PCBUs are required to manage operational risks of plant in accordance with Chapter 3 of the Regulations. Chapter 5 requires PCBUs to register plant, maintain records, testing, inspection, hazard identification, etc.
c) Code of practice	The Mobile Crane Code of Practice (2006) is a document that lists the requirements for duty holders (predominantly for PCBUs) for mobile crane operations. It outlines PCBUs are to ensure the overall coordination of lifting operations, including adequate preparation of the workplace, consulting crane operators, ensuring they have the appropriate license, etc. Workers (doggers and crane operators) are required to comply with the reasonable instructions of PCBUs, the equipment guidance material, and standards for crane operation.
d) Guidance material	The 10 life saving rules are non-negotiable guidance in the company's vision of zero harm. These rules apply to all employees, management, contractors, regardless of status / role. These include wearing a seat belt whilst driving, following the management of change process, fitness for work, permit to work system adherence, etc.
e) Organisational policies	The IPL HSEC policy requires persons in control of workplaces to provide a safe health working environment, training, establish and maintain safety management standards and systems within relevant requirements, manage risk appropriately. The policy requires workers to comply with all relevant legislation, WHS management standards / systems.

f) Organisational procedures	Safe Operating Procedures are considered a critical control for WHS. Their aim is to protect personnel, avoid incidents, minimise operational risk and protect the plant. PCBUs have to responsibility under section 19 to ensure the SOPs are appropriate for managing the associated risk and training for their understanding and execution is provided. Officers are required to ensure the adequacy of SOPs to address the risks associated with the relevant plant. Workers have an obligation under section 28 to comply with policies / procedures / reasonable instructions of a PCBU.
g) Organisational processes	Organisational processes require plant to be captured in SAP to generate automatic notifications for licensing / registration requirements, maintenance, and specific details (manufacturer, build date, serial number, etc). Additionally, inspections / pre-starts or samples, daily inspections, and operational procedures are required to be recorded and input into the WHSIS.
h) Organisational systems	The WHSIS provides the platforms such as SAP, production recording, and eDocs for the input for information about plant, results of sampling or inspection of plant, and the maintenance of plant.

Outcome for Activity 1	☐ Satisfactory ☐ Not satisfactory
Trainer/Assessor comments	

ACTIVITY 2

Identify two (2) plant-related hazards (one relating to pressurised fluid, one relating to moving machinery parts) that may occur in your workplace. For each hazard identified, find information to explain:

- The nature and scope of the hazard, including the incidents/injuries it can cause
- Determine the level of risk for the hazard within your workplace
- Name and justify at least two (2) risk controls that may be implemented to address the hazard and risk assessment results
 - Explain which of these risk control options would be the most suitable, following the hierarchy of control
- Who you would consult as part of hazard identification/risk assessment

Name hazard relating to pressurised fluid

The lubrication oil system circulates lubrication oil to/from compressors and turbines. The equipment includes pumps, coolers, pressure control valves, and a tank reservoir.

Nature and scope of hazard

As the system runs at ~1000kPa and up to 55 degrees Celsius there is potential for loss of containment (pressurised oil releasing from piping). This causes additional hazards such as slips or burns resultant from leaks, fire can result if leak close to heat source (turbine).

Source of information (e.g. website address):

Determine the level of risk

Matrix	A: Death or permanent disability	B: Serious injury	C: Lost time injury	D: Casualty Treatment	E: First Aid
1: Very Likely	E	E	H	H	M
2: Likely	E	H	H	M	M
3: Possible	H	H	M	M	L
4: Unlikely	H	M	M	L	L
5: Very Unlikely	M	M	L	L	L

E: Extreme	H: High	M: Medium	L: Low
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Level of risk: 4 (unlikely) x D (casualty treatment) = **Low**

Risk controls

Pressure Safety Valves (valves that automatically open to reduce / control line pressure)
 Pressure transmitters that monitor pressures
 Field inspections (system inspected twice per day)
 Alarm system that alerts when pressure is high/low (prompt to check system)

The Most effective control would be the Pressure Safety Valves / Control Valves as they are engineering controls as opposed to the administration controls.

Source of information (e.g. website address):

Consulting others

All operators should be aware of the hazards and their controls for the lube oil system. This should include training for managing leaks (use of spill kits, escalation and reporting system) and communication to relevant work groups.

Name hazard relating to moving machinery parts

Turbines are used to drive compressors and are critical part of the plant.

Nature and scope of hazard

The Syngas (steam driven) Turbine spins at up to 12,500 RPM with ~9500 horsepower. The rotating shaft extends through the turbine casing into the compressor. This shaft has incredible force and should not make contact with anything.

Source of information (e.g. website address):

Determine the level of risk

Matrix	A: Death or permanent disability	B: Serious injury	C: Lost time injury	D: Casualty Treatment	E: First Aid
1: Very Likely	E	E	H	H	M
2: Likely	E	H	H	M	M
3: Possible	H	H	M	M	L
4: Unlikely	H	M	M	L	L
5: Very Unlikely	M	M	L	L	L

E: Extreme	H: High	M: Medium	L: Low
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Level of risk: 4 (unlikely) x A (death or permanent disability) = High

Risk controls

Controls to prevent contact include machinery casing, couple / shaft guarding on the machine and training - area induction and turbine operational safety training.

The guarding in place would be the most the most effective control as it isolates the possibility of contact with the spinning rotor.

Source of information (e.g. website address):

Consulting others

Consultation for turbine hazards should include rotating engineer, turbine specialist, senior operations technicians, HSE manager, and operations manager.

Outcome for Activity 2	☐ Satisfactory ☐ Not satisfactory
Trainer/Assessor comments	

ACTIVITY 3

For the two (2) risks (and associated risk controls) identified in Activity 2:

- a) Explain how you would contribute to implementing the risk control
- b) Describe how you would evaluate the effectiveness of risk controls that had been implemented
 - Consider how you would monitor the risk controls
 - How often would you undertake a review of the risk controls?
- c) Identify how organisational behaviour and culture may impact on the effectiveness of these controls.
 - Identify improvements that could be made to organisational policy, procedures, processes and systems to address these barriers.
 - Who would you report your findings and suggested improvements to?

Hazard/Risk 1**Implement risk control**

All plant changes are required to follow the Management of Change process. This begins by raising a modification (summarising the change and the expected benefit) and where I would contribute to implementing the risk control. This is then granted initial approval from where the turbine specialist and rotating engineer can verify the risk reduction of the change against the costs. This information is then sent on to the plant manager for final approval. If final approval is granted a project team is allocated roles and functions such as planning the change (plan shutdown, organise parts and labour, update existing drawings, etc). Throughout the latter stages I can assist in organising isolations and purging for the project scope.

Evaluation of risk control

Normally there is a monitoring phase after new equipment is commissioned. In this instance increased monitoring on the lube oil system would take place. Data would be collected to verify the effectiveness of the controls implemented and confirm the risk reduction expected by the change.

Addressing barriers

Improvements made to increase the effectiveness of these controls would include; updating relevant procedures for the lube oil system to capture the changes, consult with workers on the change from the initial concept through to post implementation review and accept / implement their feedback.

The findings would be reported to the Modification system where all concerned persons are linked and would receive email notification to read prior to closing out the modification. The findings should also be summarised and distributed by site bulletin.

Hazard/Risk 2**Implement risk control**

All plant changes are required to follow the Management of Change process. This begins by raising a modification (summarising the change and the expected benefit) and where I would contribute to implementing the risk control. This is then granted initial approval from where the turbine specialist and rotating engineer can verify the risk reduction of the change against the costs. This information is then sent on to the plant manager for final approval. If final approval is granted a project team is allocated roles and functions such as planning the change (plan shutdown, organise parts and labour, update existing drawings, etc). Throughout the latter stages I can assist in organising isolations and purging for the project scope.

Evaluation of risk control

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Outcome for Activity 3

- ☐ Satisfactory
☐ Not satisfactory

Trainer/Assessor comments

ACTIVITY 4

Consider the registration, licensing and certification issues associated with plant:

- a) Identify two (2) types of plant requiring registration
 - How should registration compliance be monitored and documented?
 - Which individuals/parties need to be informed about this information?
- b) Identify two (2) workplace tasks which require operator licensing and/or certification (e.g. high risk work)
 - How should licensing/certification compliance be monitored and documented?
 - Which individuals/parties need to be informed about this information?
- c) Identify the training requirements necessary to meet registration, licensing and certification requirements (i.e. for new plant and/or new operating methods).
 - What methods would you use to determine training needs?
 - Which individuals/parties need to be involved in this process (i.e. involved in training, ensuring that training is undertaken and completed prior to commencement of work)?
 - How should training compliance be documented/recorded?

	Explanation
a)	Boilers classified as hazard level A, B, or C (as per section 2.1 of AS 4343:2005) and tower cranes (including self-erecting cranes) should be registered. Compliance for registration should include documented ongoing monitoring (such as equipment use and condition / inspection recording, and independent third-party inspections and reports). This is in addition to maintaining records of equipment details (serial number, manufacturer, build date, maintenance history / schedule). Operators of boilers/tower cranes should be appropriately trained (generally a HRWL), and informed of the operational risks and trained in operational procedures.
b)	Operating boilers and Tower cranes require a HRWL. Licensing would be ideally stored in the WHSIS and as a minimum on any person operating (available for perusal during an audit). The WHSIS can include a training verification that prompts when HRWL is due in advance to organise prior to expiration date. Licenses should also be assessed against the onsite equipment to ensure it is appropriate. All training department personnel and operators of boilers / tower cranes should be informed of the requirements.
c)	Perusing WorkSafe guidance on requirements (https://www.worksafe.qld.gov.au/licensing-and-registrations/work-health-and-safety-licences), the Act and Regulations, company requirements relative to the plant, and workers will assist in determining the training needs. Individuals and parties required to be involved include Human Resources, Training Department, workers, training providers, QLD Workplace health and safety (HRWL owners) and the safety department. Training should be recorded in the WHSIS.

Outcome for Activity 4	☐ Satisfactory ☐ Not satisfactory
Trainer/Assessor comments	

QUIZ

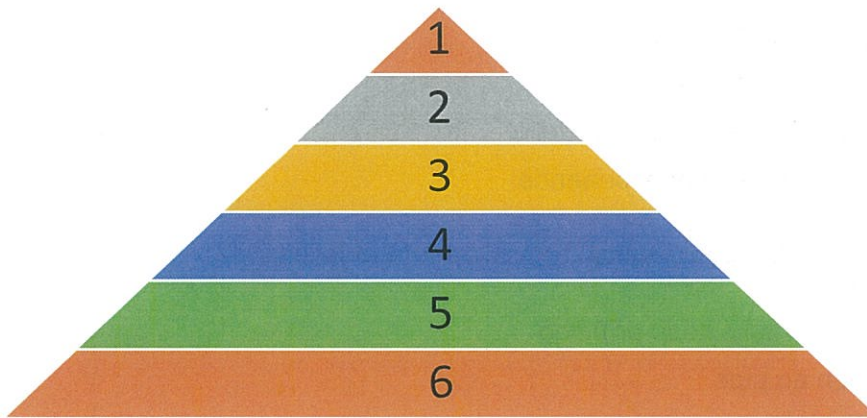
QUESTIONS	CORRECT
1. Which of the following may impact on WHS risk and the management of WHS? Select all that apply. ☒ Workplace culture towards WHS ☒ Language, literacy and numeracy levels of the workforce ☐ Training being too long and boring ☒ Consistency in the workplace (e.g. shift regularity)	☐
2. Which documents would reflect training requirements of plant operators? Select all that apply. ☒ Training Needs Analysis ☒ WHS regulator website ☐ Professional Development portfolio ☒ Logbook of operational experience	☐
3. A high pressure fluid injury could result from which of the following? Select all that apply. ☒ A leaking hydraulic hose or fitting ☐ A split in an air pipe ☐ A grease gun ☐ Opening a bottle of replacement brake fluid	☐
4. What should be considered when developing strategies for guarding moving parts in machinery? Select all that apply. ☒ Anticipated work practices (e.g. maintenance requirements, workers reaching into machines to free jams or to retrieve things) ☒ Implementing fences or guards that are kept in position while the machinery or plant is operated ☒ Training workers to change practices (e.g. use guards, change dangerous practices such as reaching across moving parts) ☒ Locating lubrication points away from moving parts, if possible ☒ Reported hazards and risk assessments regarding machinery in question	☐
5. According to the <i>Managing risks of plant in the workplace Code of Practice 2013</i>, when isolating an energy source so that multiple people can work on plant, which of the following is best practice? Select your response. ☒ A lock that allows one or more padlocks to be fitted (i.e. one for each person working on the plant) ☒ One padlock for all users ☒ One tag for all users ☐ Multiple tags for each user, no locks	☐

6. Which of the following tasks require a permit to work? Select all that apply.

- ☒ Removal of asbestos
☐ Concreting
☒ Confined space entry
☒ Excavation and demolition
☒ Isolation of energy, plant and equipment
☒ Working at heights

☐

7. Identify the elements of the hierarchy of control, using the labels 1 – 6 below.

☐


Label (1 – 6)	Element
3	Isolate the hazard
6	Provide and use Personal Protective Equipment (PPE)
1	Eliminate the hazard
4	Control the hazard by engineering means
5	Control the hazard by administrative means
2	Substitute the hazard

8. Match the following terms and definitions by placing the corresponding term number next to each definition.

☐

Label	Term
1	Causation
2	Hazard
3	Prevention
4	Risk
5	Foreseeability

Label (1 – 5)	Definition
	The action of stopping something from happening.
	That which is seen as the natural result of action/inaction.
	A measure of the possibility of harm, considering seriousness of injury and likelihood of occurrence.
	Something which has the potential to harm people.
	The relationship between conduct and the resulting effect (e.g. injury)

9. According to the WHS regulator, which of the following activities require a licence? Select all that apply.

- ☒ Operating cranes and hoists
- ☒ Rigging and dogging
- ☒ Scaffolding
- ☒ Driving plant on the road

☐

Outcome for Quiz

- ☐ Satisfactory
- ☐ Not satisfactory

Trainer/Assessor comments

PRACTICAL TASK

You are required to have a suitable observer verify your ability to complete the following tasks. These tasks may be simulated or real.

TASKS	VERIFIED
A. In a small group, show leadership while conducting a safety audit of plant used in high-risk work that requires a permit. • Check fluid measurements and guards, as required • Check logbook and maintenance records • Observe isolation and tag out systems	☒
B. In your small group, document potential hazards and their causes in a risk register, identifying: • Possible injuries/damage • Required control measures (referring to legislative and organisational requirements) • Risk assessment results	☒
C. Collaborate with others to consider current organisational policies/procedures and offer recommendations for the following areas: • Hazard management • Monitoring and reporting compliance with regulatory requirements for registration, licensing and certification (including organising training)	☒
D. Electronically and orally present findings to appropriate persons (e.g. PCBU, Trainer/Assessor). As part of the presentation: • Identify the duties, rights and obligations of individuals/parties based on findings of audit • Identify factors that will impact on WHS risk management • Explain how control measures will be implemented, monitored and reviewed for effectiveness	☒
Name of observer	<i>Allan Martin</i>
Role of observer (Confirm their suitability to sign)	☒ Trainer/Assessor ☒ Other (specify): <i>Operations Team leader</i>
Phone number of observer	<i>041 8877 031</i>
Email address of observer	<i>allan.martin@incitecpivot.com.au</i>
Signature of observer	
Date	Click here to enter a date. <i>12-1-19</i>
Comments	

Outcome for Practical Task	☒ Satisfactory ☐ Not satisfactory
Trainer/Assessor comments	

