Plant Hazard Identification and Risk Assessment

Issue date 16/02/2017

Review date 16/02/2018

Plant information

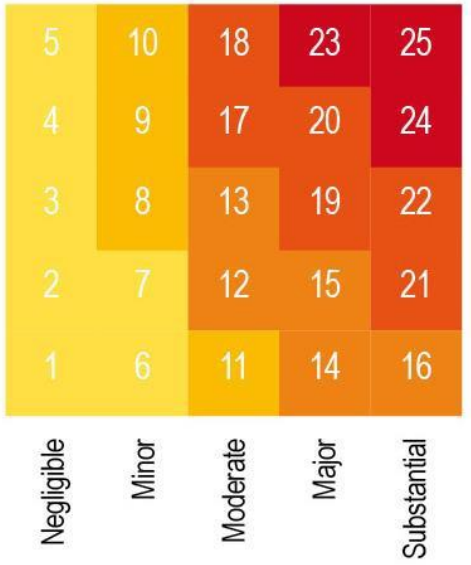
Plant item:	Kobelco CKE2500-2	**Plant identification details**	CKE2500-2 JD04-02714	
Project:				
Competency required to operate the plant:	C0 – Slewing Crane >100t Capacity			
List all legislation, codes of practice and Australian Standards applicable to this item of plant:				
	Mobile Crane Code of Practice 2006. Risk Management Code of Practice 2007, WHS Act 2011 WHS Regs 2011			
List other documentation relevant to this plant reviewed during this assessment? ie SWMS, SOPs, Manufacturer's Handbook.	Operational Manual/Inspection Handbook for Kobelco CKE2500-2			
Assessment conducted by: **(Names and positions)**	John Cassidy – Construction Manager Peter Riters - Supervisor		Date:	16/2/2017

The following risk ranking criteria are used to assess the level of risk for the various aspects involved in a design. Higher risks require increased levels of control.

Consequence		Safety
Substantial	Cannot achieve key team or major program milestone, > x days	Class 1 (Fatal Incident)
Major	Major slip in key milestone or critical path impacted; X-X Days Slip	Class 1 (Permanent Injury)
Moderate	Major slip in key milestone; not able to meet needed date, X-X Days Slip	Class 2 (Lost Injury Time)
Minor	Additional resources/re-planning required to meet need/key date, X-X Days Slip	Class 3 (Minor injury, medical treatment required)
Negligible	Minimal or no key impact on dates, X-X Days Slip	Class 3 (Slight injury First Aid)

Risk	Probability	
	Almost Certain	Threat can be expected to occur. 75%-99%
	Likely	Threat will quite commonly occur. 50%-75%
	Possible	Threat may occur occasionally. 25%-50%
	Unlikely	Threat could infrequently occur. 10%-25%
	Rare	Threat may occur in exceptional circumstance. 0%-10%

- Extreme Threat
- Very High Threat
- High Threat
- Moderate Threat
- Low Threat



Note: Existing Safe Work Method Statements (SWMS) etc are to be reviewed along with other control measures relating to the plant. If the assessment identifies that a SWMS SOP etc is not fit for the purpose, note this as a corrective action required in the **Additional Controls** section.

Maintenance/repair being assessed:			
No. of employees working on (or likely to be working on) plant:		**Estimate duration of activity**	
Type of activity:	**Scheduled frequency.**	**By Whom.**	**Location of Maintenance.**
☒Scheduled. As per Kobelco Manufacturer's Handbook – Inspections to be carried out: Competent Person may be any of the following. • Electrician • Service Fitter • Boilermaker • Supervisor	• Daily	Operator	☒On site - ☐ Off site.
	• 500 hours	Service Fitter	☒On site - ☐ Off site.
	• 1000 Hours	Service Fitter	☒On site - ☐ Off site.
	• 1500 Hours	Service Fitter	☒On site - ☐ Off site.
	• 2000 Hours	Service Fitter	☒On site - ☐ Off site.
	• 2500 Hours	Service Fitter	☒On site - ☐ Off site.
	• 3000 Hours	Service Fitter	☒On site - ☐ Off site.
☒Unscheduled.	When and if it malfunctions	Service Fitter	☒On site - ☐ Off site.

Competency requirements for maintenance: ***(e.g. electrical, welding, etc)***	All inspections maintenance and repairs shall be carried out by a competent person. (a) A competent person inspecting welding on a crane should have suitable knowledge and experience in the inspection and testing of welds, including knowledge of non-destructive testing methods, and AS/NZS 1554: Structural steel welding. (b) A competent person inspecting hydraulic systems and circuitry on the crane should have suitable knowledge and experience in the inspection and testing of hydraulic systems.
References ***(Australian Standards, maintenance manuals etc):***	Mobile crane of Practice 2006. Risk Management Code of Practice 2007, WHS Act 2011, WHS Regs 2011, Operational Manual/Inspection Handbook for Kobelco CKE2500-2

Identified energy sources:	N/A	**State Method of isolation:**	N/A
Other permit to work required?	☐Yes ✓No	**If Yes, which permits:**	

Hazard identification and risk assessment during operations and/or maintenance activities

Section 1	Put an **X** if the hazard does apply to the plant. Leave blank if the hazard does not apply to the plant.	**Section 4**	Then indicate the **Consequence**, **Likelihood** and **Risk Rating**.
Section 2	Write where on the plant the hazard exists.	**Section 5**	Write the existing Controls and relevant Comments relating to additional controls required
Section 3	Indicate when the exposure is likely to occur? During Operations **(O),** Maintenance **(M)** or Both **(B)**.	**Section 6**	Indicate the residual risk taking into account controls being implemented after considering applicable legislation, Codes, Standards, etc.

SECTION 1 Hazard category and examples	**SECTION 2** Where on this plant does this hazard exist?	**SECTION 3** Exposure during O M or B?	**Section 4**			**SECTION 5** Controls and comments	**SECTION 6** Residual Risk		
			Consequence	**Likelihood**	**Risk Rating**		**Consequence**	**Likelihood**	**Risk Rating**
Entanglement - Yes ☒No Can anyone's hair, clothing, gloves, necktie, jewellery, rags and other materials become entangled with moving parts of plant, or materials in motion?									
☒Arms, hands, fingers, or upper body. ☒Legs, feet, or lower body. ☒Hair, clothing, or jewellery.	Pinch points. Crush points.	B	MAJOR	P	19	Competent personnel. Spotters. Effective Communication.	MAJOR	R	14
☐ Isolation of energy source.									
☐ Cleaning brushes.									
Crushing - Yes ☒No Can anyone be crushed due to falling, uncontrolled or unexpected movement of plant or its load, lack of capacity to slow, stop or immobilise the plant, tipping or rolling over, parts of plant collapsing, contact with moving parts during testing, inspection, maintenance, cleaning or repair, thrown off, under or trapped between plant and materials or fixed structures?									
☒Materials falling or being ejected from working area.	Falling loads	B	MAJOR	P	19	Competent personnel. Spotters, Effective communication, Barricades	MAJOR	R	14
☒Uncontrolled movement of loads.	Crush injury. Falling loads. Crane tipping over.	B	S	P	22	Competent operator / dogman. Correct slinging of loads. PPE to be worn. Effictive communication.	S	R	16

☐ Nip points.									
☐ Inability to slow, stop or immobilise plant.									
☐ Isolation of energy sources.									
☐ In-running rollers/gear sets.									
☒ Plant tipping or rolling over.	Crush injury. Falling loads. Crane tipping over.	B	S	P	22	Competent operator / dogman. Correct slinging of loads. PPE to be worn. Effective communication.	S	R	16
☒ Parts of plant closing or collapsing.	Boom collapse, Structual failure	B	S	P	22	Competent operator / dogman. Correct slinging of loads. PPE to be worn. Effective communication.	S	R	16
☒ Trapping between plant and materials or fixed structures.	Counterweight Slew	B	S	P	22	Competent operator / dogman. Rope certificates in place. Platform certificates. Correct slinging of loads. PPE to be worn. Clear communication.	S	R	16
☒ Failure resulting in loss of contents or load.	Incorrect rigging	B	S	P	22	Competent operator / dogman. Rope certificates in place. Platform certificates. Correct slinging of loads. PPE to be worn. Clear communication.	S	R	16
☒ Falling objects.	Crush injury. Falling loads. Crane tipping over.	B	S	P	22	Competent operator / dogman. Rope certificates in place. Platform certificates. Correct slinging of loads. PPE to be worn. Clear communication.	S	R	16
☒ Load falling/moving due to power loss or plant failure.	Crush injury. Falling loads. Crane tipping over.	B	S	P	22	Competent operator / dogman. Correct slinging of loads. PPE to be worn. Effective communication.	S	R	16

☐ Other (please specify).									
Cutting/ Stabbing/ Puncturing - Yes ☒No Can anyone be cut, stabbed or punctured by coming in contact with moving plant or parts, sharp or flying objects, work pieces ejected, work pieces disintegrated or other factors not mentioned?									
☐ Contact with sharp parts.									
☐ Contact with flying parts or work pieces.									
☐ Parts or work pieces breaking (disintegrating).									
☐ Work pieces ejected.									
☐ Movement of plant or components.									
☐ Isolation of energy sources.									
☒Body or body parts caught between moving components.	Hand caught between sheaves and ropes	B	MOD	P	13	Good communication between Dogman and Operator. Qualified personnel. Correct PPE.	MOD	R	11
☐ Other (please specify).									
Shearing - Yes ☒ Can anyone's body parts be cut off between two parts of the plant and a work piece or structure?									
☐ Body or body parts caught between moving components.									

☐ Isolation of energy sources.									
☐ Body or body parts shear when passing structure.									
Striking - ☒ No Can anyone be struck by moving objects due to plant or surfaces of the plant, or material handled by plant operation?									
☒Uncontrolled or unexpected movement of plant *(warning sirens required).*	Slewing into equipment.	B	S	P	22	Qualified Dogman. Spotters in place.	S	R	16
☒Uncontrolled or unexpected movement of components or material *(warning sirens required)*.	Load dropping or swinging into something.	B	MAJOR	P	19	Qualified personnel. Correct PPE. Spotters in place. Designated work area. All workers read JSA.	MAJOR	R	14
☒Moving objects due to parts or work pieces breaking (disintegrating).	Load dropping or swinging into something.	B	MAJOR	P	19	Qualified personnel. Correct PPE. Spotters in place. Designated work area. All workers read JSA.	MAJOR	R	14
☐Work materials protruding into travel path of Plant.									
☐ Normal movement of plant.									
☐ Isolation of energy sources.									
☐ Other (please specify).									

Electricity (Shock or burns) Contact - ☒ No Can anyone be injured by electrical shock or burnt due to damaged or poorly maintained leads or switches, water near electrical equipment, working near or contact with live electrical conductors, lack of isolation procedures or the factors not mentioned?									
☐ Contact via damaged or poorly maintained electrical leads and cables.									
☐ Overloading of electrical circuits.									
☐ Isolation of electrical energy sources.									
☒Contact with or proximity to live electrical conductors.	Load and or boom coming in contact with overhead wires	B	S	P	22	Competent operator / dogman. Correct slinging of loads. PPE to be worn. Effictive communication.	S	R	16
☐ Contact via damaged electrical control devices.									
☐ Contact via water entry.									
☐ Other (please specify).									
Explosion/Fire - Yes ☒No Can anyone be injured by an explosion of gas, vapors, liquids, dusts or other substances, triggered by plant operation?									
☐ Ignition of flammable atmosphere initiated by the plant.									
☐ Ignition of flammable atmosphere initiated by material.									
☒Ignition of flammable material by the plant.	Fire somewhere on machine.	B	MAJOR	P	19	Fire extinguisher (Test & Tag). Good housekeeping.	M	R	14

☐ Ignition of flammable material by the process.									
☐ Other (please specify) Housekeeping.									
Slips/ Trips/ Falls - Yes ☒No Can anyone using the plant or in the vicinity of the plant, slip, trip or fall due to the working environment or other factors?									
☒Uneven or slippery work or access surfaces entering or exiting the plant.	Fall over objects.	B	MAJOR	P	19	Good spoil removal.	M	R	14
☒Housekeeping hazards produced by the plant.	Slip on wet ground.	B	MAJOR	P	19	Clean pad / dry pad.	M	R	14
☐ Material ejected or falling from the plant.									
☐ Inadequate work platforms (size, location, fall protection).									
☒Access (ladders, stairs, walkways) to and from the plant.	Accessing Machine Deck	B	MAJOR	P	19	3 points of contact	M	R	14
☒Lack of guardrails or fall protection.	Falling off machine when doing pre-start.	B	MAJOR	P	19	Exercise vigilance when doing pre-start and maintain 3 points of contact	M	R	14
☐ Collapse of the supporting structure.									
☐ Other (please specify).									
High Pressure Fluid - Yes ☒No Can anyone come into contact with fluids under high pressure, due to failure or misuse of the plant?									

☐ Contact with fluids or gas under pressure as part of normal operation.									
☒Contact with fluids or gas under pressure due to failure.	Hydraulic lines may burst	B	MAJOR	P	13	Ensure hydraulic lines have been de-energized before working on them. Personnel to stay clear of hydraulic lines where possible.	M	R	14
☐ Contact with fluids or gas under pressure due to misuse.									
☐ Striking due to severed high pressure hoses/couplings.									
☐ Stored energy in machine systems / accumulators counterweights.	Hydraulic lines, Counterweight falling	B	MAJOR	P	13	Ensure hydraulic lines have been de-energised before working on them. Personnel to stay clear of hydraulic lines where possible. Ensure counterweight bolts are tight at pre-start	M	R	11
☐ Isolation and bleeding of pressure energy sources.									
☐ Other (please specify).									
Plant rolling over/ through limits - Yes ☒No Can this item of plant roll or tip over due to operating over specified working limits?									
☒Tip over hazard.	Machine tipping over.	B	MAJOR	P	19	Platform certificates in place. Qualified operator.	M	R	14
☒Correct qualifications of operator.	Machine tipping over.	B	MAJOR	P	19	Qualified operator.	M	R	14
Working environment and ergonomics - Yes ☒No Can anyone be injured due to seating design, repetitive body movement or posture, excessive effort, poor workplace or plant design causing mental or physical stress, lack of consideration for human behavior, poor lighting or others factors not mentioned?									

☐ Inadequate lighting levels.									
☐ Glare from artificial light.									
☐ Glare from natural light.									
☐ Placement and identification of controls.									
☐ Seating design or seating location.									
☒ Human error or behaviour aspects (Human factors).	Machine tipping over, Structual failure	O	MAJOR	P	19	Operator to work within the safe work limits of the crane as determined by the load chart and operators handbook.	M	R	14
☒ Manual handling tasks associated with the plant.	Installation of boom and counterweights	B	MOD	P	13	Correct manual handling procedures	M	R	11
☐ Cramped or restricted work spaces (particularly for maintenance.									
☐ Noise levels.									
☐ Vibration.									
☐ Rain or moisture.									
☐ Radiation (ionising – non ionising).									

☐ Biological.									
☒Location of plant in the workplace.	Movement into areas of low visibility to Operator.	B	S	P	22	Spotters / Dogman. Qualified Operator. Good housekeeping. Clean work area.	S	R	16
☐ Other (please specify) Heat and UV radiation.									
Other Hazards – Yes No ☒ Can anyone be injured or suffer ill health from exposure to:									
☐Chemicals.									
☐Toxic Gases.									
☐ Vapours.									
☐Fumes.									
Condition and suitability of plant									
☐ Age and condition.									
☒Service and maintenance history.	Poor service history.	B	MOD	P	13	Serviced as stated by manufacturers specifications. Electrical limit switches working and in good order.	MOD	R	11
☐ Frequency of use (high or low use or inappropriate duty cycle).									
☐ Not fit for purpose.									

☐ Unsuitable accessories/fittings.									
☐ Inability to apply isolation/lock out devices.									
☒ Accessories in unsafe condition.	Anti-Two-Block not working.	B	MOD	P	13	Serviced as stated by manufacturers specifications. Electrical limit switches working and in good order.	MOD	R	11
☐ Use in arduous environment.									
☐ Modification from original design.									
☐ Other (please specify).									
System of work relating to the plant									
☐ Emergency procedures relating to the plant.									
☒ Communication systems associated with plant operation.	Horn not working.	B	MOD	P	13	Horn operational.	MOD	R	11
☒ Communication methods with plant operation.	Fogged up windows.	B	MOD	P	13	Windows cleaning regularly.	MOD	R	11
☐ Use of Permit to Work system.									
☐ Start up and shut down procedures.									

☒Secure against unauthorised use/access.	Access unauthorised.	B	MAJOR	P	19	Isolated after work. Machine locked up. Keys hidden.	MAJOR	R	14
☐ Storage or restoration to service requirements.									
☐ Other (please specify).									
Environmental issues causes failure									
☒Inclement weather causes issues.	Bad weather causing poor vision and swinging loads.	B	S	P	22	No work in unsuitable weather as per specified in CKE2500-2 operation manual.	S	R	16
☐ Wind fowls cables and snags or breaks cable.									
☐ Water impairs operation.									
☒Wind speed exceeds recommended limit.	Bad weather causing poor vision and swinging loads.	B	S	P	22	No work in unsuitable weather as per specified in CKE2500-2 operation manual.	S	R	16
☐ Other (please specify)									

Are all identified risks controlled to as low as reasonably practicable? YES: ☐ or NO: ☐ If No, list **Additional controls** required on next page

Completed by:		Contact details:	
Reviewed by:		Contact details:	

I have reviewed the Farrellys Construction Services Conventional Crawler Crane Risk Assessment and have had the opportunity to comment and make changes as I thought necessary.

Name:	Position description:	Signature:	Date:	Company:

Additional controls:
For each additional control, identify appropriate corrective actions, including priority, timeframes and responsibilities, communicate the requirements to the person responsible and then input the information into the Corrective Action Register.