Tideway

LESSONS LEARNED

BLACKFRIARS – RIG MAST CONTACTS CRANE BOOM

On Saturday 11th May 2019, the Expanded piling team and FLO crane team were working in the West Cofferdam. A 250t crawler crane stationed at the top of the cofferdam was hooked on to the tremmie pipe to facilitate concreting works on pile SP13 which required the crane to position the boom straight across the cofferdam (Diagram 1).

The crane was stationary in this position for ~20min prior to the incident. A BG42 Piling Rig was positioned on the east side of the crane boom installing casings on pile SP43.

The rig slinger signaler (RSS) instructed the rig operator (RO) to track to pick up more casings which were located close to the underside of the crane boom and required the rig to reverse before tracking forward (Diagram 2) to reach the casings. An auger directly behind the rig required the RSS to be stationed towards the rear of the rig during the reversing manoeuvre to clear the auger.

The RSS then instructed the RO to track forwards towards the casings. As the rig is tracking forward, the crane operator (CO) noticed the rig tracking towards the crane boom anticipating the rig mast to make contact with the crane boom.

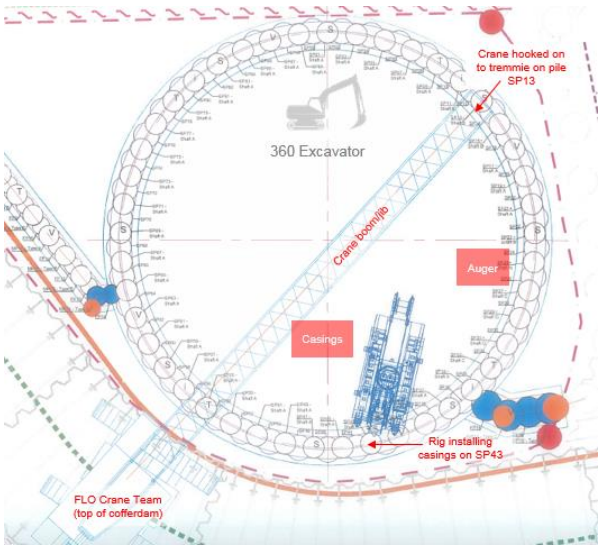

Diagram 1. Cofferdam Layout

The CO began sounding his horn and shouting to the team in the cofferdam to draw attention to the anticipated plant contact. The CO caught the attention of others in the area who collectively tried to draw attention to stop the rig tracking forward. The rig team did not hear the alarms or shouting and the rig continued tracking forward at which point the rig mast made contact with the crane boom (Diagram 3), sustaining asset damage to both the crane boom and rig requiring repair (Diagram 4).

Diagram 2. Rig Movements

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Key Findings

- The Rig Slinger Signaller (RSS) did not see the overhead obstruction before instructing the Rig Operator (RO) to track forwards towards the casings (the RSS was positioned towards the rear rather than at the front of the rig when it was tracking forward reducing the ability to anticipate any overhead obstructions)
- The crane boom was in the path of the rig. Plant movements were not planned or communicated, the casings were located close to the underside of the boom, and an auger was positioned behind rig which required the rig to manoeuvre around it
- The crane operator and others in the area were unable to communicate with the RO or RSS to stop the rig tracking forwards and into the crane boom
- The works were not in accordance with the Lift Plan; plant movements were not communicated to personnel/plant and the rig was not issued with a crash radio

Immediate Actions

- Stop all works in the West & East Cofferdam, crane out of action
- D&A tests conducted (all negative)
- Review, update and re-brief the lift plan, WPPs, VTS' to incorporate risks and controls for plant/plant clash, plant movement & comms
- Issued crash radios to rigs and agreed protocol for use (incl. communicating plant movements)
- Conducted Collective Insight with recommendations informing corrective actions
- Works planning to incorporate diagrams showcasing plant movements, etc. included in the 4pm daily meeting and DAB

Diagram 3. Rig path tracking into Crane Boom

Lessons Learned

- Review/update risk assessments, methods statements and lift plans to ensure the risk of plant/plant clash is identified and the appropriate controls are in place (utilise PvAs as a tool to review planned v actual on site)
- Ensure appropriate forums are in place to plan all plant movements and work activities with all stakeholders (e.g. DAB, black hat meeting, etc.)
- Ensure appropriate measures are in place for controlling all plant movements (for example, ensuring all movements are communicated through the lifting supervisor) and ensure all plant in the work area (e.g. cranes, rigs, excavators, etc.) are considered
- Review the requirement for crash radios in all plant (i.e. rigs, excavators, etc.) as well as cranes per the lift plan

Rig mast contacting crane boom
(photo from re-enactment)

(photo from day of incident)

Diagram 4. Asset Damage

- Ensure key personnel (i.e. lifting supervisors, slinger signallers, etc.) have the appropriate perception tests, appointment letters, authorisation and training