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Tower crane safety

In late 2004 Bovis Lend Lease launched a detailed inspection of the tower cranes on its sites in the UK. Its findings, while shocking have been a major catalyst in raising the game of UK tower crane hirers.

In 2004 a man was killed after falling from a tower crane on a Bovis Lend-Lease site in New York. As a result of the accident Bovis ordered a full and detailed inspection of all similar tower cranes on its UK sites. Ian Wallace, supply chain solutions safety manager at Bovis Lend Lease, UK, inspected 33 tower cranes on its sites in February 2005 and meticulously documented what he found. His report showed shockingly poor practices and numerous failings in basic safety systems by those that supplied and operated the cranes.

He found:

- *Materials such as pins, bolts, grease buckets and timber lying around on the cranes superstructure, vulnerable to falling or being blown over the side.*
- *Supermarket carrier bags used to lift materials from the ground up to the top of the crane.*
- *Hoists and cables left completely unguarded.*
- *A hoist rope not laying properly*
- *Operators access ladders with inconsistent rung spacings, including huge gaps between tower sections.*
- *No lightning protection, even though the crane was often the highest point on the site.*
- *Components from different cranes and even different manufacturers mixed on the same crane.*
- *Holes and gaps in decking on the upper-structure.*
- *Fall arrest harnesses being used by operators, a dangerous practice if he needed to escape quickly.*
- *Cabs with broken windscreens and no wiper blades*
- *Access to the base of the crane that resembled an obstacle course.*
- *Fire extinguishers in cabs- often foam type, which in an enclosed cab is dangerous and there is no real need for one.*
- *Anti Collision systems switched off or not working and operators who had no clue how to use them anyway.*
- *Duty boards were not maintained and in deplorable condition*
- *Large illuminated signs and lights placed on jibs and back jibs with no consideration of how to reach them or their affect on the crane.*

He found that when it came to erection teams there appeared to be literally no pre-erection inspections. Incorrect components or broken items (such as cab screens) were often not discovered until they were 30 metres in the air. The level of weather monitoring prior to erecting, dismantling or using the crane was inconsistent.

- *Risk assessments were "pretty ropey at best"*
- *No plans in place for evacuating people from the top of the crane in the case of an emergency.*

When Wallace had completed his inspections he began to approach individual tower crane companies with his findings. A few in the industry, including Paul Phillips who was with HTC at the time and chairman of the CPA Tower Crane Interest Group, and other members, quickly agreed that the best way to face up to the Bovis findings was to form a working group within the Tower Crane Interest Group. The working group met four times and presented its findings earlier this year.

The industry responds

They accepted most of the findings from Bovis and developed a set of 16 Technical Information Notes which form part of a comprehensive set of practices and guidance to overcome the failings that Bovis identified.

In general terms the responses addressed the Bovis list as follows:

- Access to the tower crane, some of the Bovis issues, assumed open access to the upper areas of the crane, whereas the group felt that access should be controlled with access permits required and only granted to essential visitors who are appropriately trained or accompanied by someone who is.
- Only bags or containers designed for the purpose should be used to raise materials to the top of the crane, or a chest type rucksack.
- If access to the back jib is restricted the level of guarding might well be more open than if the hoist was located in a more public area.
- On the improperly fitted rope, tensioners should be fitted and guidance issued for properly installing cable issued. (TIN 004)
- Storage of items at height, only items required should be kept on the top of the crane and those should be kept in properly installed boxes or chests.
- Harnesses should not be required for the operator, as he has no need to go out on the jib.
- Fixed ladders should be fitted properly, hoops are not required if the structure provides protection.
- Mixing components should only be done where manufacturers have agreed and approved the application.

Other Technical Information notes cover:- lighting, weather reports, permitted gaps in the upper structure, cab screen condition, anti collision and other security aids. The fitting of illuminated signs, rescue from height, risk assessments, pre and post erection checks, signage and sanitary issues.

The 16 Technical Information Notes are intended as guidance and to become "best practice". As such they can be referenced in court, in the case of an accident.

In a presentation earlier this year, Paul Phillips said "the Bovis audit has been a wake up call to the industry" and has helped with the revision of BS7121 part 5.

All 16 Technical Information Notes are available for free downloading from the CPA web site, *www.cpa.uk.net* for both members and non members. A link is also available on *www.Vertikal.net* in the Lifting and Access directory.

TOWER CRANE	TECHNICAL INFORMATION NOTES
001	Access to Tower Cranes After Commissioning
002	Raising and Lowering of Small Material
003	Tower Crane Access Procedures
004	Installing Wire Ropes on Winch Drums and Storage Reels
005	Housekeeping on Tower Cranes
006	Tower Crane Access Ladders
007	Duty Boards
008	Tower Crane Edge Protection
009	Security of Access to the Crane Base
010	Tower Crane Anti-Collision Systems
011	Attachment of Floodlights, Illuminated Signs and Christmas Decorations
012	Tower Crane Access Signage
013	Rescue of Personnel From Height on Tower Cranes
014	Pre-Erection Component Checks
015	Risk Assessment – General Access to Tower Cranes (incl. maintenance)
016	Fall Protection Equipment For Tower Crane Operators