

◀ HEALTH & SAFETY ALERT ▶



Non-Crossrail: Grade 10.9 Bolts

What happened:

A Non-Crossrail high potential incident occurred when Grade 10.9 high strength holding bolts failed on a crane base on a project in London.

16 bolts, which had been pre-tensioned in the standard way on a crane base, later all failed within four days. This was found to be a brittle failure and because the bolts were pre-stressed, they failed in a manner which released energy, resulting in the bolt heads ejecting to 4m above the lifting frame.

It is believed the failure was due to a recognised phenomenon called 'delayed hydrogen embrittlement failure', which can be caused in the manufacturing process. This type of failure would be expected to occur within a few days of tensioning bolts as was seen in this case.

The investigation is ongoing and no-one was injured.

Future Considerations:

- Bolts of Grade 10.9 or higher to be approved by technically competent person(s) prior to use.
- Hardness and tensile tests to be used as a minimum to verify the metallurgy of all Grade 10.9 bolts.
- Permits to include the need for technical sign off.
- All using this type of bolt to be briefed on this incident.



PEOPLE & PLANT

Date: 10th March 2016



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