REPORT ON FATAL INJURY TO SAM BALL ON 16 JANUARY 2002

Background

1. On 16 January 2002 Sam Ball was fatally injured when he was struck by a falling concrete beam suspended from a mobile crane on a construction site in Hoddesdon, Hertfordshire. A metal pin, forming part of the lifting tackle, became dislodged thereby allowing one end of a lifting frame to drop. The pin became dislodged because it had fractured in two places. The beam fell as it was being lowered into position on a car park structure and Sam was approaching a grab line attached to the lifting frame.

The fractured pin

2. The Health and Safety Laboratory (HSL) undertook a forensic investigation of the fractured pin and concluded that the pin had fractured in a brittle manner by intergranular fracture. The brittle nature of the fracture was attributed to low temperature temper embrittlement, a recognised phenomenon associated with tempering in the range 200 to 400°C. Heat treatment trials demonstrated that the incident pin had previously been tempered at a temperature of approximately 225 to 250°C.

3. HSL found that the incident pin had fractured in two locations and the condition of the fracture surfaces indicated that the fractures had occurred at different times. When the frame was used to lift the concrete beam immediately prior to the incident, the pin already contained one fracture. The location of the second fracture suggested that a section of the fractured pin had already become detached. When the pin fractured for a second time, the chain was no longer connected to the master link and this caused the lifting beam to fall.

4. The pin was purchased by a UK importer direct from a reputable South African based manufacturer/supplier.

Testing and thorough examination of the lifting equipment

5. The lifting frame, including the tackle containing the pin, was designed and manufactured in the UK using, inter alia, components from the South African supplier. The lifting frame was subject to several individual component test certificates and the component containing the pin was examined and found free from cracks, flaws or other defects before first used. The whole lifting frame assembly was subsequently re-examined and given a unique distinguishing number.

6. The lifting equipment containing the pin was subject to a thorough examination under Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) Regulation 9(3) and a current certificate of inspection had been obtained from the competent person.

7. The design of the lifting equipment was such that the fractured pin could not be visually examined without dismantling and removing the pin from the link. The pin was not removed during the examination and was therefore not visually examined by the competent person during the examination prior to the incident.

8. HSE experts advised that whilst it may be desirable to dismantle the link during thorough examination, the examination process could not normally be expected to include dismantling unless the link (containing the pin) was visually defective. The pin failed because it had received heat treatment at an inappropriate temperature and this would not have necessarily been apparent during a routine thorough examination.

Consideration of legal proceedings

9. HSE considered the available evidence to decide if legal proceedings could be brought in respect of any parties and if such proceedings would be in the public interest. The South African company were directly responsible for supplying the pin and for the defect in the pin, which resulted from their manufacturing process. This was the fundamental cause of the incident. Enquiries revealed that the company was no longer trading. In these circumstances HSE legal officers advised that legal proceedings in the UK would not be possible. Consideration was also given to possible offences by the other parties. However, in all cases assessment of evidence and public interest factors led to the conclusion that legal proceedings would not be possible or justified.

Lesson for those carrying out examinations of lifting tackle

10. There is one point that arises from this investigation, which needs to be considered by others. Where components of lifting tackle are not visible the competent person undertaking the routine examination should give careful consideration to the circumstances in which such components should be removed for examination or routinely replaced. The suppliers and manufacturers should provide information on this subject to their customers.

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