Technical Report on Lift Incident on 12 March 2009

at Westlands Centre, 20 Westland Road, Quarry Bay, Hong Kong

Introduction

In the morning of 12 March 2009, at around 8:00 am, passengers inside Lift No.2 (L2) at Westlands Centre, 20 Westland Road, Quarry Bay heard the sound of objects falling on the top of the lift car. The lift then stopped on the 5th floor, and the passengers made a safe exit from the lift. One of the passengers reported the incident to EMSD and also to the building management company. EMSD carried out investigation on the same date, and found that one of the suspension ropes was broken and fell on top of the lift car

Background

2. The lift was installed in 1989 by Schindler Lifts (Hong Kong) Ltd (Schindler). It is driven by an electric motor with rated speed at 1.6 metre per second (m/s) and rated load at 1,000kg. It serves the 23 storey building with stops at every floor. The lift is under the control of the Lifts & Escalators (Safety) Ordinance, Chapter 327 of the Laws of Hong Kong.

3. The maintenance of the lift has been provided by Schindler since 1989. The last periodic examination of the lift was conducted by a Registered Lift Engineer (RLE) of Schindler on 25 May 2008, and the lift was certified to be in a safe working condition.

Investigation and Findings

4. Inspection by EMSD found that one of the six suspension ropes of L2 was broken at the termination point of the counterweight side. The other 5 ropes were found intact and fixed to the counterweight (see Photo 1 in Appendix A). The broken suspension rope was shown in Photo 2 in Appendix A. Whereas in the Lift Machine Room for L2, the groove of the traction sheave for the broken rope was found to be severely worn (see Photo 3 in Appendix A). No other damage of the lift component was observed (see Photo 4 in Appendix A).

5. The breakage of the rope was detected by the safety device of the lift which immediately stopped the operation of the lift.

6. As part of the investigation, an independent expert was engaged to conduct laboratory examinations and tests on the broken rope to ascertain whether the tensile strength of the rope was in compliance with the manufacturer's technical specification. The test results showed that the rope met the manufacturer's technical specification of 158kN in tensile strength.

7. From the severe wear found only on one of the grooves of the traction sheath, it was concluded that the rope failure was due to unbalanced loading condition of the suspension ropes with the failed rope carrying a high proportion of the total load. The loading overstressed this suspension rope and broke the rope wires at the termination point of the counterweight side.

Remedial Action

8. The traction sheaves of L2 together with all the suspension ropes with their terminations were replaced by Schindler. The lift L2 was put back in operation after the examination and certification by a RLE of Schindler on 31 March 2009.

Follow-up Action

9. EMSD will issue circular letters to all Registered Lift Contractors to remind them the importance of load balance among suspension ropes. EMSD will continue with the investigation to find out whether there are any persons or parties liable for the incident under the Lifts & Escalators (Safety) Ordinance. If there is sufficient evidence showing that there are persons/parties liable, EMSD will take necessary legal action.

Electrical & Mechanical Services Department

14 April 2009

Appendix A - Photos

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<tr><td>Photo 1 – Five ropes were still fixed to the lift counterweight.</td><td>Photo 2 – Broken suspension rope.</td></tr>
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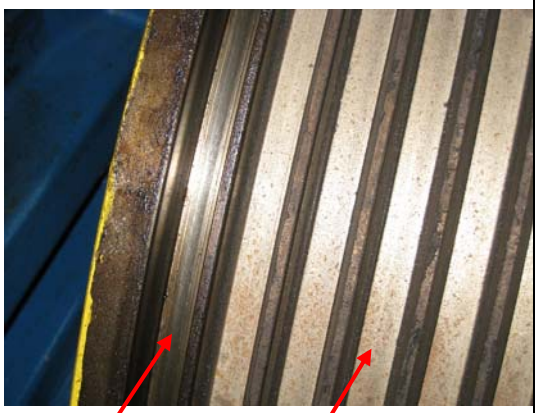
<tr><td>Photo 3 –Traction sheave of Lift No.2.</td><td>Photo 4 – No damage was found in L2 main drive unit.</td></tr>
<tr><td> 
Worn groove Normal groove</td><td>  </td></tr>
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