

FIRE SERVICES EXAMINATIONS BOARD

STUDY NOTE

EXAMINATION

LEADING FIREFIGHTERS EXAMINATION

PAPER

OPERATIONS

SUBJECT

FIREFIGHTING & RESCUE INCIDENTS

ITEM

INCIDENTS INVOLVING LIFTS

STUDY NOTE No.

1109

INTRODUCTION TO THE STUDY NOTE

This study note has been prepared as the basis of study in connection with the qualifying examinations for promotion.

Candidates will be expected to demonstrate knowledge of the information contained in the study note and understand how it should be applied:

The 'References' made at the end of the Study Note are included for information only and candidates will not be expected to study these as part of the bibliography.

INCIDENTS INVOLVING LIFTS

1. Introduction

This study note provides additional and updated information on the subject of rescue from lifts and escalators.

2. Guidance for Incidents

In general, and for incidents involving all types of lifts, guidance should indicate:

- (a) The officer-in-charge of the first attendance must, whenever possible, contact the occupier to ascertain the circumstances of the failure and any subsequent action taken by persons on site. The information gained will form a critical part of the dynamic risk assessment before the 'Action plan' is formulated.
- (b) Current guidance emphasises actions, when in some circumstances the only acceptable safe course of action (other than any immediate actions necessary to protect from threat to life) may be to await the arrival of a specialist lift engineer. This is particularly the case when a hydraulic lift has no pressure in the system and the car is not at its lowest point, creating the possibility of the lift car dropping in an uncontrolled manner.
- (c) A 'Shear Trap' (a term used by lift engineers) exists between the lift car and landing openings. Any movement of the lift car poses significant risk of life threatening injuries, to any person crossing the 'Shear Trap'. Guidance should include instructions that no person (casualty or rescuer) must be allowed to cross the shear trap until the lift is stationary and it is confirmed that the lift car is at its lowest level, or that the lift suspension mechanism is securely holding the weight of the car.

It should be noted that a 'Shear Trap' risk might also exist between a lift car balance weight and any structures within the lift shaft.

- (d) Before attempting to lower any lift, it should always be raised slightly to ensure that the weight of the car is being securely held by the suspension mechanism.
- (e) The benefits of any proposed course of action, which would require a lift car to be secured with fire service lines, should be balanced against the following considerations:
 - (i) Firefighters will be put at SIGNIFICANT RISK when trying to achieve this, both from the risk of a fall into the lift shaft and from any potential movement of the lift.
 - (ii) The weight of the lift may be too great for fire service lines.

- (iii) Knots create a weak point in a rope and may give way under a shock load.
 - (iv) Suitable anchorage points for lines may not be available or may be inadequate for the potential load.
- (f) When the power to a lift has been isolated, a firefighter will normally be stationed at the emergency isolation point whilst Fire Service operations are in progress. On leaving the incident, a notice should be placed on the switch stating that an emergency isolation has taken place and the power should not be reinstated until any necessary checks have been completed by a competent person.

Firefighters are not considered to be competent persons in this respect.

- (g) Personnel observing the movement of a lift car, or working at landing openings may need to be protected from the risk of falling any distance likely to cause personal injury. They must also exercise caution to ensure that they do not enter the 'shear trap'.
- (h) Identification of relevant information in respect of lifts and appropriate pre-planning is a critical element in the development of safe operational procedures for incidents involving persons trapped in lift cars.

Specific procedural guidance for incidents involving persons trapped in the cars of hydraulic lifts should include:

- (i) Isolate the power supply to the lift and check the pressure gauge attached to the lift pump. If the pressure gauge reads zero and the lift car is not at the lowest floor, it may be held by the emergency braking mechanism or lodged against an obstruction in the shaft. In either case an EXTREMELY DANGEROUS SITUATION EXISTS AND NO ATTEMPTS SHOULD BE MADE TO MOVE THE LIFT CAR OR REMOVE ANY CASUALTIES WITHOUT THE ADVICE OF A QUALIFIED LIFT ENGINEER. IT IS ESSENTIAL THAT THE LIFT CAR IS NOT TOUCHED OR THE SHEAR TRAP CROSSED BY ANYONE UNTIL A QUALIFIED LIFT ENGINEER HAS CONFIRMED THAT THE CAR IS SECURE AND PROPERLY SUPPORTED BY ITS SUSPENSION MECHANISM.
- (j). If there is a pressure reading on the gauge, the car should first be moved in an upward direction by means of the hand pump. (This can be an extremely slow process involving movement of only a few millimetres for each stroke of the pump.) When upwards movement is observed it may be presumed that the weight of the car is being held by the suspension mechanism and it is safe to lower the car using the emergency lowering valve.
- (k) If the lift car does not move upwards when the hand pump is operated, it must be presumed that the car is not being held securely by its suspension mechanism. Irrespective of the actual pressure reading on the gauge, the actions detailed for 'no pressure' must be followed and the situation treated as extremely dangerous. NO ATTEMPT SHOULD BE MADE TO MOVE THE LIFT CAR OR REMOVE ANY CASUALTIES WITHOUT THE ADVICE OF A QUALIFIED LIFT ENGINEER.

- (l) The construction and position of the emergency lowering valve will vary depending on the make, type and age of the lift, but a sign or label should identify it. Operation of the valve will drain hydraulic oil from the system and allow the lift to descend slowly by force of gravity.

Initially, operate the valve for approximately two seconds and observe the movement of the lift car. If movement is observed, continue to operate the valve and observe movement of the lift until it reaches floor level. If the lift does not move during initial operation of the valve, or movement later stops, it should be presumed that the lift is either being held by the emergency braking mechanism or lodged against an obstruction in the shaft and an EXTREMELY DANGEROUS SITUATION EXISTS. NO FURTHER ATTEMPT SHOULD BE MADE TO MOVE THE LIFT CAR OR REMOVE ANY CASUALTIES WITHOUT THE ADVICE OF A QUALIFIED LIFT ENGINEER.

- (m) Persons in the lift car may be distressed, but are generally not in any physical danger. On the remote occasion that urgent actions are necessary to protect life AND IT CAN NOT BE CONFIRMED THAT THE LIFT IS BEING SECURELY HELD BY ITS SUSPENSION MECHANISM, improvised securing devices may need to be put in place. Hydraulic rescue or similar equipment may be appropriate or, exceptionally, fire service lines may need to be used. It must be emphasised that, to achieve their objectives, personnel will be put at significant risk and they will need to cross the 'Shear Trap'. SUCH ACTIONS ARE EXTREMELY DANGEROUS AND CAN ONLY BE JUSTIFIED IN CIRCUMSTANCES WHERE IMMEDIATE ACTIONS ARE NECESSARY TO PROTECT LIFE.
- (n) It should be noted that if a lift car becomes lodged on an obstruction in the shaft after the descend button had been pressed, the lowering valve may remain open draining the hydraulic oil from the system.

References

Dear Chief Fire Officer 8/1999/Firemaster Letter 8/1997