The Report of Thorough Examination as a Management Tool for Maintenance

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Abstract. Legislation in the UK (LOLER 98 [1]) demands that lifting equipment in the work place[1] is subjected to a Thorough Examination periodically – usually every six months. For installations outside the work place, owners still have to satisfy the requirements of other legislation such as the Health and Safety at Work etc Act 1974 to provide a safe lift. By following the same measures as those in the workplace owners will in all probability satisfy legislation.

Therefore, all lift owners should regularly receive a report of Thorough Examination which will detail the findings of the examination. The study looked at the possibility of using the report as an aid to monitor the maintenance activity. It found it to be a useful tool in this respect; however a level of understanding of the report along with other information regarding the maintenance activity would be required to provide the owner with a complete and objective picture.

1 INTRODUCTION

There are many factors which contribute to make the lift a statistically safe means of transport:-

- It only travels vertically within a guarded area, the range of travel is limited to its guided path and conventionally it has no other lifts with which it may collide.
- The construction and installation is generally well regulated and there are exacting standards which should be followed.
- The manufacturer should provide comprehensive instructions on its safe operation and maintenance.
- Legislation in the UK calls for periodic independent examination and suitable maintenance of the lift.

The safety is therefore influenced by the design and manufacture, installation and after care. Clearly the area most influenced by the owner is the after care.

Legal responsibilities are imposed on the owner or duty holder of a lift in the workplace to ensure maintenance and examination. In all situations even where the legal responsibilities are contrived there will be moral responsibilities which do not necessarily equate to legal accountability. In a modern ethical society therefore the need to maintain a safe lift is paramount both legally and morally. The *(Penguin English Dictionary)* defines moral as:

Moral: relating to the principles of right and wrong in human behavior; ethical. Conforming to a standard of right behavior or to the dictates of one's conscience.

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[1]The workplace Health safety and Welfare Regulations define the workplace as any premises or part of premises which are not domestic premises and are made available to any person as a place of work, and includes any place within the premises to which such a person has access while at work, any room, lobby, corridor, staircase, road or other place used as a means of access to or egress from the workplace or where facilities are provided for use in connection with the workplace other than a public road.

The same source states that responsibility is *"the state of being responsible"* and "*a moral or legal obligation".* Responsible is defined as *"Liable to be called to account as the person that did something – having control or care of something or somebody".*

Rather than a personal moral code, in the case of a lift owner it is more often a collective moral responsibility which refers to arrangements appropriate for addressing widespread harm and wrongdoing associated with the actions of groups. The key components of the basic notion of moral responsibility are deeply rooted in the fabric of every society and are constitutive of social life. Without some conception of moral responsibility our society would be uncivilized and unrecognizable to that which we currently enjoy.

An example of a moral code leading from a responsibility is where within a contract of maintenance the owner and the maintainer may agree to be bound by the LEIA[2] Voluntary Code of practice, which is not a legal requirement but provides an ethical list of responsibilities to which both parties adhere.

The inspection body will provide periodic Thorough Examinations and will issue the owner with a report showing the findings of that examination. The maintainer will provide the maintenance and repair of the lift. The owner should provide monitoring of the maintenance function. Key performance indicators should be incorporated along with a method to monitor them; the Thorough Examination report can help to provide this. The ACOP to LOLER 98 states that the report of Thorough Examination *is a vital diagnostic aid to the safe management of lifting equipment,* and the HSE in guidance note INDG339 [2] suggest that the report of Thorough Examination may be used to aid maintenance monitoring.

2 THE THOROUGH EXAMINATION REPORT

A well written examination report is a useful tool and can provide a wealth of information to an informed reader. UK legislation requires a Thorough Examination report in order to satisfy regulation 10 of LOLER 98, this is the result of the Thorough Examination required under regulation 9 and Schedule 1 of the regulations sets out the information required in the report.

Part 8 of Schedule 1 is concerned with defects. LOLER only specifies that defects which are or could become a danger to persons are reported in good time giving detail of the defect and particulars of any repair or alteration to remedy it.

A typical LOLER examination report will contain three sections to part 8. Section 8a and 8b list defects and section 8c is reserved for observations. Part 8a is confined to those defects which pose an imminent risk to persons - both users and maintainers. These defects should be repaired either before further use, for an issue which, in the competent person's opinion, will manifest its-self imminently (within the next few operations), or within a specified time. Time related defects are those which the competent person determines will not fail imminently but within a short time – a usual period of time is up to three months.

Other defects which are safety related but have not deteriorated sufficiently to be categorised in part 8a are listed in part 8b and should be repaired as soon as reasonably practicable. In other words, the owner does not have to take measures to avoid or reduce the risk if they are technically impossible or if the time, trouble or cost of the measures would be grossly disproportionate to the risk. It is generally conceded that a "reasonable" time for attention to these issues should be at the next maintenance visit – but definitely before the next examination.

[2] LEIA – Lift Escalator Industry Association

The legal approach to this term is well known and various cases can be sited to cover this - Edwards v National Coal Board 1949 [3] and McCarthy v Coldair Ltd 1951 [4].

Part 8c is where other observations may be recorded; these will include defects and issues which are not safety related to the lift and maintenance or Health and Safety issues.

3 FINDINGS

400 Engineer Surveyors were asked to participate in the study, it was completely voluntary. Each surveyor was asked to complete a survey form for the first 3 lifts they encountered over a two week period in order to encourage randomness.

The study found that many examination reports contained more information than is required under LOLER 98 and many reports read like a condition survey rather than an assessment of the lift safety. This superfluous information was mostly found in section 8b, and therefore incorrectly categorised under LOLER 98.

The inclusion of this information is historic and dates back legislation prior to the introduction of LOLER 98 such as the Factory Act, OSRP[3] Act and the HEO[4] where comments on condition and maintenance were encouraged on the prescribed form F54.

The lift owners, their consultants or maintainers are often in disagreement with inspection bodies regarding these comments because it may appear from the report that the lift is unsafe to use if the issues raised are not corrected within the time periods established. The maintainer's performance is often measured on the outstanding defects and they may be unfairly penalised for issues which do not affect the safety of the lift nor are included in the maintenance contract.

These issues and defects however are required in order for the report to be used in the manner suggested as an aide to monitor the maintenance provision. Therefore, rather than be a constant point of dispute, the information contained within the report should be embraced and be used in the most beneficial way for all. To enable this however it is vital that the inspection industry should ensure that the issues are categorised correctly on the report and be aware of the impact that incorrect categorisation has on the maintainer.

For the reasons given above the information in section 8b of the reports was categorised into issues or defects identified as maintenance, condition, installation and health and safety. For the study those items concerned with maintenance were extracted. From a potential 1200 returns just short of 170 were returned, 159 of which were usable. There were 461 "8b" defects recorded, of which 207 were determined to be maintenance issues.

The definition of maintenance issues or defects was taken from page 15-4 of the CIBSE guide D 2015 [5] which refers to maintenance as "adjustment, cleaning, lubrication and replacement of worn parts".

Items critical to passenger safety either directly – such as areas relating to the passenger interface (doors, levelling accuracy and the alarm system etc.) or indirectly – such as brakes and ropes – applied the criteria from guide D to determine that these issues would be considered a maintenance task under the majority of maintenance contracts – be it comprehensive or just an "oil and grease" contract.

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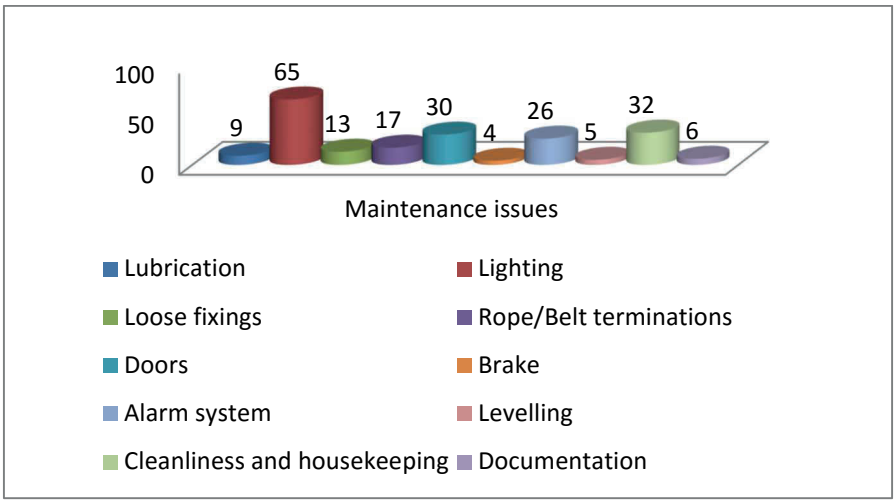
[3]Offices Shops Railway Premises. [4]Hoist Exemption Order.

Maintenance instructions imposed by the manufacturer will normally also have duties placed upon the lift owner or duty holder to check the former, for example providing weekly checks. Most recorded accidents happen at the interface between the lift and the landing such as contact with moving doors, tripping due to poor levelling and crushing due to unintended movement[5].

The issues were given general headings in the data analysis, and the headings and detail are shown in chart 1 below:

Chart 1 Maintenance issues



The aim of proactive preventative maintenance should be that these issues are corrected before they become a problem and ideally they should be corrected before they are detected at a Thorough Examination.

The examination history revealed that some issues were recorded at the previous examination (pre-existing) and were still evident - an indication of a failure to repair and maintain the lift effectively. 91 lifts contained one or more pre-existing issues.

Using the on-site log card as a record, the maintenance dates and activities were referenced against the findings on the report, and it was established there were maintenance issues remaining despite a maintenance visit within the previous 6 weeks. Chart 2 below shows the number of issues recorded.

The data suggested that the type of lift, environment, maintainer or age of lift had little effect on the maintenance performance since similar levels of performance and spread of issues were found.

The phrase, “A lift is a lift wherever and whenever it was installed” appears to be true. It should be remembered however that this study only considers the maintenance issues, the other type 8a and 8b defects were not recorded as they are not considered to be maintenance issues.

As BS EN 81-80 [6] has shown there are problems with older lifts from a safety point of view due to the design and technical advancement of lifts and the safety components. This should be considered along with maintenance.

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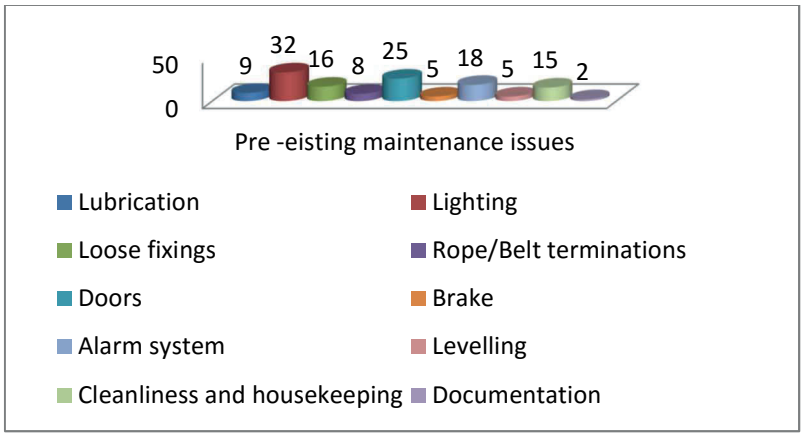
[5]The study cited an accident reported in the Epping Forrest Guardian 27/10/2010 - http://www.guardian-series.co.uk/news/8479126.WOODFORD_LEYTONSTONE__Brakes_to_blame_for_lift_death/ 27/10/2010.

Chart 2 maintenance issues where a service visit had taken place within the previous 6 weeks



The type of maintainer may have a bearing on the effectiveness of the maintenance, and selection should not be confined to the manufacturer, as the study showed that independent maintainers performed as well if not better.

Although on the whole it was found that the environment had little effect on the maintenance performance there are special considerations to be made concerning certain situations such as in hospitals. The contracts for maintenance may require out of the ordinary inclusions such as passenger release due to the environment (HTM08-02) [7] and procurement for maintenance services in these areas should be aware of this.

The findings suggest that there is a need for the education of lift owners and duty holders, and that in some cases there is poor management and records of maintenance (Cooper [8]) which may be down to a number of reasons such as time constraints, poorly written contracts, financial constraints or inadequate understanding from those completing the maintenance (Cooper [9]).

4 CONCLUSIONS

The support and co-operation of Zurich Engineering (ZE) made this study possible, however it should be noted that the opinions expressed are those of the author and not necessarily ZE.

Throughout the study it has been supposed that the findings on the Thorough Examination reports are correct; work during and prior to this study did show in some cases across the inspection industry a less than adequate standard of reporting. It was found that confusion exists in some cases due to inspection bodies using differing terminologies and interpreting the requirements of LOLER 98 in different ways.

There is currently a call for standardisation of the current LOLER report (CIBSE Guide D 2015 p15-8 [10]). Smith [11] noted there is some misunderstanding of the report form and the defects contained within it. It is an area that the inspection industries should investigate, and work with clients and maintainers to resolve.

It is inadequate to just assume that the maintenance duty is being completed correctly, and some kind of monitoring of the maintenance function should be provided. The study concluded that clear communication between the owner and both the maintainer and the inspection body, and between the maintainer and the inspection body should be initiated – possibly written into the maintenance contract. It is believed that this would provide some clarity and transparency within the examination and maintenance provision.

Some inspection bodies have now developed online platforms which will facilitate this. Further work needs to be done by Inspection bodies possibly under the umbrella of SAFed[6] to standardise the reports.

There has long been a divide between inspection and maintenance companies, which is a major hindrance to the effectiveness of lift safety and reliability. Owners are often frustrated by the standoff that appears to be evident, and transparency and co-operation should be a major objective for all.

5 LITERATURE REFERENCES

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[4] Fife & Machin. *Redgraves – Health and Safety in factories* - Butterworth & Co

[5,10] CIBSE *Guide D Transportation systems in buildings 2015* ISBN 978-1-906846-64-0

[6] BS EN 81-80 *Safety rules for the improvement of safety of existing passenger and goods passenger lifts:2003* BSI.

[7] Department of Health *Health Technical Memorandum 08-02* Department of Health

[8] David Cooper *Elevatori – the meaningless tick. Issue 1-2015 p82* ISSN11217995

[9] David Cooper *Elevation issue 76 p96, 77 p82, 82 p56* Cyber Coms Ltd.

[11] Laura Smith *The implications of the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 in care homes.* University of Salford

BIOGRAPHICAL DETAILS

The author is a Senior Engineer currently employed by Zurich Engineering and has 23 years' experience in the inspection industry. He served an electro mechanical apprenticeship in the Royal Navy and gained an HNC in Electrical and Electronic Engineering from Highbury College in Portsmouth before joining Plant Safety Ltd in 1993 as an Engineer Surveyor. In 2005 he joined Zurich Engineering and was promoted to Senior Engineer. He is a member of the IET and IAEE and has an MSc in Lift Engineering.

[6] SAFed - Safety Assessment Federation