

The New Zealand LIFT FAX

The New Zealand Lift Fax is produced bi-monthly for the NZ lift industry. Just send your email address to LEC to subscribe.

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05/2008

WHAT'S GOING UP or DOWN THIS MONTH:

OTIS NZ HQ REJUNIVATES ITSELF:

It was under the radar when **Nicolas Breton** NZ Manager of Otis moved on back to his more familiar surroundings of Belgium in mid May 2011. It was only a month ago that I caught up with Nicolas in Gore at the Coroners inquest, and although not a time to discuss transfers, there was no indication of him moving on then.



It had been a difficult period for both Otis and Nicolas as no one can prepare for the premature death of an employee, let alone when it is due to a site accident, which has dominated Nicolas's role over his past 21 months in office.

From the few associations I had with Nicolas over this period, he was always able to act with dignity and respect in carrying out his difficult obligations over this period.

To compound this, Otis has moved from its well established offices in 60 Stanley Street, Auckland, to a more accessible site I am to understand, that is located at 11 York Street, Auckland.

Richard Langdon from Aussie took over the reins on the **16th of May 2011**, in time to move into the new NZ head office in York Street, Auckland.

EDITORIAL:

NATIONAL IQP REGISTER GRINDS TO A STOP:

Sadly it began as an opportunity to address the inconsistencies evident in our safety inspection systems in NZ, that have emerged since the introduction of the 1991 Building Act when it restructured the standard of safety inspection in NZ to user pays. This is where the philosophy and political motivations of the free enterprise proponents put all its safe inspection eggs overnight into the one basket, and left the market to sort out the processes.

We might think I am talking about the inspection of Mining in NZ, but no, this is the inspection of lifts in the building industry, that also went through the same philosophical changes after 1991.

It is not that the philosophy did not have merit, just that the process instigated placed total reliance on the free market to take over the past central Government inspection regime, and remain fiscally competent to survive while being administered by individual local councils throughout NZ.

Experience shows, that when competition is rife and fiscal responsibility is involved, the loser is usually the non-fiscal processes that you cannot put a dollar on that get eased out of the short term equation. That is why it has taken nearly 20 years to recognise the inconsistencies in the plan as the inspection organisations have down sized to survive, and used financial constraints to justify poor process. It was hoped that a national Register of IQP's would generate the necessary efficiencies of process and recording to combat the fiscal pressures, along with the evident inconsistencies in standard of inspection through recognising independent certification bodies such as the CBIP, to ensure a consistent standard of inspect is maintained in the market. But sadly the politics in Government and Councils have ensured we are to wait a while longer before common sense prevails, and an opportunity for excellence is once again postponed.

INDEPENDENCE LTD CHANGES HANDS:

Rob Douglas who has been the Director and exclusive agent for **Stannah lifts** in NZ, along with **Daldoss, Lehner** and **Hiro Lifts**, has reached the stage in life where an offer he couldn't refuse has enabled him to hand over the reins of **INDEPENDENCE LIMITED** to new owners, husband and wife **Peter and Penny Donohue**.

Peter and Penny have been owners of L.C.Manufacturing after taking over from Alan Hemmings who subsequently became V.T. Manufacturing some year back.

And so it is only right I congratulate Rob on his achievement in this industry and in his well earned retirements, and welcome Rob & Penny into the challenges and rewards of this expanding area of the industry, and confirm the sound base on which they can now move on with to build the future of their business.

L.C. Manufacturing will own the Independence Ltd name, the business telephone numbers, facsimile, email and website, but continue to trade under the L.C. Manufacturing name. Rob Douglas will handle any outstanding product warranties as at the settlement date on the 25th July 2011, with LCM administering them.

LCM retains exclusive distributors for the Stannah Stairlifts (UK), Lehner Liftechnik (Austria), and Hiro Lift (Germany)



OTIS Gen2 ACCIDENT – August 2009

A lift Consultants review.

27th April 2011

The Coroner
Dunedin District Court,

Attention: David Crerar,

Dear Sir,

re: Comment on Coroner Court hearing - Dave Shaw Lift Accident:

As you are aware, I am full of opinions and now that a little time has passed I have had time to reflect on the day of the inquest and consolidate my thoughts. It was good to have the opportunity to hear all experiences and it filled in most of the gaps that needed to be known to be able to give due consideration to this accident.

As I now understand the accident, the Gen2 design of Otis lift was 98% complete in its installation into the Edendale Fonterra, plant but had been left idle parked level with the top floor over 2 or so months while building work was completed, and that Dave Shaw returned to the site to fit landing fixtures, commission the alarm REM monitoring system and a few other small items, before placing it into service.

Upon completing this work Dave could not start the lift, whereby after phone discussions with his team leader based in Christchurch some 500k's north, it was determined that the brake seemed mechanically stuck. Subsequent to this it was determined after the accident that the likely cause of the sticking was due to rust buildup between one or both brake discs and fixed calipers.

The key points I gained from the testimonies given were:-

A. The Construction Manager:

1. The Construction Managers testimony seems somewhat contrived because of the in-depth knowledge he displayed regarding accessing the lift and procedures undertaken by him in what could be classed as an unknown and possibly dangerous environment. There was therefore little I took from it.

B. The Otis Manager:

1. Reflected the serious impact the accident had had on him and the people in his organization and the companies desire to do all that was necessary to learn from the accident and minimize its impact on Dave's immediate and wider family, but to also minimize any negative reflection on the corporation or its product.
2. Concluded that the death occurred because Dave; although well experienced and trained, for undetermined reasons didn't follow company procedure regarding an electro/mechanical brake failure, and died in attempting to rectify the fault when the brake was released; presumably by Dave, and allowed an uncontrolled upward movement of the lift to travel over the final 350mm of free travel, that consequently crushed Dave.

- o Confirmed from the evidence gained on site by an Otis mechanic, and determined the condition the lift was in immediately following the accident was:-
- o The power was turned off.
- o Top floor UNI Panel open and test tool plugged in.
- o The battery missing from the ENI panel.
- o The top floor doors had been opened by Firemen using the 'Jaws of life'.
- o Roof top control switched over to RTC.
- o Overhead controller panel covers off.
- o Battery found on bracket above the overhead controller and connected directly to the brake coil.
- o A hammer was found lodged in the drive belts with the head in the machine.
- o The CWT was on the buffer.
- o Dave had been crushed between the overhead machine beam and the 'Safety from Falling' handrail fitted to the top of the car.
- o The handrail was removed to release Dave.

3. Confirmed the following conclusions to support their findings:-
 - o That Dave failed to control the lift car at all times.
 - o That Dave modified all safety devices to enable the car to move.
 - o That Dave attempted to repair a stuck brake by himself.
4. Confirmed that Otis, based on the knowledge learned, had taken the following actions and implemented changes to procedures following the accident to minimize any risk of a similar accident occurring in the future.
 - o A new policy of job hazard analysis is to be emphasised in training with employees tested twice annually.
 - o A new daily process of checking out of town employees departure from site has been implemented.
 - o An analysis of a new brake lining material to inhibit corrosive adhesion of the Gen2 brake disc and brake lining is to be researched by Otis in the USA.
5. Confirmed that it was not normal procedure to position oneself between the "Safety from Falling" handrail and out side the line of the car top.
6. Confirmed the Otis procedure that any mechanical brake failure should not be attempted to be fixed by an individual as removing it is a 2 man job.
7. Confirmed that Otis produced a DVD for training purposes that it used inhouse to inform employees of the accident, its causes and consequences.

C. The Department of Labour Representative:

1. Outlined the Otis health and safety practices and working procedures used by Otis staff to ensure employees followed documented procedures and confirmed that they were both satisfactory and comprehensive.
2. Indicated that in determining responsibilities of persons involved, that Glenn Jarvis was the Otis Team leader and who in conversation by phone advised Dave of the possible causes of electrical brake failure including - a failed rectifier - an open brake coil - a faulty brake contact, and accepted that Dave said he could sort it.
3. The DOL found that Otis failed to take all practical steps to safeguard their employee under Section 6 of the HSE Act, but were advised not to prosecute because it would be too difficult to prove and any prosecution was likely to fail.

D. LEC comments on points arising from evidence given.

1. The Otis evidence seemed pointed toward showing how Dave failed to follow proper procedure because a faulty brake takes two persons to remove to repair, and concludes he should not have put himself in the position he did because he was working alone.
2. What wasn't brought out was that Dave role in working by himself reflected the confidence Otis had in his ability to 'get the job done', and in being electrically and mechanically competent where problems existed in all facets of lift installation, and also from my experience with Dave, he was a problem solver and fault finder on which you could rely. The fact that he communicated with Glenn over the fault indicates their reliance and respect for each other, which is a different relationship than merely one of authority or responsibility over another, as indicated in the DOL determination.
3. Another point of significance is that Dave was fault-find a problem, not repairing it. What he had to do was determine why the brake wasn't lifting after all Glenn's points had been considered, which by his actions in leaving the site to buy a hammer indicated he believed the brake to be mechanically binding. From his experience the brake had operated OK up until 2 months previously, and so the logical conclusion I suspect once he had applied power directly to the coil and the brake didn't lift, that something was mechanically sticking the brake. The sort of thing a large bare metal surface area in a hostile environment could be subject to when not used for an extended period.
4. Putting myself in Dave position, from many year as a trouble shooter and adjuster myself, he would understand that when the brake was momentarily electrically released without supporting the counterweight, the lift would run up the final 350 or so mm of travel. And so I accept Dave knew this and also accept that jumping the brake coil momentarily with a separate supply was a reasonable fault finding test to confirm it was mechanically stuck.

5. Upon confirming this, and based on his knowledge that the brake had worked previously and hadn't been moved since he last operated it, he may have decided to attempt blocking the movement of motor by wedging his claw hammer in the drive, and then to mechanically shock release the brake with power on it by tapping the disc assembly with his screwdriver.
6. The critical action would be to place himself in a safe place that are provided on the top of the lift, in case he wasn't able to quickly remove the bridge to reset the brake when it did release, or if using the hammer as a wedge, it failed to stop the movement and the lift up the 350 mm overrun. Of course with the power directly on the coil the brake could release at any moment, and so from that moment every step taken needed to be calculated to ensure he remained in the safe space, as even moving around the top of the lift could free the brake placing full reliance on any wedge if in place to inhibit movement.
7. All lifts are historically designed for safe maintenance using knowledge in dangerous environments to minimize if not remove any danger to authorised maintenance and installation personnel. A change in the industry has seen the evolution of the Motor-roomless or MRL lift, that has proliferated in the market because the controls and machines once housed in a separate secure room to the lift shaft, are now incorporated into top floor controllers with the machines and drives located in the shaft.
8. In this instance, the brake which is mainly employed for holding, has long life, and other than when being installed requires no periodic adjustment or maintenance, and so the only procedures are for dismantling for repair. This is a reason why I feel Otis was wrong to place emphasis on 'not following of a procedure', when the circumstance Dave found himself in was fault-finding not repair, which relies heavily on the persons experience and self judgment in how he determines the problem and resolves it. If Dave could not have freed the brake, that is when a whole different scenario arises that would involve the need for a repair team, and the impetus for Dave to resolve the issue.
9. The DOL's lack of depth of experience in the lift industry is also reflected in not establishing this fact, as if trying to apportion blame for the sake of it, by singling out Glenn Jarvis who demonstrated good procedure and leadership, but was typically criticised for placing trust in his staff, by not making a decision when prior to hindsight, Dave was in the best position to make, and should have made.

10. We have seen much tighter financial control, especially in Global corporations in industry, resulting in reduced numbers of skilled persons/unit carrying out installation and maintenance of lifts that is due to technological improvements, competition and tight profit controls. And so workers in Dave's position are more autonomous, gain knowledge mainly through off-site training, and their onsite experiences, and are much more tightly regulated through standard procedures in all aspects of their work.

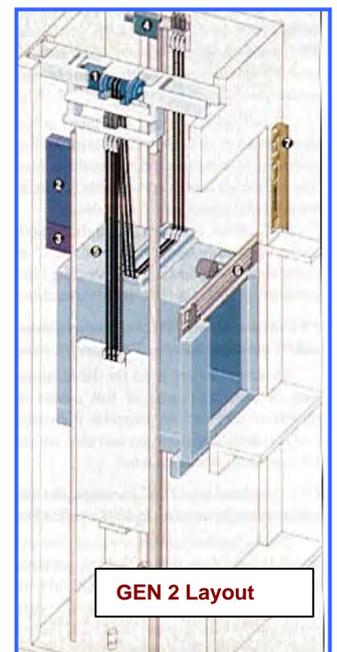
11. The main unanswered questions arising from the inquest from my perspective were:-

- o Safety from falling guards such as that that crushed Dave have been controversial since becoming adopted under what I term corporate safety; that which is imposed and not necessarily agreed on by those who work in the environment. The reason Dave would have removed some of the safety vests etc. was because he was well aware of the dangers in the environment he was placing himself in, and knew only too well that safety lanyards and fluro vests, and unnecessary guards etc. can catch you out unexpectedly in this type of environment. And so my question is! . . . What is more dangerous? The risk of falling down a 300mm or so gap between the lift and the wall, or the obstruction that requires you to climb on it or get yourself in a more dangerous position to achieve your purpose. Was the guard necessary and did it play a role in adding to the hazard in the environment in which Dave was employed. I would suggest the guard is an unnecessary additional hazard in this environment.
- o All traction lifts have brakes to hold a lift when stationary, and all are electro-mechanical set by spring tension to fail safe, and are released through the energizing of an electrical magnetic coil that releases the motor so that it can freely turn. What differs in the Gen2 brake design is that it has no means of mechanically releasing the brake, and so relies totally on electrical operation, whereas historically all brake mechanisms had mechanical means of releasing the brake to be able to test the brake, overspeed the machine, and move the lift without power. And so although Otis suggests that Dave went outside procedure, of which in this instance there is none, the design by not incorporating a means of mechanical release for the above purposes, meant Dave, if he was to solve the problem, needed to determine his own method.
- o Evidence was indicated that a claw hammer was found lodged in the motor pulley / belt drive without further comment, but when forced to use what was available to secure the equipment, it is likely Dave considered these things:-
 - a. Understanding the lift would run up if the brake released, blocking the counterweight as detailed would stop this movement, but also wedging the belt drive mechanism to restrict movement

once the brake released could also control the lift. This may have been reasoned by Dave, and explains the location of where the hammer was found, and possibly why he was entrapped if it unexpectedly failed before he could remove the brake supply.

b. Surface rust on the brake disc seems the most likely reason for the brake not lifting after sitting for an extended time in a damp environment, and although the coil would be designed to lift the brake against the spring load, it is at its weakest point of attraction at its maximum airgap, and although designed to lift against the spring, it seems after 2 months the force at this point was insufficient to break surface corrosion . . . without assistance such as being separated with the point of an interposed screwdriver. Once released and the disc turned and the lift was stopped and started a few times, it would probably be all that was needed to be able to use the lift until the disc could be inspected, stripped and cleaned at a later date.

- o Single man installation, maintenance and repair has increased in the lift industry with tighter financial control of corporations; technological changes bringing improvements in performance and reliability, and more clearly defined safe working procedures and practices being implemented. It is my opinion that this has mainly resulted because of a perceived fiscal advantage in employing less people to do the same work, but along with these measurable advantages I wonder if any measure has been taken as to the disadvantages that may not be so measurable, and how they affect the workplace safety and performance.
- o This accident is a good example where the best of formalised processes and procedures combined with minimizing labour costs, don't necessarily end up in the most efficient result, which comes from the total equation of all endeavors, not just the monetary return. Where autonomy is encouraged as more fiscally efficient, many social and human interactions are overlooked which if able to be quantified, I feel would highlight weaknesses in the fabric of the personnel structure that undermines the desired corporate and personal benefit. There are many subtle benefits in mentor based training team spirit, safety and efficiency, which can be negated by single man tasking in this industry.



12. Conclusions:

- 12.1 That Dave was faultfinding a problem employing the knowledge and skills he had gained in a known and controlled environment in working for Otis Elevator Co Ltd, who although identifying and implementing many safe practices for their employees to work within, had not presumably recognised a sticking brake as a problem that could lead to endanger an employee until now.
- 12.2 That Dave in carrying out his work to a recognised high standard, on encountering an unknown and unfamiliar problem, employed his faultfinding skills to narrow the fault down to its source and proceeded to implement what he considered at the time the steps necessary to minimize risk to himself and to solve the problem.
- 12.3 That due to the brakes design, the magnetic force necessary to release it was insufficient when unforeseen minor rusting of the elements occurred, and because no allowance was made for mechanically releasing the brake for known industry testing functions, Dave Shaw in resolving the problem which was his job, solved it, but subsequently lost his life when the untested steps he had to take to safeguard himself as best he could by himself, most likely failed unexpectedly when not in his safe space.
- 12.4 That full time assistance especially on out of town jobs may have seen a safer more efficient process adopted and a different outcome to this accident.



13. Recommendations:

- 13.1. That the brake materials that make up the operating surfaces be considered and where necessary changed to remove the likelihood of corrosion affecting the operating surfaces. (It is understood Otis is already investigating this.) Alternatively strengthen the designs magnetic lifting force to be able to break any sticking due to mild surface corrosion.
- 13.2. That Otis reconsider the advantages of runaway testing for brakes and governor over speed testing and reinstate a mechanical means of emergency brake release that can preferably be implemented outside the shaft, and possibly return to employing a hand-winding mechanism.
- 13.3 That Otis reconsiders the employing of trainee assistants in both installation and service functions as a means of improving on site mentoring and in practice make the process of installation, testing and servicing of their equipment safer and more efficient.
- 13.4 Encourage legislators to revamp the lift accident inspection process to remove the time consuming and mostly ineffective DOL local investigation focused on prosecution and penalty that discourages open discussion within the industry for all to learn.
Implement a requirement for Companies involved in accidents to provide a complete report to the DOL within a month of an accident, for coordinated distribution and gathering of comment from interested industry representatives before presentation to the Coroner within a further month. Where reports are not forthcoming in time, a process of appropriate incremental fines could be employed until the reports are satisfactorily presented.

Ed.

Hopefully these opinions are taken in the spirit they are given, and that is to expose the issues so that all may learn, especially those directly involved in the industries effected. My experience in closely following this accident process is that our accident investigation system in New Zealand seemed mostly inefficient in process, with the length of time taken to produce any assessable outcome counter productive to it, and stifling of any public peer review on which to learn from it.

My opinion is that this happens because:-

- ? It is produced in an legalistic adversarial environment, where outcomes reflect vested interests rather than the common good.
- ? Most persons involved purport to wish to learn from the accident, but suppression of wider peer involvement in the process ensures vested interests fear of litigation removes any likelihood of productive open discussion.
- ? The private investigation system in NZ is insular, inefficient and inept due to its legislated requirement to focus on prosecution, and self protecting at the expense of the wider community it is supposed to service. Ed.