



From the Chairman

This newsletter should have been distributed during July but certain parts of the locomotive were giving cause for alarm and it was thought better to describe the problems and their solutions rather than leave readers hanging.

The popularity of Swanage as a holiday destination does not seem to have diminished despite the financial hardship and the charter trains keep visiting, which in part may be due to the novelty of a new destination.

Some of the additional revenue from last year was put to good use from which our locomotive will benefit; no more will it have to run over that awful stretch of track between Herston station and Victoria Avenue bridge. The old rail was badly corrugated and the noise of '53 coupling rods jangling was a trifle off-putting. However, that's all gone and it's now the smoothest and quietest piece of track on the Railway.

Our locomotive will be leaving the Swanage Railway on or about August 26th to fulfill our commitment to the Bodmin & Wenford Railway by participating in their Steam Gala. It is planned to return to Swanage shortly thereafter to participate in the Swanage same.

The trip to Yeovil Junction did not happen; the diesel locomotive passed for main line running (i.e. approved with TPWS and OTMR) was not ready in time and there was no possibility of '53 going by rail on its own or by road.

Insurance

No update has been submitted for some while (when dealing with insurance it is usually the case that no news is good news!) so it was thought opportune to remind you of what we have and why we have it, and to answer a couple of common questions.

DLL buys a combined Public Liability and Employer's Liability policy suited to the heritage railway industry. We have been with our current insurer for some years but we review our options, normally annually, via our broker. This is to check that we are buying

the correct cover at a fair market price. Currently we are in year 1 of a 2 year deal which offers slightly better terms if we remain claim free, which is of course our intention, than would be the case if we bought the insurance annually.

What do these insurances do? Well, in the event that DLL incurs a legal liability to a claimant (that may be a member of the public, a company, or an employee) for accidental death, injury or damage to property, then the insurance is intended to protect DLL from the costs associated with that claim. This will be both compensation and legal costs.

Whilst DLL includes appropriate clauses within its contracts, the law (ultimately the courts) will decide how liability is apportioned. For the same reasons, notwithstanding that DLL has no paid or contracted employees, it may be deemed that a person working to the benefit of DLL and under their control is deemed to be an employee.

Accordingly the insurance we buy is a necessary expense that will reduce the risk of something untoward undermining the future viability of DLL.

Locomotive Report

Locomotive Report Jan – June 2010

During the steam test before the February half-term week, when the locomotive was requested by the Railway for Brake Van rides, a crack was found in the angle that supports the outer edge of the left-hand running plate and side tank. To effect the repair the leading sandbox and vacuum pipe had to be removed. Repairs and testing were completed in time for '53 to haul the Brake Van rides over the 'Railway at Work' weekend – March 13 & 14th.

On March 29th, after two problem-free days of running, a heavy knock was reported by the driver and '53 was failed and left at Harman's Cross. On examination no fault could be found and '53 was driven back to Swanage with no knocking.

During April the piston and packings were attended to in an effort to reduce steam leakage. '53 then ran for seven days during the Victorian week when the the knock suddenly re-appeared, the driver reporting it to be at the front of stroke of the left-hand cylinder. To avoid the possibility of any damage '53 was failed so that pistons and cylinders could be examined. Possible causes could be a loose piston or a piston hitting the cylinder cover. On removing the cylinder covers, the pistons were found to be tight on the tapered ends of their rods and there were no signs of the pistons hitting the cylinder covers.

On further testing the right-hand (fireman's side) piston did not seem to be travelling back to the rear cover when the connecting rod was disconnected. When the pistons were removed a lip was found on the cylinder wall at the rear-end of the piston ring travel on

the side opposite the steam ports. This is a normal wear pattern but it would seem that the lip was enough to bring the piston to an abrupt halt. It would also explain why the knocking was only heard when the regulator was shut off - as steam when applied would normally cushion the piston against the small amount of slack in the connecting rod bushes and driving axleboxes.

No damage was found in the pistons or rings; the lips will be ground out and the locomotive re-assembled as soon as possible, hopefully in time for peak season running

Operation

Month	Days	Miles
March	5	173
April	0	0
May	7	455
June	0	0
July	<u>5</u>	<u>220</u>
	17	848

Latest Situation (as of 10th August 2010)

This issue of Travellers' Tales has been delayed by the continuing saga of the pistons.

When the fitters attempted to check the 'bump stops', the results did not make sense. This is a procedure whereby marks are made on the slide bars relative to the location of the crossheads when the pistons are at their limits of travel. This can be done with motion detached (just move the piston rod – with a crowbar) or attached (move the locomotive – with a pinch-bar !) - the former was chosen... The distance moved by the pistons was not only different but neither of them agreed with the connecting rod travel. No obvious reason could be found so it was decided to dismantle the motion and delve deeper. The next step was to remove the pistons (see above for more detail).

Each piston head sits on a taper on the end of each piston rod and is held captive by a gun-metal nut that is about 5 inches across the flats. These have cotters which sit in grooves in the outer ends of the nuts and through holes near the end of each piston rod to prevent any movement. The nuts had already been replaced due to cracks found radiating from the thread in the previous April when attention had been paid to the piston rod packings.

The piston heads were also difficult to remove as they has grown used to the taper of the rod and nothing had happened to make them uncomfortable. Once separated cracks were noted radiating from the smaller end of the taper (i.e. the front). Things began to look serious.

A good deal of grey matter was exercised in attempting to discover a reason for the cracks in the piston head, some are listed below:

- The heads and rod tapers were not lapped together
- The nuts had been flogged up too tight (plus, perhaps, the one above)
- A result of 'picking up the water' i.e. priming
- Another result of the 'cosmetic' overhaul at Eastleigh in 1965-6
- They had always been like it
- Old age

As we have no pattern for pistons, a fairly early decision was to arrange to have a pattern made, just in case. A new duplex valve was already needed for when the 'carriage warming' season started and that, too, needed a pattern. A visit was paid to the foundry with one piston plus the duplex valve (referred to in the previous issue) and the engineering drawings of it made by member Clive Walker. The two items would remain at the foundry for measurement whilst the pattern detail was committed to their computer system.

The piston remaining at Swanage was subjected to some close examination and dye penetration was used to determine the extent of the cracks around its tapered mounting hole. The result was considered serious enough to warrant an expert's opinion whose report calmed the situation by opining that the cracks had been formed as the item had cooled after casting and so had been there as long as the pistons had been in use. Plans were therefore made to get the other piston and the old duplex valve back from the foundry as soon as possible and re-assemble the locomotive's motion with a view of readying it for service.

Mentioning the situation to the metallurgist MD of the foundry brought forth a different opinion; that the only way to tell whether they were casting cracks was to break open the piston to examine the crack faces, which was definitely not an option at this stage. Confirmation of our expert's opinion was sought from the senior NDT (Non Destructive Testing) engineer at Serco and given, so the re-assembly continued.

I think the reason for the two opinions is due to the difference in industry; the metallurgist and foundry deals in 'pure' metals, i.e. if something is made commercially, for sale, then the material would be specified by the customer and the foundry would use only that. In the railway foundry the experience would be mostly empirical; meaning that the benefit to the composition of the final product of a few bits of scrap rail, half a dozen rail chairs and fishplates would be known by the foundry foreman from experience and a few cracks might be considered normal. After all, Nine Elms had had experience of foundry work since about 1850 !

Both pistons have been lapped to their respective rod tapers (that's a day's work, each) so we know that will not be an issue. Fitters ground out the ridge, mentioned in his report, so there would be no impediment when the subsequent attempt was made to determine

the 'bump stops'. This was successful, so the motion was erected and the locomotive extracted from the Loco Shed and made ready for testing.

The fitters took '53 out and enjoyed themselves using the Swanage Railway's third train path and pronounced the loco 'cured'.

'53 was later put into service and the reports from the crews were very encouraging, most crews having no trouble in timing their trains. After eight days of faultless running, the same two fitters as above were, once again, crewing the locomotive and enjoying it until standing at Harman's Cross with a service train. A full brake application had been made while waiting for the Down train (one can then shut the small jet off which makes for a quiet life) when suddenly there was a very loud bang from somewhere underneath. The handbrake handle jumped as did both crew! Examination determined that the piston rod on the brake cylinder had become detached from its piston resulting in the piston flying up and hitting the top of the brake cylinder (due to atmospheric pressure from underneath). The loco was failed and was later returned to Swanage very slowly as the dejected crew had only the handbrake to retard their progress.

Once again over a pit, the piston rod was removed from the brake gear and work started on removing the brake cylinder bottom plate. This is never an easy task but this time the piston was laying on top of the plate, trebling the weight. When the two items were examined the cause was fairly obvious; the rod had been held into the piston by just two threads and the first one wasn't much good! The piston rod has a taper (much like that in the steam cylinders, previously described) and a section of thread between that and the upper end. During installation the rod is pushed up through the 'neck' of the cylinder bottom plate and screwed into the piston. The lower rod end is captive in the brake gear and thus prevented from turning and the friction of the taper is sufficient to prevent the two items separating. In our case, however, about four or five threads had been machined from the inside of the piston, leaving only enough remaining to engage the top two threads on the rod when seated on the taper.

This situation has been rectified by forming a taper lower down the rod so that the threads at the top of the rod now engage with all the threads at the top of the piston. Could this be another result of the visit to Eastleigh in 1965-6 ?

The locomotive is now running well, handling 5-coach trains without difficulty and providing a comfortable ride for the crews into the bargain.

To give you some idea of the ability of our locomotive, I was fortunate to be present on Carfe Castle platform one afternoon when '53 left the Down platform pulling five coaches plus a Crompton (Class 33 weighing about 90 tons) heading for the 1 in 80 gradient up to Afflington Bridge and Harman's Cross, in second valve and about 45% cut off with the fireman shovelling for all he was worth.