

The Bluebell Standard

Newsletter of the Bluebell Railway Standard Class 2 Project Issue 2
Autumn 06

Locomotive Report

This is the second issue of our report and newsletter. Very many thanks to all our supporters and to those who give so generously of their time working on the project and who support our publicity and fund raising efforts in so many ways. This newsletter is to set out what has been happening to get this unique engine built and running. It is not just that there is no surviving example of a British Railways Class 2 Tank Engine, 84030 will be exactly right for the Bluebell Railway's operations in terms of its versatility, power and reliability.

As visitors to Sheffield Park who have been able to get access to the engine will have seen, progress here has been limited. At least the frames have temporary PVC covers and some areas below the smoke-box saddle have been cleaned up and painted to check corrosion. Some redundant rivet holes have been cleared of rivets and drilled, tapped and plugged. The boiler support guides were removed as corrosion was threatening to cause distortion and damage them. Norman Baker, who provided the covers, regularly clears accumulated water and ensures that they remain in fair condition. The redundant hind end has been reduced but part remains attached to ensure that the frames are held in alignment and ready for lifting should that be necessary either to accommodate the requirements of other projects or to allow the construction of an additional building. We have taken part in discussions with others with interests in options for enhancing the Sheffield Park infrastructure, and the requirements as we see them for the Standard Class 2 Project have been set out. However we know this will require substantial funds from the Trust and elsewhere and are not holding our breath. We are taking the view that although a covered area would be an enormous help to our progress and ability to attract volunteers as well as to protecting the engine, we will get on regardless.

The focus of attention remains on extending the frames. We had, by mid summer, still found no UK company willing and able to flange the seven frame stretchers needed to build the hind extension to the frames. In a final effort to get some interest, visits were made to three companies; two in West Midlands and one in Audenshaw, Manchester, all with plate flanging capability. Drawings of the seven items were tabled and discussed face-to-face with their representatives to make sure that our particular requirements were understood. There were two key issues. One was the bend radius on the inside of the flange to allow proper seating of attachment rivet heads and sufficient contact area with the frames to prevent rocking. The radii were known to be tight for cold flanging. Second was the tolerance on the overall width. This needed to be small enough to allow machining to fit the frames without losing too much of the flange thickness. Checks on the one remaining flanged stretcher in the frames showed British Railways lost 1/16" in machining each flange, so we adopted this figure. The industry standard, $\pm 3\text{mm}$ for flanged items of this size, would have obliged us to specify stretchers at least 3mm wider than the finished size. However if stretchers were delivered to us 3mm up on the nominal size we would have to machine flanges to about 1/8" below nominal. One company offered to quote on the required basis and after six weeks of chasing we received a quote but, in spite of further calls, without the commitment to the tolerances or bend radii we needed. Pressing these stretchers hot using die blocks, as LMS and British Railways workshops did, is clearly not a practical or economic option for us.

The whole exercise has taken a lot of time, however we are now resolved to fabricate the stretchers and take advantage of the freedom to select thicker flanges to permit machining without compromising their finished thickness. A junction weldment has been designed to be as strong as a bent plate and new drawings for the original seven stretchers and for two others that BR called up as fabricated in any case are nearly complete. These reflect current standard plate sizes. Quotes will be sought for cut and profiled parts for assembly at Sheffield Park and for completed stretchers with drilling, most cut-outs and final machining to be made at the Park. A drawing has also been prepared for the frame extension plates themselves and a suitable material has been selected to modern plate specifications to match the existing frame plates.

Whilst this has been going on in the background significant progress has been made elsewhere and full advantage has been taken of the 20' container as a work area for small items and a refuge from poor weather. We have electric power thanks to workshop staff and Nick Wren. This

means lighting inside and a supply for tools. A large number of small items has been stripped down and cleaned and painted where appropriate.

The four coupling rods were brought in from outside storage and one at a time have been cleaned up and their bearing brasses pressed out in the workshop. All have now been checked free of cracks and fit for service. These rods are the original rods from 78059 and are to the "plain" rod design. Checks confirmed that this style would be appropriate for a late BR Class 2 2-6-2T engine. The option of using the "fluted" rods was available as we also have a set of fluted LMS Ivatt rods. It is hoped that we can dispose of these profitably. Work has now well ahead with restoring the first connecting rod. This was particularly heavily corroded towards the big end, but team efforts and some new dreadnought files are working wonders. The second connecting rod is available as a raw forging and will require marking out and machining once a drawing has been prepared. The prospect of a freshly machined connecting rod on one side of the engine has spurred us on to bring the other to an equally bright condition.

The steam brake cylinder was fully dismantled and surface corrosion removed. The bore of the cylinder is in excellent condition and has been checked dimensionally and is well within the permitted tolerances. The piston, rings and rod were reassembled with fresh studs and nuts. The steam admission port will require re-machining in due course as corrosion has reduced the thread height. The internal surfaces have been oiled and the external surfaces painted for preservation. Although the steam brake cylinder for 84030 is the same as that from the tender engine, the brake shaft and levers differ, mainly due to the arrangement of the handbrake on the tank engine. This will require the fabrication of a full width brake shaft with end bearings and levers to transmit the steam brake and hand brake loads into the brake linkage. Stress calculations for the British Railways brake arm have been made and a preliminary drawing for a fabricated lever arm has been prepared.

A start has been made on the removal of the corroded liners from the coupled wheel horn guides. It is hoped that some machining capacity may soon be available in the workshop to enable this to progress. The new manganese steel liners have been checked and coated to preserve them pending attachment. Off-cut material is available for welding trials.

The front pony truck frame stretcher parts remain ready for the completion of the welding.

New bolts and nuts are being made for the valve spindle crosshead guides and a complete set of crosshead guide blocks from 78059 has been refurbished and painted. The diameters of the valve spindles themselves have been measured. Depending on whether new liners are required, the valve heads may need replacement. The valve spindle guide bushes were removed and the front and rear steam chest and tail rod covers have been refurbished and painted.

Cylinder end covers have also been refurbished, missing studs replaced and the covers painted.

Before the LMS Ivatt 2-6-2T 41312 returned to Mid-Hants in September, the engine was extensively photographed as an aid to our project.

Work Planned

The short term goals are to complete and fit the front frame stretcher and buffer beam, to complete the hind frame extension with its buffer beam and to attach this to the rest of the frames. Meanwhile work will continue to restore the horn-guides and axle boxes, restore the motion and build the pony trucks so that the engine can be wheeled and the motion fitted. Once this is completed work can turn to making the side tanks and the cab and bunker before the engine can be assembled. The boiler overhaul will be the last area of attention.

Fundraising

Displays to publicise the project were mounted at Horsted Keynes for the Toy and Collectors Fair and for the Giants in Steam Weekend. Several volunteers had given items for sale and visitors gave generously to the rebuild fund. We also attracted some generous one-off and regular donations and to draw attention to what had been a quiescent project. We are also starting to sell some specialist items on e-Bay. The display on the collection chimney has been doubled in size thanks to Roy and a set of coloured photographs installed to increase awareness. Photographs have been provided to up-date the Bluebell Railway web site. We are benefiting greatly from the Trust's agreement to process regular and occasional financial contributions from taxpayers of £20 or more to the Project as charitable gifts. This arrangement should have added £3200 + 28% from tax repayments to the Project funds by the end of this year. We have also received support from other areas including a generous donation of £1360 from John Bloom arising from the Toy and Collectors' Fair. As one of our members insists, we must start to spend.