Progress - 2012

Strategic Intentions

As we approach the sixth year of the Project (we started on 23 June 2007), it is time to take stock of where we are and where we will go in 2012. We are still moving forward, albeit slowly and in spite of having to confront major issues such as gauging. We need to pay greater attention to the physical security of our components and tools, given the activities of metal thieves. Mike Cooper is also very conscious that some of what is said below, in terms of intent, was also said at this time last year. The main task in 2012 will be the rewheeling and the specifying of the motion, making sure that our work is to the highest standard and with a critical eye for detail.

So where are we going in 2012? Now our wheels have arrived, the main focus will be to complete the main axleboxes and the bogie - which has also been delayed. When these two tasks are complete and the wheels fettled, they can then be fitted to turn 1014's frames into a rolling chassis. The highest standards of workmanship on these tasks is necessary as they are vital to the successful performance, or otherwise, of the locomotive on the main line. Once we are able to move the locomotive chassis about the Works, the tender superstructure workstream on No 4 Road can be set-up, as indicated at this time last year. In relation to the locomotive, we should have a good idea of the gauging issues, thus allowing us to concentrate on the construction of the cabsides and lower front spectacle plate. Now our forged motion blanks are at Ufone we will also plan the machining of these, subject to financial headroom. Furthermore, we will continue to seek out means to acquire or manufacture Lot 350 type inner motion and the 3-row superheater; the latter probably being new work using a resin pattern. Our boiler will be despatched to Richard Watkins, boilersmith at LNWR Heritage Crewe, for reworking to No 15 OA specification, much of the groundwork to specify and price this having already been done. We hope to complete all the brake gear, including both vacuum cylinders and possibly specify the double blast pipe, once the boiler centreline dimensions are known.

Once the tender dragbox patterns are complete, they will be cast and machined at Boro Foundry and subsequently moved to Multi-Tech in Pontefract for assembly to the frame plates and inner ladder frame.

Finally, work will continue every Saturday, with a reduced workforce on non-working days and occasionally will set up working weekends for specific tasks.

January

From this report onwards reports of 'Progress' will embrace both work on the locomotive and the new build tender. Happily, this month saw positive developments on both work streams.

Locomotive Progress

At long last, work began on re-assembling the bogie. Early in the month efforts were concentrated on painting small parts. While this proceeded the springs were soaked so that some lubrication and anti-rust liquid could be applied to the faces between the leaves. Later the left trailing axlebox was re-metalled to take out the excess clearance discovered on the right trailing thrust plate. Re-assembly was assisted by the arrival of the inner face 'doughnuts', part of the lubrication system for the rear bogie axlebox.

14/01/2012 - 'We happy few!'- the bogie re-assembly team taking a rest.

14/01/2012 - re-assembling a leading bogie axlebox

14/01/2012 -one of four bogie leaf springs immersed in a tray of anti-rust oil in an endeavour to introduce some lubricant between the leaves prior to fitting on the axlebox.

28/01/2012 - newly produced/delivered inner face 'doughnut' ready for fitting to the rear bogie axle. This item helps retain lubricating oil within the bearing on axles where there is no cast collar of the type shown above.

28/01/2012 - white metalling the left trailing axlebox to compensate for the excessive clearance found on the right trailing thrust face.

Work on the main bearing has also commenced, with their removal from the horns. Detailed measurements indicate the horn slides are badly corroded following 40 years of storage at Barry. It is likely they will need to be removed from the frames and their faces refurbished, consequently Geoff Gore has started on the rear horn faces by removing the worst of the corrosion. Thereafter, the faces will be squared to line and level, in readiness for an assessment of the work required to render them 'fit' for future use. Having been removed, it appears that the axleboxes will not require a great deal of work, but their use on new condition axles means that material must be removed from the boxes. Overall, it seems likely that refurbishment of horns and axleboxes is likely to take longer and incur greater expense than anticipated.

Gary Davies continues work on the brake hanger brackets, with a start being made on producing shoe pins having received the pin retaining straps. The authorities have advised that corrosion on a brake hangers taken from 5227 is unacceptable, thus further refurbishment is needed. Also requiring replacement are the shoe inserts, but there might be a pattern available.

Following discussions, the wheels were moved to a location on number 4 road, on 21 January. Since then the shelter has been erected over them and work has commenced. Provision of a power supply is in hand. Furthermore, it has been decided that following treatment of the driving wheels, the tender wheels will be moved in to the shelter for similar treatment.

28/01/2012 - LaDonna, in charge of the team delegated to finish and protect the new driving wheels with her charges in the shelter on No. 4 road. Cleaning has started and protection of bare metal is on-going. Thereafter, the wheels will be prepared for painting.

28/01/2012 - a good start! A sparkling clean crank pin on the new driving wheels, ready for proper protection until used for its real purpose.

Progress has been made in a number of planning areas:
1) Boiler - estimates received from Richard Watkins at Crewe. Further clarification is being sought before finalising plans.
2) Gauging - report received from Nigel Trotter. Issues more complex than previously supposed, but following discussion with Chairman, allowed to proceed on cab design, taking account of the two main critical dimensions.
3) Vacuum pump - inspection of the original part by John Bilson of Bilson Patterns suggests a casting, including core patterns is feasible. Costings now being sought, for 1014, 7808 and 4709.
4) Non-ferrous castings - following a reasonable quotation an order for cylinder drain and smokebox lance cocks has been placed.

New Build Tender

Mark Callcut from Spiral Weld in Southampton visited and discussed the way forward. A method statement has been worked out, involving returning the axlebox slides to the maximum measured wear figure, so that they can then be reground to that measurement in order to make all faces square and parallel. Then weld deposit the horn faces to accommodate the new dimensions on the axlebox slides plus the minimum wear figure. Multi-Tech will not fit the horns and thus saving money. Spiral Weld will use the jig to provide a centre point for grinding the faces. It, or a laser copy, will be provided to Multi-Tech to assist with making out.

14/01/2012 - tender axlebox horns in purpose made jig in readiness for measurements.

14/01/2012 - measuring wear on the tender horns.

Following a meeting with KWG, we are producing a number of assembly drawings for the tender chassis, which will be bolted together with 20 and 22 mm bolts prior to being riveted ¾ and 7/ 8 inch. I will be issuing the works order to Multi-Tech for Phase 2 of the tender underframe assembly in the next 3 to 4 weeks.

Overall, a month of essential progress.

February

Consolidation was the main theme for February, as the work streams have been cut back while certain critical activities are worked on. Nevertheless positive progress was seen.

Locomotive Progress

All gauging drawings based on the current static and dynamic gauges have been completed. The Chairman and Nigel Trotter are to be briefed by KWG, especially as there are still issues with the cab shoulders and cylinders. Meanwhile cab re-design is in-hand.

Eddie Mocroft's quotation for vacuum pump patterns being the cheaper, has been accepted - at least two pump casings will be order eventually. He will start the job once the drag box patterns have been delivered.

Peter Robinson, owner of the eccentric strap patterns has been contacted and he is now seeking quotes for four straps in EN8 specification steel.

Drawings and patterns have been located for brake hanger pad inserts, consequently 24 pairs of these inserts have been ordered in EN8 steel from Railway Forgings and Castings at Warminster. It has been noted that the inserts are fixed to the hanger by tapered pins - these will need to be replaced.

Work on the main horn guides is proceeding, with the guides being smoothed with an angle grinder. Thereafter they are polished with plate air-plainer to remove and high spots.

11/02/2012 - grinding the horn guides to produce a smooth surface.

11/02/2012 - smoothed face of horn guide

Fortunately wear on the horn guides is slight, thus it is likely that shims will be inserted behind the brasses to restore clearances followed by machining the crown brasses and thrust faces, a job that can be done in-house. The next step will be to establish the mid point of each axlebox, relate that to the coupling rod centres so enabling us to specify the replacement axlebox horn bronzes.

Re-assembly of the bogie continues. The front axleboxes have had the ATC beam pins installed. Following clearing and cleaning work on an axlebox the front wheel set is running freely on the bogie. Work has started on fitting the horn underkeeps and rear axle doughnuts, plus cleaning and undercoating.

11/02/2012 - ATC brackets fitted to bogie.

LaDonna and her team have made good progress with the work of protecting the bright metal parts as well as making a start on the cosmetic work necessary.

25/02/2012 - eccentrics cleaned and protected.

25/02/2012 - lead crank pin after treatment. Bright metal covered with Denso tape.

25/02/2012 - thrust face with Denso tape protection.

New Tender Build

Little to report. The tender horns (retrieved from the donor tender) have been measured to ascertain the nature of the refurbishment necessary. Initial costings from SpiralWeld suggest it will be an expensive task, consequently, investigations are being undertaken, with SpiralWeld, to look for possible reductions in cost or workable, cheaper alternatives.

March

An apparently quiet month dominated by measuring, planning and costing, thus time has been well-spent. The 1014 Team have also spent time assisting the 6023 Group by riveting the King's cab roof.

Locomotive Progress

A meeting on 20 March saw considerable progress in planning for the boiler modifications. A works order followed for the initial strip of the firebox for investigation by Allianz inspectors has been passed to L.N.W.R. Crewe. Enquiries now in hand for transporting the 8F boiler to Crewe, perhaps by the end of June 2012.

Work on the bogie continues with work concentrated on fitting the underkeeps and pinning the nuts. All other components are available and most were fitted by the end of the month.
A sample pivot clamp has been located, drawings produced and an order made for one to be produced for 1014.

Work on the main horn guides is moving well, with Matthew W doing good work following Geoff Gore's tutelage and despite Geoff's enforced absence. The next step will be to level the frames and using the laser we have borrowed plot the centre line of the axles, which should also run through the centre line of the cylinders.

LaDonna and her team have now completed all the covering of the bright work and have moved on to filling the casting flaws in the spokes and main balance weight faces.

Gary D and Barry P worked on the removal of the old pad inserts in the loco brake hangers. As we suspected, they are rusted into position and have to be burnt/machined out.

Following through the matter of gauging, KWG has now sent a drawing pack to Nigel Trotter for comments. There are still issues with intrusions into the gauge but no more modifications can be done without drastic alterations, which we are loath to do. Accordingly, and in line with the Chairman's direction, we are procuring materials for various elements of the cab sides/spectacle plate and reinforcements have been from Tadley. A number of orders will be necessary from Angle Ring Company for roof profiles. All being well on receipt of the orders another workstream can open.
A correct set of brass frames has been located in Security, all the threaded holes cleaned, and the old bolts removed.

Tender Progress

Refurbishment of the Tender Horn Guides has occupied much time, including an alternative method of refurbishment which involves machining back the horn faces and axlebox horn slots to the maximum wear figure and assembling onto the frame with the bolt holes inset by an appropriate distance. This will ensure that all components will be restored to a common base. KWG to manage this task and is now looking for a machine shop, which can surface grind or mill to the accuracy we require.
Measurements, analysis of results and discussions continue

SORRY, NO NEW PICTURES THIS MONTH!

April

As suggested in March, 2012 is becoming a busy period, with much happening, particularly on the management/procurement front. However, there was some discernible progress in the workshop.

Locomotive Progress

07/04/2012 view of assembled bogie - still requires painting in black final coats.

The bogie is now complete and awaits final painting. However, one of the oilways onto the yaw plate is blocked and the plate may have seized - again. Now the pivot clamp has been ordered we are now looking at installing the bogie so that, with an accommodation bogie, we can move the frames. This will depend on the restoration of the horn guides on the main frame but would enable us to start work on the tender body.

07/04/2012 - view of completed axlebox, with wheel set fitted.

07/04/2012 - view of upper surface of completed bogie.

Brake Hanger Pad Inserts for the loco and have now arrived and with a certificate of material conformity. There are an additional 12 pairs for maintenance, 6 of which have been allocated to 3650. We have now made a tool for extracting these pads from the hangers and the old pad inserts in the loco brake hangers have been removed. Replacement pads will be fitted by the brake gear guru, aka Gary Davies, in due course.

07/04/2012 - sets of newly cast brake hanger pads as received.

The bogie is complete and the yaw plate has now been freed, oiled and moves freely. Finish painting is now required.

The main frames have had their levels read and are about 6 mm low at the rear of the loco. The next steps will be to jack and level the whole frame. After that, we will use the laser to find the centre points of the axles, which enable us to specify the horn brasses.

All the old pad inserts in the loco brake hangers have now been removed. Replacement pads for the loco and tender have been received, and will be fitted by the brake gear guru, Gary Davies, in due course. Gary is now producing the shoe pins for both the loco and tender.

07/04/2012 - Cover for reversing gear being fitted.

The cover for the reversing gear has been modified from the Maindy Hall original and now awaits a new flange, which is in process.

Tender Progress

KWG has found a machinist who can machine the 12 tender horns to the dimensions we require for a total of £360. This means that, with the tender axleboxes to be machined to a horn slot width of 8.45 inches, the entire refurbishment is likely to cost less than £1000. A spreadsheet analysis indicates that the outer bolt pitch needs reduce to 58.2 mm / 2 9/32 ins from 2 3/8 ins, a reduction of 3/32 in. This will give a horn dimension of 85.2 mm, a nominal reduction of between 2.271 and 1.021 mm on the original sizes. They will all be moved to the machinist, together with the axleboxes, on 19 May.

Following a with Eddie Mocroft it transpires he will complete the front box pattern by the end of next week. KWG and I will conduct acceptance and then the pattern will go to Boro Foundry for casting and annealing. We hope the rear box can be completed by the end of May which will allow the tender ladder frame and both dragboxes to be moved to Multi-Tech in Pontefract.

May

Another relatively quiet month, dominated by planning and procurement. The working parties have suffered some enforced changes as a result of Geoff Gore's indisposition and LaDonna McDonald's bicycle accident.

Locomotive Progress:

The bogie is being finish painted. The bogie pintle clamp was delivered but needed some minor modification before being fitted later in the month.

05/05/2012 - Bogie pintle clamp as delivered.

With fitting of this clamp and completion of necessary preparatory work, the bogie should be ready to be be fitted to the locomotive chassis. However, before the chassis can be moved to a new position to facilitate construction of the tender tank, the Project Team are to undertake to construct new steel frames To replace the broken wooden frame) for the accommodation bogie, using parts from the two bogies made available to us.

The SpiralWeld sales engineer visited and was briefed on the repairs to 1014's front draw hook and inner buffers. Following this, the draw hook was sent to SpiralWeld for refurbishment at the end of the month.

Gary has now produced all the shoe pins for both locomotive and tender.

An order for casting the eccentric straps has been passed to Tyseley Locomotive Works Ltd. An order for machining will be issued in due course.

05/05/2012 - non-ferrous castings - cylinder cocks ready for final machining.

A number of non-ferrous castings have been delivered to Didcot Railway Centre. A drawing has been located for the cylinder cocks which will be sent to Alexander Higgins at Stourbridge for completion. Work has started on cleaning and refurbishment/repair of the actuating linkages.

A lance cock casting was also delivered and the internal machining has been completed, now the external parts are being attended to.

Two 22 inch vacuum cylinder pistons, a 22 inch cover and a 3,500 gal brake standard have been collected from the Erlestoke Manor Ltd. These are for 1014 and 2999. The pistons have gone direct to the machinist where they will be machined and mated with their piston rod.

Main Frame Horn Guides/Axleboxes - Matthew has stood down from the horn guide refurbishment because of work and exam pressure. KWG and Mike Cooper decided more horsepower should be put into this workstream, possibly the most important task that the team will carry out. There is also a danger of over complicating what is required especially as we have received a mass of advice, often conflicting! Accordingly, whilst Geoff was with us, KWG led a meeting of engineering minds to decide the way forward. The team will be led by Doug Middleton and Ian King and Dicky Boast will assist. Both Geoff and Matthew can return when they feel able to do so. It was agreed that it is necessary to accurately establish the longitudinal and vertical axle centre lines in relation to the cylinders and it has been established that all the horn faces are skewed to the lateral centres, some by up to 1/8 inch. The worst affected faces are the trailing ones and we have agreed to trial fit the axleboxes to see if they are also skewed. It seems likely that the easiest way of dealing with these faces is to machine them in situ rather than remove them and we will investigate that way forward.

Lifting and levelling the frames has been postponed, until it is confirmed whether it is necessary. Meanwhile, work to condition and measure the main horns continues.

Work on the driving wheels continues, despite LaDonna's enforced absence. 5/6 are now filled and are being sanded.

Mike Mowbray from Axle Haulage has completed his assessment of the boiler move and envisages no problems. A draft order for comment has been issued and liaison with the Operations Manager for the of the details of the move to West Yard for collection and removal of the Collett tender underframe carcass.

Tender Progress

The tender horns and axleboxes were delivered to the machinist in mid May. Refurbishment cost are likely to be around £1k and the job will be supervised by KWG.

KWG and Mike Cooper accepted the front dragbox pattern at Boro Foundry on 1 May. An order has been placed for casting and the final machining. Drawings are complete for both front and rear dragbox construction, the latter having been started.

Following the issue of the final machining drawings a quotation has now been received for machining, consequently an order will be placed with Boro' Foundry at the end of the month.

05/05/2012 - completed pattern for the front dragbox.

Miscellaneous

At the end of April, the Project Team helped in riveting the cab roof of 6023 'King Edward II'.

June

Personnel:

Geoff Gore's death is reported earlier, but news of a more positive nature includes Mike Sawers being back in harness. In addition, we all wish LaDonna a rapid recovery and return to work to tidy up the Pooley store, which we have made very untidy, and to provide us with lemon drizzle cake and cookies! No stereotyping there then!!!!

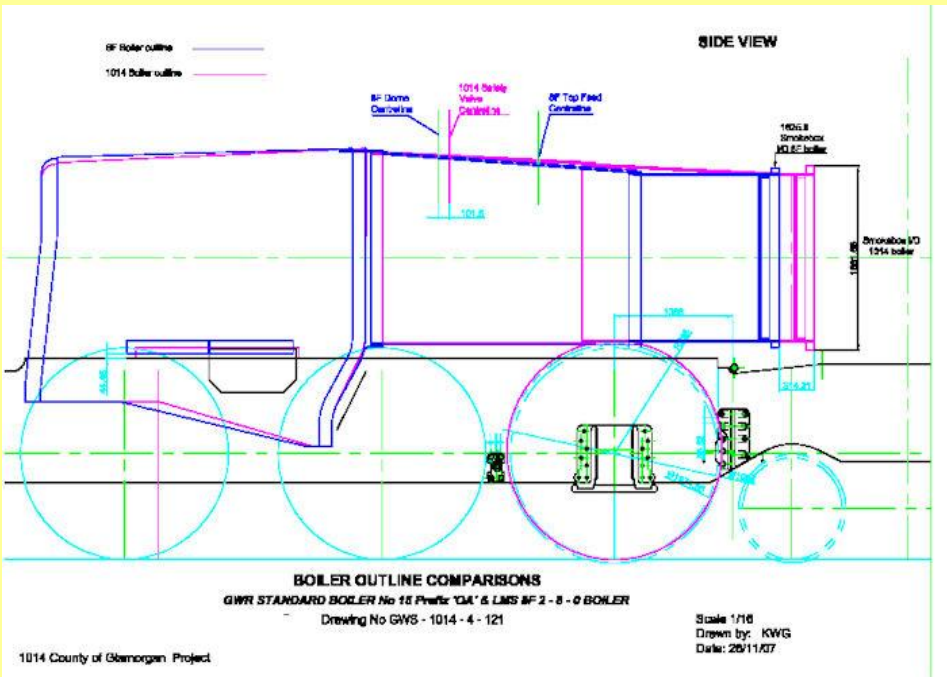
Locomotive Progress:

The start of the month brought some very good and encouraging news, as indicated in the press release, Richard Croucher, our Chairman, issued:

Work will be starting shortly on the (re)construction of the boiler for the GWS County Project. This has been made possible as a result of a major bequest from one of our members who died during 2011.

Our former member specifically wished that the bequest be put towards the County Project and the sum involved will allow the Project Team to make significant progress on rebuilding the boiler.

The No 15 OA boiler that was initially fitted to the GWR County class locomotives has its genesis in the boiler that was fitted to the Stanier 8F class, which was built in large numbers at Swindon Works during World War 2. The boiler is similar in many respects to that of a Stanier 8F, the ruling dimensions for the firebox being almost identical - see drawing.



Drawing produced by KWG showing the alterations necessary to convert the Stanier 8F boiler to the No. 15 OA type carried by the County Class.

As reported previously the Society owns an 8F boiler from Stanier 8F 2-8-0 No. 48518, which is located at Didcot:

8F boiler on trolly outside the shed at Didcot Railway Centre. More recently the boiler was loaded and centred on a Lowmac wagon for movement to West Yard, where it will be collected and transported to Crewe by Axle Haulage.

The GWS Boiler Report, which compares the two designs, shows that the only major difference in the fireboxes was the shape of the foundation ring and associated plate work. At a start-up meeting at the beginning of the project, it was decided that the modification of the Stanier 8F boiler should concentrate on achieving a close conformity with the GWR No 15 OA boiler.

Therefore, apart from any necessary remedial work, it is not proposed to alter the firebox in any way except to blank off the two safety valve openings on top of the firebox (not required for the No 15 OA) and to convert the backhead to a GWR layout, which is similar to that of the LMS.

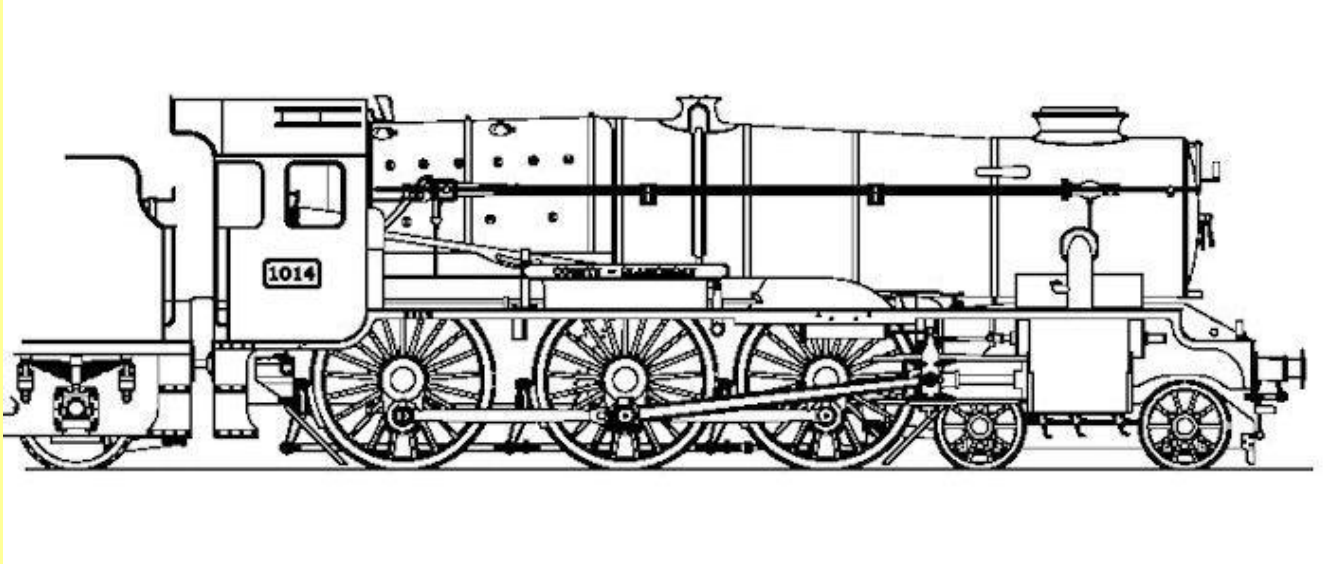
Subject to engineering and affordability considerations, the main issue was how best to alter the barrel of the boiler from a partly coned barrel to the required fully coned type of the correct length for a County Class locomotive, albeit with the same front and rear diameters. It is now proposed to manufacture a new coned barrel in two parts together with a new front tube plate and smoke box – the Society already has in its possession the double chimney off No. 1006 *'County of Cornwall.'*

Early in the project, the Project Team had entered into discussions with LNWR Crewe's boilersmith, Richard Watkins, over the boiler conversion, a task reckoned to be too large to do within Didcot Railway Centre. He agreed with the Project Team that the conversion was achievable and produced a proposed schedule of works in 2011. The Project Team then broke this down into logical steps, which involved initial assessment and then attention to the firebox, followed by the manufacture of a new tubed boiler barrel with front tube plate and then a new double chimney smokebox and its associated door furniture.

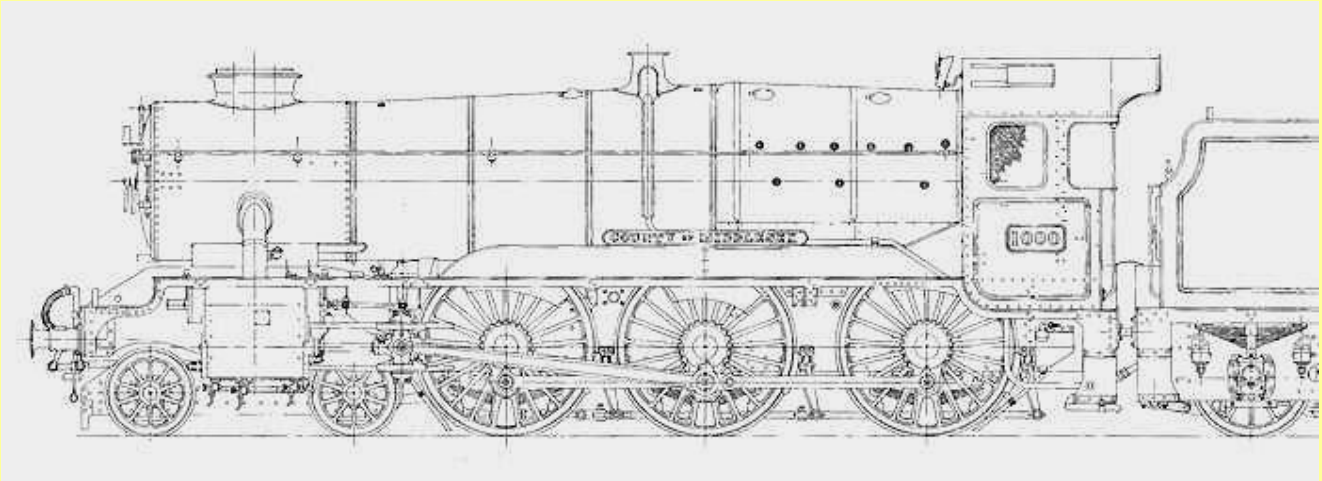
Contract 1A, the first of 5, was placed on LNWR Crewe Ltd on 2 April 2012 for removing the 8F barrel and stripping the firebox for investigation and specialist inspection. Once the firebox is opened up, it will be inspected jointly by the Society's insurers, the Project Team and Richard Watkins to decide the content of Contract 1B, which will cover the necessary refurbishments and repairs, set as a result of the inspection of the boiler at the end of Contract 1A.

The Project Team expects to move the boiler to Crewe in July 2012, subject to the usual operating constraints. It hopes to re wheel the frame at the end of the first quarter in 2013 and to have the boiler on the frames by 2015, the 50th anniversary of the cutting up of the original 1014. We have agreed with LNWR Crewe Ltd for the boiler to be returned to Didcot to allow the final restoration work, such as piping up and assembly of the fittings, to be completed before it is finally steamed.

Associated with the boiler modification work is the need to adjust the height of the 'new' County to fit within the loading gauge stipulated by Network Rail. KWG has produced a drawing of what 1014 should look like when complete, which is shown below along with an earlier drawing of a County as it operated in B.R. (W.R.) days - can you see the differences?



Drawing produced by KWG showing how 1014 should look in profile following necessary loading gauge adjustments



The original County class profile built to the B.R.(W.R.) loading gauge.

A reappraisal of the work necessary to deliver the horn guides and axleboxes in a condition necessary for the main line, has been undertaken by Mike Cooper and KWG. A new team will be led by Doug Middleton and Ian King and Dicky Boast will assist and reinforced as necessary.

A meeting with the Business Manager of A&N Ltd, an on-site machining company dealing in the gas/oil, maritime and pipeline industry (has also done work in the railway preservation industry) indicated that the job can be done at DRC in-situ with his range of machines to the required accuracy. Before this can be done they need to know the amount of material to be removed and the finished dimension.

Following this, a project meeting considered the means of fixing the centre lines and dimension the horns. A jig has been designed allowing a lateral centre line to be set-up from which the jig to horn clearances will be measured. Doug and team have been briefed and

KWG is now investigating the manufacture of the jigs, a necessary expenditure if this is to be done correctly. Once complete, the jig will become GWS engineering property and available to any future restoration.

This work will be the main effort for the remainder of the year with the intent to re-wheel in the first quarter of 2013. Following the leveling of the frame in July, all keeps will be removed. The longitudinal centre line of the drive axle will be fixed in relation to the cylinders (4337 mm from the rear cylinder face) and a jig made allowing the wear in the hornguides to be measured using slip gauges. Using a 96-inch vernier, we can then fix the centres of the lead and trailing axles. A similar process will be followed for the lead and trail hornguides. When the wear on the horns has been quantified and they have been ground to size by A & N On Site Machining, the repairs to the axleboxes can be specified and carried out at the SDR. In the meantime, KWG is refining the jig design and will supervise its manufacture.

The second big development of the month was the delivery by Tadley of steel for the cab sides and spectacle plate. As a result a new work stream has sprung into action and is making good progress.

02/06/2012 - the cabside work team showing the right hand side plate in position on the running plate.

02/06/2012 - view of right and left hand cabside plates in position. The first handrail and associated cut-out frame shown being fitted.

16/06/2012 - fitting the left hand cab handrail and cabside cut-out frame.

Both cabsides are fitted to the valances, the right hand is drilled and left hand leg plate is being fettled to fit the splasher and fire iron tunnel. It is likely the tunnel may have to be remade or jacked into a better position. An order for ½ inch rivets will be made in the near future, thus it be possible to rivet the cabsides during Work Week. The height reduction measures, taken to reduce the cab shoulders for gauge reasons, have created a requirement for short loco crew, consequently there needs to be another review of the cab floor design to see if yet another inch can be squeezed off its height.

Meanwhile, Gary has machined the wedges for the brake hangers and is drilling holes for the taper pins; work on the driving wheels continues apace; investigations have started into the parts necessary for bogie yaw plate lubrication.

Tender Progress:

The dragbox pattern is now complete and Boro' will cast both in the near future, as part of the same job, creating economy of scale in the SG iron. KWG will issue the machining drawing for costing in the near future.

The tender horns and axleboxes have been delivered to the machinist. The likely cost for their refurbishment is in the order of £1k. Machining will commence in the near future, supervised by KWG. The first set of horns and their associated axlebox will define the revised bolt pitch to secure the horns to the frame and, once the machining drawing is amended, an order can be placed on Multi-Tech for the machining of the tender frames.

Regrettably, the plan to repair an accommodation bogie has been thwarted, as have hopes to move the loco. As a result, welding of the the tender superstructure will have to go onto the back burner for now.

This month a member of the team has assisted with welding 3650's leaking pannier tanks.

July

A relatively quiet month, few work streams evident at Didcot, but with significant progress made elsewhere.

Locomotive Progress:

Early in the month the main frames were properly levelled by Matthew W. supervising a team of three. The frames are now level laterally to 0.010 ins and longitudinally to 0.020 ins on the left hand side and to 0.040 ins on the right.

07/07/2012 - Mainframes safely jacked-up during the levelling process.

The Cab workstream is really starting to deliver. The right hand side is drilled and marked up with the leg plate being fettled to size and it is looking good. Regrettably, a problem has been discovered with the left hand cabside, requiring the assembly to be dismantled and the misalignment of the outside pad of frame angle 21 corrected. When complete, the cab angles will be refitted to ensure the cabside is vertical. Once the left hand cabside is truly vertical, a strut/tie will be welded to each side to ensure that they remain vertical. The cab team will then fettle the left hand leg plate to fit the splasher and fire iron tunnel, although it is likely the latter will need to be jacked into a better position. Roof angles from Angle Ring Company have arrived, although the roof panels have been postponed in order for us to draw breath and fit the roof angles. Cabside reinforcement sections have also arrived and the parts will be made up by the welders and drilled to fit to the cabsides.

Process Projects in Eastleigh have completed the hook repair and the item is now with SpiralWeld®, who will do the repairs to the shaft and thread. The brake hanger is complete.

The remains of the old Collett tender have been cut-up facilitating the levelling, for safety, of the 8F boiler on the Lowmac. By 14 July, the boiler was moved into the lifting shop (2999 having been temporarily moved out). On 15 July it was transferred to the 'green wagon' for its move to the West Yard.

14/07/2012 - 8F boiler on Lowmac being shunted into works for lifting onto 'green wagon' for transfer to West Yard.

14/07/2012 - boiler in Didcot lifting shop being made ready for lift the following day.

Having been worked to Didcot West Yard, on the afternoon of 18 July a crane lift loaded the boiler onto an Axle Haulage low-loader. The boiler arrived at L.N.W.R. Crewe the following day.

Thereafter, phase 1 of the boiler work will begin - stripping of and assessment of the firebox.

18/07/2012 - Crane lifting boiler from transfer wagon towards lorry trailer.

18/07/2012 - Boiler on lorry flat bed getting ready for its departure to LNWR Crewe.

Tender Progress:

Tender horn guide refurbishment has suffered from machine serviceability but KWG has been assured that the dimensions will be available soon. Once the machining drawing is amended an order will be placed on Multi-Tech for the machining of the tender frames.

Both tender dragbox patterns are complete and casting and machining orders issued. Boro' will cast both in the near future.

14/07/2012 - Completed rear tender drag box pattern.

August

A month dominated by Work Week when there was an average attendance of 5/6 volunteers. To quote Mike Cooper, 'project activity continues to be robust... ', however, some activities, notably machining the axlebox jigs and tender horns/axleboxes are subject to delay.
Despite this frustration, there is now an on-going work stream, the leader of which and KWG have agreed a way forward, consequently work has commenced. Progress should be improved once the replacement motherboard for the machinist's milling machine is delivered. KWG intends using a laser in conjunction with the jig to check the axle centre lines across the loco.

Locomotive Progress:

Work has commenced in Crewe with the stripping of the boiler and opening-up of the firebox. A board meeting has been scheduled for September at Crewe with Richard Watkins, boiler smith, to consider the next steps.

Good progress is being made on the cab, as the following images will show.
Right hand side is substantially complete. Side reinforcement sections to be welded, so they can be fitted giving the structure stability. Dimensioning and positioning problems on left hand side solved, so sides and leg plate fitted. Mismatch onto the fire iron tunnel has been rectified and surround flange awaits welding. Once welding finished, leg plate and flange will be drilled.

11/08/2012 - view of cabsides fitted to frames.

11/08/2012 - view of left hand side of cab, showing fire irons tunnel

25/08/2012 - Left hand side of cab showing weatherboard fitted.

25/08/2012 - Interior view of from right hand side of cab looking forward along running plate.

25/08/2012 - view of weatherboard from right hand side.

Reworking of the cab hand rails has started and the support and fastening plates at the base completed. The next step will be to rivet the angles to the sides.
Roof angles purchased from Angle Ring Co. have been delivered and will be cut and welded to match weatherboard profile. Roof sheeting being costed.
Later in the month, the weatherboard has been fitted adjusted to the legplates. Cab support sections are in progress and left hand window surround installed. Components to connect curved handrail to the cabsides are complete. The left hand cabsplasher, internal to the cab, is being fettled.

Production of eccentric sheaves is ongoing, consequently options are being investigated for the eccentric rods. Gary Meusz, late of Ufone, has been contacted, and is investigating prices for forged blanks in EN 8 which will be flame cut to size, annealed and CNC milled. Ovality of the eccentric sheaves has been checked and results are good with ovality below 0.004 ins. Discussions will be started with Bob Meanley, whose team are producing the sheave straps.

A supplier of taper pins has been located whose costs are very competitive. 25 are being ordered for the main brake hangers.

A specialist supplier for small runs of springs has been located for a reverser return spring. As a number of projects require similar springs it planned to make a bulk order.

It is intended that 1014 will be provided with both a live and exhaust steam injector, an approach being considered by both Saint and Pendennis projects, thus inter-project liaison is continuing.

A sight glass assembly has been acquired.

Non-Ferrous Castings - machining of the lance cock by Chris Denton is moving well.

11/08/2012 - Machining of lance cock continues.

Tender:

The tender dragboxes have been cast. The rear was cast and cooled over the Bank Holiday, while the front was scheduled for casting on 31 August.

Issues with machine serviceability has delayed tender horn guide refurbishment remain, thus the order for Multi-Tech to machine the tender frames is also delayed.

September

Project activity continues to be satisfactory but Mike Cooper is relieved that there is a way forward on the machining of the tender axleboxes/horns as well as the horn guide jig for the mainframe. Although somewhat slow at present activity will pick up once we take delivery of the horn guide jigs. Meanwhile there is much back-room activity which is not currently obvious in workday terms.

LaDonna MacDonald's restoration to full running order continues, thus the County Set and wider GWS population wish her good luck and hope to see her back on parade before too long.

Locomotive Progress:

KWG has now completed the jig drawing and the method statement has been explained to the Chairman, who has sanctioned the go-ahead thus allowing production to be priced. It will, to a certain extent, replicate the optical method used at Swindon. The machinist's milling machine is now repaired and work moving forward.

The Chairman and GWS Project Management Team visited Crewe on 20 September for a meeting to discuss work on the firebox, following its separation from the 8F barrel. In summary, there is some pitting/grooving to the outer steel skin in the area of the throatplate and sideplates. Replacement of these sheets will allow the foundation ring to be reprofiled. All the top stays require replacement but the sidestays (in monal) are serviceable. It was interesting to note the build-up of solid boiler scale. The Society's insurer's boiler inspector's report has been received and will dictate exactly what work is to be undertaken. It should be noted that 1014 will be run at 225 lb/sq. in, rather than the 250 lb/sq. in of the original.

20/09/2012 - boiler scale which indicates that the boiler had not had a washout for a considerable time prior to withdrawal.

20/09/2012 - view of firebox interior towards the front end.

20/09/2012 - view of upper firebox stays.

20/09/2012 - interior view of firebox towards firebox door.

The eccentric sheaves datasheet has been passed to Bob Meanley, who has indicated that additional measurements may be required. The sheaves are now cast and an order issued for their finishing.

08/09/2012 - newly cast eccentric sheaves.

One eccentric rod of the correct dimension has been discovered in security. An expression of interest for the production of these items has been made.
Unfortunately, the extension rods in security are too short, but our scouts are continuing their searches.

19/09/2012 - delivery of the two drop links giving a good indication of their size.

Two drop links for the Stephensons' links purchased from Llangollen have arrived at Didcot Railway Centre. The project now has a complete set

The project team are now trying to locate exhaust and live steam injectors. The exhaust steam injector pattern is amongst the Swindon Patterns in Wroughton. A 10x live steam injector is available in security. A pair of snifter valves for the top feed assembly has also been located.

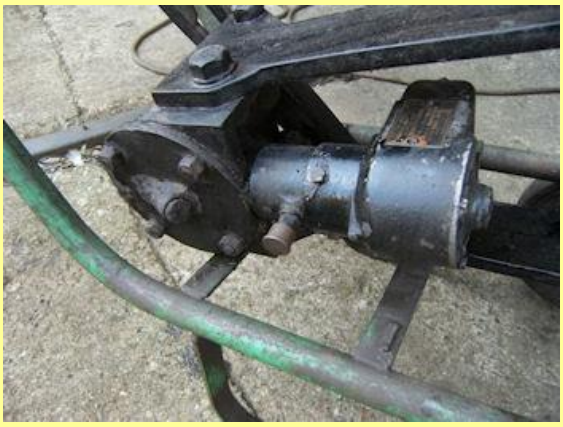
Three reverser return springs have been ordered from Capital Springs for collection in October.

A vacuum pump has been located, payment for which will be in kind – the casting of a

component in LG4.

Work has started to collect the parts and fabricate others for the cylinder drain cock gear assembly.

A speedometer dial and bracket has been obtained from security and work is in hand to identify the parts to make the drive unit. The support frame is a routine fabrication.



08/09/2012 - speedometer generator.

08/09/2012 - speedometer support framework.

The cab workstream continues to make progress. There are still concerns needing to be addressed in relation to floor height and consequential height clearance in the cab. Next will be construction of the roof angles, using the sandwich piece at the rear of the cab roof as a pattern. The arrival of part of the sandwich roof stiffener will allow us to start cutting and welding the roof angles. Meanwhile, the left hand cabside support section is now complete and the flange welded to the fire iron tunnel.

01/09/2012 - leg plates fitted to the weatherboard and the latter welded up. Joint gaps are less than 1 mm.

Late September - completed left hand cabside support. The flange has been welded to the fire iron tunnel.

A very useful meeting with the 6023 team considered fitting of TPWS and OTMR equipment onto 1014 - essential if the locomotive is to run on the 'big railway'. For OTMR a capability to monitor and record regulator opening, steam pressure, vacuum pressure and gear position will be required. It is advisable to start thinking about the fit NOW, even though the cab and footplate are not complete. Dicky Boast, an ex-REME radar technician, will lead on this, liaising closely with the 4079 team. The nature of the equipment is shown in the images, meanwhile he is searching for suitable replacement sender components for the speedometer.

08/09/2012 - TPWS box as fitted to 4079 - this is part of the instrumentation for future mainline running.

08/09/2012 - another component which must fitted to 1014 to enable the loco to be suitable for operation on the 'main line'.

And finally, the loco brake hangers are complete and being painted, while the driving wheels are now black-undercoated.

Tender Progress:

The resolution of machine serviceability means that refurbishment of axlebox and horn guide sets is almost complete. Despite the delay an order will soon be placed on Multi-Tech for machining the tender frames.

Both front an rear tender dragboxes have been cast. After initial cleaning up, the castings were accepted and the order for machining placed - scheduled for early October. Once both machined dragboxes have been accepted, planning will commence for their move and that of the ladder frame to Pontefract.

08/09/2012 - front drag box casting.

08/09/2012 - rear drag box casting.

October

Project activity remains slow. The loco horns/axleboxes have been declared to be the main effort in preparation for rewheeling. Meanwhile the level of back-room activity continues.

LaDonna MacDonald's restoration to full running order continues, with surgery scheduled for the beginning of November (proved successful). The County Set and wider GWS population wish her all the best for a full recovery and look forward to seeing her back at work on the Project.

Locomotive Progress:

The detailed boiler inspectors report on the 8F firebox from Mike Hilton of Allianz has been received. The report contains no surprises and confirms the level of work that we expected after the 20 September meeting at Crewe.
Generally the firebox is in good order and while the monel metal side stays do not replacing, new crown stays will be required. Once the firebox has been rebuilt, the next stage will be to make a new boiler barrel to the Swindon 15 OA design, which is completely different from that of the 8F.

06/10/2012 - trial laser setup in readiness for undertaking the essential measurements of the axleboxes to ensure a smoothly rolling chassis.

As indicated previously, the main frame horn guides/axleboxes, is our main priority at present, thus volunteers will be redeployed as necessary to this work stream. With drawing completed, production having been priced, delivery of the jig is expected in mid December.
The laser was set-up early in the month, which will give us an accurate axle centre height.
Aluminium tubes for the accurate measurement of the axle centres have arrived and are being machined to length.
Suddenly, this whole job is not looking so difficult although the trick will be to measure the horns quickly, then specify the repairs to the axleboxes and get them to the SDR.

06/10/2012 - Left hand side of the cab. Support section complete..

The cab work stream continues to progress, albeit slowly. Both cabside support sections are now fettled and can be drilled to the sides. Some minor bracketry has to be completed, then the structure must be disassembled, cleaned, primed and riveted. Cutting and welding the roof angles is imminent, following the arrival of part of the sandwich roof stiffener.

Attempts to locate the correct exhaust and live steam injector patterns continues.

A vacuum pump has been located, the payment for which will be in kind – the casting of a brake ejector in LG4. The pattern and cores in will be priced at Hunt Castings in Romsey.

Discussions are in hand with Hasler AG Bern over the tachometer sender of the speedometer assembly. There is little doubt that the speedometer frame assembly will have to be redesigned and speedometer gauge in the cab recalibrated.

Work continues to collect the parts and fabricate others for the cylinder drain cock gear. The cock springs in 316 SS have been ordered from Capital Springs.

The reverser return springs have been collected from Capital Springs in Kent. Work is in hand on preparing a shaped end washer and cotter for 1014's spring, after which it will be assembled onto the wayshaft.

20/10/2012 - reverser springs - old, broken spring shown above, newly produced spring as received from Capital Springs, Edenbridge.

In preparation for rewheeling, we are tightening all the securing nuts and locknuts on the bogie pintle and correctly pinning them. The pintle will then be painted and greased ready for the bogie.

A Mason's Valve has been received thanks to our links with the 2999 project. It is a beautiful piece of work and we are grateful to Peter Chatman for his assistance.

We were pleased to receive a visit on 20 October from John Scanlon of J&L Paints who spent an hour looking over works on the loco. It was also good to see David Hurd who was also given the grand tour!

Tender Progress:

Tender horn guide machining is complete. As a result, the revised pitch of the hornguide securing bolts can be specified on the frame plate machining drawing - these compensate for the wear in the hornguides. The AutoCADs machining drawings have been sent to Multi-Tech for pricing.

Both tender dragboxes have been cast, machined and MPI tests carried out this month. Following inspection acceptance will be formalised and once accepted, both dragboxes, a planning will commence for their removal, with the ladder frame to Pontefract to link up with the end and side frameplates.

November

The headline news for the month was the acceptance of the tender drag boxes, but otherwise project activity remains slow, but should pick up when the loco horns/axlebox jigs arrive. The level of back-room activity continues apace.

Locomotive Progress

The main effort has been the main frame horn guides/axleboxes. Material for the jigs has been ordered and delivery is expected in early December. The measuring rods are almost complete. Confirmation of the axle diameters being 8.750 ins and the back-to-back dimensions between thrust faces is required. Once this and the slip gauge measurement has been completed horn grinding and axlebox overhaul can be properly specified.

The cab workstream continues to progress. Cutting and welding the front roof angle is ongoing and the rear panel, sandwiched between two angles, has been welded. Much of the cab has been taken apart to facilitate this work and will then be reassembled to fit the main roof support and roof panel. Further dismantling will be undertaken for undercoating and will then be riveted permanently together.

Meanwhile work on a range of smaller parts continues:

1) A 10x live steam injector pattern has been found and it is thought that exhaust steam injector has been located, but there is uncertainty as to its being of the correct type.

17/11/2012 - exhaust steam ejector located - correct type for 1014?

2) Discussions continue with Hasler AG Bern over the tachometer sender. A mechanical/electrical system has been identified which can be fitted into a modified speedometer frame assembly and comes with its own dial. It will require an electrical supply but, as on-board power must be carried for the on-board systems, this should not be a problem.

3) TPWS & OTMR - Dicky Boast has recruited an assistant who has recently graduated from Cambridge with a distinction in his Masters in Mechanical Engineering.

4) In relation to the Cylinder Drain Cock Gear, cock springs in 316 SS have arrived and

the raw castings delivered to Alexander Higgens in Stourbridge for machining and completion. Most of the other gear is now in stock or being overhauled.

5) Preparation of the bogie pintle for rewheeling is complete and awaits top coating.

Tender Progress

Acceptance of both tender dragboxes took place on 14 November. Both boxes have to be stress relived in a kiln before we can move them to Pontefract.

14/11/2012 - front drag box at Boro' following acceptance.

14/11/2012 - rear drag box at Boro'.

AutoCADs machining drawings for the tender frameplates have been sent to Multi-Tech for confirmation of pricing - nothing has been heard yet. Having accepted the tender dragboxes, both they the ladder frame have to be moved to Pontefract, a process dependant on extracting the ladder frame from Didcot Railway Centre into West Yard where it can be loaded onto a trailer- mid February seems to be the earliest time this can occur.

Other activity includes completion of the grinding of the tender horns and design work has started on the tender brake shaft and its support collars and brackets.

December

Another month of planning and preparation, but one uplifted by the return of LaDonna who immediately began to get a grip on tidiness in the Pooley and checking on the stability of the shelter. To celebrate Christmas the County set joined with Drew Fermor's 4079 group for a small party. Finally, the Chairman, invited the County team to make the draw for the Christmas Draw 2012, proceeds of which will be used to fund the construction of the County's tender as well as starting the machining of the loco connecting and coupling rods.

15/12/2012 - Keeping warm around the forge at the Christmas Party. *(Frank Dumbleton)*-

Locomotive Progress:

A long vernier has now been located and overhauled consequently a start has been made on measurement of the wheel back-to-backs and an 8-9 inch vernier to check that all the axle diameters are the same. We are still pressing for delivery of the horn guide jigs early in 2013 as time is of the essence on this workstream.

The cab workstream continues to progress. The front roof angle is complete and, with the weatherboard, undercoated in a very bilious green! Work is going well on the rear angles, which support the front and rear sections of the roof panels. One of the side support sections has also been undercoated. The access hatch in the reverser tower has been cut out and the access cover will be completed next workday as a small project by Joe Sherwood. I hope to take delivery of the roof sections and main brace in the near future.

15/12/2012 - Front cab roof angle in its bilious green undercoat!

15/12/2012 - Undercoated weather board.

A pair of valve rods found in Security were cleaned, but discovered to have come from 5900, which does not have a pair fitted, consequently they have been returned to Security. Discussion ensued about manufacturing replacements and the need for forging, which will be followed-up with the VAB advisor. Similarly for the valve rod crosshead, which had been planned to be spark eroded/machined from solid.

The pattern and cores for the vacuum pump ' quid-pro-quo' work have been delivered to Hunt Castings in Romsey along with a drawing from Ted Lacey, but needs careful interpretation. Luckily, Dave Hunt likes a challenge and a visit to him on 5 December proved very useful. A number of additional patterns/cores have been located and PG has lent us an original casting, which should make the task easier.

All the details of the TPWS/OTMR/Speedometer have been passed to Dicky B. The latter's assistant is now tracking down an agent in the UK Hasler AG.

There is also a need for a steam generator to provide a battery charging capability for the on-board power but it looks as if it may be beyond a reasonable price, given that its electrics will probably need complete replacement.

Dicky B has completed the under cab linkage to the cylinder drain cock gear, using both new and recovered scrap bin parts. This is a work of art and is an example of the high standard of work that we should aim for.

15/12/2012 - restored cylinder drain cock lever.

Meanwhile at the end of the month from Crewe an invoice for the firebox which states that the following work completed: side stay nuts burnt off; right and left wrapper removed; caulk side stays; die nut side stays; burn out foundation ring corner studs.

In addition, contact has been made with Applied Inspection, an NDT (non destructive test) test house based in Burton-on-Trent who to be engaged to crack test the frames before the wheels are fitted - a Flying Scotsman situation is to be avoided.

Tender Progress:

Discussions with Richard Smith at Multi-Tech over the main frame drilling are on-going.

Four brake hanger brackets, in matched pairs, have been gathered. Apart from corrosion, they are serviceable and reconditioning has started with removal of all the steel pin bearings. The latter will be renewed after the brake hanger brackets have been sandblasted and painted. The rear brackets, of a totally different pattern, will have to be manufactured.

Stripping the scoop gear lever shaft has commenced - this will be non-operational on the locomotive, but is required for cosmetic purpose. One bearing carrier was broken, but the other main parts are salvageable for reuse. PG has a pattern for this bearing carrier. A water scoop standard has been acquired, which will be stripped and parts used in the same way as the brake standard.

An as-new lever shaft has recently been located and a second, old but serviceable, bearing carrier.

15/12/2012 - Pre-restoration view of water scoop gear.

Drawings now been drawings and pattern/casting costs obtained for the brake cross shaft, support bracket and bearing carriers/caps. It is intended that the cross shaft be machined by a local contractor with the cranks manufactured separately and welded to the shaft, as per the prototype.

Stripping of the brake standard, inherited with the loco frame, has commenced. This item is almost complete, and only slightly damaged, so can be incorporated in the Lot A180 tender with ease.

15/12/2012 - brake screw revealed during stripping process.

15/12/2012 - top of the brake standard.

Agreement has been reached with Bob Fry that the old 'Gibbon' (accommodation bogie) will be repaired for use by the Project. It has a broken wooden frame and is currently located to the rear of the works. Suitable timber has been identified and Terry P will carry out the work, assisted by labour from the County team. First task will be to remove the wheels to storage and the carcass to a safe place of work, a job it is hoped to start in the New Year with the lift of the pair of wheel sets.

15/12/2012 - unrestored 'gibbon' - important for moving large parts around workshop, something it is hoped will be done during 2013.

Grinding of the horn guides is now complete.

Mike Cooper's (Project Manager) end of year Report:

We have now almost completed the sixth year of the project, which started in June 2007, and it is time to take stock of where we are and where we will go in 2013. We are still moving forward, albeit slowly, and we have confronted and solved some major issues during 2012. Luckily, we have encountered few problems and activity has been buoyed by a substantial legacy that has allowed us to start work on major elements of the project such as the boiler. Regrettably, we missed our main 2012 target of rewheeling, but we were not helped by delays in delivery and some difficulty in specifying the methods of dimensioning and overhauling the main axleboxes, which is critical to successful performance running. With 1014 now starting to look like a County, we must also ensure that every element of our activity from design, manufacture, machining, assembly and painting is to the highest standard and with a critical eye for detail.

Progress during 2012 was slow but satisfactory with no major setbacks. With the sad death of Geoff Gore we were deprived of an experienced machinist and, regrettably, the two we thought had been recruited failed to turn-up at crunch time. Our boiler was moved to Crewe on 18 July and a detailed assessment of the firebox revealed no major issues. Work started later in the year with the removal of the barrel and the stripping of unserviceable parts from the firebox, which will be rebuilt to replicate, almost exactly, that of a Lot 354/No 15 OA specification, together with a new barrel and smokebox. A team fettled our wheels in a military style shelter at the front of the Works, filling the casting blemishes and undercoating them. A great deal of time has been spent resolving the gauging issues, which mean a lowering of the boiler centre line by 45 mm and on the cab shoulders by 88 mm, as well as a requirement to fit a 6023 pattern safety valve and top feed. The doom-mongers thought that this would ruin the locomotive, but the side elevation Auto CAD shows the locomotive has lost little of its looks. Work Week saw a major effort on putting the cab together with the sides, leg plates and weatherboard all being drilled and temporarily assembled onto cab angles, and this will continue into 2013 with the completion of the roof and riveting of the whole assembly. Work on the cylinder drain cock gear has started with a mix of old and new parts - the six raw castings from Bridport Foundry were delivered to Alexander Higgens in Stourbridge for machining. The reverser has been completed with delivery of the massive reverser return spring from Capital

Springs at Edenbridge. Masons valve and clack valve castings have been delivered, courtesy of our colleagues on the Saint project and the casting for the lance cock completed for machining to start. All locomotive brake hangers have been overhauled with new bearings, anti-rattle shims and one with major cosmetic repairs. Searches of our stores have located an eccentric rod, a front draw hook, the side window frames and oil reservoirs. Various benefactors continue to gift us components and, in this context, I am most grateful to all our supporters for their continuing beneficence to the project. The new tender vacuum cylinder piston (in stainless steel) and rough cast cover has been delivered but we still await the new tender draw hook and drag link pins. Work started late in the year on drawing and specifying the tender main brake shaft and its ancillaries as a precursor to seeking sponsorship. We now have all the loco/tender inner buffing gear which should be fitted next year and the reconditioning of the tender horns is complete. And, on 14 November we conducted acceptance of the tender front and rear dragboxes from Boro' Foundry at Stourbridge.

2013 objectives will be outlined in the January 2013 update.