

# Progress - 2010

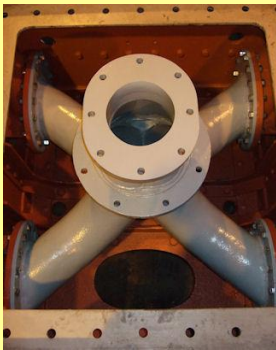
## Strategic Intentions for 2010.

The County Project has now been running for over two years and we have developed from an inexperienced team into one that knows what it has to do to deliver 1014 for the main line. Our skills and confidence have increased and we are all older, wiser and more experienced.

So where are we going in 2010? Assuming our wheels will be ready around Easter, the main initial effort must be to complete the bogie and main axle boxes to receive the wheelsets and turn 1014's frames into a rolling chassis. A small, locally based, team has been assembled, to fit the wheels during the week, rather than on a workday. The technical paper on an alternative method for producing locomotive motion will be issued shortly, which should allow considerable cost savings on manufacture. A major challenge will be to locate a source of supply of EN 16(T) steel, the current industry standard for forged motion and Colin Evans, our metallurgist, is on that case. Conversion work on the exhaust is completed and it should be fitted early in the New Year. Final fitting of the rear splasher/running plate sections should be completed in January with riveting following, so providing us with a firm platform from which to move rearwards to fit the cab footplating/side sheets or forward to the front section. The saga of 5227 at Barry might be drawing to a close, sooner rather than later in 2010, so yielding vital brake and motion parts for us, as well as some brake parts for 2999. It is also hoped to be able to start a small works party presence every Saturday, in addition to our main effort every second Saturday.

## January

At the beginning of the month the modified exhaust system was delivered and fitted by a group of our younger work force. No problems were encountered. In subsequent weeks all the new fastenings were fitted and tightened ... twice. On checking dimensions, it was found they were more precise than the originals!



03/10/2010 - Exhaust system as first fitted, prior to final tightening.



16/01/2010 - Exhaust system as finally fitted and checked.

Work commenced on cleaning the valve chest drains.

Meanwhile, brake cross beam stub end bearings machined.

The month began with sorting out the misalignment of the left hand running plate and splasher unit. Having removed this unit from the frames, welds were cut and rewelded square. This was completed by the middle of the month; the rear footplating was rejigged and pronounced vertical to the cab sides. Pilot holes for fastenings drilled to await riveting.

The parts of forming the rear sand box have been welded together and now require to be smoothed off and top and bottom brackets fitted. The sanding gear is being reworked.

Planning continues for the construction of the screw reversing pedestal from the two 'wrecks' in our possession. Quest at present for a connector to join the reverser rod to the reverser. Meanwhile, parts for the finished item are being cleaned and assessed.



16/01/2010 - Reverser worm and bearing following cleaning.

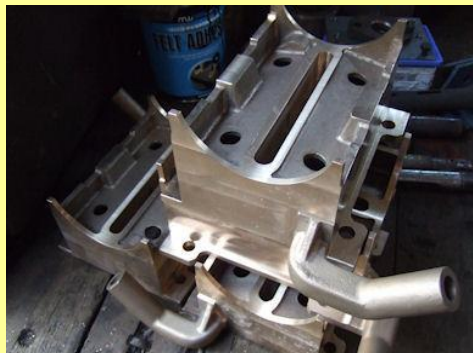


16/01/2010 - Removing years of gunge/dirt from the screw reverser.

The 'water jetting' paper and associated research is still on-going. KWG completed the CAD for machining any motion parts to be produced and has been passed on to machine shops to obtain estimates for doing such work. Investigations continue into the specification of steel required to manufacture motion - evidence suggests that employed for 5029, 6023 and the Steam Rail Motor meets the current specifications and would thus be applicable for 1014. As a result, more requests for estimates have been despatched to machine shops. By the end of the month, costings are still awaited for machining and forging, to complete the requirements of the final paper.

An assessment of the motion parts required for Lot 354 has been put in hand.

Bogie oilkeeps completed and placed in Pooley van, in readiness for final cleaning. Plugs for sand holes to be produced, completed later in the month and keeps drilled to accept them.



03/01/2010 - Completed oilkeeps. Need to be cleaned free of all swarf etc.



31/01/2010 - Completed sand core plugs.

16/01/2010 - Oil keeps cleaned, then test fitted to axleboxes. Fit satisfactory, apart from minor fettling needed as a result of the casting process.

Machining of axleboxes continued to a conclusion. Tidying-up and some adjustments remain to be completed - the latter including redoing the white metalling of the inner bearing faces to the front wheels, having been found to be too thin.

By the end of the month, a start was being made on gathering together the bogie components for assembly - this will be necessary to produce the rolling chassis and clear space in the workshop.

To help illustrate better, the aims and objectives of the project, Peter Donaldson has agreed to revamp the publicity notice board alongside 1014 at Didcot with immediate effect.

## February

A mid-month visit to Buckfastleigh (South Devon Railway workshops) showed substantial progress was being made with the fitting of tyres to the wheels:



10/02/2010 - Machined tyre in gas ring furnace, being heated causing it to expand (*David Hurd*).



10/02/2010 -Wheel set being lowered into the expanded tyre. (*David Hurd*)



10/02/2010 - Wheel inserted into tyre - the tyre was then allowed to cool, thus contracting and firmly 'gripping' the wheel, to the point where it is immovable. (David Hurd)



10/02/2010 - One tyre having been fitted, the wheel set is turned over for the other driving wheel to be tyred - the tyre being seen in the background. Clearly shown too, is the hole for the crankpin. (David Hurd)



10/02/2010 - The evidence! 1014's driving wheel with tyre fitted. (David Hurd)

All six driving wheels were expected to have been tyred by late February. Once that task is completed, the next stage is the machining and fitting of the crank pins.

For the project to be a success, planning is essential. A major focus was the assessment of the motion configuration, i.e. confirming which standard parts of G.W.R. motion could be used in lot 354 applications. So far it seems that a number of Hall and other standard components will be appropriate. Some, like the rear section of the Hall coupling rod, might be capable of modification to Lot 354 specifications. Much will need to be manufactured anew to meet the County specification, notably the front coupling rods and connecting rods.

Producing these, and a range of other smaller motion parts, is likely to be expensive and requires manufacturing processes no longer readily available. Hence the research into the concept of water jetting - the paper is still 'in preparation' as it raises a lot of metallurgical issues that must be resolved.

Meanwhile, consultations with a number of manufacturers are on-going and estimates sought.

Work on fitting the rear footplate to the frames continues. The left hand rear footplate, cause of problems in December, has now been completed, except for the new cab spectacle plate flange required. At the end of the month work to re-jig the front part of the splashers was in-hand.

Deliveries included steel for the undercab footplating, rod stock and two sheets of chequer plating for non-slip provision.



13/02/2010 - Steel for undercab footplating - pre-shaped.

Riveting footplate and cabsides to the frames has been an elusive task. The team have decided, with help, to do the job themselves. To this end, appropriate tools are being acquired and repaired where necessary, so that in March five of the team can be trained in riveting techniques, to do the job themselves. Acquisition of such skills etc., will be useful later in the life of the project too.

Work started on replacement of the extension nipples which drain steam/condensate from the valve chests. One drain pipe was removed - with great difficulty due to severe corrosion of the threads. The other is immovable at present. Overall it is proving a complex task!





13/02/2010 - The valve chest drain - and the corrosion.



13/02/2010 - The one drain pipe that could be removed - corroded thread to be seen at the top edge of the image.

With machining of the bogie axleboxes complete, the final fettling gets underway. Two of the four had been completed by the end of the month.

Once finished, work must proceed quickly with machining and fettling the six driving wheel axleboxes - essential for wheeling the chassis this spring ... if all is to go to plan.



13/02/2010 - Fettling a machined bogie axlebox.

## March

Detailed examination of the motion needs for the County indicated that Hall coupling rods cannot be modified to fit the Lot 354 specification or plans, thus a complete set of external motion will be required to be manufactured. KWG is preparing a cost effective solution to the provision of the internal valve gear - likely to be a redesign of the Stephenson links.

Both right and left hand splashers have been separated from the running plate and successfully aligned with their rear counterparts. Wheel clearances have been checked, showing a need for some minor work on the right hand front. By the end of the month the majority of the drilling and welding on the front splashers was completed.

The running plate has also been drilled in readiness for riveting, which will be undertaken by the Project Group following the riveting training received in late March and the acquisition of parts for the equipment required to do the work.

Work on the sandbox gear continues.



13/03/2010 - Right hand splashers aligned and ready for welding together and to the running plate.



13/03/2010 - Newly fabricated left hand rear sandbox trial fitted to frames.



Progress continues with the fettling of the axleboxes. The oil keeps to be fitted thereafter.

Once this is complete attention will turn to fettling the main axleboxes in readiness for re-wheeling the chassis.

13/03/2010 - Final fettling of bogie axleboxes continues. Oil keeps now being fitted.

Trial fitting of a bogie bearing to the axle indicated that the fit was 'tight' so 0.0055in on the radius needs to be removed. Fettling continues.



27/03/2010 - Right hand trailing axle bearing trial fitted to axle.



Work on the bogie axlebox oil keeps continues - drilling oil return slots to prepared for final assembly of the oil keeps and axle bearings prior to fitting to axles and bogie frame.

Eight bogie spring hangers cleaned in readiness for undercoating and fitting.

27/03/2010 - Drilling oil return slots in oil keeps.

Oil keep lubrication cages fitted with felts and damaged springs replaced. The felts were then left soaking in oil.



27/03/2010 - Felts fitted into two of the oil keep cages - other felts, cages and springs shown in foreground.



27/03/2010 Aassembled oil keep felts, cages and springs soaking in oil.

Peter Donaldson has completed and erected a new visitors' information board. This will be found alongside 1014 in the workshop at Didcot Railway Centre and sets-out to convey something of the aims, objectives and achievements of the Project to visitors when there is no one from the team available to answer questions etc.



13/03/2010 - New information board at Didcot Railway Centre.



## April

Developments on the valve gear/coupling rod/connecting rod issue suggest that the idea of water-jetting is inappropriate for our needs, besides being an expensive option. Furthermore, research into the compatibility of the Hall's valve gear and that required for Lot 354 suggests that a combination on new-build and use of components for a Hall would be acceptable in producing truly Lot 354 locomotive.

An inventory of needs suggests that new-build requirements will be:

1) Connecting rods - the cost of a pair of forged connecting rods has been received from Ufone (Walsall) - they produced similar components for Tornado and are known to the Society. As a result the cost of the blanks has been funded and agreement reached with Ufone, who will machine at a later date.

2) Coupling rods - costings to be sought.

Also needed - essential modifications to Hall-type eccentric sheaves to provide the 0.5 inch additional valve travel for Lot 354.

All other Hall valve-gear components are in common, many of which we have in stock.

News from Buckfastleigh indicates that 1014's driving wheels are almost complete:



08/04/2010 - Drilling holes for the crankpins (*Dave Hurd*)



30/04/2010 - 1014's wheel sets at Buckfastleigh - essentially complete apart from fitting the crankpins. They will be transported to Didcot Railway Centre in the very near future. Wheeling the chassis is scheduled for June/July (*Jeffery Harper*)

Work on the rear sandboxes continues with new tubing prepared for fitting. Front sandboxes have been derusted and stored in the fitted position. Internals being fettled.

Brake hangers - drilling and fitting of lubrication nipples continues.

Reverser pedestal stripped to release screw reverser base. Design work for new pedestal complete and funded.

Work to be progressed in the near future. Other fittings located, in our hands and stored.

Running plate and splashers - sections of splashers now fish-plated and joined with correct pattern round headed bolts. Splashers now complete and now await final riveting to the running plate.

Bogie - all oilkeeps are a sliding fit on the axleboxes. Fettling continues. All spring hangers have been painted.

April was marked by good news and bad news relating to the County Set personnel -

Good news - Graham McEwen of Reading School has joined the team as a permanent member.

Sad news - earlier in the month Drew Fermor informed Mike Cooper of the premature death of one of his students, also one of the County Set's youngest workers. Iain McDonald, also from Reading School, died in tragic circumstances around Easter. Iain's last contribution to the work on 1014 was on 10 April. His mother relates he regarded GWS and the 1014 project as his second home: observing that 'he never stopped talking about it'. This was reflected in his pleasant demeanour, intelligent approach, enthusiasm, reliability and positive relations with other members of the team. The County Set (and the 4079 Team) were well represented at Iain's funeral on 30 April, where Drew Fermor of the the 4079 Group and Iain's engineering tutor gave the eulogy.

Perhaps, one day, when 1014 is finally complete and running, it will represent a fitting memorial to his efforts.

Iain will be missed and we all hope and pray that he will Rest in Peace.

## May

At the start of the month Didcot Railway Centre was host to a very successful G.W.R. 175 Gala . During the celebrations, the public were able to view progress on 1014. To mark the event, for at least the first weekend, the new, right hand side nameplate was fitted to the running plate.



01/05/2010- County of Glamorgan nameplate fitted (temporarily) to the running plate.

Offer of sponsorship for all six connecting rod blank forgings permits detailed discussions to commence with Ufone, regarding production and later machining.

Lubrication nipples fitted to all the brake hangers.



The machining specification of the new right rear cylinder cover has been under discussion, based on both original and Lot 354 drawings. The County cover has 18 stud holes and a thicker packing gland for which the casting is not suitable. We also have Hall pistons and rods. As the donor frame is from a Modified Hall, it is essential to ensure that parts like these covers are handed but identical to the ones already on the loco, i.e. to Modified Hall specification.

15/05/2010 - Newly produced right rear cylinder cover - machining commenced. Machining has now commenced to the latter specification.

Design work has been completed for the new reverser tower. Subsequently, an order has been placed with Tadley's for the manufacture a new tower, plus many of the associated bits. Meanwhile work on cleaning-up and preparing the screw mechanism continues.

A standard G.W.R. whistle (from a Hall) has been donated to the Project Group for fitting on 1014.

Work on the splashers continues to make progress. By the beginning of the month the splashers had been fishplated and connected with the correct round headed bolts.



01/05/2010 - Right hand splasher fitted. connected and primed. The left hand splasher is also completed.

In readiness for riveting to the running plate (Work Week?) a range of small tasks needed to be undertaken.



29/05/2010 - Slot cut into running plate to allow the wayshaft lever to be fitted.



29/05/2010 - Correct round headed bolts fitted to motion plate covers. The right hand motion plate cover has been modified to sit correctly on the frame valance.

Work continues to ensure the frame angles are correctly fitted prior to riveting of the running plate.



29/05/2010 - Frame angle 19 (the tee bar) repositioned on its end flange and refastened to frame angle 21.



29/05/2010 - Newly acquired riveting tool, with a selection of heads.

Riveting is the priority task for 'Work Week' in August. Following previous disappointments the Project Team have prepared themselves for this by undertaking training in riveting and acquiring the necessary equipment/tools to complete the task. It promises to be a noisy week!

The bogie has been focus of attention, as the team get ready for wheeling the chassis. The oil keeps are now a sliding fit on the axleboxes. The axleboxes are being machined to axlebox diameter plus 1/1000th of an inch (the diameter of the bogie axle). Spring hangers have been painted and threads and nuts/locknuts oiled and axles MPI tested.



01/05/2010 - Painted bogie spring hangers



15/05/2010 - MPI testing the bogie wheel axles - passed successfully.

Although not immediately apparent, it was overall, a month of progress on planning, acquisition and work fronts.



## June

Storage issues occupied some well-spent time during the month as many of the repaired parts, formerly stored in the Pooley van have been moved into the Project Group's recently 'inherited' ISO container.

The Pooley van, meanwhile, will be fitted with more shelving units primarily used for tools, fasteners and fittings for work in progress.



19/06/2010 - Inside the ISO container showing some of the restored parts housed there. Hopefully, another shelving unit will be acquired in the near future for the smaller items.

A successful meeting with Ufone suggested that they could and would be prepared to manufacture new coupling and connecting rods. The next step is to consult our VAB advisor, in conjunction with Ufone, to confirm the grade of steel to be specified - EN19 as used for 60163. Once completed, the way should be clear to procure forgings for two sets of coupling rods and two connecting rods. This will be followed by machining of all six items, along with the bearings and joint pins.



Work on the steam chest continues. Drain valves, cleaned, freed and re-threaded. When nipples are repaired they can be refitted to the steam chest.

Rust is being chipped from the lower part of the cylinder block.

Machining of the Right rear cylinder cover continues.

19/06/2010 - Cleaned steam chest drain pipes - scale can be ascertained from shoe at bottom right hand corner of image!

The ends of the brake hanger pivot pins were drilled for split pin retainers.

Welders making two coupling suspension hooks, one of which has been fitted.



19/06/2010 - Newly manufactured coupling suspension hook placed on bolt holder of buffer.

Welding of rear sandboxes complete and bolted to frames; eventually they will be riveted to the frames. Next tasks - prime and undercoat, add bitumen coating to interior and fit the operating gear.



05/06/2010 - View of new rear right hand sandbox as bolted to the frames.



05/06/2010 - Newly manufactured sandbox awaiting finishing, temporarily bolted to frames.



Work on the cab area continues. Pre-formed sections of under-cab foot plating are being fitted, in readiness for fitting the cab side sheets.

19/06/2010 - Fitting under-cab foot plating.

Although a cosmetic exercise, the rather care-worn temporary nameplate has been repaired, repainted and replaced on the running plate. Time spent doing this was considered important as it clearly identifies our locomotive amongst the others in Didcot Works for Project supporters, G.W.S. members and the general public.



19/06/2010 - Repainting the temporary name-plate.

Work on the bogie axleboxes continues. Fettling the oil keeps is complete and the final machining of the axleboxes in hand.

As part of the preparation work on the bogie, frame filler has been applied to provide a smooth surface for painting and the exhibition finish we hope to apply to the whole of 1014.



19/06/2010 - Applying frame filler to the bogie frames.

Overall, a month of consolidation, as well as progress.

## July

1-2 July. after many postponements, a team of 4 undertook the 5227 strip at Barry. We recovered 6 x H44 pattern brake hangers, 2 x Stephenson link hanger brackets (plus long hangers), 2 x Churchward pattern brake cross beams and the adjusting linkage for 2999, as well as numerous brackets, clips and other GWR ephemera. These parts might cost in excess of £25k to manufacture, so for a charge of £475 the return is very good.



1-2/07/2010 - Releasing cross beam from linkage. This is one of two Churchward design cross beams recovered for use on the Saint - they are being exchanged for a later type of cross beam from Maindy Hall.



1-2/07/2010 - H44-type brake hanger almost released from 5227 - six of these were recovered.





1-2/07/2010 - Puller on H44 bottom boss



1-2/07/2010 - Chris C and Gary D. working hard to release brake hanger.

On return to Didcot Railway Centre the recovered items were assessed, whereupon cleaning and repairs commenced. Assisting the Project Team was LaDonna McDonald, mother of the late Iain McDonald. Apparently she enjoyed her visit, the work and the County set so much she intends returning as a full team member.



03/07/2010 - Link hanger bracket recovered - unrestored!



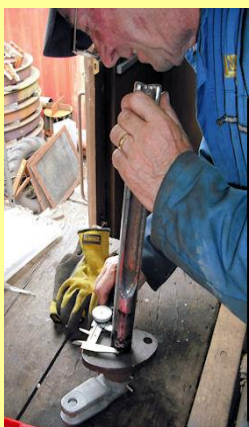
03/07/2010 - LaDonna with a restored brake hanger.

Having examined the ex. Maindy Hall brake crossbeams, the threaded ends were considered serviceable. They will be matched with the H44 hangers from 5227, but all the bearings will require replacement. Meanwhile shot blasting to remove the rust from the hangers continues.

The link hanger blocks are being blast cleaned at SPX in Newbury. The first has been returned, but some of the others required some small repairs before being despatched to SPX. Once again the bearing will need to be replaced before fitting to 1014.



31/07/2010 - Link hanger blocks before and after treatment at SPX.



31/07/2010 - Measuring the faulty sand pipe. A slight bend was responsible for it not operating smoothly, consequently it will be replaced.

Work continues on the sandboxes, following their being bolted to the frames. All the linkages completed. After assembly, the right hand linkages were working smoothly, but that on the left proved somewhat stiff. Investigations showed that the left hand sand pipe was slightly bent - 0.030 inches out of true! Another section of tubing is on order.



Discussions about the coupling/connecting rods continue. Documentation for forging has been agreed. Need thence to ascertain correct modern specification for steel in lieu of the G.W.R. specification, GW Spec. 19 HT1 steel. BS970 150M19, or EN14, seems to fit the bill, a specification for which the G.W.S. already has conformity certification as replacement for original motion material. Gary Meusz of Uforme is confirming the price and availability of six billets of this specification or an approved alternative from Somers Forge, Halesowen.

Another important item requiring to be manufactured will be the blast pipe. Serious consideration of this arose following a conversation with Ian Elvar (part of the 6023 team), whose recommended bedtime reading for Mike Cooper is a document produced by J.J.G. Koopmans, entitled 'The Fire Burns Much Better', which considers the inter-relationship between chimney, and blast pipe dimensions and affects on pressures and gas flow.

Early in the month the Hall class boiler support was removed from the frames. This will be replaced by a larger radius support to Lot 354 dimensions, which was part of a delivery of items received from Angle Ring Company.

Other items in the aforementioned delivery included eight angle rings, some of which are for the cab.



03/07/2010 - Removal of Hall boiler support.

The reverser was subject of some attention. Earlier in the month the pedestal was separated from the remains of the tower and cleaned. Later, the steel for the manufacture of the reverser tower was delivered, ready for welding.



17/07/2010 - Cleaning the reverser pedestal after stripping from remains of the much rusted and useless reverser tower.



17/07/2010 - Cleaned reverser pedestal.

The reverser tower shown opposite is a memorial to the late Andrew Hook, former Chairman of Bristol Group, who died earlier this year. Andrew was a supporter of the Project and at his funeral a collection was made *in lieu* of flowers. His widow, Vivienne, kindly allocated half the money raised to the G.W. County Project specifically for the manufacture of the reverser tower. For that we thank her very much and, when completed and fitted into the cab, it is anticipated a plaque will be fixed to the tower in dedicated to Andrew's memory.



06/08/2010 - Steel to fabricate a new reverser tower after delivery and awaiting welding.

Fettling of the bogie oil keeps was completed by the beginning of July. However, fitting the bearings into the bogie frame indicated some adjustments were needed, notably with the rear set. Some additional machining should remedy the front clearances. Fortunately, with the slight delay in delivery of the driving wheels (September?) the extra time can be used to correct the issue and still be ready to complete the rolling chassis in the autumn.



17/07/2010 - Application of brains to the bogie issue.



31/07/2010 - Machining a bogie bearing.

The Pooley van has not featured much lately, but in July another set of racking was acquired and erected, providing more, much needed secure storage space.



31/07/2010 - Happiness is more shelves in the Pooley van. They are being filled rapidly!

Work week is nearly upon us- planned work includes - frame riveting, bogie axleboxes, undercab running plate and minor manufacture/cleansing/fettling. Ian King is in charge of riveting, supervised by Kevin Dare, of the 3650 team.

Overall a satisfactory month's work, despite disappointment with the bogie.

## August

**Work Week** - Satisfactory with quite a lot achieved. We had good week with an average of 8 on parade each day.

Dominating the work was riveting. Having received training and acquiring the necessary equipment, a County Set team undertook the task:



06/08/2010 - Heating the rivets (*Matthew Wilkins' Father*)



06/08/2010 - the riveting team - Heater - Ian King; Placers - Mike Cooper & I.C.; Riveters - Peter Donaldson & Matthew Wilkins. (*Matthew Wilkins' Father*)



06/08/2010 - Heating rivet and angle support to insert rivet (*Matthew Wilkins' Father*)



06/08/2010 - Riveting! (*Matthew Wilkins' Father*)

The right side of the frame has been riveted and front step, frame angles and rear steps are complete. Work was stopped on the left side because the lack of space caused by the racking raised H&S concerns over safe access and fire.



06/08/2010 - Front step riveted in place on buffer beam.



06/08/2010 - Frame angle fully riveted.



06/08/2010 - Riveted frame angle fixed to frames.



06/08/2010 - H44 Hanger brackets, derusted and primed.

H44 hanger brackets from 5227 at Barry, derusted, cleaned and primed, ready for 'action'.

Modification of the link hanger brackets has commenced - method statement and material is available to complete both the bracket and short links to Lot 354 specification.

Following the exertions and good progress of Work Week, things quietened down a little during the rest of the month ... but there is still progress to record.

A second link hanger bracket has been delivered to SPX in Newbury for blast cleaning (re: July report).

Modification of the link hanger blocks is now well in-hand - the pins are complete and bearings on one bracket bored to size.



A selection of parts for the sanding gear were delivered in late August. The parts will be assembled with existing components to facilitate operation of the sanders from the locomotive's cab by the footplate crew.



21/08/2010 - some of the rods and levers as delivered.



The reverser tower steel has been welded to form the box, upon which the reverser screw will be mounted. The box will be mounted on the right hand side of the cab in due course.

21/08/2010 - two views of the reverser tower following welding of the steel components.

Meanwhile, work continues in preparation for the fitting of the cab sides, with the fitting of the under-cab footplating, which will support the cab sides.



21/08/2010 - fitting the under-cab footplating in place - note too the primed sandbox.

On-going machining work includes the axleboxes and right hand rear cylinder cover.

Finalising the stress/material specifications of the steel we propose to use for the outside motion continues in consultation with David Ward G.W.S.'s metallurgy adviser.

## September

Fitting of under-cab footplating progressing. Right hand side adjusted (heated to reduce curvature) and fitted. Angle brackets installed to hold every thing in place below the spectacle plate. Footplate drilled to fit valance. Left hand side progress slower.



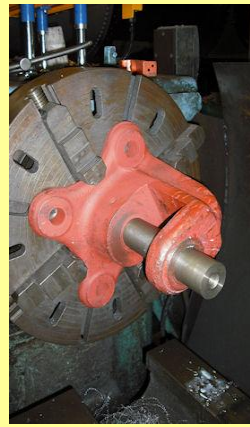
11/09/2010 - right hand side under-cab footplating being fitted.



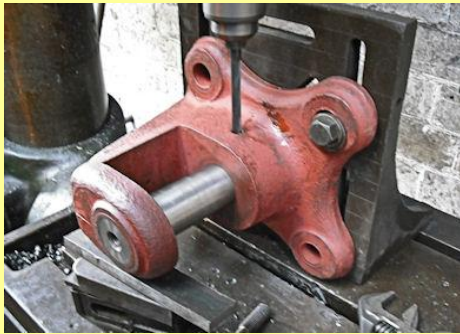
25/09/2010 - right hand side under-cab footplating fitted and bolted to running plate and valance.

The second link hanger bracket has been returned from SPX at Newbury.

Modifications continue - bearings on both brackets have been bored to size and taper pins fitted in preparation for fitting on to frames in October. NB. Gary Davies has manufactured all the taper pins required.



11/09/2010 - Working on the recently returned bracket.



25/09/2010 - Modifications in-hand.



11/09/2010 - Modified link hanger bracket almost ready for fixing to frames.

The weighshaft lever is now a sliding fit on the stub end and awaits the fitting of a key to hold it firmly in place - this key is being manufactured. The spring adjuster has been refurbished. now we need to find or probably make a suitable spring.



25/09/2010 - Weighshaft lever fitted to stub and awaiting fitting of key in slot.

Derusting of other small components continues, including the brackets in the cab for operating the sanding gear.

Manufacture of new piston valve chest drain nipples is in hand.

Plans relating to the new motion parts are advancing. It is hoped that all outstanding issues will be finalised so that an order can be made in advance of the VAT increase scheduled for January 2011.

## October

Work on front sand boxes continues. Boxes need some welding and internal painting with red oxide and bitumen. Cap locators and chains fitted on front sand boxes. Chains treated with Galve Spray to prevent rusting - seems promising. Front sanding rods ready for assembly and fitting to boxes.



02/10/2010 - Restored exterior of front sand boxes.

Piston valve chest drainage system has seen progress. The old nipple and thread remains have been removed from under the cylinder blocks.

Manufacture of replacement drain nipples has been completed.



06/11/2010 - Nipple drain hole on the cylinder casting following removal of rusted remains of nipple. The thread has now been cleaned in readiness for inserting the replacement nipple and drain.



02/10/2010 - Newly manufactured cylinder drain nipples.



02/10/2010 - Refurbished piston valve drain pipe with new nipple attached.

'Solid progress' has been noted in the cab area. The right hand side has been fettled, angles cut to size and the reverser tower fitted into position. Later in the month the reverser screw was fitted, while the reverser reach rod has been added.

Work continues on the left hand side of the cab, but at a slower, but steady rate.



09/10/2010 - Front view of reverser tower.



23/10/2010 - Lifting the reverser screw and pedestal onto the reverser tower.

Restoration and repair of the link hanger brackets has been completed. The brackets and frames were then reamed for the bolts which will attach them to the frames.

By the end of the month the stress and other essential calculations to confirm the suitability of the steel for the new motion were completed. During the month a team restoring a Hall class locomotive asked if they could 'piggy back' our order for motion steel. The economies of scale suggest to do so might yield a saving in cost to the County Project should this happen.



23/10/2010 - Simon Foote presenting the whistle to Richard Croucher, with Mike Cooper and Keith Gilbert of the County Project in attendance. (Frank Dumbleton)

In the course of a small celebration, railway enthusiast Simon Foote presented the Project with a G.W. whistle. It is one of the larger, lower toned brake whistles which all G.W.R. locomotives carried, officially for use during emergencies. This particular whistle came from a Hall class locomotive, but was also standard to the Counties.

The whistle had been given to Graham Hartley in 1965 by a B.R. employee at Oxford engine shed. Simon continued: "Sadly Graham died of a brain tumour in 1994 and the whistle was kindly passed on to me by Graham's widow Pat, and his daughters Emma and Kathryn. I know we will all be very pleased to see the whistle go full circle, so to speak, and return to a GWR loco".

For this donation we are very grateful.



It was also agreed that LaDonna MacDonald would be the Project Group's 'house keeper', i.e. she looks after the organisation of the infrastructure (work area and Pooley). She has made a good start on clearing up the Pooley. In addition, she has responsibility for painting tasks.

Overall, a month of steady, positive progress.

## November

Fitting to the frames of the link hanger brackets marked an auspicious stage in the reconstruction of 1014, namely the first step in reassembling the motion.

The paper including calculations etc. for the new motion steel were passed to Dave Ward, who recommended either two types of steel as being suitable. One of these is currently available and, all being well, will be subject of an order for six billets very shortly. From those, the four coupling and two connecting rocks will be machined.

Following the removal of the corroded valve chest nipples, there was discovered a burnt rivet in one of the drain pipes. This was removed with the help of a magnetic probe. The area having been cleaned externally, requires a few blasts of compressed air to remove any debris still remaining inside.



06/11/2010 - First link hanger bracket bolted (temporarily) to the frames. To complete the task spring washers are required, which are being acquired.



06/11/2010 - Removing the errant rivet.



06/11/2010 - Newly manufactured larger nipples for fixing the drain pipe to the smaller nipples fixed into the piston valve chest.

All sand boxes have had red oxide applied to the interiors.

In the cab, the reverser gear and reach rod have been joined to the weighshaft and the operation checked. The reach rod, from 4942, is incorrect for Lot 354 and will need to be modified to ensure it operates fully.



06/11/2010 - Reverser assemblage on footplate.



06/11/2010 - It works!! Testing the reverser linkage.



06/11/2010 - Oil keeps trial fitted to axle box bearings.

In the meantime, work has progressed quietly with the bogie, notably ensuring the correct fit of the axle boxes. To date adjustments to three out of four of the bearings have been completed and trial fitted to the oil keep boxes. Work continues to prepare the fourth.

When this work is finished reassembly of the bogie can proceed in readiness for the arrival of the driving wheels (due imminently) and production of a rolling chassis.

For the remainder of November Mike Cooper was 'under the doctor' and thus unable to be present at Didcot (or Twickenham!). Despite this, the team regulars continued with the tasks outlined previously.

## December

For the first time work days were cancelled because of the weather. 4 December was considered too cold for work to be carried out safely, so was cancelled. 18 December saw Didcot and surrounding parts being hit by snow. When the webmaster arrived at about 11.25 there was approximately 4 - 6 inches of snow on the ground and it was still snowing! Unfortunately, for the webmaster, the few who managed to journey through to Didcot, sensibly abandoned work for the day at 10.30. As a result, the County Set's Christmas 'bash' (and annual team photo) in conjunction with the 4079 team was also postponed.

The webmaster would like to express his respect for the crew of 3738 and the others who were working to provide a 'Thomas the Tank Engine' day for those members of the general public who also travelled to Didcot - it was not a day for the faint hearted!

But December did have its highlight. On 16 December, Mike Cooper went to Somers' Forge in Halesowen to witness the forging of 1014's outside motion - coupling and connecting rods.



16/12/2010 - Coupling rod billet being lifted from furnace.



16/12/2010 - Ingot being carried to press.



16/12/2010 - Ingot in process of being pressed into basic shape.



16/12/2010 - Ingot formed as a rear coupling rod.

Thus the year ended on a very positive note, despite the weather. Confirmation that the dimensions are suitable for machining is awaited. Heat treatment will continue before the rods are sent for machining. It is possible that there might be sufficient spare material for the production of extension and eccentric rods.

And finally. Mike Cooper's annual review of progress achieved in 2010:

We are now at the end of our third year working on the County Project, which has settled into the slow but progressive movement forward of any long-term restoration. Luckily, we have assembled an excellent, durable and multi-skilled project team, morale is good and our results tangible.

Work-wise, some major landmarks were accomplished but a major one was not achieved. Regrettably, our wheels did not appear from Rileys, despite being promised for Easter 2010 and being continually chased by the contract manager, Dennis Howells. The delay has major implications for the project as, without our wheels, we cannot progress the six main axleboxes and from experience on the four bogie axleboxes, we know how long they can take to complete. Another task, which took an age to confirm, was our outside motion. Delays beset our paper on water jetting, which proposed to follow the Brighton Atlantic route. Value for money and risk assessments showed this method of producing the motion was unlikely to be cheaper and potentially held more project risk. However, from every black cloud there appears a silver lining and, following the approval of our motion steel and stress calculation papers by David Ward our metallurgist, we contracted with Ufone Engineering in Dudley, as our prime-contractor, to produce all our outside motion; this from steel that has an almost identical mechanical performance and chemical composition to GW Specification 19. Following another contact with Don Ashton, an ex-Swindon GW valve gear expert, we have decided that the internal motion will be built to Lot 350 specification; at 225 lb/in<sup>2</sup> cylinder pressure. The performance differential to the Lot 354 specification will be minimal and the use of existing parts/patterns will save considerably on project costs.

Parts from 5227 at Barry, required by both 1014 and 2999 projects, were stripped in July; the 1014 parts are now derusted, with the Stephenson link hangers overhauled and fitted to the frame.

Work Week saw a major effort on riveting the locomotive frame with assistance from the 3650 crew and Peter Gransden.

Now fitted are the cab lower running plates and reverser tower, while the reverser screw has been cleaned and overhauled, with the redesign and conversion of the reach rod to Lot 354 specification in progress. Corrosion damaged drain nipples on the valve chest drains were removed, the location holes rethreaded and new nipples manufactured. Also manufactured was a new rear cylinder cover, which is currently being machined, plus we have been gifted a whistle and a duplex gauge.

Our Pooley van is now an excellent project base with its own caretaker/store person, who has it organised and tidy, and our ISO is an Aladdin's cave of completed parts. Our Chairman continues to locate backers for the project and his various appeals continue to yield a satisfactory financial return. Publicity-wise, we now aim to have copy for the preservation railway press every month and our website continues to be very popular.

Project wise, all of the above is very positive. We have made good progress during 2010 and I am optimistic that we can build on this for 2011 with some more significant achievements.