

THE MIKADO MESSENGER



2007 PRINCE OF WALES
Building Britain's Most Powerful Steam Locomotive



Ian Matthews sanding the filler, on the tender tank, before it is painted - A15LT

Welcome to edition No. 66 of *The Mikado Messenger*, our monthly eNewsletter which aims to provide a regular progress update on the construction of new Gresley class No. 2007 *Prince of Wales*.

Thanks to our supporters' continued generosity, over £3.5m has now been donated or pledged - this equates to over **70% of the required £5m**.

This month see the launch of a brand new club - The Pony (Truck) Club - please see below for more information.

Stephenson Engineering Ltd have sent us a fabulous video of the CNC machining programme that will be carried out on the coupling rods - it can be found in the Motion Update section, below.

We are following Government guidelines with regards to the coronavirus, and whilst our office-based staff are now working from home, our workshop staff are continuing to work at Darlington Locomotive Works where they are taking all necessary precautions. However, as many of our supporters and volunteers are from vulnerable groups, the Works is currently closed to non-essential staff. In addition, Nene Valley Railway have cancelled all their events until the end of May 2020 so this means we can no longer hold the P2 Roadshow on Saturday 23rd May 2020 and the Supporters' and Tornado Team

day on Sunday 24th May 2020. We are sorry to have to make these changes. We hope you understand that the circumstances are beyond our control and the restrictions are very necessary at this challenging time.

As a small charity we value your continued support and hope that you will be able to spend time and travel behind *Tornado*, and visit DLW to view our progress with *Prince of Wales*, in the not too distant future. We will of course be reviewing all our activities on a frequent basis to protect everyone involved with the Trust and to secure our long-term future. Please keep an eye on our website and Facebook pages for updates or call 01325 460163 or email enquiries@a1steam.co.uk if you have any questions.

FUNDRAISING

A P2 for the price of a pint of beer a week: around 930 supporters have signed up as Covenantors for No. 2007 *Prince of Wales*, from as little at £2.50 per week, and are now kindly donating over £205,000 annually including Gift Aid. We aim to reach 1,000 regular donors by the 2020 convention in September. If you haven't yet signed up as a Covenantor we would encourage you to get on-board. You can find more information [here](#).

The Motion Club has now welcomed 162 members, with only 13 places remaining of our 175 members target. You can find more information about The Motion Club [here](#) - help us to fund the manufacture of No. 2007's motion!

The Boiler Club has hit the 189 members mark, leaving just 111 spaces available. As we have now placed our order for the boiler, we would urge those who haven't yet contributed towards the purchase of No. 2007 *Prince of Wales*' boiler to join us. This is the single most expensive component on the locomotive and is due to be delivered to Darlington Locomotive Works (DLW) in 2021. More information about The Boiler Club can be found [here](#).

The Tender Club, is filling up with 65 places already taken. In order to keep on schedule to complete No. 2007 within three years, we need to complete the manufacture of the tender frames. Our target for The Tender Club is 250 members, contributing £1,500, so if you would love to contribute towards the tender more information can be found [here](#).

Our brand new club, **The Pony (Truck) Club** has already welcomed seven members, so there are only 13 places remaining of our 20 members target. You can find more information about The Pony (Truck) Club [here](#) - help us to fund the manufacture of No. 2007's pony truck.

You can sponsor No. 2007 *Prince of Wales* components from as little as £25 ranging up to £15,000! The **Dedicated Donations** scheme has already raised over £400,000. If you would like to sponsor a component, please email dedicated.donations@p2steam.com, detailing the amount you would like to donate and/or if you had a specific part of the engine in mind, we will then send you some component recommendations to suit your donation.

To-date, almost £2.5m has been spent, almost £3.0m raised and almost £3.7m pledged of the required £5m to complete No. 2007 *Prince of Wales* within the next three years.

ENGINE FRAMES UPDATE



A Cartazzi spring guide trial fitted to the frame; an outside motion bracket fitted to the frame - A1SLT

Summary: engine's frames erected; all major frame stays, brackets, horn blocks, axle boxes & buffers cast and fitted using around 1,000 driven bolts.

Progress update: the coupled and pony truck wheelsets have been removed from the frame which has enabled the outside motion brackets to be permanently fitted to the frame along with the leading boiler support using driven bolts and Philidas self locking nuts; the Cartazzi spring guides have been trial fitted to the frame to enable the gaps between them and the hornguides to be measured prior to having manganese steel wear plates welded on.

Next steps: fitting the final bolts to attach the outside motion brackets to the frame; the Cartazzi spring guides will be sent away to have their 11-14% manganese steel liner plates welded on.

Fundraising: The Founders Club was established in September 2013 to give the project a racing start and get it to the point of erecting the engine's frames with a target of raising £100,000 plus Gift Aid from 100 supporters each donating £1,000. The Founders Club closed in July 2014 having attracted 360 members and raised around £450,000.

PONY TRUCK UPDATE



Checking the pony truck cannonbox end float - A1SLT

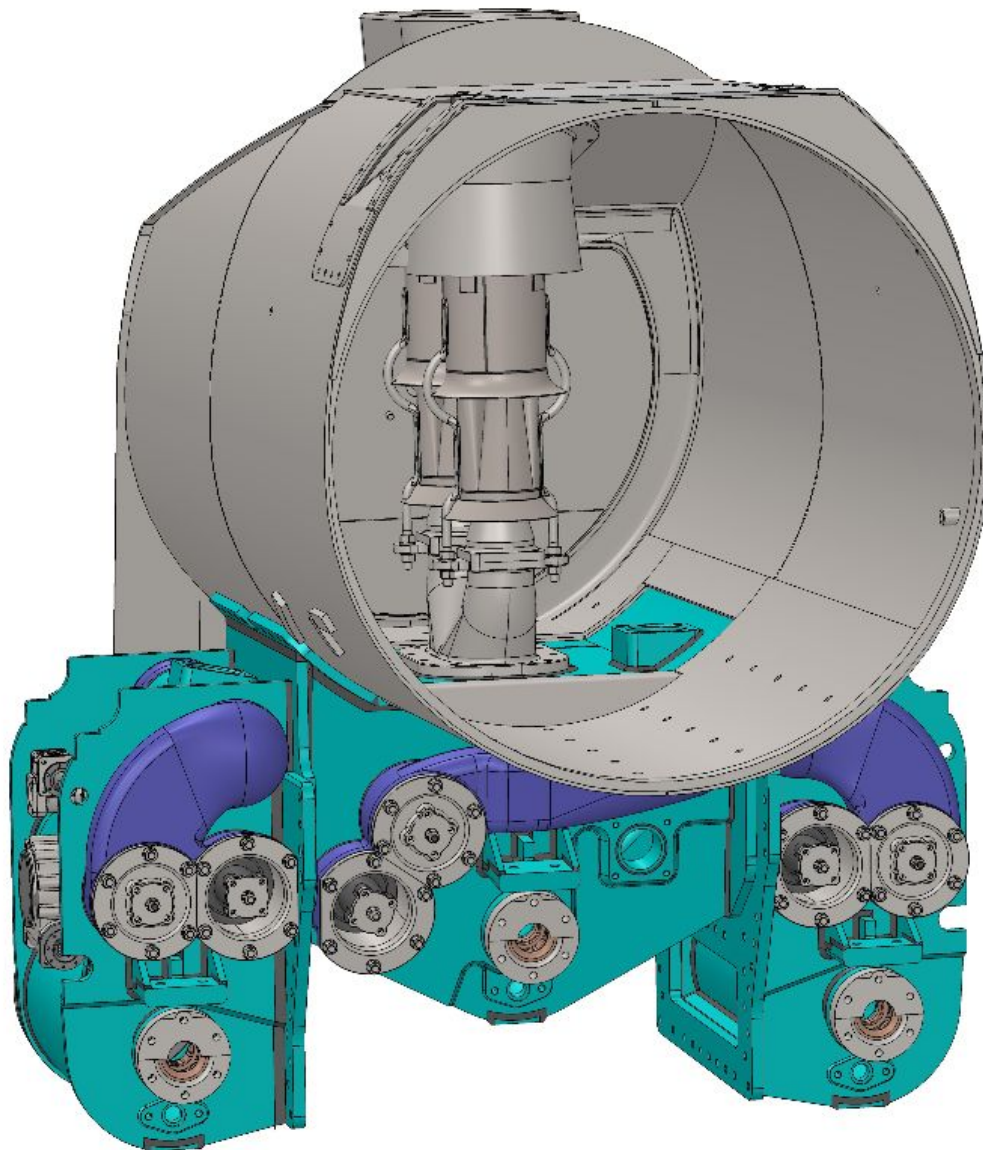
Summary: redesign of the pony truck, using side control springs, has been completed; order for pony truck frame fabrication has been placed with North View Engineering Solutions (NVES) in Darlington; the pony truck wheelset and cannonbox have been delivered.

Progress update: NVES has made further progress with the pony truck frame; the pony truck cannon box has been trial fitted to the wheelset with the dummy adjustment rings fitted; Daniela has been measuring the end float of the cannon box on the wheelset from which calculations will be done to enable the permanent adjustment rings to be machined to the correct thicknesses.

Next steps: completion of fabrication of pony truck components, stress relieving, grit blasting and priming followed by machining; manufacture at DLW of pony truck spring bolts, final machining of cannonbox adjustment rings and assembly of cannonbox onto axle bearings.

Fundraising: this month we launched a new £20,000 appeal - The Pony (Truck) Club - to fund the construction of the leading pony truck for No. 2007 *Prince of Wales*. We would like to invite 20 supporters to donate £1,000 plus Gift Aid (in up to four payments of £250). This club has got off to quite a canter and seven supporters have already signed up. Please do consider joining The Pony (Truck) Club and help us to reach our target in line with the frame's delivery to DLW. For further information click [here](#).

CYLINDERS UPDATE



An unusual view of the cylinder block assembly with smokebox and Kylchap cowl - *David Elliott/A1SLT*

Summary: design studies into cylinder block manufacture and selection of valve gear complete; 3D CAD design of the cylinder block and valve gear substantially complete; further progress has been made in applying the weld details to the cylinder block inside exhaust passages with particular attention being paid to the order of fabrication to ensure that all welds can be completed properly.

Progress update: the updated cylinder block model has had its ancillary components added and the

smokebox model modified to reflect necessary changes that have been incorporated into the cylinder block in the area of the smokebox saddle.

Next steps: creation of detailed 2D manufacturing drawings for the cylinder block.

Fundraising: The Cylinder Club was founded in October 2017 to fund the redesign and manufacture of the cylinder block with a target of raising £100,000 plus Gift Aid from 100 supporters each donating £1,000. The Cylinder Club closed in March 2018 having achieved its target.

BOILER UPDATE



Safety valve seating blocks and outer firebox back plate pressings - *Christopher Wörfel, DBM/A1SLT*

Summary: boiler design study completed; forged foundation ring corners manufactured & machined; regulator castings delivered; superheater header cast & machined; boiler cladding manufactured, trial fitted to frames and now in storage; boiler order placed with DB Meiningen (DBM) for delivery in 2021; foundation ring forgings and regulator castings dispatched to DBM; the minor re-design of the banjo dome to suit the P2 cladding by has been completed by DBM; good progress has been made with producing two sets of superheater elements and procuring basic components which are not affected by any design changes including the firebox tube plate and firehole door pressings.

Progress update: in parallel with the approval of the updated design by their notified body, TÜV Sud, DBM have been busy manufacturing and procuring new parts for the new P2 boiler and the spare boiler for both A1 and P2. These include the safety valve seating blocks which have been CNC (Computer Numerical Control) machined from solid, pressing of the inner and outer firebox back plates, production of all the flanges for backhead fittings and the blow down valves, production of the machined rings that the front tube plates are welded into and machining the castings for the regulator supplied from the UK for the regulators. In the meantime, the approved design has been sent to the UK certification bodies for information and comment.

Next steps: rolling of the boiler barrel plates and starting the assembly of the boiler and firebox shells.

Fundraising: The Boiler Club was founded in October 2017 to fund the design modification and manufacture of the boiler with a target of raising £600,000, plus Gift Aid, from 300 supporters each donating £2,000 in up to 40 payments of £50. As of today, The Boiler Club has attracted 189 members who have generously donated over £470,000. For further information click [here](#) - we must reach our 300 members target in 2021.

WHEELSETS UPDATE



Ian Matthews grinding off the balance weight rivets on the intermediate wheelset - A1SLT

Summary: study into ride & suspension completed using Vampire[®]; software; crank axle re-designed to comply with modern standards, approved and manufactured; all engine wheelsets complete and trial-fitted to engine; a full drawing set for the pony truck frame has been produced and checked.

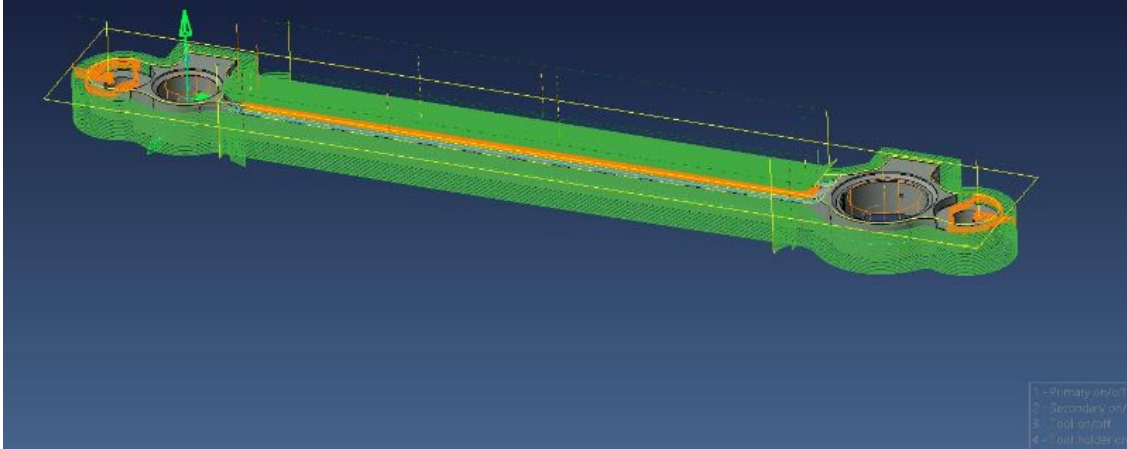
Progress update: having reviewed the options for removing excess metal from the coupled wheel cannon boxes, it has been decided to do the work “in house” at DLW.

Next steps: manufacture of some simple fixtures to assist in machining off surplus material from the coupled cannon boxes.

Fundraising: The Mikado Club was founded in March 2016 to wheel the engine with an initial target of raising £200,000, plus Gift Aid, from 160 supporters each donating £1,000. This was extended in May 2017 (to also wheel the tender) to 200 supporters raising £250,000 plus Gift Aid. The Mikado Club closed in May 2018 having achieved its target.

MOTION UPDATE

Description : Project1
Author : gary chamberlain
Tool-sets : STEPHENSONS STANDARD MACHINE CRB
Reference piece : Piece (0.0060)
Reference stock : Stock (0.0060)
Reference obstacles : None
Piece material : S355 STEEL
Activate WPL : 0
WPL name :



CNC programme for machining the LH intermediate driving coupling rod - *Stephenson Engineering Ltd/ A1SLT*

Summary: all heavy motion ordered from order with Stephenson Engineering Ltd of Atherton, Manchester; work started with first delivery due in autumn; updated poppet valve gear design almost complete with first components in manufacture.

Progress update: Covid-19 has slowed the process of machining, however a Stephenson Engineering Ltd production engineer has been developing the CNC programme for machining the coupling rods, from his home. A video of the programme can be seen [here](#).

Next steps: machining the middle and rear coupling rods and forging the leading coupling rods.

Fundraising: The Motion Club was founded in May 2018 to fund forging and machining of the heavy motion, with a target of raising over £210,000 including Gift Aid, from 175 supporters each donating £1,000 in up to eight payments of £125. As of today, The Motion Club has attracted 162 members who have generously donated over £200,000. For further information on how to become a member and help us to reach our target before the convention click [here](#).

TENDER UPDATE



The tender tank resting on the accommodation bogies whilst it is being prepared for painting -
A1SLT

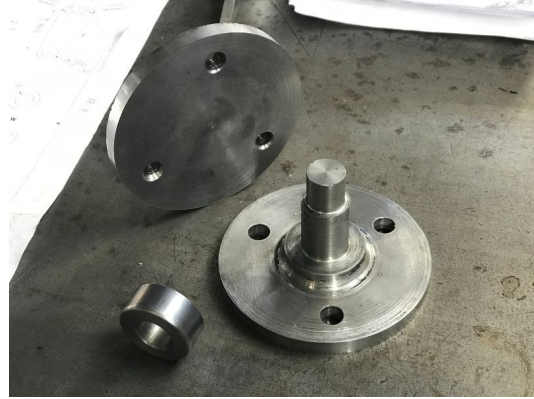
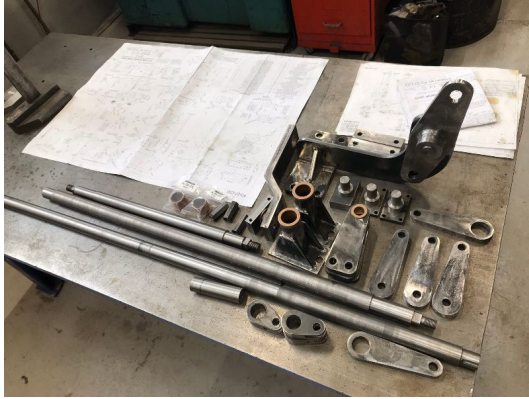
Summary: axlebox and other tender castings produced by William Cook Cast Products; frames being assembled by ID Howitt; tank construction complete; tender wheelsets are now at DLW, having been assembled South Devon Railway Engineering and painted by Ian Matthews.

Progress update: the tender tank was delivered to DLW in March (video available [here](#)); Ian Matthews has made good progress with filling and starting to prime the tank's exterior surface; Ian Howitt continues to make progress with fitting hornblocks to the frames, which are now over two-thirds complete.

Next steps: continuation of preparing and painting the tender tank, fitting handrails to the tank, making and fitting pockets to the tender tank back sheet to fit combined tail/marker lights.

Fundraising: The Tender Club was launched in April 2019 to fund the construction the tender, with a target of raising £450,000, including Gift Aid, from 250 supporters each donating £1,500 in up to eight payments of £125. As of today, The Tender Club has already attracted 65 members who have generously donated over £120,000. For further information on how to become a member click [here](#).

MISCELLANEOUS FITTINGS



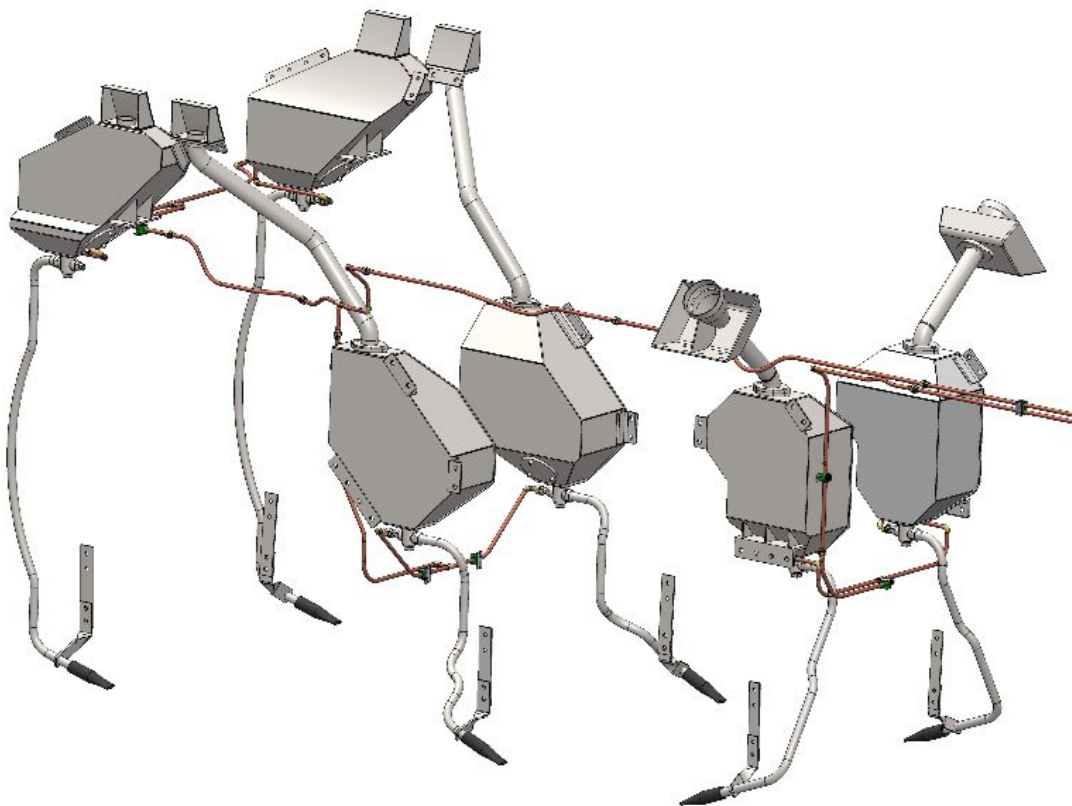
Cylinder drain cock linkage and rod ends - *Bob Hughes/A1SLT*

Running Gear

Summary: following detailed designs by Alan Parkin, DLW continues to make details for the cylinder drain cock gear.

Progress update: most parts and sub-assemblies complete and ready to fit to engine.

Next steps: fitting the operating lever in the cab and fitting brackets to the running plate and frames.



Sand boxes and pipework - *Alan Parkin/A1SLT*

Pipework

Summary: the design is well advanced and installation under way.

Progress update: Alan Parkin has completed 3D models of the sander pipework.

Next steps: continuation of design of pipework details, ordering of long lead items.



The essential services power supply under test on the bench - *Rob Morland/A1SLT*

Electricals

Summary: significant progress on design and manufacture of electrical system; belt driven tender alternator nearing completion, turbine wheel for steam turbo alternator manufactured; essential services power supply design under evaluation.

Progress update: the new shore power supply and load bank have passed their soak tests and are now ready for service; the essential services I/O panel and battery box electronics have been prototyped on the bench at Darlington Works South in Melbourn, thus allowing an investigation of the optimum specifications and values for circuit protection components, including battery fuses and miniature circuit breakers.

Next steps: work will continue on detailed design and bench testing of the essential services I/O panel and battery box electronics, ensuring that all combinations of operating conditions are explored to fully stress and validate the design.

Fundraising

The Dedicated Donations scheme was founded to fund numerous components including the non-ferrous fittings and has raised over £400,000 to-date with new parts being frequently made available for sponsorship. For further information, click [here](#).



Progress on No. 2007 *Prince of Wales* - Mandy Grant/A1SLT

TRAVEL WITH *TORNADO*



No. 60163 *Tornado* passing Beeston Castle, December 2019 - John Halliwell/A1SLT

Keeping No. 60163 *Tornado* in tip-top working order is an expensive business as we are constantly being reminded! The profit from operating our programme of main line tours, *Tornado's* hire fees from heritage railways and working for other rail tour promoters, normally covers her day-to-day and year-to-year maintenance costs. However, not only do they do not at present generate a sufficient surplus to fund her five and ten year overhauls, conservatively estimated at around £500,000 each, with *Tornado* in hibernation at the National Railway Museum she isn't able to generate these fees or be the greatest advert for becoming an 'A1 for the price of a pint of beer' (£2.50 per week) Covenantor. It is, therefore, vital for us to continue to maintain (and hopefully grow) *Tornado's* on-going Covenant

income. If you aren't already an A1 Covenantor please consider coming on-board and perhaps, if you are an existing Covenantor, recruit a friend. Information about becoming becoming an A1 Covenantor can be found [here](#).

We are reviewing the schedule for the locomotive and will keep the website updated as best we can as it looks like it may be the summer before we are back running our tours. Bookings for our tours in the summer are **still open** and can be booked through our [website](#) or by calling 01325 488215.



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