30th Anniversary Edition

60163 TORNADO
New Steam for the Main Line

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

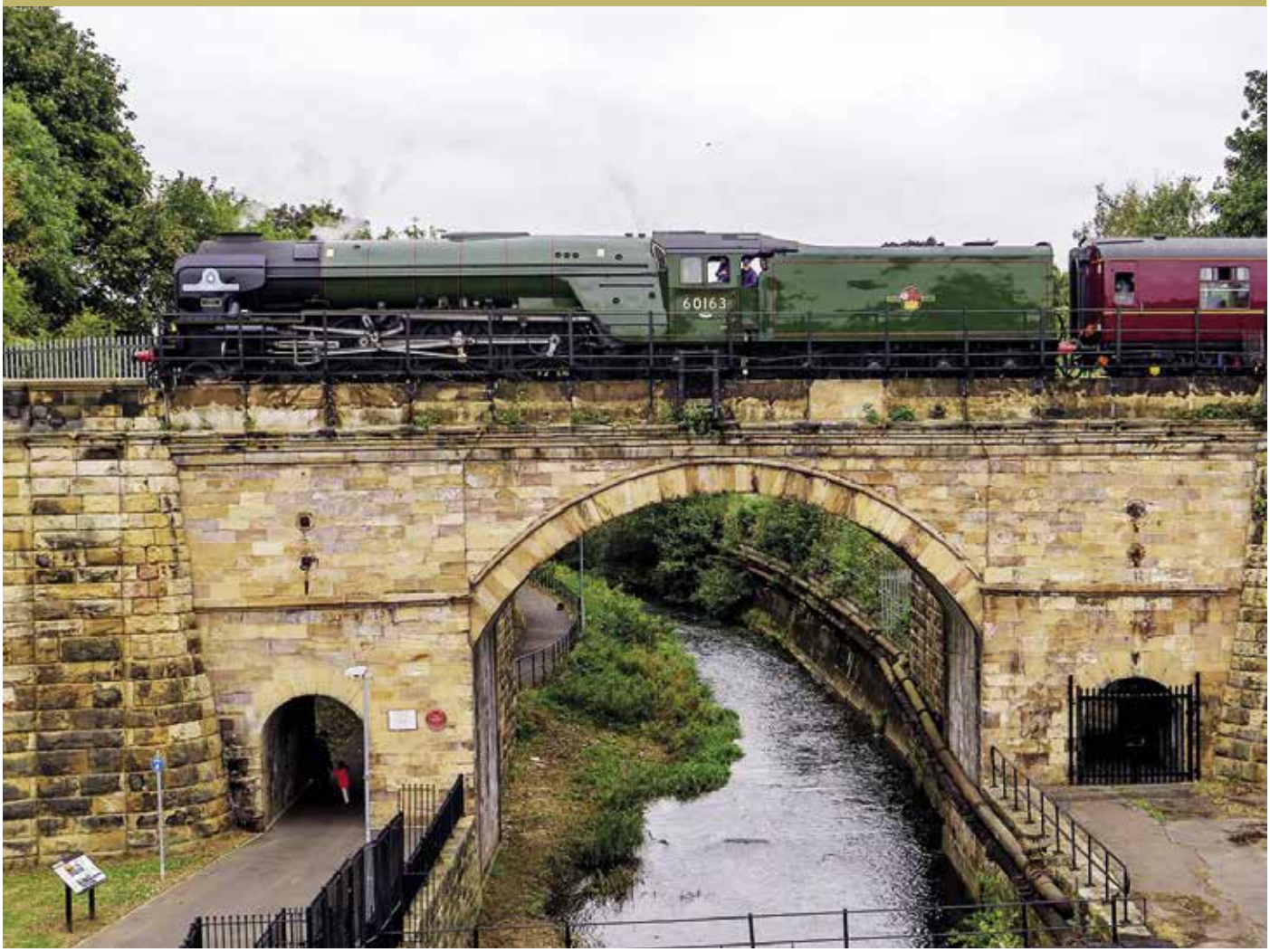
3403 ANON
Recreating Gresley's last design

THE COMMUNICATION CORD

No. 59 Autumn 2020

***Tornado* straddles the original Stockton & Darlington Railway Skerne Bridge in Darlington, working a trip to launch the countdown to 'SDR 200' in 2025.**

Charlotte Graham



COUNTDOWN TO 'SDR 200' *by Graham Langer*

On 27th September, No. 60163 operated a private charter for members of Darlington Borough Council along what is left of the original Stockton & Darlington route, pausing for a photoshoot on the newly renovated Skerne Bridge, close to *Tornado's* birthplace in Hopetown. The trip marked the 195th Anniversary of the S&D and fired the starting gun for the countdown to the bi-centenary celebrations in five years' time. The A1 Steam Locomotive Trust, *Tornado*, *Prince of Wales* and Darlington Locomotive Works 2 will all be at the centre of events in the town. TCC

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EDITORIAL *by Graham Langer*

As we continue to ride the Covid-19 roller-coaster it would be very easy to become despondent at the effect it is having on the country, the economy and, where we are concerned, the heritage railway industry. However, in the midst of all this uncertainty there are a great many things to be thankful for, particularly the help heritage railways have received from central government and the National Lottery as well as the support local councils have provided. One thing the A1 Steam Locomotive Trust has never been short of is optimism! Without this vital ingredient the project to build a new A1 would never have seen the light of day, the team ignoring the nay-sayers who condemned the scheme at the outset, overcoming the phenomenal challenges (both engineering and financial) and succeeding to become the first organisation to build a main line steam locomotive in Britain since 1960.

None of this would have been possible without the extraordinary people who put their faith in the Board and engineers at the Trust, the Covenantors. This year we are celebrating the 30th Anniversary of the founding of this remarkable organisation and it was deeply disappointing that we were unable to meet as usual for the annual Convention, losing that opportunity to catch up with old friends and have a look round No. 2007 *Prince of Wales*, not to mention a jolly good dinner on the Saturday night! We hope as many of you as possible managed to catch the 'virtual' Convention presentations on YouTube, indeed we have had some plaudits for doing this from Covenantors who are usually unable to physically attend the event. The Convention is still available to view on the A1 YouTube channel (use this link https://www.youtube.com/watch?v=newhzKDfIJU&t=178s), indeed, it has now had over 5,000 views! Thank you to all of you who donated your anticipated attendance costs to the Trust afterwards.

In this edition of *The Communication Cord*, David Champion takes a walk down memory lane, listing some of the highlights of the last 30 years – I have to confess, reviewing some of these events reminded me of the unparalleled excitement many of us felt at each milestone moment during the building and operation of *Tornado*. For those who have joined the Trust since we completed our A1 it is hard to convey the pleasure to be had from watching *your* locomotive take shape, grow in size and then move under its own power for the first time. This is not some vicarious thrill gained third hand, this is *your* moment and it only happens once with each new locomotive. Help us to fulfil your dream by supporting our Birthday Appeals and breathing life into these superb locomotives. TCC

With Colonel Huw Parker on the footplate it seemed a good opportunity for a member of the Household Cavalry to get more closely acquainted with *Tornado*.... As they say, "If the cap fits...!"

FROM THE CHAIR *by Steve Davies*

If we thought matters relating to Covid-19 might ease then I'm afraid we were in for a rude awakening. The pandemic, and its associated movement and socialising restrictions, has driven a coach and horses through railway heritage operations, with the main line scene affected just as much as the preservation world. We managed to squeeze in two really impressive main line runs with *Tornado* ('The Queen of Scots' and 'The Ticket to Ride') before the Covid restrictions tightened, but then were able pick up some work with our friends at the Railway Touring Company. Unfortunately, their entire November programme has been put on hold and we now wait with bated breath to see if we will be able to return to operations this side of Christmas. I hope so, as we are keen to show off *Tornado's* spectacular new BR Green livery (courtesy of the great team at West Coast Railways) to an even wider audience than that we have so far been able to reach. On that same subject, thank you to those supporters who have written expressing their delight that we have gone down this livery route. Many of you appear to be very, very happy to see the engine as you remember the class in the 1950s and 1960s. I have replied personally to all those who wrote as it is my firm policy that if you take the trouble to write personally then we should afford you the courtesy of a personal reply. *Tornado* is currently stabled at the NRM in York, and I would wish to place on record my sincere gratitude for the way the museum's Director, Judith McNicol, and her team have gone out of their way to support us and generally make Huw Parker's crew feel welcome. We hope to repay the NRM's kindness with an operational visit to York and/or Shildon at some future stage.

Although the main line scene is currently depressed, we nevertheless managed to be the star of the show at a major event on Sunday 27th September to commemorate the 195th anniversary of the opening of the Stockton & Darlington Railway. *Tornado* and the support coach conveyed a socially distanced VIP party from Middlesbrough to Shildon, traversing as much as practical of the original route. The highlight of the proceedings was a photo opportunity on the top of Skerne Bridge (which subsequently made the national press) which had been restored in advance to immaculate condition by our friends at Network Rail. The next stop was North Road station where key officials from Darlington and Stockton Borough Councils jointly marked the start of the five-year countdown to the Bicentenary celebrations. We as a Trust are earmarked to play a major role in SDR 200 (current nomenclature shorthand for the event), not least as we will be occupying brand new premises courtesy of the overall strategic plan for Darlington's new Railway Heritage Quarter. It is of course our intention that both *Tornado* and *Prince of Wales* will feature in a 'Darlington's Own' double act, a very exciting prospect I'm sure you will agree.

Despite the current travel restrictions, a small group of us managed to visit Meiningen to check on progress with the boilers. It will come as no surprise to you that Covid has had an impact on the pace of work over there, and that the first boiler will now be slightly delayed. However, a revised delivery date of early spring next year for the first boiler does not impact on our programme, and the second boiler remains on track for completion in December 2021. Needless to say, Meiningen continues to impress with the sheer scale and quality of its operation. For those who have never been, I would regard a visit to Meiningen to be one of those bucket-list activities all railway heritage aficionados should try and accomplish before heading to the heavenly marshalling yard. It really is a trip back in time. But don't let the traditional heavy engineering atmosphere deceive. Behind the 1950s-era impression lies a sophisticated, modern engineering ethos, backed up with the latest technology and techniques, although one has to have a double take when the framed photograph of Erich Honecker, complete with mini-East German flags, comes into view in the boiler shop!

Although these are challenging times, I am delighted to report solid progress with *Prince of Wales*. The project team is firing on all cylinders (*pun intended? Ed.),* and a major review of our processes is paying dividends in terms of the cohesion of what we are trying to plan and deliver. The pony truck really looks the part, and the machined rods are now arriving at Darlington – we look forward to exciting you with images of some of the rods fitted to the driving wheels, before too long. The next major milestone is to finalise the design of the cylinders and to get the tendering process underway, which we hope to kick-start before Christmas. All this continues to require a considerable flow of finance, and we are most grateful for the way our contributors and supporters continue to dig deep to get this amazing project completed - I can assure you all that your money is being spent wisely. In the last edition of TCC, we announced that Richard Courteney-Harris had become an adviser to the Board on the P2 project. Things move fast at Darlington! I am delighted that Richard has now accepted our invitation to become a Trustee.

Finally, I would make the obvious point that in our 30th anniversary year it was hugely disappointing not to be able to gather for our annual Convention. The ability to get together, the opportunity to hear first-hand about progress and to generally socialise in convivial company is surely the glue that binds us all together. However, the 'virtual' convention went far better than I could have expected, and I hope you all appreciate the time and effort which went into making it happen. No doubt we will be using this medium more often in future. In closing, could I therefore thank you all for continuing to support the Trust, across a broad range of activity. It's not just about building a P2, it's also about keeping *Tornado* flying the flag for the whole organisation, and to that end, Graeme Bunker-James and his team have pulled together a really imaginative tour programme for 2021, including a double-act with *Flying Scotsman* on several trips. Now that is the one to book!!

In conclusion, I believe that a happy family is one that always has something to look forward to. My fellow Trustees and I, and all the team here at the Trust, make it our mission to do just that for the A1 Steam Locomotive Trust family! TCC

2020 CONVENTION *by Graham Langer*

Normally at the end of September our Covenantors would have gathered at an hotel in Darlington for a convivial morning of presentations from the Trustees followed by a tour of Darlington Locomotive Works (DLW) and a 'walk round' No. 2007 *Prince of Wales* with David Elliott. However, these difficult times caused the Trust to re-think how it would be able to do so, the consequence of which was a decision to create a 'virtual' event online by publishing a video on YouTube. Various Trustees recorded pieces to camera which were then stitched together to form a comprehensive presentation by Mandy Grant. We must thank Mandy who worked many hours 'cutting & shutting' the footage to create a remarkable two hour long seminar.

Steve Davies opened the event, standing in front of No. 2007 at Darlington, welcoming our audience and explaining how proceedings would work. Steve paid tribute to the remarkable progress made by the Trust in the last thirty years, reminding us all of the 'raison d'etre' for the Trust, building new locomotives at a time when many of the main line fleet are heading for their eightieth birthdays (or, in the case of *Flying Scotsman*, its centenary!). After reflecting on his reasons for wanting to join the Trust and acknowledging the honour of being appointed its new Chairman, Steve reviewed the challenges facing the Trust, both in trying to operate *Tornado* on the main line this year and the need to continue fund-raising for *Prince of Wales*. Paying tribute to former Trustees he praised the commitment and dedication of those currently keeping the organisation on the rails and forging ahead.

Steve handed over to Huw Parker, Operations Director, for a review of *Tornado's*, albeit somewhat limited, operations since the last Convention. Accompanied by slides from this period Huw's presentation covered tours which included last October's splendid 'Pennine Explorer', 'The Illuminati', *Tornado's* first train to Blackpool, 'The Marches & Severn Express' and the Christmas season which included working a train for Steam Dreams, the first for some years before rounding off the year with a final tour to Edinburgh. No. 60163 then ran to Leeming Bar for routine winter maintenance and repairs to stays and foundation ring as well as inspection and maintenance of the motion, cylinders and valves. A few day's running-in was followed by working service trains on the Wensleydale Railway – then Covid-19 started to cause changes to the plan. *Tornado* moved to the National Railway Museum for storage during the summer

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Steve Davies addresses the convention via video from Darlington Locomotive Works.

before moving to Carnforth with her support coach for a fresh coat of paint for both of them!

Graeme Bunker-James, the Trust's Commercial Director, took over from Huw to focus on future railtours and merchandising. Graeme acknowledged that it had been an extremely challenging year with a constantly shifting calendar of cancelled and revised tours, paying tribute to the office staff who have had to cope with a level of disruption that could never have been anticipated. New marketing initiatives have worked well and further enhancements are planned with better targeted marketing in future. Even when operations resumed this autumn the planned schedule was further upset by the tragic derailment on the Aberdeen route which caused the cancellation of the planned 'Aberdonians'. Looking towards 2021, Graeme was confident that planned winter maintenance this year could be reduced owing to the lack of tours during 2020 and *Tornado* would have a full programme next year starting earlier than usual, in February, including trips to the north of Scotland, the West Country and East Anglia although 'The Aberdonian' will be the core repeat business for the Trust's own railtours. New ventures for 2021 will include Valentine's trips to start the year, a first run to Hull, an 'Aberdonian' starting from Glasgow and two days of operation in September back-to-back with *Flying Scotsman*, allowing passengers to travel with both locomotives in one day. Merchandising has been difficult to say the least but improvements in technology mean that the Trust's volunteers are better armed to lift large sums of money from people on tours!

Graeme handed over to Mark Allatt, Head of PR, Marketing and Fundraising. Mark started by thanking the team at the Trust that supports his efforts before reviewing how this side of the organisation works. Many planned events had to be cancelled as the pandemic spread, losing the Trust valuable opportunities to spread the word and raise additional funds, these included a planned Spring Day Out with *Tornado*, DLW open days and numerous roadshows as well as the chance to visit preserved lines and other groups for lectures. Mark then went on to review the methods we employ to raise funds, emphasising the importance of the covenant as the bedrock of our fundraising, The Tornado Team as a method of attracting younger supporters and the legacy programme to ensure the long-term future of the locomotive. Mark also trailed the forthcoming Dedicated Donations scheme for No. 60163, to be launched in 2021. After exhorting our supporters to travel behind *Tornado*, Mark moved on to cover the P2 fundraising programme. The 930 Covenantors already signed up are worth £1.5m to the Trust and this remains the most important method of core funding – we still need more people to sign up! The various clubs have proved their worth, raising considerable funds for specific areas of the construction, The Boiler Club is doing well, The Motion Club is now full and The Tender Club is filling up. Mark was also pleased to say that The Pony (Truck) Club was rapidly over-subscribed and newly launched Turbogen Club had got off to a good start. The latest addition to the 'Club' schemes is the P2 Support Coach appeal. After acknowledging that we need to keep an open mind about additional funding streams which might include loans or grants Mark wrapped by thanking those who continued to support the Trust before handing over to Chris Walker to give an overview of the Trust's current financial position.

Chris noted that the year 2018/19 had been a tough one following 'The Ebor Flyer' failure although things had been improving following *Tornado's* return to traffic. Paul Bruce expanded on the requirement for extra staff at DLW, some on the railtours side, others on the engineering staff and he congratulated Daniela Filová on gaining her HNC recently. Mark Grant then gave an update on the voluntary element of the Trust, thanking new volunteers who had responded to his appeal for more at last year's Convention but expressing his disappointment that insufficient work had been available to use many of them since.

Conducting what is probably the Convention's 'Magnum Opus' David Elliott now presented an overview of the engineering side of the construction of *Prince of Wales*. Starting with a presentation of slides, the first covering the members of the engineering department and their various roles in the Trust and the return of volunteers to active participation at DLW followed by others dealing with the massive Project Plan and adjustments that have been required to it, David elaborating on the way in which this has had to change with time. Alas, David had to report that Covid-19 has had a significant effect on construction, particularly with the boiler and motion, however, there is plenty of good news to report, the purchase of a useful pair of accommodation bogies (on which the tender tank now resides), the completion of the afore-mentioned tender tank and the tender wheelsets, steady progress on the tender frames, the ongoing assembly of the two new boilers at Meiningen, the fitting of components to the locomotive frames and the design of the sanding gear and the design and assembly of the alternator by Alan Parkin.

David was able to show some beautiful CADs of the cylinder block and explain in detail the reasons for, and realisation of, the re-arrangement of the valves within the block and the consequent adoption of a rocking shaft to drive the poppet valves. These slides were followed by some video of the pony truck in assembly. David then gave an overview of the staffing arrangements before handing over to Rob Morland to discuss the design of the electrical systems for the new P2 including a new design of lamp, new shore supply arrangements to provide up to 2000W from voltages between 85 and 305VAC, quite a challenge! The design of the control panel electronics is now complete and the wiring looms mapped, in addition the P2 requires a different design of lamp to Tornado, one that incorporates a combined LED head/tail/marker luminaire. Rob then handed back to David Elliott for a video 'walk round' the new locomotive. David highlighted the extensive use of stainless steel, the need to reduce the width of the cab steps on both *Tornado* and *Prince of Wales* for gauging reasons, the lessons learned with No. 60163 which led to a more sophisticated method of removing the cab (when required) and a detailed look at the method used to counter-sink some inaccessible bolt holes (including video footage of the process). David paid tribute to the volunteers, especially the one who has created a near mirror-finish on some of the 'bare metal' components such as the smokebox door

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David Elliott expounds to camera.

details and front coupling hook. Using video taken at the time, David included the arrival of the tender tank at DLW and its positioning on the new accommodation bogies before taking a look at some of the detail parts such as the regulator stuffing box components (Ed Laxton was filmed machining the glands for these) and the regulator cross-shafts. At this point Daniela stepped in to enthuse about the new Bridgeport milling machine and some of its output before David resumed his piece to camera, dealing with the need to produce our own 12" brake cylinders in future and the machining of the oversized coupled axle cannon box, Daniela then covered the use of job cards and the production of stainless steel electrical junction boxes, David showing the joint rings that will replace screwed joins on the electrical conduit and Ian Matthews forming some of the complex shapes for the latter. Viewers were then treated to a preview of the first machined coupling rods to have been delivered to DLW and the revealing of a recently donated turbo-generator which had come via the North Eastern Locomotive Preservation Group, amazingly this worked straight away, despite many years of storage! Daniela was then shown examining the Finite Element Analysis of the pony truck before David wrapped up the walk round.

Steve Davies then discussed the decision to review the decisions surrounding 90mph running for *Tornado* and although it has not been ruled out the ability to run the locomotive at the higher speed will be reserved for very special occasions. Steve also covered the plan to shelve the acquisition of our own train, in large part because of changes in regulations on Network Rail and the availability to the Trust of a greater pool of main line certified stock. Turning to the new V4, No. 3403, Steve confirmed that a name had been chosen which would tie the Trust to the army (*what a surprise! Ed.*) following the link between *Tornado* and the Royal Air Force and *Prince of Wales* with the Royal Navy. The news on Darlington Locomotive Works No.2 is encouraging, No. 2007 will be finished in Hopetown but No. 3403 will be erected in the new facility, the completion of the P2 being nicely timed for 'Stockton & Darlington 200' in 2025. Steve closed the Convention by enthusing about the progress the Trust had made to date and appealing for a push for further donations to speed the P2 project to the finish line. The video presentation closed with some evocative footage of *Tornado* leaving Darlington on the return leg of 'The Ticket to Ride' in the dark. TCC

30 YEARS ON *by David Champion*

David Champion

Where it all started. October 1963, No. 60156 *Great Central* at old platform 8 (now platform 2) at Newcastle Central. This photo was one of several of my 60's pics that I used to keep me focussed on the task in hand during the 90's. Taken with a Kodak Brownie 127 fixed lens camera that gave you eight exposures to the film - you took them carefully! When we ran into that same platform at Newcastle on that first York-Newcastle trip in 2009, we replicated that scene.

To me it feels like 55 years.

As a naive teenager in the 60's I thought it was only logical that one day, the rather vague '*they*' would start to build brand new steam locomotives to keep the emerging heritage railways going as their stock of locomotives built in the Victorian and early 20th Century eras eventually became too fragile or 'precious' to use in daily service. So I waited for the 'obvious' thing to happen, and waited….. and waited. In the 70's Mike Satow built the Stephenson 'Locomotion' replica, and the small Rainhill locos, but in the 80's nobody seemed to patch together the progress in making replacement bits and pieces for the large heritage fleet, and see that most of the essential components for a steam engine were now being produced, but as parts of separate restorations. All it was needed was for '*them*' to put all the processes together and come up with a brand-new engine. But it didn't happen. '*They*' didn't seem to think it was obvious, in fact '*they*' seemed to think it was impossible.

It may well not have happened if Mike Wilson had not sent in the letter to 'Steam Railway News' proposing the building of an A1. That lit the blue touch paper for me. A quick call to my brother Phil, to tell him the good news, and then a call straight away to Mike. The excitement was that Mike had put together two great USP's, not only the idea of a brand new main line express engine, but a Peppercorn A1 pacific – the ones that got away, the ones we loved and worshipped alongside the other luckier East Coast thoroughbreds, the A4s, the A3s and A2s. The A1 was the missing link. I learned from Mike that things were at a very formative stage, there were thoughts of a traditional railway enthusiast body, raising money by selling merchandise such as pens and pencils and membership for £5. Working in the world of finance, I counselled Mike that the huge sums of money were beyond the scope of that kind of fund raising. Mike replied that as I was in business, could I put a plan together? "Sure Mike!" then a little afterthought when I put the phone down, "I wonder how you do that then?"

The tale has often been told of the several months I spent musing this way or that, culminating one summer's evening after dinner at home in Northumberland, while toying with the tail end of a bottle of particularly good red wine in my study the ideas firmed up thick and fast, and after 20 minutes the A1 project plan was down on a sheet of A4 paper (both sides - mind you). These days I smile a little ruefully when hearing some of the folklore variations of this event. But that's how it was. From that night onwards I had an unshakeable faith that, although there was a mountain to climb and many obstacles would present themselves in the years ahead, one day we would see a brand new Peppercorn A1, and we would be the ones that built it.

The organisational plan that I jotted down was devised to cover not only how to get our hands on the vast sums of money required, but how the organisation should be constituted and run – that it would be managed by professionals in the appropriate fields, Finance, Marketing, Engineering, Law, who would provide their services free, that it would be a Charitable Trust able to claim Gift Aid (thereby effectively getting the Taxman to contribute around a quarter of the cost). And the doubters in the Steam Movement would gradually be converted as it was demonstrated that this was a centre of excellence in both Engineering and Management skills, fully up to the challenge.

The initial team was assembled from a few of my business clients, Ian Storey, renowned Railway Engineer and owner of the unique Stephenson valve gear Black 5, and Stuart Palmer, a Newcastle Business Lawyer. This, with Mike, made up the original 'gang of four' with my brother Phil organising newsletters.

My plan was to announce that an A1 was indeed to be built, but to keep the details of '*how*' secret for the several months leading up to the formal launch at York on November 17th 1990. I shamelessly did this to build up a sense of anticipation and excitement.

An early A1SLT board meeting with a very young David Elliott and David Champion in the chair.

The York launch is well documented, together with the following London and Edinburgh roadshows. Great fortune emanated from these presentations with the key additions to the Management team of David Elliott, Chartered Mechanical Engineer, Wreford Voge, a Chartered Accountant in a national practice and an expert on the tax structure of charities, the late Barry Wilson, Vice President of Bank of America in Jersey, the young Mark Allatt, even then a rising star in the world of Commercial Marketing. I now had the team and Peter Townend, former King's Cross Shedmaster, made himself available for technical advice. Just how lucky can you get! To add to that great fortune, Chris Milner and Peter Kelly of *Railway Magazine* were early converts, followed later by our old friend Nigel Harris, then editor of *Steam Railway*. So this was the Trust as we moved through 1991 and the formidable Management Team set about the long task over the next few years of building the organisation, preparing the build sequence and creating an income stream able to cope with this mammoth task. At this point most people still thought we were barking mad. In those early years there were many people asking impatiently when we were going to start cutting metal, to which I would respond that we would do so only when we were ready. So many times, even these days, have we seen a new group announce a grand plan, grandly cut a few pieces of metal thinking they are building an engine only to quickly run out of money and stall, perhaps only then realising the scale of the task.

So, the most hectic, exciting adrenalin-fuelled decade for me unfolded. There were many challenges but golden highlights abounded.

There were many outside pressures. Some would have us build a locomotive of - in their judgement – radically different and more advanced internal design, dressed up only on the outside to look like an A1. This of course would have been fraudulent. Others wished us to abandon our tight focus on building the vital income stream using regular monthly Covenants, and supplement it with merchandise sales of items such as pens and pencils and sending out collecting buckets for small change. At one point Mark Allatt and I mused that the size of the financial task in hand was such was that we would need to sell a commemorative pencil to every man woman and child in the country – and anyway, we were no good at selling pencils!

But ah! The golden highlights….

* David Elliot spreading out the enormously long build plan on the board table at my office in 1992, and everyone there slowly coming to the realisation that this wasn't just a plan to build an A1, it was a plan to that could be used to build other classes too……...hmm.

* Discovering that Arthur Peppercorn's bride was still hale and hearty and thrilled by our quest. Dorothy Mather of course, became President of the Trust and became a beautiful, hearty, cheerful and fun-filled addition to what had become a great group of friends.

* Then asking Dorothy to press the start button on the machine which profiled *Tornado's* main frame plates in 1994 – the day the build commenced.

* Just before Christmas 1994, when Doncaster Council could make no progress with a construction site for us, a prompt from Barry Wilson resulted in me asking Darlington Council for the use of the former Stockton and Darlington carriage works. Their officers' response was immediately encouraging, subject to approval by Councillors.

* Bob Meanley from Tyseley Loco Works managed the erection of the frames there and in January 1995 we 'launched' the frames by breaking a specially brewed bottle of Black Sheep Ale across the buffer beam.

Ted Parker

Dorothy Mather presses the 'GO' button at British Steel.

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A bottle of 'Black Sheep' christens *Tornado's* frames.

Dorothy Mather accepts the keys to Darlington Locomotive Works in 1996.

David and Dorothy with the newly cast middle cylinder for No. 60163.

* And a month or two later we held a reception at Tyseley for potential industrial sponsors, when *Tornado's* nameplates were presented to us by RAF Tornado pilots. Bob arranged for us to 'borrow' *Flying Scotsman* for the day and let the sponsors drive it on the demonstration line. The RAF pilots were overwhelmed and said it gave a greater sense of latent power than their normal steeds. When the guests had gone home we all had a go driving it. Wouldn't you? The icing on the cake that day was that two Darlington Borough Council officials had come incognito to the event to relay the news that, yes, we could have the S&D carriage works.

* The days of excitement when we met with Council officials to plan the conversion of the carriage works into our new home, which included reducing the floor level by two metres and laying rail at the new level. Darlington Council accessed six-figure grants to fund the work. We can never thank them enough.

* The day Dorothy opened the new Darlington Locomotive Works in 1997,

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***Tornado* makes her first moves at Darlington in 2008.**

a scene witnessed by hundreds of Covenantors and televised on the BBC as curtains rose around *Tornado* to lighting and smoke effects, while Elgar's 'Land of Hope and Glory' blared from the loudspeakers!

* So many other happy memories from that decade shared with our ever-loyal Covenantors as we savoured the excitement of each new major piece of engineering, the wheels, the cylinders, the smokebox, cab and a myriad of other smaller parts.

By my side, supporting us fully all this time was my lovely wife Gill, who had become 'one of the gang'. As the decade closed came the dreadful news that she was terminally ill with cancer which would be progressively disabling. There was only one thing I could do – it was her time now, she needed all my attention. Changing tack to be her carer and enjoy her final years with her, it was also time to pass Chairmanship of the Trust into the capable hands of Mark Allatt who had the rare set of skills needed to take the Trust forward to the completion of *Tornado*. Under Mark's sure hand, the Trust marched on, coming up with the innovative bond issue to fund the boiler, thereby bringing forward completion by several years.

* In August 2008 came the day we had wished for since 1990 -the first day's steaming at Darlington under the view of the world's, yes, the world's, TV cameras. Reported in news programmes as far away as Australia - Nice one Mark! We had done it, just damned well done it!

And then, thick and fast more memorable highlights:

* The first passenger train hauled by No. 60163 in works grey on the Great Central Railway in September 2008.

* The main line trial run to Newcastle in the dark in 2008 (as still can be seen on Youtube) roaring through Durham at what the Trust coyly admits was 75mph plus VAT, chime whistle screaming!

* Then that first main line run from York to Newcastle in 2009 – replicating the photo I took in 1963.

* Looking with amazement at the thousands who braved the snow and

Mandy Grant

The people who made it possible! The Covenantors.

Andy Graves

***Tornado* tears through Durham on her final main line test run to Newcastle.**

lined the entire East Coast route all the way from Darlington in February 2009 to see *Tornado's* first run to London, to be welcomed by an unprecedented crowd at King's Cross station (estimated at 10,000 people).

* The launch of the P2 project in 2013 - the 'Holy Grail'.

* Then the really big one – the televised 100 mph run.

So as the P2 takes shape and our celebrated A1 continues to enthral both passengers and sightseers we continue to look forward to a wonderful future, one that we could not have dreamed of in 1990.

Under our imaginative and resourceful new Chairman, Steve Davies, we look forward to a new home in Darlington, rail served at last, with all the facilities for building and maintaining our expanding roster. After the P2 we have the excitement of the V4 to enthral us. What a sight it will be to see these three locomotives together, and what a thoroughly useful roster too, as they pass the baton between them on railtours with exotic destinations. Anyone for London to Fort William?

Looking back over 30 years there have been three constants which have always put the Trust at the forefront of the Steam Railway Movement, and the combination of these is unique to us.

A) We have had a fully professional Management team to guide the Trust right from the start, taking in new talent as we went along, starting with Rob Morland back in the early days and continuing to this day with business-minded people continuing to be attracted by the "can do" reputation such as Colonel Huw Parker, Graham Nicholas, Graeme Bunker-James, Graham Langer, Paul Bruce, Richard Peck and many others too numerous to name here, each highly qualified and bringing their personal area of expertise to the team. I really believe we have the most professional team that has ever been assembled in our field.

B) The use of the latest technology and industrial methods, with special thanks to David Elliott and Rob Morland for spearheading this right from the early days.

C) The Trust's biggest resource, the Covenantors. Without you, the people who came on board, even when the world seemed to doubt us, none of what we have achieved was possible.

The combined financial strength through you covenanting the price of a pint of beer a week, our "people power", gave the vital and reliable income stream that allowed the Management Team to do their job.

Yours is the real achievement. Thank you for everything. TCC

Ken Woods

Extraordinary scenes at King's Cross. *Tornado* is mobbed by well-wishers as she arrives in the capital for the first time with 'The Talisman' in 2009.

Robin Coombes

The big one! No. 60163 charges down the East Coast Main Line at 100mph.

A1 ENGINEERING REPORT *by Richard Pearson*

In TCC 58 we left *Tornado* being repainted in West Coast Railway's paint shop just as the first topcoat had been applied. The green gloss paint was allowed to dry and harden over the weekend and on Monday morning the WCR painting team got straight on with the lining. The first things to be lined were the tender and cab sides. It was originally planned to spray-paint the driving wheels just as had been done with the green gloss and the tender frames, but due to the amount of masking required around the motion it was eventually decided that it would be easier to brush paint them. Before it left the paint shop the locomotive was moved backwards ½ a wheel revolution, and any areas missed on the wheels could be revealed and painted.

On Tuesday 1st September the day we had been waiting for eventually arrived as No. 60163 was pulled out of the paint shop into the sunshine. This then allowed us to see and inspect things in daylight, and from this we produced a snagging list of items which had been missed or just needed a second coat of paint. Inside the cab, the cab sides were repainted, the cab roof thoroughly cleaned and polished, the boiler backhead cleaned and degreased and, where required, repainted. The nameplates were restored by the painting team at RAF Leeming and a small Trust team went to RAF Leeming to collect them. Their restoration involved sand blasting to remove all the old paint from the nameplates and the badge plates. Everything was then repainted ready for new badges to be fitted. However, due to workload the team at RAF Marham hadn't been able to paint and despatch their badge to Leeming to meet our timescales - so for 'The Queen of Scots' the nameplate on the fireman's side didn't carry the proper badge, but instead we used a stand-in aluminium RAF Marham badge plate borrowed from DLW – I wonder if anyone noticed? One of the last livery details to be added to No. 60163 were the route availability numbers,

RAF

A socially-distanced group at the handover of the refreshed nameplates at RAF Leeming.

All photos - Richard Pearson (except where marked)

***Tornado*, reunited with her nameplates, gleams in the sunshine at Carnforth.**

Finishing touches! One of the Carnforth painting team paints the hose cocks.

Cleaning *Tornado's* cab of spray dust.

Ian Greenan applies the RA number to the cabside.

RAF

Graeme Bunker-James and Steve Davies with one of the repainted plates.

Ian Greenan having fun applying the water slide transfers. Numerous small tasks were also tackled including the acquisition of new "DO NOT MOVE" boards with rubber feet (which hopefully won't scratch the new paintwork!), a full oil level survey, painting the locomotive's chocks and painting some further cab fittings, the recovered driver's and fireman's seats also returned from the upholsterer look very smart. The spectacle wind shields also had a thorough clean and polish, as did the chime whistle, and we continued to clean and paint tools as time has allowed

The opportunity to refresh the support coach also presented itself and it was No. 21249's turn to receive a bit of TLC when it was moved it to the paint shop for a repaint. Within a couple of days the coach had received two coats of gloss. The roof was also be painted, and the frames and bogies received a black 'wash over'. Axlebox covers, springs and dampers were also be painted in their appropriate colours, and lining and numbers added. Additional repairs over the following weeks included a roof ventilator, adjusting the brakes and (disaster!) the need to replace the tea boiler!

Tornado had a light engine move for 'The Queen of Scots' as a shake-down and following the tour there were few items on the 'snag list' that needed attending to, the most serious of which was the need to replace a broken left-hand trailing driving wheel spring. We don't keep spare springs in the coach as they are too big and heavy, so after setting up a method of work for the spring's removal and agreeing the next steps with Ian Greenan and Nik Proctor, I then returned to Darlington to collect a spare from DLW. By the time I got back to York, Ian and Nik had finished removing the spring, and had cleaned all the spring hanger bolts ready for refitting. We then worked into the evening to fit the new spring. Spring changes can often be long and difficult jobs, but this one went smoothly and we eventually got finished at around 21:30hrs.

Following 'The Ticket to Ride' tour and the Stockton & Darlington 195 private charter, the locomotive subsequently needed attention to the shriek whistle and one air pump, as well as continuing research into oil pots and cork sizes, aiming to eventually standardise the corks we use on No. 60163. This will also help David Elliott modify and improve the oil pots on No. 2007, making them all with removeable caps just like the inside motion on *Tornado* - it is far easier to remove water and any other unwanted debris from the oil pots if you are able to access them properly via a removeable cap. During the third week in October the locomotive had its boiler washed-out although further plans for No. 60163 will depend on the resumption of railtours, all of which were cancelled until December following the announcement of the new lockdown. TCC

Above: The support coach is rubbed down in the Carnforth paintshop.

Right: The coach receives its first coats of gloss paint.

The finished result, carrying BR maroon livery for the first time since its overhaul at DLW.

TORNADO ON TOUR *by Huw Parker*

'THE QUEEN OF SCOTS' - SATURDAY 12TH SEPTEMBER

Alistair Moulstone

Digging in. No. 60163 ascends Beattock with 'The Queen of Scots'.

'The Queen of Scots' was to have been the culmination of our summer Aberdonian season, with *Tornado* working the return leg of a tour to Edinburgh via Stirling to York. Sadly, closures of several lines due to landslips and flooding meant the original itinerary had to be drastically amended. Instead, *Tornado* joined the train at Carlisle on the Northbound leg from York and rewarded everyone with a great performance over Beattock. We left Carlisle a few minutes late and were soon passing Gretna Junction at 59mph, where it became evident we had caught up to the Class 4 freight in front. The WCR crew allowed the engine to settle to the work at hand ensuring we remained running under green signals.

We maintained a steady 49mph all the way up the 6 miles of 1 in 200 through Kirkpatrick, rising to 63mph on the level through Kirtlebridge. Speed was allowed to drop slowly up the 4 miles of 1 in 200 through Ecclefechan to 54mph at the summit by milepost 22. A gentle acceleration down through Lockerbie saw a maximum of 76mph soon after Wamphrey, the foot of the formidable climb to Beattock Summit.

The energetic climb saw speed drop only gradually on the 4 miles of 1 in 202 to pass Beattock at 67 mph, where the 10 miles of 1 in 88, steepening to 1 in 74 begins. Milepost 45, half-way up, was passed at 32 mph, followed by 3 miles at a steady 28 mph. The minimum speed was a very competent 22 mph over the summit.

The engine was allowed to accelerate on the downhill grades but kept in check for an impending 50mph restriction. Carstairs was negotiated now some five minutes behind time, but another commanding acceleration away from the junction saw 48mph at the top of Cobbinshaw and no further increase to this delay. Further fine work by the WCR crew in managing the approach to Edinburgh allowed for both a non-stop run right through from Carlisle, and an on-time arrival into Waverley. TCC

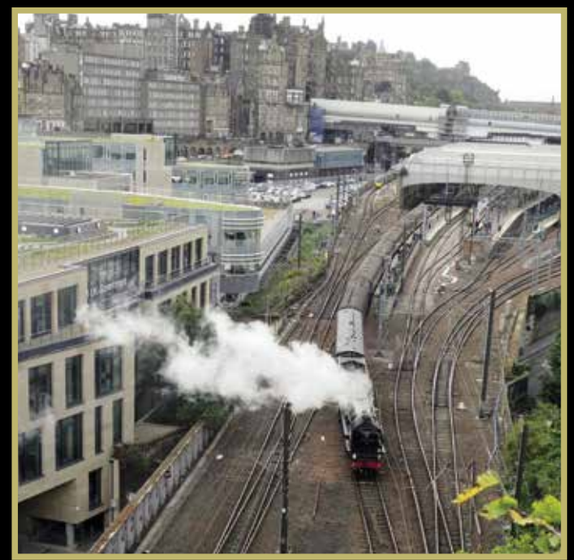
Bob Alderman's ashes were placed in the firebox as we went over Lesbury viaduct just north of Alnmouth, Graeme Bunker-James sounding Bob's initials (RA) in morse on the chime whistle.

Graham Nicholas

***Tornado* is seen at Carlisle at the start of a tremendous day out.**

Mike Wilkinshow

Running into Edinburgh, the train is seen at Joppa.



Michael Denholm

A different perspective, *Tornado* stands in Edinburgh Waverley station.

TORNADO ON TOUR *by Huw Parker*

'THE TICKET TO RIDE' – SATURDAY 19TH SEPTEMBER

Some Yeeles

Getting another great railtour off to a flying start, *Tornado* heads past Northallerton.

Following 'The Queens of Scots' railtour, we discovered a broken spring on the trailing driving axle on the driver's side. Delivery of a spare from Darlington was quickly arranged and this was successfully supported by some of our volunteers ahead of the FTR at York on Friday.

The FTR was passed successfully and the locomotive moved into the North Yard to take coal. Whilst there, we were visited by members of the Household Cavalry, who were travelling as our guests on the train the next day and a photo opportunity had been arranged, making the local and National press including the Sunday Times and the Daily Telegraph. A group of very patient soldiers were shunted and manoeuvred to gain some extremely atmospheric photographs in very different surroundings to their usual ceremonial duties on Horseguards Parade!

Charlotte Graham Photography

Steve Davies and Graeme Bunker-James with members of the Household Cavalry before the run.

We were away from The National Railway Museum early next morning with driver Chris Cubitt and fireman Fraser Birrell managing the shunt to join the coaching stock behind the WCR Class 47 for the move to Darlington North Road. These moves to or from the start of a tour being dragged at the back of the train are not much fun for the footplate crew, particularly as the days are getting shorter and temperature drops! However, after a brief wait in the loop just South of Bank Top Station, we continued on to North Road where our first passengers were waiting to board.

Whilst boarding, we took the opportunity to top off the water in the tender ahead of the run south back to York and across into Lancashire and then we were away. A few minutes late departing North Road and Darlington Bank Top, we were back on time approaching York and then a steady run down across to Wakefield for an early arrival before heading to Brighouse for the water stop at the end of the station platform. We progressed in bright sunshine, the loco running well and ahead of time all the way as far as Huyton, when other traffic slowed us over the last five miles into Lime Street, arriving just four minutes late into the platform.

Shortly after depositing our happy band of travellers to enjoy visiting the City of Liverpool, the train was hauled for servicing at Preston. Turning the whole train at Lostock Hall, *Tornado* drew the formation into the Up/Down Goods Loop in Preston station, before cutting off into the North Yard to service, coal and water in just under an hour. It is always a relief to see the coal lorry and water tanker waiting to meet you on these occasions! This time servicing was completed without any issues and *Tornado* propelled her support coach back onto the stock for the return move to Liverpool.

Once back at Lime Street, fireman Danny Davin built up the fire ready for the climb out through the tunnels to Edge Hill. Away on time, Driver Peter Kirk worked hard to lift the train out of a curving platform without slipping. The exhaust sounded superb entering the tunnels and after a brief slip on the first crossover, we recovered quickly from an initial drop in speed, climbing away steadily with the exhaust reverberating off the walls of the cutting towards the top of the grade at Edge Hill station. After that, the locomotive quickly settled down into a good run North and after a brief turn of speed up the WCML to Lostock Hall, we turned East for some steadier running towards Blackburn and Copy Pit. After Blackburn, we were held without explanation at Rose Grove Station, but despite the unplanned check, the crew made easy work and the locomotive sounded on great form on the climb out of Burnley to Cornholme. Once over, we were brought to a stand again at Hall Royd Junction to be informed by the signaller of a trespass incident on the line ahead and to proceed at caution which added further delay, bringing us 20 minutes down into the Brighouse water stop. Taking on

Alan Weaver

The train crosses the River Wharfe at Ulleskelf.

Daniel Birch

'The Ticket to Ride' crosses Todmorden Viaduct.

additional water due to the delays, we left 30 minutes late and although we made some time back as far as the Wakefield stop, we ran around 20 minutes late all the way after that, back to our starting point at Darlington North Road. As the last passengers departed, we set off back towards York to stable at the Railway Museum. Following a final check around the locomotive the remaining support crew members retired, happy to have completed another successful trip with *Tornado* doing what she does best on the main line! TCC

Kailum Buckley

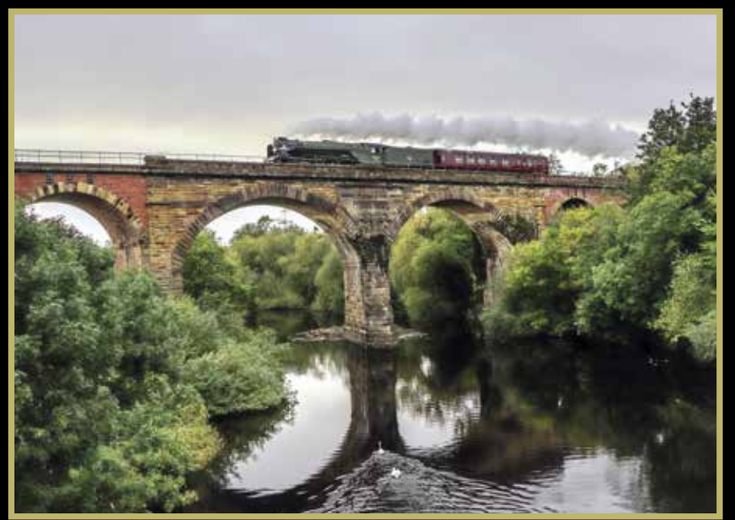
The return leg near Preston.

PRELUDE TO 'SDR 200', A PRIVATE CHARTER – SUNDAY 27TH SEPTEMBER

***Tornado* worked a private charter for Council officers for pre-launch publicity for events leading up to the bi-centenary of the Stockton & Darlington Railway in 2025. The locomotive and support coach worked from York to Shildon and back. TCC**

David Elliott

The train is seen at Shildon.



Sam Yeeles

***Tornado* crosses the River Tees at Yarm.**

RAILTOURS *by Sophie Bunker-James*

We are delighted to bring you a fantastic programme of trains with *Tornado* in 2021. Following a difficult year, we have been able to re-date all of our tours cancelled in 2020 as well as adding in some brilliant new routes. Starting in February we have two circular trains from York, taking us North via Darlington for a Luncheon Tour around the North East, and an evening tour which will see *Tornado* visit Harrogate and Knaresborough. We have tours across the Settle & Carlisle Railway starting from East Anglia, the East Midlands, Darlington and, for the first time, Hull. From The West Midlands, we are taking on Shap and Beattock en-route to Edinburgh and from Liverpool and Manchester we are crossing the Peaks to visit the beautiful city of York.

We are excited to be back in Scotland for our series of Aberdonian trains from Edinburgh in the summer. In addition to these, we have a springtime Aberdonian, and our first train from Glasgow and Stirling headed to the Granite City.

If that wasn't enough, who could fail to be excited by four extra special trains across the S&C with *Tornado* and *Flying Scotsman* in September? These trains are proving very popular and early booking is recommended.

Our brochure is now available in print and to download from our website. Bookings can be made online at a1steam.com/railtours or call the booking office at 01325 488215.

For the safety of our passengers and crew, the trains in the first part of the year will likely need to continue to conform to our Covid adjustments (which are available to view on our website) but we are hopeful a return to our usual, more social on board experiences by the end of 2021. TCC

TORNADO TOUR DIARY - 2020/2021

Below are the future operations *Tornado* is confirmed to be involved in. More details will be published on www.a1steam.com as trains are finalised. Contact details for tour companies are below.

- **Tuesday 8th December** – 'The Bath and Bristol Christmas Express' – London to Bath & Bristol and return – bookings through The Railway Touring Company - **CANCELLED**
- **Saturday 12th December** – 'The Edinburgh Christmas Market' – York to Edinburgh – bookings through The Railway Touring Company
- **Thursday 17th December** – 'The Christmas White Rose' – London to York (*Tornado* on return only) – bookings through The Railway Touring Company
- **Saturday 19th December** – 'The Christmas White Rose' – London to York (*Tornado* on outward journey only) – bookings through The Railway Touring Company

2021

- **Saturday 13th February** – Valentine's Luncheon Circular Tour from York, Thirsk and Darlington – bookings through Tornado Railtours
- **Saturday 13th February** – Valentine's Evening Circular Tour from York – bookings through Tornado Railtours
- **Saturday 13th March** – 'The Ribblehead Rambler' – Hull to Carlisle and return – bookings through Tornado Railtours
- **Saturday 27th March** – 'The Fens and Fells Flyer' Cambridge to Carlisle and return – bookings through Tornado Railtours
- **Saturday 3rd April** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Monday 5th April** – 'The Clyde Aberdonian' – Glasgow to Aberdeen and return – bookings through Tornado Railtours
- **Saturday 10th April** – 'The Caledonian' – Birmingham to Edinburgh and return – bookings through Tornado Railtours
- **Saturday 8th May** – 'The Cumbrian Explorer' – Darlington to Carlisle and return – bookings through Tornado Railtours
- **Saturday 15th May** – 'The Jorvik Express' – Liverpool to York and return – bookings through Tornado Railtours
- **Saturday 22nd May** – 'The Pennine Explorer' – Leicester to Carlisle and return – bookings through Tornado Railtours
- **Thursday 22nd July** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Sunday 31st July** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Thursday 12th August** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Thursday 19th August** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Thursday 2nd September** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Saturday 11th September** – 'The Aberdonian' – Edinburgh to Aberdeen and return – bookings through Tornado Railtours
- **Thursday 16th September** – *Tornado* and *Flying Scotsman* – West Midlands to Carlisle and return – bookings through Tornado Railtours
- **Thursday 16th September** – *Flying Scotsman* and *Tornado* – Peterborough to Carlisle and return – bookings through Tornado Railtours
- **Saturday 18th September** – *Tornado* and *Flying Scotsman* – Middlesbrough to Carlisle and return – bookings through Tornado Railtours
- **Saturday 18th September** – *Flying Scotsman* and *Tornado* – Birmingham to Carlisle and return – bookings through Tornado Railtours

The Trust respectfully requests that anyone wanting to see *Tornado* follows the rules of the railway and only goes where permitted.

Tornado Railtours
01325 488215
a1steam.com/railtours

The Railway Touring Company
01553 661 500
railwaytouring.net

VOLUNTEERS *by Mark Grant*

After such a long wait, we managed to run two of our planned tours this autumn. 'The Queen of Scots' and 'The Ticket to Ride' which were both fully staffed by our stewarding volunteers (with support from our friends from SRPS and BLS) all complying with Covid regulations. It was great to see people back and feeling safe in a new environment.

Back in March, we were due to introduce a new system to assist our merchandise crew, obviously this didn't happen. However, we did manage to get it up and running for the last of our own tours. A tablet and card-reader based system that will make stock control and payments a breeze. I'm glad to say it worked flawlessly, and I've now completed an online training session for our sales team. The system can be used on-board and at events, and so will give us flexibility that we've never had before

I'm looking forward to our trips next year, where we can engage some of our newer volunteers in various roles with *Tornado*. A big thank you to all who have helped out during a very difficult period.

Mark Grant

Above: The new technology available to the on-board team.

Left: 'The Ticket to Ride', Charles Tremeer relaxing after a few hours of helping the merchandise team on the Trust's final tour of the year!

Remember, if you're interested in any position either on-board or at events, please get in touch with me, **mark.grant@a1steam.com** TCC

Covenantors' Diary *by Leigh Taylor*

Thank you for returning your data collection sheet (we have received hundreds!) These help us to understand how you like to hear from us and to update Gift Aid declarations. These will take a considerable amount of time to process and so we would be grateful if you could bear with us as we work through them. If you inadvertently receive mail to an old address or unwanted mail we apologise in advance. Please don't forget to let us know if your contact details change. Covenantor Cards will be sent out in early 2021.

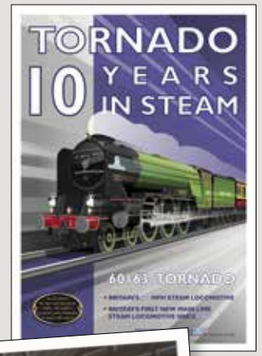
September Draw 2020 (raffle)

- 1st Prize – Table for two in First Class Dining on a *Tornado* railtour - T Williams
- 2nd Prize – Two First Class tickets Non-Dining on a *Tornado* railtour - Mr C Wellum
- 3rd Prize – Two x Standard Class Tickets on a *Tornado* railtour - Mrs J Blythe
- Five x Prizes – '*Tornado* 10 Years in Steam' poster - J F G Brown, Greasley, Mr M Hopps, Mr G Hodgson, Mr K Housley
- Five x Prizes – 'A Giant Resurrected' poster - Mr P Tyers, M M Doyle, Mr J Freear, Mr S Somes, Mr S A Inness

Thank you for playing…

We are continuing to follow Government guidelines with regards to Covid -19, with our office-based staff predominantly working from home and our workshop staff are working at Darlington Locomotive Works where they are taking all necessary precautions. An unavoidable aspect of home-working is that we are only able to collect and send out post once or twice a week, so the processing of covenant and club forms and payments is taking a little longer than usual. Thank you for your patience.

We hope to restart Open Days at DLW and Roadshows as soon as possible. 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. TCC



Some of the prizes in this year's raffle draw.

Charlotte Graham.

Members of the Household Cavalry with *Tornado* at the National Railway Museum on 18th September prior to 'The Ticket to Ride' tour on the 19th.

A1 PROFILE - No. 60130 *KESTREL* *by Phil Champion*

Phillip Hill

***Kestrel* on 'The Yorkshire Pullman' at Doncaster in 1959.**

No. 60115 was the first Darlington-built A1. After the initial 16 ordered under the 1945 Programme to be built at Doncaster a further 23 were ordered under the 1946 Programme for Darlington to construct although the Works order was not issued until January 1947. Despite being ordered a year later the first of these, No. 60130 (Works No.2049), was built in September 1948, along with Doncaster's No. 60115 making them the second and third A1s. Fitted with boiler No. 3909, it was seen nearly complete on the 4th and was first noted in steam when running in light engine past Hartburn on the 23rd. Next day it was in steam in Darlington works yard. On the 28th No. 60130 entered service as one of a quintet allocated to Doncaster shed (DON).

An observer looking at the locomotive, resplendent in BR apple green with black and white lining and BR's name written in full on the tender, would have noticed some differences with the Doncaster-built examples. The cabsides and tender had a smooth finish with countersunk rivets in contrast to Doncaster's snap-head rivets. Although painted apple green with the words 'BRITISH RAILWAYS' in Gill Sans on the tender, the numbers and letters were in 'old gold' instead of the standard light cream. The casings over the rear coupled wheels dipped slightly towards the rear. While No. 60130 had a Flaman speed recorder from new like the Doncaster examples it was only one of four Darlington ones fitted from new. This free steaming machine might look a fine sight in the post-war world but the sheet metal chimney reflected this period of austerity.

No. 60130 was seen in Darlington on 2nd October and West Hartlepool on the 3rd. The first recorded trains were the 14:12hrs Darlington-Leeds which it worked daily from the 11th – 19th and the 21st even though it was transferred to King's Cross shed (KX) on the 17th. Its allocation at Doncaster had lasted just three weeks; the RCTS book *Part 2A of LNER Locomotives* states that there was little scope for Pacifics at Doncaster because of the number of through diagrams between King's Cross, Newcastle and Leeds. The first train noted out of the capital was the 11:18hrs on 5th November 1948 with the 11:18hrs King's Cross-Peterborough. An example of the good loads an A1 could haul was the 15 coach load on the 13:00hrs down on 18th February 1949. Runs to the north included Newcastle on 16th July, then via the Durham coast with a diverted 13 coach up passenger the next day before going to Leeds with the 18:15hrs ex-King's Cross on the 23rd. Its first recorded named train was the down 17:30hrs 'Yorkshire Pullman' on 13th August.

Naming came after nearly two years, on 20th July 1950 following a general overhaul at Doncaster. *Kestrel* was one of half a dozen A1s with bird names, four from A4s, the name *Kestrel* being carried by an A4 from February 1937 until November 1947; most of us knew that engine later as *Miles Beevor*. While in works as well as naming it was repainted in BR blue, one of four done that month. Though No. 60130 was the first Darlington A1 it was the ninth or tenth to be named. 15th September 1951 brought a transfer to Grantham (35B) along with eight others. This was due to a reduction in through engine diagrams in favour of shorter ones with each engine being shared between two crews. Repainting into BR green was in January 1952, following a 'Heavy Intermediate' at Doncaster, again the tenth Darlington-built one so treated but about the 20th of the whole class.

On 21st and 24th October 1952, two weeks after the Harrow & Wealdstone disaster, it worked King's Cross-Huntingdon Automatic Train Control (ATC) trial trains to satisfy the public that something was being done about an ATC system. A variety of trains were hauled, on 14th February *Kestrel* was at King's Cross with a parcels, the down 'Flying Scotsman' from was hauled a number of times in April and June into Newcastle, while a King's Cross-Peterborough local was rostered on 7th and 19th August. 1953 started with a general overhaul which included fitting boiler No. 29847 and transfer to Ardesley (37A) took place on 15th February so West Yorkshire trains were hauled a lot now. Named trains were exemplified by the up 'Bradford Flyer' on 16th December 1953, the up 'West Riding' on 11th April 1954 and the down 'Harrogate Sunday Pullman' on 25th September 1955. The locomotive returned to Doncaster for a general repair at the end of 1954 and left equipped with boiler No. 29849. A couple of hiccups were a failure on the up 'West Riding' at Essendine on 4th January 1956 and a failure with the 'Bradford Flyer' at Huntingdon on 19th October. Typical of normal workings between September 1956 and January 1957 were the 09:10hrs, 13:18hrs and 15:40hrs King's Cross-Leeds plus eight departures at noon recorded with the down 'Queen of Scots'. Having had a further general overhaul during November 1956 (boiler No. 29859 fitted this time) the locomotive returned to Doncaster for an unclassified repair the following June which saw the later BR crest applied to the tender. Three months later No. 60130 was transferred to Copley Hill (56C) along with No. 60123 *H.A.Ivatt*, once more calling at 'The Plant' the following June for another 'General' which saw it leave carrying boiler No. 29871. Named trains hauled included the down 'White Rose' on 19th November 1958 and the up 'Yorkshire Pullman' the following 17th January. An 05:44hrs rugby special was taken from Leeds–King's Cross on 14th May 1960. Travels to the North East were made several times in October and December 1961 when it was serviced on Gateshead shed. Quite a variety of traffic was pulled by *Kestrel*, from the up 'Queen of Scots' between Newcastle and Leeds on 26th May 1962, to the up seed potatoes at Newcastle on 6th November to the 18:12hrs King's Cross–Leeds many times between March and June 1963. After another general overhaul in May, when it acquired boiler No. 29805, diversions via Lincoln were noted in May and September 1960 while on 6th July it was seen on Lincoln shed. Each day from 11th – 13th September it pulled a Leeds-Doncaster race special. The last named train that we know *Kestrel* hauled was the up 'Yorkshire Pullman' on 1st February 1964. On 8th May it passed Newark heading south with yet another rugby special.

During February 1963 *Kestrel* received its sixth boiler, No. 29785, a Diagram 117 one which lasted until withdrawal. Fifteen other A1s and two A2s were so fitted. They were identical to the Peppercorn boilers except that the round dome was further forward and it had thicker boiler barrel plates though the heating surface was the same. Reallocation back to Ardesley (56B) came on 6th September 1964 along with No. 60117 *Bois Roussel* and 60133 *Pommern*. Our last recorded working of No. 60130 was a York-Tyne Yard goods on 21st October after which it went onto Gateshead shed.

From 18th January 1965 to 14th March it was stored at Ardesley though by 9th May it was on Wakefield shed. On 20th August and 9th September it was on standby at Ardesley but withdrawal came on 4th October 1965 when it was one of nine to go. Though it was one of the first to be built *Kestrel* was one of the later ones to be withdrawn with 37 already having gone. Whilst the A1s' average lifespan was 15 years, No. 60130 lasted 17 years and one month. It went to J. Cashmore of Great Bridge in December 1965 as one of a pair of A1s they bought.

Neil Wilson

A detailed study taken at Copley Hill in 1952 .

Cedric Clayson

On 24th May 1962, No. 60130 tears through Grantham.

Michael Denholm

A late image of No. 60130 *Kestrel* at Gateshead on 6th November 1964 in the company of Class A3 No. 60052 *Prince Palatine* and Class A4 No. 60146 *Peregrine* with Class V2 No. 60837 in the background.

This history was compiled by Phil Champion based on a database compiled by Tommy Knox and with reference to the RCTS book "Locomotives of the LNER Part 2A" as background. Revised and updated by Graham Langer, May 2020. TCC

P2 ENGINEERING UPDATE *by David Elliott*

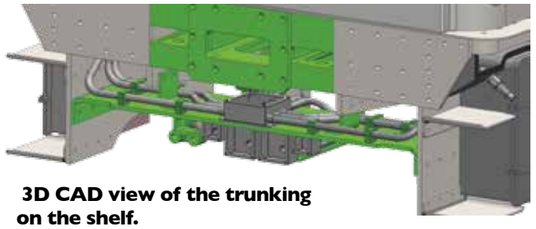
General

Headway since TCC 58 has been steady rather than spectacular with good progress on a number of fronts. The high spot has been the delivery of the first pair of coupling rods. Covid-19 still affects output, particularly for our suppliers and subcontractors where, whilst not suffering from any Covid infections in their establishments, they have staff members having to isolate for two weeks at a time due to family or close friends being infected or in contact with the disease.

Frames

We now have the profiles for the "shelf" under the back of the cab and Ian Matthews has started making some special tooling to facilitate hot bending of the 20mm thick plate to form the flanges on each end which mate with the outer Cartazzi frame plates. Normally, shaping like this is carried out cold using a brake press forming a series of small bends, however, the radius required in this case is equal to the thickness of the material necessitating the bending to be undertaken at red heat. In this condition the metal will be sufficiently pliable to be bent using form tools in our 30ton press. As it is important that the finished article is a good fit between the outer frames, doing the work in house as opposed to by a plate bending firm will enable subtle adjustments to be made to ensure a tight and parallel fit.

When fitted to the frames, the shelf will complete the frame structure and enable Ian to start fitting the electrical trunking under the cab which is relatively complex as the 3D CAD view shows.



3D CAD view of the trunking on the shelf.

Alan Parkin

Pony Truck

By the time you read this, the pony truck should have been delivered to DLW. The manganese steel hornblock liners are being welded on as this is written, after which the main pony truck frame will be re-mounted on the horizontal borer at North View Engineering Solutions in Darlington to have the hornblock liners machined to finished size. This completes the fabrication of the three major components of the pony truck.

In the meantime, Daniela is continuing to refine the FEA (Finite Element Analysis) stress modelling in collaboration with Ricardo Rail to produce the necessary supporting documentation to facilitate certification of the new pony truck design

The pony truck at NVES.

All photos Daniela Filová (except where marked)

Above: The pony truck crosshead. and the machined surface of the pony truck.

Machining the pony truck on the horizontal borer at NVES.

David Elliott examines the pony truck drawings at NVES.

Boiler

A further visit to Meiningen was made on 29th October (fortuitously just before England went into national lockdown again and Germany was added to the countries return from which required 14 days of quarantine!). Significant progress has been made with all the major components being on hand, the first boiler (the spare for *Tornado* and *Prince of Wales*) starting to look like a boiler. The boiler for No. 2007 is scheduled for delivery in December 2021 which is optimum for preparing it to be fitted to the locomotive around the middle of 2022.

Contemporaneously, Ed Laxton, our apprentice machinist, has almost completed machining the components for the regulator stuffing boxes and cross shafts, one set of which will be required to be sent to Germany in the not-to-distant future to enable completion of the regulator assembly and pressure testing of the first boiler. Following welding on the cranks on the cross shafts, they have been sent to Locomotive Maintenance Services (LMS) at Loughborough to have bronze built up on the parts of each shaft where the packing materials in the stuffing boxes bear. This reduces corrosion in this area and provides a bronze sleeve which when worn can be machined off and renewed without scrapping the cross shaft.

All photos Daniela Filová (except where marked)

Above: First boiler being assembled at DBM.

Left: Proof-machining the regulator stuffing boxes.

Right: Regulator cross shafts with the cranks welded on.

Below: Regulator cross shafts.

Motion

The two intermediate coupling rods were delivered by Stephenson Engineering of Atherton, Manchester on 21st September and are an excellent job requiring significantly less fettling than the rods on *Tornado*. Ian Matthews, assisted by volunteers, is steadily making progress with this meticulous and lengthy task. Meanwhile, Stephensons are nearing completion of machining the leading coupling rods and have completed forging the trailing coupling rods.

Forging coupling rod blanks at Stephensons.

Robert Stephenson Engineering

Above: The middle connecting rod is forged.

AJSLT

The leading coupling rod at an advanced stage of machining.

LMS at Loughborough has been contracted to make the four whitemetal lined bronze bearing bushes for the intermediate rods. These have been designed to be the same late BR type fitted to *Tornado* and for the intermediate rods are identical to those fitted to *Tornado*. The only bearing bushes which differ from the A1 design are the those for the leading crank pins where the closeness of the slidebars and crossheads demand slightly narrower crank pin bearings.

Robert Stephenson Engineering

Left and right-hand Intermediate coupling rods delivered to DLW.

Cylinders and valves

Alan Parkin has now produced several manufacturing drawings for the approximately 140 individual components which are required to fabricate the cylinder block. At the same time David Elliott is building up the scale 3D printed model to determine the best construction sequence to ensure that all seams can be fully welded. The intention is to issue a "request for expressions of interest" to a number of fabricators during December. The target is for an almost full set of manufacturing drawings at the end of January to enable shortlisted companies to quote for the whole job.

The partly assembled scale model of the cylinder block.

David Elliott

3D CAD view of poppet exhaust valve.

In parallel with this research, discussions are at an advanced stage with a specialist company in CFD (computational fluid dynamics) to model the steam flow through the cylinder block to ensure that we do not have avoidable pressure reducing features to enable us to optimize the detail of the design – there is little scope for significant redesign of the block as the steam and exhaust passages are already as large as practical within the tight limits of the envelope of the block, however some gains may be possible through increasing radii on the inner corner of bends etc. It is expected that this work will lead on to a more extensive model to analyse steam flow from the regulator to the blast pipe which will assist in fine tuning the profiles of the cams and the diameter of the blast pipe tops.

A further use of CFD will be look at smoke lifting. The original P2 No. 2001 *Cock o' the North* did not have smoke lifting issues as even at low outputs. As students of the history of the P2s will be aware the second engine, No. 2002 *Earl Marischal* (as first built with Walschaerts valve gear and the same smokebox and smoke lifting plates as No. 2001), immediately suffered from drifting smoke affecting the driver's view resulting in early fitment of large and rather ugly smoke deflectors. The main difference is that piston valves open and close the exhaust valves gradually, with very little cross section for gas flow at the start and end of each event resulting in the exhaust appearing to "leak" from the chimney encouraging it to stick to the boiler top, which with the cross winds and the Coanda effect draws the exhaust down on the leeward side of the boiler. By contrast, poppet valves open and close to full area quickly resulting in sharper edged exhaust beats. Whilst not a problem on No. 2001, with all the computer modelling to optimize efficiency and power, there is a risk that the "squareness" of 2007's exhaust beats may end up less sharp. If a smoke lifting problem is identified it is anticipated that with 80+ years of aerodynamic development since No. 2002 appeared, some relatively unobtrusive aerodynamic fences or strakes could be applied to solve the problem.

A short-term lack of Solidworks drafting capability has been identified and steps are in hand to recruit addition resources to cover this to expedite production of the detailed drawings for the valve gear. Low risk items such as reversing gear, return crank gear boxes and cardan shafts, and casting and machining valve covers can then be put into manufacture. In parallel it is intended to prototype a cam/follower/tappet/valve assembly and subject it to some fatigue testing before committing to a full set.

Brakes

We continue to accumulate brake rigging for the engine, with the two trailing brake hangers and brake stay trial fitted to the frames. The two brake cross shafts have been delivered and Ed is in the process of machining their bronze bearing bushes which will enable them to be fitted to the frames.

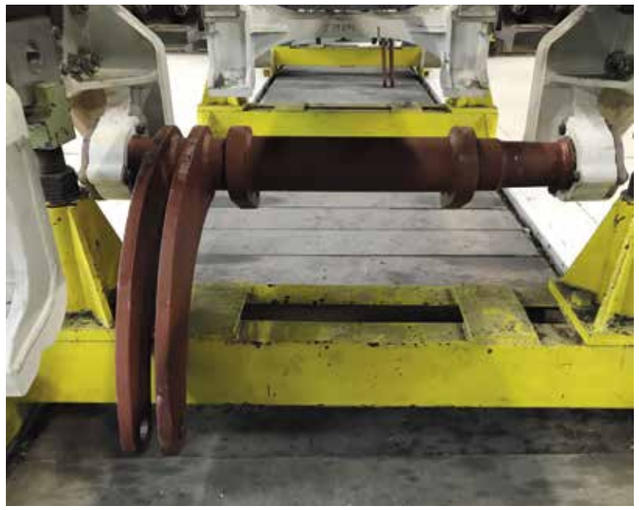
The six leading brake hangers are a complicated shape necessitated by the coupled wheels on the P2 being very close together leaving no room for conventional brake hangers. After some discussions it was decided to start with profiles from thick plate to achieve the rough shape followed by a lot of machining to achieve the finished product. An order was placed some time ago, however the contractor, having procured profiles and started the machining, had a change in circumstances which prevented him finishing them. Kindly the part-finished profiles have been donated to the project, and Triple T Engineering at Newton Aycliffe are presently in the process of CNC machining them to their finished state.

Photos: Daniela Filová

The two trailing brake hangers and brake stay fitted to the frames.

Above: Ed Laxton machining a brake cross shaft bronze bush.

Right: Part-machined brake hanger profiles.



Photos: Daniela Filová

Trial fitting of front and rear engine brake cross shafts.

Cylinder drain cocks

Considerable progress has been made (mainly by Ian) in installing Alan's cylinder drain cock design onto the frames. The design is closely based on that on *Tornado* to eliminate the use of Bowden cables as used on the original P2s.

Ian Matthews

Cylinder drain cock actuating linkages.

Tender

Steady progress with the tender frames continues at Ian Howitt's works at Crofton. The initial machining of the hornblocks has been completed, the hornblocks dispatched to NVES in Darlington for welding on manganese steel liners (NVES, thanks to our activities over the years, maintain a welding procedure for welding manganese steel to cast or mild steel), and are now back at Crofton for final machining. Many details for the brake linkage and hand brake mechanism have been made including the brake cross stay and brake cross shaft.

Photos: Daniela Filová

Tender hornguides with manganese steel lines welded in place.

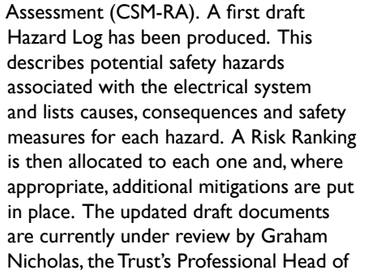
Electrical System

With the system design largely complete the Electrical System Specification has been updated to reflect all the new design elements. A start has been made on writing the section on standards compliance, which involves a clause-by-clause assessment of relevant standards. Many standards have been replaced since we designed the A1 so this represents a lot of new work. We are also using the electrical system to pilot the Trust's updated approach to risk assessment. This is based on the new railway Common Safety Method for Risk Evaluation and Assessment (CSM-RA). A first draft Hazard Log has been produced. This describes potential safety hazards associated with the electrical system and lists causes, consequences and safety measures for each hazard. A Risk Ranking is then allocated to each one and, where appropriate, additional mitigations are put in place. The updated draft documents are currently under review by Graham Nicholas, the Trust's Professional Head of Engineering.

Starting the turbogen on the A1 involves a manual process of warming through the turbine to expel water before running it up off-line and connecting the power supplies once it is operating at full speed. DB Meiningen offers a control box which contains a circuit that uses the alternator tachometer output to determine when the turbine is up to speed before automatically connecting it to the batteries using relays. However, this system is designed for direct battery connection. The A1 system connects the turbogen via DC-DC converters, which is incompatible with the Meiningen circuit, so we have not used it on our engine. As we are moving to a two turbogen solution for the P2 we are taking the opportunity to design our own start-up circuit, so the crew do not need to manually start and bring each turbogen online. A prototype tachometer circuit has been designed and bench tested. This will be used to drive a relay which will connect the turbogen to the loads once it is running above a pre-determined speed. The next step will be to test this on the A1 when it is next in steam to confirm the optimum speed for switching. The circuits will then be incorporated into the Turbogen Control Box system, which has already been designed.

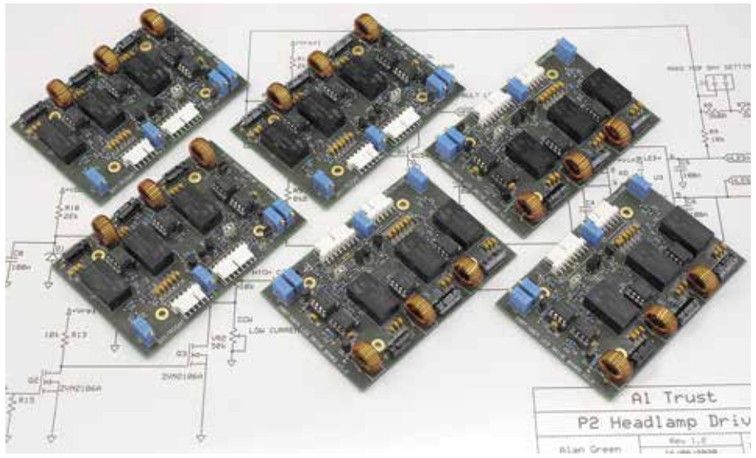
Daniela Filová

Some of the structured electrical trunking and junction boxes.



Rob Morland

The prototype tachometer set-up.



Rob Morland

The initial delivery of headlight driver PCBs for testing.

Work on the new combined head/tail/marker lamp luminaire continues. We have received the first driver PCBs back from Stevenage Circuits and Alan Green has built and tested an initial batch for use in finalising the design. Roger Millington, Alan and Rob are now working together to ensure that the lamp performance when displaying each of the three aspects is optimised.

For the rear of the tender we are planning to use two original Stones marker lamp housings to display the marker and tail aspects, as on the A1. Provision will be made for fitting and connecting the new P2 headlamps to display the head aspect when running tender-first on the main line. Alan Green has updated the A1 marker/tail driver circuit design to include modern driver components (the original design is now 12 years old!). This will be

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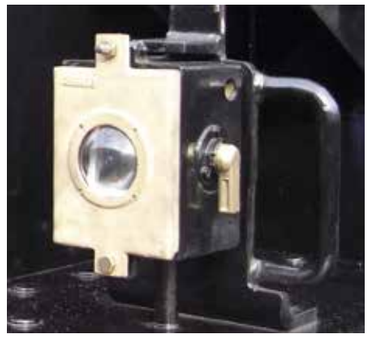
compatible with the A1 lamps, so we will have replacement PCBs for those when they reach the end of their useful life. We were delighted during the build of *Tornado* when supporters came forward and offered us original Stones housings that allowed us to fully fit the engine. We now have a requirement for a further two housings for the P2. We would be pleased to receive any offers of housings that will allow us to meet this requirement. They need to be the same design as on *Tornado* and ideally have a clear lens. Please get in touch if you have one that you would like to see fitted to the P2!

Work on the electrical conduit system for the tender is currently paused, awaiting the next phase of work on the East Coast Digital Project, which we expect to include installation of the European Train Control System (ETCS) on *Tornado*. As mentioned in TCC 58 we are taking the opportunity to incorporate several of the P2 electrical system design improvements into the design for *Tornado*, especially around the arrangements that permit cab removal. Once this is agreed we will import the A1 design back into the P2 and complete the conduit work.



A Stones marker lamp of the type required for No. 2007.

Pipework and fittings

Orders are being placed for the first of what will be in excess of 400 metres of copper pipe for air, steam and water. The detailed list is being finalised for the estimated 120 Pegler "Yorkshire" GHD fittings which are used with metric pipework. Material quotes are being sought for in excess of 300 LNER style cone joints used on steam, water and lubrication pipework. Then we just have to make the LNER fittings, form all the individual pipes and then fit them all to the locomotive – never a dull moment! TCC

ASK DAVID ELLIOTT

We suggested that, in light of the lack of a Q&A session at the 'virtual' Convention, Covenantors might like to send questions in.

John Brooks responded by asking:

" In designing the cam profiles for the RC valve gear of No. 2007, will you be going back to basic principles, or will you be following earlier successful designs *viz.* Santa Fe No. 3752, the SAR 15E class (which we were told at the last London Roadshow had continuously-variable cams), or even the valve events of *Duke of Gloucester*? "

David Elliott responded, "We are designing the cams for 2007 from scratch. We do not have actual cam profiles for the Franklin fitted locomotives. We do have drawings for the stepped cams for the South Africa 15E and 16E (note that these only had stepped cams). We also have a table from the Associated Locomotive Equipment Company (which held the Lentz patents at the time and designed the cams for the South African Locomotives and No. 2001 *Cock o' the North*) covering the stepped cams fitted to No. 2001 after the problems with the continuously variable cams originally fitted to No. 2001. The initial shot at continuously variable cams in the present 3D model is based on this table with the cam profiles interpolated between the values for the fixed cams. These have only been drawn to check cam follower operation but would almost certainly be sub-optimal.

As you will read elsewhere in this issue of *The Communication Cord*, the plan is to create a CFD (Computational Fluid Dynamics) model the valves and cylinders. There are a number of competing parameters in creating valve events.

In general, it is desirable to advance the opening of inlet valves as the locomotive increases speed to improve the chances of full pressure being available in the cylinder as soon as the piston reaches top or bottom dead centre - this is usually allied to reducing cut-off as normally short cut-offs are associated with higher speeds. For the exhaust valves, the faster the locomotive is going, the earlier the exhaust valve closes on the exhaust stroke to create back pressure, the ideal condition being when the residual steam in the cylinder is compressed to a little below boiler pressure as the inlet valve opens. This reduces the inertia forces on the crank pin and minimises the amount of inlet steam used to fill the clearance space at the end of each stroke. The clearance space is the gap between the piston and cylinder end plus the volume of the port up to the inlet and exhaust valves. In this condition the maximum piston force is available as soon as the power stroke commences. Too little back pressure or advance of the inlet valve results in the pressure at the beginning of each stroke being below that of the supply from the boiler reducing the power produced in each stroke.

However, the pressure condition at the beginning of each stroke will also vary according to regulator opening and cut-off. Long cut offs at high speed can result in lower inlet pressures hence less power than would be predicted.

We intend to use the CFD model to optimise opening and closing of exhaust and inlet valves over a wide range of operating conditions to produce the best compromise of power versus efficiency. This will directly inform the profiles of the cams.

The illustration shows our first try. The nearer section is the forward cam - the skew on it is to produce earlier closure with reducing cut off. There is a cylindrical section beyond which is mid gear, where the valves are held half open to enable the residual steam to pass freely from one end of the cylinder to the other when the engine is coasting. This reduces drag and minimises the tendency of the cylinders to work as a vacuum pump which can draw char back down the blast pipe and accelerate cylinder wear. The shorter far end is for reverse. TCC

David Elliott/A1SLT

THE P2 SUPPORT COACH APPEAL *by Mark Allatt*

A unique opportunity has arisen for The A1 Steam Locomotive Trust to acquire BR Mark 1 BSK E35457 for eventual use as the support coach for No. 2007 *Prince of Wales*.

A support coach and crew are an essential part of the operation of steam locomotives on Network Rail. Since British Railways steam operations ended in 1968, much, if not all of the static infrastructure and paid staff required to support them no longer exists, requiring the use of support coaches and crews to travel with the locomotive.

Support coaches are usually drawn from passenger brake coaches of the BR Mark 1 era, taking advantage of the existence of the guards/ parcels van space for ease of conversion to workshop and store functions. The passenger area will provide mess room, seating and/or sleeping accommodation.

Brake Corridor Second (BSK) E35457 was built at Wolverton in 1963, is fitted with Commonwealth bogies and was most recently used as the support coach for BR standard class 4 No. 76084. In surprisingly excellent condition, E35457 will require minimal work other than the reinstatement of its dual-brakes and the addition of a similar electrical system to that fitted to E21249, No. 60163 *Tornado*'s support coach.

The A1 Steam Locomotive Trust is seeking to raise £100,000 from 100 supporters to each donate £1,000 (in up to eight monthly payments of £125 by standing order) towards the acquisition, overhaul and conversion of BR Mark 1 BSK E35457.

In recognition of their support, donors will receive:

- Exclusive certificate signed by David Champion (President) and Steve Davies (Chairman) of The A1 Steam Locomotive Trust
- The opportunity to buy a ticket (seat already reserved) on one of the first trains hauled by No. 2007 *Prince of Wales*
- Reasonable access to No. 2007 and No. 60163 at all times
- Special supporters' day with *Tornado*
- Two tickets (booked in advance) to travel behind *Tornado* or *Prince of Wales* in E35457 on a heritage railway and commemorative photograph with the locomotive and coach.

Launched as part of The A1 Steam Locomotive Trust's 30th Anniversary Appeals, The P2 Support Coach Appeal has got off to a good start and by the end of October had already attracted 31 supporters donating £31,000 plus Gift Aid.

For further information on The P2 Support Coach Appeal, please visit **www.p2steam.com,** email **enquiries@p2steam.com** or call **01325 460163**.

The P2 Support Coach Appeal is raising funds for the acquisition and overhaul of BR Mark 1 E35457. If there are surplus funds left over following its acquisition and overhaul, we will use the money to purchase or manufacture other components for the Gresley class P2 that the charity would not otherwise have. TCC

A1SLT

No. 2007's support coach is delivered to the Great Central Railway.

P2 ROADSHOWS, DARLINGTON LOCOMOTIVE WORKS OPEN DAYS AND PRESENTATIONS *by Mark Allatt*

In the light of Government advice to prevent the spread of the coronavirus, we suspended our P2 Roadshow programme, Open Days at Darlington Locomotive Works (usually held on the first and third Saturday of the month) and ad-hoc Presentations to external groups.

Whilst it looks unlikely that we will be able to restart the P2 Roadshow programme any time soon, we are currently looking at ways in which we can re-open Darlington Locomotive Works for pre-booked guided tours. In addition, after receiving such positive feedback from the virtual annual convention, we are working on an on-line substitute - please keep an eye on our website for the latest updates. Thank you in advance for your patience and understanding.

When they re-start, the presentations will feature key team members including Mark Allatt and/or David Elliott and cover the background to the project to build new Gresley class P2 No. 2007 *Prince of Wales*, progress to-date, future plans and details of how to get involved.

We would encourage you to attend and bring along some friends and family members who would be interested in hearing about the project. The two-hour presentation will start promptly at 11:00hrs and run until 13:00hrs and is open to existing supporters and interested members of the public:

For more information on the P2 roadshows visit **www.p2steam.com**, email **enquiries@p2steam.com** or call **01325 460163**. TCC

THE RACE IS ON TO GET UP STEAM! *by Mark Allatt*

In June 2019 the starting gun was fired with the order of two new boilers from DB Meiningen – and we now have less than 14 months to raise all of the funds necessary to pay for No. 2007's boiler – that's more than one new member recruited to The Boiler Club every four days! By the end of October 2020, The Boiler Club fundraising campaign had recruited over two-thirds of its target membership with pledges of over £400,000 excluding Gift Aid. Launched in October 2014 to raise the £600,000 needed pay for the manufacture of the boiler, The Boiler Club now has over 205 members who have each donated or pledged £2,000 (plus Gift Aid).

Following the success of The Founders Club, which was designed to get to the P2 Project to the point of cutting No.2007's frames, the Trust established The Boiler Club to fund the construction of *Prince of Wales'* boiler. It is the Trust's desire to leave No. 2007 *Prince of Wales* debt free upon completion and therefore its aim is to raise at least £600,000 for The Boiler Club from 300 supporters each donating £2,000 to the project (in up to 16 payments of £125 by standing order). In return for this commitment, members of The Boiler Club receive these special benefits:

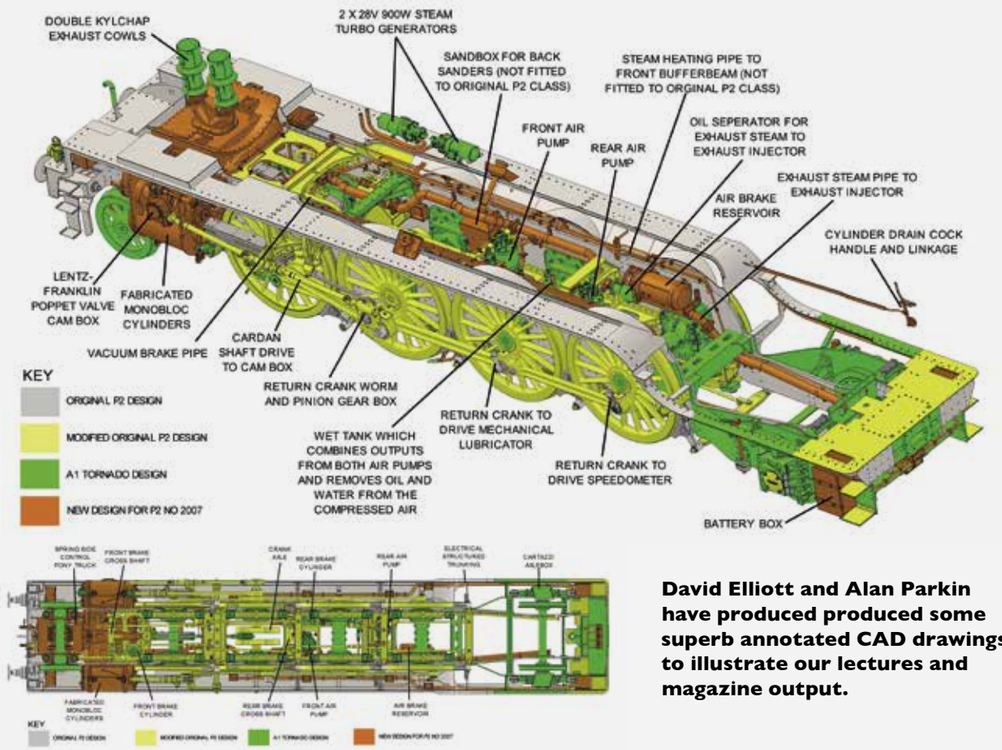
- Opportunity to buy ticket (seat already reserved) on No. 2007's first main line train
- Reasonable access to No. 2007 at all times
- Opportunity to buy exclusive Boiler Club badge
- Opportunity to join one of the teams building No. 2007
- First choice of other components to sponsor
- Special limited-edition version (signed/numbered) of the first official painting of No. 2007 *Prince of Wales* with No. 60163 *Tornado* – 'Dream Team' by renowned railway artist Chris Ludlow
- Special supporters' day with *Tornado*.

Reaching the two-thirds point in the funding of No. 2007 *Prince of Wales'* boiler through The Boiler Club will mark a significant milestone in the project to build Britain's most powerful steam locomotive. The boiler is the beating heart of a steam locomotive and to keep the construction of No. 2007 *Prince of Wales* on schedule for completion within three years we need to take delivery of the new boiler in 2021.

To become a member of The Boiler Club, email **enquiries@p2steam.com**, call **01325 460163** or visit **www.p2steam.com** for more information.

The A1 Steam Locomotive Trust is raising funds for the manufacture of the boilers for the new Gresley class P2 No. 2007 *Prince of Wales*. If there are surplus funds left over following the manufacture of the boilers, we will use the money to buy other components for the Gresley class P2 that the charity would not otherwise have. TCC

•WORKSHOP NOTES•



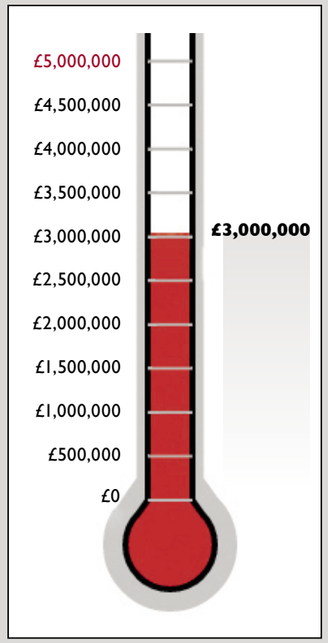
David Elliott and Alan Parkin have produced produced some superb annotated CAD drawings to illustrate our lectures and magazine output.

WE ARE HALF-WAY THERE! *by Mark Allatt*

Over £2.5m spent – and more than £3m donated - of £5m target

Gresley class P2 No. 2007 *Prince of Wales* outside Darlington Locomotive Works.

As you will have read elsewhere in this edition of TCC, even in these difficult times our project to build Gresley class P2 No. 2007 Prince of Wales continues to make solid progress on all fronts. It's still difficult to ascertain at the time of writing what the long-term impact of the coronavirus will be on our fundraising efforts, but we are carefully monitoring our financial position and building as much flexibility into our project plan as possible. As we know, our fundraising works as a virtuous circle, with donations generating progress which encourages supporters new and existing to support the next phases of construction. Our biggest challenge at the moment remains the recruitment of new Covenantors due to the lack of opportunities to talk to potential supporters face-to-face. A huge thank you to all our supporters who continue to give most generously to the project. At this time, we are still on target to complete the new locomotive within three years provided we can turn up the wick on our income growth.



Donated to date.

Public interest in seeing a new Gresley class P2 become a reality sooner rather than later remains high and over 930 people have already signed up to the 'P2 for the price of a pint of beer per week' (£2.50 per week or more) Covenant scheme since its launch in March 2014. The average monthly donation is still over £15 per Covenantor (excluding Gift Aid) and the projected annual income for our P2 project from the monthly Covenant scheme now well in excess of £200,000pa – a remarkable achievement in such a short period of time and all thanks to the generosity of our supporters. However, due to the coronavirus we have had to suspend our programme of Works Open Days and P2 Roadshows and so are not getting the face time with potential new supporters. Whilst we are doing what we can do raise our profile digitally and in the print media, I would encourage all of our existing supporters to try to recruit a friend to come on board as a covenantor or if possible, consider increasing your Covenant.

In addition to this core scheme, funds have been raised through The Founders Club with over 360 members donated £1,000 each plus Gift Aid – target 100 people, now closed; The Mikado Club, launched in March 2016 with an initial target of 160 members to wheel the engine and extended in May 2017 to 200 members to also wheel the tender - now fully subscribed with 200 supporters pledging £1,000 each plus Gift Aid and therefore potentially raising £250,000; and The Cylinder Club, only launched at our Convention in October 2017, is now also fully subscribed with 100 people having already pledged £1,000 each plus Gift Aid and therefore potentially raising £125,000. The Gresley Society Trust has sponsored the locomotive's distinctive front-end for which we are most grateful. You can read elsewhere in this issue of TCC where these funds have already been put to good use.

Our order in June 2019 for two new boilers – an heir and a spare – from DB Meiningen makes it more important than even that we reach our 300 members target for The Boiler Club as soon as possible. We have already recruited 206 people to The Boiler Cub, each of whom have pledged £2,000 each to fund the boiler meaning that £412,00 of the £600,000 target (excluding Gift Aid) is now pledged. With the delivery of the boiler for No. 2007 scheduled for December 2021 – and the spare boiler for both of our locomotives expected to be delivered in December 2020 - we need an average of seven new members a month – please do consider becoming a member of The Boiler Club if you are able. If you are already a member of The Boiler Club, please do consider joining a number of our supporters who have taken out a second membership of The Boiler Club to fund No. 2007's share of the spare boiler.

April 2018 saw the launch of The Motion Club, established to fund the manufacture of the heavy motion for No. 2007, where we set ourselves the challenge of raising £210,000 from 175 supporters each donating £1,000 plus Gift Aid. In just ten days we had already signed up 24 members of The Motion Club, potentially worth £30,000 including Gift Aid – a remarkable achievement thanks to the generosity of our supporters. Although somewhat delayed through no fault of our supplier, you can see elsewhere in TCC that good progress is now being made with the heavy motion and the first pair of coupling rods were delivered to DLW in time for the virtual convention. As of the end of October 2020, we had recruited 175 members to The Motion Club, with £175,000 pledged excluding Gift Aid – at last reaching the initial target, proof indeed that visible progress really does drive donations.

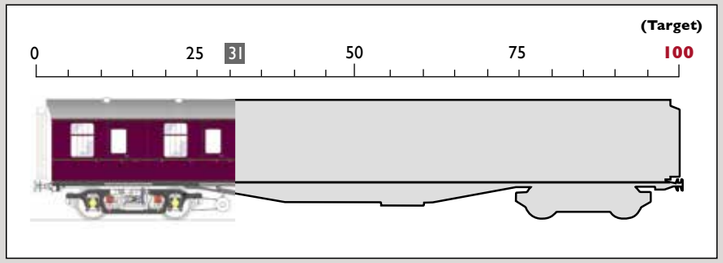
We launched The Tender Club in April 2019 to raise the funds to manufacture No. 2007's tender. We set ourselves the challenge of raising £450,000 through The Tender Club from 250 supporters each donating £1,500 (plus Gift Aid) to the project in up to 15 payments of £100 by standing order. The Tender Club got off to a rather slow start, but progress has been steady, and we have now recruited 88people as of the end of October which is still in stark contrast to the tender's progress! As you can read in David Elliott's engineering update, work has progressed rapidly on the tender since the last edition of *TCC*. We still have a long way to go to be able to fully fund the tender and will therefore need to more closely align its pace of construction with the availability of funds over the coming months. Please help us to close the gap and get on board The Tender Club.

As you will read elsewhere in TCC, in April we launched our first smaller – or bite-sized – fundraising club to provide the funds required to complete the pony truck. With The Pony (Truck) Club – apologies for the pun - we are seeking to raise the necessary £20,000 (plus Gift Aid) from 20 supporters each donating £1,000. This club got off to quite a gallop and has now recruited 31 supporters had signed up enabling us to also fund some of the required certification.

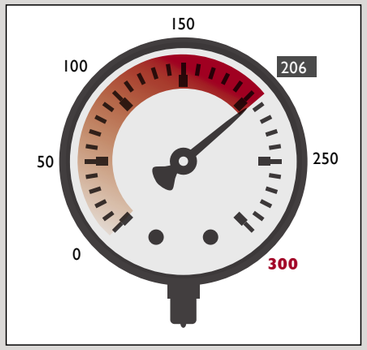
Spurred on by this success, in we launched The Turbogen Club in July and by the end of October the fundraising campaign has already 'generated' 23 members of the initial target of 40 members each contributing £1,000. Please do take a look and consider joining The Turbogen Club before it reaches its target.

Our newest fundraising campaign, The P2 Support Coach Appeal, was launched in August to acquire, overhaul and convert BR Mark 1 BSK E34547 into the support coach for No. 2007. Our target is to raise £100,000 from 100 supporters each donating £1,000 and we have already recruited 31 supporters - if you haven't already done so, please do consider stepping on-board.

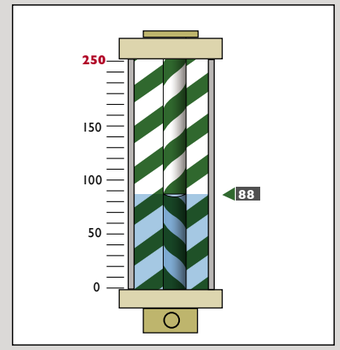
Our Dedicated Donations initiative continues to generate substantial income for the project, with over £400,000 to-date from existing supporters sponsoring a variety of components. There are still a considerable number of wheeling-related Dedicated Donations still available for sponsorship, ranging from a driving wheel spoke at £600 (or from £25 per month for 24 months) to a Cartazzi axlebox casting at £1,300 (or from £50 per month for 26 months) to and driving wheel casting & proof machining at £12,000 (or from £200 per month for 60 months). We have also released some very visible Dedicated Donations related to the painting of the locomotive, with sponsorship of the LNER lettering on the tender available for £1,000 per side (fireman's side remaining) and the lining of the tender at £1,000 for each side and £500 for the rear.



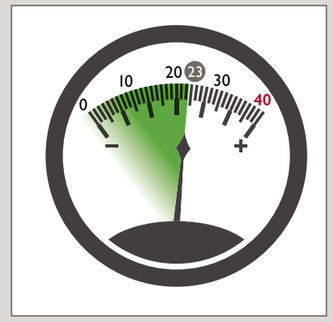
The P2 Coach Appeal - 31 supporters.



Boiler Club Gauge - 206 Members.



Tender Club Gauge - 88 Members.



Turbogen Club - 23 Members.

We are delighted with the level of support that the project to build Britain's most powerful steam locomotive has received since its launch. This means over £2.5m (over half of the total required) converted into metal and more than £3.0m (60%) raised.

We now have a rolling chassis and we remain on-track for completion of the new locomotive within three years. However, to maintain this rate of progress we need to raise more than £700,000 per year, which given the nature of the regular donation scheme becomes more challenging as each year passes. Last financial year we didn't quite achieve our budget of £500,000 and so we will have to work harder this year to maintain our momentum.

We would encourage all our supporters who haven't yet contributed to this exciting project to help us to meet these deadlines by becoming a monthly 'P2 for the price of a pint of beer a week' Covenantor, joining The Boiler Club, subscribing to The Motion Club, becoming a member of The Tender Club or taking out a Dedicated Donation. It's time to get on-board!

For more information on how you can help to build Britain's most powerful steam locomotive visit **www.p2steam.com**, email **enquiries@p2steam.com** or call 01325 460163. TCC

POWERING NO. 2007 TO COMPLETION WITH THE TURBOGEN CLUB *by Mark Allatt*

Rob Morland

Turbo-generator assembly.

In August 2018, the Trust placed a £350,000 order for a state-of-the-art electrical system for new Gresley class P2 No. 2007 *Prince of Wales*. The electrical system, based on that which has operated successfully for the past 12 years on No. 60163 *Tornado*, includes systems that generate and store electricity, together with lighting and instrumentation systems. Also included are all current railway safety and communication systems, plus new systems that will soon be needed on the Network Rail main line.

The Electrical system for No. 2007 *Prince of Wales* will be based on the following key principles:

- Dual redundant power supplies and electronic battery management
- Steam turbine and axle-driven generators
- Structured trunking system for wiring and optimised equipment locations for minimum wiring
- Military specification components for reliability and all LED lighting.

Power will be generated by the Trust's new design for an axle-driven alternator, based on an off-the-shelf truck product, and new turbo-generators, based on the German design fitted to *Tornado*. No. 2007 will be fitted with two turbo-generators, each with an output around 25A at 27V DC (675VA).

In order to keep on schedule to complete No. 2007 within the next three years, we need to have the two turbo-generators delivered to Darlington Locomotive Works in 2020. We estimate that each turbo-generator will cost around £40,000 to complete and install.

Spurred on by the success of The Pony (Truck) Club, in early July we launched The Turbogen Club – the second of our new mini-clubs to fund specific areas of construction that are beyond the reach of most people to support as a Dedicated Donation.

It is our desire to leave No. 2007 debt free and therefore our aim is to raise at least £40,000 with The Turbogen Club from 40 supporters each donating £1,000 plus Gift Aid (in up to four payments of £250).

Members receive the following special benefits:

- Opportunity to buy ticket (seat already reserved) on one of the first trains hauled by No. 2007 *Prince of Wales*
- Reasonable access to No. 2007 at all times
- First choice of components to sponsor as a Dedicated Donation
- Special supporters' day with *Tornado*
- Exclusive certificate signed by the electricals design team of Rob Morland and Alan Parkin
- A limited-edition turbo-generator coaster
- Invitation to the first official run of the new turbo-generator.

By the end of October, the fundraising campaign for The Turbogen Club has already 'generated' more than half of the initial target of 40 members, each contributing £1,000.

To become a member of The Turbogen Club, email **enquiries@p2steam.com**, call **01325 460163** or visit **www.p2steam.com** for more information.

The A1 Steam Locomotive Trust is raising funds for the acquisition of two turbo-generators for the new Gresley class P2 No. 2007 *Prince of Wales*. If there are surplus funds left over following the acquisition of the two turbo-generators, we will use the money to buy other components for the Gresley class P2 that the charity would not otherwise have. TCC

Turbogen Coaster.

P2 DEDICATED DONATIONS UPDATE *by Mandy Grant*

1st August 2020 – 4th November 2020 has seen another steady increase in component sponsorship, with 11 individual components being sponsored, raising a further £6765.00 before gift aid. This brings the total number of components now sponsored to 628!

We are most grateful to all of our supporters who have responded to the Dedicated Donations campaign so far!

Looking for an unusual gift? With prices ranging from one of many driven bolts & slotted nuts for £30 to the complete exhaust steam injector for £15,000. Why not treat the rail enthusiast in your family to something different and help us to complete this iconic locomotive!

Whatever your budget, please email Mandy at **dedicated.donations@p2steam.com** for more information.

Components sponsored during this period include:

- Pony Truck Axle
- Pony Truck Labyrinth Seal Ring 1
- 4x 1" BSW Driven Bolts and Slotted Nuts - Leading LH Hornstay
- L N E R Tender Lettering Driver's Side
- Hose Cock Adapters for Engine Buffer Beam Bracket 2
- Leading Coupled Axlebox Castellated Nut 6
- Clip for Vacuum Brake Pipes
- Brake Hanger Bracket 3 LH Machining

If you know of a business owner or company who may be interested in sponsoring an item on No. 2007 *Prince of Wales*, please contact **dedicated.donations@p2steam.com** TCC

THE TENDER CLUB STEADILY FILLING UP *by Mark Allatt*

In April 2019, the project to build Britain's most powerful express passenger steam locomotive announced a new £450,000 appeal to fund the manufacture of the tender for new Gresley class P2 No. 2007 *Prince of Wales*. The A1 Steam Locomotive Trust has set itself the challenge of raising £450,000 (including Gift Aid) through The Tender Club from 250 supporters each donating £1,500 (plus Gift Aid) to the project in up to 15 payments of £100 by standing order. At the same time, the Trust was also pleased to announce that the order to manufacture the tender tank has been placed with North View Engineering Solutions of Darlington.

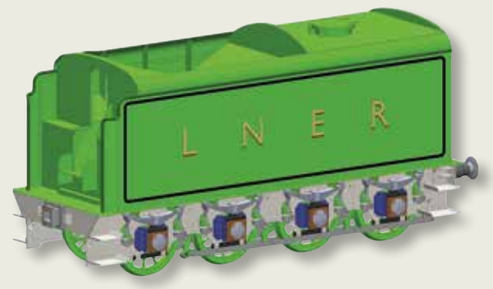
Substantial progress has been made on the tender with the erection of the tender frames by ID Howitt of Crofton (now over two-thirds complete), the construction of the tender tank by North View Engineering Solutions Ltd of Darlington (structurally complete, delivered to DLW in March, primed & undercoated and now stored awaiting the frame) and the assembly of the four tender wheelsets at South Devon Railway Engineering Ltd in Buckfastleigh (now complete and in DLW where they have been filled and painted and await balancing)

In return for supporting this appeal, special benefits for members of The Tender Club include:

- Opportunity to buy ticket (seat already reserved) on one of the first trains hauled by No. 2007 *Prince of Wales*
- Reasonable access to No. 2007 at all times
- Opportunity to buy exclusive Tender Club badge
- Opportunity to join one of the teams building No. 2007
- First choice of other components to sponsor
- Special supporters' day with *Tornado*
- Special limited-edition print of Stephen Bainbridge's 'Locomotives of the future' painting.

The tender for No. 2007 *Prince of Wales* is based closely on the tender built for A1 class No. 60163 *Tornado*. The original P2 tenders were to the 1930s non-corridor design built for the new A3 'Pacifics' being built at that time.

The water capacity of the original design was 5,000 gallons, which at a typical consumption of 45 gallons per mile would provide a range between water stops of 80 miles (with as safety margin). The tender for *Tornado* was re-designed to increase the water capacity to 6,250 gallons which increases the range to about 110 miles. The additional water



David Elliott

capacity is at the expense of a reduction in coal capacity from 9 tons to 7½ tons.

The tender tank is a fully welded structure made from weathering steel (as used on motorway bridges and the Angel of the North) to provide improved resistance to corrosion. The main visible differences with the new tender when compared to that of *Tornado* is the curving inwards of the side sheets at the front to match the shape of the cab sides, and the extensive use of half round beading along the front and top of the sides and the top of the back of the tank.

We now urgently need the fundraising for the tender to keep pace with its construction if we are to remain on-track for completion of No. 2007 within the next three years. By the end of October, The Tender Club had recruited 88 members of its 250 members target meaning that only £132,000 (excluding Gift Aid) of the required £450,000 (including Gift Aid) has already been pledged – that still leaves us with a lot of work to do!

To become a member of The Tender Club, email **enquiries@p2steam.com**, call **01325 460163** or visit **www.p2steam.com** for more information.

PS The A1 Steam Locomotive Trust is raising funds for the manufacture of the tender for the new Gresley class P2 No. 2007 *Prince of Wales*. If there are surplus funds left over following the manufacture of the tender, we will use the money to buy other components for the Gresley class P2 that the charity would not otherwise have. TCC

Attention all Club Members! - *Exclusive badges are available to purchase -*

The Boiler Club, The Mikado Club, The Cylinder Club,
The Motion Club, The Tender Club - All Club Badges £5.00 each (Badges shown actual size)

To purchase your badge please send a cheque for the relevant amount made payable to 'The P2 Steam Locomotive Company' and send to The A1 Steam Locomotive Trust, Darlington Locomotive Works, Hopetown Lane, Darlington DL3 6RQ.

THE RAILWAY HERITAGE QUARTER AND DARLINGTON LOCOMOTIVE WORKS TOO! *by Paul Bruce*

The Trust is very excited to be working closely with Darlington Borough Council on the development of the Railway Heritage Quarter (RHQ) to support the celebrations for the 200th anniversary of the Stockton & Darlington Railway in 2025. With over £20m committed to the project so far, this world class visitor attraction is making real progress.

As previously reported the outstanding RHQ will incorporate a new Works for the Trust and give the P2, the A1 and the V4 a rail connected base in their hometown of Darlington.

As shown on the image right, 'Darlington Locomotive Works 2' is planned for the Bonomi Way side of the Bishop Auckland line and will link to the main site by a footbridge crossing the branch. The draft track layout demonstrates the extent of the site which would be over half a mile end to end. Current proposals would bring our heritage partners NELPG and DRPS into the 1861 Peachey shed on Whessoe Road, each organisation finally able to bring locos back home via the national rail network.

The image centre right shows how visitors might access the Works via the overbridge whereupon they would arrive onto a high-level viewing gallery looking down onto the Trust's engineering activities. We would reemphasise that designs are still under development, but the building would provide up to four new build bays and two running shed bays along with stores, workshops and admin facilities. By the time of opening, the V4 would be in full swing and the P2, the A1 and their respective support coaches would have their heavy overhauls here. A range of machining, construction, painting as well as general overhaul could be periodically experienced according to the programme of works.

All images by DBC

Above: DLW2 and bridge plan.

New shed internals.

Goods shed internals.

Entry to the RHQ would be through the existing Goods Shed which receives a comprehensive overhaul and conversion and provides a focal point from North Road and will look towards Skerne Bridge, the world's oldest railway bridge still in use.

Internals with viewing gallery.

The image above shows an artist's impression of the new build bays and viewing gallery. The need to lift locomotives and coaches makes this the highest part of the building and the gallery is likely to be over six metres above the workshop floors.

Eagle-eyed readers may have spotted a turntable on the plans. This is a longer-term aspiration to provide real flexibility for the RHQ site as a whole. As well as being key for Trust activities, it gives the opportunity to arrive at this world class attraction by steam and for visiting locos to be serviced and turned for their return journey.

We have a long way to go but everyone is behind this magnificent project which will provide a core to the whole 2025 celebrations. More importantly it creates an ongoing world-class facility of which the Trust, the town and the UK can be justifiably proud. TCC

FROM THE ARCHIVES *by Graham Langer*

Autumn 2000 - The chimney, chimney liner, blast pipe and three steam pipes for No. 60163 were delivered to DLW following completion of machining by Ufone Precision Engineers at Dudley, West Midlands. Good progress was being made by Ian Howitt of Crofton, Wakefield on the distinctive superheater header covers, which are fitted to the rear of the smokebox. These deceptively simple looking items would originally have been made by pressing red hot plate between male and female dies. This process is not viable for making two covers, as the tooling costs would be excessive. Instead, a single male former was made and the covers manually 'panel beaten' from 10mm plate using the former to create the right shape.

Autumn 2005 - Armed with a letter of 'letter of no objection' from Her Majesty's Railway Inspectorate and with the approval of our Vehicle Acceptance Body, we formally instructed Meiningen to commence manufacture of *Tornado's* boiler on 16th October 2005. Outside motion machining was almost complete. However, with the expected arrival of the boiler in July 2006, efforts were redirected between the frames to complete tasks which would be difficult with the boiler on the engine. To this end, Ian Howitt was contracted to make fixtures for, and to machine, the inside big end brasses. In other news, Andrew Cook, sponsor of *Tornado's* tender, has acquired a French 141R 2-8-2 locomotive in full working order for use on steam specials in Switzerland.

A1SLT

The smokebox furniture at DLW, ready for fitting.

Autumn 2010 – The 2010 (20th Anniversary) Convention was held in Chesterfield with *Tornado* stabled at Barrow Hill Roundhouse. The locomotive had enjoyed a busy summer of main line railtours and visits to preserved lines including Barrow Hill and the East Lancashire Railway. Work at DLW continued to focus on fitting out the support coach whilst elsewhere in Darlington am miniature version of *Tornado* had appeared on a roundabout. Commissioned by the Borough Council and built by local firm S&I Structures this model still stands on Darlington's Victoria Road and St. Cuthbert's Way roundabout.

A1SLT

The inside big end brass is machined at Ian Howitt's workshop.

Autumn 2015 – Sadly we had to record the passing of the Trust's President, Dorothy Mather, on 10th November 2015, losing a tangible link with Arthur Peppercorn in the process. There was no sign of the pace slackening during the summer, either for *Tornado* or *Prince of Wales*! No. 60163 continued to clock up incredible mileages and visited Kingswear, Peterborough, Edinburgh, Tweedbank (for the first time), London, Newcastle, Minehead and Bridgnorth. On 13th September *Tornado* ran over the newly re-opened Borders line, once again breaking new ground. At DLW work was progressing on the erection of No. 2007's frames with most of the key stretchers on hand to aid the process, all the wheels had been cast and the proof-machined driving wheels delivered to the Works. TCC

The A1 Steam Locomotive Trust is pleased to display the logos of organisations giving us their ongoing support. Their contribution is gratefully acknowledged.

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*All information correct at the time of going to press late November 2020. For up-to-date information and dates please check the website www.a1steam.com.

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● e-mail: *enquiries@a1steam.com* ● website: *www.a1steam.com* ● tel: 01325 460163

Darlington Locomotive Works is normally open to the public on the first and third Saturday each month (11am – 4pm).
Access to the works is via Head of Steam: Darlington Railway Museum where Covenantors are entitled to free entry (with Covenantor card). Charity registration No. 1022834.
The Trust respectfully requests that anyone wanting to see *Tornado*'s main line passenger trains follows the rules of the railway and only goes where permitted.