

THE COMMUNICATION CORD

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60163 TORNADO
New Steam for the Main Line

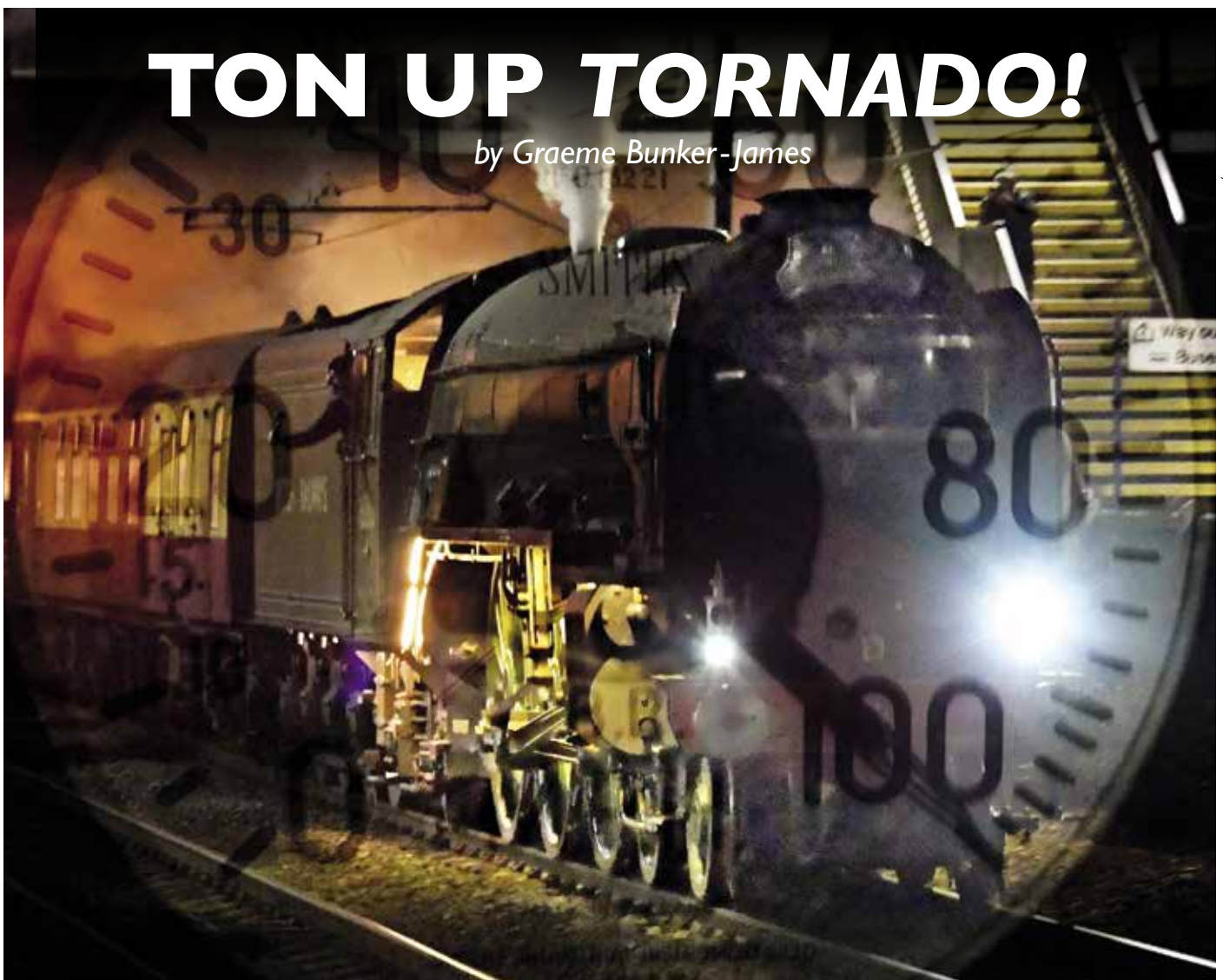


2007 PRINCE OF WALES
Building Britain's Most Powerful Steam Locomotive

TON UP TORNADO!

by Graeme Bunker-James

Robin Coombes / Mandy Grant



Around 04:00hrs on 12th April 2017 *Tornado* added another major milestone to the record books; the first steam locomotive to achieve 100mph in the U.K. for 50 years.

The build up to the night's events has been long in the making. It has always been the intention of the Trust that *Tornado* would be passed for 90mph operations

to facilitate better pathing on busy routes. The original view was that simply proving the locomotive was up to the task (which the original design had already proved before 1965) would not be sufficient. Many hurdles were to be overcome before trials would be authorised. The decision that the locomotive would be trialled at 100mph

comes from a need to show that at 10% above the certified speed the locomotive is still operating safely. This gives a margin when running at 90mph, and is in common with other traction types. Safety was the first priority, gaining data and experience of the locomotive above 75mph being the objective.

CONTENTS

PAGE 1
Ton up Tornado!
PAGE 5
Editorial
Walton-on -the-Naze 150th Railway celebration
PAGE 6
Three days on the Settle & Carlisle Railway
PAGE 7
‘The Easterling’
PAGE 8
Settle & Carlisle ‘Plandampf’
PAGE 9
‘The Border Raider’
PAGE 10
Tornado on Tour
‘The Saint David / Y Dewi Sant’
PAGE 12
Tornado on Tour
Nene Valley Railway
PAGE 13
Tornado on Tour
‘The North Briton’
PAGE 14
Tornado on Tour
‘The Heart of Midlothian’
PAGE 16
Tornado on Tour
‘The Talisman’
PAGE 17
A1 engineering report
PAGE 18
Tornado preparation
PAGE 19
Keeping Tornado on the tracks
Tornado Tour diary 2017
PAGE 20
The big picture
PAGE 22
‘Shed Notices’
PAGE 23
Annual Convention prize draw 2017
PAGE 24
A1 Profile - No. 60117 Bois Roussel
PAGE 26
P2 engineering update
PAGE 29
P2 Fundraising
PAGE 30
The Boiler Club
PAGE 31
P2 Roadshows
Mikado Club badges
P2 Dedicated Donations update
Boiler Club badges
PAGE 32
‘Workshop Notes’
PAGE 33
Breaking new ground (again!)
PAGE 34
Darlington Locomotive Works
PAGE 36
P2 Profile – No. 2004 Mons Meg
PAGE 38
Profile- Gordon Best
PAGE 39
From the archives
PAGE 40
Sponsors and contact information



Rob Morland

Tornado is readied to depart from Newcastle with the return run to York.

The test route was set from Doncaster to Newcastle (and return) as it would be a fair assessment. It was felt that running down Stoke Bank would not prove the locomotive in a realistic situation. Speed would be swiftly gained on the bank but would that demonstrate the all-round performance needed for 90mph certification? It was felt it wouldn't. The selected route would make for a more demanding trial, and in reality push *Tornado*. As it was a test, that is the correct approach; the locomotive will not be pushed as hard in service. There would also be no hiding place. Cameras were fitted across the locomotive and Jez Yarnall and his DATS team, working with Owen Evans of Resonate Ltd, had fitted a vast array of accelerometers and other equipment to the locomotive and tender. Every aspect of the locomotive's dynamic ride would be recorded. In a first, an electronic temperature sensor was fitted to the inside big end bearing to guard against the failure that occurred on *Mallard's* record run in 1938. Although *Tornado* has a much improved design of middle big end, it is something that needs monitoring. Therefore the original stink bomb housing was fitted with an electronic temperature sensor designed by Steve Sims of Ziconix assisted by our own Rob Morland and David Elliott. The sensor would transmit a signal via Bluetooth to a mobile phone which would log the data and display the temperature (see the separate article by Rob Morland). It works very much like a hands free system in your motor car. This worked brilliantly on the night and much useful data was collected. It also showed it takes around 25

miles for the bearing and surrounding metal to reach full working temperature. The load for the test consisted of seven Mk2 coaches, two Mk1s (one being our support coach) and a DBC Class 67. The northbound run on the night was delivered with absolute professionalism by the DB Cargo crew of Traction Inspector Jim Smith, Driver Steve Hanczar and Fireman Tony Jones. Speed was raised gradually, with *Tornado* cruising at 82/83mph south of York at 15% cut off. With no issues found at our water stop in York station we set off again. North of York the gradients were slightly against us but once clear of a brake test at Thirsk and the curves at Aycliffe the locomotive picked up speed well. North of Tursdale the first 90mph of the night was achieved - so far so good, as the locomotive led its train into the servicing point at Tyne Yard. All was well with the locomotive and the measuring equipment so we made the movements towards Gateshead to reverse the train (diesel hauled) into Newcastle Central - the Class 67 had been in the consist heading north. As the locomotive had proven its haulage capabilities, the 67 was removed from the train here, with which driver Joe Wray would shadow *Tornado* to Doncaster. Dave Proctor had also relieved Tony Jones and taken on the firing duties. The departure from Newcastle was phenomenal. We rarely get to see what No. 60163 can do on a light train, although 315 tonnes is a fair bit more than the 'Silver Jubilee' or 'Coronation' of the 1930s, but *Tornado* absolutely flew. We were restricted to 75mph max until passing Reilly Mill, but

then Driver Hanczar set the locomotive to it down the grade from the summit. For the next 16 miles speed never dropped below 80mph and a maximum of 97mph was recorded south of Bradbury but the 'ton' still eluded us. The locomotive ran at or over 90mph for seven miles on this section, providing valuable data. From Darlington to Thirsk a number of restrictions limited higher speeds, but useful performance data was gathered. After a 50mph speed restriction for relaying works at Thirsk and a 75mph restriction near Sessay the footplate crew set to work and speed rose rapidly on the gentle gradients. By Pilmoor the locomotive was running above 90mph again and acceleration continued. Five miles further on and *Tornado* was running at 98mph, with speed increasing. We were now on level track and so Driver Hanczar pushed a little further. With a magnificent firing effort from Dave Proctor, and under the watchful eye of Jim Smith, *Tornado* was asked for more and for around 1.3 miles 100mph was achieved north of the village of Alne. As well as the three figure speed, *Tornado* had been running above 95mph for some ten miles. The objectives of the test, to gather data and experience of running the locomotive at higher speed, had been achieved. At York Station the hero's welcome for the footplate crew, and plenty of cups of tea, made it a magical moment likely never to be repeated. However, the job was not done. There followed more inspections and a top up of water, courtesy of Ian Buxton, and off to Doncaster. The locomotive was worked up to 90mph near Temple Hirst and a then a final full brake test undertaken; with this last piece of important data gathered it was then onto Doncaster and the end of the run. The locomotive had performed superbly and once safely back on shed it was time for tired heads to sleep, although there were one or two media duties to attend to first. There was also the small matter of de-rigging the locomotive of all the cameras and measuring devices which took a good few hours. We are indebted to many people in multiple organisations for their assistance. Space does not permit them all to be mentioned but it would be wrong not to single out a few. DB Cargo have been totally behind the trial-running, bringing their expertise and experience from running No. 4464 *Bittern* at 90mph in 2013 to bear. Richard Corser, Nic Edwards, Quentin Hedderly, Sean Levell and Keith Jackson all put in many hours of work to plan and deliver the test. Network Rail has provided much assistance, particularly in the engineering disciplines under Chief Engineer John



In a darkened compartment of the support coach, synchronised speedometers record 100mph.



Meanwhile Mark Allatt watches as the same figure appears on the digital readout on the train.

Shaw. Their structures' engineers at York reviewed the test route and confirmed that *Tornado* could run at the necessary higher speeds for testing. Embankment specialists, track engineers, gauging engineers and many others also confirmed their agreement. Particular thanks must go to Sam De'Ath, Harrinson Mattinson, Peter Cushing and Steve Valentine. On

the night Chris Gee's team at York helped ensure we had the railway available to us and green signals on the relevant stretches. Our notified body Ricardo Rail, and in particular Eddie Draper, provided valuable assistance and expertise including final inspections of the locomotive and support in obtaining the necessary authority for the test. Alan Haywood of the Cass

Rob Morland

Graham Langer

Right: The team responsible, including members of the AISLT support crew, engineers and representatives of DB Cargo and Virgin Trains.

Below: The crew, Graeme Bunker (AISLT), Dave Proctor (fireman), Steve Hanczar (driver) and Jim Smith (traction inspector) are feted by the railway press at York, just minutes after setting a preservation era record.



Graham Langer



Graham Nicholas

Haywood partnership has compiled a methodology for the assessment of *Tornado* on structures which has been an important step in moving us forward. No one has considered high speed steam on structures since the 1960s, either for maintenance issues or the design of new constructions. We also had great assistance from Andy Booth and Electromotive at Doncaster where *Tornado*

was prepared for the run.

The final credit, and perhaps the most important, goes to David Wright and his team at LMS. The work required to prepare the locomotive at the same time as completing the annual exam and routine maintenance was exceptional. With the locomotive having to cover for others which are not yet back from overhaul, etc. all these matters came to a head right in

the lead up to the test run. That David and his small dedicated team turned out a locomotive capable of running hard under test conditions, and achieving 100mph, is to be applauded. The work now is to analyse the data, understand what was happening on the day and then make appropriate submissions. It is hoped by the end of the year *Tornado* will be approved for 90mph. **TCC**

EDITORIAL by Graham Langer



Given the blanket coverage by the national and international media I am sure everyone now knows that in the early hours of 12th April *Tornado* achieved a UK speed record for the preservation era, attaining 100mph on the East Coast Main Line north of York; that this was accomplished on virtually level track makes the feat all the more impressive. In an article in this edition of TCC Graeme Bunker-James covers the story of this amazing night and Rob Morland explains some of the technical wizardry that made it possible. We are indebted to our industry partners for facilitating this run and to our own engineering team who ensured that not only was *Tornado* built to the highest standards but that the documentation to support this was available to the railway authorities and certification bodies. There has been much debate in the railway press about the practicality and need for 90mph running but the Trust is convinced that having this derogation will enable us to fit our trains into the modern railway environment for the benefit of both our own passengers and other operators on an increasingly congested, high speed network. However, this exciting news must be tempered by the caveat that it was an expensive process and the paperwork still needs to be completed.

The discussion surrounding this trial has served to highlight one important point; the preserved fleet of Class 7 and 8 steam locomotives are all over 60 years old, many are in their 70s and the most celebrated of all, Flying Scotsman, is rapidly approaching its centenary! The work involved keeping these engines fit for the main line can only get more onerous and costly, even when they are limited to 75mph. The "procession to the plinth" is a reality (witness John Cameron's decision to preserve 'No. 9' as a static exhibit) and there may come a time when Network Rail and the authorities impose a 'use by' date on some of the older machines, leading to a gradual reduction in the main line fleet. We are extremely lucky to live in a country where steam is still accepted on the 'big railway' and there are people and organisations with the resources to keep overhauling locomotives but this situation can never be taken for granted; 'new build' offers the brightest future for main line steam and your continued support for *Tornado* and the construction of *Prince of Wales* is vital to ensuring this.

From an AI perspective we have had a great start to the year.

As well as a busy diary working for Belmond, Torbay Express and others, our own tours are selling well with loadings up 15% compared to last year. This is very encouraging, but there is more work to do, so do join us for a tour if you can. Covenantor numbers are stable but we need them to grow, so if you know anyone interested please let the office at Darlington know. We have nearly completed the 'tender behind' campaign with only 20 Pacifics left to be allocated, allowing us to complete the purchase of *Tornado's* tender. Meanwhile the project to build a P2 also steams on, the roadshows along the route of the East Coast Main Line are yielding new covenantors and donations as well as a staggering growth in membership of the 'Mikado Club' reported in Mark Allatt's column on page 29.

Writing this editorial has been a bittersweet experience. As *Tornado* tore south towards York and we watched the digital readout climb towards the 'ton', I was aware that there was one person missing who would dearly loved to have been on that train; Barry Wilson, one of the pivotal figures in the Trust, who died suddenly on 16th March. Barry's contribution was considerable, both in terms of his oversight of the Trust's finances and for his role in the acquisition of the support coach; those of us who worked with him on the support crew can also vouch for his physical stamina and willingness to tackle dirty jobs with gusto. A full obituary appears on page 22. **TCC**



Robin Coombes

The last AI to top 100mph was No. 60145 *Saint Mungo* in 1965 - a feat emulated by *Tornado* on 12th April.

Walton-on-the-Naze 150th Railway Celebration - Saturday, 12th August 2017

Tornado will make history when it arrives in Walton to commemorate the town railway station's 150th anniversary this August. For the first time people will have a chance to hop aboard a steam special for a return journey from London Liverpool Street to Walton railway station. Once in Walton, the train will then run to and from Colchester Town five times, giving 1,500 visitors an opportunity to enjoy an historic trip. Thousands of people are expected to spend 12th August at the seaside town, where a fireworks display will round off a day's worth of entertainment at 21:00hrs. Visitors will be

able to ride the attractions at Walton Pier for free having first collected a wristband from various top locations, such as the Naze Tower.

Proceeds from the day, and specially-made *Tornado* mugs, are being donated to St Helena Hospice. A London return ticket will cost passengers £99, while a return from Walton ranges between £17.50 and £80 for a family of four. Passengers will be treated to a buffet.

For tickets email contact@tornado150.co.uk or freephone 0330 1138989. **TCC**

THREE DAYS ON THE SETTLE & CARLISLE RAILWAY by Tony Jones

Much has been written regarding the remarkable way in which February's Tornado 'Plandampf' runs over the Settle & Carlisle line (S&C) were organised at such short notice by Northern, DB Cargo UK and, of course, the A1 Steam Locomotive Trust. Here Tony Jones, who worked on these services, tells the story from his perspective.

As a DB Cargo UK driver based at Carlisle, my involvement was as fireman for the three days. By lodging driver, fireman and traction inspector (TI) at Appleby, it was possible for DB Cargo UK to utilise just a single set of men for the duration; this did mean, however, that a lot of coal needed to be moved by just one pair of arms. I was lucky to have trainee fireman Andy Denton of Healey Mills depot on the footplate for some of the runs and his assistance helped greatly. All the runs were crewed by TI Jim Smith of Thornaby, driver Steve Hanczar of Tyne Yard and myself, with the exception of two, the first southbound trip on Tuesday morning (when Pete Sheridan of Warrington depot drove and Bob Hart of Crewe acted as TI) and the last northbound service on Thursday (when Bob again substituted for Jim Smith).

We ran two return trips daily, with a break at Appleby between the morning and afternoon runs to allow the locomotive to be serviced, and the footplate crew to go in search of fish and chips. By my reckoning the distance between Appleby and Skipton is about 55 miles; that's 220 miles per day, and a remarkable 110 miles between tender fill-ups (which were done



The tender first consist is seen at Ribbleshead.

only at Appleby). The fireman's role on a steam locomotive is primarily boiler management, and although shovelling several tonnes of coal is a part of that job, there is a fair bit more that the fireman needs to consider. Running tender first, as we were required to do on the southbound runs from Appleby, also presents challenges not normally encountered on modern day main line trips. For example, when braking, the water level in the gauge glasses would



With DBC branding to the fore, Tornado leaves Gargrave with a Skipton service, running tender first with the Class 67 coupled inside.

rise as the boiler contents surged towards the firebox (normally, when running chimney first, the opposite happens and the fireman anticipates this by making sure that the water level is near the top of the glass before braking commences). The issue here is that if the safety valves lift – and there is every chance when one considers that, prior to braking, the regulator will have been closed – there is the possibility of water being forced out through the safety valves in addition to steam.

Another complication when running tender first is signal sighting, as the driver is sitting on the right-hand side in direction of travel when the locomotive is running backwards, and he has to have his head out of the window – there being no spectacle plates in the tender for reverse running. Andy Denton and myself 'sign the road' as drivers, and so we were both in a position to assist in sighting signals. However I can say that having my head stuck out of the cab when travelling over the S&C in mid-February wasn't one of the highlights of the three days.

I think I can speak for the rest of the footplate crew when I say that we found the northbound runs to be more satisfying. Leaving Skipton, the gradient rises until milepost 229½, and with a load equivalent to 12 coaches (the class 67 was providing the electric train supply only), we needed to be well prepared. The fire needs to be built up prior to departure, and Tornado's wide firebox needs particular attention paid to the back corners; it's much easier to pile the coal in when stationary than it is when the draught from an open

regulator is pulling the coal off the shovel. The trick is to avoid having the locomotive 'blowing off' prior to departure – particularly when 'under the wires' as we were at Skipton. That task was complicated by some of the departures being delayed slightly because of the number of passengers wishing to board the train.

The falling gradient through Hellifield allowed us a breathing space before the start of the real climb, 16 miles of 1 in 100 from Settle Junction to Blea Moor tunnel, the fabled Long Drag. A stop at Settle station punctuated the climb on our trips which prevented any records being broken, but one of my lasting memories from the February runs was the way that we accelerated away from Settle – we would be up around the 40mph mark by Stainforth tunnel, just two miles north of our Settle stop. It is necessary to fire almost continuously until Blea Moor tunnel is reached. From there until the summit at Ais Gill the line undulates and is less demanding of the fireman. Ais Gill marks the end of the heavy work and after departure from Kirkby Stephen the fire could be allowed to run down.

It was a pleasure to share the footplate with several notable guests on these northbound runs: Alex Hynes, who was at the time managing director of Northern; Nigel Harris of Rail magazine; and my boss, Hans-Georg Werner, CEO of DB Cargo UK. Their reaction, and that of all the other participants, together with the media coverage we attracted, underlines how successful these three days were in raising people's awareness of the S&C. I look forward to the next time! TCC

'THE EASTERLING' - MONDAY 28TH AUGUST 2017

London King's Cross to Great Yarmouth



On her August Bank Holiday train, 'The Easterling', Tornado will take passengers for a good old fashioned day at the sea side. With over three hours at the resort of Great Yarmouth, passengers will have the opportunity to relax and enjoy the bracing East Coast sea breezes. The popular seaside town offers a long sandy beach, a fine array of shops and many eateries. Following a route via Cambridge, Ely and the Norfolk Broads and return, Tornado's first trip to Great Yarmouth offers steam throughout. TCC



TICKET	PRICES
First Class Dining	£239.00
First Class Non Dining	£159.00
Standard Class	£99.00

TIMES (PROVISIONAL)	OUTWARD	RETURN
London King's Cross	09:15hrs	20:05hrs
Potters Bar	09:35hrs	20:25hrs
Stevenage	09:55hrs	20:05hrs

Terms and conditions are available on request. Guaranteed 'tables for two' in First Class Dining and First Class Non-Dining are available for a supplement of £25.00 per person. All profits from this tour go towards keeping Tornado on the main line in future years.

Online and telephone bookings are handled by our booking agents UK Railtours. Go to www.ukrailtours.com to make an online booking, or call 01438 715050 to book over the phone. In the event of cancellation or haulage problems please see our full terms and conditions of carriage.

SETTLE & CARLISLE ‘PLANDAMPF’ by Graeme Bunker-James

When first approached in late summer of 2016 about running a ‘Plandampf’ on the truncated S&C route, it seemed a wonderful idea but unlikely to happen. To run planned steam in lieu of scheduled DMU services is not easy; costs are higher, standard ticket prices have to apply and steam isn’t as swift as modern traction, especially when more capacity is added to accommodate demand. However, at a meeting in early December momentum started to build and Northern MD Alex Hynes coined the phrase ‘I♥S&C’. Network Rail was 100% supportive and pulled out all the stops to ensure that the trains ran as well as possible. It looked like an idea first mooted by Nigel Harris and Tony Streeter of Bauer Media might just happen.

For the Trust to be asked to develop the plan, and seek to bring industry partners together is a great honour, and shows the esteem *Tornado* is held in by the Industry. DB Cargo’s new CEO came on board and backed the venture agreeing to run the trains for a reduced fee. From the green light being given, to *Tornado* departing London for Appleby, was five weeks. It really showed what can be done when the industry works together. A lot of people have asked if this is about having fun, and in some ways it is, but the main reason is to put money back into the local economy and the S&C back on the map. That is the measure of success, not speeds, or horsepower or similar. Filling hotels, B&Bs, pubs and local tea shops was as important as full trains on the route.

Following close on the heels of our successful ‘Red Rose’ rail tour, *Tornado* was prepared for the long journey to Appleby on Monday 13th. Having visited Electro-motive in Doncaster or a full underframe inspection, *Tornado* joined the train at Doncaster with No. 67029 and together they hauled their nine coach train via Leeds and onto Appleby (for late night servicing) ready for the 08:25hrs start the following morning. Being an extended period of operations the support crew were split in two, an early turn and a late turn, to manage the 16 hour days. *Tornado* doesn’t get to work shifts of course!

The first day involved lots and lots of media coverage, with the BBC sending four crews to capture the event. ITV were also on-board, making for a very busy support coach, and the print media were out in full force. *Tornado* headed tender first on the south bound runs, with the Class 67 coupled inside providing electric train supply to the Mk2 coaches. With hundreds looking on, and several hundred



Alon Weaver

In fading light *Tornado* is seen at Skipton station with the last service of the ‘Plandampf’.

on the train, progress south was in lovely sunshine. Being only the second train of the day the railhead was a little poor so it was decided that the Class 67 would assist in starting the train away from Kirkby Stephen, no point in having a bad slip and risking a failure. Progress was good and would have led to an on-time arrival at Skipton if a technical issue on the Class 67 diesel hadn’t intervened. The first north bound train was absolutely full and a slight delay was incurred ensuring as many people were accommodated as possible, but *Tornado*’s first run north was watched by thousands at the lineside. Five drones over Ribbleshead Viaduct give an indication of just how many folks came to watch the train on that first day. The atmosphere on the trains and at the station was wonderful with passengers, staff, British Transport Police and enthusiasts determined to have a good time.

The second round trip was also very well patronised and a steam-hauled stopping train on the S&C with an AI at the helm brought back memories of the sixties, although an AI would have been very rare on such a duty. To hear the locomotive working hard away from Settle, to the stop at Horton in Ribblesdale, was spine tingling as the light faded. The fact that people were leaving the train at intermediate stations, and others joining, made it a very different service those we often run.

On the Wednesday operation, having seen the wall to wall coverage in the media, the numbers at the lineside were even greater. The roads at Ribbleshead were crammed, and the platforms at Kirkby Stephen and Settle were full of passengers and those coming to watch. Luckily the

weather was still favourable, a welcome bonus. *Tornado* continued to perform well, and her crews were getting to grips with the station stops and the run rounds. The slickness of operation reminded many of days gone by when locomotives running round was the norm and it was completed swiftly, with train crew and signalman trusting each other not to cause delays. Station dwell times were as fast as the normal multiple units, a testament to the staff involved.

The final day saw a little rain, the first of note, but it didn’t last long; the sun broke through and still the crowds came. Northern have reported that between 5,500 and 6,000 people travelled on the trains, and there were many thousands at the lineside. Tourist spots such as Appleby Castle, which would have been closed, were open. The hotels, bars and restaurants in the area were full every lunch time and evening. The media still came to witness the event and it reached as far as the Czech Republic, Malta, America and Australia. The BBC were still following the story, and the beautiful sound of *Tornado*, on the following Sunday. The event has been a magnificent success, and looking back it could scarcely have gone better. The coverage, with *Tornado* centre stage, was total, especially on social media. The locomotive performed impeccably, and the team looking after it were superb - the engine doesn’t get tired but the support crew do. They worked brilliantly, in concert with our DB Cargo colleagues, and that showed in the fact that not a minute was booked to the locomotive over all the operations. Would we do it again? Well we might, if asked, but perhaps we need a rest first! **TCC**

‘THE BORDER RAIDER’ - SATURDAY 16TH SEPTEMBER 2017

Birmingham to Carlisle



Mike Glen

‘The Border Raider’ offers a wonderful opportunity for passengers to journey to Carlisle, over some of the most beautiful and challenging railway in the country, on *Tornado*’s first train to start from the West Midlands and will be steam hauled throughout. The journey covers some 400 miles, travelling north to Preston and on to Carlisle via Shap Summit and returning via the

Settle and Carlisle line. Passengers have over two hours to enjoy Carlisle, where the station is close to the Cathedral and nearby pedestrian shopping area. *Tornado* will then proceed back, climbing the summit of Ais Gill and crossing Blea Moor, then passing over the famous Ribbleshead Viaduct before re-joining the outward route south of Preston. **TCC**

TICKET	PRICES
First Class Dining	£239.00
First Class Non Dining	£159.00
Standard Class	£109.00

TIMES (PROVISIONAL)	OUTWARD	RETURN
Tame Bridge Parkway	07:35hrs	22:40hrs
Birmingham New Street	07:50hrs	22:25hrs
Wolverhampton	08:15hrs	22:00hrs
Stafford	08:40hrs	21:35hrs
Crewe	09:20hrs	20:55hrs

Terms and conditions are available on request. Guaranteed ‘tables for two’ in First Class Dining and First Class Non-Dining are available for a supplement of £25.00 per person. All profits from this tour go towards keeping *Tornado* on the main line in future years.

Online and telephone bookings are handled by our booking agents **UK Railtours**. Go to **www.ukrailtours.com** to make an online booking, or call **01438 715050** to book over the phone. In the event of cancellation or haulage problems please see our full terms and conditions of carriage.

TORNADO ON TOUR by Huw Parker

‘THE SAINT DAVID / Y DEWI SANT’



Tony Bartlett

Tornado gallops through the Vale of White Horse on her way to Cardiff.

Instead of joining the support crew on 1st March for ‘The Saint David’ trip to Cardiff, on this occasion I travelled on the cushions – booked as a passenger in First Class Dining. If you have not had the pleasure of sampling this yet, then I strongly recommend you add it to your list of things to do! So it was that, instead of arriving 36 hrs before to prepare *Tornado* and her coach, getting out of bed at a ridiculously early hour for final preparations and moving the locomotive and coaching stock to the planned departure point, I and my group made a leisurely start at London Paddington to join the train.

I had been monitoring the light engine move off Stewarts Lane and was aware that there was a delay. After initial concerns, I was relieved to discover this was due to a failed freight train blocking the route through to Wembley, where *Tornado* and her support coach were to join the stock before being drawn into Paddington ready for departure. Nothing for it, but time for a leisurely coffee outside ‘The Mad Bishop’! Once the tracker confirmed *Tornado* and train were heading for the station, I gathered up my party and joined fellow passengers making their way

to Platform 14 to join the train. Due to the late arrival, boarding was a fairly rushed affair and there was not time to say hello to the support crew and DB team. However, once on board our coach, it was easy to relax and not worry about what was happening at the front as the steward poured a welcome glass of prosecco!



Peter Lovell

With progress of the GWR electrification evident, *Tornado* passes Twyford with ‘The Saint David’.



Huw’s table, set for breakfast.

We eventually left 48 minutes down, but the team at the front soon set about regaining time. I was distracted momentarily from the engine’s performance as a full English breakfast was served with all the trimmings and copious amounts of tea. It was easy to feel that we were back in the 1950s, surrounded by the comfort of a First Open coach, waist-coated stewards and stewardesses offering silver service and polite conversation. My guests were certainly impressed and loved the views from the coach window, occasionally obscured by passing steam, the sound of a three-cylinder exhaust and the distant locomotive whistle. They were amazed by the attention we received from the lineside, with people lining nearby lanes and roads or waving from fields and lineside fences.

We had regained 37 minutes by the time we arrived at Swindon, but after being held unnecessarily we left a full 52 minutes late. We made up some time with a quick water stop at Bristol East Yard, before the climb up Filton Bank and some good running down through the Severn Tunnel and away through Newport, clawing time back with each mile.

I enjoyed greeting familiar members of the support crew as they made their way to and from the footplate at various stops, but my curiosity finally won and I made my way forward to find out how the locomotive was behaving. It sounded fairly good from our locomotive coach to be honest, but I made an excuse to visit to the support coach to meet everyone and quickly catch up with the earlier delays and findings of the Fitness to Run exam the day before. I got back to my seat just in time before we arrived in Cardiff only 15 minutes down. I was almost at a loose end not having to service the engine, but instead I joined the rest of the visitors to Cardiff and enjoyed exploring the city, with a visit to the castle and a brief view of the Principality Stadium before sampling a local hostelry and returning to the station to catch the return leg.

UKRT



Robert Stewart

‘The Saint David’ heads west from Didcot Parkway.

Delays turning the engine and releasing the train from Canton Sidings led to a late departure and the weather had turned cold as the train drew forward into the platform. If breakfast on the outward journey was excellent, then dinner on the return was awesome. Once again in a fantastic setting, with tables re-laid with white linen and pre-ordered drinks waiting for us on our return. A good wine list and a tasty menu provided a perfect accompaniment to the sound of *Tornado* as we headed back to Severn Tunnel Junction and thence North through Chepstow, Gloucester and Stroud, the locomotive ascending Sapperton Bank competently in steady rain, before re-joining the main line at Swindon. Having missed our booked path, a good run back towards London was delayed slightly at Wantage Road, but a swift crew change at Didcot and prompt station activity at Reading and Slough saw us arriving back to Paddington at 21:29hrs, just 23 minutes down. Well done to all at the front!

For me, this was a wonderful insight to the quality of trains that the The A1 Steam Locomotive Trust strives to achieve. Normally on Support Crew duties, we are oblivious to the efforts of the stewards, merchandising and catering teams behind us as we focus on the needs of the locomotive from well before departure until several hours after the last passenger has departed. This was a good opportunity to sample what we offer our customers and it did not disappoint. The problem is, next time I am handed a mug of tea and bacon sandwich in the support coach as we set off for the day, I shall be thinking enviously of our guests enjoying their full English breakfast in the sumptuous surrounding of First Class Dining. If you have not tried it yet, then I cannot recommend the experience highly enough! Look out for our *Tornado* Tours Brochure and book for that next special event! [tcd](#)

TORNADO ON TOUR by Graham Langer

THE NENE VALLEY RAILWAY



Michael Cooper

Above: Over the weekend of 22nd and 23rd April, Tornado worked service trains on the Nene Valley Railway during that line's 'Best of British' gala. In fine weather the locomotive is captured crossing the River Nene on the Saturday.



Mandy Grant

Above: An atmospheric shot taken at Wansford.



Michael Cooper

Right: Two lads have bagged themselves a prime position to enjoy the sound of Tornado working a service train.

TORNADO ON TOUR by Graeme Bunker - James

'THE NORTH BRITON'

'The North Briton' marked a welcome return of Tornado to the whole of the Settle and Carlisle line and the weather was set fair for passengers to be able to enjoy the beautiful scenery to its maximum. This tour was also the first time the locomotive had worked into Leeds from the ECML via Gascoigne Wood and featured the Tyne Valley route via Hexham, a route which doesn't see Tornado often enough.

The locomotive performed superbly, hauling its fully booked 13 coaches over Ais Gill. A water stop at Long Preston also gave the chance for photographs of the locomotive.

Top right: Tornado powers past Arksey with 'The North Briton'.

Right: A fabulous image of the S&C at its best, here at Lunds Viaduct.

Below: Getting to grips with the Settle & Carlisle line again, Tornado crosses Arten Gill Viaduct.



Gareth Griffiths



David Horner



Graham Nicholas

This was our first tour starting from the East Midlands and given how popular it was there are likely to be more. **TCC**



Brian Sherrington

Above: The returning 'North Briton' is seen at Blaydon.

TORNADO ON TOUR by Graeme Bunker-James

‘THE HEART OF MIDLOTHIAN’

Michael Denholm



Tornado on the Royal Border Bridge, Berwick.

‘The Heart of Midlothian’ allowed Tornado to once again visit Edinburgh via the stunning east coast route along the cliffs near Berwick. The sun shone, but a few operational issues combined to make the train 40 minutes late into the Scottish capital, none of which was down to Tornado.

It was agreed that a 25 minute late start would be made to allow passengers as much time to explore Edinburgh as possible and then a stunning return trip ensued. Departing on a revised schedule some 27 minutes later than originally planned, Tornado arrived into Doncaster to hand over the train to a Class 67 diesel one minute early. A tremendous run back which everyone enjoyed immensely. **TCC**



Crew - Jim Smith, Vince Henderson and Keith Murfin at Newcastle.

Vince Henderson

Lee Andrew Davies



Above: No. 60163 sprints past Drem.

Left: The star of Tyne Yard - Tornado shines brightly under the floodlamps of Tyne Yard, ready to take over ‘The Heart of Midlothian’, bound for Edinburgh.

Michael Denholm



Above: ‘The Heart of Midlothian’ approaches the border at Berwick-on-Tweed.

Left: Arrival at Edinburgh Waverley.

Bottom Left: Ready to leave York on the way home.

Mike Wollingshaw

Mandy Grant



Above: Tornado makes a rousing departure from Edinburgh Waverley.

Michael Denholm

TORNADO ON TOUR by Graeme Bunker-James

'THE TALISMAN'

A visit to York and Darlington was the itinerary for 'The Talisman', and gave a chance for a visit to Darlington Locomotive Works to see No. 2007 Prince of Wales. Operations went well until the return journey was delayed at Newark due to tanker issues. Punctures and the A1 (the road!) being closed were the cause and the local fire brigade assisted until the first tanker arrived.

The second tanker had been repaired and met us at Peterborough. Leaving 77 minutes late Tornado was afforded the fast line all the way to Welwyn and by King's Cross had reduced the delays to 44 minutes, taking half an hour out of the schedule. Although being late is always a frustration it had been a fabulous run on the home territory of the ECML. **TCC**



Gareth Griffiths

Tornado tears past Arksey with 'The Talisman'.



Michael Denholm

In charge of the return 'Talisman', Steve Hanczar looks back for the 'right away' at Darlington.



Mandy Grant

The crowds mill around Prince of Wales, admiring the extent of progress to date.



Mandy Grant

Over two thirds of the passengers travelling on 'The Talisman' opted to visit the Locomotive Works during their stopover in Darlington.

AI ENGINEERING REPORT by David Elliott and Rob Morland

An Electronic 'Stink Bomb' for 100mph -

The large LNER three cylinder locomotives at one time had a reputation for failure of the middle big end bearing. Several factors are believed to have contributed including:

- Design shortcomings in the inside connecting rod big end
- The tendency of Gresley three cylinder engines with 2:1 conjugated valve gear driving the valves for the inside cylinder to produce higher power from the inside cylinder compared with the outside cylinders
- Use of bearing brasses with deep white metal pockets.

To give crews warning of potential failures, the LNER started fitting a device (colloquially known as the "stink bomb") which emitted a strong smell when the bearing started to run hot. Over the years, and particularly during the mid-1950s, the inside big end bearings were subject to a number of design changes which largely eliminated the problems. Furthermore, the Peppercorn class A1 with three independent sets of Walschaerts valve gear did not have the problem of higher power output from the inside cylinder associated with the Gresley 2:1 conjugated gear.

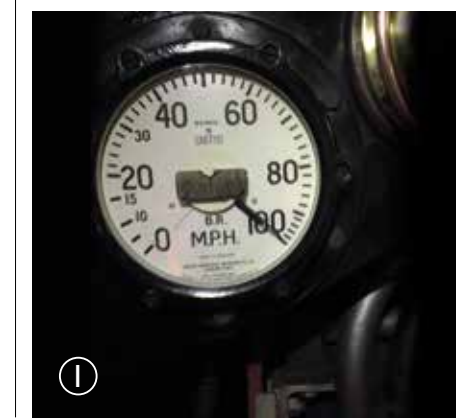
Given the improvements in design and fitting since the 1930s, the A1 Steam Locomotive Trust decided not to fit a

stink bomb device on No. 60163 Tornado when it entered service. However, as we prepared for 90mph testing it was decided to look into whether a modern version of the stink bomb could be devised, to provide additional assurance when operating at high speeds. The middle big end temperature sensor was custom-designed and built by Rob Morland and David Elliott, working with Steve Sims of specialist Cambridge sensor company Ziconix.

The sensor electronics, developed by Ziconix (www.ziconix.com), comprises a custom circuit board containing a microcontroller and Bluetooth Low Energy Radio, together with a PT100 temperature sensor and high-temperature Lithium battery. This is housed within a machined Tufnol plug, which locates within a modified version of the original LNER "stink bomb" tube. The sensor radio communicates with a smartphone handset containing a custom software application which receives the big end temperature and displays it on the screen for monitoring by the crew. For the 100mph test run, the handset was mounted temporarily on the fireman's side running plate where it had good radio communication with the sensor and could be seen by the crew from the cab. The whole assembly is designed to cope with the challenging environment of the middle big end, which rotates at 400rpm when the

locomotive reaches 100mph, generating a centrifugal force of more than 60g. To this must be added shock forces of up to 50g which may impact anything attached to rail vehicle wheels or axles.

Having proven the system, a Bluetooth transceiver will be fitted between the frames, wired to a microcomputer and display in the cab. We will also be able to connect additional sensors to the system in due course, which will provide valuable experience as we develop the more comprehensive instrumentation system that is being planned for the P2. The project was completed to a tight timescale and we believe this is the first time that a wireless electronic temperature sensor has been fitted to the crank axle of a steam locomotive operating on the UK main line – another first for Tornado! **TCC**



Graeme Bunker

1 - The proof of the pudding! Tornado's speedo registers the magic 'ton', made possible by the technology supplied by Ziconix.

2 - Big end sensor mounting tube, designed by David Elliott based on the original "stink bomb" assembly carried by three-cylinder LNER locomotives.

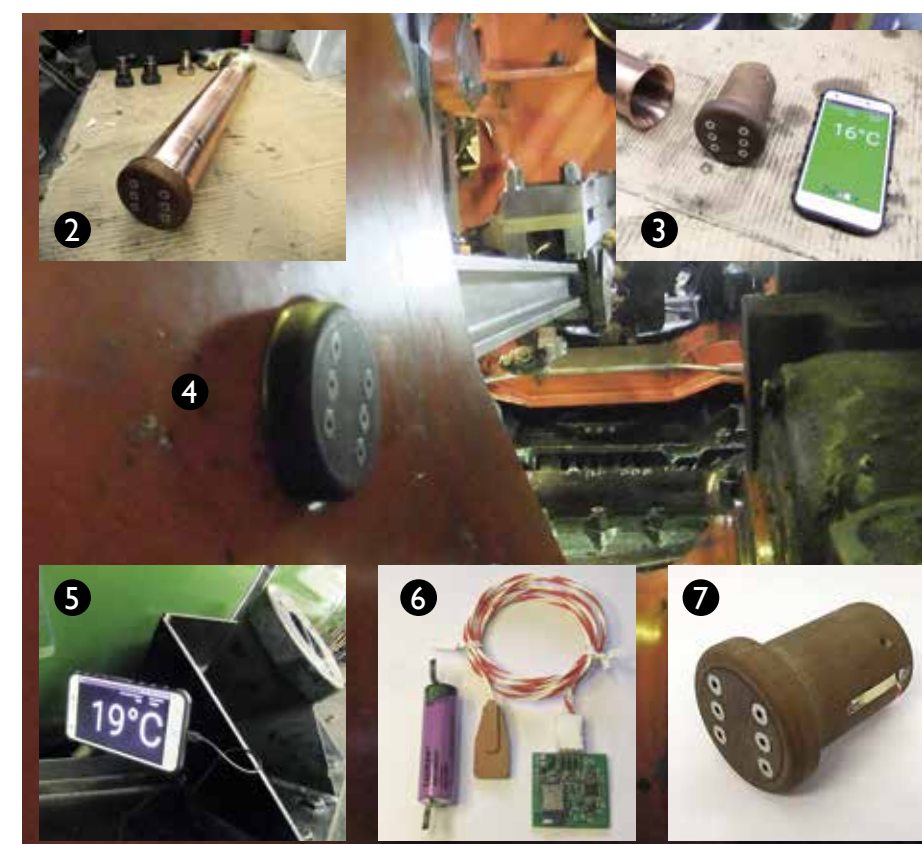
3 - Sensor tube, Tufnol plug containing the electronics assembly and mobile handset receiver application.

4 - Big end temperature sensor assembly in place on the crank axle.

5 - Mobile handset receiver located on the fireman's side running plate for the 100mph test run.

6 - Sensor electronics and radio module, with the PT100 temperature sensor and special high-temperature battery.

7 - Completed electronics and radio assembly within the Tufnol plug, ready for fitting to the sensor tube.



All photos Rob Morland

TORNADO PREPARATION *by Jorge Gorman*

On Saturday 28th January, eight volunteers including myself descended upon Stewart's Lane depot to clean and prepare *Tornado* for its first Belmond British Pullman outing of 2017. Such a prestigious train requires the locomotive and support coach to be cleaned to the highest standards. Usually, cleaning will take place along with preparation on the preceding day to any trip. However, to achieve the expected standard we operate a cleaning day, where support crew members are encouraged to come along for the day to clean the locomotive whilst not in steam, and not under any pressure to 'finish' the job on the day. As a member of the support crew, a large proportion of your time is spent cleaning the locomotive. This not only presents the locomotive looking its best, but it also provides us with a clean and safe working environment.

The day starts with everyone arriving on site at the Depot on Saturday morning. First item for discussion in the mess room is tea! Once settled in with mugs in hand, I give a short briefing on the days tasks, everyone signs in, and puts on their overalls & PPE (personal protective equipment) ready to start work. The first job to tackle is wheels and motion. We split into two teams of four, one team working on the driver's side, the other on the fireman's side. A little friendly competition is always good to provide some motivation on these days! The bogie wheels, driving wheels, along with the frames and motion are all cleaned with paraffin on both sides of the engine. I won't be drawn to tell you which side was quicker, as I don't wish to upset the team working on the fireman's side!

Once this job was completed, we next moved onto the tender, frames and axle boxes. Again, these require a splash of paraffin and some rags with a few willing volunteers behind them. Once both sides were clean, and we had rehydrated ourselves sufficiently, we broke up into smaller teams with individual tasks. Janet, Mike, John B and Martin all set to polishing the smoke deflectors, boiler barrel, cab sides and tender. At the same time, Chris and I checked the levels of the sanders to see if any needed filling. Only a couple of bags were required for the task on this occasion, but it's always important we check that they're full, so that when it comes to the Fitness to Run exam, we can see them all working correctly.

After a break for lunch (kindly provided by Chris and Janet, along with some delicious homemade pies made by Martin) the team split once more to complete various tasks. Chris and John R set to



Above: Left to right (Top) Martin Baistow, John Baistow, Chris Ardy. (Bottom) Mike Curtis, Janet Hill, MNLPS Terry Bartlett, John Rawlinson, Jorge Gorman.



David Elliott and Rob Morland work on the locomotive with the cleaning gang.

cleaning surface rust off the smokebox door and buffers. These are covered with a thin coating of bearing oil once cleaned to prevent any moisture causing further rust. During this task, the tender was filled and began to overflow from the fire hose valves placed on the underside of the tender tank. Once we had retrieved the hose, we then went on to fill the two tanks located in the support coach, which provide water to the kitchen and toilet on board.

By the time these tasks were completed,

our day was drawing to an end and at 17:00hrs we tidied everything away, leaving a clean working environment for the crew of the following week's 'Belmond British Pullman'. The team involved did a fantastic job and managed to completely clean the locomotive and tender. We are extremely proud that by working together, we continue present the locomotive looking its best and cleaned to the highest standards. I wish to thank the team for all their hard work and look forward to our next day together! **TCC**

Jorge Gorman

Jorge Gorman

KEEPING TORNADO ON THE TRACKS *by Mark Allatt*

Keeping No. 60163 *Tornado* in tip-top working order is an expensive business. Whilst the profit from operating our programme of main line tours and *Tornado's* hire fees from heritage railways and working for other rail tour promoters currently covers her day-to-day and year-to-year maintenance costs, they do not at present generate a sufficient surplus to fund her five and ten year overhauls, conservatively estimated at around £500,000 each. Therefore, it is vital for us to continue to maintain (and hopefully grow) *Tornado's* on-going covenant income.

The number of individual covenantors supporting *Tornado* has gradually declined since a peak of around 1,600 (many more £5pm equivalents) in 2009 to 1,123 today, each person

donating an average of £9.68pm before Gift Aid – mostly unfortunately due to anno domini and new covenantor recruitment failing to keep pace. The last couple of months have seen this number stabilise and so hopefully it will start to grow on the back of the 'I♥S&C' Plandampf and 100mph test run. I would urge all our existing A1 covenantors to help us to recruit new supporters and for P2 covenantors (65% of whom are not also A1 covenantors) to come on-board if they are able to.

For more information on how you can help to keep Britain's only new-build main line steam locomotive on the tracks visit www.a1steam.com, email enquiries@a1steam.com or call **01325 460163**. **TCC**

FINAL NEW SHED ALLOCATIONS - Only 20 Pacifics remaining in The 163 Pacifics Club

The last few months have seen tremendous progress in our campaign to raise £200,000 to pay for No. 60163 *Tornado's* tender. As you will recall, William Cook Group, through its chairman Andrew Cook, funded the construction of No. 60163's tender in 2006. *Tornado's* tender is currently owned by William Cook Group (the Trust's Principal Sponsor) and it is leased to the Trust under a fifteen-year loan agreement which will come to an end in 2021.

The 163 Pacifics Club was set up in 2013 to fund the purchase of *Tornado's* tender from William Cook Group through the sponsorship of the 163 ex-LNER express passenger Pacifics from the Gresley class A3s/A4s, Thompson

class A1/1 and Peppercorn class A1s. 163 people making a one-off donation of £960 (or £10 per month over eight years) with the addition of Gift Aid this would raise £195,600. I'm delighted to announce that 143 Pacifics have already found new shed allocations, leaving only 20 remaining for sponsorship.

With *Tornado's* having attained the magic 100mph and awaiting final approval to operate selected main line trains at 90mph, let's complete the project we embarked upon in 1990 through the purchase of No. 60163's tender before the start of her 10th birthday celebrations in August 2018.

For more information on how you can become a member of The 163 Pacifics Club visit

www.a1steam.com, email enquiries@a1steam.com or call **01325 460163**.

TORNADO TOUR DIARY - 2017

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.

● **Monday 29th May** – 'The Cornishman' – London Paddington – Penzance – **SOLD OUT**

● **Thursday 1st June to Sunday 4th June** – Bodmin & Wenford Railway

● **Tuesday 13th June** – 'The Railway Children' – special charity tour round the Surrey Hills

● **Sunday 18th June** – 'The Torbay Express' – Bristol to Kingswear and return – Torbay Express

● **Sunday 2nd July** – 'The Torbay Express' – Bristol to Kingswear and return – Torbay Express

● **Sunday 23rd July** – 'The Torbay Express' – Bristol to Kingswear and return – Torbay Express

● **Saturday 5th August** – 'The Towry Tornado' – Eastleigh to Carmarthen and return – Pathfinder Tours

● **Monday 28th August** – 'The Easterling' – London King's Cross to Great Yarmouth – AISLT promoted tour- bookings through UK Railtours

● **Wednesday 6th September** – 'Belmond British Pullman' – London to Bristol (return with No. 35028 Clan Line) – Belmond British Pullman

● **Sunday 10th September** – 'The Torbay Express' – Bristol to Kingswear and return – Torbay Express

● **Saturday 16th September** – 'The Border Raider' – Birmingham for the Settle & Carlisle Railway – AISLT promoted tour – bookings through UK Railtours

● **Saturday 23rd – Sunday 24th September** – Barrow Hill Roundhouse 'Pacific Power' weekend

● **Saturday 7th October** – 'The Tees-Tyne Express' – Dorridge to Newcastle and return – AISLT promoted tour – bookings through UK Railtours

Belmond British Pullman
Tel: 020 3117 1300
www.belmond.com/british-pullman-train

UK Railtours
Tel: 01438 715050
www.ukrailtours.com

Nene Valley Railway
Tel: 01780 784444
www.nvr.org.uk

Torbay Express
Tel: 01453 834477
www.torbayexpress.co.uk

Tornado races along the East Coast Main Line for a date with destiny.



Robin Coombes

• SHED NOTICES •

BARRY WILSON – an obituary

It is with sadness we have to record the death of Barry Wilson. Barry was the Finance Director of the Trust from 1994 until 2013 but joined the Trust at its inception. He was one of the first covenantors and attended the initial launch meeting held at King's Cross in 1990. Born and raised in Hull, he was a keen trainspotter in the 1950s and naturally developed an interest in all things LNER. On leaving school he qualified as a chartered accountant and it was while on an audit that he met his wife, Linda. Barry's career eventually led him to work for accountants in Jersey in 1978, later moving into the banking sector until retirement. Apart from his activities for the Trust, Barry was keen on most sports, particularly cricket, soccer and rugby union, and played the first two and squash until problems with his knees forced him to give up.

His qualifications and experience made him an ideal person to become the Trust's financial director and the work he did, though not glamorous or in the public eye, was most crucial to the Trust. The day to day work involved maintaining the books, liaising with the banks, preparing cash forecasts, approving purchase orders, paying bills, raising sales invoices, debt collection and regular reporting to the Trustees. Preparation of annual budgets from information provided by the engineering, marketing and merchandising teams, reporting to HMRC, doing group VAT returns, making bond interest payments, preparation of the annual accounts and liaison with the Trust's auditors were also part of the regular mix of activities. All these functions increased significantly following the completion of *Tornado*, as there were now two active subsidiary Companies covering operations and merchandising.

Barry came up with the concept of dedicated covenants, which became a major source of donations in the early years of the project, and the idea of raising funds to buy the boiler by the issue of the bearer bond in 2004. This raised enough money for the Trustees to be able to order the boiler, which in turn provided the catalyst for a major surge in covenant income and therefore reduced the time to complete construction significantly. In the early years Barry very generously advanced loans to the Trust and he and Linda purchased and donated the support coach (which was renovated at the Works) to the Trust. As a volunteer, he assisted with aspects of construction of *Tornado* and was also a member of the support crew.

Barry died suddenly at his home in Jersey on the 16th March. We offer our condolences to Linda and his family at this sad time – they can be incredibly proud of all he achieved during his time with The A1 Steam Locomotive Trust. **TCC**



Barry Wilson standing inside *Tornado's* boiler barrel during its construction at Meiningen.

AI SLT

GILLIAN LORD – a tribute

As mentioned in TCC 45, Gillian Lord has stepped down as Merchandising Director and Trustee of The A1 Steam Locomotive Trust.

Gillian came from a railway family (her father worked for BR) and always had an interest in railways. In 2004 Tony, her husband, attended a couple of talks about the new steam locomotive being built in Darlington and before she knew it, she had been volunteered to attend events to sign up new covenantors! This in turn led to Gillian becoming a covenantor herself in 2008, working on *Tornado's* first main line runs, selling raffle tickets and talking to passengers, then in April 2009 when *Tornado* visited Barrow Hill she was surprised to see how little commemorative merchandise there was available to sell to the hundreds of people who had gone along to see the locomotive. Gillian decided to have a little chat over coffee with Mark Allatt and the rest they say is history!

Gillian built up the merchandising to become a force to be reckoned with, the list of suppliers grew with Gillian establishing a relationship with them, insisting that as far as possible all items are sourced and made in the U.K. In the first 12 months the merchandise choice grew and sales were phenomenal, so much so that to keep track of stock a till had to be purchased and all items given a PLU number. Gillian worked on the majority of *Tornado* hauled trains in 2009,

2010 and 2011 then in 2012 she decided to enlist other volunteers to work as team leaders, these people would be in charge of the merchandise team for that day, liaise with the R.O. and balance the books at the end of the day. Once a year Gillian arranged a Merchandise Volunteers Day, a social get together with learning workshops and a chance for volunteers to discuss anything merchandise.

Tornado merchandising has been the envy of many other main line locomotive groups and preserved railways and Gillian ensured that it had the same professional approach applied to it as all other areas of Trust activities. She will be a hard act to follow! **TCC**



Gillian Lord (with her husband, Tony) and members of the sales team at the Nene Valley railway in 2015.

Mandy Grant

• SHED NOTICES •

OSPREY

Great Central Auctions tell us that the nameplate from No. 60131 *Osprey* is coming up for auction in June. Completed at Darlington in October 1948, *Osprey* was to become one of the longest-lived Peppercorn A1s, being withdrawn from Neville Hill shed in October 1965.

Coincidentally *Peregrine's* worksplate was recently auctioned by Great Western Auctions, fetching £2,200 as the hammer went down.



Two birds of prey! No. 60131 *Osprey* passes No. 60146 *Peregrine* on an up freight at the end of May 1964.

Michael Denholm

ANNUAL CONVENTION PRIZE DRAW 2017

We are pleased to announce the launch of our Annual Convention Prize Draw for 2017.

The aim of the draw is to raise additional funds for No. 60163 *Tornado*, with all money raised going directly towards the ongoing running and maintenance costs of *Tornado*.

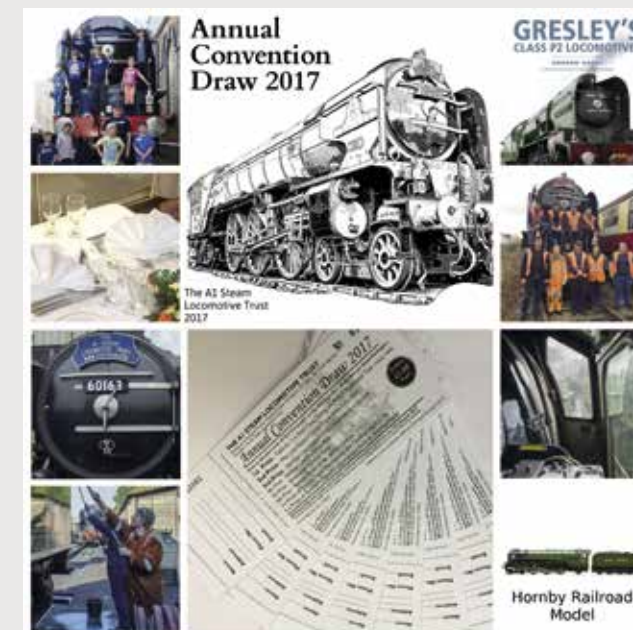
Prizes are as follows:

- 1st Prize** – Table for two in first class dining on an AI SLT promoted tour (Value £495)
- 2nd Prize** – Main Line Support Crew Experience (£400)
- 3rd Prize** – Heritage Line Support Crew Experience (£300)
- 4th Prize** – Heritage Line Footplate Ride
- 5th Prize** – 60163 Smokebox Number Plate
- 6th Prize** – Hornby Model of No. 60163 *Tornado*
- 2 x Prizes** – A years' *Tornado* Team Membership (for children aged 5 – 15)
- 5 x Prizes** – Gresley's Class P2 Locomotives Book, by Andrew Hardy

A book of 10 raffle tickets will be sent out to each of our registered supporters shortly, along with their annual convention invite. Tickets can be sold for £1 each and will be entered into the prize draw once monies and stubs have been received at Darlington Locomotive Works. Registered supporters can request additional books to sell.

Individual tickets can be bought for £1 each, on our main line trains, on our stand at heritage railways, at Darlington Locomotive Works open days and at Darlington Head of Steam Museum.

If you are not a regular supporter and will not be attending any of the above events but you wish to support the cause, you can obtain tickets directly from The Trust. You can purchase tickets in books of *10, by writing to us at Darlington Locomotive Works, Hopetown Lane, Darlington, DL3 6RQ. You must include your Name, Address, Email Address and a Contact



Phone Number, along with a stamped addressed envelope and a cheque for £10 per book of tickets, made payable to The A1 Steam Locomotive Trust. Once received, we will post the tickets out to you.

All ticket stubs and monies sent by post must be received at Darlington Locomotive Works by 27th August 2017. The draw will take place at our annual convention on Saturday 30th September 2017.

Full terms and conditions can be obtained by emailing **enquiries@a1steam.com** or by sending a SAE to Darlington Locomotive Works at the address above.

*Due to the increased administrative time involved in selling postal tickets, it will not be cost effective for us to sell them individually, it has therefore been decided that tickets requested by post will only be sold to the requester in books of 10. **TCC**

AI PROFILE - No. 60117 BOIS ROUSSEL by Phil Champion

First recorded in Doncaster Works erecting shop on 31st August 1948 works No. 2034 was the fourth of Arthur Peppercorn's AIs. No. 60117 entered service on 22nd October, as one of four class members allocated to Grantham. Its original appearance featured a plain chimney, apple-green LNER-style livery with black and white lining plus 'BRITISH RAILWAYS' in white on the tender.



No. 60117 Bois Roussel with No. 60033 Seagull and No. 60108 Gay Crusader in 1959.

Its first recorded sightings in operation were on 8th November as light engine at Doncaster and twelve days later when it hauled a train through Grantham. Its first named train was on 25th June 1949 when, after bringing in a train from Newcastle into King's Cross at 15:35hrs, it departed several hours later with the down 'Aberdonian'. Observations in its first two years include the GN and NE sections of the main line like Grantham on 27th March 1949 and its shed on 14th May, Ferryhill on 29th August, Heaton Junction on 5th December and York on 18th March 1950. The first note of No. 60117 on non-passenger trains was when it took an up goods past Welwyn Garden City on 3rd March 1950.

Transfer to Copley Hill Shed at Leeds took place on 4th June 1950, though it had entered Doncaster Works for general repairs on 16th May which were completed on 6th July. There No. 60117 was named *Bois Roussel* after the 1938 Derby winner (in the fine tradition of the LNER naming its express locomotives after racehorses), one of 13 AIs to be so named. Bois Roussel was a champion racehorse named after its breeding farm Hares du

Bois-Roussel in Normandy, France. The Derby was only its second race; the jockey then was Charlie Elliott. With nine class members already named, No. 60117 was one of seven more to be named that July. In the same month its express status was demonstrated by repainting in BR blue and enhancing *Bois Roussel's* appearance, was a change to a lipped chimney. In common with other AIs, the Flaman speed recorder was removed. Naturally, most workings were between West Yorkshire and the capital as on 5th August when it hauled a train between Retford and Leeds Central, or 27th June 1951 when it worked a Bradford to King's Cross train. Pullmans featured too, with five sightings of *Bois Roussel* on the up 'Yorkshire Pullman' between August 1950 and October 1951, 'The Harrogate Sunday Pullman' on 9th September 1951 and the 12:00hrs down 'Queen of Scots' from King's Cross 20 days later. However, it could still work to the North East, being seen in Newcastle on 27th March 1951. Repainting of AIs into lined BR green was well under way; in November No. 60117 was one of three painted, eight other AIs having been so treated in the previous three months.

Bois Roussel reverted to Grantham's allocation on 18th May 1952. A week later it was seen on the down 'Flying Scotsman' past York; after seven months No. 60117 returned to Copley Hill on 15th February 1953. The first recorded working after this was an additional King's Cross to Leeds on 3rd April; its first recorded parcels train was the early morning up parcels into King's Cross on 23rd May. Along with other class members, the Hudd system of Automatic Train control was fitted. The mid-fifties brought the transposition of smokebox numberplate and handrail pioneered by No. 60116 to assist in fitting train headboards. Indeed *Bois Roussel* hauled a number of named expresses, the 'Harrogate Sunday Pullman' on 31st May 1953 which was diverted via Spalding, the up 'West Riding' on 30th July, the 'Queen of Scots' recorded many times in 1953/55-57, especially the up train hauled daily from 17th to the 12th February 1955, the down train of that Pullman from Leeds to Newcastle on 28th April 1955 returning with the up 'North Briton' and the up 'Bradford Flyer' in 1954 and 1956. As well as ordinary trains between King's Cross such as the 11:43hrs, 13:18hrs, 14:34hrs,

Peter Townsend

15:40hrs and 18:15hrs down trains between September 1956 and January 1957, No. 60117 powered other trains. It helped with trans-Pennine trains like the 09:00hrs ex-Liverpool taken forward from Leeds to Newcastle on 24th April 1955. When it took the 09:00hrs ex-Liverpool train forward from Leeds to Newcastle it returned two days later with the 16:15hrs Newcastle to Liverpool train via the Durham coast piloted by 'Hunt' Class D49 No. 62752 *The Atherstone* from Ripon. On the 29th it worked the 08:55hrs Newcastle to Liverpool train taking on Class D20 (ex NER Class 'R') 4-4-0 No. 62395 as pilot from Ripon.

The second half of the 1950s and into 1960/1 continued much as before with general Leeds to King's Cross runs. In both directions it now hauled 'The White Rose' as well as 'The West Riding', 'Yorkshire Pullman' and 'Harrogate Sunday Pullman'. Frequent appearances continued to be made at the head of the 'Queen of Scots'. During these years of good, steady work *Bois Roussel's* appearance changed with the application of the later BR crest in April 1958 during overhaul at Doncaster Works. Special trains were hauled too, one from Hull to King's Cross arriving at 16:16hrs on 7th April 1958 and an up special seen going through New Southgate on 6th July. A sign of the times was No. 60117 taking a return school special at 19:45hrs from King's Cross to Grantham. A visit to new territory was when the 08:25hrs Leeds to King's Cross on 22nd October 1958 was diverted via Ely. More ECML diversions into 1960 brought No.

60117 to Lincoln twice and on 28th May 1960 even to Cambridge.

More variety of work was recorded in the early 1960s. 29th July 1961 found a one-off working of the down 'Tees Thames Pullman'. A shorter turn was the 08:35hrs Peterborough to King's Cross a year earlier on 30th July. The overnight sleeper was hauled into the capital on 28th November 1962. Goods trains noted were through Newcastle on 6th January 1962 and York on 2nd February 1963. The early evening King's Cross to York parcels was pulled by No. 60117 a number of times during 1963, usually after coming up to the capital on a passenger turn from Leeds. Other passenger work in 1963 included the 2G85 Berwick – Newcastle stopping train of 22nd February and the 1A08 down Anglo-Scottish Car Carrier from the capital to Newcastle on 30th May. Working the down 'Queen of Scots' into Newcastle on 13th July was further north than usual for No. 60117 and this train; in fact it is our last record of a train this Pacific hauled more than any other. A less common destination was the 09:58hrs to Great Yarmouth from Leeds on 23rd July.

Fewer records remain of the latter part of No. 60117's life. There is a mixture of passenger work from Leeds, specials, an up extra seen at Newark on 14th March 1964 and named trains like the 'Yorkshire Pullman' from Leeds on 24th April. A transfer to Ardesley shed came on 6th September 1964, followed by a move to Gateshead on 6th December with a return to Ardesley on the following 3rd January. While at Gateshead it had

travelled around to new destinations for the AIs. 16th December saw it on the 1V45 Newcastle to Bristol as far as Derby and next morning it returned on the 02:40hrs Sheffield to York parcels after which it went on York shed then on the 18th it took the Newcastle to Bristol train from York to Derby. On the 21st it took a down parcels at 15:07hrs from Newcastle and on Christmas Eve it was there at 11:31hrs on an up Class 6 (express) goods. *Bois Roussel's* last recorded working, from Ardesley, was the 18:03hrs Leeds to King's Cross on 5th January 1965. Withdrawal from traffic was on 21st June 1965. Six days later it was seen lying at Ardesley shed. A final journey to Tyneside was necessary as No. 60117 had been sold in August to Clayton & Davie of Dunston for scrap.

During its life No. 60117 carried six Diagram 118 boilers. It was one of the ten longest-lasting AIs. After pounding the English section of the ECML and the spur to West Yorkshire (with a particular leaning towards the latter) for nearly 16 years there would doubtless have been a lot more life left in *Bois Roussel* had dieselisation not been rushed through so quickly. A racehorse by name and, with its named expresses, a racehorse by nature!

tcc

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.



Bois Roussel is seen at Doncaster Works on 19th May 1963 accompanied by *Mallard* which had been withdrawn the previous month. Of interest is that No. 60117 is apparently coupled to a GNR pattern coal-railed tender.

Gavin Morrison

P2 ENGINEERING UDATE by David Elliott

Frames

The hardened tender rubbing plate has been permanently fitted to the drag box and the inside of drag box and surrounding frame area has been finish painted along with the underside of the footplating under the cab. This footplating has now been permanently bolted to the frames/footplate angles by the volunteers. Our volunteers have continued in drilling and fitting permanent bolts between the footplating and splashers. Steady progress has been made by the volunteers to finish machine the brake hanger brackets. Ian Matthews has fabricated the Cartazzi spring safety brackets and machined the Cartazzi spring brackets from profiles. These have now been permanently fitted.



All Images David Elliott

Sand boxes

The original P2 locomotives were fitted with gravity sanders for the leading coupled wheels and steam sanders for the driving (second) coupled axle. No back sanders were fitted. With No. 2007 likely to do significant work in reverse, mostly on heritage railways, as the recent 'Plandampf' with *Tornado* on the Settle & Carlisle railway required, haulage of substantial loads over significant gradients running tender first is likely to happen. *Tornado's* back sanders were used extensively in damp conditions. We had decided when establishing the detailed specification for *Prince of Wales* that back sanders should be fitted. The work on the 3D CAD has been completed to design and shoehorn in an extra pair of sand boxes for the back sanders. As we have not been able to find detailed drawings for the original leading and driving wheel sand boxes, the drawings for these have been prepared from the outlines shown on the general arrangement drawings, using welded fabrication style found on *Tornado's* sand boxes but keeping the more complex shape of the original P2 sand boxes to fit in the constricted space available. All will now be air operated as per *Tornado*. Ian Matthews has assembled the leading and forward driving sand boxes and fitted them to the frames, and now has the kits for the back sandboxes.

Smoke box

The smoke lifting screen beading is now fully fitted. Volunteer Ray has made a nice job of polishing out the remaining machining and smithing marks on the door hinges and centre boss.



Above: Ian mills a spring hanger bracket.

Left: Recently manufactured spring hanger and safety brackets for the Cartazzi wheels.



Ian Matthews assembles a leading sand box.

Wheelsets

Assembly of the crank axle is imminent at South Devon Railway Engineering (SDRE). The Cartazzi and pony truck axles and all the crank pins have just been received at DLW from Unilathe of Stoke on Trent. There has been a significant setback with the plain coupled axles. On extracting them from their packing case at Unilathe's Stoke on Trent works, the axles were found to have the keyways already machined in them contrary to the specific instructions on our order to the axle suppliers. This was as a result of the initial enquiry to them producing a response from the South African axle manufacturer, that they could not machine the keyways. The keyways they have machined are correctly formed, however their orientation is wrong. In common with most British locomotives, the P2s are "right hand leading", in other words the right hand cranks on the wheelsets are in advance of the left hand cranks (when the engine is travelling forwards) by 120 degrees. As supplied, the axles have the keyways left hand leading. The three axles have been rejected. The supplier has reacted correctly to the news, and three replacement axles have been ordered, and are presently reported as due to arrive in the UK on 15th May, which, allowing two weeks for customs and other import formalities, should see them delivered to Unilathe at the beginning of June.

Right: Fully machined crank pins.



Cladding

With the delay in the wheelsets following from the axle problem, a decision has been made to start work on the cladding. Certain aspects of the cladding on *Tornado* have proved problematic, principally that each time significant welding work is carried out on the boiler the cladding does not fit properly due to the boiler (in particular the firebox) having slightly changed shape. This necessitates time consuming re-work. The problem is exacerbated by the way in which the crinoline rings and hoops around the firebox are firmly bolted to a significant number of bosses welded to the boiler barrel and firebox. If these move relative to one another as a result of welding on the boiler, the holes in the crinolines and hoops do not line up. The cladding on the P2 extends up to the loading gauge, so lends itself to the approach used on the A4 class, where it is an almost freestanding "shed" over the boiler. Using the A4 design as a starting point, we are adopting a similar philosophy with some further developments. Instead of bolting directly to bosses on the boiler and firebox, the crinolines and hoops will sit on saddles on the boiler and be held in place by short fish plates off a reduced number of bosses. Hence, if adjustment is needed the length or shape of the fish plates can be altered which is a much easier job than adjusting the crinolines. It also removes the need for the bosses to be positioned with a high degree of accuracy on the boiler – a task that Meiningen eventually were forced to abandon on *Tornado's* boiler. They were eventually fitted by making and lining up the crinolines with the bosses bolted to them, and tacking the bosses to the boiler. The bosses were then fully welded by a coded

welder once the crinolines were removed.

The new policy will also facilitate our eventual aim of a spare boiler and interchangeability of boilers between engines. A further alteration possible with the more structurally integral support for the cladding, is that the handrail knobs will be attached to crinolines and longerons between the crinolines rather than to bosses welded directly to the boiler. This further reduces the requirement to weld bosses to the boiler and will prevent the phenomenon experienced on *Tornado* where it is possible to burn the skin on the handrails where they pass through the bosses. Unlike *Tornado's* cladding where most of the crinolines are circular, on the P2, they are egg shaped with several different radii to produce the required shape and are all different shapes. Whilst the steel bending firms can get quite close to the required profile, it will be necessary to make a laser profiled template for each crinoline/hoop to ensure that we achieve the true shape. By making these templates somewhat thicker than is strictly necessary for a hand-held template, it is possible to assemble them as ribs on a steel spine structure to form a dummy boiler to pre-fit the cladding. This offers two main benefits. Firstly, the manufacture of *Tornado's* cladding took eight months of almost continuous effort by Peter Neesam using the boiler itself as the former; by building the "skeleton", it is possible to make the entire cladding less the fishplates before the boiler arrives. This delays the need for the boiler to be at Darlington by at least six months. Once the cladding is finished and primed, it can be dismantled and stored pending fitting to the boiler.



David Elliott

Above: The recently delivered superheater header.

Fittings

The superheater header is now at DLV.

Brake and spring gear - Brake gear

Ian Howitt (who did extensive and diverse work on *Tornado*) has been contracted to start making brake parts, beginning with the brake hangers. The two rear hangers are straightforward, however the front six hangers are of an unusual shape and were probably originally forged. The reason for the complex shape is the close spacing of the coupled wheels to keep the overall coupled wheelbase to a minimum. As a result the normal position for the brake hanger brackets between the tyres is not possible, so they are on the bottom of the frame plates and are inboard to clear the backs of the tyres. The hangers are a forked design to overcome this problem – see the CAD below. Ian is machining these from thick flame cut profiles.



CAD of the front brake hanger.



Ian Howitt

Above: The brake hanger being machined.



Ian Howitt

A fully machined rear brake hanger.

FUNDRAISING FOR No. 2007 PRINCE OF WALES

Final push for The Mikado Club by Mark Allatt

Our project to build Gresley class P2 No. 2007 *Prince of Wales* continues to make solid progress on all fronts and we are still on target to complete the new locomotive by 2021 provided we can keep up the current pace of income growth.

Pledges towards building No. 2007 *Prince of Wales* have passed £2.4m just three years after the frames were rolled at British Steel's plant in Scunthorpe. Public interest in seeing a new Gresley class P2 become a reality sooner rather than later remains high and over 820 people have already signed up to the 'P2 for the price of a pint of beer per week' (£10 per month or more) covenant scheme since its launch in March 2014. The average monthly donation is now £17.13 per covenantor (including Gift Aid) and the projected monthly income for our P2 project from the monthly covenant scheme is now running at 109% of that of *Tornado* – a remarkable achievement in such a short period of time thanks to the generosity of our supporters. What is even more striking is that only a quarter of A1 covenantors (35% of P2 covenantors) are regular donors to both locomotives, meaning that the overwhelming majority of the funds are being given by new supporters of the Trust.

In addition to this core scheme, funds have been raised through The Founders Club (over 360 people have donated £1,000 each – target 100 people, now closed), The Boiler Club (116 people have pledged £2,000 each - target of 300 people) and Dedicated Donations (over £200,000 from existing supporters

sponsoring a variety of components). The Gresley Society Trust has also sponsored the locomotive's distinctive front-end for which we are most grateful.

As you will have read in a recent issue of *The Mikado Messenger*, the fickle hand of fate has interrupted the otherwise smooth flow of components for the assembly of the wheelsets (with the keyways in the plain coupled axles being machined incorrectly) which means new axles will have to be supplied from South Africa. Although this has delayed the process of wheeling the frames of No. 2007, extraordinary progress on other fronts means that this will have no effect on the overall timetable and Darlington Locomotive Works will be far from idle for the next few months. We do however still need to complete our funding of The Mikado Club as soon as possible. As I write this article on St George's Day (the third anniversary of the rolling of No. 2007's frames) we have already recruited 152 members (95%) to the club and are looking for just another 8 members – so if you haven't already joined please do consider coming on-board and help us to make a Mikado!

There are also 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 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 £1m converted into metal (over 20% of the total required), over £1.4m raised (over 28%) and over £2.4m pledged (over 48%). We are now hopeful that we will have completed the rolling chassis for No. 2007 *Prince of Wales* by autumn 2017 and we remain on-track for completion of the new locomotive in 2021. However, to maintain this rate of progress we need to continue to raise more than £700,000 per year, which given the nature of the regular donation scheme becomes more challenging as each year passes. 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 covenantor, joining The Boiler Club, taking out a Dedicated Donation or subscribing to The Mikado Club. 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**

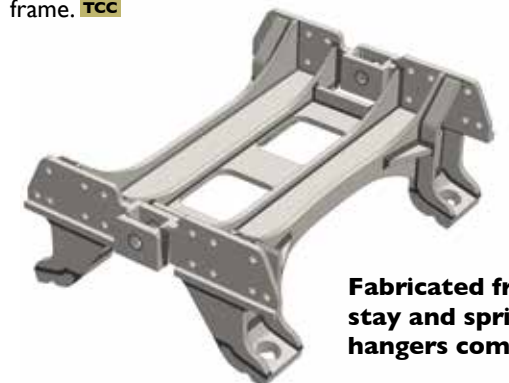
NEWSFLASH - Due to the outstanding success of The Mikado Club, the number of available places has been extended to 200 in order to raise a revised target of £200,000 to also wheel the tender.

Tender

We had anticipated starting the tender frames later this year, and to this end have ordered the remaining steel castings for the locomotive from William Cook with delivery due in July. Apart from the three engine crossheads, 58 of the 61 castings on the latest order are for the tender. In the meantime, we have received a proposal from Ian Howitt, who built *Tornado's* tender frame, for a repeat performance. Whilst we had originally anticipated doing all the erection work on No. 2007 at Darlington, the Locomotive Works is becoming increasingly congested – especially with the cladding manufacture taking place. Following a visit to Ian Howitt's works at Crofton, the scope of work has been refined and detailed, and a good price agreed, including beneficial payment terms enabling us to place an order sooner than anticipated. Once Ian Howitt has made progress with manufacturing the fabricated drag boxes and has machined the castings, the fully machined tender frame plates (presently in store at Darlington) will be moved to Crofton.

Design

In addition to producing drawings for detailed manufacture of sand boxes, spring hangers and boiler cladding, details are being refined to finalise the design of the pony truck frame. **TCC**



Fabricated frame stay and spring hangers combined.

Help Britain's most powerful steam locomotive to build a head of steam

Join The Boiler Club today and help us to complete No. 2007 Prince of Wales in record time!

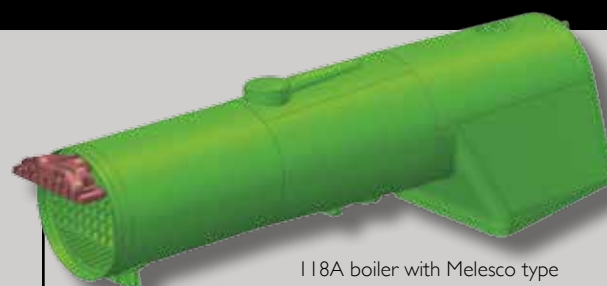


The boiler is the beating heart of a steam locomotive and to keep the construction of No. 2007 *Prince of Wales* on schedule for completion in 2021, we need to place the order for the boiler in 2019 for delivery in 2020. We have established The Boiler Club to fund the construction of *Prince of Wales*'s boiler. It is our desire to leave No. 2007 *Prince of Wales* debt free upon completion and therefore our 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 40 payments of £50 by standing order) – we are already well over a third of the way there.

Special benefits for members of The Boiler Club:

- Opportunity to buy ticket (seat already reserved) on one of No. 2007's first main line trips
- 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*
- Special Boiler Club day with *Tornado*

Together we can build this remarkable locomotive - join The Boiler Club today!



118A boiler with Melesco type superheater header as used on *Tornado*

No. 2007's boiler in detail

- Use of diagram 118A *Tornado* boiler with detailed modifications to improve overhaul life
- Interchangeable with *Tornado* boiler
- *Tornado* boiler is 17in shorter than P2 boiler – No. 2007's smoke box will be extended within the cladding
- 250psi of No. 60163's boiler will be retained to improve economy and increase maximum power



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

For further information please visit www.p2steam.com email enquiries@p2steam.com call 01325 460163 or write to The Boiler Club, P2 Construction Fund, Darlington Locomotive Works, FREEPOST RTJS-XECR-XARL, The A1 Steam Locomotive Trust, Hopetown Lane, Darlington DL3 6RQ

P2 ROADSHOWS by Mark Allatt

We are holding a series of presentations at major towns and cities along the route of the East Coast Main Line from London to Edinburgh and all the way to Aberdeen during 2017. Our London roadshow, held at London Transport Museum, had 52 attendees and has so far generated five P2 covenants worth £54pm (£4,536 over seven years plus GAD), one membership of The Mikado Club worth £1,000 (plus GAD), a £2,000 donation (plus GAD), two Tornado Team memberships worth £50pa.

The Peterborough roadshow, held at the Great Northern Hotel, had 57 attendees and has so far generated two P2 Covenant worth £20pm (£1,680 over seven years plus GAD) and one A1 covenant worth £10pm (£600 over five years plus GAD), £2,075 (plus GAD) in Dedicated Donations and a £30 (plus GAD) donation. Our Doncaster roadshow held at Doncaster Museum & Art Gallery, had 30 attendees and has so far generated one P2 covenant worth £20pm (£1,680 over seven years plus GAD) and three P2 book sales. The York roadshow, held at the York Railway Institute, was disappointingly only attended by 11 people but has so far generated one P2 covenant worth £15pm (£1,260 over seven years plus GAD) and three P2 book sales.

The Darlington event attracted 72 people and produced four P2 covenants worth £40 per month (£3,360 over seven years plus GAD) as well as £250 of Dedicated Donations (plus GAD).

The next roadshows will begin at 11:00hrs on:

- **Saturday 17th June 2017** – Newcastle Mining Institute, Newcastle
- **Saturday 1st July 2017** – Edinburgh Jury's Inn, Edinburgh
- **Saturday 14th October 2017** – Dundee Heritage Trust Discovery Point, Dundee
- **Saturday 25th November 2017** – Aberdeen Jury's Inn, Aberdeen.

The two hour presentations are given by David Elliott and Mark Allatt and are also attended by other volunteers and supporters. Please do come along to support the project, hear the latest news and ask any questions that you might have. Even better if you can bring a friend or two!

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

Attention all Mikado Club Members!

P2 Mikado Club Exclusive Badges Are Now Available To Purchase

To purchase your badge please send a cheque for £5 made payable to 'The P2 Steam Locomotive Company' and send to The A1 Steam Locomotive Trust, Darlington Locomotive Works, Hopetown Lane, Darlington DL3 6RQ.



P2 DEDICATED DONATIONS UPDATE JANUARY 2017

by Mark & Mandy Grant

February to April has seen a healthy increase in component sponsorship, with 17 individual components being sponsored, raising a further £7,755.00 before gift aid. This month's sponsored components included the steam stand casting, machining and valve details, the LH leading coupled wheel tyre, the LH and RH upper and lower water gauge body castings, the crank axle stub axle RH forging, the RH cab side screen hinges and details and various bolts and handrail knobs! We are most grateful to all of our supporters who have responded to the Dedicated Donations campaign!

Since its launch in 2014, 312 individual components have

been sponsored as part of the Dedicated Donations Scheme, in addition to many of the smokebox components which have been sponsored directly by The Gresley Society Trust.

Components sponsored through the Dedicated Donations Scheme range in price from one of over 1,000 driven bolts & nuts for £25, to the complete exhaust steam injector for £15,000

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

Attention all Boiler Club Members!

P2 Boiler Club Exclusive Badges Are Now Available To Purchase

To purchase your badge please send a cheque for £5 made payable to 'The P2 Steam Locomotive Company' and send to The A1 Steam Locomotive Trust, Darlington Locomotive Works, Hopetown Lane, Darlington DL3 6RQ.



'WORKSHOP NOTES'

RED WHEEL EVENT AT DARLINGTON LOCOMOTIVE WORKS *by Tony Lord*

On Friday 7th April 2017, Hopetown Lane Carriage Works, which incorporates the maintenance and refurbishment works of NELPG (North Eastern Locomotive Preservation Group) and the Darlington Locomotive Works of The A1 Steam Locomotive Trust of which The P2 Steam Locomotive Company Ltd. is part, had the honour of receiving a Red Wheel Plaque from the Transport Heritage Trust.

The plaque was installed by Darlington Borough Council and unveiled by Sir William McAlpine, the President of the Transport Trust in front of Her Majesty's Lord-Lieutenant of County Durham, Mrs Sue Snowden, the Vice Lord-Lieutenant Mr Alasdair MacConachie OBE, the Mayor and Mayoress of Darlington Mr & Mrs W. Dixon and a number of invited guests.

The plaque acknowledges the history of the building which opened in 1853 and was the original Stockton & Darlington Railway carriage manufacturing works. It also states



that the building was restored in the 1990s in preparation for the building of new steam locomotives and the refurbishment and maintenance of existing ones. After completion of the formalities, the guests were given a guided tour of the two halves of the building by Chris Lawson of NELPG



Left: Sir William McAlpine unveils the plaque.

and David Elliott of The A1 Steam Locomotive Trust. Light refreshments were served in the works before the guests left the site. We would like to thank all concerned with the organisation of the event for their help before, during and afterwards. It was gratefully received.



All photos Bob Hughes

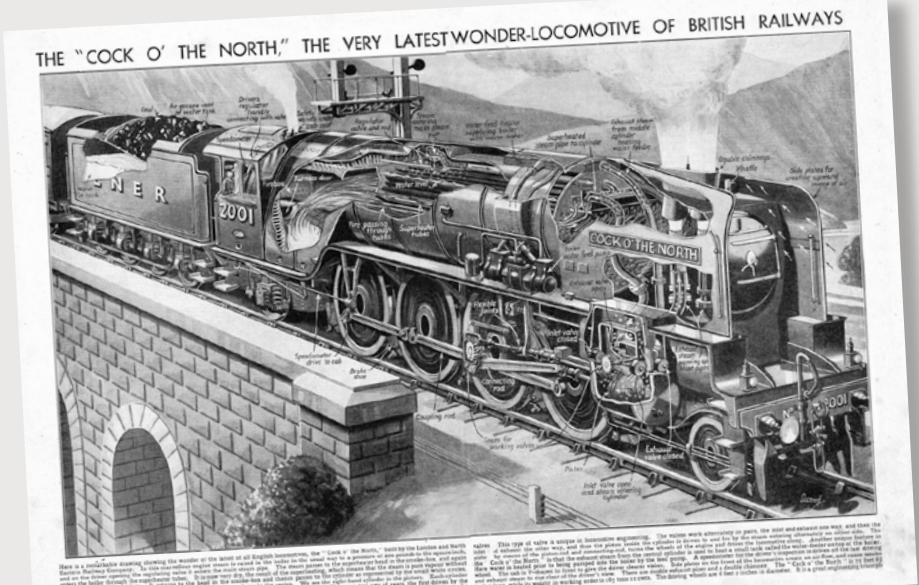
Those pictured are (left to right) Alistair MacConachie OBE - Vice Lord-Lieutenant of County Durham, Cllr Brian Jones - The Mayor of Darlington, David Elliott - Director of Engineering, The A1 Steam Locomotive Trust, Tony Lord - Buildings Manager, The A1 Steam Locomotive Trust, Mrs Sue Snowden CBE - Lord-Lieutenant of County Durham, Sir William McAlpine Bt - President of the Transport Heritage Trust, Cllr Doris Jones BEM, the Mayoress of Darlington.

'WORKSHOP NOTES'

THE BOY'S BOOK OF WONDER AND INVENTION

Dennis Camplin kindly drew our attention to this image which was in *The Boy's Book of Wonder and Invention* edited by Charles Ray.

An excellent cut-away diagram of Cock o' the North from *The Boy's Book of Wonder and Invention*.



BREAKING NEW GROUND (AGAIN!) *by David Champion*

The announcements made at the Trust's 2016 Convention were to put it simply, breathtakingly ground breaking. A railway magazine editor said he had never before had a press release containing such significant developments – and all in one document. In it the Trust staked its claim to continuous locomotive building of at least three more locomotives, operation using its own train and locomotives, and launching the search for a base in Darlington with main line connection, space to stable the train and room for a possible turntable; all of this in addition to building No. 2007, Britain's most powerful steam locomotive and simultaneously operating and maintaining *Tornado*.

You have to agree that there is never a dull moment in the A1 Trust!

How did we get here? Is it all a lucky accident? Or could it just be the result of vision, hard work and professionalism backed up by the most generous and loyal band of supporters? Let's think back to 1990. The British railway preservation movement had gained worldwide recognition for having pioneered the resurrection of abandoned railways, the preservation of rolling stock and bringing locomotives back to life from the worst scrapyard condition. But there was one 'holy grail' that was widely accepted as an impossible step too far, the building of new standard gauge main line locomotives; and it **was** a step too far using the accepted 'heritage movement' way of doing things, setting up a society, annual subscriptions, jumble sales and selling souvenirs.

Right from the beginning I realised that to build a brand new express steam locomotive required a fresh way of looking at the problem, having a soundly worked out business plan to raise the cash, a robust project plan to manage the build, and people with relevant business and professional experience to manage all the disciplines that would be needed. These people needed more than that, they needed to have vision, daring and the courage to plot their own course. Let's not forget that when we launched the project to build an A1 in 1990, most people in the movement thought we were mad, and couldn't understand our departure

from the 'established' ways of doing things. There are some that still can't understand it despite the evidence of our achievements.

We were lucky that within a short time the core team of professionals was on board and we quickly showed the world that we knew what we were about. I remember as early as 1993, when we were still engaging in preparatory work for commencement of construction that Nigel Harris (then editor of Steam Railway magazine) referred to us as 'the best organised railway group in the world'.

We are fortunate that a number of that early team are still active in the Trust including, Mark Allatt, David Elliott and Rob Morland which gives the management of the Trust sound continuity. When the management expertise is coupled with our unique strength – the loyal Covenantors who generously give the 'price of a pint of beer a week', and sponsor components, the result is a world beating cocktail.

Of course we used to discuss 'what after *Tornado*', and I remember in the mid -nineties Mark and I discussing a P2 and subsequent engines, a main line base and so on, but at that time we were focussed on completing the A1. Since then, the continuity of the Trust's management and an enormous amount of work over the years is now bearing the most wonderful fruit. The Trust's development plan charts an exciting route, daring to be different. A high class train that will still be running 30 years from now, a growing allocation of newly built Gresley thoroughbreds to suit any main or branch line, a 'Didcot of the North' base in Darlington.

Hopefully most of us will see all this, but even if through *anno domini* we individually only see part of this great adventure, we can be sure that any gifts we leave to the Trust will form part of a tremendous legacy that will still be giving pleasure to people in 50 years' time, something to be really proud of. When Mark asked me to open the launch of the P2 project in 2013 my theme was built around the saying 'Fortune Favours the Brave'; there is another that is also appropriate to The A1 Trust, the RAF motto on the original 'Cottesmore' nameplate on *Tornado*, 'We Rise to Our Obstacles'. **TCC**

DARLINGTON LOCOMOTIVE WORKS PROGRESS *by Tony Lord*

The AI Steam Locomotive Trust had originally decided to build *Tornado* in Doncaster but due to the removal of the necessary facilities from that town, the Trust had to think again. Darlington was the obvious choice as an alternative location and thanks to the invaluable help of Darlington Borough Council an agreement was signed on the 10th March 1995 between the Council and the Trust for the Trust to set up a permanent base at the 1853-built former Stockton and Darlington Railway Carriage Works. This meant that the new locomotive would be built in the town that was the birthplace of the railways of Britain.

Progress since then - on 27th September 1997 the south end of Hopetown Lane Carriage Works was reopened in its new form as Darlington Locomotive Works thanks to grants from Darlington Borough Council, the National Heritage Memorial Fund and the European Regional Development Fund. Work to alter the interior of the building to facilitate the construction of the new locomotive having been completed, very little was done to the fabric of the works until the completion of *Tornado* in 2008 and that of the new support coach in May 2013.



The above photographs show the south end of the locomotive works. The left hand picture was taken before work commenced on the renovation and the right hand one shows the same section after completion of the work by the Council.



Left: The state of the workshop after the completion and removal of the support coach.

As can be seen, the walls were in a poor state of repair and there was a good chance of contamination by crumbling plaster on any new work being carried out. It was therefore decided that the walls should be re-plastered and painted before the P2 project commenced. We had to comply with the requirements of the Council by using lime plaster, as would have been the case in the late 1800s.



Right: Same view of the workshop after completion of the renovation work in 2014 ready to accept the frames of the new P2 locomotive Prince of Wales.

The lighting has since been replaced with LED luminaires. The next major project that was carried out by Darlington Borough Council was the renovation of the exterior of the whole building. This took place in 2015 and has made a massive difference to the appearance of the premises of both The AI Steam Locomotive Trust and the North Eastern Locomotive Preservation Group parts of the building.



The AI Steam Locomotive Trust then had to apply for Listed Building Consent to mount our Darlington Locomotive Works sign above the door on the tower section of the building. Consent was granted and our sign was erected in November 2016.



Above: The newly installed handrail from top to bottom of the staircase.



The photos above show the same view of the first floor proposed office as it was originally found but with the new beam installed (left) and as it is now (right).

There are three rooms upstairs that are accessed by a staircase in the tower section of the building. In 2013 David Elliott and I gained access to the upper floors and David took a number of photographs of the rooms and the staircase.

It was obvious that the first job would be to install a suitable handrail but that required another Listed Building Consent application which was duly sent to Darlington Borough Council. In 2015 the handrail was installed and it became safe to start work on the upstairs room.



Above: There was no no handrail on the staircase and one had to be very careful when using it as it was a long drop to the bottom.

We were offered help to get the upstairs rooms refurbished and after obtaining the necessary consent from the Building Control department of the Council, work commenced on creating a new office and storeroom on the upper floors. To date, we have installed a new beam to support the weight of paper likely to be stored in the top floor room and are presently fitting plasterboard to the walls and ceilings of the new office accommodation. **TCC**



P2 PROFILE – No. 2004 MONS MEG by Andy Hardy

On 11th July 1936, No. 2004 left the Doncaster Plant and entered traffic. Mons Meg is another name of Scottish origin, Mons Meg is a medieval bombard located at Edinburgh Castle in Scotland. It was built in 1449 on the orders of Philip the Good, Duke of Burgundy and sent by him as a gift to James II, King of Scots in 1454. The bombard was employed in sieges until the middle of the 16th century, after which it was only fired on ceremonial occasions. Mons Meg has since been restored, and is now on display within the castle. On completion, the locomotive immediately began running in from Doncaster shed. On several occasions the locomotive was seen hauling trains from King's Cross including the heavy 600 ton 16:00hrs departure to Doncaster.



On 21st August 1936 Mons Meg is seen leaving the 'Cross.

Gaining the Doncaster Works number 1839 and boiler No. 8789 the locomotive was identical to its sister engine No. 2003 except for one subtle difference. In an attempt to reduce the ferocious blast from the locomotive exhaust and the detrimental effect of pulling the fire too hard that resulted, a by-pass valve was fitted to divert part of the exhaust steam away from the blastpipe. Originally a butterfly valve was fitted and this was opened by pulling a mechanical linkage that ran along the left hand side of the locomotive behind the vacuum ejector pipe. However oil often carbonised in the valve and it would get stuck open or closed, causing the locomotive to be failed. The draughtsman who designed the valve,

L. Parker, was sent to unstick and sort the valve out at Thornton and eventually came up with a new design. In July 1937 it was changed to a plug type valve, pulled to open and pushed to shut, again using a mechanical linkage. However it was noted that its use was ignored by drivers as it could make the locomotive steam badly on uphill stretches of line. Parker was once again sent North and after riding on the locomotive found the mechanical linkages seized due to lack of use. A redesign was required and in June 1939 it was replaced by an automatic valve working off a linkage on the reverser which opened when cut-off was 38% or longer in fore gear. Problems with carbonisation still occurred requiring frequent dismantling

and cleaning during maintenance periods. More proposals were put forward during 1940 including an automatic flap-valve and a steam operated vane. Neither option was ever taken past the design stage.

When outshopped new No. 2004 was painted in full LNER apple green livery. During a heavy repair at Cowairs in February 1943 the locomotive was painted in plain wartime black livery. Other wartime modifications included having its valences removed and top lamp bracket lowered. The latter was carried out on all the streamlined P2's to aid opening the smokebox door to replace boiler tubes. When the lamp iron was in the original position it struck the chime whistle restricting the opening of the door and



Above: 11th July 1938 - No. 2004 leaves Edinburgh Waverley.

NRM / SSPL



Rebuilt as a pacific and briefly numbered E504, Mons Meg is seen at the 'Plant'.

causing problems withdrawing the top rows of tubes.

Mons Meg was always allocated to Haymarket shed and completed 294,243 miles in as built condition. However like the rest of the class it was to be rebuilt as a Pacific and was withdrawn on 22nd August 1944 and returned to Doncaster for conversion. The engine returned to traffic in the November of the same year receiving boiler No. 8771 which had previously been carried on *Cock o' The North*. The locomotive was sent to Haymarket shed and returned to service. In June 1946 the locomotive was renumbered

504. After the locomotive's next repaint on 12th March 1948, carrying apple green with 'BRITISH RAILWAYS' written on the tender side, the locomotive received the number E504, the E denoting the Eastern Region were responsible for its maintenance. However this was to last only 11 days with the engine renumbered 60504 on 23rd of the same month.

In late 1949 new homes were being found for the A2/2 class. Three were transferred to York and three to New England shed in Peterborough. Mons Meg was transferred to New England on 9th January 1950. In November 1953 the

engine underwent another heavy overhaul and received boiler number 29771 which had previously been carried by No. 60501. Like all the A2/2 class locomotives No. 2004 required regular trips to the works with no less than 32 visits to the workshops between converting to a Pacific and withdrawal. The end for the locomotive came on 23rd January 1961 when the locomotive was finally withdrawn and scrapped at Doncaster.

TCC



In need of some attention, No. 60504 climbs away from King's Cross.

J P Wilson / Rail Archive Stephenson

P2SLC Collection

PROFILE – GORDON BEST by Graham Langer

Growing up in Haverton Hill, Gordon was interested in train spotting. Due to the local shed containing only dirty goods locomotives, the allocation and numbers of which never changed, his 'spotting' place was 20 minutes' walk away in the small village of Cowpen Bewley on the Middlesbrough-Newcastle coast line where he went to watch mainly local passenger and goods trains and the once daily Liverpool and London bound trains. Gordon's father was interested in model railways and had an O gauge layout in the sitting room. When Village of Haverton Hill was condemned due its proximity to the ICI works the family all moved to the new town of Billingham nearby.

On leaving school at 15, Gordon did as expected and joined the local shipyard where his father worked in the drawing office. After a year as office boy he started as an Apprentice Fitter/Turner, normally working in ships' engine rooms, going on sea trials as each one was completed. He had been attending Stockton Technical College on a one day a week basis at this time and at the age of 21 went into the Drawing Office to work in the Mechanical Engineering Department. In 1969 the Shipyard closed and he went out into the big world of contract drafting; this was with William Press (now Amec) and he either worked in their office or in various ICI sites and first came across 'Computer Aided Drafting' (CAD). ICI Agricultural Division had a setup on a large table, capable of drawing Isometric Piping drawings. The drafting side of this was not very successful, however the material listing side was a valuable stock control item and he was involved in this for many years to come. Gordon was a member of the Middlesbrough Model Railway club at the time and found the punched waste from the input cards perfect for making brick walls! A group from the club also bought a GCR coach (now on GCR Loughborough).

In the late 70's, after a year in Togo, West Africa, he moved to a small company that did work for ICI research in Billingham and was with them for a couple of years until he was offered a staff job with ICI. Gordon joined the pipe stressing program at Whessoe but, unfortunately, after three or so years ICI decided to 'rethink' its Design Work policy and scrapped all different divisions, bringing in contract firms instead of using its own staff. At this time another local firm offered a three year contract in South Africa and as his wife (whom Gordon had first met at school) had spent a while out there with her family Gordon decided to take up the offer, leaving for Johannesburg with their two children in 1981.

Gordon was mainly involved in Gold Mine Design, but again after a while, he was diverted into the Computer and the Material Take Off side. He joined the local Railway club just as they were starting a Railway Museum, enabling him to meet names he had only known by their books, Frank Holland, Dusty Durrant and the Museum's founder Alan Jorgensen. Gordon



A proud moment, Gordon is presented to HRH The Prince of Wales at *Tornado's* naming ceremony.

was given the position of Carriage & Rolling Stock Manager - he had been at the NYMR since its inception in the late 60's, helping out on track and signalling with the late John Boyes (with whom he had worked at ICI research). Gordon enjoyed the next few years there, often travelling around the country on special steam trains including a test run behind the 'Red Devil' and being invited on trip on The President's train to see the new 'Museum of South Africa' Sod Cutting Ceremony (which never got built).

The Railway Museum was at Randfontein Gold mine and they allowed us to use their workshops - although they did all the work! The accounting system worked differently in S.A. and when a locomotive reached the end of its life the depreciation on it was zero so selling it for scrap was costly! It was easier to give them away, in the end we had 47 locomotives and about 10 carriages - but there was nowhere affordable to keep them safe so all bar two locomotives were scrapped, even the small 4-6-4 suburban tank we used as our Logo.

The family came back in 1986 and settled in Darlington where Gordon returned to work with Amec, working on Chemical Plants, Atomic Power Stations, and AWE Aldermaston, travelling all around the country. By this time CAD drafting was taking off so after joining another local firm Darchem, he used their CAD system for a while and then went onto a Tech College course for 'AutoCAD' which he has used ever since. He joined the local railway club and started to help out at Darlington Railway Museum, mainly maintaining the large O gauge railway they used to have before 'reorganisation' (now scrapped). Gordon was a helper with the Ken Hoole Study Centre and was able to get a full set of LNER Carriage Diagrams; having gone through converting the wooden bodied coaches to AutoCAD there came the fateful day in 1994 when Bob Devonport (The AI Trust's Covenantor Manager) asked if he knew anything about using 'Excel'. The rest as they say is history.

In the early days of *Tornado's* construction Gordon did a fair amount of CAD work for Bill Brown, converting the LNER drawings to AutoCAD culminating in producing the drawing used for the cover of the *Tornado* Haynes Manual. His model railway is still in pieces awaiting reassembly in the attic and the locomotives are still in their boxes... **TCC**

FROM THE ARCHIVES by Graham Langer

● **Spring 1997** - A new home! With the awarding of £300,000 in grants for the building from the European Regional Development Fund, the National Heritage Memorial Fund and Darlington Council, 1997 saw the old Hopetown Carriage Works converted from a neglected, redundant liability into a new home for the construction of No. 60163. The solid structure would provide a secure, dry environment in which the final assembly could be undertaken with a full length pit, stores and room for machine tools providing the necessary facilities to do so.

● **Spring 2002** - Following the completion of the optical alignment survey of the frames by staff from the Severn Valley Railway, the middle and rear cannon boxes for the driving wheels of the roller bearing- fitted locomotive were now in position. The coupling rods had their knuckle pin bushes machined and fitted. The forgings for the remainder of the motion, the valve gear, were also ordered. This included the eccentric rods, expansion links, radius rods, combination levers, union links and valve spindles. By the spring the expansion link brackets had been fitted to the frames.

● **Spring 2007** - By spring 2007 Bedestone had completed the grinding of the inside radius link and it went to I D Howitt Ltd at Crofton for assembly to the radius link trunnions which had been completed by Multi-Tech. The inside reversing rod lifting arms and cross shaft had been fitted, the reverser cross shaft removed and the arms to drive the inside cylinder reverser and for the balance spring slid on. The inside big end brasses had been finished, machined and hand fitted to the crank pin, and the inside connecting rod had been trial fitted to the crank pin. All the rods and components were weighed and the connecting and eccentric rods swung to determine the pendulum period to permit calculation of the centre of percussion.

● **Spring 2012** - As part of the winter maintenance programme, *Tornado* was due for tyre turning. The Trust was able to use the services of South West Trains Wimbledon depot to turn the tyres; Wimbledon has a



Dorothy Mather is handed the keys to Darlington Locomotive Works by the Mayor of Darlington.



The middle big end is fitted to the crank axle.

Hegenscheidt under floor wheel lathe which is able to turn wheels without removing them from the vehicle, however the coupling and connecting rods did have to be removed. In Darlington work on the support coach

had progressed far enough for a cabinet maker, Peter Beaumont, to start work refurbishing the interior; a small band of volunteers was busy fitting the windows and Paul Depledge was occupied fitting the miles of wiring required. **TCC**

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Darlington Locomotive Works is normally open to the public on the 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. 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.

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