SR MAUNSELL CLASS N 2-6-0 No. 31874

In the early years of the twentieth century the South Eastern & Chatham Railway's (SECR) Victorian 4-4-0's and 0-6-0's were struggling with increasing freight demands on the tough gradients in the region. The Traffic Department was demanding new motive power with wide route availability and the flexibility to be used on passenger services as required.

This was the situation confronting Richard Maunsell when he replaced the retiring Harry Wainwright as Chief Mechanical Engineer in November 1913. but he had limited options. The SECR's lightly constructed track severely restricted total weight and axle loadings and so Maunsell looked to the latest developments on the GWR from whom he head-hunted Harry Holcroft. The resulting 2-6-0 design revealed a revolutionary, modern, lightweight and powerful mixed traffic locomotive.

Building on Churchward's principles, the combination of a high pressure, tapered boiler with Belpaire firebox, long travel valves and outside Walschaerts valve gear was unprecedented at the time. Maunsell also introduced a standardization policy and the N class was designed along side the K class tank engines to use the same basic design, boiler, cylinders, motion and as many other parts as possible.

Although designed in 1914, the introduction of the N class was heavily interrupted by the First World War as might be expected. The prototype N class entered service in 1917 but war work, and a backlog of loco repairs, meant that it wasn't until 1920 that a second engine was produced. By the end of 1923 the class had climbed slowly to fifteen examples.

They set a template for future locomotive developments in the UK. A874 is part of a second batch that had slightly unusual origins. It was produced in mid-Twenties from a 'kit of parts' made at Royal Arsenal Works (RAW) in Woolwich under a contract from the Ministry of Supply.

At the end of WWI the railways of UK were 'under threat' of Nationalisation and the SECR N class had been selected by HM Government to be a standard for use across the new unified railway. In anticipation, the government ordered one hundred locos from Woolwich Arsenal as part of a scheme to retain it's skilled work force - as munitions work was minimal by then.

However, in 1921, Nationalisation was abandoned in favour of Grouping to form 'The Big Four'. On 1st January 1923 the SECR merged with the London & South Western Railway, the London Brighton & South Coast Railway and some other smaller independent lines to become the Southern Railway (SR). Richard Maunsell was appointed Chief Mechanical Engineer of the newly merged organization.

Meanwhile, the work at Woolwich Arsenal wasn't going well. Their workers were used to producing guns not locomotives and struggled to get one 'demonstrator' working even then needing some help from Ashford Works. As costs and delays spiralled the newly formed Big Four railway companies each made their own plans.

The work at Woolwich was stopped and around 100 locos in various stages of

construction were put in the hands of the George Cohen and Armstrong Disposal Corporation for sale to the highest bidder. The newly formed Southern Railway purchased fifty 'kits' in 1924 at a heavily discounted price. They were transported to, and assembled at, Ashford Works between June 1924 and August 1925. A874 was the 49th of this batch and left Ashford in September 1925.

A874 was among 47 of the 50 to be allocated to the Western Section of the SR and spent most of its operational life based at Exmouth Junction working the hilly lines west of Exeter. In service the N's gained the nick name 'Woolworths' or 'Woolies' because of their Woolwich origins - and the bargain basement purchase price.

The Western Section batch quickly gained an unenviable reputation for poor reliability. This was caused by a combination of suspect workmanship at Woolwich Arsenal and, being on LSWR territory, they were very remote from the support of Ashford Works. After some time they settled down, however, and the N's earned the respect of footplate crews who grew to like their free steaming, power and general versatility.

From 1928, SR introduced a new loco numbering system resulting in A874 becoming No. 1874. Early in the 1930's, a third order for fifteen engines increased the N class up to 80 examples. This final batch incorporated several minor design changes and modifications. Soon afterwards all other existing class members were updated to make them similar to the final 15. This work included, amongst other things, the removal of piston tail rods, the addition of front foot steps and a pair of distinctive smoke deflectors.

Still stationed at Exmouth Junction shed on Nationalisation on 1st January 1948, No. 1874 was given its BR number 31874 in September 1948. Initially, the class was given the power classification 4MT but this was later uprated to 4P 5FB in deference to their proven ability. The B indicated that the N class braking capabilities were at the better end of BR's scale. In December 1950, 31874 was moved to Salisbury shed but stayed for only 7 months. It then spent a month at Hither Green shed before settling at Bricklayers Arms shed on 27th July 1951.

By the late 1950s, years of hard work meant that a number of the class were suffering from worn out cylinder blocks. In May 1957, 31874 was one of 29 N class locos fitted with new BR Standard 4 cylinders having outside steam pipes. At the same time the front section of the frames were replaced and the chimney and blast pipe were also changed to improve draughting. The curve in the top of the frames, by the smoke box door, is the most obvious give away as the original frames were straight in this area.

In February 1961, 31874 returned to its first shed, Exmouth Junction, from where it was despatched to Eastleigh Works for a General Overhaul between 3rd and 28th October 1961. Whilst there it had BR's Automatic Warning System equipment added as well as much attention to the boiler. It returned to traffic at Exmouth Junction shed, for just over 2 years, working over a wide range of the Southern's remaining network in the West of England.

On Saturday 27th April 1963 – The "North Cornishman" rail tour was arranged jointly by the Plymouth Railway Circle and the Railway Correspondence & Travel Society. It is not known when T9 Class loco No. 120 travelled from it's base at Eastleigh to Exmouth Junction but it occurred so that 120 was in the area to haul this train from Exeter Central to Padstow via Okehampton and Wadebridge and return. This special was, in fact, the last

time a Class T9 hauled passenger train traversed the route.

Whilst the rail tour was en-route to Padstow, No. 120 was photographed pausing at St Kew Highway station. The reason this rail tour is mentioned at all is that whilst waiting there it was passed by 31874 hauling a short train from Wadebridge. Small world with both locos based currently at the Swanage Railway.

31874 was withdrawn from traffic at Exmouth Junction shed in March 1964 after a total service life of 38 years, 5 months and 29 days. In June it moved to Woodham Brother's scrap yard in Barry arriving on the same day as its stable mates 31625 and 31806 plus the other two U class locos now based on the Bluebell [31618 and 31638].

31874 was to be the only N class to make it to Barry scrap yard and, hence, the only example of this important class to be saved for the nation. It rested at Barry for 10 years before being bought by John Bunch and becoming the 48th to be rescued from the yard.

In March 1974, 31874 arrived on the Mid-Hants Railway where it was restored to running order in just two and a half years. It was well suited to the steep gradients of the line and hauled the inaugural train on the reopening of the railway on 30th April 1977. For a short period it carried the name "*Aznar Line*", in recognition of the Spanish shipping company that sponsored the road transport from Barry to Alresford. Later it was named 'Brian Fisk' in recognition of the contributions of Yvonne Fisk who was the managing director of 'Mayfair' – a prominent men's magazine.

Around 1995, 31874's boiler was used to overhaul 31625 to main line specification as it was in a better condition than 31625's existing boiler which it received in return. After a brief further spell in traffic it ran until 1998. With its stable mate 31625, 31874 took turns being painted as "James the Red Engine" to augment the Mid-Hants "Thomas" days, introducing the magic of steam to the next generation and raising valuable income in the process.

When it was withdrawn in 1998 it had severe firebox problems, cracked frames and clearly needed a lot of investment. It was thought to be beyond economic repair and so lay in the sidings for over 16 years. Six years longer than at Barry!

In 2014 fortunes changed when John Bunch's three Moguls moved to the Swanage Railway. In August work started to return 31874 to steam. The problems that kept it in the siding for so long were overcome and dealt with steadily. Unfortunately, the loco passed its 90th birthday in Herston Works. Inauspiciously being separated from its boiler and tender as well as being stripped down to the bare frames. It is thought that this will be the most thorough overhaul since BR as it is the first time 31874 has been off its wheels since then.

31874 is being refurbished and restored in Swanage Railway's Herston Works with boiler work carried out by specialist contractors Adam Dalgleish Engineering Ltd. With support from the Swanage Railway Trust and other donations, it is proving possible to return this unique and important loco to steam.

Thanks to a Department of Transport and RSSB grant, 31874's overhaul was to include the equipment and certification required for Main Line Operation. The engineering specification for the work was already being carried out to standards required for use on the main line and initial Vehicle Acceptance Body (VAB) inspections had also been carried out. However, the grant covered only the fitment of GSMR, OTMR & TPWS equipment and further funds are still needed to complete the overhaul.

The boiler lift in August 2014 marked the start of the overhaul proper when it was taken to the Stockton works of Adam Dalgleish Engineering Ltd. along with the tender.

Adam wrote "*Under contract from Swanage Railway, ADE is carrying out one of its most extensive repairs to date to the boiler of Southern Railway N Class 31874.*

Following heavy corrosion, extensive plate renewal is required, including half side plate replacement to both the steel wrapper & inner copper firebox, replacement half throatplate sections to both the steel wrapper & inner copper firebox and full replacement of outer steel backhead & inner copper firebox backhead, all hot flanged in house by our team of Boilersmiths.

Following these works the firebox will receive around 300 new side stays and be reunited with its refurbished foundation ring.

The boiler will also receive a full re-tube following fitment of a new steel front tubeplate that is set to be produced in house. ADE will also be undertaking the fabrication of complete new Smokebox & Ashpan for the locomotive."

The boiler work was to be completed by overhauling and refitting the boiler manifold, regulator and other fittings then steam testing before return to Herston Works for reuniting with the loco's chassis.

After the Boiler was lifted the frame was craned off its wheels. The remaining chassis consisting of frames, cylinders, bogie, motion, braking and running gear were cleaned using high pressure water jet which stripped the dirt and paint back to bare metal. The chassis was then transported to Herston Works where it was stripped down and inspected before the long task of refurbishment and reassembly could start.

The work is extensive being carried out by a mixture of volunteers and Swanage Railway engineering staff with some specialist work being undertaken by outside contractors. The work includes;

Motion overhaul - New pistons; New valve liners; New valve spindle; Machining and shimming Crosshead and slidebar plus Re-bushing & machining valve gear and reversing linkage.

Frames and Platework - New rear drag box; New sections in front dragbox; Repairs to cracked frames; Replacement Cab plate work; Replacement Vacuum and Steam heat pipework; Refurbished Buffers and Brake cylinders; Repair sand boxes plus New boiler and cylinder cladding.

Rolling Chassis - New springs & New spring hangers; Refinish driving wheel axel journals; Axle box overhaul and New axle box crowns (off site); Surface machining to horn guide faces; New bushes and pins to brake rigging; New Brake Blocks; Steam brake and vacuum brake cylinder overhaul; Front Bogie strip down and overhaul.

Fixtures and fittings - Welding repairs to Blast pipe & new Blower jets; Welding repairs to super heater header & machining; Refurbished lubricators; New replacement Injectors; Overhauled damper controls and linkage plus Overhauled sanders.

The tender was initially stripped down by Adam Dalgleish Engineering Ltd. with reassembly being carried out by Southern Locomotives Ltd. After the tank was lifted from the frames it was discovered that the long period of storage had left it's frames in a far worse condition than had been expected. The front and rear drag boxes had always been

planned to be replaced but, with the tank off, the frames were found to be too badly wasted for economic repair.

On the up side, the tender tank itself was in better condition than first thought and most of it has been saved. After finding the frames to be too far gone it was planned to construct a new set using the various castings and axle boxes from the original but work scheduling issues forced this to be revised. Southern Locomotives Ltd. is now contracted to overhaul 31625's tender frames and install the tank on that. New steam heat, vacuum and water pipework will complete the tender.

On Thursday 1st December 2016 another major milestone, in the restoration of 31874, was passed when it was lowered on to its wheels. In the same lift the front pony truck was removed allowing it to be fully overhauled. All work is still being carried out to a high standard to allow main line operation in due course.

The frames were lifted by a set of four hydraulic jacks which support a pair of beams from which the frames were suspended allowing the wheels to be rolled in underneath. The work of completing the assembly of the brake rigging and spring suspension could then move forward.

Elsewhere in Herston Works the tender frames were progressing well with remedial work to the tender tank being completed allowing it to go away for shot blasting and painting. In Stockton the boiler was still progressing slowly.

It's fair to say that 31874 has been a much tougher job than anyone could have imagined when restoration was first considered. Whilst some of the problems were known, the engine has thrown up so much more work than anticipated.

The boiler has had the most extensive overhaul yet undertaken on a Swanage Railway based locomotive, although that 'investment' should anticipate a useable life of around 20 years with only basic boiler work (retubing etc.) required over the intervening period. Adam Dalgleish Engineering Ltd ceased trading in 2018 and 31874's boiler was transferred to Northern Steam Engineering Ltd in Stockton-on-Tees to complete the work.

To date, 31874's boiler has had a New outer backhead; New steel outer side sheets; New Copper half sides; New foundation ring sections; New outer throat plate; All new crown stays; New rivets around the dome pressing; New clack boxes; All new plugs/doors; Almost all stays renewed; New tubes; New Superheater Flues to BR standard design rather than SR's design; New Longitudinal stays; New gauge frames; New grate; New Ashpan; New Smokebox plus Elements and header repaired and new element T bolts.

The chassis has been complete for some time, with a new lubrication system, and has been fitted with conduit to allow mainline electronics to be fitted in future. 31874's tender has already run on the mainline behind 31806.

In late December 2020 it was announced that a decision had been taken to fit the repaired boiler from 31874 onto 31806. The logic for this being that the boiler certificate for 31806 expired in April 2021 and the Swanage Railway needed one of the three John Bunch locomotives to be in service early in 2021.

The work outstanding to complete the overhaul of 31874 meant that it could not be in service within this timescale. But by fitting the restored boiler from 31874 onto 31806, in January 2021, the latter was in traffic on the Swanage Railway in time for the 2021 season.

Consequently, this meant that 31806's boiler would have to be repaired/refurbished and placed in 31874 to complete it's overhaul. COVID-19 and several other factors have caused any existing schedules for 31874's return to service to be postponed.

It is to be hoped, however, that 31874 will appear in revenue earning service in the not too distant future. Any financial assistance, however small, would be greatly appreciated and will help breathe life back to this unique loco.

Further information on fund raising, etc.:

http://swanagemoguls.com/aboutthelocos/n-class-31874-bio/

Information compiled by Peter Sykes 1st March 2024