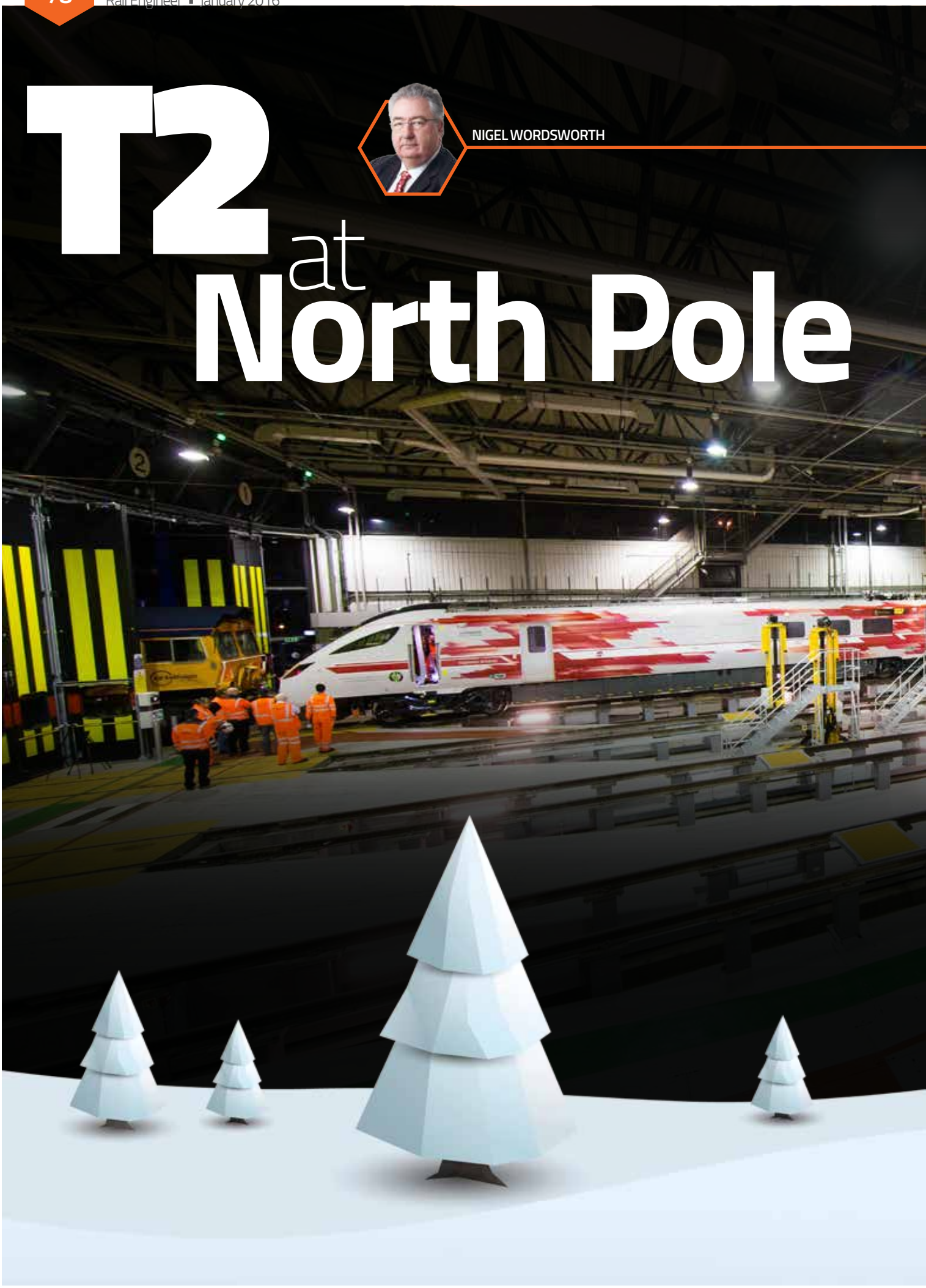
T2 at North Pole

NIGEL WORDSWORTH



When Rail Engineer was invited to visit North Pole in early December, it seemed like a good opportunity to sort out Christmas presents. When the itinerary arrived, the route was found to be via St Pancras and Paddington. However, it was not then to catch a plane at Heathrow for the snow-covered North. Instead the next leg of the journey would be by bus.

For the trip wasn't to Santa's North Pole at all, but to Hitachi's new depot at the edge of Wormwood Scrubs.

North Pole depot opened in 1994 as the maintenance facility for Eurostar trains, then operating out of Waterloo. A six-road, 400 metre long light maintenance shed and a four-road heavy maintenance workshop were built, along with separate buildings for a wheel lathe and a carriage wash.

When Eurostar moved to St Pancras in November 2007, maintenance moved to Temple Mills near Stratford and the North Pole facility became surplus to requirements.

Reworked for IEP

Until, that is, the Intercity Express Programme (IEP) was announced. Two related classes of trains were to be purchased for use on the Great Western and East Coast main lines. These were ordered from Hitachi and would be built in a new factory at Newton Aycliffe in County Durham, although the first five would come from Japan for main line testing while the new factory was being commissioned.

The new Class 800 units will be bimode trains, capable of running off an overhead 25kV electrical supply but also fitted with underfloor MTU diesel engines so they can operate away from the electrified network if necessary. Both five and nine-car units will be manufactured.

The related Class 801 trains, also in five and nine-car variants, will operate solely on electrified lines. However, they will have one of the MTU diesels fitted so they can be driven out of a neutral or failed section if necessary and can manoeuvre in depots and sidings. Great Western is not taking any five-car 801 units, although Virgin East Coast will have twelve.

Three depots will look after the Great Western fleet: at Swansea, Stoke Gifford – and at North Pole.

Hitachi, and leasing company Agility Trains, submitted planning applications to reuse part of the North Pole site in 2011. Following approval, work started to completely remodel

the six-road, 400 metre long main shed and turn it into a modern facility that could undertake both light and heavy maintenance on the new train fleet.

Due to the length of the building, even the nine-car Class 800/801 sets will be under 250 metres in length, the decision was taken to have the wheel lathe inside the main building and to only have carriage washes outside. The old 200-metre heavy maintenance shed, which was anyway on another part of the site, was not included in the plans.

Looks like new!

By the time of the December visit, the facility was virtually finished. There was even a train sitting in the building, a five-car bimode, manufactured in Japan and the first to be fully fitted with seats and an interior. Code named T2 (test train 2 – to become 800002), it is scheduled to start running on the Great Western, at night, next year having already covered 20,000 miles on the East Coast main line.

Sister train T1 (800001), which is devoid of an When Rail Engineer was invited to visit North Pole in early December, it seemed like a good opportunity to sort out Christmas presents. When the itinerary arrived, the route was found to be via St Pancras and Paddington. However, it was not then to catch a plane at Heathrow for the snow-covered North. Instead the next leg of the journey would be by bus.

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Sister train T1 (800001), which is devoid of an interior but is fitted with a variety of monitoring equipment, has been conducting tests on the East Coast main line for the last few months. The third test train, T58, is so numbered as it is actually the first of the East Coast tranche of the order and will also be the first nine-car unit to run (800101).

Hitachi managing director Karen Boswell welcomed Rail Engineer to the North Pole facility, saying she was pleased we would both get the opportunity to look at the new depot and to get "up close and personal" with train T2.

Depot manager George Shipley then showed off the new facility. It looks brand new, rather than a refurbished 1994 structure. Main contractor VolkerFitzpatrick has done a good job of completely remodelling the interior. The six roads now have inspection pits, which they never had before, and the floor has been both strengthened to take the loading of the lifting jacks and excavated for the bogie drop and the wheel lathe.

Numbered with road 1 nearest to the office accommodation (and to the Great Western main line which runs alongside the building), the first two roads will be used for general maintenance. Road 3 is fitted with a complete set of jacks to lift an entire train, supplied by Mechan. In fact there are, on the face of it, too many jacks. This is so that, if two five-car units arrive coupled together, the entire ten-car consist can be lifted as one unit.

Road 4 includes a bogie drop, also supplied by Sheffield-based specialist Mechan, while Road 5 has an overhead crane to remove roof-mounted equipment such as pantographs and heating and ventilation units (HVAC).

Road 6 is the home of the new Hegenscheidt wheel lathe. George Shipley explained that the shed is so long that there can almost be a production line arrangement as a whole train passes over the lathe. "A luxury," he said.

Overhead lines power three roads, with worker safety assured through the installation of a Zonegreen depot protection system, and there is a small shunter for moving trains when needed.

Outside, a new access from the Great Western main line has been created. Trains enter from the East, in the direction of Paddington, and pass by a carriage wash supplied by Wilcomatic. As well as being able to enter the workshop, storage sidings are located to the south of the facility, and here are workstations where the diesel engines can be refuelled, the toilets emptied and water and water tanks refilled – all these units are from Derby-based Garrandale.

Both the sidings, and the twin turnback roads at the other end of the workshop, are controlled by a Bombardier LOPS (locally operated points system), installed by VolkerRail as part of the trackwork alterations.

All aboard

Having viewed the new depot, it was time to walk through the train. One of the MTU diesels was running to provide on-board air conditioning and lighting.

Starting at the front (first class end), the central driving position gives a great view of the line (or in this case, the workshop) ahead. The controls for ERTMS and other signalling systems surround the driver, and the GSM-R radio and other equipment are within easy reach.

Behind the cab, the galley stretches down both sides of the corridor for a surprising distance. It takes up the equivalent of 20 seat spaces, but is correspondingly well equipped.

In fact, there are four levels of catering installation on IEP trains. Level 1 is the full galley supporting a first-class at-seat service. Level 2 is still an at-seat service but without the full galley. Level 3 is a café-bar in the centre of the train (which takes out 16 seats) and level 4 is provision for an at-seat trolley facility.

Jon Colley, programme manager at Virgin Trains East Coast, confirmed that its trains will be fitted with a level 1 galley in first class and a level 3 café in standard class.

First class seating takes up the rest of the first coach. Set out in a 2+1format, the seats are finished in dark grey. This is a standard for IEP. Both launch customers, Great Western and East Coast, will have the same basic colours and arrangements although touches such as antimacassars will be branded.

Through the door into the second coach and the floor rises in a slope. This is to give room for the underfloor diesel engines. While these MTU-supplied V12 700kW units, which meet European Stage IIIB emissions regulations, are very compact, they still need a slight increase in floor height – hence the slope.

Thereafter, the IEP Class 800/801 train is as you'd expect a modern train to be. Standard class seating is 2+2 with a mix of airline-style and tables. There is accommodation for two bicycles, in a separate storage compartment, and both disabled and conventional toilets. The sliding doors are unusual, but are as used on Hitachi's Class 395 Javelin for Southeastern. It's a very modern train, but using tried and proven technology.

Both first and standard-class seating and tables are mounted on rails in the floor, so can be changed if either the mix of passengers changes or a new franchise-holder wants to alter the arrangements. Even the galleys are removable, though the water supplies and drainage would have to be disconnected, but it is not the work of a moment as first class and standard class carpet colours and other details are different – it is all possible but would involve a major refit.

Power is provided at each seat, with both conventional 13A three-pin sockets and also a USB charging connection.

Luggage racks are included, as well as sturdy overhead storage. Hitachi's brief was to provide for one small bag for each passenger and one large bag for every four passengers in standard class and for every two passengers in first.

The next step

Testing is continuing. When the Stoke Gifford depot is complete, T2 will transfer there to continue the programme. The trains are rated for 125mph operation, although 140mph is achievable with minor modifications.

As for the future, test trains T3 and T4 are undergoing final pre-delivery testing at Hitachi's Kasado works. T5 and T6 are being assembled at Newton Aycliffe, with T5 being hand-built by a team which will become the supervisors when the factory is in full production.

Construction of T5 is expected to take ten weeks, as the workforce learns how to do it and any final assembly glitches are ironed out. Thereafter production will be ramped up until it hits one train a week at the peak. No more trains are planned to be built in Japan after T4.

With the trains due into service on the Great Western main line in 2017, there's still a lot to do. There is some debate as to whether the line will be fully electrified in time, or whether the service will need to start with the bimode trains using their diesel engines, at least for part of the route.

Be that as it may, the Hitachi team is confident that the trains will be ready on time, with all but five of them built in the UK by a British workforce. Yes, some major components will come from Japan, but no train builder sources all of its major components from one factory. Train manufacture is a global business, and Hitachi is just the latest manufacturer to spread its wings and open a new factory in a new market.

With two additional orders already won, 29 more IEPs for Great Western's Cornish routes and 70 of the new AT200 commuter trains for delivery to ScotRail commencing late 2017, the team at Newton Aycliffe is going to be busy.