

INFORMED SOURCES e-Preview February 2020

In the introduction to Modern Railways' invaluable annual publication 'The Modern Railway' I identified 2020 as the 'Year of turmoil'. And judging by the January column I called it about right.

Accessibility ruling triggers rail replacement coach crisis

Additional detection needed for Class 755 operation

PRM-TSI exemptions fuel disabled protests

New Train TIN-Watch

Bi-mode on Slochd validates laws of physics

Last month I highlighted accessibility as one of the key issues facing the railway in 2020. I didn't expect a major crisis to erupt before my forecast had appeared in print.

On 16 December the Department for Transport wrote a round-robin letter to train operators. In its letter DfT said 'We have become aware that there is a significant shortage of PSVAR-compliant vehicles for TOCs to procure in order to provide rail replacement services from 1 January'.

Just as our industry has the Rail Vehicle Accessibility Regulations (RVAR,) so the bus industry has the Passenger Service Vehicle Accessibility Regulations (PSVAR). And under the Disability Discrimination Act, from 1 January 2020 it became a criminal offence to operate vehicles on scheduled services which don't comply with the accessibility regulations. For buses and coaches, requirements include provision of a wheelchair space plus a ramp or lift for access.

Everyone, including the Office of Rail & Road, had assumed that Rail Replacement Services did not count as 'Scheduled Services' under PSVAR. However, an accessibility activist challenged ORR on the definition of scheduled service. Legal advice confirmed that Rail Replacement Services did indeed come under PSVAR.

Hence the letter, which included DfT's response to the crisis. Operators of Rail Replacement Services have been granted a temporary exemption from PSVAR. But only to 31 January.

This won't help much, because the problem is a shortage of suitable coaches. Accessible buses have low floors and can extend a ramp or kneel to allow wheelchairs on board. Most coaches have high floors to provide space for luggage lockers underneath.

To meet PSVAR, high-floor coaches have to be fitted with lifts. National Express, for example, commissioned its own design of accessible long distance coach with a lift for wheelchairs.

PSVAR does not apply to coaches used for private hire, such as holidays, day trips and theatre visits. These have been the main source for rail replacement services.

And in general there has been limited demand for PSVAR coaches outside scheduled services. As a result, there are very few of them available for hire. According to the Confederation of Passenger Transport (CPT) there are around 600 accessible coaches in the UK potentially available for rail replacement work. However, this is dependent on their geographical location and existing commitments.

Obviously, DfT is going to have to extend the exemption while the coach-hire industry catches up. Meanwhile, ORR has launched consultation on how it should respond to the PSVAR shock.

ORR is considering imposing additional requirements on train operators in four key areas:

Mandatory tendering for accessible buses and coaches in rail replacement contracts; encouraging earlier procurement and greater use of accessible vehicles at times of planned disruption; proactive provision of information to passengers on the accessibility of rail replacement services, and any available alternatives that may be more appropriate; and working with industry partners to improve the provision of accessible coaches during large-scale engineering works.

Of course, DfT and ORR are trapped between breaking the law and maintaining services for all passengers. ORR gets this, but Rail Minister Chris Heaton-Harris seems to believe in a magic PSVAR-compliant coach strategic reserve.

During the one month exemption he expected TOCs 'to do all they can to source compliant vehicles before considering using non-compliant ones'. Where non-compliant vehicles are used, 'TOCs must provide passengers who require it with accessible alternative transport, such as taxis'. The trouble is that wheelchair accessible taxis are also rare, especially away from the big cities, and may take an hour or more to turn up.

No easy answers.

Crossings modified for Class 755 operation

Last month's Modern Railways reported that the Rail Accident Investigation Branch (RAIB) was investigating a very, very near miss at an Automatic Half Barrier (AHB) level crossing on the Norwich-Sheringham line.

Here's the RAIB description of what happened.

"At about 19:53 hours on Sunday 24 November 2019, a 4-coach class 755 passenger train, operating the 19:45 Norwich to Sheringham

service, was approaching Norwich Road automatic half barrier level crossing, to the north-east of Norwich. The crossing barriers were in the lowered position until the train, travelling at about 45 mph (72 km/h), was about 200 metres from the crossing. The barriers then lifted, the level crossing warning lights went out and cars began to cross the railway. The train driver applied the train's emergency brake and sounded its warning horn, but the train was unable to stop before reaching the crossing. No road vehicles were struck but a car passed in front of the train around a quarter of a second before the train went over the crossing".

After privatisation, one of Railtrack's priorities was to obtain low cost signalling, suitable for replacing manually controlled mechanical boxes and crossings. In November 1997, two pilot schemes were let, one of which was the Norwich-Sheringham route.

Harmon of the USA would provide the single processor interlocking and other hardware. The contract was let through its recently acquired subsidiary Vaughan Systems of Ware, now renamed Vaughan Harmon Systems Ltd. Three existing automatic crossings would be modernised and three others automated.

With automatic level crossings, the disadvantage of a fixed 'strike-in' point, where the train is detected starting the crossing closure sequence, is that the warning time given to the user may be longer than necessary for slow trains.

Harmon's predictor uses track circuits to detect an approaching train and determines its speed. The speed is used to calculate the 'strike in' point to provide a constant warning time.

Harmon's predictor system was fitted to the six AHB between Norwich and Cromer and entered service in 2000. According to ORR there has not been any previous accident history on the crossing in the 20 years since the predictor system entered service.

What seems to have happened is that the track circuit lost detection of the approaching Class 755. The crossing assumed the train had left the section and opened the gates.

RAIB has identified two key issues for its investigation.

These are the design, implementation and operation of the predictor system, including any effects of rail head contamination due to fallen leaves, plus the design of 'relevant elements of the Class 755 train and the process for accepting it for use on this route'.

After the incident Network Rail immediately put the barriers under local control and imposed a 20 mile/h Emergency Speed Restriction. This accounted for much of the service disruption. The extended running times meant that there was insufficient time to run to Sheringham and pick up the return timetable. Trains were therefore turned back at Cromer.

It was also decided to fit treadles as a backup to the predictor track circuit at the six AHBs. This is a reversion to British Rail practice which combined track circuit and treadles.

Norwich Road, Great Plumstead and Rackheath Road crossings had been equipped just over a week after the issue emerged. The closed period for the gates has also been extended to 98 seconds. The other three AHB crossings on the route were fitted early in January.

Other routes were also affected by loss of detection of Class 755 multiple units during leaf fall. The leaf fall period officially ended on 18 December, but testing was still needed to check that Class 755s were being detected correctly on track circuited lines.

In the column I describe the recovery process, which was assisted by some of Network Rail's 'intelligent infrastructure'. By the start of the New Year the infrastructure was fully available with no restrictions on Class 755 operation. The only exceptions were the 20 mile/h ESR at the three AHBs pending fitment of treadles.

Now we wait for the RAIB report.

#### PRM-TSI exemptions fuel disabled protests

On 1 January it became illegal to operate a passenger rail vehicle which did not comply with the Persons with Reduced Mobility Technical Specification for Interoperability (PRM-TSI). In the December 2019 column there was a table listing the non-compliant vehicles which would require an exemption to remain in service. The estimate was 1092.

Back in the December 2011 Informed Sources I highlighted the way in which deferred decisions by DfT on the start of compliance work was putting meeting the January 1 2020 deadline at risk. I estimated the number of exemptions likely to be needed at around 2,000.

So out by 100%? Well, not quite. On 19 December Rail Minister Chris Heaton-Harris wrote to the Rail Delivery Group expressing his 'extreme disappointment' that the rail industry and train operators would fail to meet the accessibility deadline. He added that 'owners and operators have had 10 years to prepare for the 31 December 2019 deadline'.

Much of the delay rests with late delivery and acceptance of new trains or refurbishing programmes including PRM compliance work. However, his Department has contributed to the problem by its refusal to face up to the approaching deadline.

Mr Heaton-Harris noted that 'were all non-compliant trains removed from service there would be a disproportionately negative effect on the provision of services for passengers'. Hence the 'reluctant' agreement for dispensation notices covering 'around 1,200' carriages.

Fleet-by-fleet details of the exemptions became available when DfT eventually published the individual dispensation letters. With the help of the Modern Railways team I have updated and expanded my December table. New details include whether replacement is with new or cascaded stock or where late-running refurbishment is on-going. Replacement fleets are also shown, with the manufacturer and delivery status.

Oh yes, and the new total is 1,346 vehicles.

#### New train TIN-Watch

This month we welcome yet another new fleet to the Table of Truth. Congratulations to Hull Trains on providing reliability data as soon

as the first of their new Hitachi bi-modes was in service.

ScotRail has been cock-a-hoop since the South Western Railway Siemens Class 707 fleet was promoted to compete with the galacticos of EMU reliability in the Top 10. But despite the Class 707 elevation, the Class 385's top ranking among the new trains is well deserved, with a stellar 60,000 MTIN for the latest Period.

Newton vindicated.

This last item is bit of self-indulgent fun, finally signing off my long campaign to counter DfT's claim that distributed traction would give the Intercity Express Train in diesel mode magical powers, allowing it to outperform the more powerful IC125s it was replacing.

When Class 800 bi-modes were ordered for services north of Edinburgh I queried their performance over the northern climbs. I was reassured that distributed traction would offset the power disadvantage compared with IC125.

This clearly contravened the laws of physics. My brother the Prof even ran a model which demonstrated that, while the IEP zipped away because of its weird DfT specified acceleration curve, once the initial sprint ran out of power the IC125 caught up and disappeared into the distance.

But who believes in abstruse calculations? However, eventually, LNER's December 2019 timetable meant that we were able to test the validity of Newtonian physics by comparing a nine car Class 800 against IC125 performance over the southbound climb from Inverness to Slochd Summit. I am indebted to my chum David Shirres for the details.

The climb starts at Tomatin, which the Class 800 passed at 70.3 mile/h. After 3.5 miles at a gradient of 1:60, the speed at the summit was down to 55.3 mile/h. This compares with 65 mile/h for a 2+9 IC125.

Which is as expected, since the IC125 has a power to weight ratio of around 10 hp/tonne compared with 8.6 hp/tonne for a nine car Class 800 with its engines derated for reliability.

Just to emphasis the point that power to weight is the determinant, ScotRail's Inter7City shortened IC125s touch the 75 mile/h line speed limit before braking for the 50mile/h restriction after the summit.

Does it matter that 2 min are lost on the climb to Slochd summit so early in the journey? Not really.

But this real-life comparison is a reminder that when it comes to traction performance the cold numbers, not wishful thinking, should rule.

Roger's blog

Last week there was a briefing for the specialist press by Network Rail Chief Executive Andrew Haines with North West & Central Region Managing Director Tim Shoveller riding shotgun. The value of these briefings is that you can ask detailed questions without the eye rolling from the mass media which used to go on if you tried to ask a serious question at DfT press conferences – back in the day when ministers were brave enough to have press conferences.

This coming Friday it's the Fourth Friday meeting where I get the chance to sit back and relax. Unlike the Golden Spanners and Innovation Awards which I compere, the Golden Whistles for Excellence in Operations is run by my colleague Tony Miles.

February is pretty quiet at the moment. But I doubt that this will last. DfT will have to publish the results of the Williams Review sooner or later. With zombie franchises multiplying, it could be sooner.

March gets off to a good start, with the Accelerate Rail conference, followed by Waterfront's 'Achieving UK rail decarbonisation' event a week later. The list of topics and speakers is promising and I'm hoping this new venture will join Waterfront's long running annual Rolling stock and Signalling conferences.

So while the lull lasts I really will get down to updating my rolling stock orders data, bringing the latest financial results into my Zombie Franchises file as well as researching topics for the March Informed Sources column. March already? Where has the year gone?

Roger