INFORMED SOURCES e-Preview October 2019

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There's a broad mix of topics in this month's Informed Sources, featuring a couple of in-depth analyses and a return to the 1990s, while the new train reliability table continues to grow.

Power failure highlights specification confusion.

WCP award – victory for DfT reactionaries

Class 365 fleet state-owned

New Train TIN-watch

On 9 August a power cut affected a wide area of Southern England. But despite the East Coast Main Line overhead line supply remaining live, on Thameslink services north of Farringdon, Kings Cross and St Pancras passengers were trapped for up to eight hours. This was because around 60 Class 700/717 Electric Multiple Units had shut down and 31 could not be rebooted without the assistance of a technician.

Two generators coming off-line caused the power cut. Together they represented a greater power loss than the nominal reserve of 1,000 MW maintained by the National Grid. The loss of generated power was so large that within a minute it dragged down the standard 50Hz frequency of the grid to 48.8Hz.

This drop in frequency caused GTR's Siemens Class 700 and 717 trains shut down when their low frequency protection systems were triggered.

A drop in supply frequency can affect the harmonic frequencies in the traction return current. Traction equipment is designed to keep these harmonics away from frequencies which could affect track circuits in normal operation. So trains monitor the supply frequency and if it strays outside pre-set limits the traction equipment is shut down.

However while this protection was activated on the Class 700 and 717 stock, plus certain Bombardier traction packages on Transport for London trains, Siemens has discounted signalling interference protection as the cause of drivers being unable to restart their trains.

With the Siemens trains, tripping involved a lock-out of the traction system. This occurred when the frequency had fallen to around 49Hz. However, the system should not have tripped until the frequency was down to 48.5Hz.

Nor, according to Siemens, should there have been a permanent Lockout following a protective shutdown caused by a supply voltage frequency drop. All trains should have been recoverable by the driver employing the Battery Reset procedure.

But it's obviously not as simple as that, because half of the trains that shut-down could not be restarted by the driver using the Battery Reset procedure. They had to be rebooted by a technician using a lap-top. Why the difference?

At the time of the power cut Siemens was partway through a Software upgrade. In order to protect some component in the traction package, this new software removed the ability of the driver to recover from a lockout by using the Battery Reset process.

Immediately following the incident, Siemens commissioned a software patch which will allow units which protectively shut down below 49Hz to recover themselves without the need of a reboot or laptop when the frequency rises to 49.5Hz. At the beginning of September, this patch was being verified by Siemens Software engineers. It was then expected to be trialled on a Class 717 before being downloaded to those trains with the later software.

WCP award – do or die!

If anything confirmed the view of Keith Williams, Chairman of the Government's Rail Review, that 'franchising cannot continue the way it is today: it is no longer delivering clear benefits for either taxpayers or fare payers', it was the award of the West Coast Partnership (WCP) to the FirstGroup/Trenitalia consortium on 19 August. That Mr Williams was rolled out to endorse the award as 'a step forward that is firmly in line with the Review, introducing benefits for passengers today and capable of incorporating the reforms needed for the future', confirmed my view that we should moderate expectations for his much-touted review, the 31st review since 2006.

So what is different about the WCP that Keith finds so compelling? Well, according to DfT: 'It reflects a significant move away from the previous flawed franchising system to tackle issues already highlighted by the Williams Review, with the use of a Forecast Revenue Mechanism (FRM) to avoid a repeat of the issues that affected the previous East Coast Main Line'.

FRM is intended to limit the franchise operator's exposure to the risk of revenue failing to meet the expectations in the franchise bid. DfT will review the franchisee's actual Revenue against the Target Revenue in the bid. As soon as revenue strays outside plus or minus 3% of forecast revenue, DfT either caps 80% of the loss or collars 80% of the gain.

Does this sound familiar to franchising veterans? Yes, it's a more generous, less sophisticated version of the 'Cap & collar' regime which applied to franchises let before the Brown/Wilkinson reforms which followed the InterCity West Coast replacement franchise procurement scandal of 2012.

There is one further, and very significant, difference. Cap & Collar became available only from the fifth year of the franchise. FRM applies from the start.

So when Transport Secretary Grant Shapps proclaimed that the franchise 'represents a decisive shift towards a new model for rail', it was very much a case of the emperor's old clothes.

There is an interesting hostage to fortune in the details of the rolling stock programme.

According to the DfT press release, '23 brand new trains [will be] introduced by December 2022, replacing the unpopular diesel Voyagers and expanding the fleet'. Yes, Voyagers are now officially 'unpopular', joining Pacers in DfT's Bad Trains Guide.

Despite everyone knowing that HS2 was already at least two years late, in the WCP announcement DfT still portrayed the franchise as covering the period up to HS2 opening in 2026, albeit with provision for an extension for up to five years.

But according to the 'Stocktake' by the Chairman of HS2, published on 3 September, integration of HS2 services with the national network is now expected 'from December 2030' following a period of 'captive' operation restricted to HS2'. DfT must have known this, so why the mad rush to bind itself into a franchise at a time when maximum flexibility is going to be needed to cope with accelerating uncertainty?

Perhaps, having been forced to bin the South Eastern franchise procurement and extend Cross Country, DfT was determined to get WCP away, do or die. And it seems they talked their new Secretary of State into believing it would be a good news story.

I suspect this will prove to be an expensive mistake when there was no hurry to let the franchise. Wait and see would have been the prudent approach, with the Operator of Last Resort (OLR) acting as caretaker. As for Keith Williams' claim that this noughties-style retro-franchise aligns with his emerging proposals, we shall see.

Class 365 – risk doesn't go away.

On 12 November 1992, the Chancellor of the Exchequer's Autumn Statement included a change in the rules which had prevented government bodies, like British Rail, leasing stuff. Exploiting these relaxed rules, and partly in an attempt to encourage development of a leasing market in the run-up to privatisation, British Rail was given authority to lease rolling stock worth £150 million in the years 1994-95 and 1995-96.

As it was explained to me at the time, by non-other than Rail Minister Roger Freemen himself, lease payments would fall outside BR's External Finance Limit because the financial risk would stay with the leasing organisation which would own the rolling stock. Well that was the theory.

What followed was the Informed Sources version of East Enders. Throughout 1993, almost every month brought a new plot twist.

Then as now there were also the industrial and political imperatives of avoiding factory closures. Most vulnerable was ABB Transportation's (formerly BREL) York plant, which would have nothing to build after its current contract for Networkers was completed. But you couldn't just give the contract to ABB. There had to be competition.

After some prodding, InterCity responded with a proposal for a small batch of InterCity 225s for the West Coast Main Line. But when the prices came in IC225 was unaffordable and the money went, as intended, to the new dual-voltage Networker.

When the deal was signed in October 1993, BRB entered into finance leases with the banks for what would be the Class 365s. But when the Rolling Stock Companies were privatised in November 1995, the Class 365s were the odd fleet out, because BR didn't own them.

A Special Purpose Vehicle was set up with the sole business of owning and leasing the Class 365 fleet. In effect, Eversholt leased the fleet in place of BR and then sub-leased the Class 365s to a train operating company. Revenue from the sub-lease was used to pay the lease rentals due to the owners (the head lease).

Now, remember that bit about financial risk staying with the leasing organisation? Do you really think banks are that naïve? Of course not.

Somewhere in the small print was a clause guaranteeing that if the trains weren't wanted before the lease expired in 2022, the Government would buy out the head lease. And with 19 units in store, and no immediate prospect of a new operator, Eversholt was unable to make the head lease payment for 2019.

As a result, owner RBS Bank called in the Government guarantee, and DfT has bought back the entire Class 365 fleet. But what does a government department do when it finds it has 40 dual voltage EMUs on its hands? Why, call in the Operator of Last Resort, which has set up Train Fleet (2019) Limited.

So now we have a ROSCO of Last Resort. This is not necessarily an embarrassment, since it means that DfT has a strategic reserve of versatile PRM-TSI compliant EMUs which it can allocate to any TOC in need.

New Train TIN-watch

Northern's CAF Class 195 Diesel Multiple Units have joined the Table of Truth this month, bringing the number of new and repurposed fleets listed to 14. As a reminder of my long standing benchmark, I have put Northern's Class 142 Pacer fleet in their appropriate ranking.

Only three fleets are above the Pacers: Siemen's Class 700 and 707 and Hitachi's Class 385. In the Battle of the bi-modes, the LNER and GWR fleets are neck and neck. I did wonder whether LNER had an advantage from less intensive diagrams, but the differences in unit mileage are insignificant.

Good news for GWR is that the 60 mile/h speed restriction at Steventon Bridge, which Class 800s have avoided by running through the section under diesel power, has been lifted to 110 mile/h since 14 September. This followed some good old-fashioned empiricism rather than modelling.

Analysis of real time data from test runs at 125 mile/h showed that operation at line speed would, indeed, not be sustainable in terms of both contact wire life and pantograph wear. However 110 mile/h turned out to acceptable, at a cost of only 7 seconds delay.

One lesson from TIN-watch is that with this new generation of software-enabled trains, rolling stock engineers are entering unknown territory when it comes to reliability. Latest example of software-on-wheels syndrome are the much-anticipated Stadler Flirts on Greater Anglia.

Stadler's frequent bi-mode failures have been largely engine-related, with sets sometimes failing on depot before even starting a diagram. Stadler attributes the engine problems to software rather than physical issues such as overheating. The Class 755s should make their debut in next month's table when all will be revealed.

But Stadler's problems are a minor inconvenience compared with those still facing Bombardier. The Class 701 order for South Western Railway (SWR) has now been confirmed as a year late. The first trains are expected to be in service 'by the middle of next year'.

Asked about progress with its delayed Bombardier Class 720 fleet at the end of August, Greater Anglia said that it was still finalising the roll-out plans for the Bombardier trains.

Roger's Blog

September started with one of those days when you have the seamless, boringly-reliable journey that the railway aspires to. It went WGC - Kings Cross – Paddington – Didcot and return. All the mainline trains ran to time and on the outward journey there was a train via Paddington in the platform as I came down into the Underground.

Leaving Paddington, what the late, great, Cecil J Allen would have called a 'sparkling start' by 800.309 under electric traction saw us arrive 5 mins early at Reading. The £1 coin test was passed and the only excitement was a chat with the conductor about how he was re-booting a toilet – see the remarks on software above.

Coming back I tried the new GWR filter coffee in its high tech cup. You drink through a mesh to avoid swallowing the grounds and there's a little hatch in the top for milk and the stirrer. Pretty decent coffee too.

But one thing I did notice as I got up to leave the Class 700 as I arrived back at WGC: my bum certainly knew that it had spent a collective 140 minutes sitting on the 'ironing board' seats common to the Class 700s and 800s.

And on my latest trip on a Class 700 it felt as if the substrate under the seat cover was breaking up. In fairness I should add that Mrs F is happy with these seats. I think it may be down to differences between the male and female pelvic bones.

Reason for the visit to Thames Valley Signalling Centre at Didcot was an update on Network Rail's experience with Resonate's Luminate Integrated Traffic Management (TM) system now that the 15 months trial was ending. Full details in the November Informed Sources which will be a traffic management special reporting on the state of play with current systems.

Talking of TM, if anyone has the list of firms prequalified for the East Coast Main Line TM procurement as part of the route upgrade, an e-mail to roger@alycidon.com would be appreciated. In total confidence of course.

Last week it was the Waterfront Rail Industry Forum. This was a real high-level meeting on the 30th floor of an office in Canary Wharf. As ever, an excellent event with a range of speakers representing Wales, Scotland and the English regions plus highly topical panel discussions.

Naturally the Williams Review loomed. It looks as though the central guiding mind (Rail for Britain anyone?) will specify services and take revenue risk, while franchises will be replaced by management contracts to run the timetable. This makes the West Coast Partnership award even more irrational.

This week I'm off to Doncaster to see Bombardier's latest automatic level crossing. One of my favourite starts to a day out is a run down the ECML with the sun coming up over the fens and a full English being served.

And then its October with the Modern Railways RVE show at Derby on the 3rd and the Accelerate Rail conference on the 10th.

Meanwhile the Editor has just asked how many trophies I will be handing out at the Golden Spanners awards in November. It may be warm and sunny outside as I am typing this, but the Summer break is definitely over.

Roger