

INFORMED SOURCES e-Preview June 2019

I'm writing this at the end of a busy and enjoyable week, with the LNER Azuma launch on the Tuesday followed by a day at Railtex on Thursday. Apologies to those who were intending to see me on the opening day of the exhibition: the late announcement of Azuma launch meant a change of plan.

East Midlands IC125 dilemma
SSI in the 21st Century
East Coast traction power supply uncertainty continues
New train TIN-Watch

Announcing of the award of the East Midlands franchise to Abellio. the Department for Transport promised 'modern diesel trains' starting to replace the EMT IC125 fleet 'from May 2020'. To which the obvious question is 'with what'?

As far as I can tell, the only available 125 mile/h capable 'modern diesel trains' available from that date are the four Hull Trains Alstom Class 180 Coradia DMUs. These are due to be replaced by Hitachi AT300 (800 Series) bi-modes by the end of this year.

Assuming you diagrammed three out of the four that would displace 25% of EMT's 2+8 IC125 formations, which is a start. Meanwhile, in May 2020, the Corby electrification should be commissioned, allowing driver training to start for the new electric commuter service in the December 2020 timetable. The introduction of the Kettering/Corby EMUs should release some Class 222s which could, in turn, displace more of the remaining IC125s.

Leading candidate for the Corby electric stock is the Greater Anglia Class 360 fleet which is PRM-TSI compliant. However, their release is contingent on the timely delivery of the Bombardier Class 720 Aventra EMUs to Greater Anglia.

If delivery of the Aventras is still running late, Greater Anglia will want to get rid of as much of its non PRM-TSI compliant stock before the 1 January 2020 deadline when compliance becomes mandatory. This means that hat the Class 360s are likely to be the last to be released. May 2020 may be a bit optimistic for the start of driver training.

All this indicates that some East Midlands IC125s will have to run on for up to a year past the PRM-TSI compliance deadline. DfT has finally authorised East Midlands Trains' and Porterbrook to investigate ways of mitigating some of the non-compliance of the current fleet.

However this task is full of known unknowns, not least, how long the IC125s will have to run on and whether any PRM TSI compliance work could be done soon enough to be worthwhile.

At the end of a recent evidence session, Transport Committee Chair Lilian Greenwood bounced Transport Minister Andrew Jones on Abellio's solution to the IC125 problem. Apparently that was commercially sensitive until the award was confirmed. Jones added, 'I have not seen the bid detail on that point, but we would know that there were 12 trains outstanding, and that alternative solutions, short term plans, were being developed to deal with those 12 trains'.

Lilian was looking forward to hearing what those plans are, but added 'I am not sure I am filled with confidence'. Me neither. I suspect a dispensation will prove more convenient.

Battle

Meanwhile, three manufacturers have submitted bids for the new 125mile/h trains which will also replace the Meridian fleet. They are Bombardier, Hitachi and Stadler and in the column I analyse their prospects. All are offering 125 mile/h bi-modes and all are keeping their cards close to their chest.

As reported a few months back, Hitachi have added a fourth diesel Generator Unit (GU) to their five car AT300, which has turned it into a 'rocket'. 'Where have you put the extra engine', I asked?

'Can't tell you'.

'Well, it's a five car set with engines under the middle three vehicles so it must be at one end'.

'Sorry, that's commercially confidential'.

Of course, they and Bombardier could be offering six or seven car units? But Bombardier are equally coy, while Stadler may have a wild card configuration.

So overall, a hard one to call and I don't envy the Abellio procurement team. They have to juggle deliverability of unproven designs, performance and cost, all the while under the threat of potentially significant political fall-out over work-hungry assembly plants getting hungrier.

SSI – still going strong

Next year sees the 35th anniversary of a decisive step forward in the application of digital technology to railway signalling. On 8 September 1985, British Rail commissioned its first Solid State Interlocking (SSI) at Leamington Spa.

Today Network Rail has around 450 SSI on the network which, as explained last month, are not going to be replaced anytime soon. Within an overstretched renewals budget older relay-based schemes are going to be replaced first.

When the new generation, SSI backwards-compatible, interlockings came in, the manufacturers stockpiled supplies of SSI components against future orders. For modest schemes SSI remains competitive. The most recent application, the Seaford Branch resignalling, featured in last month's Modern Railways.

With classic SSI likely to be in front-line use for a least another two decades, and on an increasingly busy railway, upgrades to the supporting systems and equipment are long overdue. Which is where Park Signalling of Stockport comes in. As reported in last month's blog, in April I helped launch the modernised version of the Technician's Terminal used for SSI maintenance.

Over the years, Park had supplied several custom replacement terminals. But with the large population of SSI remaining in service for the foreseeable future, the decision was taken to 'go for broke and develop a new terminal that would do everything the original would do only better'.

While the new terminal is directly compatible electrically, Park Signalling has developed a modern, graphical user interface. Obviously the live demonstration was at a technical level way above my head. However, to judge by the subsequent Q&A session the potential customers at the launch were clearly impressed. Lincoln SCC has just acquired one of the first new terminals.

What I could get my brain round was the separate demonstration of a highly topical piece of Park Signalling kit. Called REMOSdI it is a diagnostic smart tool for the SSI data links which connect the interlocking to the trackside equipment. Recent issues with new electric traction on the ECML have brought Electro-Magnetic Interference with SSI data links to the fore again.

What fascinated me was the ability to examine the individual binary telegrams which transmit the SSI outputs and returning inputs. You can even see the effect of electrical 'noise' in the data link.

I'm conscious that this item may all be a bit esoteric for the general reader, but decision makers need to appreciate that SSI has not stood still and despite reaching its coral anniversary, the application of 21st Century technology can offer improved reliability.

Power supply could delay ECML service expansion

When the Office of Rail & Road was hearing submissions from Virgin Trains East Coast and potential open access operators for Long Distance High Speed (LDHS) paths on the East Coast Main Line (ECML), Network Rail was perceived as an obstacle to progress. The infrastructure operator was concerned that the increase in traction power demand from the extra electric trains would exceed the capability of the supply system.

At that time Network Rail's ability to model the ECML power supply network was struggling to keep up with the flood of proposals from the operators. But that was back in 2015. Four years on and Network Rail has a much better idea of the impact of new trains and timetables on traction power supply capability.

South of Doncaster the ECML power supply has already been strengthened under the Power Supply Upgrade 1 (PSU1) programme. PSU2 will cover the rest of the route and this is critical to future services.

In addition to Class 800 Hitachi bi-modes replacing LNER's IC125s, Hull Trains is also replacing its Class 180 DMUs with Class 802 bi-modes. FirstGroup has ordered Hitachi Class 801 EMUs for its London-Edinburgh open access service. And a nine car Class 801 draws more power than a Class 91.

Under the Department for Transport's Intercity Express Programme (IEP), a new feeder station was required for the Doncaster Depot where the LNER Hitachi fleet will be maintained. Fortunately someone realised in time that this Feeder Station at Potteric Carr could feed the main line as well as the depot.

Commissioning of Potteric Carr is scheduled for June and Network Rail reckons it should be in operation for October. Potteric Carr includes the first application of an innovation which will help reduce the cost of electrification, as well as improving efficiency.

An ABB Static Frequency Converter (SFC) converts the incoming 33kV AC 3-Phase into DC and then back into 25kV AC single phase for the overhead line equipment. This is the first UK application of SFC technology, which is already used on European railways. ABB estimates that the SFC has saved 60% compared with the cost of providing a new high voltage grid connection for the site.

Potteric Carr will provide the Doncaster Area with sufficient power to run the 2021 timetable with its extra LDHS paths. However, the electrification engineers also have to reckon with temporary closures, or 'outages'. Until the new Hambleton Junction feeder station becomes operational the traction power supply will lack resilience in the event of an outage at Potteric Carr.

In the event of an outage the traction power supply would be able to accommodate up to four electric-powered trains per hour in each direction through Doncaster. Above that number, bi-modes would have to change to diesel traction and electric trains terminate short.

Moving north, the next critical location is the Hutton Bonville feeder station which supplies power to the ECML between Northallerton and Darlington. Modelling has shown that this can support the May 2019 Monday-to-Saturday timetable. However, the 2021 timetable will require a brand new Feeder Station at Hambleton Junction. It is due to be commissioned by the end of November 2020.

Existing traction power supplies around Berwick will be able to support two LNER electric services per hour in each direction, either Intercity 225 or Azuma trains. However, modelling predicts that power demand from even this modest service could pull the line voltage down to almost 18kV at times in the Innerwick and Marshall Meadows feeding areas. This is close to the minimum transient specified voltage of 17.5kV.

Low voltage would affect both of the LNER fleets. But despite its apparent butchness, the 'Mighty 91' would be the hardest hit.

If the Innerwick and Marshall Meadows feeding areas are marginal today, there is no chance for LNER's extra Sunday services to and from Edinburgh, plus the new First East Coast Trains' all-electric open access service, plus TPE's new bi-mode one train/h Edinburgh service. Hence the requirement for an upgraded grid supply at Marshall Meadows, also with Static Frequency Converters.

New train TIN-Watch

This month the Table of Truth welcomes the Great Northern Siemens Desiro City Class 717s, which are replacing Class 313s on my local 'stoppers' into Moorgate. But missing from this month's Table are the two Great Western 800 Series IEP fleets.

There appears to have been data entry issues. While the fleet mileages have changed, the number of units and the number of TINs have stuck on the Period 11 numbers. Normal service should be resumed next month with Period 1 of the new accounting year.

I have also been taken to task by a reader over the calculation of MTIN Moving Annual Average (MAA) figures for trains that have been in service for less than a year. The table uses the sum of the MTINs to date divided by the number of reporting periods in service.

My reader argues that he was an accountant and 'when we say a year we mean a year'. On this basis MAA should be calculated by adding up the MTIN figures available and then dividing by 13, since no mileage was run in the earlier Periods.

This would not be of much use in helping a Depot Engineer to track the improving performance of his charges. But as my reader concludes, 'It would not be the first time that engineers see things differently'. Quite!

Roger's Blog

It was a busy start to May, with research interviews for the two features I was contributing to the Siemens Mobility supplement in this month's magazine. Then I had to write up the articles against a tight deadline. This is a good thing, occasionally, because a bit of head-down concentrated writing gets the journalistic adrenaline flowing.

That was followed by some more high pressure writing as the Modern Railways team put together the June Editorial. No prizes for guessing that this was on the subject of franchising, where both Stagecoach and Arriva are taking legal action over the East Midlands award.

As already mentioned, I had been planning to attend the opening day at Railtex, but LNER decided to hold the press launch of Azuma on that day. It also happened to be Modern Railways' press day, so Tony Miles and I enjoyed the run in the sun while the Editor and Assistant Editor sweated over hot display screens.

It was a model of a new train press launch, which also gave me the chance to take a closer look at the Class 800. LNER have certainly improved the interiors, but new moquette doesn't make the seats any more comfortable. The ride was also very 'nervous'. It was possible to balance a £1 coin, but only for brief intervals.

This might reflect the current state of the ECML track. Certainly in the Great Western Class 800s, the ride is better west of Reading where track condition improves.

Two days later it was off to Birmingham for Railtex. While waiting for breakfast I thought I would compare the Pendolino's ride with the Azuma. My Mk1 human sensors judged it smoother, but I thought I would give it the coin test. No £1 coin in my pocket, so I used a 20p and it balanced at 107mile/h.

Obviously it wouldn't sit there for miles on end. But Mr Miles was on a photographic assignment on the train. When I told him about the 20p I repeated the test and the coin sat there long enough for him to get his professional camera set up. This obviously says something about the state of the WCML track as much as the Pendolino suspension and there has clearly been a reversal of fortune between the East and West main line infrastructure.

This year at Railtex, instead of going up and down the aisles, I had a list of 'must-sees', although going between these companies there was also the chance for some serendipitous discoveries at stands en route. As it was there was so much to discuss on the must-see stands that with the exhibition closing at 16.00 on the final day, I didn't see as many exhibitors as I would have liked.

This week includes a briefing on a new approach to crew and stock management. June then starts with the Rail Freight Group Conference. The following Week, there's a Westminster Energy, Environment & Transport Forum policy conference on rail services in the UK with an impressive list of keynote speakers.

After that it is fairly quiet (so far). This should give me time to update the East Coast traction presentation I gave to the Gresley Society.

When President Sir Michael Holden invited me to give a talk to the Retired Railway Officers Society, my first thought was something on the current state of the industry. But that would be predictable and worthy, so for the July RR0S meeting I will be tracing traction policy from the Deltics to Azuma. A bit of tech, some railway politics and the odd attempt at a joke.

Now to file my photos from the Azuma launch and Railtex.

Roger