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BACKGROUND TO BOMBARDIER AND THE THAMESLINK CONTRACT

HISTORY OF LITCHURCH LANE WORKS IN DERBY

By Roger Jackson

Midland Railway (MR) was, by most measures, the second largest of the railway companies produced by Victorian enterprise in Britain, though for a period, including its diversified interests it had the highest capital valuation in the world. It was the only sizeable railway company to concentrate all its engineering and management functions in one place, making Derby the largest railway town in Britain.

London Midland & Scottish Railway (LMS) absorbed the MR in 1923 to form the largest of the four railway groups specified by the government to rationalise the railways after the first world war. Although having a head office in London and single biggest factory in Crewe, the LMS concentrated its engineering design functions in Derby.

British Railways (BR) further concentrated the professional design and operational functions in Derby, setting up the Railway Technical Centre (RTC) and probably the greatest concentration of railway expertise in the world. However in October 1969, the workshops and much of the design (rather than development) capability in BR were incorporated as British Rail Engineering Limited (BREL) a financially independent but government owned entity. Shortly before privatisation the operating side of the BR was divided into business sectors (Intercity, Freight, Network Southeast, Regional Railways etc) each responsible for their own engineering functions totally separate from BREL.

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Privatisation produced a rapid decline in engineering capability, the RTC being privatised and sold off, with relatively little railway activity remaining now. In 1989 BREL was privatised becoming 'ABB Transportation Ltd'. However there remain some 87 railway businesses located throughout the East Midlands, which make up the Derby & Derbyshire Rail Forum. These companies collectively employ 25,000 people and contribute £2,6 billion pounds to the local economy – they form the largest cluster of rail companies in the world.

Derby Carriage Works was built in Litchurch Lane by the Midland Railway, with production commencing in 1873. Having changed ownership and alias many times, it is now part of the Transportation division of Bombardier Inc of Canada, which has become the sole remaining manufacturer of railway carriages in Britain.

Always one of Britain's principal rolling stock manufacturers, Litchurch Lane supplied virtually all the air-conditioned Mk2 & Mk3 Intercity coaches to British Rail until circa 1990. However Derby Carriage Works lost the Mk 4 contract for the electric trains on the East Coast Main Line (ECML). It is thought that this resulted from the Intercity sector specifying such an ambitious ride quality that the design team deemed it to be unobtainable (even though they were arguably world leaders in carriage suspension design). The contract was won by private enterprise that spotted the lax penalty clauses and realized they could make a handsome profit from a non compliant product. This resulted in significant expenditure by Intercity bringing the ride quality to an acceptable standard.

Since then, the main product has been multiple units, latterly Turbostars, Electrostars and trains for the London Underground. Recently this included a huge order from Transport for London for nearly 2000 vehicles. Bombardier has also had substantial orders

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from the South Eastern and Southern Railway franchises and the Republic of South Africa.

GOVERNMENT PURCHASE OF TRAINS IN THE 21ST CENTURY

Following privatisation, the usual mechanism for ordering new rolling stock was that a Train Operating Company (TOC) would produce a business specification of their requirements, though the trains would then normally be bought and leased out by a Rolling Stock Owning Company (ROSCO). Selling into this free market Bombardier won (and lost) a lot of smaller contracts, but matched the success of their competitors overall.

Following the collapse of Rail-Track and a lessening of confidence in the privatisation process, there was a partial retrenchment and the multiplicity of private orders were to be overshadowed by two massive orders from the government, IEP & Thameslink (with Crossrail to follow later). Securing one of these orders would have sustained Bombardier (at reduced output) but the event of losing both (though neither has yet been confirmed) means they now have no incentive to retain a major presence in Britain.

Intercity Express Programme (IEP)

In 2005 the Transport Secretary proposed that the Department for Transport (DfT) should lead the programme to replace the mainline diesel trains dating from the 1970s. Originally known as HST2, by the time of the ITT in 2007, this was re-christened the IEP to reflect the inclusion of electric trains for a putative electrification programme.

A joint Siemens/Bombardier bid was submitted but Agility Trains (a consortium of Hitachi, Barclay Private Equity and John Laing) were declared the preferred bidder in 2009; though Barclays have since left the consortium. The received wisdom is that Bombardier spent a lot of money designing an expensive train, which attempted to meet an unrealistically ambitious specification, particularly in terms of weight. As with the Mk4 Carriage, the contract was won by a cheaper, but non-compliant bid. The contract was thought to be near confirmation in Feb 2010 when procurement was suspended. This was probably a result of massive uncertainty about how the specification should deal with the relatively small proportion of Britain's main lines that have been electrified (even after extension). The DfT favoured embedding diesel

engines in the electric trains (Bi-Mode) for autonomous operation beyond the wires. This was questioned by the Foster Review, which considered the more conventional alternative of attaching locomotives, but this latter was rejected by Philip Hammond for potentially wasting too much time in mid journey. He restarted the procurement process in March this year but no definitive order has yet been placed.

Super Express Train (SET)

Is the latest name chosen by Hitachi for their train. Other complications arose because DfT apparently did not realise that the proposed Bi-Mode trains would have to use their diesel engines and electric propulsion at the same time to match the performance of the existing electric trains. Whilst this oversight by DfT was to be expected, Hitachi should, and probably did, know better. The previous generation of electric trains, had been designed for an operating speed of 140 mph, but subsequently full cab signalling was made mandatory for operation above 125 mph so they are unlikely ever to operate faster than 125. The IEP was specified as a 125 mph train, partly to replace the existing 140 mph trains on the East Coast Mainline (ECML). This may be why they were originally specified with less power, though the proposed power to weight ratio has now been increased to approximately match that of the existing trains.

However a sleight of hand has been achieved with the publicity that Hitachi (and DfT) give to the acceleration of the new trains, they have managed to give the spin that their trains have twice the acceleration of the existing trains. This refers to the fitting of a large number of small traction motors, which give an exceptionally high starting tractive effort for an express passenger train. But this is only available until the traction characteristic hits the (approx) constant power curve dictated by the power electronics. With current SET proposals, this occurs at about 20 mph under diesel power and 30 mph with electric. Most accelerations from rest scheduled for express trains occur at termini and major junction stations where the track limit is usually of the order of 25 mph; so the IEP will be able to accelerate like a tube train up to the station limit but then have to turn the power off and wait while the older trains accelerate up to its speed. After leaving station limits it will then struggle to match the acceleration of existing trains. However this has not inhibited the government (Theresa

Villiers in particular) waxing lyrical about the time savings to be achieved by superior acceleration.

The Future of IEP/SET

Ironically, there is a rumour in the industry that Siemens was threatening to use European law to sue the British Government for opening the door to Japanese industry. Bombardier was inclined to avoid upsetting the Government! The Japanese did promise in return to look at British bids before committing themselves to their home suppliers; but the assumption is that they will do just that! It was the loss of the IEP bid that made Bombardier so dependent on winning the Thameslink contract. It is a tragedy that insufficient protest was made at the time Hitachi was declared preferred bidder for the IEP, when there might have been some hope of revising the terms of ITTs from the DfT. In the present situation, including the commitment to European law, one might even now think that revisiting this contract before closure may offer a better hope of retaining the Bombardier design team in Derby.

Unfortunately there is a complication in that Hitachi has committed itself to building an assembly plant at Newton Aycliffe in County Durham. It is understood that this will only do final assembly of some of the trains, probably less than half the total manufacturing; all the engineering being done in Japan. So the UK has exported the design role and most of the manufacturing in exchange for a relatively small amount of simple assembly work. However this does not stop politicians in the North East (and Philip Hammond) extolling this as a wonderful enhancement of 'engineering employment' in Britain!

THAMESLINK

The midland suburban services (25kV ac overhead electrification) were connected to services south of the Thames (750V third rail) in late 1980s. The fleet of trains built by BREL (mainly designed in Derby and built in York) were only the second multi-voltage units in Britain and the first not to use starting resistances when operating with a dc supply.

These services were a victim of their own success, and there is now a programme of works to enable an increase of 50% in train length and a (metro like) frequency of 24 trains

per hour through the central link. For homogeneity, it was decided to re-deploy the existing fleet (again reducing the opportunity for TOCs and ROSCOs to place small orders) and replace them by purchasing 1200 new carriages. This is an exceptionally large order for the British railway industry and could have partially compensated for the loss of the IEP contract. The original intention was to issue the ITT in Autumn of 2008 and close the contract the following summer, but as usual everything has slid to the right. Although there has been some slippage in the associated civil engineering works, the timetable is incredibly tight which does make it hard to stop and reconsider.

On the other hand it is an argument for using proven designs, which in the case of the requisite lightweight bogies is something Bombardier has but Siemens doesn't. However Siemens have convinced the politicians that they can make things work straight off the drawing board.

Crossrail

The only other really big contract in prospect is that for services using the new East-West tunnel under London. This would also be from DfT but, initially at least, would only be about half the size of Thameslink. Also it is thought that Thameslink and Cross Rail fleets share a common business specification implying the same supplier as Thameslink.

Future of Bombardier

Having lost the IEP contract, Bombardier had been planning to reduce the number of sub-contract assembly workers, but they were also planning to increase the size of the design team and even create a company centre of excellence in Derby. However many of the design team are now being made redundant and, not being locally recruited, are seeking work elsewhere. Siemens has invited applications! We are now left with an assembly plant completing the contracts for Transport for London (though presumably deliveries will now be later than had production continued at the present rate).

The demise of Bombardier is, perhaps, less of a disaster for Derby than a disaster for British engineering where we have, as usual, exported the high-skill/high-value work in return for a few assembly jobs that could probably be done more economically in China. This repeated demonstration of the willingness to sacrifice British hi-tech industries on the altar of free trade (under governments of all hues), when no one else in the world is playing the same game, can be explained (most generously) by assuming that naked Thatcherism is deeply entrenched in the civil service.