East Coast – where ‘Falcon’ meets ‘Eagle’
Ian Duncan, Engineering Director, East Coast

Combination for growth turns LNWR into leading UK train maintenance specialist
Mark Knowles, Managing Director, LNWR

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East Coast manages three depots directly. Our Bounds Green site in north London is responsible for maintenance and repair for the 30-strong fleet of Class 91/MkIV electric trains, while our Craigentinny depot in the eastern suburbs of Edinburgh maintains our 14 diesel High-Speed Trains (HSTs), along with contracted maintenance work for Cross Country’s Voyager and HST fleets. East Coast’s third depot, at Clayhills in Aberdeen, plays a vital role in carrying out overnight repairs and exams on East Coast’s HST fleet. Trains are also stabled at the Neville Hill (Leeds), Heaton (Newcastle), Polmadie (Glasgow) and Inverness depots.

The story of train service reliability on the East Coast Main Line is well documented: in the last 18 months we have faced operating temperatures as low as -18°C, producing conditions so severe that one of our HSTs literally froze to the rails at Clayhills depot in Aberdeen. More recently we’ve also had to contend with hurricane-force winds which led Network Rail to close access to Scotland’s busiest station, Edinburgh Waverley, for several hours.

But extreme weather is only part of the story.

We also have the task of delivering a reliable service every day from our fleet of 30 Class 91/Mk IV electric trains and 14 HSTs, operating a timetable which saw 117 extra services added every week to one of the busiest railways in the country.

Of course, safety is and will remain our first priority. We are totally accountable for the train in all its aspects, in line with our vision, to positively change the focus of engineering within our business.

From 22 May 2011, and for the first time, daily direct return services were added between London and Lincoln, and London and Harrogate, opening up many new journey opportunities for passengers. The extra services have also, of course, added to the challenge of achieving right time starts every day – and delivering higher mileages from our existing fleet.

The punctuality challenge – ‘Falcon’ swoops to conquer

It is fair to say that East Coast train punctuality,
whilst improving, is still not where we as a business want it to be. We are implementing several initiatives which together are driving us towards a step change in performance.

A key part of this is the introduction of a Remote Monitoring system, which we have named ‘Project Falcon’. East Coast has invested approximately £2 million in this project, which has started to deliver quicker and more accurate fault diagnosis, thus reducing the time a locomotive is out of action for repair.

‘Falcon’ is progressively being introduced across East Coast’s entire fleet of electric and diesel locomotives. Following a competitive tendering process, Interfleet Technology (using Nexala Software) was selected to deliver this advanced system.

Interfleet’s engineering team have worked closely with East Coast throughout the installation programme. Their continuous improvement team has worked with us to review the data gained from the ‘first of class’ pilot fitment of ‘Falcon’ to an electric and a diesel train in September 2011, utilising this experience to refine the product as the roll-out continued to the rest of our fleet.

The technology behind ‘Falcon’ is also tried and tested. Experience gained with the system on the Anglia franchise provided a useful benchmark for the East Coast and Interfleet engineering teams.

Of course, our fleet assets are ageing, even though many millions of pounds have been invested over the years in refurbishments. These included replacing the original Paxman Valenta high standard. Fast and accurate fault reporting and diagnosis is key to realising this aspiration: it was this realisation that prompted East Coast to roll out ‘Falcon’ across its fleet in the autumn and winter of 2011/12.

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data immediately following an incident using the direct playback facility is providing revealing insights into the way train components behave in specific situations.

Better information leads to more accurate and automated delay attribution, opening up the potential for significant industry cost reductions. Further savings are also expected as the system enables a more thorough review of driver techniques and their impact on performance.

Several East Coast teams are already making the most of data received from trains fitted with ‘Falcon’ monitoring equipment. Subject to establishment of a clear business case, the potential exists to expand the system’s capabilities to monitoring of previously troublesome air conditioning and door control units on the Mark IV carriages which form the backbone of East Coast’s electric fleet.

In the meantime, ‘Falcon’ is already delivering specific benefits to East Coast. For example, using the new technology, checks to a train which consistently failed to reach its top speed – running at a maximum of 122mph – revealed that its automatic speed limiter had been set too low. This was easily recalibrated and, when the train was returned to service, it covered London-Newcastle diagrams three minutes faster.

In a further example, a high incidence of delays at Wakefield Westgate station in West Yorkshire was examined by our engineers. Examination of RMD recordings showed dwell times were consistently one minute, but preceding timing points made it difficult to achieve the station stop time accurately. The timetable was adjusted slightly and the problem was solved.

The future – the ‘Eagle’ is landing!

East Coast, like many other operators, is moving away from the now-antiquated mainframe RAVERS and IMACS computer systems inherited from British Rail to a much faster and better replacement, which in our case will dovetail with the ‘Falcon’ remote monitoring system.

At the core of this new technology, which we’ve named ‘Eagle’, will be a new Engineering Maintenance Management system. This will reduce the frequency of train failures, while cutting train maintenance costs.

The future system will automatically order new parts when stocks are low; helping us to better understand repeat component failures; and allow us to track all aspects of maintenance and fault rectification. It will encompass production control, work records and job cards; match competencies with tasks; and provide accurate information in formats we can use quickly to save paperwork and monitor warranties and the lifespan of components.

We’re also keen to develop further advances, including a barcoding inventory and remote access to information using mobile devices.

It’s envisaged that ‘Eagle’ will link directly with ‘Falcon’ to produce a fully integrated approach to cover all engineering core maintenance and management systems.

We’re currently evaluating bids to provide the ‘Eagle’ technology in response to an invitation to tender issued in November 2011, with a view to announcing the chosen supplier in spring 2012.

Ultimately, with this exciting new technology in place, it’ll be clear if a train continues to run with outstanding defects days after they were first reported. Our approach will drive up performance – while providing valuable reassurance that there are safeguards in the system to help us deliver the highest standards.

As one existing user has put it – when ‘Eagle’ has landed at East Coast, there’ll be no place to hide.

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Ian Duncan is the Engineering Director of East Coast. He was previously Head of Asset Management and Head of Fleet GN for First Capital Connect, where he was responsible for introducing 321 fleets, and through good performance of staff at Hornsey, improved reliability of 317, 317 and 365 fleets on the GN Route, Ian also bought back in house the maintenance of the 365 fleet back into Hornsey staff responsibilities, rather than the previous contract with Bombardier. Prior to this, Ian was Head of Production at First Great Western, Business Manager with Thames Trains and the Contract Delivery Manager at ALSTOM and was involved in delivering the new London Underground Northern Line Metro trains. Ian has 36 years rail experience where he started his Railway Apprenticeship at Shields Electric Traction.
Established as a leading passenger transport provider in the UK and mainland Europe with rail and bus businesses in 12 countries, Arriva was a reputable player when it came to delivering front line services – but not as a maintenance supplier supporting the UK’s rail industry.

In reality the decision to move into train maintenance was a strategic and logical move by Arriva. The group, which is now owned by Deutsche Bahn, identified an opportunity to provide the assurance of being part of a large group and develop LNWR so it could compete with some of the country’s international maintenance companies for major contracts.

Some three years later and the ambitions of LNWR – and Arriva – are being realised. LNWR has strengthened its position as a train maintenance company and services one of the most diverse fleets of trains in the UK.

Located in Crewe in the North West of England, LNWR’s 35 acre site is situated adjacent to one of the UK’s busiest sections of track – the West Coast Main Line.

Signalling from Crewe station allows platform access from all 12 platform roads and the maintenance depot has three through routes which make LNWR’s facilities an attractive location for train operators and a logistically sound site for stock movements, servicing and stabling of up to 150 single car units.

Formerly one of the largest independent train maintainers in the UK, and borne out of privatisation, the LNWR was opened under the ownership of music producer, entrepreneur and rail enthusiast Pete Waterman in 1996. It remained under Waterman’s stewardship until Arriva’s acquisition.

The depot was an attractive prospect for Arriva. Some £3 million had been spent on turning it from a former Victorian carriage shed into a comprehensive servicing facility for modern electric and diesel trains.

As one of the largest depots and stabling facilities on the West Coast Mainline, and equipped with a versatile and professional workforce, LNWR has flourished as part of Arriva’s UK Trains division.

Operations have grown significantly. LNWR is now a forward-thinking and proactive supplier of traction and rolling stock maintenance and refurbishment services to some 22 UK train operating companies/freight operating companies or vehicle/maintenance suppliers and two rolling stock leasing companies.
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Combination for growth
When Deutsche Bahn acquired Arriva in August 2010, the door opened to further new opportunities for LNWR.

As part of DB and Arriva’s combination for growth strategy, LNWR underwent significant expansion. In May 2011, four Axiom rail depots transferred from DB Schenker (UK) Ltd to LNWR’s rail maintenance operations.

The transfer of passenger train servicing and rolling stock maintenance depots at Bristol, Eastleigh, Cambridge and Tyne Yard (Gatehead) to LNWR gave the business a 210-strong workforce and combined turnover of £30 million which is targeted to rise by approximately 30% in 2012.

Perhaps more importantly the combined business increased LNWR’s strength and geographic presence on the UK rail network making it one of the leading providers of rail vehicle maintenance services and creating the potential to tap into new contracts and markets.

LNWR believes that the confidence gained by being part of Arriva and its parent company DB, is helping attract more work from ROSCOs and other large customers in the UK and further afield.

Delivering in the rail industry
Operating from five locations, 24-hours a day, 365 days a year, LNWR’s core activities are based around the overnight servicing of a variety of passenger rolling stock. This includes Controlled Emission Tank (CET) servicing, tanking, fuelling, cleaning, fault finding and repair.

Train presentation standards are key to successful relationships with operators and LNWR is proud of its reputation in this area. This is achieved through the careful use of a directly employed skilled workforce complemented by access to reputable contractors which offers extra operational flexibility and capacity.

LNWR’s four other depots provide a range of capabilities. Predominantly they support CrossCountry’s fleet of class 220/221 Voyagers

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on behalf of Bombardier and the Class 170 Turbostars in partnership with London Midland, along with maintenance and servicing of freight stock and locos for Freightliner and DB Schenker (UK) Ltd.

The locations are fully equipped to support many types of rolling stock and provide flexibility in delivering additional overhaul projects. Eastleigh carries out Riviera rolling stock refurbishments and Bristol Barton Hill provides comprehensive damage repair services to UK rail operators.

Each of the four depots offer a contract cleaning service, have maintenance and repair workshops and offer water, CET and fuelling services. Bristol, Tyne Yard and Eastleigh also have wash plants.

At the Crewe depot, LNWR has a tandem ‘Sculfort’ ground wheel lathe which operates around the clock, providing convenient slots for customers with challenging rolling stock operational plans who need wheels re-profiled quickly and efficiently. The depot, which is one of the last of its type in the UK to employ skilled carpenters who can deliver specialist refurbishment work, is currently undertaking a significant refurbishment of Class 158 trains for Angel Trains.

The refurbishment is a complex and comprehensive refresh of the 24 two-car units in service at the group’s Arriva Trains Wales (ATW) business. The project follows the successful completion of a similar programme on ATW’s Class 153s and the refurbishment of a Mark 3 Restaurant First Modular (RFM) with a first class saloon, kitchen and buffet facilities for ATW’s Premier Service which links North and South Wales.

LNWR, which had to bid for the work alongside other UK train maintenance companies, is delivering a complete interior refurbishment and installing new fully compliant passenger information systems which meet the Technical Specification for Interoperability for Persons with Reduced Mobility (PRM TSI).

It is also installing low energy lighting, cab air conditioning, door system modifications, a new seating layout with new ‘Grammer’ seating (with tip ups), a C6 overhaul and a full exterior repaint (in two-pack paint, carried out at the on-site fully Environmental Protection Act (EPA) compliant spray booth).

Each two-car unit is delivered back to the customer in 15 working days to reduce the impact of front-line service with the contract scheduled for completion in September 2012.

The project is being managed by the in-house heavy maintenance team using the LNWR Project Management Model. This tool enables the Crewe team to deliver high quality output on time and high quality customer information to ensure its customer is part of the team approach.

Alongside the Class 158 project, LNWR’s heavy maintenance team is also undertaking a C4 overhaul programme on 18 HST Mark 3 coaches operated by Great Central Railway.

LNWR won the contract in 2011, prior to the Arriva group acquiring the open-access operator which provides services between Sunderland and London Kings Cross and Bradford/Halifax and London Kings Cross. All work will be completed by May 2012.

LNWR also delivers a full fleet management service for the Freightliner AC (electric) loco fleet, providing servicing and maintenance for 24 Class 86 and Class 90 locomotives which operate daily on the UK rail network.

Working in partnership with Freightliner, LNWR is delivering maintenance solutions which enhance performance and increase operational reliability and it provides support with Class 66s and Class 70s at both its Crewe and Eastleigh depots.

The business is currently in the process of developing its Crewe site to include a bogie overhaul facility to support the Freightliner fleet with on-site lifting, testing and refurbishment equipment designed specifically to provide an operationally efficient service to a valued customer. This represents an investment of some £125,000.

The Crewe depot is a hive of activity as a result of LNWR securing some more unusual contracts. Rolling stock from private owners or for use outside the UK can be found at the site. Over the years the depot has worked on a range of projects including the trialling and testing of mothballed Class 87s electric locos so they could re-enter service in Bulgaria after seven years in storage.

LNWR is focused on growing the business, and with the backing of Arriva UK Trains, it has...
developed plans to invest in new equipment to assist in future bids for more heavy maintenance and refurbishment work to complement its established train servicing activities.

In 2011, some £750,000 was invested in an extensive renewal programme at Crewe. This included the upgrading of all fuelling points, wash plant enhancements and the development of a waste streaming and recycling station – an approach which the business hopes to roll-out to its other locations.

LNWR is ISO 9001 (quality systems) accredited and is currently working toward ISO 14001 (environment), and ISO 18001 (safety) accreditation as well as being fully engaged with the British Quality Foundation (BQF) ‘Recognised for Excellence’ (R4E) process designed to demonstrate competent and credible businesses management systems.

While investment in facilities, management systems and winning new business remains a priority, LNWR realises its real strength lies with its 210-strong workforce and training and development is vital to the industry and the business.

LNWR has created a professional workforce which is adept at multi-tasking. This is absolutely essential when you have a business which handles a wide range of roles on diverse train fleets.

Attracting and retaining skilled and versatile engineers and craftspeople is key to LNWR’s current and future success so the business is committed to nurturing new talent.

Over the years LNWR has taken on a number of apprentices providing them with first class training which contributes to both LNWR’s skill base and the wider UK rail industry.

This commitment to training new apprentices remains strong at a time when many businesses are thinking twice about investment of this type. The business has already started exploring opportunities for a further intake in 2012, visiting recruitment fairs and building relationships with learning providers.

Looking ahead
LNWR’s combined operation under Arriva UK Trains stewardship has created a strong business which is passionate about offering and delivering the complete package of maintenance and refurbishment.

Together, the five depots combined with a strong team of skilled professionals offer new prospects for LNWR, Arriva and the wider UK rail industry.