TRACK CHANGES AT KING'S CROSS

by Thomas Crame

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A report of the LURS meeting at All Souls Club House on Tuesday 14 June 2016

King's Cross station originally opened as part of the Metropolitan Line on 10 January 1863 but the station closed in 1941 and was relocated to its current site just to the west.

This new station featured a bay platform for reversing services east to west but Thomas can find no evidence of this platform having been commissioned.

(Subsequently, a member of the audience stated that he had seen the bay platform in use towards the end of the Second World War).

The station also featured a trailing cross-over at the Farringdon end of the station, which was controlled by a ground frame. This arrangement proved unsatisfactory and the area was re-signalled in 1958, and some of these signals continue in use to this day. The signal box was situated on the City Widened Lines platform (aka: King's Cross Thameslink) until 1979 when control moved to Farringdon signal cabin. In 1999, control moved again to the Baker Street Signalling Control Centre.

In 1993, an Engineers siding was installed as part of a proposed subway expansion scheme (under the Fennell Report following the King's Cross fire) which was, in fact, never fully completed. This siding was thus the first segment to be removed as part of these track changes, being decommissioned and removed over the weekend of 24/25 January 2015.

The aim of the project, which is part of the "4 Lines Modernisation Project" is to (a) remove little-used crossovers, (b) convert spring toggle points to power operation and (c) provide new cross-overs to support bi-directional working and greater operational flexibility. The proposal for King's Cross included a number of novel features including the first modular scissors crossover installation on London Underground (and, it is believed, in the UK). It was also the first time for nearly 25 years that the commissioning of the new track layout and signalling changes was undertaken simultaneously – normally the track would be installed in stages with temporary signalling arrangements before the final signalling commissioning.

This scheme included the retention but re-locking of the 1958 signal frame, installation of a new equipment rack with 80 relays in the Interlocking Machine Room along with point control and detection circuits in external kiosks. Alterations also had to be made at relay rooms in King's Cross (disused), Euston Square, Great Portland Street and in the Baker Street Control Centre. The geographical limits of the project were from Great Portland Street to nearly to Farringdon – so quite a long way for the team to walk about seven or eight times per day!

The commissioning and planning of this project took up most of 2015 and included:

- Correlation of the existing drawings with what was actually installed.
- Planning for 33km of cables to be run.
- Working in partnership, to co-ordinate access and works, with the teams working on track renewal and the Farringdon power substation.
- Facilitating "rusty rail" routes every 3 days (as per LU instructions).
- Duty rotas for the 40 staff involved including rest breaks each day.
- Pre-testing of the mechanical locking before installation on site
- All wiring pre-tested for continuity before installation on site
- The scissors cross-over assembled at Beeston (near Nottingham), tested and adjusted, then disassembled and transported to London.
- 2,500 wire ends to be terminated before installation on new equipment.
- 600 wire ends to be terminated on existing equipment
- 446 wire ends to be removed.
- 100 new relays to be installed.
- Modification of circuits for 12 signals.
- 8 new trainstops.
- 6 new position detectors.

- 5 new signals.
- 4 new point machines.
- 4 equipment rooms to be modified, along with trackside works.
- 4 new or modified track diagrams in equipment rooms or control rooms.
- 3 new track circuits.
- 2 new sets of site computer data,

…. but only 1 chance to get it right!

There was a six-day window for line possession and blockade between 24 and 31 December 2015. These activities were documented in a 148-page plan which can be summarised thus:

24th December: after close of traffic possession between Baker Street, Edgware Road and Aldgate East/Minories Junction; disconnection of track circuits; removal of redundant train-stops (each weighing 120kg+) and points equipment; isolation of the computer control systems; changeover of the diagram in the Interlocking Machine Room at King's Cross; and the existing plain line was removed where the scissors crossover was to be installed.

25th: Mechanical locking changed over; King's Cross IMR internal and external changeovers; loose laying of half the scissors crossover.

26th: External changeover between King's Cross current and disused platforms (including five home signals – this was probably the most complex area); testing mechanical locking; functional testing of the new and modified circuits at King's Cross and Euston Square; continued installation of the scissors crossover.

27th: Functional testing continues; tamping the track; reinstatement of signalling assets and trackside equipment (such as trainstops and installing the final track circuit cables); modifying and updating Baker Street Control Centre diagrams; installation started on point machines.

28th: Functional testing completed; installation continues on point machines; Permanent Way works completed by 13:00 and track circuit set-up and testing runs until 19:00; wiring counting and correlation.

29th: Principles testing takes priority all day of home signals, outer rail between Euston and King's Cross; reversing moves; control system links reinstated and checked that King's Cross and Baker Street control rooms showing identical displays; more wire counting and correlation.

30th: Completion of control system and lever operation logic testing. Tom commences correlation of evidence and certificate from testers which is required to authorise re-opening. By 14:30 first test train ran through King's Cross which identified a minor issue with signal OJ16 (Inner Rail Starter) which required a subsequent modification.

31st: Passenger services resumed from 04.51. Technical Officers remained available until 07:00 on 4 January to deal with any issues.

Post 31 December: The crossover was first used on 2 January because of a track circuit failure; the Rear Cab Clear circuits are not commissioned until 9 February 2016 due to delay in delivery of the plungers. Signal OJ16's problem is resolved on 9 March. There were also some issues reported by drivers complaining that signals were clearing late which had to be investigated and rectified.

The meeting then thanked Thomas in the usual manner and a period of question and answer followed.

Amanda Day