

# **OPERATING HERITAGE UNDERGROUND**

## **by Andy Barr MBE, Heritage Operations Manager**

### **A report of the LURS meeting at All Souls Club House on Tuesday 12 November 2013**

It was Sir Peter Hendy, Commissioner of TfL, who decided that a steam train should run between Paddington and Farringdon to mark the 150th anniversary of the London Underground. It was intended to make a train of the oldest rolling stock currently certified for operation. Other celebration events were held through the year using steam locos, or electric trains where steam was not allowed. These events marked not only the opening of the Metropolitan Railway, but also the progress achieved since then and further planned developments, and were a valuable public relations exercise.

Before any train could operate there had to be full technical acceptance of every vehicle, whilst operation had to conform with the Safety Case and Emergency Plans, and be integrated in an effective timetable. Technical acceptance for each vehicle involved at least 13 listed items, with 11 listed responsible agencies. To ensure that the rolling stock would fit the current tunnels, the original Metropolitan Railway diagrams were examined before the actual vehicles were remeasured to check compliance. The use of slam-doors in tunnels required special provisions, and evacuation plans in the event of problems. Wooden carriages required crash and fire resistance assessments, and station fire detection alarms required modification for the passage of a steam train. Risk assessments were made for the effects on staff and passengers, and for the regular train service.

Metropolitan Railway steam locomotive No.1 of 1898 had been used on the first Steam on the Met. runs, but was now 'out of ticket' and unlikely to steam in the foreseeable future. A deal between TfL and its owner, the Buckinghamshire Railway Centre, ensured that No.1 could be put back into steam for the celebrations for a sum of £250,000. TfL retain first option on its use for 15 years, but it is available to the Buckinghamshire Railway Centre at other times. The Flour Mill won the tender to strip the loco down, remove the boiler from the frame and overhaul it, and remove all running framework, to inspect and renew it where necessary. The vehicle was then rebuilt with continued inspection by a steam competent engineer before being 'run in' initially on the Avon Valley at 25 mph and later on the Seven Valley Railway at 50 mph. During this work the wheels were re-profiled and found to be down to their last turning, so drivers must be light in their use of the vacuum brake as any flats will require new tyres from South Africa at a cost of at least £40,000 and a lead time of 3-6 months.

Coach 353 of 1892 was funded by the Heritage Lottery Fund for £400,000 sponsored by the LT Museum and rebuilt by the Ffestiniog Railway from derelict condition. For running under modern conditions it required a converted underframe and running gear with air and vacuum brake capability. Steam heating was refitted but lighting was by electric LEDs to simulate the original gas lighting. Test running to 50 mph was undertaken on the Great Central Railway.

The Ashbury coaches had been running fully restored on the Bluebell Railway. They were original steam stock, although converted as electric multiple units between 1908 and 1921. They are slam-door fitted and restricted to 25 mph running which was acceptable with non-stop running on the commemorative trips. They are vacuum brake fitted which was found to meet modern emergency brake test requirements. However, brake release is much slower than with modern air brakes and railway signallers were therefore requested to pre-clear routes to reduce the need for stops.

The Metropolitan Railway 4-wheel milk van of 1896 was used as an emergency equipment van with 2,000 litres of water, ladders, fire extinguishers, etc. It had last run in the Neasden centenary celebrations in 1963 and was overhauled by the LT Museum including new springs and a strengthened wooden underframe.

Sarah Siddons was built in 1920 but converted to air-brake operation only in the 1960s after withdrawal from regular passenger operations. She has been reconverted to part-vacuum brake by Eastleigh Works and is now able to run with vacuum only stock and also to run as a barrier wagon to convert vacuum application on the loco to air brake on the coaches. She is permitted to run at up to 50mph. All the former exposed 630 volt live switch-gear has perspex covers now.

The desire was to recreate the original Metropolitan Railway opening day trip from Paddington to Farringdon, neither of which are current-day reversing points. It was decided that the commemorative steam train would shuttle between Edgware Road and Moorgate. Loco No.1 was initially placed at the east end of the train so that it was passed by passengers holding the special return trip tickets before boarding and after alighting from the train at Moorgate. Edgware Road was not suitable for an exchange of passengers from a single trip, and demand preference would have been for the steam-hauled direction anyway. Ticket prices were set to recover the full cost of the steam operations since it was unreasonable to expect financial support from regular travellers.

On the second weekend of special running the steam loco was deliberately placed at the west end of the train with the intention that it would haul the train into Baker Street platform 2 in preference to Edgware Road. However, at a late stage this plan was thwarted by the needs for Metropolitan Line upgrade works.

Operational management required staff consultation, and consideration of customer and operational safety. The steam loco was driven by volunteers from the Flour Mill accompanied by a line-competent pilotman and an operating official. Each coach was staffed with volunteer stewards under a Chef de Train, whilst train operators acted as train guards. Station supervisors and engineering support also required training. Those on the train required training on the customer briefing, evacuation procedures and emergency alarm operation. Operational documentation included an overview, appendices for every person on the train, and train regulation arrangements with the requirement for no delay to normal trains.

The operational safety plan sits within the railway rule book and is signed off by the line management, giving a single point of accountability. Emergency capability included track fire risks with a fire-watcher on each following train, precautions for spectator overcrowding on platforms, on train management, the service control interface, evacuation procedures, and on-board emergency water provision. Loco watering facilities were provided at Moorgate.

Prudent emergency movement capability included having two locomotives on the train (one steam and one electric), the emergency response unit availability at Farringdon, Kings Cross and Baker Street, and two battery locomotives standing available in Farringdon sidings. These were not used. On the actual operating weekends of 13 and 20 January an S Stock train was left in the adjoining platform 3 at Moorgate to enhance safety for visiting photographers who could board the stabled train to view through its far windows.

Trials had to be undertaken to check the clearance of steam vapour in tunnel sections, and its effect on signal-sighting for both following and approaching trains. Originally the Beattie well-tank from the Bodmin & Wenford Railway was used one night in February 2012, between battery locos with Sarah Siddons, to stand in Baker Street station for 30 minutes with full fire burning. Then in December 2012 a full trial was undertaken with Met No.1, coach 353, a flat wagon with water supplies and Sarah Siddons. The plan was to wait at Edgware Road for a possession to be taken and then move to Baker Street. The train was held unexpectedly in Baker Street platform and its safety valves lifted at the wrong moment and blew steam and water in an impressive display which was captured by photographers. There was then a full rehearsal in January 2013. The Bluebell Railway coaches were delivered by road to Lillie Bridge. The train entered the system via Olympia with Met No.1 leading. The 1 in 70 climb to Edgware Road used most of the available steam and the loco needed a rest to recover. The train was operating within a possession, but it demonstrated the difficulty of observing lineside signals when steam bounced off the tunnel roof and blocked the view from the cab. For running within the normal train service a buffer-beam camera was installed to provide a cab view of the line ahead. This provided a valuable record of the steam runs, and will be released commercially after editing. It was also decided that to assist with the visibility through junctions to shut the loco regulator through sub-surface junctions and rely on power from the supporting loco. It was noted that an impressive steam display was provided even when the train was pulled by the electric loco since No.1's regulator had to be slightly open to ensure cylinder lubrication.

Public reaction was supportive of the runs with cheers and waves from ordinary members of the travelling public who happened upon the event by chance. Based on the success of the celebratory runs, it was decided to operate steam trains between Harrow and Amersham in April and September 2013. These could not be limited to 25 mph, and therefore different coaches were required. The LU 4-TC set introduced brake compatibility issues as it is air braked whilst the steam locos are vacuum

braked. Met No.1 is also air brake fitted but has no air compressor. The Quanton Road steam crews also had no experience of running at such a speed and on such a prolonged gradient. Two crews were taken down to the Severn Valley Railway to gain experience whilst Met. No.1 was down there. All non-employees needed a medical, track training and route familiarisation. And Lillie Bridge was too distant to provide depot accommodation for the train, which meant setting up at Ruislip depot.

Every year of the old *Steam on the Met* saw a loco fail, usually with a hotbox. So in addition to Met. No.1, GWR Prairie tank 5521 was acquired from the Flour Mill as a backup loco. It was repainted appropriately as L150 for the occasion. A further loco was BR pannier tank 9466 of Dennis Howells. Met. No.1 failed with a hotbox on the first weekend, and had a minor failure the following weekend. L150 also had problems. Two class 20 diesels were suitably painted to provide support. Tripcocks had to be fitted to both ends of all locos, in case of reverse working. Internal door locks also had to be fitted to the coach slam-doors for operation by stewards.

Operating issues included a tight timetable with limited time at Harrow to water the locos. Tickets were therefore issued for the return trip from Amersham only, where loco watering was also undertaken in the sidings. Paying passengers were promptly identified with wrist bands as well as tickets to assist rapid loading. The total load going up the gradient to Amersham from Rickmansworth needed Met. No.1 to be double-headed with 9466 due to the 200 tonne load. Operations at Amersham were revised from previous *Steam on the Met* days since (un)coupling over electrified lines was no longer acceptable. Instead, trains worked back into No.34 siding on the southbound side after complete detrainment of passengers, with the steam loco at the north end and spare locos held in the shunting neck at Amersham.

Heritage operation is not only about steam trains, and the 150 year celebrations included the 1938 Tube Stock runs on the Northern and Piccadilly lines and the A Stock runs on the Metropolitan Line. Coach 353 was also moved to Baker Street platform 1 between two battery locos for the royal visit, and took part in the Lord Mayor's Show. Given the success of the 2013 runs, plans are in hand for the Hammersmith & City Line 150th anniversary on the first two weekends of August 2014 with steam runs between Hammersmith and Moorgate. 2014 is also the Year of the Bus, and heritage buses will operate from the Hammersmith station forecourt. There are also plans to use the Ashbury set again on the following weekend. The 1938 Tube Stock and the A Stock will also be out and about again. In 2015 it is planned to run a 3-car Q Stock train and steam trains in the central area and also out on the main line. This is working towards the District Railway's 150th anniversary in 2018. Whilst Sir Peter Hendy remains the Commissioner of TfL, at least, we will continue to mark heritage events.

The concluding treat of the presentation was a buffer-cam video of a trip from Moorgate held outside Edgware Road due to a points failure in the snow, and unexpectedly extended to reverse in Gloucester Road inner rail platform.

**John Hawkins**