

**OCTOBER 07**

## **NEARLY 97,000 LU CARS? THOUGHTS ON CAR NUMBERING**

**by John Hawkins**

The DLR has 94 cars, numbered between 01 and 99. LU operates under 5,000 passenger cars, numbered between 100 and 96918! Of course the DLR has reused numbers from withdrawn stock, but LU also does this. Why aren't four-figure car numbers sufficient?

The DLR operates basically only one type of car, built in different batches, but LU and its predecessors have found it useful to number different types of car in different series. It will perhaps prove convenient for the DLR that the imminent delivery of incompatible rolling stock will require the introduction of new three-figure car numbers.

Each LU line initially operated independently, so each numbered its cars starting from 1. With the amalgamation of lines over time into the Underground Group, and with the centralisation of maintenance at Acton Works, a common numbering system was devised using four-figure numbers, with the first digit indicating the type of car.

### **THE UNDERGROUND GROUP SCHEME**

Although accommodating the Metropolitan Railway rolling stock upon the anticipated formation of London Transport in 1933, renumbering commenced with miscellaneous rolling stock in 1931 and with passenger cars in 1932. At that time there were only three types of car: motor cars, trailers and control trailers. The first of the four digits indicated the vehicle type. Cars were not then coupled into permanent formations, so there was no need for a unit number.

The remaining wooden-bodied District Railway trailers and control trailers were numbered in a 1xxx series. 2xxx, 3xxx and 4xxx were used for the motor coaches of the Metropolitan Railway (MR), the tube line motor cars, and the District Railway (DR) steel-bodied motor cars respectively. The 5xxx and 6xxx series were for tube line control trailers and MR driving trailers, as they preferred to call them. Trailer cars were renumbered as 7xxx, 8xxx and 9xxx for the tube lines, DR steel-bodied vehicles, and the MR respectively. Why were MR motor cars given precedence, but not their other cars?

A-end cabs carried an even number, whilst D-end carried the odd numbers, a principle continued to varying extent to the present day. (The A-end being generally the north/west end of a train, although on some lines trains may become turned. This designation comes from labelling the axles of each car A, B, C and D. Until 1937 they were known as A- and B-ends.)

Numbers below 1000 were used for the short-lived remaining DR wooden-bodied motor cars (1-37) and for service and non-standard vehicles. Service vehicles also received a letter prefix to indicate their purpose, e.g. L for locomotive, a principal begun in 1931 and still generally followed. The locomotive-hauled coaching stock of the MR retained their three-digit numbers.

## *THE NEW WORKS PROGRAMME*

This orderly system did not remain for long, since the rolling stock for the 1935-40 New Works Programme required the use of longer numbers. Much of it was to be formed into units, with each pair of driving motor cars carrying the unit number as the final two digits. To avoid number duplication, or another renumbering of the existing rolling stock, the new cars were allocated to a 1xxxx series.

The new tube cars were numbered from 10xxx for A-end driving motors, 11xxx for D-end driving motors, the second digit indicating direction rather than the final digit as hitherto. Non-driving motors were allocated a 12xxx series, with 012xxx for trailer cars.

The new surface stock was allocated 13xxx for A-end driving motors and 14xxx for D-end driving motors, continuing from the tube car sequence but reversing the 'odds and evens' rule. The new surface stock trailer cars were allocated to either 013xxx or 014xxx, dependent on whether they were intended for eventual conversion to A-end or D-end driving motors. It has been suggested that the 0 prefix indicates that no motors were fitted. There was no duplication in numbers between, say, 14xxx and 014xxx cars so that on conversion the leading 0 could be removed.

The new surface stock, although superficially identical, was built in three classes. The O-stock was numbered with a 0 in the hundred position; the Q stock trailers with a 1 as 013<sup>1</sup>02 or 014<sup>1</sup>92, these cars working with older District Line stock. However the P-stock was numbered between these two types, and also after the Q-stock, and could therefore be found with 0, 1 or 2 in that position, so this was not intended to be significant. Interestingly there were only 25 Q-stock motor cars built, which also worked with older stocks, and these were numbered in the original four-figure series as 44xx with even numbers at the A-end and odd numbers at the D-end.

I have not seen it suggested that the 1938 Tube Stock trailer cars were numbered in anticipation of conversion to non-driving motors if found necessary, although the experimental 1935 Stock on which it was based had not included trailer cars. Perhaps it was just numbered in conformity with the new surface stock, where many trailer cars were later converted to motor cars, although it was arranged without duplication between 12xxx and 012xxx numbers.

Since the last five digits of trailer car numbers were not common with any motor cars in any of these stocks, there was a lack of consistent numbering within units. This was accepted at the time, in line with the older car stock formations, and remained until delivery of the 1959 Tube Stock. An attempt at a more orderly number system with the R-stock was thwarted.

In 1945/6 trial cars for the Metropolitan Line were numbered 17000, 17001 and 20000. Perhaps the 15xxx and 16xxx numbers were reserved for a planned District Line order and 18xxx and 19xxx for a Piccadilly Line order, neither of which came to fruition under post-war austerity.

## *POST-WAR DELIVERIES*

When the R-stock arrived it was numbered 21xxx for A-end driving motors, 22xxx for D-end driving motors (again reversing the 'odds and evens' rule), with 23xxx for intermediate driving motors. With no trailer cars there was no need for the six figure numbers commencing with 0. Each car in a 6-car train was differently equipped, its position being indicated by the middle digit (a feature not repeated until 1995 Tube

Stock). It was intended that the cars remain within their unit as delivered, so the final digits were to indicate the unit number, i.e.:

21102 – 23202 – 23302 – 23402 + 23502 – 22602

However, the delivery process did not achieve consistent numbering of many units. The east-end 2-car portion was a separate unit, and a second of these was required to lengthen some peak-hour trains to 8-cars. In 1971 it was decided to convert the service to all-day 7-car trains, this being achieved by withdrawing the 232xx car from 8-car trains and inserting it into 6-car trains beside the 232xx car, an 'A' suffix to the car number indicating the modified additional car. This formation provided a 7-car train with seven different types of car!

At the time of the R-stock order, a new type of car was also being introduced on the tube lines. This was the uncoupling non-driving motor, or UNDM for short (pronounced UNDuMb), which replaced one of the middle driving motor cars to make additional space available to passengers. Some were converted from 1938 Tube Stock and others were part of the 1949 Stock order. They were allocated 30xxx numbers for A-end cars and 31xxx for D-end cars. Thus it appeared that a new numbering principle had emerged, with the initial digit allocated to a type of rolling stock. The 24xxx, 25xxx, 26xxx, etc. numbers were not used.

In confirmation of this, the prototype 1956 Stock trains appeared numbered between 40000 and 45005, without a leading 0 for trailer cars, perhaps because there was no anticipation of them being converted to motor cars. An untidy numbering scheme was applied, and it was fortunate that the production 1959 Stock used a simpler scheme, with the 1956 Stock later being renumbered to suit. These trains were delivered with the outer driving cars numbered from 40000 – 41000, with the second digit again indicating A- or D-end. The middle driving motors followed on as 42xxx and 43xxx cars, but to maintain the correct direction were in the units of 41xxx and 40xxx respectively. The non-driving motors were numbered from 44000, the second digit indicating an A-end unit. There were two trailers in each train, but since these were all numbered in the 45xxx series, unlike the other cars the final digit indicated the unit direction and soon lost any connection with the other car numbers. Thus the third and final train was numbered:

40002 – 45004 – 44002 – 43002 + 42002 – 45005 – 41002

As O/P stocks were converted to CO/CP cars their initial 1xxxx digit was also 'converted' to a 5xxxx, although the trailer cars retained their original numbers. In addition the 7xxxx series was used for various Pre-1938 Tube Stock trailer cars modified to run with the 1938 Stock and control trailers converted to trailers, and the 9xxxx series had been used for the 1938 Stock 9-car train experiments on the Northern Line.

### *NEW UNPAINTED-ALUMINIUM FLEETS*

With the prospects of large orders for new aluminium trains, and the five-figure sequences being quickly filled, it was decided to revert to four-figure numbers. However, many cars from the original four-figure numbering scheme remained in service, and some had to be renumbered to make room for the new trains, although many numbers still remain to be used today. The new numbers allocated for 1959/62 Stock were 1xxx for driving motors (A-end even numbers, D-end odd numbers), 2xxx for trailers (even numbers only to match adjacent driving motor) and 9xxx for non-driving motors (odd numbers only to match adjacent driving motor).

The new A-stock carried 5xxx numbers on the driving motors and the matching 6xxx number on the attached trailer car with A-end even numbers, D-end odd numbers. The C69 stock followed on with 55xx – 65xx numbers, running into 56xx – 66xx, – this totally reversible stock has no identified A- or D-units. The later C77 stock was numbered 57xx – 67xx.

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By the time the Victoria Line stock was ordered, the original four-number rolling stock had been withdrawn, and the new stock was allocated 3xxx for driving motors and the matching 4xxx for the adjacent trailer car. These numbers had originally been allocated for the new fleet intended for the Central Line, but in the event only three prototype trains were delivered and took numbers from 3900 for the motor cars and 4900 for their trailers. The 1967 Tube Stock A-end cars are numbered 30xx – 40xx whilst the D-end cars are numbered 41xx – 31xx, with the xx representing the unit number common to all four cars. The 1972 Tube Stock was similar, in that the 4-car units were numbered:

32xx – 42xx – 43xx – 33xx

However, the 3-car unit was numbered 34xx – 45xx – 35xx, the A-end car being an UNDM that could be coupled to either end of a four-car unit. With maintenance economies, the 34xx car now always couples with the 33xx car.

When 1973 Tube Stock was ordered there were to be three types of car, but only the 7xxx and 8xxx series remained unused. Rather than considering a return to five-figure numbers, the choice of three-figure numbers was taken. As mentioned, the Underground Group renumbering scheme reserved numbers below 1000 for service and non-standard vehicles, with a letter prefix to indicate purpose. Thus three-figure numbers without a prefix did not strictly duplicate currently used numbers. The driving motor cars were numbered from 100, the UNDMs from 300 and the trailers from 500, with the last two numbers consistent within a unit. A-end units have even numbers and D-end units the odd numbers. With 154 of these units, the last was numbered 253 – 653 – 453. There were also 21 double-ended units provided for operational flexibility – the unit numbering continued, but with the initial digit of the driving motors changed from 2xx to 8xx for easy recognition, giving 854 – 654 – 855, 856 – 656 – 857, etc.

With the delivery of D-stock, the shortage of four-figure numbers was overcome by using five figure numbers, but only for the trailer cars. This stock was formed up in the same way as the 1973 Tube Stock and followed the same idea of retaining the two final digits to indicate the unit number. Driving motors were numbered 7xxx, UNDMs were 8xxx, with the trailer cars being numbered 17xxx. A-end units have even numbers and D-end units have odd numbers. The twenty double-ended units are numbered in a separate series from 7500 – 17500 – 7501.

The short-lived 1983 Tube Stock comprised only 31½ trains, formed in 3-car double-ended units, so sufficient vacant numbers remained in the 3xxx and 4xxx series. A-end driving motor cars were numbered from 3601, with the D-end driving motor cars from 3701, and the trailer car becoming 4601. The last two digits indicated the unit number. The 1986 Tube Stock prototype trains, only six two-car all-motor units, adopted two-digit numbers from 11 for driving motors and from 21 for attached non-driving motor cars, avoiding locking up remaining number ranges.

## *INTO THE '90S*

With the delivery of 1992 Tube Stock a full return to five-figure numbers was required, and a series commencing 9xxxx was chosen to indicate the decade of delivery, last used to indicate 9-car trains. These new trains were made up from 340 2-car units that were totally reversible in service to cater for trains turning around the Roding Valley loop. There was no need for designation of A- and D-ends. All cars are motor cars, but of three types shown by the second digit: 91xxx cars are driving motor cars, 92xxx are UNDMs (a term not used for this stock) without shoe gear, and 93xxx cars are UNDMs with shoe gear. A 92xxx car is included in each pair of cars. De-icing units are distinctively numbered from 402 upward, rather than using a D suffix as on previous stocks. Odd numbers are allocated to units with driving motor cars, and even numbers to all other units.

The similar trains ordered by Network SouthEast for the Waterloo & City Line were numbered in their system, with driving motor cars from 65501 and UNDMs from 67501, the last two digits indicating the unit numbers up to 10. These numbers do not clash with LU numbers, and have been retained since the line take-over in 1994.

The next stock deliveries were of 1996 Tube Stock, which retained the 9xxxx series to indicate the decade, and even adopted 96xxx car numbers that uniquely identified the stock type. The final two digits are consistent within a unit, with A-end units having even numbers and D-end units the odd numbers. The middle digit indicates the type of car, but because there are 126 units the driving motor cars have a middle xx0xx or xx1xx, whilst the trailers in each unit are numbered xx2xx or xx3xx (except for de-icing trailers which are numbered xx8xx or xx9xx), and the UNDMs are xx4xx or xx5xx. The special trailer cars later inserted in the D-end units are allocated xx6xx or xx7xx numbers.

The similar 1995 Tube Stock was produced at the same time, but with 212 three-car units there were insufficient numbers to follow a 95xxx scheme. Instead, a numbering scheme running on from the 1992 Stock was devised, but at a late stage it was decided to replace the leading 9xxxx indicating 1995 Stock with a 5xxxx to represent 1995 Stock, perhaps to clearly differentiate them from the similar 1996 Stock delivered concurrently. The driving motors are numbered 51xxx, the trailer cars 52xxx, and the middle UNDMs 53xxx, so the second digit also indicates position from the train end. The final three numbers are consistent within units, commencing at 501, with even numbers at the A-end of the train although these trains are reversible. The de-icing equipped units are numbered separately from xx701, enabling this to be determined by any car in the unit rather than having to identify the equipped car.

## *THE FUTURE FORETOLD*

With rolling stock for a new millennium, a fresh start is to be made in numbering the 2009 Tube Stock in a 1xxxx series. The second digit indicates both car type and position from train end, with 11xxx for the driving motor cars, 12xxx for the trailer cars, 13xxx for the non-driving motor cars and 14xxx for the UNDMs. The final three numbers are consistent within a unit, the even numbers at the A-end of the train. Although numbered as units to maintain consistent numbering of different car types, it is the intention to maintain these trains in block formations. With only 94 units, the middle digit will remain at 0, but could not have been removed without renumbering

remaining older cars. Of course, these numbers will repeat some from the New Works Programme – ‘Back to the Future’!

The S-stock numbering will follow similar principles, with 21xxx for driving motor cars, 22xxx for the adjoining motor car, 23xxx for an additional motor car not provided in three-car units, and 24xxx for the middle UNDM cars (designated MS cars in this stock). De-icing equipped cars are designated 25xxx rather than 23xxx. The last three digits are consistent within the 380 units, with even numbers at the A-end although the trains may be turned in service. The units for 7-car trains are to commence from xx201, leaving middle digits 0 and 1 in 8-car trains and 2, 3 and 4 in 7-car trains. This appears to be an ideal numbering system given the stock configuration, providing information with each digit. Of course, the second digit does not necessarily indicate the position from the train end, since the 23xxx car is omitted from 3-car units, and 25xxx de-icing cars take the place of other 23xxx cars. Again, although numbered as units it is the intention to maintain these trains in block formations.

It will be nice to see some R-stock driving motor car numbers in the 211xx series reappear as S-stock driving motors, but unfortunately in the 8-car Metropolitan Line sets. Some of the R-stock middle-motor car numbers will serve the same purpose again on the District Line in the 232xx and 233xx series (even numbers only).

This leaves the possibility that the 2012 Tube Stock for the Piccadilly Line, whose delivery will commence after completion of the 2009 Stock order but concurrent with the balance of the S-stock order, will be numbered in a 3xxxx sequence. The new Bakerloo Line fleet is ten years away, but could use a 4xxxx series, which remains conveniently vacant before the 5xxxx numbers of the 1995 Stock, the 6xxxx numbers on the Waterloo & City Line, and the 9xxxx of the 1992 and 1996 stocks. After that the crystal ball grows dark.

So LU car numbers have indicated the type of stock, the type of car, and the A- or D-end direction by varying digits, since the 1930s renumbering. They can also indicate the unit number (new works orders, R, and 1967 Stock to date), the car position in the train (R, 1995 Stock, 2009 Stock), the delivery year (in the past decade) and even the deicing units (1995 Stock). There has been little consistency over the years, and it appears that the numbering system has to be tailored to the specific characteristics of each new stock.

## **SHOULD THE SECOND UNIT BE NUMBER 1?**

The LU tradition has been to number cars from xxx00, so that the first 1935 Tube Stock unit was 10000-11000, and the second was 10001-11001. This can be confusing to some, and an alternative is to commence with the first unit being numbered xxx01. With stock numbered by unit, in accordance with tradition the first train has been numbered (A-end unit) xx00 – xx01 (D-end unit), commencing numbering from the A-end (1973 Tube Stock & D-stock). By numbering the first unit from xxx01 and maintaining the odds-and-evens tradition, the first train now becomes (A-end unit) xxx02 – xxx01 (D-end unit), reversing the direction of numbering (1995/96 stocks onward).

1956/59/62 stocks followed tradition, numbering from 1000, as did A-stock from 5000, both types not showing unit numbers. But 1967 Stock started a new practice with 3001 representing the first (double-ended) unit, the 30xx indicating A-end, as followed also by 1972 and 1983 Tube Stocks, and also C-stock from 5501, which had no direction. The practice reverted to tradition with the 1973 Tube Stock and D-

stock units commencing at the A-end from 100 and 7000 respectively, but with 1992 Stock the first unit was 91001, with no indication of direction. The 1995/96 stocks have also been numbered from unit 01 at the D-end, and this will be followed by the coming 2009 Tube Stock and S-stock.

## **RENUMBERING ASIDE**

Renumbering of remaining older cars to make way for new fleet deliveries was once not unusual, but appears to be unacceptable today. Car renumbering is time consuming for staff, involving the location of each vehicle and the renewal of transfers and labels. Staff resources are in short supply today, and are much more expensive. But beyond this, vital card records of each car's maintenance history were easily amended with the stroke of a pen and refiled in a new order. This is not so today, when computer records do not provide for renumbering. Even if programs were amended to allow this, how many changes would they need to permit? In the past some cars have carried at least three different numbers over time.

*Based upon "London Transport Railways, the Car Numbering Systems, Some Historical Notes" by Piers Connor with Brian Hardy.*

## **LATE POSTSCRIPT**

It has been reported that the number scheme for 7-car S-stock (? S7 for short) has now been revised to avoid a clash with National Rail vehicles. The only change is the initial digit becoming 3xxxx instead of 2xxxx, reminiscent of the late change for 1995 Tube Stock from 9xxxx to 5xxxx. The S8 cars will remain unchanged, numbered between 21001 and 25144, whilst the S7 stock will be numbered between 31201 and 35436. This makes a clearer distinction between the two batches of stock, and given the retention of the same unit numbers there would be no clash in numbers if later it proves necessary to convert some S8 to S7 trains, merely changing the initial digit to match. This does mean that we will not now be seeing R-stock numbers return to the District Line.

Interestingly for metro-numerologists, this leaves the 4xxxx series for the Piccadilly Line 2012 Tube Stock, and could possibly see reuse of original numbers from the 1956 Tube Stock, introduced on the same line over a half-century earlier.