Sleeper shake-up?

With the future of the Scottish sleepers under the spotlight, PETER MUGRIDGE suggests a radical change in how the services could operate...

So is it possible to increase flexibility and reduce costs without compromising service levels - and possibly even allow a modest expansion?

I believe this can be done by means of a carefully designed purpose-built fleet of Electro-diesel Sleeper Multiple Units (EDSMUs, see page 58).

This suggested design avoids the need for extensive shunting movements where services split and join - instead, an EDSMU would be able to make use of auto-coupler technology in much the same way as conventional multiple units.

As can be seen from the outline design, the units are articulated, with twin-axle trailer bogies underneath each vehicle joint and a three-axle conventionally mounted driving bogie at each outer end. This keeps the axle loading constant across the length of the rake, while allowing maximum comfort for the passengers - there is no under-floor traction equipment in the three sleeping cars in each unit.

Below: The 1740 Fort William-London Euston sleeper rumbles over Rannoch Viaduct on June 18 1985, with 37012 leading ‘Ethel’ 97250. The train is formed of recently delivered Mk 3 sleepers, Mk 2 day coaches, and a mixture of Mk 1s and an early Mk 2. Heat is supplied by the ‘Ethel’, which was converted for this purpose from a redundant Class 25. RAIL PHOTOPRINTS/JOHN CHALCRAFT.

Right: DB Schenker 90036 stands at London Euston on February 24, having arrived with the ‘Caledonian Sleeper’ from Glasgow Central. The crew that arrived on this train from Scotland will lodge in London, and return north that night. This is yet more additional operational cost for the sleepers. JACK RUSSELL.

Region territory. At a stroke this eliminates locomotive hire and reduces the number of shunting staff required (a large element of the fixed costs).

On-board crew would still need to be in the same passenger/crew ratio for safety reasons, but operations could be more flexible.

By choosing a five-car unit with four 20-metre vehicles and one 16m vehicle, four units can couple together in the same space as a 16-vehicle locomotive-hauled ‘Caledonian Sleeper’ rake.

The present ‘Caledonian Sleeper’ rakes are 356m long plus a 19m Class 90 at each end, giving a total of 394m of platform space. A rake of four EDSMUs would come to 384m.

There would, however, be a reduction in the number of berths available - 120 as opposed to 144 within this length - but the greater flexibility would mean this is not a disadvantage.

As can be seen from the outline design, the Sleeper services, in their current format, are a very labour-intensive operation. This is especially true of the ‘Caledonian Sleeper’, where rakes are split and joined to serve different destinations from one service.

At Carstairs, the Lowland Sleeper from London Euston to the Central Belt splits, with portions running to Edinburgh and Glasgow. At Edinburgh, the 18-coach 2115 Highland Sleeper departure from Euston is split into three portions, with trains then running to Aberdeen, Inverness and Fort William. The reverse happens on the return journey, with the three portions formed into one train which then heads south.

Yet these services provide a vital link for long-distance travellers. Plus, by avoiding daytime travel, business users can boost their productivity. The Sleeper saves a day each way - it is possible to work a full day in an office anywhere within range of the M25, catch the Sleeper, and arrive (refreshed from a night’s sleep) for an early meeting hundreds of miles away.

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The end two sleeping berths within each unit would be disabled berths. This provides a total of eight disabled berths per four-unit train, an increase in disabled capacity compared with the equivalent full-length ‘Caledonian Sleeper’ rake.

One advantage of having a permanent formation of three sleeping cars is that we can be creative with the door positions, providing an equal spacing throughout the train, while maximising accessibility to similar manners to that used on Eurostar. There are four passenger doors on each side of each unit, and nowhere is more than half a carriage’s length away from a door on either side.

The three sleeping cars are assumed subject to properly calculated measurements) to hold ten cabins each, although 11 may be possible. These would be to the same dimensions as the cabins on the present Mk 3 sleeper vehicle, but would feature careful design consideration to allow a greater usable space within each cabin.

The interconnecting door between pairs of cabins would slide into a cavity in the doodling wall, instead of being hinged. Similarly, the cabin doors themselves would slide into a cavity with the corn wall. As well as saving space within the cabin, the use of sliding doors allows for a more ‘light-tight’ environment for the passengers, as we can eliminate the gap under the door.

The basin would be a more compact corner-mounted design, rather than a full-width unit than the window, further improving the ‘light-tight’ aspects of the cabin. As at present, it is proposed that the cabins should be twin berths, with the upper berth capable of folding away to allow cabins to be used for either First Class or Standard.

Below: It is not only Scotland that is served by sleeper trains from London. Penzance also sees a daily weekday train from London Paddington. Operated by First Great Western, this is formed of six or seven coaches, and in the morning also carries passengers travelling west in its day coaches. 57605 Taurus Castle stands at Penzance on April 30 2001, having worked the 2350 from London Paddington. RICHARD CUNNICK.

Operating the new units
Being able to split and join units more easily means services can be more flexible.

If there was heavy demand for one destination and light demand for another it would be possible to run, for example, three units to Edinburgh and one to Glasgow (or vice versa) instead of a fixed portion of half the trains to each.

Building the trains
The last thing needed is a small, specialised class, because the build costs would be disproportionately high. So on a worst-case basis, how many of these five-car train examples would be required to provide a like-for-like replacement of the existing Sleeper fleet?

With four units replacing each of the present rakes, that comes to eight plus maintenance cover units at Inverness and Wembridge, so ten units in total.

The ‘Night Riviera’ is a shorter rake, and would most likely be formed of two units each on a like-for-like basis with one maintenance space at Long Rock (assume that any emergency requirement to cover a failure at the London end could be solved by hiring the Wembridge space unit). This gives five more units, giving a total of 15. That equates to 75 vehicles (not too bad a production run, even allowing for different basic types of vehicles (assume the design would be based around a modular structure).

Looking at the most basic additional services (the ones likely to be viable), including the Liverpool/Manchester example adds eight units to the production run. Putting the Plymouth drop portion for the ‘Night Riviera’ adds two more units, and that becomes four with the Swansea operation added. That takes it from 15 units to 27 units (335 vehicles).

Re-shuffling the ‘Caledonian’ operation to include Newcastle and a Carlisle portion adds a third full-length duty from Euston each night. That adds another eight units, so it’s now 35 units (475 vehicles).

At this point it probably needs two more units for the Caledonian operation and one more for the western operation, so the final figure becomes 38 units (390 vehicles) - more than enough to get the build cost per vehicle down to a reasonable figure.

Expanding sleeper services?
The lack of shunting and locomotives allows a more exciting possibility to be explored... a modest expansion of Sleeper services.

For example, a few years ago the ‘Night Riviera’ to Penzance ceased to attach and Riviera to Penzance ceased to attach and Riviera to Penzance ceased to attach and Riviera to Penzance ceased to attach and... and so on and so forth. It would increase costs, increase power consumption and severely reduce capacity.
Class passengers, including a sole occupancy option for an additional fee. Rather than dedicating specific carriages for each class, the reservations system starts booking First Class inwards from one end of the unit and Standard inwards from the other end unit, until the two meet. This will allow the maximum yield to be obtained from each unit each night - you could, for example, have 2½ carriages Standard and ½ carriage First on one night and the reverse the next night if there was a large business travel demand.

Even in the age of high-speed services, a Sleeper operation has a place, as the ability to travel overnight and save a day each way has many advantages. It avoids hotel costs without having to make an unreasonably early start, as well as allowing full days to be worked. Or in the case of leisure travellers, two extra days on holiday!

My contention is that this EDSMU idea is a suggestion that should at least be subject to proper and open study within the industry. Perhaps there could be a single national franchise for the Sleeper operations in future, instead of including them within regular franchises, since inter-regional operation would otherwise risk becoming too administratively complex.

Sleeper history

Britain once had a comprehensive network of sleepers. For example, even the mid-1970s saw 22 sleepers a night leave London. They ran from Euston to Barrow-in-Furness, Glasgow (three a night), Holyhead, Inverness, Liverpool, Manchester, Perth (in addition to Inverness) and Stranraer via Dumfries. Then there were those from King’s Cross to Aberdeen (three a night), Edinburgh (two a night), Fort William, Leeds and Newcastle via Hartlepool.

Finally, Paddington had sleepers to Exeter, Milford Haven, Penzance and Swansea. There were also summer Motorail sleepers from Kensington Olympia, and the cross-country services (Glasgow to Nottingham via the S&C, and Plymouth to Glasgow and Edinburgh). Over successive years the network thinned, mainly because a number of these sleepers were merely a few coaches having a ‘free ride’ attached to disappearing postal or newspaper trains. Also, King’s Cross lost everything in favour of Euston.

By the 1990s the only ones remaining were those we have today, plus the Plymouth to Edinburgh and Glasgow service, which was said to be busiest sleeper in the country and at the time the most heavy passenger train as well.

It was killed off in readiness for privatisation as it didn’t ‘fit’ the idea of soon-to-be-created CrossCountry. It last ran in September 1994.

Barry Doe, RAIL contributor

The author’s impression of an Electro-diesel Sleeper Multiple Unit

Diesel locomotives used on sleepers north of Scotland’s Central belt are hired by ScotRail from DB Schenker. Class 67s took over the Fort William trains from Class 37/4s in 2006, and now haul portions to Aberdeen and Inverness, as well as on the West Highland Line. On June 10 2010, DB 67007 (left) stands at Fort William with coaches for that night’s sleeper train. On the right 156458 waits to leave for Mallaig. RICHARD CUNNICK.