

# Sleeper shake-up?

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

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

- 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.

Leisure travellers also make good use of the Sleeper - it is quite common to see couples or even parents with young children using the Sleeper as their means of travel for a holiday or a weekend break.

However, the labour-intensive methods of working have confined Sleeper operations to two core routes in the UK for the past two decades.

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, particularly on the former Southern

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 BOSKETT/RAIL.

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



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.

Traction is by means of a 25kV electric ➔

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.





➔ power car at one end and (for operation off the wires) a diesel power car at the other end. Each would be of about 1,500kW, giving 6,000kW per four-unit train - roughly equal to the power provided at present.

The units can therefore operate singly or in multiple on or off the wires, with a fairly consistent performance. It is assumed that while operating under the wires the diesel engine would be switched off, although it could be used as an emergency power supply should the overheads fail.

Seated accommodation, with a snack/bar counter, is provided within the electric power car, while luggage space is provided within the diesel power car.

Each power car would also contain a disabled toilet. The diagram shows two in the diesel end, although it is likely only one would be needed at each end. One of the two locations could therefore possibly become a shower compartment instead, but as for showers en suite - forget it! That would increase costs, increase power consumption and severely reduce capacity.

## 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 trains 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 Wembley, so ten units in total.

The 'Night Riviera' is a shorter rake, and would most likely be formed of two units each way on a like-for-like basis with one maintenance spare at Long Rock (assume that any emergency requirement to cover a failure at the London end could be solved by hiring the Wembley spare unit). That's 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 on 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 (135 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 (175 vehicles).

At this level it probably needs two more maintenance cover units for the Caledonian operation and one more for the western operation, so the final figure becomes 38 units (190 vehicles) - more than enough to get the build cost per vehicle down to a reasonable figure.

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 articulated unit is that we can be creative with the door positions, providing an equal spacing throughout the train, while maximising capacity in a similar manner 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

**The 2230 London Euston-Inverness sleeper approaches Culloden on June 27 1986, hauled by 47533. Inverness still receives trains from Euston each weeknight, hauled by DB Schenker Class 67s from Edinburgh Waverley.** RAIL PHOTOPRINTS/JOHN CHALCRAFT.



## 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 detach a Plymouth portion. While this cut costs on the Penzance operation, it made travel to and from Plymouth less attractive for berth passengers - after all, who wants to be turfed out of bed at 0500 in the morning? (The same applies to Carlisle on the 'Caledonian Sleeper'.)

It would now be possible to simply couple and uncouple a unit at Plymouth. And you could go further... if you sent a four-unit EDSMU out of Paddington you could uncouple one unit at Bristol to run to Swansea. Three would continue to the west,

with one dropping at Plymouth and two continuing to Penzance...

Or maybe you could have a four-unit set from Euston drop one unit at Carlisle, with three continuing to Edinburgh, of which the front one would carry on to Newcastle while the remaining two carry on to Fort William, Aberdeen or Inverness. The other destinations can come from a separate rake. Indeed, send two units up the West Highland, and there would be no reason not to split them at Crainlarich so that one could serve Oban...

In other words, you do not have to stick to the present operational pattern. You would no longer have to be restricted by having Inverness, Aberdeen and Fort William off one rake with Edinburgh and Glasgow off

another. It is possible to offer more varied destinations without a huge increase in fixed costs.

Could other destinations be added?

Certainly it should be possible to re-introduce a Scotland-South West sleeper service in this way, or a London to Liverpool/Manchester operation.

The departure point could be Paddington instead of Euston, and it could pick up at Reading and then run to Birmingham. Here it would split - one unit for Manchester and one for Liverpool.

Meanwhile, another two-unit train could have departed from Plymouth or Cardiff, and split at Birmingham for Liverpool and Manchester. These portions would then merge with the split from London.

## 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 train to each.

**Right: Whereas all northbound sleepers now leave London Euston, in the 1980s London King's Cross was also a hub for sleeper trains. BR 31186, 31206, 31218 and 31243 stand at King's Cross on December 4 1981, having arrived with empty sleeper coaching stock. These trains will run to Newcastle, Edinburgh and Aberdeen, hauled by Class 47s and Deltics.** RAIL PHOTOPRINTS/JOHN CHALCRAFT.



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 vehicles, 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 dividing wall, instead of being hinged. Similarly, the cabin doors themselves would slide into a cavity within the corridor wall. As well as saving space within the cabin, the use of sliding doors allows 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

under the window. The window blind could be of a design that would slide within the double glazing - control would be by a manually operated dial similar to those on glazed panels in conference room walls, but with a solid rather than Venetian blind design. Such a feature would allow for a blind wider

than the window, further improving the 'light-tight' aspects of the cabin.

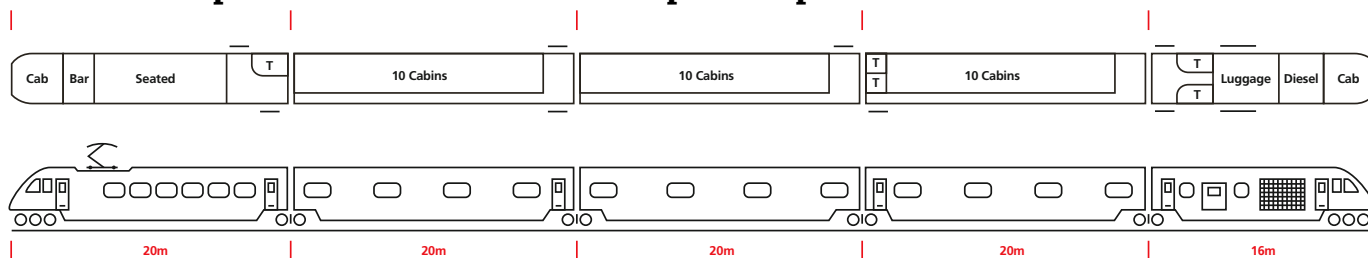
As at present, it is proposed that the cabins should be twin berth, with the upper berth capable of folding away to allow cabins to be used for either First Class or Standard ➔

**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 Totnes Castle stands at Penzance on April 30 2009, having worked the 2350 from London Paddington.** RICHARD CLINNICK.





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



➔ 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. **R**

### 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**

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 CLINNICK.

### About the author

**Peter Mugridge, Contributing Writer**

An enthusiast for 33 years with an interest in operational and strategic matters, Peter Mugridge uses the sleeper services regularly. He has travelled extensively throughout Europe and the UK.

