

Rail Freight Multiple Unit Trial, Aberystwyth to Chirk, March 2005, Final Report

Introduction

Timber has not been transported by rail from Welsh forests since the early 1990s, road transport being favoured because of its flexibility, particularly over the relatively short haulage distances within Wales, but also because of the inadequate railway infrastructure within Wales.

Despite this it was felt there was a need for the forestry industry to keep its options open over the methods available for transporting timber, particularly with the forthcoming European Working Time Directive, forever increasing fuel costs, and the fragility of the road haulage sector within Wales. Another reason is that there are clear environmental benefits in moving timber from road to rail, and some 16 million tonne kilometres of timber traffic could potentially be transferred. Finally there were also pressures for change from the end-user side with potential new markets opening up which could only be supplied by rail (eg Aberthaw power station), and a need to be prepared for new opportunities that were expected to arise. These included possible new markets outwith Wales and the Marches following the abandonment of the *D micians* Protected Zone (in May 2005) and the requirement for cheaper transport – if possible – as areas of Wales are becoming uneconomic to harvest.

INBIS Ltd has been trialling the relatively new concept of the Freight Multiple Unit (FMU), an integral train with two drive units and freight-carrying modules in-between. Such trains are lighter (250-300 tonnes) than conventional freight trains (600 tonnes) and as they are based on sprinter technology they can accelerate rapidly to fit in behind passenger services. They are also considerably cheaper to run per year than freight trains, but a potential disadvantage is that being integral they have to be loaded within a fixed time frame.

A trial to explore the potential benefits of using an FMU was funded using external partnership funding, and a Partnership Agreement drawn up between FC Wales, INBIS Ltd and First Class Partnerships Ltd. The trial took place in March 2005, with the FMU making 19 journeys and conveying 2 840 tonnes of chipwood and bars from Aberystwyth to Kronospan Ltd at Chirk.

Objectives

The main objectives of the trial were:

- To demonstrate the practicalities and economics of rail transport for the timber market in Wales and its associated benefits to the environment.
- To prove the effectiveness of the FMU as a reliable and practical means of rail transport over a rural railway network which has not carried freight for over 10 years.
- To provide a basis for investment in rail facilities and equipment for possible ongoing business supported by a Freight Facilities Grant.

Method

Carrying out the rail trial demonstrated the complexities of dealing with the railway industry. INBIS Ltd provided the overall project management and engineering support for the rail services, while First Class Partnerships Ltd arranged the logistics of rail operations. A number of other contractors also had to be engaged, as follows:

1. AMEC-Spie provided, maintained and adapted the Multi Purpose Vehicles (MPVs) – the power units of the train – and with their previous experience of FMU trials provided guidance on safety case compliance.

2. EWS Railways Ltd were the licensed operator for the train, providing drivers, ground staff, fuelling facilities and the 7 intermediate OTA timber wagons. They also planned the timings of the train to the INBIS specification in conjunction with Network Rail, provided servicing facilities at Crewe for the assembly and break-up of the trains, and provided mobile cab signalling equipment to meet the requirements of the route.
3. Network Rail provided permission to use their yard at Aberystwyth and for the stabling of the train at Coton Hill, Shrewsbury. They also agreed the train operating conditions and provided the staff necessary for the project to comply with the safety requirements.
4. Windhoff (MPV manufacturers) provided specialised technical support in the configuration of the train and provided back-up for the first few days of operation.

Members of the Wales Timber Transport Group also provided their support, and in particular the members from Ceredigion County Council Highways Department, who provided use of the nearby council weighbridge.

Delivery of the project

The train formation was to have had 2 powered multi-purpose vehicles (MPVs), one at each end, and 7 conventional OTA-type 2-axle timber-carrying wagons marshalled between as a fixed formation train. An open 20ft container module was to have been mounted on each MPV platform, but in the end the high construction costs of these (at £15k each) meant that only one was built. This affected the maximum payload as follows:

Unit	Planned			Actual		
	Number	Payload	Total	Number	Payload	Total
OTA	7	22	154	7	23	161
Module	2	27	54	1	25	25
TOTAL			208			186

The train plan, after many iterations, provided for an arrival at Aberystwyth at 09.22, departure at 11.50, with arrival at Kronospan at 15.47. The original project specification was for a 3-hour loading time, but this had to be reduced to 1½ hours due to engineering works on the line. Prompt loading by mid-Wales haulier Kieron Owen and his team enabled the train to be loaded in this reduced time, but this needed 3 lorries working simultaneously.

The train performance was very good with all but 2 trains arriving at Aberystwyth within 5 minutes of the scheduled time. The 2 that were slightly late – 8 and 11 minutes – were delayed by the incoming passenger train, not the other way around (ie the passenger train was never delayed by the FMU). Arrivals at Kronospan were all within 50 minutes of the booked time, all delays being caused by extraneous factors, typically late running of passenger trains on the single track. The one exception here was the late loading of the second train, which was part of the learning curve (it was the strapping, not the loading, that caused initial difficulties). No delays were directly caused to other train services, and EWS have provided a full analysis of performance train by train.

The duration of trial was originally intended to be 5 weeks (25 trains) but there was a delay in the trial start date by 3 days to 3 March for further site preparations at the Aberystwyth yard, it was decided not to run a train on 7 March to ensure a full loading for the press day on 8 March, and EWS were unable to operate on 4/5 April. The final train ran on 1 April, making 19 trains in total, but this was long enough to provide sufficient experience for future planning.

The train loadings did not fully exploit the potential capacity of the train for the following reasons:

1. On the first day Network Rail imposed operating conditions requiring a class 37 locomotive to be towed at the rear of the train to prove the FMU's capability up the steep 1 in 47 gradient up to Talerddig. This locomotive would then have been available for rescue purposes if the FMU had failed, which, as it turned out, was an unnecessary precaution. On this occasion the load was reduced to 72 tonnes (a loss of about 100 tonnes).
2. One of the intermediate OTA wagons (110324) developed a 'flat' on one of its wheels which EWS were not able to rectify until the set was returned to Crewe on 19/20 March for tyre turning. This wagon lost 8 loaded journeys, about 166 tonnes.
3. The most significant factor in reducing loading potential was damage incurred to stanchions and straps at Kronospan. As EWS did not have a 'line-of-route' repair capability (ie a nearby repair depot) this could not be quickly or easily rectified. The load on the damaged wagon had to be reduced, which resulted in the loss of about 270 tonnes in all.

In total **2842** tonnes were moved on **19** trains, an average of 150 tonnes per train or 154 if the first train is disregarded.

Lessons Learned

Planning and preparation. Overall planning was good but there were some late issues arising from Network Rail over terminal access and safety procedures. Network Rail themselves recognise that this should have been better handled, and the complications of the Aberystwyth Railway Club, the yard access owners, might have been avoided if the issues had been brought forward sooner.

FMU running and performance. Running and performance went very well, proving the practical and reliable application of the FMU concept in a rural railway context. There were no adverse impacts on other rail operations.

Terminal operations. It had been hoped the old Shell sidings (owned by Network Rail) could have been used for the trial but this was not possible and instead the operational line had to be used. This imposed operating and safety systems which would be costly and time-consuming if required on an ongoing basis, but could be avoided with a new terminal. The speed of loading (and unloading) that was achieved proves that the quick turnaround necessary for high productivity is entirely achievable.

Economic viability. Trial conditions do not allow the most economic solutions to be demonstrated and the train operator needs to have 'line-of-route' facilities for both train crew and maintenance.

Wagon damage and rectification. If Kronospan were to feature in any long-term rail plans then systems need to be established to minimise wagon damage. This is not adequately addressed in their current rail services.

Next Steps

The trial has demonstrated that the FMU provides a practical and reliable rail solution for moving timber in Wales and that the rail infrastructure of the Cambrian line was able to support this. There has been a considerable amount of media interest in the next steps beyond the trial but progress here is likely to be challenging as time is needed to explore the various options. A sponsor needs to be found who will progress matters, and it is likely that this sponsor will come from one of 3 categories: a processor, a haulier, or a rail freight company. The sponsor needs

to work up a financial case for a permanent operation, which can then be considered by the Wales Assembly Government, which controls Freight Facilities Grant within Wales.

No existing freight operating company has an operating base within Wales which is suitable for running an FMU operation and further work is necessary in defining existing train scheduling and the timber volumes so that preferred railhead locations can be identified. Although good progress has been made with the JST Services application through Scottish Executive there is a clear benefit in dealing with the combined requirements of Scotland and Wales together (the two countries within the UK where FFG is currently available). This would enable the engineering development costs of a fully commercial FMU to be reduced. HSBC Rail has confirmed its willingness to provide private-sector funding for FMUs and could be future owners of the vehicles, minimising future financial risk.

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