

PRESERVED COACHING STOCK OF BRITISH RAILWAYS

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LOCOMOTIVE HAULED COACHING STOCK

THE PEGASUS PROJECT

On Tuesday 19th October Railfilms Ltd & EMC (International) Ltd jointly gave a presentation detailing this project under the title 'The Pegasus Project – A First View'. This including the opportunity to inspect the work carried out on Pullman Car 'PEGASUS' and at the same time gain a greater insight into the project than had been possible previously.

The project has not previously been mentioned on these sheets but had been referred to in issue 350 of 'Rail' magazine published in February. At that time 'PEGASUS' was located at the Carnforth workshops of the West Coast Railway Company with the project in its early stages of development and much that was recorded then has been superseded. It is however probably worth repeating what was written then about the project for those whom missed the original item.

Particular interest surrounds the work currently being undertaken on Pullman Car 'PEGASUS' at the Carnforth workshops of the West Coast Railway Company. It being the intention to return this carriage to the main line by the end of 1999 when it will carry the title 'MILLENIUM BAR'. This particular carriage was constructed for use on the 'Golden Arrow' by the Birmingham Railway Carriage and Wagon Company in 1951, but had latterly been used on Euston-Glasgow Sleeping Car trains were it had been named 'NIGHTCAP BAR'. It has a timber-framed body with steel panelling. This style of body construction will certainly not meet the stringent group standards intended for introduction after 2002 and thus investigations are taking place in order to make it acceptable for use after this date.

The project is being lead by Edinburgh based EMC (International), the main thrust being to evaluate whether a new body structure can be constructed on the existing under-frame. This however must closely resemble the distinctive Pullman Car style and incorporate as much of the existing material including body panels and interior as possible. Work includes the incorporation of collision pillars at each end of the vehicle in addition to improving the overall collision resistance. Careful analysis is also taking place of the materials used in the interior in order that they meet current standards of fire resistance in particular. Other changes will see the Gresley bogies being replaced with Commonwealth bogies and air brakes fitted.

Although purists would argue that a completely new vehicle is being created using a salvaged under-frame the project is more comparable to a heavy general overhaul/refurbishment of a locomotive. The vehicle being stripped to its component parts and then re-assembled incorporating the latest design of components were applicable.

Close liaison is taking place at each stage of the project through Interfleet Technology, the vehicle acceptance body for the project, with Her Majesty's Railway Inspectorate (HMRI). Not surprisingly other operators and potential operators of similar carriages are watching developments very closely.

The arrival of 'MILLENIUM BAR' on the mainline will however be a fine example of modern technology working with traditional skills.

Subsequent progress with the design revealed that it was possible to install a new steel frame that would have the properties of a Mark 3 whilst retaining all the appointments of the traditional Pullman build. For this to be progressed, it was therefore decided to move 'PEGASUS' to the Edinburgh premises of Blake Fabrications who are highly skilled in the manufacture and fabrication of substantial steel structures. It is at this later location that the majority of work including the manufacturing process has taken place. Blake Fabrications knowledge of steel manufacturing tolerances and welding capabilities being fundamental to the successful creation of a body shell that accurately resembled the original design.

A significant change to the original plan has been the retention of Gresley bogies although these have been upgraded by incorporating axle end roller bearings and a double bolster secondary suspension. A decision was also taken to retain the traditional 'TRIANON BAR' title rather than use the modernistic 'MILLENIUM BAR' title.

The original wooden body was removed in Edinburgh with items such as windows, roof ventilators, gangways, external piping, buffers, electrical boxes, draw-gear, ETH heaters and interior furnishings salvaged and refurbished.

Enhancements made to 'PEGASUS' have been a low volume flush controlled emission lavatory, 24v batteries, 600amp ETH circuit, 240v a.c. circuit and air braking.

The design of the new body and modified frames was extremely complex in order to have a structural integrity comparable in performance terms better than that of a Mark 2 vehicle and similar to that of a Mark 3. The calculated end loads are taken entirely by the solebars, as a key feature of this design are the continuous intercostal waist rails that provide for the transmission of end loads along the entire length of the body side. The calculated cant rail loads meant that a material cross sectional area of approximately 600mm² had to be provided. This was achieved by using 3mm thick folded sections.

The vehicle structure itself was manufactured from steel to BS EN 10149-3 grade 5260NC or it's equivalent, which provides formability without spring back. Design of the structure was particularly difficult. In particular the original body end is narrower than the main part of the body. Thus a situation exists where it is possible for the body side to receive a more severe side impact or glancing blow when in traffic. Consequently the new body pillars had to be designed to withstand increased loads of 150 KN without yielding. The calculated vestibule end structure loads were so great that they could not be absorbed by specifying conventional steel beams within the available space, the solution was to engineer a structure using shear plates of 3 and 6 mm thickness at the cantrail and floor level respectively. The plates were then supported by longitudinal channels, which carried the end loads back to the body sides. Gusset plates were also added to tie the end pillars back to the frame.

The most significant technical problem was the establishment of a methodology for overcoming the shear connection between body side and the solebar. This was essential if the body was to act as a whole. The connection was achieved by adding a folded section to the body side which was then attached as tightly as possible to the solebar by Huck bolts which were positioned at the base of each pillar, thereby providing a high co-efficient of friction. The roof carlines aligned with the tops of each pillar and hooked into the cantrail to create a hoop effect, similar to that of Mark 3 style vehicle construction.

The vestibule end structure was sub assembled and positioned on the vehicle ends for attachment to the under-frame. Once in position the refurbished gangway components could be positioned and re-attached so as to recreate the original installation. This presented a number of difficulties as there is little technical information available and the components have worn together over life. The problem was further complicated by the increased size of the body end compared with the original. Hence the guide assemblies had to be extended in order to provide the same location and movement as previously. The vestibule roof canopy was salvaged from the original vehicle with each quadrant above the corner doors being originally made by panel beating the steel to shape. This meant that the new roofline also had to be hand worked to blend the new roofline into the old as if it were a hand in a glove.

During the assembly process, exacting measurements were taken and analysed, thereby ensuring that the build up of tolerances was controlled to within acceptable parameters. This was particularly important in order to ensure that the interior would fit. Particular attention was paid to the cutting of the window apertures, which form a strong visual impact on the finished vehicle. During this process consideration was given to the future build up of dirt and the prevention of moisture traps. Drain holes were provided at specific locations and sealant was used to close natural gaps. All new breakthroughs have been prepared to protect against the transmission of fire into the vehicle. Firewalls have been installed at each vestibule end.

On October 19th when 'PEGASUS' was inspected construction was at a stage where electrical and water services were being installed. Subsequently fitting out has been rapid and to schedule and by mid November 'PEGASUS' should be internally complete with external painting scheduled towards the end of the month.

Both Railfilms and EMC are confident that on completion of the works 'PEGASUS' will achieve it's own Railtrack "registration" category equivalent to Mark 3 status and therefore avoid many of the problems that older rolling stock on the railway is expected to have in terms of safety.

1) Additions

a) British Rail Mark 2 Passenger Carrying Coaching Stock

TSO	5157	Birmingham Railway Museum
TSO	5186	Birmingham Railway Museum

e) 'Queen of Scots Train' (Scottish Highland Railway Company)

It is intended to paint Mark 1 BSK 35322 (99035), currently carrying maroon livery, in the LNWR style carried by other carriages in the train shortly. Thus, with the exception of teak GNR Saloon 807 (99881) all carriages will be in the same livery.

f) Railfilms Ltd, Crewe

The company continues to operate GWR Saloon 9004 and the 'LMS Club Car' converted from Mark 1 TSO 5067, these are both based at Crewe. As recorded on this Amendment Sheet Pullman Car 'PEGASUS' is expected to join the operating fleet shortly. Ultimately it will displace GWR Saloon 9004 from the mainline although initially its use will continue.

It is then anticipated that the next vehicle to be certified for use on the main line will be Gangwayed Brake Van (BG) 84025. Currently this carriage, that had previously seen use as a support coach for Steam locomotive 35028 'Clan Line', is receiving extensive attention in the workshops of Lancastrian Carriage and Wagon at Heysham. Work being undertaken includes the fitting of air brakes, the fitting of electric heat and the replacement of BR1 bogies with Commonwealth bogies. Internally it is being fitted out for use as an exhibition vehicle and is expected to be painted in pullman car livery. When completed it will be used in conjunction with the three saloons for exhibition/hospitality work in a similar way to which the 'The Bulmers Cider Pullman Train' was used in the early 1970s.

6) Bodies of Non Passenger Carrying Coaching Stock

a) Great Western Railway Stock

i) Deletions

FRUIT D **3453** Broken up on site at Simms Birds Ltd (formerly Birds Commercial Metals), Long Marston.

FRUIT D **3480** Broken up on site in a field at Illmington, Warwickshire

b) Southern Railway Stock

i) Additions

PMV **2106** Aylescott Driers & Feeds, Burrington, Umlerleigh, North Devon (SS616163)

Special Note:- This particular body has also retained it's under-frame, both sets of buffers and coupling hooks and is supported on sleepers. The owner has to get rid of this body in the near future and would like to see it either preserved or used by somebody else rather than have to break it up. Any interested parties should contact Brian Fraser-Smith at the above address or telephone 01769-520556.

c) London, Midland & Scottish Railway Stock

i) Deletions

FISH VAN **40258** Broken up on site at C.C. Crump Wagon Repair Works, Connahs Quay, Shotton, Clwyd

MULTIPLE UNIT VEHICLES

1) Additions

a) British Railways DMUS

RDB998900 Inspection Car (Bg/DC 2267/1950) Middleton Railway

RDB998901 Inspection Car (Bg/DC 2268/1950) Middleton Railway

b) Military Personnel Carriers

The following are all Wickham Type 27 Mark III Four Wheel Personnel Carriers. These were accidentally omitted from 'Preserved Locomotives of British Railways - ninth edition'.

9020	(Wkm 8084/1958)	
9021	(Wkm 8085/1958)	Severn Valley Railway
9022	(Wkm 8086/1958)	Alderney Railway, Manez Quarry
9024	(Wkm 7090/1955)	Chinnor & Princess Risborough Railway
9025	(Wkm 7091/1955)	Alderney Railway, Mannez Quarry
9029	(Wkm 7095/1955)	Alderney Railway, Mannez Quarry
9031	(Wkm 8089/1958)	Swindon & Cricklade Railway
9035	(Wkm 8195/1958)	Museum of Army Transport
9037	(Wkm 8197/1958)	Buckinghamshire Railway Centre
9038	(Wkm 8198/1958)	South Devon Railway
9043	(Wkm 6965/1955)	Kent & East Sussex Railway
9044	(Wkm 7438/1956)	Kent & East Sussex Railway
9045	(Wkm 8774/1960)	Cholsey & Wallingford Railway

Any information for inclusion in future amendment sheets should be forwarded to:-

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