

NEWSLETTER

No 4 Autumn 2003



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Exminster Signal Box Preservation Project

GWR

EXMINSTER SIGNAL BOX

Preservation Project

Exminster Signal Box Preservation Project

NEWSLETTER

No 4 Autumn 2003

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EDITORIAL

Hello again all, and welcome to another Newsletter!

It is my great pleasure, in this issue, to introduce the Project's newly recruited Secretary, Mr Eddie Langford.

This issue also brings three further articles by supporters, which is excellent because it means you don't have to listen to me all the time! If any other supporters have any photographs, or would like to write an article etc, these are always welcomed for publication.

I would like to use this column to share with you a recent satisfying conversation. I am a volunteer signaller on a miniature railway. I was discussing signalling 'gossip' with another signaller who, off-the-cuff, said "I hear that Exminster Box is moving to Swindon". I laughed and explained to the signaller my involvement in the Project. I'm sure you'll be as pleased as I am that this Project is on the signallers' gossip 'agenda' – The word is spreading.

Enjoy reading, and thank you again for your support.

Danny Scroggins,
Chairman

Please note I have moved house. All correspondence regarding the project should be directed to my new address, shown above.



NEWS

THE APPLICATION FOR REGISTERED CHARITY STATUS HAS BEEN SUBMITTED! (Finally!) The many months of hard work in reading and researching the complications of becoming a Registered Charity are about to pay off: The 'Exminster Signal Box Preservation Society' will soon have a legal existence.

On achievement of the Registered Charity Status we will be eligible to receive the grant of £5,000 promised by the Railway Heritage Trust for 2004. This, I hope, will see the Box to Swindon. I am confident that when material changes occur, more and more people will become interested (and hopefully more and more money will come in). Almost every week I receive an email or a telephone call from a new person who is keen to be involved. This Newsletter is read by about 50 people and I don't know how many passers-by read the copy on the website. This project really has the interest to be a success.

The Project has recruited a new Secretary in the shape of Eddie Langford. Please read the 'Meet the Committee' section of this Newsletter for more information.

I am delighted to report that this Project has formed a good relationship with the existing organisation the 'Friends of Swindon STEAM Museum'. The 'Friends' have been invited (and accepted) to appoint one of their members to represent the interests of the Friends to the Exminster SB committee.

The Project was recently featured in 'Heritage Railway' Magazine and appeared in the Swindon Evening Advertiser. Although the latter is only a local paper, it is particularly valuable to us as it is the newspaper read by the greatest number of Swindon residents, and given that the project will be based in Swindon we are likely to attract local volunteers.

My goodness! I have received some very juicy letters from supporters crammed full of fascinating information following my request for information regarding the operations at Exminster. Firstly, Greg Crane has sent me some explanations for some obscure parts of the layout. See his column on page 7. Mr Andrew Dickinson, after finding our website, has sent me several pages of information, which I have split into sections and will publish in parts over the next few Newsletters. See part 1 on page 3.

There is one unfortunate disappointment to report this issue. A supporter who had promised to construct a method statement for the removal of the Box (required by Network Rail) has pulled out, without leaving even a half-completed method statement to the Project. Hence...



W A N T E D

Are you a professional railway engineer? Do you know a professional engineer? If so please get in touch! A method statement is a vital document that the Project must produce in order to proceed with building works. Unless a volunteer engineer can be found in the group, this will be very expensive to have constructed. If you can help, please email danny@exminstersignalbox.org.uk or telephone 07950 633 597.

Andrew Dickinson looks at the technical side of the Signal Box...

PART I – HAND GENERATORS & ELECTRIC LOCKS

By Andrew Dickinson

Hand generators were provided in all GWR and BR(WR) signal boxes that controlled motor worked points even if the signal box had a mains electricity supply. At locations where the signal box had a mains electricity supply, and this was used to work the motor points, the mains supply was converted to 110v DC through a transformer/rectifier unit. In the event of a failure of the mains supply, the signaller turned a rotary switch located above the generator, which cut out the signal box from the 110v supply and connected the generator to the outgoing circuits. In this case, the generator was used only in supply failure emergencies. Batteries were not provided as a backup as it was generally not Western practice to have such a battery.

At signal boxes where there was no mains electricity supply, the generator was used every time the signaller wanted to move the motor points.

All the equipment (generator, hand crank lock units, electric lock/circuit controllers, relays and the point machines) required for the motor worked points was manufactured by Westinghouse Brake & Signal Company. The design and the equipment remained the same (apart from a few minor modifications) from the 1930s to the early 1960s.

An example of a generator can be seen in Adrian Vaughan's 'Signaller's Reflections' on page 158 (lower plate) and page 160 (lower plate) but in the latter partly hidden behind the lever frame. For the former, this would not have been the normal method of installation with the rear part of the machine fitted to the windowsill. I suspect space limitations forced the installers to put it there. Normally it was mounted on a steel frame and an example of this can be seen on page 154 but here it has been used for a Tyers Electric Train Token machine instead. This steel frame was a standard structure and must have been manufactured using a standard S&T Office drawing.

The hand crank lock units referred to above were mounted on two smaller steel strips (parallel to the frame) under the generator. The hand cranks were used to operate the points when the motor had failed. The hand crank lock units were provided for two main safety reasons. Firstly, to ensure that the hand crank was in a safe place where it could not be used to wind the points over without the signaller's knowledge. Secondly, to ensure that if the crank was being used by a member of staff to wind the points over, the signaller could not operate the points from the signal box when the failure was rectified, thereby causing possible injury to the member of staff from the sudden activation of the motor. Hence, a set of contacts existed inside the lock unit that cut the outgoing power to the motor when the crank was removed.

When the crank was returned to the signal box after use, it was inserted into the unit and turned through about 30°. This locked the crank in the unit and this was then secured by a pin inserted through two lugs on the unit. (One each side of the handle) and a padlock put through a hole in the pin. The crank was, therefore, secure and only certain members of staff had a key such as the signal lineman. Later, BR(WR) installations used a unit that

dispensed with the pin and a pair of small curved hinged thin steel lugs were used instead. The padlock was put through a hole in these lugs to secure the crank handle.

These hand cranks and lock units were also configured in a similar manner to single line staffs and key tokens. A crank could only be used on one set of point machines and replaced in its correct lock unit. The design feature was to prevent a crank being used on another set of points, which, without the signalman's permission or knowledge, would be a dangerous situation. At Exminster, therefore, there would be two different sets of crank and lock units.

This was achieved by giving each crank a different shaped hollow end that engaged on an identically shaped projection on the motor shaft inside the point machine. The geometric shapes that I knew were square, triangular and hexagonal. The configuration was also put on the wiring diagram so that the linemen knew which unit configuration was being used for each set of points. This information would be needed quickly if a faulty lock unit or point machine had to be replaced.

If one were to look inside Exminster Signal Box, it should be possible to find where the generator frame was installed on the floor given the four holes in the floorboards. It would normally be around the top of the staircase or to the right hand side of the lever frame.

The repeaters for points 39 and 61 would probably have been mounted side-by-side on a board at the end of the block shelf rather than being installed directly above the levers themselves. This was so that the signalman would be able to see when the points had obtained 'Normal' or 'Reverse' detection when operating the generator. This was the practice at other boxes.

The quadrants for the levers working motor points would certainly have had extra notches cut into them, as described on page 4 of Newsletter No 3. The extra notches are identified as 'B' and 'D', with 'B' being nearest the normal position of the lever and 'D' being nearest the reverse. The idea of the notches is that the lever is held in position so that the electric lock is free to 'pick' when it is energised. There is a small clearance between the notch in the electric lock blade and the lock dog itself.

The operation of the motor points also follows that described in Newsletter No 3. The lock plunger was pressed and when the lock picked, the lever could be moved from Normal to the 'D' position where it was held by the lock. The generator was then used to operate the points and when Reverse detection was obtained (showing on the block shelf indicator), the lock would pick again and the lever could be moved fully to the Reverse position.

Levers controlling motor points and signals where approaching locking was provided would be fitted with locks with a circuit controller. These types of locks are referred to as combined lock and circuit controllers. The controller had copper (or brass) bands that rotated when the lever was moved. This action either made or broke circuits with the rotation of the bands, or made circuits only at certain positions of the lever such as 'B' or 'D' for point motor operation.

The electric lock fitted to the lever controlling a motor point is identified in the wiring diagrams as an NBDR lock so that at Exminster, they would have been 39(NBDR)L and 61(NBDR)L. The levers controlling signals with approach locking would be fitted with an NB lock and would have been identified at Exminster as 46(NB)L, 47(NB)L, 79(NB)L, and so on.

An example of a lever frame with quadrant notches for NB and NBDR locks can be seen on page 155 of 'Signalman's Reflections'. This ties in with page 156 (top plate) showing the signal box diagram for the same box. Here, lever 9 (signal) has a 'B' notch in the quadrant [to allow the lever to be held in a position that holds the points locked for time required by the time release] and lever 10 (points) has 'B' and 'D' notches [to allow the lever to be held in a position that holds any conflicting signals for the operation of the generator]. The frame is of the same type as Exminster.

The photograph on page 156 also shows GWR pattern brass lock plungers. It is extremely difficult to read the exact date on the diagram, but the text at the bottom of page 155 states that the new frame was installed in October 1941. This is, more-or-less, the same time as the new frame installed in Exminster. Whether Exminster had this type of plunger installed when the 1941 frame was fitted is difficult to say. I would suggest that it would have had brass plungers at that time.

In 1941 Exminster would undoubtedly have had plungers for the operation of combined electric lock and circuit controllers. These plungers would have been identified in the wiring diagrams as 39LN and 61LN ('N' being the equipment letter used for a plunger or switch) for the motor worked point levers and 46LN, 79LN, etc, for the approach locked signal levers.

Later BR(VR) installations did away with plungers for combined electric lock and circuit controllers altogether. Instead, a contact was fitted to the lock itself and this operated to pick the lock when the lever was moved about ¾" to 1" from either Normal or Reverse positions.

Thank you to Andrew Dickinson for this wonderful technical information. Don't miss Part 2: "Time Release Units".

EXMINSTER INFORMATION HUNT

Do you know something we don't? Please tell us as the more information we have the better picture we can build of the Box, and the better restoration we can make.

If you would like to make this 3808mm² work to your advantage, please contact admin@exminstersignalbox.org.uk today.

MEET YOUR COMMITTEE (SECRETARY)

By Eddie Langford

On Wednesday mornings, Stan Langford and his three-year-old grandson Eddie used to collect the local village's newspapers from Colthrop Crossing Box (on the Berks & Hants Line). This, unknown to Eddie, was to be the beginning of a long relationship with railways...



As I got older, I found myself taking a greater and greater interest in the operation of the railways. My increasing interest brought me a lot of good friends, one of whom was Colthrop signalman David Canning. David helped me to gain access to many signal boxes around the country (in BR days) and it is down to him, and many others, that I am now a signalman for Network Rail, having worked in Reading Panel and most of the area's Crossing Boxes, including Colthrop (although now supervising crossings by CCTV, sadly without its lever frame or block instruments!).

I first encountered Danny and the Exminster Project through an entry in the guestbook of John Hinson's website (www.signalbox.org) and its link to our Exminster Website (www.exminstersignalbox.org.uk). I am now delighted to be taking on the role of Secretary for this extremely exciting Project.

The main objective for the committee at the moment is to achieve registered charity status, which will be an enormous help to the Project. In this day and age, with modern panel and IECC boxes it is important to preserve mechanical equipment. Hopefully I can play a leading part in helping to bring this piece of history back to life, and preserving it for future generations.

If anyone wishes to contact me, please feel free to do so by email, eddie@exminstersignalbox.org.uk is my address.



EXMINSTER OPERATIONS

By Greg Crane

Ex-Exminster station staff Greg Crane explains the layout peculiarities of Exminster.

Liaison with Cowley Bridge Junction

Cowley Bridge Junction was the only Box in the Exeter Division to have a Train Regulator on duty. These were senior signalmen. The Signalmen at Exminster would advise him when an up train had passed Dawlish Warren. While on the subject of Cowley Bridge, Southern Region trains had preference over Western Region trains on the Junction.

Points 25 & 26

The one used on a regular basis was 26, this was used by the 0545 Hackney Yard to Exeter Riverside stopping goods. The train would stand on the Up Platform, and then shunt to the sidings via point 26. This was involved in detaching coal traffic for the Devon Mental Hospital, also for the local coal merchant S. H. Gush, as well as collecting empties, also traffic, on a less regular basis, for various farms in the area. Very occasionally traffic was loaded away from farmers. This would mainly be grain and sugar beet.

Cattle Dock

The Cattle Dock at the time I was there was hardly ever used. The trucks arrived on the end of up stopping passenger trains. The train would go via point 24 to the Up Platform Line. It would then reverse via points 25 and 33 to the Cattle Dock. After detaching it would return to the Up Platform, and continue on its journey.

Down Sidings

The Down Sidings were regularly used to stable traffic awaiting acceptance further down the line. When a train was required to proceed, a light engine with a guard was sent from Newton Abbot to collect it. This would crossover via points 19 and disc 30, then travel Down Main to the far end of the Sidings, and join the front of its train via points 39 and disc 37.



WEBSITE – www.exminstersignalbox.org.uk

By Luke Cartey

The website is still going strong, and is definitely helping enormously in attracting people to the project. We've had over 1000 hits on the site, and this is rising steadily. There seems to be a reluctance to sign the guest-book though, so next time you're on-line, please sign the thing!

In July the site was considerably updated and revamped. A new function was added called the 'Round Trip'. This function takes you on circular tour of all the pages on the site in a logical order. At least, it's supposed to. With no rhyme or reason, it seems to spontaneously work on some machines and not on others with no obvious pattern. I am pulling my hair out over this! Please email me at the address below and tell me if you were able to make this function work or not, and include some details about your machine (eg, Operating System), that will help me build a better picture of the possible problem.

Happy surfing!

Our continued thanks go to Luke Cartey for his help in the upkeep of this site. Any comments are welcomed: webmaster@exminstersignalbox.org.uk.

FRAME INTERLOCKING

The locking chart I printed in the last issue stirred a lot of interest. I realise that the chart I produced was nowhere near the standard GWR format for locking charts, but I felt it was an adequate portrayal of the interlocking.

Mr Bob Davies of the Exeter West Group is currently looking into the interlocking for us, and Mr Andrew Dickinson, who has an article published elsewhere in this publication, has provided a lot of technical information about the installation.

As so much work is currently going on with interlocking, I don't want to print lots of half-finished information now when I can print much better quality charts later. So the taste of interlocking given in Issue 3 is all you're getting for now!



Andrew Dickinson looks at the technical side of the Signal Box...

PART 2 – TIME RELEASE UNITS

By Andrew Dickinson

The time release units that would have been installed in Exminster are very well illustrated in Adrian Vaughan's 'Signalman's Reflections' on page 156 (both plates). These units are the device with the round glass cover. They were used by the GW S&T in the 1940s and may have been used from as early as the 1930s (Challow - 1931) up to the last days of the GWR. Certainly, they were installed at Banbury South and Banbury Junction (1944) and these units were in use up to 1978 when new colour light signals or removal of existing signals forced their demise.

The description of the operation of these units described in Newsletter Issue 3, relating to 'Signalman's Twilight' is quite correct in that signalmen operated them manually when required. They were not automatically activated, unlike later time release units installed from the early days of BR(VWR) onwards. The text in the top paragraph of 'Signalman's Reflections', page 157, also gives a description of the operation of the timer unit and the principal of approach locking itself.

These timer units were (unusually for equipment used on a British Railway) manufactured by an American company.

The signalman activated the timer by turning the knob on the front of the unit anti-clockwise. This action started a spindle rotating inside the unit. The unit was entirely clockwork and the only electrical connections to the unit were to the switch contacts it actually controlled. The clockwork part of the instrument controlled the rotation of the spindle, and the position of the spindle controlled the making and breaking of the contacts. The unit made a ticking noise when it was timing out. When the unit had reached the end of the time delay period, the spindle speeded up, and then closed the contacts at the end of the timing cycle. The purpose of the speeding up was to enable the contacts to close quickly and hence make a clean 'make'. If the spindle had operated the contacts when it was running at its slower timing out speed, then there would have been

a slow 'make' of the contacts with possible sparking due to the electrical load of the lock coil and hence possible damage to the contacts.

The knob has held in its 'Normal' position by the pressure of a separate spring. To activate the unit, the signaller turned this knob to overcome the spring pressure and then the unit started to time out. The timer spring was wound up (ready for the next time it was required) when the signaller reset it after it had timed out by turning the knob clockwise until it 'latched' under the spring pressure described above.

This 'latching' action was also important in that it closed the contacts at the end of the timing cycle. The closure of these contacts proved that the unit was set at the start of the timing cycle and that, when operated, the unit would provide the time delay as designed.

This is one of the safety features that signalling engineers incorporated into equipment and circuit design. If the unit had developed a mechanical fault and only a small amount of the designed time delay was available, this would be a dangerous situation in that the safety of the approach locking would only be provided for a short time or, worse, would not be provided at all.

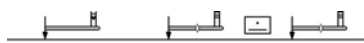
These circuits were wired into the Normal lock circuit of the lever(s) working the approach locked signals. So that Exminster, if the signaller had used the time release for signals 65/79 after changing his mind about running a goods train along the Down Main (having cleared and replaced signal 79, allowing the two minutes timeout, then fully replacing 79 and reversing 61), then he could not clear 65 until he reset the timer. Also, by incorporating these timer contacts in the Normal lock circuitry the integrity of the timer was proved every time the signaller pulled the signal.

The contacts in this application are called 'back' contacts and this description applies to any relay contact that is closed when a relay is de-energised. Any contact that is closed when a relay is energised is called a 'front' contact. The opposite end of any contact is the pivot or 'arm'. All these contacts were wired to the terminals on the relay itself, and are identified on wiring diagrams as '1B', '2F', '2A', and so on. Relay coil terminals are identified as 'R1', 'R2'.

The equipment letter used for any time release unit is 'J' and for any relay (regardless of its application) is 'R'. So a timer unit is identified in the diagrams as 'JR'. At Exminster, therefore, the units would be identified as 46/47JR, 65/79JR and so on.

Later (from BR(WR) days onwards), timer units were relays that were installed in the relay cupboard downstairs. They were fully automatic in operation and were electrically activated when the signaller placed the lever of the approach locked signal in the 'B' position.

Thank you to Andrew Dickinson for this wonderful technical information. We look forward to Part 3 in Issue 5 for "Approach Locking".

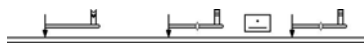


SIGNALLING NOTICES

Romsey Signalling Marathon

The Friends of Romsey Signal Box, who have preserved 23-lever signal Romsey Signal Box, held a 48-Hour Signalling Marathon, from 8pm on 12th September until 8pm on 14th September 2003.

Many thanks to all the volunteers who supported this event, either as a signaller, a booking boy, a simulator operator, or an interpreter (to the public). Events like this go a long way towards publicising the existence of organisations such as ours, it's nice to see the Romsey SB Project doing so well, and that gives me confidence for this Project. Well done to everyone!



AND FINALLY...

Last issue's quiz question was...

From the locking information given in Issue 3, what is the longest mechanical lock, ie, which are the two levers furthest apart which are dependent on each other?

The two furthest levers I can see are 3 and 69: A distance of 66 levers at 4-inch centres is 7 yards 1 foot.

Readers may be interested to know that David & Marion Canning have published a range of railway books, photographs, calendars and CD-ROMS. One of their 2004 calendars features a photograph of a certain west-country signal box. If anyone would like more information please contact David & Marion at dandmcanning@talk21.com, or visit their website www.davidandmarionphotography.co.uk.

I hope you all keep safe and well, you'll hear from me again in December!

Thanks for reading, and thanks for your continued support.

Danny S.



	<p style="text-align: center;">W A N T E D</p> <p>Are you a professional railway engineer? Do you know a professional engineer? If so please get in touch! A method statement is a vital document that the Project must produce in order to proceed with building works. Unless a volunteer engineer can be found in the group, this will be very expensive to have constructed. If you can help, please email danny@exminstersignalbox.org.uk or telephone 07950 633 597.</p>
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GWR

EXMINSTER SIGNAL BOX

Preservation Project