

## **BLEA MOOR ALTERATIONS TO A) ENABLE PROTOTYPICAL SIGNAL AND JUNCTION OPERATIONS, AND B) SUPPORT DUAL LOOP OCCUPATIONS**

Blea Moor provides long up and down passing loops with watering facilities on the S&C route between stations at Ribbleshead and Dent. Blea Moor appears in Railsim's representation of the S&C for Trainz in both the "Carlisle Skipton" and "Yorkshire Dales" routes. As released in TC3 and TS2009, Blea Moor had the safety junctions at each end of the up and down loops switched by default toward the main lines rather than the dead ends. This non-prototypical arrangement of the junctions was forced in order to provide more prototypical performance of the loop entry and exit signals.

The subject of this document is to describe a means by which both junctions and signals may operate prototypically, with the added bonus of support for occupation of each loop by 2 slower trains to allow a faster train to pass. These alterations have been made to the S&C route updates included in the January 2010 Service Pack release by Auran.

Open the TS2010 updated version of "SnC Carlisle Skipton" or "SnC Yorkshire Dales" in Surveyor and go to Blea Moor (search on any object beginning with BM). You will note the following changes:

### **1. All 4 safety junctions switched towards the dead-ends**

The switches of the following junctions have been toggled to the indicated directions: BM9a R, BM11a L, BM20 L and BM22 R. These are prototypical default settings for such junctions to protect the main lines from accidental encroachment by vehicles from the loops.

### **2. Mid-way ground shunt signal added to up loop**

A ground shunt signal BM18 has been added a little ahead of the signal box on the up loop. This signal allows a second slow train to enter the loop when there is already one occupying the exit half beyond the signal box, and mirrors BM14 already provided on the down loop.

### **3. An entry invisible signal added to up and down loops**

An invisible signal has been added in front of mid-way loop home signal BM14 on the down and the mid-way ground shunt signal BM18 on the up (see Item 2 above). The positioning of this signal just in front of another must appear odd and will be explained shortly. An entry invisible signal is added to ensure the correct operation of the loop-entry arms of the bracketed signals BM2 and BM29. 'Correct' operation means that the loop arm will clear well in advance of the first approaching slow train that is to take the loop and, if a second slow train approaches while the first occupies the exit half of the loop, then the loop arm will clear for the second train once it has almost been slowed. Without the entry invisible signal, the first slow train is almost brought to a stop, while the second may be stopped indefinitely. The reason the entry invisible signal is located only 20m in front of mid-loop signals is that, when the first slow train to occupy a loop is long and extends back near the mid-loop signal, the

second slow train to occupy a loop is held at the entry invisible signal until the exit half of the loop is vacated by the first slow train. Consequently, in order to make it appear that the train is held by the visible mid-loop signals, the invisible 'entry' signals must be located close to them.

#### **4. Trigger at Dent Head added on down main near signal box**

The addition of this trigger is to enable the controlled release of slow trains from the Blea Moor down loop by use of the "Wait For Trigger" <kuid2:57344:80001:3> command. A slow train in the loop waits for the passing fast train to reach the trigger at Dent Head before attempting to leave the loop. In the up direction, a trigger for this purpose -RIT2 - already exists at the entry to Ribblehead. The naming of the down trigger at Dent Head provides a quandary: the name "DHT1" is already taken by a trigger at Durran Hill, so "DHdT1" has been used.

**A hand drawing of the revised track and signal plan for Blea Moor is provided as an appendix to this document.**

#### **TESTING THE REVISED ARRANGEMENTS AT BLEA MOOR**

Testing was conducted by assembling 3 trains at Dent Head on the up main line and a similar 3 at Ribblehead on the down main line. The first 2 trains in each line up are slow trains to be stored in the respective loop at Blea Moor. The last train in each line is an express passenger to pass the first 2 by using the respective main line at Blea Moor. A session called **Blea Moor passing loops demo for Carlisle Skipton** has been released as a companion to this document.

The AI Command sequences for the trains in the down direction are:

**Slow train 1** : Drive To TM **BMdl**, Wait For Trigger **DHdT1** by down express, Drive To TM GAdm.

**Slow train 2** : Wait For 2 minutes, Drive To TM **BMdl**, Drive To TM DEdm.

**Express passenger** : Wait For 5 minutes, Drive Via TM **BMdm**, Drive To TM AGdm.

The AI Command sequences for the trains in the up direction are:

**Slow train 1** : Drive To TM **BMul**, Wait For Trigger **RIT2** by up express, Drive To TM HOum.

**Slow train 2** : Wait For 2 minutes, Drive To TM **BMul**, Drive To TM RIum.

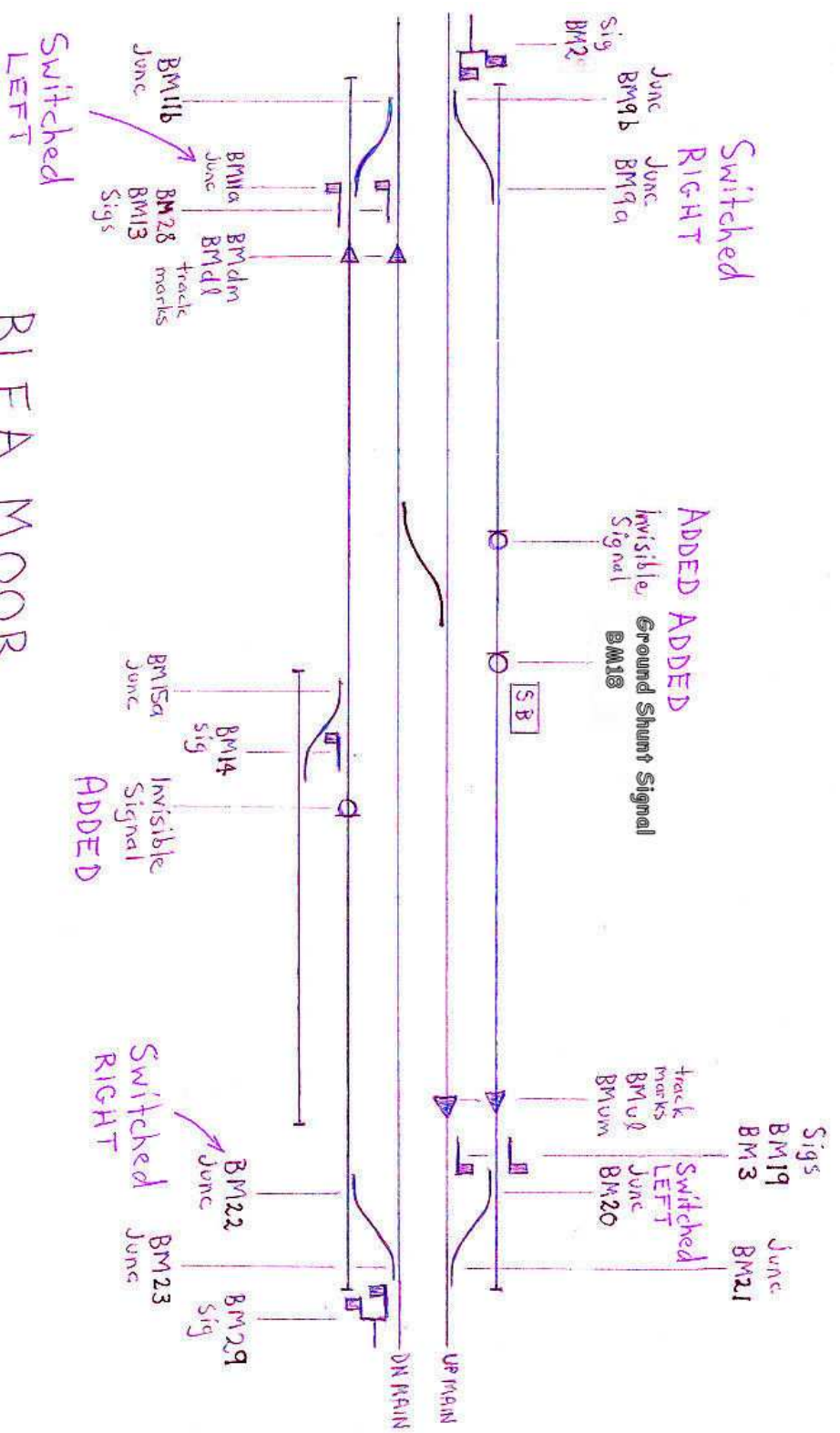
**Express passenger** : Wait For 5 minutes, Drive Via TM **BMum**, Drive To TM HBum.

NOTE: 'Navigate to' driver commands have not been used above because it can cause unwanted behaviour in this context.

Things to look out for when running the test session:

- **Slow train 1** should receive a clear signal from the loop entry arm when 300 to 400 feet from the signal. Train speed should not fall below 20mph at the point when the signal arm changes to 'clear'. Subsequent slowing is due to anticipation of a 15mph limit onto the loop.
- **Slow train 2** should not be temporarily stopped by the loop entry arm. The signal clears when the train is close. The train progresses onto the loop to a point halfway along then stops.
- When the **Express passenger** triggers the loop release of **Slow train 1**, this train vacates the exit half of the loop and the mid-way loop signal (invisible on the up) shall clear to allow the **Slow train 2** to move up to the loop exit signal.
- When **Slow train 1** clears the next section, the loop exit signal will clear to allow **Slow train 2** to proceed on its way out of the loop.

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# BLEA MOOR Revised Track & Signal Plan for TS2009 & TS2010

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