

SSI Signalling Principles Group

SSISPG DIS-101 Non-Panel Interfaces

1. DOCUMENT STATUS

This is a document was approved at the SSI SPG meeting on 7 November 2001 (subject to minor amendments now incorporated).

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3. INTRODUCTION

3.1 Purpose of this Document

During testing for Dartford, it became evident that there could be useful additions to SSI 8003-53, Interfacing to IECC/ARS. There are also other ARS problems that could be solved by changes to this document. Although this document was originally provoked by problems encountered at Dartford, these are generally not the solutions used there.

3.1.1 Single button controlled signal (as raised by AEAT)

In SSI8003-62 Section 5, it states that 'certain controlled signals which do not perform interlocking functions and certain auto signals have clearance controlled by one button.' The data for these signals has no route, just the bpull bit is used to register operation of the entrance button and signal stick is used to give one train function. These routes will not work with ARS, which needs a route to register that it has set successfully. A section is needed in 8003-53 to say that such signals should be provided with a route, preferably with TORR, and that it should be set and unset in PRR data with the bpull bit.

3.1.2 Single button auto signal (as raised by Bombardier)

An additional latch is required, set when the button is pushed, and unset when pulled, to allow the button light indication to work on an SDS.

3.1.3 Mexican stand off.

ARS has the potential to put trains into opposite ends of a bi-directional line section simultaneously owing to a failure to look far enough ahead. One train subsequently has to reverse. This can be cured by requiring all opposing routes (and destination sub routes) within and onto the bi-directional line normal in the ARS request (with the tests for ARS sub areas) for the route onto the single line rather than just those required for safety in

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the non ARS request. It should be possible to put this data into the ARS data without putting it in the SSI, but experience shows it more likely to get into ARS if it is already in SSI. Since ARS data usually copies the SSI data it will then stop trying.

3.1.4 Slot request

Where an ARS route requires a slot, such as that needed to get ECS into a stabling siding, then ARS needs to be able to request the slot.

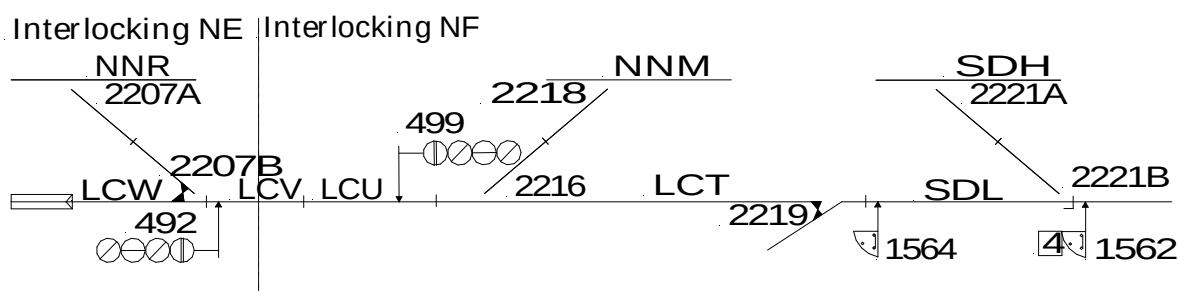
One way to achieve this is to provide a slot request Latch. This latch unset is or-ed with the slot given conditions in the route availability part of the route setting panel request [*Perhaps only for ARS but I can't actually see why it shouldn't be used for signaller requests too*] (if the slot is only in the aspect rather than the route, then this bit can be omitted). When an attempt is made to set the route without the slot being given first, but all the other route availability conditions pass, then instead of setting the route, this latch is set. [although the logic should be the inverse - if the slot is given then the route is set, else the latch is set] This renders the route unavailable to ARS until the slot is given so it will stop trying until then. The latch set is used to (either or both) set a TFM output requesting the slot, and / or step the TD description to the fringe next train coming berth, (which can then give alternative slots if it wants to, so changing the available depot entry and encouraging ARS to select a different route). Giving the slot unsets the latch as does pulling the button [with some selection. such as no route set, if multiple signals use the same slot].

3.1.5 Preceding Shunt Signal

The particular problem addressed by this document is a preceding shunt. The ARS doesn't try to set the forward (preceding) route until it has a route up to it, or a train at or approaching it. It doesn't try to set the rear route because that route has forward route set in its availability (in both ARS and SSI). This results in no route and an overdue train.

It would be simpler if the preceding were to be done just in the aspect level rather than in the route setting. Even if the rear route just has forward signal off in aspect data without putting its route set in the route locking, then the ARS would be unhappy (about a signal not clearing), unless it is overcome by fooling it into believing that it is waiting an approach release type condition. In this simpler case, when the ARS required the rear route, it would test the availability for both routes (which it is more likely to do if the rear route availability test is as shown below for the complex case (QAR1562A), although the change could be confined to the ARS), before processing an only slightly modified version of the rear route commands to which is added at the end, a panel request command setting the request for the non ARS forward route (=QR1564).

4. ARS LONG ROUTE SETTING



Route 1562A requires a route set first from Signal 1564 toward 492 (which is just across the NF>NE Interlocking boundary). The normal ARS data doesn't cope with this, as it won't try to set the forward route until there is a route up to it, which would fail to set because it needs a forward route, and it appears to the ARS to be unavailable. I believe that what is needed is what we would call elsewhere a 'long route'.

ARS data is out of scope but as it generally follows SSI data, it is proposed that it has a single set of data for the rear route which includes the availability data for both routes, including a copy (more or less) of the ACD part of OPT data and the PRR data (which calls on a copy of PFM data). Then the SSI can have a panel request for the combined route in PRR data, used only by the ARS, that tests ARS availability latches, and all