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Module

Chapter C: Data Files and Related Documentation

For endorsement, authorisation and issue record of this document, please refer to the SSI Applications Manual Contents, NR/L2/SIG/17002.

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User information

This Network Rail standard may contain requirements that are colour-coded according to the following Red–Amber–Green classification.

Red – Mandatory requirements

- **Requirements** that **will** be complied with, and achieved under all circumstances.
- Accountability for the efficacy of these requirements lies with the Professional Head/Standard Owner.
- These requirements are monitored for compliance.
- Local non-compliances, discovered through engineering verification visits, will be reported and monitored through the quarterly Engineering Verification Report.
- Corrective actions will be enforced where local non-compliances remain open beyond the agreed mitigation plan dates.
- These are presented in a red box **and with the word “shall” or a direct instruction.**

Amber – Conditional requirements

- **Requirements** that **will** be complied with unless deviation has been approved.
- Accountability for the efficacy of these requirements lies with the Professional Head/ Standard Owner, or their nominated Delegated Authority.
- These requirements are monitored for compliance.
- Derogations **may** be permitted; which are to be approved by Standard Owner in advance.
- Derogations and Temporary Non-Compliances **may** be granted through the existing Delegated Authority arrangements.
- These are presented with an amber sidebar **and with the word “shall” or a direct instruction.**

Green – Guidance

- Guidance based on good practice; representing supporting information, based on good practice, to help achieve **RED** and **AMBER** requirements.
- This guidance is **not mandatory** and is not monitored for compliance.
- Alternative solutions may be used, which do not need to be formally approved.
- Decisions made by a competent person to use alternative solutions should be backed up by appropriate evidence/documentation.
- This is presented with a dotted green sidebar **and with the word “should” (usually in notes).**

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Issue record

Issue	Date	Comments
3	Feb 2002	3 rd Issue
4	03/03/2012	4 th Issue

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 03/03/2012.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

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1 Panel Signal Display Data (PSD File)

This file shall contain a set of data for every signal identity listed in the SIG file, though it need not necessarily be listed in the same order. To check rapid processing of the data, the only data option permitted in this file is the "Signal Display Special", and if a signal has no Panel display or a non-standard one for which the "Signal Display Special" is not wanted, a null set of data comprising of a single end marker "." should be provided. Non standard signal indications, such as those associated with the replacement of automatic signals, with fixed aspects and with distant signals should be controlled instead from data in the POD file (see Section 4).

The "Signal Display Special" is used for all standard indications of lamp and aspect proving for main aspect signals and position light shunting signals, and is made up of a "Panel Drive for Signal" special followed by two or three "Panel Indicator Commands", "End of Special" and "End Marker". There are three forms of this special:

```
!S51   I51DG s , I51RG sf   $ .

!S52   I52DG s , I52RG sf , I52(OFF)G s   $ .

!S114 gs   I114(OFF)G s , I114RG sf   $ .

. / null data for S52R
```

The first form is used for main signals with no associated position light. The first panel indicator command refers to the green indication which is lit when the signal memory indicates that the signal is lamp proved and the aspect code is yellow or less restrictive. The second panel indicator command refers to the red indication which is lit when the signal memory indicates that the signal is lamp proved with an aspect more restrictive than yellow (red or shunt). This red indication, when lit, is flashed if both the "button pulled" bit is set and the "free of approach locking" bit clear in signal memory, i.e. if timing out of approach locking release is taking place, otherwise it remains steady.

The second form of the special is used for main signals which have an associated position light. The first two panel commands have the same meaning as above. The lamp corresponding to the third panel command is lit if the aspect code in signal memory is "shunt".

If the associated position light is present but is not indicated on the Panel (typically where this aspect is only controlled by a ground frame) then the second form of data is adapted such that the third panel command controls dummy indication PSDDUMMY, e.g.:

```
!S52   I52DG s , I52RG sf , IPSDDUMMY s   $ .
```

Where a fixed red main signal and associated position light is required the second form of data is adapted such that the first panel indicator command controls dummy indication PSDDUMMY, e.g.:

```
!S52   IPSDDUMMY s , I52RG sf , I52(OFF)G s   $ .
```

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The dummy indication IPSDDUMMY is to be used in all instances of the two applications shown above, and it is not to be used for any other applications. It is located at the end of the IND file, utilising an otherwise spare Panel Multiplex output.

The third form of the special is used for position light shunting signals. Note the "gs" qualifier added to the "Panel Drive for Signal" data type. In this case the first panel indicator command refers to the white indication for the signal and is lit when the aspect code in the signal memory is less restrictive than red. The indication is not dependent on lamp proving, as this is not normally checked for the "off" aspect of position light shunting signals. The second panel indicator command refers to the red indication for the signal and is lit when the signal memory indicates that the signal is lamp proved and red. The red indication is flashed in the same way as for a main signal. Many position light shunting signals do not have lamp proving of the red aspect, but the same data structure applies, as the "lamp proving" bit in signal memory will have been permanently set by the Interlocking data in this case.

2 Panel Points Display Data (PPD File)

This file shall contain a set of data for each points identity listed in the PTS file. As with the signal data, the data may be listed in any order, but the "Points Display Special" is the only permitted option, and null data shall be provided for points with non-standard or no indications.

The "Points Display Special" is used for all normal indications of points normal, reverse and out of correspondence.

!P211 I211N s , I211R s , I211(OC) sf \$.

The "Panel Drive for Points" special is followed by three "Panel Commands", which relate to the normal, reverse and out of correspondence indications, an "End of Special" and an "End Marker". The normal or reverse lamp is lit if the points memory indicates that the appropriate detection bit in points memory is set, and either the corresponding control bit is set or neither control bit is set (to cover the Mode 1 or 2 initialisation case). If the conditions for neither of these are satisfied, the out-of-correspondence indication is lit and flashed.

3 Panel Track Display Data (PTD File)

The display of white route lights and red track circuit lights on the Panel is the most complex of the tasks that the Panel Processor has to perform. The source file contains a set of data for each track circuit identity listed in the TCS file. As with the signals and points the data may be listed in any order, but only the "Track Display Special" is permitted and null data shall be provided for track circuits with non-standard or no indications.

Before explaining the contents of the "Track Display Special" data structure, it is important to identify the rules for illumination of the white and red track indications on the Panel.

Where a track circuit includes pointwork it is split for display purposes into a number of "segments". For a track circuit with one point end only these would correspond to the section of track common to both routes over the points, and the two sections of

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track over the points normal and reverse after these have diverged. Track circuits containing more than one set of points will have several segments. Figures C1 & C2 show examples of track circuits on a Panel, with the names allocated to each lamp. Red lamps have names ending in "T", white lamps have names ending in "U".

The rules for the track indications are:

- (i) If the track circuit is occupied and no sub-routes are locked, the red lamps for all segments are to be lit.
- (ii) If the track circuit is occupied and any sub-route over it is locked, the red lamps for only those segments over which the sub-route is locked should be lit.
- (iii) If the track circuit is clear and a sub-route or sub-overlap is locked, the white lamps for those segments over which the sub-route or sub-overlap is locked should be lit except the nearest white lamps to the points in the normal or reverse segments.
- (iv) The white lamp nearest to the points in the normal or reverse segments should be lit if the points are controlled and detected in that direction and the conditions (iii) for illumination of the other white lamps in the segment have been satisfied.

Each track circuit display special is made up of several parts in the following order:

- (a) A "Panel Drive for Track Circuit" special data type specifying the track circuit to which the data relates.
- (b) A "Full sub-route list", made up of a list of all the sub-routes over any part of the track circuit followed by a terminator "\". The sub-routes are each specified in the form of a test for the sub-route in the "free" state. This area of data is used to distinguish between conditions (i) and (ii) described above. Note that sub-overlaps are deliberately omitted from this list to check that the whole track circuit is "flooded" with red indications if an over-run into an overlap occurs.
- (c) One set of "Segment Data" for each of the track circuit segments which are separately identified on the Panel. Each set of segment data is made up of three parts, each of which ends in a terminator "\".
- (ci) A "Segment sub-route/sub-overlap list", similar to the "Full sub-route list" but specifying only those sub-routes which pass over the segment in question, plus any sub-overlaps which require to be indicated with white lamps. If this list is blank except for the terminator, it is assumed that all the sub-routes specified in the "Full sub-route list" pass over this segment; e.g. a track circuit on plain track, or the common segment leading up to a set of points.
- (cii) "Red lamp data" made up of a list of panel commands to illuminate all the red lamps in the segment. The commands are executed if the track circuit is occupied and either all of the sub-routes in the "Full sub-route list" are free (no route set over any part of track circuit), or one of the sub-routes or sub-overlaps in the "Segment sub-route/sub-overlap list" is locked (route or overlap set over this segment). Otherwise the indications specified in the commands are extinguished. Normally the list will include one command only;