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Issue:	7
Date:	05/09/2015
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Module

Chapter B: Route Indicator Mixture, Reading Through, and Flashing Aspects

Endorsement and Authorisation

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 contains colour-coding according to the following Red–Amber–Green classification.

Red requirements – No variations, could stop the railway

- **Red requirements shall** always be complied with and achieved.
- Red requirements shall be presented in a red box **with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of red requirements lies with the Professional Head/Standard Owner.
- Red requirements are monitored for compliance.
- Corrective actions shall be enforced if deviations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

Amber requirements – Controlled variations, approved risk analysis and mitigation

- **Amber requirements shall** be complied with unless variation has been approved in advance.
- Amber requirements shall be presented with an amber sidebar **and with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of these requirements lies with the Professional Head/Standard Owner, or their nominated Delegated Authority.
- Amber requirements are monitored for compliance.
- Variations **may** be permitted. Variations are approved by the Standard Owner or through existing Delegated Authority arrangements.
- Corrective actions shall be enforced if **non-approved** variations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

Green – Guidance

Guidance is based on good practice. Guidance represents supporting information to help achieve **Red** and **Amber** requirements.

Guidance shall be presented with a dotted green sidebar **and with the word “should” (usually in notes) or as a direct instruction**.

Guidance is **not mandatory** and is not monitored for compliance.

Alternative solutions may be used. Alternative solutions do not need to be formally approved.

Decisions made by a competent person to use alternative solutions should be backed up by appropriate evidence or documentation.

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Issue record

Issue	Date	Comments
6	04/12/2010	6 th Issue
7	06/12/2015	Clause 4.2 has been amended to detail additional identities and the data required in the IPT file for a flashing double yellow. Clause 4.6 has been amended to correct several cross-referencing errors.

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 06/12/2015.

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.

Reference documentation

[GK/RT0031](#) - "Lineside Signals and Indicators", Issue 4, February 2002.

[GK/RT0060](#) - "Interlocking Principles", Issue 4, June 2003

[GK/RT0032](#) - "Provision of Lineside Signals", Issue 2, February 2002

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1 Introduction

[SSI8003-69](#) deals with some of the more complex junction signalling arrangements, including flashing aspects and splitting distant signals. It is based on [GK/RT0031](#). These subjects are dealt with under the following main sections headings:

Chapter B – Route Indicator Mixture, Reading Through, and Flashing Aspects

2. Mixture of Route and Junction Indicator Types with Sequential Lighting
3. Reading through
4. Flashing aspects
5. Referenced Standards

Chapter C – Splitting Distant Signals

1. Introduction
2. Principles
3. Data - General
4. Data - Simpler Case - Left-hand Junction
5. Data - Simpler Case - Right-hand Junction
6. Outer Splitting Distant Signal
7. Where Junction Signal Main Aspect is Visible Before its Indication of Route
8. Interlocking Boundary in Rear of Junction Signal
9. Referenced Standards

2 Mixture of Route and Junction Indicator Types with Sequential Lighting

In some cases, a signal has to have lamp proved route indicators as well as junction indicators. The case where these are only used one at a time is covered in [SSI8003-10E](#) Sections 1.1 and 1.2.2. This section shows cases where it is necessary to display both together, with one being proved alight before the other is lit, as per Standard Signalling Principle 6 Section 5.6.2.

There may be a mixture of routes, some requiring just the junction indicator lit, others requiring both types of route indicator lit sequentially. For the former, standard data is used for lighting the junction indicator and proving it alight.

For the latter the RJL data for the route in the OPT file is used to light the route indicator. When this is lit special data in the IPT file is used to light the junction indicator. When this is lit standard IPT file data is used to set the “route indicator proving” bit in signal memory. Thus this bit set proves all the required route or junction indicators lit for every route that requires one or two indicators lit.

Assume that Signal Module 18 has the route indicator proving on input 6 and Signal Module 19 controls the junction indicator then the special IPT file data is typically:

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```

/ Address 18 - Signal Module
*I18
  if G s 6 ( R109D(M) s or R109D(C) s or R109E(M) s or R109E(C) s )
  then G19 s 30 / light junction indicator
  \
. / end of tgm 18

```

Where additionally the route indicator is required alight on its own for one or more routes then the lamp proving for this indicator will need to be temporarily stored in a latch when these routes are set, with the latch then being used to update the route indicator proving bit as shown in [SSI8003-10E](#) Section 1.2.2.

3 Reading Through

[GK/RT0060](#) section C7.1.3 states that where it is possible to see signals beyond the signal that a train is approaching, it is permissible for the signal(s) beyond to be controlled to a more restrictive aspect(s) where risk arises from reading through.

Three forms of reading through are now considered. In each case the driver of a train, whilst approaching a signal, can see a signal further ahead.

In the first case there is a risk of train passing a running signal at danger because the running signal further ahead is displaying a proceed aspect.

In the second case there is a risk of a train passing through a route too quickly because the cleared signal further ahead is not the one that the route has been set up to.

In the third case the first signal is approach controlled from single yellow after the train has passed the previous signal. Whilst the first signal is held at single yellow, the signal further ahead that the route has been set up to may be displaying a single yellow or a less restrictive aspect. Thus there is a risk of a train accelerating and passing through a route too quickly.

In all cases, a special form of approach control is applied to the signal further ahead.

In the first two cases, the controls required for clearing this signal generally take the form of:

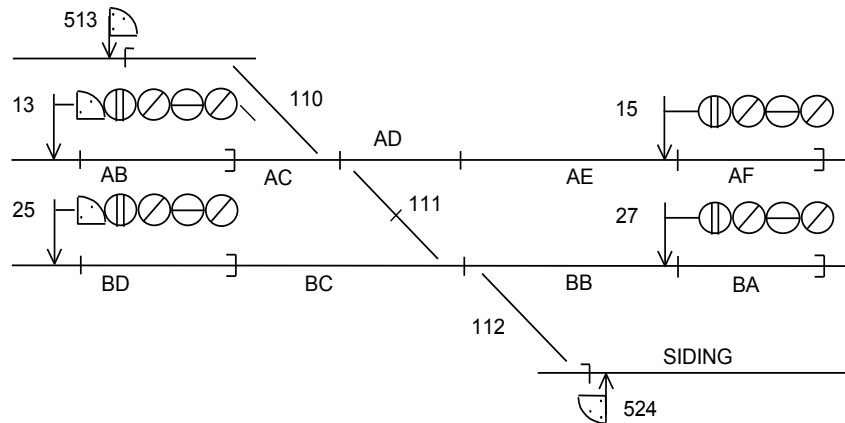
```

[ train occupying one or more track circuits in rear of this signal
OR a route up to this signal having been set ]

```

The control is applied in the aspect sequence data (or in the route/junction indicator data if present) of the signal concerned. The figure below illustrates the second case where the control has been applied to signal 15 in case a driver, taking a route from signal 513 or 13 to signal 27 or the siding wrongly assumes that a proceed aspect at signal 15 is intended for the train, and proceeds at too high a speed. Similarly, the control has also been applied to signal 27 in case a driver, taking a route from signal 513 or 13 to the siding wrongly assumes that a proceed aspect at signal 27 is intended for the train. Data examples of these controls now follow with the additional data shown in **bold**:

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/ 15 signal

```
G s 7 \
if ( TAE o or LRA-AD/AF s )
then S17 seq 4 , G s 7654
\ . / ASD
```

/ 27 signal

```
G s 7 \
if ( TBB o , P112 cn or LRA-BB s )
then S29 seq 4 , G s 7654
\ . / ASD
```

A test for route-away latch set has to be used rather than a sub-route locked (see [SSI8003-10F](#) Section 1.4 for details of these latches). In the example for signal 27, note the use of "controlled normal" rather than "controlled and detected normal". Any TORR associated data has not been shown in data examples above.

In the third case, the controls on the first signal for approach controlling it from single yellow are transferred to the signal further ahead where they are used to approach control this signal from red.

This can be applied to a situation in Section 4 of this document. The relevant figure is in Section 4.1. The data shown in Section 4.3.2 is such that the aspect of the junction signal for route 107A is held at single yellow until point "X" is reached, this being achieved directly in the data for the junction signal:

Consider a control table requirement to maintain at red the signal in advance on this diverging route until the junction signal clears to double yellow or green, in order to not present a misleading aspect sequence to the train driver. The conditions for approach release of the junction signal from yellow are transferred to the aspect sequence data for the signal in advance. The latter signal shall also be allowed to clear (other normal conditions permitting) whilst a train is in between the two signals: