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| <h1>TECHNICAL INSTRUCTION</h1>                                                    | <b>TI 148</b><br><b>Issue 1</b><br><b>25/02/2010</b><br><b>Page 1 of 2</b>    |
|  | <p>NETWORK RAIL - SIGNAL ENGINEERING</p> <h2>Issue of design for testing</h2> |
| <b>Relevant Standard:</b> NR/L2/SIG/11201, NR/GN/SIG/11701                        |                                                                               |

### **Purpose**

It is important that the tester understands exactly what has been changed within a design, especially when the design involves interlocking data.

A clear understanding of the changes is particularly important when associated with another change such as that arising from a test log or design change after the design has been issued to the testers.

### **Scope**

This TI applies to designers and testers where principles testing is required due to the change in the arrangement of an existing control.

### **Background**

During a recent project the designers altered the arrangements for an interlocking control following a test log but failed to highlight all the other functions that the control supported. The testers checked the data alteration but failed to appreciate that another function was affected leading to a wrong side failure.

### **Requirements**

Section 8 of NR/L2/SIG/11201 will be expanded at the next issue to include the following:-

#### **“Issue of Design for Testing**

Designers have a duty to ensure testers have all the necessary design information to be able to complete a successful test. This shall include information to the principles tester of all areas of the interlocking and special external controls that have been affected by the design alterations. Thus where a control is not intentionally changed but is re-arranged with the intent of achieving the same functionality these areas of change must be separately and uniquely identified. Suitable guidance on how to achieve this is included in NR/GN/SIG/11701.”

M4.3 of NR/GN/SIG/11701 will be amended to clarify the requirements as follows:-

“Where interlocking logic (incl circuits or mechanical locking) relating to a particular control is rearranged in connection with some other alteration, but the intended control remains unchanged, such affected controls should be identified to the tester. This should be achieved by the following methods:

- In the testing copy of the control tables. This should be achieved by colouring the control either in a distinctive colour (not red or green) or by underlining or boxing the control in a distinctive colour (may include red and/or green) without changing the source record. The method of denoting these affected controls should be made clear on the drawing.
- For data systems by provision of a ‘difference list’.
- By provision of a separate ‘areas of change’ document. This may include a description of the application of each amended latch or ‘special’ control.

The designer should come to an understanding with the TIC whether methods b and c will be used to support method a.

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# TECHNICAL INSTRUCTION

TI 148

Issue 1

25/02/2010

Page 2 of 2

This process should also apply if the whole interlocking is re-engineered, including a data change, (e.g. EPROMs replaced) once principles testing has started.

The designer should be careful not to jeopardise the independence of principles testers by advising on the extent of testing necessary, but may, upon request, verbally advise the tester on the extent of design change as well as provision of the above documents."

## **Compliance Requirements**

This TI is mandatory and shall be complied with by Network Rail and its contractors where applicable from 1st June 2010. Once staff have been briefed, the revised process can be used immediately.

## **Action Required**

Designers shall apply this TI wherever the design is amended after initial issue to the testers.

## **Staff to be Briefed**

Designers and Testers

## **Expiry Date**

When the Signalling Design Handbook is updated.

**End**

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