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SwP 025/17

**Billingshurst MCB-OD Level Crossing
Missing Control**

Infrastructure Projects



Background

In September 2015 a incident occurred at Billingshurst MCB-OD level crossing.

Although the crossing was commissioned in May 2014, the fault only revealed itself during operational perturbation; when two trains closely followed each other on the Down line and at the same time a third train was approaching Billingshurst station on the Up line.

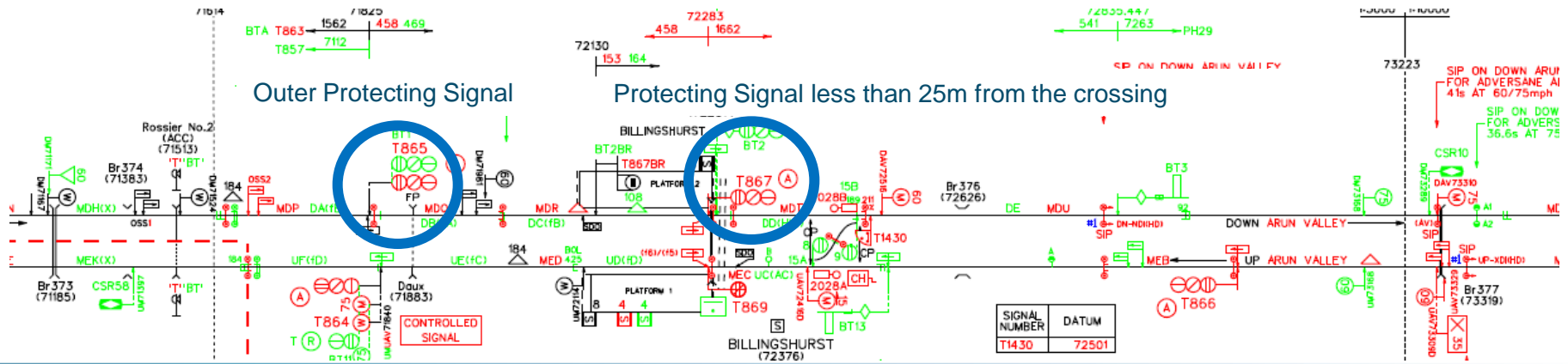


Image courtesy of David Warwick (Network Rail)

Incident

The incident involved a second Down train approaching the crossing's Outer Protecting Signal (T865), which displayed a cautionary aspect when the barrier raise sequence had been initiated after the first train. The crossing's Outer Protecting Signal (T865) was replaced to red as soon as the Crossing's down detection had been lost, but had displayed a proceed aspect for almost 8 seconds.

The investigation found that although the crossing's Outer Protecting Signal (T865) correctly proved the Crossing down & clear of any obstructions. The converse proving condition had been omitted thus the crossing's barrier raise controls did not prove the crossing's Outer Protecting Signal (T865) at red.



Causes (Cont.)

- The Level Crossing Control Tables were produced prior to establishing the Level Crossing requirements.
- The Control Table error was not identified by the detailed signalling design process. The Interlocking Data and Level Crossing circuit designers implemented Level Crossing requirement as specified on the Control Tables, thus perpetuating the error.
- The Control Table omission was not identified during the Testing process.

Key Lessons Learnt

Engineering Managers are reminded of the importance of establishing project related requirements prior to the commencement of detailed design.

Designers, Design Verifiers and Testers are reminded that whilst they should adhere to the control requirements as presented via the Control Tables they should also ensure that they have complied with the relevant Signalling Principles and project requirements.

Designers are reminded that when writing specifications, Control Tables etc. the Converse Controls (otherwise referred to as “Reciprocal Locking”) are fully considered, stated and clearly identifiable as a means of capturing the full extent of any requirement.

Further Information...

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