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Polegate Axle Counter Positioning Error

Infrastructure Projects Signaling

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Background

East Sussex Coast Resignalling commissioned 16th February 2015 including train detection via Frauscher axle counters

On both 8th and 9th April 2015 the Signaller reported PBK (711R) and RBF (711R) Axle Counters were disturbed following the legitimate passage of a train over 711 points Reverse – which is a rare movement and wasn't used during soak test!

Signaller attempted reset but the axle counter section remained in an Error state.

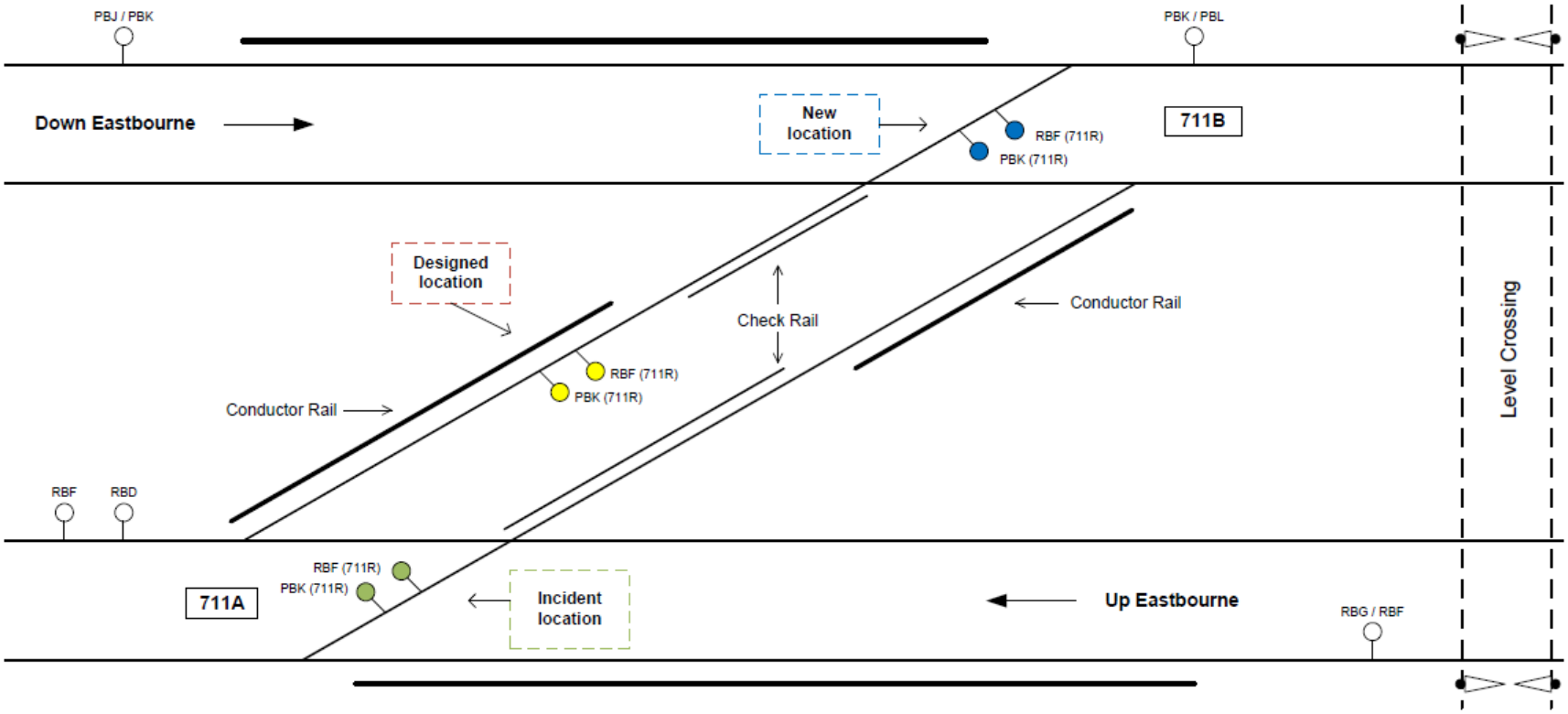
Maintenance technicians ascertained that as the train passed out of PBK section into RBF, the Advanced Evaluator Board (AEB) showed an axle count of 32 axles on PBK section (ie 4-car train counted twice) and the Input/output Extension Board (IO-EXB) displayed error code E.16 (error number = negative count).

Maintenance technicians then identified that the axle counter heads were not installed as per the design drawings and the route over the axle counter head was signed out of use.

Heads repositioned 15th May and route signed back into use.

Joint investigation instigated with Atkins and NR (DPE and T&C Engineer)

Yellow – original design
Green – original install
Blue final position.



Why were the heads commissioned on the wrong rail?

- Design was issued using the axle counter head sighting form and location drawings.
- The installation of the heads did not follow the design, as compliance with the design required installation on the rail closest to the conductor rail.
- The installed heads position was not effectively communicated to Design. Information supplied to the designer using the axle counter head sighting form was unclear as to what the actual installation was.
- Design did not clarify information supplied from site.
- The testing did not identify that the heads were on the wrong rail using the sighting form or map on the location drawing.
- The test specification in use at the time (since updated) did not include a test that identified that the heads were installed in the correct order (heads are bi-directionally configured on the crossover).

Why did this happen?

The design required an undesirable installation (heads on rail closest to 3rd rail).

The axle counter head sighting form did not include important and obvious site orientation information (station, level crossing).

The site installation did not take account of the importance of the correct orientation of the heads.

Information between design and construction was not effectively controlled or managed. The 'as built' was therefore not validated by design.

The testing did not effectively capture the issue and did not use all of the supplied documentation as an integrated design package. A number of different teams completed different parts of the testing and this was also not integrated as a complete testing solution.

Note; the incorrect installation remained unnoticed for 2 months as April 2015 was first time that the cross-over was used post commissioning. No test train was operated.

Actions / Recommendation

Competent [design] representation is required to assess site installation of axle counter heads (critical higher risk installations).

Axle counter head sighting form needs to be reviewed for completeness and relevance. Atkins are contributing to a cross industry working group on this.

Where multiple test teams complete an activity each must be aware of the completion criteria required by the design package and testing documentation.

Frauscher Testing spec to be updated to include check of direction and rail configuration. Atkins have issued a formal internal brief relating to the above. PEM T&C team to take forward for NR SWTH.

Further Information…

For any further details or information please contact:

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