



Safety recommendation no. 102

Date of the publication	22.09.2016
Number of the final report	2015022001
Safety deficit	<p>On 20th February 2015, shortly after 06:40 in Rafz, on the track near the exit towards Schaffhausen, a regional train collided with the side of an S-Bahn train. The collision can be attributed to the fact that the S-Bahn train driver incorrectly believed that he could depart when a 'Stop' signal was displayed.</p> <p>During the investigation, the cause of the accident was identified to include the following factor: the kind of cooperation in the driver's cab, which gave the impression of mutual control and thereby made it impossible to recognise the error in a timely manner. The investigation found that, among others, the following factors contributed to the accident:</p> <ul style="list-style-type: none">– The coincidental synchronisation of the signal positions which the locomotive crew involved mistakenly believed to be applicable to their own train.– Self-imposed time pressure. <p>Amongst other things, the investigation has established the following factors, which contributed to the accident: the different light intensity of the signals which facilitate a mix-up; the presence of poor light conditions, which made it more difficult to see which signals relate to which track. For the installation of signals, operational criteria such as train headways, the usable length of track, travel times, track clearance, etc. are taken into consideration. Signals should primarily satisfy the needs of human capabilities and meeting operational requirements should be secondary. The layout of the track in Rafz, with a gentle S bend, made it more difficult to see which signal aspects applied to which track. The unusual operating position of the regional train overtaking the S-Bahn train coupled with the light conditions present created a situation for the S-Bahn train that could only be interpreted correctly with an above-average level of attention. All of this increased the risk of being enticed into departing when a 'Stop' signal was displayed.</p>
Safety recommendation	<p>The FOT should audit the process used by the infrastructure operators for determining and checking signal locations for whether all signals meet the level of visibility, correlation of signal and track as well as perceptible light intensity required by the crew in all light conditions.</p>
Addressees	Bundesamt für Verkehr
Stage of the implementation	<p>Implemented: The Federal Office of Transport (FOT) confirms that, as part of its monitoring activities, 11 infrastructure managers (IMs) and 21 railway undertakings (RUs) have been audited. The IMs have shown that they are aware of the issue and that the necessary processes are in place to ensure the visibility of signals. The RUs are</p>

aware of the reporting process.

**Investigation report concerning
the safety recommendation**

Schlussbericht
