

## Railway accident investigation report

Railway operator : Nagaragawa Railway Co., Ltd.

Accident type : Train derailment

Date and time : About 19:25, April 15, 2016

Location : At around 25,608 m from the origin at Mino-Ota station, between Han-no station and Suhara station, single track, Etsumi-nan Line, Mino City, Gifu Prefecture

### SUMMARY

On April 15, 2016, the inbound 1020 train, composed of one railway vehicle, started from Hokuno station bound for Mino-Ota station, Etsumi-nan Line of Nagaragawa Railway Co., Ltd., departed from Han-no station on schedule at 19:25, by one-man operation.

While the train was running in cruising operation at about 50 km/h in Suhara tunnel between Han-no station and Suhara station, the driver of the train felt violent shock accompanied with abnormal sound, and applied an emergency brake immediately to stop the train. After the train had stopped, the driver got off the train and checked around the train, and found that all two axles in the rear bogie were derailed to left.

There were two passengers and the driver onboard the train. The driver of the train was injured in the accident.

### PROBABLE CAUSES

It is somewhat likely that, while the train was running in the curved track section in the tunnel, the accident had occurred as the left wheel of the third axle in the rear bogie climbed over the rail and derailed due to the increased derailment coefficient by the significantly decreased wheel load, which were caused by the followings.

- (1) Lateral force, usually acted on wheels in outer rail of the curved track, increased larger than as usual due to the existence of relatively large irregularity of line alignment.
- (2) The irregularity of cross level increased still more by the passage of trains because there were loosed fastening bolts of rail fastening device and fallen away rail pads in the track continuously along the track, where relatively large irregularity of cross level, to promote decrease of wheel load.
- (3) In addition, the irregularity of cross level increased still more when the rear bogie of the train had passed, because the left rail, i.e., outer rail, had been broken.

It is somewhat likely that the rail in the tunnel was broken in relation with that the reducing ratio of cross section of the rail by corrosion had been exceeded substantially the criteria to decide rail replacement, and cracks considered to be caused by corrosion of rail or continuous existence of loosed fastening bolts of the rail fastening device and fallen away rail pads along the track, could not be recognized in the track inspection implemented periodically by the company.