

~ Accident that the train derailed because the gauge widened significantly while the train was passing through the curved track ~

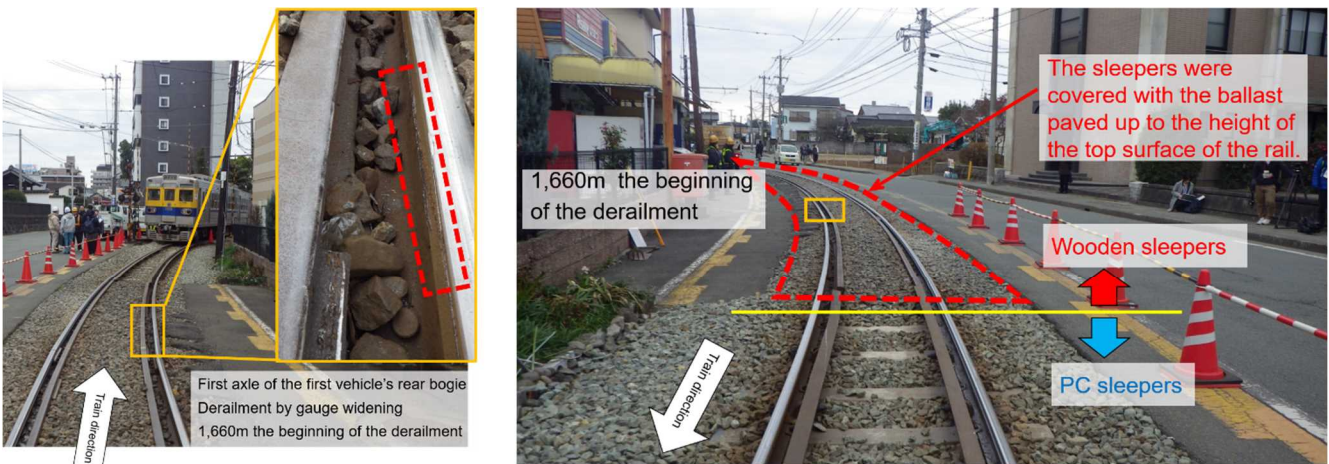
Railway operator : Kumamoto Electric Railway Co., Ltd.
 Accident type : Train derailment
 Date and time : At about 06:50, January 9, 2019
 Location : At around 1,660 m from the origin in Kita-Kumamoto station, between Kurokami-machi station and Fujisakigumae station, single track, Fujisaki Line, Kumamoto City, Kumamoto Prefecture

<SUMMARY>

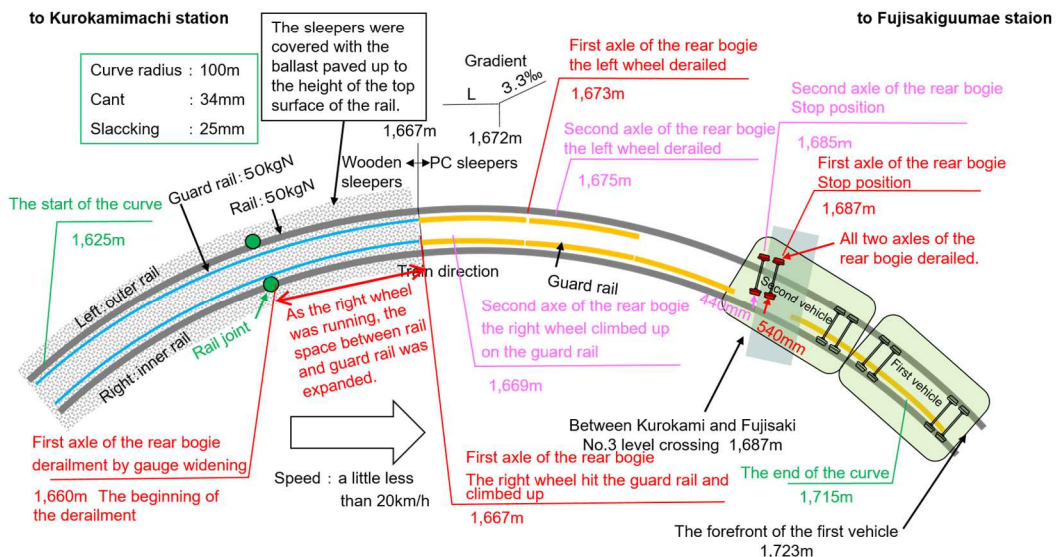
At about 06:50, January 9, 2019, while the inbound 302 train, composed of two vehicles in one man operation and started from Miyoshi station bound for Fujisakigumae station of Kumamoto Electric Railway Co., Ltd., was passing the right curved track of 100 m radius between Kurokami-Machi station and Fujisakigumae station, the velocity of the train suddenly decreased and the train stopped.

After the train stopped, the driver checked the situation and found that all two axles in the rear bogie of the rear vehicle had derailed to left.

There were about 25 passengers and the driver onboard the train, but no one was injured.



<The situation of the derailment>



<PROBABLE CAUSES>

It is probable that the concerned accident occurred as the right wheel of the 1st axle in the rear bogie of the rear vehicle fell to inside gauge because the gauge was widened significantly while the train was passing the right curved track of 100 m radius, and after running as being widening the gauge, the left wheel flange of the same axle climbed up left rail and went off to left, and the 2nd axle of the same bogie followed to went off to left.

It is probable that the gauge had widened significantly as the gauge was dynamically widened due to the rail tilting etc., caused by the lateral force by the running train, because the inferior rail fastening devices existed continuously in the concerned curved track.

It is probable that the inferior rail fastening devices existed continuously because the inspection of the sleepers and the rail fastening devices was not implemented well as the sleepers were covered by the ballast spread in the height of upper surface of the rail, and the measures preventing the recurrence of the same kind accident occurred in 2017, such as the replacement to the prestressed concrete sleepers or the additional driving spikes, had not been implemented.

In addition, it is somewhat likely that the occurrence of the concerned accident was related with that the function of the guardrail to prevent the derailment could not work well, because of the decreased margin against derailment to inside gauge due to the relatively large slack in the curved track, and the dynamically enlarged width of the flange way by the tilting, etc., of the guardrail due to the lateral force acting on backside of wheel, etc., from right wheel caused by the insufficient fastening of the guardrail to the sleepers.

<MEASURES TO PREVENT THE RECURRENCE>

- (1) Steady implementation of the track maintenance
- (2) Revision of material of the sleepers
- (3) Study on the reduction of the slack
- (4) Proper installation and maintenance of the guardrails, etc.
- (5) Measurement of the dynamic irregularity of gauge

The above measures to prevent the recurrence of the accident had been implemented partly by the concerned company as the measures taken after the train derailment accident occurred in 2017, but it is necessary to implement certainly in the steeply curved track including the concerned accident site in high priority.

In addition, it is desirable that the improvement works should be implemented earlier as possible as to remove the ballast covering the sleepers, reinforce the track, etc., because the place where the sleepers were covered by the ballast for long extension in around the concerned accident site was in the status that the track maintenance works will become difficult as it is necessary to remove the ballast when the periodic inspections are implemented.

Here, on the prevention of the train derailment accident due to the gauge widening similar as the concerned accident, refer to "Opinions on the Prevention of Train Derailment Accident Caused by Gauge Widening", Japan Transport Safety Board No.43, issued on June 29, 2018, which the Japan Transport Safety Board had issued to the Minister of Land, Infrastructure, Transport and Tourism.