

Railway accident investigation report

Railway operator: Kyushu Railway Company
Accident type: Train derailment
Date and time: About 22:00, October 14, 2012
Location: Around 396,547m from the origin in Mojiko station, in the premises of Kagoshima-Chuo station, Kagoshima Line, Kagoshima City, Kagoshima Prefecture.

SUMMARY

The inbound local 2476M train, one-man operated two vehicle train set, starting from Kagoshima-Chuou station bound for Sendai station of Kagoshima Line, Kyushu Railway Company, departed from Kagoshima-Chuou station on schedule, at 22:00, October 14, 2012. The train passed the left curve at about 25 km/h after departure. The train driver noticed the scream of the passengers when the front of the train passed the No.79-Ro turnout. As the train driver checked rear of the train he found the gangway bellows leaned to right considerably, then he applied the brake to stop the train.

The train driver checked the situation of the train and found that the rear bogie of the second vehicle was on the track different from the scheduled route and the second axle derailed to the right.

There were 157 passengers and a crew on board the train but there was no injured person.

PROBABLE CAUSES

It is somewhat likely that the first axle in the rear bogie of the second vehicle of the train climbed up the outside rail, i.e., right rail, of the left curved track and derailed to the right of the outside rail, and the second axle dragged by the first axle derailed to the right, in this accident. It is considered probable that the train stopped after the first axle in the rear bogie of the second vehicle restored to the wrong track at the turnout.

It is considered probable that the first axle in the rear bogie of the second vehicle derailed to the outside rail of the left curved track due to the following reasons.

- (1) The lateral force of the outside rail had increased because the alignment of the left curved track had exceeded the maintenance standard and the alignment was increased toward the right, i.e., outside direction.
- (2) The wheel weight of the outside wheel had decreased because the twist in the left curved track had exceeded the maintenance standard and became large in the direction to decrease wheel load of the outside wheels.

In addition, it is considered probable that the mud pumping in the ballast, the loosen spikes, partial corrosion in the sleepers and the gaps between rail and tie plates, observed around the start point of flange climbing, were related to climb up of the first axle in the rear bogie of the second vehicle. In addition, it is considered somewhat likely that the increased spring coefficient of the axle spring of the vehicle by aging was related to climb up of the first axle in the rear bogie of the second vehicle.

It is considered somewhat likely that the rear bogie of the second vehicle derailed because the lateral force acting on the outside wheel due to larger static wheel loads in the inside wheels, i.e., left wheels, of the rear bogie, while the static wheel loads in the outside wheels, i.e., right wheels, were larger than in the inside wheels of the front bogie, although the ratio of wheel load unbalance were within the managed values in the regulations of the company.