

~ Accident that the train ran onto the compacted snow and derailed while passing the level crossing located in the curved track ~

Railway operator : Hokkaido Railway Company
 Accident type : Train derailment
 Date and time : At about 05:31, December 6, 2017
 Location : In the premises of Zenibako station, Hakodate Line, Otaru City, Hokkaido

<SUMMARY>

At about 05:31, Wednesday, December 6, 2017, while the inbound Deadhead 5854M train, one man operated and started from Teine station bound for Otaru station of Hakodate Line, was running in the No.2 track, the refuge track for inbound and outbound trains, in Zenibako station, at a velocity of about 34 km/h in the cruising operation, the driver of the train noticed an abnormal sound and the indication showing an abnormal situation in the monitor display in the driving desk, then the driver applied an emergency brake and stopped the train.

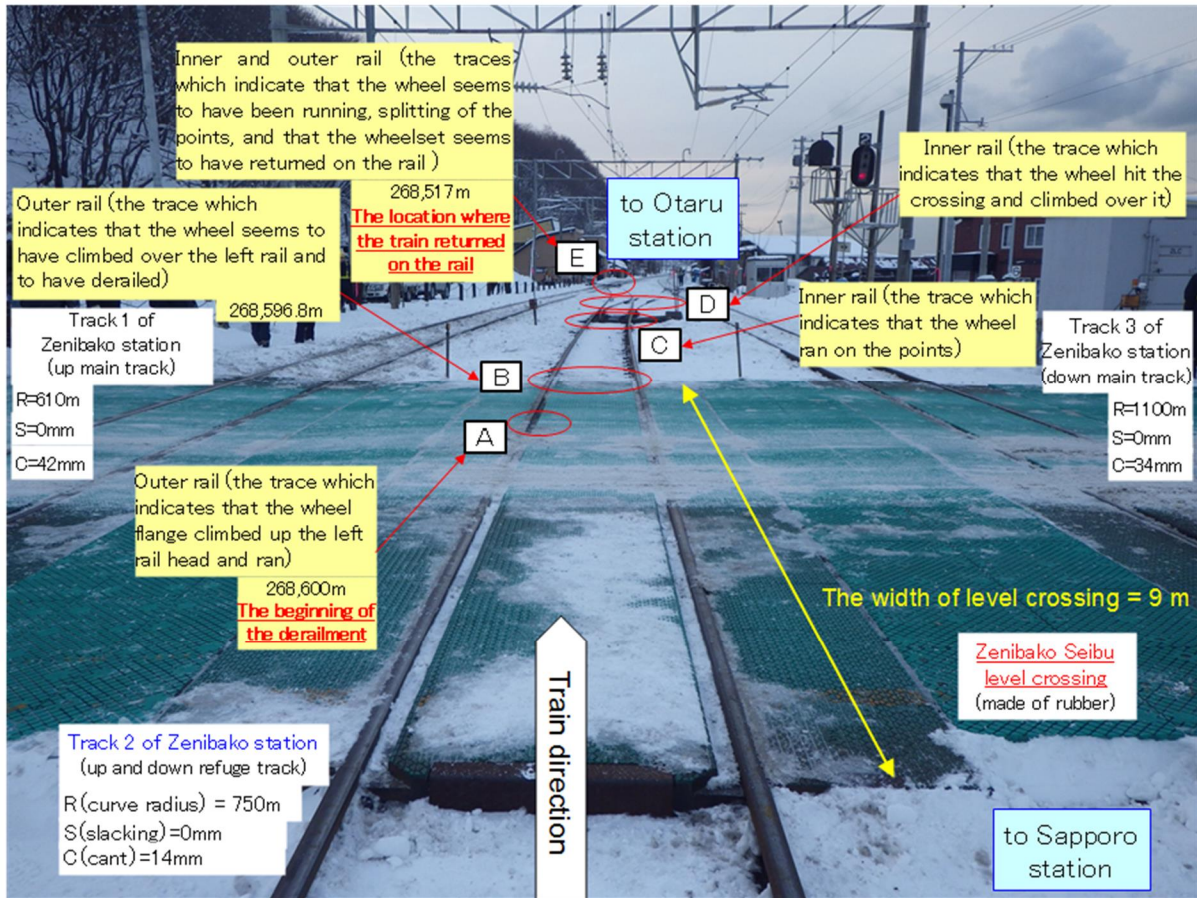
After checked the vehicles, train operation was resumed, but the indication of the abnormal situation had been displayed repeatedly. Therefore, the train operation was cancelled, and the train was deadheaded to Sapporo Operation Depot. As the traces showing that wheel derailed and continued running, was found in the wheel of the 1st axle in the front vehicle of the 1st vehicle of the train, in the results of the vehicle inspection implemented in Sapporo Operation Depot, the investigation of the track in the premises of the station was implemented. As the results of the investigation, the trace of the derailment of train was found in Zenibako West level crossing and the trace of restoring was found in the No.11 turnout which was located in about 83 m apart from the level crossing in the direction of Otaru station.

As the concerned train had been operated in the deadhead operation, only the driver was boarded, but he was not injured.

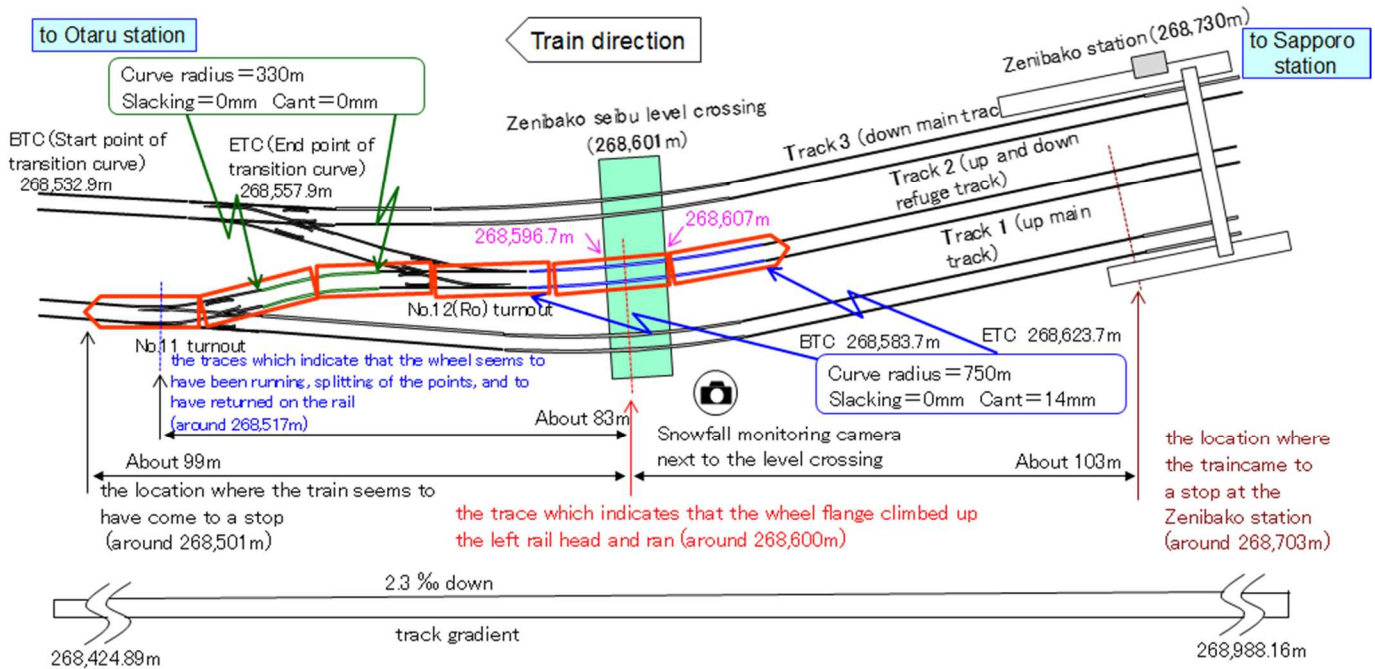


※This figure was quoted from the map (Digital Land Web) published by Geospatial Information Authority of Japan, and revised.

<The situation of the vicinity of the accident site>



<The situation of the derailment>



<PROBABLE CAUSES>

- It is probable that the accident occurred as the left wheel of the 1st axle in the front bogie of the 1st vehicle climbed up the left rail, *i.e.*, the outer rail, and derailed to left, while the train

was passing the level crossing in the premises of the station, located in the right curved track in the refuge track for inbound and outbound trains where the frequency of train operation was low.

- It is somewhat likely that the derailment was caused as the wheel flange climbed up the compacted snow which had existed on the rail and the flangeway in the level crossing.
- It is somewhat likely that the compacted snow had been formed as it snowed hard in the previous day of the accident in the situation that the temperature around 0 °C had been continued, and the snow had been trodden hard by the automobiles passing the level crossing road in the long interval between the concerned train and the train operated just before the concerned train. In addition, it is somewhat likely that the compacted snow formed on the rail and the flangeway had been remaining without removed, because the snow removal works had not been implemented before the concerned train passed.
- It is somewhat likely that the snow removal works had not been implemented related with that the accident occurred before the period to prepare the snow removal formation in winter, that the status check of the level crossing had been implemented by the simple inspection such as the visual inspection, etc., and that the interval of the train operation was not considered well in the onsite confirmation and in the judgement to implement the snow removal work.

<MEASURES TO PREVENT THE RECURRENCE>

- (1) Proper snow removal formation and designation of the place to be implemented the snow removal work responding the situation

It is desirable to increase the number of the staffs engaged in the snow removal work depending on the circumstances when the cases such as the day of heavy snow, the strong cold air mass passing at night, or the meteorological status of the same kinds that needed attention, etc., were anticipated, even in the other period of the scheduled snow removal formation in winter. In addition, it is desirable to plan further enrichment of the snow removal works for the level crossings such as the proper designation of the target places of the snow removal work, considering the environment of the level crossing, by comprehending the status of compacted snow by the onsite confirmation, the interval of train operation, the traffic mass of automobiles, etc., responding the situation of falling snow and stacked snow.

- (2) Pick up the place required attention considering the environment of the level crossing

The concerned level crossing has already been designated as the place required attention in the snow removal formation in winter, but it is desirable to pick up the places required attention for the snow removal works and study the concrete measures for the other level crossings.

Here, it is required in the above studies, to consider as to fulfill the facilities, etc., in each level crossing, toward the proper implementation of the snow removal works considering the environment of each level crossing, such as the level crossing in the track where train does not pass for a long time, the level crossing of the heavy traffic of automobiles, etc.