

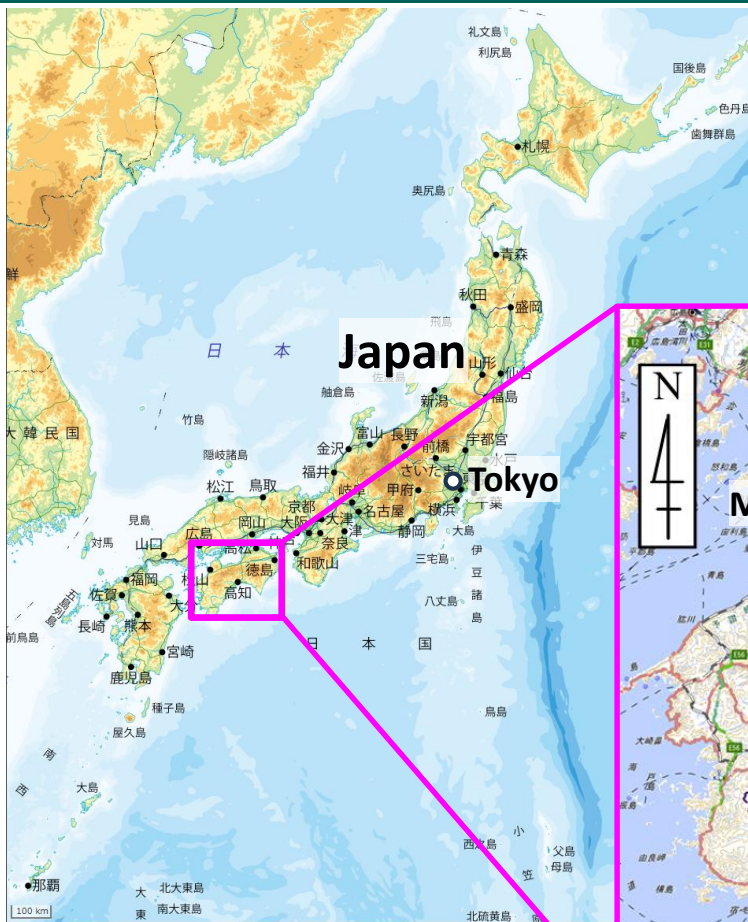
Tosa Kuroshio Railway Nakamura Line, Train derailment accident

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Railway Accident Investigator

Japan Transport Safety Board

Location of the Accident Site



(same scale)
Taiwan



Railway Operator : Tosa Kuroshio Railway Co., Ltd.

Location : Kuroshio Town , Kochi Prefecture , Japan

Ariigawa Station to Tosa-Shirahama Station (single track),
Nakamura Line (Around 24k648m from Kubokawa Station)



Accident Summary (1 / 2)

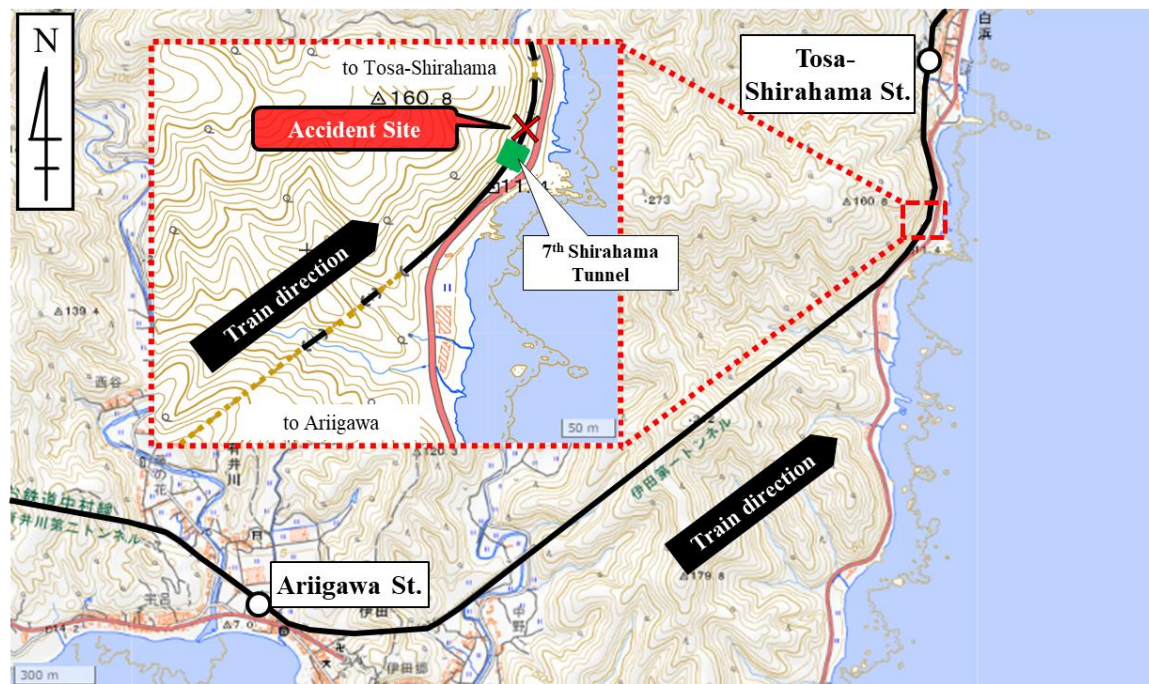
Accident Type : Train derailment

Date and Time of Occurrence : June 2, 2023 at around 08:58 a.m.

Weather : **Rain**

Summary of Railway Accident :

The 312D train, a single-car train bound for Kubokawa Station departed from Ariigawa Station on Friday, June 2, 2023, approximately 30 minutes later than the scheduled time (08:25) because of heavy rain. After entering the 7th Shirahama Tunnel, the driver of the train noticed some mud and sand on the track near the tunnel exit, so he applied the brakes while traveling at a speed of about 61km/h.



* This map was created using Geospatial Information Authority of Japan's web-based electronic national land map.

Accident Summary (2/2)

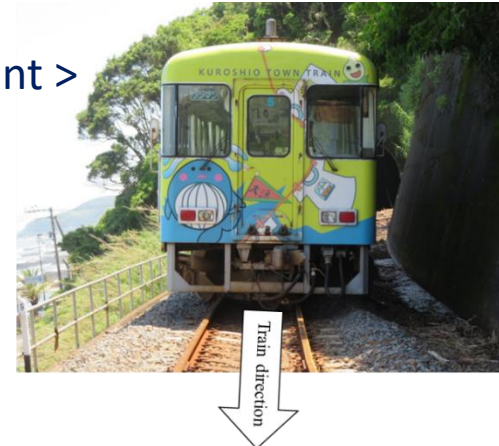
Summary of Railway Accident (continued) :

However, the train climbed onto the mud and sand at the same time as the brakes were applied. After the train ran over the sand, it continued for about 50 meters before coming to a stop. All two axles of the front bogie of the train had certainly derailed. There were no passengers on the train, and one driver and one track maintenance worker were on board, but they were not injured.

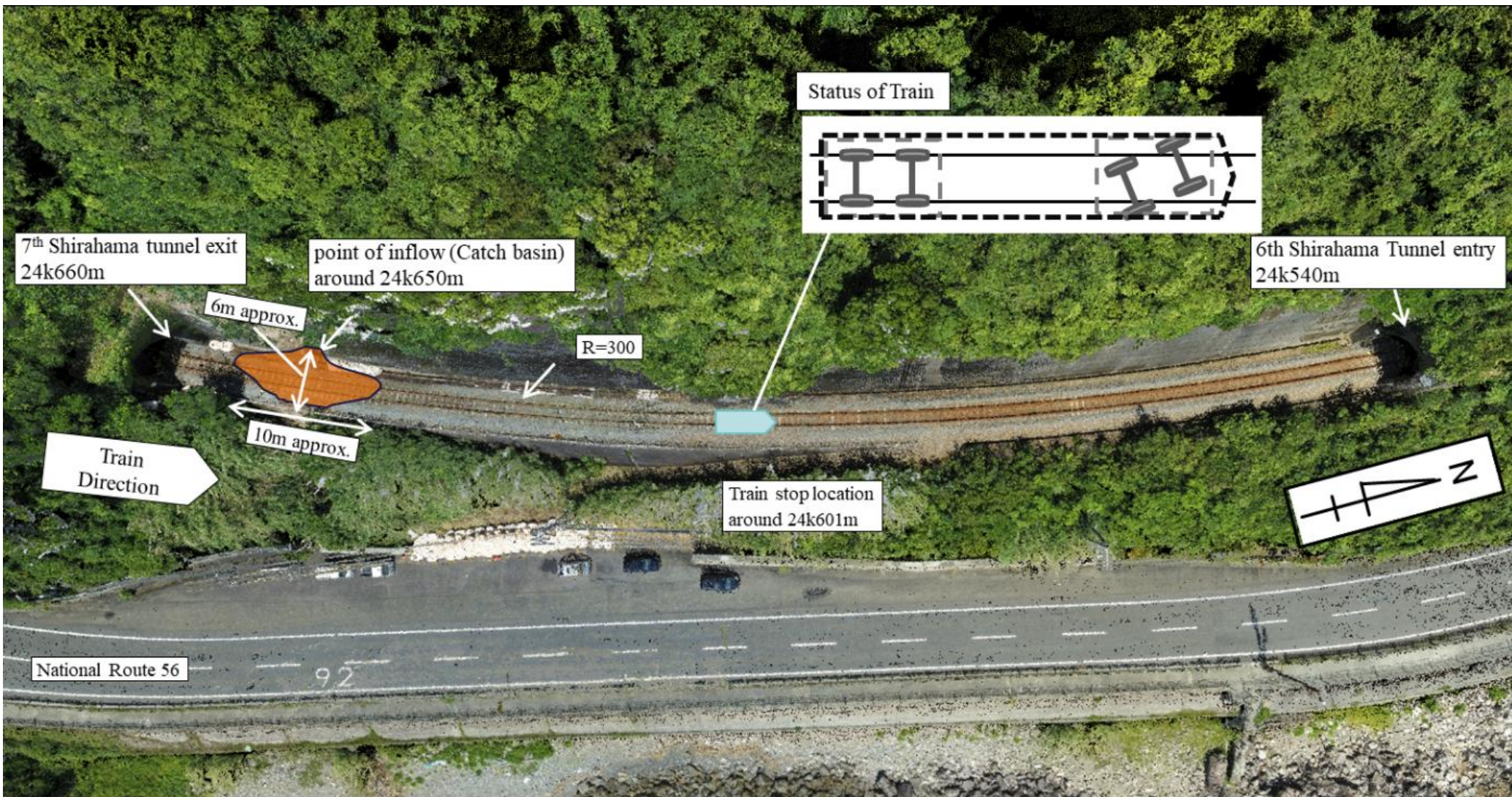


< Mud and Sand Inflow (Day of Accident) >

< Status of Derailment >



Overview of Accident Site

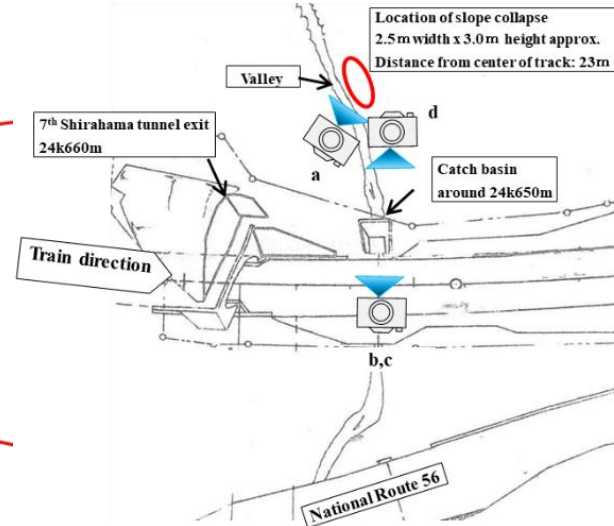


* Images taken by drone and 3D scanner

Collapsed Section of Slope, Drainage Facilities

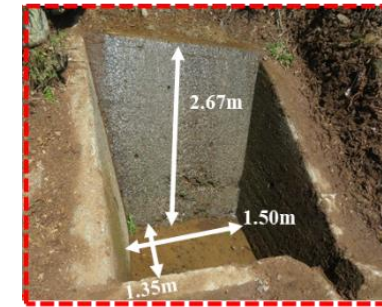
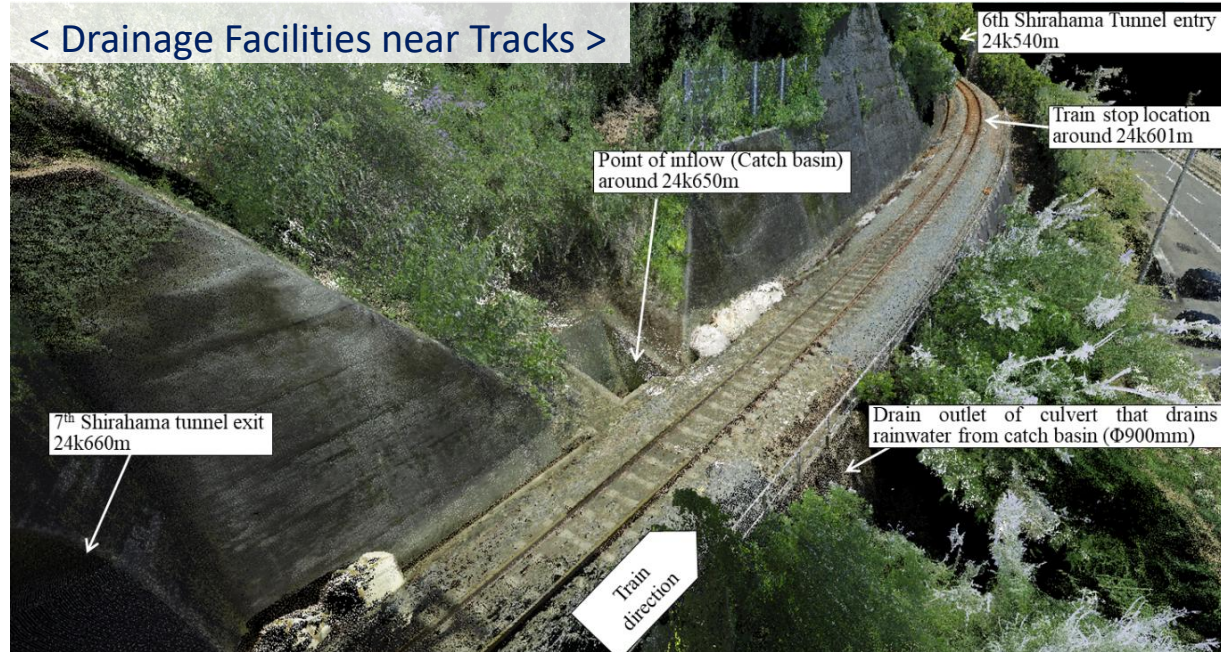


b: Photo taken on day after accident



a

< Drainage Facilities near Tracks >



c Photo taken after removal of mud and sand



d Photo taken after removal of mud and sand

1. Rolling Stock

It is probable that there were no abnormalities in the condition of the Train that would have contributed to the derailment.

2. Track

It is probable that there were no abnormalities in the track condition that contributed to the derailment.

3. Slope

It is probable that the slope collapsed because the slope was steep and the weight of the slope surface increased due to the rapid rainfall, causing the slope to become unstable.

It is probable that it was difficult to predict the collapse of the slope in advance and take steps to prevent the accident in advance.

4. Operation of the Train

In the investigation into this accident, JTSCB analyzed the handling of the train, which was allowed to run despite rainfall reaching the control value for the suspension of operations. As a result, JTSCB mainly found the following points:

(1) When the rain gauge reached the control value for suspension of operation, the train should not have been able to run near the accident site, but since the train driver did not receive any instructions from the dispatcher to drive slowly or suspend operation, it is probable that the train ran near the accident site at normal speed.

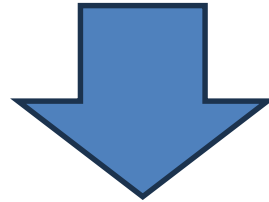
(2) On the other hand, the head of facility should have been monitoring the rain gauge monitoring device, but instead was discussing the operation plan at a distant location and did not pay close attention to the rain gauge monitoring devices.

(3) It is likely that it had become standard practice to observe the situation before taking action when the rain gauge reached the control value, rather than immediately implementing operational restrictions. This indicates a lack of awareness of the importance of ensuring train safety during rainfall, and there was likely insufficient understanding of the dangers posed by rainfall when it reached control values.

Probable Causes , → Recommendations



It is highly probable that the train departed after rainfall reached the control value at which operation should have been suspended, collided with mud and sand that had accumulated on the tracks, and derailed after running over them.



JTTSB recommended that Tosa Kuroshio Railway establish a system enabling dispatchers who constantly monitor driving conditions to promptly notify train drivers of speed restrictions when the control value for implementing speed restrictions is observed, in order to prevent recurrence of accidents.

< Follow-up >

- Recommendations → : July 25, 2024

JTSB requested a report on the measures taken.

- → Submission of implementation plan : October 21, 2024
- → Submission of interim report : November 29, 2024
- → Submission of completion report : March 19, 2025

< Completion report from Tosa Kuroshio Railway >

- ➔ The report reflected the recommendations.



Improve Transport Safety

Thank you for your attention.

