

Executive Summary

TRC's Train No.125 at Qidu Station Occurrence Investigation

On January 3, 2025, Tze-Chiang Express Train No. 125 operated by Taiwan Railway Corporation, Ltd. (hereinafter referred to as "TRC") was scheduled to be shunted from Qidu Rolling Stock Branch to Qidu Station. The occurrence train departed from Qidu Rolling Stock Branch at 11:57 and passed through turnout No. 509 at Qidu Shunting Yard at 12:00. At that time, the train was traveling at 18 km/h when the first axle of the second bogie of electric locomotive E502 at the rear of the train derailed.

After the rear electric locomotive derailed, the occurrence train continued to travel towards Qidu Station. After employees in the shunting yard discovered the derailment, they notified the train driver to stop the occurrence train via the train dispatch radio. The train driver activated the emergency brake at 12:02 and stopped the train at platform 3 of Qidu Station. The occurrence damaged electric locomotive E502 and power equipment, tracks, and turnouts. There were no casualties in this occurrence.

In accordance with the Transportation Occurrences Investigation Act, R.O.C., and the definition of major transportation occurrences specified therein, the Taiwan Transportation Safety Board was the independent agency in charge of investigating the railway accident. The agencies (institutions) invited to participate in the investigation include Ministry of Transportation and Communications, Railway Bureau of the Ministry of Transportation and Communications, and TRC. This investigation report was reviewed and approved in the 80th board meeting of the TTSB on November 14, 2025 and released on December 11.

After comprehensive investigation and analysis of the factual data, a total of 8 findings and 7 safety recommendations were obtained.

Findings

Findings Related to Probable Causes

1. The track gauge of the curved point blades of turnout No. 509 at the Qidu shunting yard exceeds the prescribed limit, and loose track spikes and rotten sleepers were also found. When the occurrence train passed through the turnout that curves to the left, the wheels on the right generated lateral force to the right rail, causing the right curved point blades to move laterally, sink vertically, and tilt outward, further widening the track gauge. As a result, the left wheel of the first axle of the second bogie of electric locomotive E502 at the rear of the occurrence train was not in contact with the rail surface and fell off the track.
2. TRC's E500 electric locomotive does not have an alarm function for pantograph damage, so the train driver could not determine that the pantograph of electric locomotive E502 at the rear was damaged from the information displayed on the locomotive control and monitoring system, and the occurrence train continued to run towards Qidu Station. The body of the derailed locomotive deviated from the track and caused the overhead catenary system to be pulled by the pantograph. The derailed locomotive collided with the relay cabinet and power equipment on the wayside and caused damage to 8 turnouts.

Findings Related to Risk

1. TRC discovered that the gauge of the point blades of turnout No. 509 exceeded the prescribed limit during a routine inspection of turnouts before the occurrence, but TRC determined that it was not a priority and did not schedule maintenance. Therefore, no improvement was completed before the occurrence.

2. TRC has not established appropriate inspection frequencies for turnouts based on the frequency of use and the type of sleeper, which makes it difficult to detect defects in frequently used turnouts with wooden sleepers in time.
3. TRC has not allocated an appropriate number of scientific inspection tools based on the differences in the number of turnouts in different track maintenance areas, which is detrimental to the efficiency and accuracy of turnout inspection.
4. Although TRC has regulations that define and classify sleeper decay, maintenance personnel often rely on their own experience to make judgments, which makes it difficult to accurately detect decayed sleepers.
5. The "Track Maintenance and Inspection Regulations for 1067 mm Gauge" does not provide wear standards for siding turnouts of 37 and 50 kg rail, so maintenance and inspection personnel do not have a clear basis for conducting inspections.

Other findings

1. The records from the automatic train protection system, locomotive control and monitoring system, front-view camera, level crossing camera, and power dispatch room alarms, as well as the landline phones with recording functions in the OCC dispatch console and power dispatch room, have inconsistent system times.

Transportation Safety Recommendations

To the Taiwan Railway Corporation, Ltd.

1. TRC should establish a computerized management mechanism for track maintenance, so as to ensure that any track defects that are found are effectively tracked and improved. (This is an existing safety

recommendation and still controlled by relevant sub-projects. This is the second time it has been proposed.)

2. Review train procurement regulations and stipulate that trains must have a mechanism for detecting abnormal damage to the pantograph.
3. Reassess the turnout maintenance frequency, specify different inspection frequencies based on turnout type or frequency of use, and add a defect improvement or tracking column to the inspection form to ensure turnout safety and reliability.
4. Allocate an appropriate number of scientific inspection tools based on the characteristics of each track maintenance area, so as to improve the efficiency of turnout maintenance.
5. Strengthen the education and training of track maintenance personnel on how to determine sleeper decay, and conduct quarterly inspections of sleeper decay.

To the Railway Bureau, Ministry of Transportation and Communications

1. Supervise TRC to ensure that it reassesses turnout maintenance frequency, specifies different inspection frequencies based on turnout type or frequency of use, and adds a defect improvement or tracking column to the inspection form to ensure turnout safety and reliability.

To the Ministry of Transportation and Communications

1. Revise the "Track Maintenance and Inspection Regulations for 1067 mm Gauge" to specify the service level of each line and the turnout wear standards for rails at each category.

Note: The language used in the occurrence investigation Final Report is in Chinese. To provide a general understanding of this investigation for the non-Chinese reader, the Executive Summary of the Final Report was translated into English. Although efforts are made to translate it as accurately as possible, discrepancies may occur. In this case, the Chinese version will be the official version.