

Executive Summary

TRA's Train No. 7101 and 2633 at Tongxiao Station

On March 18, 2020, at 20:49. A southbound freight train No.7101 of Taiwan Railway Administration (TRA), was delayed to pass through the No.3 track of Tongxiao Station (schedule time was 20:37). At the same time, a southbound train No.2633 departed on time from No.4 track which was merged with No.3 track ahead. Driver of Train No.7101 applied emergency brake to stop the train after the train entering the platform, meanwhile, driver of Train No.2633 noticed the moving train on the adjacent track and also applied emergency brake to stop the train, two trains were very close and a risk of collision was existing. There was no fatalities and injuries in this occurrence.

According to the Transportation Occurrences Investigation Act, the Taiwan Transportation Safety Board is responsible for investigating major transportation occurrences that arise in the R.O.C. territory. This accident is considered as a major transportation occurrence within the scope of investigation. The Railway Bureau and TRA were invited to participate in the investigation.

The investigation report was approved by the 25th Board Meeting on May 7, 2021, and published on June 18, 2021.

After comprehensive investigation and analysis of the factual data, a total of ten conclusions and eight safety recommendations were obtained, which are detailed as follows:

Findings

Findings related to probable causes

1. Due to the late arrival of train No. 7101 at Tongxiao Station, the dispatcher modified the train from passing to stopping at the station. The driver did not realize that the station home signal before entering the station displaying proceed with attention, the next signal probably meant danger; and did not prepare to stop due to being distracted and not seeing the repeating signal displaying danger, causing the train to pass the signal at danger, resulting that local train No. 2633 on the adjacent track to almost collide with freight train No. 7101.
2. After the General Dispatch Center dispatcher found out that freight train No. 7101 had turned off the ATP system, they did not issue a dispatch command as required by regulations demanding that the “Call-Reply mechanism” had to be applied at each station along the route and was thus unable to remind the driver of freight train No. 7101 to stop at Tongxiao Station and wait for local train No. 2633 to pass.
3. TRA’s contractor personnel used the train dispatch radio to directly demand the driver of freight train No. 7101 to switch off the onboard radio registration code and to turn it on when setting off; however, the driver forgot to turn it on, resulting in the closure information of the Automatic Train Protection (ATP) system for freight train No. 7101 not to be displayed on the train dispatch console at the General Dispatch Center, losing the chance to remind dispatchers to issue dispatch command.
4. Before freight train No. 7101 departed, the train ATP system malfunctioned. The driver switched off the ATP after notifying the General Dispatch Center, causing the train to lose protection by ATP.

Findings related to risk

1. TRA has not established a double confirmation mechanism for the

Chief Dispatcher to manage and supervise the dispatch commands issued by dispatchers, making it difficult to achieve hierarchical management and prevent human error.

2. TRA does not have complete regulations governing the timing for canceling the onboard radio registration code by the driver and has no authorization mechanism, causing the onboard registration code to be canceled at will, increasing train operation risk.
3. TRA does not restrict contractor personnel from using the train dispatch radio to make demands about train operations to frontline operational staff, increasing operational risk.
4. TRA does not provide sufficient training and related training work regulations for instructor drivers and nor has it clearly defined the division of responsibilities and authority between the instructor driver and driver trainee in the training process when there are abnormal conditions while onboard, increasing train operation risk.

Other findings

1. The design of the TRA customer service telephone system easily makes people use the 24-hour emergency line for customer service matters, disturbing train dispatchers.
2. The training, performance evaluation, and health check results of the driver of train No. 7101 in the past year had no abnormality; with no evidence to suggest medication, alcohol, behavior, psychological state, fatigue or other problems affected his performance that day; signal abnormality and visibility affected by the weather were also eliminated as factors not affecting the driver's operation.

Safety Recommendations

To TRA

1. Enhance drivers' education, training, performance evaluation, and understanding of wayside signal displays.
2. Establish SOP for issuing dispatch commands by the General Dispatch Center, stipulating issue, review, and double confirmation mechanisms.
3. Modify the dispatch radio user term, stipulating that contractor personnel should not use the dispatch radio.
4. Reconsider the train operation after the ATP system is off, stipulating that normal operation is not allowed after the ATP system is off, and revising related regulations.
5. Establish hierarchical management for the General Dispatch Center, stipulating the responsibility of the Chief Dispatcher for supervising the train operating decisions by dispatchers.
6. Formulate SOP using onboard radio registration code, stipulate the timing of registration and cancelation, and establish an authorization confirmation mechanism.
7. Establish training courses for instructor drivers, stipulate training work regulations for instructor drivers, stipulate on-the-job training hours, and define the division of responsibilities and authority between the instructor driver and driver trainee.
8. Review the design of the customer service telephone system to avoid customer service calls disturbing the operations of dispatchers.

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.