Executive Summary

Taiwan Sugar Corporation's Train No. 101 at Xinying Sugar Factory

On June28, 2020, the Taiwan Sugar Corporation's（TSC）Train No.101 departed from ZhongXing Station in Xinying Sugar Factory at 0900, and the destination was Balaoye Station. At 0905, the train derailed at 0K+350. There were no casualties in the accident.

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 Taiwan Sugar Corporation were invited to participate in the investigation.

The investigation report was approved by the 35th Board Meeting on February 11, 2022, and published on March 9, 2022.

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

Findings

Findings related to probable causes

1. Taisugar was unable to carry out daily, monthly, and annual inspections properly, with the result that switch rail damaged, rotten sleepers, loosened bolts, and other shortcomings were not corrected in a timely manner. As a result, when the train passed through a single-track turnout at 0K+400, the lack of support from the sleepers caused

them to sink under the weight of the train, causing the wheels of the locomotive to have insufficient contact depth with the steel rail tread and anti-derailment guard rail surface, causing the locomotive to immediately turn and derail.

Findings related to risk

1. Taisugar's operation management of its sugar train (Wufenche) lacks railway operation safety policy, regulations, budget, accident investigation, and other operational organizations; in terms of operation management, personnel carry out multiple operation tasks, lack of professional consideration, insufficient track maintenance budget, and inspection tools are basic, probably causing operating risk.
2. In a regular inspection in 2018, the Railway Bureau found foundation loss at 1K+660, Bridge No.2, and Balaoye Station, missing turnout fastener, broken turnout switch, expansion gap exceeding the permitted value, and other shortcomings. However, the Railway Bureau failed to request Taiwan Sugar Corporation to comprehensively review the operation route for systemic deficiencies, increasing operating risk.

Other findings

1. The Railway Bureau currently conducts regular inspections of local, private, and industry railways by spot checks, rather than a comprehensive and systematic inspection.
2. Taisugar's train operation recorder was not tested every two years, therefore, the correctness of the record could not be ensured; also, the operation record paper card was blocked by foreign object, causing the record contents to be unreadable.

Safety Recommendations

To Taiwan Sugar Corporation

1. Revise regulations for each level of the company and establish a dedicated organization for the operation of Taisugar's sugar train to guarantee operation safety.
2. Increase sugar train operation professional staff and enhance training in professional areas and inspection SOP.
3. Increase route inspection and maintenance equipment or devices to implement railway construction and maintenance regulations.
4. Establish route maintenance quality evaluation and readiness standards, to avoid route deficiencies affecting operation safety prior to improvement.

To Railway Bureau, MOTC

1. Review the onsite inspection operating mechanism for regular inspections, to clearly grasp the operating status of railway operators and supervise operators to improve.
2. Supervise the establishment of a dedicated organization for the operating safety of Taisugar's sugar train, increase professional manpower and route inspection equipment, and implement railway construction and maintenance regulations.

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.