

# **Executive Summary**

## **Taiwan Sugar Corporation's Train No. 1 at Suantou Sugar Factory**

On July 30, 2022, a train operated by the Taiwan Sugar Corporation (hereinafter referred to as TaiSugar) at the Suantou Sugar Factory Cultural Park in Lioujiao Township, Chiayi County, departed from the Suantou Park Station. The train (hereinafter referred to as the accident train) operated a round-trip route that turned back near the sugarcane transfer platform and returned to Suantou Park Station.

The accident train departed from Suantou Park Station at approximately 10:00 AM, carrying one driver at each end, one tour guide, and about 130 passengers.

At around 10:30 AM, while the train was on the return trip and passing switch No. 20 at track kilometer 0K+031, the driver of the leading locomotive No. 151 noticed abnormal motion from the rear locomotive No. 123 (hereinafter referred to as the accident locomotive) and applied the emergency brake. The accident locomotive derailed. No injuries were reported in this occurrence.

According to the on-site investigation, all three axles of the accident locomotive were found derailed.

### **Findings**

#### **Findings Related to Probable Causes**

1. TaiSugar was unable to properly carry out daily and monthly inspections of its operating routes, resulting in uneven track geometry, unstable track bed, deformed switch rods, and poor drainage at switch No. 20. These conditions likely caused the ballast beneath the sleepers to sink or the switch handle to become unsecured, leading to the switch rail not being correctly contacted with the stock rail, which may have contributed to the derailment of the accident locomotive at track kilometer 0K+031.

#### **Findings Related to Risk**

1. TaiSugar's operation management lacks not only a dedicated organization but also cooperation or delegation to other professional rail operators to be responsible for railway safety policy, regulations, budgeting, accident investigation, training, and other functions for the operation of its trains. The absence of structured training programs for new personnel in the train business prevents frontline units from

cultivating railway professionals, potentially increasing operational safety risks.

2. TaiSugar's annual recruitment for positions does not consider the academic background needed for operational duties, and the recruitment schedule does not align with the needs of the units. This leads to understaffing and forces personnel to take on multiple roles without differentiated training, posing further risks to railway safety.
3. Inspection and maintenance records for train routes are kept primarily in paper form, which may lead to risks such as loss of permanent records or the inability of frontline staff to access real-time information.

### **Other Findings**

1. The front-mounted CCTV equipment on TaiSugar's diesel locomotive was not functioning and had not been repaired or replaced in a timely manner, resulting in SD card footage that could not be retrieved or interpreted.

### **Safety Recommendations**

#### **To Taiwan Sugar Corporation (TaiSugar)**

1. The TTSB has already issued a safety recommendation in the investigation report “0628 Taiwan Sugar Cooperation’s Train No. 101 at Xinying Sugar Factory, suggesting “Revise regulations for each level of the company and establish a dedicated organization for the operation of TaiSugar’s train to guarantee operation safety”.  
(As this recommendation is currently under implementation and tracking, it will not be repeated here.)
2. In accordance with the Taiwan Sugar Corporation Railway Construction and Maintenance Guidelines, TaiSugar should properly perform inspections and maintenance on the operational routes of its trains and assess the feasibility of digitizing inspection and maintenance records.
3. Define the required professional competencies for various positions and supervisory roles within the train operation system to establish standards for training new personnel, train operators, and maintenance staff.
4. Review and revise the recruitment requirements for TaiSugar personnel to ensure alignment with job functions and streamline the overall recruitment schedule.

#### **To the Railway Bureau, Ministry of Transportation and Communications**

1. As the supervisory authority, the Railway Bureau should require TaiSugar to

implement the above safety recommendations concerning inspections, maintenance, and professional training. In accordance with Article 41 of the Railway Act, these items should be included in scheduled and unscheduled inspections, and TaiSugar's progress should be supervised and tracked.

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.