

## **Executive Summary**

On October 31, 2021, a private light truck (called the tea-picking truck below, license plate number 3477-ZK) set out from Zhushan Township in Nantou County at 5am. The truck driver was the foreperson of a tea-picking team. Picking up 16 tea pickers along the way, the destination was Siwei Tea Factory in Xinyi Township, Nantou County, where they were going to pick tea. At around 05:44am at the 79-kilometer mark of Provincial Highway 21, the tea-picking truck was hit by a private light truck (called the light truck below, license plate number 7937-ZK) coming from the opposite direction in the southbound lane. The light truck crossed over the central line and could not return to its original lane in time. This accident injured 16 tea pickers on the tea-picking truck and 2 people on the light truck, giving a total of 18 injured.

According to the Transportation Occurrence Investigation Act of the Republic of China (ROC), the Taiwan Transportation Safety Board (TTSB), an independent transportation occurrence investigation agency. The investigation team members also included the National Police Agency, Ministry of the Interior (MOI); the Occupational Safety and Health Administration, Ministry of Labor (MOL); the Directorate General of Highways, Ministry of Transportation and Communications (MOTC); Nantou County Government; and Siwei Tea Factory.

The Final Report of the occurrence investigation was approved by the TTSB's 47th Board Meeting on February 3, 2023.

On the basis of comprehensive factual information and analysis, the following 17 investigation findings and 8 safety recommendations were proposed.

## **Investigation Findings**

### **Findings Related to Probable Cause**

1. The light truck driver was probably speeding and crossed into the opposite lane. It failed to return to its original lane after the end of the broken yellow centerline, hitting the tea-picking truck.

### **Findings Related to Risk**

1. The back of the tea-picking truck had 3 longitudinal long seats for the tea pickers to sit on installed. With no seat backs and seatbelts to restrain them, the tea pickers in the back of the truck were injured by the impact of the collision with the light truck and had a relatively high risk of bone breaks due to age and sex.
2. Siwei Tea Factory was aware that the tea-picking team foreperson had used an illegal vehicle to transport tea pickers for a long time and ignored the fact that they were riding in an illegally modified vehicle, showing that they did not fulfill management responsibility to prevent the occupational injury from happening.
3. With long-term absence of management of the tea industry, no agency can grasp the employment relationship between operators, the tea-picking team foreperson and tea pickers; it is also hard to force operators to fulfill their management responsibility vis-à-vis the tea picker transportation method through labor inspection, meaning that this type of accident is likely to be repeated.

### **Other Findings**

1. The accident vehicles had valid plates issued by a motor vehicles office.
2. There was no evidence to indicate that the driver's performance might have

been affected by fatigue or alcohol.

3. Siwei Tea Factory and the foreperson did not take out insurance for the tea pickers, failing to provide basic protection for their labor conditions.
4. Compared to other industries, tea-picking is small and it is difficult for it to be given priority for labor inspections. Every time there is a tea-picking truck accident, it is handled like an ordinary traffic accident; after such occupational injury occurs, employers are not required to submit an occupational accident report to the labor unit. The labor competent authority says that unless a report is received from workers or the place of work has an occupational disaster, there is no way to carry out a labor inspection of an employer because workers have an accident going to or from work.
5. When a tea-picking truck is stopped by the police, the information will be passed on to other tea-picking trucks, therefore the effect of such stopping is limited. Each tea-picking truck is stopped and given a citation at most once or twice a year, with some not stopped in the entire year. Moreover, the fine is not heavy and no license points are issued or additional punishment given for serial offenders which makes illegal behavior occur repeatedly.
6. Reviewing Nantou County Police Department's records of enforcement in the last five years, on average only two citations have been issued for installing seats every year while an average of 15 citations a year have been issued for carrying passengers in the back or overloading, showing an obvious gap in the number of citations for the two types of violation and indicating that the degree of enforcement for illegal installation of seats was relatively low.
7. When the new license plate was issued, the tea-picking truck did not have the seats fitted in the back, so met vehicles safety requirements.

8. Whether for regular or ad hoc vehicle inspections, if seats have been removed it is difficult to effectively detect if the owner has installed seats in the back.
9. Article 87 of the Road Traffic Safety Regulations stipulates the form and installation method of bodies, ladders, compartments and seats of substitutional passenger vehicles; in comparison, Attachment 15 of Article 23 of the Road Traffic Safety Regulations stipulates change methods and the documents that need to be submitted for change of bodies, ladders and compartments but has no regulations for seating alterations or modification in substitutional passenger vehicles.
10. With no regulations on alterations or modification of seats and seatbelts and no vehicle safety inspection and testing for substitutional passenger vehicles, there is no way to ensure that the installed seats and seatbelts are safe.
11. The position of the right curve sign and slow sign at the location of the occurrence were around 35 meters closer to the start of the curve than the “not less than the Stopping Sight Distance (SSD)” required in accordance with the Regulations on the Installation of Road Traffic Signs, Markings and Signals, which probably affected the driver’s reaction time to slow down; also, before encountering the signs, the upstream road section is straight and overtaking is allowed; the distance of the right bend sign from the start of the curve is too short and this probably affected the judgment time needed for driver to return to the original lane.
12. The Second Maintenance Office of the Directorate General of Highways did not retain the original design drawings of road construction of Provincial Highway 21 and road maintenance only followed the road’s current situation with no re-surveying done; project acceptance was based mainly

on the quantity of construction items and materials with no further inspection of roadway alignment parameters (including curve radius for horizontal alignment and superelevation) that affect safety factors. This maintenance procedure probably causes potential traffic safety risks such as speed limit, superelevation and sight distance not meeting design speed standard on road sections with poor alignment designs, causing vehicles to overturn and overtaking collisions or rear-end collisions to occur relatively easily.

13. If the Directorate General of Highways can introduce a road safety audit mechanism in which systematic safety checks are carried out of new road construction projects or existing road maintenance or improvement by an objective third party, putting forward potential risk and safety protection measures, it will effectively increase road traffic safety and service quality.

## **Safety Recommendations**

### **To Siwei Tea Factory**

1. The tea factory and foreperson should choose suitable and legal vehicles to fulfill the tea factory's management responsibility to ensure the transportation safety of the tea pickers going to and from work.

### **To the Occupational Safety and Health Administration, Ministry of Labor**

1. A tea industry promotion and guidance mechanism or other effective method should be formulated with Nantou County Government to grasp the tea-picking industry employment situation in its jurisdiction so that operators or employers can fulfill their management responsibility.

### **To Nantou County Government**

1. Guide tea-picking operators in its jurisdiction to choose suitable and legal

vehicles or draw up management guidelines that match the ecology of tea-picking industry to ensure the safety of tea pickers when going to and from work.

2. A tea industry promotion and guidance mechanism or other effective method should be formulated with the Occupational Safety and Health Administration, Ministry of Labor to grasp the tea-picking industry employment situation in its jurisdiction so that operators or employers can fulfill their management responsibility.
3. Strengthen the crackdown on the behaviors of speeding and crossing over the double solid yellow line.
4. When tea-picking vehicles are stopped by police, citations should be issued according to the fact of violations and the violations recorded in detail, such as the overloading and seat modification situation to stop illegal transportation of tea pickers repeatedly happening.

#### **To the Ministry of Transportation and Communications (MOTC)**

1. Assess the introduction of a road safety audit or road safety check mechanism, stipulate the safety check items that road transport system construction projects should carry out in each life cycle stage, and have a third party impartial professional team implement a safety check plan to increase traffic efficiency and substantive safety of the domestic highway system.

#### **To the Directorate General of Highways, MOTC**

1. The data element for various construction projects in the highway inventory database should be reviewed and supplementation of data and drawings related to highway engineering and traffic engineering under its jurisdiction assessed to serve as the basis for highway maintenance or formulation of improvement plans.