Executive Summary

On November 4, 2024, a Tecnam P2012 Traveller operated by Apex Aviation, with registration number B-86002, departed Songshan Airport at 1748 Taipei time, returning to Kinmen Airport for standby duty after completing an emergency medical service mission from Kinmen Airport to Songshan Airport with 5 persons onboard. At 1925, during landing roll at Kinmen Airport, the aircraft experienced a left main wheel tire burst. No injuries were reported. Upon inspection, damage to the fuselage main frames were discovered.

According to the Transportation Occurrence Investigation Act and the content of Annex 13 to the Convention on International Civil Aviation, the TTSB is an independent transportation occurrence investigation agency responsible for conducting this occurrence investigation. The investigation team also included members from Civil Aeronautics Administration (CAA) and Apex Aviation. The final report was reviewed and approved by the 79th TTSB Board Meeting held on October 17, 2025.

The investigation identified 7 findings based on a comprehensive review of factual data and analyses and issued 3 safety recommendations to the relevant organizations.

The findings related to probable causes is as follows:

1. The fuselage frames located forward and aft of the left main gear box of the occurrence aircraft sustained substantial damage. The probable cause was that the structural loads experienced during touchdown exceeded the design load limits when the left main wheel made ground contact. According to the flight data recorded by the aircraft's avionics system (G1000), several flights after delivery showed relatively high values in vertical/lateral acceleration, descent rate, or bank angle. However, due to the low sampling rate of 1 Hz, the actual peak acceleration at touchdown could have been much higher than the recorded data and thus not captured. In addition, Apex Aviation had never inspected the damaged area prior to the occurrence, and no relevant records were available to verify when the damage occurred. Therefore, the exact cause and timing of the structural damage could not be determined.

The findings related to risk are as follows:

1. Apex Aviation's "suspected hard landing" assessment mechanism relied entirely on voluntary reporting by operating personnel. However, the company's safety management system failed to effectively

encourage the proactive reporting of potential risk events. Consequently, an aircraft that experienced a hard landing might not have been inspected in a timely manner, and any resulting structural damage could have gone undetected until a scheduled maintenance check, posing a risk of continued operation with structural damage and endangering flight safety.

2. Due to the lack of simulator for the P2012 aircraft, the size of Apex Aviation's fleet, and the unpredictable and irregular nature of emergency medical service missions, flight crew members had relatively low flight hours and irregular flying intervals. This affected their ability to maintain proficiency in operating this type of aircraft. The issue was particularly evident among pilots who had transitioned from operating large aircraft to the P2012.
3. During landing, the pilot flying may have inadvertently pressed the left brake pedal while applying rudder input, causing brake pressure to be applied to the left wheel at touchdown. As a result, the left main wheel could not rotate freely, leading to tire tread and ply layer abrasion along the runway surface, ultimately resulting in tire burst.

The other findings are as follows:

1. The occurrence flight crew held valid licenses and medical certificates issued by the Civil Aeronautics Administration (CAA), and their flight qualifications met the requirements of both the CAA and the Apex Aviation. Their rest and activity within 72 hours prior to the occurrence were normal, and preflight breath alcohol testing results were zero.
2. The occurrence aircraft's weight and balance were within prescribed limits. Review of maintenance records, airworthiness directives, and manufacturer service bulletins revealed no abnormalities or unfulfilled directives related to the occurrence.
3. Weather conditions at the time of the occurrence met Apex Aviation's landing requirements; therefore, weather was not a factor in this occurrence.

Transportation Safety Recommendations

To Apex Aviation

1. Strengthen the monitoring and reporting mechanism for "suspected hard landings" to enable early detection of structural damage caused by hard landing events.
2. Enhance training and evaluation of flight crews on approach and landing operations to improve operational proficiency.

To Civil Aeronautics Administration

1. Supervise Apex Aviation to strengthen its monitoring and reporting mechanism for suspected hard landings, and to enhance flight crew training and evaluation in approach and landing operations.

Full Final Report in Chinese is available for download at
https://www.ttsb.gov.tw

Ya-Ting Chang, Director
Secretariat Office
Tel: +886-2-7727-6210
E-mail: yating@ttsb.gov.tw

Kuo-Chih Chang, Investigator-In-Charge
Aviation Occurrence Investigation Division
Tel: +886-2-7727-6310
E-mail: kcchang@ttsb.gov.tw