



Air Accident Investigation Unit Ireland

FACTUAL REPORT

**SERIOUS INCIDENT
TECNAM P2006T, EI-WST
Weston Airport, Co. Dublin**

22 August 2023



An Roinn Iompair
Department of Transport

FINAL REPORT

Foreword

This safety investigation is exclusively of a technical nature and the Final Report reflects the determination of the AAIU regarding the circumstances of this occurrence and its probable causes.

In accordance with the provisions of Annex 13¹ to the Convention on International Civil Aviation, Regulation (EU) No 996/2010² and Statutory Instrument No. 460 of 2009³, safety investigations are in no case concerned with apportioning blame or liability. They are independent of, separate from and without prejudice to any judicial or administrative proceedings to apportion blame or liability. The sole objective of this safety investigation and Final Report is the prevention of accidents and incidents.

Accordingly, it is inappropriate that AAIU Reports should be used to assign fault or blame or determine liability, since neither the safety investigation nor the reporting process has been undertaken for that purpose.

Extracts from this Report may be published providing that the source is acknowledged, the material is accurately reproduced and that it is not used in a derogatory or misleading context.

¹ **Annex 13:** International Civil Aviation Organization (ICAO), Annex 13, Aircraft Accident and Incident Investigation.

² **Regulation (EU) No 996/2010** of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.

³ **Statutory Instrument (SI) No. 460 of 2009:** Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulations 2009.



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In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010 and the provisions of SI No. 460 of 2009, on 24 August 2023, the Chief Inspector of Air Accidents appointed Ray Jordan as the Investigator-in-Charge to carry out an Investigation into this Serious Incident and prepare a Report.

Aircraft Type and Registration:	TECNAM P2006T, EI-WST	
No. and Type of Engines:	2 x BRP-Rotax 912 S3	
Aircraft Serial Number:	368	
Year of Manufacture:	2022	
Date and Time (UTC)⁴:	22 August 2023 @ 11:51 hrs	
Location:	Weston Airport (EIWT), Co. Dublin, Ireland	
Type of Operation:	General Aviation	
Persons on Board:	Crew – 2	Passengers – Nil
Injuries:	Nil	
Nature of Damage:	Minor	
Commander's Licence:	European Union Commercial Pilot Licence (CPL) Aeroplane (A), issued by the Irish Aviation Authority (IAA)	
Commander's Age:	68 years	
Commander's Flying Experience:	More than 5,000 hours, of which 11 were on type	
Notification Source:	The Operator	
Information Source:	AAIU Field Investigation AAIU Report Forms submitted by the Crew	

⁴ **UTC:** Co-ordinated Universal Time. All times in this report are quoted in UTC unless otherwise stated; local time was UTC + 1 hour on the date of the incident.

FINAL REPORT

SYNOPSIS

Shortly after take-off from Runway 25 at Weston Airport (EIWT), the Flight Crew of a TECNAM P2006T aircraft, consisting of an Instructor and a Student, was advised by the Duty Air Traffic Controller that the aircraft's towbar was still attached to the nose landing gear. This was acknowledged by the Instructor who elected to return for an immediate landing. The aircraft landed with the towbar still attached which caused minor damage to the fuselage. Neither occupant was injured. There was no fire.

NOTIFICATION AND RESPONSE

The Operator and the Duty Air Traffic Controller filed separate occurrence reports regarding this event. Following further enquiries by the AAIU, three Inspectors of Air Accidents deployed to EIWT and commenced an Investigation.

1. FACTUAL INFORMATION

1.1 History of the Flight

The Student stated that on the day of the occurrence, he had completed a training exercise in a simulator with the Instructor, as he was undertaking a course of flight training for the granting of a multi-engine piston rating. Having completed the simulator session and following a pre-flight briefing with the Instructor, the Student proceeded to the aircraft, which was parked on the south apron (**Figure No. 1**), outside hangar No 3 at Weston Airport. The Student said he noticed that the towbar was attached to the aircraft when he commenced his pre-flight walkaround inspection. However, before the walkaround could be completed, he answered a mobile phone call of a pressing nature.

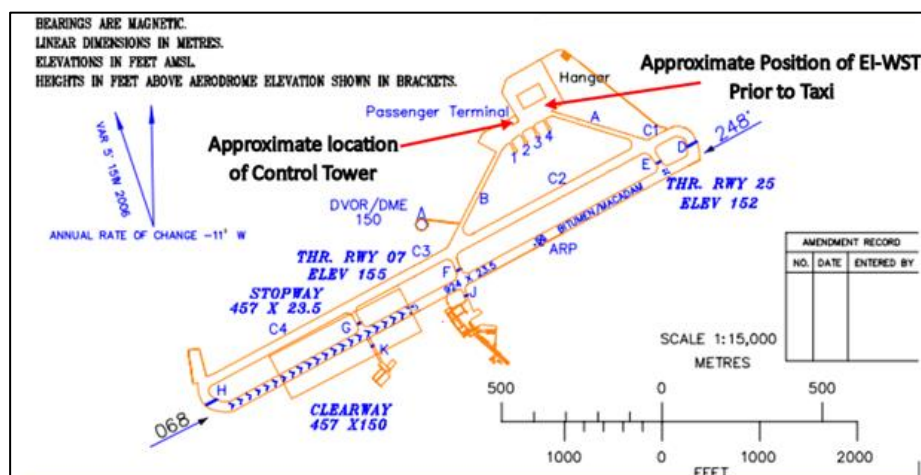


Figure No. 1: Approximate position of EI-WST prior to taxi
(figure adapted from AIP IRELAND AIRPORT CHART dated 7 June 2007)

The Instructor had by now arrived at the aircraft and noticed that the ongoing phone call was causing the Student a degree of stress. The Instructor suggested cancelling the flight, but this offer was declined by the Student who advised that he had only partially completed the walkaround inspection.



The Instructor stated that he would complete the remaining items of the walkaround inspection while the Student walked into the hangar to conclude his phone conversation. The Instructor continued with the walkaround inspection but became aware of a helicopter in close proximity that was preparing for flight. Due to concerns regarding downwash from the helicopter, the Instructor moved the aircraft, using the towbar, to another position closer to the open hangar doors until the helicopter had departed.

Following the helicopter's departure, the Instructor moved the aircraft, using the towbar, further away from the open hangar doors and completed the walkaround inspection. The Instructor stated that a light drizzle began to fall and that he took shelter under the aircraft's left wing. The Student, having concluded his phone conversation, approached the aircraft from the rear and was advised by the Instructor that the pre-flight walkaround was complete. The Instructor entered the cockpit first, through the door on the left-hand side of the aircraft, and sat in the front right-hand seat, followed by the Student, who sat in the front left-hand seat. The Student was the designated handling pilot.

At 11:37 hrs, Weston Air Traffic Control (ATC) received and granted a request for start-up from EI-WST for 'circuits'. Approximately five minutes later, ATC cleared the aircraft to taxi via taxiway (TWY) A to hold short of Runway (RWY) 25 at D. During the taxi phase from the south apron, which required two left turns and two right turns, neither crew member reported noticing anything unusual, and having completed the required power checks, the aircraft was cleared for take-off. The Student stated that lift-off was normal and as he selected the landing gear lever to the up position, a radio transmission was received from ATC advising that the towbar was hanging from the nose landing gear. Both crew members stated that they realised that the towbar had been left attached to the nose landing gear and the landing gear selector was immediately moved to the down position.

The Instructor took control of the aircraft from the Student and requested landing clearance. ATC offered a choice of runways with the Instructor electing to land on RWY 25. The Instructor performed a left-hand circuit during which he was advised by ATC that the towbar was still hanging from the nose landing gear. The Student stated that during the landing, the Instructor held the nose wheel off the ground longer than normal and that he (the Student) only noticed unusual noises during the latter stage of the ground roll. The aircraft came to a stop abeam TWY J (**Photo No 1**), where they were met by the Airport Fire and Rescue Service (AFRS) that had positioned at TWY F.



Photo No. 1: Aircraft stopped abeam TWY J (*image provided by the AFRS*)



The Instructor also stated that unlike most of the aircraft he had flown, on the subject aircraft there is a single cockpit door on the left side of the aircraft, and consequently an instructor must enter the cockpit first, followed by their student. The Instructor said that on other aircraft types he had flown, he is always the last one to board the aircraft following a visual inspection, irrespective of who has been tasked with the pre-flight walkaround. He also stated that the towbar, when attached to the nose wheel, is not visible from the cockpit and that during taxi out on the day of the occurrence, he did not hear any unusual noises. In the Instructor's opinion, the fact that the towbar was equipped with its own wheel (used for ground manoeuvring) was the likely reason that no unusual noises were heard prior to getting airborne.

1.3.2 Student

The Student stated that he was the holder of a Private Pilot Licence (PPL) and had accumulated approximately three hours of flying experience on the aircraft type. The Student said that prior to the flight on the day of the occurrence, he had completed a training exercise in a simulator with the Instructor and had taken a day off work in order to do so. He informed the Investigation that earlier in the day, he had received a personal phone call of a pressing nature that required action by him on behalf of the caller. During the pre-flight walkaround, he received another phone call from the same individual which required further action by the Student.

The Student informed the Investigation that the Instructor had given him the option of cancelling the training flight, but he had declined the offer. However, he said that, with the benefit of hindsight, he should have cancelled the flight. His assessment as to the cause of the incident was distraction precipitated by personal issues.

1.4 Interview with the Air Traffic Controller

The Weston Airport Air Traffic Control Officer (ATCO), who was on duty in the tower, stated that prior to issuing taxi clearance to EI-WST he would have scanned the area in the vicinity of the aircraft for any conflicting traffic. He said that he only became aware of an issue with the aircraft shortly after it got airborne, as it became '*perfectly silhouetted*' against the horizon. Having advised EI-WST that the towbar was still attached to the nose gear, he contacted the AFRS on a separate frequency and cleared them to hold short of RWY 25.

The ATCO stated that he had not previously witnessed an aircraft take off with a towbar still attached. His main concern was that the towbar would fall from the aircraft which was overflying a '*populous area*'. His other concerns were the potential aerodynamic effect of the towbar on the aircraft in flight and whether a safe landing could be made with it still attached.

1.5 Personnel Information

The Instructor held a European Union CPL(A) that was issued by the IAA on 19 June 2002. The Instructor also held a Class 1 Medical Certificate, which was valid until 4 January 2024.

FINAL REPORT

He held a Flight Instructor Certificate for Multi-Engine Piston (Land), which was valid until 30 September 2025. The Instructor first flew the subject aircraft on 6 June 2023 and had flown the subject aircraft type on nine separate occasions prior to the occurrence flight.

The Student held a European Union Private Pilot Licence (PPL) that was issued by the IAA on 3 December 2019. The Student also held a Cass 1 Medical Certificate, which was valid until 17 May 2024 and a Single-Engine Piston (Land) class rating which was valid until 30 November 2023. The Student had flown the subject aircraft on two previous occasions, the first of which was on 17 August 2023. The Student stated that he had successfully completed a skill test for the granting of a CPL on 13 July 2023 but did not apply for the new licence until December 2023.

The Instructor's and Student's flying experience as provided to the Investigation are outlined in **Table No. 1** and **Table No. 2** respectively.

Total all types:	> 5000 hours
Total on type:	11 hours
Total on type P1:	8 hours
Last 90 days:	41 hours 30 minutes
Last 28 days:	7 hours 10 minutes
Last 24 hours:	1 hour

Table No. 1: Instructor's Flying Experience

Total all types:	185 hours
Total on type:	3 hours
Total on type P1:	Nil
Last 90 days:	14 hours
Last 28 days:	6 hours
Last 24 hours:	Nil

Table No. 2: Student's Flying Experience

1.6 Damage to Aircraft

Following recovery of the aircraft to the Operator's hangar, a visual inspection of the nose landing gear was conducted in conjunction with landing gear retraction and extension tests. An inspection panel aft of the nose landing gear bay doors was dented by the towbar's wheel as the aircraft landed. The impact geometry of the towbar with the fuselage is shown in **Photo No. 2**.



Photo No. 2: Towbar's wheel in contact with inspection panel (*image provided by AFRS*)



1.7 Damage to Towbar

The towbar's handle sustained significant abrasion damage as it was dragged along the runway surface during the flare manoeuvre and subsequent ground roll (**Photo No. 3**). A knurled knob which secures one side of the towbar to the nose wheel, was missing. The Investigation weighed the towbar and found it to be 3.25 kgs.



Photo No. 3: Damage to towbar

1.8 Aircraft Information

1.8.1 General

The TECNAM P2006T is an all metal, high-wing aircraft, with a wingspan of 11.4 metres. It is powered by two BRP Rotax 912 S3 liquid and air-cooled engines which drive two-bladed constant speed MT propellers. It is equipped with a retractable landing gear which is powered by an electric pump. The main landing gear has a trailing link suspension system and when extended, the nose landing gear and the rudder pedals are connected by pushrods to provide nose-wheel steering. The aircraft has a maximum take-off weight of 1,230 kgs and a maximum landing gear extension/operating speed of 122 Knots Indicated Airspeed (KIAS).

The main cabin door is located on the left side of the fuselage while the emergency exit (passenger door) is located aft on the right side of the fuselage. An emergency exit for use in the event of ditching, is located on top of the cabin (**Figure No. 3**).

FINAL REPORT

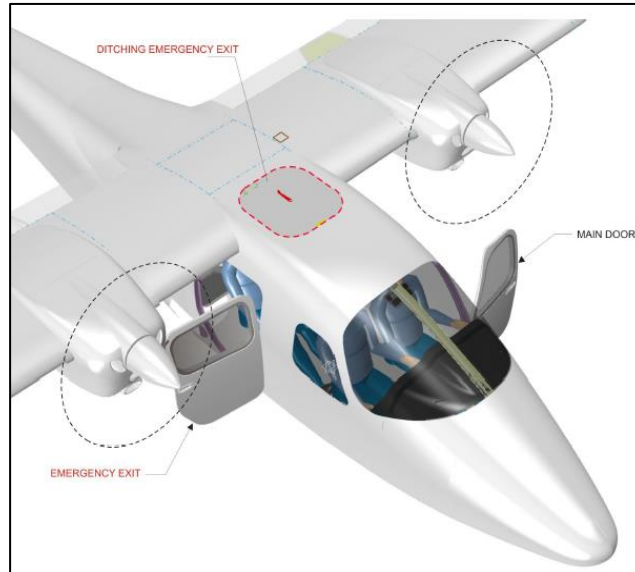


Figure No. 3: Aircraft main door and emergency exits

1.8.2 Airworthiness Certification

The Certificate of Airworthiness for the aircraft was issued by the IAA on 7 December 2022. The associated Airworthiness Review Certificate (ARC) was also issued on 7 December 2022 and was valid until 6 December 2023.

1.9 Meteorological Information

Met Éireann, the Irish meteorological service, provided the Investigation with an aftercast of the estimated meteorological conditions at the time of the occurrence. Details from the report received are reproduced in **Table No. 3**.

Meteorological Situation:	Low pressure centred north of Scotland extends a moderate to fresh westerly airflow over Ireland
Surface Wind:	West to south-west, 8-10 knots (kt), gusts 12-17 kt
Wind at 2,000 feet (ft):	Westerly, 10-15 kt
Surface to 300 ft:	Similar to surface
Visibility:	20-30 kilometres (km)
Weather:	Sunny spells and cloudy patches with light showers
Cloud:	Scattered (3-4/8 ^{ths}) layered cloud with bases between 1,500 and 2,000 ft, broken (5-7/8 ^{ths}) layered cloud with bases between 2,500 and 4,000 ft
Surface Temperature/Dew Point:	18/13 degrees Celsius
Mean Sea Level (MSL) Pressure:	1,017 Hectopascals (hPa)
Freezing Level:	12,000 ft

Table No. 3: Estimated weather conditions at EIWT at the time of the occurrence



1.10 Airfield Information

EIWT is a general and business aviation airport located approximately eight nautical miles west of Dublin, Ireland. It has one bitumen/macadam runway designated 25/07, with a take-off run and landing distance available of 924 metres (m) for RWY 25. The apron and all taxiways have bitumen/macadam surfaces.

Rescue and firefighting services are available during the airport's operating hours. The Air Traffic Control tower is located approximately 110 m from where the aircraft started to taxi and provides an unobstructed view of the south apron (**Photo. No 4**).



Photo No. 4: View from the control tower of the south apron

1.11 Human Factors

1.11.1 Distraction and Interruption

In May 2023, the UK Civil Aviation Authority (CAA) published Safety Sense Leaflet (SSL) No. 31 titled '*DISTRACTION AND INTERRUPTION IN GENERAL AVIATION OPERATIONS*'. It provides guidance to pilots with strategies on how to deal with distractions and interruptions, which may be trivial in nature but can lead to serious incidents or accidents. It states the following on the subject:

'Distractions and interruptions are a threat because they create demands on our cognitive systems that humans are not well designed to cope with. Distractions can be insidious and we are often unaware of the negative effect on our focus.'

[...]

'After the interruption or distraction has passed, new task demands can then arise, which then further divert our attention from remembering that the original task has not been completed. Even if we do remember to resume the original task, we may struggle to recall its exact status, making errors in completion more likely.'

FINAL REPORT

The Safety Sense Leaflet further states, in its section on personal issues:

'Issues such as illness or stress represent a significant human factor in many incidents and accidents. Often incidents involve behaviour or omissions thought uncharacteristic of the individual involved - for example taking an apparently rash decision or forgetting a vital action. Normally conscientious pilots can be affected by external factors and experience a loss of cognitive performance.'

Such issues may be a general distraction during the flight and have the effect of reducing mental capacity. The mind of the pilot may also drift from the task in hand, which will reduce the effectiveness of the prospective memory.

For GA pilots, a degree of self-awareness is necessary. In times of personal upset or stress it may be prudent to refrain from flying or take mitigations such as reducing the complexity of your flights or flying with another pilot. Building in margins of free time around your flying plans will also assist with transitioning to the correct mindset and remove the distraction of time pressure.'

1.11.2 Recognising Vulnerability

R. Key Dismukes, formerly of the NASA Ames Research Center, published an article titled 'REMEMBRANCE OF THINGS FUTURE: PROSPECTIVE MEMORY IN LABORATORY, WORKPLACE, AND EVERYDAY SETTINGS'. On the subject of 'Recognizing Vulnerability' he states:

'People often underestimate vulnerability to forgetting, perhaps because intentions typically involve simple, familiar actions. They may mistakenly assume that intended actions of profound importance [...] will not be forgotten, and they may assume that skill and conscientiousness are adequate safeguards in such situations. But numerous reports reveal that even the most conscientious of skilled operators sometimes forget intended tasks of great importance.'

Dismukes further states that 'Creating reminder cues can be one of the most powerful prospective memory tools. Cues that are distinctive, salient, and closely associated with the intention are generally the most effective, however no cue is effective if the task being performed when retrieval is needed does not direct attention to that cue and cause it to be processed.'

1.12 Case Study

On 7 August 2019 a Cessna Centurion 210 aircraft departed Southend Airport with its towbar still attached. During the departure the towbar fell from the aircraft onto the runway which went unnoticed until 30 minutes later when a landing Embraer 145 aircraft collided with the towbar. In that event, the commander of the landing aircraft stated that the towbar was difficult to see against the dark asphalt runway.



The commander of the departing aircraft stated to the UK's Air Accident Investigation Branch (AAIB) that prior to his arrival at the aircraft, he was involved in a minor road traffic incident which may have distracted him while completing his pre-flight checks, as it was 'on his mind'. The pilot also stated that prior to departure he had also left two bags behind.

As a result of that serious incident, the AAIB issued a Safety Recommendation to the UK CAA regarding the importance of increasing the visibility of ground equipment. The CAA responded with a 'Clued Up' safety article titled 'TOWBARS' which states:

'It's not quite black and white... White works well on dark asphalt, but not necessarily on concrete, whereas black or blue as we know aren't so good on the former but stand out well on the latter, and neither is brilliant on grass; it might seem a bit basic, but bright yellow, red and orange do suit many airfields as a stand-out colour and are a good choice for a towbar.'

1.13 The Aircraft Operator

Subsequent to the occurrence, the Operator modified the aircraft's towbar in order to make it visible from the cockpit, when attached to the aircraft. The modification is shown in **Photo No. 5**. The Operator advised the Investigation that the modification to the towbar was subsequently removed as, in their opinion, it was impractical.



Photo No. 5: Modification to towbar

Subsequently, the Aircraft Operator issued the following Flight Crew Instruction (FCI):

'Please note that irrespective and independently of any other Pre-flight external checks, the final pre-boarding action of the aircraft commander/instructor will be a 360 degree visual inspection/confirmation that all remove before flight external fittings have been removed, and hatches secured. This procedure is of particular importance with Tecnam type aircraft where external locks are employed. On aircraft where the instructor boards first, boarding will not be conducted until this procedure has been actioned.'

FINAL REPORT

2. AAIU COMMENT

On the day of the occurrence, the Student, who had taken a day off work to continue with his flight training, received a phone call of a personal nature requiring action by him. During his initial pre-flight walkaround inspection, he was interrupted by another phone call, which also required action by him and which, in the opinion of the Instructor, caused a degree of stress for the Student. The Instructor completed the pre-flight while the Student continued with his phone conversation. The aircraft was moved twice by the Instructor using the towbar to avoid the downwash from a departing helicopter and, having sheltered under the aircraft wing due to drizzle, the removal of the towbar was forgotten.

The Instructor was concerned for the well-being of the Student and offered him the opportunity to cancel the flight; however, this offer was declined. The Instructor boarded the aircraft first, followed by the Student. The aircraft requested taxi clearance from Weston Tower which was granted. The ATCO stated that he scanned the area in the vicinity of the aircraft for any conflicting traffic, however, he did not observe the towbar still attached to the aircraft until the aircraft was airborne. This was likely due to the distance between the aircraft and the ATCO's position in the tower, and the fact that the blue colour of the towbar was not conspicuous against the bitumen/macadam surface of the apron. In the case of the subject aircraft, the towbar, when attached, is not visible from the cockpit.

The Investigation notes that during the taxi phase of the flight, neither crew member noticed anything unusual. The taxi route required several turns that would have required steering inputs by the handling pilot, which in this instance was the Student under instruction. It is possible that during these inputs, there may have been some degree of resistance due to the still-attached towbar. The Student had only flown the subject aircraft on two previous occasions and may not have recognised any resistance, however minor, in the rudder pedals.

Shortly after becoming airborne, the ATCO observed the towbar hanging from the aircraft and advised the Crew, who elected to complete a circuit of the airport and land on RWY 25. During the landing, it is likely that the handle of the towbar contacted the runway first and then swung rearwards with the wheel of the towbar striking the aircraft. This caused minor damage to the fuselage.

This occurrence highlights the adverse safety effects of distractions and the fallibility of prospective memory in flight operations. The experienced Instructor described the occurrence as the '*culmination of many little events*' such as taking shelter under the wing, the departing helicopter and his concern for the Student. Safety research suggests that a towbar colour with high conspicuity reduces the potential for error. The Investigation notes the Instructor's comments in relation to the boarding procedure on the subject aircraft and the subsequent FCI issued by the Operator relating to a final 360-degree visual inspection to be carried out by a commander/instructor prior to boarding.

- END -

In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No. 996/2010, and Statutory Instrument No. 460 of 2009, Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulation, 2009, the sole purpose of this investigation is to prevent aviation accidents and serious incidents. It is not the purpose of any such investigation and the associated investigation report to apportion blame or liability.

Produced by the Air Accident Investigation Unit

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