FINAL REPORT

AAIU Report No.: 2002/008
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Operator:	Private
Manufacturer:	New Piper Aircraft Company
Model:	PA 28 – Cherokee 180
Nationality	British
Registration	G-AYPJ
Location	Weston Aerodrome
Date/Time UTC	26 April 2002 at 0730 hrs

SYNOPSIS.

While attempting to land at Weston Aerodrome, the aircraft overran the end of Runway (RWY) 07, penetrated the boundary hedgerow and came to a halt on a local minor public road. The aircraft experienced significant damage. However, neither the pilot nor the passenger, were injured.

NOTIFICATION

Both Weston Aerodrome and the Dublin Airport Station Manager reported this accident to the Air Accident Investigation Unit (AAIU) at 0800 hours on the 26 April 2002. Due to the fact that the aircraft was blocking a public road and bearing in mind that there were no injuries to the persons onboard, a decision was made by the local Garda Síochána to recover the aircraft back within the aerodrome boundary hedge. Prior to its removal, photographs were taken of the aircraft at the accident site by members from Weston Aerodrome and were subsequently provided to the investigation. Two inspectors from the AAIU arrived at the accident site at 0930 hours on the 26 April 2002 and commenced an investigation.

The AAIU transmitted formal notification on the day of the accident to the Irish Aviation Authority (IAA), the Air Accident Investigation Branch (AAIB) in the UK, the National Transport Safety Board (NTSB) of the (USA), the manufacturer, New Piper Aircraft Company (USA) and the Civil Aviation Authority (CAA) UK.

Under the provisions of ICAO, Annex 13, (Aircraft Accident and Incident Investigation), the Chief Inspector of Accidents appointed Mr. Jurgen Whyte (Operations) Inspector of Accidents/Investigator-in-Charge (IIC) and Mr. Graham Liddy (Engineering) Inspector of Accidents, to carry out an investigation into the circumstances of this accident and to prepare a report.

FINAL REPORT

1. FACTUAL INFORMATION

1.1 History of the Flight.

The aircraft, G-AYPJ, took-off from Mona Flying Club in Anglesey, North Wales, at 0630 hours UTC with one pilot and passenger onboard for a private 2000 ft VFR flight to Weston Aerodrome, Dublin. It was the pilot's first flight to Weston. The en-route segment of the flight was uneventful, other than the fact that the headwinds experienced were stronger than that originally forecasted. As both persons onboard the aircraft were required to be at an important meeting in Dublin at 0830 hours, the pilot was anxious for an early arrival at Weston.

From Killiney, G-AYPJ was vectored by Dublin Air Traffic Control (ATC) along the valley of the River Liffey. When the pilot had Weston in sight, he closed his flight plan with Dublin and then established radio communications[1] with the clubhouse at Weston. G-AYPJ was advised by the clubhouse that the wind was favouring RWY 25. Shortly thereafter, the pilot called downwind and continued for a left base turn for RWY 07 in the belief that he was actually approaching RWY 25. Due to the squally and turbulent conditions prevailing at the time, the pilot kept his speed up on approach (approximately 100 kt) with flap 10º. Flap 20º was selected on short finals. The aircraft touched down fast, at approximately the mid-point of RWY 07. The pilot applied braking, but was conscious of not over-braking in order to avoid skidding on the wet runway. The aircraft then drifted left of centreline, followed by a drift to the right side of the runway. It departed the paved surface at an angle of approximately 15 degrees from the centreline and abeam the numbers of RWY 25, which are approximately 61 metres from the end of the runway. The aircraft then ran parallel to the runway heading along the grass beside the runway and continued past abeam the end of the paved surface. It travelled a further 5 metres before it impacted the boundary hedgerow and slide down onto the road. No vehicles were present on the road at the time of impact. Both the pilot and passenger exited the aircraft unaided and uninjured.

1.1.1 Witness Observations

1.1.2 Observer No 1

A qualified pilot was located in the clubhouse when G-AYPJ made its initial radio call. He advised the pilot of G-AYPJ that the wind was favouring RWY 25. He did not provide wind direction or wind strength, however, he estimated the wind to be between 270-280 degrees at 20-25 kt. Observer No 1 recalled hearing G-AYPJ calling downwind and then some time later observed, with surprise, the aircraft attempting to land halfway down RWY 07. As the aircraft had drifted so far down the runway, he thought that the pilot would carryout a go-around. But then he saw the aircraft touch-on fast, bounce, touch-on again, yaw to the left, then to the right and depart the right hand side of the paved surface. The last he saw of G-AYPJ was as it disappeared over the boundary hedgerow at the end of RWY 07. He immediately told a colleague to telephone the local Fire, Garda Síochána and Ambulance Services (which was done) and he himself rushed to the accident site in a private car.

[1] The Weston Clubhouse provides advisory information only, on 122.4 MHz

1.1.3 Observer No 2

An aircraft technician was taking shelter from the elements while sitting in an aircraft, parked at the light aircraft park[2]. In his opinion, the wind was favouring RWY 25, or slightly north of that, at around 20-25 kt. He saw G-AYPJ approaching fast in over RWY 07. He jumped out of the aircraft that he was sitting in and saw the aircraft land-on halfway down the runway. It bounced, drifted to the left, then right and went of the right side of the runway. On seeing the aircraft going through the boundary hedgerow, he jumped into his car and drove straight to the accident site. On arrival he saw the aircraft positioned in the middle of the road with two persons standing beside the aircraft uninjured. He made the aircraft safe by disconnecting the battery and later assisted with the recovery of the aircraft from the road back to the aerodrome.

1.2 Injuries To Persons

There were no injuries reported to the investigation.

Injuries	Crew	Passengers	Others
Fatal	0	0	0
Serious	0	0	0
Minor	0	0	0
None	1	1	

1.3 Damage To Aircraft

The nose wheel was sheared off on impact with an earth bank and was contained within the hedgerow. Leading edge damage, skin puncture and distortion to the starboard wing was caused during the aircrafts transition through the hedgerow and on to the road below. The propeller was bent as a result of the aircraft's transition through the hedgerow and the subsequent impact with the road. The aircraft was subsequently written-off by the insurers.

1.4 Other Damage

Impact damage to hedgerow and road surface.

1.5 Personnel Information:

1.5.1 (Commander)

Personal Details	Male, aged 50 years
Licence	UK/CP/224880H/A
Last Periodic Check	5 January 2002
Medical Certificate	10 October 2001, Class I

Flying Experience:

Total all types	875	hours
Total all types PI	626	hours
Total on type	27	hours
Total on type PI	27	hours
Last 90 days	3	hours
Last 24 hours	1	hour

[2] The light aircraft park is located in the general area, south of the touchdown point of RWY 07.

1.6 Aircraft Information

1.6.1 General Information

Aircraft type	PA 28-180E
Manufacturer	Piper
Serial number	28-5821
Year of manufacture	1970
Certificate of airworthiness	Valid until 01 October 2004
Certificate of registration	23 January 1986
Total airframe hours	6,614 hours
Engine	Lycoming 0-360-A4A

1.6.2 Aircraft Description

The PA 28 is a low wing monoplane with a fixed tricycle undercarriage. The aircraft can carry a total of four people, with individual seats in the front and a bench type seat in the rear. The main door is on the starboard side with a smaller baggage door aft of the cabin on the starboard side. It is powered by a 180 hp Lycoming, four-cylinder, horizontally opposed, air-cooled engine, driving a two-blade fixed-pitch propeller.

1.6.3 Technical

There was no evidence of any pre-existing defect on the aircraft that might have had an influence on this accident. Both the two main wheels and the nose wheel tyres were in good condition.

In his post accident interview with an inspector of accidents, the pilot stated that the aircraft had suffered no technical failure and was fully serviceable prior to the runway excursion.

1.7 Meteorological Information

1.7.1 Met Éireann, the Irish Meteorological Service, provided the following after-cast.

General Situation: A depression of 984 hPa centred north of Scotland maintained a strong northwesterly airflow over the area. Active troughs passed through the area between 0700 and 0800 hours UTC.

Wind: 2,000 feet: 330 degrees 45 Kt
Surface: 300 degrees 17 gusting 27 kt occasionally 310 degrees 22 gusting 38.

Weather: Light rain showers at the time of the accident. However, active troughs had passed through the area between 0700 and 0800 hours UTC and there was isolated thunderstorm activity in these troughs.

Visibility: 10+ km.

Cloud: FEW 2,000 feet, SCT 4000 feet.

Temperature/Dew-Point: 08º/04º

MSL Pressure: 1003 hPa.

1.7.2 Wind Regime

The wind direction showed little variation around the time of the accident. Allowing for local topography, the wind direction most probably varied in the narrow range from 280º to 320º true. However, the wind speed remained gusty after the passage of the troughs as indicated by the surface wind speed and direction indicated above. There would have been moderate low-level turbulence associated with the steep pressure gradient, with a risk of isolated pockets of severe low-level turbulence.

1.8 Aids to Navigation

Not a factor

1.9 Communications

There is no control tower at Weston. The clubhouse provides advisory information on 122.4 MHz.

1.10 Aerodrome Information

1.10.1 General

Weston Aerodrome (N 5321.1 W 00629.4) is located 8 NM West of Dublin, 150 ft above mean sea level (AMSL). RWY 25/07 is the only tarmac runway, and is 890 metres long by 15 metres wide. There are also two grass runways, namely 12/30 and 18/36.

RWY 25 has a displaced threshold/turning area approximately 60 metres long, from the start of the paved surface to the painted numbers of RWY 25. 5 metres beyond the end of the paved surface is a 0.5 metre high hedgerow/bank running at right angles to the runway. The hedgerow is approximately 10 metres wide and beyond that there is a 3-metre drop onto a minor public road, called Cooldrinagh Lane.

There was no automatic equipment installed for recording or measuring wind speed and direction at Weston Aerodrome. There is a windsock located to the right of RWY 25, approximately 100 metres past the threshold. The clubhouse, where the radio is located, is situated south-south-east of the threshold of RWY 07 and approximately 800 metres from the windsock near the threshold of Runway 25, on a bearing of approximately 230° (T). Another windsock is located directly in front of the clubhouse.

Due to its location, it is not possible to view aircraft approaching RWY 07 or view the RWY 07 threshold from the clubhouse.

1.10.2 Runway Inspection

1.10.2.1 Braking action

An inspection of the runway after the accident, failed to find any skid marks related to braking-action. Tyre marks were clearly visible on the grass where the aircraft departed the runway edge and all the way up to the boundary hedgerow.

1.10.2.2 Runway markings

The runway number markings, in particular the RWY 07 (numbers) were observed to be small in size, very faded and therefore considered to be difficult to identify from a distance

1.11 Flight Recorders

The aircraft was not equipped with flight recorders nor was it required to be thus equipped.

1.12 Wreckage and Impact Information

The aircraft suffered extensive damage as a result of its impact and transition through the hedgerow/bank and the impact with the road below.

1.13 Medical Information

Nil

1.14 Fire

There was no fire. However, a fire tender from Weston Aerodrome and a local fire service tender responded and were present at the accident site shortly after the aircraft came to a halt.

1.15 Survival Aspects

Both persons onboard were wearing lap and diagonal strap restraints

1.16 Tests and Research

Nil.

1.17 Organizational and Management Information

1.17.1 Carriage of Documents

During the post accident interview, the pilot was unable to provide the investigation with flight documents such as the Certificate of Airworthiness (COA), Certificate of Registration (COR), Flight Manual and Checklist. The pilot did have his valid flying licence on his person.

In his response to the draft report, the pilot informed the investigation that his flying club had subsequently advised him that the COA/COR were attached underneath some papers on a clipboard in a seat pocket.

1.17.2 Wind Measuring Equipment

In a previous investigation[3] carried out by the AAIU at Weston Aerodrome, a Safety Recommendation **(SR 32 of 2001)** was issued on foot of the fact that (in part), *there was an absence of an accurate system for measuring the wind speed and direction at the airfield and that an anemometer would have permitted a more accurate wind speed assessment.*

SR 32 of 2001 reads:

Weston Aerodrome should consider the installation of an anemometer to facilitate accurate determination of wind speed and direction.

The AAIU received no response from Weston Aerodrome management in relation to this Safety Recommendation.

1.18 Additional Information

Nil

2. ANALYSIS

2.1 General

In a frank interview and in his submitted accident report form to the AAIU, the pilot recognised that he had landed downwind on RWY 07, believing it to be RWY 25. In addition, he recognised that he had misjudged the approach and landing. The pilot was at a loss as to how he made such an error in runway selection, then remain convinced that he was approaching RWY 25 and not take the opportunity to recover from the situation.

2.2.1 Discussion

In the aftermath of such an accident, and with the benefit of hindsight, the individual(s) directly involved can be puzzled when trying to determine, how, after being presented with many obvious warning signs, that they continued on regardless.

People are all prone to error from time to time. Whether they are highly skilled/experienced, complete amateurs or just going about their daily life, they will make mistakes. The consequences of mistakes will invariably depend on the circumstances/environment that individuals find themselves in, or place themselves in at the time. The final outcome may come about as a result of a single error event or through a number of accumulative errors. In high-risk activities, error(s) can lead to serious injury or death.

The more common aviation accidents occur during the approach, landing and the take-off phase of flight. In many cases these accidents come about through a "chain of events". Commercial operators make huge efforts to reduce the exposure to risk by developing Standard Operating Procedures (SOP's), Operation Manuals, Flight Manuals, Checklists, refresher training, ratings, checks etc.

[3] AAIU Report No 2001/0015, published 15 October 2001

Pilots engaged in general aviation (GA) flying have far less oversight available to them and therefore need to rely strongly on their own judgement, discipline and airmanship for their survivability. Many GA pilots can lack recent currency. In the early days of trying to build up experience, their exposure to risk is high. The exposure to risk can also increase when flying over difficult terrain in marginal weather conditions, operating into unfamiliar landing strips, or operating in difficult crosswinds.

In this particular accident, the pilot had good overall GA experience, but lacked recent currency (3 hours in the past 90 days). While it can never be fully determined as to why the pilot mixed up the landing runway, it can be said that there was a degree of complacency with regard to his discipline of flight and his airmanship. The fact that the pilot had poor recent currency and was flying into an unfamiliar landing strip, under squally/turbulent conditions should have provided sufficient warning to him that his exposure to risk had increased and that he was now more vulnerable to making an error of judgement.

The pilot did have some concern with regard to the squally/turbulent conditions and he was also aware that he had to make a timely arrival at Weston in order to attend an important meeting in Dublin. These factors in themselves may have provided a source of distraction to the pilot during his preparation for the approach and landing.

Additional factors, that may have contributed to the final outcome was the fact Weston, a high activity aerodrome, still does not have an accurate system for measuring wind direction and speed. If an accurate wind advisory had been available to the pilot, it may have concentrated his mind towards identifying the correct into wind runway.

The investigation observed that the runway number markings, in particular the numbers 07 were small in size, very faded, and difficult to identify from a distance. A visual sighting of the numbers by the pilot as he approached the runway, may have provided a clue that he had mixed-up the runways.

This accident should be a reminder to all that every person is vulnerable to errors of judgement. Safeguards must be put in place to ensure that error(s) are recognized and that appropriate and timely corrective action(s) are put in place.

Safeguards such as:

- An over-flight "recce" of the unfamiliar aerodrome; would have provided the pilot with an opportunity to orientate the runways and reconcile the landing runway against the prevailing wind conditions.

- A check of the aircraft heading against the runway heading on final approach; would have confirmed to the pilot as to which runway he was actually approaching.

- Recognition of the higher-than-normal ground speed on final approach; would have been an indication to the pilot that the aircraft was being affected by a significant downwind component.

When the aircraft made its initial touchdown approximately halfway down the runway, the pilot lost his opportunity to break the last link in the accident chain. Having failed to touch-on within the recognized touchdown point (first third of runway), the pilot should have been more disciplined to accept that he had "got it wrong" and therefore initiate an immediate go-around. As it was, he persisted with the attempt to land the aircraft. Had any one link in the accident chain been identified and broken, it is probable that this particular event would not have occurred.

3. CONCLUSIONS

3.1 Findings

3.1.1 The pilot was medically fit and licensed in accordance with the UK Civil Aviation Authority Regulations to undertake this flight.

3.1.2 No Flight Manual or checklist was carried onboard the aircraft.

3.1.3 The pilot stated that the aircraft had suffered no technical failure and that it was fully serviceable prior to the runway excursion.

3.1.4 Weston Aerodrome advised G-AYJP on initial radio contact that the wind was favouring RWY 25.

3.1.5 The pilot positioned his aircraft for RWY 07, in the belief that he was actually approaching RWY 25.

3.1.6 The aircraft was affected by a significant downwind component as it approached RWY 07.

3.1.7 Having failed to touch-on within the recognized touchdown zone, the pilot decided to continue with the landing, rather than initiate a go-around.

3.1.8 The aircraft's initial touchdown was fast and at a point approximately halfway down the 890 metre runway.

3.1.9 The combination of a high touch-on ground speed and a lack of an aggressive braking action by the pilot rendered it impossible to stop the aircraft within the remaining runway distance available.

3.1.10 The management of Weston Aerodrome has yet to respond to Safety Recommendation 32 of 2001, which was issued on the 15 October 2001.

3.2 Causes

3.2.1 The pilot landed downwind and was unable to stop the aircraft within the remaining runway distance available.

3.3 Contributory

3.3.1 Poor situational awareness.

4. SAFETY RECOMMENDATIONS

4.1 The management of Weston Aerodrome should ensure that the runway number markings are painted and made clearly visible to approaching aircraft. **(SR 17 of 2002**)

4.2 As the management of Weston Aerodrome has not responded to safety recommendation **(SR 32 of 2001)** (15 October 2001), the following safety recommendation is re-issued.

Weston Aerodrome should consider the installation of an anemometer to facilitate accurate determination of wind speed and direction. **(SR 18 of 2002)**

During this investigation the AAIU was informed that, since 10 August 2002, a new owner has taken over Weston Ltd. The new Directors have placed Flight Safety as a No 1 priority.

Appendix A

Final resting position of G-AYPJ on Cooldrinagh Lane