Accident

Aircraft Type and Registration:	ATR 72-212 A, G-OASB
No & Type of Engines:	2 Pratt & Whitney Canada PW127M turboprop engines
Year of Manufacture:	2001 (Serial no: 679)
Date & Time (UTC):	14 November 2025 at 2055 hrs
Location:	East Midlands Airport
Type of Flight:	Commercial Air Transport (Cargo)
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to nose and main landing gear
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	58 years
Commander's Flying Experience:	5,554 hours (of which 5,152 were on type) Last 90 days - 80 hours Last 28 days - 33 hours
Information Source:	AAIB Field Investigation

Synopsis

The aircraft was operating a scheduled cargo service from Guernsey Airport (GCI) to East Midlands Airport (EMA). The flight was uneventful until the late stages of final approach. As the commander retarded the thrust levers to prepare for touchdown, the aircraft floated and then rapidly pitched down. The aircraft touched down on the nose landing gear and then bounced twice before finally landing. The nose landing gear was extensively damaged. The two pilots were the only occupants and neither was injured.

History of the flight

The aircraft was loaded with 3,300 kg of fuel and 3,858 kg of freight for a scheduled cargo flight from GCI to EMA. All loading was carried out in accordance with standard procedures and the aircraft mass and balance was within limits. Start up, departure, climb, cruise and the descent to final approach were all uneventful.

The crew obtained the EMA ATIS report in the cruise and the commander, who was PF, carried out the approach brief. The commander described the conditions as "far from ideal, but well within safe operating limits", and stated that he had operated in much worse conditions. The ATIS was updated as the aircraft approached EMA and the weather for the approach was reported as broken cloud with a base at 700 ft aal, rain, and with the wind from 050° at 11 kt gusting 23 kt. From these figures and the aircraft mass the crew calculated and set an approach speed (V_{APP}) of 123 kt. The approach was normal and all the routine checklists were completed.

On approach, EMA ATC advised the crew that the wind was 060° at 20 kt with no gust. The crew decided to reduce the V_{APP} to 120 kt. The co-pilot, who was PM, called "STABLE" in accordance with company procedures at 1,000 ft aal. Then, as the aircraft neared the ground, the co-pilot gave radio altitude callouts at 80, 50, 20 and 10 ft agl. The 10 ft call from the PM is a cue for the PF to retard the power levers to flight idle. The commander did so and initiated the flare.

Both pilots subsequently described the aircraft as "floating in the ground effect". The commander recalled the aircraft then dropping suddenly onto the runway although the IAS was still above $V_{APP.}$ He recalled this event as lasting only one or two seconds and that he was taken completely by surprise and was unable to execute a go-around to prevent a touchdown. The aircraft landed heavily and then bounced back into the air. The commander recalled raising the nose, but the aircraft bounced again. Again, the commander felt taken by surprise. After the second bounce he did not want to apply power as he considered that, with the nose-down attitude, power would accelerate the aircraft into the ground.

As the aircraft touched down a third time, the commander stated it was apparent that the nose landing gear had been damaged. The PM took control of the yoke while the commander focused on keeping the aircraft on the centreline using the nosewheel tiller. The commander exited the runway at Taxiway S (Figure 1). Once clear of the runway, EMA ATC asked if the commander could continue to taxi to Parking Stand 71. Due to the difficulties in manoeuvring the aircraft, the commander informed ATC that he would have to shut down on the taxiway. An airfield operations vehicle approached and confirmed that both nose landing gear tyres were deflated. Neither pilot was injured.

Airfield information

EMA has one primary runway, designated Runway 09/27, which is 2,893 m long and 45 m wide. The airport layout is shown in Figure 1.

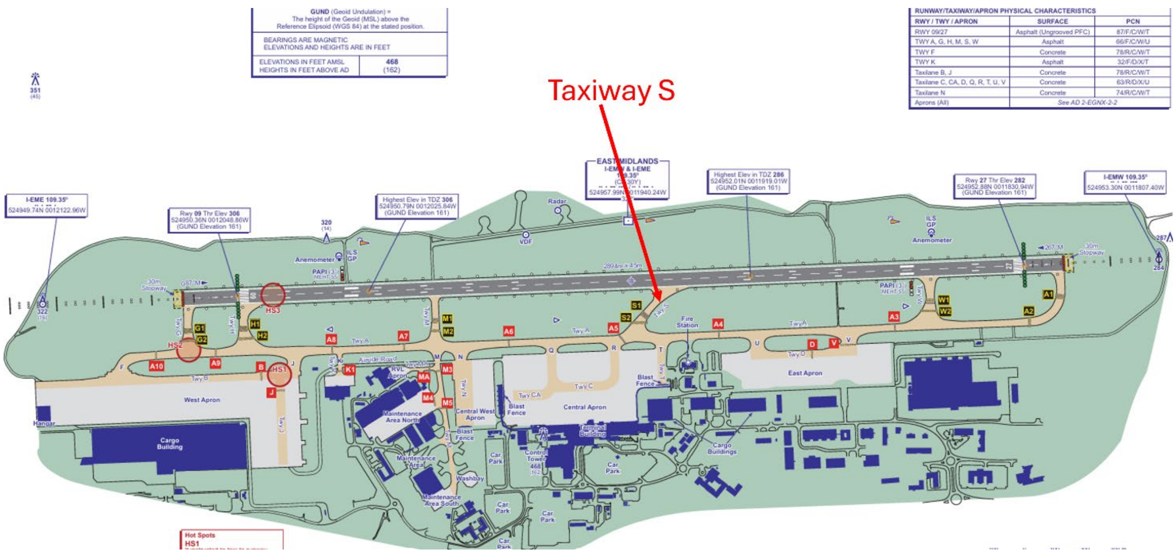

Figure 1

EMA layout diagram

Meteorology

The briefing pack given to the crew before flight contained a TAF for EMA which forecast the weather as:

For the period 1200 hrs on 14 November until 1200 hrs on 15 November 2025.

- Wind: 060° at 15 kt, gusting to 25 kt.
- Visibility: 10 km or more.
- Cloud: broken cloud at 1,500 ft agl.

Temporary Conditions from 1200 hrs until 0000 hrs on 15 November 2025.

- Visibility: 6 km.
- Weather: light rain and drizzle.
- Cloud: broken at 600 ft agl.

Another temporary period from 1200 hrs on 14 November until 0300 hrs on 15 November 2025.

- Wind: from 060° at 20 kt, gusting to 36 kt.

40% probability between 1200 hrs on 14 November and 0000 hrs on 15 November 2025.

- Visibility: 4 km.
- Weather: heavy rain and heavy drizzle.

The METAR at 2050 hrs was wind from 050° at 13 kt, visibility 6,000 m in rain, cloud broken at 700 ft aal, temperature and dewpoint both 8°C and QNH 1005 hPa.

Recorded information

The aircraft was fitted with an FDR and CVR, both of which recorded the approach and landing at EMA. In addition, the airport provided CCTV recordings that captured the event.

The FDR recorded a number of parameters including pitch attitude, engine data and the position of the left elevator. Control column position and force was not recorded. A ‘pitch effort discrete’ parameter was available which was triggered whenever the control column pitch force exceeded 10 daN in either the pitch-up or pitch-down axis. This was recorded for both control columns independently.

Prior to the flight, a ‘full and free’ control check was performed which showed the left elevator range of +12.7° to -21.8°, where positive elevator deflection would be a control input in the aircraft nose-down sense.

As the aircraft descended through a radio altitude of 50 ft, the recorded power lever position was 50°[1], engine torque was 37% on both engines and indicated airspeed was 120 kt. Over the next five seconds, the recorded power lever position began to reduce to 44°, engine torque gradually reduced to 30% and the aircraft began to pitch up (Figure 2, Point A).

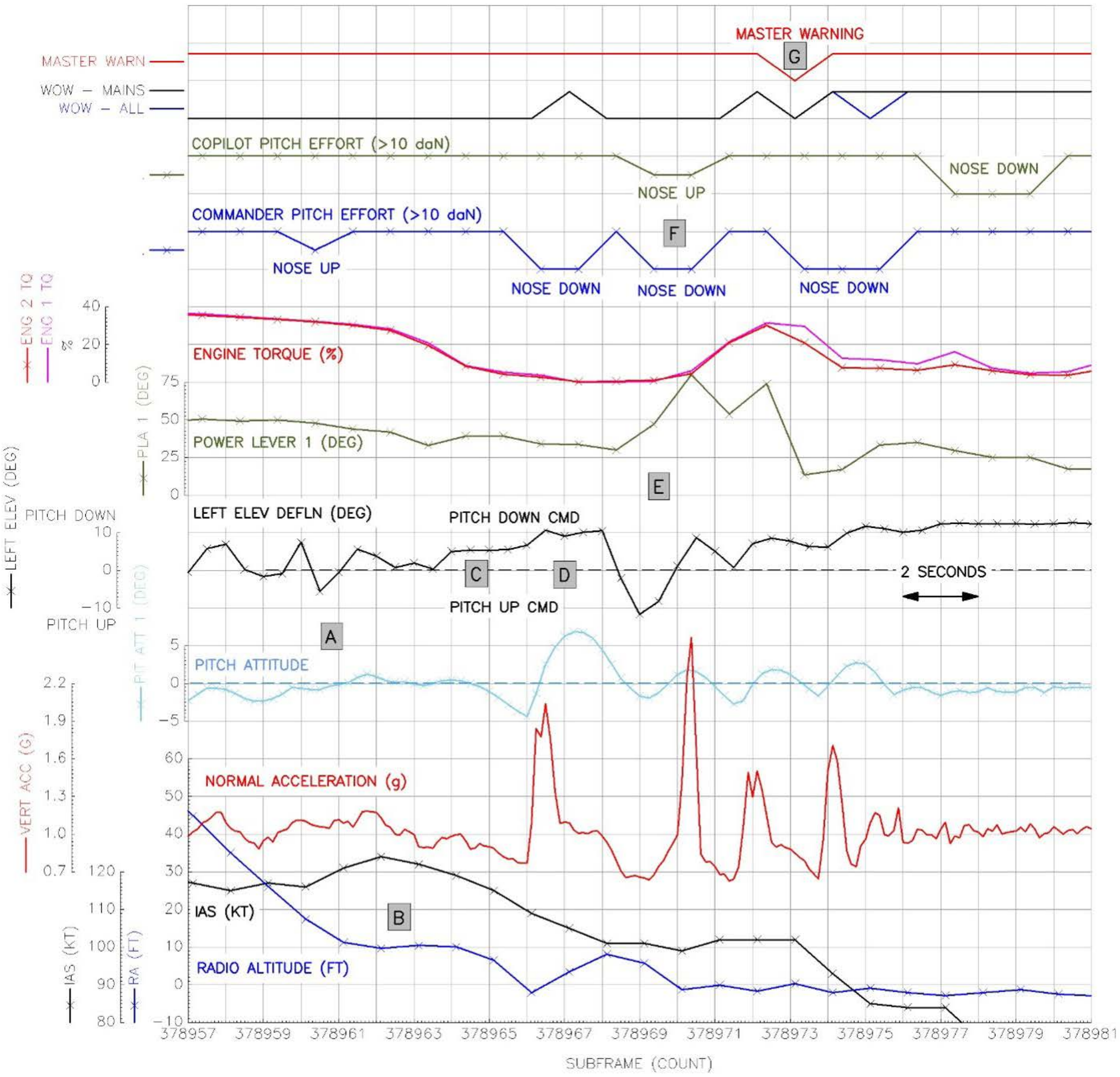

Figure 2

G-OASB flight data parameters

The power levers were reduced further and engine torque reduced but the aircraft floated at approximately 10 ft radio altitude for the next three seconds (Point B). After this, nose-down elevator was recorded (Point C) and the aircraft pitched down from +0.4°[2] to -4.4°, consistent with that elevator deflection, over the next two seconds.

Footnote

1 During takeoff when full power was demanded, the power levers reached 75°. When idling, power lever position was 19°.

2 Positive pitch is pitch up, negative pitch is pitch down.

The first touchdown was at a pitch attitude of -4.4° and a vertical acceleration of 2.04 g. The aircraft bounced and pitched up during which the main landing gear was momentarily recorded as being on ground (Point D). During this time, continued pitch-down elevator was applied, before reversing to pitch-up. At the same time, the power levers were advanced and the engine torque increased (Point E). The recorded 'pitch force discrete' indicated that just prior to the second bounce, the commander was applying a pitch-down effort and the co-pilot pitch-up (Point F).

The aircraft bounced a second time at 2.6 g, a third at 1.5 g before settling on the runway with a 1.7 g touchdown. Just after the third bounce, the master warning was heard on the CVR (and also recorded on the FDR (Point G)). The manufacturer commented that this was likely to have been a takeoff configuration warning, with the weight-on-wheels system briefly sensing that the aircraft was on the ground while the flaps were not in the takeoff position.

Aircraft information

The ATR 72-212A is a twin turboprop airliner with a retractable tricycle landing gear. G-OASB was converted from passenger to freighter configuration in 2022.

Aircraft examination

Both nose landing gear wheels were fractured during the landing, causing the tyres to deflate and difficulty for the flight crew in steering the aircraft from the runway. Figure 3 shows the damage to the nose landing gear after the aircraft stopped on Taxiway S.

Figure 3

Damage to nose landing gear after landing

The wheel hub fractures were visually examined and the failures were determined to be due to mechanical overload (Figure 4).

Figure 4

Overload fracture of right nose wheel (left nosewheel similarly damaged)

The damaged nosewheels were removed and serviceable wheels installed to permit the aircraft to be towed to a parking apron. Subsequent examination of the nose landing gear axle revealed that it had been bent upwards during the landing (Figure 5).

Figure 5

Upward bend evident in right nosewheel axle (left axle similarly damaged)

The aircraft manufacturer assessed the loading sustained during the heavy landing and determined that the nose landing gear leg, drag brace, right main landing gear leg and shock absorber required replacement due to exceeding their design load capacities. The manufacturer also required the left main landing gear shock absorber to be removed and inspected to determine whether it remained in a serviceable condition.

Weight and balance

The aircraft has a basic weight of 12,315 kg and it was loaded with 3,858 kg of cargo and 3,300 kg of fuel. Allowing 50 kg of fuel for taxi out the aircraft's takeoff weight was 19,432 kg against a MTOW of 22,800 kg. The CG position for takeoff was 31.3% of the Mean Aerodynamic Chord (MAC)[3], which was within limits. The calculated fuel burn for the sector was 839 kg so the planned landing weight was 18,854 kg against a maximum landing weight of 22,350 kg. The CG for landing was 31.1% MAC, also within limits.

Footnote

3 The Mean Aerodynamic Chord (MAC) is a single, representative chord length used to describe the aerodynamic properties of a wing whose chord varies from root to tip. Most wings are tapered, swept, or otherwise nonrectangular, so the chord length isn't constant and for stability calculations the MAC is used as reference.

Startle effect

The startle effect is an immediate, involuntary physiological and cognitive response to a sudden, unexpected stimulus (such as a loud noise, abrupt aircraft motion, or unexpected warning). In aviation, startle can temporarily impair higher-order cognitive functions, particularly situation assessment and decision-making.[4]

When startled, pilots may experience attentional narrowing, delayed comprehension, and a tendency to revert to automatic or inappropriate actions, rather than deliberate, analytical decision-making. Research shows that startle interferes with a pilot's ability to update ('reframe') their mental model of the situation, increasing the likelihood of incorrect or delayed decisions during time-critical phases of flight.

Although the cognitive disruption is usually less than 30 seconds, it can be decisive. Startle, especially when combined with surprise, has been identified as a contributory factor in loss-of-control accidents where pilots made ineffective initial decisions despite adequate technical skill.

Organisational information

The operator's manual contains the following guidance on 'bounced landings':

> *'BOUNCE ON LANDING*
>
> *Bouncing at landing usually is the result of high energy approach. In-service experience shows that most of the events involving bounces at landing resulted from the following factors:*
>
> - *Excessive airspeed during approach*
> - *Engine power on touchdown*
> - *Late flare initiation*
> - *Incorrect flare technique*
>
> *Some environmental factors could also contribute to experience bounce at landing, such as windshear and thermal activity.*
>
> *BOUNCE LANDING – HOW TO PREVENT*
>
> *1. Stabilized Approach*
>
> *The most efficient prevention is to ensure the approach is stabilized with a focus on the airspeed and the rate of descent. Stabilization means:*
>
> - *Aircraft configured for landing*
> - *All briefing and checklists done*

Footnote

[4] Martin et al. (2015), *'International Journal of Aviation Psychology'*.

- *Lateral flight path management*
- *Energy management (Pitch, Power, Speed and Vertical flight path)*

In case of un-stabilized approach, at any point during the approach, a go-around should be performed. For indication, when the aircraft is stabilized in approach at VAPP on a 3° descent path, the pitch attitude should be in the range -2.5° to +1°. A pitch attitude lower than -2.5° during the approach may indicate an excess of aircraft energy.

2. Correct Landing Technique

Power reduction should be initiated passing 20 ft. The touchdown should occur with power levers at Flight Idle. In coordination with power reduction, the pilot flying progressively adjusts aircraft pitch to flare the aircraft. Airspeed reduction during flare is normal. Touchdown should occur at an airspeed below VAPP. For indication, a pitch attitude below -1.5° at touchdown would result in contact with the runway on the nose.

3. Bounce Recovery - Rejected Landing

In case of significant bounce at touchdown, the following rejected landing technique must be applied:

- *Maintain a normal landing pitch attitude.*
- *Initiate a rejected landing by advancing power levers to the ramp.*
- *Maintain the landing gear and Flaps configuration.*
- *Be ready for a possible second touchdown. Should a second touchdown happen, as landing pitch attitude is maintained and power is increased, it would be soft enough to prevent damage to the aircraft.*
- *When steady positive climb is established, follow normal go-around procedures.*

Note: when a rejected landing is initiated, the flight crew must be committed to proceed with the intended maneuver'.

Analysis

The aircraft was conducting a scheduled cargo flight from GCI to EMA. The aircraft was within its mass and balance limitations for the flight and there were no extant technical defects. The forecast weather for the arrival time at EMA indicated strong winds with gusts of up to 36 kt for the time of arrival. The commander had initially set a V_{APP} of 123 kt but reduced this to 120 kt when ATC gave a windspeed of 20 kt with no gust.

In the latter stages of the approach the aircraft attitude was in the expected range for a stabilised approach. Conditions were somewhat turbulent so the commander as PF was making frequent control inputs to maintain attitude and track the approach path.

The approach was normal and the commander recalled the 10 ft radio altitude call from the co-pilot at which point he retarded the power levers to idle. The aircraft briefly floated in the ground effect. The crew recalled the aircraft suddenly dropping to the runway, which may have been a result of a change of airflow over the aircraft due to the turbulent conditions. The recorded data showed a nose-down elevator deflection and the aircraft attitude pitched from approximately level to 5° nose-down in one second. The aircraft landed nosewheel first and then bounced. The commander, taken by surprise, did not initiate a go-around.

After the first bounce, the commander, possibly still inhibited by a startle effect and feeling the aircraft was again nose-down, did not apply power to avoid driving the aircraft into the ground. The aircraft bounced a second time and then landed.

It was only nine seconds from the start of the initial pitch-down to the aircraft finally landing. The commander's decision-making capacity throughout the landing could have been affected as a result of a physiological and psychological response to the unexpected pitch down and bounce after the initial runway contact.

Conclusion

The aircraft pitched down rapidly in the final stages of an approach following a nose-down elevator deflection and touched down heavily on the nosewheel. The aircraft nose landing gear and right main landing gear were damaged and had to be replaced.

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