Serious Incident

Aircraft Type and Registration:	Airbus A320-251N, G-UZEF
No & Type of Engines:	2 CFM International Sa LEAP-1A26 turbofan engines
Year of Manufacture:	2025 (Serial no: 12383)
Date & Time (UTC):	20 April 2025 at 0547 hrs
Location:	South-western UK Airspace
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 6 Passengers - 177
Injuries:	Crew - None Passengers - None
Nature of Damage:	None
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	15,100 hours (of which 9,100 were on type) Last 90 days - 115 hours Last 28 days - 45 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and enquiries by the AAIB

Synopsis

The crew left the ditching pushbutton selected when re-configuring the aircraft from the de-icing checklist. With the ditching pushbutton selected the aircraft did not pressurise and the cabin altitude slowly increased as the aircraft climbed to its cruise altitude of FL390. The crew were alerted to the increasing cabin altitude[1], and an emergency descent was performed. During this procedure the commander noticed the ditching pushbutton was on and once this was deselected the aircraft pressurisation returned to normal. The aircraft was levelled at FL200 and after some analysis the crew determined that they could continue with the flight to their destination. The aircraft climbed up to FL370 and the rest of the flight was completed without further incident.

The operator and the manufacturer have taken safety action to raise awareness of the event and to amend the de-icing checklist

History of the flight

The flight crew were operating an early morning scheduled service from Belfast Aldergrove airport (Belfast) to Palma de Mallorca airport, Spain (Palma). The flight was a training flight

Footnote

[1] Cabin altitude is pressure level of an aeroplane's cabin expressed as an equivalent altitude above mean sea level.

for the co-pilot, who had completed 36 of the planned 50 training sectors. The aircraft had arrived late from its previous flight that morning. As the flight crew walked towards the aircraft, the commander noticed what appeared to be ice on the upper surfaces of the wings, fuselage and stabiliser.

Once the crew were in their seats, the commander took a few minutes to settle the co-pilot. He explained the aircraft would probably need to be de-iced; a process which the co-pilot had not experienced before. In addition to completing the regular pre-flight procedures, the flight crew needed to configure the aircraft for de-icing before the de-icing crew arrived.

The commander used the relevant checklist in the Quick Reference Handbook (QRH), which was available to both crew members on their electronic tablet devices, to configure the aircraft. The de-icing crew arrived and performed a tactile check, reporting to the commander there was no longer any requirement to de-ice. Therefore, the flight crew began to reinstate the configuration of the aircraft referencing the checklist but, in doing so, omitted to return the ditching pushbutton to OFF (Figure 1).

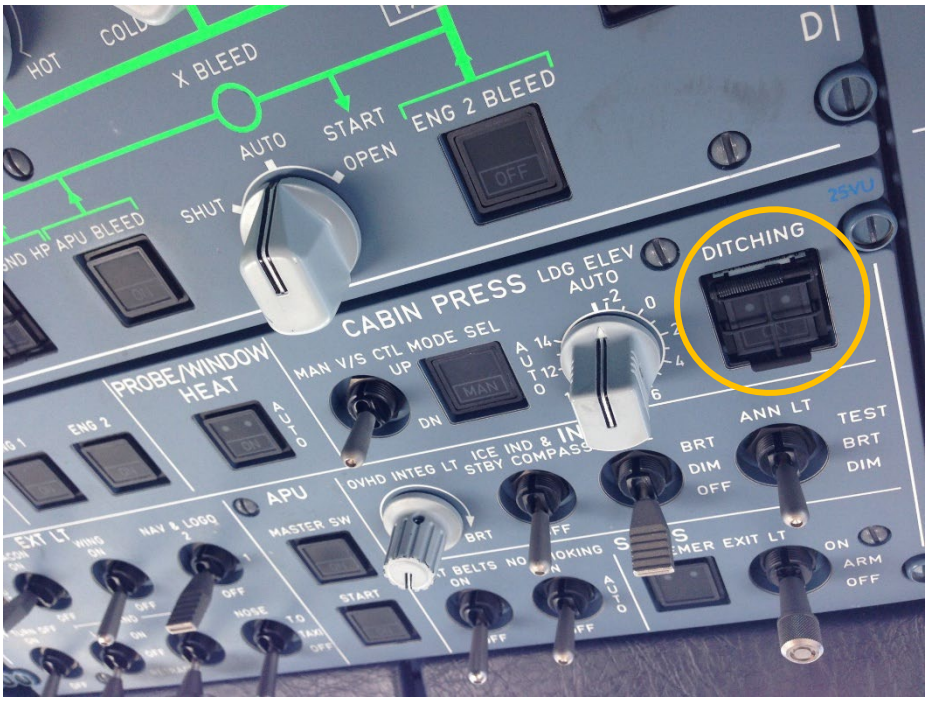

Figure 1

Ditching pushbutton, situated on the right side of the overhead panel ©A320 Guide

The flight departed with the co-pilot operating as PF and the commander as PM. Shortly after the aircraft reached cruising altitude, the crew noticed that the cabin altitude indication was rising. With limited time for discussion, the commander announced, “oxygen masks on, 100%”. Having both donned their oxygen masks, the commander alerted the cabin crew with a public address. The commander then announced an emergency descent, instructing the co-pilot to declare a MAYDAY. The commander could be heard on the CVR verbally monitoring the cabin altitude and prompting the co-pilot with his memory actions, eventually

taking over and initiating the descent. During this period the Electronic Centralised Aircraft Monitoring (ECAM) warning for excess cabin altitude sounded, and the crew commenced the procedure for dealing with that.

With the aircraft descending, the commander switched the annunciator lights[2] to BRIGHT, to facilitate a check of the overhead systems panels. Looking at the panels with the lights now at bright he noticed that the ditching pushbutton ON light was illuminated. Realising this was the reason behind the cabin altitude warning and slow decompression, the flight crew requested to level off the aircraft with ATC. The ditching pushbutton was reset to OFF, and the cabin pressurisation resumed a normal profile, negating the requirement for the flight crew to remain on oxygen. The ECAM pressure altitude warnings ceased and after further communication with ATC the aircraft levelled at FL200.

The cabin manager confirmed there had been nothing abnormal in the cabin and reported that passengers seemed unaware of the descent. The commander discussed and generated options about the ongoing flight with the co-pilot, checking the fuel status before deciding to climb back up to cruise at FL370, and continue to Palma.

Recorded information

The aircraft was fitted with Combined Voice and Flight Data Recorders which were downloaded at the AAIB. Both recorders captured the event and were used to help write the history of flight.

At 0453 hrs, the recorded outflow valve position moved from 100% (fully open) to 0% (fully closed) and remained in this position until the event. The aircraft took off at 0523:30 hrs and climbed progressively to FL390, during which the recorded cabin altitude climbed (Figure 2).

Footnote

[2] The annunciator lights are integral lights within the pushbutton switches of the flightdeck, they can be selected to BRIGHT or DIM or to TEST which illuminates all the annunciators at the same time.

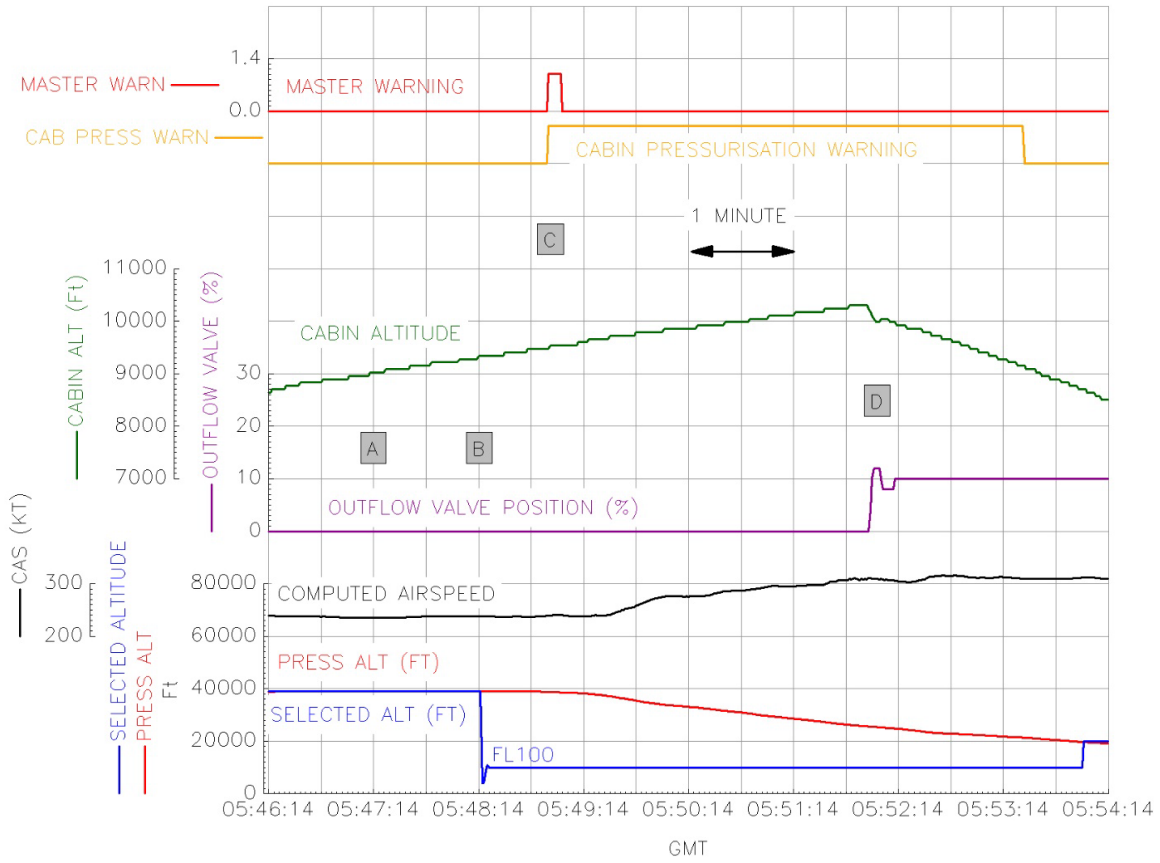

Figure 2

G-UZEF FDR data

At 0547:14 hrs, the aircraft was at FL390 and the recorded cabin altitude was climbing past 9,000 ft. The CVR recorded the commander questioning why both packs were shown as OFF (Figure 2, Point A). The crew donned oxygen masks and a minute later, the autopilot selected altitude reduced from FL390 to FL100 and the aircraft descended (Figure 2, Point B). A MAYDAY was declared and the cabin altitude continued to climb. At 0548:54 hrs, the recorded cabin pressurisation warning was recorded, accompanied by a Master Warning audible on the CVR (Figure 2, Point C).

The flight crew performed the ECAM actions and continued discussing why the packs were OFF. They determined that the ditching pushbutton was selected[3] and at 0551:57 hrs, the recorded outflow valve position increased to 12% and the cabin altitude began reducing (Figure 2, Point D). Approximately 90 seconds later, the recorded cabin pressurisation warning reset. Maximum recorded cabin altitude was 10,304 ft.

Aircraft information

Aircraft pressurisation system

The A320 series is fitted with an automatic cabin pressurisation system. Its primary function is to adjust cabin altitude and its rate of change to provide occupants of the aircraft with a

Footnote

[3] Position of the DITCHING pushbutton was not recorded.

comfortable flight. When normally operating, cabin pressurisation is fully automatic. There is an outflow valve on the right side of the fuselage behind the aft cargo compartment. In normal operation the position of that valve is controlled by one of two cabin pressure controllers.

Air for pressurisation and air conditioning is supplied by two air conditioning packs. The packs receive bleed air from the engines or the auxiliary power unit (APU). Bleed air sources and packs are switched on and off using individual pushbuttons on the air condition systems panel on the overhead panel (Figure 3). The air flow into each pack is regulated by a pack control valve.

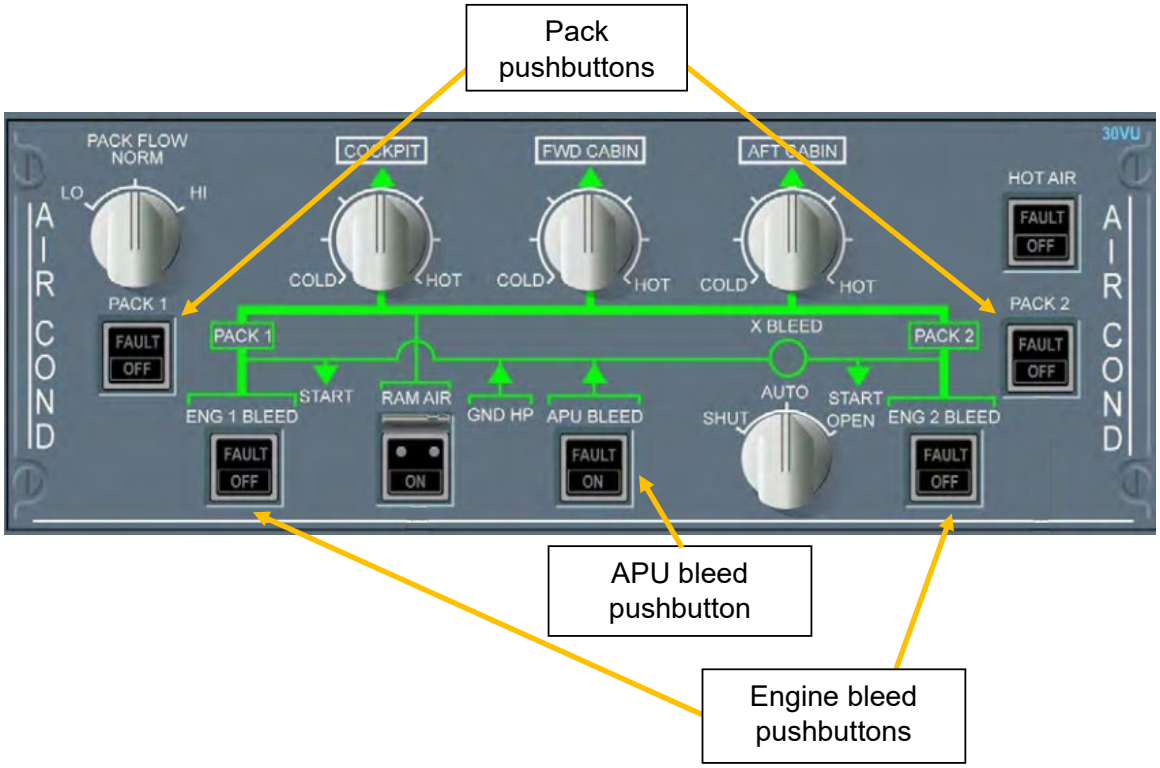

Figure 3

Air conditioning controls on the overhead panel ©Airbus

When the aircraft is on the ground, the cabin can also be conditioned using a ground air source. That does not involve using either of the aircraft's air conditioning packs.

The aircraft's ECAM system presents information to the pilots on two central screens in the flight deck. It displays primary engine indications, fuel quantity, flap and slat positions, bleed air configuration, warning and caution alerts, and memos. The ECAM pages include synoptic diagrams of all the aircraft systems with status messages. The system page for the bleed system contains indications about the position of the pack control valves (Figure 4).

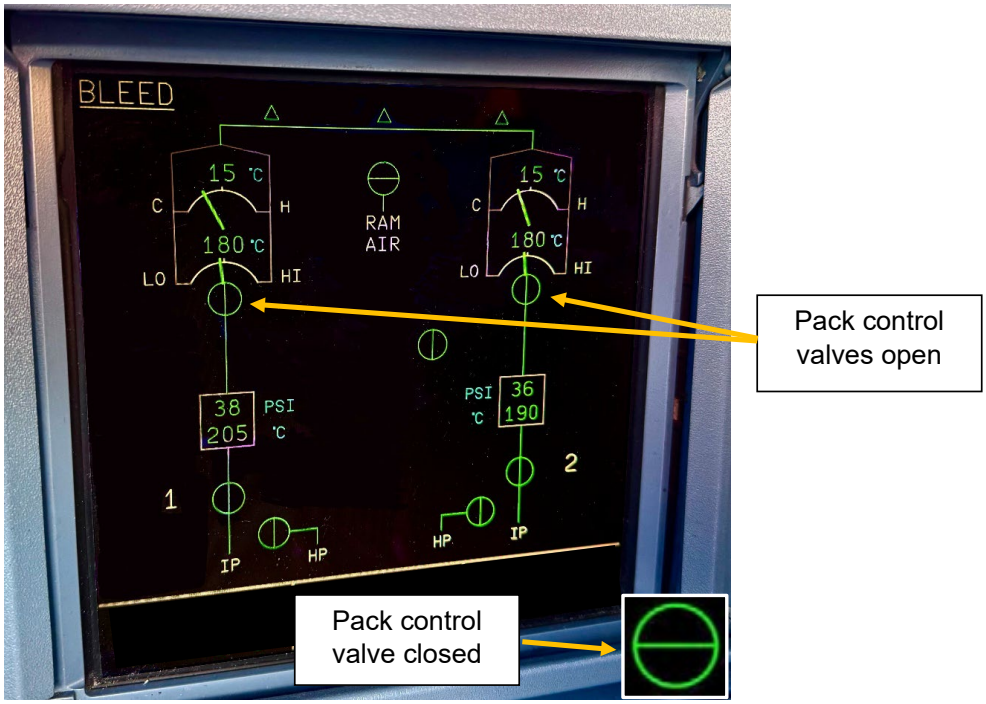

Figure 4

Bleed ECAM systems page with inset showing how closed valve would be displayed ©A320 Guide

The cabin pressure page shows the position of the outflow valve, cabin altitude, differential pressure, and rate of cabin altitude climb or descent (Figure 5). There are two pack indications which are small triangles above the related pack label. These triangles are normally green with the pack label in white. Both become amber when the pack flow control valve is closed with the associated engine running.

Figure 5

Cabin Pressure ECAM system page ©Airbus

Ditching pushbutton

The aircraft has a ditching pushbutton on the cabin pressurisation system section of the overhead panel (Figure 1). It is used if the aircraft ditches on water to minimise water entry into the aircraft. The pushbutton is guarded and when operated signals the outflow valve, and any valves below the flotation line of the aircraft, to close. It also signals the pack control valves to close regardless of any other control signals. As long as the ditching pushbutton is selected, the outflow valve and pack control valves will remain closed. There is no direct indication on the ECAM of the position of the ditching pushbutton.

The manufacturer specifies that in flight, the PF and PM must crosscheck guarded controls before operating them. There is no such specification for their operation on the ground.

De-icing procedures

Aircraft performance is certified based on a clean wing without any ice or other frozen precipitation on it. If ice is present the aircraft must be de-iced/anti-iced as required before departure even if the temperature is above freezing.

De-icing requires fluid designed to remove ice being sprayed on the effected surfaces of the aircraft. To reduce the possibility of fluid from being ingested into the cabin the crew must configure the aircraft beforehand. This involves turning off all sources of bleed air as well as selecting the ditching pushbutton. The checklist is available in the QRH and the Flight Crew Operations Manual. There is an additional checklist for reconfiguring the aircraft after spraying is completed which includes deselecting the ditching pushbutton and checking the outflow valve is open on the relevant ECAM systems page. The manufacturer's guidance on the use of such 'supplementary' checklists is:

> *"The procedures should be applied in accordance with the READ & DO principle, i.e. the PM reads the procedure and the PF or the PM acts on the controls, depending on the context".*

Because G-UZEF was not actually sprayed with fluid, there were items in the reconfiguration checklist which would not have been relevant to the crew, for example, receiving the de-icing report. Therefore, these steps would have been skipped over during the reconfiguration process.

Emergency descent procedure

The manufacturer states that crews should initiate an emergency descent if they identify a depressurisation event. Relevant indications are the cabin altitude and cabin rate of climb readings, the excess cabin altitude alert, and the oxygen masks dropping down in the cabin. The cabin altitude will begin to flash on the ECAM systems page at 8,800 ft cabin altitude. The excess cabin altitude alert triggers when the cabin reaches or exceeds 9,550 ft. The crew are required to drop the oxygen masks for the cabin manually if the cabin altitude exceeds 14,000 ft or is obviously going to do so. The automatic system will drop the masks at cabin altitude14,000 ft regardless.

Additional information from the crew

Commander

The commander was an experienced training captain with the operator. He described the light conditions on arrival at the aircraft as dark with dawn just approaching as they started their pre-flight preparation of the flight deck.

The commander stated he was keen to reduce delays to the aircraft's flying schedule for the day. He commented he may have felt pressure to get the aircraft ready for departure after establishing it did not require de-icing. He said he may have reconfigured the aircraft himself rather than completing the checklist as 'read and do'. He noted that "when looking up at the overhead panel in those light conditions, with the annunciator lights on dim, the ditching pushbutton light, if illuminated, is not clearly visible".

The flight proceeded normally, climbing to a cruise altitude of FL390. As the aircraft levelled off, the commander saw the cabin pressure reading appear on the lower ECAM screen, flashing, at 9,100 ft. He also noted that both pack indications on the page were in amber, although the pack switches on the overhead panel were ON with no fault lights. Shortly afterwards the ECAM EXCESS CABIN ALTITUDE warning was generated. With the cabin altitude still climbing the commander announced that both should don their oxygen masks and commence an emergency descent. The commander actioned the PM memory item of switching on the seat belt sign but noted the co-pilot seemed hesitant with his actions. He prompted the co-pilot but after a very short delay took control and initiated flying the emergency descent.

During the descent the commander recycled the pack switches and noticed the annunciator light setting was still at DIM. He reset the switch to BRIGHT and saw the ditching pushbutton was still ON from the de-icing. That switch was deselected and the aircraft pressurisation resumed. The commander levelled the aircraft off at FL200 to assess the aircraft's status. He spoke with the cabin manager and confirmed that normal operations were resumed. The flight crew discussed the situation and after reviewing the fuel state, confirmed they could continue to their destination. The aircraft climbed to FL370, and the rest of the flight was completed without incident.

Co-pilot

The co-pilot was about halfway through his initial line training with the operator. This was his first job as a pilot having completed his flight training.

He described conditions as they approached the aircraft on the ramp as dark and overcast. He noticed as they climbed the aircraft's steps that the wings seemed to be covered in frost. He had never de-iced before and was unfamiliar with the checklist and process. As a crew, they began preparing the aircraft for the flight. The commander brought up the de-icing supplementary checklist on his tablet and the co-pilot asked the commander to take him through it. The commander performed the checklist as read and do, reading the items and making the selections himself. The co-pilot checked the commander's selections

while referencing the checklist on the commander's tablet across the flight deck. He did not bring up the checklist on his own tablet. Once they had established de-icing was not required, the commander got the checklist out again and ran through the re-configuration. The co-pilot again read the checklist across the flight deck and did not notice the ditching pushbutton had been omitted.

When the aircraft reached the cruising altitude of FL390, the co-pilot (as PF) began completing the cruise checks of all the systems pages on the ECAM. When he looked at the cabin pressurisation page, he noticed the cabin rate of climb and the cabin altitude did not look as he expected for that phase of flight. He alerted the commander to the page, and they began to troubleshoot. They noted that the pack indications were amber but, on checking the overhead panel, both packs were selected ON, with no fault lights. The cabin altitude continued to climb, and the commander called for the crew to go onto oxygen and to initiate an emergency descent.

The co-pilot said that, having donned his oxygen mask and established communications with the commander, he was just about to initiate the descent when the commander took control. The co-pilot then adopted the PM role. At some point during the descent the commander switched the annunciator lights from DIM to BRIGHT and saw that the ditching pushbutton was on. The commander de-selected the ditching pushbutton and the pressurisation returned to normal. The commander levelled the aircraft at FL200, and the crew discussed what had happened and what their options were. Given the passenger oxygen masks had not dropped, and the aircraft had sufficient fuel for the destination, the crew decided on continuing to Palma. The co-pilot resumed control as PF, and they climbed to FL370. The flight was completed without further incident.

Other information

Information from the operator

The operator identified 19 further events involving the ditching pushbutton between 2015 and the event with G-UZEF. All the other events were on the ground and involved the selection of APU bleed air, or the use of external air with the ditching pushbutton still selected. These generated an ECAM alert for overpressure or for excess residual cabin pressure. The events were generally due to delays to de-icing which resulted in the cabin temperature increasing and the crew attempting to provide air conditioning with the outflow valved closed.

A number of these reports included comments about it being difficult to see the ditching pushbutton, and associated internal lighting, from the left seat because it is obscured by the landing elevation dial (Figure 1) which protrudes from the panel.

The operator intends to include this event in their pilot safety magazine in October 2025, and to include elements of it in its upcoming 'winter operations' computer-based training package, which is in its final stages of development.

Information from the manufacturer

The manufacturer is aware of six previous events where the ditching pushbutton being selected ON has triggered the excess cabin altitude alert in flight. Four of these events were caused by the ditching pushbutton being left ON after de-icing. The manufacturer was unable to determine the cause of the remaining two events because of insufficient information.

Analysis

After configuring the aircraft for de-icing, which was then not required, the crew re-configured the aircraft, but did not deselect the ditching pushbutton or check that the outflow valve was open, as required by the checklist. The commander, who was PM for the flight, performed the configuration as 'read and do' with the co-pilot watching. The co-pilot, who was under training, had never performed the de-icing procedure before, and the checklist was unfamiliar. The commander felt some time pressure to get the aircraft away as close to scheduled time as possible and, as a result, probably completed the re-configuration with little reference to the checklist. The unusual situation of the eventual lack of de-icing also meant that several of the items on the checklist were not relevant and were skipped. With the dark light conditions, the flight deck annunciator lights had been set to DIM. That, together with the ditching pushbutton being difficult to see from the left seat, meant the commander did not notice it was illuminated until after the emergency descent had been initiated, when he switched the annunciator lights to BRIGHT.

Selecting the ditching pushbutton signals the pack control valves to close regardless of the pack and engine bleed selections. That meant there was no air flowing into the packs which normally provide air for pressurisation of the cabin. As the aircraft climbed, the pressure in the cabin slowly reduced as the air leaked out. Eventually, as the aircraft reached FL390, the ECAM alerted the crew to the pressurisation problem.

Having noticed the cabin altitude continuing to rise, but without an identifiable reason for it, the commander instructed that they should both go onto oxygen and initiate an emergency descent. The descent was well managed as a crew, with the commander taking over when he felt the co-pilot hesitated, and the co-pilot providing good support once he had become PM. During the descent, the commander switched the annunciator lights to BRIGHT and noticed the illuminated ditching pushbutton. De-selecting the button saw the aircraft immediately begin to pressurise. The commander levelled the aircraft at FL200 where the crew discussed their options using the operator's decision-making framework. They concluded that they could continue to their destination, so climbed up to FL370 and continued the flight without further incident.

The operator had recorded 19 previous events, where the ditching pushbutton had not been deselected, but all of those occurred on the ground. A number of those reports noted difficulty in seeing the ditching pushbutton from the left seat. The manufacturer recorded six events where ECAM alerts were generated in flight because of the ditching pushbutton being ON. Four of those involved incorrect reconfiguration after de-icing, with the other two having insufficient information to tell.

Conclusion

The event was caused by missing checklist items that were not noticed by either crew until the cabin altitude reached the threshold for the aircraft system alerts. The crew managed the event successfully, getting the aircraft into a descent before the situation in the cabin required the passengers to use oxygen masks. Once the error was detected and rectified, the crew reviewed their situation and concluded that it was appropriate to continue to their destination.

Safety action

Both the operator and the aircraft manufacturer took safety action as a result of this event:

- The operator included this event in their pilot safety magazine in December 2025.

- The manufacturer updated the de-icing checklist to add a comment and a note below the action lines “DITCHING pb … ON” and “DITCHING pb ….OFF” to draw the attention that if the ditching pushbutton is left ON after completion of the fluid spraying, it will lead to a lack of pressurisation in flight and ultimately to the triggering of the excess cabin altitude alert.