Accident

Aircraft Type and Registration:	Airbus A300-622F, D-AEAG	
No & Type of Engines:	2x Pratt & Whitney PW4158 turbofan engines	
Year of Manufacture:	1992 (Serial no: 0621)	
Date & Time (UTC):	12 October 2025 at 1625 hrs	
Location:	London Heathrow 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 underside and internal structure, beyond economical repair	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	47 years	
Commander's Flying Experience:	3,600 hours (of which 2,572 were on type) Last 90 days - 28 hours Last 28 days - 11 hours	
Information Source:	Aircraft Accident Report Form submitted by the operator	

Synopsis

During touchdown onto Runway 09L at London Heathrow Airport (Heathrow), the aircraft experienced a tailstrike as a result of a commanded increase in pitch, compounded by the associated pitch-up effect of the ground spoiler extension sequence. The commander, concerned that the aircraft may have experienced a high bounce and was becoming unstable, initiated a go-around without conscious acknowledgement of having already selected reverse thrust. The flight crew subsequently conducted a second approach and landed on Runway 09R at Heathrow.

History of the flight

On the day of the accident, the flight crew were scheduled to operate from Leipzig-Schkeuditz Airport (Germany) to London Heathrow. The co-pilot commenced his duty from London Luton Airport (Luton) that morning, operating to Leipzig where he rested for several hours before meeting the commander when reporting for their upcoming sector to Heathrow. This flight would be the first and only sector of the commander's duty day.

The flight crew flew a stable ILS approach for Runway 09L, with the commander operating as PF. At 1612 hrs, ATC issued a landing clearance, reporting the wind as 030° at 4 kt. During the latter stages of the approach, the commander disconnected the autopilot and autothrust in line with the company's standard operating procedures and continued to fly

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the approach manually. The flare was initiated at approximately 30 ft radio altitude, with the aircraft's pitch stabilising at +5.5° nose-up, and the rate of descent decreasing to 650 ft/min. At 15 ft radio altitude the commander started to retard the throttle levers to idle. The aircraft's left main landing gear contacted the runway first, followed by the right main landing gear and the aircraft experienced a bounce. With the throttle levers now at idle, ground spoiler deployment commenced and the commander selected the reverse thrust control levers to idle. The left main landing gear decompressed momentarily and, following a pitch-down response during the bounce, a second touchdown was recorded. Subsequently, the commander increased the aircraft's pitch which, combined with the continued extension of the ground spoilers and their associated pitch-up effect, resulted in a tailstrike. Around this time the commander called "GO AROUND", and flight data revealed he then advanced the throttle levers to Takeoff Go-around thrust (TOGA) and, approximately four seconds later, pressed the GO-LEVERS[1]. Initially, engine thrust was limited until the thrust reverse translating sleeves were back in their stowed position and the system was latched. The flight crew then flew a standard go-around and received radar vectors from ATC for a subsequent approach and landing on Runway 09R at Heathrow.

Accident damage

The aircraft was grounded at Heathrow Airport for several months following the event. An initial damage assessment conducted by the operator's maintenance organisation identified damage to the lower tail section at frame 77. Damage included buckling of the skin inwards at the frame, the rivets joining the skin to the frame having separated from the skin, and the tailskid having sustained abrasion damage.

Footnote

[1] Go-levers are located under and between the throttle levers. They are used to engage the autothrottle system into SRS or GO AROUND mode depending on the stage of flight, aircraft configuration and current level of automation.

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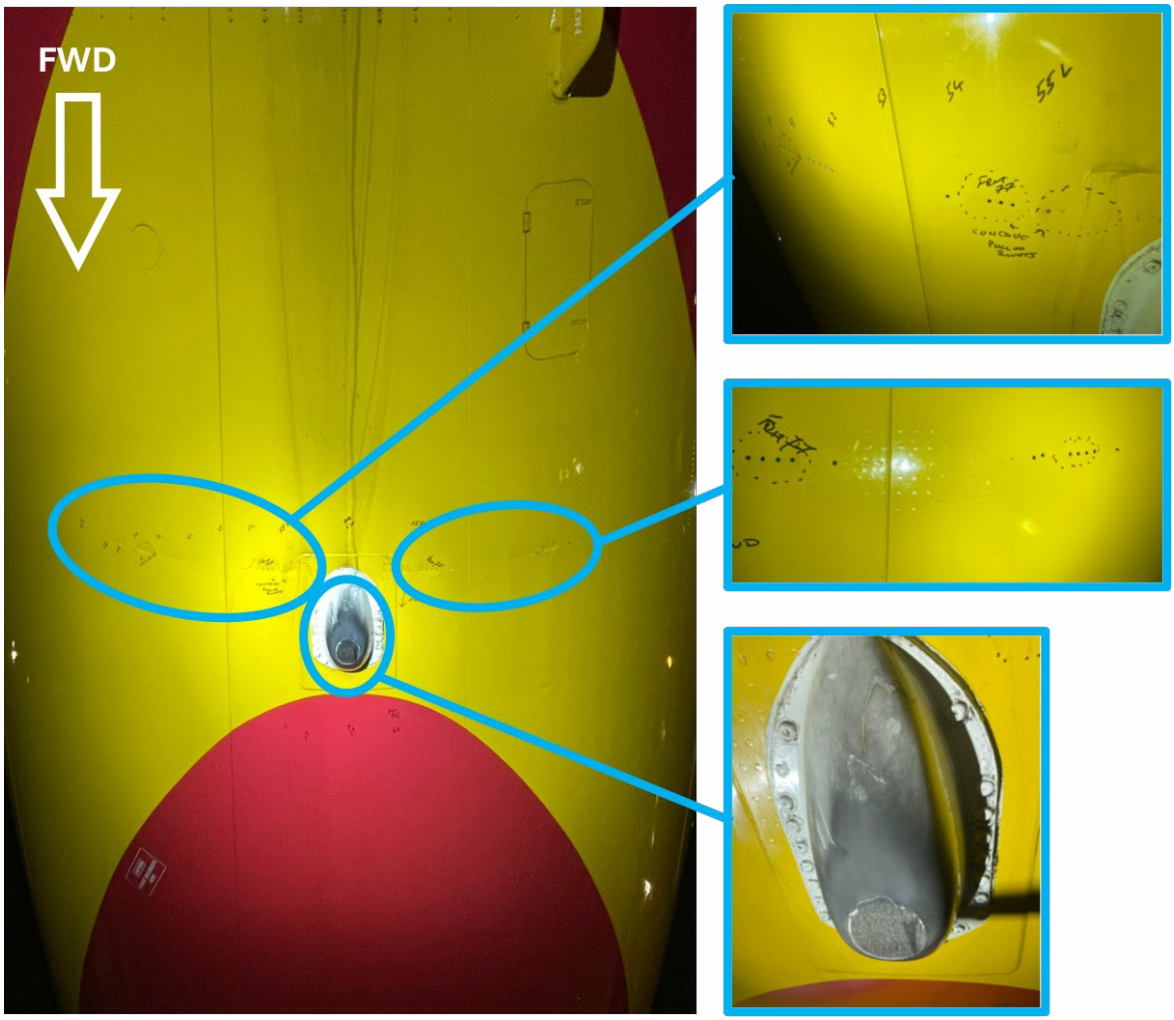


Figure 1

Rear fuselage damage at frame rivet joints and rear-mounted tail skid
(images used with permission)

Aircraft examination

A detailed structural evaluation was undertaken by the operator's maintenance team, which identified damage categorised as *'severe'* in the engineer's maintenance report. Inspection found that the non-structural bulkhead internal frame had deformed inwards, and the cleats riveted between it and fuselage skin had sheared at their rivet holes (Figure 2). Other damage to weld joints and non-structural components was observed.

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Figure 2

Example of damage to internal structure
(image used with permission)

The operator requested on-site support from the aircraft manufacturer to assess the damage for potential repair. The aircraft was subsequently retired from service.

Recorded information

The FDR and CVR were downloaded by the AAIB. The operator also provided data recorded by the Digital ACMS[2] Recorder (DAR) used for their Flight Data Monitoring Program. ATC recordings were provided by Heathrow Airport, and were used to verify the time-synchronisation of CVR audio with FDR and DAR data.

Figure 3 illustrates the variation of pertinent parameters during the final approach, flare, touchdown, tailstrike and go-around and is referred to in the subsequent sections of this report. The DAR recorded some parameters at a higher sample rate than the FDR, as well as some additional parameters, which were not recorded to the FDR[3]. Hence, the data source with the best sampling rate was used for each parameter, and this is indicated accordingly in Figure 3 by “DAR” or “FDR”.

The landing was also captured on video by a member of the public who was live streaming to a social media site. Image frames extracted from a copy of the video are included in Figure 4.

Footnote

[2] Aircraft Condition Monitoring System.
[3] D-AEAG’s flight data acquisition system implemented a 64 words per second (wps) ARINC717 stream to the FDR. This means fewer parameters, recorded at lower sample rates, than on newer generation aircraft.

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The aircraft manufacturer used the FDR and DAR data to conduct a detailed analysis of the incident. This included wind condition calculations from Air Data Inertial Reference Unit parameters (see *Meteorology* section).

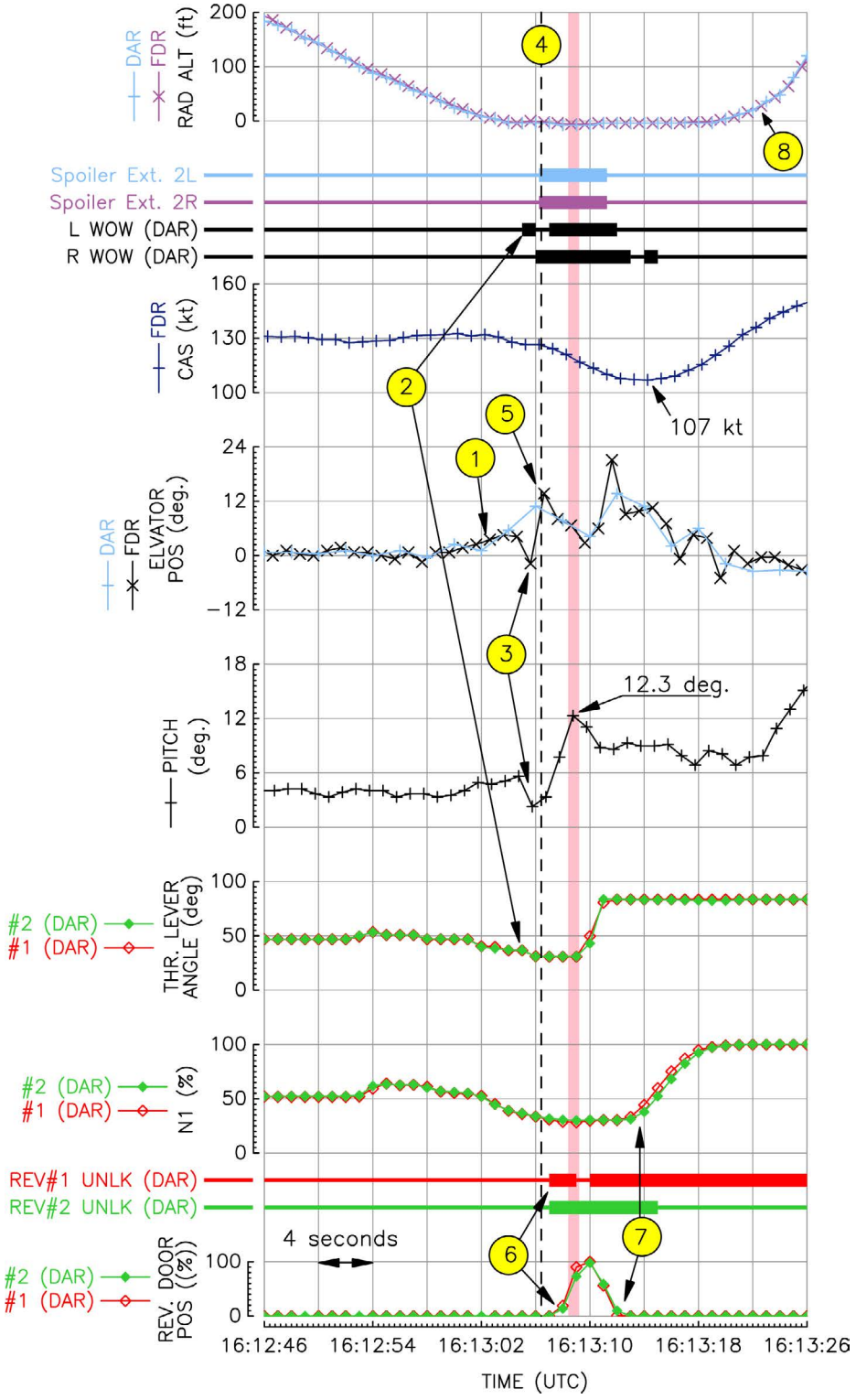


Figure 3

Pertinent FDR and DAR parameters from 200 ft radio altitude, until climbing away from the runway

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Approach

The data indicated that the aircraft was fully configured for landing with all approach criteria met as it descended through 1,000 ft aal. From 600 ft aal, the aircraft was flown manually and remained stable in accordance with the A300 Flight Crew Operating Manual (FCOM[4]) stable approach criteria.

Flare and initial touchdown

FDR data indicated the flare commenced from about 30 ft. The elevator gradually moved aft to +5.5° deflection (Figure 3, point 1), and the throttle levers were slowly moved to idle as the left main landing gear momentarily contacted the runway (point 2) with 1.4g of vertical acceleration.

D-AEAG then rolled slightly right and landed on the right main landing gear before bouncing briefly. The spoilers were extending during the bounce. The second touchdown, with both main gear wheels on the runway, was about 1.7g. The elevator briefly moved to a slight nose-down deflection, as the aircraft initially de-rotated (point 3).

The CVR's Cockpit Area Microphone (CAM) recorded sound of the landing gear initially contacting the runway, followed about a second later by the co-pilot announcing "SPOILERS" (point 4), and the elevator moved to about +14° nose-up deflection (point 5). FDR data indicated the spoilers had deployed (not shown in Figure 3). The thrust reverser doors became unlocked and began to open (point 6). Elevator inputs decreased towards a neutral position as the thrust reverser translating sleeves opened, but the pitch attitude was now increasing.

Tailstrike and application of go-around thrust

The CVR recorded the commander calling "GO AROUND" about three seconds after the left landing gear first contacted the runway, which was also heard on the CAM recording. This appeared to have occurred just before FDR data indicated the pitch attitude reaching 12.3° nose-up. The region of the tailstrike is estimated by the pink band in Figure 3, based on the CCTV video and the pitch attitude recorded to the FDR.

About 1.5 seconds after the commander's "GO AROUND" call, the co-pilot called "PITCH, PITCH". This corresponded with approximately when FDR data indicated the throttle levers advancing to go-around power, and the pitch attitude reducing to about 9° nose-up. Other than the co-pilot's "PITCH, PITCH" callout, there was no audible sound on the CVR when the tailstrike occurred, nor any comment by either pilot to indicate that they were aware it had occurred.

Footnote

[4] A300 FCOM PRO-NOR-SOP-180A STABILIZATION CRITERIA

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1613:07 hrs
1s before tailstrike
Figure 2, point 6
Pitch +7.7°
Spoilers deployed
Reverser doors opening



1613:08 hrs
Time of tailstrike
Pitch +12.3°
Spoilers deployed
Reverser doors nearly fully open



1613:09 hrs
1s after tailstrike
Pitch +11.1°
Spoilers deployed
Reverser doors nearly fully open



1613:10 hrs
2s after tailstrike
Pitch +8.8°
Spoilers nearly retracted
Reverser doors nearly closed

Figure 4

Still images taken once per second from the video capturing the landing
(images used with permission)

Despite the throttle levers advancing after the call to go around, the engines remained at idle N_1, whilst the thrust reverser translating sleeves were still recorded to be in motion. The N_1 started increasing after the thrust reverser translating sleeves had returned to their fully closed position (point 7). By the time the N_1 began to increase, the airspeed had reduced to 107 kt.

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With the engines spooling up to go-around power, the aircraft initially lifted off from the runway with an airspeed of about 110 kt but did not achieve a rate of climb for a further eight seconds (point 8), at which point the landing gear was then retracted.

Reverser 1 unlock during climb

As D-AEAG climbed above a radio altitude of 850 ft aal, the CVR recorded one of the flight crew announce, "ONE REVERSER UNLOCK." FDR data indicated that the thrust reverser translating sleeves on engine 1 were still in an unlocked state (REV#1 UNLK) until about 1,200 ft aal.

ATC communications after the go-around

The Heathrow tower controller notified the flight crew that ATC had received a report from somebody on the ground that D-AEAG had experienced a tailstrike, to which one of the crew acknowledged that it was "A POSSIBILITY."

Aircraft information

D-AEAG was an Airbus A300-622F, which was delivered to its first operator in 1992 as a passenger aircraft, and was subsequently converted to freighter configuration in 2011. It had operated with its current operator as D-AEAG since its freighter conversion.

The A300 is not equipped with a tailstrike detection system, and instead relies on observation or feedback from ATC, cabin crew or other sources.

Ground spoilers

The aircraft is fitted with seven spoilers on each wing. Flight crew must arm the ground spoilers prior to taking off and landing. In flight these spoilers function as speedbrakes and roll spoilers.

On the ground, all seven spoilers on each wing extend automatically as ground spoilers, when the following conditions are met:

- *'Ground spoilers are armed (SPEEDBRAKE lever in RET [fully retracted] position and pulled upward into the arming detent) and main landing gear compressed,*

or

- *At least one thrust reverser selected, and*
- *Both throttle levers are at idle, and*
- *Wheel speed of main landing gear aft wheels is more than 85 kt.*

Note: In the case of aircraft bouncing, the ground spoilers will remain extended provided both throttle levers are maintained at idle, and the other arming conditions are still met'.

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Tailstrike

With a body roll angle of 0°, the tail skid would contact the runway at +11.2° with the shock absorbers fully compressed, and at +12.8° with them fully extended. Flight data showed the aircraft's pitch attitude reached a maximum of 12.3°.

Weight and balance

The load sheet for the flight calculated that the centre of gravity (CG) would be 26.0% on landing. At 1,000 ft aal during the approach, the FDR recorded a calculated CG of 25.6% MAC, which was in the middle of the allowable balance conditions for the phase of flight.

Meteorology

The manufacturer calculated wind conditions using recorded FDR and DAR parameters. This indicated the average wind to be 047° at 8 kt, from 200 ft up to 1,000 ft radio altitude. The mean headwind decreased from 8 kt to 4 kt, with a mean left crosswind of about 5 kt.

At the time of the event, weather conditions were relatively calm. The METAR published a few minutes after the event reported wind as 030° at 5 kt varying between 350° and 060°, visibility greater than 10 km, no cloud detected, temperature 15°C, dewpoint 8°C and a QNH of 1031 hPa.

In the flight crew's post incident report, the co-pilot described minor turbulence on short final.

Personnel

Commander

The commander recalled feeling a bounce but stated the landing then "felt normal for a brief period of time". As the nose de-rotated, he applied back pressure on the yoke to prevent the aircraft from coming down hard on the nosewheel, which he said could sometimes be the case on this aircraft. The commander, feeling a second bounce and believing they could be in a high bounce situation, initiated a go-around. Having previously experienced a high bounce when flying as PM, he described how this touchdown began to feel similar, with everything happening very quickly. At the time of his decision to go around, the commander had not realised that due to "muscle memory" he had already selected reverse idle.

Co-Pilot

The co-pilot described feeling the left main landing gear touch down first, followed by the right main gear, but was unaware of a bounce. Whilst monitoring the aircraft systems during touchdown the co-pilot called "SPOILERS", to signify the start of ground spoiler extension. The commander then called "GO AROUND" and the co-pilot remembered thinking, "why am I seeing sky all of a sudden?". Scanning the primary flight display, he saw the aircraft's pitch was at +10° nose-up and called "PITCH, PITCH", which he believed was probably around the time the tailstrike occurred.

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During the go-around the co-pilot recalled seeing a master caution light illuminate and ENG 1 REVERSE UNLK appear on the ECAM display. Before the flight crew could commence the ECAM procedure, the caution had cleared requiring no further action from the flight crew.

Organisational information

The operator and manufacturer identify two categories of bounce that may be encountered by flight crews during touchdown, a light bounce and a high bounce.

The operator's Part B manual provides the following two recovery techniques, which state that '*The bounce recovery technique depends on the height reached during the bounce*.'

'Recovery from a light bounce (5ft or less):

In case of a light bounce, the following recovery technique can be applied:

- *Maintain a normal landing pitch attitude:*
  - *Do not increase pitch attitude as this could cause a tailstrike; and,*
  - *Do not allow the pitch attitude to increase, particularly following a firm touchdown with a high pitch rate.*

Note: Spoiler extension may induce pitch up effect.

The ground spoilers remain extended during the bounce, provided both throttles are kept at idle.

- *Continue the landing;*
- *Keep thrust at idle; and,*
- *Be aware of the increased landing distance'*

'Recovery from a high bounce (by more than 5ft)

In case of a high bounce, do not attempt to land, as the remaining runway length might not be sufficient to stop the aircraft.

> ***Note:*** *In any case, if reverse thrust has been selected, a full stop landing must be completed.*

The following go-around technique can be applied:

- *Maintain a normal landing pitch attitude;*
- *Initiate a go around by advancing throttles while triggering go-levers;*
- *Ignore the takeoff configuration warning, if any;*
- *Maintain the landing gear and flaps configuration;*

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- *Be ready for a possible second touchdown;*
    - *Do not try to avoid a second touchdown during the go-around. Should this happen, the second touchdown would be soft enough to prevent damage to the aircraft, if pitch attitude is maintained;*
- *When safely established in the go-around and no risk of further touchdown exists (i.e., with a steady positive climb), follow normal go-around procedures; and,*
- *Re-engage automation, as desired, to reduce workload'.*

Both the operator and manufacturer guidance stipulates that once flight crew have selected thrust reversers, a full-stop landing must be completed. The Flight Crew Techniques Manual gives the following guidance regarding the selection of reverse thrust on landing:

> *'Reverse thrust should be selected immediately on main wheel touchdown, there is no need to wait until the nosewheel is down'.*

The manufacturer stated, *'For the training, no guidelines exist to recognise a light or high bounce at landing*'. However, recommendations are made in the manufacturer's Flight Crew Training Standards manual, to assist operators implementing specific simulator training modules for bounce recovery.

The operator provided simulator training programmes for 'landing incident avoidance', which included high and light bounce recovery techniques.

Reverse thrust system behaviour

Activation

Reverse thrust on the A300 is controlled by operation of the reverse thrust control levers, which are mounted on the forward face of each main throttle lever. The levers are mechanically locked in the stowed position when the throttles are not at idle.

With reverse thrust selected, the Full Authority Digital Engine Control (FADEC) system commands the opening of the translating sleeves and increases engine power accordingly, if the landing gear squat switches are compressed to signal weight-on-wheels (WOW) to the FADEC computer. Without WOW, FADEC logic is designed to inhibit the unlocking and opening of the reverser. Should the aircraft become airborne after the reversers have opened, the FADEC should command them to close, and will prevent engine thrust from increasing until the translating sleeves are once again closed.

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ECAM Logic

If an engine thrust reverser translating sleeve unlocks in-flight, an ENG 1 REVERSE UNLK or ENG 2 REVERSE UNLK annunciation will be displayed to the flight crew on the ECAM System Display. The A300-600 Flight Crew Operating Manual states:

> *'Triggering Conditions:*
>
> - *The engine 1(2) thrust reverser system is unlatched.*
> - *The translating sleeves travel between the stowed position and 90% of their travel or vice versa.'*

The activation is indicated by an audible sound, MASTER CAUTION light, annunciation on a REV UNLK light, and on the ECAM System Display page. The annunciation is inhibited during landing and the high-speed phase of takeoff, until a radio altitude of 400 ft agl is reached.

Analysis

During the final phase of touchdown onto Runway 09L at Heathrow, the aircraft experienced a bounce. Following the subsequent touchdown, the commander applied back-pressure on the control column to prevent the nosewheel from landing heavily. When combined with the pitch-up effect of ground spoiler extension, this resulted in the aircraft's pitch attitude reaching 12.3°, causing a tailstrike.

The commander, believing the aircraft had entered a high bounce situation, commenced the recovery technique by initiating a go-around. Both the manufacturer's and operator's manuals provide two recovery techniques for what are described as a '*light*' or '*high*' bounce during touchdown. The manufacturer considered the bounce preceding the tailstrike in this accident to be a '*light bounce'* but stated that '*there are no predefined parameters to categorise or recognise a high versus a light bounce'*. Although simulator training was provided by the operator, which included the recovery techniques for a light or high bounce, the determination of which of these is occurring is down to the judgement of the flight crew based on their experience.

During the touchdown sequence, the commander selected reverse idle in accordance with the manufacturer's standard operating procedures. Given the routine nature of this action, it was likely performed as an automatic, habitual response. Manufacturer and company guidance stated that once flight crew have selected reverse idle, a full-stop landing must be completed. When the commander made the decision to go around, it is reasonable to conclude that he had not realised the thrust reversers had already deployed, having made the selection by automatic muscle memory, without deliberate cognitive processing, and as a result of long-term operational practice.

The investigation considered that the selection of reverse idle did not directly cause the aerodynamic pitch-up leading to the tailstrike. Nonetheless, initiating a go-around after selecting reverse thrust is contrary to standard procedures and delays engine spool-up,

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requiring the flight crew to maintain pitch until speed increases. The tailstrike was likely due to a culmination of a commanded increase in pitch, combined with the associated pitch-up effect of the ground spoiler extension sequence, resulting in a maximum pitch angle of 12.3°. Both company and manufacturer manuals highlight the known pitch-up effect of the ground spoilers and caution pilots to '*be ready to counteract any pitch-up effect.'*

Any bounce event on touchdown places significant demand on flight crews to process numerous inputs from the aircraft's systems, visual cues and physical sensations. This rapid assimilation of information needs to be followed by an immediate assessment of the appropriate recovery technique to be flown. During this incident, a total of four seconds passed from the time the left main landing gear initially touched down, until the point the throttle levers were advanced to full forward by the commander, representing limited time for the flight crew to act accordingly during a critical phase of flight.

The manufacturer's calculations of the wind conditions from FDR data were consistent with forecast conditions indicating calm winds, suggesting that turbulence or wind gusts were unlikely to have been a factor.

The reason for the Engine 1 thrust reverser translating sleeves being sensed as unlocked for an extended time after it returned to the closed position was not determined. The CVR suggested the crew were not aware of this situation until sometime during the climb, consistent with the ECAM logic inhibiting the annunciation during the go-around until passing 400 ft aal. Despite this, the video footage and FDR indicated that the reversers had closed and did not subsequently reopen during the go-around. Had they done so, this could have adversely affected the aircraft's handling and led to a significantly worse outcome.

Conclusion

Following touchdown on Runway 09L, the aircraft suffered a tailstrike as a result of a command for increased pitch, exacerbated by the associated pitch-up effect of ground spoiler deployment. Reverse idle was selected during this event, which required the flight crew to complete a full-stop landing. It is not thought that the selection of reverse thrust prior to the initiation of the go-around, contributed to the tailstrike.

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