Airbus A310-304, D-APON, 21 April 1996

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Aircraft Type and Registration: Airbus A310-304, D-APON

No & Type of Engines:2 CF 6-80C2A2 turbofan engines

Year of Manufacture:1988

Date & Time (UTC):21 April 1996 at 1746 hrs

Location: Stand 51, London Gatwick Airport

Type of Flight: Public Transport

Persons on Board: Crew - 9 Passengers - 40

Injuries: Crew - None Passengers - None

Nature of Damage: Extensive damage to No. 1 engine fan, minor damage to intake lip

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age:58 years

Commander's Flying Experience:22,000 hours (of which 4,000 hours were on type)

Last 90 days - 180 hours

Last 28 days - 50 hours

Information Source:AAIB Field Investigation

History of the flight

The aircraft, operating as RA229, left Frankfurt at 1610 hrs andlanded at London Gatwick at 1741 hrs; the commander had calledthe handling agents at Gatwick approximately 30 minutes priorto landing advising them of his arrival time. After a normallanding on Runway 08R, the crew were cleared, via taxyways 6 and4, to Stand 51. At the time it was daylight and the weather wasgood. As the commander approached Stand 51, he noticed that therewas a Ground Power Unit (GPU) positioned on Stand 51L but consideredthat it would be clear of his aircraft. He also noted that therewere no ground personnel awaiting D-APON and that the AzimuthGuidance for Nose-in Stands (AGNIS) and Parallax Aircraft ParkingAid (PAPA) lighting systems were on. The commander establishedthe aircraft on the centre-line and taxied slowly forward to theindicated final position. With an estimated 3 feet to go, hefelt an impact and stopped the aircraft immediately; there wereno unusual engine indications but the commander realised thatD-APON had collided

with something and secured both engines. Almost immediately, he was aware of personnel converging on theaircraft and he did not therefore advise ATC of the collision. On the jetty, the aircraft despatcher had positioned to movethe jetty onto the aircraft as it arrived on stand but he noticedthe GPU and considered it a potential obstruction . He left thejetty and went down onto the ramp but was unable to attract thecrew's attention before the collision.

Aircraft and GPU damage

The impact damage comprised a short vertical crease in the lowerlip of the intake, together with slight bruising and paint smearingof the lower outboard sector of the intake lip. In addition,a pair of rubber wheel chocks which had been left on top of theground power unit fell into engine intake, one of these enteringthe rotating fan. The chock, which was too large to pass throughthe fan blades, was instead knocked successively around the peripheryof the fan intake face causing extensive damage to the acousticlining of the intake duct immediately in front of the fan, whilstbeing rendered down into progressively smaller pieces by the successiveblade strikes. These smaller pieces of debris from the chocks,together with pieces of damaged acoustic lining, were then ingestedthrough the fan and ejected from the bypass duct. So far as couldbe judged from an external inspection, damage to the engine wasconfined mainly to the outer periphery of the fan, with no damagebeing apparent to either the fan bypass duct or to the core-engine.

Impact marks were found on the GPU in question which showed thatthe engine intake lip had struck the rear part of the unit onthe left side, approximately as shown in Figure 1. The positioningof the ground power unit on the stand was consistent with expectedposition for such a unit when connected to an F28 aircraft, theprevious aircraft on stand 51 (the dotted aircraft outline shownpositioned on stand 51 Left in Figure 1). The normal stop positionfor A310 aircraft on Stand 51 is also shown as a dotted outlinein Figure 1.

Stand security

Stand 51 on Pier 4 is a Multiple Aircraft Ramp System (MARS) standwhich, in addition to a main central parking position, has twosupplementary parking positions designated 51L and 51R. Thisenables one large or two small aircraft to use the stand. Thereare AGNIS lights on all three positions. All AGNIS lights atthe airport are on permanently and controlled centrally; thereare no facilities on the stands for switching the lights on oroff.

At 1719 hrs, a F28 aircraft had departed from Stand 51L. Thehandling staff responsibility for the despatch of this aircraftthen noted that some trailers of bulk baggage and freight hadbeen delivered to the stand and decided that a B737 type aircraftwould soon be arriving on Stand 51L; they therefore decided thatthe ground equipment on the stand, a GPU with a set of aircraftchocks on top of it could be left in position rather than beingmoved to a designated equipment parking area. The handling agents,who were responsible for both the outgoing F28 and the inboundA310, have a 'Ground Operations Manual' which details the proceduresby which their personnel must work. Section G2, page 2 statesthe following: "Vehicles and equipment should not be lefton stands after the departure of aircraft, except in the authorisedequipment parking areas`".

Following the commander's call to the handling agent to warn ofhis arrival, an Aircraft Load Supervisor (ALS) and 7 other staffwere allocated to meet D-APON on stand. However, as he was allocatingtasks to his personnel, the ALS became aware that he did not haveanyone in his group qualified to operate some of the essentialequipment. This deficiency and associated time to get the qualifiedpersonnel meant that the group did not arrive on the stand untilafter the aircraft's arrival.

This therefore meant that the ALSwas unable to comply with the following instruction in the 'GroundOperations Manual': "Prior to the aircraft arrival on stand,the person in charge of the arrival must ensure the stand is freeof obstructions and all equipment is clear of the aircraft's path."

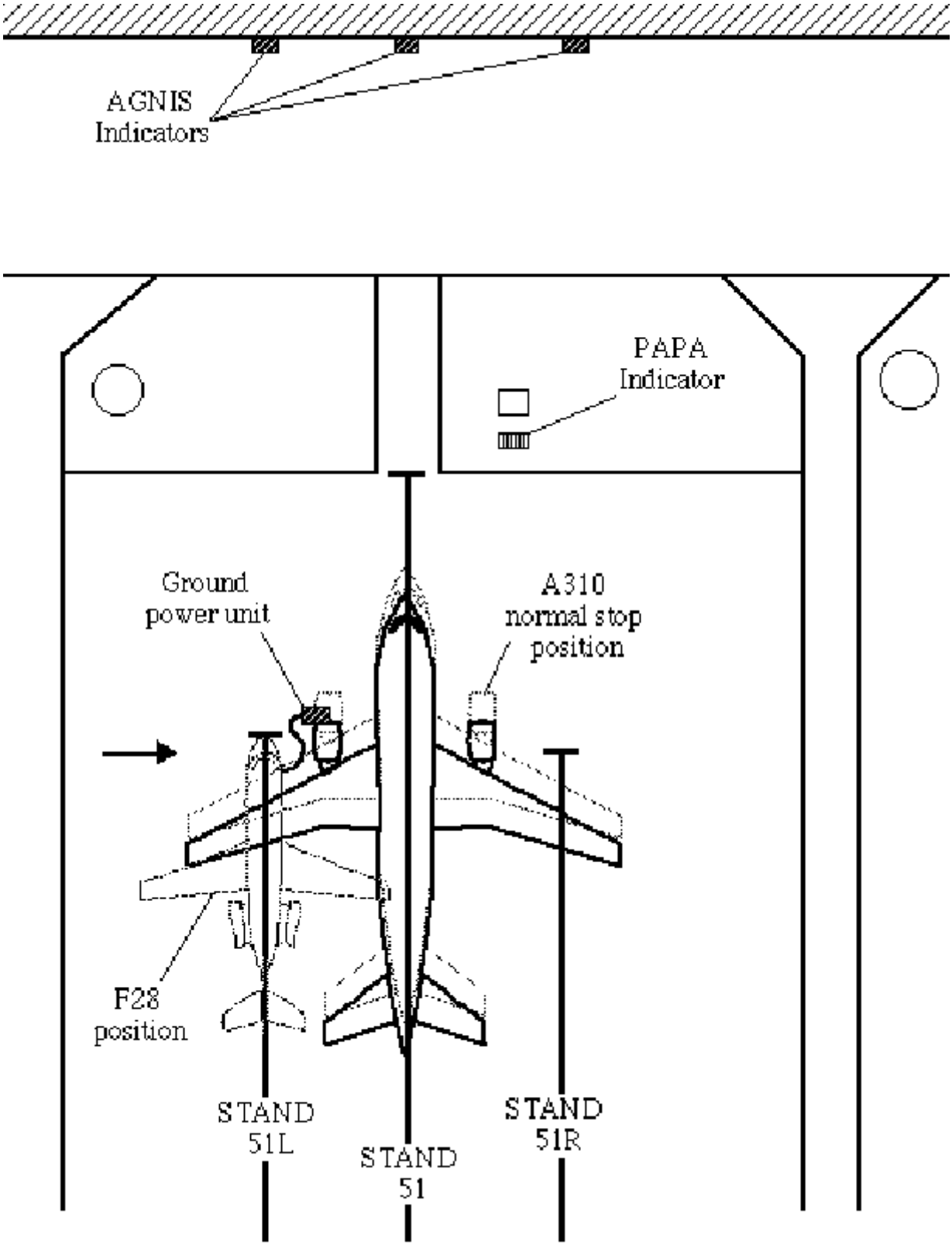
AGNIS operating instructions and meanings

During the investigation, the procedures for the control of AGNISlights were examined at both Heathrow and Gatwick, both BAA airports. This revealed a fundamental difference in that the AGNIS lightsare permanently on at Gatwick whereas at Heathrow the ground staffhave specific instructions only to switch them on when they havechecked that the appropriate stand is clear of any obstruction;furthermore the Heathrow equipment is on timing switches and willturn off after 40 minutes.

AERAD and JEPPESON publications were also reviewed and neitherrevealed any information about the meaning of the illuminatedlights with relevance to stand clearance. However, the UKAIPincludes the following entry for Gatwick 'Visual Ground Aids':

"All stands with the exception of stands 1 and 125 and otherspecified areas are designed for nose-in/push back operationsand are provided with AGNIS stand entry guidance system. MARSstands 49, 51, 52, 53, 54, 55, 63, and 65 are provided with permanentlyilluminated additional AGNIS units for aircraft alignment on theMARS centre-lines left and right of the main centre-line. Arrivingpilots should note that the adjacent stand centre-lines have theAGNIS illuminated. Cross reference of the taxiway stand numeralsagainst the stand designator on the face of the pier is recommendedto avoid any confusion."

This entry emphasises the need for caution to ensure that thecrew have identified the correct stand rather than relating toobstructions; it includes the phrase "permanently illuminated"but could indicate that only the left and right positions werepermanently illuminated.


AGNIS
Indicators
PAPA
Indicator
Ground
power unit
A310
normal stop
position
F28
position
STAND
51L
STAND
51
STAND
51R