

DATA SUMMARY

LOCATION

Date and time	Wednesday, 3 may 2000; 10:30 hours
Site	Airport of Valencia (Valencia)

AIRCRAFT

Registration	EC-HIA
Type and model	AEROSPATIALE SN 601 CORVETTE

Engines

Type and model	PRATT & WHITNEY JT15D-4
Number	2

CREW

Pilot in command

Age	30 years
Licence	Airplane commercial pilot
Total flight hours	2.500 hours
Flight hours on the type	500 hours

INJURIES

	Fatal	Serious	Minor
Crew			2
Passengers			
Third persons			

DAMAGES

Aircraft	Wings, landing gear doors and landing gear well
Third parties	None

FLIGHT DATA

Operation	General aviation – Commercial – Aerotaxi
Phase of flight	Parcked

1. FACTUAL INFORMATION

1.1. Description of the event

The aircraft was being used in air taxi services. On the day of the event it was planned to carry out a flight from Valencia Airport to Tenerife Norte Airport.

Before the passengers boarded the aircraft, the flight crew carried out a pre-flight inspection, completed the pre-start checklist, and started the right hand engine.

At some moment afterwards, the co-pilot might hit the landing gear lever with his knee or with the knee pad, the lever moved to the «gear up» position, and the retraction cycle started.

Both main landing gear legs folded up, and the aircraft hit the ground with the rear part of the fuselage and then with both wings.



Photo 1. General view of the aircraft

1.2. Injuries to persons

The pilots were the only two people on board, and they resulted uninjured.

1.3. Damage to aircraft

As a result of the impact, the aircraft suffered damage to the wing tips, flaps area (especially in the RH wing), wing-fuselage fairings, landing gear doors and landing gear well.



Photo 2. Detail of the RH landing gear

1.4. Flight crew information

The pilot had a valid airplane commercial pilot licence. He had 2500 h of flight experience, including around 500 h in the type of aircraft that suffered the incident.

The copilot had a valid airplane commercial pilot licence and 1500 h of flight experience, including around 450 h in the type.

1.5. Aircraft information

1.5.1. *Description of the landing gear retraction system*

This aircraft has a system that physically precludes the landing gear lever from being put in the «gear up» position when it is on the ground. The information on the aircraft situation, on the ground or airborne, is obtained from micro switches located in the landing gear legs. They provide a signal to the system whether the aircraft is on the ground or not, depending on the compression of the shock absorbers.

Nevertheless, this system has also an inhibiting mechanism, in a manner such that, when it is activated, the gear may be retracted even while the shock absorbers are compressed. Such a mechanism is activated through a red push button (crash button) which is located besides the landing gear lever, in the same panel in the cockpit. When the button is pushed, it is possible to move the lever to the «gear up» position. This button is



Photo 3. Landing gear lever and «crash button»

crossed by a hole in order to allow the use of break wire with the intend of, as stated in the Maintenance Manual, «... éviter des manoeuvres accidentelles de ce bouton son enfouissement est condamné par un fil frein qu'il faut rompre en appuyant sur le bouton», that is, «to preclude unintentional movement of the button, it is locked by a wire that must be broken when the button is pushed».

1.5.2. *Maintenance of the aircraft*

This aircraft was bought in France at the end of 1999, and was subjected to a complete revision before its acceptance by the buyer.

The last maintenance check before the incident took place on 28 March 2000 in the facilities of the same maintenance centre. The aircraft had 6835 h and 6990 cycles at that time.

The maintenance records were reviewed in order to identify the last maintenance action carried out on the «crash button». The investigation could only go back from the date of the incident to the moment when the aircraft was bought (end of 1999) and it was concluded that no maintenance action was carried out over that mechanism within that period and, therefore, the break wire of the «crash button» was probably installed before the change of property of the aircraft.

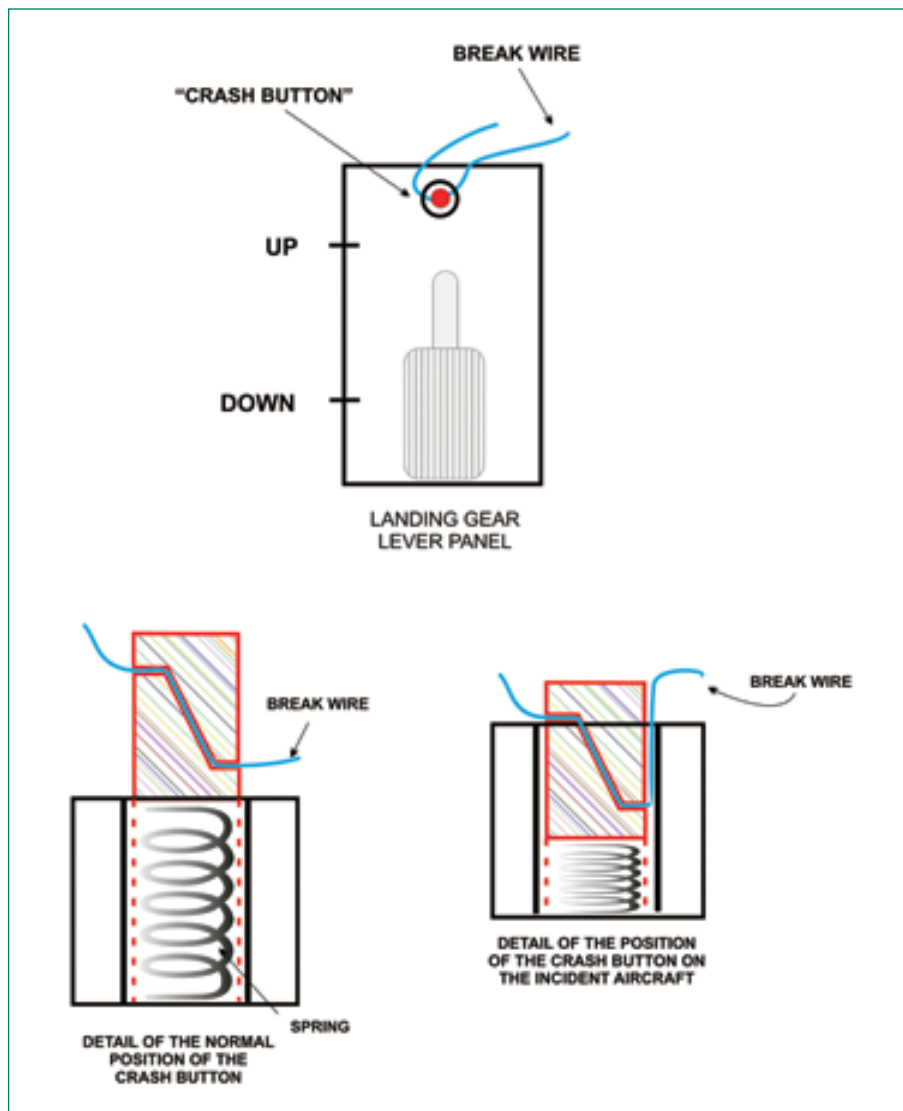
The approved specifications of the break wire are indicated in the Maintenance Manual of the aircraft: «aluminium recuit A5 diamètre 1 mm».

2. ANÁLISIS

It was noted that the button had previously been pushed, but the break wire was deformed instead of breaking, in a manner such that left the button in the «pushed» position, which in turn allowed the lever to be moved to the «gear up» position.

It cannot be discarded the possibility that the pushing of the button was done as an unintentional action during routine maintenance or cleaning tasks that had previously been carried out in the cockpit.

After the incident, it was noted that the break wire of the crash button had a diameter of 0.8 mm, being therefore lower than the specified one, and that the wire composition was also different from the required according to the Maintenance Manual.



Graph 1. Schematics of the crash button and associated break wire

On the other hand, it must be highlighted that the flight manual of this aircraft does not mention that the crew must perform a check of the position of the «crash button» and of the presence of the break wire. The crew of the incident did not check the position of that crash button.

3. CONCLUSIONS

As a consequence of the previous information, it is considered that this incident was caused by a defective maintenance of the aircraft, when a break wire of different dimensions and characteristics from those specified in the Maintenance Manual was installed in the landing gear retraction mechanism. It was not possible to trace this defective maintenance.

Due to an inadvertent action over the landing gear lever, it moved to the «UP» position because the «crash button» was pressed.

Nevertheless, this incident could perhaps have been prevented if the crew had been provided with information to verify the position of the «crash button» during the pre-flight or engine pre-start tests. There are no such a kind of instructions in, for instance, the airplane flight manual.

4. SAFETY RECOMMENDATIONS

REC 25/04. It is recommended to the «Direction Générale de l'Aviation Civile» of France (DGAC-F) that requests EADS France (formerly Aerospatiale), as holder of the type design of the aircraft, to modify the Airplane Flight Manual of the SN-601 Corvette in order to include instructions to verify the position of the landing gear actuation device («crash button») as a part of the check to be carried out by the crew before the flight.