

**DATA SUMMARY**

**LOCATION**

Date and time	<b>Wednesday, 27 September 2006; 14:25 h (local time)</b>
Site	<b>Malaga Airport (LEMG)</b>

**AIRCRAFT**

Registration	<b>EC-ELI</b>	<b>G-XLMB</b>
Type and model	<b>CESSNA 152</b>	<b>CESSNA CITATION EXCEL</b>
Operator	<b>Airman</b>	<b>Aviation Beauport</b>

**Engines**

Type and model	<b>LYCOMING O-235-L2C</b>	<b>PRATT &amp; WHITNEY PW545A</b>
Number	<b>1</b>	<b>2</b>

**CREW**

**Pilot in command**

Age	<b>34 years</b>	<b>40 years</b>
Licence	<b>SP(A)</b>	<b>ATPL(A)</b>
Total flight hours	<b>31 h</b>	<b>5,500 h</b>
Flight hours on the type	<b>31 h</b>	<b>1,000 h</b>

**INJURIES**

	Fatal	Serious	Minor/None	Fatal	Serious	Minor/None
Crew			<b>1</b>			<b>2</b>
Passengers						
Third persons						

**DAMAGE**

Aircraft	<b>Propeller</b>	<b>None</b>
Third parties	<b>None</b>	<b>None</b>

**FLIGHT DATA**

Operation	<b>General Aviation – Flight training – Solo</b>	<b>Commercial air transport – Non-scheduled international cargo</b>
Phase of flight	<b>Taxiing from runway</b>	<b>Standing – Engine run-up</b>

**REPORT**

Date of approval	<b>27 June 2007</b>
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## 1. FACTUAL INFORMATION

### 1.1. History of the Flight

The Cessna 152 aircraft, registration number EC-ELI, was heading toward the parking apron at Malaga airport after having made a solo training flight from Granada airport and landing on runway 13. As the aircraft was entering the apron, the jet blast from an engine test being performed by a Cessna Citation Excel aircraft, registration number G-XLMB, caused the tail section of the Cessna 152 to lift up off the ground and rotated the airplane 90°. As the airplane dropped back down, the nose of the plane struck the ground, resulting in damage to the propeller.

Neither the student pilot of EC-ELI nor the crew of G-XLMB (composed of pilot and co-pilot) were injured.

### 1.2. Statements

#### 1.2.1. *Statement from the student pilot aboard the Cessna 152*

He was authorized to land on runway 13 at Malaga Airport at around 14:15 local time, and after clearing the runway he was transferred to Ground, which authorized him to



Figure 1. Photograph of the aircraft and a close-up of the blade

taxi to general aviation parking. Upon arriving at D1, he left the main taxiway to head for the parking apron. As he entered the parking area, he felt a strong jolt when in the vicinity of the new hangars and felt the airplane lift up by the tail and make a ninety degree turn which, by coincidence, forced him into the first hangar. He quickly stopped the engine and tried to keep the airplane from moving while he observed that the Cessna Citation, registration number G-XLMB, was carrying out an engine test on the apron with the exhaust directed toward the entrance to the apron. The pilot stated that at no point did Ground inform him to be on the lookout for an airplane performing an engine test.

### 1.2.2. *Statement from the crew aboard the Cessna Citation Excel*

On that day it was scheduled to conduct several engine runs for test purposes.

The first occurred at approximately 11:52, after a rejected take-off, at the hold position for Runway 31 with the agreement of ATC after discontinuing the initially scheduled takeoff from that point. On completion of the test run G-XLMB returned to the General Aviation stand.

Approximately 30 minutes later it was necessary to conduct another engine run. ATC clearance was then requested and received. This second check was planned to be carried out on a spot close to the previous one, near the hold position of Runway 31. When they reached that point, ATC noted they were not happy with the position as it was blocking the taxiway. G-XLMB once again returned to stand at General Aviation.

One hour later they again requested permission from ATC to conduct another engine run, this time in a place inside the GA apron. This was in order to avoid blocking or contaminating the main taxiway. The crew had carried out an inspection on foot the area to ascertain its suitability, on the assumption that ATC would advise any conflicting taxiing aircraft.

The engine run was eventually carried out in that area and it was only after it that the crew learned about the incident.

No one was situated outside the aircraft during any of the three tests to observe the jet exhaust during the engine test runs.

### 1.2.3. *Statement from the Controller*

At 12:08 UTC, Clearance Delivery received a call on frequency 121.85 from the airplane with call sign AVB9MB (registration G-XLMB). Engine start-up was authorized along with

the flight plan, and the airplane was then requested to confirm its parking position. The aircraft replied that it was in General Aviation, but that it was not requesting start-up yet since it had to perform an engine check first. Authorization was granted and the crew was reminded that their flight plan expired at 12:24 UTC, and that if they were not going to be airborne by that time to send a delay message to Brussels. The crew was asked to read back the authorization, which they did, afterwards repeating that they were going to check the engines. They were given the go-ahead, and told to contact Ground on 121.7 when ready to taxi.

He informed his colleague in Ground of the situation. At no time did he realize that AVB9MB was going to perform a high power engine test since:

1. Permission for this test must be requested from Malaga Operations (without a flight plan), which must then in turn call the Tower directly to coordinate the aircraft's taxi, accompanied by a "Follow Me" vehicle, to the designated point.
2. The frequency for Clearance Delivery is used for authorization and engine start-up, not to request engine tests. Moreover, it is common for aircraft with flight plans to use that frequency to inform of delays in start-up due to minor pre-flight checks that must be performed first, to which Clearance Delivery usually responds with a message informing them of their flight plan's expiration time. Since AVB9MB had a flight plan that expired in 16 minutes, Clearance Delivery interpreted that to mean that a minor check was going to be performed since the crew did not have time for an engine test. The controller does not know why the crew acknowledged an authorization they could not comply with.
3. The controller was later informed that the crew had performed an engine test that same morning and should have been familiar with the proper procedure and known that to perform the test, they had to taxi to the opposite hold point and not do it on the apron.

### 1.3. Malaga airport information

Malaga airport is located at coordinates 36° 40' 30" N and 4° 29' 57" W at an elevation of 15.9 m. The runway designations are 13-31. Figure 2 shows the layout of the airport with the path taken by the CESSNA 152 and the place where it was affected by the jet blast from the CESSNA CITATION. It also shows the designated point for carrying out a high power engine test with runway 13 in use.

#### 1.3.1. *Procedures to taxi to parking*

What follows is an extract of the procedure relevant to the incident, as set forth in the Aeronautical Information Publication (AIP) published by AENA:

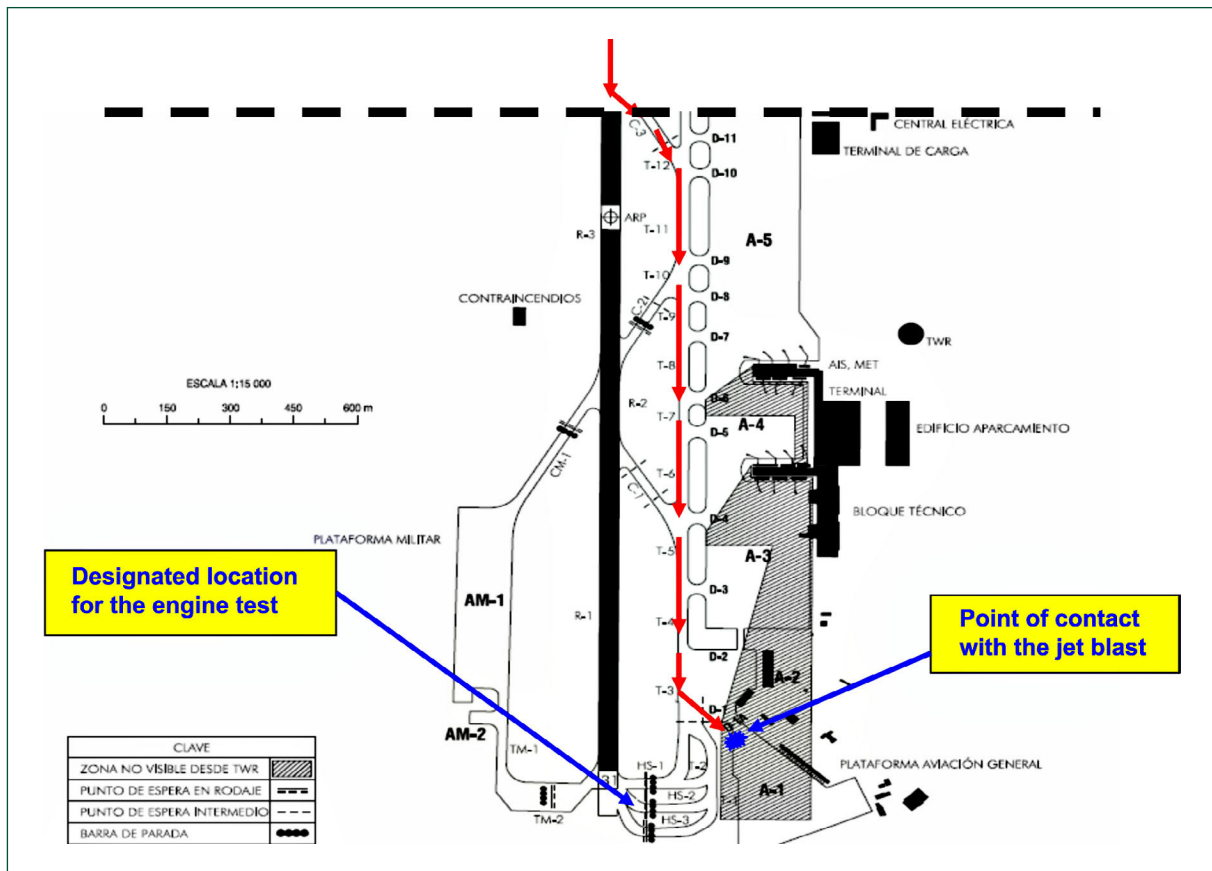


Figure 2. Path taken by the airplane showing where contact was made with the jet blast

## 20. LOCAL REGULATIONS

### PROCEDURES TO EXIT THE RUNAWAY

– Landing for RWY 13: only available TWY C-3, C-1 or runway end.

### ATC PROCEDURES

#### 2. GROUND MOVEMENT

Pilots will proceed to verify at every moment the aircraft position, checking that taxiing is being executed under total safety conditions. In case of being disoriented or in doubt, pilots will stop the aircraft and immediately will notify to ATC.

### STANDARD TAXIING PROCEDURES

#### 1. START-UP OF ENGINES/TURBINES

- A. Pilots will request clearance to start-up engines/turbines on the appropriate frequency of MÁLAGA TWR.
- B. On requesting engine start-up clearance to ATC, pilots will report the complete aircraft designator, parking position occupied and the ATIS message received.

In case of aircraft with 52 metres or longer wing-span, pilot will report it is an aircraft type E/F.

- C. Clearances will be issued as soon as requested. When delays are expected to exceed 15 minutes ATC will provide with the appropriate engine start-up time.
- D. Once engine start-up clearance or time has been provided, MÁLAGA Clearance will issue the corresponding ATC clearance for the aircraft.

## 2. GROUND MOVEMENT

### 2.1. Traffic in apron.

2.1.1. The entering aircrafts have priority over the leaving aircrafts.

2.1.2. Once the push-back manoeuvre is starting, this aircraft will have priority over the entering aircrafts.

2.1.3. Collision avoidance with other aircraft or obstacles is a responsibility of:

- Pilots taxiing in the apron and taxiway segments not visible from TWR (see AD 2 - LEMG GMC).
- Handling companies during towing.

2.1.4. Except for rescue and fire fighting vehicles on the accomplishment of their specific missions, all surface movements of aircraft, towed aircraft, personnel and vehicles on the manoeuvring area are subject to previous ATC clearance.

2.2. Ground Control is responsible for:

- The control of every movement of aircraft, personnel and vehicles on the manoeuvring area except for the runway.
- To issue clearances for towed push-back and taxiing of aircraft.
- Reporting the stand positions assigned to the aircraft by the Operation Center (CEOPS).

### 1.3.2. *Procedure for performing engine tests*

The AIP sets out the following concerning the performance of engine tests:

#### 21. NOISE ABATEMENT PROCEDURES

##### RUN-UP TEST FOR JETS (All types)

Run-ups tests for jet aircraft are only permitted prior authorization by the airport authority.

In addition, there is an AENA TECHNICAL INSTRUCTION titled "PRUEBAS DE MOTORES EN TIERRA" ("GROUND ENGINE TESTING"), publication code SGM-PG-10-IT01, intended for its personnel and which applies to tests conducted on the parking apron, and which states the following:

- Authorization will be requested from the Services Manager, who will in turn inform CEOPS and the TWR.

- Tests will always be authorized as long as they do not interfere with normal airport operations.
- If the power requested is MINIMUM, it will be authorized for all stands, except when passengers are boarding or deplaning an aircraft situated behind the test aircraft.
- If the power requested is MEDIUM or MAXIMUM, it will only be authorized at the hold positions for the runway not in use, with the airplane situated such that the jet exhaust is directed to the asphalt of the taxiway.
- In all cases (minimum, medium or maximum power), the company will place a person on the ground to ensure the engine exhaust does not affect other aircraft, vehicles or persons.
- The aircraft must have its turbine lights on during the entire test.
- CEOPS will always inform the Chief of the Airport Fire Department to be on the alert, as well as the Signalman Supervisor to direct traffic away from the jet blast area insofar as is possible.

#### 1.4. Communications

The communications transcript reveals that on September 27, at 12:07:55 a conversation took place between Clearance Delivery (CLDRY), located in the tower, and the airplane with registration number G-XLMB, with call sign AVB9MB, on channel 61 on a frequency of 121.85 during which CLDRY asked for confirmation that the airplane was on the general aviation apron and the airplane crew, after confirming it, informed the controller that they were not ready to start their engines, and that they had to carry out to carry out an engine test. The controller reminded them of their flight plan's expiration time and of the need to send a "delay" message if they could not adhere to their schedule. They responded that they were aware of that fact, and specified that some of the tests would be at "low revolutions" and then at "high revolutions" and that they should be able to resolve the problem quickly. The crew's actual reply was the following: "Yes I know is we are fully aware of that thanks. All we would like to do is start engines to do some low power engine runs and then to do some high power engine runs. That is all we would like to do at the moment."

It must be noted that it is quite difficult to understand these communication recordings, specifically the two times when the words "power engine" appear.

They received authorization from the controller, who once again reminded them of their flight plan's expiration time and of the possible need to communicate their delay. Her exact words were: "O.K. there is no problem you can you can do that but I remember you that your flight plan will be over at one two two four you have to be airborne before that time if not you need to send a delay message".

They asked her whom to call for taxi clearance, and the controller gave them the frequency 121.7.

Then, between 12:15:39 and 12:16:54, Ground Control (GND) held a brief conversation with the airplane with registration number EC-ELI and call sign AYM10A, and later with airplane G-XLMB and call sign AVB9MB, on channel 62 on a frequency of 121.7. During this conversation, airplane AYM10A contacted GND, who asked him to speed up until he crossed D5 and then to taxi at his discretion to the usual parking area. Next, at 12:29:35, the airplane with call sign AVB9MB contacted GND and informed them that they had completed their engine test runs and were cancelling their flight plan.

Later, at 12:47:42, a representative from the operator of plane AYM10A called GND on the internal telephone 48627, informed them of the incident and asked if airplane G-XLMB with call sign AVB9MB was authorized to perform engine tests on the apron. They replied that permission had been requested and had in fact been granted.

## **2. ANALYSIS**

### **2.1. Actions taken by the pilot of the Cessna 152**

The airplane landed on the active runway and left it via taxiway C3, which is one of two authorized in the AIP, part 20. LOCAL REGULATIONS, specifically in the section on PROCEDURES TO EXIT THE RUNWAY. He then contacted GND and continued on the taxiway, constantly checking the aircraft's position as required by the AIP section on ATC PROCEDURES. 2. GROUND MOVEMENT, eventually proceeding to general aviation parking in accordance with the indications provided by ATC.

### **2.2. Actions taken by the crew of the Cessna Citation**

The first engine test run performed at 11:52 was carried out with permission from the Airport Authority (according to statements from the crew which could not be verified), following the indications in the AIP, part 21. NOISE ABATEMENT PROCEDURES, section on RUN-UP TEST FOR JETS (All types). They received ATC authorization and the test was carried out at the hold point of the inactive runway, on the condition that the plane be situated such that the exhaust jet was directed toward the asphalt of the taxiway. A half hour after this test run, another run was performed under the same conditions, but in a different location that resulted in a dust being kicked up and interfering with the taxiway.

An hour later they requested permission by radio from CLDRY to repeat the engine test in the general aviation apron, which they received, as evidenced by the communications transcript and by information supplied by AENA. In this case they did not ask the Airport Authority for authorization, and thus the test was not carried out in accordance with the AIP.



At no point during the three tests was a person situated outside the aircraft to watch the exhaust and ensure that no other aircraft, vehicles or persons were affected.

### 2.3. Actions taken by ATC

The frequency for Clearance Delivery (121.85 MHz) must be used when getting authorization to start engines or to communicate a change in flight plan (generally due to a delay). The crew's request to perform a high power engine test on the general aviation apron was unexpected since it did not conform to the procedures described in the AIP or in AENA's Technical Instruction.

The information supplied by AENA and the transcript of the communications held with the crew of the airplane with the call sign AVB9MB indicate that the high power engine test on the general aviation apron was authorized, but the investigation revealed that Clearance Delivery was not aware that a high power engine test was going to be performed. There was a misunderstanding between Clearance Delivery and the crew when the latter requested permission to start their engines and perform low power engine tests to be followed by high power tests.

Listening to the communications, it does not appear that the misunderstanding was caused by a level of English lower than required, but rather to a key point in the conversation in which the speaker was not clearly heard, as evidenced during the listening of the recording of the communication.

Finally, it is important to note that neither Airport personnel nor ATC personnel noticed that the incident had occurred, and therefore emergency services were not properly mobilized. It was the operator that reported the incident and alerted these services.

## 3. CONCLUSION

### 3.1. Conclusions

Concerning the student pilot aboard the Cessna 152:

- He acted correctly at all times and could neither foresee nor avoid the effect on his aircraft from the other airplane's jet blast.

Concerning the crew of the Cessna Citation:

- They acted in accordance with procedures in the AIP during the first two executions of the high power engine tests on that day, but not on the third since they did not request authorization from the Airport Authority, requesting it instead over the radio

from Clearance Delivery, which is not responsible for such authorizations. Since they were not required to be familiar with AENA's Technical Instruction, they did not station anyone outside the airplane to ensure that no persons or aircraft were affected by the jet blast.

Concerning ATC Delivery Clearance:

- The controller did not understand correctly the request that was being made by the crew of the Cessna Citation, and inadvertently authorized a high power engine test on the general aviation apron. This lack of understanding was probably due to a specific moment of the conversation in which the communication from the aircraft is not clearly heard.
- ATC personnel did not notice that the incident had occurred, and consequently did not mobilize emergency services.

### 3.2. Causes

The cause of the incident was the authorization given to the Cessna Citation, registration number G-XLMB, to carry out a high power engine test in an area different from the one specified in the airport's procedures, due to a miscommunication between ATC Clearance Delivery and the aircraft's crew.

## 4. RECOMMENDATIONS

**REC 29/07.** It is recommended that AENA modify the AIP SPAIN to ensure that the information on aircraft engine tests at Malaga Airport is in line with AENA's Technical Instruction for that airport titled "PRUEBAS DE MOTORES EN TIERRA" (GROUND ENGINE TESTING), publication code SGM-PG-10-IT01.

AENA accepted this recommendation and, as a result, reported that the Malaga Airport AIP was amended as of 15 March 2007. The paragraph covering ground engine testing was modified to put its wording in line with the provisions of Technical Instruction SGM-PG-10-IT01.