

**DATA SUMMARY**

**LOCATION**

Date and time	<b>Sunday, 1 July 2012; 08:45 UTC<sup>1</sup></b>
Site	<b>La Juliana Aerodrome (Seville, Spain)</b>

**AIRCRAFT**

Registration	<b>HA-NAH</b>
Type and model	<b>SMG-92 Turbo Finist</b>
Operator	<b>Swallow Aviación, S.L.</b>

**Engines**

Type and model	<b>WALTER M601 D-1</b>
Number	<b>1</b>

**CREW**

**Pilot in command**

Age	<b>23 years old</b>
Licence	<b>CPL(A)</b>
Total flight hours	<b>340 h</b>
Flight hours on the type	<b>24 h</b>

**INJURIES**

	Fatal	Serious	Minor/None
Crew			<b>2</b>
Passengers			<b>8</b>
Third persons			

**DAMAGE**

Aircraft	<b>Significant</b>
Third parties	<b>Aerodrome fence and some olive trees</b>

**FLIGHT DATA**

Operation	<b>Aerial work – Commercial – Parachute drop</b>
Phase of flight	<b>Takeoff – Takeoff run</b>

**REPORT**

Date of approval	<b>24 October 2012</b>
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<sup>1</sup> All times in this report are in UTC unless otherwise specified. To obtain local time, add 2 hours.

## 1. FACTUAL INFORMATION

### 1.1. History of the flight

On Sunday, 1 July 2012, an SMG-92 Turbo Finist aircraft, registration HA-NAH, was preparing to make its third flight of the day as part of a parachuting drop operation at the La Juliana Aerodrome (Seville).



Figure 1. View of the aircraft

The aircraft started taking off from the runway 27 threshold. Upon reaching a speed deemed proper by the pilot for rotation, the pilot noticed that the aircraft was not taking off, so he decided to abort the takeoff. While trying to stop the aircraft, it exited via the left side of the runway near the end, breaking through the fence that surrounds the aerodrome. The damage to the aircraft was mainly limited to the propeller, engine fairing, landing gear, elevator and

wings, which detached when the fuselage impacted some olive trees while the aircraft was outside the airfield.

Inside the aircraft were eight skydivers and two crew members, none of which was injured. The aircraft was evacuated in an orderly fashion.

### 1.2. Personnel information

The pilot had a commercial pilot license (CPL(A)) with an Aerotech SET rating, which allowed him to operate the type of aircraft in question. The rating was valid until 31 May 2013. He also had a parachute drop rating (PAR). His medical certificate was valid until 4 January 2013.

The pilot had gone on duty at 07:15 and he had already flown two parachuting flights before the accident flight. He had flown 12 hours in the last 30 days and 58 hours in the last 90 days.

There was also a safety pilot onboard, since the pilot in command was familiarizing himself with the characteristics of the field.

### 1.3. Aircraft information

The SMG-92 Turbo Finist aircraft is equipped with a Walter M601 D-1 turboprop engine, a three-bladed propeller and a tail skid. Its maximum takeoff weight (MTOW) when configured for parachuting drops is 2,700 kg. This aircraft was manufactured in 1994 and had serial number 003. The airframe had 2,575 flight hours and the engine had logged 1,556 h of operation.

The aircraft's documentation was in order on the date of the accident.

The aircraft had last been inspected on 22 May 2012 as part of a 500-hr check conducted in accordance with its maintenance program.

Section 9 of the Flight Manual addresses the differences to be kept in mind by the pilot when making parachuting drops with this aircraft, since this type of operation has an increased MTOW limit of 2,700 kg (the MTOW for normal operations is 2,350 kg).

This increased weight means that the distances needed for the takeoff and landing runs are also increased, as is the rotation speed, which is 86 kt with 0° flaps and 79 kt with 20° flaps.

According to the aircraft's performance tables, given the conditions present at the aerodrome, the takeoff distance<sup>2</sup> would have been 600 m and the takeoff<sup>3</sup> approximately 340 m.

The table below shows the weight and balance of the aircraft prior to the flight:

HA-NAH	Weight (kg)	Arm Aft Datum (m)	Moment (kg · m)
Basic empty weight	1,509	1.425	2,150.00
Pilot and copilot	150	0.951	142.65
Parachutists 3 & 10	160	1.770	283.20
Parachutists 4 & 9	160	2.280	364.80
Parachutists 5 & 8	160	2.840	454.40
Parachutists 6 & 7	160	3.330	532.80
Zero fuel weight	2,299	1.708	3,927.85
Fuel (0,8 kg/l)	192	1.250	240.00
Max ramp weight (2,700 kg)	2,491	1.664	4,167.85
Start and taxi	-10	1.250	-12.50
Maximum takeoff weight (2,700/2,350 kg)	2,481	1.675	4,155.35

<sup>2</sup> Takeoff distance: total distance available to the airplane for takeoff until it reaches an altitude of 35 feet above ground level.

<sup>3</sup> Takeoff run: length of runway traveled by the aircraft until the wheels leaves the ground.

The Manual specifies a forward limit of 1.330 m and an aft limit of 1.680 m. The result of the weight and balance calculation (1.675 m) shows that the center of gravity was well aft but within limits.

Section 4 of the Flight Manual, on emergencies, recommends doing the following if the takeoff is aborted:

- a) Throttle lever to IDLE.
- b) Throttle lever to BETA and reverse.
- c) Brake.
- d) Stop the engine when clear of the runway and evacuate the aircraft if necessary.

The flap lever is located on the center pedestal and has three-positions: up, takeoff (20°) and landing (full down, 40°). To the left of the instrument panel there is a flap position indicator light. When the flaps are in transit, it shows three yellow lights. When the flaps are locked in the takeoff or full down position, three green lights are shown. When the flaps are retracted (up position), there is no indication.

#### 1.4. Meteorological information

The most likely weather conditions at the time of takeoff were as follows: variable wind from 340° to 010° at 6 to 11 km/h and gusting to 14 to 22 km/h from the north, 10 km visibility, clear skies and a temperature of 22 °C. The QNH at the Seville San Pablo Airport was 1,019 hPa. There was no precipitation and no adverse weather warnings.

#### 1.5. Aerodrome information

The Juliana Aerodrome is in the province of Seville, near the town of Bollullos de la Mitación. Its coordinates are 37° 17' 43'' N and 006° 09' 48'' W.

It has a 925-m long, 17-m wide asphalt runway in a 09-27 orientation. It is at an elevation of 45 m.

Air-to-air communications are handled on 123.50 MHz.



Figure 2. Aerial view of La Juliana

## 1.6. Wreckage information

The onsite investigation conducted after the accident revealed that the flaps were in the 0° position, the throttle lever was in an intermediate position, the pitch was full forward and the condition closed.



Figure 3. Powerplant control levers (left) and flap selector (right)

## 1.7. Pilot and eyewitness statements

In his statement, the pilot confirmed that he took off from runway 27 and that halfway down the runway, having reached rotation speed, he tried to rotate. He realized he had traveled far down the runway and pushed the throttle full forward. He heard the engine wind down and decided to abort the takeoff by placing the throttle lever in reverse and applying the brakes. He hit the fence and some olive trees, after which they evacuated the aircraft. He was the last to leave the aircraft after turning everything off.

One of the parachutists who was onboard during the accident also provided a statement. He was experienced skydiver and had flown on this type of aircraft before and in his statement he said the takeoff run was normal and estimates they reached a speed of between 65 and 70 kt. He did not feel or hear anything abnormal from the engine. The aircraft did not leave the ground while it was on the runway. He confirmed that the evacuation had been orderly, with the crew exiting last.

## 2. ANALYSIS AND CONCLUSIONS

The aircraft was attempting to make a parachuting drop above the La Juliana Aerodrome. Onboard the aircraft were two crew and eight parachutists. Whenever this aircraft is doing a short-field takeoff with a high weight, it is recommended that the flaps be set to their takeoff position of 20°.

The evidence indicates that the pilot was attempting to take off on runway 27 and forgot to place the flaps in the takeoff position (20°).

Since the flaps were selected to 0° (Up), the aircraft would have needed a speed in excess of 86 kt to take off, instead of the 79 kt corresponding to a flap position of 20°.

When the aircraft reached a speed deemed adequate by the pilot for takeoff, the pilot attempted to rotate, but the aircraft remained on the ground, so the pilot decided to abort the takeoff. Since the aircraft was not in its ideal takeoff configuration, its speed was undoubtedly below that needed to rotate.

According to the performance tables, the aircraft would need to cover 340 meters during its takeoff run, meaning the length of runway available would have been more than enough to allow the aircraft to accelerate and stop within the runway.

When the pilot stepped on the brakes, he probably did so asymmetrically, causing the aircraft to exit the runway to the left. The distance traveled by the aircraft before stopping indicates that the pilot did not place the throttle in reverse properly. If he had, this, along with the brakes, would have allowed him to bring the aircraft to a stop much sooner.

The accident is regarded as having resulted from the improper configuration of the flaps for takeoff. This caused the pilot to abort the takeoff when, upon reaching the rotation speed he deemed suitable for takeoff in the given configuration, the aircraft did not take off. Moreover, his improper inputs to the brakes and the reverse throttle resulted in the aircraft exiting the runway and then impacting the aerodrome fence and some olive trees.