



Serious incident

to the Socata TB-20 "Trinidad" registered **F-GGNZ**
and the Beechcraft 58 "Baron" registered **F-GNSE**
on 13 October 2016
at Saint-Yan (Saône-et-Loire)

⁽¹⁾All times given in
this report are in
local time (UTC+2).

Time	15:35 ⁽¹⁾
Operator	ENAC (National School of Civil Aviation)
Type of flight	F-GGNZ: Local training flight F-GNSE: Cross-country training flight
Persons on board	F-GGNZ: Student pilot, instructor, passenger F-GNSE: Student pilot, instructor
Consequences and damage	No damage
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in February 2020. As accurate as the translation may be, the original text in French is the work of reference.	

Near-collision between an aeroplane in an aerodrome traffic circuit and an aeroplane on an IFR departure, both under instruction

1 - HISTORY OF THE FLIGHT

The pilot of the TB-20 took off for a local VFR flight from Saint Yan airport, with an instructor and another student pilot on board. On his return from the flight, he completed a first left-hand aerodrome traffic circuit to runway 33L, then slightly extended his climb to complete a U-shaped landing circuit to runway 33L. He was in radio contact with the tower controller.

The pilot of a TB-10, also operated by ENAC, took off from runway 33R for right-hand aerodrome traffic circuits. At the tower controller's request, he extended the climb-out. When he requested a right turn, the controller instructed him to turn left into a remote crosswind leg.

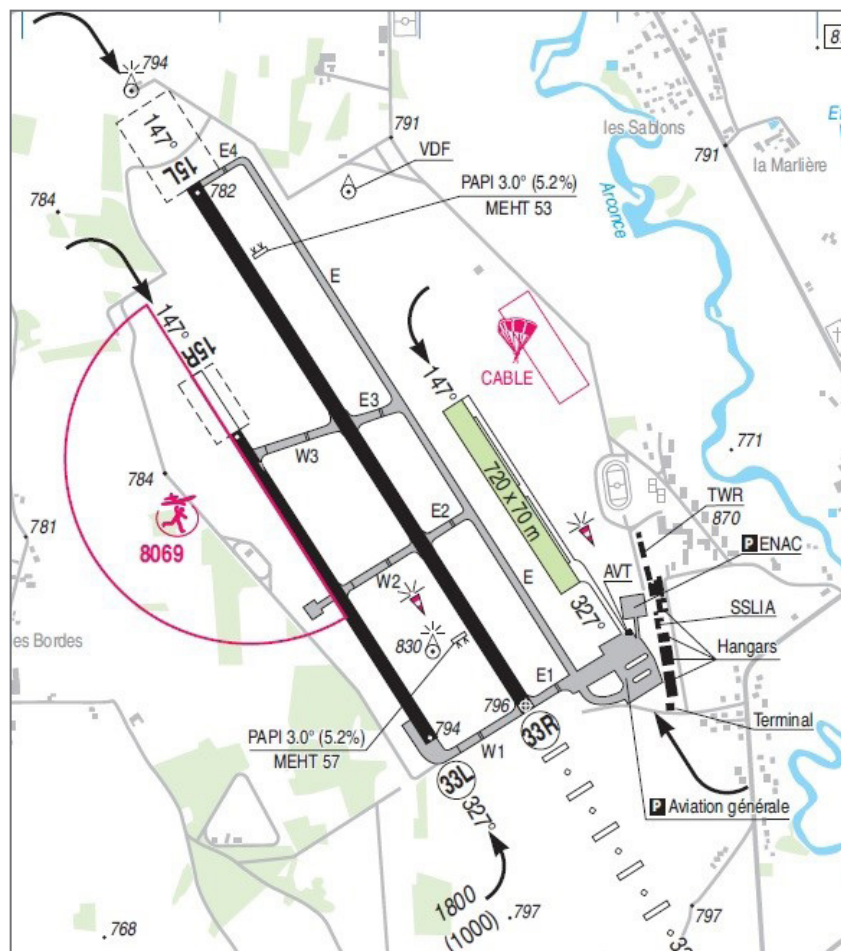
At the holding point for runway 33R, the pilot of the Beechcraft 58 (Be-58) was preparing for an IFR training flight to Clermont-Ferrand (Puy-de-Dôme). He received clearance for departure from the ground controller for an omnidirectional departure towards RIMOR. This clearance was conditional on maintaining visual contact with the TB-10 that had just taken off. When the tower controller thought that the TB-10 was no longer in conflict, he cleared the Be-58 for take-off. The pilot took off then turned left in accordance with his clearance. He did not receive any information about the TB-20.

When the pilot of the TB-20 was on the downwind leg and the pilot of the Be-58 had turned left heading south-west, the pilot of the TB-20 suddenly saw the Be-58 approaching on his left. He performed a sudden evasive action. The Be-58 passed a few metres above the TB-20. The occupants of the Be-58 did not see the TB-20 and continued the flight. The instructor of the TB-20 requested to abort the flight and landed on runway 33R. He filed an AIRPROX report.

2 - ADDITIONAL INFORMATION

2.1 Airport information

The airport has three separate runways, all 15/33. All three runways can be used simultaneously. The airport's reference altitude is 796 ft.



Source: SIA

Figure 1: excerpt from the VAC chart for Saint-Yan airport

The airport has an air traffic control unit with three separate frequencies: tower, ground and approach.

Departure clearances are given by the ground controller in coordination with the approach controller. On an omnidirectional departure from runways 33 L/R, the pilot had to climb to 1,000 ft before following, still in climb to the en-route safe altitude, a direct course to the point assigned to him.

At 1,000 ft, certain paths may interfere with the downwind leg of the left-hand circuit, which is at the same height.

2.2 Pilot information

2.2.1 TB-20 crew

The instructor has been FI(A) rated since 2003 and has been working at ENAC since 2008. On the day of the incident, he had logged approximately 6,000 flight hours.

The pilot in training was preparing for his ATPL(A) licence and, at the time of the occurrence, held a PPL(A) licence obtained in 2014. He had logged approximately 120 flight hours, including 30 hours on the TB-20.

2.2.2 Be-58 crew

The instructor has been FI(A) rated since 1995 and has been working at ENAC since 2008. On the day of the incident, he had logged nearly 10,000 flight hours.

The pilot in training and flying at the time of the incident was of Chinese nationality. He was in training for an ATPL(A) licence. He had logged 219 flight hours, of which 77 were IFR hours and 27 were on a Beechcraft 58. It was not possible to interview him during the investigation.

2.3 Statements

2.3.1 TB-20 crew

The student pilot explained that, after a first aerodrome circuit, he decided to extend the climb-out to 2,000 ft to give himself time to prepare the aircraft before performing a left-hand U-shaped landing circuit to runway 33L. While turning to rejoin the downwind leg, he descended again to 1,600 ft. Shortly afterwards, he saw the Be-58 approach on his left and instinctively pulled back on the stick. He was aware that there were three aircraft in the circuit but was not expecting the Be-58's path to be in conflict, especially given that he had not received any traffic information. He said that he had heard the communications in English made by the Chinese pilot of the Be-58 but had found them incomprehensible.

He added that the visibility was reduced.

The instructor stated that he was surprised by the student's evasive action. He had not seen the Be-58 coming. The passenger heard the pilot exclaim while he was performing a nose-down evasive action⁽²⁾. He only saw the Be-58 when it passed just above their aircraft.

The TB-20 is equipped with a Traffic Advisory System (TAS) that detects the presence of other aircraft when their transponder is in operation⁽³⁾. None of the occupants recall hearing a TAS alert⁽⁴⁾ before the near-collision.

2.3.2 Be-58 instructor

The instructor explained that, at the time of the occurrence, a significant number of Chinese student pilots were in training for their ATPL(A) licences. He said that these students often had fairly poor English and that comprehension was difficult. They had limited flying experience, which meant that a high level of concentration was required from the instructors.

⁽²⁾It could not be determined whether the evasive action by the pilot was a nose-down or nose-up input.

⁽³⁾The TB-20's TAS system has only one antenna, so the aircraft's structure can create a masking effect in certain configurations.

⁽⁴⁾It was not possible to determine whether there had been a TAS alert.

The departure clearance was given long before the take-off clearance because the TB-10 took off before them. He was surprised that the controller denied the TB-10 pilot's request to turn right and instructed him to turn left. He had no information regarding the presence of the TB-20.

The Be-58 was equipped with a transponder but did not have a TAS system.

2.3.3 TB-10 instructor

The instructor explained that he was doing aerodrome traffic circuits with Chinese student pilots, who were beginners. He added that these sessions represented a heavy workload, especially since the students had poor English and had great difficulty understanding the controllers' instructions. For this flight, the instructor was in charge of radio communication tasks. He explained that the traffic was heavy and that the tower controller seemed very busy.

On the climb-out from runway 33R for a right-hand circuit, the tower controller instructed him to extend the climb. When the instructor saw clouds ahead, he requested a right turn, but the controller instructed them to turn left. He was surprised by this instruction. The pilot turned left and, when the aircraft was in the remote crosswind leg, the instructor saw the TB-20 higher up, in the downwind leg. Shortly afterwards, during the turn, he saw the Be-58 in a left turn which crossed the TB-20's path at a very short distance.

2.3.5 Ground controller

The ground controller reported that the weather conditions were poor in the morning but improved in the middle of the day. Traffic then increased, but visual monitoring of the aircraft in the circuit remained difficult because of the visibility.

She explained that the controllers regularly switch positions. During a handover, she had switched to the ground position. The traffic was then fairly calm for approximately three-quarters of an hour until the near-collision.

The departure clearances are given by the ground controller long before the departures actually happen. It is the tower controller who clears the take-offs and ensures coordination with other aircraft in real time.

2.3.6 Tower controller

The tower controller said that for the past few weeks, the traffic had been heavy at the airport with large groups of Chinese student pilots undergoing their initial training. In addition, the weather conditions on the day of the incident sometimes made it difficult to keep track of the aircraft and it was necessary to pay close attention.

He added that the controllers had a radar display, but this was only an aid and significantly lagged behind the actual positions of the aircraft, especially during turns. It made it possible to look in the right place more quickly but not to monitor aircraft properly.

⁽⁵⁾This was another TB-20 that was performing a right-hand practice forced landing (PFO) on the unpaved runway.

⁽⁶⁾This was the TB-10 that had just taken off from runway 33R for right-hand runway circuits and that the controller would instruct to turn left.

⁽⁷⁾This was the TB-20 that had taken off again from runway 33L for a left-hand circuit to make a U-shaped landing circuit towards runway 33L.

He explained his situational awareness just before the incident:

- ❑ an aeroplane was coming in from the west to join a right-hand circuit for the unpaved runway⁽⁵⁾;
- ❑ a TB-20 was on a climb-out from runway 33R, for a right-hand circuit⁽⁶⁾;
- ❑ a TB-10 was on a climb-out from runway 33L, for a circuit that was initially right-hand. The controller denied the TB-10 the right-hand circuit to avoid a conflict with the BE-58⁽⁷⁾;
- ❑ a Be-58 was on an IFR departure heading south-west from runway 33L.

He informed the crew of the Be-58 that the take-off clearance was conditional on having sight of the preceding aircraft. He specified that this request to the crew of the Baron was in response to a recommendation made following a previous occurrence (see section 2.4.2).

He added that, at the time of the incident, clouds prevented him from seeing the aeroplanes properly and that he had turned his attention to the radar display. He said that he felt tired and planned to request a handover of his position shortly.

The tower controller's first assignment was in Reims in 2001. He came to St Yan in 2011, where he qualified in 2013. He lives in Lyon, 140 km away, and makes numerous round trips. The previous control session, two days earlier, had been tiring and the return journey had seemed difficult: he was feeling tired but still able to do his job.

2.4 Previous occurrences

2.4.1 Near-collision on 26 June 2008

On that day, visibility was good. The crew under instruction on an ENAC TB-20 were on a VFR flight from the Moulins area (Allier) and were directly joining the left-hand downwind leg towards runway 33R. They received traffic information about a TB-20 taking off under IFR from runway 33R with a left turn. At the beginning of the downwind leg, the crew belatedly saw the other aircraft on a converging path and performed an evasive action.

The crew of the IFR flight had not been informed of the presence of another aircraft arriving. During their left turn, they saw the first aircraft and also performed an evasive action.

Following this incident, a reminder memo was issued to the controllers to emphasize the importance of giving reciprocal information to the crews of different aircraft.

2.4.2 Near-collision on 11 December 2014

The crew of an ENAC Be-58 were on a local training flight. On their return from the flight, the approach controller asked them to make a 360° delaying turn before transferring them to the tower frequency. During this manoeuvre, the tower controller asked them to directly join the downwind leg. When the aircraft was at the start of the downwind leg, the crew saw another ENAC Be-58 on a converging path and performed a nose-down evasive action. The second aircraft crossed their path above them. The crew had received information about the second aircraft on take-off a long time before. They had identified another aircraft that had taken off earlier and was no longer in conflict.

⁽⁸⁾To the west of the airport.

The second Be-58 was on an IFR training flight. It had received clearance for an omnidirectional departure towards Mendes⁽⁸⁾. It had not received flight information for the first Be-58, which was on a downwind leg.

Locally, a feedback document was distributed to make controllers aware of the use of preliminary information and that they must not refer solely to the radar in aerodrome air traffic control.

3 - LESSONS AND CONCLUSION

3.1 Tower controller's representation of the situation

The investigation showed that the tower controller had an incorrect representation of the situation: in particular, he confused the TB-20 with the TB-10 in climb-out.

Poor visibility caused him to turn his attention to the radar display, which lagged behind the actual situation. He identified several potential conflicts based on an incorrect representation. For example, he identified a potential conflict between the Be-58 and the TB-10 in climb-out and asked the TB-10 to extend its climb on the centreline before clearing the Be-58 for take-off.

The crew of the TB-10 in climb-out for a right-hand circuit with clouds ahead, requested a right turn. The controller instructed them to turn left, not right. He thought he was talking to the crew of the TB-20, of whose position he had an inaccurate representation. He then announced to the crew of the Be-58 that the preceding aircraft was no longer in conflict and cleared them for take-off.

When the controller saw that the TB-10 had turned left into a crosswind leg, he initially thought that there was a conflict between the TB-10 and the TB-20. He did not identify the danger of the TB-20 and Be-58 crossing paths.

3.2 Measures taken since the serious incident

Following the occurrence, ENAC issued an operational memo in April 2017 specifying that, following several near-collisions, ENAC crews should no longer accept omnidirectional departure procedures from Saint Yan airport.

The AIP⁽⁹⁾ was amended in August 2017 and requests that pilots climb on a heading of 327° to an altitude of 1,800 ft for omnidirectional departures. As a result of this amendment, the ENAC operational memo no longer applies and ENAC has stated that no more air proximities have occurred in similar conditions.

⁽⁹⁾Aeronautical Information Publication.