



Serious incident to the SOCATA – TB 20 registered **F-GGNS**
and to the Beechcraft - Be 58 registered **F-GNSD**
on 6 October 2021
at Saint-Yan

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| Time | 14:27 ¹ |
| Operator | École Nationale de l'Aviation Civile (ENAC) |
| Type of flight | F-GGNS: Instrument flight (IFR), in instruction F-GNSD: Local visual flight (VFR), in instruction |
| Persons on board | F-GGNS: Student-pilot, instructor, passenger F-GNSD: 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 October 2022. As accurate as the translation may be, the original text in French is the work of reference. | |

Near collision between two aircrafts on initial climb from parallel runways, both in instruction flight

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements, ATC communication recordings, the ApiBox flight recorder installed on the TB 20 and the Garmin G500 TXi display installed on the Be 58.

On 6 October 2021, at 14:19:41, on the return leg from a local flight, the pilot of the Be 58 contacted the tower controller at Saint-Yan airport. The tower controller asked him to call back on the left-hand downwind leg, without specifying whether it would be for runway 33R or 33L², and informed him of the presence of another Be 58 on the crosswind leg for runway 33 (this was also an ENAC flight, call sign NAK 721R). The pilot replied that he was looking for traffic and that he would call back on the left-hand downwind leg³.

At 14:22:28, a DR 400 registered F-GOSV, coming from Dijon-Darois, contacted the tower controller. The tower controller replied that several aircraft were flying runway circuits and she asked the pilot if he could fly overhead at 3,000 ft and then call back on the left-hand downwind leg for runway 33L. The pilot replied that he would call back on the left-hand downwind leg for runway 33L.

¹ Except where otherwise indicated, the times in this report are in local time (UTC +2).

² The QFU can be provided by the controller later depending on the traffic.

³ The exchanges between air traffic control and ENAC flights are, unless otherwise stated in the report, in English.

At 14:23:03, the Be 58 pilot called back on the left-hand downwind leg for a touch-and-go (see Figure 1, point ①). The controller replied that he was number 1 for runway 33L and asked him to call back on final. The pilot read this message back.

At 14:24:37, the TB 20 instructor contacted the tower controller and announced he was ready for departure from Tango⁴. This was an instruction flight under an IFR flight plan bound for Clermont-Ferrand. The controller asked him to taxi to Echo 1 for take-off from runway 33R.

Note: the pilot had previously received clearance on the ground frequency for an IFR omnidirectional departure towards the GURGO reporting point. This procedure consists in holding the runway axis (magnetic track 327°) up to 1800 ft QNH and then turning left towards the GURGO reporting point. This point is located 9 NM at 220° from the airport.

At 14:25:09, the TB 20 pilot was cleared to line up from Echo 1 and then to take off on runway 33R.

Six seconds later, the controller cleared the Be 58 for an option on runway 33L. As the pilot did not read the message back, the controller called him back. The latter replied at 14:25:31 that he was on the downwind leg⁵ (see Figure 1, point ②). The controller repeated the clearance for an option. The pilot read this message back.

At 14:26:26, F-GOSV called back overhead the facilities. The controller asked him to call back on the left-hand downwind leg for runway 33, asked the TB 20 pilot to continue the initial climb and told him she would call him back. This request was repeated at 14:26:47 following the pilot's failure to read back the message (see Figure 1, point ③).

Eighteen seconds later, the controller asked the Be 58 pilot, who had just performed a touch-and-go, to be vigilant because the TB 20 to his right was going to turn left. The pilot answered "Ah" (see Figure 1, point ④).

Six seconds later, the TB 20 pilot indicated, in French, that he was ready to turn left towards GURGO (see Figure 1, point ⑤). The controller asked him, also in French, to hold the axis and said that she would call him back.

At 14:27:36, the Be 58 overtook the TB 20 which was then about 100 ft lower⁶ (see Figure 1, points ⑥ ⑥).

Two seconds later, the controller confirmed to the TB 20 pilot that he had to hold the axis and asked him to contact the approach controller. The Be 58 pilot asked what he should do. The controller told him that he could turn onto the crosswind leg (see Figure 1, point ⑦). The pilot of the TB 20, still on the frequency, indicated in French to the controller that it had been "a bit close" and that if he had turned there would have been a collision. The Be 58 pilot confirmed this on the frequency.

⁴ Holding areas are located just before the taxi-holding position and allow aircraft to perform the pre-flight run-up and checks without disrupting ground traffic.

⁵ He was actually on final.

⁶ F-GNSD was higher than the airport circuit altitude (1,800 ft).

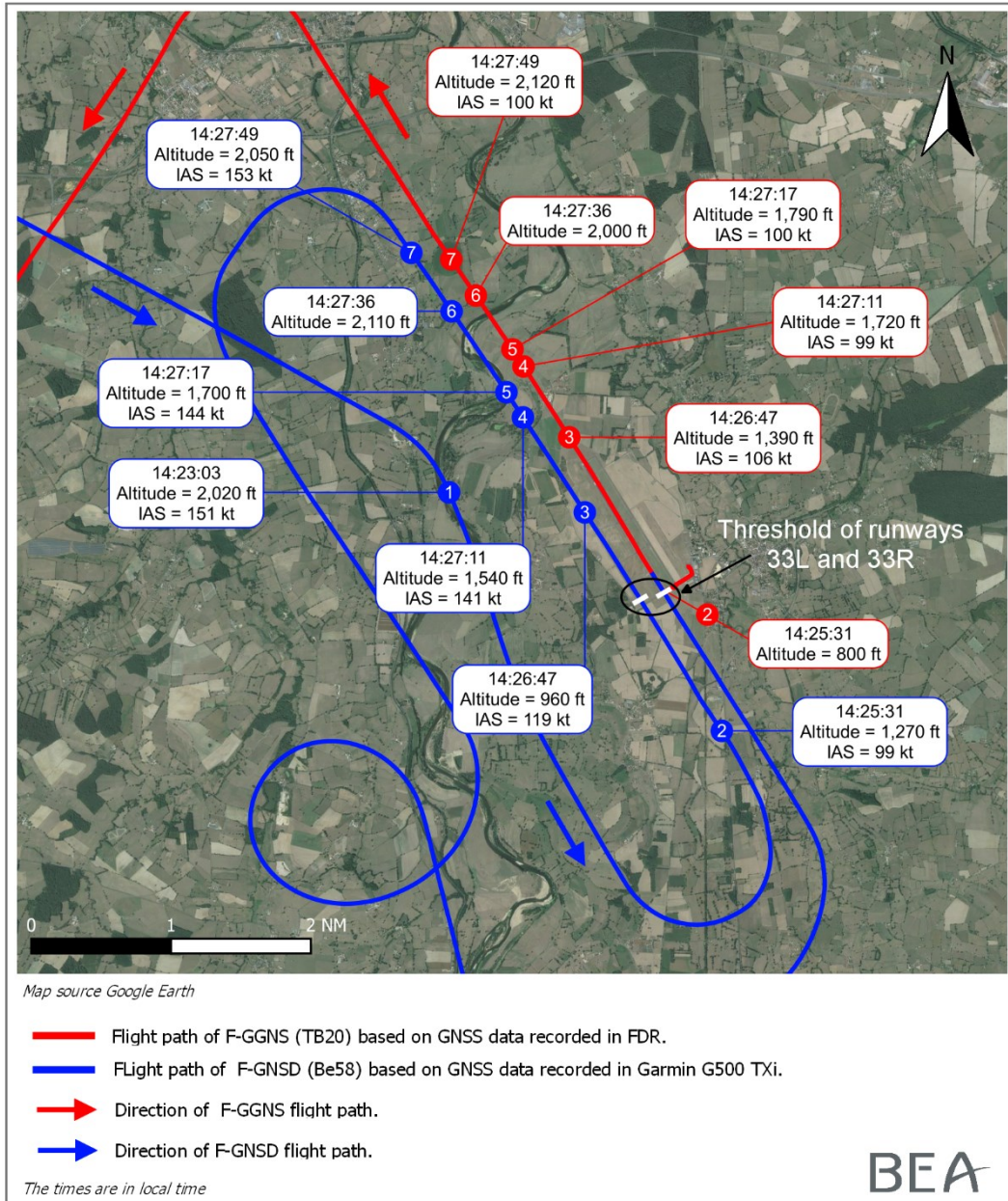


Figure 1: flight paths of the two aeroplanes

2 ADDITIONAL INFORMATION

2.1 Saint-Yan airport information

The airport has three separate and independent runways, two paved and one unpaved, all oriented 15-33.

The airport's reference altitude is 796 ft.

Runway 15L/33R is 2,034 m long and is usually referred to as the "main runway". Runway 15R/33L is 1,200 m long and is referred to as the "secondary runway".

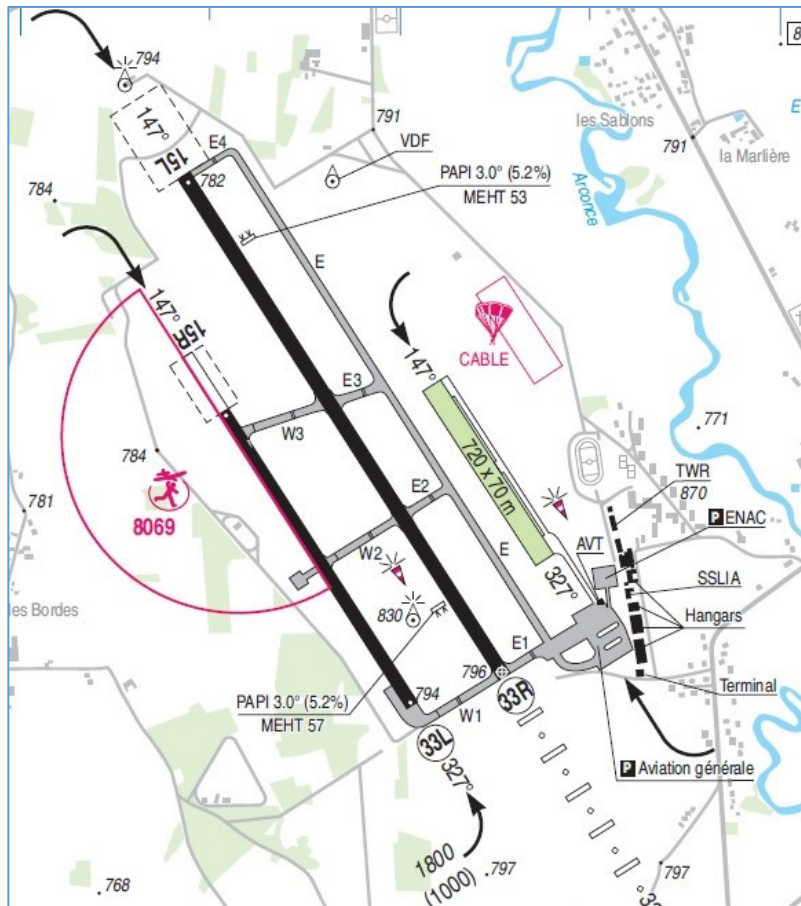


Figure 2: excerpt from Saint-Yan airport VAC chart (source: AIS)

The airport has an Air Traffic Control (ATC) unit with three separate frequencies: ground, tower and approach.

The airport circuit is generally flown to the west of the facilities at 1800 ft QNH (i.e. 1,000 ft AGL). For traffic reasons, it may be flown to the east of the facilities, upon instruction from the ATC.

IFR departure clearances are issued to crews on the ground frequency. The tower controller is informed of this verbally and via the paper strip received. For omnidirectional departures, which can only be used if specifically authorised by the approach controller, the climb is made on the axis (magnetic track 327°) up to 1800 ft QNH, then the crew proceed to their assigned point.

2.2 Pilot information

2.2.1 TB 20 instructor (F-GGNS)

The instructor held Instructor (FI(A)) and Instrument Rating Instructor (IRI) ratings. He had been working at ENAC since 2017.

He had logged 3,700 flight hours, 555 hours of which on type and 120 hours of which in the previous three months.

In his statement, the instructor, who was at the controls, indicated that he was carrying out an IFR training flight bound for Clermont-Ferrand with two French students on board. They were on an omnidirectional departure towards GURGO, which involved climbing straight ahead to 1800 ft QNH before a left turn towards GURGO.

During the initial climb before reaching the turn altitude associated with the IFR departure, he heard over the radio that a Be 58 was also on initial climb on the axis of runway 33L, and was therefore to his rear left, and travelling at a faster speed than his speed. He considered this flight as a threat. He was unable to see the aeroplane and asked the student in the rear seat to monitor the rear left sector. The presence of the Be 58 triggered a "Traffic Alert" on the TAS⁷. At the same time, the crew saw the Be 58 passing them abeam to their left, at a slightly higher altitude.

The controller transferred the TB 20 to the approach controller and then cleared the Be 58 to turn onto the left-hand crosswind leg.

2.2.2 Be 58 instructor (F-GNSD)

The instructor held Instructor (FI(A)), Class Rating Examiner (CRE), Instrument Rating Instructor (IRI) and Instrument Rating Examiner (IRE) ratings. He had been working at ENAC since 2003. He had logged 9,000 flight hours, 3,760 hours of which on type and 107 hours of which in the previous three months.

In his statement, the instructor indicated that he was returning from a local flight, with a Chinese student on board. They were cleared to perform a touch-and-go on runway 33L. Just after the touch-and-go, in initial climb, the controller asked them to hold the axis, without providing further information. The pilot was surprised by this instruction because the downwind traffic he had in sight (DR 400 registered F-GOSV), had already passed abeam to his left.

The student-pilot complied with the controller's instruction. The instructor then saw traffic downwind to their left on the TAS, and just after that, a TB 20 to the right, in front of them, which they were rapidly catching up with.

The TB 20 pilot asked the controller to confirm his left turn towards an IFR point. The controller asked him to hold the axis. The pilot indicated that he then understood that the TB 20 was on an IFR omnidirectional departure. He realised that the paths were conflicting and that the TB 20 would cut across their path at their altitude.

He acquired visual contact with the TB 20 when they overtook it. Their aeroplane was then slightly higher. After overtaking the TB20, the pilot asked for instructions from the controller. The controller instructed him to hold the axis and said that he could then join the downwind leg.

⁷ Traffic Advisory System. The TB 20's TAS retrieves information from surrounding transponders and displays this on the on-board GPS charts using the Distance/Delta altitude format. The Be 58's TAS is based on the same principle but is also able to retrieve ADSB information from the transponders (route/code/registration/ground speed). It is more accurate because there is less latency as data is transmitted digitally from one aeroplane to another.

2.3 Controllers' statements

2.3.1 Tower controller

The controller had been working at Saint-Yan airport since 2008. She had previously worked at the East Area Control Centre (ACC) in Reims. She held the senior controller rating for the Tower and Approach positions, as well as an instructor rating.

The controller indicated that the incident occurred after a long period of work on the airfield. This period lasted about two-and-a-half months and ended on the day of the incident. During this period of work, the airport operated with a single runway, sometimes runway 33L and sometimes runway 33R, and the taxiing constraints were numerous and unpredictable, sometimes with very short notice from the airport operator. The controllers adapted in real time but this caused them to become increasingly tired. She herself was exhausted at the end of this period.

The controller specified that the work, which was scheduled for completion on 25 September 2021, continued until the morning of 6 October, the day of the incident. During this additional week, the controllers were informed of the work at the last moment. For example, on the morning of Friday 1 October, runway 33R was closed for several hours. On Tuesday 5 October, the day before the incident, the secondary runway was closed for half a day. On the day of the incident, the runways were closed in the morning. The controllers were informed of this the same morning. All of these constraints resulted in traffic management difficulties.

The tower controller reported that she started her shift in the morning and, due to the low traffic levels, managed the GND and LOC duties (combined positions). Traffic levels picked up markedly as soon as the runways reopened. The positions were then separated.

A DR 400 coming from Dijon to perform an airport circuit arrived during a traffic peak. She decided to ask him to call back when overhead the facilities with the intention of then asking him to join the left-hand downwind leg as there was traffic on the right-hand downwind leg. When the Be 58 registered F-GNSD arrived on final, she cleared it for an option on runway 33L. The pilot replied that he was on the downwind leg. She did not tell him he was mistaken because she had sight of him and repeated her clearance. The DR 400 then called back when overhead the facilities. She then asked F-GNSD to continue its initial climb. Her idea was to ask him to call back on the downwind leg as soon as the position of the DR 400 on the downwind leg would allow it.

Occupied with managing the traffic, she was surprised by the relative speed between the Be 58 and the TB 20 registered F-GGNS at take-off. According to her, the heavy traffic sequence in the previous minutes was very resource-intensive and she no longer had sufficient mental capacity to manage the conflict properly. She added that, at that moment, she felt a momentary loss of technical skills due to the lack of practice in managing the two parallel runways during the work period.

2.3.2 Ground controller

The ground controller indicated that she had just started her shift after the lunch break. Traffic was picking up after a quiet morning. She was busy managing the ground traffic when she heard something unusual happening on the tower frequency. After the incident, she quickly took over the frequency to replace her colleague, as required by national guidelines after an incident.

She added that since the start of the work, the working environment was very changeable. The controllers were in a situation of constant uncertainty about the progress of the work and were not in control of the last-minute schedule changes, which occurred frequently.

The controllers felt left to their own devices.

She added that this period resulted in a loss of the automatic reflexes necessary for the air traffic controller position.

2.3.3 Approach controller

The approach controller indicated that the morning was quiet in terms of traffic and that the three positions (APP, GND, LOC) were combined.

Traffic picked up suddenly as soon as the work finished in the early afternoon. About 15 min before the event, he suggested separating the control positions.

2.4 Meteorological information

The ATIS information recorded at 11:20 UTC was as follows:

Right-hand SN ILS 33 approach, runway 33 in use, transition level FL60, high-speed turn-off closed, taxiways E2 and W2 closed, wind 300°/7 kt, visibility greater than 10 km, broken clouds at 2,500 ft, broken clouds at 3,000 ft, broken clouds at 3,500 ft, temperature 13°C, dew point temperature 9°C, QNH 1024 hPa.

2.5 Specificities of local traffic

Aviation activities at Saint-Yan airport mainly comprise ENAC instruction flights. These flights are, by nature, very varied, ever-evolving and subject to deliberate, or unknown, changes in intention for instruction purposes. The management of this type of traffic, often referred to as “training traffic”, requires special technical skills and constant monitoring.

Flights from other areas, referred to as “external flights”, also come regularly to Saint-Yan for training.

In the context of parallel runways, this increases the provision of two-way traffic information to crews.

2.6 Period of work on airfield

2.6.1 Purpose of the work

The work was scheduled to run from 2 August to 25 September 2021, under the responsibility of the airport operator Saint Yan Air'e Business (SYAB). The objective of the work was to completely repair the two runways and associated taxiways, as well as the lighting.

2.6.2 Work schedule

To meet the fixed objectives, a decision was made to carry out the work in two phases:

- Phase 1 from 2 August to 22 August 2021. This phase consisted in repairing runway 15R/33L and the cracks in the taxiways.
- Phase 2 from 23 August to 25 September 2021. This phase consisted in repairing runway

15L/33R and the cracks in the taxiways.

During these two phases, the airport operated with a single runway and was reserved for based aircraft.

2.6.3 Coordination between the various stakeholders

The airport operator initiated coordination with the main user ENAC and the air traffic services in order to regularly review the progress of the work in relation to the initial schedule. However, this coordination was not carried out on a regular basis with the ATC.

Any modification of the schedule and/or of the possible work areas was subject to a prior agreement with ENAC. The controllers were simply informed of these modifications. The airport-based Aircraft Rescue and Fire Fighting service (ARFF) remained available and in two-way contact with the control service regarding any changes.

2.6.4 Extension of work in the days preceding the incident

On Tuesday 28 September, the airport operator informed the ATC and ENAC by e-mail, with a few minutes' notice, that due to disruption caused by adverse weather, the work would have to continue for longer, starting that day. Both paved runways were available. Work was being carried out on various taxiways.

On Thursday 30 September, ENAC and the ATC were informed by e-mail:

- of the closure of runway 15L/33R on Friday 1 October between 9:30 and 11:30;
- of work on the taxiways (especially E1) and on the Tango holding areas, scheduled for Monday 4 October;
- of the closure of runway 15R/33L on Tuesday 5 October for a half day (times not specified).

On 6 October, the day of the event, the runways were still undergoing some work up to 09:20 UTC, along with taxiways E2, W2 and the Tango areas.

This work was the subject of a memo dated 30 September from the North-East Air Navigation Service (NE ANS) addressed to the Saint-Yan air traffic controllers.

2.7 Applicable airport control procedures

On the day of the incident, the procedures applicable by the ATC units with respect to the provision of airport control for aircraft in controlled flight were set out in the ATM/ANS IR⁸ and the SERA⁹, adapted by the RCA3¹⁰

⁸ Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight ([Version in force on the day of the incident](#)).

⁹ Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation ([Version in force on the day of the incident](#)).

¹⁰ Appendix to the Order of 21 April 2017 laying down the rules and procedures for air traffic services provided to aircraft operating under general air traffic rules ([Version in force on the day of the incident](#)).

These procedures indicate that the airport controller must monitor the progress of all flights in the airport circuit as well as the movement of aircraft, vehicles and persons in the marshalling area. Initial radio contact takes place before the start of the airport circuit if the associated class of airspace does not require prior radio contact.

This is the latest time at which the aircraft can request clearance to join the airport traffic.

Asking aircraft to call back at a specific point of the airport circuit may help aircraft to locate themselves in relation to other aircraft and to ensure appropriate separation.

The avoidance of collisions between IFR and VFR flights, and between VFR flights is ensured in airport traffic. The pilot-in-command¹¹ is responsible for avoiding collisions with other aircraft using traffic information. Airport traffic information shall be provided whenever conflicting situations are foreseeable. It is kept up-to-date with foreseeable aircraft manoeuvres.

Except in situations where separations must be increased due to wake vortex and where separations may be reduced, no landing or take-off clearance shall be issued to an aircraft until the preceding departing aircraft has crossed the end of the runway in service or has initiated a turn, or until all preceding arriving aircraft have cleared the runway in service.

Since the incident, the ATM/ANS IR has been complemented by the Order of 04 March 2022¹², which firstly adapts the Order of 11 December 2014 to the new European rules, secondly completes them with additional provisions applicable to air traffic service providers, and lastly repeals the RCA3.

2.8 Operation of the air navigation service at Saint-Yan

The position of head of air traffic at Saint-Yan airport had been vacant for two years, and the position of deputy had been vacant for about six months. The role of head of air traffic was being performed by the NE ANS Officer located at Strasbourg Airport¹³.

The duties of the head of air traffic are:

- assuming responsibility for the airport's air operations;
- developing working methods;
- communicating the needs for the development of facilities and procedures;
- managing relations with users and representatives of other administrations;
- giving opinion on studies and projects;
- drafting memos and operating instructions;
- drafting NOTAM requests;
- researching, compiling and updating documentation;
- designing, producing and presenting aeronautical information;
- managing personnel and administrative matters.

¹¹ Whether under IFR or VFR rules.

¹² Order of 04 March 2022 laying down rules applicable to air traffic service providers ([Version in force at the time of publication](#)).

¹³ Expected to be in place until autumn 2022.

Due to the absence of local management, there was no close and regular consultation with the airport operator and ENAC. However, a few controllers, who were shift supervisors, could interact with these entities.

Many factors affected the working conditions of the Saint-Yan air traffic controllers:

- A shortage of controllers¹⁴. Therefore, breaks, which should account for 13 % of working time, are sometimes not taken for traffic reasons.
- Controllers are not informed in advance of IFR flights transiting their Terminal Manoeuvring Areas (TMA), as the control positions are not served in strips for these flights. This may lead to frequency overload.

3 CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are not intended to apportion blame or liability.

Scenario

The incident occurred after a long period of work which resulted in the alternating closure of one of the two runways and reduced activity at the airport.

On the day of the incident, the work period was ending. In the morning, the runways were closed alternately and some work was still being carried out on some taxiways. The tower controller started her shift in the morning and, due to the low traffic levels, managed the GND and LOC functions (combined positions). In the early afternoon, with both runways back in use, air traffic increased. During the take-off of a TB 20 in IFR flight and the touch-and-go of a Be 58 a few seconds later, the controller had considered asking the Be 58 to turn onto the left-hand downwind leg after its initial climb. The presence of an external VFR flight, a DR 400 wanting to perform an airport circuit for training and at that moment heading towards the downwind leg, altered her initial strategy. She then asked the pilot of the Be 58 to continue his initial climb. Her idea was then to ask him to turn onto the downwind leg as soon as the position of the DR 400 would allow it.

The controller was then surprised by the closing speed between the Be 58 and the TB 20. She reported that she detected the conflict but that, due to a resource-intensive traffic sequence, no longer had sufficient mental resources to manage the conflict in the time available. Only the pilot of the Be 58 was informed of the presence of the TB 20 to his front right, about 25 s before overtaking it and before the planned turn to the left of the latter. He acquired visual contact with the TB 20 when overtaking it, but did not announce it.

The TB 20 pilot had monitored the traffic on the frequency and perceived the conflicting presence of the Be 58 to his rear left. He anticipated the closing-in and did not make the left turn of his IFR omnidirectional departure, and was then instructed by the controller to hold the runway axis, thereby eliminating the risk of collision.

¹⁴ Eight controllers covering the work of nine.

Contributing factors

The following factors may have contributed to the controller's difficulty in managing the conflict:

- The temporary loss of automatic traffic management reflexes on parallel runways, following a long period of work at the airport.

The controllers worked with a "single runway" during the nine weeks of work. They were not required to manage flights on parallel runways, which involves a great deal of two-way traffic information and special technical skills that can only be maintained through regular practice.

This lack of practice in managing traffic on parallel runways disrupted the air traffic controller's automatic reflexes. When the traffic increased, the controller was thus unable to naturally and instantaneously implement the traffic control methods usually employed in parallel runway management, and in particular the provision of regular two-way information between aircraft flying on potentially conflicting paths.

Measures taken or being considered since the event

Measures have been taken or are being considered by the NE ANS to improve the air traffic control situation at Saint-Yan:

- The position of deputy head of air traffic at Saint-Yan airport was filled in September 2022. This officer had previously worked at Saint-Yan. The arrival of a head of air traffic was also planned for October 2022.
- Two controllers were assigned to Saint-Yan and have been working there since the summer of 2022.
- Technical modifications will be launched to allow the use of strips for IFR flights in transit in the TMA.

Safety lessons

Importance of announcing visual contact

During the closing-in, 25 s before one aircraft overtook the other, the controller provided traffic information to the Be 58 pilot regarding the presence of the TB 20 to his front right. The Be 58 pilot acquired visual contact with the TB 20 when overtaking it, but did not announce it. Annex 6 of the SERA¹⁵, on definitions, provides that, following the issuance of traffic information by the controller, pilots shall announce whether or not they have visual contact with the signalled aircraft. This notion is important. It helps to improve situational awareness among the different stakeholders.

Accuracy of position reports and read-back

The Be 58 pilot did not read back the option clearance for runway 33L, nor did he subsequently read back the instruction to hold the axis after the touch-and-go. This required the controller to request a read-back on two occasions and resulted in an increase in frequency occupancy time during a busy traffic management phase.

¹⁵ [Implementation of the implementing regulation \(EU\) no. 923/2012, known as "SERA" \(Standardised European Air Rules\) in France.](#)

Importance of listening carefully to radio exchanges

During the initial climb after take-off, the instructor pilot of the TB 20 perceived the presence of the Be 58 to his rear left by listening to the frequency and advised his crew, even before the traffic alert system (TAS) notification. In the absence of visual contact with the Be 58, he did not make the planned left turn, thereby eliminating any risk of collision. Continuous monitoring of the frequency is not always easy on board in an instructional situation. It nevertheless allows crews to take possession of their air environment, to dispel any doubt and to react appropriately as necessary.

The BEA investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liabilities.