We catch it all | We report it all | All about safety

safetynet

Edition 31 | March 2021

Improving safety performance

TOKAI SAFETY MANAGEMENT TOOL

Tool Kit for ATM Occurence Investigation

Occurrence reporting and investigation are vital elements of an effective and pro-active ATM Safety Management System. Once a safety occurrence has happened, a notification report must be filled in. This report will trigger the investigation process (information gathering based on facts, data analysis, drawing up of the conclusions and recommendations).

ATNS has discontinued the use of XTRAX as a Mandatory Occurrence Reporting Tool on the 30th April 2020 with the view of introducing an enhanced and wholistic safety reporting tool that is also compliant with the SACAA's Centralized Occurrence Reporting System (CORS). The SACAA's CORS is based on the ECCAIRS system (European Coordination Centre for Accidents and Incidents Reporting System) of which TOKAI is compatible. TOKAI was chosen as the best available tool after benchmarking exercises were conducted with other global ANSP's. Furthermore, because the Risk Analysis Tool of TOKAI was already in use within ATNS, it became the most efficient choice.

About TOKAI

Tool Kit for ATM Occurrence Investigation (TOKAI) is the main tool to collect and analyze the occurrence reports from ANSPs and to support the investigation and recommendations in order to avoid future similar situations.

EUROCONTROL has developed the TOKAI (**Toolkit for ATM Occurrence Investigation**) tool, consisting of several applications to support the complete investigation process. It is suitable for application in operational, engineering and support environments. TOKAI provides a means for occurrence notification and enables a harmonized application of relevant safety regulations (ICAO Annex 13, ESARRs and relevant EC Directives and Regulations). Furthermore, it enables the user to transfer data to an ECCAIRS system, or to produce reports in different formats, including the AST (Annual Summary Template), needed for the exchange of safety information with EUROCONTROL and E5X formats. The TOKAI tool includes the RAT (Risk Analysis Tool) which provides a method for a consistent and coherent assessment of the risks induced by the different hazards identified in the system. It also allows users to effectively priorities actions designed to reduce the effect of those risks.

TOKAI consists of the following modules and functions:

ATS NOTIFICATIONS

- Mandatory Reporting
- Voluntary reporting
- Hazard reporting

DATA GATHERING

- Notification is validated as a Mandatory Occurrence Report.
- Investigation process takes place.
- All data gathered for the investigation can be stored here including image files.
- Multiple investigators can work on the same investigation remotely.
- Investigations and finalised reports can be tagged to show correlations and similarities.

RAT

- Risk Analysis of ATS safety occurrences to determine Probability and Severity
- Risk Analysis of OT safety occurrences to determine impact of failure on operations.

WHO IS THE **REIGNING BRAIN?**

COMPETITION QUESTION

Who is currently the largest airline in Africa and also the first African airline to operate the B787 Dreamliner?

Submit your answers to **safetyeditor@atns.co.za** and the winners will receive a corporate pen set.

EMERGENCY DESCENT: **GUIDANCE FOR CONTROLLERS**

EDITORS' NOTE

This abstract was first published in the February 2020 edition of SKYlight - "Safety Intelligence as a Service" available from SKYbrary at EUROCONTROL.

Useful to Know

There are various reasons why the flight crew might initiate an emergency descent. These include but are not limited to loss of pressurisation and in-flight fire. Many flight crew drills encourage emergency descents to continue to the higher of 10,000 feet or Minimum Sector Altitude from where the aircraft may then seek the shortest route to a suitable diversion aerodrome.

An emergency descent could be initiated without prior warning. Depending on the circumstances, the flight crew could begin a high vertical speed descent without warning if the safety of the aircraft is at risk, which is in line with the guiding principle applied to the prioritisation of flight deck tasks: Aviate, Navigate, Communicate.

Anticipated Impact on Crew

A wide range of practical problems could arise in the cockpit following the decision to initiate an emergency descent:

- Increased workload in the cockpit - During the initiation of an emergency descent, the workload becomes intense as the crew try to resolve the problem with the aircraft, fly the aircraft safely, and plan for the descent.
- Emergency descent procedure - Descent is initiated in accordance with the operator's emergency procedures and associated training.
- Situational awareness issues - The crew may struggle to maintain full situational awareness.
- Communication problems - Several problems connected with air-ground communications could arise including late communication, poor message quality due to donning of oxygen masks, and non-standard phraseology.

What to Expect

- Descent without warning - Pilots are trained to announce any emergency descent promptly and to subsequently advise ATC of their intentions as soon as practicable. However, during the early stages of an emergency descent, the workload is high and controllers should expect to hear little more than the announcement of the descent in the first few minutes.
- Delay in emergency squawk - the setting the 7700 emergency squawk may be delayed because, although this action is included in most pilot memory drills for emergency descent, it is often the final item.
- Poor quality RTF - poor communication quality, due to changes in the sound of speech including a distorted sound spectrum, because of the effect which the donning of oxygen masks may have on the clarity of transmissions.
- Interruption to RTF - if oxygen masks are donned, the procedure to do so will cause a temporary interruption to both transmit and receive functions. Such temporary interruptions may also occur due to the need for the 'pilot-not flying' to communicate with the cabin crew on the crew interphone using a channel selector which temporarily replaces the ATC frequency at a time when the other pilot may be too busy to substitute attention to ATC if the intention to descend has already been broadcast.

OBSERVATIONS ON **RNAV APPROACHES**

EDITORS' NOTE

This abstract was first published in CALLBACK 483, dated April 2020 as a Monthly Safety Newsletter from The Office of the NASA Aviation Safety Reporting System.

Rushing to Expedite - A late approach clearance, expectation bias, and other factors resulted in surprise and a track error while this B737-800 flight crew was conducting RNAV (RNP) operations.

From the Captain's report:

We were descending into Denver via the JAGGR3 RNAV with QWIKE at 210 knots and at 11,000 feet MSL (approximately 6,000 feet AGL). The ATIS had multiple approaches listed to possibly expect, making setting up the approach impossible. The First Officer (FO), Pilot Monitoring (PM), even queried Denver Center if they had any idea what approach we could expect, and they did not. Given the VMC conditions, we expected vectors off the STAR to the ILS RWY 17R. The ATIS did say RNAV approaches could also be assigned, but given the conditions, the weather, and

me having not flown into Denver in over ten years, I expected vectors to the ILS, not an RNAV (RNP) with a Radius to Fix (RF) leg.

We had been cleared direct to CLPTN and told to keep our speed at 270 knots until told otherwise. At some point we were slowed. As I recall, it was just prior to OPREE, which is 6,000 to 7,000 feet AGL, that we were switched to Approach. When we checked in, the Controller informed us that we were cleared for the RNAV (RNP) Z RWY 17R. I was surprised that they were using that type of approach. Normally, a Receiver Autonomous Integrity Monitoring (RAIM) prediction is required. I made the comment to the FO that I need to make sure we were even legal for an RNP approach, having not had a RAIM.

I called up the plate on my iPad. This approach has several items that need to be procedurally checked. It has an RF leg, the RNP requirement, and the RF leg speed and waypoints. VOR updating needs to be turned off on page 2 of the NAV STATUS page on the FMC. A lot of heads down time [is needed] to prep for that approach.

As I looked that up, the approach was loaded into the box, all the time quickly approaching QWIKE, which is an Intermediate Fix (IF) on the approach. We were trying to get down, set the approach up, and check legalities, and all below 10,000 feet AGL. It was very busy, to say the least, and we both missed the route discontinuity in the box from QWIKE to STAAM. As we hit STAAM, we noticed the

plane continuing straight ahead and not on the RF leg. I tried to heading-select us around to the leg without success. At this time, the Controller asked us if we were descending on the approach and then told us we were a mile north. The Controller then canceled our approach clearance, gave us a vector, and cleared us for the ILS approach. At no time was there a TCAS alert of any kind, nor did we come close to any other aircraft. We landed uneventfully, and were told to call TRACON.

I talked to a supervisor afterwards, and we discussed the event on our part, verifying that the box is correct is paramount. I should have declined the approach and requested the ILS. It would help the crew if more lead time were given if an RNAV (RNP) approach specifically is going to [be] assigned, so that all the proper steps on our part can be accomplished. More specificity on the ATIS to which approach is being used could allow proper preparation by the pilots. [The ATC Supervisor] said they have been told it is easier for pilots to switch from an ILS approach to an RNAV (RNP) approach procedurally. I told him that is incorrect, and it is not the type of approach that should be given last minute. Feeling rushed and crammed to get this approach loaded and [checking] all the RF points and RNP values loaded, and set us up where we went from the green into the red comfort zone quickly.

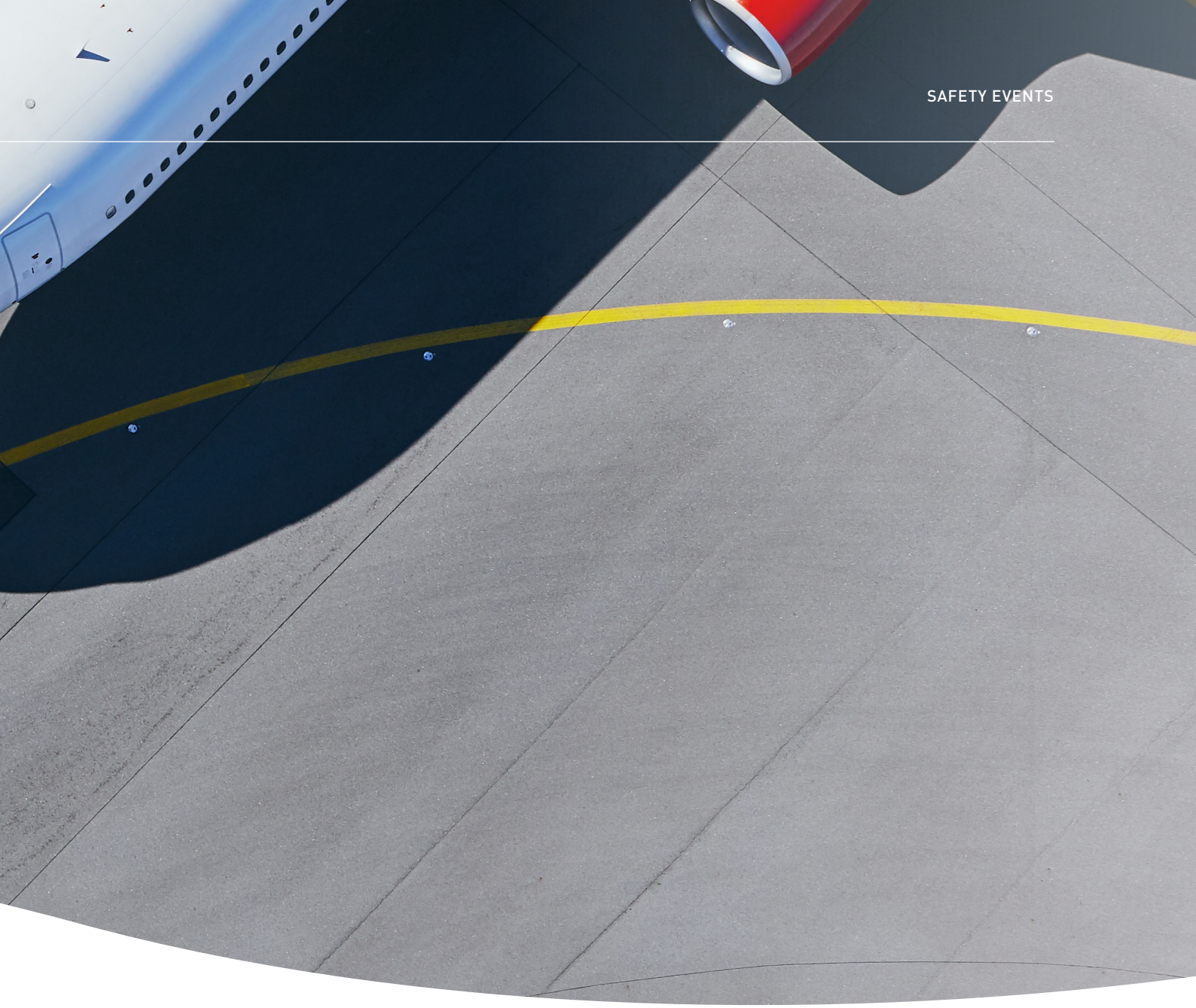
There are lots of great learning points for everyone in this event. I am reviewing my methodology for future events similar to this. There are a lot of steps involved in setting up this approach. We missed the route discontinuity. We learned an old lesson again: Check and recheck, and go around if need be.

SAFETY EVENTS

Selected events that occurred between January and December 2019

NOTE

The remedial interventions that focuses on the individuals involved are excluded from this publication. Furthermore, safety event reviews have been de-identified and reproduced with the sole purpose of

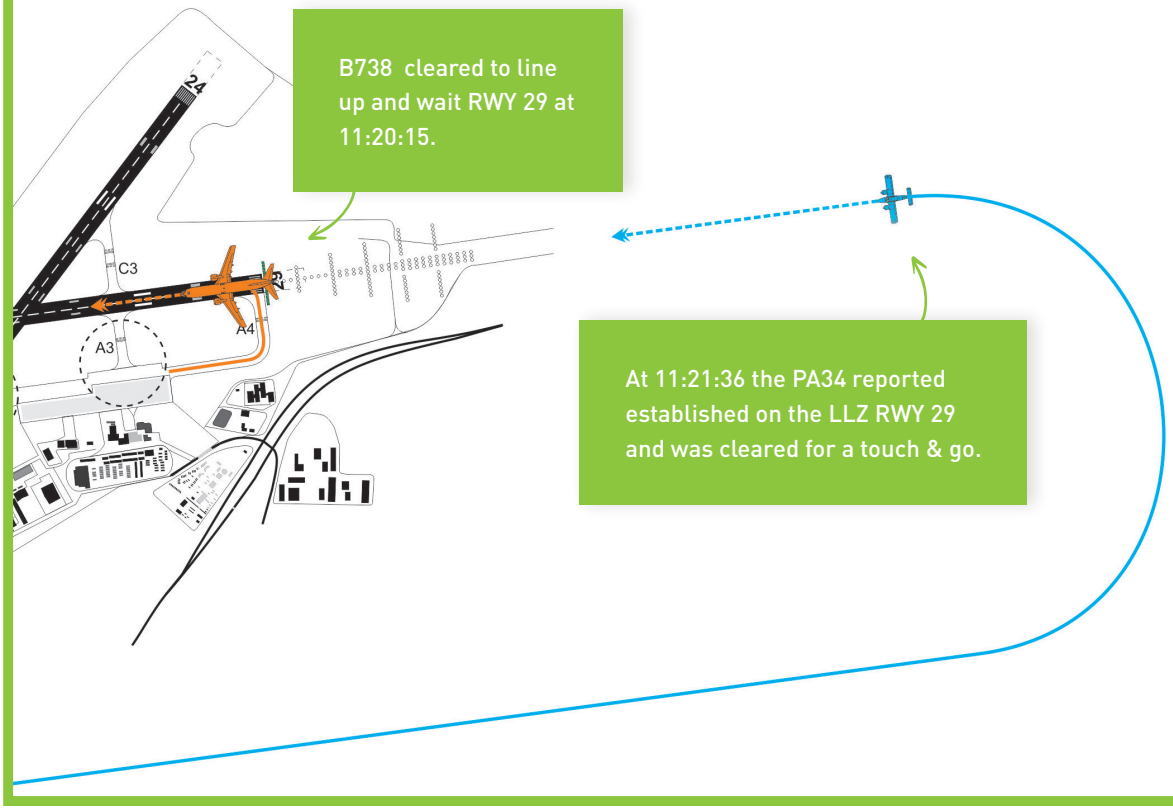


promoting a learning culture within ATNS as well as the aviation industry at large. The events are thus published with the aim of sharing lessons learnt in order to prevent similar or more severe occurrences in the future.

SCENARIO

01

On **24th February 2019** a RI occurred on RWY29 at 11:21:36 UTC between a B738 and a PA34.



At time 11:00:00 the controller took over position.

At time 11:05:05 the B738 initiated two-way communication with the event controller and requested ATC clearance for a flight to FAOR.

At time 11:06:28 a PA34 that was doing IFR training reported going around RWY29. The event controller instructed the PA34 to climb 4500ft and to contact approach on frequency 120,1Mhz.

At time 11:10:40 the event controller initiated a personal telephone call on the VCCS.

At time 11:11:26 the B738 requested start and a full-length departure. The event controller requested the person to standby on the phone and issued the B738 with the surface data and approved push-back and start. Within the same minute, the controller returned to the personal call, and a non-event aircraft reported on the left base RWY29 for a visual approach, whom was then cleared to land.

At time 11:15:10 the event controller issued a taxi instruction to another non-event aircraft whilst still on the personal call. Two minutes later the B738 reported ready for taxi. The event controller issued the B738 taxi instructions to the holding point RWY29. The event controller further issued incorrect taxi instructions to the non-event aircraft that had just landed, and then continued with the personal telephone conversation. The pilot of the non-event aircraft corrected the controller by reading back the correct taxi instructions.

At time 11:20:15 the B738 reported ready for departure. The controller instructed the B738 to line up and wait RWY29. The pilot read back correct, however, while the pilot was reading back, the event controller can be heard on the composite continuing with the personal call.

At time 11:21:14 the event controller issued a taxi instruction to a non-event aircraft, however, used an incorrect call-sign with no readback from the pilot. The event controller re-issued the taxi instructions using the correct call-sign.

Twenty-two seconds thereafter, the PA34 reported established on the localizer RWY29. The controller cleared the PA34 for a touch and go and instructed him to report safely airborne. The B738 interrupted the frequency and alerted the event controller

that they were lined up on the runway. The controller immediately cancelled the PA34's landing clearance and instructed them to continue the approach RWY29 and advised them of the B738 lined up on the runway.

At time 11:22:12 the controller apologised to the B738 crew and cleared the aircraft for take-off. The controller then returned to the personal call to bid farewell and end the call.

The following contributing factors were identified for this RI:

a. The investigation concluded on negligence on the part of the controller in the form of a distraction caused by personal telephone call whilst on position. The event controller made a personal telephone conversation for approximately 12 minutes whilst on operational position. The event controller was engaged in a personal phone call on the VCCS when they cleared the B738 to line up and the PA34 to Touch and Go RWY29.
b. There was incorrect flight progress strip management.
c. Failure to scan RWY29 before issuing traffic on final approach with a landing clearance. The event controller appeared oblivious to the risk of conducting a personal call whilst on operational position. They did not recognise the emerging distractions when preceding landing aircraft was issued incorrect taxi instructions and the incorrect use of call-signs for a taxying aircraft.
d. The RI occurred within the first 22 minutes of the controller assuming control of the position, thereby being in a lowered mental alertness state still.
e. The line-up clearance of the B738 was issued eighty-one seconds before the touch-go clearance was issued to the PA34. This causes the action and plan to exit the short-term memory that could not be recalled again at the time of the PA34 reporting on final approach. Such instructions have to be kept within the first 15 to 30 seconds to avoid such lapses unless prominent cognitive reminders can be initiated in the meantime.

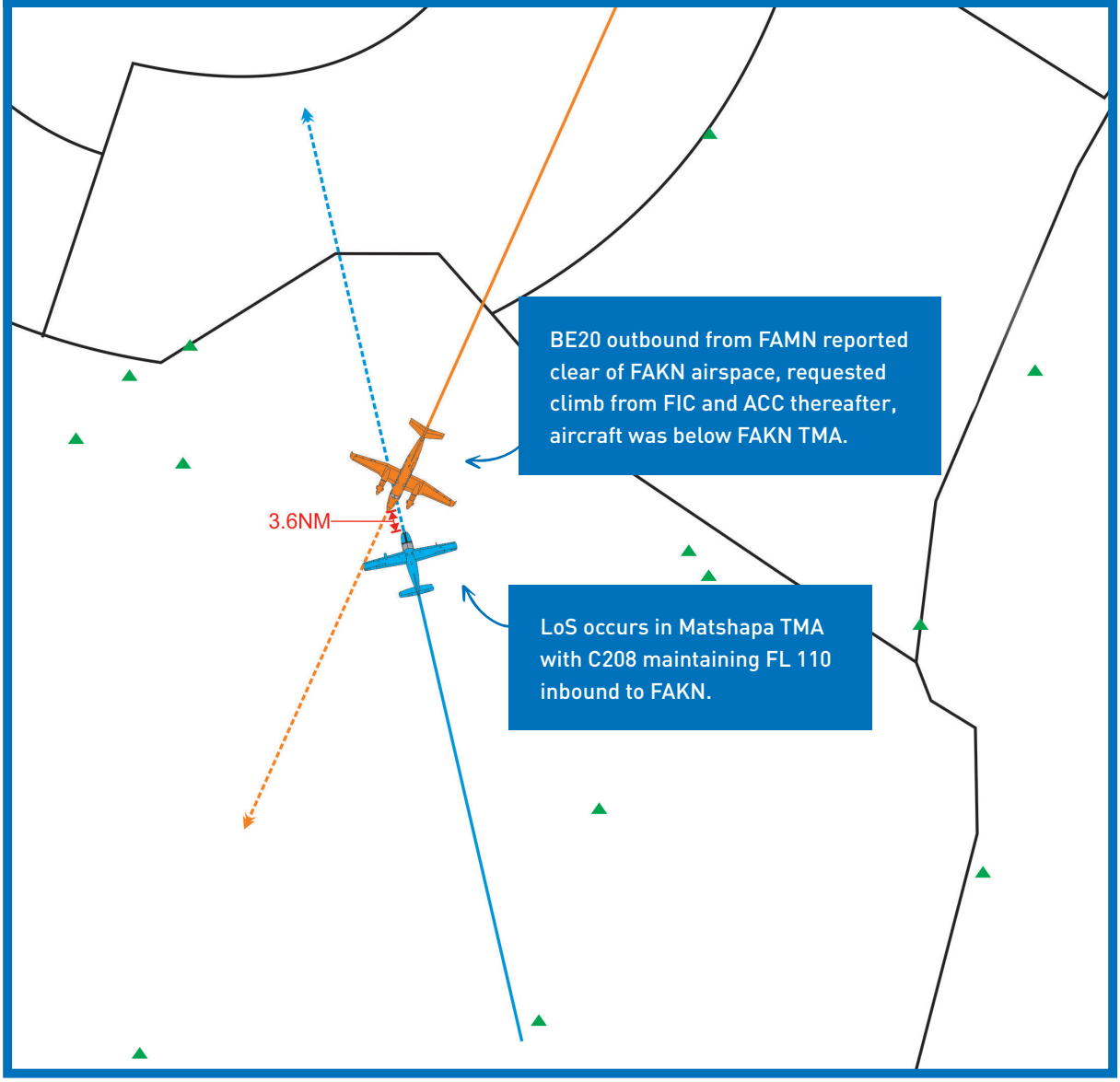
Certain recommendations were drafted to assist in curbing similar risk situations from occurring again in the future. These are:

i. Draft an ATS operational instruction that addresses operational distractions whilst on position, i.e. non-operational conversations with colleagues, personal telephone calls, use of devices for non-operational purposes etc.
ii. Reinforce Mandatory Occurrence Reporting throughout the unit.
iii. Reinforce runway occupancy vigilance and flight progress strip management throughout the unit.
iv. Reinforce practice not to issue RWY-related clearances more than 20 seconds in advance so as to keep situation/risk in short-term memory.

SCENARIO

02

On **31st May 2019** an ATC operational error lead to a LoS in the Sikhuphe TMA. This occurred at 11:48:37 UTC between a C208 and a BE20.



At time 11:42:29 an un-concerned target squawking 2000 appeared in the FAMN area and is lost off the ASD at time 11:43:01.
At time 11:44:40 the BE20 calls the FAOR Area sector. The controller responds but receives no reply from the BE20 and tried a second time, without success.

At 11:44:57 the BE20 called FAOR Flight Information Service (FIS) but the transmission is partially blocked due to a non-event aircraft transmitting at the same time (double transmission). The FIS controller (working with an instructor) requested the last transmission to be repeated (say again).

At time 11:45:20 the BE20 called FIS again, and the FIS controller activated the flight plan on the TOPSKY system and issued the BE20 a squawk. Thereafter, the FIS controller requested the BE20's airborne time and FL on request, for which no response was received.

At time 11:45:27 the BE20 switches frequency and called the ACC NE sector again to advise that they had departed from FAMN routing to FAGY via MS passing FL080. The controller then enquired whether the BE20 had been in contact with FAKN APP. The controller also advised the BE20 crew of traffic inbound to FAMN and gave the position of the traffic as 8 NM SE of PKV. The BE20 advised that they did not speak to FAKN as they were outside of FAKN airspace but have the traffic on TCAS. The ATC requested the level passing of the BE20 and they replied they were at 8500ft. The ATC gave the BE20 a squawk and instructed them to climb to FL240.

At time 11:46:00 The FIS instructor advised the student to call Matsapha (Sikhuphe) for a joining clearance into Sikhuphe airspace.

At time 11:46:15 FIS co-ordinates a joining clearance into Sikhuphe airspace. As Sikhuphe answers the phone two aircraft call FIS. The FIS controller places the aircraft on standby and liaises the BE20's joining clearance.

At 11:46:41 Sikhuphe issued a joining clearance to FIS for the BE20 to enter their airspace on the climb to FL280 subject to the C208 and advised that they can retain control of the BE20. Thereafter FIS continues to talk to the aircraft on standby.

At 11:47:11 the BE20 reported a target about 10 NM ahead of him, the ACC controller advised that there is traffic in the Matsapha TMA and asks if the BE20 is clear of the Matsapha TMA. The BE20 advised that they will enter Matsapha TMA shortly. The ACC controller hands the BE20 to Sikhuphe on 128,0MHZ.

At 11:47:32 the ACC controller enquired

from the Multi Sector Planner (MSP) whether a joining clearance was obtained from Sikhuphe and a discussion ensued on who activated the flight plan (Investigator note: the ACC controller and MSP was not aware that FIC had activated the flight plan).

At 11:47:58 FIC Instructor asks the ATC if they are speaking to the BE20, he advised that they activated the flight plan and liaised a joining into the Sikhuphe airspace.

At 11:48:14 a LoS is observed in Sekhuphe airspace. The BE20 appeared on radar approximately 1NM inside Sikhuphe airspace maintaining FL105 while the C208 was at FL110.

The following findings were derived from the investigation:

a. The ACC controller's deduction from an aircraft calling JHB ACC NE and reported clear from FAKN TMA is that the aircraft is outside the lateral limits of the TMA and not underneath the FAKN TMA. If the traffic was underneath the FAKN TMA they would be in the FAKN SR area and required to broadcast on that frequency.
b. The MSP was unaware of the BE20 and the developing traffic scenario. Moreover, the operation between the FAKN TMA and the Sekhuphe TMA provides for a very limited timeframe to liaise traffic and obtain clearances and demands a quick reaction from the MSP.
c. There is insufficient radar coverage in the area that the LoS occurred for lower flying/climbing/descending aircraft.
d. Radio coverage in the area is also limited for both the FIC and ACC NE sectors. This is partially also due to the mountainous terrain. In addition, the vastness of the FIC and ACC sectors require these controllers to individually select transmitter radios depending on where the aircraft is located. Some transmitter selections also cannot be selected together as it creates frequency distortion. These NE sector risks have been raised quite a few times during safety event investigations, although it seems no progress has been made on a corporate level to mitigate these risks. Radar and communication limitations seem to persist and contribute to safety events with very little evidence that action has been taken that are fit-for-purpose and successful in mitigating such risks. Similar events occurred on 25 October 2017 and 26 July 2018.
e. Although not directly linked to the safety event itself, the controller was in a state of trauma following the event. This is quite normal, however, the lack

of feedback to the controller aggravated the trauma experienced because no closure was provided. Furthermore, even months after the actual event occurred the controller still was not provided with formal feedback and given the ATSU investigation report. Lastly, it is of utmost importance that controllers involved in safety events are involved in the investigation and asked to provide input to the report as the facts in isolation will provide very little insight into the systemic failures.

f. The support provided by the pool managers was exemplary.
g. Not event related - The controller as well as the Pool seem to carry additional fatigue risks in the roster. The controller only sleeps 6 hours per night which results in a cumulative sleep debt that causes chemical imbalances in the human body. Moreover, the rostering practice seems to be accommodating late PM followed by early AMs that reduce the amount of quality sleep even further.

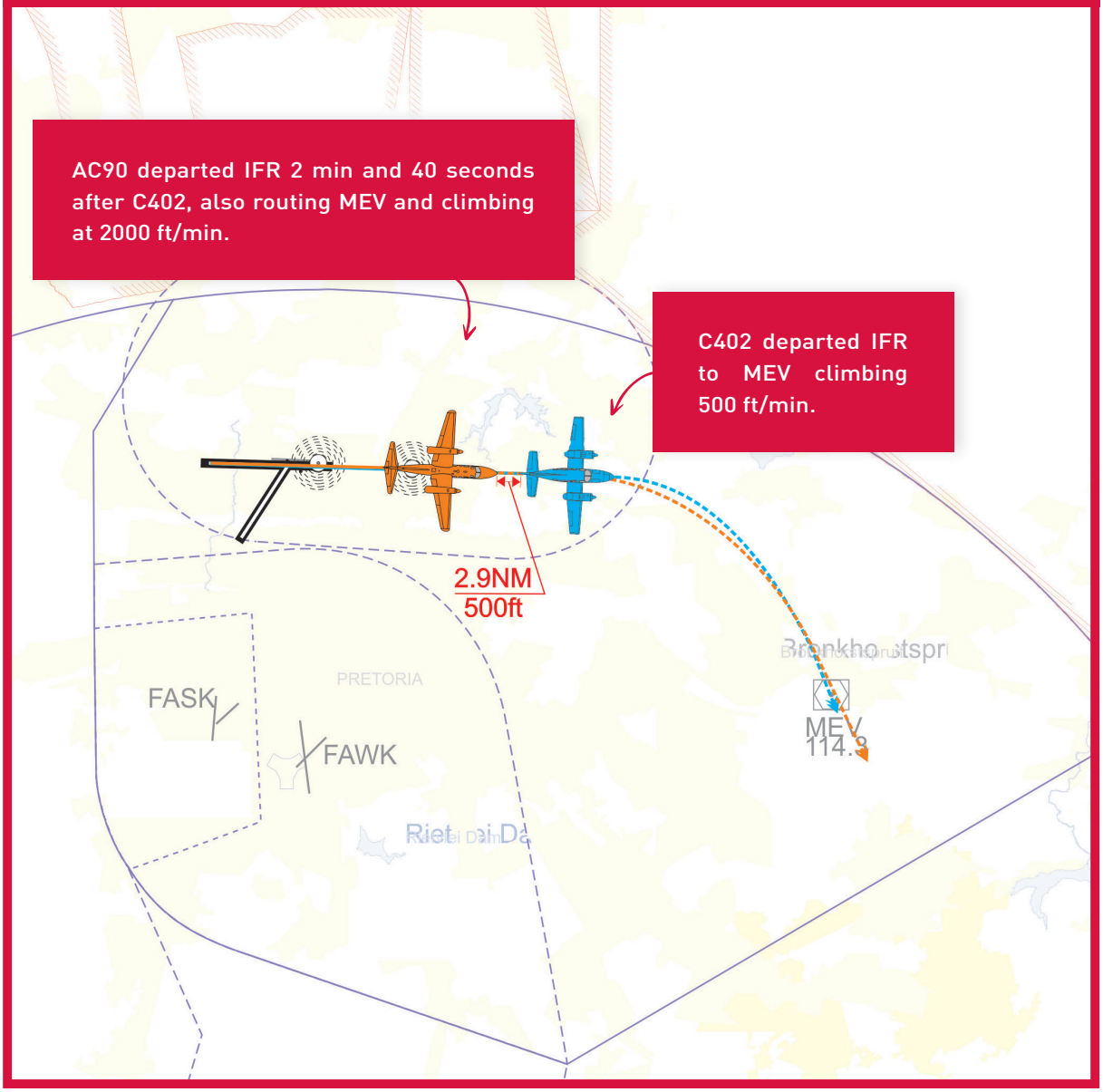
Certain system-based recommendations were made to better prepare for the service to be provided and safety not to be compromised in similar future scenarios:

i. Investigate the quality of the radar and communication capability of the sector – revisit previous recommendations and develop a list of mitigations that will be actioned – while providing progress updates to the Pool.
ii. Review coordination practice of the FIC pool and the MSP and the associated training of such practices.
iii. Engage the crew/operator of the BE20 to ensure they are familiar with the complex airspace design of the FAKN TMA.
iv. As a minimum, ensure that the ATSU investigation reports are shared with the controllers involved.

SCENARIO

03

On **21st July 2019** a LoS occurred at 08:17:04 UTC between C402 and a AC90.



At time 08:04:55 the AC90 contacted the TWR and advised that they managed to start and requested taxi. The AC90 was issued with taxi instructions and to listen out for a clearance. Three minutes later the AC90 was issued with an after-departure clearance.

At time 08:10:04 the C402 reported ready at the holding point (received its taxi instructions prior to AC90) and was cleared to line up and wait.

At time 08:11:00 the AC90 reported ready in turn at holding point. The controller contacted FAOR Approach via the PCUG and requested release for the C402 and the AC90 on the same route and both were released by the FAOR Radar Approach controller.

At time 08:11:48 the C402 was cleared for take-off and was instructed to report passing 7000ft after which the AC90 was instructed to line up and wait.

At time 08:13:41 the event controller requested the level passing from the C402 and the C402 reported passing 6000ft.

At 08:14:28 the AC90 was cleared for take-off and instructed to report passing 7000 ft.

At time 08:16:21 the event controller requested the C402 to report his rate of climb and the C402 advised he was climbing at 500ft per minute. Thereafter the controller also requested the AC90 to report rate of climb, which was reported at 2000ft per minute. In response, the controller instructed the AC90 to reduce his climb rate to 1000ft per minute while the C402 was required to increase rate of climb to 1000ft per minute and asked if the aircraft can achieve that.

At time 08:16:59 the C402 stated that they can comply and that they are coming up to 7000ft and are outbound. The C402 was handed over to FAOR Approach and the LoS occurred at 08:17:04.

At time 08:17:30 the AC90 reported passing 7000ft and was handed over to FAOR Approach as well.

At time 08:24:55 the Radar controller called and advised that there was a loss of separation at 2.8NM and 500ft between the C402 and the AC90.

The following findings were derived from the investigation:

a. The controller did attempt to use a rate of climb restriction once they realised the position of the AC90 but there was insufficient time/space for it to be effective.
b. MEV is no longer listed as a VOR servicing FAWB. NOTAM A2691/20 has been issued stating the MEV is temporarily withdrawn. The use of the published GPS coordinates for an unserviceable beacon is common practise but a decommissioned beacon has no associated coordinates. During the investigation it was found that the NOTAM defining "Point MEV" had lapsed and as a result of the investigation was re-issued. The long-term solution to replacing MEV with a navigational aid or waypoint has not been concluded.
c. It was never clarified by the unit investigator if working of all sectors combined was a standard practise for this traffic volume and the time of day.
d. It is not clear why the controller was working combined positions of GMC, Aerodrome and Procedural Approach at the time of the event. This is noted because the ATSU had 35 movements in that hour that seems quite high for a Procedural Approach unit and especially for a combined sector/service operation. One of the main goals of separated frequencies and positions are to enable service provision and safely deal with higher traffic demands.
e. It is also not clear whether the wording selected for the coordination is common RT for FAWB as well as for FAOR Approach. It seems that the choice of words ("Radar morning Wonderboom release for NLU behind KUS ready same routing") was the primary contributing factor to the developing scenario that resulted in the FAOR Approach controller understanding it as the AC90 (being the known better performer) will be departing first.
f. The controller was also not withdrawn from position following the LoS. It can only be assumed that the ATSU was dealing with a challenge of staff shortages at the time. Three months prior, two controllers filed fatigue reports due to only 4 people on the roster per day and working 5 hours non-stop before breaks are afforded (the recommended break time is after 2 to 2.5 hours for medium to high traffic demand or complex airspace ATSUs). The staff shortage was due to medical reasons, maternity leave, a pending validation and transfers.
g. The controller had 18 months experience at FAWB at the time of the LoS. Therefore it may be fair to conclude that the lack of knowledge in aircraft performance was not a contributory factor. Although, it may be hard to identify what solutions ATNS

do have in place (other than operational validations) to teach controllers the differences in aircraft performance. A matter that has been raised before in a few investigations from some time ago. Moreover, the performance of the C402 seems unusually slow as the aircraft was not only climbing slow but required 5 minutes and 11 seconds to exit the FAWB airspace. Something that cannot be known to the controller in a procedural airspace. According to various websites, the climb rate of a C402 is 1450ft/min while an AC90 should climb between 1000ft to 1670ft per minute. However, in general terms it is understood that the performance of an AC90 is vastly different from a C402. This seemed not to be known to the controller prior to the two IFR departures.

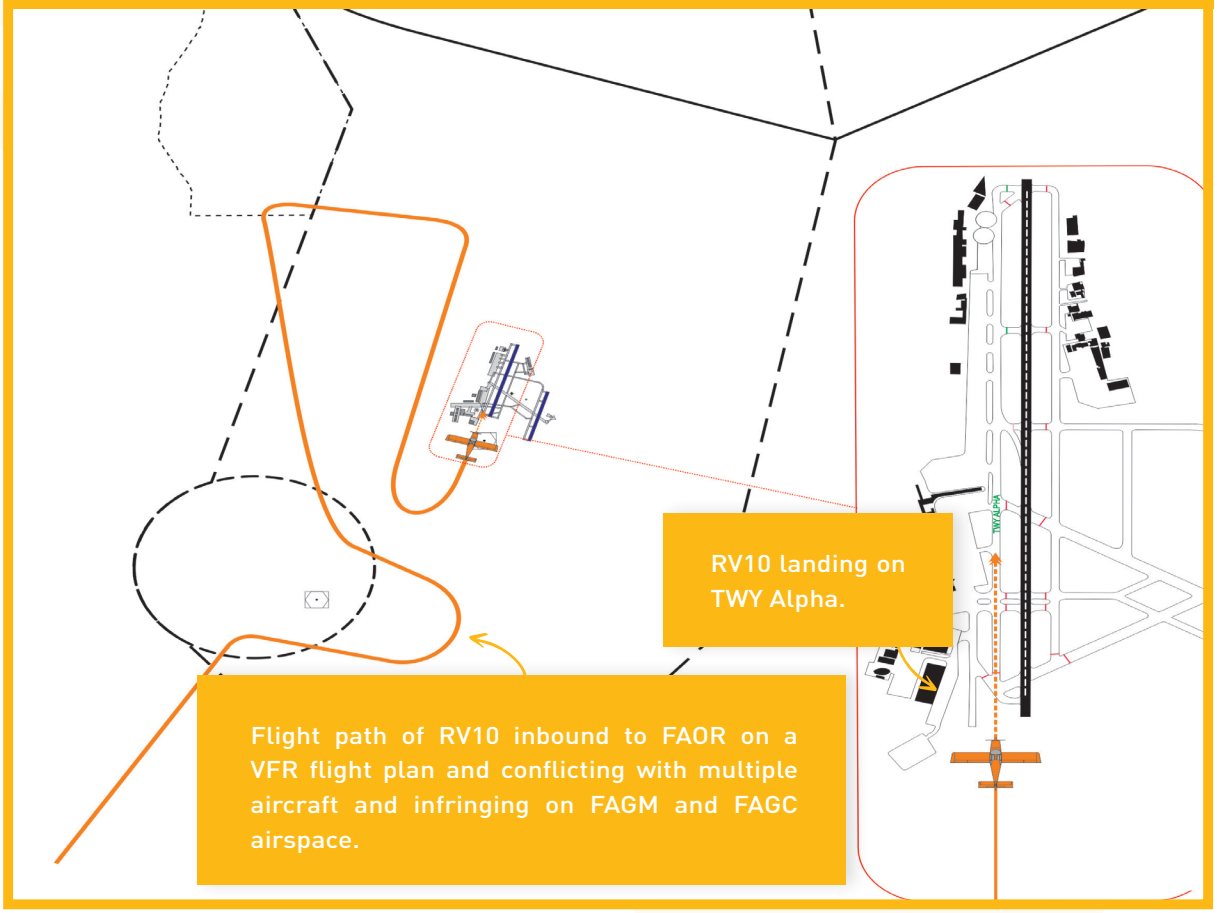
h. The above being said, it remains a concern how separation should be affected at FAWB. First of all, the rate of climb applied by the controller seems insufficient due to the vertical size of the airspace and the large performance difference between the two aircraft. The matching of rates of climb is an adequate tool, provided that vertical separation already existed to allow for the inertia of the aircraft to settle. Second, there are no beacons to use to establish any type of separation between IFR departures where the faster aircraft is the succeeding aircraft.

Some recommendations were formulated to address the identified risks as depicted below:

i. Confirm any current fatigue risks at FAWB.
ii. Ensure that FAWB staff understands the fatigue triggers that should attract fatigue reports – even though it is the frequency of such occurrences that determines the level of risk and whether action should be taken.
iii. Explore and capture the available means to deal with IFR separations within the FAWB airspace and identify the areas where means to separation is lacking.
iv. It is further recommended that certain scenarios be created of IFR departures with local operating aircraft and the range of separation solutions available – to be used as a training/refresher tool at FAWB.

SCENARIO 04

On **29 August 2019** a RV10 on a VFR flight from FATP to FAOR, entered the FAOR CTR from the South without a joining clearance, resulting in an AIRPROX with an E135 and subsequent re-positioning of second E135 and a RJ85.



The RV10 continued to infringe upon the FAGM and FAGC ATZ's and was re-positioned for RWY03L but landed on TWY Alpha, parallel to the Runway, with several aircraft holding at TWY's India and Lima. Several sectors were involved in the scenario as it played out and will be discussed individually hereafter.

FABL Approach – Frequency 124,3MHz:

At 11:07 the RV10 arrived at FABL from FATP, for re-fuelling purposes, before its flight to FAOR as per flight plan. At 11:59 it departed from FABL and returned to FATP on a VFR flight and advised the reason as there being no oil available at FABL. The FABL TWR ATCO advised the pilot of the flight plan in the system and amendments that will be required (departure now from FATP and not FABL). Thereafter, the controller also offered to contact the Briefing Office on the pilot's behalf to amend the flight plan and reminded the pilot to contact CAMU for a new CTOT into FAOR.

At 12:14:10 the RV10 established contact with FABL Approach to advise they were airborne from FATP to FAOR as per flight plan. The FABL Approach controller corrected the ZS prefix to ZU and then issued the squawk and the information of no reported traffic for the climb to FL075.

At 12:16:04 the FABL Approach controller informed the pilot that the flight plan on that reference was for a flight from FABL to FAOR and requested whether a new flight plan under another reference was filed for the new departure aerodrome. The RV10 pilot advised that they departed from FABL but had to divert to FATP for oil and that the FABL TWR controller offered to amend the flight plan on their behalf. The FABL Approach controller then activated the FPL (FABL-FAOR) in TopSky.

At 12:20:51 the RV10 was handed to ACC Central on frequency 120,3MHz.

Area Central - Frequency 120,3MHz:

At 12:21:15 the FABL Approach controller contacted the ACC Central controller telephonically and advised that the incorrect flight plan was activated and requested the flight plan be cancelled to enable the correct one to be activated. The flight plan was then cancelled. Two minutes later the ACC Central controller handed the position over to another controller and explained the request for the RV10 flight plan to be activated.

At 12:25:50 the RV10 established contact with ACC Central. The correct flight plan for the RV10 was activated with a new squawk code and the pilot was requested to recycle the squawk to enable the flight plan to couple to the target. Ten minutes thereafter, the RV10 was handed to FIS South on 119,5MHz. As there was no read-back from the RV10, the ACC controller asked a nearby aircraft to relay the message, after which the RV10 acknowledged receipt of the frequency change.

Flight Information Service (FIS South) - Frequency 119,5MHz

At 12:36:53 FIS South accepted the flight

plan label while the target was still coupled to the flight plan, 10NM east of FAWM.

At 12:38:01 the RV10 established contact with FIS South. The FIS ATSO advised the RV10 to arrange their flight to remain clear of the Johannesburg TMA, 7500ft or below and to report ready for descent.

At 12:43:10 the target of the RV10 disappeared from the radar display, but the flight plan track remained on the display and progressed as per estimates.

At 13:01:06 the RV10 target appeared 13NM south of FAPY, not coupled to the flight plan. At this stage the RV10 appeared to be routing direct to FAOR, while the flight plan track was routing to GAV then FAOR as per the filed flight plan route. In response, the FIS South ATSO manually coupled the target of the allocated squawk to the flight plan track. A TopSky "RTE" warning (route adherence) followed as a result of the target routing direct to FAOR, while the flight plan was still indicating a routing via GAV.

At 13:07:28 the RV10 requested descend and was informed there was "no reported traffic" for the descend and to report entering the Johannesburg Special Rules Area (SRA). The RV10 acknowledged.

At 13:11:01 the RV10 reported entering the Johannesburg Special Rules Area at 6500ft and the FIS ATSO advised them to broadcast on Special Rules Area frequency 125,6MHz. The FIS ATSO then inhibited the flight plan abeam FAVP on entering SRA South. At this stage, the RV10 target was still coupled to the inhibited FPL but was greyed out and the flight plan collapsed. The target then progressed in this state all the way to the FAOR CTR.

FAOR Tower West ATCO 1 - Frequency 118,1MHz

At 13:21:06 the RV10 established contact with FAOR Tower, stating the callsign again without the ZU-prefix. The TWR West controller requested the RV10 to confirm its callsign. The pilot reported that they were 13NM south of the airfield, on flight plan and requesting joining and landing instructions. The inhibited label/target was visible, but still greyed-out because it was inhibited earlier. The TWR West controller then first attended to BC2 calling on frequency.

At 13:21:34 the TWR West controller requested the RV10 to again confirm aircraft type and destination. The RV10 replied with the aircraft type and stated that they were landing at FAOR and coming up 12NM (at this stage the RV10 entered the FAOR CTR to the south of FAGM).

At 13:21:36 the TWR West controller enquired whether the RV10 had a flight plan

and the pilot again provided the reference number for the flight plan. The TWR West controller instructed them to standby and attended to an intercom call from Radar who was requesting RWY03L for inbound traffic. The TWR West controller declined the request and advised they had the RV10 traffic inbound and were planning them for landing on RWY03L.

At 13:22:23 the RV10 entered the FAGM ATZ from the south and again called FAOR TWR. The TWR West controller did not respond to them but continued to transmit to two other aircraft on frequency. Immediately thereafter, the controller phoned FAGM to inform them of the RV10 that was infringing on their airspace. This was followed by a transmission to the RV10, informing the pilot of infringing on the FAGM airspace and a handover to the FAGM frequency 118.7MHz.

At 13:23:23 the RV10 was observed turning eastbound and exiting the FAGM ATZ to the east, re-entering the FAOR CTR. At the same time, a E135 was turning onto the FAOR ILS at ±9NM final with the RV10 in its 11 o'clock position.

At 13:23:56 the RV10 called the FAOR West controller again. However, the TWR West controller first attended to traffic lining-up and then informed the RV10 that no flight plan could be located, but that they should continue on approach for RWY03L and to take caution with traffic on final approach RWY03R. The RV10 replied that they were on a flight plan and provided information regarding the departure aerodrome amendment that occurred. Whilst this transmission was in progress the RV10 crossed the approach path of RWY03L, routing eastbound, with the E135 in its 3 o'clock position (1,9NM and 800ft apart).

At 13:24:23 the TWR West controller instructed the RV10 to turn left immediately. The pilot acknowledged while advising that they were approaching final approach for RWY03L. The RV10 is then seen turning left onto final approach RWY03R at 0.9NM to the right and ahead of the E135, 900ft apart.

At 13:24:33 the TWR West controller instructed the RV10 to "reduce" to 6500ft, which was read back as descend to 6500ft. The RV10 label indicated that the aircraft was maintaining 6500ft, while the E135 was still on Radar frequency. Hereafter, the TWR West controller contacted Radar on the intercom to request a hand-over of the E135 due to the RV10 traffic.

At 13:24:56 the E135 established contact and advised that they had the traffic in sight 2NM ahead and below them. The TWR West controller confirmed to the E135 crew that the traffic was at 6200ft and positioning for final approach RWY03L. At this stage the RV10 was 1.1NM ahead, routing in the same

direction, matching speeds and 700ft below the E135.

At 13:25:24 the TWR West controller instructed the RV10 to turn left to route to the west of the field when the RV10 was 1NM ahead of the E135 and 500ft below. At the same time, Radar repositioned another E135 and a RJ85 out of the sequence due to the risk developing on final approach. Sixteen seconds later, the controller instructed the RV10 again to expedite and turn left immediately. The RV10 turned while separation continued to reduce to 0ft and 0.8NM when the E135 passed behind the RV10.

At 13:25:53 the TWR West controller advised the E135 that the RV10 traffic was clear and cleared them to land RWY03R. Thereafter, the TWR West controller instructed the RV10 to continue routing westbound and the aircraft is seen routing westbound and crossing the final approach path for RWY03L.

At 13:26:21 the TWR West controller instructed the RV10 to turn left again but no response was received.

At 13:27:28 the TWR West controller instructed the RV10 to route westbound until clear of the CTR. The RV10 reads back correctly and then infringed the FAGM ATZ for a second time. The Radar Planner telephonically informed the FAGM controller of the infringement. At this stage the Radar Planner contacted the TWR, offering to vector the RV10 to final approach. However, the RV10 advised that they were unable to accept vectors and stated that they were on a VFR flight. At the same time they exited the FAGM ATZ again and entered the Special Rules Area (SRA).

At 13:30:00 the TWR West controller instructed the RV10 to route northbound from their current position and standby further joining instructions.

At 13:31:22 the TWR West controller asked the RV10 if they were familiar with the airspace. The RV10 replied that they were and the controller instructed them (on advice from a colleague in the background) to route northbound to hold at the Sandton Towers at 7000ft.

At 13:34:07 another controller takes over control of the TWR West frequency.

At 13:35:06 the TWR controller enquired whether the RV10 was familiar with the airspace and the pilot replied that they were. The RV10 was then instructed to route inbound at 6500ft and to report on the left downwind for RWY03L. The aircraft type was verified again by the TWR controller and the joining instructions were reiterated.

At 13:36:02 the RV10 was instructed to

remain clear of FAGC airspace. Although this instruction was read back correctly, at 13:36:11 FAGC ATZ was infringed. In response, the TWR controller enquired whether the RV10 was routing to FAOR and the pilot responded in the positive, while the Radar Planner telephonically informed the FAGC controller of the airspace infringement.

At 13:36:38 the RV10 exited the FAGC ATZ, into the SRA, routing towards the FAOR CTR.

At 13:36:57 a BE20 (non-event aircraft) is cleared for a VFR departure to FAGM from RWY03L and provided with traffic information regarding the inbound RV10. Reciprocal traffic information is also provided to the RV10.

At 13:37:37 the TWR controller requested the RV10 to report the field in sight. Fifty-four seconds later the TWR controller provided updated traffic information to the BE20 and the RV10 about each other.

At 13:39:22 the TWR controller enquired whether the RV10 was routing to FAGM, which the pilot confirmed and responded that he will report overhead FAGM. The TWR controller then advised the RV10 to remain clear of FAGM airspace and the pilot read back that they will remain to the east of FAGM. The TWR controller then informed the pilot that they were to the north of FAGM and should position on final approach for RWY03L.

The TWR controller provided traffic information regarding the E190 on final approach RWY03R and enquired whether the RV10 had the field in sight yet. The RV10 confirmed field in sight and indicated that he will continue with the left downwind for RWY03L. The TWR controller instructed the RV10 to report on final approach RWY03L and the RV10 indicated that they had the approaching traffic 'visual'.

At 13:40:39 the TWR controller instructed the RV10 again to report final approach RWY03L and advised that the aircraft was ahead of the E190. The RV10 read back correctly and indicated that they will keep their speed up.

At 13:40:46 the TWR controller stated that "it's the one on the left, it's the Runway on the left". The RV10 replied "affirm sir".

At 13:40:56 the TWR controller attempted to pass traffic information to the E190, but the traffic was still on Radar frequency.

At 13:41:06 the RV10 reported established on final approach RWY03L, while the TWR controller attempted twice to raise the E190 on frequency. No response was received.

At 13:41:32 the TWR controller cleared the

RV10 to land RWY03L. The pilot read back cleared to land 03 but did not specify the left or right. Thereafter, the E190 reported on frequency and was cleared to land RWY03R.

At 13:42:40 there was an unidentified transmission asking, "are you aware this RV is landing on Bravo". The TWR controller responded in the negative. Six seconds later the TWR controller attempted to inform the RV10 that he was landing on TWY Alpha and not the Runway. This occurred simultaneously with the traffic landing on TWY Alpha. An A319 was stationary on TWY India holding point RWY03L, with a B738 behind it awaiting departure, and an A320 was holding short of TWY Bravo on TWY Lima with the RV10 landing in-between them.

At 13:43:03 the TWR controller informed the RV10 that he landed on the Taxiway and not the Runway. The RV10 apologised. The controller then requested the parking bay from the RV10, to which the pilot responded that they were merely dropping off passengers. The TWR then instructed the RV10 to hold short of TWY Foxtrot and to contact GMC on frequency 121,9MHz where they will be allocated a frequency from which to obtain a parking bay.

FAOR Ground Movement Control - Frequency 121,9MHz

At 13:49:47 the RV10, still holding short of TWY Foxtrot on TWY Alpha established communication with the GMC controller and requested assistance with arranging a parking bay. The GMC controller informed the pilot to listen-out.

At 13:51:20 the GMC controller enquired whether the pilot was familiar with the airfield. The pilot replied in the negative and the GMC controller then informed the RV10 of parking bay Golf 7 and provided progressive taxi instructions to the bay.

There was a range of findings that flowed from this investigation and a summary is provided below:

a. The FIS ATSO was not aware that the RV10 was destined for FAOR, did not interrogate the flight plan or alert FAOR TWR and assumed it was destined for FAGM, because VFR inbound flights are not the norm at FAOR.
b. The FIS ATSO inhibited the label of the RV10 and the TWR ATCO did not know how to un-inhibit it.
c. Clearer routing and joining instructions

may have assisted the RV10 pilot to fly into FAOR, although the pilot did indicate his familiarity with the airspace.

d. The RV10 entered controlled airspace without a clearance. The RV10 also did not comply with the filed flight plan route, apron control and Buffer zone procedures.
e. The RV10 pilot misidentified the TWY as the RWY when the ATCO said, "it's the one on the left".
f. None of the controllers involved in the event had prior knowledge or experience in handling VFR traffic into FAOR. Moreover, VFR fixed wing operations are not trained in the TWR, and both the FIS and TWR West controller validated recently at FAOR.
g. Combining of both FIS and TWR sectors due traffic levels which is discouraged in the SSI's. However, underload was cited as reason for combining of sectors on FIS and TWR. Working combined sectors during quite periods can be a useful means of skills maintenance, however, this has to be balanced with the efficiency and safety requirements.
h. No alerts were activated due to the aircraft operating in the STCA inhibition zone.
i. Systemically there were a few factors that contributed to the unfolding traffic scenario. The first being the management of flight plans. In the end due to airport related matters, the aircraft repositioned a second time to FATP and this caused the system to contain more than one flight plan that added to a certain level of confusion.
j. Relating to the flight plan matter, is also the difference in the use of callsigns whereby a search may be unsuccessful for a ZS registration when an aircraft has filed as ZU while the ATC remains oblivious to the reality. It may be helpful to share such a finding/example with both GA (understanding how flight plan recall/searches are performed) as well as operational staff.
k. In addition, the matter of buffer zone monitoring by FIC is of great concern and leaves FAOR with a false sense of security. The vastness of the airspace being serviced by FIC is a concern in itself. When two sectors are combined, the risk escalates exponentially. The only saving grace is the low traffic count potentially. However, to monitor a third piece of airspace that is removed from all other areas of monitoring is an unfair and unachievable requirement from a human performance perspective.

As a result, these recommendations were made to prevent similar occurrences occurring in the future:

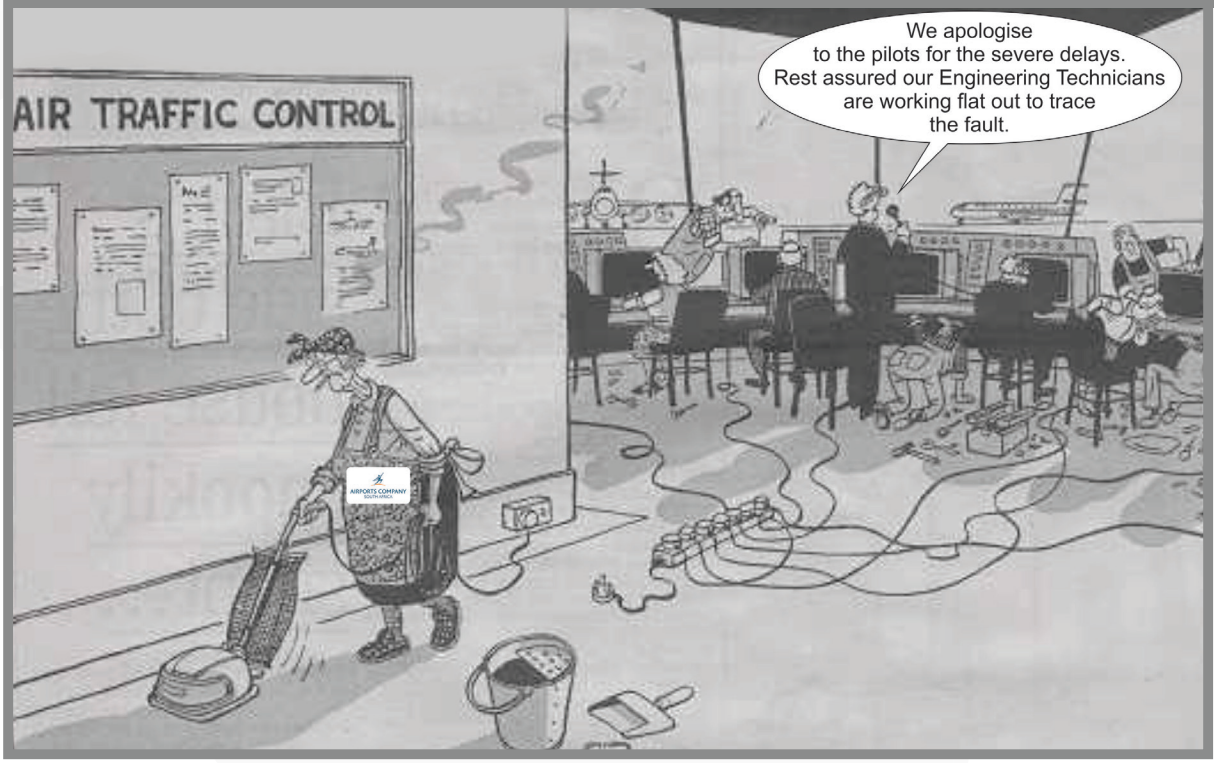
i. Review of VFR procedures into FAOR, specifically routes, reporting points, coordination procedures and documentation/communication to flying community thereof. The accommodation of VFR operations into, and out of FAOR to be reviewed in conjunction with ACSA Management.
ii. Briefing to Tower Pool on lessons learned to promote a learning culture.
iii. Procedures associated to the combining of sectors to be reviewed by the FIC and Tower Pools respectively, corrected in the SSI's where applicable, and complied with. The O Dir 4/2010 log keeping requirements to be reinforced throughout the FAOR centre.
iv. FAOR TWR Training to include a module on VFR operations and the management thereof. All staff that are currently validated to attend simulator training or similar to enhance their skill, specifically w.r.t. VFR operations and the management thereof. The scenario as in this report will be a good example to use in the training. This training should be complimented by annual exposure of at least one simulated exercise of a similar nature.
v. Buffer Zone procedures to be reviewed, amended where necessary and reinforced to both the FIS and TWR pools to ensure both understand their respective roles.
vi. The RV10 crew to be debriefed on all non-compliances and role played in this occurrence.

vii. MATS to enforce that all TopSky alerts be attended to, even in information airspace.
viii. Radar Planner to be commended for informing both FAGM and FAGC of the RV10 infringing on their respective airspaces. This was above and beyond his normal functions.
ix. Situations that fall out of the normal scope of operations, such as VFR inbounds to FAOR, emergencies etc. to be included in the annual continuation training (simulated).
x. Staff and industry to be sensitised regarding flight plan searches that may involve ZU registrations.
xi. Non-contributory – the leave management process following large scale projects such as TopSky that has inhibited leave allocations, to be reviewed and tested for effectiveness of leave allocation upon completion of the project.
xii. Training to be provided to the FIS ATSO on process/actions to follow when traffic is routing VFR inbound to FAOR. This training can also be extended to the FIC Pool as it has been identified as training deficiency.
xiii. The process of reporting upwards any occurrence that may attract media attention to be reviewed and adapted to current requirements.

SCENARIO

05

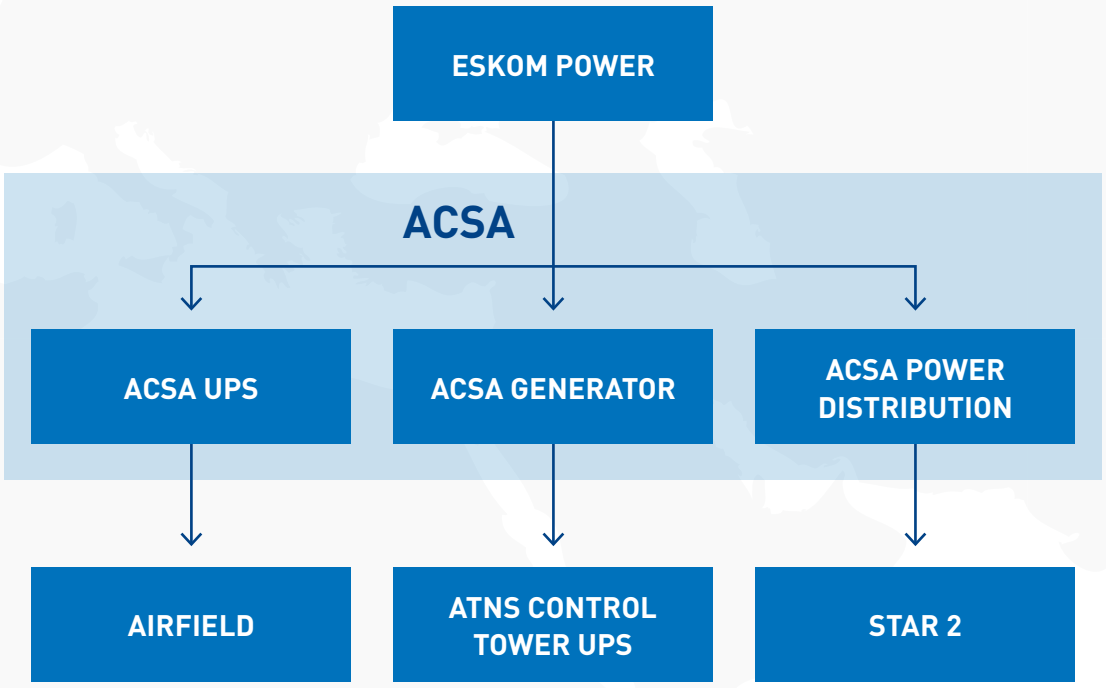
This event is more technical in nature, but some useful lessons can be learned from the unfolding scenario. The event occurred in FACT and involved an electrical power failure.



FACT control tower is within ACSA's Airport and receives power supply from ACSA. The main Eskom power pipeline to ACSA is split into three, and supplies these entities:

- The ATNS Control Tower,
- Star 2 and
- The airfield (Runway Lights, ILSs etc).

Diagram: ATNS power link connection to ACSA's generator.



FACT control centre is equipped with Uninterrupted Power Supply (UPS) and Diesel Generators for the purpose of supplying back up power in case of power failure. The UPS is connected inline; thus the UPS supplies all the essential equipment with AC power and maintains the load in case of a power failure. While the generator will start up in a few seconds after a power failure and then the generator will supply the UPS with AC power to re-charge the batteries. The generator will automatically switch off again a few seconds after the power is restored.

ACSA as the main supplier of power to ATNS, is required to perform power checks once every month. These power checks involve switching off the Eskom mains power supply to test the back-up system power capability to sustain the airport load.

On the 21st Oct 2019, ACSA sent FACT TS Management a request to perform power checks, the request was acknowledged by ATNS FACT TS Management.

Description of the system failure

On the 24th October 2019, at 23:45, ACSA resumed with the Power checks. The main

power pipeline that ACSA's electricians' trip is split into three to supply ATNS Control Tower, Star 2 and the airfield (Runway Lights, ILSs etc).

At 00:30 local time, the ATC reported a power failure at the control centre; this was the exact time ACSA Electricians were busy with power tests. As a result, the FACT control Tower, the entire airfield, and Star 2 area lost power supply, and all three section's back-up power did not activate.

The UPS in principle was supposed to continue supplying the equipment through its batteries and the generator was supposed to kick in few seconds later. However, on this particular day, both UPS/Diesel Generators did not carry up the load after Eskom power was lost. The power failure led to a total equipment shutdown at ATNS Control Tower, Star 2 and the airfield.

Impact of the failure

There was a total failure of systems at FACT Control Tower that resulted in around 10 minutes of complete darkness. At 02:10AM local time, TopSky System was restored and reported operational.

At 03:50AM local time, all systems were restored and confirmed as operational. In the meantime, the air space was partially closed, two aircraft were inbound, and all departures were suspended for 60 minutes. No further safety-related incidents were noted during the airspace downgrade period.

Contributing factors

When the electrical power was restored, an investigation by FACT ATSEPs found that there was significant (ABOUT 90 Volts) potential difference between the electrical ground wire and the neutral wire. Under normal circumstances, these two legs should have a potential difference of 0 Volts. The potential difference of 90 Volts is suspected, that it might have prevented the UPS/ Generators from taking over the load.

Both the Airfield and Star 2 also lost power, and its back up power could not activate either. Internal investigations suspect that the issues might have been with Eskom or the manner in which the power routines checks were conducted by ACSA.

On finding the 90Volt potential difference FACT management contacted an electrician to investigate the source of the 90Volt. On Monday the 28th of October the electrician was on site and no potential difference could be found on any of the AC distribution boards. However, on the 29th October 2019, at 00:15PM local time, there was another power failure at FACT and the UPS held the load, and the generator took over the load within a few seconds.

The following recommendations were produced as a result of the various investigations:

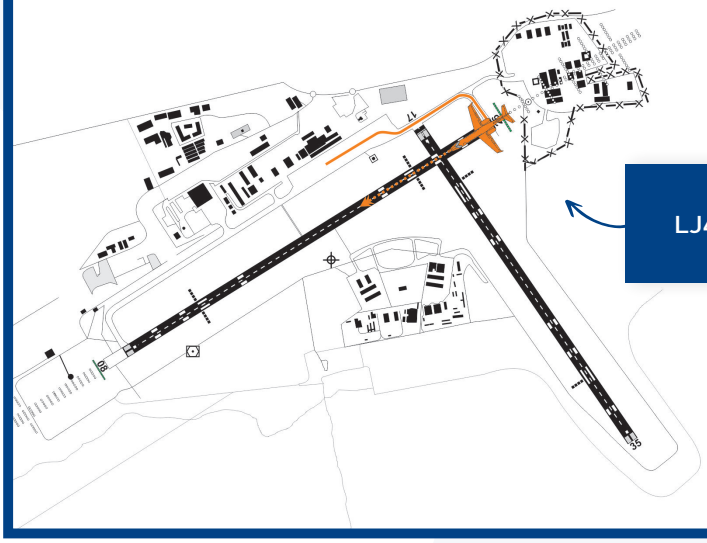
i. It was recommended that the Neutral and Earth bar in the Low Voltage Distribution Cabinet at the FACT centre be strapped together by an authorised electrician.
ii. The strapping of the Neutral and Earth will prevent any floating voltages in future, which will eliminate the potential for any UPS and/or generator to not carry the load during power failures.
iii. An authorised electrician was tasked to do the neutral and earth strapping on the 8th of November 2019.
iv. It was recommended that during the ACSA power routine checks, ATNS must have an Engineering Technician (ET) on site to ensure quick restoration response time of the ATM systems when need arises (i.e Roster should be drafted in line with ACSA power routine checks).
v. It was recommended that when the fault is logged against the power failure that affects all the systems, Sub Faults for all the affected systems must be open on MMS.

SCENARIO

06

On **21st November 2019** a Runway Incursion occurred at 12:40:59 UTC between a LJ45 and a B734.

B734 on long final approach RWY 26 and cleared to land 2 min and 25 seconds after line up clearance was issued to the LJ45.



LJ45 lined up RWY 26.

At time 12:38:34, the LJ45 routing from FAPE to FACT reported ready at the holding point A4 RWY26 and was issued a clearance to line up on the RWY.

Thereafter the controller instructed a C172 (circuit traffic) to continue left downwind RWY26 and expect to hold overhead the coastline.

At time 12:38:52 C210 contacts the TWR inbound and was cleared to join and report right downwind RWY26. The pilot requested the controller to repeat the instruction which was read back correctly thereafter.

At time 12:39:16 the controller instructed a C152 (circuit traffic) to fly wide left downwind via position Willows which was read back correctly. Nine seconds later, a Sling reports CTR outbound and the controller instructed the Sling to broadcast frequency 130.35 MHZ, which was read back correctly. Within the same minute, the controller crosses a Gazel helicopter on RWY26 from South to North, with a request to expedite and report safe, which was read back correctly.

At time 12:39:50 the B734 inbound from FALE calls established ILS RWY26 at about 10nm final approach, and the controller instructed the B734 to continue approach, due to helicopter crossing RWY26 ahead and issued the surface wind.

At time 12:40:05 the controller instructs the C172 to execute two orbits to the right and to report completed, and requested the C210 to report a B734, 7NM final approach in sight.

At time 12:40:37 the C152 reports overhead Willows and the controller instructed the C152 to continue along the coastline and to report overhead the Shooting Range. Fourteen seconds later, the Gazel was instructed to remain north of RWY26 after which the pilot advised that they were landing.

At time 12:40:59 a runway incursion occurred when the controller cleared the B734 to land RWY26. Immediately after this transmission, the LJ45 advised the controller that they were still on the runway. The controller cancels the landing clearance for the B734 and advises the crew to continue the approach.

At time 12:41:17 the event controller clears LJ45 for take-off, and thereafter cleared the B734 to land RWY26 as the LJ45 rotated.

The investigation produced these findings:

a. It appears that the pressure that training is placing on the operational system is adding an additional risk that is not mitigated at present. In this particular setting, the controller was exposed to 2 hours on position only. In addition, the controller's previous time on the particular position was 10 days prior. In other words, skill maintenance becomes a topic of concern. This is especially relevant as this investigation found that the previous two safety events at this ATSU also had two ATCO3 controllers involved that were not working aerodrome control as their primary service and skill set. This was also evident in the comment by the controller that the RWY was only scanned after the landing clearance was issued to the B734 – indicating a potential memory lapse that can be rectified through repetition priming (more frequent exposure to re-establish the skill set and correct sequence of actions required). However, the scanning technique applied should be explored further. It is not clear whether this was a simple single occurrence or perhaps a habit that has developed over time from the individual or perhaps even the team. A monitoring programme may be able to assist in determining the nature and extent of the incorrect scanning that occurred on the day. Should this not be a once off occurrence, further time has to be invested in training the individual or team in an adjusted scanning technique.
b. Moreover, this particular session also contained an escalated demand in terms of the traffic volume of 27 movements. As this was the second busiest hour of the day, it may also illustrate the need for tactical management of breaks. Typically, such busy spells should be used to expose students to the traffic volume (depending on their experience level at the time).
c. Controllers usually work in short term memory of around the first 30 seconds (Atkinson & Shiffrin, 1971). In this case, the line-up clearance was issued to the LJ45 and the controller was busy with many other tasks and traffic. Hence, that instruction appeared to have moved out of the short-term memory bank by the time that the B734 was cleared to land 2 minutes and 25 seconds later. Ideally, instructions and clearances should not be issued far in advance due to the dynamically changing environment.
d. In addition, on the matter of tactical management of breaks based on traffic, the system seems not to be able to manage breaks tactically, as the controller took over responsibility for the position only 30 minutes earlier and was therefore still in a lowered mental alertness state. Ideally, should such a traffic number increase be known or envisaged, the next controller should be on position for at least 30 minutes or longer before such a wave of

traffic present itself. This also highlights the importance of traffic and trend monitoring at ATSU level (possibly with the assistance of CAMU).

e. Post the runway incursion, the controller continued to work for an hour and 19 minutes, based on the audio recordings and the occurrence log. However, controller knowledge of the purpose of withdrawal from position as a protective practice in ATNS is paramount to prevent further risk exposure for the controller and ATNS. This practice is guided by the CISM Directive and should be deployed regardless and especially in these types of circumstances in order to manage the risk of lowered concentration levels following a burst of adrenaline. Hence, even in cases of suspected safety events, the safe option is to withdraw from position. Should the staff complement not be able to afford such a withdrawal, that should also be noted, and plans designed to enable such a capability.

The following recommendations were concluded on during the investigation:

i. Investigate the presence of any trends regarding waves of traffic in comparison to the allocation of breaks. Known and unknown waves of traffic patterns should be explored through controller experiences and hourly traffic numbers. HF can assist as the ATSU may deem necessary.

ii. Review rosters over a period of 3 month to determine whether the frequency of rostering ATCO3s are creating the potential for a skill degradation risk (including time per day and number of shifts on this position).

iii. Perform a monitoring activity over a period of a few days/weeks (if aerodrome is only worked once in 10 days, then it may have to be over a period of a month perhaps) focussing specifically on the monitoring technique in relation to the issuing of landing and take-off clearances for the controller and the team. HFS may assist should the ATSU not have the resources (a local resource can also be trained to perform such observations).

A SUBTLE **STRING OF ERRORS**

EDITORS' NOTE

This abstract was first published in **CALLBACK 469**, dated February 2019 as a Monthly Safety Newsletter from The Office of the NASA Aviation Safety Reporting System.

A Captain and a Controller describe how an unnoticed error, an assumption, and an expectation combined to result in a runway incursion that could have been catastrophic.

From the Captain's Report:

Taxiing to the active runway, we were cleared to cross the runway at a taxiway on two separate occasions within 30 seconds. We both looked at the approach end of the runway and confirmed an aircraft in position as Ground Control had indicated. My FO confirmed with me that the aircraft in position was not moving. I also looked and agreed.

I now concentrated on steering the aircraft on the taxi line while crossing the runway. My FO then stated that Aircraft Y was rolling down the runway. I braked but was not able to stop before entering the runway. Aircraft Y rotated and overflew us. We queried Ground, and they confirmed for a third time that we were cleared to cross the runway.

From the Tower Controller's Report:

We were in the last part of a large departure push. I was working the Tower Control position. I had four aircraft ready to depart. Three were at one runway and one was at an intersecting runway. I was departing a business jet from an intersecting runway. As the taxiing Aircraft X turned north, I lined Aircraft Y up on the runway. With my plan firmly in my head, I would depart Aircraft Y; then I would allow Aircraft X to cross the Runway 4 at a taxiway. When the Ground Controller coordinated the crossing, I had my plan made and did not realize the crossing was before Aircraft Y. I cleared Aircraft Y for takeoff. The aircraft rotated and was airborne before the taxiway. The ASDE-X alerted. I saw Aircraft X approaching the runway, but in my mind, I thought the aircraft would hold short of the runway. Maybe additional training on expectation bias would help.

CONTACT DETAILS FOR THE SACAA MEDICAL QUERIES REGISTER

The Medical/Empic Queries should be referred to the monthly Senior Medical Assessor and Administrator as per the allocation on the next page. The CAA has made the contact details available of all the Medical Staff to ensure that queries are managed efficiently.

SOUTH AFRICAN CIVIL AVIATION AUTHORITY

SACAA: Aviation Medicine Department contact details

NAME	JOB TITLE	TELEPHONE	EMAIL	CELL
Dr. Lesego Bogatsu	Senior Manager	011 545 1137	BogatsuL@caa.co.za	083 461 6324
Dr. Bernice Mashaphu	Senior Medical Assessor	011 545 1418	MashaphuB@caa.co.za	083 461 6080
Dr. Fatima Alli	Senior Medical Assessor	011 545 1480	AlliF@caa.co.za	079 894 8954
Mr. Kgama Melesi	Professional Nurse	011 545 1327	MelesiK@caa.co.za	071 806 0301
Sister Tshepo Masole	Professional Nurse	011 545 1210	MasoleG@caa.co.za	083 451 2665
Nomcebo Thabede	Medical Assistant Officer	011 545 1243	ThabedeN@caa.co.za	083 461 6032
Nangamso Hlathana	Admin Officer	011 545 1183	HlathanaN@caa.co.za	–
Sandra Kgomo	Admin Officer	011 545 1289	KgomoS@caa.co.za	–

THE SAFETY-NET

We catch it all, report it all because we are about safety!

Do you have an aviation story or photo; reigning brain question or perhaps a safety award nomination for Safety-Net?

Send us an email at
safetyeditor@atns.co.za