SAFETY-**NET**

Edition **34**

SAFETY-**NET** EDITION **34**

WHO IS THE REIGNING **BRAIN??**

Edition 34 Competition question:
What is the name of the newest supersonic commercial jet and which four airlines have already confirmed orders?

Submit your answers to **safetyeditor@atns.co.za.**

Winners of the reigning brain competition in Edition 33 were Zanokuhle Vilakazi and Ramona Abrahams.

The questions was: In which year, and between which two cities/countries did the commercial jet service begin?

The correct answer was: On May 2, 1952, the British Overseas Aircraft Corporation (BOAC) began the world's first commercial jet service with the 44 seat Comet 1A, flying paying passengers from London to Johannesburg.

Radar Dropping Targets (Lanseria Area)

An investigation report

An MOR report with reference number: FAOR APP-1935-13.03.2022 was received by S&R on 13 March 2022, reporting an incident of the Radar dropping targets. The MOR report stated the following:

"XXX departed FALA to UTRUK. RADAR unserviceability led to only being identified at FL90, 9NM North of FALA. At the same time YYY crossed the TMA boundary on AVAGO arrival RWY03R. Target dropped just inside the boundary. These [sic] led to inability to climb XXX and the aircraft had exited controlled airspace by the time radar contact was re-established."

The MOR was assessed by S&R and an investigation launched to better understand the extent of the risk to safety and service provision. During the investigation it was noticed that the reported incident is not isolated from other similar incidents that were not filed on e-Tokai. Thirty-eight other instances were logged in the FAOR Approach Occurrence Log and FALA Occurrence Log between 21 February 2022 and 07 April 2022.

Background:

The execution of the Radar Replacement Programme brings forth possible surveillance radar coverage downtimes in the FAOR and FALA TMAs. In evaluating the impact to Air Traffic Management Operations due to radar downtimes and possible compromised radar coverage, an initiative that serves as a contingency to FAOR S-Band 2 radar replacement was put in place. Before the old FAOR S-Band 2 Approach Radar was decommissioned, the ATA radar was commissioned and tested as a stand-in radar to provide radar service during the replacement period of the FAOR S-Band 2. This activity involved recommissioning of the ATA Training Radar as an operational radar (at ORTIA) and performance assessment activities, such as Flight Calibration and Flights of Opportunity performance assessments. This is a regulatory requirement to ensure that the SACAA (ATS Surveillance Procedures and Separation Methods and Minima) and ICAO Standards and Recommended Practices (SARPs) are complied with.

During the ATA radar flight trial exercise, a dedicated flight test was used to generate ASTERIX and GPS data for evaluation purposes whereby the aircraft's behaviour was closely controlled and its position was accurately measured using GPS equipment. The ATA Radar flight trial took place on 29 January 2022, over a total flight period of seven hours. The outcome of the flight calibration confirmed that ICAO Standards and Recommended Practices (SARPs), and SACAA ATS

Surveillance Procedures and Separation Methods and Minima of 5.0 NM, as well as Johannesburg Terminal Airspace Separation Minima of 3.0 NM in the TMA was achieved by the system. This was confirmed through the flight-check results for both MSTS and MSTP Tracking Systems.

Preparations and tuning of the ATA Radar as a temporary replacement during the commissioning of FAOR S-Band 2 was completed in September 2021.

Below is the sequence of events relating to ATA Radar:

- The ATA radar was successfully flight calibrated on 29 January 2022.
- The ATA Radar air conditioners were successfully installed and commissioned in February 2022.
- The ATA radar was attached for operational use on 25 February 2022.
- The ATA Radar was detached from operation on 12 March 2022 at 09:18Z during fault finding (see 1.2). (Note: The MOR was filed on 13 March 2022 at 11:00Z).
- The ATA Radar was re-attached to operation on 14 March 2022 at 12:33Z.

FAOR S-Band 2 background:

FAOR S-Band 2 co-mount radar was commissioned in August 2005 with a 15-year lifespan that lapsed in August 2020, as shown in Table 2 below. The FAOR S-Band 2 replacement project commenced on 01 October 2020, with a plan to switch off the radar on 28 February 2022, after the commissioning and attachment of the ATA radar. Below are the sequence of events relating to S-Band 2 Radar leading to the 28th of February 2022:

- During the S&R Technical Safety Audit that took place from 22–26 November 2021, FAOR S-Band 2 was found with only one channel operational for SSR and also for PSR due to the shortage of spares.
- FAOR S-Band 2 radar was detached on 19 January 2022 at 11:54Z.
- FAOR S-Band 2 radar was re-attached on 19 January 2022 at 13:09Z.
- FAOR S-Band 2 radar was detached on 21 of February 2022 at 07:58Z.
- FAOR S-Band 2 radar was re-attached on 24 February 2022 at 11:01Z.
- FAOR S-Band 2 radar was detached on 24 February 2022 at 11:47Z.
- FAOR S-Band 2 radar switched-off on 28 February 2022.

Below is the sequence of events relating to FAOR S-Band 1 Radar performance from January to March 2022:

- FAOR S-Band 1 radar shut down and corrupted data during a power failure simulation audit on 19 January 2022 at 20:50Z. During the Technical Safety Audit power failure simulation test, the UPS was unable to carry the load for a transitioning period from mains to generator. This caused the hard shut down due to depleted batteries. After power restoration, SSR configuration parameters were corrupt and it could not switch on. Only the PSR was able to switch on and stay on air.

- On 20 January 2022 at 12:40Z, the fault was attended to and both RPC-PCs were malfunctioning due to the corrupt data on the Operating System. The ATSEP installed application software and reverted to site parameters and the targets were available on the IBIS. The site was green on the RCMS.

- On 22 April 2022, the Surveillance Specialist discovered that the radar parameters loaded on the FAOR S-Band 1 Radar PSR (Channel 1) and SSR were incorrect. It was further discovered that there was no proper control for saving the radar parameters, since they were saved all over the place. Some were saved on the desktop while others were saved on the c:/drive.

After the detailed investigation was concluded, the findings were as follows:

The main contributing factor to the radar targets dropping around the FALA TMA and JHB Approach TMA was the failure of FAOR S-Band 1 on 19 January 2022, during the power failure simulation followed by SBand 2 being detached on 24 February 2022. Although S-Band 1 was restored back to service on 20 January 2022, it was not performing optimally due to the incorrect parameters that were loaded.

The crippled S-Band 1 radar continued to operate with the impacted detection performance from 19 January 2022 until 22 April 2022, when the specialist managed to restore the correct parameters. In the absence of S-Band 2 and having a crippled S-Band 1 the radar coverage around FALA area and JHB, approach was negatively impacted. ATA Radar could only provide limited coverage above 8000 ft due to its position and the number of reflections around it.

It was also found that the maintenance practice used by Technical Support to detach and re-attach radars, as they conduct maintenance or fault finding, has a negative impact to radar coverage and operational procedures if not communicated with ATCs in advance. The ATCs are not always aware of the ATSEP's activities when they detach or re-attach the radars, neither are they informed of its impact to their operations.

JHB approach utilises the Separation Minima procedures of 3 NM as per APPENDIX C. The regulatory requirement (ICAO Doc 9689 Chapter 3, ICAO Doc 4444 and SACAA Separation Methods Minima) for 3 NM separations were not met for the period of 19 January 2022 to 22 April 2022. This was due to poor radar coverage around the JHB Approach TMA.

The poor control of the critical radar system configuration parameters was found to be the major contributing factor in this investigation.

The JHB Separation Minima (3 NM) safety case was developed without Technical Support or Operation Technologies inputs, and there was no alignment with the maintenance requirement during its development. Hence, the finding under Point 3 did not seem to be a safety risk for Technical Support. The Safety Case has not been reviewed since April 2010.

It was found that the majority of the facility failures were not filed on e-Tokai in a form of an MOR in line with ATNS Safety Management System, until 13 March 2022.

The following recommendations flowed from the investigation:

It was recommended that Operations Technology (OT) put measures in place for proper control of systems parameters.

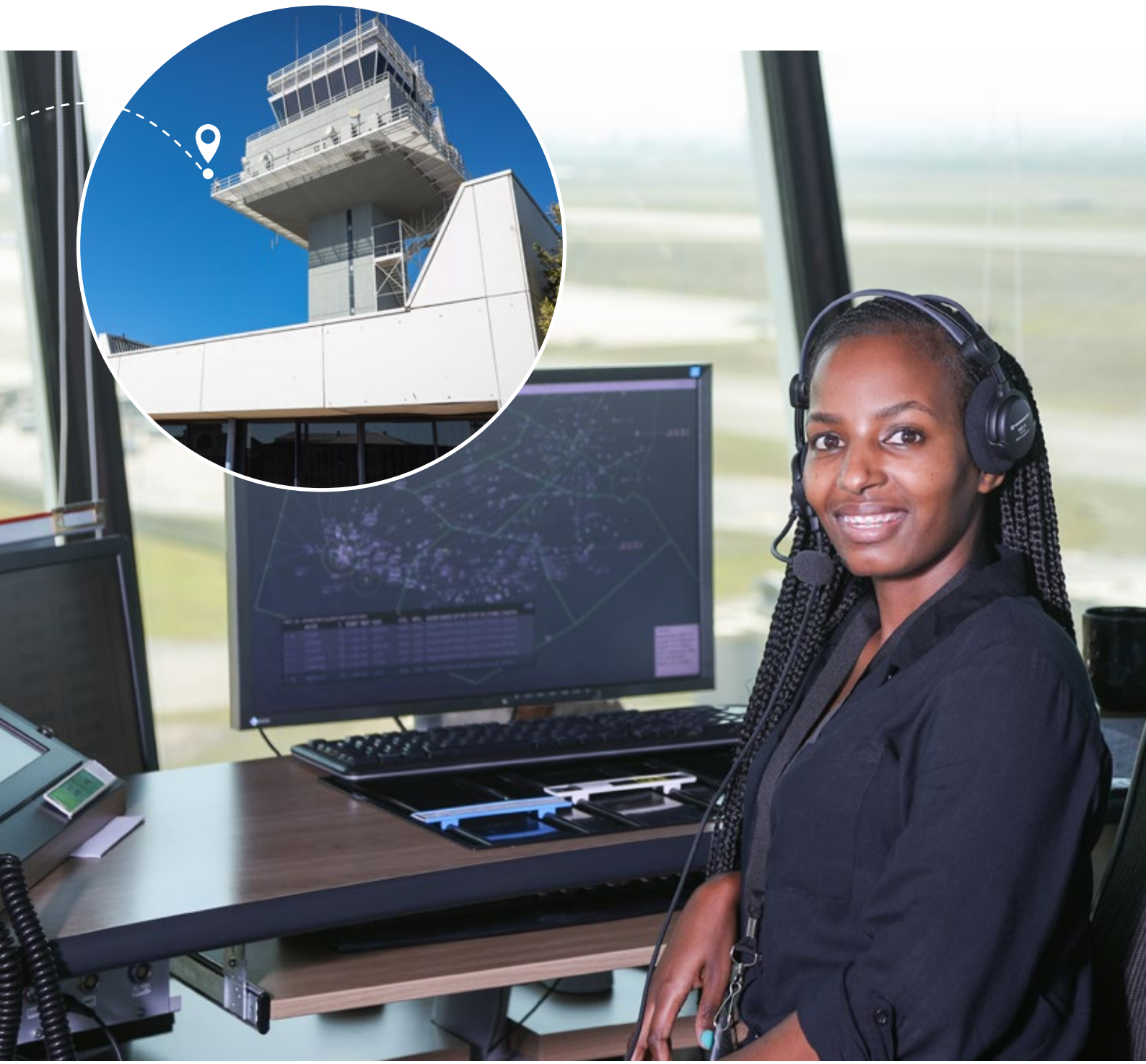
It was recommended that Technical Support (TS), together with Air Traffic Services (ATS), document the process that will ensure the clear line of communicating the detachments and re-attachments of radars during maintenance and fault finding.

It should also clearly indicate the impact on operation procedures for every radar being attached or detached.

It was recommended that the JHB Separation Minima Safety Case is reviewed to reflect the current operational environment by all the relevant stakeholders.

It was recommended that ATNS at all times ensures compliance with Separation Minima regulatory requirements, and apply the separations in line with systems availability.

It was recommended that all the Facility MORs are filed in line with the ATNS Safety Management System. In this case, only one of the 37 occurrences was reported via MOR.



RUNWAY INCURSIONS

Editor's note: This collection of occurrences was first published in the NASA Callback Issue 469 of February 2019.

A runway incursion is defined as "any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft." Runway incursions result from various causes and usually ensue following a sequence of errors that a pilot, a Controller, or Ground Operations does not trap. Regardless of specific errors or causes, runway incursions have serious implications, which may include a ground conflict or collision.

All in a Day's Work

A commercial aircrew described the circumstances that preceded their unauthorised entry into an active runway environment. Distraction, weather, and fatigue were factors.

From the Captain's Report:

At the end of a long day, which included a fuel stop, a late hotel pickup, and weather, we landed on [Runway] 19L in San Francisco (SFO) and were cleared to hold short of 19R. We acknowledged the clearance. As we taxied off 19L, my iPad shut down on its own as it had done the last two days. As I reached over to restart it,...I lost location SA (Situational Awareness), and our nose taxied onto 19R. Just then the First Officer (FO) said, "Wait. Where are we?" and he told the Tower that we had started taxiing onto Runway 19R. The Tower said, "Yes, continue crossing 19R and contact Ground." The rest of the taxi was uneventful.

From the First Officer's Report:

This was originally supposed to be a non-stop flight to San Francisco, but due to severe weather in SFO and fuel requirements, we had to stop for fuel. The day was further delayed...with an SFO flow control program. Upon arrival into SFO, the weather was moderate rain, 3/4 mile visibility, and winds gusting over 40 knots. We landed on 19L, and Tower instructed us to make any right turn and hold short of 19R. We turned right on Taxiway G, and...neither of us saw the hold short line for 19R. Both of us realised the mistake at the same time, but at that point the nose was slightly in Runway 19R. It was difficult to see ground markings with the wet surface, dark conditions, and weather.

A Subtle String of Errors

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:

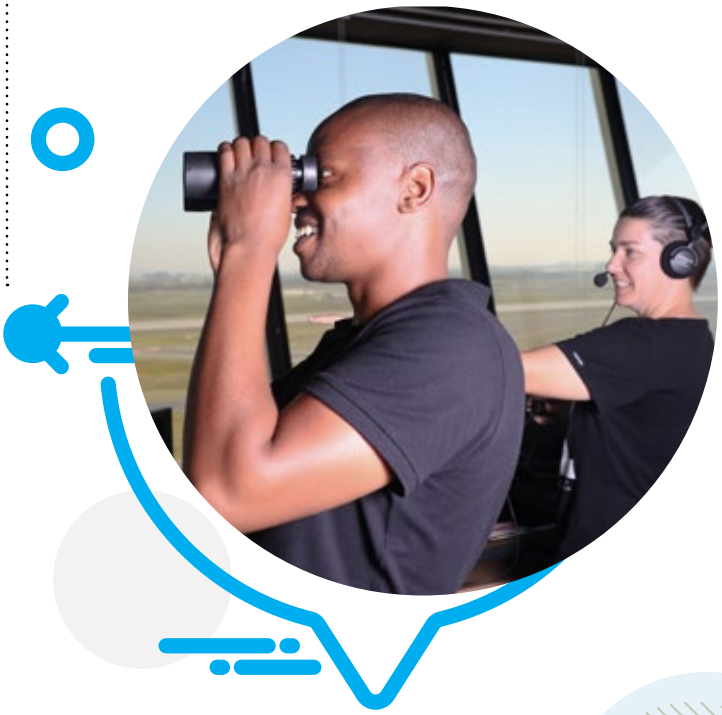
We were in the last part of a large departure push. I was working the Tower Local Control position. I had four aircrafts ready to depart. Three were at one runway and one was at an intersecting runway. I was departing a business jet from an intersecting runway. As the taxiing Aircraft X turned north, 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 realise 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.

Communication or Interpretation?

With taxi clearance to the runway and a sequence to follow another aircraft, this A320 Captain was surprised and confused when they followed the aircraft across a runway.

We were cleared to leave the ramp and taxi to the runway. We were told our sequence was to follow the MD88 ahead and monitor the Tower, which we did. Approaching the taxiway, the MD88 started taxiing to cross the left runway, which was being used as a taxiway, as there was a tug pulling an aircraft stopped on the runway. So as previously cleared, we continued to follow the aircraft ahead.

Approaching the runway, Tower called our flight number, so I stopped with [our] nose slightly on the runway. My copilot then told Tower that our clearance was to follow the MD88 and monitor the Tower, which we were doing. The Controller then said he has a phone number to call for a possible runway violation. We continued on with no further incident. There was no threat to safety in any way. The clearance to sequence and follow the MD88 superseded the one given to us on the ramp. We were never told to hold short of a taxiway, or the left runway, with the second clearance. There was a definite communication failure on both parties, ATC and us. With the tug and aircraft stopped on the left runway, the runway was obviously not active. In the future, with this type of communication, I will clarify the intent.



Incompatible Taxi Instructions

A LaGuardia Controller made a callsign error while issuing an otherwise valid taxi clearance. A ground taxi crew erroneously accepted the illogical taxi instructions. An alert flight crew averted the developing conflict.

Aircraft X was a maintenance aircraft under tow, repositioning from the west side of the airport to the east side. Aircraft X was instructed to proceed via Taxiways DD and G to hold short of Runway 4. A portion of Taxiway A was closed...for aircraft that were parked on the taxiway overnight. ...with Taxiway A closed between E and G, [outbound departures] had to taxi via A, G, and B. My plan was to have Aircraft X hold short of Runway 4 for a few minutes until a couple of outbound aircraft cleared Taxiway G and Taxiway B. ...aircraft Y had called for outbound taxi. Mistakenly I called them Aircraft Y Maintenance and gave them clearance to taxi via N, A, and hold short of M. Aircraft X Maintenance took the clearance and read it back. At that point Aircraft X crossed the active departure runway (Runway 4) and went onto Taxiway B. Even though I missed the read back, at no point did I instruct any aircraft to cross a runway. I am perplexed as to why Aircraft X did not question the clearance. They were holding short of Runway 4 at G. The clearance they took was, "Taxi N, A, hold short of M," and there were no crossing instructions in the clearance. There is no possible way to get to Taxiway N from where they were. I got busy with other duties and caught the crossing just as they cleared. Local Control had cleared Aircraft Z for takeoff as Aircraft X was crossing. It appears that Aircraft Z delayed their takeoff roll and verified with Local Control that they were cleared for takeoff. I don't believe it is good practice to use an actual callsign to tow or reposition aircrafts. ...[Aircrafts with] similar sounding callsigns is not a good idea and will probably lead to more of these incidents.

Stop, Look, and Listen

A C172 student and instructor encountered a surprise during their takeoff roll. The takeoff was successfully continued but could easily have resulted in tragedy.

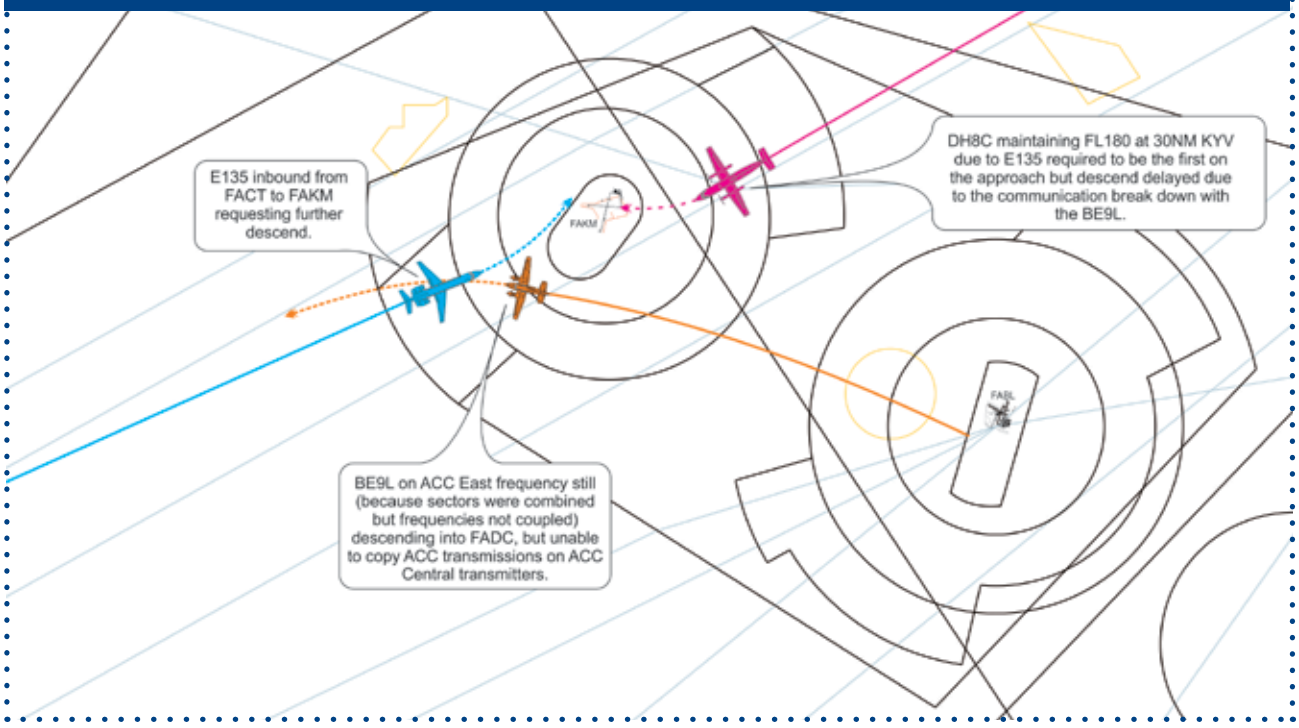
> After announcing...that we (myself and my instructor) were taking off on Runway 23 and staying closed left traffic for 23, we cleared both the final approach and the runway for traffic. We started our takeoff roll and reached rotation speed at 55 knots. Just before I started to lift off, four or five emergency vehicles (fire trucks, ambulance) with lights flashing crossed Runway 23 off of Taxiway C from left to right directly in front of me. There was no attempt by the vehicles to stop at the runway [edge line] to check for traffic on Runway 23. I had no time to abort the takeoff and simply continued to rotate to...fly the airplane with a normal takeoff. I crossed over the moving vehicles at an altitude of less than 50 feet. ...we continued our pattern work, and they were gone when I finished my flight.

SAFETY EVENTS:

SELECTED EVENTS THAT OCCURRED BETWEEN JANUARY AND JUNE 2022

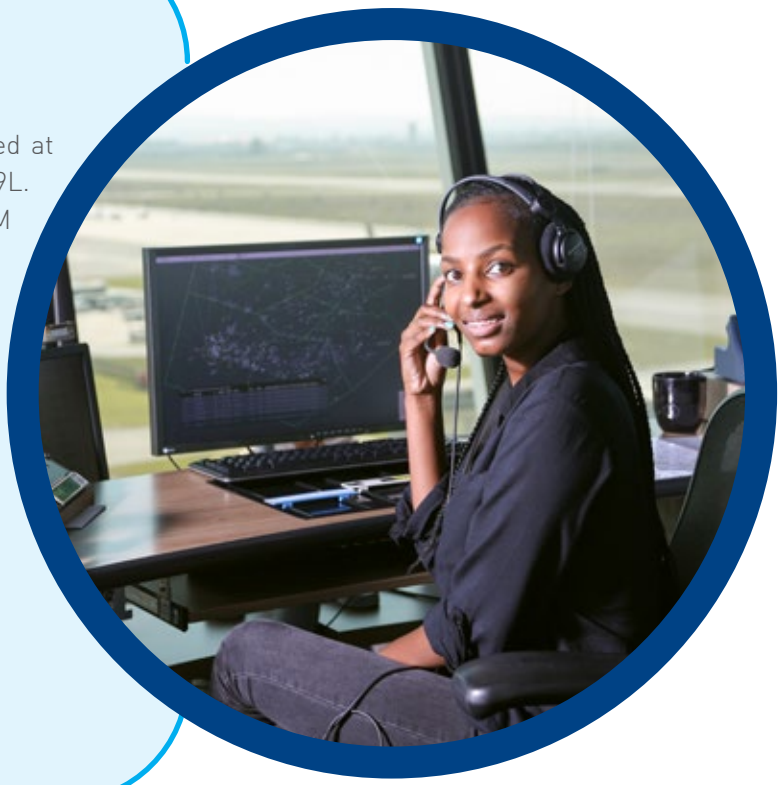
NOTE: The remedial interventions that focus on the individuals involved are excluded from this publication. Furthermore, safety event reviews have been de-identified and reproduced with the sole purpose of promoting a learning culture within ATNS as well as the aviation industry at large. The events are thus published with the aim of sharing lessons learnt in order to prevent similar, or more severe, occurrences in the future.

SCENARIO 1



On 18 January 2022, an LoS occurred at 05:33 UTC between an E135 and BE9L. The E135 was descending into FAKM from the South and the BE9L, who had lost contact with the Controller, was descending into FADC routing from FAGY. The student and nstructor took over the positions from the night shift controller.

The ACC Central, East and West sectors were combined.



At 05:10:22 the event E135 routing FACT to FAKM established contact with ACC Central on 120.3Mhz at the sector boundary. The E135 reported position APLEN at FL370. The controller instructed the E135 to report ready for descent. The student then enquired with the instructor if FAKM was open to which the instructor replied "no". At this stage the BE9L, routing East to West (from FAGY to FADC) was overhead BLV at FL260.

Because of combined sectors (C/E/W) the student started to experience many double transmissions when the traffic volumes picked up.

At 05:14:38 a DH8C at the sector boundary, routing FAOR to FAKM at FL180 made contact with the student. The student informed the DH8C that there was no reported traffic at FL180 and instructed them to report ready for descent into FAKM.

At 05:23:16 the instructor prompted the student to check for the FAKM opening time with Bloemfontein approach. They were informed that FAKM opens at 0530Z and would be using RWY10, VMC operations. FABL APP then requested that the event E135 be positioned number one for the approach, ahead of the DH8C inbound from the North. The student and instructor then deliberated on how FABL APP was going to make their sequence work with the E135 being positioned ahead of the DH8C that estimated the field first.

At 05:23:57 the E135 requested descent. The E135 was instructed to descend to FL150 for RWY10. The crew were instructed to "speed up please" as they were number one for the approach.

At this stage the event BE9L was approximately 30NM East of KYV, at FL260, routing on track to FADC. At 05:25:37 the event BE9L was observed descending from FL260.

The cleared flight level (CFL) tab on the flight plan label still showed the initial FL260. As the BE9L passed FL256 a flight level warning was generated by TopSky. The student was heard asking the instructor if they had issued descent for the aircraft and the instructor responded to say that they think so. The BE9L had not been issued descent.

At 05:26:04 the student liaised the descending BE9L with FABL APP informing them that they would provide the separation between the E135 and the BE9L. The FABL approach controller noted the information and informed the student that they had no reported traffic to affect the BE9L descent.

[Discussion followed between the instructor and student regarding the BE9L and E135. The instructor advised the student to descend the BE9L all the way, below the E135].

At 05:26:32 the student cleared the BE9L for descent, "cleared descent below controlled airspace no reported traffic, report 15NM inbound to destination." No response was received. The BE9L was passing FL246 on the descent (nil comms) and the E135 was passing FL316 on the descent.

Twenty-three seconds later, the DH8C requested descent into FAKM. The student advised the pilot to standby.

At 05:27:33 the E135 was instructed to "descend to FL230 now" (meaning, stop the descent at FL230 because they had initially been cleared to descent to FL150). The E135 queried if the descent instruction was for them. The student confirmed the instruction was for the E135, and again instructed them to "descend to FL230 now". The BE9L was passing FL236, approaching from the East to West.

[More discussions ensued between the student and instructor regarding the BE9L and E135 separation. The student can be heard saying that the developing situation was making them uncomfortable].

One minute later the E135 informed ATC they were approaching FL230. The ATC issued further descent to FL220. The E135 was passing FL253 and the BE9L passing FL224 on the descent. The pilot read back correctly and informed ATC that they were readability strength one.

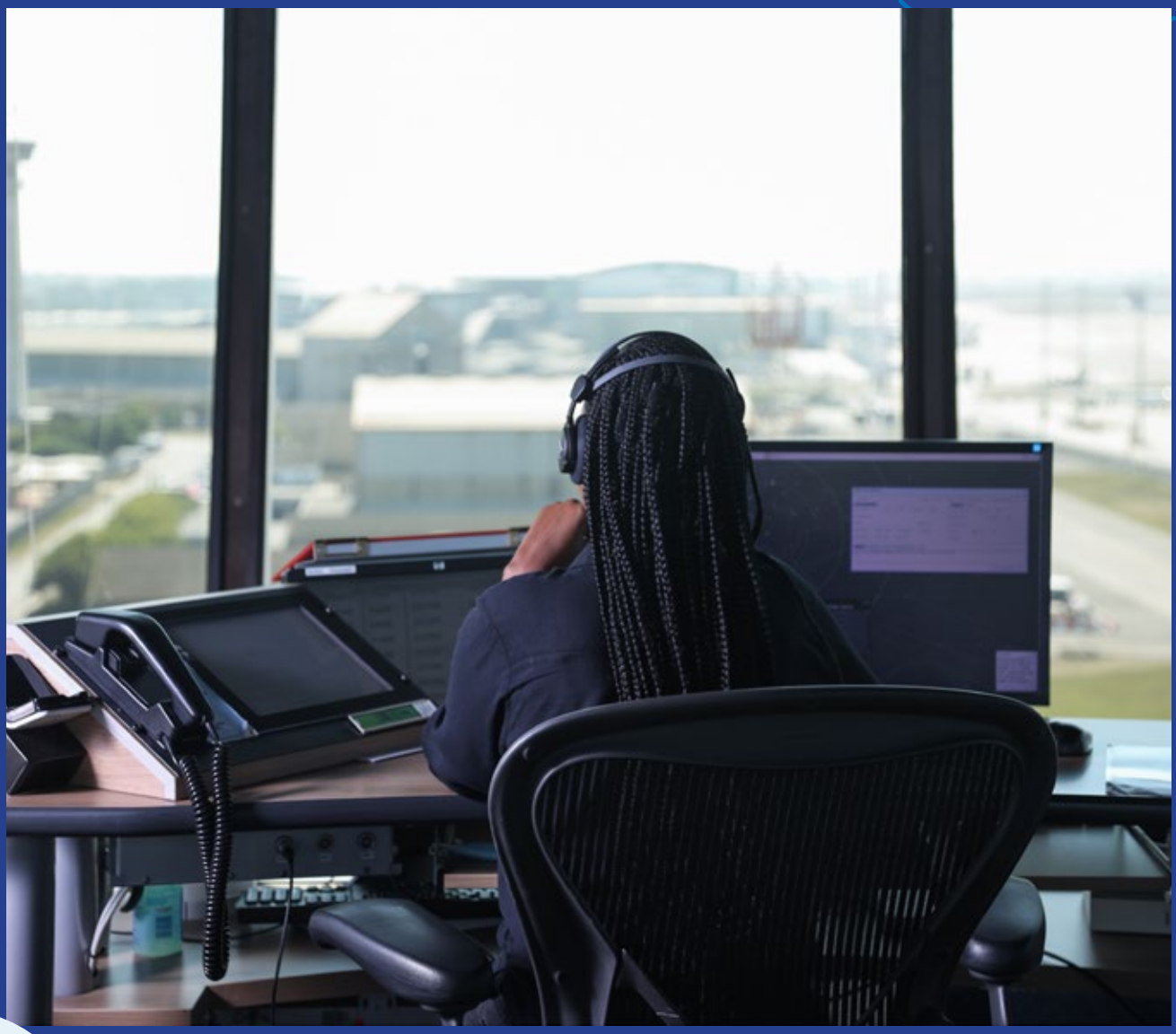
At 05:28:55 the DH8C inbound for FAKM again requested descent. There seemed to be confusion as to who was requesting descent and the student queried this on frequency. The DH8C informed ATC again they were requesting the descent into FAKM. The trainee ATC advised the DH8C to standby descent as they were number two for the approach.

Thirty-five seconds thereafter, the student twice called for the BE9L, with no response from the aircraft. The student then decided to descend the E135 (passing FL224) below the BE9L (NIL contact, passing FL210). The E135 was then instructed to descend to FL190. More discussions ensued between student and instructor regarding the situation, which now included the DH8C from FAOR to FAKM maintaining FL180 and approximately 30NM north of KYV.

At 05:29:55 the student again tried to call the BE9L without success. At this stage, the E135 was passing FL216 on the descent to FL190 and the BE9L was passing FL204. Hereafter, the instructor took over the frequency and tried to establish contact with the BE9L with no luck. At this stage the E135 was passing FL204 and the BE9L passing FL198. The DH8C was maintaining FL180 on track to KYV approximately 25NM North of KYV. At 05:30:40 the DH8C (once again) informed ATC they were ready for descent. The instructor advised the DH8C to route KYV to hold as they were number two to the E135. The DH8C queried if they should enter the hold at FL180 and the instructor confirmed this.

At 05:31:16 the student again called the BE9L on 120,3MHz with no response. The instructor can be heard telling the student that the two aircrafts would be too close in proximity, and the student should rather turn the E135 away. The E135 asked if the ATC required a relay with no response from ATC. The lateral distance between the two aircraft was 19.9NM, with the E135 passing FL197 and the BE9L passing FL191. In response, the E135 was instructed to turn left ten degrees for traffic. However, at 05:32:20 a CAS alert was activated between the E135 and BE9L. The lateral distance between the aircraft was 10.5NM with the E135 passing FL188 descending to FL150 and the BE9L passing FL177 on the descent for destination. Separation between the E135 and BE9L reduced to 4.7NM as the E135 was passing FL159 descending to FL150, and the BE9L was passing FL167 on the descent.

At 05:32:00 the sectors were split into ACC Central/West combined and ACC East. Whereafter FABL APP advised that they would accept the E135 and DH8C. The instructor then transferred control of the E135 to approach frequency 119,4MHz. The E135 was now passing FL138 descending to FL90 and the BE9L was passing FL158 on the descent, lateral distance was 5.4NM and increasing. At 05:34:07 the instructor transferred the DH8C to APP, frequency 119,4MHz.



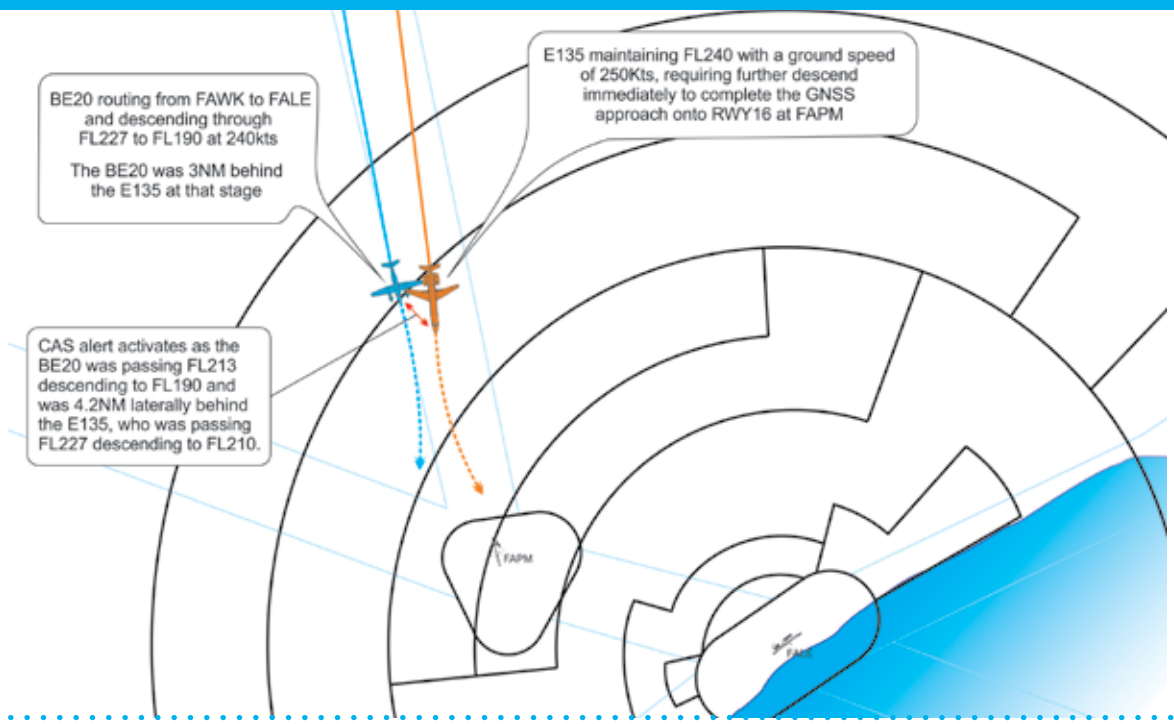
The main contributing factors of the LoS were determined as follows:

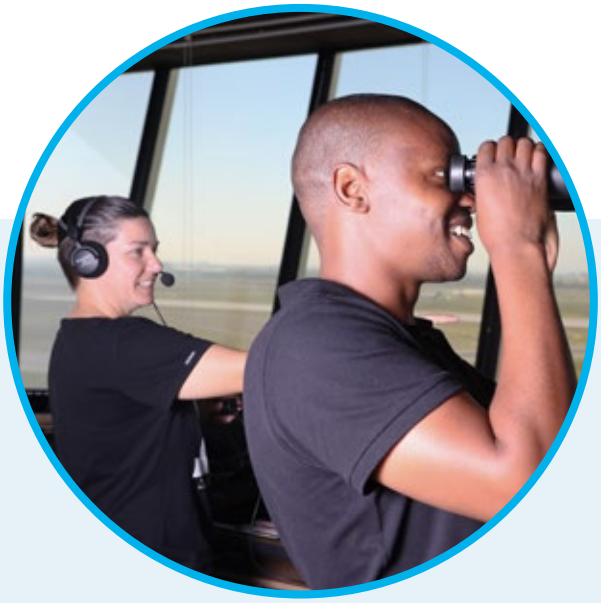
i. The E135 requested descent and was issued FL150, high speeds as they would be first for the approach, ahead of the DH8C that was inbound from the North at FL180. The BE9L then commenced descent from FL260.
ii. The BE9L did not request descent from the ATC.
iii. When the BE9L was passing FL256 on the descent the TopSky system issued a level alert. The student was heard asking the OJTI if they had indeed issued descent to the aircraft. There was uncertainty from the instructor and student, but this was seemingly not factored in when issuing descent to the E135.
iv. The traffic management that ensued and the conflict resolution proved inadequate, leading to a loss in separation.
v. When the ATC issued vectors to the BE9L there was no response from the aircraft. The event E135 offered to relay to the BE9L, but this was not taken up by the ATC's.
vi. Combined sectors (Central, East and West) caused a busy frequency with many double transmissions and a distraction from the situation building up with the E135, BE9L as well as sequencing the E135 and DH8C into FAKM.
vii. The DH8C requested descent many times, and the ATC failed to timeously inform the DH8C crew that they would have to enter the KMV hold. The ATC then turned the E135, but this proved insufficient and late.
viii. The BE9L was routing from FAGY to FADC. FAGY is within the FALE TMA, within the ACC East airspace. When the BE9L entered the ACC Central airspace the Controller did not change the aircraft over to frequency 120.3MHz – the Central frequency – so the BE9L remained on the East frequency and eventually fell out of range and lost communication with the controller, as the frequencies could not be coupled.
ix. It is not clear from the investigation why all three sectors were combined on the day, or what particular other risk was mitigated by combining the sectors. Given this reality, the display screens on any of these sectors are not adequate to allow for the collapsing of all three sectors and this holds an additional corporate risk because of zooming actions required to resolve conflict situations of this nature while still monitoring the larger airspace. This specific risk also surfaced during another LoS in the ACC East sector when working collapsed sectors – LNK735 and LMG3, dated 5 May 2022.
x. The intended actions required from crew and the actual meaning or response from crews to be considered and even explored with at least the local airlines when wording such as "speed up please" is being used. This may be construed as an unclear instruction or not an instruction at all and this may result in future safety events not being resolved due to inadequate crew responses.
xi. Planning of shifts in terms of training in ATNS will be of great significance to student success in the future because there have been occurrences in the past where students are exposed to risk scenarios that can be avoided through such planning. For example, combing sectors on a first shift after 11 months away from the particular sectors. In the same fashion, having students working during a known busy or complex spell when they are within their first 25 hours, can have a detrimental impact on the confidence of the controller as well as the level of situational risk. Some decision making of the OJTI may be impacted by the known previous experience of the controller, although the degradation of skill over time has to remain a consideration as well. Another very similar example of this was of a LoS at FAOR - LNK770 and LNK087 dated 20 October 2017.
xii. It is not clear from the investigation how the controller was prepared for the return to shift and C/E/W positions. Apart from a 100-hour re-validation, a process is required for the cognitive activation of a controller to work in a previously familiar environment. For example, simulator exposure in conflict resolution and passing of essential traffic information in order to hone the skill before engaging in live traffic. Again, the skill degradation over time has to be acknowledged and planned for.

The following recommendations were concluded on in order to prevent similar occurrences in the future:

a. Conflict resolution methodology to be added to the ACC CEW 2022 continuation training (CT) programme, and to be simulated in the SSS exercises.
b. Passing of essential traffic information to be included in the ACC CEW 2022 continuation training (CT) programme, and to be simulated in the SSS exercises.
c. ACC CEW OJTIs to be briefed on when to take control of the frequency when conducting OJT. This must also be simulated during the CEW CT 2022 (for OJTIs).
d. The radios in the recording sound bad. M:ATS together with M:TS to investigate further and identify any technical solutions that may alleviate the problem.
e. The frequencies were not coupled. The CEW ATCOs indicate that the coupling does not work well, which is why when sectors are combined; they have to hand over the traffic that crosses multiple sectors, from one frequency to another. This adds to the workload of the ATCOs. M:ATS and M:TS to investigate if there are any technical solutions that can rectify this.
f. Training, especially a first shift after being away for such a long period, should not be conducted with all three sectors combined. This becomes an overload on the trainee.
g. Solution to be sourced for enhanced airspace monitoring capability when sectors are combined for ACC C/E/W. Solution could be hardware and/or liveware based (according to SHELL model).
h. Training consideration to be shared across ATNS that student exposure to known high-risk scenarios (collapsed sectors; high traffic volume waves) within their first 25 hours are avoided through planning where possible. This includes where previously validated controllers return to position after an extensive period away from that domain. Refer to Section 7.2.3 and 7.2.4.
i. Consider the RT applied (which is assumed to be commonly used) across the ATSU or even ATNS. Annual continuation training to capture more pertinent RT alternative to vague instruction to increase speed.

SCENARIO 2





On 05 May 2022, a LoS occurred at 11:23:00 UTC between an E135 routing FAOR to FAPM and a BE20 routing FAWK to FALE.

At 11:00:40 the BE20 called on 129,1Mhz maintaining FL230, the Area Controller cleared the BE20 inbound to comply with the GETOK1C for RWY06.

At 11:07:41 the E135 made contact maintaining FL370. The Area Controller cleared the E135 direct to DUDMA for the GNSS approach RWY 16.

At 11:13:47 the E135 requested descend (at this stage the E135 is behind the BE20 at 14.8NM). The Area Controller cleared the E135 to descend to FL250. Three minutes later the Area Controller advises the E135 that further descend will be in about three minutes. The E135 acknowledges. (At this stage the E135 is passing FL297 descending to FL250 and is 5.2NM to the right of the BE20 who is maintaining FL230. The E135 groundspeed is 390kts and the BE20 groundspeed is 240kts).

At 11:18:00 the Area Controller inserts a heading of 190 degrees in the third line of the E135 target label but does not issue it. Twenty seconds later the Area Controller descends the E135 to FL240 (the E135 is now 3.1NM to the right of the BE20 who is maintaining FL230).

One minute later the BE20 requested descend. After clarifying who was requesting descend, the Area Controller descends the BE20 to FL190. (The E135 is now passing FL251 descending to FL240 and has geographically passed the BE20. Lateral distance between the E135 and the BE20 is now 2.6NM). thereafter, the Area Controller calls the BE20 and advises them that to facilitate further descend, they should fly right, five degrees. The Pilot read back "right five degrees".

At 11:21:11 the E135 advised that they would not be able complete the descend into FAPM if the delay was delayed any further. In response, the controller issued a left turn of 5 degrees. Twenty-two seconds thereafter, the controller descended the E135 to FL230. At this stage the BE20 was behind the E135, 3.0NM passing FL227 on the descend to FL190, groundspeed 240kts and the E135 is maintaining FL240 with groundspeed of 250kts. At 11:22:10 the Area Controller instructed the E135 to turn further left five degrees, and once established to descend to FL150. Fifteen seconds later, the Area Controller instructed the E135 to descend to FL210. However, at 11:22:38 the E135 advised the Controller that they would require a rate of descend of 1500 ft per minute to make DUDMA at 8800ft".

At 11:22:46 the CAS alert was activated between the E135 and the BE20 (the BE20 was passing FL213 descending to FL190 and was 4.2NM laterally behind the E135, who was passing FL227 descending to FL210). In response, the Controller instructed the BE20 to turn right 10 degrees. Immediately hereafter the E135 was instructed to stop the descend at FL220. (the E135 is now passing FL222 on the descend). Pilot of the E135 replies that they have passed FL220. At 11:23:07 standard separation was lost between the E135 and the BE20. The E135 was passing FL219 descending to FL210 and the BE20 is passing FL210 descending to FL190. The lateral distance between the E135 and the BE20 reduced to 4.8NM.

Forty-four seconds later the standard separation was re-established with lateral distance between the E135 and the BE20 at 5.0NM. In response the Controller instructed the E135 to descend to FL150 and the lateral distance between the E135 and the BE20 increased to 6.1NM and increasing.

At 11:23:58 the E135 reported that they were becoming fuel critical. The Controller requested the E135 to report intentions. The E135 responded by saying, "confirm what time we can start the approach into FAPM" and the Controller instructed them to standby. Durban approach was contacted, and they advised that no delay was expected. At 11:24:30 the Controller advised the E135 that no delay was expected. The lateral distance between the E135 and the BE20 was now 8.8NM. The E135 asked whether they were cleared for the approach and the Controller confirmed and instructed them to contact Durban approach on 125,75Mhz.

The CAS alarm activated when the conflicting aircraft were 1400 ft and 4.2NM apart. Leading up to the CAS activation and after, the headings required for each aircraft to fly so that continuous descend can be achieved whilst standard separation is maintained had not been determined or calculated. The Area controller reacted to the situation as it unfolded and to the pressure exerted by the E135 regarding their profile at DUDMA. The incremental degree issued to each aircraft to turn was reactionary.

The main contributing factors of the LoS were identified as:

i. There was a lack of positive control and although the potential conflict was identified early, a delayed reaction to the identified conflict was observed.

ii. The headings issued to both aircraft during descend for separation appeared to be inadequate to avoid a risk of conflict.

iii. The size of the display screen that is used to monitor and control a large section of airspace referred to as ACC East creates certain challenges when it is required from a controller to zoom into a situation that requires close monitoring, as was the case in this scenario. Larger displays are not necessarily the answer, although that can alleviate the problem in some instances because this phenomenon is not common. However, the alternative would be re-sectorisation in to smaller airspace sectors. The risk emanating from this scenario is the fact that the standard scale setting is inadequate to control aircraft in close proximity of each other while still required to monitor the larger airspace. As a first step, it may be useful to survey similar scenarios to determine how frequently such cases present themselves and, based on such detail, whether further action is required. In addition, training may play some part in skill transfer of controlling micro situations versus monitoring the larger airspace, although secondary screens can assist with this it is not ideal from a human performance perspective and divides attention during critical scenarios.

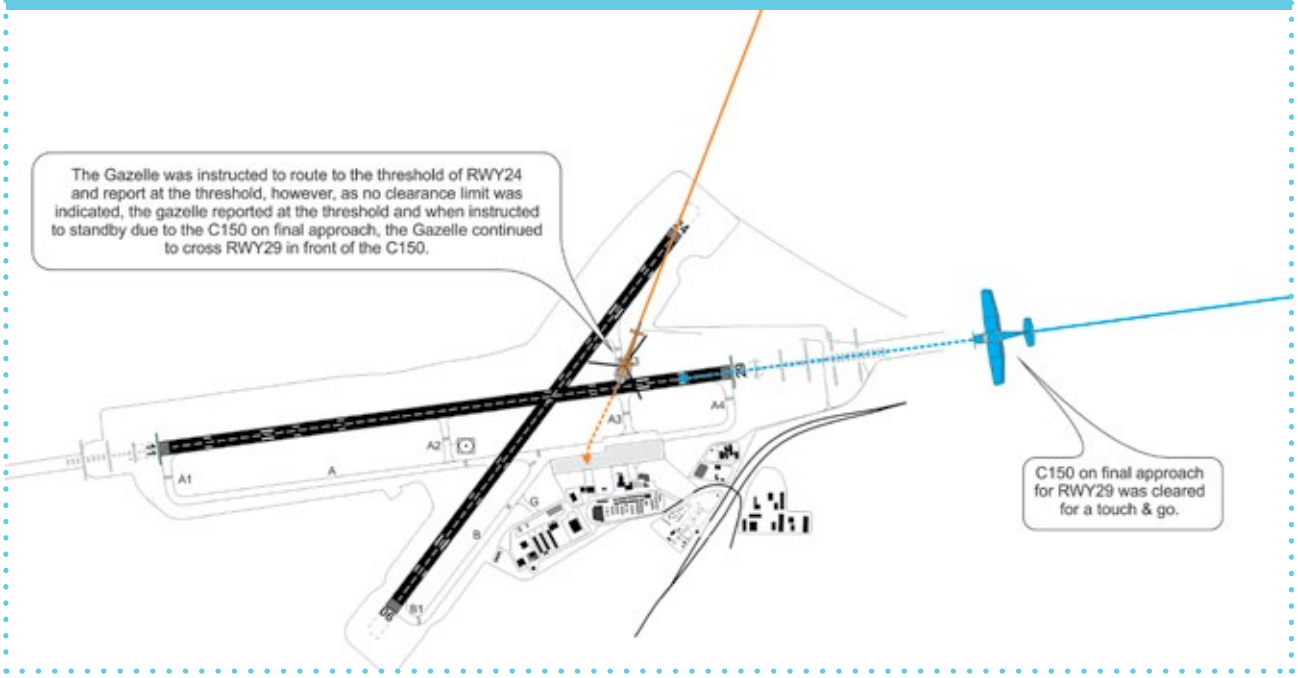
iv. The controller was to be commended for identifying the conflict as the traffic entered the airspace.

v. A total of four turns was issued (on three occasions a turn of five degrees were issued, followed by a turn of 10 degrees) to resolve the scenario. This is considered excessive or perhaps too cautious in not wanting to disrupt the flight path of both flights and may relate to the controlling technique of the controller. Intervening earlier into a situation with a minor turn may be more advantageous to both flights and allow for better fuel efficiency that is considered a critical part of ATNS service delivery in an industry that is still taking strain in the current economic circumstances.

The following recommendations flowed from the findings of this investigation:

- ACC CEW continuation training to include LoS recovery training.
- The PM was tasked to reinforce positive controlling techniques throughout the pool, i.e. issuing headings that are calculated and proven to achieve the desired separation.
- Promote proactive management of identified conflicts instead of reacting when the window of opportunity has reduced.
- The size of the airspace to be controlled (that required vectoring in this case) versus the size of the display screen for ACC East to be noted as a corporate safety risk.

SCENARIO 3



On 28 November 2022, a RI occurred at 11:26 UTC between a Gazelle and a C150. The Gazelle crossed RWY29 in front of the C150 that was on short final approach RWY29.

At 11:18:50 the Gazelle established contact with the Tower Controller and reported that they were airborne from What's Landing airfield, have two persons on board and three hours of endurance, and requested to route coastwise for landing at the general aviation helipad. The Tower Controller advised the Gazelle that they were cleared inbound not above 1500 feet and that they cannot accommodate a coastwise routing.

They instructed the Gazelle to route via the Hemmingway Mall.

At 11:19:48 the C150, which was already in the circuit, reported on a wide left-hand downwind for RWY29 and requested a full stop landing. The Tower Controller advised the C150 that they copied and instructed them to continue on the downwind and to report ready to turn base.

At 11:20:00 the Tower Controller called the Gazelle for a readback. The Gazelle readback to route coastwise, not above 1500 ft, and that they are currently squawking 5003. The Tower Controller corrected the Gazelle and instructed them to route via Hemmingway Mall and to report overhead the Mall. They advised them that RWY29 was in use and that the QNH was 1009.

Forty-five seconds later the Tower Controller requested the Gazelle's aircraft type. The Gazelle replied that they are a Gazelle 341 helicopter, and the registration starts with ZU.

At 11:21:16 the Tower controller instructed the C150 to continue the downwind and to report a PA34 on short final approach RWY29 in sight. Thereafter, the Gazelle was instructed to squawk 5463. The Gazelle advised the Tower Controller that they were unreadable. The Tower Controller repeated the instruction to the Gazelle to squawk 5463. The Pilot copied and readback correctly.

At 11:22:18 the C150 reported the PA34 on final approach RWY29 in sight. The Tower Controller instructed the Cessna to report final approach RWY29, number two. As the C150 reported on final approach RWY29, the Tower Controller instructed the C150 to continue the approach as the PA34 on RWY29 would be airborne shortly. The C150 readback correctly and advised the Tower Controller that it will be a full stop landing.

At 11:24:17 the Tower Controller instructed the Gazelle to route, "threshold of RWY24" and to report overhead the threshold. The Gazelle readback correctly. Where after the Tower Controller cleared the C150 to land on RWY29. Fifty-nine seconds later the Gazelle reported on long final for RWY24. The Tower Controller instructed the Gazelle to report overhead the threshold. At 11:25:55 the Gazelle reported overhead the threshold RWY24 and the controller instructed the Gazelle to standby as there was a C150 landing on RWY29. However, at approximately 11:26:13 the Gazelle crossed RWY29 ahead of the C150 which was on short final RWY29. On observing the Gazelle crossing, the Tower Controller instructed the Gazelle to land pilot's discretion and to report safe on the ground. The C150 continued thereafter to land safely and was cleared to vacate RWY29 on A2 taxiway and cleared to cross Runway 06/24 to the apron.

At 11:27:17 the Gazelle reported safe on the ground.

The findings from this investigation provided the following understanding of the event:

i. The Gazelle crossed the active RWY29 without authorisation or clearance from the Tower Controller. They were cleared inbound and instructed to route to the threshold of RWY24. They did not follow the "right of way" rule to give way to the C152 executing a landing on RWY29, nor did they take into consideration the Tower Controller's traffic information about the C152 that was landing RWY29.

ii. When they reported over the threshold of RWY29, they were instructed by the Tower Controller to standby as there was a C152 landing RWY29. They did not readback this instruction nor did they acknowledged the information, instead they proceeded to cross RWY29 for the landing pad.

iii. At no stage was the Gazelle instructed to hold over the threshold of RWY24, nor was it issued a restriction to remain 50 meters or more north of RWY29. When the Tower Controller instructed the Gazelle to standby, a readback was not forthcoming nor solicited from the Gazelle.

iv. When the Gazelle crossed RWY29 in front of the C152 it was too late for the Tower Controller to intervene, so they issued them with the surface wind and instructed them to land at Pilot's discretion.

v. From the Tower Controller statement, the intention was for the Gazelle to route in order to hold over the threshold of RWY24 and to standby crossing due to the C152 that was landing on RWY29. However, the Tower Controller was ambiguous in their instructions as they had not issued a clear instruction to the Gazelle to hold over the threshold of RWY24 and to remain 50 meters or more to the north of RWY29. So, even though the clearance limit was the threshold of RWY24, positive control through a restriction, was not applied to ensure that the Gazelle remains North of RWY29.

vi. The investigation report indicated a total of 65 hours worked in the previous cycle. From previous safety events it is known that there is a surplus of staff at FAEL, partly due to the closure of FABE. However, there may be a persistent risk at the ATSU based on the number of staff and deterioration in skill maintenance opportunities because of the low hours worked in every cycle. This is also aggravated for some controllers by the fact that they validated FABE with very low traffic volumes and an additional amount of re-validation hours at FAEL during COVID-19 restrictions. It is suggested that a pertinent skills maintenance programme be considered for staff at this ATSU that includes more frequent simulator exposure.

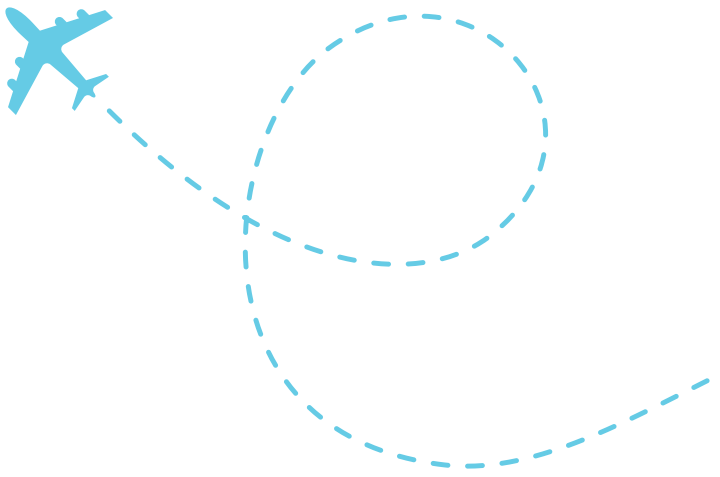
Some recommendations were made to mitigate re-occurrences of similar events:

a. Runway Incursion to be discussed with all staff members in next staff meeting (09 June 2022).

b. ATCs should be encouraged to request pilots to call the tower following an incident if the matter is unable to be addressed on frequency.

c. The importance of insisting on a readback from pilots should also be discussed in both instances mentioned above.

d. Reinforce throughout the unit that all helicopter traffic must be issued positive instructions to hold over a particular position and to be explicitly restricted to remain clear of the active runway (or issued with a clearance limit).



ATNS Just Culture

Dear aviation professionals, we have realised in recent months that there is still some misunderstanding regarding the application of Just Culture. Hence, we hope it will be helpful to share the following explanations again that were published in the ATNS Just Culture brochure.

Please note that a Just Culture intent is to promote safety reporting. Therefore, a Just Culture is focussed on safety related matters. As an example, late coming for a shift resorts outside of the SMS and should therefore follow the normal ATNS disciplinary route.

Should you have any suggestions and even questions, please do make contact with your line manager as well as S&R so that matters can be clarified where needed.

OUR CHOICES , ACTIONS & BEHAVIOURS			
GOOD CHOICES	HUMAN ERROR	AT-RISK BEHAVIOUR	RECKLESS BEHAVIOUR
Result of good system design and good choices. **Managed through:** • Positive re-inforcement • Recognition • Learning from what went well	**Inadvertent actions: slip, lapse, mistake.** **Managed through:** • Creating awareness • Better system or work environment design • Processes and procedures	**A conscious choice to act outside of what is required.** **Managed through:** • Understanding factors leading to change in behaviour/ practice • Adjust process or system design • Policy and procedure review • Education and training • Monitoring	**Conscious and/ or predetermined disregard of substantial risk.** **Managed through:** • Remedial action • Disciplinary processes
ENCOURAGE	SUPPORT	COACH	DISCIPLINE

Drift from good to risky choices and actions

Behavioural drift in the execution of your safety-related duties can occur where at-risk behaviour has become 'normalised' over time, often because people do not experience any untoward consequences, or they perceive that the benefits of their actions outweigh the risks.

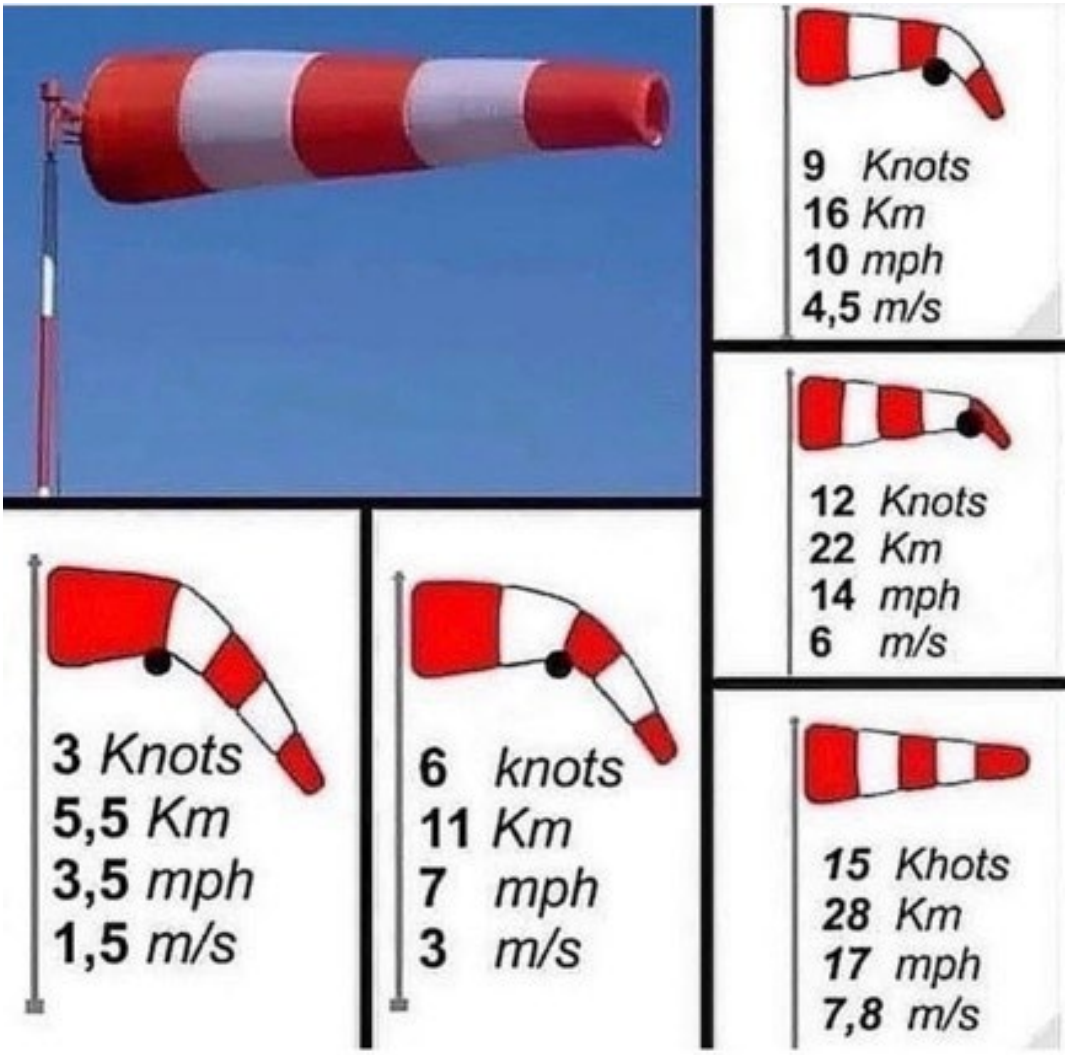
When drift is noticed we should investigate the systems, procedure and processes involved in driving safety to understand the content and what needs changing. This may necessitate further training, communications, or a redesign of the system, rule or process before expectations are re-established. When re-communicating the process and requirements, it is important to outline what needs to be done and why this is important from a safety perspective.

Moreover, it is of paramount importance that wherever change is planned, that the managers and staff working with or affected by such a system, procedure or process is involved in the design of such a change.

Repetitive Behaviours

The suggested responses for Good Choices, Human Error and At-Risk Behaviour are generally for managing once-off occurrences. Where these occurrences become repetitive, consideration may be given to the risk of continuous at-risk behaviour and the unintended safety risks emanating from the drifted safety practice that emerged, provided that behavioural links can be identified.

Safety Refresher Corner



SAFETY-**NET**

Edition **34**

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