

SKYwatch

SAFETY BRIEF

SIXTH EDITION | JANUARY 2023

EDITORIAL NOTE BY THE
DIRECTOR OF CIVIL AVIATION

Keeping our SKIES SAFE

Dear Aviators,

Summer is upon us, and sudden stormy weather is a known phenomenon in our summer rainfall areas, such as Gauteng. This is the time to prepare for the weather and increased flying during the festive season, including the maintenance of aircraft.

On 8 November 2022, the Minister of Transport, Mr Fikile Mbalula, held a press conference to update the media and the aviation sector on the status of aviation. I fully agree with him that our scheduled aviation is among the safest in the world. I would like to congratulate all the aviators and their support sectors on our country's extraordinary safety record of more than thirty years of safe flying by our airlines.

Among others, the Minister mentioned that South Africa in 2017 during the last ICAO audit, achieved a safety compliance rating of 87.39% against a global average of 69,32%. Furthermore, the FAA's assessment of South Africa's aviation safety under their International Aviation Safety Assessment (IASA) programme from 15 to 19 November 2021, confirmed that South Africa complies with the applicable ICAO standards for civil aviation safety oversight and therefore retains its Category 1 status. This means that South African operators can fly or operate directly into the United States, with obvious economic benefits to operators and the country.

We are also elated that during the 41st Assembly of ICAO that took place from 27 September to 7 October 2022, South Africa was re-elected to the seat that we have consistently held since 2003. This seat in the 36-member General Council is for the next three-year period and recognises the country's contribution to world aviation decision-making processes.

This edition boasts very good reading related to aviation safety, such as the pre- and post-COVID accident trends, the dangers of exceeding your maximum aircraft speed, and the National Accident Reduction Week.

As we progress into the new year, I wish all our readers joy, good health and success.

Until next time.

Ms Poppy Khoza
Director of Civil Aviation (CEO)

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NATIONAL AVIATION ACCIDENT REDUCTION WEEK

It is a norm in the transport industry of South Africa that the October Transport Month (OTM) campaign kickstarts at the beginning of the tenth month. The OTM's purpose is to create awareness within the general public about all transport agencies' infrastructure and programmes.

This year, after the launch of the OTM, the South African Civil Aviation Authority (SACAA) launched its first annual National Aviation Accident Reduction Week (NAARW). This is a campaign focusing on brainstorming sessions, aimed at eradicating misconceptions and exposing accident causals and precipitating factors. This National Aviation Accident Reduction Week will serve as a platform for accident discussion workshops.

WHY NAARW?

IN RESPONSE TO THE APPROVED 5-YEAR GENERAL AVIATION SAFETY STRATEGY (GASS), THE SOUTH AFRICAN CIVIL AVIATION AUTHORITY (SACAA) LAUNCHED THE NAARW IN RESPONSE TO THE CALL BY THE MINISTER OF TRANSPORT TO REDUCE THE NUMBER OF ACCIDENTS IN GENERAL AVIATION BY 50%.

To date, there is significant progress, as accidents have reduced by 25%. In 2021/22 as compared to 2020/21, statistics show that Gauteng and the Western Cape provinces respectively, have become major hotspots in relation to General Aviation accidents. As a result, the SACAA hosted the National Aviation Accident Reduction Week events in Stellenbosch, Western Cape Province from 14 - 15 October and Kitty Hawk, Gauteng Province on 22 October 2022 aligned to these hotspots.



STELLENBOSCH AIRFIELD

This two-day event was attended by General Aviation key stakeholders in the province. The Accident and Incident Investigation Division (AIID), SAPS Search and Rescue, South African Search and Rescue Organisation, Air Show South Africa, Western Cape Provincial Government and many more were in attendance.

When welcoming the industry and outlining the purpose of the NAARW, the programme director, Mr Erik du Rand, said the event was taking place to target the General Aviation community in order to improve safety and reduce accidents in GA. He explained that there

will be display validation flights for those who have registered. These validations are required by pilots who fly at air shows. He added that the day will close off with safety talks, with the aim to create an environment for engagement in order to find solutions to the accident causal factors.

The event included exhibitions, accident reduction workshops, talks, an air navigation race, the pre-flight competition, and the landing competition, regarding which some of the activities were disturbed by the weather.

NATIONAL AVIATION ACCIDENT REDUCTION WEEK



SAFETY TALKS

A safety talk was conducted by an esteemed panel of aviation legends, which included Juba Joubert, David Doull, Flippie Vermeulen, and Charlie Marais, under the guidance of Eon De Vos.

Topics such as Good Airmanship and a Safety Mindset, Flight Planning and Preparation, Pre-Flight Checks and Post-Flight Checks, Basic Maintenance and Mechanical Checks Before and After Flights, Currency and Recency, Weather and Avoiding Fatal Traps, Training and Recurrence Checks Vs Renewal Checks, Buddy System/ Continued Improvement, Position Reporting and Communication were amongst the topics discussed.

These talks showed that almost every cause of an accident is the result of human action, either in erring directly during flight, or in the process of design and construction.



The Stellenbosch Safety Talk Panel (L-R Flippie Vermeulen, Charlie Marais, Juba Joubert, Eon De Vos and David Doull)



KITTY HAWK AIRFIELD

Exhibitions

The aviators were met with a vibrant atmosphere when they visited the exhibitors' stands at the NAARW. Various stakeholders and organisations used this opportunity to present their plans and ideas on how to boost aviation safety. The SACAA's GA exhibition stand drew in aviators and the GA team took advantage of this to spread the message of safety, in particular regarding the GAARS campaign.

Furthermore, the AIID stand saw increased engagement with the industry in terms of incident investigations and the solutions required.



NATIONAL AVIATION ACCIDENT REDUCTION WEEK



POINTS OF DEPARTURE

The SACAA has been met with general approval for their hosting of these events. The industry has been very complimentary of the Regulator’s generation of a platform of this sort for GA pilots, engineers, and associated industry members to contemplate their usual, familiar operations. The platform provided a “learning to unlearn” solution-based approach and the SACAA pledges to keep up these events as it strives to keep its “Keeping you safe in the sky” brand promise.

WE HAVE PROVIDED THE LINK BELOW FOR YOU TO WATCH THE HIGHLIGHTS AT THE KITTY HAWK NAARW EVENT:

<https://youtu.be/hPIQH1up5R8>



VNE..... By Dr. Robert Clark

Let’s be honest. How many times have you been tempted to go, or physically gone beyond VNE (the never exceed velocity of an aircraft). Just attend a braai at the airfield, add a few beers, and you will have people discussing their experiences when they exceeded VNE!! They are also the guys who normally land up in hospital with a broken wrist from all the “High Five’s” they get at the braai. Before we get overly excited and congratulate these individuals, let’s take an honest look at what VNE actually is and the perils associated with it.

The acronym VNE suggests that you should not go there. **It states “NEVER EXCEED” for a very good reason** as the aerodynamic forces before, and beyond VNE can have detrimental effects on the aircraft, and dire health consequences on you and your passengers. Structural damage is common beyond VNE, and no pilot wants that headache to deal with in flight.



VNE indicated on the ASI

Some people believe it is 110% of the cruise speed and, therefore you are safe to exceed the VNE in clean air. That cannot be true, as the Jabiru 430 cruise speed is 120 knots, and the VNE is 140 knots.

Research, however, would suggest that there is no correlation between cruise speed and VNE. **VNE, ACCORDING TO LITERATURE RESEARCH, SUGGESTS THAT THIS VELOCITY IS 10% LESS THAN THE MAXIMUM DIVE VELOCITY WHERE THE TEST PILOT DID NOT EXPERIENCE BUFFETING SEVERE ENOUGH TO CAUSE STRUCTURAL DAMAGE.**

So,
what is
VNE?

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If this is true, why don't we descend at VNE as we know that the aircraft has certainly gone faster during the testing phase? Well, there are multiple reasons for not doing this, but let's just look at a few:

I believe the **FIRST REASON**, and certainly the easiest to understand, is that the red-line on your air speed indicator, must be telling you something.

The colour red normally means, stop what you are doing, or there will be consequences! In the case of your aircraft, it most probably will be structural damage. We also associated red with danger. Drive through a red traffic light a few times and your luck will eventually run out. Likewise, exceed VNE once or twice, and your luck will run out!

The warning of imminent danger could be an aerodynamic flutter, a high-speed whistle or the instantaneous destruction of the aircraft. When this happens, you lose your status as the PIC (Pilot in command) of your aircraft and become a passenger of a doomed fuselage without wings that is going to crash and burn.

The **SECOND REASON** is flutter.

Have you ever watched our national flag in a nice steady breeze? It is stable and a beautiful sight but what happens when the wind speed increases? Things start to get unsteady and flutter starts to set in motion, which results in uncontrolled oscillations of the flag.

The same phenomenon happens to your aircraft. When you approach or exceed VNE, the aerodynamic forces can induce a flutter that could be destructive of nature.

Just go onto YouTube and google aerodynamic flutter. The videos are horrifying. Who on earth wants to be in an aircraft with the horizontal stabilizer flapping around uncontrollably?

ARE YOU SAFE TO DESCEND AT A SPEED JUST BELOW VNE?



Well, let's unpack this and you decide for yourself:

- When they test an aircraft for VNE prior to certification, the aircraft is brand new and in mint condition. It is most probably true to say that most aviators don't fly brand new aircraft. What about your 25-year-old aircraft that has been in a training school for 20 years and withstood the abuse of student pilots and flight instructors demonstrating flight maneuvers that are not common in everyday flight? Do you still apply the same rules to VNE? Materials do change when subjected to stresses, especially when these stresses exceed the elastic deformation limit of the material. Are you still prepared to stress your aircraft as if it was brand new?
- The testing for VNE is done in a controlled manner, with a test pilot who has a parachute, in perfectly calm conditions and in a brand-new aircraft. Have you thought what happens if you are approaching, or exceeding VNE and you hit turbulence or a gust of head wind? Just stop what you are doing and think about it. What you think is a good idea with the wind whistling in your ears could turn into a catastrophic event in half a second. Just think about that. Your entire life of working hard for a better future, raising a family, spending time with loved ones, having a loving spouse, having family holidays in Thailand, owning your own aircraft, living on a farm, being blessed with grandchildren.....all that ends in half a second. Is it still such a good idea?
- The third reason is that there is no reason to ever go near VNE. If you are flying to your favorite destination for a weekend away with the family, start the descent earlier. Who really cares if you are not the first plane to arrive at the destination? It is not a race and should never be seen as that. Aviation should be fun, not a race to see who lands first by pushing the flight envelope of the aircraft.

I urge you to reconsider your actions if you have consciously exceeded VNE.

The problem when you approach VNE or the exceedance thereof, is that the associated aircraft failure is normally instantaneous, with dire consequences. Who wants to be 5 000 ft agl (above ground level) without wings, knowing that the next 20 - 30 seconds are going to be a totally helpless and terrifying situation?

There is also the debate as to whether VNE is based on IAS, or TAS? The answer seems to be type specific. Before your next flight, ensure you know what is applicable to your aircraft before you land up on the wrong side of VNE.

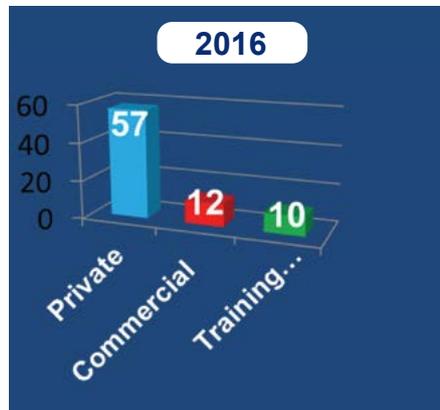
AS A RESPONSIBLE AVIATOR, PLAN YOUR DESCENT AND PLAN TO CONSCIOUSLY AVOID VNE. BUY A FASTER AIRCRAFT IF SPEED EXCITES YOU, BUT DON'T BE IRRESPONSIBLE AND EXCEED THE FLIGHT ENVELOPE OF YOUR AIRCRAFT. THE CONSEQUENCES COULD BE CATASTROPHIC TO YOU, AND YOUR LOVED ONES THAT YOU LEAVE BEHIND.

TREND MONITORING PRE- AND POST-COVID

*The following information was compiled by the General Aviation Safety Strategy Trend Monitoring Focus Group to determine a possible trend in pre- and post-COVID Accidents and Incidents.



PRE-COVID



From 2015 to 2017 the majority of accidents were in the private sector.

2018

In 2018 there was a total number of 82 aircraft accidents in South Africa. 72% of the 82 accidents occurred in the private sector / non-commercial aviation.

From JAN 2018 – JAN 2019, 56% of the accidents in GENERAL AVIATION were CAUSED by FLIGHT CREW/ PILOTS.

PRE-COVID CAUSAL FACTORS DIRECTLY RELATED TO FLIGHT CREW FROM JAN 2014 – JAN 2019

47%

caused by poor airmanship or technique

LACK OF GOOD JUDGEMENT, DECISION-MAKING AND WELL-DEVELOPED SKILLS TO ACHIEVE SAFE FLIGHT.

18%

caused by failing to maintain flying speed and stalling

16%

caused by losing directional control during take-off

9%

caused by a blatant disregard for regulations and /or procedures

IF THE PILOTS ADHERED TO THE REGULATIONS AND/OR PROCEDURES, THE ACCIDENTS COULD HAVE BEEN AVOIDED.

5%

caused by spatial disorientation VMC into IMC

POST-COVID

2020

In 2020 the majority of the accidents and serious incidents in General Aviation, recreational aviation and the training environment were in the category of **"LOSS OF CONTROL"**.

There was a total number of 102 accidents and serious incidents, of which 49 were in the category of 'loss of control'. Most accidents related to the pilot and the human factor.

The focus group embarked on analysing the 'Loss of Control' accidents and serious incidents. The accidents and serious incidents in the category of 'loss of Control' are due to the following two trends that have been identified:

CROSSWIND COMPONENTS

- Accidents occur at airfields with a known crosswind component
- With the accidents related to crosswinds, the majority of the flight crew are student pilots and training flights
- Probable causal factor: Lack of crosswind training

- Probable causal factor: Lack of known weather phenomena at certain airfields.

LACK OF STABILISED APPROACHES

- Accidents occurred after long navigational exercises (training and normal GA/RA environment)
- The majority of flight crew were student pilots
- Deep landings and aircraft "ballooning" were factors
- Probable causal factor: Lack of go-around procedure training/decision-making.

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TREND MONITORING PRE- AND POST-COVID



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2021

In 2021 the majority of the accidents and serious incidents in General Aviation, recreational aviation and the training environment were in the category of “Loss of Control”.

There was a total number of **160** accidents in 2021 of which **131** accidents and serious incidents were in General Aviation, recreational aviation, and the training environment. **66** (50%) of the accidents were in the category of ‘loss of control’.

Loss of control on ground:
20 Accidents

Loss of control in flight:
17 Accidents

Abnormal runway contact:
22 Accidents

Loss of lifting conditions/stalling:
3 Accidents

THE FOLLOWING TRENDS HAVE BEEN IDENTIFIED:

1 RUNWAY EXCURSIONS (ON GROUND AND ABNORMAL RUNWAY CONTACT)

Due to:

- Loss of directional control after landing
- Not adhering to aircraft limitations during landing
- Lack of a stable approach, incorrect procedural speeds
- Loss of directional control during the take-off roll.

2 LACK OF STABILISED APPROACHES (ABNORMAL RUNWAY CONTACT)

Due to:

- Not adhering to aircraft limitations
- Hard landings that caused structural and mechanical failures
- Crosswind components causing uncontrollable situation during landing.

3 UNSUCCESSFUL FORCED LANDING

Due to:

- Engine/mechanical failure during take-off and climb
- Some accidents caused by fuel starvation
- Mechanical failure due to fatigue and abnormal operating limits
- Probable causal factors: incorrect procedures and technique for a forced landing after take-off
- Poor judgment and decision-making
- Poor technique and execution.

4 OTHER

- Collision with obstacles (power lines),
 - Not adhering to regulations and a lack of situational awareness and airmanship
- Disregard for aircraft limitations.

As per the pre-COVID statistics, the loss of control accidents can also be classified as poor airmanship and technique. Although no aviator intends to kill himself or his/her passengers, a lack of good judgement, the incorrect decision made under high pressure situations, the disregard for limitations, procedures and regulations and a lack of knowledge or skill equates to poor airmanship.



SACAA successfully hosts OCTOBER TRANSPORT MONTH 2022 CAREER EXPO

Transport Month was proclaimed in October 2005 for all transportation infrastructure service providers, including aviation, maritime, public transportation, and roads. The month of October is also used to further advance the country's road safety initiatives, while creating awareness of the economic benefits of the sector. After the launch of October 2022 Transport Month (OTM) by the Department of Transport, the South African Civil Aviation Authority hosted its annual Career Expo without the famous air show. The event was hosted in partnership with Airports Company South Africa at the Bram Fischer Airport in Mangaung in the Free State Province on 13 October 2022 And was supported by the Free State Provincial Departments of Education, Police, Roads and Transport, TETA and other key aviation stakeholders.

The OTM 2022 Career Expo aimed to provide an ongoing, reliable, and useful platform where learners, educators and other interested parties come together to create new learning opportunities and learn about scholarship programmes in the aviation industry. The focus was on introducing 795 learners from previously disadvantaged schools in Mangaung and the surrounding areas of Koffiefontein, Trompsburg, Petrusburg, Gariep and Tweespruit to the world of aviation. In addition, the learners were encouraged to seriously consider the transport sector as a possible career choice.

The SACAA Acting DCA for the day, Mr Themba Thabethe, outlined the purpose of the day. "I am delighted to see all the learners and the aviation experts together at what promises to be a day full of excitement and introduction to the world of flight and the advances of technology. Much planning and effort has gone into creating this day, and I think it will be a day worthy of the intention of Transport Month and the larger goal of introducing young people to the possibilities of careers in aviation," he said.

He continued to outline challenges in aviation, the approaches and the activities that the SACAA has implemented to develop aviation, as well as achievements and opportunities in the industry. "Although it is easy to talk about the pipeline of experts for the future, this is easier said than done. There are numerous challenges for aspiring aviation experts, which include the need for exposure, training and work experience. However, at the SACAA we have developed a structured approach to these challenges. We meet these challenges by firstly exposing learners to the world of aviation, as we are doing today; secondly by being financially

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SACAA successfully hosts OCTOBER TRANSPORT MONTH 2022 CAREER EXPO

involved, such as with our bursary and IFLYSTEM programme, and thirdly by providing employment experience through our Industry Partnership Trainee Programme.”

“By following this approach, we are solving the mentioned challenges with exposure to aviation career fields, access to training, and experience in the workplace. Exposure takes place by means of our Aviation Awareness Programme, which includes school visits, youth shows, Aviation Career TV and a Community Radio Campaign.”

“I am happy to report that these programmes have proven to be successful.



For example, in the last year, a total of **270 schools were visited** and a total of **34 881 learners were reached** across the country. **32 interviews were conducted** at radio stations in the last year, and the community radio campaign's combined listenership was more than 8 million.”

“The bursary programme is offered to young aviators who are in need of funding to access careers within the aviation industry and focuses on Pilot Training, Aeronautical Engineering, Aircraft Maintenance Engineering & Cabin Crew Licences. The SACAA is proud to report that 70 students have benefited from this programme since 2013.”

“The third solution for the challenges that face learners and students, namely employment experience, is achieved through

partnerships with the industry. The SACAA has secured partnerships with local airlines and maintenance organisations to provide practical training experience to bursary students such as the Aircraft Maintenance Engineering students. The SACAA continues to provide stipends, meals and accommodation costs to support the students while they are in training.”

“Furthermore, the Trainee Programme is dedicated to attracting young graduates and to develop and empower them with appropriate skills and experience needed to be appointed in aviation jobs. Although this is a way of developing a pipeline for critical and scarce technical jobs, it has also been used to build capacity for other critical and scarce, non-technical positions. Trainees receive practical exposure and theoretical training about the aviation industry to acquire specific aviation-related skills and formal qualifications. They then get opportunities for full-time employment with the SACAA in line with the Recruitment, Selection and Appointment Policy,” he concluded.



The Free State Department of Police, Roads and Transport, MEC William Bulwane, emphasised that learners who want to pursue a career in aviation must take courses in Mathematics and Science. He encouraged learners to choose subjects that will enable them to study and choose careers in aviation. “Make sure that you are following the studies in the subject stream required to qualify yourself to be able to get trained as a maintenance engineer, pilot, safety operations inspector, and so on. Some of these career choices require you to study in the Science, Technology, Engineering and Mathematics (STEM) subjects, and the sooner you know what subject choices to make at school, the better.”

SACAA successfully hosts OCTOBER TRANSPORT MONTH 2022 CAREER EXPO

What would these future jobs require from the learners present here today? First and foremost, it is important that you become aware of your options in terms of careers; so, do make the best of the opportunity to become aware of all the job options in aviation, of which there are many; and not all are technical or aeronautical," he said. The MEC further touched on the

transformation in the aviation industry. "We also need to speed up the pace of transformation in the aviation industry so that it reflects the demographics in the country. This is a very important feature of today's events. Although progress has been made in terms of the transformation of the aviation industry, it is still much too slow for us to even make noise about," he concluded.



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The SACAA and Safety Outreach FG would like to acknowledge the efforts and contributions of its own staff and other external parties involved for their dedication towards making this publication a success.

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