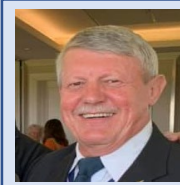




Flying Spirit

February 2021



President's Message

Col Mike Louw (ret)

Here we are, at the start of 2021, and the world around us seems as if it has not yet left the year 2020, a year which for many was a year filled with fear, trepidation, isolation, loneliness, ill-health challenges, heartache, and grief. And so, it continues. In the beginning, the Covid-19 pandemic was mere statistics to most of us, then the statistics started getting names, then some of the names starting sounding familiar, and then familiarity became names of people we knew, and then it got a lot closer to home, immediate family and friends. Never in our 75-year history has such devastation been wrought on mankind, and SAAFA has not been exempt from this.

A brief scroll through social media platforms will provide ample evidence of the fact that both SAAFA members and past members of the SAAF have been affected by Covid-19, in some cases tragically so. During the past two months the SAAFA, and by extension, the SAAF has been racked with the passing of a number of our friends and colleagues due to Covid-19 related complications. In one particular family, there were three deaths in the space of three weeks, brother, sister, and her husband. We have sadly also lost a number of our comrades owing to natural causes. To the family and friends of all these persons, I would like to express my sincere condolences. My prayer is that the Lord will comfort and strengthen you during this time of bereavement.

It is only in our darkest hours that we may discover the true strength of the brilliant light within ourselves that can never, ever, be dimmed. However painful they are, setbacks, failures, and tragedies are a part of life. Whether we manage to find joy in the daily struggle of life and achieve success is largely dependent on our ability to persevere through even the toughest adversity without giving up. It is at times like these that we as SAAFA need to exercise real camaraderie, albeit from a physical distance, and in this regard is a beacon of hope can be a powerful source of reassurance to many of our elderly and frail members.

Despite the current new threat, we need to be optimistic, to be hopeful, and to be thankful for what we have.

The past year has also had a further impact upon the SAAFA, especially in terms of a decline in the numbers of persons who have paid their annual levies, which includes capitation fees, as well as the inability of Branches to hold fundraising and social events, due to the lockdown restrictions. This obviously impacts negatively upon the ability of several Branches to continue with financial and other support to beneficiaries in need. Some Branches have managed to persuade a number of their members to continue to pay a nominal amount towards "virtual lunches" which is then utilised for the benefit and support of their beneficiaries. This is truly commendable and serves as examples of service above self.

Let us continue to truly live out the values of our Association in being a source of comfort and strength to those most vulnerable among us, and to continue to maintain and foster friendship, comradeship, and good fellowship among all members. Let us continue to bear one another's burdens during the challenging and unknown times that still lie ahead.

No storm can last forever, happier days are surely coming.

God bless.

MILITARY ATTACHÉ AND ADVISOR CORPS'



MAAC

And just as we all thought life was going to become easier, so Aunty Rona's "second wave" struck, doing so with great ferocity and it is unlikely that any of us has not been touched by the pandemic in some way.

In terms of MAAC activities, the "second wave" very understandably resulted in postponements of planned events and functions. The situation has been exacerbated by the discovery of the so-called "South African strain" which led to additional travel embargoes, much of the world believing that the strain originated in South Africa, rather than the fact that South Africa had virologists of sufficient expertise to recognise the new strain, and hence it being named the "South African Strain", or SARS-CoV-2.

Against this background, the Military Attaché from the Republic of China (Taiwan), Col Jeffrey Cheng Hung Lin, RoCAF, took his leave of South Africa after a tour of three and a half years. Col Lin has been replaced by Colonel Thomas Chi Tang Liu also a member of the RoCAF. Col Liu is a fine fellow and we look forward to interactions with him and his family in the years to come.



very kindly provided our international guests with a VIP and extremely interesting tour.

Col Liu was introduced to the SAAF by way of a visit to the SAAF Museum, AFB Swiie, where WO Alan Taylor

Col Lin decided that as a farewell he would host certain of his closest friends and associates to a game of golf at Wingate Park Country Club, followed by non-alcoholic drinks. It was a splendid day, and National President Mike Louw presented Col Lin with a SAAFA shield in recognition of his extraordinary friendship with SAAFA. At the same ceremony, Col Liu was invited to become an Honorary Member of SAAFA, an offer he accepted with alacrity.



Groupie at Wingate, masks off for photo to enable ID.

Col Jeff Lin has been an outstanding Attaché for his country, despite his Embassy not having diplomatic accreditation in South Africa, he nonetheless persevered in his duties with enthusiasm and vigour, resulting in tremendous success and the genuine affection and respect of his peers and colleagues. He will certainly be missed very much indeed.



Mike Louw presenting Col Jeff Lin with a SAAFA shield

As a post-script, the SAAFA National Executive agreed unanimously that Col Lin be invited to remain an Honorary Member, such was his enthusiasm for and generosity towards our Association. He already considers himself the sole member of the Taiwan Branch of SAAFA!



Mike Louw; Col Jeff Lin; Philip Weyers; Craig Standton; Col Thomas Chi Tang Liu



- ◀ No parades or functions were attended in the last four months.
- ◀ There hope that the lunch routine will be resumed soon.
- ◀ A newsletter has been prepared by Roelf Rossouw and will be distributed soon.
- ◀ First meeting for the new year is probably going to take pace in February at the Moth Cottages.

SAAFA



- ◀ At the end of December 2020 there are officially 81 names listed on the Whale Coast Branch database.
- ◀ One member has resigned and 3 members have deceased.
- ◀ A memorial service was held for Alec Kitley (Snr) in Gansbaai, on Thursday, 31 December 2020.
- ◀ The staff at Kidbrooke Place, Hermanus, reported that the Welchmans are doing just fine.
- ◀ The second 2020-edition of Whale Coast Flier was distributed on 18 December 2020.
- ◀ Decision was taken to cancel the luncheon of 18th December 2020 and to arrange the next luncheon to coincide with the Annual General Meeting scheduled for Wednesday, 17th March 2021.
- ◀ As we are all being affected by this situation; we need to emphasise that all planned activities for the branch might have to be rescheduled or cancelled if and when so required.

SAAFA



- ◀ The Pietermaritzburg Branch did not hold a lunch in the month of December 2020.
- ◀ The membership of the SAAFA Pietermaritzburg Branch remained at 10 members.
- ◀ No parades or functions were attended during December 2020.

SAAFA



- ◀ Nothing new for January – Invoices will be sent out to members.
- ◀ SAAFA 75 Whisky Raffle was drawn at November lunch. (Winner Shirley Stones)
- ◀ WAAFS might have a meeting on 18th January depending on outcome of Government decision on 15th January about Lockdown.
- ◀ SKYLINE, SAAFA JHB's Newsletter for December was sent out on 14th December and was well received.
- ◀ The further Government decree on gatherings means that we cannot have a lunch on 29th January 2021.
- ◀ The SAAFA JHB Banquet planned to be held at Indaba Hotel on Saturday 27th February has been cancelled.
- ◀ A new venue (same date??) is still to be decided and booked. Covid dependent.
- ◀ The SAAFA Johannesburg AGM is due to be held on Friday 26th March at a lunch.
- ◀ SAAFA JHB Secretary has resigned and will be leaving office on 31st January. The Committee records their thanks to Carol for her 17 years of service to SAAFA and the Branch and wishes her Godspeed in her retirement and as she spends more time with her family.

SAAFA



- ◀ Our best SAAFA Outeniqua wishes accompanies this message. There is not too much of a change to the November report so this is (to an extent), déjà vu.
- ◀ 76 active members at present.
- ◀ We have been unable to enjoy our monthly traditions for reasons known all too well.
- ◀ I propose these monthly reports (until there is a return to normal business), be submitted quarterly.

SAAFA



- ◀ No parades of functions were attended during the month of December 2020.
- ◀ The Annual Christmas Lunch was held at the Royal Natal Yacht Club in the Durban Harbour on Friday 4 December 2020, which was attended by 34 members.
- ◀ The next lunch will/maybe/might/possibly/probably/perhaps/conceivably be held on 5 February 2021; who knows in these uncertain times?
- ◀ Members stated that they would prefer to attend monthly lunches at a more central venue such as the Royal Natal Yacht Club.

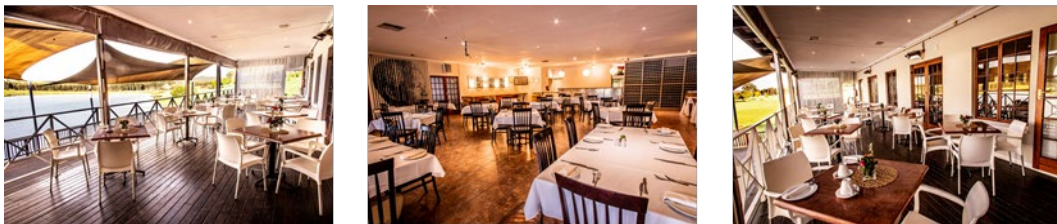
SAAFA



SAAFA

SAAFA CONGRESS 2021

St Ives Lodge and Venue



COLIN TRADER



1922 – 2021

Colin Trader, for many years the devoted Chairman of the SAAF Association Port Elizabeth Branch and passionate about the SAAF and SAAFA, passed to higher service on 16 January 2021. For many years, the life and soul of SAAFA Congresses, Colin will remain always a SAAFA legend to those who enjoyed his infectious company. The following is a very personal reflection from Mark Kelbrick, OIC SAAF Museum Port Elizabeth, Vice-Chairman of SAAFA Port Elizabeth, a friend of Colin's for 20 years and who shares Colin's passion for the SAAF, SAAFA, and our Heritage.

“There are many platitudes and clichés that one could give at such a somber time as this:

He was loved by all

He will be missed by all

He was a great man

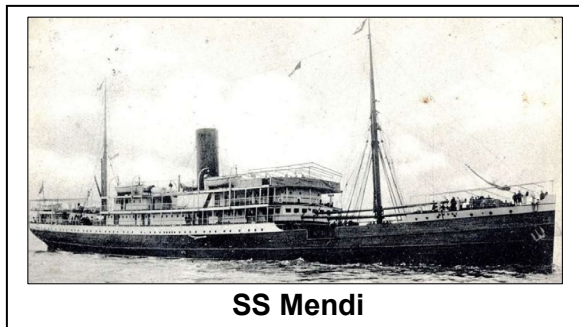
They're in a better place, etc., etc and I'm sure that at some point or another we've all been guilty of using these sometimes-indifferent statements. However, in my experience of Colin Trader and especially his involvement in the SAAF, these words fall egregiously short of the mark. He comes from a generation and caliber of men and women that I believe will never again walk the face of this earth. A generation who stepped up when the call was sounded and was prepared to pay the ultimate price for those that weren't even born yet, namely us. After the war, when most folks only wanted out he stepped up again and for the next almost 76 years, short of 10 days if my facts are correct, dedicated himself to the 4 pillars of the SAAF Association, firstly being benevolence by helping those again that were not able to help themselves; secondly helping to preserve the heritage and image of the Air Force; thirdly attending as many memorial services as he was able to so that we may never forget, and lastly maintaining good camaraderie amongst the members of the SAAFA with a glass of white wine, or 3. I have many fond memories of my times spent with Colin, not only of him wanting hugs from my wife Megan and her pretty friends but also of his tremendous knowledge of all things Air Force. This created in me a passion for SAAF heritage for which I am eternally grateful and one which serves me daily in my appointment at the SAAF Museum.

Through the values, he instilled in me and I'm sure the many other values instilled in all of you, his memory and spirit will linger with us until we too have passed through the veil to join him once again in the spirit of camaraderie that he so enjoyed *Per Aspera Ad Astra – Through Adversity To The Stars*”

The SS Mendi

A ship history forgot

(Wessex Archaeology/ www.iwm.org.uk/history)



SS Mendi

History records many ships as lost at sea, far from home. The exact circumstances of the sinking are often poorly known, the deaths of passengers and crew recorded a silent tragedy. Few of those ships are famous in one continent and all but forgotten in another. The steamship *SS Mendi* is one of them.

On the night of 21 February 1917, more than 600 men of the South African Native Labour Corps (SANLC) lost their lives in the sinking of the *SS Mendi* - the largest single loss of life for the non-combatants in the SANLC during the First World War.

Global conflict

The First World War rapidly became a new type of war. It was the first war to be seen as global in extent. The scale of death and injury on the Western Front was unprecedented.

As more and more soldiers were sent to the trenches, keeping them supplied became even harder. Soon Conscientious Objectors and the medically unfit had been drafted in to serve as laborers. As the scale of conflict continued to escalate, troops were brought in from around the British Empire. And from across the Empire and beyond came laborer's: The Foreign Labour Corps.

For the administrators of the Empire, the demands of the war posed a dilemma. The need for more men was clear but mindful of the possible consequences, there was a reluctance to train and to arm non-whites, and especially Black Africans.

But the need for more men, especially laborers continued to grow, and the pressure increased. Some of this pressure came from black and colored subjects of the empire who wanted to serve. Eventually, a compromise was reached; they could serve in supporting roles, under the command of white Commissioned Officers. The non-combatant Foreign Labour Corps was born. Soon units were formed around the Empire, from India to the West Indies, totaling 300,000 men.



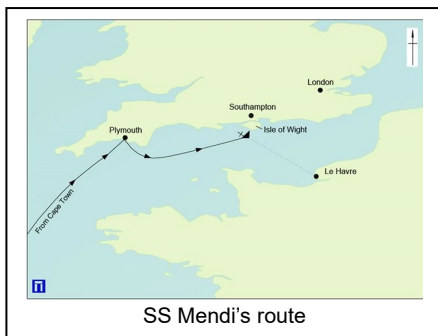
Non-combatant Foreign Labour Corps

Over 70,000 of them formed the South African Native Labour Corps, working first in German South West Africa and East Africa, and then in France. It was for the French port of Le Havre that the Mendi was bound in February 1917. Aboard were 823 men of the 5th Battalion South African Native Labour Corps.

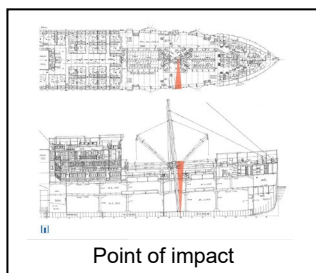
The sinking of the Mendi

The Mendi had left Cape Town on January 25th, 1917. She stopped three times, delivering cargo, and taking on supplies. Firstly, in Lagos in Nigeria and then in Sierra Leone, where a small gun was fitted to the stern. Her last stop was Plymouth, England, on February 19th. She sailed for France the next day. On this last, hazardous, leg of her journey, she was escorted by the destroyer HMS Brisk.

The sea was calm but after midnight thick fog surrounded the Mendi. She had to slow down until she was barely creeping forward. As German U-boat submarines hunted in the area, slowing down was dangerous. By 04:57 a.m. the Mendi was 11 nautical miles (20 km) off the southern tip of the Isle of Wight.



Suddenly the steamer Darro emerged from the dark and fog. The Darro was a mail ship, twice the size of the Mendi. She was sailing at full speed. She drove into the side of the Mendi amidships, cutting into the hold where men lay asleep.

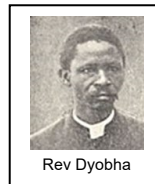


The aftermath

The damage was fatal. As the Mendi listed further and further to starboard, none of the lifeboats on that side could be launched. Although the port lifeboats were launched and there were life rafts and lifebelts, few of the men could swim. Most had never seen the sea before they boarded the Mendi at Cape Town.

The Mendi sank within 25 minutes. Almost 650 men, both crew and Labour Corps died; drowned, or killed by the cold.

Inexplicably the Darro offered no help. The survivors, picked up by HMS Brisk and then other ships, told tales of bravery and selflessness. The story of the chaplain, the Reverend Isaac Dyobha leading a Death Dance has become famous in South Africa. According to the story, the men formed ranks on deck and Reverend



Dyobha addressed them.

'Be quiet and calm, my countrymen, for what is taking place is exactly what you came to do. You are going to die, but that is what you came to do. Brothers, we are drilling the death drill. I, a Xhosa, say you are my brothers. Zulus, Swazis, Pondos, Basothos, and all others, let us die like warriors. We are the sons of Africa. Raise your war cries my brothers, for though they made us leave our assegais back in the kraals, our voices are left with our bodies.'

The South African parliament stood to mark the loss of the Mendi, the second-worst loss of South Africans in World War One. An Inquiry was held and the Master of Darro was found to blame, but controversy raged as to why so few survived. The survivors, over 200 of them, were taken back to England before being assigned to other battalions and sailing for France to work in the docks and construction.

They were the last men of the South African Native Labour Corps to be sent to Europe. The Armistice that ended the First World War came into effect at 11:00 a.m. on the 11th of November 1918.

The legacies

The story of the *Mendi* received little mention in histories of the War written in its aftermath, but the memory of the men and the injustice dealt with them after their death was not forgotten. Told by word of mouth rather than the written word, the story became an icon of unity and a symbol of injustice in the struggle against apartheid.

Since the ending of apartheid, the loss of the *Mendi* has become part of official histories and marked in many ways, including remembrance ceremonies and the making of memorials. The Mendi Memorial in Heroes Acre at the Avalon Cemetery in Soweto was unveiled by President Nelson Mandela and her Majesty Queen Elizabeth II in 1995. Meanwhile, the *Mendi* itself lay far away, all but lost to history.

In Britain, the names of all those who died that night are inscribed, along with those of other service personnel who have no grave but the sea, on the Hollybrook Memorial in Southampton. But it was not until 1974 that the wreck of the *Mendi* was identified correctly.

The Ship

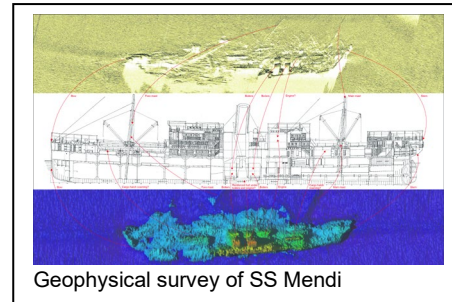
The *Mendi* was launched on the River Clyde in Glasgow in 1905. The 4230-ton steamship was built by Alexander Stephen and Sons. She was owned by the British and African Steam Navigation Company, part of the Elder Dempster Group, and used on the Liverpool to West Africa mail and cargo run, a route that followed part of the earlier slave trade, from Britain to Africa and then America.

In the autumn of 1916, the *Mendi* was contracted to the British Government for war service. She was sent to Lagos, Nigeria to be fitted out as a troopship. Three cargo holds were converted for troop accommodation. The officers were housed in the existing passenger accommodation above deck.

The *Mendi* transported Nigerian troops to Dar es Salaam, Tanzania, to fight in German East Africa before returning to South Africa to set out on her fateful voyage to France.

The Wreck

The wreck was first located in 1945 but she was not correctly identified as the *Mendi* until 1974. She lies in deep, murky, water and so has rarely been visited by divers. Those who have, say that she sits upright on the seabed. Parts of the bow and stern are quite well preserved, but she has broken apart in the middle and parts of the boilers and engine can be seen.



There is a growing awareness that the *Mendi* can be treated as war grave but some pieces, such as porthole surrounds have been brought to the surface by divers as souvenirs or to sell. Some have been given to museums in Cape Town, Port Elizabeth, and on the Isle of Wight.

The future

In today's South Africa the story of the *Mendi* has a prominent role in reconciliation and is used as a symbol of reconciliation. In Britain, this significance is largely unknown, and her story is obscure. Around the world, the roles of the various Foreign Labour Corps in the First World War have been little explored.

Archaeology provides a way to rediscover a part of the story of the *Mendi* that has been lost. It is hoped that more scientific surveys of the wreck can be made. Hi-tech geophysical surveys and Remotely Operated Vehicles with cameras can allow us to see beneath the sea and at last, discover a ship that history forgot.

Last

One of the survivors of the sinking, Jacob Koos Matli, described how the trauma stayed with him. Traveling on another transport ship during the war he recalled that 'every time I heard the whistles I would jump up and tell the sailors that this ship was also sinking'.

PATCHEN EXPLORER



By

Maj Gen Des Barker (FRAeS, MSETP, SAAF Rtd)

(A summary of some interesting aspects of the *Explorer* flight test conducted by the SAAF Museum)

Not having been designed to comply with universally accepted standards and regulations, experimental aircraft designs sometimes offer interesting phenomena for test pilots since they may exhibit unusual dynamic behavioural characteristics with deviations from what is regarded as 'conventional' qualities not commonly found on type certified aircraft.

In most cases though, the experimental designer has designed for a specific mission requirement on a functional airframe that should, in theory, be 'vice less'. Marvin Patchen's 1972 *Explorer*, the only one in the world, was designed as a land-based version of the Teal Amphibian utility aircraft in the NORMAL category.

Having found its way to South Africa from the USA, this design possessed several features required for visual reconnaissance, namely, a high level of stability about all axes, docile handling qualities to reduce pilot workload, a design manoeuvre speed of 100 mph, more than 180° unobstructed horizontal and 135° forward vertical field of view, and a small radius of turn, amongst others.

It was these features that presented a possible solution for a 'quiet visual recce' aircraft during the early 1980's which saw the transfer of the *Explorer* to the SAAF's Test Flight and Development Centre (TFDC) at AFB Waterkloof. The tasking placed on the TFDC was to evaluate the Patchen *Explorer* in the 'quiet, visual reconnaissance' role.

However, military operational planners have to consider more than the performance and handling aspects of an aircraft, survivability

in a hostile environment is paramount. The classic adage of "don't go to a gunfight with a knife", prevented the *Explorer* from ever being seriously considered for use within an operational environment where the 'bad guys' shoot back.

A 100-mph target at 1,000 ft agl does not require the shooter to have to make significant allowance for 'lead' and gravity drop, making such aircraft an easy target for 'low skilled shooters'. With no future operational application in the SAAF, the *Explorer* was eventually transferred to the SAAF Museum as a 'one off' prototype.

Design Features

A design feature for an amphibian is to locate the engine above the wing to avoid water contamination. With the engine positioned just behind the main wheels and converting from the tail wheel Teal Amphibian to a land-based nose wheel configuration, however, made the aircraft critically sensitive to balance, particularly the landing flight phase.

With two pilots in the cockpit, the aircraft centre of gravity moved ahead of the forward limit, with attendant adverse handling conditions which had to be catered for by a

procedure of moving the second pilot's seat fully backward during landing to reduce the longitudinal stability and enable the pilot to be able to generate pitch attitude for the flare to land.

Historical reports on the *Explorer* in SAAF service recorded an inordinate number of incidents of nose wheel damage which eventually led to the SAAF grounding the aircraft. The three causal factors to heavy landings could be found in the 'heavy nose' caused by the forward centre of gravity, too high a flare for landing and closing of the power to flight idle too early, which instantly reduced the energy over the empennage, leaving the pilot with a helpless feeling of pulling back on the stick with no ability to prevent the nose down pitching moment onto the nose wheel; the only change being the expression on the pilot's face.

The Flight Test Programme

The *Explorer* had not flown since 2001 and had been stored in a SAAF Museum hangar with minimum inhibition measures taken on the basis that the aircraft would never be restored to flight status in the future. But, as in all things in life, "never say never" because eleven years later, the decision was reversed.

Objectives

The 'return to Service' flight test programme essentially focussed on the serviceability of the engine, airframe, and systems to validate the known performance and handling qualities listed in the POH. Unfortunately, the POH is rather 'Spartan' with the bare minimum amount of performance information presented, making performance validation rather intriguing at best, particularly in determining the actual conditions under which limited original flight testing of the prototype was conducted. There was no checklist or operating procedures available which required the compilation of such prior to releasing the *Explorer* to the SAAF Museum. The flight test profile was limited to performance and handling tests on the ground, take-off, climb, stalling, maximum speed, and several handling qualities tests.

Conclusion

The objectives of the flight test programme were achieved in that the aircraft was declared serviceable for flight, the performance and handling qualities were assessed as acceptable for operation by the SAAF Museum pilots and the required checklists and operating procedures were promulgated. When bringing back vintage aircraft to flight condition, it is prudent to have the original data on the performance and handling qualities of the aircraft available in an effort to be able to quantify the level of performance.

Recommendation

SAAF Museum aircraft have been provided with a mandate to fly by the Air Force Command Council. However, this does not imply carte blanche exposure to the original flight envelope, so, bearing in mind the requirement to 'keep them flying', it was recommended that the aircraft be returned to flight status at the SAAF Museum and flown in accordance with the limitations specified in the prototype Pilot's Notes with the exception of maximum normal acceleration, which was recommended to be limited to +3g instead of the +3.8g, and the maximum airspeed be limited to the maximum structural cruise speed of 142 mph, not the 160 mph Vne specified the Notes. It is trusted that this 'one off' prototype, only Patchen *Explorer* in existence, will continue to grace the South African skies for many years to come



Rather "Spartan" instrument panel providing pitot/static, electrical, engine and fuel information; No attitude indications only turn and slip (not shown); VFR only.



The ATLAS “Angel”

Extracts from a Test Report

By

Maj Gen Des Barker (FRAeS, MSETP, SAAF Rtd)

(Images provided by Paul Potgieter (Aerosud) and Warbirds (Pty Ltd), Wonderboom.)



Thirty-three years on, the Atlas C4M Kudu eventually received its rightful powerplant. Des Barker, the SAAF's production acceptance test pilot for the original Atlas C4M Kudu during 1976, was also the consulting test pilot for Warbirds' *Atlas Angel* re-engine programme.

Atlas Kudu is Born

Born out of “duress” from the United Nations Arms Embargo imposed on South Africa during the 1970s, the Atlas C4M Kudu was spawned in response to an operational requirement from the SAAF for a light re-supply/medevac capability during the Angolan conflict. With the C47-Dakota fulfilling the ‘light transport’ role and the C160/C130 aircraft fulfilling the medium-lift component, the nature of ‘bush warfare’ required an even lighter airlift capability with the specific ability to get into and out of remote, unprepared strips.

The operational requirement called for four different transport roles, the first, a cargo load of 2 x 44-gallon fuel drums for fuel placements at remote locations to provide mobility to the logistic support lines in SWA and Angola. The other three, for the casevac role, a stretcher plus medic, for the transport role, 4 passengers, and the paratrooping role, 6 paratroopers.

Contrary to popular belief, the Atlas C4M Kudu was not a spin-off designed from the AM-3C Bosbok by Atlas just modifying the

AM-3C Bosbok and replacing the fuselage with the wider and larger volume fuselage of the Kudu. The prevailing duress left the local

industry with very little alternative but to take the Italian designed AL-60 light civil utility aircraft of the early 1960s, originally designed by Al Mooney of Lockheed, and certify it against the SAAF's operational requirements.

The AL-60 had been manufactured in small quantities in Mexico and Argentina and under licence in Italy. Aermacchi then



Aermacchi AL-60

purchased a licence to produce the type, first in its original configuration as the AL-60B, for some African customers then in a modified version as the AL-60C. This latter version changed from the original tricycle undercarriage to a tail dragger arrangement and it was this aircraft that was manufactured by Atlas under licence.

The basic specification was thus for general-purpose, light utility transport, accommodating a crew of two and up to six passengers in the cabin or 560 kgs of freight. The first civilian prototype (ex SAAF #999) used by Atlas Aviation for the certification of the Kudu to Federal Aviation Regulations

Part 23, flew on 16 February 1974, and the first military prototype flew on 18 June 1975, entering SAAF service in 1976. More than 40 Kudus had been built when production ended in the early 1980's with the prototype Kudu #999, eventually being assigned to the Test Flight and Development Centre.



TFDC Kudu #999

SAAF Operational Utilisation

The question within the SAAF at that time was, "Was there sufficient excess horsepower to accomplish the mission? In the early 1970's, the Rhodesian Air Force's AL-60B Trojans, had at odd intervals visited AFB Pietersburg in support of RhodAF weapons exercises on the Roodewal Bombing Range, and already then, the Trojan was derogatively referred to by the fighter pilots as a "noise generator, converting fuel into noise". The Kudu and Bosbok were yet to be introduced to inventory.

SAAF Kudu pilots will readily attest to the fact that the Kudu was, in fact, underpowered, which meant that high skills, judgement, and knowledge levels were required as was respect for the environmental factors that governed 'density altitude' to safely maximise output from the Kudu in the 'hot and high' conditions that prevailed in SWA Namibia and Angola.

The concept of fitting a turboprop to the Kudu, though, is not new. During 1976, the discussion around the crew room amongst the fixed-wing test pilots and flight test engineers at TFDC often breached the subject and in fact, Lt Col Arrie Meulman drew up a concept design for a turboprop equipped Kudu – the flight test fraternity, more than anyone else, understood the implications of releasing an underpowered

Kudu to Service and expressed empathy with Kudu pilots having to accomplish the mission in hot and high conditions from rough fields in the middle of nowhere.

The logisticians, however, not understanding the implications, were having none of it – the Bosbok had an Avco Lycoming GSO-480-B1B3 flat-six piston engine and for purposes of standardisation of equipment and training, they were not going to have their world complicated by the logistics support efforts required to provide pilots with a more powerful aircraft.

Kudu Challenges

The Kudu was not only 'performance challenged', but also in some cases, the flying qualities demanded above-average skills. However, despite its performance and handling shortcomings, the Kudu shouldered a large portion of the light utility and transport requirements for the SAAF 'in theatre'. At the operational level, the slow



speed of the Kudu cruising along at approximately 110 KCAS, making it highly

vulnerable to enemy ground fire and man-portable surface-to-air missiles. What is certain though, is that the rather limited performance and handling qualities challenges of the Kudu, produced high calibre pilots; young inexperienced pilots had to learn to deal with the idiosyncrasies if they were to survive. The SAAF's training syllabus adequately prepared the mostly young and inexperienced pilots with the necessary skills to fly the aircraft safely.

On the one hand, survival was ensured by clever utilisation of the aircraft through flight tactics to counter the ground threat and on the other hand, squadron pilot's developed standard operating procedures to deal with performance and handling shortcomings imposed by operations into and out of 'bush strips'; but pilots had to learn to compensate for the shortcomings.

The primary challenges posed by the Kudu from a handling perspective, was the landing, particularly in crosswind conditions. The relatively large keel surface area aft of the centre of gravity increased the weathercock stability which meant that pilot workload in crosswind conditions was higher than one would have liked.

Besides, the downwash from the full flap landing configuration reduced the tail plane's pitch authority to bring the aircraft into the three-point attitude for landing which resulted in squadron pilots 'stealing' two notches of nose-up trim to reduce the pull force required for the round out. Not a bad idea for compensation, but any balked landing overshoot at full power produced a strong nose-up pitching moment from the all-moving stabilator, that would have to be overcome by a pitch trim rate that was not very quick and as a result, the cockpit could become very busy trying to get the aircraft trimmed out, flaps raised and deal with the directional control challenges imposed by full power.



Also, on landing, closing power to flight idle in the high drag landing configuration tends to decelerate the aircraft rather rapidly and if the round-out height is excessive, the aircraft will drop out of the pilot's hands. The bottom line is that the Kudu required a high level of coordination in certain flight phases. Following transport aircraft design requirements, the degree of stability about all axes was relatively high, but inadequate excess power remained the single biggest complaint area by SAAF Kudu pilots; however, this complaint was heard from most SAAF pilots, irrespective of the aircraft type they flew. There was never a SAAF pilot that 'had enough excess power'; the SAAF inventory aircraft were designed for European conditions, not understanding the stringent requirements for Africa's hot and high conditions.

Re-engine the Kudu!

So, it took approximately thirty-three years for someone with insight into the requirements of the skydiving mission to realise that with the ready supply of the rugged ex-military Kudu's, the potential existed to meet the demands of the skydiving mission, provided a suitable powerplant could be installed to overcome the power shortcoming.

The skydiving mission essentially requires short 'block times' and quick 'turn-around times' i.e., short time to height with a respectable number of skydivers carried, and a minimum time to descend, all to reduce the cycle time for each drop load. The cliché of 'time is money' is particularly relevant in skydiving which of course, coincident therein, lies the critical requirement for fuel efficiency, all to reduce cost per load of skydivers. A bonus of the Kudu airframe, of course, is the cargo doors on the Kudu that provide skydivers with easy ingress and exit. The Kudu was no stranger to the skydiving mission, having been used extensively by the Defence Skydiving Club at Swartkop for many years.

The Kudu airframe met the requirements of volume, what was needed, however, was a ruggedized powerplant to provide the excess shaft horsepower to provide short field take-off performance at maximum all-up weight, the excess shaft horsepower to provide quick time to height, and the ability to descend rapidly without the concomitant issues of 'shock cooling' associated with piston engines.

The *Angel* is Born

Several Atlas Aircraft C4M Kudu aircraft was purchased by Rob Taylor (Pty) Ltd and were subsequently earmarked for an engine replacement of the 340 hp Avco Lycoming GSO-480-B1B3 engine and Hartzel 3-blade constant speed propeller, with a Walter M601D engine and Avia V508 3-blade constant speed propeller. To differentiate from the standard configuration, the aircraft in this new configuration was designated the *C4M-TP Angel*, a Non-Type Certificated

Aircraft (NTCA) in terms of Part 24 of the SA Civil Aviation Regulations (CAR's).

The modification programme was undertaken by Johan Lok's Wonderboom based maintenance and repair company, *Warbirds*. Structural analysis and modification planning support from Franscois Jordaan's *Aerostruct Consulting* and flight test support by Carlos Cabral, a SACAA Class II test pilot, formed the remainder of the project test team.

The Engine

The Walter configuration at 68% of its maximum torque, is equivalent to the 340 bhp maximum of the standard Atlas Kudu. Built-in the Czech Republic, the Walter M601D turbo-propeller was designed for use in remote areas with rugged and minimal field maintenance requirements as top priorities and has been installed in the Let 410 (19-seat commuter) operating in harsh Siberian, African, South American, and Eastern European regions.

Fitted with an AVIA V508 3-blade constant speed propeller and spinner, with full feather and reverse, the modification included the following additions; oil cooler, oil lines, electric fuel pumps, wiring harness, relays, voltage regulator, starter-generator, igniters, exhaust, control cables, and switches and annunciators.

The engine also included an auto-start system with electro-hydraulic transducer control to automatically control the starting process optimally to reduce the risk of 'cooking' the engine on start-up. Engine starting is accomplished using a combination starter-generator and electronic ignition (dual low voltage torch igniters)



The Walter Turboprop engine installation on the C4M-TP Angel. (Warbirds)

The maximum engine power of the Walter engine is approximately double that of the Lycoming GSO-480 engine. Since propeller speed 2040 rpm is essentially unchanged, this implied double the engine torque and significantly increased helical airflow around the fuselage at maximum engine power which would impact on static and dynamic stability characteristics of the aircraft.

Effect of Airframe Modifications

The Walter engine installation resulted in mass and inertia changes which affected the aircraft performance, stability, and control. To maintain the static margin at approximately the same range of CG positions as for the standard Atlas Kudu, it was necessary to move the propeller mounting face forward by 305mm (12 ins). The military radio equipment weighing 86 lbs was also removed from its original position from the rear racks aft of the cabin, and modern radio equipment weighing 12 lbs was installed in the cockpit on the instrument panel. A new battery weighing 97 lbs was fitted in the rear to the now unused radio instrument rack aft of the cabin replacing the original battery which weighed 65 lbs.

The net effect was a mass redistribution which, although the static margin was theoretically unchanged, did change the moments of inertia of the aircraft about both the pitch and yaw axes which impacted the static and dynamic stability characteristics of the aircraft; the exact amount would have to be determined by flight test. With the increased propeller mass, the rotational inertia of the propeller was increased by 26% and although the rotational speed was the same as that obtained with the Lycoming engine, the propeller gyroscopic loads had changed.

The considerably increased installed shaft horsepower significantly increased aircraft performance, increased the propeller normal force, slipstream, downwash, and mass flow, the exact optimized utilization of such power was required to be determined in flight test to verify compliance with FAR Part 23, even

though the aircraft was to be flown within the NTCA category.

Performance

To best describe the performance improvements to the Kudu by the introduction of the Walter 601D turboprop, it would make good sense to relate the aircraft's performance to the typical skydiving mission. Simulating a mission weight at the take-off of 4683 lbs (320 lbs less than maximum military overload), it represented, in this case, a typical jump load of seven skydivers and 245 lbs of fuel.

The first indication to the pilot that the original shortcoming of insufficient power available had been resolved, was with the take-off. Operating from Wonderboom's 5997 feet long runway at density altitude 3670 ft, the total take-off distance over a 50 ft screen height, was 975 feet made up of a ground distance of approximately 760 ft and an air distance of approximately 215 ft.

A nominal torque value of 105 psi (83%) produced a significant acceleration with the tail wheel lift-up at approximately 35 KIAS after 9 secs (215 ft). The aircraft was rotated at 75 KIAS after 16 secs (650 ft) and airspeed was maintained at 75 KIAS until 50ft agl screen height, which was reached in 18 seconds. Good enough for the skydiving mission and light transport mission? You bet! An impressive distance for any aircraft operating at near maximum all-up weight.

Level cruise at 80 KIAS at 10 000 ft pressure altitude, required only 37psi torque (29%) with a fuel flow of 107 litres/hour.

Throttling back to flight idle, descent without the skydivers present at 135KIAS, was easily accomplished at 2000 ft/min in 3 minutes during which time only 3 litres of fuel was consumed before touchdown.

Landing back at Wonderboom (OAT = 13°C) on R/W 11, in landing configuration of 100% flap, approach speed at 65KCAS (FAR 23 procedure 1.2xVso) over a 50 ft screen height at a relatively heavyweight of 4435 lbs in calm wind, three-point landing without using beta or reverse, the total landing

distance was an impressive 592 feet. Impressive, particularly due to the very short ground roll distance of only 217 ft.

Conclusion

Within the scope of the limited flight test programme, it can be concluded that the fitment of the Walter 601D turboprop on the Kudu, significantly increased the performance of the C4M *Angel* in the skydiving mission. Contrary to SAAF pilot's experience flying the Kudu under operational conditions during the Angolan conflict, pilots assigned to fly the skydiving missions can look forward to an aircraft in which the deficient performance challenge to operating the Kudu, has been resolved in the 'C4M *Angel*'.

Never has there been a pilot that has complained about too much power. There is no doubt that in this case, the aircraft has been provided with adequate power for the mission, and many former SAAF pilots that operated the Kudu in the operational area would have given their 'eye teeth' for this engine to reduce their 'stress levels'.

Aircraft Particulars: C4M Angel	
Performance	
Service Ceiling* (calculated)	19,000 ft
Max Speed	165 KIAS
Cruising range (calculated)	520 nms
Cruise speed	130 KCAS
Mass	
Empty weight	2861 lbs
Start weight	4497 lbs
Maximum All Up Weight	5071 lbs
Dimensions	
Wing area	225.72 ft ²
Height	12.01 ft
Length	31.54 ft
Wing span	42.91 ft
Crew	1
* Aircraft not pressurised or provided with oxygen. Maximum altitude thus oxygen limited, not performance.	



The Misfortune at the opening of Nelspruit Airfield

**CALL BACK
THE PAST**



Recent view of old Nelspruit Airfield.

What is the probability that two separate accidents by two separate aircraft from the same squadron could occur on the same day at the same airport? It was 29 July 1967, the official opening of the Nelspruit Airport where the two accidents occurred, ironically, both were SAAF C-47 Dakotas.

The SAAFs Para-Dak carrying the army's parabats which were scheduled for a mass drop later in the day, on arrival, landed downhill on the new runway and overran the end of the runway. The aircraft was severely damaged but thankfully, no one was injured.



SAAF Para-Dak in the Banana Plantation (Winston Brent)

crowd of 3,000 watched in stunned silence as another SAAF VIP Dakota carrying the airshow dignitary, a SAAF Brigadier officiating at the opening of the airfield, spun off the runway and ploughed into a section of the crowd at an air display at the official opening of the Nelspruit Airport.

The Dakota hit an embankment with its undercarriage which broke the right-hand undercarriage off, causing it to slew into the crowd, killing their father in his deck chair and injuring their mother, their nine-year-old sister, and several others.

SAAF maintenance personnel arrived and transferred a wing from the Para-Dak onto the VIP Dak and flew it out. The Para-Dak was ignominiously returned to Zwartkop AFB by road.

Having earlier witnessed a SAAF Dakota overrunning the runway, four sisters in a

Dakota 6878 is listed as destroyed by fire at Rand Airport on 24 May 1981.



Dakota 6882 was converted to a DC-3TP. The work was carried out by Dodson Aviation, South Africa. Operated by Rossair Executive Air Charter with new c/r ZS-MAP.

- 10 July 2009 To National Test Pilot School, Mojave, CA with new c/r N882TP
- 24 April 2012 Certificate of airworthiness for NX882TP (DC3-65TP, 32644)
- 5 April 2016 To Dakota Express Llc, Wilmington, DE keeping c/r N882TP.
- 12 July 2017 To Preferred Airparts Llc, Kidron, OH keeping c/r N882TP
- 22 May 2018 Certificate of airworthiness for N882TP (DC3C-R-1830-90C, 32644)
- 14 Nov 2019 To Abx Holdings Inc, Farmington, MI keeping c/r N882TP
- 30 Jan 2020 Certificate of airworthiness for NX882TP





Memorial Services 2021/22

Date	Time	Service	Venue	Town
FEBRUARY 2021				
21	10h00	SS Mendi Memorial Service	Soweto	Johannesburg
21		Armed Forces Parade	Polokwane	Polokwane
MARCH 2021				
7	10h00	SS Mendi Memorial Service	Gamothakga	Pretoria
APRIL 2021				
3	10h00	Koevoet Veterans Memorial Service	Voortrekker Monument	Pretoria
4	10h00	RAFA Memorial Service	Bays Hill	Pretoria
18	TBN	Gunners Ass Memorial Service		Potchefstroom
MAY 2021				
16	10h00	SA Air Force Memorial Service	Bays Hill	Pretoria
23	10h00	Heritage Foundation Wreath Laying	Voortrekker Monument	Pretoria
23	15h00	Smuts Memorial Service	Smuts House	Irene
JUNE 2021				
6	11h00	SAPPERS Memorial Service	Sappers Rust	
JULY 2021				
11	10h00	Delville Wood Memorial Service	Burgers Park	Pretoria
11	10h00	Delville Wood Memorial Service	Soweto	Johannesburg
25	10h00	Korean War Veterans Ass Service	Bays Hill	Pretoria
AUGUST 2021				
15	11h00	Border Boys Parade	Eloffsdal	Pretoria
21	TBN	61 Mech Memorial Service	Ditsong	Johannesburg
21	10h00	SAP COIN Memorial Service	Doornpoort	Pretoria
SEPTEMBER 2021				
5	11H00	WARSAW Flight Commemoration Service		Johannesburg
12	10h30	RLI RAFA Battle of Britain Service	Bedfordview	Johannesburg
12	09h00	International Day of Peace Service	NGK Raslow	Pretoria
OCTOBER 2021				
10	10H00	Alphine 44 Memorial Service	Bays Hill	Pretoria
24	11h00	Battle of El Alamein Pretoria District MOTH	Coal Box MK2	Pretoria
NOVEMBER 2021				
7	09H30	Italian Prisoners of War Memorial Service	Italian Cemetery	Zonderwater
11	17h30	Cornwall Hill Service	Cornwall Hill	Pretoria
14	11h00	Remembrance Sunday Memorial Service	Commonwealth War Graves Cemetery	Johannesburg
DECEMBER 2020				
5	09h00	SAMHS Veterans Ass Memorial Service	1 Mil	Pretoria



THE GREAT REALISATION

By



Tomos Roberts (Tomfoolery)

It was a world of waste and wonder of poverty and plenty.
Back before we understood why hindsight's 2020.
You see the people came up with companies to trade across all lands.
They swelled and got much bigger than we ever could have planned.
We always had our want's but now, if got so quick.
You could have anything you dreamed of in a day and with a click.
We noticed that families stopped talking, that's not to say they never spoke.
But the meaning must have melted and the work life balance broke.
And the children's eyes grew squarer and every toddler had a phone.
They filtered out the imperfections but amidst the noise, they felt alone.
And every day, the skies grew thicker till you couldn't see the stars.
So, we flew in planes to find them while down below we filled our cars.
We drive around all day in circles.
We've forgotten how to run.
We swapped the grass for tarmac, shrunk the parks till there were none.
We filled the sea with plastic because our waste was never capped.
Until each day you went fishing, you'd pull them out already wrapped.
And while we drank and smoked and gambled
Our leaders taught us why, its best to not upset the lobbies, more convenient to die.
But then in 2020 a new virus came our way,
The government reacted and told us all to hide away.
But while we were all hidden amidst the fear and all the while.
The people dusted off their instincts.
They remembered how to smile.
They started clapping to say thank you.
And calling up their mums.
And while the car keys gathered dust, they would look forward to their runs.
And with the skies less full of voyagers, the earth began to breathe.
And the beaches bore new wild life that scuttled off into the seas.
Some people started dancing, some were singing, some were baking.
We'd grown so used to bad news but some good news was in the making.
And so when we found the cure.
And we were allowed to go outside,
We all preferred the world we found to the one we'd left behind.
Old habits became extinct and they made way for the new.
And every simple act of kindness was now given its due.

Q: Why did it take a virus to bring the people back together?

Sometimes you've got to get sick, before you start feeling better.
Dream of tomorrow and all the things that we can do.
And who knows, if you dream hard enough, maybe some of them will come true.
We now call it, The Great Realisation, and yes, since then there have been many.
But that's the story of how it started, and why hindsight's 2020.





As dismal as the world may feel right now, think of the mandated work-from-home policy as an opportunity to refocus your attention from the external to the internal. Doing one productive thing per day can lead to a more positive attitude. Set your sights on long-avoided tasks, reorganise, or create something you've always wanted to.

Approaching this time with a mindset of feeling trapped or stuck will only stress you out more. This is your chance to slow down and focus on yourself.

Personally, my task for the day is to fill up the branch news section with all the news submitted from everyone. I do need some help with this task, that being that the news is sent from all the branches. I know I mention this month after month but my goal is to keep all our members up to date with news from across the country and ensuring that old acquaintances don't get left behind.

Letting go of illusions of control and finding peace in the fact that you are doing your part to "flatten the curve" will certainly build mental strength to combat the stressful situation the entire globe is experiencing.



Thank You

Des;
Philip;
Marianne;
Christel;
Johann



• Account Name:	The South African Air Force Association
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• Code:	632005
• Account Number:	16 6016 7699
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