An Air Force that inspires Confidence
I greet you all with a great sense of excitement and expectations in the advent of the year 2014 - a year that brings a host of exciting events and activities to be managed with the accompanying challenges around funding and other resources. I am, however, very optimistic and firmly believe that we will achieve all the desired outcomes that we have set for the SAAF.

I would like also to thank, wholeheartedly, all the contributors and the team who have helped make this edition of Ad Astra possible.

Best wishes.
In our Republic’s 20th year of democracy and in the year of our 5th democratic elections, the SA Air Force which was established in February 01, 1920 turned 94 years. To all the members of the South African Air Force, thank you for your outstanding contribution to our Madiba’s Nation.

Let us be mindful of the sacrifices borne by our forefathers and the veterans of our liberation struggle. May the courage and vision displayed by them serve to inspire and motivate us all as members of the South African Defence Force, to collectively strive to bring hope, peace and security in our Motherland and Continent.

In 2014, the SAAF will be concentrating in the following areas:

- Building capacity in every respect
- Restructuring of the South African Air Force
- SAAF transformation agenda - transformation in the broader sense
- Institutionalizing a “just culture” – finding solutions to “what is wrong” and not on “who is wrong”
- Career planning
- Youth development, Siyandiza & SAAF Cadet
- Building reserve force capacity in all mustering and support RF Flying Squadrions

Congratulations to Air Force Base Makhado for winning the Prestige Unit of the Air Force 2013 cycle. The prestige awards are aimed at rewarding outstanding accomplishments by Units, Bases and Directorates in the Air Force.

I see another great Air Force year, because we have the resilience to make it through any tough economic times. We have collectively proved that a problem is only a problem when viewed as a problem. As leaders in our respective fields, we have delivered results in an environment of high demands and obligations- we have indeed accomplished our missions as directed by the broader DOD effectively.

May each of you continue to be guided by the indispensable elements of character, discipline, accountability, courage and integrity. Model exceptionalism. In your daily conduct, at work in the streets and at home. Being a soldier is a special calling, turn your daily service into an exceptional craft and bring your best self to the SAAF everyday. Let us continue to ensure that this Air Force continues to Inspire Confidence.

I wish to highlight certain aspects of your Air Force today and to update you on some current issues. The Constitution of the Republic clearly states that “the Defence Force must be structured and managed as a disciplined military force”. As a soldier for me, the future success of the SAAF will be underpinned by an enforcement of discipline and intense concentration on functional, developmental and physical training. In other words, we are going back to basics: Taking the time to refocus our attention on the more fundamental elements and habits that may have been neglected during recent times. We need to instilculcate a “new” all-encompassing culture that informs Doctrine, Organization, Training, Equipment, Leadership, Education, Personnel and Facilities framework.

Understanding the classic principles of war, C&C structures and presenting proper stuff work. Warrant Officers to be empowered to deal with discipline, Airmen/women to concentrate on simple, important ideas or activities Airmen/women and units to be in the news for behaviour consistent with SAAF values. Standard of discipline must be consistent across the operational and institutional areas.

Nurture & share fundamental skills of personal and organizational leadership.

“Human capital” management to include a six year career horizon for all members.

One Force Concept to be exercised. PSAPs too MUST be managed professionally. Talent management within all ranks must be nurtured and encouraged. Physical training is mandatory for all.

We all must be responsible and accountable for all our actions.

Discipline, in the context of expected behaviour in the SAAF has neither variation nor degree. It is not ambiguous. We are going back to basics. Our vision “An Air Force that inspires Confidence” is hinged on 6 strategic goals; Readiness, Sustainability, Safety, Compliance and Image. In pursuit of these goals, the SAAF leadership is focusing on the development and maintenance of our people, our main equipment and our infrastructure.

Our definition of air power has initiated exciting engagements with other role players: “Air power is the nation’s capacity to project through the medium of air or aerospace in the employment of all its aviation resources, civil and military, public and private in support of air operations”.  

People

- Developing, Preparing, Deploying and Sustaining a modern, balanced Air Force requires a wide variety of specialist command and management skills. Despite various challenges the SAAF has succeeded admirably in maintaining a high level of core competencies.
- We have embarked on an extensive own capability plan, which includes measures to recruit, develop and retain scarce skilled human resources. Our strategic partnership with the local aerospace industry is critical to ensure both own capability and a sustainable aviation industry.

Main Equipment

The SAAF main equipment supports capabilities of air reconnaissance, air combat, command & control (surveillance and air defence), air and maritime transport. These include legacy as well as new SAAF main equipment acquired in recent years. Strategic partnerships are being forged with the aviation industry to share aviation technical skills between industry and the SAAF with the aim of growing the domestic aviation industry and to drive innovation.

The SAAF is determined to support the South African aviation industry by ensuring that essential sovereign and strategic capabilities are retained and that industry is afforded every opportunity to achieve international competitiveness.

Status of the AMG contract

The Auditor General found the AMG contract with Denel to be non-compliant with the current regulatory framework. Following its termination at the end of March 2013, the Department of Defence concluded the Skilled Services Agreement or SSA with Denel Aviation to provide critical and scarce skills for an interim period.

The SAAF has thus developed an own capability plan that includes: The transfer of skills from the SSA employees; On-going and targeted recruitment; Optimisation of logistics systems and structures; Improved technical personnel development, motivation and utilisation; and Greater co-operation with strategic technical partners, including collateral utilisation of Denel Aviation’s extensive engineering capability.

Most short-term objectives of the capability plan are being met.

The SAAF has enough aviation artisans and technical officers to fill between 90% of positions. The retention of experienced artisans and technical officers is stable. The SAAF will continue to ensure the highest standards of flight safety and efficiency.

Infrastructure

The SAAF’s infrastructure includes the strategic/operational headquarters, 9 Air Force Bases/Stations, weapons ranges and forward or mobile bases as required. The infrastructure is of varying age, with the older bases posing particular maintenance challenges.
In response, the SA government has made extensive investments through the years, for example the refurbishment of the AFB Waterkloof runway. The DOD and National Department of Public Works have now established a joint project team to expedite DPW support to the SAAF. The DOD has also established a Defence Works capability to augment the SAAF’s own facility maintenance structures. National Treasury asset management initiatives are expected to provide further impetus to these efforts.

Land users on properties adjacent to SAAF facilities have diversified, driven by steady economic development in the past few years. In some instances, these patterns of land use have not always been compatible with requirements for military aviation and have threatened mission sustainability. Co-operative relationships with local authorities and landowner associations have largely eased these pressures and are expected to expand in years to come. The SAAF exercises its social and environmental responsibility in a sense of good citizenship. The SAAF airbase strategy outlines SAAF capabilities and force dispersion across the country as a basis for prioritising long-term capital investment in the infrastructure footprint of the SAAF.

**SAAF to focus on capacity building, peace support and reserves in 2014**

*Written by Guy Martin, Monday, 03 February 2014*

The South African Air Force will focus on building capacity, transformation, youth development and reserve force capacity in 2014, according to Lieutenant General Fabian Msimang, who made the remarks to SA National Defence Force graduates at the Air Force Day parade at AFB Waterkloof on Saturday.

The 2014 annual Air Force Day marked the founding of the South African Air Force (SAAF); 94 years ago on 1 February 1920 and for the first time in some 20 years also included a passing out parade, for 52 SA National Defence Force (SANDF) members who successfully completed Basic Military Training Course 3 of 2013, presented between 14 August 2013 and 1 February 2014 at the Basic Military Training School at Bodorp near Hoedspruit.

“I convey our congratulations to the successful graduates who are now members of a proud warrior class of this glorious National Defence Force,” Air Force chief Msimang said. “Airmen, as I look into your eyes, I know you will carry us even, further even, higher…You are now solders.”

During his address, Msimang said the Air Force will focus on the establishment of the African Standby Force and by extension the Inter-State Defence and security committee and ensure an enduring collaborative and constructive role in our sub-regional forums such as the African Capacity for Immediate Response to Crisis (ACIRC) as an interim instrument for our continent.

**In conclusion**

I would like to thank each and every one of you for your contribution towards making your Air Force or Air Force that inspires confidence.

The newly established Defence Works Formation and SAAF-own facilities development capacity will be central to ensuring sound real estate management and works maintenance tailored to the requirements of the SAAF.

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**The South African Air Force**

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The biannual Air Power Capability Demonstration (APCD) hosted by the SA Air Force aimed at showcasing the combat readiness of the SANDF was held at the Roodeval bombing range in the Limpopo province, near the city of Polokwane.

The event took place from the 23rd to the 24th of October 2013. The deputy chief of the SA Air Force Maj Gen Gerald Malinga, while speaking on behalf of Chief of the SA Air Force Lt Gen Fabian Zakes Msimang, told the audience that the primary role of the SANDF is to defend and protect the Republic and its people. Furthermore, he said that through the Air Capability Demo, the SAAF is able to test its airworthiness, capabilities as well as its combat readiness. He said that the SANDF had the duty to enhance and maintain a comprehensive defensive capability of promoting peace, security and stability in our region while supporting the people of South Africa, the SADC communities and the African continent.

He mentioned that this joint exercise involves all arms of services of the SANDF: the SA Army, Special Forces, SA Navy and SAMHS, in support of the SA Air Force. In order for the organisation to test its combat readiness, as per their mandate, sufficient funding needs to be budgeted for. APCD is one of the most senior joint exercises within the SANDF that determines the readiness of the SANDF.

It requires joint training as well as joint and autonomous force preparation while evaluating the entire spectrum of air and surface operations, which remain a key focus area for the SANDF. Maj Gen Maling reitered that, despite the budgetary constraints in the SANDF, the Air Force Command Council has made a decision to set funds aside for the APCD to take place and, for this reason, the SAAF might not be able to participate in air shows, fly pasts and other exercises until the budget of the SAAF had been adjusted.

The key attributes of air power namely: flexibility, mobility and fire power was demonstrated by various aircraft types. The Rooivalk, BK117, Oryx helicopter as well as Gripen and Hawk fighters and the C130 transport aircraft made spectacular demonstrations while supported by the force elements of the SA Army. Maj Gen Maling thanked all men and women in uniform serving in the SANDF as well as the the Aero Manpower Group (AMG) and Public Service Acts Personnel (PSAP) for the parts they play in the organisation. He also acknowledge the presence of military attaches, the senior course in the military (ENSP) and also captains of industries and the Denel Aviation Group.

The Rooivalk Proves Its Worth

Maj Gen W.S. Mlambo
General Officer Commanding Air Command

“Because of its independence of surface limitations and its superior speed the airplane is the offensive weapon par excellence.”
— General Giulio Douhet

When the previous Central African Republic (CAR) situation which was, later dubbed as the Battle of Bangui expired, one prominent question dominated every military expert’s mind. Where is the Air Force & its valuable assets? Those who survived from that battle later confessed that if the SAAF Rooivalk was there, the outcome of that encounter would have been different.

On the 4th of November 2013, at approximately 17h00 Congolese time, the long awaited answer came through Timely. Ugly Biting Teeth from the cloudy Sky of Goma when 16 Squadron Rooivalk under the UN Flag successfully neutralized the M23 stronghold in the eastern DRC. Consistent with its motto “Hlaselani” the Rooivalk earned its first historical combat mission when it fired multiple 70mm rocket salvos against M23 bunkers near Chanzu. The successful mission played a key role in altering the pace and course of direction regarding the conflict in the eastern DRC. General Carlos Alberto dos Santos Cruz, commander of the UN forces during an interview with the Sunday Times confirmed the impact of the Rooivalk firepower. “They are very good aircraft – very precise with very good technology. We need this kind of fire power for our missions”.

Some describe Air Power as “The ability to project power from the air and space to influence the behaviour of people or the course of events.” According to the Sunday Times report dated 10 November 2013, the Rooivalk attack marked the end of the twenty month old M23 rebellion against the DRC government. The subsequent military and political developments in the east DRC in favour of DRC government forces confirm the ability of air power to influence the behaviour of people or the course of events.

The achievement peace and political stability are a prerequisite for economic development and the improvement of the quality of life of communities. The two factors, like The Siamese Twins, are interdependent and cannot be achieved in isolation to each other. “Peace, security and development are very important to any continent, but you won’t get development if there’s no peace and security and you won’t get peace and security if people don’t see the peace dividends. We have to start interesting people in that area that there’s more to life than just becoming mutineers and rebels. The message we’re all sending is “Kwanele” [enough is enough].” After the UN Forces utilisation of the Rooivalk capability, the beacon of hope for peace and stability is emerging larger in the Eastern DRC.

The Rooivalk successful mission demonstrated that this capability is a valuable strategic asset that is required for the SANDF and the country. The cloud of uncertainty regarding the Rooivalk prowess in combat missions has now been lifted. This positive achievement further opens diverse opportunities for Rooivalk capability system update and strategic plan decisions regarding its future role in the SANDF. When the dawning peace in the DRC finally becomes a permanent feature, SAAF [16 Squadron], specifically the ground and aircrew that participated in this mission, will be honoured not only by the South African people but the people of the Eastern DRC will hold them close to their hearts.
Looking into the Future

Maj Gen J. D. Pelser
Chief Director Force Development and Support (CDFDS)

The SAAF is challenged daily to become more effective, efficient and economical, in line with the Public Finance Management Act, and it is continuously searching for improvement opportunities.

From a support and systems point of view, one of the more interesting initiatives is Through Life Capability Management (TLCM) study that is co-sponsored by the Chief of Joint Operations and the Chief of Logistics.

In plain English capability refers to the ability to perform a task or execute a mission successfully – i.e. so as to achieve a desired effect or outcome.

The term mission may be used as in the Defence Review, for example, to defend the RSA against a conventional attack (Mission 1 of the Defence Review).

Such a mission can in turn be broken down into operational (military or combat) tasks, operational support tasks, and support service tasks, as well as related sub-tasks.

This means that the capability concept can be applied at any level of detail – from the broad conceptual to the very concrete.

Capability is an emergent property of a system or group of systems. On its own, a fighter aircraft system cannot defend the RSA against an attack. But when it is combined with other systems such as infantry or naval forces, the required defence capability “emerges”.

A system is a collection of inter-related parts. Inherent in this definition is an implied relative permanency of association.

Capabilities are however often tailored to specific contingencies. In systems language, they are “virtual” systems that are constituted (brought together) in the relevant configurations when required (or sometimes, for force preparation reasons) and returned to their natural homes thereafter.

In the 1998 Defence Review and transformation design, it was decided not to manage virtual systems (capabilities) explicitly, but only indirectly.

Instead, the SAAF chose to manage actual system groups such as combat, helicopter or transport aircraft systems.

A total system management approach was implemented, implying single point responsibility, accountability and authority to manage a whole system, including all its parts, and all aspects of the system, through its whole life.

Responsibility can roughly be defined as the duty to do something, accountability as the obligation to report on or account for what was done or achieved, and authority as the delegated power to make decisions regarding the resources and activities required to achieve the required outcomes.

In DOD/SANDF language, a system is considered to consist of Personnel in an Organization, with suitable Sustainment, Training, Equipment, Doctrine, Facilities, Information, Technology and a Budget (POSTEDFITB).

These must at all times be kept in balance; coherent, consistent and integrated, to form a true system, not just a random collection of parts.

Due to structural and systemic constraints, some elements of the approach could not yet be fully implemented.

These include authority over all required resources, which is often limited by necessary (and sometimes unnecessary!) bureaucracy.

Fragmentation of processes has also made it difficult to maintain the required continuity over the whole life of systems.

Nevertheless, the system management approach has served the SAAF exceedingly well. The approach is not in competition with the capability management approach, but complementary.

The relationship between capabilities, systems and their constituent parts can be illustrated as follows:

Note that systems can contribute to more than one capability, that capabilities often are the emergent properties of multiple systems, and that most systems consist of nearly all POSTEDFITB elements.

If this relationship is explicitly managed, large increases in readiness, sustainability, efficiency, economy and even safety, compliance and defence image can be expected (the underlined words are the SAAF’s Desired Outcomes).

Although it is yet early days in the DOD/ SANDF’s Through Life Capability Management (TLCM) initiative, it can be expected to provide quantum improvements in the affordability of defence, due to better alignment between expectations, capabilities, systems and resourcing.

Colonel Daniel Sutherland, Officer in Charge of the Unit since January 2008, continually strives to achieve more efficient communication between members at all levels. He not only maintains a “finger on the pulse” approach to every aspect of operational support, he also actively encourages every member to be a part of the decision making process.

The 16 logistical sections function as an interdependent integrated system. They are driven by process management based on a proven business model. Often asked to walk the extra mile, the social welfare of members forms an integral part of the daily conduct. Furthermore, fitness and good health are actively promoted through sport and social functions.

Harmony creates a positive sense of competitiveness which relates to excellent cooperation, commitment and creativity without having to sacrifice the friendly attitude to every challenge.

Establishing the Hartzell Propeller Maintenance and Repair Organisation (MRO) Section is testament to the dedication which drives the members of 2ASU Detached to fulfill their core function of maintaining and repairing aircraft.

The removal of the C47-TP aircraft 6877 from the Mthatha Airport in the Eastern Cape early in 2013 by members of the Mechanical Engineering Support Section served as prime example of the “We make things happen” attitude of the members of this unit. Every member of the unit is proud to “make things happen” every day.

“We make things happen.” This motto has become a way of life for the proud men and women of 2 Air Servicing Unit (ASU) Detached, based at Air Force Base Ysterplaat, in the shadow of magnificent Table Mountain. Maintenance and repair of aircraft and aircraft related systems demands excellence in every minute detail and this is dependent on a commitment to support operations in the South African Air Force (SAAF) logistical and technical environment.

Leadership through efficient communication is a core belief of the managerial team at 2 Air Servicing Unit and a structured information system encourages functional team work at all levels. Lieutenant
Unmanned systems have been in use from as early as 1849. The principle is simple: remove the pilot and crew from the aircraft, and therefore from potential danger, and control it from the ground. For this very reason unmanned systems are often utilised where some element of danger is prevalent. Unmanned systems are also regularly employed in situations involving long periods of monotonous and where exposure to a contaminated environment is required.

Definition of a UAS

The Free Dictionary provides one of the best definitions for an Unmanned Aircraft System (UAS): a powered, aerial vehicle that does not carry a human operator; uses aerodynamic forces to provide vehicle lift; can fly autonomously or be piloted remotely; can be expendable or recoverable; and can carry a lethal or non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles, and artillery projectiles are not considered UAS; and can carry a lethall or non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles, and artillery projectiles are not considered UAS.

Early unmanned aircraft were referred to as Remotely Piloted Vehicles (RPV) and Remotely Piloted Aircraft (RPA). Contemporary culture has switched to the term UAS, while the terms RPV and RPA are still used in some circles.

In an endeavour to eliminate terminological confusion and set a fresh baseline, the International Civil Aviation Organization indicated that, as of 2009, the various terms originally used for unmanned air systems will be replaced by the single generic terms “Unmanned Aircraft” (UA) and “Unmanned Aircraft System” (UAS).

Types of Unmanned Aircraft

There is no single standard for categorisation of UA. Various methods are used, of which the following prove to be useful:

- The United States military “TIER” system
- Functional categorisation
- Performance categorisation

All three these methods do exhibit some commonality or “overlap”, and a single UA could be categorised by combining all three methods if required.

Functional categorisation group UA in terms of function, purpose, mission, task or role; typically:
- Targets
- Decays
- Reconnaissance and/or Surveillance
- Combat
- Logistic Supply
- Research and Development
- Civil and Commercial use

Performance categorisation group UA in terms of altitude, speed, endurance, range and include Handheld, Tactical, Medium-Altitude Long-Endurance (MALE), High-Altitude Long Endurance (HALE) or High Speed types, to name a few.

Uses for Unmanned Aircraft

Unmanned Aircraft are versatile. Although the first uses were primarily of a military nature, modern UAs are being employed in civil roles in increasing numbers. Recent military and paramilitary uses include:
- Surveillance
- Reconnaissance
- Intelligence
- Aerial targets
- Battlefield targeting
- Battlefield damage assessment
- Strike and attack
- Communications relay
- Logistic resupply

Recent civil uses include:
- Meteorological data assimilation
- Environmental monitoring
- Pollution detection
- Forest fire detection
- Search and Rescue
- Wildlife monitoring
- Power line inspection

New uses for unmanned systems appear almost on a daily basis and this has resulted in a proverbial boom in technological innovation, development and employment. Airworthiness Authorities are required to deal with this boom by adapting certification and safety strategies to meet increasing operational demand.

Introduction to Airworthiness

An aeronautical product can be considered airworthy when:
- It has been designed in accordance with approved aeronautical standards by an Accredited Design Organization;
- It has been manufactured to the approved design in accordance with approved manufacturing methods and standards by an Accredited Production Organization;
- It has been maintained in accordance with the approved maintenance documentation, within an accredited Maintenance Organization; and
- It has been operated by trained, competent and licensed crews in accordance with the approved Operating Manuals.

The concept of Airworthiness can be split up into Operational and Technical Airworthiness. Operational Airworthiness, in short, is concerned with, amongst others, licensing of aircraft, flight standards, aircraft training, airspace management, airspace rules, and the like. Technical Airworthiness, on the other hand, is concerned with the integrity of the aeronautical product design, production standards, maintenance processes and standards, as well as the through-life integrity of such aeronautical products. The certification of aeronautical products is an element of Technical Airworthiness.

To confuse matters even further, Technical Airworthiness can be split up further into Initial Technical Airworthiness (ITA) and Continued Technical Airworthiness (CTA). CTA ensures that airworthy Aeronautical Products remain as such, and remain a true reflection of their respective certification documents (typically Certificates of Design, Type Certificates and/or Certificates of Airworthiness) throughout operational life. ITA, on the other hand, is concerned with the integrity of new, modified and upgraded Aeronautical Products. ITA is typically managed within the scope of the Military Technical Compliance Program.

The Military Technical Compliance Program

The technical clearance and release for operations of military Aeronautical Products – and the subsequent guarantee for Initial Technical Airworthiness – is managed within the scope of the Military Technical Compliance Program, which involves some, or all, of the following elements:
- Qualification
- Certification
- System Safety

The above terms are interpreted differently by Airworthiness Authorities and Design Organizations worldwide. For the purposes of this article, the interpretations as used by the SAAF Airworthiness Authorities, Directorate System Integrity (DSI), follows hereafter.

Qualification: Qualification is the process that verifies compliance to prior-agreed functional-, performance- and technical requirements. The origin of these requirements, at a high level, is the User Requirement Statement. It evaluates functionality and performance, and proves that the product “can do the job”, or is “fit for purpose”. A “qualified” aeronautical product is not automatically safe or certifiable.

Certification: Certification (or “Type Certification”) verifies compliance of the aeronautical product design (or “Type Design”) to prior-agreed Airworthiness Standards. It essentially proves that it is safe to operate. Type Certification performed in isolation does not necessarily guarantee a qualified, “mission capable” system. For military systems, Type Certification is never conducted without prior knowledge of the intended Roles, Missions, Theatre of Operations and Operating Environment. Type Certification of Military aeronautical systems is therefore conducted within the scope of the intended application of the product.

System Safety: The System Safety process is an integral part of Type Certification, but can also be completed in isolation, should Type Certification not be sensible or economically viable for the product in question.

The System Safety process is applied to show that the Type Design meets or exceeds an agreed Safety Objective. It is the “bare minimum” any Aeronautical Product should be subjected to, to prove its inherent safety. The System Safety process identifies all potential hazards (as well as contributing factors and potential outcomes), analyses hazards for probabilities of occurrence and severity, and, through a formal Safety Assessment Process classifies, mitigates and manages all associated Risks.

The details concerning intended Roles and Missions, as well as the intended Theatre of Operations and intended Airspace usage (as stipulated in the URS) are important when conducting Safety Assessments; Risk is classified differently for a UAS operating over densely populated areas, as opposed to a similar system confined to e.g. a weapons range surrounded by sparsely populated areas, or the open ocean.

Technical Airworthiness of Military UAS

It is the position of DSI – and so all international Airworthiness Authorities – that Military UAS should receive the same treatment as manned systems insofar as Qualification, Certification and System Safety are concerned. To put it otherwise, the process leading up to eventual clearance and release for operations of Military UAS should be managed by means of the existing and proven Military Technical Compliance Program, as tailored for the particular program.
**UAS-Unique Principles**

In the conducting of activities leading up to the Type Certification of Military UAS, certain principles unique to Unmanned Systems should be upheld. These include:

- The Principle of Equivalence: this requires that an Equivalent Level of Safety be upheld for the UAS, as would have been the case for a similarly-sized and weighted Manned System.
- The Principle of Risk: the primary concern is the safety and risks to third parties on the ground and in the air.
- The Principle of Completeness: in terms of what is perceived as the “Aircraft” to be Type Certified, this would include the Aircraft, Ground Control elements, Data Link elements, as well as Launch and Recovery elements. The summation of all these elements will ensure a Type Certified system inclusive of all elements found in a similar Manned System.
- The Principle of Responsibility: a clear distinction is made between operational and technical responsibilities in Type Certification activities (this is true for Manned Systems as well). A typical example unique to UASs is the concept of Detect, Sense and Avoid (DSA), which is accepted to be an Airspace- or Operational Airworthiness requirement, not a Technical Airworthiness requirement per se. UAS “Rules of the Air” – once promulgated will determine the DSA requirements. DSA equipment, however, will be certified to the same standards as the rest of the UAS. This viewpoint is shared with major world Authorities.

**Type Certified Military UAS**

Unmanned Aircraft in excess of 150kg are automatically required to be subjected to the full Military Technical Compliance Program, and will therefore follow a process towards Type Certification. In consideration of UAS, DSI advocates that the wheel be not be reinvented; the existing Type Certification and System Safety processes are sufficiently mature to substantiate the safety and integrity of the Type Design, if followed correctly. In addition, the Qualification process is mature enough to substantiate the functionality and performance of the UAS. These processes obviously require tailoring to fit each UAS-related development program, but all the building blocks are already in place.

The Certification Basis for a Military UAS is to be built up from existing Airworthiness Standards, supplemented with additional certification requirements for UAS-specific elements not sufficiently covered by the basic Standards. Some Authorities have created and published Airworthiness Standards already tailored specifically for UAS, including the following:

- **NATO STANAG 4671** Edition 1, Unmanned Aerial Vehicle Systems Airworthiness Requirements (USAR)
- **UK MOD Defence Standard, DEF STAN 00-970 Part 9** Amendment 1, Design and Airworthiness Requirements for Service Aircraft – UAS Systems
- **Direction Générale de l’Armement (DGA) UAV Systems Airworthiness Requirements version 3.0**
- **RTCA/DO-254 (Complex Aeronautical Hardware)**
- **RTCA/DO-160 or MIL-STD-461 (Electro-magnetic Interference and Compatibility)**
- **RTCA/DO-170 (Software and Embedded Firmware)**
- **RTCA/DO-278 (Complex Hardware)**
- **RTCA/DO-200 (Aeronautical Data)**

**Non-Type Certified Military UAS**

The above outline caters for what is commonly referred to as “large UAS”. A separate process is advocated, or supported, for smaller UAS, or UAS that have been in operation for a prolonged period. These systems are collectively known as Non-Type Certified UAS. The Technical Airworthiness and inherent technical safety of such systems is guaranteed by having developers subject the development to a stand-alone System Safety examination, in lieu of full Type Certification. This process is warranted for Unmanned Systems falling into the following Categories:

- **Light UAS**: UAS employing an aircraft with a maximum all-up weight (MAUW) of 150 kg or less are traditionally exempt from the full Type Certification process. The justification for this argument is the kinetic energy imparted by the aircraft during an impact with another aircraft or with the ground. The reasoning is that the kinetic energy should be sufficiently low (due to potential low speed and light weight) to warrant disregard to the full Type Certification process.
- **Legacy Systems**: UAS in operation for many years are unlikely to be subject to “retroactive Type Certification”, particularly if the years of operation can add to the set of evidence to prove system robustness, design integrity and overall safety.
- **System Failures**: The failure of systems critical for the safe operation of the UAS should be sufficiently remote, so as not to endanger third parties.
- **Data Link Integrity**: The Data Link is the invisible, and one of the most critical, elements of the UAS. Data Link loss could have potentially disastrous results, if not managed well. Reliability, redundancy, range, strength, status, latency, critical functions and loss management should be considered.
- **Autonomous Flight**: UAS are capable of autonomous flight along either pre-programmed flight paths (waypoint to waypoint), or using intelligence to generate its own flight path between two points. The Safety Argument should consider positional accuracy, chances for misleading information, flight path deviation, flight path alteration and intervention.
- **UA Recovery**: In the unlikely event of a critical system failure, the UA should have a reliable means of safe recovery, without detrimental impact to third parties or property.
- **Collision Avoidance**: Collision Avoidance is primarily an operational responsibility, however, systems governing Collision Avoidance should be highly reliable.
- **Software and Firmware**: The reliability of systems and functions reliant on software and firmware should be sufficiently high, and failure of software elements critical for the safe operation of the UAS should be sufficiently remote, so as not to endanger third parties.
- **EMI and HIRF**: EMI is the result of electromagnetic radiation amongst internal equipment contained within either the UA or GCS, whilst HIRF is the result of the radiation of internal equipment by external radiating sources. Both phenomena can have detrimental effects on equipment, and the UA, and the assessment should prove that the UAS is sufficiently “hardened” to counter these effects. One unique aspect to keep in mind for UAS is the potential effect of HIRF on the Data Link, which, if not sufficiently robust, could result in link loss.
- **Take Off and Landing**: The Take Off and Landing phases of the mission are critical due to the use of either an external pilot – with handover to internal controllers once airborne or prior to landing – or by autonomous means.
A sufficiently robust Safety Assessment can be developed if all the above mentioned attributes have been kept in mind and adequately addressed.

### Airspace Integration

Aircraft operating within the National Airspace (NAS) are required to adhere to “rules of the air”. These rules are stipulated by the International Civil Aviation Organisation (ICAO), and by local authorities (SA CAA), and provide vital information to aviators travelling through the various types and classes of airspace. Rules include, amongst others, minimum separation distances, rules of way and collision avoidance rules, procedures and etiquette, aerodynamic rules, approach and departure rules, etcetera. These rules are internationally governed and are applied throughout the world to allow operators of foreign aircraft entering our NAS to seamlessly integrate with local traffic, and vice versa.

### Airspace Rules for Unmanned Systems

The introduction of unmanned aircraft into the NAS presents a few unique challenges. The primary hurdle is the capability of the unmanned system to detect, sense and automatically avoid (DSA) other air traffic. Aircraft within the flight path, in addition to fixed objects (mountains, masts, buildings, etc.). Manned aircraft are endowed with a “set of eyes” in the cockpit capable of seeing out into the immediate surroundings and vicinity of the aircraft to help detect other air traffic or stationary obstacles; such actions are only hampered in situations where the pilots cannot see outside, typically in cloud (Instrument Meteorological Conditions). In such cases, the onboard crew reverts to Instrument Flight Rules (IFR) and rely solely on instruments. Unmanned Aircraft operate primarily on this principle – all UAS flights are essentially IFR flights, with the exception of the portion of flight where the UA is within visual line of sight of ground observers or operators.

The current lack of standardised DSA equipment and associated protocols (rules) creates an unfavourable scenario when mixing manned and unmanned aircraft within the same airspace. At present, there are no Regulations and no Polices (“rules of the air”) controlling the operation of Unmanned Aircraft interacted with manned aircraft in the National Airspace. This is a worldwide issue and is not isolated to South Africa.

Until such time as Authorities have put in place the required polices and regulations, the current practice requires operators of unmanned systems to apply for a Special Flight Permit prior to each and every flight, if such flight is to take place in civil airspace. The operator is required to submit precise details of the nature of the flight, including the location, flight path, required times, dates, duration, altitude, range and tasks. The SA CAA temporarily closes (“segregates”) the specific portion of the National Airspace for the times and dates applied for, and issue a Flight Permit containing all restrictions and limitations in this regard. A Notice to Airmen (NOTAM) is also issued to warn other Airspace Users of the situation.

A similar process is followed for military UAS operating within military segregated airspace. The applicant or operator submits the request to the Air Force Command Post (AFCP), and the flight is controlled through the issuing of a special technical clearance by DSI, which covers the Technical Airworthiness approval. The flight is performed under control of military Air Traffic Controllers (ATC), radar coverage and Air Traffic Services (ATS), as provided by military authorities within the military segregated airspace; this takes care of the Operational Airworthiness aspects. A Military Type Certified UAS will not require additional technical airworthiness oversight by DSI in this regard, unless the nature of the operation falls outside the scope of the technical approvals.

### Conclusion

The Technical Compliance Program, including Type Certification and System Safety, is an integral part of the process to ensure that safe and airworthy aircraft are designed and built for operations. Although the process may appear cumbersome, expensive, time-consuming and, in certain instances, unnecessary, it eventually affords operators of aircraft systems with the assurance that their systems are safe and in compliance with recognised design and airworthiness standards.

The process to ensure technical airworthiness for UAS is well-documented and, if followed correctly, will yield an air system in compliance with airworthiness, safety and technical design standards. The process to insert and operate inherently technically safe UAS into the National Airspace is far more complex, and is still under development. To ensure safe operations within the National Airspace, UAS operators currently need to apply to local Authorities (SA CAA/ATNS or DSI/AFCP) for special clearance. This process will be alleviated once Authorities and Operators have developed, agreed on and promulgated formal Rules of the Air for Unmanned Systems.

### Design and Building of a Mobile Communications Test Facility at AFB Overberg

Lt Col C. Coetzee

Air Force Base Overberg (formally Test Flight and Development Centre) is responsible for all developmental test flying in the SAAF as well as test flying for SAAF acceptance of airborne systems. One of the more important types of testing which consumes a lot of time (and therefore budget) is the testing of an aircraft’s communications system. Specifications for communications equipment always include Communications Range and Quality. The range requirements differ for the different types of radios on board (Hf, Vhf, Uhf, etc) and the mode of the individual radio (low/high power, encrypted, hopping, etc), among other requirements. In order to ensure that the results are a true reflection of the capability of the system under testing, the reference equipment (against which the requirements are measured) needs to be calibrated.

Traditionally this calibrated radio equipment was housed in a fixed building at AFB Overberg. The aircraft then had to fly to the required distance from the ground facility in order to test that the communications system meets the range requirements at different settings and over the entire frequency range. Apart from the wasted time and fuel to get to the test area, the aircraft then had to return to the base in order to rectify possible problems.

Several years ago the Flight Test Instrumentation and Engineering personnel at AFB Overberg decided to place calibrated radio equipment into a container which could then be transported to the specified range from the base for testing, saving on flight time to and from the test area.

The container, however, needed a specialised towing vehicle, which was bulky and had become unworkable. The Flight Test Support Section at AFB Overberg identified a need for a more cost effective and ruggedized mobile container complete with installed communication equipment and accommodation facilities that could more readily be deployed, for future communications testing.

The concept of using a mobile test facility had already been demonstrated in the old container with the communications testing of the Astra aircraft during the nineties. The new container was therefore planned to be designed, built and tested in time to be utilised for the testing of the Orx communications suite as part of Project Drummer.

A User Requirement Specification (URS) was drawn up in September 2011 which described the requirement in detail. The new Mobile Communications Test Facility (MCTF) was to be self-sufficient when deployed up to a period of 5 days with two personnel. This meant that apart from the radio test equipment on board, there also were requirements for accommodation, cooking and ablution facilities. It also had to be deployable without a specialised transport vehicle and be self-sufficient in terms of water, power and spares. Many flying hours could be saved in this way, as the aircraft under test could commence testing almost immediately after getting airborne.

**Concept of a Deployed Test Facility**

**The Team**

**Test Facility at AFB Overberg**
instead of flying to a test area first, which could be between 100 and 200 nautical miles away. The turnaround times between flights and maintenance activities could also be dramatically shortened as the aircraft did not have to ferry back to the airfield.

As a risk reduction exercise the equipment and layout was initially tested in the old container before detailed design of the new facility commenced. The configuration decided on was a ruggedized trailer, with supporting equipment transported in a separate double cab 4x4 vehicle which would also tow the trailer. Apart from the communication test equipment, the trailer was equipped with a two burner gas stove, a sink, fridge/freezer, water tank, geyser, chemical toilet, shower, generators and sleeping berths.

A task was registered at Director Systems Integrity and the Flight Test Support Section at Air Force Base Overberg received the first components for the MCTF on 20 July 2012. The development of the MCTF was finalised within 66 working days and successfully demonstrated as functional and operationally deployable to the quality section of ARMSCOR on 28 November 2012. The total cost of the project is equivalent to approximately 8 Oryx or 4 Gripen flight hours. The first planned deployment will be in support of the Oryx testing as part of Project Drummer later during this year.

When the trailer is deployed to a distance of 150 nautical miles from the base, communications test ranges of 100 to 200 nautical miles can be verified without the test aircraft flying further than 50 nautical miles from the base. This saves on dead flying time and also allows swift configuration changes and necessary adjustments to the aircraft communications equipment. The utilisation of the MCTF for communications testing in the future pay for its development many times over in terms of time and money.

C47 – TP Engine Cradles
Maj E.S. van Niekerk

Cradle Background
The Dakota aircraft has been in service in the SAAF since 1946, albeit the aircraft has since been extensively modified. Part of the modification of the fleet entailed the replacement of the piston engines by more powerful and efficient turbo-prop engines. The engine cradle on which the newer turbo prop engine is mounted was originally manufactured by Aerosud. Due to the extensive use of the Dakota by the SAAF, the float level of these engine cradles reached a critically low level. 1ASU was subsequently tasked to manufacture additional engine cradles.

Tasking
In August 2011 1ASU was officially tasked by the C47-TP Dakota Design Support Office to manufacture welding jigs for the manufacturing of C47-TP engine cradles. 1ASU was highly motivated with this immense challenge, and planning of the Engine Cradle Project started with determination. The first challenge was to determine whether 1ASU had the capability and facilities while the second was the competency levels of personnel to complete this highly skilled task which comprises elements such as very close tolerances, highly accurate pipe bending and pipe angle welding techniques. Other elements consisted of curing methods in large ovens with temperatures up to 800ºC, machining of huge diameter pipes, as well as various “go-no go” jigs.

The Team
Experienced personnel, considered leaders in their respective fields, were selected for the specific tasks at hand. The diverse range of sub assemblies that required manufacturing led to SAAF members gaining essential skills from the AMG personnel, which were subsequently retrenched during the course of the Project. The SAAF members are still exceeding expectations with the development of the Engine Cradle Project.

Process Planning
The Process Planning commenced and designs, technical drawings, process planning sheets and job cards were created for the manufacturing. Time consuming but essential meetings were diligently held weekly in order to establish and approve the process, consolidating all sections as an effective entity. Meeting high standards and goals required careful planning and willpower.
Facilities

Various hurdles were initially encountered, due to the small tolerances required to the shear physical size of the jigs. The welding room had to be upgraded to perform the specific welding techniques. The door size was doubled to accommodate the jigs. Dust filters and ventilation fans had to be installed. The already large Heat Treatment ovens situated at Thaba Tswane had to be enlarged to accommodate the bulky cradles, which required twelve hour calibration periods. These alterations were all completed by making use of capabilities available within the SAAF.

During the course of the Project the ovens’ electrical cables and control boxes in the Heat Treatment Section were lost due to theft and had to be replaced. This was a major setback, but through determination and willpower the members persisted and these obstacles were overcome. It must be noted that a great deal of 1 ASU’s ability to overcome the electrical cable malfunction was due to the professional support and cooperation of 5 ASU’s Electrical Section.

New Skills and Capabilities

The curing process for the cradles and jigs were hampered by the fact that 1 ASU’s curing ovens are situated at Thaba Tswane. Some of the curing simply had to commence in 7 Hangar and the use of Heating Blankets was suggested, an idea about which some of the members were initially sceptical due to the high costs involved in procuring these blankets. The blankets were procured and soon their worthiness was noted and a new capability was created in the SAAF.

The Road to Success

These pictures are an indication of the progress, as well as the “trial and error” coupled to lessons learnt through the manufacturing process.

Conclusion

1 ASU embraced the challenge regarding the manufacturing of a very high quality aircraft component. Through diligence and determination 1ASU was committed to succeeding with this task. From the Officer Commanding 1ASU to the lowest rank, every member worked in unison to ensure a quality product was delivered.

This project succeeded in enhancing 1ASU member’s pride by portraying our capabilities to the organization and also enhanced the cohesion between various entities within the SAAF. 1ASU will continue to support the SAAF and our community in the years to come. Rendering a professional service is our business.

History of the Pilatus Astra / PC7-MKI

Mr J. Janse van Rensburg

When the Harvard aircraft became due for replacement a requirement was placed on industry to supply a fleet of new basic flying training aircraft. In 1993 an order was placed to Pilatus Aircraft for a fleet of 60 aircraft. The SAAF became the first customer for the Pilatus PC7-MKI aircraft variant, designed and manufactured by Pilatus Aircraft in Stans, Switzerland. Some changes from the PC9 variant included low-pressure tyres more suitable for unpaved runways, a larger dorsal fin and a lower powered turboprop engine.

An order was placed for 60 aircraft which had to feature avionics developed by ATE, a South African based company, in conjunction with Pilatus. The first aircraft to be assembled arrived at AFB Ysterplaat on 22 September 1994 and was ready for the first flight on 13 October 1994.

The completed jig

F Sgt Delport demonstrating the use of the Heat Blankets

The last aircraft was delivered to the SAAF on 10 December 1996.

Two SAAF pilots were trained by Pilatus to perform the acceptance test flights on newly assembled aircraft. The pilots responsible for these acceptance flights were Maj D. Holtzhausen and Maj P. Rossouw. During one of these acceptance flights carried out on 17 October 1996 an engine malfunction was experienced. The catastrophic nature of the engine failure resulted in the aircraft having to be landed immediately. The aircrew were instructed to eject but opted to land on a gravel road outside of Darling, Western Cape. The pilots landed the aircraft safely with only minor damage. This enabled Pratt & Whitney to confirm the problem on the engine and implement a worldwide modification. The pilots were rewarded for saving the aircraft with a two week holiday in Switzerland by Pilatus.

The inauguration ceremony was held on 30 November 1994 with Lt Gen J. Kriel officiating as the Chief of the South African Air Force. The aircraft was then named the Pilatus ASTRA. Following this, the first five aircraft operated from 3 Hangar Langebaanweg while the flying school still operated the Harvard aircraft from 4 Hangar. The first student course on this aircraft was noted as course 1/95 and started in June 1995 with 28 student pilots.

Since 1995 the Pilatus Astra and PC-7 MKI has been used effectively to train more than 459 student pilots and 225 instructors.

Aircraft 2054 on gravel road outside Darling.

CO F Phokela, Capt J Fouche

Ready for night flying under shelters

On Monday 27 March 2006 a significant milestone was achieved when the fleet accumulated 100 000 flying hours. Capt Johan Fouche and CO Frans Phokela enjoyed the privilege to break through this milestone at
10h45, forty minutes into a two hour training flight with aircraft 2055. When considering the original estimations for aircraft attrition, both the aircrew of CTS and the aircraft itself have performed admirably. Given that this is in an ab initio flying environment, the loss of only four air- craft over a period of 18 years remains above expectation.

The first aircraft lost was aircraft 2022 on 8 November 1995 when it collided with aircraft 2018 during formation aerobatic prac- tice. The pilot ejected safely from aircraft 2022. Aircraft 2018 landed safely with ex- tensive damage.

The second aircraft was lost on the 3rd of February 1997. Aircraft 2021 was flown by Maj L Burger and a student when the aircraft could not be recovered from an inverted flat spin manoeuvre. The aircraft crashed on the farm Vrede and was completely destroyed. The pilots ejected safely.

One specific incident occurred on 1st September 1998 when ASTRA 21 was being operated from AFB Louis Trichardt at the time. The news reached head office that an ASTRA, aircraft 2025, collided with a Chee- tah. Immediately the worst was expected for the pilot. The student ejected and was unconscious for a few seconds, only regaining consciousness while falling with his parachute through the clouds. He landed safely, sent a text to the pilot on his cell phone that he was “ok” and was then subsequently picked up by an Oryx rescue helcopter. This was his third ride of the day. His final ride was in the ambulance to hospital, luckily with no major injuries.

By the year 2005 it was evident that due to the both poor reliability of the avionics as well as obsolescence on some components that an inevitable replacement of the avionic system was required. With screens delaminating and components being unreliable the aircraft could no longer be operated in Instrument Meteorological Conditions (IMC).

The objective of the upgrade was therefore to reinstate the IFR status of the aircraft and to remove the obsolete avionic equipment, replacing it with new modern “glass cockpit” components.

This led to the launch of Project ITINAMBO in October 2008 to upgrade 15 ASTRAs and the provision of associated training aids. The contract was again won by Pilatus Aircraft Ltd and was signed on 16 October 2008. The Pilatus solution was to install the avionic suite as fitted to the factory produced Pilatus PC-7 Mk II aircraft which are in service with other Air Forces. This avionic system is certified by the Swiss Federal Of- fice for Civil Aviation for operation under Instrument Flight Rules (IFR).

The PC-7 MkII still serves as the SAAF Silver Falcon display team’s aircraft. These aircraft are also fitted with a smoke generation sys- tem and were repainted to the now iconic Silver Falcon colour scheme in 2008.

Aircraft Technical details:

The PC-7 MkII is an all-metal, single engine, low-wing, training aircraft with two seats in tandem. It is cleared for flight between -3.5g and +7g up to airspeeds of 300 KCAS or Mach 0.60. The aircraft can be flown in aero- batic manoeuvres and training exercises up to its operating limit of 25,000 ft. It is powered by a Pratt & Whitney PT6A-25C free turbo-prop engine with a four-bladed propeller. The engine thrust is offset to minimise the effects of torque. The aircraft is aerodynamically conventional, controlled by manual flight controls with electric trim. It has an unswept single-piece wing with 7° of dihedral from approximate- ly one quarter of the wing span. The aircraft is equipped with a retractable tricycle land- ing gear, electrically controlled and hydrau- lically operated, differential brakes and a nose wheel steering system.

The two-piece canopy provides good visibility from both cockpits and the rear seat is raised to improve the forward view. The canopy must be closed for flight. On the ground, it opens sideways and can be held slightly open by a stay. On ejection, the canopy is shafftered by breakers on the top of each seat. The two ejection seats can be fired at ground level with a minimum air speed of 65 KCAS. The seats can be fired individually, using the handle on the seat pan. Alternatively, they can be fired in sequence, rear seat first, by a command ejection system.

The environmental control system (ECS) provides the cockpit with cooling, heating and canopy demisting. The ECS also supplies air for the anti-g system.
The Roles and Functions of Technology

Col J.J. Van Vuuren

The term “technology” conjures up many differing concepts in the minds of people. The word technology originates from within the language and basically translates as the art, skill and the cunningness of the hand. Technology can be defined as the making, modification, usage, and knowledge of machines, chemicals, the many differing compounds as well as the sum of the table of the periodic elements that can improve techniques, systems, and methods of organisation.

Technology has many differing uses and can be utilised in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input or output relation or perform a specific function. It can also refer to the collection of tools, including machinery, modifications, arrangements, and procedures. The very many technologies significantly affect the human as well as other animal species’ ability to control and adapt to their natural environments.

The term can either be applied generally or to specific areas. Some examples include weapons technology, medical technology, information technology and as in our case, Military Technology and the sub technologies that supports the structure as a whole.

Taking into account of the above noted some concepts can range from blue-sky basic research, such as ion implantation into semi-conductors, or to the demonstrations of new standoff weapons that might have or might not have been designed around such processes. For management though the word technology conjures up the notion of strategy and plans. The word technology as defined by an end user. This is an example of a typically once-off article that is not even considered as a prototype. A philosophical approach would be to consider “the long shadow of technology”. This implies that any technology effort, even if small in effect, throws a long shadow as its uptake into the battle field. The long shadow can also darken the prospects of any competitor.

A formal military definition regarding the use of advanced technology is in itself, extremely complex. The use of descriptors such as sensors, materials, processes, demonstrators, leading edge, IT and improved performance all provides for a good feel for technology. A less precise but more conceptual definition would be that of “an intangible asset that spawns capability”. Technology can also be seen as a capability that, vested in people, provides for a good feel for technology. A less precise but more conceptual definition would be that of “an intangible asset that spawns capability”.

The definition of demonstrate and demonstrator implies that an article has been designed and built by a team of engineers to demonstrate a particular functional performance to address a particular foreseen requirement as defined by an end user! This is an example of a typically once-off article that is not even considered as a prototype. A philosophical approach would be to consider “the long shadow of technology”. This implies that any technology effort even if small in effect, throws a long shadow as its uptake into prototypes, products, capability and doctrine will have far reaching effects in the battle field. The long shadow can also darken the prospects of any competitor.

A fundamental aspect relating to technology is that it positions one to be a “smart” user or buyer. Technology demonstrators come into their own in terms of positioning with hands-on knowledge and experience to become smart. Technology can also be channelled into specific capability areas such as modelling and simulation and decision support that will enhance decision making with regards to upgrade vs. buy decisions, in service maintenance and strategic planning. Unfortunately too many instances prevail where technology is seen as expensive and demanding of effort over too long a period. This is a short sighted approach that will result in main equipment becoming obsolete and ineffective sooner than necessary.

Technology can be a driver of improved capability at a lower cost per hour. Trends for technology spending vary throughout the world. It is reported that 50% of military technology is imported into Europe. The RSA is estimated to spend 0,7% of the GDP on research and development. Japan spends 2,3%. Germany spends 2,4% of its GDP, Greece and Romania spend 0,5%. Brazil, India and Russia spend 1% with China at 1,5%. It is very evidently clear that the RSA is at the tail end of expenditure which is not conducive to the growth of a developing our nation’s “how and why” perspective.

There has always been a drive amongst nations to procure technology. This is very evident in many joint development programs that being conducted across the world as we speak. There are demands of offset agreements and the protection of IP and associated licensing coupled to advanced technology. To be successful in any technology, acquisition requires a three pronged approach namely, technology absorption, technology transfer and technology establishment.

These are three very distinct and separate efforts which when implemented in a coordinated fashion will ensure the acquisition of a new technology base and are set out below. Technology absorption is the process whereby a team of well-experienced engineers gain access to and an understanding of the applicable developed tools, technologies and design strategies.

Technology transfer is the process whereby the absorbed technology is communicated to the point where it is to be established. Technology establishment is the process whereby the local industry, institutes and other entities receives the transferred knowledge, absorbs it and makes it part of their inherent knowledge, capability and expertise. Primary evidence of successful know-how transfer will be forthcoming when upgraded hardware and software items supplied by the absorbing entity pass acceptance testing.

How does one structure a technology effort? A corporate strategy and policy is necessary to provide the framework within which departments, divisions and services can define their own unique directions. A co-ordinating role should be played by corporate body. Independent research and development entities should support the DOD, the Divisions and Arms of Service to perform the necessary exploitation of challenges and to provide unbiased consultation services. The SANDF Capital Acquisition Master Plan should inform the direction and implementation of technology efforts to facilitate preparing for development and acquisition activities. Technology does require a unique value system quite often requiring unique personnel to achieve maximum output.

Technology should be aimed at filling the gap between applied research and full scale development and should be programmed into an institution’s spending plan to facilitate remaining ahead. In particular a military technology effort capability has to match the military mindset to produce applicable military technology.

It is, however, incredibly more than that many commercial successes and applications have arisen out of military applications of technology such as GPS and microwave applications.

It is important to note that technology and acquisition have some fundamental differences, but the most notable is that acquisition baselines are fixed in terms of specification, performance, configuration control, certification and application.

According to LOG 7, Paragraph 1, technology is a combination of skill and capability that can be used to produce or manufacture useful articles of value. It is true but is misses addressing that spark of innovation, that leap of performance enhancement and the long shadow effect.

Technology could be seen as the quick fix for lack of tactical performance, operational challenges and attaining a winning edge. However due to an inherent element of fickleness it requires critical management of time and resources as well as a careful assessment of maturity to ensure that moving from applied research demonstrators into full scale development will be successful.

The pursuit and establishment of technology holds many advantages, most notably the provision of a winning edge but it needs to be tackled, pursued and managed with respect and competence.
Proper Career Management in the Air Force is essential to provide the organisation with a skilled and capable workforce. To perform professional and career orientated succession planning, Career Managers need to be responsible for ensuring the people they serve are properly developed and trained. In this way they should be equipped with the necessary skills for competent output.

The key factor here is the linking of skills development to career paths. This was made especially evident at the DoD Human Resource Development Conference held during July 2013.

To most people Career Management is the responsibility only of the Functional Director/System Group Director at Air Force Headquarters, but in reality this is not the case. Career Management is a line responsibility. All managers share the responsibility for the Career Management of those serving under their command and control. The responsibilities of the Functional Director, Line Manager and individual member are illustrated in the figure below.

As reported in the previous edition of Ad Astra, the SAAF eagerly illustrated in the figure below. those serving under their command and control. The responsibilities of the Functional Director, Line Manager and individual member are illustrated in the figure below.

Career Management
Col M. Mattheyse

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Career Management Triangle

- **Functional Director**
  - HR Plan of Mustering
  - Succession Planning
  - Career Plan
  - Analyse Career Questionnaires
  - Seniority List
  - Placement/Contract Board
  - Submissions
- **Line Manager/Structure Manager**
  - (Director/OC/Supervisor)
  - Structure
  - Service Delivery
  - Continuity
  - Operational Objectives
  - Career Interview
  - Provide PD with Info
  - Past/Person Profile of Posts
- **Member**
  - Commitment
  - Aspirations
  - Career Questionnaire

It is essential that all of these individuals play their part for effective Career Management to happen. Director Human Resources is often confronted with enquiries from members who feel they have not benefited from the Career Management process, for instance by not being nominated for a course or being informed too late of courses they were nominated for. The route cause of these problems can usually be traced back to a break in communication between the member and their Line Manager or Functional Director. This usually takes the form of documents not being completed, or negative confidential reports being filed without the member taking cognisance of the comments.

Career Management is the process which plans and shapes the progression of individuals in the organisation. This is done in accordance with organisational needs and objectives, members’ performance potential and their preferences. However, this is just a process, requiring input from all parties so as to be effective. Individuals are urged to consult their Line Managers and Functional Directors whenever they have enquiries, ensuring the process works correctly.

As reported in the previous edition of Ad Astra, the SAAF eagerly anticipated the arrival of 36 Royal Air Force Cadets from the United Kingdom and 40 Young Falcons from various provinces in South Africa who, on Sunday the 30th June 2013 formed a group of 76 air cadets.

They gathered to participate in a locally hosted nine day aviation development programme. The arrival of the cadets was preceded by an exceptional amount of hard work and thorough planning via both parties locally and abroad. The participating cadets were formed into four flights namely, the Gripen, Typhoon, Puma and Rooivalk that represent aircraft of both countries.

The primary objective and aim of the visit was to develop a partnership between the two Air Forces, with the overall aim of establishing an Air Force Cadet system for the SA Air Force.

In the welcoming address delivered by Maj Gen F. D. Pelser he reiterated the historic relationship between the South African Air Force and the Royal Air Force. He reminded the cadets that they are the future leaders of the two Air Forces and he encouraged them to stay focused, positive and to remain in control of their own destinies.

**Once in a life-time experience**

The facilitators of the program set clear guidelines to give an opportunity for cadets to understand the challenges that careers in both the Royal Air Force and SAAF aviation environment hold. After having attended lectures on the history of the SA Air Force and its air power capabilities, the cadets then had a chance to view the military aircraft that are on display at the SAAF Museum. The following afternoon they visited Denel Aviation and explored the company’s Simulator Training Centre.

**Exposure to the SAAF & SA Navy Environment**

A C130 from 28 Squadron transported some of the cadets from AFB Waterkloof to AFB Ysterplaat. Visits to 22 and 35 Squadrons were facilitated where the cadets learned more about the Maritime History and the Maritime Capabilities of the South African Air Force. At AFB Ysterplaat Museum Mr Chris Teale and his staff introduced the visitors to the well-kept aircraft on display.

In the evening the cadets thoroughly enjoyed the various cultural activities at the Young Falcons Academy where they explored the virtual flying equipment utilised by the South African cadets.

**Naval Base Simon’s Town**

The next day the cadets visited the Simon’s Town Naval Base where they were welcomed by the OCC SA Naval Museum. The cadets were introduced to the proud history of the SA Navy, with an emphasis on the maritime relationship between the SA Air Force and the SA Navy.

The cadets were divided into three flights which then visited the frigates the SAS Amatola, the SAS Isandlwana) and the SA Navy Museum submarine, SAS Assegai.

The cadets conducted themselves in an exemplary manner as a number of compliments were received from Navy personnel, praising them on their behaviour and discipline. After the morning visit to the SA Navy, the cadets returned to AFB Waterkloof.

**Social and sport activities**

The following day the cadets witnessed the flying programme at the SAAF Museum AFB Zwartkop, and those who were interested attended a lecture on the intricacies of air navigation. They also had an opportunity to enjoy the display of a wide range of military vehicles.
and also participated in other interesting activities. On completion of the flying activities the cadets were taken to the SAAF memorial to pay respect to the late airmen and women some of whose ashes are interned there. The following day the cadets enjoyed a day at the Valley of the Waves at Sun City.

Prize-giving ceremony

The cadets of both countries were awarded a Certificate of Aviation Development and a wooden shield was presented to each cadet by Brig Gen Y.J. Mavumbe. In her closing speech she acknowledged the hard work done by all members responsible for the aviation awareness and the youth development activities.

Passing-out parade

At an official passing out parade the cadets drilled in a very well disciplined, well rehearsed parade.

During the General Salute by the Deputy Chief of the SAAF Maj Gen G. Malinga, three SAAF Museum Harvard aircraft performed a fly past which made everybody on the parade feel that they were now part of the military aviation family.

During the Deputy Chief of the SAAF’s closing address he reminded the parade participants that knowledge is about the empowerment of individuals. He told the cadets that they are the future aviators and that many opportunities await them.

In conclusion he said, “Stay focused, maintain direction, energise, be innovative, stay positive, act and influence when necessary and remain in control of your own destiny.

Remember what you have been taught and exposed to in military aviation, use it wisely and make a difference whenever an opportunity arises itself.”

Every year the SAAF Inspector General evaluates the entire SAAF structure via a well tested internationally recognised set of standards which then indicates who achieved the highest score in any set of groupings that cover all aspects of the SAAF Management System.

There are thirteen different criteria that measures the total performance of the SAAF and of these thirteen, the winners are then awarded trophies in three rankings in effect, Gold, the top scorer, Silver, the second best and Bronze marking third place.

These awards are always fiercely contested and very shortly after the event, everyone look at their results and immediately start thinking up new and innovative ideas in order to improve their rankings or, as usual, how to maintain the coveted first place.

The thirteen criteria are training, aviation safety, SHERQ, and then the best performing directorates, the best performing flying units, the best performing air servicing units, the best performing protection squadrons, the best performing operational units, the best performing general support units, the best training units, the best Air Force Base, the very coveted Sword of Peace and finally, the Prestige SAAF Unit Award.

This year the 2013 Prestige Awards Ceremony was hosted at AFB Waterkloof on the 31st of January 2014, and on the eve of the 94th anniversary of the second oldest air force in the world.

It was an elegant event, with a 2 Squadron Gripen flown by Lt Colonel Moosa Mbokota presenting a magnificent twilight flying display. The South African Air Force Band added double the value to the event with polished performances, as well as more entertainment from Yvonne Chakachaka who also happens to be the Honorary Colonel of the Air Force Gymnasium.

The Master of Ceremonies that evening was Lt Col Etienne van Blerk who said that the Inspector General of the Air Force had evaluated the performances of all SAAF units and bases and was he was satisfied with the results he had presented to the CAF.

The Chief of SAAF Lt Gen F. Z. Msimang urged other units to work harder next time around and to strive for even higher levels of excellence. He thanked the Inspector General and the team, Yvonne Chakachaka as well as all of the other members who had worked so diligently in preparing and delivering an event that in itself was of the highest order.

AWARDS RECIPIENTS

Royal Air Force Training Award
3rd runner up: 80 Air Navigation School, AFB Yplt
2nd runner up: 2 ASU-Detached, AFB Yplt
Winner: 85 Combat School AFB Makhado

Aviation Safety Award
3rd runner up: AFB Yplt
2nd runner up: 85 CFS
Winner: AFB Makhado
Safety, Health, Environment, Risk & Quality Award
3rd runner up: 41 Sqn, AFB Waterkloof
2nd runner up: AFB Durban
Winner: 87 Helicopter Flying School, AFB Bloemspruit

Best Performing Directorate Air Command
3rd runner up: DAT BHS
2nd runner up: DAS
Winner: Directorate Base Flying Training

Best Performing Flying Unit
3rd runner up: 21 Sqn, AFB Waterkloof
2nd runner up: 35 Sqn, AFB Yplt
Winner: 44 Squadron

Best Performing Air Servicing Unit
3rd runner up: 1 ASU, AFB WKLF
2nd runner up: 2 ASU, AFB Lbwg
Winner: 6 ASU Bloemspruit

Best Performing Protection Squadron
3rd runner up: 525 Sqn, AFB Overberg
2nd runner up: 506 Sqn, AFB Bspt
Winner: 515 Squadron AFB Makhado

Best Performing Operational Unit
3rd runner up: LASS, AFB Hspt
2nd runner up: BACS, SAAF HQU
Winner: 500 Sqn, Swkp

Best Performing General Support Unit
2nd runner up: SAAF HQU
Winner: Air Force Museum Swartkop

Best Performing Training Units
3rd runner up: CFS Lbwg, AFB Lbwg
2nd runner up: SAAF College
Winner: 80 Air Navigation School

Best Air Force Base
3rd runner up: AFB Bupt
2nd runner up: AFB Yplt
Winner: AFB Overberg

Sword of Peace Award
3rd runner up: 19 Sqn, AFB Hqpt
2nd runner up: 17 Sqn, Swkp
Winner: 28 Squadron Waterkloof

Prestige SAAF Unit Award
Runner ups: AFB Yplt & AFB Bupt
Winner: AFB Makhado

The combined Air Force (AF) and Basic Military Training (BMT) parade took place at Air Force Base (AFB) Waterkloof. Lieutenant General Zimpande Msimang as the parade review officer officiated over the procession held on 01 February 2014.

Dark clouds with the promise of rain gathered just before the review officer observed the general salute and salute flight. The first drops of rain came almost an hour after a display by new troops.

This year’s celebration was held on a weekend, Lt Gen Msimang the Chief of the Air Force (CAF) officiated. It was his first in 2013 he did not attend due to other official commitments.

The day was a perfect platform for CAF to address members of the Air Force on the correct state of affairs. In his speech, the general raised his voice in painting the way forward for the aircraft organisation to hundreds of spectators.

The general lamented that, in 2014, the organisation will be concentrating building capacity in every respect; restructuring; transformation in the broader sense; career planning and youth development. The SAAF will also be locking into building reserve force capacity in all mustering and support the reserve force flying squadrons.

CAF was speaking at 94th anniversary of the birth of the SAAF. SAAF established on 01 February 1920, is the second oldest Air Force in the world. The SAAF closely follow the Royal Air Force (RAF). Colonel (Sir) Pierre van Ryneveld, whose statue stands tall inside the entrance of SAAF Headquarters, was appointed Director Air Services. He was tasked with the establishment of an Air Force for the Union of South Africa.

Lt Gen Msimang, leading the 94-year-old SAAF is in his infant stages as the Chief of the Air Force. According to the general, SAAF is going through a restructuring phase. And, he urged uniform members and captains of industry to allow it to grow in the new direction.

General Msimang boosted about the recent external deployment of the locally designed Rooivalk attack helicopter. The Rooivalk was deployed in the Democratic Republic of Congo late in 2013 under the auspices of the United Nations (UN) mission. One of
them was on display still with UN colours, supported by amongst other Hawk, fighter jet.

"The platform was a demonstration of mutual relations between the SANDF and the South African Defence Industry", said CAF. Moreover, the general said both parties have "designed, developed, produced the best in the Rooivalk in terms of an attack helicopter".

On parade, 52 new recruits were unveiled to the public. The course was presented over the period 14 August – 01 February 2014 at Boston near Hoedspruit. General Msimang said the new troops answered a nations call, which is "serve, and country". "When I look into your eyes, I know you will carry us even further and higher", the confident Lt Gen Msimang told the class of 02/2013. The 52 women and men entered Boston as civilians, on 01 February 2014 they marched off, off AFB Waterkloof as soldiers.

Airmen Salina Makhunga was awarded the fittest female soldier with an average of 84, 33%. Amn Makhunga was born on 13 August 1993 in Setlopo, Mafikeng. In 2010 she passed grade 12 at Setumo High School. The shy Makhunga said she will be utilised in the protection mustering. "I have always wanted to 'work' for my country, now that I am in the Air Force my destiny is halfway fulfilled", said Amn Makhunga.

Furthermore, Airmen Thabo Matabane became the biggest winner of the evening with two accolades the fittest male (90%) and overall (95, 1%) recruit. Born in Lebowakgomo, Limpopo Province on 02 December 1991 and passed grade 12 at Voortrekkerhoogte High School in 2010. And, will now serve the SAAF in the Supply Support environment. When asked what he will miss the most about the course, Amn Matabane said being compared to a former instructor, Corporal/Peter "Skappie" Matabane. He said most instructors said he was his younger brother, it should be note that they are not related "we just share a similar surname".

During the parade, Lt Gen Msimang awarded the award for Prestige Unit of the Air Force (2013) to AFB Makhado. AFB Langebaanweg took the award last year. The trophy with a fish eagle of top with its wings spread was handed to base commander, Brig Gen Schalk van Heerden.

The SAAF Band added glamour to the evening with an unusual uniform. The band usually received applause for their music, 2014 was different. The band, under the direction of Lieutenant Colonel Matthys Pienaar unveiled (dress in) their new uniform. The garments are set to "inspire confidence" so believes the Air Force commander. That, in keeping with the SAAF vision: An Air Force That Inspires Confidence.
Exactly one year ago today, the South African National Force lost some of its finest Airmen in an air crash close to Cathedral Peak Range in the Drakensberg Mountain. May I request that we rise and observe a moment of silence in honour of our fallen heroes… We shall remember them.

It gives me great pleasure to extend a warm and cordial welcome to you all on this auspicious and memorable occasion, as we honour yet another group of Air Force aviators to our proud flying fraternity. To the members on parade, I urge you as General Brown said, “Look to your left and right towards your brothers in arms. You’re all now members of a proud warrior class.” You have answered our nation’s call – which is Service, and Country. May you grow to be airmen with integrity, … for ours is to serve with discipline, dignity, professionalism and patriotism.

I request that we give them all a big round of applause.

This event marks the summit of a long period of dedication, and hard work by all of you. Your achievement would have not been possible without the commitment of the various Officer Commandings, your instructors, your mentors and the support of your parents, family members and loved ones.

I offer a special word of welcome to your proud families, loved ones and friends. Thank you for your support.

As disciplined members of the SANDF, we must contribute towards creating the right conditions for economic growth, safety and security within our borders and in the SADC region, continentally and internationally.

Given the Government’s focus on “Peace, Security and Stability” on the African continent, the SANDF is increasingly undertaking tasks to preserve life, promote peace and reconciliation, in order to give development and stability a chance. The skills and experience you have now acquired are crucial in meeting our Constitutional mandate and to defend our National interests.

A month ago, two South African Air Force Rooivalk helicopters attached to the UN’s Intervention Brigade flew the aircraft’s first ever combat mission – and our aircrew and supporting personnel performed with distinction.

From left: 2Lt Leo Heymans, 2Lt Tebogo Mashaba, Lt Col Lourens Erasmus, Lt Gen F.Z. Msimang, Col Kenny Peteo, Lt Col Gerrit Pretorius, Capt Michael Motsatse, 2Lt Vusi Phakathi • Left back: 2Lt Johan Ginage, 2Lt Leletlu Motsegiela, 2Lt Jason Hartt, 2Lt Wilfred Ntuna, 2Lt Nielus Heimes, 2Lt Ernst Hlungwane
Clearly, the primacy of air power will be a decisive factor in shaping the outcome of future conflict. Indeed, an agile and decisive Air Force is a major component of the South African Defence Force. It is for this reason that you, the members on parade, must perform your duties with discipline, diligence, and zeal.

The recent success of the Rooivalk mission in the Democratic Republic of Congo is indicative of the continuing high standards of training and discipline that our Air Force members receive. Within all this, please know, understand, and appreciate that safety is an inseparable element in our Air Force culture and it is our critical key performance indicator.

Since June 2013, we have embarked on an analysis of the SAAF Training Environment, to ensure that all ten SAAF Training Providers are aligned and structured to accommodate the National Qualification Framework imperatives. This is critical if we are to ensure that training standards in our institution, within the SAAF are relevant, professional, and recognized accordingly.

As soldiers, the success of our Air Force will be underpinned by an enforcement of discipline and the concentration on functional, developmental, and physical training. In other words, we have to heed the call of “going back to basics”—for ours is to serve with discipline, dignity, professionalism, and patriotism.

As we mark the 16 days of activism against Women and Children Abuse may we, as soldiers be exemplary in our respect to our women and children in our respective communities, our homes, and working environment all year round, and at all times. To the men in uniform, let us be the candle of hope of a gender sensitive South Africa that nurtures, supports, and protects our women and children and loved ones.

To the members on parade, I wish you all … Success in your future endeavours. You are our future leaders. Go out there and serve the Nation. The Air Force Command Council, will definitely be following your careers with interest—continue with the hard work and discipline you have demonstrated so far.

I thank all the members on parade led by the Parade Commander Maj Dreyer. I also thank the South African Air Force Band led by Lt Col Pienaar for adding a touch of elegance and sparkle to this auspicious occasion. I wish you all a safe festive season; full of love, laughter, and good health. Have a festive season filled with God’s blessings and beauty.

I thank you.
You do not have to be a financial guru to know that a spending plan and a wealth strategy are an important tool for managing money. In the true spirit of nurturing and empowering spouses, the SAAF Spouses Forum invited Nedbank to present a financial fitness programme at the SAAF College as part of Human Rights month celebrations.

The Chairperson of the SAAF Spouses Forum, Mrs Afrika Msimang, said "we need to shift our perception of a budget from a negative punishment mindset to something aspirational. Military spouses are often the unsung heroes of the military. When the service member is away the spouse is left in charge of legal and financial issues at home. We have to be empowered to know how to establish and handle our finances effectively and efficiently in order to avoid Mashonisa, and so called "Black listing."

As a military spouse, many with difficulties of finding employment due to frequent moves, you are probably well aware that financial problems can often have an impact on your husband or wife's ability to carry out his or her military duties. In fact, many studies around the world reveal the correlation between financial difficulties and the rise in domestic violence. We need lessons in financial planning to be prepared, should an emergency strike the immediate family and relatives we are responsible for, and how to prepare for future expenses such as crèche or university fees for the children and inevitable retirement.

The inspirational Mrs Ntsihleseng Lebaka, the financial fitness expert from Nedbank, gave us a nutritious menu on the fundamentals of personal financial management. Her presentation focused on things that we, as a military spouses can do to help get our family on a solid financial footing. The members and spouses who attended this programme, found it helpful and informative. They said that they now know that they have to list both fixed and fluctuating expenses and all other little budget related issues, like clothing and entertainment that often catch them off guard. The spouses said they enjoyed the session on Debt Prioritization. We all know that Debt is a reality of modern life, but not all debt is the same. Ms Lebaka gave us insight on which debt is best to pay off early, which can wait, and how to manage it all effectively.

Now is the time to learn to take control of your money, rather than having your money control of you. More financial fitness programmes will be offered at all SAAF bases for all spouses.

Financial Fitness to Avoid Mashonisa

Mama Afrika

35 Squadron Newest C47-TP Commander

Capt J. L. King

35 Squadron, a transport and maritime squadron based at AFB Yzerfontein, recently had the privilege of signing out their first ever black transport B-Category commander on the C47-TP aircraft. This honour was bestowed on Capt Sibusiso Nkosi after he completed his final route check during June.

Capt Nkosi was born on the 9th of January 1981 in the town of Ermelo in Mpumalanga. He grew up in the dusty streets of Wesselslo where he lived with his father, Solomon and late mother, Thoko, as the youngest of four children. In 1989 he began his primary education at Pieter Mabuza Primary School and continued it at Bashele Higher Primary from 1991. He matriculated with a Matric Exemption from Ithafa Comprehensive High School in 1998 where his interests in Maths and Science guided his wish to study engineering. In 1999 he attended the Wilbank campus of the University of Pretoria to study Electrical Engineering, but unfortunately financial constraints cut his education short and he returned to his hometown. It was here where he came across an advert for the DOD Youth Foundation and, embracing the interest he had for aviation from a young age while watching the aircraft flying out of a nearby airfield, applied for the program. He attended the DOD Youth Foundation in 2002 and on the 15th of January 2003 found himself at the Air Force Gymnasium in Valhalla, ready to begin his career. He completed his Basic Military Training and then the Officers Formative Course later that year and proceeded to the Military Academy in Saldanha early in 2004. During 2004 and 2005 he studied various subjects at the Academy in order to attain his Higher Certificate of Military Studies from the University of Stellenbosch, a prerequisite before commencing to the flying phase of the Pilot's Course.

During 2006 he completed his Pilots Wings Course at AFB Langebaanweg and was awarded his wings on the 12th of December that year having been streamed to become a fighter pilot. He remained at the Central Flying School's "E" Flight while waiting for his transfer to BS Combat Flying School. This was not to be, however, as a backlog of students led to the line effectively closing to new pilots, necessitating a move to the transport line. Capt Nkosi was transferred to 41 Squadron at AFB Waterkloof in August 2007 and completed his Basic Air Transport Course and conversion onto the Cesna Caravan early in 2008. He would not remain there long though and was transferred to 35 Squadron in October after expressing his interest in flying the big tail dragger.

Capt Nkosi completed his conversion onto the twin-engined C47-TP Turbo Dakota in August 2009 and began his tour as a co-pilot. After flying several hundred hours during which he earned the trust and appreciation of his commanders due to the efficiency he showed in carrying out his tasks, he became a C-Cat commander and completed his Maritime Operation Conversion Course to become a fully-fledged fixed-wing maritime pilot. This qualification opened the doors to gain valuable operational experience externally and later the same year completed two tours in Mozambique in support of Ops Cooper, once deploying as a maritime pilot and the second time deploying as the Air Component Commander aboard the SAS Hanswana.

After working hard to reach the required amount of hours, Captain Nkosi was given the chance to prove himself and undertake the B-Category Command checks and, after passing them, made history by not only becoming the first black C47-TP commander at the squadron, but also the first black B- and C- Cat commander in the squadron's history. Capt Nkosi (that's Sibu to his friends) lives happily with his wife, Buleleka, with whom he has been involved since 2006, and their 4 year old son, Stshoela.

He currently has around 820 hours to his name including over 560 on C47-TP while holding the ratings of B-Category Transport and D-Category Maritime commander. Apart from his flying duties he is also an Aviation Safety Officer at the squadron where he has excelled in promoting a safety culture, particularly by ensuring the other aircrew members attend the courses which are available to them. Overall his quiet efficiency and high regard for the feelings of others, as well as his impeccable military bearing and professionalism in carrying out his duties have made him a popular and well respected member of the 35 Squadron family. When asked what he could say about his achievements he responded: "Whoever you are or wherever you come from doesn’t determine your future. Only hard work gets you to where you want to be."
Mthatha Airport had been undergoing major renovations during 2012 and 2013. This included increasing the size of runway 14/32 to 2600m/45m in order to accommodate an increase in air traffic to the area. During November 2012 a SAAF C47-TP aircraft departed the runway during the after-landing roll and collided with a construction ditch. The size of the ditch was significant and the aircraft was severely damaged as a result. After the accident a sequence of events was triggered in order to recover the stricken aircraft. The recovery of C47-TP 6877 went ahead as joint venture between 1 ASU and 2 ASU (Det) Aircraft Recovery Teams in three phases.

The aircraft had come to rest in close proximity to the runway and posed a safety risk to other traffic. The President of the Board of Inquiry instructed 1 ASU Aircraft Recovery Team to clear the aircraft from the runway as part of Phase 1.

Once the operational status of the airport restored Phase 2 commenced. Damage to the aircraft was classified as 5.1, which relates to the recovery of all usable components from the aircraft, whilst the fate of the fuselage is determined by the ongoing Board of Inquiry. Removing the aircraft from the airport was paramount as the airport was preparing for its official opening and the arrival of various international dignitaries.

The 2 ASU (Det) Aircraft Recovery Team worked around the clock and through a number of thunderstorms. The team, consisting of Capt H. Cengani, WO1 W. Carstens, WO2 T. Leendertz, FSgt C. Smith, Sgt J.J. Koegelenberg, Sgt J.J. Vosloo, Sgt R. van Zyl and Mr F.J.A. Koegelenberg, were commended on a job well done as they managed to complete the arduous task within the allocated three days. Once stored under quarantine subsequent functional testing would determine serviceability before returning any components to operational service.

Air Command then ordered the removal of the aircraft from Mthatha Airport and once again a joint venture saw members of 1 ASU, 2 ASU (Det) and 35 Squadron deploy on short notice. The team was tasked on Monday, deployed on Tuesday and arrived on site on Wednesday afternoon.

Facing a 12h00 Thursday completion time the team, consisting of WO1 W. Carstens, WO1 R. Stebbing, FSgt M. Snodgrass, FSgt K. Dreyer, Sgt R.S. van Zyl and Cpl Z. Rolfe, once again did 2 Air Servicing Unit (Det) proud by having the aircraft removed from Mthatha Airport by 10h30 on Thursday. This was despite the fact that a section of the perimeter fence had to be removed to accommodate transport movements.

The fuselage was inhibited and stored at 14 SAI awaiting Phase 3: total dismantling and disposal. On 8 July 2013 the new runway at Mthatha Airport was officially opened by the Minister of Transport, Ben Martins.
During the week of the 30th of September to the 4th of October the SA Air Force netball event was hosted at AFB Ysterplaat and the Wynberg Sports Club. The tournament was unique in the fact that there were both male and female teams participating. The aim was to promote social cohesion through sport.

AFB Ysterplaat accommodated over a hundred netball players from nine bases around the country. As the tournament brought women and men together, the reactions from male players were interesting. FSgt M. Ramokolo said, “Netball is not only for females as initially believed. Myself and other men have proved that for the past few days.

As of today I am tempted to say men make better netball players than women.” Further, he refuted the unfounded belief that men who engage in this sport are “gay” or feminine. He said many of the men are “straight” and none of them showed any discrimination. He also added that none of the females who played against them were at all discriminatory.

FSgt Ramokolo is a 40-year old, 1.75m tall, from 5 Air Servicing Unit at AFB Waterkloof. His height surely helped his game. He was awarded the award for Best Shooter (Male). This award is an achievement considering he has only played netball for 7 months. FSgt Ramokolo has played volleyball and basketball before switching to the female dominated sport of netball. He believes the difference between the three forms of sport is negligible.

He is currently on a mission to recruit more men into the sport. His dream is to play for the regional team and ultimately the South African national team. In his opinion, the championship assisted in achieving social cohesion. We are reminded that stiff muscles suffered during the tournament will not last, but the memories would.

The championship was used as trials for selecting the SAAF netball teams. According to the organisers, the chosen teams would compete against other arms of services. Brig Gen Y. F. Mavumbe, the patron of the sport, said social cohesion should be used as a tool to foster nation building. She further urged the players to leave a good legacy and to lay a red carpet for the new generation. “The fact that no ground work was prepared for you must not deter your thinking. Go and be the force of change you want to see. The future generation will be asking what you have done; the organisation is here to support you. Your blood and sweat was not in vain, as some of you were chosen to represent the organisation”, said Brig Gen Mavumbe. The General is a former netball player herself; she played netball during her school days. She urged players and all involved to return to their bases and units and pass on the skills.

The final matches were played on Thursday. The rules of the International Federation of Netball Associations (IFNA) and the Netball South Africa (NSA) were observed throughout the championships. Teams played 30 minute games (15 minutes a side) with a 2 minute break. They played on a round-robin basis to determine the overall winner. The points were awarded as follows: Win – 2 points, Draw – 1 point, Lose – 0. In the event of a tie the results were determined by the goal average. The yellow and red card rules were enforced. No player was issued a red card during the tournament. Results are as follows:

**Male Team:**
AFB Waterkloof (position 1) (A Team)
AFB Ysterplaat (position 2)
AFB Waterkloof (position 3) (B Team)

**Female Team:**
AFB Swartkop (position 1)
AFB Ysterplaat (position 2)
AFB Waterkloof (position 3)

Best Shooter: F/Sgt Mpho Ramokolo
Best Centre Court: Cpl K.A. Matlawa
Best Defender: Cpl E.T. Mmasa

The best overall player of the 2013 Netball Championship was Cpl M. “Caster” Mabelebele from 68 Air School. The tall lady also plays for Salvokop Start as a goalkeeper. She told the Ad Astra correspondent that she had a dream of having seven children.

All of whom would play netball as a family team, a mixed team if they are not of the same sex. She believes men in general look chic while playing the game. The “best team spirit” award went to 68 Air School. The SAAF female team triumphed over the Western Cape regional netball team, beating them 24 – 9.
RISING TO NEW DIMENSIONS

17 - 21 SEPTEMBER 2014
AFB WATERKLOOF
CITY OF TSHWANE
CENTURION

Strategic Outcomes
READINESS
SUSTAINABILITY
SAFETY
COMPLIANCE
IMAGE
“My 10 year old son, Khwezi, has always wanted to fly aeroplanes. Old Mutual let him spend a day in the cockpit with real pilots to experience his dream job, 15 years before it happens. I have peace of mind knowing that he will have the means to make his dream come true no matter what happens. I’m glad I have life cover in place to help secure his future.”

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