Chapter 10

The SA Air Force: mandate, activities, main equipment and key personalities

The SA Air Force (SAAF) is the second-oldest air force in the world. It was founded in 1920 by Sir Pierre van Ryneveld, a pioneer of aviation in South Africa. The world's oldest air force, the Royal Air Force, was established two years previously, partly at the instigation of General Jan Smuts, then a member of the British War Cabinet. Australia's Royal Australian Air Force is the third oldest and was also established in 1920. The SAAF is the second-most senior service in the SANDF.

What is the mandate of the SAAF?

To provide and manage the air defence capability of the Department of Defence on behalf of the DoD, thereby participating in the service to ensure:

- The sovereignty and protection of the Republic's territorial integrity.
- Compliance with the international obligations of the Republic to international bodies and states.

In plainer language, the SAAF exists to defend South Africa's airspace from unfriendly or unauthorised incursion, to support its sister services and to support government's foreign and domestic policies.

Vision

The South African Air Force intends achieving the following ten strategic objectives by 2012:

Declaration 1
The SA Air Force is able to maintain an affordable and sustainable balance between the structural elements of air power: Equipment, People, Doctrine – each element developed to its full potential and employed with maximum efficiency.

Declaration 2
It can conduct all operations entrusted to it with an exceptional degree of dependability and skill.

Declaration 3
It can afford its force design, sustain all required force preparation and force employment, and maintain high standards of aviation safety.

Declaration 4
It has a rejuvenated, affordable, sustainable, representative and skilled "one force" human resource component, consisting of Regular Force, Reserve Force, Public Service Act Personnel and contracted human resources, which it develops and maintains trough a well-established and comprehensive human resource strategy formulation and planning process.

Declaration 5
It is free of racial stereotypes and gender biases, and offers opportunities for all its members to find self-fulfilment and contribute meaningfully to the creation of air power excellence, and it is free from crime from within its own ranks.

Declaration 6
It has well-developed strategies and plans aimed at the optimum application of air power, and its personnel are proficient in air power fundamentals.

Declaration 7
It has a common, shared Air Force culture and ethical code which promotes unity amongst its members who share a common passion for military aviation.

Declaration 8
It is able to respond efficiently and timeously to national priorities as and when called upon.

Declaration 9
It has successfully integrated all new aircraft systems into the SA Air Force, and can operate them at the intended flying rates with a high degree of operational efficiency.

Declaration 10
It consistently achieves high levels of efficiency and organisational effectiveness through a mature systems management approach.

SAAF Vision 2012 was compiled and published in 2002 as the Air Force's ten-year strategic plan. As a strategy, it serves as an intellectual construct to link where the SAAF is today with where it wants to be ten years' time in a substantive and concrete manner. In its first three years, Vision 2012 achieved a remarkable level of acceptance at all levels of the Air Force and its long-term objectives have permeated the organisation to the point where even the most junior members are able to relate their daily tasks to the Air Force's vision.

Once an organisation has adopted a vision to transform itself over an extended period, the question arises of how frequently such a view should be updated to ensure that it remains valid. If it is updated and changed too often, it runs the risk of creating an apathetic attitude in the organisation where some people do nothing but wait for the next update in the hope that their responsibilities will be overtaken. If, on the other hand, the vision is updated too infrequently, it runs the risk of becoming outdated as people stop referring to it in the knowledge that real events have already overtaken much of its contents.

To find a workable solution, the Air Force Board decided to conduct a comprehensive strategic revision of Vision 2012 every third year, or whenever a major strategic event triggers such an update. In alternate years, the validity of the strategy is maintained through a process of technical reviews where the fundamental strategy is assumed to be still valid and the only changes made are at the technical level, such as dates, aircraft numbers (to account for losses) and budget amounts.

2005 marked the first comprehensive update of Vision 2012. The planning process roughly followed the same approach as used for the original version of Vision 2012, namely to first review the current status of the organisation, then define the desired future state of the SA Air Force, perform an in-depth analysis of the strategic environment, compare where it was with where it wanted to be in ten years and, finally, define a planning framework with tasks and responsibilities to ensure that the objectives were achieved. Planning staff in the Air Force Office worked closely with the DoD and the field air force to ensure that the updated strategy was an accurate reflection of the desired future state of the organisation, and that its plan to get there was realistic and achievable.

Table 10.1: Explaining SAAF Vision 2012.

Mission

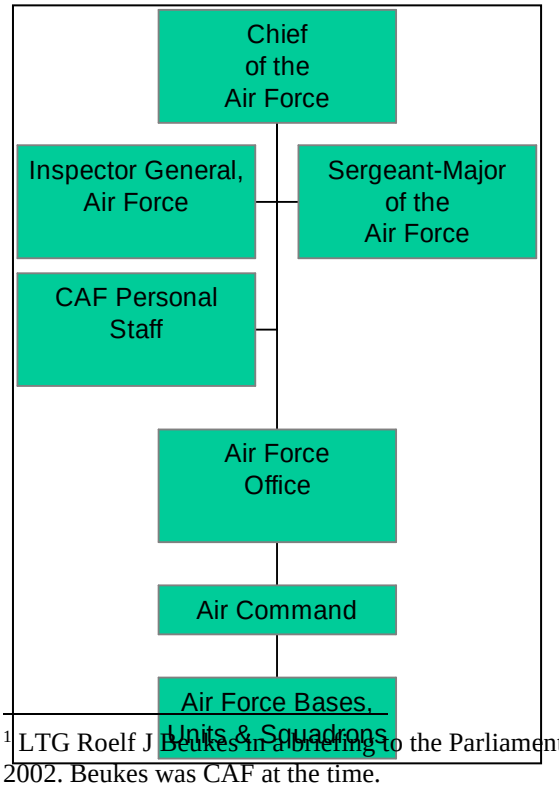
"The SAAF provides combat ready air capabilities for the SANDF in service of our country."[1]

Motto:

Per Aspera Ad Astra (Through Adversity to the Stars)

How is the SAAF currently macro-organised?

SA Air Force headquarters consists of the Air Force Office in Pretoria as well as the Air Command. The role of the Air Force Office is to prepare and supply combat ready air forces. In this role Chief of the Air Force (CAF) is supported by various directorates also situated in Air Force Headquarters.



[1] LTG Roelf J Beukes in a briefing to the Parliamentary Portfolio Committee on Defence, July 19, 2002. Beukes was CAF at the time.

Table 10.2: The SAAF

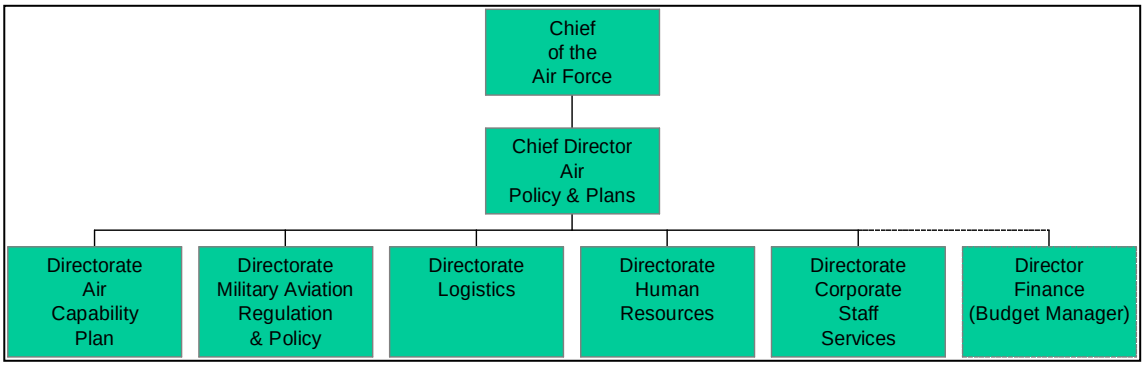


Table 10.3: The SAAF office.

LTG Carlo Gagiano was born on March 26, 1951 and joined the South African Air Force in 1968 and qualified as a pilot on the Aermacchi Impala in December 1969. During his career he flew the Harvard, Pilatus PC 7, Vampire, Sabre, Mirage III, F1CZ, as well as the Cheetah D and E aircraft.

In 1985 he completed the South African Air Force's Senior Command and Staff Course and was subsequently appointed as the Officer Commanding 3 Squadron, operating F1CZ aircraft. In 1989 he was appointed as the Officer Commanding 89 Combat Flying School with Cheetah D aircraft.

He was military attaché to Israel from 1991 to January 1994. He completed the SANDF Joint Staff Course in November 1994 and was then transferred to Central Flying School Langebaanweg as the Officer Commanding. After a four-year tour at Langebaanweg, he was transferred to the Air Force Office in December 1998, promoted to Brigadier General and appointed as Inspector General of the Air Force on April 1, 1999.

On 1 November 2000 he was promoted to Major General and appointed as Chief Director Operations Development at the Joint Operations Division, responsible for defence capabilities, joint force employment strategy, joint command and control and joint doctrine.

After a three-year tour at the Joint Operations Division he was transferred back to the South African Air Force as Chief Director Air Policy and Plans, responsible for Air Force policy, capabilities, strategy and resource allocation.

Gagiano was appointed as Chief of the Air Force on March 1, 2005.

Gagiano is married to Leonie.

Table 10.4: CAF's biography

Inspector General, AF

The IG, Air Force, serves on the personal staff of the CAF. In common with his peers in the other services and in many other militaries in the world, the IG is expected to report on and promote the combat readiness (including mission performance, discipline, morale and esprit de corps), integrity, efficiency, effectiveness and credibility of the Air Force through impartial and independent inspections, assessments, inquiries, and investigations.

"It is the primary task of the Inspector General of the Air Force to manage a professional inspection service based on the mission, vision and value system of the SAAF, in order to ensure that the SAAF functions in an effective manner. To achieve this, various types of inspections are carried out. These include General Inspections, Functional Inspections, Staff Visit Inspections and Readiness Inspections."[2]

Brigadier General WJ Hartog joined the Air Force as a pupil pilot in July 1968 and was awarded his "wings" the next year. He next attended operational conversion courses and flew the de Havilland Vampire (1969), the Canadair Sabre Mk6 (1970) and the Mirage III (1971), serving with 85 Combat Flying School and 1 Squadron during this time. Hartog is a qualified Pilot Attack Instructor and acted as a A-Category Instructor & Flight Commander at CFS Dunnottar and as an Attack Instructor & Flight Commander at 85 Combat Flying School. He was also acting base commander at AFB Hoedspruit before being posted to 3 Squadron as officer commanding. Next Hartog was Personal Staff Officer to Chief of Air Staff Operations and Military Attaché to Israel. On his return he was Senior Staff Officer: Aviation Safety and then Officer Commanding AFB Makhado.

Hartog holds a BA Degree (University of South Africa) in Natural Sciences. He is a graduate of the Junior & Senior Joint Warfare Course, the Senior Command & Staff Course, Senior Joint Staff Course, Basic Flying Safety Management Course and International Aviation Safety Programme Management Course (University of Southern California) and Military Attaché's Course. Hartog's extramural activities include woodwork and gardening. He hols a commercial pilots & civilian grade II Instructors License. He also speaks Hebrew.

BG Hartog is married to Marietjie and has two daughters, Ingrid and Tania.

Member of the SAAF Board.

Table 10.5: IG AF's biography

WO1 S.J. Du Preez was appointed as the Sergeant Major of the Air Force on November 1, 2002. This is a step up from his previous appointment as Sergeant Major of Air Command. Born Stephanus Johan he completed his education in Afrikaans Hoër Seunskool Pretoria in 1967 and thereafter attested in the Air Force as an apprentice Aircraft Mechanic and qualified in April 1971. In 1974 he qualified as a Flight Engineer on Helicopters. WO1 Du Preez served in three helicopter squadrons and flew operationally in all the original French manufactured helicopters in SAAF inventory.

Du Preez has had various appointments and served on many forums in

[2] Inspector General of the Air Force, The State of the Air Force, SAAF Bulletin, 6/99, p5.

his career, he was appointed Squadron Logistical Officer 19 Sqn, coordinator of the SAAF exhibition at the Louis Trichardt (now Makhado) Show and winning a gold medal. He has served as chairman of the SAAF Technical Trade Training Committee and as SO Flight Engineering at Air Command. He served a term of duty on the staff of Inspector General of the Air Force and was requested to be a technical advisor and judge to the 1997 helicopter competition.

His hobbies include gardening, socialising, reading and sport. He represented E Province, Natal Defence in volleyball. He is a keen golfer and won the Natal SAAF Golf Championships whilst stationed at 19 Sqn, AFB Durban. He is a Defence Force volleyball umpire; he was given Defence colours for rugby, cricket, baseball and soccer. He is a member of the South African Technical Institute, the SAAF Association and the Memorable Order of Tins Hats. He is married to Elize and they have two children Eloise and Neil.

Du Preez firmly believes that "with the aid of the newly implemented South African Excellence Foundation, we will be able to identify the SAAF's strengths and areas for improvement to ensure success in Chief of the Air force's venture for Air Power Excellence". He fully supports CAF, the Air Force Board and the Air Command Council and sees his appointment as an ideal position from which he can be a major contributor to the success of the SAAF of the future.

Member of the SAAF Board.

Table 10.6: The WO of the SAAF's biography

SA National Defence Force (1994 – present)

Chief of the Air Force

• LTG Carlo Gagiano	March 1, 2005 – present
• LTG Roelf J Beukes	March 1, 2000 – February 28, 2005
• LTG Willem Hendrik Hechter	May 1, 1996 – February 29, 2000
• LTG James Kriel	April 27, 1994 – April 30, 1996

SA Defence Force (1957-1994)

Chief of the Air Force

• LTG James Kriel	November 1, 1991 – April 26, 1994
• LTG Jan PB van Loggerenberg	July 1, 1988 – October 31, 1991
• LTG Dennis J Earp[3]	March 1, 1984 – June 30, 1988
• LTG A Michal Muller	December 1, 1979 – February 29, 1984
• LTG Robert HD "Bob" Rogers[4]	March 1, 1975 – November 30, 1979
• LTG Jacobus P Verster	December , 1967 – February 28, 1975
• LTG Henry J "Kalfie" Martin	May 1, 1965 – November 30, 1967

SAAF Chief of Staff

• Combat General Barend G Viljoen	September 23, 1956 – April 30, 1965

Union Defence Force (1912-1957)

• BRIG Stephen A Melville	August 25, 1954 – September 22, 1956
• BRIG Harold G Willmott	July 1, 1951 – August 24, 1954

Director General of the SAAF

• BRIG James T Durrant	October 1, 1946 – June 30, 1951
• BRIG Harold G Willmott	October 17, 1945 – September 10, 1946
• MG Christoffel J Venter	October 1, 1940 – October 16, 1945
• COL John Holthouse	September 13, 1939 – Sept. 30, 1940

Director Air Service and Technical Services

• LTC Hector C Daniel	September 13, 1936 – Sept. 12, 1939

Director Air Service

• COL John Holthouse	May 1, 1933 – September 12, 1936
• COL Sir Helperus Andreas "Pierre" van Ryneveld	February 1, 1920 – April 30, 1933

[3] Earp was shot down during the Korean War (1950-1953) and was taken prisoner-of-war.
[4] Later became a DP MP.

Table 10.7: Previous Chiefs of the SAAF

SA National Defence Force (1994 – present)

SA Defence Force (1957-1994)

Union Defence Force (1912-1957)

Table 10.8: Previous WO of the SAAF

What is the SAAF Board?

The Air Force Board is the highest decision-making body in the Air Force. It provides strategic guidance to the Air Force.

Expand on the role of the Air Force Office

The Air Force Office is the result of the April 1, 2000 restructuring of the SANDF. LTG Gagiano and his staff are tasked with ensuring the SA Air Force contributes to the achievement of the Department of Defence's outputs through the provision of landward defence capabilities. The SA Air Force provides air forces that contribute to

- 'Defence Against Aggression',
- 'Regional Security' and
- 'Support to the People'.

The role of the Air Force Office is to prepare and supply combat ready air forces. In this role Chief of the Air Force (CAF) is supported by various directorates also situated in Air Force Headquarters.

<u>Chief Directorate Air Policy and Plans</u>

MG Mandla Mbube Mashobane Mangethe was born on December 27, 1952 in Johannesburg and Matriculated at Musi High School in 1972. He attended the Jabulani Technical college until 1975.

Mangethe served in the ANC's armed wing, uMkhonto We Sizwe from 1976 to 1994. He is married to Thoko and has four children. In 1994 he integrated into the SANDF as a pilot at 44 and 41 Squadrons. During 1997 he lectured at the Air Force College. From 2000 he served as Senior Staff Officer Long Term Planning at the Air Force Headquarters.

In January 2001 he was appointed as Chief of staff Regional Joint Task Force West (Cape Town). He became General Officer Commanding Regional Joint Task Force West in April 2002.

He was appointed Director Operational Support and Intelligence Systems in April 2003 at the Air Force Headquarters. In January 2004 he was appointed Chief Director Force Preparations and on

March 1, 2005 he was appointed Chief Director Air Policy and Plans.

Member of the SAAF Board.

Table 10.9: CD APP's biography

Directorate Air Capability Planning

Brigadier General PJ van Zyl was born in Vredendal in the Western Cape and attended school in the small town of Lutzville just north of Vredendal. He matriculated in 1969 and was called up for national service to 10 Anti-Aircraft Regiment in Youngsfield. In 1971 he joined the SA Army and spent the next five years as a training officer at Youngsfield.

In 1975 he successfully applied for pilot training and received wings in June 1976. He served as a staff pilot on 8 Squadron until 1979, flying the Aermacchi Impala Mk I and II aircraft. This tour was followed by a Mirage III conversion course in 1980 and a tour as a reconnaissance pilot at 2 Squadron, the Flying Cheetahs, at Air Force Base Hoedspruit. During this time he participated extensively in operational reconnaissance missions in the operational area and flew more than 170 operational missions in Mirage III RZ and R2Z aircraft. On completion of this tour of duty in 1986, he was transferred to Central Flying School Dunnottar where he attended the flying instructors' course and served as a flying instructor until June 1989. Van Zyl was then transferred to AFB Louis Trichardt as operations coordinator, a post he held until December 1990. This tour was followed by a staff assignment in the projects environment until he was appointed as Senior Staff Officer Air Projects in 1994. He held this post until 1997 when he was transferred to the United States to attend the National Defence University for post-graduate studies. In 1998 he was appointed as Air Attaché in Washington, DC and remained in this post until June 2001, when he returned to South Africa.

Brig Gen van Zyl holds a BA degree in Political Science from the University of South Africa, and a Master of Science degree in National Resource Strategy from the National Defence University in Washington, DC. He completed the Joint Staff Course at the SA Defence College in 1997. Brig Gen van Zyl is presently appointed as Director Air Capability Plan at the Air Force Office where he is responsible for the strategic planning of air capabilities in the Air Force.

He is married to Carol, and they have two sons. His hobbies are photography and computers, and he enjoys hiking and camping.

Member of the SAAF Board.

Table 10.10: DACP's biography

Directorate Military Aviation Regulation & Policy

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Table 10.11: DACP's biography

Directorate Logistics

Brigadier General T.(Tersia) Jacobs
Member of the SAAF Board.

Table 10.12: The DLog's biography

Directorate Human Resources

Member of the SAAF Board

Table 10.13: The DHR's biography

Directorate Corporate Staff Services

Director Corporate Staff Services
Brigadier General PN Sibiya
Member of the SAAF Board.

Table 10.14: The DCSS's biography

Director Finance

Mr. J.H. Coetzee
Budget Manager
Member of the SAAF Board.

Table 10.15: The SAAF Budget Manager's biography

Chief Directorate Aviation Academy

Major General N.L.J. (Lucky) Ngema.
Member of the SAAF Board.

Table 10.16: CD Aviation Academy's biography

Chief Director (without portfolio)

Major General EH (Eddie) Dert matriculated from the Green and Seapoint Boys High School in Cape Town in 1965 and attested in the Air Force as an apprentice radio/radar (airborne) mechanic in January 1966. As an apprentice he served at 2 ASU AFB Ysterplaat and qualified on Shackleton Sonic Systems. Directly after qualifying, he served as a technical instructor at the School for Technical Training (now 68 Air School). He then attended the course for the National Higher Diploma for Technicians (Electronic Engineering) at the Technikon Pretoria over the period 1970 to 1974 while serving at 4 Air Depot (detached at AFB Waterkloof) and maintenance Group SAAF.

He received his commission in December 1975, completed the SAAF Senior Command and Staff Course in 1984 and Joint Staff Course in 1993. As a junior officer he served at Maintenance Group and 4 AD from 1975 until 1980, a period in which he was responsible for the execution of aircraft avionics system modifications in the SAAF. He also served for three years as the Chief Technical Officer of 3 Squadron with the Mirage F1CZ product system and later as Staff Officer Maintenance (Mirages) at Air Force Headquarters. He served for two

years as a member of the controlling staff for the Senior Command and Staff Course at SAAF College and five years as Senior Staff Officer Engineering (Electro-technical) at Air Force Headquarters which included the primary functions of engineering policy, management of all local industry technology projects and training programs for SAAF engineering students. Military awards received during his career include the Good Service Medals, Bronze, Silver and Gold, the Military Merit Medal, the Southern cross Medal and Bar to the Southern Cross Medal. In January 1993 he was appointed as the Officer Commanding 5 Air Depot, a post he held until his appointment as Brigadier General and Director Maintenance Group and Computer Systems, Air Force Headquarters, in April 1996. Subsequently to the restructuring of the SAAF in 1998 he was appointed in April 1999 as Director Logistics in the Air Force Office. Maj Gen Dert was appointed in April 2001 to the post of Chief Director Force Development and Support. In January 2005 Maj Gen Dert was assigned to specific Air Force Board Focus areas. Maj Gen Dert is married to Joan and they have three children. For the purpose of recreation he enjoys boating and angling as opposed to golf and as a hobby practices popular music and astronomy. Member of the SAAF Board.

Table 10.17: CD without portfolio's biography

Expand on the role of the Air Command

The Air Command lies on Level 3 of the DoD's structures and is also situated in the Air Force Headquarters in Pretoria. The purpose of the Air Command is to prepare combat ready air forces by executing the plans and policy created on Level 2 by the Air Force Office by translating strategic plans into executable business plans, according to allocated resources.

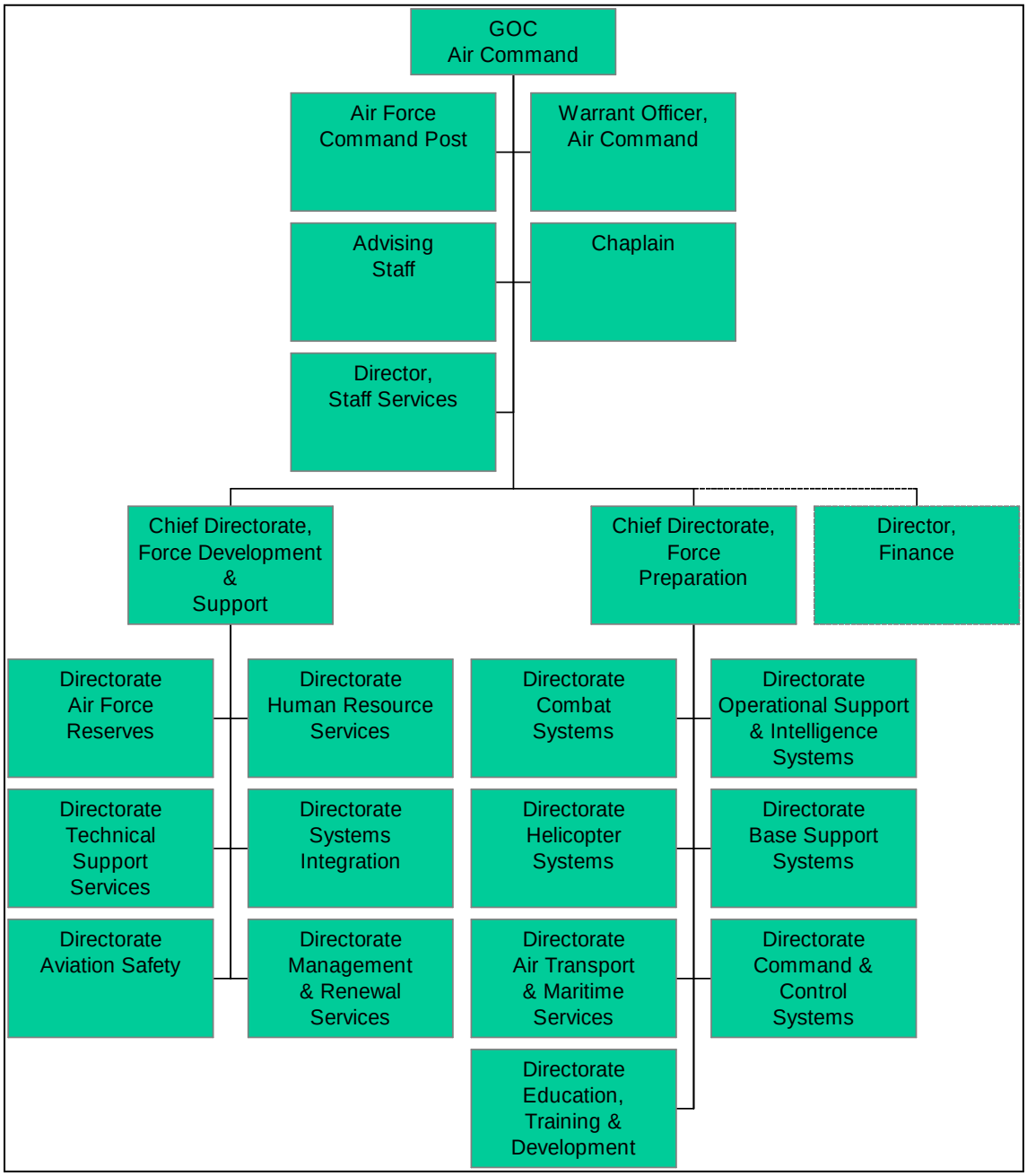

Table 10.18: The Air Command

Major General Frans J (Lappies) Labuschagne was born in Johannesburg in March 1950 and matriculated from Alberton High School. He joined the South African Air Force in 1968 and qualified as a pilot in 1969. He obtained his Bachelor of Military Science Degree at the Military Academy, in Saldanha in 1972. He completed his Senior Command and Staff Course in 1985 and the Joint Staff Course in 1994 respectively.

During the period 1973 to 1976 he served as a basic flying instructor, teaching student pilots on North American T6 Harvard and Aermacchi MB326 M&K Impala aircraft. The following four years he served as a pilot attack instructor at 85 Combat Flying Training School. After completing the Mirage III Operational Conversion Course he was posted to 24 Squadron. Over a period of eight years, from 1980 to 1988 he filled various posts on this

squadron ending his tour being the officer commanding of the squadron for the last four years.

For the remainder of his career to date, MG Labuschagne has served at the Air Force Office as staff officer and senior staff officer involved with the force preparation of the fighter/bomber squadrons. From 1992 to 1994 he served as the Officer Commanding of Central Flying School Langebaanweg and for the period December 1994 to June 1998 he served as Attaché in Washington DC. Upon his return from USA he went back to the Directorate Force Preparation and has served as Chief Director Force Preparation in the Air Command from April 1999 to December 2003. He served as GOC Air Command since January 2004.

Maj Gen Labuschagne is married to Irene and has two children; both married, and two grand daughters. He is interested in golf, motorcycling and the collecting of old literature.

Member of the SAAF Board.

Table 10.19: GOC Air Command's biography

Chief Directorate Force Development & Support

This chief directorate is responsible for the operational development and support of the Air Force by formulating and monitoring the necessary doctrine, policy, directives and guidelines. Its six directorates are:

- Air Force Reserves
- Aviation Safety
- Human Resource Services
- Management & Renewal Services
- Systems Integration
- Technical Support Services

Major General H.A. Bhembe
Member of the SAAF Board.

Table 10.20: CD Force Development & Support's biography

- Directorate Air Force Reserves

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Table 10.21: Director Air Force Reserve's biography

- Directorate Aviation Safety

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Table 10.22: Director Aviation Safety's biography

- Directorate Human Resource Services

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Table 10.23: Director HRS' biography

- Directorate Management & Renewal Services

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Table 10.24: Director M&RS' biography

- Directorate Systems Integration

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Table 10.25: Director SI's biography

- Directorate Technical Support Services

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Table 10.26: Director TSS' biography

Chief Directorate Force Preparation

This chief directorate is responsible for both personnel training and the readiness of the SAAF's flying assets and squadrons. Its seven directorates are:

- Air Transport & Maritime Systems
- Base Support Systems
- Combat Systems
- Command & Control Systems
- Education, Training & Development
- Helicopters Systems
- Operational Support & Intelligence Systems

MG Gerry Malinga
Member of the SAAF Board.

Table 10.27: CD Force Preparation's biography

- Directorate Air Transport and Maritime Systems
  As the name implies, all maritime and transport activities fall under this directorate. Associated units are:
  - 21 Squadron
  - 28 Squadron
  - 35 Squadron
  - 41 Squadron
  - 44 Squadron
  - Air Force Reserve Squadrons
    - 101 Squadron
    - 102 Squadron
    - 104 Squadron
    - 105 Squadron
    - 106 Squadron
    - 107 Squadron
    - 108 Squadron
    - 110 Squadron
    - 111 Squadron

BG Anton Kriegler

Table 10.28: Director ATMS' biography

- Directorate Base Support Systems

Responsible for the maintenance of facilities and airfields at nine bases and seven forward airfields. The Base Support Operational Systems component assesses the mission preparedness of ground support systems. It furthermore provides the relevant force preparation operational plan and training syllabi for base support personnel. The Base Support Logistic System component ensures the achievement of system effectiveness through optimised engineering and contract management support.

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Table 10.29: Director BSS' biography

- Directorate Combat Systems
  This directorate is responsible for all offensive and defensive fixed wing activities. Units answering to it include:
  - 2 Squadron
  - 60 Squadron
  - 85 Combat Flying School
  - Electronic Warfare Centre

BG Pierre du Plessis

Table 10.30: Director Combat Systems' biography

- Directorate Command & Control Systems
  This busy directorate has in its charge the SAAF Mobile Deployment Wing, consisting of:
  - 18 Deployment Support Unit
  - 92 Tactical Airfield Unit
  - 140 Squadron
  - 142 Squadron
  - Mobile Comm Unit

  The directorate also commands the:
  - Bushveld Airspace Control Sector
  - Lowveld Airspace Control Sector
  - Air Force Command and Control School

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Table 10.31: Director C2's biography

- Directorate Education, Training & Development
  This directorate provides the SAAF a mechanism through which the education, training and development of its members take place. Associated units are:
  - 68 Air School
  - 80 Air Navigation School
  - Central Flying School

- SA Air Force College
- SA Air Force Gymnasium
- SAAF Museum

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Table 10.32: Director EDT's biography

- Directorate Helicopter Systems
  Responsible for the operation control of all the SAAF's helicopters, this directorate comprises:
  - 15 Squadron
  - 16 Squadron
  - 17 Squadron
  - 19 Squadron
  - 22 Squadron
  - 87 Helicopter Flying School

BG Hugh Paine

Table 10.33: Director Helicopter Systems' biography

- Operational Support & Intelligence Systems
  This directorate incorporates the intelligence, counter intelligence and Protection Services Squadrons. Their core business is the provision of operational support to the SAAF for the conduct of air operations. Units include the:
  - Joint Air Reconnaissance Intelligence Centre (JARIC)
  - Protection Services:
    - 500 Squadron (SAAF Task Force)
    - 501 Squadron
    - 502 Squadron
    - 503 Squadron
    - 504 Squadron
    - 505 Squadron
    - 506 Squadron
    - 508 Squadron
    - 514 Squadron
    - 515 Squadron
    - 525 Squadron
    - 526 Squadron
    - ?
    - ?

10 Air Depot?
TFDC?
ASU?
APSC?

SAAF Band?

Does the SAAF's macro structure reflect the "wings in the air"?

The SAAF is a small air force and in the absence of a discernable threat there is no indication that it will grow in combat power in the foreseeable future. Threat and resources determine structure and this, in turn, shapes superstructure in the same way as the environment plays a role in determining the shape of a house and that shape the roof. However, an independent service, of any size, needs its superstructure to fulfil a number of functions if it is to be so described. This is even more the case with a high-technology service such as an air force. For this reason, the SAAF superstructure may be larger than its structure would seemingly require – but while this is the price one pays for service independence, one must guard against condoning over-ranking or the pegging of posts at a certain level of seniority with the intent of matching a similar post in another service. In simple terms, a post should be pegged at the lowest level possible for its effective and efficient discharge. This, largely, the SAAF seems to have accomplished.

Expand on the AF "capabilities"

Unlike the SA Army, where "capabilities", such as infantry and armour, largely coincide with its professional corps, the SAAF's capabilities lie in its equipment not the career branches of its staff.

Air Combat Capability (Fighters)
Mission: To provide and sustain operationally ready advanced light fighter aircraft, light fighter training aircraft, long range transport, in- flight refuelling and electronic warfare aircraft, crewed by appropriately qualified personnel.
Taskings:

- Combat: Denel Cheetah C&D
- Combat Training: BAE Hawk LIFT
- Heavy Transport/Mission Support: Boeing 707
- Electronic Warfare: EW Centre

Readiness: Limited by a shortage of qualified pilot attack instructors, a resultant training backlog and a lack of funds to pay for adequate flying hours. In addition, the phasing out of the Impala in 2005 and introduction of the Hawk LIFT in 2006 as well as the winding down of the Cheetah fleet, in anticipation of its replacement by the Gripen in 2008, caused turbulence in the fighter community. At present, training is optimised to prepare fighter crews for the most likely contingencies, being basic air defence and reconnaissance as well as some precision bombing and air-to-air refuelling. Only 10 Cheetah can carry the V4 beyond visual range air-to-air missile and only two are fitted with cockpit laser designators for delivering precision weapons. Tactical reconnaissance is limited to day operations only. The readiness situation at 60 Squadron is also serious – a lack of capacity among technical staff – and the present budget – in 2005 only allowed for the continuous operation of one of the three flightworthy B707 platforms. This fell to none in 2006. A ray of sunshine in

2005 was the availability of two 60 Sqn crews qualified in air-to-air refuelling, up from just one the year before. Meanwhile, the electronic warfare capability has atrophied. The squadron's EW systems have become obsolete and are no longer fitted. The ability to determine an enemy's electronic order of battle is limited – but, paradoxically within the requirement set by the Joint Operations establishment. Returning to the Hawk, the first conversion course to the little LIFT was set for May 2006 and was to be presented by BAE Systems to a class of eight – four black males, one white female and three white males[5]. This, was, however, delayed. 85 CFS was only re-opened in October 2006 when the first ten Hawk aircraft were also officially received – the first four were delivered in May 2006. By October 2006, the first four trainees had completed their ground training and was about to begin flying the Mk120 Hawk. A further four students were undergoing ground training on the school's state-of-the art simulators. Speaking at a ceremony on October 19 to mark the re-opening of the school and the acceptance of the first ten Hawks, 85 AFS commander, Colonel Daan van der Linde said he would be training eight students a year. Training on the LIFT lasts 430 hours and follows 180 hours at the Central Flying School. Eligible pilots are then trained on the Gripen.

Air Transport & Maritime Capability

Mission: To provide and sustain operationally ready transport and maritime aircraft crewed by appropriately qualified personnel.

Taskings:

- Air Mobility for Diplomacy: Boeing Business Jet, Dassault Falcon 50/900
- Medium Heavy Transport: Lockheed C130BZ
- Medium/Medium Light Transport: Casa 212/235
- Medium Range Maritime patrol: Douglas C47TP
- Light Transport/Reconnaissance: Cessna 208/185
- Command & Control: C550/BE30/BE20/PC12
- Air Force Reserve Squadrons: Various, private aircraft

Readiness: This capability was by late 2005 being dogged by a personnel shortage, with only 58% of pilot posts being staffed. While the VIP squadron was staffed to "meet requirements[6]", other squadrons were being undermined by shortages of air and

[5] LTG Gagiano, April 2005.

[6] But: In April 2005 Defence Minister Mosiuoa Lekota ordered a probe into why on several occasions aircraft had been unavailable to fly then-Deputy President Jacob Zuma on official business. An answer to a parliamentary question that month revealed that despite the 21 Squadron fleet, Zuma and his aides flew on chartered private planes on more than 20 occasions between May 2004 and January 2005, costing the taxpayer more than R2-million. Of these 21 flights, 11 were chartered because of a "shortage of cabin crew" on other available flights, the Sunday Independent reported at the time. Seventeen of the chartered flights were local - many between Air Force Base Ysterplaat and Air Force Base Waterkloof. One flight between Johannesburg International Airport and Cape Town International Airport cost R93,176,81. This flight was undertaken because no SAAF aircraft were available, apparently due to other commitments. Other chartered flights included a trip in August 2004 to Dar-es-Salaam, Tanzania, for Zuma and his party to attend the 22nd Great Lakes heads of state summit in Burundi. That trip cost R389,790,96. Another flight, costing R251,196, was chartered from Johannesburg to Dar-es-Salaam in May 2004 when the deputy president attended the Southern African Development Community's extraordinary summit on agriculture and food security. It is not clear whether the result of this probe was ever publicly announced. In December 2006 another furore erupted around VIP air transport and Lekota announced another "commission of enquiry" into the matter, this time concentrating on flights chartered for the Presidency and Cabinet ministers between January 1 and December 10. Media reports said Lekota expected announce some finding three months hence. The

ground crew, particularly senior flight crew and aircraft commanders. As a result, the SAAF could only provide four to six of the 15 aircraft required daily. On the plus side, the coming to fruition of several projects as well ass interventions to do more with the funds available, has led to a significant increase in readiness – and actual hours in the air – in recent years. Good fortune has also smiled on the SAAF: An investigation has found that reports on wing problems on the C130BZ fleet were somewhat exaggerated. The outer wings indeed required some attention, but the main wing spars have many decades of use ahead of them before they will require the attention that have grounded heavily-used C130B fleets elsewhere in the world. The average SAAF C130 now has 10,000 hours on log (after 40 years of flying); while in the US it is 60,000[7]. However, the Cessna 185 fleet was also less than ready due to a platform rebuild programme and the C47TP fleet was being hampered by a spares shortage.

Helicopter Capability

Mission: To provide and sustain operationally ready light utility helicopters, medium transport helicopters and combat support helicopters, crewed by appropriately qualified personnel.

Taskings:

- Medium Transport: Denel Oryx
- Light Utility: Eurocopter Alouette III, Eurocopter BK117, Agusta A109

Readiness: In late 2005, units were only 61% staffed with pilots and 66% with flight engineers. Only 51% of the flight engineers were deployable due to medical restrictions. In addition, a significant part of the pilot pool was junior and less experienced than required. The phasing out of the Alouette fleet and delays in the arrival of the Agusta A109 replacement created turbulence in the light utility helicopter (LUH) fleet. By March 2007 16 A109 (out of 30) had been delivered. It also appears this fleet will require more funds to operate than the Alouette III and might be more temperamental and have a smaller lift capability. Although it represents a leap in capability, expected shortfalls in the operating budget will prevent the full exploitation of its potential. The Alouette was finally "officially" retired on June 30, 2006, after 40 years in service. By late 2005 the daily requirement for 16 LUH a day could be met – using the Alouette. A year later, the A109 was in service with 17 and 19 Squadrons as well as 87 Helicopter Flying School – but were not much in evidence. To the author's knowledge none took part in the SA Army's annual force preparation exercises in 2006 (Seboka and Young Eagle) – Oryx and BK117s being used instead.

Beeld (Jan-Jan Joubert, Al Mbeki, adjunk se vlugte bekyk, December 14, 2006, p1) reported that a chartered flight arranged to fly Deputy President Phumzile Mlambo-Ngcuka to Australia and New Zealand in October of that year cost taxpayers R3 million and a flight to the UK in December cost R4.55 million. The true purpose of the inquiry is not yet clear, but from comments made by Lekota at a Saturday morning briefing a week before Christmas indicated that it could be to seek justification to buy a second Boeing BBJ. Lekota also made some fuss over his department being responsible for the travel arrangements of the national president and deputy president, who "by law" may not fly scheduled commercial airlines for "security reasons". He did not state what Act of Parliament he was referring to or elaborate on the security concerns, raising the possibility that they have been invented to justify the travel arrangements.

[7] By simple calculus South Africa's C130BZ fleet needs to fly another 200 years before encountering the same problem. The calculus, of course, is not really that simple… The formula to determine wing wear includes variables such as hours flown, the weight loading of the aircraft, the type of surface landed or taken off from, etc.

The situation with the Oryx fleet was less rosy in 2005, with only 22 of the 30 aircraft required being available. Of these, only 10 can be deployed for more than four weeks at a time. Maintenance was being hampered by a lack of personnel and compounded by a similar lack of capacity at Denel for product support. At the same time, the Oryx fleet has become due for a midlife upgrade and major service, which should it fail to materialise, will ground the fleet by 2007. A project, dubbed "Drummer" has been registered to address this issue. The Rooivalk combat support helicopter was still in project phase and not ready for operational service. According to a candid assessment, the requirement for four Rooivalk would only be met at the end of 2006 and the best estimate for a deployable capability was for sometime in 2007[8]. Speaking to the media in March 2007[9], LTG Gagiano said this had slipped to 2008.

Command & Control Capability

Mission: To supply and maintain operationally ready command and control elements in support of air battle space operations.

Taskings:

- Air Traffic Management
- Air Defence Management
- Information Technology & Communications Management
- Ground Command & Control Management
- Air Force Command & Control School

Readiness: In late 2005 this capability was staffed at "satisfactory" levels with sufficient mission controllers to meet then-current flying needs and adequate numbers of air traffic controllers. The two Airspace Control Sectors were providing 24 hour airspace control and their supporting radars were providing the necessary medium and high-level coverage. An upgrade programme was also underway for the service's long-range radars. In a candid assessment, the SAAF identified a need for better low-level coverage, pointing out this required either tactical mobile radars or airborne surveillance. On the negative side, some of the equipment in use was becoming outdated and difficult to maintain, especially in the face of persistent underfunding. Also, while there was enough static and mobile communications equipment to satisfy all planned internal requirements; any increase in external deployments would require the reallocation of resources, which could have an effect on internal force preparation exercises. The reduction in flying hours was also affecting this branch, impacting directly on the honing of their skills. In April 2006, Jane's Air Force News Briefs reported that Exercise New Horizon 8 had demonstrated the "capability of integrating civilian radars, civilian flight plan data, strobe data, shipping information, ground-based air-defence and naval air-defence information at a central node."

Operational Support & Intelligence Capability

Mission: To prepare, develop, provide and support protection support, intelligence systems and counter intelligence support to the SAAF through protection squadrons, intelligence subsystems and Air Force unique intelligence training.

Taskings:

- Counter Intelligence

[8] In April 2005 LTG Gagiano pegged the date as July of that year.

[9] CAF briefing, AFB Makhado, March 9, 2007.

- Intelligence
- Joint Reconnaissance & Intelligence Centre (JARIC)
- Protection Services

Readiness: The withdrawal and planned disposal of the Seeker 1 has somewhat dented the capabilities of this branch. According to the DoD's 2004/5 Annual Report, JARIC could provide 100% of the imagery support requested, 92% in that period and 8% later. The report credited 91% of JARIC's products as having a "positive impact on society", though how this was measured was not explained. The counter intelligence capability was, the report said, undermined by a "general lack of security awareness" in the SAAF as well as a shortage of officers and NCOs in the mustering. The protection services also did well in the 2004/5 year, notably the elite 500 Squadron, the SAAF's Task Force, who deployed to Ivory Coast in late 2004 to provide President Thabo Mbeki visible, armed close VIP protection during a visit there. However, persistent underfunding, leading to a deterioration in equipment as well as understaffing has left the country's air force bases less well protected than they perhaps ought to be in the current high-crime environment.

Base Support Systems Capability

Mission: To provide air base infrastructure facilities to squadrons and resident units on bases, including maintenance of all relevant systems and personnel, in order to support flying operations.

Taskings:

- Airfield Systems
- Aviation Fuel systems
- Ground Power Units
- Fire-fighting Service
- Motor Vehicle Systems
- Facilities & Operational Structure

Readiness: This capability is deteriorating due to that old bugbear, underfunding. Runway and taxiway maintenance was less than desired, and scheduled maintenance to barrier systems were hampered by budget constraints. While the lighting system at AFB Langebaanweg was upgraded, those at Makhado, Ysterplaat and Swartkop were in urgent need of attention. The average serviceability of the airfield system was thus just 80%. The aviation fuel system also needed attention in late 2005, with only 75% of fixed installations and 60% of mobile refuelling equipment serviceable. Regarding ground power units, the serviceability status versus actual requirement was low due to the age of the equipment and it not meeting Military Standard 704E. "Substantial resources will have to be channelled into this area in the near future," the DoD's 2004/5 Annual Report warned. The maintenance and repair of the firefighting service's vehicles, equipment and personal gear was also affected by underfunding, with only 75% of vehicles and 60% of personal gear being serviceable – meaning one out of four firefighting vehicles were useless and four out of ten fire-fighters could not perform the tasks they were allocated and trained for without unnecessarily risking their lives. The SAAF's vehicle fleet was also deteriorating, only 40% of C vehicles[10],

[10] C-Vehicles: Equipment or construction used for earth moving, handling of equipment and related civil engineering tasks. In SAAF speak, C-vehicles are the tractors and other impedimenta found on the verges of airfields and used to move aircraft, luggage and ground support equipment about the flight line and hangars.

60% of D vehicles[11] and 70% of B vehicles[12] being available for service. The situation with regards to facilities was equally dire. “Critical maintenance and upgrading for most of the operational infrastructure is needed. The SAAF will not be able to restore facilities and operational infrastructure from within its operating budget. Without significant funding being provided, a situation will soon be reached where flying operations will come to a standstill.” the DoD’s 2004/5 Annual Report stated bluntly.

Education, Training & Development Capability
Mission: Education, training and development of SAAF personnel.
Taskings:

- Basic Flying Training
- Navigational & Survival Training
- Development Training
- Logistical Non-technical Training
- Fire Training
- Hospitality Training
- Technical Training
- Physical Training
- Sport
- SAAF Training Integrity Centre
- SAAF Training Council
- Air Defence Standards Generating Body
- Advanced (Tertiary) Training
- Skills Training
- Adult Basic Education & Training (Literacy)

Readiness: Some courses during the 2004/5 reporting period were affected by budget shortfalls.

Technical Support Capability
Mission: To establish, prepare and maintain optimised technical and tactical logistic support capabilities to provide support to system groups and to manage air service units.

How “ready” is the SAAF to fulfil its mandate?

The Chief of the Air Force, LTG Carlo Gagiano in October 2006 issued what Business Day called his “most dire warning yet” that the SAAF was losing the readiness battle. The paper quoted him as saying almost all the main air force systems were in decline as far as conducting and sustaining operations were concerned. Gagiano said the SAAF's decline was related directly to the "extraordinary levels of underfunding" the service was experiencing and that it would not be possible to use the expensive Hawk jet trainers and Gripen jet fighters bought at a cost of billions of

[11] D-Vehicles: Standard commercial vehicle used in the SANDF without modification for the transport of goods or one or more persons.
[12] B-Vehicles: Soft-skinned vehicle which is specially designed or modified for military use, or transformed for protection against mines (mainly trucks).

rand at their optimum level. “Present indications were that the underfunding of the operating budget would force the combat system group to operate the aircraft of the strategic defence packages at levels ‘far below their optimum level of utilisation’, the paper’s Wyndham Hartley wrote. The Pretoria News in May 2006 had quoted him in a more diplomatic mood, saying his major challenge was "finding the strategic balance between what can be afforded on the operating budget and what the nation needs". He reminded that the Department of Defence had embarked on a process of reviewing the White Paper on Defence to align departmental resources with government-ordered commitments in support of the country's foreign policy, including peacekeeping and enforcement operations on the continent. “In view of this, the SAAF has adopted certain measures like streamlining logistical support, optimising personnel structures to sustainable levels and selectively reducing the footprint of the SAAF, particularly on remote bases… The SAAF will continue to focus on transformation and the retention of scarce skills, affordability, system integrity, equipment renewal, infrastructure and regional co-operation with the creation of a more integrated regional air power base," said Gagiano. He said his vision was to have a tactical air force willing to be deployed to any place on the continent and beyond in support of government diplomatic initiatives.

In October Gagiano added, more bluntly, according to Business Day, that the decline in the ability of the air force to conduct conventional operations was "exacerbated by a massive loss of specialised technical expertise” during 2005 and early 2006. More than 240 highly skilled aircraft technicians had resigned between April 2005 and March 2006, limiting the ability of the air systems to conduct and sustain extended air operations. “Gagiano warned that the situation in the air force could affect SA’s ability to provide support for the country's peacekeeping missions on behalf of the African Union in various trouble spots on the continent,” Business Day reported. “He stressed also that operations in support of peacekeeping were ‘funded at the cost of other, longer-term needs, such as air base maintenance, aircraft spares purchases, vehicle renewal and infrastructure maintenance’.” The paper further quoted Gagiano as saying: “All operating risks experienced during the year are associated in one way or another with the considerable levels of underfunding of the operating budget. In some cases, such as the loss of technical expertise, underfunding was not the sole source of the problem. Factors such as the enormous disparities between salaries paid in the air force and those paid in the private sector, a lack of career prospects and inadequate career management contributed significantly to the high resignation rate.” Gagiano said the solution to the deterioration of the main air systems was "almost entirely dependent on the availability of funds and, without at least minimum levels of funding, few, if any, options are available to arrest the continuing decline”.

In March 2006, the Cape Afrikaans daily, Die Burger, added that technicians were being ordered to make repairs to aircraft they were not qualified to do. Advocate Pikkie Greeff of the SA National Defence Union (SANDU) told the paper technicians were being pressured to perform the work and believed they could lose their technical allowances should they refuse. The paper said the allowance amounted to approximately R1500 to R1800 per person per month. Greeff added that the situation was a time bomb. “It is not just the lives of air force personnel in the balance. What will happen if an aircraft falls into a residential area?”

Based on this it would be fair to assume the state of the air force in 2006 was even worse than that described in the confidential report of 2005.

Expand on the SAAF's musterings

Already explained is the discontinuity in the SAAF between its capabilities and the musterings of its personnel. Also explained is the need for a service to have certain abilities "in house" if it is to lay claim to the label "independent". For this reason, the SAAF has a number of branches (or musterings) to ensure proper administration as well as operational readiness. These include:

- Catering
- Command & Control
- Intelligence
- Personnel (Human Resources/Human Capital)
- Professional Musician (SAAF Band)
- Protection Services

Personnel in these musterings are allowed to wear the appropriate mustering badge above their nametags above their right tunic and shirt pockets.

In addition, personnel who qualify, usually by passing an appropriate course, are entitled to wear the appropriate proficiency badge. These include:

- Armourer
- Dog Handler
- Explosive Ordnance Disposer
- Fire-fighter
- Military Law Practitioner
- Physical Training Instructor

Certain attached personnel, who wear SAAF uniform while posted to SAAF units, also have distinguishing badges. These include:

- Chaplains
- Military Police

MUSTERING AND PROFICIENCY INSIGNIA

Armourer
Caterer
Chaplain
Command & Control
Dog Handler

Explosives Disposal
Fire Fighter
Intelligence
Military Legal Practitioner
Inspector General

Protection
Physical Training Instructor
Advanced Physical Training Instructor
SAAF Band
Military Police Agency

Parachutist
Personnel
SAAF Task Force

Table 10.34: SAAF mustering and proficiency insignia

What is the rank, racial and gender breakdown of the SAAF?

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How many pilots are there, in what mustering, and how many ought there be?

For strategic reasons the SAAF will not provide a number, but in May 2006 CAF LTG Carlo Gagiano said 45 of the 72 pilots and navigators trained in the two years previous had been black. That being said, all pilots are not equal in the flying fraternity. Among military pilots there is considerable rivalry as well as a distinct pecking order, based not only on your position in your class but also on the platform you fly. Fighter – or fast jet – pilots traditionally consider themselves the cream of the crop and reserve considerable distain for transport aircrew and helicopter drivers. Before one investigates the situation regarding each of these "musterings", the issue of numbers should first be addressed.

How many pilots are enough? Speaking at the 2005 Airpower Demonstration at the Roodewal bombing range near Makhado, SAAF Director Combat Systems, BG Pierre van Zyl cautioned that it was a "conceptual mistake" to assume anything below a 100% was "bad." He said one had to balance three factors in calculating the optimum staffing level: These were the right number of pilots required to meet force preparation and employment challenges, the correct number undergoing training at the various flying schools, and understanding the throughput in terms of career paths. His colleague, Director Helicopters, BG Hugh Paine said in the helicopter business this meant that after six years of operational experience, pilots were rotated back to flying schools to be instructor trained and plough their experience into the next generation of pilots. As a result, nearly all his senior pilots were instructor rated. BG Anton Kriegler, the SAAF's Director Maritime and Transport, added that one had to be careful with numbers: if he could run at 60%, the temptation might be to ask why he needed his squadrons manned at 100% - which brings one to the difference between war establishment, peacetime establishment and various levels of understaffing.

During wartime it is common for units to have a fuller establishment than in peacetime. The idea is that the additional personnel provide both extra hands and an attrition reserve. In peacetime, neither function needs to be met, explaining the smaller establishment. In general, the scale followed is one operational pilot (and co-pilot) per aircraft on inventory. Note that a squadron (and, for that matter the Air Command, Air Office and the various air force bases) will often include several non-operational pilots carried against administrative and staff posts. During times of financial stress, the number of operational pilots is often reduced – or their posts left vacant – with non-operational pilots standing in part-time. This is often a good economy as pilots, operational or otherwise; have to fly a certain number of hours annually in any event to keep their logbooks current.

This brings one to the question of squadron readiness. When is a squadron ready? When it is 100% staffed and equipped? When it meets an air tasking order (ATO) to have one aircraft and crew ready per day because the tasking authority knows the squadron only has two operational aircraft and three crew – and had cut its coat according to its cloth? If the media now reported that this squadron was ten aircraft and nine crews short of establishment and therefore not "ready" and the SAAF denied this, saying the squadron was ready because it could meet the ATO, who would be right?

But to return to the issue at hand… By a rough calculation, the SAAF had 187aircraft on inventory in early 2006, a number that would rise to 211 as the 24-strong Hawk Mk20 LIFT fleet arrived at 85 Combat Flying School. Using similar calculus, and excluding the 24 Astras at the Central Flying School, the SAAF has 19 single-seat fighters and 168 fighters, transports and helicopters that ordinarily require a senior pilot and a more junior co-pilot, if only in experience, rather than rank. This puts the requirement at 187 senior pilots and 168 junior pilots, or 355 all told. How many there are at present is a matter of conjecture, and perhaps, national security. Any figure should therefore be treated with caution and should be interrogated in light of the above. Are the pilots senior or junior, operational or carried against staff and administrative posts? Are they fighter, transport or helicopter pilots? Are they under training or instructors; are they regulars or reservists, etc?

As established earlier, the fighter branch is understaffed, but by what margin is not clear. The transport branch is only 58% staffed with pilots and the helicopter fleet 61%.

In light of this, the announcement by the Minister of Defence in August that the SAAF was at the time training 131 pilots to reinforce 31 operational fliers was not entirely useful. At face value this means the air force only has about 10% of the pilots its peacetime flying corps requires (31 out of 355). This seems rather thin, the more so when pegged against the requirement of 16 light utility helicopters, 30 medium helicopters and 15 transports per day. As can be seen above, the SAAF by mid 2005 could provide the LUH sorties required but only 22 of the 30 Oryx and between four and six of the 15 transports. Even so, this is 42 aircraft with 42 flight commanders and 42 co-pilots, or 84 people per day. Taking into account peacetime aviation safety rules, available pilots are not available every day, meaning that the 42 aircraft will require several spare crews if all are to be ready to be theoretically sortied at once, which brings us to the conclusion that either planners did not intend all 42 aircraft required every day to be available all the time or simultaneously, or that the SAAF is unhealthily reliant on reservist and part-time regular pilots, or…

Sqn/School	Role	Aircraft type	Number: Inventory	Number: Operational	Comments
Air Combat Capability					
2 Sqn	FGAR	Cheetah C, D	29		Estimated 10 two seat, 19 single seat.
85 Combat Flying School	LIFT	Hawk Mk120	0	0	Inaugural course, May 2006, eight students. 24 aircraft on order.
60 Sqn	TKR/TPT/EW/ SAR	B707	3	1	
Air Transport & Maritime Capability					
21 Sqn	VIP TPT	Citation II Falcon 50 Falcon 900 BBJ	2 2 1 1		
28 Sqn	TPT, SAR	C130	9	9	
35 Sqn	TPT, M Surv, SAR	C47TP	11		
41 Sqn	TPT	King Air 200	2		

		King Air 300 Cessna 208 Caravan PC12	1 13 1		
Helicopter Capability					
44 Sqn	TPT	C212 C235 Cessna 185	4 1 13		
16 Sqn	CS	Rooivalk CSH	11		
15, 19, 17 & 22 Sqn; 87 Helicopter Flying School	TPT	Oryx BK117 Alouette III	39 8 30		
Education, Training & Development Capability					
Central Flying School	TRG	Astra	24 (more in store)		60 purchased in 1993, 53 remained in 2003. Several more wrecked since then.

Table 10.35: The SAAF's pilot requirement. Key: FGAR: Fighter, Ground Attack & Recce; LIFT: Lead-In Fighter Training; TKR, TPT, EW/SAR: Tanker, Transport, Electronic Warfare & Search and Rescue; VIP: Very Important People; CS: Combat Support; M Surv: Maritime Surveillance.

The situation did not improve in 2006. In October of that year – and on several previous occasions – Chief of the Air Force LTG Carlo Gagiano complained that the private sector was poaching the cream of his crop. He grumbled that six 21 Squadron Boeing Business Jet pilots resigned that month. The Afrikaans daily, Beeld, reported that the SAAF was also running short of technical personnel, with 28 Squadron (C130) being down to just two flight engineers. "We're trying to discuss the matter with the private sector to sort out the problem," Gagiano was quoted as saying. "Just when you think you have enough personnel, the situation changes to a crisis." Beeld reported that SA Airways, for example, on average paid salaries double that offered by the SAAF.

What is the minimum flying hours required per pilot per year? What is the average?

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Does the SAAF have enough aircraft?

This is a question that can only be answered with reference to the length of a piece of string. How long is a piece of string? How many aircraft is enough? Speaking at the 2005 Airpower Demonstration at the Roodewal bombing range near Makhado, BG Des Barker, the General Officer Commanding AFB Makhado, remarked that the SAAF had moved from a strategic to a more tactical air force in the last ten years. Although he did not elaborate, it was likely a reference to the fact that two decades ago the SAAF had a nuclear strike capability with a continental (if not longer) reach. It also had an impressive (for the time) array of new and older aircraft types on

inventory, ranging from Canberra medium bombers, and Buccaneer strike aircraft to Mirage III and F1 fighters as well as Impala I and II trainers. At that time, the SAAF operated some 700 aircraft and helicopters. This has now dwindled to about 210 of all types. There are many reasons for this fall in numbers, mostly the age and obsolescence of many of the types concerned, such as the Canberras and Shackleton. But, as Barker put it, one cannot control the air with superior numbers of inferior aircraft. This raises the next point, namely that until the recent past one needed different machines for different tasks. It was the analog age, with the hardware determining function. For this reason, the Mirage III came in fighter, ground attack and reconnaissance models, to name a few. Aircraft such as the Gripen belong to the digital age where software determines function. Thus the same aircraft, with a few software changes – and some hardware attachments – can do everything – and more – than the analogue antiques. This approach allows air forces a smaller fleet – which is just as well, considering the staggering cost of the average military aircraft.

What are the SAAF's activities on any given day?

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Explain the SAAF's educational and training system

As behoves a hi-tech Service, the SAAF has an extensive range of institutions providing through-career educational and training. The SAAF's Service-specific schools are the:

- SAAF Gymnasium
- SAAF College
- Central Flying School
- 68 Air School
- 80 Air Navigation School
- 85 Combat Flying School
- 87 Helicopter Flying School
- AF Command and Control School
- Air Transport Flying School

SAAF Gymnasium

The SAAF Gymnasium is primarily responsible for recruit training. It is also the home of the SANDF Fire Training School and the SAAF's School of Cookery.

SAAF Regimental Training

Module A: Life skills

- Personal health, hygiene and neatness
- Personal finance
- Family affairs
- Study methods
- Cross cultural training
- Spiritual preparedness

Module B: Service in the SAAF
- Conditions of service
- Service benefits
- Personnel administration
- Organisation of the SAAF & SANDF
- Careers in the SAAF

Module C: Basic military skills:
- Safety rules
- Buddy aid
- Basic fire fighting
- Guard duties
- Weapon training
- Fieldcraft

Module D: Military Conduct
- Air Force culture & values
- Code of personal conduct
- Dress regulations
- Military etiquette
- Military compliments & courtesy
- Citizen education
- Military Disciplinary Code
- Behaviour in combat

Module E: Drill and Ceremonial Parades
- Drill & parade terminology
- Flight drill
- Rifle drill
- Ceremonial drill

Module F: Physical Training & Recreational Sport
- PT & recreational sport

Module G: Computer Proficiency
- Computer literacy

Table 10.36: The regimental basic training syllabus at the SAAF Gymnasium.

SAAF College

The SAAF College's core business is career training and developing an air power mindset in the SANDF. Courses presented include the:

- Junior Command & Staff Course: The JCSC prepares junior officers to perform effectively as junior commanders and/or staff officers.
- Officers Forming Course: The Officers Forming Course equips learners with the necessary knowledge, skills, attitude and values to enable them to be utilised as effective and efficient officers.
- Senior Non-commissioned Officers Development Course: The Senior Supervisors Course prepares senior non-commissioned officers to perform effectively as senior supervisors in the SAAF.
- Non-commissioned Officers Forming Course: The Non-commissioned Officers Forming Course equips learners with the necessary knowledge, skills, attitude and values to enable them to be utilised as effective and efficient junior non-commissioned officers.

- In addition, the college includes an Air Power Development Centre mandated to propagate an Air Power mindset in the SANDF.

Central Flying School
The CFS trains both pupil pilots and pilot instructors.

68 Air School
68 Air School's core business is logistics and technical aviation training.

80 Air Navigation School
80 ANS is primarily responsible for basic navigation training and navigator instructor training. It also provides training in maritime operations, orientation for supporting aircrew members and survival training for all aircrews.

85 Combat Flying School
85 CFS is responsible for basic fast jet conversion, fighter pilot and weapons training as well as instructor training. Its mission is providing the SAAF with fighter-trained personnel.

87 Helicopter Flying School
87 HFS is responsible for basic helicopter conversion training, advanced helicopter flying training and for training flight engineers.

AF Command and Control School

Basic and advanced training for air traffic- and mission controllers as well as telecommunications operators and cabin crew.

Air Transport Flying School

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(Conversion training, multi-engine conversion training, cargo handling, etc?)

How are pilots trained?

On average, it takes two-and-a-half years to train a SAAF pilot to basic proficiency and at least five to train a fighter pilot. Candidate pilots start their careers with eight weeks of basic military training at the SAAF Gymnasium. This is followed by 19 weeks of officer formative training at the SAAF College and 44 weeks of ground school at the Military Academy after which the student receives a Certificate in Aeronautical Studies. Next follows four weeks of survival training at the hands of 80 Air Navigation School.

Basic Flying Training

Graduates of this course are then posted to the Central lying School for 44 weeks of basic flying training. Training at the CFS comprises a ground and a flying phase. Ground training includes every aspect of flight instruction and makes extensive use of

computers and simulators. Lessons include air dynamics, plotting on maps, navigation and electronic warfare. Flying training is conducted on the Pilatus PC-7 Mk II Astra. Pupil pilots will undertake their first solo flight after about 16 hours of flying raining and during the course of the phase will fly 185 hours in the Astra and spend a further 40 in the simulator. Skills to be mastered include general flying, formation flying, instrument flying, navigational flying and night flying. During this time the student/instructor ratio is 2:1. On average, three out of four students are awarded their wings.

Earning one's wings at the CFS is just the start of a military pilot's training – not the end. Towards the end of the flying phase, a selection board is convened to determine whether a pilot should be allocated to h fighter, transport or helicopter line. Criteria used for the allocation of pilots include the needs of the air force, the candidates' achievements and results on course, the pilot's own preference and the recommendation of the relevant flying instructor.

Novice fighter pilots are then posted to 85 Combat Flying School, transport novices to the Air Transport Flying School and wannabe helicopter pilots to 87 Helicopter Flying School.

Advanced Flying Training

- Fighter pilot training: The first step for a prospective fighter pilot is passing a basic jet conversion course. This Fighter Orientation Course (FOC) lasts seven months. Phase One and Two involves conversion to the Hawk LIFT, general, instrument, close formation, night flying and medium and low level navigation. Phase Three is the introduction to basic fighter flying and includes a tactical phase (battle formation, low and medium level tactical flying, pre-planned strike and photo reconnaissance), a weapons phase (bombs, cannon) and an air warfare phase (manoeuvres and air-to-air firing).

- Transport pilot training:
  nnnn

- Helicopter pilot training:
  Ab initio helicopter training has since July 2006 been outsourced to Starlight Aviation in Durban. By March 2007 the first 16 students had completed their basic rotary conversion training and had moved on to Oryx conversion training. Their training at Starlight included 50 hours on the Robinson 22 light helicopter and 10 hours on the Bell 206 for exposure to turbine engines[13].

Flying and further training

On completing their advanced flying training, the young pilots are posted to their first squadrons for operational duty. As juniors, they are typically assigned as co-pilots and undergo a period of mentoring. As they gain experience, they are assigned as aircraft commanders, first under supervision and later, alone. In time, it will be their turn to

[13] CAF briefing, AFB Makhado, March 9, 2007.

mentor their juniors. In the helicopter and air transport lines, it is also traditional to start on the smaller platforms and work one's way upwards. A new helicopter pilot will thus co-fly a light utility helicopter before graduating to the aircraft commander's seat. The next step up will be the co-pilot's seat n an Oryx and then to command one of the medium transports. In the fixed-wing air transport environment, new arrivals start on the single-engine light transports such as the Cessna 185s and Caravans before earning their transfer to the larger Casa transports and VIP jets, and, later, the C130s. As pilots gain seniority, they will also be called on to take charge of groups of aircraft. Two aircraft grouped together are normally called a "section" and four a "flight". Before pilots can become flight commanders, they need to pass a 12-week flight leaders' course.

During this course, very little theory training is done and it is expected of the student to give lectures and briefings, on which leadership, squadron operation and management is assessed. During the Tactical Phase, all aspects of tactical flying and weapons delivery are covered, concentrating on leadership aspects. All aspects of single and multiple air combat and leadership aspects are specifically emphasised and assessed during the Air Warfare Phase. After this course, pilots are once again assessed for maturity and suitability and after another consolidation phase will be routed to a high speed fighter unit for further training or instructor's course at the flying school.

After about six years of operational flying, pilots return to the Central Flying School, this time to qualify as basic instructors. Some remain at the CFS to train new recruit pilots while others return to the advanced flying schools to qualify as instructors on the platforms flown there before training the next generation of pilots in their own line for about two to five years. Afterwards, they return to squadron flying or a staff or administrative post.

Flying training is not all pilots must pass to progress in their career. Promotion in rank is also tied to passing certain courses and competently completing certain administrative and staff postings. Promotion courses that must be passed include the:

- Junior Command & Staff Course (SAAF College)
- Air Power Course (SAAF College)
- Joint Senior Command & Staff Programme (SA War College)
- Executive National Security Programme (SA Defence College)

What was the furore in 2005 surrounding pilot training?

The central issue appeared to be allegations by some that the SAAF was dropping standards to boost the number of black and female pilots in the service. At issue to them was the risk this posed to the lives of the pilots, others in any aircraft piloted by marginal trainees and to the public at large. The death, in April 2005, of trainee pilot 2LT Oupa Jean-Claude Ramaithe, 24, while on a navigation flight, underscored their concerns. Opponents of the argument blamed the instructors, variously labelling them racist, lazy or both. The issue is part of the larger quota versus merit debate surrounding affirmative action in broader society and the nurture versus nature debate in aviation circles: the debate whether pilots are born or trained and whether

instructors teach or coach is older than aviation itself as it also applies to other spheres of life, for example art, journalism and sport, to name but a few.

The fact remains that the air force, not unlike other public and private institutions, are under enormous pressure to become demographically representative. At the same time, candidates with adequate schooling in mathematics and science are a rare commodity in the economy as a whole. The air force has thus developed several programmes to identify prospective pilots, recruit them into the service and provide them with the bridging and mentoring necessary to succeed.

Shortly after Ramaithe's death, SAAF Chief Director Force Preparation MG Gerry Malinga said standards were not being compromised: "There is little margin for error in aviation. There is no compromise on standards. Although aviation is inherently dangerous, our record is excellent." LTG Gagiano added to this that then-recent observations by visiting senior generals of the US and Royal Air Forces had confirmed the high quality of training provided by the SAAF, both in the basic and advanced stages. He also reminded his audience, with reference to the fatal crash that even experienced pilots made mistakes. Referring to the fact that Ramaithe had failed some tests, he said many other pilots had failed similar tests before and were currently operational pilots in the air force and in the country's airlines. "He unfortunately got lost on a low level navigation exercise between Bloemfontein and Mafikeng and was unable to regain his bearing. I have been lost as a Second Lieutenant between Pretoria and Polokwane in a Vampire, but was fortunate enough to find my way again," he said.[14]

This did not impress the Sunday Times' Roger Makings, who later in the year reported that the SAAF might outsource "its basic pilot training to eliminate unsuitable candidates and save on the costs."[15] He added that the move followed "a drop in the quality of pupil pilots selected for training that has resulted in a higher failure rate in exams and flight tests, crashes and even deaths in recent years." The paper added that the cockpit of a sophisticated SAAF trainer on a solo night, cross-country flight could be a lonely, and sometimes, scary place. "Unless he is alert and informed, nature and the complicated avionics and systems can conspire to gang up on the young pupil pilot. His isolation breeds uncertainty as he realises he is alone against the elements, with only his onboard technology to see him through. At the beginning of his training, he had failed to assimilate the volumes of knowledge with which his instructors had bombarded him. With intensive tutoring he managed to crack the required 40% pass mark. But now, alone at night, the pupil pilot begins to sense this was not enough. And it wasn't. His air speed is inexplicably climbing and the attitude indicator says he is in a gentle spiral. His mind is overwhelmed with information; he needs time to sort it all out. But time is up, as is altitude. He runs out of both ... and dies"[16].

Minister of Defence Mosiuoa Lekota, in answer to a question in Parliament in 2003, said that pupil pilots in the SAAF would be allowed to fail all their exams, fail two repeat exams, and still remain on the course, in the interests of transformation. They

[14] Both were speaking at an Air Power demonstration at Roodewal bombing range in April 2005.
[15] Roger Makings, Lower standards a death sentence, Sunday Times, Johannesburg, October 30, 2005.
[16] Roger Makings, Lower standards a death sentence, Sunday Times, Johannesburg, October 30, 2005.

could also fail two flying tests. Previously, trainee pilots had been allowed to fail only three subjects, and had to pass a repeat exam with a minimum of 60% — or be "washed" from the course. The relaxed standards, top SAAF instructors and former fighter pilots told the Sunday Times, were nothing short of a death sentence. Turning to the Ramaithe matter, Makings observed that the young pilot had failed two flight tests. He was then offered a chance to redeem himself although his instructors considered his performance sub-standard. He was sent on a night cross-country flight, got lost, and killed himself – and destroyed an aircraft belonging to the taxpayer. The doyen of fighter pilots in South Africa, BG Dick Lord (Retd), who has written three books on the SAAF and its pilots, obtained his wings in the Royal Navy in the late '50s. He became an aircraft-carrier fighter pilot and was seconded to the US Navy's "Top Gun" fighter academy in Miramar, San Diego, for two years. "Lord said … that anyone who could not crack his or her exams the first time around simply did not have the right stuff to fly complicated aircraft. Lord, who retired from the SAAF as a brigadier-general, having commanded 85 Combat Flying School and the front line 1 Squadron, also spent much of his time as a fighter pilot instructor. 'While a combat instructor in the Royal Navy, one young student had a poor attitude and only average flying skills. At weekly meetings the other instructors said he was *okay*. I wanted to wash him. The officer commanding thought I had a personality clash with him, which I admitted to. He was allowed to stay, although in my opinion he couldn't fly.' Two months later the student crashed on a night flight — killing himself, his observer and writing off an expensive aircraft. "The tragedy is that this young man had been kept on because millions of pounds had been spent on his training. If they had listened to me he would now be eligible for a pension and a mother would not have lost her only son. The lesson is that flying is dangerous and only the top students should be allowed to stay in the fighter line," said Lord."

The Sunday Times continued: "A combat school instructor, who asked not to be named, said pupils who only managed 40% wouldn't make it as fighter pilots. He said the requirements were a pass mark of not less than 60%. Two failures and the student was washed from the course. 'We only accept the top 10% of the basic training graduates. Anything less won't make the grade and ultimately is a waste of taxpayers' money.' He said that anyone who could not achieve 60% first time around would not even be able to fly the hi-tech Gripen, let alone fight in one. A former fighter pilot with more than 4000 hours' experience, who now flies airliners, dismissed the new standards as laughable. 'A fighter pilot operates alone in a highly competitive environment. In combat, flying at the edge of the envelope, he needs to know 100% about his aircraft and weapons as well as those of his opponent,' said the pilot, who also asked not to be named. 'When fighters close at more than twice the speed of sound, you don't have time to think. You need total awareness, a superior intellect and lightning reactions. All that will save you is knowledge and skill. This is not the place for a forty-percenter, and you can bet your enemy won't be a forty-percenter. This is when the inferior pilot dies.' How do other air forces compare with the SAAF's standards? Johannesburg schoolboy Luke Flemington applied to join the SAAF in 1995, but was turned down. Undaunted, he went to Britain and was accepted into the Royal Air Force. He graduated two years later at the top of his class. Flemington now flies Hawks, not quite as advanced as the aircraft the SAAF will receive next year [2006]. 'In the RAF you have to get 75% for your technical subjects but for systems and emergency procedures it's 100%. On my course no one failed.

The average for all subjects was 97%. The RAF expects nothing less.' A dissenting voice was that of the Commissioner for Civil Aviation, Seboseso Machobane, who said: 'In the civilian environment about 70% is accepted as a pass. In the military, for those who have not grown up with computers and the like, it would be acceptable to first bridge that gap and then allow for pupils to play catch-up through extra training. 'Once this has been achieved, progress has to be monitored and shown to be steady. If this does not happen then the student should be washed,' said Machobane. The SAAF said that its pass mark for emergency training was 95% and for technical subjects, 80%. Management (sic) at its Central Flying School in Cape Town has been instructed to allocate additional hours of training to pupils who 'experience difficulty'. It said that 'learners' who develop at a slower rate are generally placed at units where they 'have the opportunities to further develop in a multi-crew environment'.

Lekota is on record as having called SAAF instructors racist for wanting to wash students, and has said that instructors from Zimbabwe would be brought in to eliminate racism in training, the Sunday Times continued. This, said the SAAF, was part of its regional co-operation exchange programme with neighbouring African countries. Talks are also being held with Zambia and Botswana in this regard. But black pilots are in fact making the grade in the SAAF, despite allegations from both sides. Just days before he died flying a Sasol Tigers aerobatic jet, Gabriel Ndabandaba, a former SAAF pilot who became an instructor as well as a member of the SAAF's premier aerobatic team, the Silver Falcons, told the Sunday Times that there was no need to lower standards for previously disadvantaged candidates. "Making concessions to promote transformation is not necessary. We can do it ourselves," he said. Another pilot to cut the mustard is Major Musa "Midnight" Mbhokota who spent some years in Sweden mastering the Saab JAS39 Gripen. In answer to what it takes to become a fighter pilot, he was quoted as saying: "It takes hard work, diligence and focus to be a pilot, even more so if you want to be in the elite corps of fighter pilots operating the world's most modern, fourth-generation fighter aircraft in service." That, and certainly more than 40% in flight-training school, the Sunday Times observed.

In answer to a question asked in Parliament, Lekota in August 2005 announced that 131 pilots were then in training. According to the minister, 26 of the 131 trainees were white men, six were white women, 68 were black men, four were black women, 12 were Coloured men, two were Coloured women and three were Indian women. Air force enthusiast and webmaster of The South African Air Force (An Unofficial Website)[17], Dean Wingrin, added that of the 4000 who apply for pilot training every year, only about 30 are selected.

Die Burger reported in March 2006 that instructors were increasingly concerned about their legal liability should a below-par student be involved in an accident. "There is further concern by fellow students over their safety because they have to share the same airspace with students who have not reached the necessary standards," the paper added.

[17] www.saairforce.co.za

The furore still simmers. In October 2006, the Beeld newspaper reported, according to Wingrin, that Zimbabwean instructors[18], who arrived at the CFS in February 2006, had washed a student, 2LT Wandile Mphaka after he twice failed to carry out instructions in the air. Mphaka also destroyed a plane on landing in 2004 and failed numerous exams. His instructors at the time were among those accused by Lekota. He was subsequently placed in the care of six Zimbabwean instructors, but apparently did not believe he needed instruction as his forefathers had indicated to him he would not die in a plane crash!

Wingrin added that the Beeld report stated that the future of another student, CO Aran Gatenby was in the balance as he had refused to go to Botswana to complete his flying training because of a shortage of instructors at the CFS. Air Force chief Carlo Gagiano said of Gatenby that "it is a problem for us if anyone objects to the wishes of the air force so early in their career."

What is the SAAF looking for in a prospective pilot?

To be qualify for a "pre-selection" phase, the following minimum requirements must be met:

- Preferably a single male or female;
- Be a South African citizen;
- Be not younger than 18 and not yet 22 when starting Basic Military Training (if you have a degree the age limit is increased to 26);
- Have 6/6 vision without correction (i.e., no spectacles, laser correction or contact lenses) ;
- Be 100% medically fit for flying (i.e., classified G1K1, such test to be conducted as part of the selection process)
- Not shorter than 160cm and not taller than 190cm;
- Weigh between 55 kg and 119 kg;
- Buttock-heel length minimum of 980 mm;
- Sitting eye height minimum of 730 mm;
- Grade 12 with exemption, with English passed on HG, together with the Mathematics and Physical Science (as detailed below);
- No record of a serious criminal offence; and
- Be recommended by a selection board.

A candidate's current academic performance will determine whether he or she can directly proceed to pupil pilot training or whether he or she will first have to

[18] According to Wingrin, the party included seven instructors and five ground crew, making 12 in all. They are: Group Captain (Colonel) Anthony Viyano, a Cessna 337 pilot and instructor. With him were pilot instructors Wing Commander (Lt Col) George Ngundu and Squadron Leaders (Maj) Gilbert Sibanda, Ezwini Masuku, Maxwell Sakupwana and Vuyo Ncube. The technical staff was headed up by Squadron Leader Simba Mhuru supported by WO1s Lawrence Mlopo and Elvis Kumadiro, and MT (Master Technician, a WO1 technical specialist) Peter Mhlanga, Marshell Masanga and Antony Takawira.

successfully complete the DoD Youth Foundation Training Programme (YFDT PROG) before commencing with flying training. To be considered for direct entry to the Flying Training Programme, candidates must have full matric exemption with English, a second language, mathematics (at least a D symbol or 50%) and science (at least a D symbol or 50%) as described below. An university, technical university or technical college pass in mathematics and science will also do.

Candidates for the DoD Youth Foundation Training Programme must at least have an E (Higher Grade) or D (Standard Grade) symbol in mathematics and science and a D in English. The programme lasts a year and focuses on improving a candidate's Grade 12 results by "providing a positive and stimulating environment where students can reach their full potential." The programme is presented in Gauteng and students are expected to re-write the relevant subjects towards the end of the year. Candidates who successfully complete the YFDT PROG do not automatically qualify for pupil pilot training. They will, however, be given the opportunity to take part in the selection process.

The selection, which is by invitation only, after a paper pre-selection, is held in Pretoria and lasts about ten days. It entails:

- Psychometric Evaluation: All applicants will be required to undergo aptitude and general cognitive ability assessments. Only candidates who perform above the norm will be allowed to proceed to the next selection phase.
- Psycho-motoric assessment: A hand-eye co-ordination test must be passed in order to proceed to the next selection phase.
- Formal Selection Board: Candidates will then be interviewed by a selection panel comprising of senior military personnel from the Air Force and other staff divisions. Taking into account the candidate's performance thus far, the following additional variables will serve as criteria for evaluation during the interview: motivation, perseverance, purposefulness, creativity, officer potential, knowledge, adaptability and analytical ability.
- Medical Examination: Candidates, who are recommended for pilot or navigator training by the above-mentioned selection panel, will then be subjected to a thorough medical examination at the Institute for Aviation Medicine.
- An offer of employment will be extended to the most successful candidates, taking into account equal opportunity and affirmative action programmes within the Department of Defence.

Recruitment of prospective SAAF student pilots and navigators is an annual process. The process is initiated by advertisements in the weekend press in the third quarter of the year. A closing date is given. No applications are processed prior to the closing date, meaning, that should someone apply in January, their application will be held over and processed as part of the annual batch. There are no exceptions unless there is a special drive for affirmative action candidates. The process followed after closing date involves the initial sifting of anything up to five thousand applications. Here those who do not meet the criteria called for in the advert or application form are eliminated. The next step are those identified for initial psychometric tests. The potential candidate is contacted for the first time and told to report for the tests. The elimination process continues with tests, interviews, initial selection and the aviation

medical until the final number of candidates (dependant on the requirement) are selected.

How are navigators trained?

Navigators are trained at 80 Air Navigation School in Cape Town. Their training focuses on:

- Navigation
- Maps and Plotting
- Flight Planning
- Avionics
- Crew Cooperation
- Electronic Warfare

How are other aircrew trained?

There is no direct recruitment of aircrew. Instead, they are selected from those already qualified in a related ground mustering. Aircrew include:

- Flight Engineer
- Loadmaster (Air)
- Flight Attendant
- Air Photographer

Flight Engineer

Flight engineers are selected from qualified artisans. On larger aircraft such as the C130 Hercules and Boeing 707, their duties include the management of fuel, electrical and air conditioning systems. They are also responsible for inspections on the aircraft when operating away from base.

Loadmaster (Air)

Loadmasters are selected from supply personnel and their duties include the supervision of aircraft handling loading to ensure that cargo is tied down with the correct restraint to withstand the forces that might be encountered during flight or in an emergency. They are also responsible for ensuring that the cargo mass is correctly distributed so that the aircraft centre of gravity remains within the correct range for flight. Grade 12 mathematics and flight medical fitness is essential.

Flight Attendant

Flight attendants are selected from airspace control operators and are responsible for the well-being of passengers during flight. More importantly, they are responsible to assist passengers to evacuate from the aircraft in an emergency situation.

Air Photographer

Air photographers are selected from qualified photographers and accompany flights which undertake aerial survey.

Pilot

Air Force Reserve Squadron

Navigator

Electronic Technician

Electronic Warfare Operator

Flight Engineer

	
Loadmaster	
Radio Operator	
Flight Attendant (Air Host[ess])	

Table 10:37: Aircrew brevets

How is airspace control staff trained?

Airspace control staff includes:

- Air Space Control Operator
- Air Traffic Controller

- Air Traffic Service Assistant
- Mission Controller
- Radar Operator
- Telecommunications

The requirements to be accepted in air traffic control in the SAAF are as follows:

- Must be a South African citizen
- Not younger than 18 and not yet 24 when starting Basic Military Training
- Classified medically fit for duty by the Institute for Aviation Medicine
- Be recommended by a selection board
- The academic requirements are Grade 12 with maths and English. Science in geography is regarded as useful.

Training lasts 18 months and is conducted at the SAAF Gymnasium and at the Command & Control School at Hoedspruit.

Air Space Control Operator
Mission Controllers are assisted by Air Space Control Operators who operate the radar, man the operations room and make meteorological observations.

Air Traffic Controller (ATC)
Air traffic controllers regulate the orderly departure and arrival of aircraft at an airfield and ensure that they are separated by safe distances and heights en-route. When aircraft approach an airfield for landing, they vector them towards the runway in order that they may continue with a visual approach or intercept the radio beam of the Instrument Landing System (ILS). At some airfields the ATC talks them down by using Ground Controlled Approach (GCA) radar.

Air Traffic Service Assistant
Air traffic control assistants assist the ATC in routine aspects of their tasks and also provide ground control information to aircraft on the ground. Future Air Traffic Controllers are selected from the ATC assistants.

Mission Controller
From the moment a fighter takes off on an interception, it is directed to the target by the mission controller until it picks up the target on its own radar or makes visual contact with the 'bogey' (unidentified or hostile aircraft). Mission controllers also play an integral part in compiling an Air Situation Picture. This forms the principle element regarding the SAAF's in-flight command and control capability during both peace and war time situations. This is done by means of mobile and static radars that are situated around South Africa. Mission Controllers are officers.

Radar Operator
They are responsible for the production of an accurate and updated air situation picture. Aircraft are identified by means of electronic means, flight plans and radio messages.

Telecommunications

Telecommunications specialists receive and transmit data and maintain the equipment. An aptitude for typing is essential. Mathematics and computer literacy are essential skills.

How are the engineering professions and trades schooled?

The Air Force does not offer bursaries and apprenticeships. Instead, selected candidates are required to join the SANDF on a contract basis. This necessitates the successful completion of military courses during the first year of the contract, followed by studies and/or "learnerships" at selected universities or technical colleges and continued service in the SANDF for the remainder of the contract period.

Qualified engineers may direct enquiries to any of the Recruiting Offices.

Engineering

Fields of interest include electronics, electrical, mechanical, aeronautical and industrial engineering. University studies begin in the second year of service at either the Stellenbosch or Pretoria University. This study scheme requires students to finance their study costs and university fees out of their salary. Accommodation is paid for by the Air Force. The requirements to be accepted as an engineer in the SAAF are as follows:

- Must be a South African citizen;
- Not younger than 18 and not yet 24 when starting basic military training;
- Classified medically fit for duty by the Surgeon General; and
- Be recommended by a selection board.

The academic requirements are:

- Complete Grade 12 with exemption with a C average and English as a subject;
- At least a C symbol for both mathematics and physical science on higher gradee; and
- Minimum M-Score of 18.

Training lasts five years and includes basic military training, the officers' formative course plus a pre-academic programme and university degree studies.

Apprenticeship

Trade training is offered in a Mechanical, Electronic, Electrical or General Avionic support field. The requirements to be accepted as an apprentice in the SAAF are as follows:

- Must be a South African citizen;
- At least 18 years when starting basic military training;
- Classified medically fit for duty by the Surgeon General;
- Candidate must undergo prescribed psychometric evaluation; and
- Be recommended by a selection board.

The academic requirements are:

- Currently in Grade 12 or completed plus at least Grade 10/N1 mathematics
- Preferably Grade 12 with mathematics or N3 Certificate
- Candidates who passed Grade 12 with additional N-level subjects will be preferred

Training lasts three years and includes basic military training, theoretical training at the Centurion Technical College and practical experience at various bases and units.

How are artisans trained?

Artisans, who work on aircraft and related equipment, all serve a three year apprenticeship. Most of an air force artisan's qualifications are recognised by the civil aviation industry. Aircraft maintenance is done in accordance with exact standards and workmanship is continuously inspected. Artisans are responsible for both scheduled and unscheduled maintenance. They are assigned to the various Aircraft Servicing Units or to the squadrons. Their work also includes the rebuilding of damaged aircraft and the overhaul and rebuilding of major components. Trades include:

- Aircraft Composite Structures Worker
- Aircraft Electrician
- Aircraft Electroplater
- Aircraft Instrument Mechanic
- Aircraft Mechanic
- Aircraft Painter
- Aircraft Radartrician
- Aircraft Radiotrician
- Aircraft Reconnaissance Electro-Mechanician
- Aircraft Structures Worker
- Aircraft Survival Equipment Fitter
- Aircraft Weapons Electro-Mechanician
- Aircraft Welder

Aircraft Composite Structures Worker
A specialist in the manufacture of plastic and fibreglass components such as flight controls, radomes and composite aircraft structural components.

Aircraft Electrician
Modern aircraft are dependant on intricate electrical circuits and units. Work done in the workshops entails stripping, cleaning, testing, repairing and overhauling all electrical equipment, inclusive of alternators, generators, water raising apparatus, cabin temperature control and air conditioning units.

Aircraft Electroplater

A specialist in protecting aircraft components against corrosion.

Aircraft Instrument Mechanic
A specialist in fault finding and the repair and calibration of aircraft instruments.

Aircraft Mechanic
A specialist in fault finding and the maintenance, modification and repair of aircraft structural components such as airframes, flying controls, undercarriages, hydraulic

and pneumatic systems, pressurisation and propellers. Mechanics also work on aircraft engines. This includes stripping, inspection, balancing and assembly of the engine and components, followed by test running the engine.

Aircraft Painter
A specialist in the application of protective and decorative paint and resin finishes on the aircraft, its engines and components.

Aircraft Radartrician
The radartrician is responsible for the routine maintenance, fault diagnosis and repair of radar equipment in the aircraft.

Aircraft Radiotrician
A specialist in fault finding and the repair, overhaul and calibration of radio communication equipment, electronic instruments and control systems.

Aircraft Reconnaissance Electro-Mechanician
A specialist in the preventative and corrective maintenance of air and ground photographic equipment.

Aircraft Structures Worker
A specialist in the maintenance, repair, overhaul, manufacturing and modification of the aircraft structure and components.

Aircraft Survival Equipment Fitter
A specialist in the maintenance, repair and testing of both aircraft and personal safety and survival equipment, including parachutes and survival clothing.

Aircraft Weapons Electro-Mechanician
More commonly known as an armourer, this trade is responsible for loading weapons onto the aircraft, servicing and testing machine guns and cannons and inspecting and maintaining ejection seats.

Aircraft Welder
The aviation welder is responsible for the repairing of aircraft engine and aircraft components using oxy-acetylene, shielded arc welding, plasma arc welding, resistance welding, metallurgy and heat treatment of ferrous and special aircraft alloys, plasma and metal spraying processes.

What general tradesmen do the SAAF employ?

Musterings include:
- Electrician
- Electronician (Communications)
- Electronician (Radar)
- General fitter
- Ground Electronician
- Motor Mechanic

- Turner

Electrician
A specialist in the preventative and corrective maintenance of electrical installations, electrical equipment and airfield installations, which include airfield lighting and arrester barriers.

Electronician (Communications)
A specialist in the preventative and corrective maintenance of ground and mobile radio installations, navigational aids, telecommunication equipment and microwave systems.

Electronician (Radar)
A specialist in the preventative and corrective maintenance of ground and mobile radar installations, including air defence systems.

General fitter
A specialist in the preventative and corrective maintenance on and the manufacture of ground equipment.

Ground Electronician
A specialist in the preventative and corrective maintenance on refrigeration systems, air conditioners, compressors and associated components.

Motor Mechanic
A specialist in the preventative and corrective maintenance on petrol and diesel vehicles.

Turner
A specialist in the modification, repair and manufacture of components, and manufacture of special tools and jigs.

What are the support musterings?

Musterings include:
- Bowser Driver Operator
- Catering
- Construction Machine Operator
- Fire Fighting
- Language Practitioner
- Loadmaster (Ground)
- Material Support Clerk (Admin)
- Material Support Clerk (Supply)
- Material Support Clerk (Technical)
- Military Intelligence
- Musicians
- Nature Conservation

- Personnel
- Protection Services
- Sports Officers

Bowser Driver Operator
Drive heavy bowser vehicles; handle refueling apparatus during the refueling of aircraft. A sense of responsibility with regard to safety aspects is essential.

Catering
Preparation and serving of meals at Air Force messes and assist with the control over food supplies and the planning of functions and menus. Personnel are trained as chefs or stewards/stewardesses.

Construction Machine Operator
Handle construction machinery and vehicles used during base and runway maintenance.

Fire Fighting
The nature of aircraft operations requires specialised fire fighting services. Fire fighters render professional crash and structural fire fighting services at all air force bases. Training provided focuses on fighting aircraft fires and is also recognised by the South African Fire Institute. Fire-fighters should not suffer from a fear of heights, claustrophobia or colour blindness.

Language Practitioner
Deliver a language support service in respect of documentation and publications in any one of the eleven official languages. A recognised 3 year degree is essential, although post graduate studies will be preferred.

Loadmaster (Ground)
Loadmasters are selected from supply personnel and their duties include the supervision cargo and passenger loading. It is their task to ensure that cargo is tied down correctly and to verify that the mass of the cargo is correctly distributed so that the aircraft's centre of gravity remains within acceptable limits.

Material Support Clerk (Admin)
A specialist in the management and coordination of all road transport needs, reports and administration of all vehicle accidents and maintenance of trip books, service cards and work journals. Computer experience and a love for figures are essential.

Material Support Clerk (Supply)
A specialist in the acquisition, storing, issuing, withdrawal and disposal of all equipment (supplies) used by the Air Force. Computer experience and a love for figures are essential.

Material Support Clerk (Technical)
A specialist in monitor the servicing of aircraft and components according to laid down methods at the right time and ensuring that a complete service record is kept.

Administrative abilities, a technical feeling, computer literacy and Grade 12 mathematics are essential.

Military Intelligence
Specialists in the collection, interpretation and distribution of information. Counter-intelligence aims at neutralising the enemy's intelligence gathering capabilities.

Musicians
Musicians provide music at military parades, functions and military funerals. Grade III Theory (UNISA) and Grade IV Practical are minimum requirements.

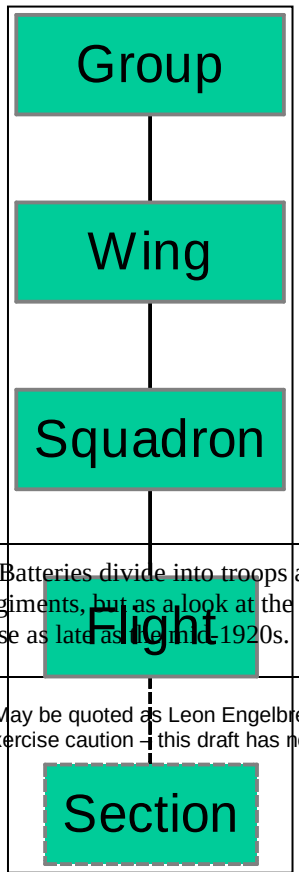
Nature Conservation
Perform nature conservation-related tasks at Air Force bases, stations and ranges.

Personnel
Attend to all personnel matters, such as recruitment, career advancement, transfer of members and other personnel matters. Computer literacy and good communication and interpersonal skills are useful.

Protection Services
Protect of Air Force facilities and personnel. They are trained variously as dog handlers, in VIP protection, as task force "commandos", as entry control and X-Ray specialists and perform sentry duty.

Sports Officers
Specialists in planning and managing general fitness, sport activities and sport facilities at Air Force bases. A recognised 3 year degree or diploma in Human Movement or Sport Management is essential.

Flights, Squadrons & Wings



The SAAF has largely inherited its organisational structures from the SA Aviation Corps and the Royal Flying Corps (RFC). The latter's leadership included a high percentage of gunners and the corps' organisation had a distinct artillery flavour, with aircraft substituting for guns. As was the case with the artillery in those days, the primary unit of action was the squadron (battery), then generally commanded by a major. Two to four squadrons formed a "wing" and an equal number of "wings" formed a "group." Squadrons, in turn, divided into two to four "flights", which, in turn, divided into two, or so, usually *ad hoc* "sections".[19] The SAAF still uses the squadron as the basis of its organisation. During World War Two, the

[19] Batteries divide into troops and troops into sections. Batteries are now largely brigaded into regiments, but as a look at the regimental histories attached to Chapter 9 will show, this was not the case as late as the mid-1920s.

SAAF brigaded some of its squadrons into wings[20], but there is no record of this practice after that conflict. That period also saw the "seniorisation" of the squadron, its commander becoming a lieutenant colonel and its status improving from being a battery or company equivalent to a battalion or regimental peer. It holds that status still. By the same token flights graduated from being platoon to company-equivalents, flight commanders now generally being captains or majors. Should the SAAF wish to resurrect the wing as an organisational entity, this should be easy to do and would not amount to much more than renaming the various capability groups. In this way, the Director, Helicopter Systems could easily become Brigadier General, Helicopters or General Officer Commanding, Helicopter Wing.

The number of aircraft attached to these structures has always been flexible. The Australian War Memorial reports that an Australian Flying Corps (AFC) had four aircraft assigned in 1916 and a RFC flight three. By 1917, an AFC flight mustered six aircraft. This was again the case during WW2, when transport, bomber and fighter flights were six strong and maritime flights numbered three aircraft. By 1965, this was down to four airframes for bomber, fighter and helicopter flights. Transport flights still numbered six aircraft. During WW1, an Australian squadron included three flying flights, during WW2, between two and four and in the 1960s two or three. Today this is all flexible.[21] Depending on the type of aircraft and the allocated ole, SAAF squadrons can have as few as three aircraft (60 Squadron) or as many as 29 (2 Squadron).

Provide examples of the SAAF's tables of organisation and equipment

Table 10.39: A fighter squadron

Table 10.40: A helicopter squadron

Table 10.41: A transport squadron

What is the SAAF's main equipment?

The SAAF's main equipment is its aircraft. The SAAF currently owns or operates around 211 aircraft of all types. The details of these are attached (Appendix 10C).

Aircraft type	Role	Number: Inventory	Number: Operational	Sqn/School	Comments
Fighters					
Atlas Cheetah C, D	FGAR	29	nn	2 Sqn, TFDC	Estimated 10 two seat, 19 single seat. One aircraft (#845) assigned to TFDC as a systems testing platform.

[20] See the squadron histories attached to this chapter.
[21] Australian War Memorial, Military Organisation and Structure, RAAF Structure, www.awm.gov.au/atwar/structure/raaf_structure.htm, accessed on December 27, 2005.

BAE Systems Hawk Mk120	LIFT	0	0	85 Combat Flying School	Inaugural course, May 2006, eight students. 24 aircraft on order.
Air Transport & Maritime					
Boeing B707-300C	TKR/TPT/EW/ SAR	3	1	60 Sqn	
Boeing B737-7ED (BBJ)	VIP TPT	1	1	21 Sqn	
Casa C212 Aviocar	TPT	4	nn	44 Sqn	
Casa C235	TPT	1	nn	44 Sqn	
Cessna 185 Skywagon	TPT	13	nn	44 Sqn	
Cessna 208 Caravan	TPT	13	nn	41 Sqn	
Cessna Citation II	VIP TPT	2	nn	21 Sqn	
Dassault Falcon 50	VIP TPT	2	nn	21 Sqn	
Dassault Falcon 900	VIP TPT	1	nn	21 Sqn	
Douglas C47TP	TPT, M Surv, SAR	11	nn	35 Sqn	
Lockheed Martin C130BZ Hercules	TPT, SAR	9	9	28 Sqn	
Pilatus PC12	TPT	1	nn	41 Sqn	
Raytheon Beechcraft King Air 200	TPT	2	nn	41 Sqn	
Raytheon Beechcraft King Air 300	TPT	1	nn	41 Sqn	
Helicopters					
Agusta A109	LUH	4	4	87 Helicopter Flying School	26 more on order.
Denel AH2A Rooivalk	CS	11	11	16 Sqn	
Denel Oryx	Medium TPT	39	22	15, 19, 17 & 22 Sqn; 87 Helicopter Flying School	Similar to the Eurocopter Cougar.
Eurocopter BK117	LUH	8	8	15, 19, 17 & 22 Sqn; 87 Helicopter Flying School	
Eurocopter Alouette III	LUH	30	16	15, 19, 17 & 22 Sqn; 87 Helicopter Flying School	Being phased out. Ten to be retained for helicopter conversion training

					at 87 HFS.
Education, Training & Development Capability					
Pilatus PC7 MkII Astra	TRG	24 (more in store)	24	Central Flying School	60 purchased in 1993, 53 remained in 2003. Several more wrecked since then.

Table 10.42: SAAF main equipment. Key: FGAR: Fighter, Ground Attack & Recce; LIFT: Lead-In Fighter Training; TKR, TPT, EW/SAR: Tanker, Transport, Electronic Warfare & Search and Rescue; VIP: Very Important People; CS: Combat Support; M Surv: Maritime Surveillance.

What is still in the pipeline?

The SAAF was a major beneficiary of the 1999 Strategic Defence Package (SDP), gaining new fighters and helicopters in the process. Still part of the SDP, but not reflected above, is the acquisition of four Agusta Super Lynx 300 maritime helicopters, scheduled for delivery from next year. The Lynx will form part of the weapon system of the Valour class patrol corvettes, significantly boosting the ships' surface and anti-submarine warfare capabilities.

Also still on its way is the Saab JAS39 Gripen, another SDP project. Nineteen single-seat versions and nine two-seat advanced light fighters were ordered in 1999. Delivery is scheduled from 2008, when the type will completely replace the Cheetah in the fighter, ground attack and reconnaissance roles.

Not part of the SDP is the Airbus Military A400M programme, now seen as a replacement for the B707. In December 2004, the Department of Transport announced that South Africa would acquire eight to 14 A400Ms for delivery between 2010 and 2014. The reported price tag for the 14 is about R11.3 billion, or about half of the 2005/6 defence budget. Government is keen on the deal as it sees the resultant industrial participation as key to its aviation industry expansion plans. It has been reported that if South Africa bought all 14, it will have the right to supply 7.2% of the value of the about-200 A400M aircraft scheduled to be produced so far. The numbers are difficult to reject considering Denel's continued precarious financial position and government's continued commitment to its survival – motivated as much by the political need to retain jobs as stimulating the hi-tech sector of industry, supporting the military and just plain, old-fashioned pride. "The A400M initiative is truly a lifeline for the SAAF and will, together with future decisions on the transport aircraft mix, rejuvenate the SAAF's transport capacity," Gagiano said in April 2005. Factors that would influence that decision was the required internal volume of candidate aircraft as one wanted to carry helicopters and other large cargo without the need to dismantle it before loading and nearly rebuilding it afterwards; as well as peaks and dips in usage. Peaks were infrequent but when they came there was often a shortage of aircraft. The B707 is presently fine for long-haul flights, something the C130, ideally an in-theatre transport, is not. That being the case, the SAAF currently relies on charter flights for outsize cargo or at peak times.

For a decade now, the SA Navy has had an urgent need for a Maritime Patrol Aircraft (MPA). Since the retirement of the SAAF Avro Shackleton around 1990, the Navy has had to rely on an unsatisfactory MPA conversion of the C47 Dakota and more recently on standard, sensorless, C130BZ Hercules medium transports impressed in

the role. The reason for this is a continued seeming reluctance on the part of the SAAF to take the requirement seriously. Flying over the oceans in support of the SAN is not a core function, a Navy admiral told the author in 2004. He added he did not begrudge the air force either: in budget conscious times (are there any other?) each service likes to concentrate on what it holds dearest.

Advanced technology may now come to the Navy's assistance in the shape of unmanned aerial vehicles (UAVs). It is trite to say that UAVs are in the process of revolutionising military aviation. South Africa was among the early operators of the type, using the Denel Seeker Mk I in limited numbers for surveillance and electronic/signals intelligence roles. The type was declared obsolete and retired in late 2004. The state-owned Denel arms group is now prototyping the much larger Bateleur (snake eagle) MALE (medium altitude, long endurance) 750km radius, 18-24 hour endurance UAV in the hope of attracting orders for MPA, EW and general surveillance duties. The Navy is, meanwhile, keeping a keen eye on the development of vertical-take-off UAVs and hopes to deploy some aboard its vessels when the technology matures (two per corvette). But some senior Navy officials have been suitably impressed by the Bateleur and are not averse to the idea of operating some in the MPA role themselves should the SAAF continue to make haste slowly with a solution… But speaking to Engineering News[22] in October 2005, Chief of the Air Force LTG Carlo Gagiano said his service planned to acquire a MALE around 2010. "No decision has been made on the numbers yet," Gagiano told his interviewer.

What about UAVs and UCAVs?

The SAAF is currently without an unmanned aerial vehicle, but it is a safe bet that it will in future again adopt a platform of this type. The SAAF is equally likely to adopt unmanned combat air vehicles (UCAVs) at some stage in the future, and, indeed, South Africa's Denel armaments complex has published conceptual sketches of such vehicles. The difference, at present, between a UAV and UCAV lies in the former being a collective noun for all uninhabited aircraft while the latter represents that category of increasingly-autonomous UAVs designed for armed aerial combat. The US DARPA (Defence Advanced Research Projects Agency) is currently funding two advanced technology demonstrator programmes to validate the concept, the Boeing X45 and the Northrop Grumman X47 Pegasus. Both programmes are seeking to prove the technical feasibility of UCAVs to "effectively and affordably prosecute 21st Century lethal strike missions within the emerging global command and control architecture".[23] Other air forces are watching developments and several, including that of Israel, have active UCAV projects. It can be taken for granted the SAAF will join this trend.

[22] Engineering News, SA eyes unmanned aircraft niche, Creamer Media Johannesburg, September 23, 2005.
[23] Factbites, Unmanned Combat Air Vehicles, www.factbites.com/topics/unmanned-copmbat-air-vehicle, accessed December 27, 2005.