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ENR 1 GENERAL RULES AND PROCEDURES
ENR 1.1 GENERAL RULES

The air traffic and procedures applicable to air traffic in the Republic of South Africa conform with Annexes 2 and 11 to the Convention of International Civil Aviation and to the Procedures for Air Navigation Services - Rules of the Air and Air Traffic Services, and the Regional Supplementary Procedures applicable to the AFI Region except in the cases listed in GEN 1.7.

All differences have been registered with the International Civil Aviation Organisation.

1 Minimum Heights

1) Except when necessary for taking off or landing, or except with prior written approval of the Director, no aircraft -

   a) shall be flown over built-up areas or over an open-air assembly of persons at a height less than 1 000 feet above the highest obstacle, within a radius of 2000 feet from the aircraft;

   b) when flown elsewhere than specified in paragraph (a), shall be flown at a height less than 500 feet above the ground or water, unless the flight can be made without hazard or nuisance to persons or property on the ground or water; and

   c) shall circle over or do repeated overflights over an open-air assembly of persons at a height less than 3 000 feet above the surface.

2) Except when necessary for take-off or landing, or with the express permission of the Director, an aircraft shall at night, in IMC, or when operated in accordance with IFR, be flown

   a) at a height of at least 1 000 feet above the highest terrain or obstacle where the height of such terrain or obstacle does not exceed 5 000 feet above sea level within five nautical miles of the aircraft in flight; or

   b) at a height of at least 2 000 feet above the highest terrain or obstacle located within five nautical miles of the aircraft in flight where the height of such terrain or obstacle exceeds 5 000 feet above sea level: Provided that within areas determined by the Director the minimum height may be reduced to 1000 feet above the highest terrain or obstacle located within 5 nautical miles of the aircraft in flight, and provided furthermore that the aircraft is flown in accordance with such procedures as the Director may determine.

2 Dropping objects, spraying or dusting

Except in an emergency or unless granted special permission by the Director, no article shall be dropped from an aircraft in flight other than-

   a) fine sand or clean water used as ballast; or

   b) chemical substances for the purpose of spraying or dusting.

3 Acrobatic flight

No aircraft shall be flown acrobatically so as to endanger air traffic. Except by individual permission from the Director, aircraft shall not be flown acrobatically -

a) unless the manoeuvre can be concluded and the aircraft brought on an even keel at a height of not less than 2000 feet above the ground or water;
b) within a five nautical mile distance of an aerodrome reference point of an aerodrome licensed and approved in terms of Part 139 unless at a height not less than 4000 feet above ground level;
c) in the vicinity of air traffic services routes; or
d) over any populous area or public gathering.

4 Towing

The Pilot-in-command of an aircraft in flight shall not permit anything to be towed by the aircraft, except -

a) with the prior written approval of the Director; or
b) if licensed to do so under the International Air Services Act, 1993, or the Air Services Licensing Act, 1990.

5 Times and Units of measurement

The units of measurement used in connection with all air traffic services in the Republic of South Africa are in compliance with Annex 5

MEASUREMENT OF:-	UNITS.
Distance used in navigation position reporting etc., generally in excess of 2 to 3 nautical miles	Nautical miles and tenths
Relatively short distances such as Metres those relating to aerodromes (e.g. runway lengths)	Metres
Altitudes, elevations and heights	Feet
Horizontal speed, including wind speed	Knots
Vertical speed	Feet per minute
Wind direction for take off and landing	Degrees, Magnetic
Wind direction except for take off and landing	Degrees, True
Visibility including runway visual range	Kilometres or metres
Altimeter setting	Hectopascal
Temperature	Degrees, Celsius
Mass	Metric tons or Kilograms
Time	Hours and minutes of the day of 24 hours beginning at midnight Universal Co-ordinated time (UTC)

6 Airspace Structure

For the performance of the flight information service and alerting service, the Director of Civil Aviation establishes flight information regions which are published in the AIP. Within the flight information regions, the Director of Civil Aviation establishes the controlled and uncontrolled airspace according to the extent of the air traffic services maintained there, on the basis of the classification described in subsection ENR 1.4. Within controlled airspace, VFR flights may be prohibited completely or partly by the air traffic services with regard to limitation of space and time if urgently required by the degree of intensity of air traffic subject to air traffic control.

7 Prohibited Areas and flight restrictions

The Director of Civil Aviation establishes prohibited, restricted and danger areas, if necessary, for the prevention of danger to public safety or order, especially for the safety of air traffic. The areas are published in the AIP subsection ENR 5.1

8 Parasailing, kites, hang-gliders, radio-controlled aircraft.

Except with the written permission of the Director and then subject to conditions as he may impose, parasailing, hang-gliding and the operation of kites and model and radio controlled aircraft shall not -

a) Take place higher than 150 feet above the surface

b) take place closer than five nautical miles from the aerodrome reference point of an aerodrome or -

c) Commence or be carried out above a public road

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ENR 1.2 VISUAL FLIGHT RULES

1 Visibility and distance from cloud.

Every VFR flight shall be so conducted that the aircraft is flown with visual reference to the surface by day and to identifiable objects by night and at no time above more than three eighths of cloud within a radius of 5NM of such aircraft and -

a) in the case of aircraft excluding helicopters operating under conditions of visibility and distance from cloud equal to, or greater than, the conditions specified in table 1 and 2:

Table 1

Airspace	**Forward Flight Visibility**	**Distance from clouds**	**Ground visibility and ceiling**
Control zones	5KM	Horizontally: 600M Vertically: 500FT	No aircraft shall take off from, land at, or approach to land at an aerodrome or fly within the control zone when the ground visibility at the aerodrome concerned is less than 5KM and the ceiling is less than 1 500FT.
Within an aerodrome traffic zone (which does not also comprise a control zone or part of a control zone)	5KM	Horizontally: 600M Vertically: 500FT	No aircraft shall take off from, land at, or approach to land at an aerodrome or fly within the aerodrome traffic zone when the ground visibility within such aerodrome traffic zone is less than 5KM and the ceiling is less than 1 500FT.

Table 2

In airspaces other than those specified in Table 1

Airspace class	**Altitude Band**	**Forward Flight Visibility**	**Distance from cloud**
C, F, G	At and above 10 000FT above MSL.	8KM	1.5KM Horizontally 1 000FT Vertically
C, F, G	Below 10 000FT AMSL and above 3 000FT above MSL, or above 1 000FT above terrain, whichever is higher.	5KM	1.5KM Horizontally 1 000FT Vertically
C	At and below 3 000FT above MSL, or 1 000FT above terrain, whichever is higher.	5KM	1.5KM Horizontally 1 000FT Vertically
F, G		5KM	Clear of cloud and with the surface in sight.

Provided that the minima specified in Table 1 are not applicable when entering or leaving a CTR and the flight has received clearance from an ATSU to operate under Special VFR minima as referred to in regulation, 91.06.22 -

(i) entering or leaving a CTR and the flight has received clearance from an ATSU to

operate under Special VFR minima as prescribed in regulation 91.06.22; or
(ii) entering or leaving an ATZ on a cross-country flight; and
(iii) a pilot in the aircraft maintains two-way radio communication with the aerodrome control tower or aerodrome flight information service unit, in which case the pilot may leave or enter the aerodrome traffic zone when the ground visibility is equal to or greater than 5KM and the ceiling is equal to or higher than 1 500FT;

b) in the case of helicopters, under conditions of visibility and distance from cloud equal to, or greater than, those conditions specified in Tables 3 and 4:

Table 3

Airspace	**Flight visibility**	**Distance from cloud**	**Ground visibility and ceiling**
Control zones	5KM	Horizontally: 300M Vertically: Clear of cloud	Except when operating under a SVFR clearance no helicopter shall take off from, land at, or approach to land at an aerodrome or fly within the control zone when the ground visibility at the aerodrome concerned is less than 5KM and the ceiling is less than 1 500FT.
Within an aerodrome traffic zone (which does not also comprise a control zone or part of a control zone)	5KM	Horizontally: 300M Vertically: Clear of cloud	No helicopter shall take off from, land at, or approach to land at an aerodrome or fly within the aerodrome traffic zone when the ground visibility at the aerodrome concerned is less than 5KM and the ceiling is less than 1 500FT.

Table 4
In Airspaces other than those specified in Table 3

Airspace class	**Altitude Band**	**Flight Visibility**	**Distance from cloud**
C, F, G	At and above 10 000FT above MSL.	8KM	1.5KM Horizontally 1 000FT Vertically
C, F, G	Below 10 000FT AMSL and above 3 000FT above MSL, or above 1 000FT above terrain, whichever is higher.	5KM	1.5KM Horizontally 1 000FT Vertically
C	At and below 3 000FT above MSL, or 1 000FT above terrain, whichever is higher.	2.5KM	1.5KM Horizontally 1 000FT Vertically
F, G		1.5KM unless in accordance with (iii) below	Clear of cloud and with the surface in sight.

Provided that—
(i) the limitations as contained in Table 3 shall not prevent a helicopter from conducting hover-in-ground-effect or hover-taxi operations within the confines of a controlled aerodrome or heliport, if the visibility is not less than 100M;

(ii) the minima specified in Table 3 are not applicable when a helicopter is entering or leaving a CTR and such flight has received clearance from an ATSU to operate under Special VFR minima as prescribed in regulation 91.06.22; and
(iii) helicopters shall be permitted to operate in less than 1.5KM flight visibility outside of controlled airspace, if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

2 Special VFR weather minima

A pilot-in-command may conduct special VFR operations in weather conditions below the conditions prescribed in Regulation 91.06.21 within a control zone-

a) under the terms of an air traffic control clearance;
b) by day only;
c) with a cloud ceiling of at least 600FT and visibility of at least 1.5KM, measured from the aerodrome reference point;
d) when the special VFR flight will not delay an IFR flight;
e) in an aircraft equipped with two way radio equipment capable of communicating with an air traffic service unit on the appropriate frequency; and
f) if leaving the control zone, in accordance with instructions issued by an air traffic service unit prior to departure.

A pilot-in-command of a helicopter may only conduct Special VFR operations in weather conditions referred to in Regulation 91.06.21 within a CTR-

a) under the terms of an air traffic control clearance;
b) by day only with a cloud ceiling of at least 300FT and visibility of at least 800M offshore;
c) when clear of clouds;
d) if a helicopter will be operated at such speed that its pilot has adequate opportunity to observe any obstructions or other traffic in sufficient time to avoid collisions;
e) if a flight can be conducted in accordance with regulation 91.06.32 with regards to minimum height; and
f) when a special VFR will not unduly delay an IFR flight.

3 VFR flight determination and weather deterioration.

i) The pilot in command of an aircraft operating outside a control zone or an aerodrome traffic zone is responsible to ascertain whether or not weather conditions permit flight in accordance with VFR.

ii) Whenever weather conditions do not permit a pilot to maintain the minimum distance from cloud and the minimum visibility required by VFR, the pilot shall—

a) if in controlled airspace, request an amended clearance enabling the aircraft to continue in VMC to the nearest suitable aerodrome, or to leave the airspace within which an ATC clearance is required;

b) if no clearance in accordance with paragraph (a) can be obtained, continue to operate in VMC and land at the nearest suitable aerodrome, notifying the appropriate ATC unit of the action taken;

c) if operating within a control zone, request authorisation to operate as a special VFR flight; or

d) request clearance to operate in accordance with the IFR.

ENR 1.3 INSTRUMENT FLIGHT RULES

1 Compliance with IFR

A flight conducted above flight level 200 shall be flown in compliance with IFR as prescribed in this part.

2 Aircraft Equipment

Aircraft shall be equipped with suitable instruments and radio navigation apparatus appropriate to the route to be flown and in accordance with the provisions of Regulation 91.05.1 and 91.05.2 of the Civil Aviation Regulations, 2011.

3 Change from IFR flight to VFR flight

a) The pilot-in-command of an aircraft who elects to change the conduct of flight of the aircraft from compliance with IFR to compliance with VFR shall, if a flight plan was submitted for the flight, notify the air traffic service unit concerned that the IFR flight is cancelled and communicate to such air traffic service unit the intended changes to be made to the current flight plan.

b) When an aircraft operating under IFR is flown in or encounters visual meteorological conditions, the pilot-in-command shall not cancel its IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period in uninterrupted visual meteorological conditions.

4 IFR procedures

a) Unless otherwise authorised by the responsible air traffic service unit, aircraft flown in compliance with the rules contained in this Division, shall comply with IFR procedures applicable in the relevant airspace.

b) Subject to the provisions of para 2, the pilot-in-command of an aircraft may execute, or endeavour to execute, a cloud break or letdown procedure at an aerodrome, or nominate an aerodrome as an alternate aerodrome: Provided that the requirements relating to cloud break or letdown procedures and to flights under IMC, as published by the Director of CAA in the NOTAM, can be complied with.

5 Air traffic service procedures

The pilot-in-command of an aircraft to be operated in controlled airspace shall -

a) ensure than an air traffic service flight plan is submitted and changes thereto are notified as prescribed in Regulation 91.03.4 of the Civil Aviation Regulations, 2011;

b) ensure that radio contact is established with the responsible air traffic service unit and that radio communication is maintained as prescribed in Regulation 91.06.16 of the Civil Aviation Regulations, 2011; and

c) comply with air traffic control clearances and instructions: Provided that-

1) the pilot-in-command of an aircraft may deviate from an air traffic control clearance in exceptional circumstances, but such deviation shall be reported to the responsible air traffic service unit as soon as possible; and
2) the pilot-in-command of an aircraft may propose an amendment to an air traffic control clearance, but such amendment shall not be applied until acceded to by the responsible air traffic service unit.

6 Mandatory radio communication in controlled airspace

6.1 The pilot-in-command of an aircraft to be operated in or crossing a controlled airspace shall ensure that, before the aircraft enters such airspace, two-way radio contact is established with the responsible air traffic service unit on the designated radio frequency, and shall ensure, while the aircraft is within, and until it leaves, the controlled airspace, that continuous radio watch is maintained and that such further two-way radio communication as such air traffic service unit may require, is established:

Provided that -

a) the air traffic service unit may permit an aircraft not capable of maintaining two-way radio communication, to fly in the control area, terminal control area, control zone or aerodrome traffic zone for which it is responsible, if traffic conditions permit, in which case the flight shall be subject to such conditions as such air traffic service unit deems necessary to ensure the safety of other air traffic; and
b) in the case of radio failure, a flight for which an air traffic service flight plan was filed and activated by the air traffic service unit on receipt of a departure time, may continue in controlled airspace if the communication failure procedures are complied with.

7 Mandatory radio communication in advisory airspace

7.1 The pilot-in-command of an aircraft to be operated in advisory airspace shall ensure that, before the aircraft approaches or enters such airspace -

a) two-way radio communication with the responsible air traffic services unit is established on the designated radio frequency;
b) if such communication is not possible, two-way radio communication is established with any air traffic service unit which is capable of relaying messages to and from the responsible air traffic unit; or

c) If such communication is not possible, broadcasts are made on the designated radio frequency giving Information on the aircrafts Intention to enter the airspace, and such pilot-in-command shall ensure that, while the aircraft is within the advisory airspace and until it departs there from, a continuous radio watch is maintained on the designated radio frequency and that-

i) such further two-way radio communication as the responsible air traffic services unit may require, is established with any other air traffic service unit which is capable of relaying messages to and from such responsible air traffic service unit;

ii) if such communication is not possible, such further two-way radio communication is established with any other air traffic service unit which is capable of relaying messages to and from the responsible air traffic service unit, as such responsible air traffic service unit may require; or

iii) if such communication is not possible, broadcasts are made on the designated radio frequency giving Information on passing reporting points and when leaving the airspace concerned: Provided that -

(aa) an aircraft maintaining a SELCAL watch while operating within an advisory route in the Johannesburg flight information region and whose SELCAL callc-sign has been communicated to the Johannesburg flight information centre, shall be deemed to be maintaining a continuous radio watch; and

(bb) in the case of a radio failure, a flight for which an air traffic service flight plan was filed and activated by an air traffic services unit on receipt of a departure time, may continue in advisory airspace if the communication failure procedures are complied with.

8 Reporting position

The pilot-in-command of an aircraft -

a) flying in controlled airspace;

b) flying in advisory airspace; or

c) on a flight for which alerting action is being provided, shall ensure that reports are made to the responsible air traffic service unit, as soon as possible, of the lime and level of passing each compulsory reporting point, together with any other information, and he or she shall further ensure that position reports are similarly made in relation to additional reporting points, if so requested by the responsible air traffic service unit and that, In the absence of designated reporting points, position reports are made at the intervals specified by the responsible air traffic service unit or published by the Director of CAA in terms of Part 175 of the Civil Aviation Regulations, 2011, for that area.

9 PERFORMANCE BASED NAVIGATION

a) In order to comply with the Navigational Specifications in South Africa, you are required to comply with the Civil Aviation Regulations and Technical Standards (CATS and CARS).

b) In the Republic of South Africa:

i) "For Oceanic procedures, RNAV 10 / RNP 4 is required to be met and complied with, ii)

ii) "For En-route procedures, RNAV5 Is reqUired to be met and compiled with,

iii) "For Terminal SID/STAR, RNAV1/RNAV2/RNP1 Is required to be met and complied with,

iv) "For Non Precision Approach procedures, RNP APCH 0.3NM Is required to be met and complied with,

v) "For Vertically Guided Approach procedures, RNP APCH with BAROVNAV I RNP AR APCH is required to be met and complied with.
Note: Special authorization to be obtained from the Director of Civil Aviation for RNP AR APCH procedures.

	Equipment Characteristics					Equipment Capability		
Class	Stand Alone	Multi Sensor	Auto Pilot REQ (Note 1)	RAIM	RAIM Equiv (Note: 2)	En-route	Terminal	Non Precision Approach
A1	X			X		X	X	X
A2	X			X		X	X	
B1		X		X		X	X	X
B2		X		X		X	X	
B3		X			X	X	X	X
B4		X			X	X	X	
C1		X	X	X		X	X	X
C2		X	X	X		X	X	
C3		X	X			X	X	X
C4		X	X			X	X	

Table 1: TSO C129/129a - Equipment Classes

Note 1: Intended to provide data to an integrated navigation system which provides enhanced guidance to an autopilot/flight director to reduce flight technical error and limited to FAR Part 121 aircraft.

Note 2: Requirement for the integrated navigation system to provide a level of GNSS integrity equivalent to RAIM

Class		Domestic Enroute	oceanic Enroute	Terminal	Departure	NPA	LNAV / NAV	Precision approach (APV - IIGLS)	ILS	Integrated sensor	Stand alone
Stand alone	Operational										
Beta	1	x	x	x	x					x	
Beta	2	x	x	x	x	x				x	
Beta	3	x	x	x	x	x	x	x		x	
Gamma	1	x	x								x
Gamma	2	x	x	x	x	x					x
Gamma	3	x	x	x	x	x	x	x			x
Delta	4								x		

Table: TSO C145/145a and C146/146a - Equipment classes

c) FAA TSO C145/145a Airborne Navigation Sensors Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS) This group of equipment utilises a SBAS to provide the augmentation. Functional Classes:

d) Functional Classes

Class Beta: Equipment consisting of a GPS/WAAS sensor that determines position (with integrity) and provides that position and integrity data to an integrated navigation system. In the absence of the WAAS signal integrity is provided by the use of Fault Detection and Exclusion (FDE).

Class Gamma: Equipment consisting of both the GPS/WAAS position sensor (defined by Class Beta) and a navigation function that provides path deviations relative to a selected path. Provides the navigation function of a stand-alone navigation system. In the absence of the WAAS signal integrity is provided by the use of Fault Detection and Exclusion (FDE). This class requires a database, display outputs and pilot controls.

Class Delta: Equipment consisting of both the GPS/WAAS position sensor (defined by Class Beta) and a navigation function that provides path deviations relative to a selected path. Similar to Class Gamma however, not all functions of that Class are provided. Class Delta does not provide a database or direct pilot controls. Class Delta equipment is only applicable to operational Class 4 precision approach providing an ILS replacement.

e) Operational Classes:

Class 1: Equipment that supports oceanic and domestic en route, terminal, non-precision approach and departures. This class applies the long term and fast WAAS differential corrections.

Class 2: Equipment that supports oceanic and domestic en route, terminal, non-precision approach, LNAV/VNAV, and departures. When in oceanic and domestic en route, terminal, non-precision approach and departure mode this class applies the long term and fast WAAS differential corrections. When in LNAV/VNAV this class applies the long term, fast and ionospheric corrections.

Class 3: Equipment that supports oceanic and domestic en route, terminal, non-precision approach, LNAV/VNAV, precision approach (APV-II and GLS) and departures. When in oceanic and domestic en route, terminal, non-precision approach and departure mode this class applies the long term and fast WAAS differential corrections. When in GLS, APV-II or LNAV/VNAV this class applies the long term, fast and ionospheric corrections.

Class 4: Equipment that supports precision approach operations and is intended to serve as a replacement for ILS. It is only applicable to functional Class Delta equipment.

FAA TSO C146/146a Stand-alone Airborne Navigation Equipment Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS)

f) These items of equipment meet the functional Class Gamma or Class Delta of FAA TSO C145/145a.

Application of navigation specification by flight phase.

Navigation Specification	Flight phase							
	En-route oceanic/ remote	En-route Continental	Arrival	Approach				
				Initial	Intermediate	Final	Missed	DEP
RNAV 10	10							
RNAV 5		5	5					
RNAV 2		2	2				1	2
RNAV 1		1	1	1		1		1
RNP 4	4							
RNP 2	2	2						
RNP 1			1	1	1		1	1
Advanced RNP	2	2 or 1	1	1	1	0.3	1	1
RNP APCH				1	1	0.3	1	
RNP AR APH				1-0.1	1-01	0.3-0.1	1-0.1	
RNP 0.3		0.3	0.3	0.3	03		0.3	0.3

9.1 Oceanic

9.1.1 RNAV-10 Specification requires

RNAV 10 was developed for operation in oceanic and remote areas and does not require any ground-based NAVAID infrastructure or assessment.

Note: As per ICAO doc 9613 RNP10 is now designated as RNAV 10.

9.1.2 RNAV 10 requires that aircraft operating in oceanic and remote areas be equipped with at least two independent and serviceable LRNSs comprising an INS, an IRS FMS or a GNSS, with integrity such that the navigation system does not provide an unacceptable probability of misleading information.

9.1.3 The assessment of a particular operator is made by the South African Civil Aviation Authority for that operator and in accordance with national operating rules (e.g. SA-CARS, JAR-OPS 1, 14 CFR Part 121) supported through appropriate advisory and guidance material. The assessment should take into account:

a) evidence of aircraft eligibility, including MEL as required by CATS
b) assessment of the operating procedures for the navigation systems to be used;
c) control of those procedures through acceptable entries in the operations manual;
d) identification of flight crew training requirements; and
e) where required, control of the navigation database process.

9.1.4 The operational approval will likely be documented through the State endorsing the air operators certificate (AOC) by issuing a Letter of Authorization, an appropriate operations specification (Ops Spec) or an amendment to the operations manual.

9.2 ENROUTE

9.2.1 RNAV 5 - Specification Requires:

VOR/DME and/or

DME/DME and/or

INS/IRS and

GNSS

Nil Navigation Database

9.2.2 The assessment of a particular operator is made by the South African Civil Aviation Authority for that operator and in accordance with national operating rules (e.g. SA-CARS, JAR-OPS 1, 14 CFR Part 121) supported through the advisory and guidance material in documents such as AMC 20-4 or AC 90-96. The assessment should take into account:

a) evidence of aircraft eligibility, including MEL as required by CATS

b) assessment of the operating procedures for the navigation systems to be used;
c) control of those procedures through acceptable entries in the operations manual;
d) identification of flight crew training requirements; and
e) when required, control of the navigation database process.

Note: As per ICAO doc 9613 B-RNAV/ RNP-5 is now designated as RNAV 5.

9.2.3 The operational approval will likely be documented through the State endorsing the air operators certificate (AOC) by issuing a Letter of Authorization, an appropriate operations specification (Ops Spec) or an amendment to the operations manual.

A navigation database does not form part of the required functionality of RNAV 5.

9.3 OCEANIC/EN ROUTE

9.3.1 RNP 4 - Specification Requires:

RNP 4 was developed for operations in oceanic and remote airspace, therefore, it does not require any ground-based NAVAID infrastructure. GNSS is the primary navigation sensor to support RNP 4, either as a stand-alone navigation system or as part of a multi-sensor system.

9.3.2 The assessment of a particular owner or operator is made by the South African Civil Aviation Authority for that owner or operator and in accordance with national operating rules (e.g. SA-CARS, JAR-OPS 1, 14 CFR Part 121) supported through appropriate advisory and guidance material. The assessment should take into account:

a) Evidence of aircraft eligibility;
b) Assessment of the operating procedures for the navigation systems to be used;
c) Control of those procedures through acceptable entries in the operations manual;
d) Identification of flight crew training requirements; and
e) Where required, control of navigation database processes;

9.3.3 The operational approval will likely be documented through the South African Civil Aviation Authority endorsing the air operator certificate (AOC) through issue of a Letter of Authorization, appropriate operations specification (Ops Spec) or amendment to the operations manual.

9.4 TERMINAL

9.4.1 RNAV 1/RNAV 2 specification requires

GNSS and/or

DME/DME and/or

DME/DME/IRU

Navigation Database

9.4.2 The RNAV 1/RNAV 2 navigation specification is primarily developed for RNAV operations in a radar environment (for SIDs, radar coverage is expected prior to the first RNAV course change). The Basic-RNP 1 navigation specification is intended for similar operations outside radar coverage

Note: For existing systems, compliance with both P-RNAV (TGL-10) and U.S. RNAV (FAA AC 90-100) assures automatic compliance with this ICAO specification.

9.4.3 The assessment of a particular operator is made by the South African Civil Aviation Authority for that operator and in accordance with national operating rules (e.g. SA-CARS, JAR-OPS 1, 14 CFR Part 121), supported through the advisory and guidance material found in documents such as TGL No. 10 and AC 90-100. The assessment should take into account:

a) evidence of aircraft eligibility, including MEL as required by CATS
b) assessment of the operating procedures for the navigation systems to be used;
c) control of those procedures through acceptable entries in the operations manual;
d) identification of flight crew training requirements; and
e) where required, control of the navigation database process

9.4.4 The operational approval will likely be documented through the State endorsing the air operators certificate (AOC) through issue of a Letter of Authorization, appropriate operations specification (Ops Spec) or amendment to the operations manual.

9.5 Basic RNP-1

9.5.1 Specification requires:

GNSS

Navigation Database

9.5.2 RNP 1 is based on GNSS positioning. Positioning data from other types of navigation sensors may be integrated with the GNSS data provided the other positioning data do not cause position errors exceeding the total system error (TSE) budget. Otherwise, means should be provided to deselect the other navigation sensor types. Operators of GNSS-equipped aircraft must have the means to predict fault detection using ABAS (e.g. RAIM)

Note: RNP 1 can be associated with Radius to Fix (RF) Path Terminator and Barometric VNAV.

RNP 1 shall not be used in areas of known navigation signal (GNSS) interference.

9.5.3 The assessment of a particular operator is made by the South African Civil Aviation Authority for that operator and in accordance with national operating rules (e.g. SA-CARS, JAR-OPS 1, 14 CFR Part 121) supported through appropriate advisory and guidance material. The assessment should take into account:

a) evidence of aircraft eligibility including MEL as required by CATS
b) assessment of the operating procedures for the navigation systems to be used;
c) control of those procedures through acceptable entries in the operations manual;
d) identification of flight crew training requirements; and
e) where required, control of the navigation database process.

9.5.4 The operational approval will likely be documented through the State endorsing the air operators certificate (AOC) through issue of a Letter of Authorization, appropriate operations specification (Ops Spec) or amendment to the operations manual.

9.5.5 The navigation database must be obtained from a supplier that complies with RTCA DO 200A/EUROCAE document ED 76, Standards for Processing Aeronautical Data, and should be compatible with the intended function of the equipment (reference ICAO Annex 6, Part 1, Chapter 7). A Letter of Acceptance (LOA), issued by the appropriate regulatory authority to each of the participants in the data chain demonstrates compliance with this requirement (e.g. FAA LOA issued in accordance with FAA AC 20-153 or EASA LOA issued in accordance with EASA IR 21 subpart G).

9.6 APPROACH

9.6.1 RNP APCH - Specification Requires:

GNSS ONLY (LNAV)

Navigation Database

9.6.2 RNP APCH is based on GNSS positioning. Positioning data from other types of navigation sensors may be integrated with the GNSS data provided the other positioning data do not cause position errors exceeding the total system error (TSE) budget, or if means are provided to deselect the other navigation sensor types.

9.6.3 The assessment of a particular operator is made by the South African Civil Aviation Authority for that operator and in accordance with national operating rules (e.g. SA-CARS, JAR-OPS 1, 14 CFR Part 121) supported through appropriate advisory and guidance material. The assessment should take into account:

a) evidence of aircraft eligibility including MEL as required by CATS;
b) assessment of the operating procedures for the navigation systems to be used;
c) control of those procedures through acceptable entries in the operations manual;
d) identification of flight crew training requirements; and
e) where required, control of the navigation database process.

9.6.4 The operational approval will likely be documented through the State endorsing the operation specifications associated with the air operator certificate (AOC) through issue of a Letter of Authorization, appropriate operations specification (Ops Spec) or amendment to the operations manual.

9.6.5 The navigation database should be obtained from a supplier that complies with RTCA DO 200A/EUROCAE document ED 76, Standards for Processing Aeronautical Data. A Letter of Acceptance (LOA) issued by the appropriate regulatory authority demonstrates compliance with this requirement (e.g. FAA LOA issued in accordance with FAA AC 20-153 or EASA LOA issued in accordance with EASA IR 21 subpart G).

9.6.6 The RNP 0.3 specification is based upon GNSS; its implementation is not dependent on the availability of SBAS. DME/DME based RNAV systems will not be capable of consistently providing RNP 0.3 performance, and States should not plan on implementing RNP 0.3 operations through application of DME/DME-based navigation. States must also not use RNP 0.3 in areas of known navigation signal (GNSS) interference. Operators relying on GNSS are required to have the means to predict the availability of GNSS fault detection (e.g. ABAS RAIM) to support operations along the RNP 0.3 ATS route. The on-board RNP system, GNSS avionics, the ANSP or other entities may provide a prediction capability. The AIP should clearly indicate when prediction capability is required and acceptable means to satisfy that requirement. This prediction will not be required where the navigation equipment can make use of SBAS augmentation and the planned operation will be contained within the service volume of the SBAS signal.

9.6.7 The following systems meet the accuracy, integrity and continuity requirements of these criteria;

a) Aircraft with E/TSO-C145a and the requirements of E/TSO-C115B FMS, installed for IFR use in accordance with FAA AC 20-130A;

b) Aircraft with E/TSO-C146a equipment installed for IFR use in accordance with FAA AC 20-138 or AC 20-138A;

c) Aircraft with RNP 0.3 capability certified or approved to equivalent standards (e.g. TSO-C193).

9.7 RNP AR APCH

9.7.1 Specification Requires:

GNSS ONLY (LNAV)

Navigation Database

9.7.2 RNP AR APCHs are only authorized based on GNSS as the primary NAVAID infrastructure. The use of DME/DME as are versionary capability may be authorized for individual operators where the infrastructure supports the required performance. RNP AR APCH shall not be used in areas of known navigation signal (GNSS) interference.Initiation of all RNP AR APCH procedures is based on GNSS updating. Except where specifically designated on a procedure as "Not Authorized", DME/DME updating can be used as a reversionary mode during the approach or missed approach when the system complies with the navigation accuracy RNP AR APCHs do not require any unique communication or ATS surveillance considerations.

9.7.3 Prior to authorization for the conduct of RNP AR APCH operations, an operator must demonstrate to the

9.7.4 South African Civil Aviation Authority that all appropriate elements of the RNP AR APCH operations have been appropriately addressed including:

a) determination of aircraft qualification;

b) training e.g. flight crews, dispatch;

c) MEL, continuing airworthiness; as required by CATS

d) requirements for operational procedures;

e) dispatch procedures;

f) maintenance procedures;

g) conditions or limitations for approval;

h) procedure operational validation for each aircraft type; and

i) conduct of a FOSA.

9.8 RNP APCH with Vertical Guidance

9.8.1 Specification Requires:

GNSS ONLY (LNAV)

BARONAV (VNAV)

Navigation Database

9.8.2 The following steps must be completed before the use of Barometric VNAV in the conduct of RNP AR APCH operations:

a) aircraft equipment eligibility must be determined and documented including MEL as required by CATS;
b) operating procedures must be documented;
c) flight crew training based upon the operating procedures must be documented;
d) the above material must be accepted by the State regulatory authority; and
e) operational approval should then be obtained in accordance with national operating rules.

9.8.3 Relevant documentation acceptable to the South African Civil Aviation Authority must be available to establish that the aircraft is equipped with an RNAV system with a demonstrated VNAV capability.

Note.- RNP AR systems: RNAV systems demonstrated and qualified for RNP AR operations including VNAV are considered qualified with recognition that the RNP approaches are expected to be performed consistent with the operators RNP AR approval. No further examination of aircraft capability, operator training, maintenance, operating procedures, databases, etc. is necessary.

9.8.4 Barometric altimetry and related equipment such as air data systems are a required basic capability and already subject to minimum equipment requirements for flight operations.

9.8.5 Following the successful completion of the above steps, an operational approval for the use of VNAV, a Letter of Authorization or appropriate operations specification (Ops Spec), or an amendment to the operations manual, if required, should then be issued by the South African Civil Aviation Authority.

10 OPERATIONAL STANDARDS FOR INERTIAL NAVIGATION AND REFERENCE SYSTEMS

10.1 General

Inertial navigation may be used by approved operators only. For approved operators of SA registered aircraft, inertial navigation may be used to satisfy the requirements of the CAA (Authority). The Inertial Navigation System (INS) or Inertial Reference System (IRS) and its installation must be certified by the state of registry as meeting Authority airworthiness standards.

Note: Airworthiness requirements of the Authority will be satisfied provided that:

The equipment has been installed to the manufacturers requirements.
The installation is listed in the aircraft Type Certificate or has a Supplemental Type Certificate for the specific aircraft type.

There is a flight manual supplement covering any system limitations.

The system is included in the operators maintenance program.

Outside SA FIRs (for example, in Europe and over the North Atlantic) other State authorities might require navigational performance different to that required by these standards.

10.2 Minimum performance for operational approval. An INS/IRS must meet the following criteria for operational approval and must be maintained to ensure performance in accordance with the criteria:

a) With a 95% probability the radial error rate is not to exceed 2NM per hour for flights up to 10 hours duration.
b) With a 95% probability the cross-track error is not to exceed +/-20 NM and along track error is not to exceed +/-25 NM at the conclusion of a flight in excess of 10 hours.

The INS/IRS should have the capability for coupling to the aircraft autopilot to provide steering guidance.

The navigation system should have the capability for updating the displayed present position.

10.3 Serviceability requirements.

An INS/IRS may be considered as serviceable for navigational purposes until such time as its radial error exceeds 3 + 3t NM (t being the hours of operation in the navigation mode).

Maintenance corrective action shall also be taken when an INS/IRS is consistently providing radial error rates in excess of 2 NM per hour and l or cross track and along track errors in excess of the tolerances given at paragraph 3.1 on more than 5% of the sectors flown.

10.4 System performance monitoring

The operator is to monitor and record the performance of INS/IRS and may be required to provide details of the system accuracies and reliabilities from time to time.

10.5 Navigation criteria

Navigation using INS/IRS as the primary navigational means is permitted in accordance with the following conditions:

a) Initial confidence Check. The INS/IRS must be checked for reasonable navigational accuracy by comparison with ground referenced radio navigation aids (which may include ATC radar) before proceeding outside the coverage of the short range radio navigation aids system.

b) Maximum Time.

1) Single INS/IRS:

a) The maximum operating time since the last ground alignment is not to exceed 10 hours.

b) On flights of more than 5 hours, any route sector may be planned for navigation by INS/IRS within the appropriate time limits (given in (c) below) but contingency navigation procedures must be available in the event of an INS/IRS in-flight unserviceability which would preclude the aircrafts operation on a subsequent route sector for which area navigation is specified.

c) INS/IRS may be used as a sole source of tracking information for continuous period not exceeding:

-3 hours in controlled airspace other than oceanic control area (OCA)

-5 hours in OCA or outside controlled airspace (OCTA)

2) Two or More INS/IRS:

a) If, during a flight, 10 hours elapsed time since the last ground alignment will be exceeded, ground alignment is to be included in the pre-flight cockpit procedures prior to push back taxi for departure.

b) INS/IRS may be used as the sole source of tracking information for continuous periods not exceeding:

-5 hours in controlled airspace other than OCA.

-12 hours in OCA or OCTA.

Notes:

1) **Provided that the use of INS/IRS as the sole means of navigation does not exceed the time limit, the aircraft may be operated for longer periods using the INS/IRS with either manual or automatic updating.**
2) **The 5 hour limit on single INS/IRS ensures 99.74% (3 sigma) probability that loss of satisfactory navigational capability will not occur with equipment mean time between failures (MTBF) of approximately 1900 hours. If the demonstrated MTBF exceeds 2000 hours, the maximum time may be increased.**

c) Updating Present Position. Updating inertial present position in flight is permitted in the following instances only:

1) Manually:

a) **Overhead a VOR beacon.**
b) **Within 25 nautical miles of a co-located VOR/DME beacon.**
c) **Over a visual fix when at a height not more that 5000 ft above the feature.**

2) Automatically:

a) **Within 200 nautical miles of a DME site when the aircraft strack will pass within 140 NM of the site.**
b) **Within 200 NM of both DME sites for a DME/DME fix.**
c) **From a co-located VOR/DME beacon provided that updates from a receding beacon are not accepted when the beacon is more that 25 NM from the aircraft.**

Notes:

1) **En Route VOR and DME sites separated by not more that 500 metres are considered to be collocated.**
2) **DME slant range error correction might be necessary in some circumstances.**
3) **Updating a present position from a visual fix may not be planned for IFR flights.**
4) **A receding beacon is one from which the distance to the aircraft is increasing.**
5) **Updating in other circumstances (for example, over a NDB) will not provide sufficient accuracy to ensure that the INS/IRS operates within the prescribed tolerances for navigation.**
6) **Because INS/IRS are essentially accurate and reliable, and ground alignment is more accurate than in-flight updating, updating of present position is usually not warranted especially during the initial few hours of operation. However, INS/IRS errors generally increase with time and are not self-**

correcting. Unless the error is fairly significant (for example, more than 4 NM or 2 NM/hr) it may be preferable to retain the error rather than manually update.

d) Limitation on Use. Wherever track guidance is provided by radio navigation aids, the pilot-in-command shall ensure that the aircraft remains within the appropriate track-keeping tolerances of the radio navigation aids. INS/IRS is not to be used as a primary navigation reference during IFR flight below lowest safe altitude (LSALT).

e) Pre-flight and En-route Procedures.

The following practices are required:

1) New data entries are to be cross-checked between at least two crew members for accuracy and reasonableness, or, for single pilot operations, an independent check (for example, of INS/IRS- computed tracks and distances against the flight plan) must be made.

2) As a minimum, position and tracking information is to be checked for reasonableness (confidence check) in the following cases:

a) Prior to each compulsory reporting point.

b) At or prior to arrival at each en-route way point during RNAV operation along RNAV routes.

c) At hourly intervals during area type operation off established RNAV routes.

d) After insertion of new data.

10.6 OPERATING CRITERIA

10.6.1 Two or more INS / IRS Installations. For two or more INS / IRS installations:

a) If one INS/IRS fails or can be determined to have exceeded a radial error of 3+3t NM, operations may continue on area navigation routes using the serviceable system(s) in accordance with the navigational criteria applicable to the number of INS/IRS units remaining serviceable.

b) If,

1) The difference of pure inertial read-outs between each pair of INS/IRS is less than 1.4 (3+3t) NM, no action is required.

2) The difference of pure inertial read-outs between any pair of INS/IRS exceeds 1.4 (3+3t) NM and it is possible to confirm that one INS/IRS has an excessive drift error, that system should be disregarded and/or isolated from the other system(s) and the apparently serviceable system(s) should be used for navigation.

Note: 1) This check and its isolation action are unnecessary if a multiple INS/IRS installation is protected by a serviceability self test algorithm.

3) Neither condition (1) nor (2) can be satisfied, another means of navigation should be used, and the pilot-in-command must advise the appropriate ATS unit.

10.6.2 Single INS/IRS installations

For single INS/IRS installations, if the INS/IRS fails or exceeds the serviceability tolerance:

a) The pilot-in-command must advise the appropriate ATS unit of INS/IRS failure.

b) Another means of navigation is to be used.

c) The aircraft is not to begin a route sector for which area navigation is specified unless it is equipped with an alternative, serviceable, approved area navigation system.

10.6.3 Autopilot Coupling: Autopilot coupling to the INS/IRS should be used, whenever practicable, if this feature is available. If for any reason the aircraft is flown without autopilot coupling, the aircraft is to be flown within an indicated cross-track tolerance of +/-2 NM. In controlled airspace ATC is to be advised if this tolerance is exceeded.

10.7 NAVIGATIONAL TOLERANCES

10.7.1 The maximum drift rate expected from INS/IRS is 2 NM per hour (2 sigma probability). For the purposes of navigation and determining aircraft separation, the 3 sigma figure of 3 NM is allowed so that the maximum radial error with 3 sigma confidence equals 3+3t NM where t equals the time in hours since the INS/IRS was switched into the navigation mode.

10.7.2 DME and other inputs can automatically influence the INS/IRS to improve the accuracy of its computed position. The pilot may also insert known position co-ordinates to update the INS/IRS. Therefore, if the system is updated with known position information the position error is reduced and the INS/IRS can be assumed to operate within the radial error tolerance of 3+3T NM where T is the time (hours elapsed since the last position update.)

10.7.3 The accuracy of the data used for updating must be considered. The navigation aid positions used for updating inertial present position are accurate to within 0.1 NM. However, the aircraft in flight cannot be fixed to the same order of magnitude. The accuracy of the position fix is taken as +/- 3 NM radial error.

10.7.4 Because the INS/IRS error, the navigation aid position accuracy and the position fix errors are independent of each other, the total radial error is determined by the root-sum-square method:

$$\text{Total error} = \sqrt{(3 + 3T)^2 + 0.1^2 + 3^2}\ \text{nm}$$

10.7.5 The effect of navigation aid position accuracy on the total error is negligible, and so,

$$\text{totalerror} = \sqrt{(3 + 3T)^2 + 3^2}\ \text{nm}$$
$$= \sqrt{(1 + T)^2 + 1}\ \text{nm}$$

Substituting values for T

at time of update, total radial error = 4.2 NM

after 1 hour = 6. 7 NM

after 2 hours = 9.5 NM

after 3 hours = 12.4 NM

after 4 hours = 15.3 NM

after 5 hours = 18.2 NM

after 6 hours = 21.2 NM

10.7.6 Dual installation: If two INS/IRS are installed and the aircraft is navigated by averaging, the inertial present position formula for the total radial error given in paragraph 7.4 is modified by multiplying by:

$$\frac{1}{\sqrt{}} (=0.7)$$

10.7.7 Triple installations: If three INS/IRS are installed and triple mix is used, the total radial error is further reduced. For simplicity for navigation and aircraft separation the tolerances applicable to dual installations apply and the third system provides redundancy.

10.8 GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) AND THE USE OF GLOBAL POSITIONING SYSTEM (GPS)

10.8.1 When the airborne navigation equipment using GPS is CAA (South African Civil Aviation Authority) approved as satisfying the relevant technical criteria, then operators may be approved to conduct flights when flying under IFR in oceanic, domestic en-route airspace and under certain circumstances in terminal and approach airspace as per the following paragraph Operational Matters.

The criteria presently specified may be superseded by Airworthiness and Operational Standards promulgated by the CAA.

10.8.2 AIRWORTHINESS APPROVAL

FAA Advisory Circulars AC 20-138/AC 20-138A (GPS stand-alone system) or AC 20-130A (Multi-sensors systems) is used as the basis for the airworthiness approval of an RNAV system based on GNSS. For APV BARO-VNAV operation, FAA Advisory Circular AC 20-129 is used as the airworthiness basis with additional requirements.

a) Stand alone Equipment:

1) If the RNAV installation is based on GNSS stand-alone system, the equipment shall be approved in accordance with TSO-C129a/ETSO-C129a or ETSO-C146/TSO-C146 as per the below table.

b) Multi-sensor Equipment:

2) If the RNAV installation is based on GNSS sensor equipment used in a multi-sensor system (e.g. FMS), the GNSS sensor shall be approved in accordance with TSO-C129/ETSO-C129 or ETSO-C145/TSO-C145 as per the table below.

3) Multi-sensor systems using GNSS should be approved in accordance with AC20-130A or ETSO-C115b/TSO-C115b, as well as having been demonstrated for RNP capability.

Note 1: For GNSS receiver approved in accordance with ETSO-C129/TSO-C129, the capability for satellite Fault Detection and Exclusion (FDE) is recommended, to improve Continuity of function.

Note 2: GNSS receivers approved in accordance with ETSO-145/TSO-C145a or ETSO- C146/TSOC146a (DO 229C) and used outside SBAS coverage area may trigger inappropriate Loss of Integrity (LOI) warnings. DO229D paragraph 2.1.1.6 provides a correct satellite selection scheme requirement to address this issue. Although most of the ETSO-C145/TSO-C145a or ETSO-146/TSO-C146a approved receivers comply with this satellite selection scheme, a confirmatory statement from the equipment manufacturer is still necessary. It should be noted that such confirmatory statement is not necessary for equipment compliant with TSO-C145b or TSO-C146b.

10.9 REQUIREMENTS FOR USE OF GLOBAL POSITIONING SYSTEM (GPS) AS AN APPROVED PRIMARY MEANS IFR NAVIGATION AID

10.9.1 PURPOSE

The purpose of this section is to detail the Civil Aviation Authorities requirements for the use of GPS as an approved en-route and area IFR primary means navigation aid.

10.9.2 This constitutes the Civil Aviation Authority (CAA) approval for the use of a GPS system, fitted and operated in accordance with the provisions of this within South Africa domestic airspace only, for the purpose of:

a) position fixing, as required in AIP GEN 1.5 & ENR 1.3;

b) long range navigation including operations on designated RNP routes;

c) deriving distance information, for en route navigation, traffic information and ATC separation;

d) application of RNP based separation.

10.9.3 BACKGROUND

GPS has been confirmed for IFR en route supplemental navigation use in South Africa. As further information has become available on the accuracy, integrity, availability and continuity of GPS, and following US DoD declaration of Full Operational Capability (FOG) in April 1995, CAA has determined that the use of GPS for IFR navigation can be extended, in accordance with the provisions of this section.

Instrument arrival procedures using GPS derived distance combined with NDB or VOR azimuth information, will be introduced at some future date, and will be known as GPS Arrival procedures.

10.9.4 GPS SIGNAL INTEGRITY

System integrity is an essential element of the approval for use of GPS as a primary means navigation system. GPS receivers certified to TSO-C129 provide integrity through the use of RAIM, or an approved equivalent integrity system. When RAIM is lost or not available, the accuracy of the system cannot be assumed to meet the required standard for navigation, or for the application of ATC separation standards.

GPS integrity is also dependent on the number of operational satellites in view, or available for use. Loss of one or more satellites can result in degraded system availability.

RAIM availability is greatly improved through the use of barometric aiding. Except as provided in this section, GPS must not be used to fix position, provide distance information or provide primary navigation, unless RAIM is available.

10.9.5 GPS SATELLITE CONSTELLATION

The approvals contained in this section are based on the availability of the US DoD GPS Standard Positioning Service (SPS) operating to its defined Full Operational Capability (FOG). This service does not meet the requirements of a sole means navigation system.

Disruption to the GPS may result in degradation in GPS service to such a level that some or all of the operational approvals for the IFR primary use of GPS contained in the section may need to be withdrawn. When known, these changes or restrictions will be advised by NOTAM.

Prior knowledge of RAIM availability will enable operators to use the system more efficiently, by allowing operations to be planned around gaps in RAIM coverage (RAIM holes). To achieve these efficiencies, CAA recommends that appropriate RAIM prediction capabilities be available at dispatch locations. Flights should be planned to ensure the safe completion of flight in the event of Joss of GPS integrity.

10.10 PILOT TRAINING

The following pilot training requirements must be satisfied:

a) Prior to using GPS in IFR operations for any of the purposes specified in this section, the holder of an instrument rating must, unless exempted by CAA, have completed a course of ground training based on the syllabus contained in Annex A. The course must be conducted by, or on behalf of, an approved IFR check and training organisation or approved instrument training school or by the CAA.

b) The course must cover both general information and procedures applicable to all types of GPS equipment, as well as the essential operating procedures for a specific type of aircraft equipment. Pilots who have completed the course and who wish to use a different type of GPS aircraft equipment must

ensure that they are familiar with, and competent in, the operating procedures required for that type of equipment, before using it in flight for any of the purposes approved in this section.

c) Licensing or certification requirements for pilots will be issued in due course by CAA.

10.11 OPERATIONAL REQUIREMENTS

The following operational requirements must be satisfied:

a) Operating instructions for GPS navigation equipment must be:

1) carried on board; and

2) incorporated into the Company Operations Manual for commercial operations.

b) GPS navigation equipment must be operated in accordance with the operating instructions, and any additional requirements specified in the approved aircraft flight manual or flight manual supplement.

c) In addition to GPS, aircraft must be equipped with serviceable radio navigation systems as specified by the authority.

d) When within rated coverage of ground based navigation aids, pilots must monitor the ground based system, and maintain track as defined by the most accurate ground based radio navigation aid (VOR or NDB) available. If there is a discrepancy between the GPS and ground based system information, pilots must use the information provided by the ground based navigation system.

e) ATC may require GPS equipped aircraft to establish on, and track with reference to, a particular VOR radial or NDB track for the application of separation.

10.12 OPERATIONS WITHOUT RAIM

10.12.1

a) Navigation (Nav) Solution with RAIM;

b) 2D or 3D Nav Solution without RAIM; and

c) Dead Reckoning (DR), or Loss of Nav Solution.

10.12.2 ATS services, and in particular ATC separation standards, are dependent on accurate navigation and position fixing. If RAIM is lost, the accuracy of the system is assumed not to meet the required standard for both navigation and application of ATC separation. Accordingly, when RAIM is lost, the following procedures must be adopted:

a) Aircraft tracking must be closely monitored against other on-board systems.

b) In controlled airspace, ATC must be advised if:

i) RAIM is lost for periods greater than ten minutes, even if GPS is still providing positional information; or

ii) RAIM Is not available when ATC request GPS distance, or if an ATC clearance or requirement based on GPS distance is imposed; or

iii) the GPS receiver is in DR mode, or experiences loss of navigation function, for more than one minute; or

iv) Indicated displacement from track centre line is found to exceed 2NM.

10.12.3 ATC may then adjust separation:

a) If valid position information is lost (2D and DR Mode), or non RAIM operation exceeds ten minutes, the GPS information is to be considered unreliable, and another means of navigation should be used until RAIM is restored and the aircraft is re-established on track.

b) Following re-establishment of RAIM, the appropriate ATS unit should be notified of RAIM restoration, prior to using GPS Information. This will allow ATC to reassess the appropriate separation standards.

c) When advising ATS of the status of GPS the phrases RAIM FAILURE or RAIM RESTORED must be used.

10.13 GPS DISTANCE INFORMATION TO AIS UNITS

10.13.1 When a DME distance is requested by an ATS unit, DME derived distance information should normally be provided. Alternatively, GPS derived distance information may be provided to an ATS unit, unless RAIM is currently unavailable and has been unavailable for the preceding ten minutes.

10.13.2Notwithstanding para 10.13.1, if an ATC unit has issued a clearance or requirement based upon GPS distance (e.g. a requirement to reach a certain level by a GPS distance), pilots must inform ATC if RAIM is not available.)

10.13.3 When a DME distance is not specifically requested, or when the provision of a DME distance is not possible, distance information based on GPS derived information may be provided. When providing GPS distance, transmission of distance information must include the source and point of reference -(e.g. 115 NM GPS JSV, 80 NM GPS VAL NDB, 267 NM GPS ORNAD e.t.c.)

10.13.4 If a GPS distance is provided to an ATC unit, and RAIM Is not currently available, but has been available in the preceding 10 minutes, the distance report should be suffixed NEGATIVE RAIM- (e.g. 26 NM GPS BLV NEGATIVE RAIM.)

10.13.5 Databases sometimes contain waypoint information which is not shown on published AIP charts and maps. Distance information must only be provided in relation to published waypoints unless specifically requested by an ATS unit.

10.13.6 Where GPS distance is requested or provided from an NDB, VOR, DME, or published waypoint, the latitude and longitude of the navigation aid or waypoint must be derived from a validated database which cannot be modified by the operator or crew (refer para 11.7 below).

10.14 DATA INTEGRITY

10.14.1 As a significant number of data errors, in general applications, occur as a result of manual data entry errors, navigation aid and waypoint latitude and longitude data should be derived from a data base, if available, which cannot be modified by the operator or crew.

10.14.2 When data is entered manually, data entries must be crosschecked by at least two crew members for accuracy and reasonableness, or, for single pilot operations; an independent check (e.g. GPS computed tracks and distances against current chart data) must be made.

10.14.3 Both manually entered and database derived position and tracking information should be checked for reasonableness (confidence check) in the following cases:

a) prior to each compulsory reporting point;
b) at or prior to arrival at each en route waypoint;
c) at hourly intervals during area type operations when operating off established routes; and
d) after insertion of new data - (e.g. creation of new flight plan.)

10.15 FLIGHT PLAN NOTIFICATION

10.15.1 Flight Plan notification will be in compliance with ICAO Doc 4444 - Flight Planning and South African Aeronautical Information Circular AIC D003/2022

10.16 REPORTING

10.16.1 Approved users are invited to submit details of any anomalies experienced during the use of GPS and/or any other comments in writing to the CAA for evaluation to the following address:

Civil Aviation Authority

Private Bag x 73

Halfway House

1685

Fax +2711 5451459 for attention: Director of Civil Aviation

10.17 ANNEX A - Syllabus of training GPS as Primary Means Navigation

10.17.1 GPS System Components and Principle of Operation.Demonstrate an understanding of the GPS system and its principles of operation:

a) GPS system components, constellation, control and user.
b) Aircraft equipment requirements.
c) GPS satellite signal and pseudo random code.
d) Principle of position fixing.
e) Method of minimising receiver clock error.
f) Minimum satellites required for navigation functions.
g) Masking function.
h) Performance limitations of various equipment types.
i) GPS use of WGS84 co-ordinate system.

10.17.2 Navigation System Performance Requirements.Define the following terms in relation to a navigational system, and recall to what extent the GPS system meets the associated requirements:

a) Accuracy.
b) Integrity. - Means of providing GPS integrity; RAIM; procedural systems integration.
c) Availability.
d) Continuity of service.

10.17.3 Authorisation and Documentation

Recall the requirements applicable to pilots and equipment for GPS OPS:

a) Pilot training requirements
b) Log book certification
c) Aircraft equipment requirements
d) GPS NOTAM.

10.17.4 GPS Errors and Limitations

Recall the cause and magnitude of typical GPS errors:

a) Ephemeris
b) Clock
c) Receiver
d) Atmospheric lionospheric
e) Multipath
f) SA (Selected Availability)
g) Typical Total error associated with CIA code
h) Effect of PDOP I GDOP on position accuracy
i) Susceptibility to interference
j) Comparison of vertical and horizontal errors
k) Tracking accuracy and collision avoidance.

10.17.5 Human Factors and GPS

Be aware of the human factors limitations associated with the use of GPS equipment. Apply GPS operating procedures which provide safeguards against navigational errors and loss of situational awareness due to these causes:

a) Mode errors
b) Data entry errors
c) Data validation and checking including independent cross checking procedures
d) Automation induced complacency
e) Non-standardisation of the GPS o pilot interface
f) Human information processing and situational awareness.

10.17.6 GPS Equipment Specific Navigation Procedures

Recall and apply knowledge of appropriate GPS operating procedures to typical navigational tasks using a specific type of aircraft equipment by:

a) Select appropriate operational modes
b) Recall categories of information contained in the navigational database
c) Predict RAIM availability
d) Enter and check user defined waypoints
e) Enter, retrieve and check flight plan data
f) Interpret typical GPS navigational displays LAT LONG, distance and bearing to waypoint, CDI
g) Intercept and maintain GPS defined tracks
h) Determine TMG, GS, ETA, time and distance to WPT, WV inflight
i) Indications of waypoint passage
j) Use of direct to function

k) Use of nearest airport function
l) Use of GPS in GPS and VOR / DME / GPS arrival procedures.

10.17.7 GPS Equipment Checks

For the specific type of aircraft equipment, carry out the following GPS operational and serviceability checks at appropriate times:

a) TSO status
b) Satellites acquired
c) RAIM status
d) PDOP I GDOP status
e) IFR Database currency
f) Receiver serviceability
g) CDI sensitivity
h) Position indication

10.17.8 GPS Warning and Messages

For the specific type of aircraft equipment, recognise and take appropriate action for GPS warnings and messages, including the following:

a) Loss of RAIM
b) 2D navigation
c) In Dead Reckoning mode
d) Database out of date
e) Database missing
f) GPS fail
g) Barometric input fail
h) Power I battery fail
i) Parallel offset on
j) Satellite fail

10.18 GLOSSARY

Active Waypoint -The waypoint to/from which the navigational guidance is being provided.

Along Track Distance (ATD) Fix - A distance in nautical miles (NM) to the active waypoint along the specified track. An ATD fix will not be used where a course change is made.

Course Set - Guidance set from information provided by the GPS equipment that assists the pilot in navigating to or from an active waypoint on a heading/bearing.

Dead Reckoning (DR) - The navigation of an aircraft solely by means of computations based on airspeed, course, heading, wind direction and speed, ground speed and elapsed time.

Direct To-A method used with the GPS equipment to provide the necessary course from present position directly to a selected waypoint. This is not the course waypoint to waypoint.

En Route Domestic - The phase of flight between departure and arrival terminal phases, with departure and arrival points within the RSA Airspace.

En Route Oceanic - The phase of flight between the departure and arrival terminal phases with an extended flight route over the high seas.

En Route Operations- The phase of navigation covering operations between departure and arrival terminal phases. The en route phase of navigation has two subcategories: en route domestic and en route oceanic.

Fly By Waypoint - A waypoint which requires turn anticipation to allow tangential interception of the next segment of a route or procedure. or.

Fly Over Waypoint - A waypoint at which a turn is initiated in order to join the next segment of a route or procedure.

Geodetic Datum - A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Global Navigation Satellite Systems (GNSS) -An umbrella term adopted by the International Civil Aviation Organization (ICAO) to encompass any independent satellite navigation system used by a pilot to perform on board position determinations from the satellite data.

Global Positioning system (GPS)- a U.S. space-based positioning, velocity and time system composed of space, control, and user elements. The space element, when fully operational will be composed of 24 satellites in six orbital planes. The control element

consists of five monitor stations, three ground antennas and a master control station. The user element consists of antennas and receiver-processors that provide positioning, velocity, and precise timing to the user.

Integrity- The probability that the system will provide accurate navigation as specified or timely warnings to users when GPS data should not be used for navigation.

Minimum en-route altitude (MEA)- The altitude for an en-route segment that provides adequate reception of relevant navigation facilities and ATS communications complies with the airspace structure and provides the required obstacle clearance.

Minimum obstacle clearance altitude (MOCA)- The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

Non-precision Approach Operations - Those flight phases conducted on charted Standard Instrument Approach Procedures (SIAPs) commencing at the initial approach fix and concluding at the missed approach point or the missed approach holding point, as appropriated.

Oceanic Airspace - Airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per the International Civil Aviation Organization (ICAO) are applied. Responsibility for the provisions of air traffic control service in this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.

Receiver Autonomous Integrity Monitoring (RAIM)-A technique whereby a civil GPS receiver/processor determines the integrity of the GPS navigation signals using only GPS signals or GPS signals augmented with altitude. This determination is achieved by a consistency check among redundant pseudo range measurements. At least one satellite in addition to those required for navigation must be in view for the receiver to perform the RAIM function.

Selective Availability (SA)- A method by which the U.S. Department of Defence can artificially create a significant time and positioning error in the satellites. This feature is designed to deny an enemy the use of precise GPS positioning data.

Supplemental Air Navigation System- An approved navigation system that can be used in conjunction with, or in addition to a primary air navigation system.

TO - FROM Navigation- RNAV equipment in which the desired path over the ground in defined as a specific (input quantity) course emanating either to or from a particular waypoint. The equipment functions like a conventional VOR receiver whore the CDI needle and the "to/ from" indicator responds to movement of the OBS. In this equipment the aircraft may fly either TO or FROM any single designated waypoint.

TO-TO Navigation- RNAV equipment in which a path is computed that connects two waypoints. In this equipment, two waypoints must always be available, and the aircraft is usually flying between the two waypoints and to the active waypoint. In this equipment the CDI needle functions like its tracking a localizer signal; that is movement of the OBS has no effect on the CDI needle or the "to/from".

Turn Anticipation - The capability of RNAV systems to determine the point along a course, prior to a turn waypoint, whore a turn should be initiated to provide a smooth path to intercept the succeeding course within the protected airspace.and to enunciate the information to the pilot.

User-selectable Navigation Database- A navigation database having user defined contents accessible by the pilot and/or the navigation computer during aircraft operations in support of navigation needs. This database is stored electronically and is typically updated at regular intervals, such as the AIRAC 28 day cycle. It does not include data that can be entered manually by the pilot or operator.

Waypoint (wp)- A Specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation.Waypoints are identified as either Fly-by waypoint or fly-over waypoint.

World Geodetic System (WGS)-A consistent set of parameters describing the size and shape of the earth, the positions of a network of points with respect to the centre of mass of the earth, transformations from major geodetic datum, and the potential of the earth (usually in terms of harmonic coefficients).

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ENR 1.4 ATS AIRSPACE CLASSIFICATION

1 Classification of airspace

ATS airspace within the boundaries of the RSA will be classified in accordance with the ICAO standards.

ICAO airspace classifications not in use within the RSA are indicated accordingly.

Class A. All airspace FL200 and above or as designated.

Class B. All controlled airspace below FL200 in the case of a CTR.

Class C. All controlled airspace below FL200. In the case of an ATZ, aerodrome separation will be applied.

Class D. All controlled airspace below FL200 in the case of an ATZ.

Class E. Not in use.

Class F. Advisory service will be provided.

Class G. All information airspaces.

Speed restrictions for specific airspaces are given with the description for:-

a) STAR's (Where applicable).
b) Noise abatement procedures.
c) Rules and regulations.

ATS airspace classifications							
	Class of Airspace						
	A	***B***	***C***	***D***	***E***	***F***	***G***
IFR	SEPARATION: All aircraft	SEPARATION: All aircraft	SEPARATION: IFR from IFR IFR from VFR	SEPARATION: IFR from IFR	SEPARATION: IFR from IFR	SEPARATION: IFR from IFR as far as practical	SEPARATION: Not provided
	SERVICES: Air traffic control service	SERVICES: Air traffic control service	SERVICES: Air traffic control service	SERVICES: Air traffic control service including traffic information about VFR flights (and traffic avoidance advice on request)	SERVICES: Air traffic control service and traffic information about VFR flights as far as practical	SERVICES: Air traffic advisory service flight information service	SERVICES: Flight information service
	VMC MINIMA: Not applicable	VMC MINIMA: Not applicable	VMC MINIMA: Not applicable	VMC MINIMA: Not applicable	VMC MINIMA: Not applicable	VMC MINIMA: Not applicable	VMC MINIMA: Not applicable
	Speed Limitation: Not applicable	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace
	Radio:	Radio:	Radio:	Radio:	Radio:	Radio:	Radio:
	Clearance: ATC	Clearance: ATC	Clearance: ATC	Clearance: ATC	Clearance: ATC	Clearance: Not required	Clearance: Not required

ATS airspace classifications							
	Class of Airspace						
	A	***B***	***C***	***D***	***E***	***F***	***G***
VFR	No VFR operations allowed	SEPARATION: All aircraft	SEPARATION: VFR from IFR	SEPARATION: Not provided	SEPARATION: Not provided	SEPARATION: Not provided	SEPARATION: Not provided
		SERVICES: Air traffic control service	SERVICES: (1) Air traffic control service for separation from IFR (2) VFR traffic information (and traffic avoidance advice on request)	SERVICES: Traffic information between VFR and IFR flights (and traffic avoidance advice on request)	SERVICES: Traffic information as far as practical	SERVICES: Flight information service	SERVICES: Flight information service
		VMC MINIMA: As published in RSA – Part 91, Subpart 06	VMC MINIMA: As published in RSA – Part 91, Subpart 06	VMC MINIMA: As published in RSA – Part 91, Subpart 06	VMC MINIMA: As published in RSA – Part 91, Subpart 06	VMC MINIMA: As published in RSA – Part 91, Subpart 06	VMC MINIMA: As published in RSA – Part 91, Subpart 06
		Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace	Speed Limitation: As published for relevant airspace
		Radio:	Radio:	Radio:	Radio:	Radio:	Radio:
		Clearance: ATC	Clearance: ATC	Clearance: ATC	Clearance: Not required	Clearance: Not required	Clearance: Not required

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ENR 1.5 HOLDING, APPROACH AND DEPARTURE PROCEDURES

1 GENERAL

The holding, approach and departure procedures in use are based on those contained in the latest edition of ICAO Doc 8168- OPS/611 (PANS-OPS).The holding and approach procedures in use have been based on the values and factors contained in part 11 of the PANS-OPS.

The ILS Outer Marker (OM) is a compulsory reporting point for all aircraft on an ILS approach. In the event that the ILS OM has been replaced with a DME distance fix the DME distance fix will be used as the OM and reporting done accordingly.

1.1 Provisions

a) Aircraft must be able to receive the ATIS.
b) SIDS and STARS are announced in operation on ATIS.
c) The active runway is announced on the ATIS.
d) SIDS and STARS will only be in force when Surveillance Radar in operation.
e) If unable to comply with SID or STAR, notify ATC.
f) If unable to fly TRACKS, notify ATC.
g) Pilots wishing to practice a CAT II ILS approach or a GNSS approach must either request it on the flight plan in field 18, request it at least one (1) HR before by phone, or by radio at 100NM DME JSV TGV or CTV.

2 ARRIVING FLIGHTS

IFR flights entering and landing within controlled airspace will be cleared to a specific holding point and instructed to contact the Approach Control at a specified time, level or position.

The terms of this clearance shall be adhered to until further instructions are received from Approach Control.

If the clearance is reached before further instructions have been received, holding procedures shall be carried out at the level cleared.

1) If it becomes apparent that delays will be encountered by arriving aircraft, the operator or his designated representative shall be notified and kept informed of any changes in such delays.This is to facilitate possible timely diversionary action.
2) To expedite departing traffic, arriving aircraft may be required to report when leaving or passing a reporting point, or when starting a procedure turn or base turn, or to provide other information as requested by ATC.

3) An IFR flight shall not be cleared to descend below the appropriate initial approach altitude as specified for a particular instrument approach unless:

a) The pilot has reported passing an appropriate point defined by a radio aid; or

b) The pilot reports that he/she has and can maintain visual contact with the aerodrome; or

c) The pilot is conducting a visual approach; (The limit for a visual approach is 25NM from the destination aerodrome); or

d) The pilot is conducting an approach under RADAR vectors and control

4) All inbound aircraft to O R Tambo (Johannesburg), Lanseria, Chief Dawid Stuurman (Port Elizabeth), Bram Fischer (Bloemfontein), King Phalo (East London), King Shaka (Durban), Cape Town Airports not on a STAR, will comply with the following speed restrictions unless advised otherwise by ATC:

a) Within 50DME JSV/PEV/CTV/TGV/BLV/ELV: 250KIAS or less

b) Within 15DME JSV/PEV/CTV/TGV/BLV/ELV: 210KIAS or less

c) Speed limit points (SLP) will be defined per STAR procedure.

d) In addition, all aircraft at or below FL 100 will fly a speed not exceeding 250 KIAS. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency pilots are not to request cancellation of speed restrictions.

2.1 VMC AND VISUAL APPROACHES

The purpose is to define the two types of approach clearances and pilots are requested to note the essential differences.

2.2 VMC APPROACH

When requested by the pilot and if so prescribed by the ATSU, an arriving aircraft may be cleared to descend below the initial approach ALT subject to maintaining by day;

a) own separation;

b) VMC;

c) visual contact with the aerodrome; and

d) by night - provided that there is no reduction of standard separation involved.

2.3 VISUAL APPROACH

An IFR flight may be cleared to execute a visual approach provided that the pilot can maintain visual reference to the terrain and;

a) the reported ceiling is at or above the approved initial approach ALT for the aircraft so cleared;

b) reasonable assurance exists that a visual approach and landing can be completed;

c) be within 25 NM of the destination aerodrome.

2.3.1 Separation shall be provided between an aircraft cleared to execute a visual approach and other traffic within controlled airspace.

2.4 MANDATORY RADIO COMMUNICATIONS

2.4.1 Radio communication failure (RCF) procedures - General

1) When an aircraft fails to establish contact with the aeronautical station on the designated frequency, it shall attempt to establish contact on another frequency appropriate to the route. If this attempt fails, the aircraft shall attempt to establish communication with another aircraft or other aeronautical stations on frequencies appropriate to the route. In addition, an aircraft shall monitor the appropriate VHF frequency for calls from nearby aircraft or aeronautical stations.
2) If these attempts fail, the aircraft station shall continue to transmit position reports and its intentions as appropriate on the designated frequencies, preceded by the phrase Transmitting blind. Such messages shall be transmitted twice and, if necessary, include the addressee (s) for which the message is intended.
3) If no communication is received or other indication that one-way communications are possible, the aircraft shall set its transponder to Code 7600 and proceed with the lost communications procedures.
4) In any case, whereby an aircraft having suffered a communication failure in flight arrives at an aerodrome, it shall keep watch for such instructions as may be issued by visual signals for the aerodrome control tower or other facility.

2.4.2 RCF procedures - VFR

a) If the communications failure occurs while operating in accordance with VFR, the aircraft shall continue to fly in visual meteorological conditions (VMC) and land at the nearest suitable aerodrome using the standard RCF arrival procedures prescribed in Appendix 1 to this section; or if other procedures have been published by the Director for a specific aerodrome, in accordance with such procedures.
b) The operator shall report its arrival by the most expeditious means to the appropriate air traffic services unit (ATSU).

2.4.3 RCF procedures - IFR

1) If the communications failure occurs while operating in accordance with IFR and VMC are encountered, the aircraft shall -
   a) continue to fly in VMC; land at the nearest suitable aerodrome in accordance with -
   i) the standard RCF arrival procedures prescribed in Appendix 1 to this section; or
   ii) if other procedures have been published by the Director for a specific aerodrome, in accordance with such procedures, and
   b) report its arrival by the most expeditious means to the appropriate ATSU; or
   c) if unable to ensure VMC conditions exist to a suitable aerodrome, complete an IFR flight in accordance with paragraph 2 below.

2) If the communications failure occurs while operating in accordance with IFR while in IMC or, if in VMC but unable to maintain VMC, the aircraft shall -
   a) in airspace where an ATS surveillance system is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;
   b) in airspace where an ATS surveillance system is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following -
   i) the time the last assigned level or minimum flight altitude was reached;
   ii) the time the transponder was set to Code 7600; or
   iii) the aircraft's failure to report its position over a compulsory reporting point, whichever is later; and thereafter adjust level and speed in accordance with the filed flight plan;
   c) when being radar vectored or having been directed by ATC to proceed offset using area navigation (RNAV) without a specified limit, rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;
   d) proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with subparagraph (e), hold over this aid or fix until commencement of descent;
   e) commence descent from the navigation aid or fix specified in subparagraph (d) at, or as close as possible to, the expected approach time last received and acknowledged or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;
   f) complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and
   g) land, if possible, within 30 minutes after the estimated time of arrival specified in (e) or the last acknowledged expected approach time, whichever is later.

APPENDIX 1

Standard Radio Communications Failure Procedure - VFR Arrivals.

1) Maintain squawk of 7600.
2) Make a relevant blind broadcast to traffic in the area advising of the probability of a radio communication failure, position and intentions.
3) Select landing lights on.
4) Approaching the aerodrome, make a relevant blind broadcast to traffic on the controlled airfields frequency to indicate the probability of a radio communication failure, position and intentions.
5) Join overhead the aerodrome at a height of 1000 feet above circuit altitude to ascertain which is the active runway in use.
6) Conform to the circuit pattern while joining, preferably on the downwing leg.
7) Continue to make blind broadcasts on the controlled airfields frequency to indicate the position in the circuit pattern.
8) Land and vacate the runway expeditiously and safely.
9) Taxi to the nearest parking area and shutdown.
10) Inform the owner or operator and ATC.
11) Make the relevant entry in the aircraft's flight folio.

Note: This procedure is to be used in the event the aerodrome at which the landing is to take place does not have specific procedures to be followed as published in the AIP

3 CAPE TOWN FIR

Cape Town International Airport.

STAR Applicable only when instructed by ATC or announced on ATIS.

3.1 STANDARD TERMINAL ARRIVAL ROUTES (STAR) RWY01/19.

Applicable to the following aircraft:

1) Aircraft already cleared for the STAR.
2) All aircraft inside the Cape Town FIR with flight plan destination as Cape Town International Airport or Ysterplaat Military, and able to comply with the STAR.
3) When Communication Failure is experienced after being cleared for the approach, continue with the approach and land on the designated RWY.
4) Speed limit points (SLP) will be defined per procedure. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency, pilots are not to request cancellation of speed restrictions
5) Communication Failure Procedure for the STAR

a) Applicable to all IFR aircraft inbound to FACT irrespective of IMC or VMC
b) If not cleared for an arrival, proceed to the nearest STAR entry position at last assigned level or FL100, whichever is the higher. Comply with the Communication Failure procedure associated with that STAR position.

6) Missed Approach: Missed Approaches with the intention of carrying out another approach should follow the procedural Missed Approach instructions unless advised differently by ATC. In the event of a missed approach with the intention of diverting to an alternate aerodrome proceed as follows:

i) Diverting to the East follow the routing for the TETAN ONE CHARLIE DEPARTURE
ii) Diverting to the South-East, follow the routing for the OKTED ONE ALFA DEPARTURE.
iii) Diverting to the North, follow the routing for the KODES ONE ALFA DEPARTURE.

7) Provisions

a) Aircraft must be able to receive the ATIS.
b) SIDS and STARS are announced in operation on ATIS.
c) Runway 01 is in use on the ATIS.
d) SIDS and STARS will only be in force when Surveillance Radar in operation.
e) If unable to comply with SID or STAR, notify ATC.

RUNWAY 01

Clearance	Details
ERDAS 1A ARRIVAL (ERDAS 1A)	
ERDAS 1A ARRIVAL (ERDAS 1A) Note: ERDAS at position:S332450.10 E0191112.85 (R-065/44.2DME "CTV")	Leave ERDAS on R-065 "CTV" inbound. Passing 8 DME "CTV" turn left to track 190°M for radar vectoring onto the ILS RWY 01. Pass 30DME "CTV" maintaining 250 KT IAS or less. At 8 DME "CTV" maintaining 210 KT IAS or less. Once established on the ILS Localizer maintain 180 KT IAS until 10 DME. Passing OM 150 KT IAS or less.
Communication Failure (ERDAS 1A) (Squawk 7600)	
Before ERDAS: Proceed to ERDAS and enter the ERDAS hold. Hold at last assigned level for minimum 5 minutes, then climb/descend to FL100 in the hold. Leave ERDAS at FL100 and continue on the "After ERDAS" communication failure procedure. After ERDAS: Continue on the routing for the ERDAS 1A STAR and maintain last assigned level. Crossing R-156 "CTV" on track 190°M turn right direct "CTV", then climb/descend to 6500 FT ALT. On reaching "CTV" complete the VOR/DME/ILS approach and land RWY 01. Note: Routing (including MNM Noise Routing). To avoid high ground, when established on track 190°M and below 5700 FT ALT, do not exceed 16DME "CTV".	
GETEN 1A ARRIVAL (GETEN 1A)	
GETEN 1A ARRIVAL (GETEN 1A) NOTE: GETEN at position:S340326.38 E0193611.70 (R-120/50.1DME "CTV")	Leave GETEN on R-120 "CTV". Passing 9DME "CTV" turn left to track 190°M for radar vectoring onto the ILS RWY 01. Pass 40DME "CTV" maintaining 250 KT IAS or less. Pass 9 DME "CTV" maintaining 210KT IAS or less. Once established on the ILS Localizer maintain MAXIMUM of 180 KT IAS until 10 DME. Passing OM 150 KT IAS or less.
Communication Failure (GETEN 1A) (Squawk 7600)	
Before GETEN: Proceed to GETEN and enter the GETEN hold. Hold at last assigned level for minimum 5 minutes, then climb/descend to FL100 in the hold. Leave GETEN at FL100 and continue on the "After GETEN" communication failure procedure. After GETEN: Continue on the routing for the GETEN 1A STAR and maintain last assigned level. Crossing R-156 "CTV" on track 190°M turn right direct "CTV" then descend to 6500FT ALT. On reaching "CTV" complete the VOR/DME/ILS APCH and land RWY 01. Note: Routing (including MNM Noise Routing). Due to terrain do not cross (west of) R-210 "CTV", and to avoid high ground, when established on track 190°M and below 5700 FT ALT, do not exceed 16DME "CTV".	
ASPIK 1A ARRIVAL (ASPIK1A)	
ASPIK 1A ARRIVAL (ASPIK 1A) Note: Significant point ASPIK at position: S340618.3199 E 0180800.8068 (R-275/25DME "CTV")	Leave ASPIK on R-275 "CTV" (Inbound). Passing 8 DME "CTV" turn right to track 190°M for radar vectoring onto the ILS RWY 01. Pass 30DME “CTV” maintaining 250KT IAS. Cross ASPIK maintaining 210 KT IAS or less. Once established on the ILS Localizer maintain MAXIMUM of 180 KT IAS until 10 DME and to cross the Outer Marker at 150 KT IAS.

Communication Failure (ASPIK 1A)(Squawk 7600)	
Before ASPIK. Proceed to ASPIK and enter the ASPIK hold. Hold at last assigned level for MINIMUM 5 minutes, then descend to 6500 FT ALT in the hold. Leave ASPIK on the 'after ASPIK' communication failure procedure. After "ASPIK". Continue on the routing for the ASPIK 1A STAR and maintain 6500 FT ALT. Crossing R-225 “CTV” on track 190°M turn left direct “CTV”. On reaching “CTV” complete the VOR/DME/ILS approach and land RWY 01. Note: Due to terrain do not cross (east of) R-180 “CTV”.	
ERDAS 1C ARRIVAL (ERDAS1C)	
ERDAS 1C ARRIVAL (ERDAS 1C) NOTE: ERDAS at position:S332450.10 E0191112.85 (R-065/44.2DME “CTV”)	To CT830, to CT831, to CT832, to CT833 at FL100 or above, to UTIRO at 6500FT or above. At UTIRO, continue on the RNAV (GNSS) APCH RWY 01.
Communication Failure (ERDAS 1C)(Squawk 7600)	
Before ERDAS: Proceed to ERDAS and enter the ERDAS RNAV (GNSS) hold at last assigned level. Descend to FL150 in the hold. Leave ERDAS on the “After ERDAS” Communication Failure Procedure. After ERDAS: Continue on the ERDAS 1C RNAV (GNSS) STAR. At UTIRO, continue on the RNAV (GNSS) APCH RWY 01 Communication Failure Procedure.	
ASPIK 1C ARRIVAL (ASPIK1C)	
ASPIK 1C ARRIVAL (ASPIK 1C) Note: Significant point ASPIK at position: S340618.3199 E0180800.8068 (R-275/25DME “CTV”)	To CT811 at or above FL100, turn right to EKBEV at or above 6100FT. At EKBEV continue on the RNAV (GNSS) APCH RWY 01.
Communication Failure (ASPIK 1C)(Squawk 7600)	
Before ASPIK: Proceed to ASPIK and enter the ASPIK 1C RNAV (GNSS) hold at last assigned level. Descend to FL100 in the hold. Leave ASPIK on the “After ASPIK” Communication Failure Procedure. After ASPIK: Continue on the ASPIK 1C RNAV (GNSS) STAR. At EKBEV, continue on the RNAV (GNSS) APCH RWY 01 Communication Failure Procedure.	
GETEN 1C ARRIVAL (GETEN 1C)	
GETEN 1C ARRIVAL (GETEN 1C) NOTE: GETEN at position:S340326.38 E0193611.70 (R-120/50.1DME "CTV")	To CT812, to CT813 at FL100 or above, turn left to CT814, turn left to UTIRO at 6500FT ALT or above. At UTIRO, continue on the RNAV (GNSS) APCH RWY 01.
Communication Failure (GETEN 1C)(Squawk 7600)	
Before GETEN: Proceed to GETEN and enter the GETEN RNAV (GNSS) hold at last assigned level. Descend to FL150 in the hold. Leave GETEN on the “After GETEN” Communication Failure Procedure. After GETEN: Continue on the GETEN 1C RNAV (GNSS) STAR. At UTIRO, continue on the RNAV (GNSS) APCH RWY 01 Communication Failure Procedure.	

2. Standard Terminal Arrival Routes (STAR) RWY 19

Applicable to the following aircraft

2.1.Aircraft already cleared for the STAR.

2.2.All aircraft inside the Cape Town FIR with flight plan destinations as Cape Town International or Ysterplaat Military, and able to comply with a STAR.

2.3.When Communication Failure is experienced after being cleared for the approach, continue with the approach and land on the designated RWY.

2.4.Speed limit points (SLP) will be defined per procedure. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency pilots are not to request cancellation of speed restrictions.

2.5.Communication Failure Procedures for STAR
If not cleared for an arrival, proceed to the nearest STAR entry position at last assigned level or FL100, whichever is the highest. Comply with the Communication Failure procedure associated with that STAR position.

2.6.Missed Approach
Missed Approaches with the intention of carrying out another approach should follow the procedural Missed Approach instructions unless advised differently by ATC. In the event of a missed approach with the intention of diverting to an alternate aerodrome proceed as follows:

a.Diverting to the east follow the routing for the TETAN ONE BRAVO DEPARTURE

b.Diverting to the south-east, follow the routing for the OKTED ONE BRAVO DEPARTURE

c.Diverting to the north and north-west, follow the routing for the KODES ONE BRAVO DEPARTURE

2.7Provisions

a.Aircraft must be able to receive the ATIS.

b.SIDS and STARS are announced in operation on ATIS.

c.Runway 19 is in use on the ATIS.

d.SIDS and STARS will only be in force when Surveillance Radar in operation.

e.If unable to comply with SID or STAR, notify ATC.

RUNWAY19

Clearance	Details
ERDAS 1B ARRIVAL (ERDAS 1B)	
ERDAS 1B ARRIVAL (ERDAS 1B) NOTE: ERDAS at position: S332450.10 E0191112.85 (R-065/44.2DME "CTV")	Leave ERDAS on R-065 "CTV" inbound. Passing 11 DME "CTV" turn right to track 010°M for radar vectoring onto the ILS RWY 19. Pass 30DME "CTV" maintaining 250 KIAS or less. Pass 11 DME "CTV" maintaining 210 KIAS or less. Once established on the ILS Localizer maintain MAXIMUM of 180 KT IAS until 10 DME. Passing Outer Marker 150 KIAS or less.
Communication Failure (ERDAS 1B)(Squawk 7600)	
Before ERDAS: Proceed to ERDAS and enter the ERDAS hold. Hold at last assigned level for minimum 5 minutes, then climb/descend to FL100 in the hold. Leave ERDAS at FL100 and continue on the "After ERDAS" communication failure procedure. After ERDAS: Continue on the routing for the ERDAS 1B STAR and maintain last assigned level. Crossing R-035 "CTV" on track 010°M turn left direct "CTV" then descend to 6500FT ALT. On reaching "CTV" complete the VOR/DME/ILS approach and land RWY 19.	
GETEN 1B ARRIVAL (GETEN 1B)	
GETEN 1B ARRIVAL (GETEN 1B) NOTE: GETEN at position: S340326.38 E0193611.70 (R-120/50.1DME "CTV")	Leave GETEN on R-120 "CTV". Passing 8DME "CTV" turn right to track 010°M for radar vectoring onto the ILS RWY 19. Pass 30DME "CTV" maintaining 250 KIAS or less. Pass 8DME "CTV" maintaining 210 KIAS or less. Once established on the ILS Localizer maintain MAXIMUM of 180 KT IAS until 10 DME. Passing Outer Marker 150 KIAS or less.
Communication Failure (GETEN 1B)(Squawk 7600)	
Before GETEN: Proceed to GETEN and enter the GETEN hold. Hold at last assigned level for minimum 5 minutes then climb/descend to FL100. Leave GETEN at FL100 and continue on the "After GETEN" communications failure procedure. After GETEN: Continue on the routing for the GETEN 1B STAR, maintain last assigned level. Crossing R-035 "CTV" on track 010°M turn left direct "CTV" then descend to 6500FT ALT. On reaching "CTV" complete the VOR/DME/ILS approach and land RWY 19.	
ASPIK 1B ARRIVAL (ASPIK 1B)	
ASPIK 1B ARRIVAL (ASPIK 1B) NOTE: Significant point ASPIK at position: S340618.3199 E 0180800.8068 (R-275/25DME "CTV")	Leave ASPIK on R-275 "CTV" (inbound). Passing 8DME "CTV" turn left to track 010°M for radar vectoring onto the ILS RWY 19. Pass 30DME "CTV" maintaining 250 KIAS or less. Pass ASPIK maintaining 210 KIAS or less. Once established on the ILS Localizer maintain MAXIMUM of 180 KIAS until 10 DME and to cross the Outer Marker at 150 KIAS.
Communication Failure (ASPIK 1B)(Squawk 7600)	
Before ASPIK. Proceed to ASPIK and enter the ASPIK hold. Hold at last assigned level for MINIMUM 5 minutes, then descend to 6500 FT ALT in the hold. Leave ASPIK on the 'after ASPIK' communication failure procedure After "ASPIK". Continue on the routing for the ASPIK 1B STAR, maintain last assigned level. Crossing R-320 "CTV" on track 010°M turn right direct "CTV" and descend to 6500 FT ALT. On reaching "CTV" complete the VOR/DME/ILS approach and land RWY 19.	

4 JOHANNESBURG FIR:

King Shaka International Airport

All STARs applicable for runway 06. Use STARS for runway 06 only when instructed by ATC or announced on ATIS.

4.1 STANDARD TERMINAL ARRIVAL ROUTES (STAR) RWY06

4.1.1 Applicable to the following aircraft:

a) Aircraft already cleared for the STAR;

b) All aircraft inside the Johannesburg FIR with flight plan destination as King Shaka International and able to comply with the STAR.

c) When Communication Failure is experienced after being cleared for the approach, continue with the approach and land on the designated RWY.

d) Speed limit points (SLP) will be defined per procedure. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency, pilots are not to request cancellation of speed restrictions.

4.1.2 Communication Failure Procedures for the STAR.

If not cleared for an arrival, proceed to the nearest STAR entry position at last assigned level or FL130, whichever is the highest. Comply with the Communication Failure procedure associated with that STAR position.

4.1.3 Missed Approach

Missed Approaches with the intention of carrying out another approach should follow the procedural Missed Approach instructions unless advised differently by ATC. In the event of a missed approach with the intention of diverting to an alternate aerodrome proceed as follows:

a) Comply with the ITMIL 1C RNAV (GNSS) SID. At ITMIL continue to the diversion aerodrome.

4.1.4 Provisions

a) If unable to comply with SID or STAR, notify ATC

b) Aircraft must be able to receive the ATIS.

c) SIDs and STARs are announced in operation on ATIS.

d) Runway 06 is in use on the ATIS.

e) SIDs and STARs will only be in force when Surveillance Radar in operation.

f) General Aviation Traffic operates below the TMA up to 3000 FT ALT and is considered separated from traffic operating in the TMA.

RUNWAY 06

Clearance	Details
APMAT ONE ALPHA RNAV (GNSS) ARRIVAL (APMAT 1A)	
APMAT 1A RNAV (GNSS) ARRIVAL Note: Significant point APMAT at position: S284723.78 E0305659.63 (R014/50 DME TGV)	Leave APMAT for LE002. At LE002 turn right for LE1N1. At LE1N1 turn left for radar vectors onto ILS LOC RWY 06. Pass APMAT 250KT IAS or less. Pass LE001 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS or as cleared by ATC
Communication Failure (APMAT 1A)(Squawk 7600)	
Before APMAT Proceed to APMAT and enter the APMAT RNAV (GNSS) hold. Hold at last assigned level, for minimum 5 MIN, then descend to FL130 in the hold or maintain last assigned level if below FL130. Leave APMAT on the "After APMAT" Communication Failure Procedure. After APMAT Continue on the APMAT 1A RNAV (GNSS) STAR maintaining last assigned level. Passing LE001 descend to FL080. At LE002 (not below 6300' ALT) turn right to LE1N1 (not below 5600' ALT). Continue with the RNAV (GNSS) RWY 06 to LE1N1 and intercept the ILS LOC RWY06 and land RWY 06. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the ITMIL 1C RNAV (GNSS) SID. At ITMIL continue to the diversion aerodrome.	
DUNSA ONE ALPHA RNAV (GNSS) ARRIVAL (DUNSA 1A)	
DUNSA 1A RNAV (GNSS) ARRIVAL Note: Significant point DUNSA at position: S301406.71 E0302914.71 (R246/50 DME TGV)	Leave DUNSA for LE1N2. At LE1N2 turn left to LE1T1 and intercept the ILS LOC RWY 06. Pass DUNSA 250KT IAS or less. Pass LE005 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS or as cleared by ATC.
Communication Failure (DUNSA 1A)(Squawk 7600)	
Before DUNSA Proceed to DUNSA and comply with the “After DUNSA” communication failure procedure. After DUNSA Continue on the DUNSA 1A RNAV (GNSS) STAR maintaining last assigned level. Passing LE005 descend to FL080. At LE1N2 (not below 5100' ALT) continue to LE1T1 (not below 4000' ALT). Continue with the RNAV (GNSS) RWY 06 APCH and intercept the ILS LOC RWY 06 and land RWY 06. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the ITMIL 1C RNAV (GNSS) SID. At ITMIL continue to the diversion aerodrome.	
GETOK ONE CHARLIE RNAV (GNSS) ARRIVAL (GETOK 1C)	
GETOK 1C RNAV (GNSS) ARRIVAL Note: Significant point GETOK at position: S293046.69 E0300917.83 (R301/51 DME TGV)	Leave GETOK for LE010. At LE010 proceed to LE1N2. At LE1N2 turn left to LE1T1 and intercept the ILS LOC RWY 06. Pass GETOK 250KT IAS or less. Pass LE009 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS or as cleared by ATC.

Clearance	Details
Communication Failure (GETOK 1C)(Squawk 7600)	
Before GETOK Proceed to GETOK and enter the GETOK RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN, then descend to FL120 in the hold or maintain last assigned level if below FL120. Leave GETOK on the "After GETOK" Communication Failure Procedure. After GETOK Continue on the GETOK 1C RNAV (GNSS) STAR, maintaining FL120. At LE010 (not below 8000' ALT) continue to LE1N2. At LE1N2 (not below 5500' ALT) turn left to LE1T1 (not below 4000' ALT) and continue with the RNAV (GNSS) RWY 06 APCH and intercept the ILS LOC RWY 06 and land RWY 06. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the ITMIL 1C RNAV (GNSS) SID. At ITMIL continue to the diversion aerodrome.	
ITMIL ONE ALPHA RNAV (GNSS) ARRIVAL (ITMIL 1A)	
ITMIL 1A RNAV (GNSS) ARRIVAL Note: Significant point ITMIL at position: S290151.05 E0314838.40 (R070/50 DME TGV)	Leave ITMIL for LE006. At LE006 proceed to LE013. At LE013 turn right to LE1N3 for radar vectors onto the ILS LOC RWY 06. Pass ITMIL 250KT IAS or less. Pass LE006 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS, or as cleared by ATC
Communication Failure (ITMIL 1A)(Squawk 7600)	
Before ITMIL Proceed to ITMIL and enter the ITMIL RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN, then descend to FL090 in the hold or maintain last assigned level if below FL090. Leave ITMIL on the "After ITMIL" Communication Failure Procedure. After ITMIL Continue on the ITMIL 1A RNAV (GNSS) STAR, maintaining last assigned level. At LE013 descend to FL080 and continue to LE1N3. At LE1N3 (not below 5600' ALT) continue with the RNAV (GNSS) RWY 06 APCH and intercept the ILS LOC RWY 06 and land RWY 06. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the ITMIL 1C RNAV (GNSS) SID. At ITMIL continue to the diversion aerodrome.	

King Shaka International Airport

All STARs applicable for runway 24. Use STARs for runway 24 only when instructed by ATC or announced on ATIS.

4.2 STANDARD TERMINAL ARRIVAL ROUTES (STAR) RWY24

4.2.1 Applicable to the following aircraft:

a) Aircraft already cleared for the STAR;

b) All aircraft inside the Johannesburg FIR with flight plan destinations as King Shaka International, and able to comply with a STAR.

c) When Communication Failure is experienced after being cleared for the approach, continue with the approach and land on the designated RWY.

d) Speed limit points (SLP) will be defined per procedure. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency, pilots are not to request cancellation of speed restrictions.

4.2.2 Communication Failure Procedures for STAR.

If not cleared for an arrival, proceed to the nearest STAR entry position at last assigned level or FL130, whichever is the highest. Comply with the Communication Failure procedure associated with that STAR position.

4.2.3 Missed Approach

Missed Approaches with the intention of carrying out another approach should follow the procedural Missed Approach instructions unless advised differently by ATC. In the event of a missed approach with the intention of diverting to an alternate aerodrome proceed as follows:

a) Comply with the OKTAN 1A RNAV (GNSS) SID. At OKTAN continue to the diversion aerodrome.

4.2.4 Provisions

a) If unable to comply with SID or STAR, notify ATC
b) Aircraft must be able to receive the ATIS.
c) SIDs and STARs are announced in operation on ATIS.
d) Runway 24 is in use on the ATIS.
e) SIDs and STARs will only be in force when Surveillance Radar in operation.
f) General Aviation Traffic operates below the TMA up to 3000 FT ALT and is considered separated from traffic operating in the TMA.

RUNWAY 24

Clearance	Details
APMAT ONE BRAVO RNAV (GNSS) ARRIVAL (APMAT 1B)	
APMAT 1B RNAV (GNSS) ARRIVAL Note: Significant point APMAT at position S284723.78 E0305659.63 (R014/50 DME TGV)	Leave APMAT for LE004. At LE004 proceed to LE2N2. At LE2N2 turn right to LE2T1 and intercept the ILS LOC RWY 24. Pass APMAT 250KT IAS or less. Pass LE003 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS, or as cleared by ATC.
Communication Failure (APMAT 1B)(Squawk 7600)	
Before APMAT Proceed to APMAT and enter the APMAT RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN then descend to FL130 in the hold or maintain last assigned level if below FL130. Leave APMAT on the "After APMAT" Communication Failure Procedure. After APMAT Continue on APMAT 1B RNAV (GNSS) STAR, maintaining last assigned level. At LE003 descend to FL080 and proceed to LE004. At LE004 (not below 6500' ALT) proceed to LE2N2. At LE2N2 (not below 6100' ALT) turn right to LE2T1 and continue with the RNAV (GNSS) RWY 24 APCH and intercept the ILS LOC RWY 24 and land RWY 24. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the OKTAN 1A RNAV (GNSS) SID. At OKTAN continue to the diversion aerodrome.	
DUNSA ONE BRAVO RNAV (GNSS) ARRIVAL (DUNSA1B)	
DUNSA 1B RNAV (GNSS) ARRIVAL Note: Significant point DUNSA at position: S301406.71 E0302914.71 (R246/50 DME TGV)	Leave DUNSA for LE008. At LE008 turn left proceeding to LE2N1 for radar vectors onto the ILS LOC RWY 24 and land. Pass DUNSA 250KT IAS or less. Pass LE007 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS or as cleared by ATC.
Communication Failure (DUNSA 1B)(Squawk 7600)	
Before DUNSA Proceed to DUNSA and comply with the After DUNSA Communication Failure Procedure. After DUNSA Continue on the DUNSA 1B RNAV (GNSS) STAR and maintain last assigned level. Passing LE007 descend to FL080. At LE008 (not below 5600' ALT), turn left to LE2N1 and continue with the RNAV (GNSS) RWY 24 APCH and intercept the ILS LOC RWY 24 and land RWY 24. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the OKTAN 1A RNAV (GNSS) SID. At OKTAN continue to the diversion aerodrome.	
GETOK ONE DELTA RNAV (GNSS) ARRIVAL (GETOK 1D)	
GETOK 1D RNAV (GNSS) ARRIVAL Note: Significant point GETOK at position: S293046.69 E0300917.83 (R301/51 DME TGV)	Leave GETOK for LE012. At LE012 turn left to LE2N3 for radar vectors onto the ILS LOC RWY 24. Pass GETOK 250KT IAS or less. Pass LE011 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS or as cleared by ATC.

Clearance	Details
Communication Failure (GETOK 1D)(Squawk 7600)	
Before GETOK Proceed to GETOK and enter the GETOK RNAV (GNSS)hold. Hold at last assigned level for minimum 5 MIN, then descend to FL120 in the hold, or maintain last assigned level if below FL120. Leave GETOK on the "After GETOK" Communication Failure Procedure. After GETOK Continue on the GETOK 1D RNAV (GNSS) STAR and maintain FL120. At LE012 (not below 7500'ALT) turn left to LE2N3. At LE2N3 (not below 5600' ALT) and continue with the RNAV (GNSS) RWY 24 APCH and intercept the ILS LOC RWY 24 and land RWY 24. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the OKTAN 1A RNAV (GNSS) SID. At OKTAN continue to the diversion aerodrome.	
ITMIL ONE BRAVO RNAV (GNSS) ARRIVAL (ITMIL 1B)	
ITMIL 1B RNAV (GNSS) ARRIVAL Note: Significant point ITMIL at position: S290151.05 E0314838.40 (R070/50 DME TGV)	Leave ITMIL for LE2N2. At LE2N2 turn left and intercept the ILS LOC RWY 24. Pass ITMIL 250KT IAS or less. Pass LE014 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing 4 DME 150KT IAS or as cleared by ATC.
Communication Failure (ITMIL 1B)(Squawk 7600)	
Before ITMIL Proceed to ITMIL and enter the ITMIL RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN, then descend to FL090 in the hold or maintain last assigned level if below FL090. Leave ITMIL on the "After ITMIL" Communication Failure Procedure. After ITMIL Continue on the ITMIL 1B RNAV (GNSS) STAR and maintain last assigned level. At LE014 descend to FL080. At LE2N2 (not below 5600' ALT) turn left and continue with the RNAV (GNSS) APCH and intercept the ILS LOC RWY 24 and land RWY 24. In the event of a missed approach with the intention of diverting to an alternate aerodrome, proceed as follows: Comply with the OKTAN 1A RNAV (GNSS) SID. At OKTAN continue to the diversion aerodrome.	

5 JOHANNESBURG FIR

O R Tambo International Airport

All STAR applicable for runway 03R. Use STAR for runway 03L only when instructed by ATC or announced on ATIS.

5.1 Standard Terminal Arrival Routes (STAR) RWY 03

5.1.1 Applicable to the following aircraft:

a) Aircraft already cleared for the STAR.

b) All aircraft inside the Johannesburg FIR with flight plan destinations as O R Tambo International or Lanseria International and able to comply with a STAR.

c) When Communication Failure is experienced after being cleared for the approach, continue with the approach and land on the designated RWY.

d) Speed limit points (SLP) will be defined per procedure. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency, pilots are not to request cancellation of speed restrictions.

5.1.2 Communication Failure procedures for STAR.

a) Applicable to all IFR aircraft inbound to FAOR irrespective of IMC or VMC.

b) If not cleared for an arrival, proceed to the nearest STAR entry position at last assigned level or FL090, whichever is the highest. Comply with the Communication Failure procedure associated with that STAR.

5.1.3 Provisions

a) Aircraft must be able to receive the ATIS.

b) SIDs and STARs are announced in operation on ATIS.

c) Runway 03 is in use on the ATIS.

d) SIDs and STARs will only be in force when surveillance radar in operation.

e) If unable to comply with SID or STAR, notify ATC

f) General Aviation traffic operates below the TMA up to 7500FT ALT and is considered separated from traffic operating in the TMA

RUNWAY 03

Clearance	Details
AVILO ONE ALPHA ARRIVAL (AVILO 1A)	
AVILO 1A ARRIVAL Note: Significant point AVILO at position: S265854.69 E0284315.62 (R170/56 DME JSV)	Leave AVILO on R170 JSV (INBD). At 29 DME JSV on R170 JSV turn left to intercept R310 STV (OUBD). Crossing R045 HGV turn left to intercept R030 HGV (INBD) for radar vectoring onto the ILS LOC RWY 03R. Pass AVILO 250KT IAS or less. Pass 30 DME JSV 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing the Outer Marker at 150 KT IAS, or as cleared by ATC.

Clearance	Details
Communication Failure (AVILO 1A)(Squawk 7600)	
Before AVILO Proceed to STV and enter the STV hold descending to FL240, or if lower than FL240, last assigned level and hold for minimum 5 MIN. Leave STV on the "After STV" Communication Failure Procedure. After AVILO Leave AVILO on R170 JSV (INBD) and descend to FL130. At R170/29 DME JSV turn left to intercept R310 STV (OUBD) and descend to FL110. On crossing R030 HGV descend to 8000' ALT. Crossing R197 JSV turn right onto track 350° to intercept the ILS LOC RWY 03R and complete a straight-in ILS approach and land RWY 03R. Note Aircraft to route to the STV hold in Communication Failure Procedure. Caution Holding patterns below FL110 will be conducted partially outside of controlled airspace.	
AVAGO ONE CHARLIE RNAV (GNSS) ARRIVAL (AVAGO 1C)	
AVAGO 1C RNAV (GNSS) ARRIVAL Note: Significant point AVAGO at position: S254309.90 E0272639.36 (R320/50 DME JSV)	Leave AVAGO for JS035. At JS035 turn right for JS036. At JS036 turn right proceeding to JS037 for radar vectoring onto the ILS LOC RWY 03R. Pass AVAGO 250KT IAS or less. Pass JS035 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing the outer maker at 150KT IAS or as cleared by ATC.
Communication Failure (AVAGO 1C)(Squawk 7600)	
Before AVAGO Proceed to AVAGO and enter the AVAGO RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN, then descend to FL130 in the hold, or maintain last assigned level if below FL130. Leave AVAGO on the "After AVAGO" Communication Failure Procedure. After AVAGO Continue on the AVAGO 1C RNAV (GNSS) STAR. At JS035 descend to FL090, at JS037 descend to 8000' ALT. At JS037 proceed to VEKOP and continue with the RNAV (GNSS) RWY 03R to intercept the ILS LOC RWY 03R and land RWY 03R. Note Aircraft entering the TMA at FL110 and below are to enter the AVAGO RNAV (GNSS) hold at last assigned level, and continue on the routing for the AVAGO 1C STAR. Caution Holding patterns below FL110 will be conducted partially outside of controlled airspace. Pilots to take note of the appropriate FAD's, FAP's, FAR's as well as the Magalies Glider Window (FL110-FL145).	

Clearance	Details
NIBEX ONE BRAVO RNAV (GNSS) ARRIVAL (NIBEX 1B)	
NIBEX 1B ARRIVAL Note: Significant point NIBEX at position: S264925.56 E02740'3.41 (R235/50DME JSV)	Leave NIBEX for JS012. At JS012 turn right to JS013. At JS013 turn left to JS014. At JS014 turn left proceeding to JS015 and intercept the ILS LOC RWY 03R.
Communication Failure (NIBEX 1B)(Squawk 7600)	
Before NIBEX Proceed to NIBEX and enter the NIBEX RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN, then descend to FL130 in the hold, or maintain last assigned level if below FL130. Leave NIBEX on the "After NIBEX" Communication Failure Procedure. After NIBEX Continue on the NIBEX 1B RNAV (GNSS) STAR to JS012. At JS012 descend to FL100, at JS013 descend to FL090, at JS014 adjust to 9000' ALT. At JS015 complete a straight-in ILS approach and land RWY 03R. Note Aircraft entering the TMA at FL110 and below are to enter the NIBEX RNAV (GNSS) hold at last assigned level, and continue the routing for the NIBEX 1B STAR. Caution Holding patterns below FL110 will be conducted partially outside of controlled airspace.	
AVILO ONE BRAVO ARRIVAL (AVILO 1B)	
AVILO 1B ARRIVAL Note: Significant point AVILO at position: S265854.69 E0284315.62	Leave AVILO for JS018. At JS018 turn left for JS017. At JS017 turn left proceeding to ETLIG for radar vectoring onto the ILS LOC RWY 03.
Communication Failure (AVILO 1B)(Squawk 7600)	
Before AVILO Proceed to STV and enter the STANDERTON RNAV (GNSS) hold descending to FL240, or if lower than FL240, last assigned level and hold for minimum 5 MIN. Leave STV on the "After STV" Communication Failure Procedure. After AVILO Continue on the AVILO 1B RNAV (GNSS) STAR. At ETLIG continue on the RNAV (GNSS) RWY 03R to JS2F1 and intercept the ILS LOC RWY 03R and land RWY 03R. Note: Nil Caution: Nil	

6 JOHANNESBURG FIR

O R Tambo International Airport

All STAR applicable for runway 21L. Use STAR for runway 21R only when instructed by ATC or announced on ATIS.

6.1 Standard Terminal Arrival Routes (STAR) RWY 21L

6.1.1 Applicable to the following aircraft:

a) Aircraft already cleared for the STAR.
b) All aircraft inside the Johannesburg FIR with flight plan destinations as O R Tambo International, and able to comply with a STAR.
c) When Communication Failure is experienced after being cleared for the approach, continue with the approach and land on the designated RWY.
d) Speed limit points (SLP) will be defined per procedure. If the speed is below minimum safe operating speed, the minimum safe operating speed will be flown and ATC advised. Unless for emergency pilots are not to request cancellation of speed restrictions.

6.1.2 Communication Failure Procedures for STAR.

If not cleared for an arrival, proceed to the nearest STAR entry position at last assigned level or FL090, whichever is the highest. Comply with the Communication Failure procedure associated with that STAR position.

6.1.3 Missed Approach.

Missed Approaches with the intention of carrying out another approach should follow the procedural Missed Approach instructions unless advised differently by ATC. In the event of a missed approach with the intention of diverting to an alternate aerodrome proceed as follows

a) Diverting to the South and South-west: Follow the routing for the RAGUL THREE BRAVO DEPARTURE.
b) Diverting to the South-East: Follow the routIng for the APDAK TWO BRAVO DEPARTURE
c) Diverting to the North and North-West: Follow the routing for the VASUR THREE BRAVO DEPARTURE
d) Diverting to the North-East: Follow the routing for the EGMEN TWO BRAVO DEPARTURE (JET ACFT) or EXOBI THREE BRAVO DEPARTURE (TURBOPROP ACFT).

6.1.4 Provisions

a) Aircraft must be able to receive the ATIS.
b) SIDs and STARs are announced in operation on ATIS.
c) Runway 21L is in use on the ATIS.
d) SIDs and STARs will only be in force when surveillance radar in operation.
e) If unable to comply with SID or STAR, notify ATC.
f) General Aviation Traffic operates below the TMA up to 7500FT ALT and is considered separated from traffic operating in the TMA.

RUNWAY 21L

Clearance	Details
AVAGO ONE DELTA RNAV (GNSS) ARRIVAL (AVAGO 1D)	
AVAGO 1D ARRIVAL Note: Significant point AVAGO at position: 254309.90S 0272639.36E (R320/50DME JSV)	To OR364 at FL110 or above, to OR365 at 8000FT or above, turn left to OR366 at 8000FT or above. At OR366 continue on track 035˚M, expect radar vectors RWY 21L.
Communication Failure (AVAGO 1D)(Squawk 7600)	
Before AVAGO Proceed to AVAGO and enter the AVAGO 1D RNAV (GNSS) hold. Hold for 5 minutes at last assigned level (at or above FL110) Descend to FL130 in the hold or maintain last assigned level if below FL130. Leave AVAGO on the “After AVAGO” Communication Failure Procedure. After AVAGO Continue on the AVAGO 1D RNAV (GNSS) STAR. At OR366 to UVLOG. At UVLOG, continue on the RNAV-02 APCH RWY 21L. Note NIL Caution NIL	
NIBEX ONE DELTA RNAV (GNSS) ARRIVAL (NIBEX 1D)	
Clearance	**Details**
NIBEX 1D ARRIVAL Note: Significant point NIBEX at position: 264925.56S 0274013.41E (R235/50DME JSV)	Leave NIBEX for JS023. At JS023 turn left proceeding to UVLOG for radar vectoring onto the ILS LOC RWY 21L. Pass NIBEX 250KT IAS or less. Pass JS023 210KT IAS or less. On LOC maintain 180KT IAS until 10 DME. Passing the Outer Marker at 150KT IAS, or as cleared by ATC.
Communication Failure (NIBEX 1D)(Squawk 7600)	
Before NIBEX Proceed to NIBEX and enter the NIBEX RNAV (GNSS) hold. Hold at last assigned level for minimum 5 MIN, then descend to FL130 in the hold, or maintain last assigned level if below FL130. Leave NIBEX on the "After NIBEX" Communication Failure Procedure. After NIBEX Continue on the NIBEX 1D RNAV (GNSS) STAR. At JS023 descend to FL090, at UVLOG descend to 8000' ALT. AT UVLOG continue on the RNAV (GNSS) RWY 21L to JS3F2 and intercept the ILS RWY 21L and land RWY 21L. Note: Aircraft entering the TMA at FL110 and below are to enter the NIBEX RNAV (GNSS) hold at last assigned level and continue on the routing for the NIBEX 1D STAR. Caution: Holding patterns below FL110 will be conducted partially outside of controlled airspace.	

7 DEPARTING FLIGHTS

GENERAL

IFR flights departing from controlled aerodromes will receive initial ATC clearance from the local aerodrome control tower. The clearance limit will normally be the aerodrome of destination.

IFR flights departing from other aerodromes can take off without prior arrangements with the Area Control Centre concerned, unless controlled airspace is to be entered immediately after take-off. In such cases arrangements must be made to obtain a clearance before the controlled airspace is entered.

Aircraft noise during take-off and landing creates an ever increasing annoyance to inhabitants of areas adjacent to aerodromes. Continuous efforts are made to devise procedures in order to reduce aircraft noise without jeopardising safe operations

In order to reduce or to restrict aircraft noise to the minimum, the following procedures are proposed:-

– Turnouts immediately after take-off must as far as possible be avoided and runway heading must be maintained to a reasonable altitude.
– Where possible, aircraft must climb at the best angle of climb after take-off and this must be maintained until all built-up areas are over-flown, or the desired altitude has been reached/attained.
– Testing and run-ups of aircraft engines must as far as possible be avoided during the period 2000 and 0400.
– An appeal is made to all pilots to be considerate towards inhabitants of areas adjacent to aerodromes by combating aircraft noise at all times.

7.1 NOISE ABATEMENT PROCEDUREs

Two examples of operating procedures for the climb have been developed by ICAO as guidance. These two examples of Noise Abatement procedures can be defined as follows:

NADP 1 - The first example (NADP 1) is intended to describe one method, but not the only method, of providing noise reduction for noise-sensitive areas in close proximity to the departure end of the runway.

NADP 2 - The second example (NADP 2) similarly describes one method but not the only method, of providing noise reduction to areas more distant from the runway end.

These procedures applies to jet aircraft and may be disregarded if:

At 3000FT AGL or when levelled off by ATC, or when levelled by the Standard Instrument Departure (SID)

The following procedure will be in force at the listed airport:

King Shaka International Airport (Durban)	NADP 1
Lanseria International Airport	NADP 1

NADP 1

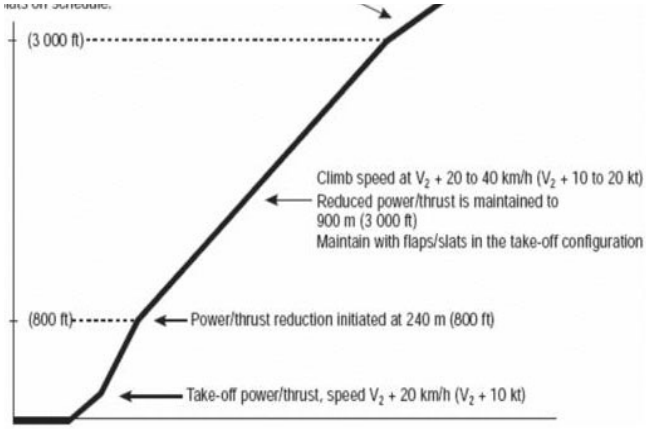
1) TAKE-OFF TO 800FT AGL
   i) Take-off power/thrust
   ii) Speed, climb at V2+10knots (V2+20km/h)

   Note: Dependant on aircraft type the take-off power/thrust may be reduced at a lower height.

2) AT 800FT AGL
   i) Power/thrust reduction is initiated in accordance with the noise abatement power/ thrust schedule provided in the aircraft operating manual.

3) 800FT AGL TO 3000FT AGL
   i) Climb at V2+10 to 20km/h).
   ii) Reduced power/thrust is maintained to 900M (3000FT)
   iii) Maintain with flaps/slats in take-off configuration.

4) AT 3000FT AGL
   i) On reaching 900M (3000FT) maintain positive rate of climb.
   ii) Accelerate smoothly to en-route climb speed
   iii) Retract flaps/slats on schedule.
   iv) In addition, all aircraft at or below FL100 will fly a maximum speed of 250KIAS. No jet aircraft are to use RWY or TWY intersection for take-off at any airport within South Africa between the hours of 2000-0400.



Noise abatement take-off climb - Example of a procedure alleviating noise close to the departure (NADP1)

The following procedures will be in force at the listed airports:

Bram Fischer International Airport. (Bloemfontein)	NADP 2
Cape Town International Airport.	NADP 2
King Phalo Airport (East London)	NADP 2
George Airport	NADP 2
Kimberley Airport	NADP 2
O R Tambo International Airport	NADP 2
Chief Dawid Stuurman International Airport (Port Elizabeth)	NADP 2
Upington International Airport	NADP 2
Wonderboom Airport (Pretoria)	NADP 2

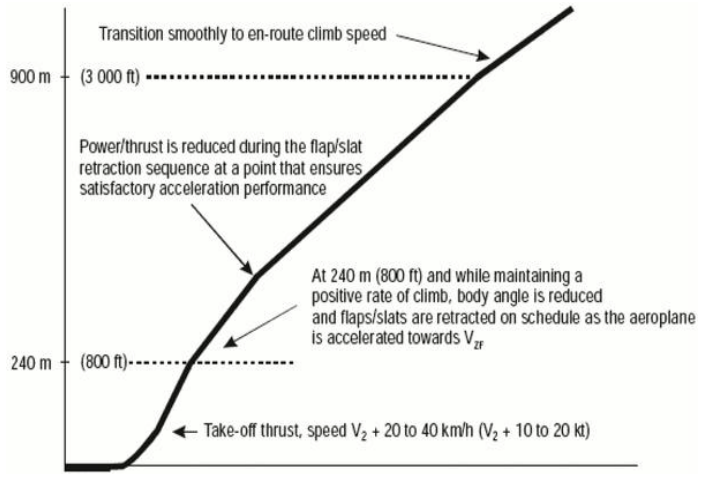
NADP 2

1) Take-off to 800FT AGL
   i) Take-off power/thrust
   ii) Speed, climb at V2+10 to 20knots (V2+20 to 40km/h)

   Note: Dependant on aircraft type, the take-off power/thrust may be reduced at a lower height.

2) At 800FT AGL
   i) While maintaining a positive rate of climb, body angle reduced.
   ii) Flaps/Slats are retracted on schedule
   iii) Aircraft is accelerated towards VZF.

3) 800FT AGL to 3000FT AGL
   i) Power/Thrust is reduced during the flap/slat retraction sequence at a point that ensures satisfactory acceleration performance.
   ii) At 3000FT AGL
   iii) On reaching 900M (3000FT), transition smoothly to en-route climb speed.



Noise abatement take-off climb - Example of a procedure alleviating noise distant from the aerodrome (NADP 2)

7.2 NOISE ABATEMENT PROCEDURES - WATERKLOOF AIR FORCE BASE (MIL UNLICENSED)

1) GENERAL
The following procedures are designed to avoid excessive noise in areas adjacent to the aerodrome and in areas overflown during take-off and landing. Strict adherence within the limits of safety and performance is required. Aircraft not landing at Waterkloof are not permitted to overfly built up areas below 1000 FT AGL.

a) Rapid changes in engine power should be avoided.
b) Heavy category aircraft commanders are permitted to select the runway for arrivals and departures.
c) Bad weather circuits (500FT) may be flown in IMC or two per training/rating sortie.
d) Heavy category aircraft are not permitted to practice 500FT circuits.

2) ARRIVALS
a) All IFR arrivals, wind and traffic permitting, will be executed on RWY01.
b) The final approach path shall be strictly at the angle defined by the ILS and PAPI glide path (3°).
c) VFR flights must adhere to the glide path on final approach and where possible avoid built up areas.
d) Fighter aircraft flying via initial point may not exceed 400KTS IAS.

3) DEPARTURES
a) VFR flights will climb to 1000FT AGL as soon as possible and once clear of built up areas ascend accordingly.

4) TAKE-OFF TO 1500 FT AGL
a) Take-off power.
b) Take-off flaps.
c) Climb at V2 + 10 to 20KTS or as limited by body angle. Dependent on ACFT type, take-off power/thrust may be reduced at a lower altitude.

5) AT 1500 FT AGL
a) Reduce thrust (if not reduced already) to not less than climb power/thrust.

6) 1500 FT AGL TO 3000 FT AGL
a) Climb at V2 + 10 to 20KTS.

7) AT 3000 FT AGL
   a) Accelerate smoothly to en-route climb speed with flap retraction on schedule.

8) ENGINE RUN-UP TESTS
   Engine run-up tests on Saturdays, Sundays and public holidays and on working days between 1600 and 0400 will only be permitted with the authorization of the operations coordinator.

9) EXEMPTIONS
   Restrictions to arrivals/departures do not apply in the following cases.
   a) In an emergency or simulated emergency.
   b) For operational flights.
   c) For inspection and calibration flights.
   d) For flights with the prior authorization from the Air Wing Coordinator AFB Waterkloof.

10) NIGHT FLYING TRAINING - MONDAY TO THURSDAY
   Night flying training must be authorised by the Air Wing Coordinator.
   a) Final arrival: 2000.
   b) No circuit and landings between 1900 and 2000.

11) FLYING TRAINING - SATURDAYS, SUNDAYS AND PUBLIC HOLIDAYS
   i) Saturdays: Flying training authorised by the Air Wing Coordinator may take place between 0600 and 1600.
   ii) Sundays: No flying training may take place except with prior authorization by CAF.
   iii) Public Holidays: No flying training may take place.

8 CAPE TOWN INTERNATIONAL AIRPORT

8.1 Standard Instrument Departures (SID) RWY01

8.1.1 Unless otherwise authorised by ATC, the maximum speeds applicable shall comply with noise abatement procedures as laid down in paragraph 8.1. In addition, all aircraft at or below FL 100 will fly a MAXIMUM speed of 250 KIAS.

8.1.2 At 2000 FT ALT contact Cape Town Radar (APP) on the frequency provided in the ATC clearance. Advise RADAR (APP) of level passing on first contact for Mode-C check.

8.1.3 Cross CTR boundary at or above 2500 FT ALT.

8.1.4 Where climb gradient required is greater than 3.3% see provisions contained within every specific procedure.

8.1.5 If unable to comply with SID notify ATC.

8.1.6 Communication Failure Procedure for SID

a) Except in the event of an emergency, aircraft shall comply with the communication failure procedures for each SID irrespective of VMC or IMC.

b) Comply with the SID procedure, climb to MSA or maintain last assigned flight level, whichever is highest. At the SID termination position set course as per flight plan and climb to flight plan level.

RUNWAY 01

Clearance	RWY	Turn	Details
KODES 1A DEPARTURE (KODES 1A)			
KODES 1A DEPARTURE (KODES 1A) NOTE: Significant point KODES at position: S330840 E0184520 (R-032/50DME "CTV")	01	Right	Climb to FL090, maintain RWY track to 3DME "CTV" then turn left to track 330°M to intercept R-354 "CTV" (outbound). Passing 8DME "CTV" turn right to track 060°M to intercept R-032 "CTV" (outbound) direct KODES. Further climb will be under radar control. At KODES set course as per flight plan.
Communication Failure (KODES 1A) (Squawk 7600)			
Comply with the KODES 1A SID, maintain last assigned level. Passing 30DME "CTV" climb to flight plan level. At KODES continue as per flight plan. Aircraft wishing to return must continue to the SID termination point at FL090, then proceed to ERDAS and comply with the appropriate ERDAS STAR Communication Failure procedure.			
IMSOM 1A DEPARTURE (IMSOM 1A)			
IMSOM 1A DEPARTURE (IMSOM 1A) NOTE: Significant point IMSOM at position:S335603.8989 E0180031.2411(R-283/30DME "CTV")	01	Left	Climb to FL090, maintain RWY track to 3DME "CTV" then turn left to track 330°M to intercept R-354 "CTV" (outbound). Passing 8DME "CTV" turn left direct IMSOM. Further climb will be under radar control. At IMSOM set course as per flight plan.
Communication Failure (IMSOM 1A) (Squawk 7600)			
Comply with the IMSOM 1A SID, maintain last assigned level. At IMSOM continue as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point at FL090, then proceed to "ASPIK" and comply with the appropriate "ASPIK" STAR Communication Failure procedure			

8.2 Standard Instrument Departures (SID) RWY19.

8.2.1 Unless otherwise authorised by ATC, the maximum speeds applicable shall comply with noise abatement procedures as laid down in paragraph 8.1. In addition, all aircraft at or below FL 100 will fly a MAXIMUM speed of 250 KIAS.

8.2.2 At 2000 FT ALT contact Cape Town Radar (APP) on the frequency provided in the ATC clearance. Advise RADAR (APP) of level passing on first contact for Mode-C check.

8.2.3 Cross CTR boundary at or above 2500 FT ALT.

8.2.4 Where climb gradient required is greater than 3.3% see provisions contained within every specific procedure.

8.2.5 If unable to comply with SID notify ATC.

8.2.6 Communication Failure Procedure for SID

a) Except in the event of an emergency, aircraft shall comply with the communication failure procedures for each SID irrespective of VMC or IMC.

b) Comply with the SID procedure, climb to MSA or maintain last assigned flight level, whichever is highest. At the SID termination position set course as per flight plan and climb to flight plan level.

RUNWAY 19

Clearance	RWY	Turn	Details
TETAN 1A DEPARTURE (TETAN 1A)			
TETAN 1A DEPARTURE (TETAN 1A) NOTE: Significant point TETAN at NDB "WC" position: S333948.00 E0192458.00 (R-089/44.5DME "CTV") 6.2%@ 140KTAS= 880ft/min 6.2%@ 180KTAS= 1130ft/min 6.2%@ 220KTAS= 1381ft/min	19	Left	Restricted to a minimum climb gradient of 6.2% until passing FL085 due to terrain. Do not cross (North of) "CTV" R-140 below FL085. Climb to FL090, maintain RWY track to 5DME "CTV" then turn left to track 145°M. Passing 18DME "CTV" turn left direct TETAN. Further climb will be under radar control. At TETAN set course as per flight plan.
Communication Failure (TETAN 1A) (Squawk 7600)			
Comply with the TETAN 1A SID, maintain last assigned level. Crossing R-105 "CTV" climb to flight plan level. At TETAN continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and then route direct ERDAS and comply with the appropriate ERDAS STAR Communication Failure procedure.			
TETAN 1B DEPARTURE (TETAN 1B)			
TETAN 1B DEPARTURE (TETAN 1B) NOTE: Significant point TETAN at NDB "WC" position: S333948.00E0192458.00 (R-089/44.5DME "CTV") 4.6%@ 140KTAS=652ft/min 4.6%@ 180KTAS= 838ft/min 4.6%@ 220KTAS=1024ft/min	19	Left	Restricted to a minimum climb gradient of 4.6% until passing 5700 FT ALT due to terrain. Do not cross (north of) R-140 below 8500 FT ALT. Climb to FL090, maintain RWY track to 5DME then adjust onto R-190 "CTV" (outbound). Passing 20DME "CTV" turn left to track 100°M. Crossing R-170 "CTV" turn left direct TETAN. Further climb will be under radar control. At TETAN set course as per flight plan.
Communication Failure (TETAN 1B) (Squawk 7600)			
Comply with the TETAN 1B DEPARTURE and maintain last assigned level. Crossing R-105 "CTV" climb to flight plan level. At TETAN continue as per flight plan.Aircraft wishing to return must continue to the SID termination point and then route direct ERDAS and comply with the appropriate ERDAS STAR Communication Failure procedure.			

Clearance	RWY	Turn	Details
IMSOM 1B DEPARTURE (IMSOM 1B)			
IMSOM 1B DEPARTURE (IMSOM 1B) NOTE: Significant point IMSOM at position: S335603.8989 E0180031.2411 (R-283/30DME "CTV")	19	Right	Climb to FL090, maintain RWY track to 5DME "CTV" then turn right to track 240°M to intercept R-210 "CTV" (outbound). Passing 5500 FT ALT turn right direct ASPIK, then direct IMSOM. Further climb will be under radar control. At IMSOM set course as per flight plan.
Communication Failure (IMSOM 1B) (Squawk 7600)			
Comply with the IMSOM 1B SID, maintain last assigned level. At IMSOM continue as per flight plan and climb to flight plan level.Aircraft wishing to return must continue to the SID termination point at FL090, then proceed to ASPIK and comply with the appropriate ASPIK STAR Communication Failure procedure.			
OKTED 1B DEPARTURE (OKTED 1B)			
OKTED 1B DEPARTURE (OKTED 1B) NOTE: Significant point OKTED at Position: S341312.000 E0193330.000 (R-131/50 DME "CTV") 6.2%@ 140KTAS= 880ft/min 6.2%@ 180KTAS= 1130ft/min 6.2%@ 220KTAS=1381ft/min	19	Left	Restricted to a minimum climb gradient of 6.2% until passing FL085 due to terrain. Do not cross (North of) "CTV" R-140 below FL085. Climb to FL090, maintain RWY track to 5DME "CTV" then turn left to track 145°M. Passing 18DME "CTV" turn left direct OKTED. Further climb will be under radar control. At OKTED continue as per flight plan.
Communication Failure (OKTED 1B) (Squawk 7600)			
Comply with the OKTED 1B SID, maintain last assigned level. At OKTED continue as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and then route direct GETEN and comply with the appropriate STAR Communication Failure procedure.			
OKTED 1C DEPARTURE (OKTED 1C)			
OKTED 1C DEPARTURE (OKTED 1C) NOTE: Significant point OKTED at position: S341312.000 E0193330.000 (R-131/50 DME "CTV") 4.6%@ 140KTAS= 652ft/min 4.6%@ 180KTAS= 838ft/min 4.6%@ 220KTAS=1024ft/min	19	Left	Restricted to a minimum climb gradient of 4.6% until passing 5700 FT ALT due to terrain. Do not cross (north of)"CTV" R-140 below FL085. Climb to FL090, maintain RWY track to 5DME then adjust onto R-190 "CTV" (outbound). Passing 20DME "CTV" turn left to track 100°M. Crossing R-170 "CTV" turn left direct OKTED. Further climb will be under radar control. At OKTED set course as per flight plan.
Communication Failure (OKTED 1C) (Squawk 7600)			
Comply with the OKTED 1C SID, maintain last assigned level. At OKTED continue as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and then route direct GETEN and comply with the appropriate STAR Communication Failure procedure.			

9 JOHANNESBURG FIR

King Shaka International Airport

9.1 STANDARD INSTRUMENT DEPARTURES (SID) RWY 06.

a) If unable to comply with SID notify ATC.

b) Unless otherwise authorised by ATC, the maximum speeds applicable shall comply with noise abatement procedures as laid down in ENR 1.5 paragraph 8.1

c) At 2000 FT ALT contact Durban Radar (APP) on the frequency provided in the ATC clearance. Advise Radar (APP) of level passing on first contact for Mode-C check.

d) Cross CTR BDRY at or above 3000 FT ALT.

e) Where climb gradient required is greater than 3.3% see provisions contained within every specific procedure.

9.2 COMMUNICATION FAILURE PROCEDURE FOR SID:

a) Except in the event of an emergency, aircraft shall comply with the Communication Failure procedures for each SID irrespective of VMC or IMC.

b) Comply with the SID procedure, climb to MSA or maintain last assigned flight level whichever is highest. At the SID termination position set course as per flight plan and climb to flight plan level.

RUNWAY 06

Clearance	Details
ITMIL ONE CHARLIE RNAV (GNSS) DEPARTURE (ITMIL 1C)	
ITMIL 1C RNAV (GNSS) DEPARTURE Note: Significant point ITMIL at position: S290151.05 E0314838.40 (R070/50 DME TGV) 7.0%ROC @140KT IAS = 992 FPM 7.0%ROC @180KT IAS = 1276 FPM 7.0%ROC @220KT IAS = 1560 FPM	Climb to FL070. Maintain RWY track to LE015. At LE015 turn right to ITMIL. Further climb will be under radar control. At ITMIL set course as per flight plan.
Communication Failure (ITMIL 1C) (Squawk 7600)	
Maintain RWY track LE015. At LE015 turn right to ITMIL maintaining last assigned level or MSA whichever is higher. Passing LE017 climb to flight plan level. At ITMIL set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to the last assigned level or MSA whichever is higher. Enter the ITMIL hold and hold for 5 MIN. Comply with the ITMIL RNAV (GNSS) STAR Communication Failure Procedure.	

Clearance	Details
TUBIN ONE ALPHA RNAV (GNSS) DEPARTURE (TUBIN 1A)	
TUBIN 1A RNAV (GNSS) DEPARTURE Note: Significant point TUBIN at position: S300201.29 E0301754.66 (R262/50 DME TGV) 7.0%ROC @140KT IAS = 992 FPM 7.0%ROC @180KT IAS = 1276 FPM 7.0%ROC @220KT IAS = 1560 FPM	Climb to FL070. Maintain RWY track to LE015. At LE015 turn left direct to LE1G2. At LE1G2 turn left onto track and proceed to LE1CF. At LE1CF proceed to TUBIN. Further climb will be under radar control. At TUBIN set course as per flight plan.
Communication Failure (TUBIN 1A) (Squawk 7600)	
Maintain RWY track to LE015. At LE015 turn left direct to LE1G2. At LE1G2 turn left to LE1CF. At LE1CF proceed to TUBIN maintaining last assigned flight level or MSA whichever is higher. Passing LE1CF climb to flight plan level. At TUBIN set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to the last assigned level or MSA or FL080 whichever is higher. At TUBIN proceed to DUNSA and comply with the DUNSA 1A STAR Communication Failure Procedure.	
GREYTOWN ONE ALPHA RNAV (GNSS) DEPARTURE (GYV 1A)	
GREYTOWN 1A RNAV (GNSS) DEPARTURE Note: Significant point GYV at position: S290728.99 E0303508.06 (R340/41 DME TGV) 7% @140KT IAS = 992 FPM 7% @180KT IAS = 1276 FPM 7% @220KT IAS = 1560 FPM	Climb to FL070. Maintain RWY track to LE015. At LE015 turn left direct to LE3CF. At LE3CF proceed to GYV. Further climb will be under radar control. At GYV set course as per flight plan.
Communication Failure (GYV 1A) (Squawk 7600)	
Maintain RWY track to LE015. At LE015 turn left direct to LE3CF maintaining last assigned flight level or MSA whichever is higher. Passing LE3CF climb to flight plan level and proceed to GYV. At GYV set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to the last assigned level or MSA or FL080 whichever is higher. At GYV proceed to GETOK and comply with the GETOK 1C STAR Communication Failure Procedure.	

King Shaka International Airport

1) STANDARD INSTRUMENT DEPARTURES (SID) RWY 24.
   a) If unable to comply with SID notify ATC.
   b) Unless otherwise authorised by ATC, the maximum speeds applicable shall comply with noise abatement procedures as laid down in ENR 1.5 paragraph 8.1
   c) At 2000 FT ALT contact Durban Radar (APP) on the frequency provided in the ATC clearance. Advise Radar (APP) of level passing on first contact for Mode-C check.
   d) Cross CTR BDRY at or above 3000 FT ALT.
   e) Where climb gradient required is greater than 3.3% see provisions contained within every specific procedure.
2) COMMUNICATION FAILURE PROCEDURE FOR SID:
   a) Except in the event of an emergency, aircraft shall comply with the Communication Failure procedures for each SID irrespective of VMC or IMC.
   b) Comply with the SID procedure, climb to MSA or maintain last assigned flight level whichever is highest. At the SID termination position set course as per flight plan and climb to flight plan level.

RUNWAY 24

Clearance	Details
OKTAN ONE ALPHA RNAV (GNSS) DEPARTURE (OKTAN 1A)	
OKTAN 1A RNAV (GNSS) DEPARTURE Note: Significant point OKTAN at position: S301758.32 E0303453.34 (R239/50 DME TGV) 7.0%ROC @140KT IAS = 992 FPM 7.0%ROC @180KT IAS = 1276 FPM 7.0%ROC @220KT IAS = 1560 FPM	Climb to FL070. Proceed direct to OKTAN. Further climb will be under radar control. At OKTAN set course as per flight plan.
Communication Failure (OKTAN 1A) (Squawk 7600)	
Maintain RWY track to LE018 maintaining last assigned flight level or MSA, whichever is higher. At LE018 proceed to OKTAN and climb to flight plan level. At OKTAN set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to the last assigned level, MSA or FL080 whichever is higher. Enter the OKTAN hold and hold for 5 MIN. Proceed to TGV and comply with the ILS Y RWY 24 Procedure.	
TUBIN ONE BRAVO RNAV (GNSS) DEPARTURE (TUBIN 1B)	
TUBIN 1B RNAV (GNSS) DEPARTURE Note: Significant point TUBIN at position: S300201.29 E0301754.66 (R262/50 DME TGV) 7% @140KT IAS = 992 FPM 7% @180KT IAS = 1276 FPM 7% @220KT IAS = 1560 FPM	Climb to FL070. Maintain RWY track to LE2D2. At LE2D2 turn right direct to LE2CF. At LE2CF proceed to TUBIN. Further climb will be under radar control. At TUBIN set course as per flight plan.

Clearance	Details
Communication Failure (TUBIN 1B) (Squawk 7600)	
Maintain RWY track to LE2D2 maintaining last assigned flight level or MSA, whichever is higher. At LE2D2 turn right direct to LE2CF and climb to flight plan level. At TUBIN set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to the last assigned level, MSA or FL080 whichever is higher. At TUBIN proceed to DUNSA and comply with the DUNSA 1B STAR Communication Failure Procedure.	
GREYTOWN TWO BRAVO RNAV (GNSS) DEPARTURE (GYV 2B)	
GREYTOWN 2B RNAV (GNSS) DEPARTURE Note: Significant point GYV at position: S290728.99 E0303508.06 (R340/41 DME TGV) 7% @140KT IAS = 992 FPM 7% @180KT IAS = 1276 FPM 7% @220KT IAS = 1560 FPM	Climb to FL070. Maintain RWY track to LE2D2. At LE2D2 turn right direct to LE4CF. At LE4CF proceed to GYV. Further climb will be under radar control. At GYV set course as per flight plan.
Communication Failure (GYV 2B) (Squawk 7600)	
Maintain RWY track to LE2D2. At LE2D2 turn right to LE4CF maintaining last flight level or MSA whichever is higher. Passing LE4CF climb to flight plan level and proceed to GYV. At GYV set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to the last assigned level or MSA or FL080 whichever is higher. At GYV proceed to GETOK and comply with the GETOK 1D STAR Communication Failure Procedure.	

10 JOHANNESBURG FIR

O R TAMBO INTERNATIONAL AIRPORTNOTE: SIMULTANEOUS USE OF PARALLEL RUNWAYS 03L/ 03R AND 21L/21R - O R TAMBO INTERNATIONAL AIRPORT

10.1 STANDARD INSTRUMENT DEPARTURES (SID) RWY 03.

10.1.1 Unless otherwise authorised by ATC, the maximum speeds applicable shall comply with noise abatement procedures as laid down in ENR 1.5 paragraph 8.1

10.1.2 At 6 500FT ALT contact Johannesburg Radar (APP) on the frequency provided in the ATC clearance. Advise Radar (APP) of level passing on first contact for Mode-C check.

10.1.3 Cross CTR BDRY at or above 8 000 FT ALT.

10.1.4 Where climb gradient required is greater than 3.3% see provisions contained within every specific procedure.

10.1.5 If unable to comply with SID notify ATC.

10.2 COMMUNICATION FAILURE PROCEDURE FOR SID:

10.2.1 Except in the event of an emergency, aircraft shall comply with the communication failure procedures for each SID irrespective of VMC or IMC.

10.2.2 Comply with the SID procedure, climb to MSA or maintain last assigned flight level, whichever is highest. At the SID termination position set course as per flight plan and climb to flight plan level.

RUNWAY 03L

Clearance	RWY	Turn	Details
EGMEN TWO ALPHA DEPARTURE (EGMEN 2A)			
EGMEN 2A DEPARTURE Note: Significant point EGMEN at position: S253845.74 E0285805.53 (R070/50 DME JSV) 4.5% @140KT IAS = 638 FPM 4.5% @180KT IAS = 820 FPM 4.5% @220KT IAS =1003 FPM	03L	Right	Restricted to a minimum climb gradient of 4.5% to the CTR boundary. Climb to FL090, maintain RWY track to 5.5 DME JSV then turn right to intercept R275 WIV (INBD). At 23.4 DME JSV turn left onto track 030° to intercept R070 JSV (OUBD) to EGMEN. Cross 15 DME JSV at FL090 or above.
Communication Failure (EGMEN 2A) (Squawk 7600)			
Comply with EGMEN 2A SID, climbing to FL090 or maintain last assigned level, whichever is highest. At EGMEN set course as per flight plan and climb to flight plan level Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if cleared level is below MSA. At EGMEN proceed to OKPIT and comply with the OKPIT 4A RWY03R STAR Communication Failure Procedure.			
APDAK THREE ALPHA DEPARTURE (APDAK 3A)			
APDAK 3A DEPARTURE Note: Significant point APDAK at position: S263303.55 E0290252.64 (R152/62 DME WKV) (R137/50 DME JSV) 4.5% @140 KT IAS = 638 FPM 4.5% @180 KT IAS = 820 FPM 4.5% @220 KT IAS =1003 FPM	03L	Right	Restricted to a minimum climb gradient of 4.5% to the CTR boundary. Climb to FL090, maintain RWY track to 5.5 DME JSV then turn right onto track 101° to intercept R152 WKV (OUBD) to APDAK. Cross 15 DME JSV at FL090 or above.
Communication Failure (APDAK 3A) (Squawk 7600)			
Comply with the APDAK 3A SID, climbing to FL090 or maintain last assigned level, whichever is the highest. At APDAK continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At APDAK proceed to STV and comply with the STANDERTON 6A RWY03R STAR Communication Failure Procedure.			
VASUR THREE ALPHA DEPARTURE (VASUR 3A)			
VASUR 3A DEPARTURE Note: Significant point VASUR at position: 253346.75S 0275335.87E (R351/40DME JSV) 4.2% @140KT IAS = 595 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	03L	Right	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 5.5 DME JSV then turn left onto track 311° to intercept R351 JSV (OUBD) to VASUR. Further climb will be under radar control. At VASUR set course as per flight plan.

Clearance	RWY	Turn	Details
Communication Failure (VASUR 3A) (Squawk 7600)			
Comply with VASUR 3A SID, climbing to 8700' ALT or maintain last assigned level, whichever is highest. At VASUR set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At VASUR proceed to AVAGO and comply with the AVAGO 2A RWY03 STAR Communication Failure Procedure.			
RAGUL THREE ALPHA DEPARTURE (RAGUL 3A)			
RAGUL 3A DEPARTURE Note: Significant point RAGUL at position: S262654.35 E0273443.89 (R241/50DME WKV) 4.4% @140KT IAS = 624 FPM 4.4% @180KT IAS = 802 FPM 4.4% @220KT IAS = 980 FPM	03L/R	Left	Restricted to a minimum climb gradient of 4.4% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 5.5 DME JSV. At 5.5 DME JSV turn left onto track 281° to intercept R241 WKV (OUBD) to RAGUL. Further climb will be under RADAR control. At RAGUL set course as per flight plan.
Communication Failure (RAGUL 3A) (Squawk 7600)			
Comply with the RAGUL THREE ALFA SID, climbing to 8700' ALT or maintain last assigned level, whichever is highest. At RAGUL continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At RAGUL proceed to NIBEX and comply with the NIBEX 2A RWY03R STAR Communication Failure Procedure.			
NESAN ONE ALFA DEPARTURE (NESAN 1A)			
NESAN 1A DEPARTURE Note: Significant point NESAN at position: S252948.88 E0280705.56 (R010/40DME JSV) 4.2% @140KT IAS = 595 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	03L/R	Left	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 8 DME JSV then turn left direct to NESAN. Further climb will be under radar control. At NESAN set course as per flight plan.
Communication Failure (NESAN 1A) (Squawk 7600			
Comply with the NESAN ONE ALPHA SID, climbing to 8300' ALT or maintain last assigned level, whichever is highest. At NESAN continue as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At NESAN proceed to OKPIT and comply with the OKPIT 4A RWY03R STAR Communication Failure Procedure.			

Clearance	RWY	Turn	Details
GRASMERE FIVE BRAVO DEPARTURE (GRASMERE 5B) RESTRICTED TO TURBO PROP AIRCRAFT ONLY.			
GRASMERE 5B DEPARTURE Note: Significant point GAV at position:S263053. 63 E0274035.17 5.0% @ 80KT IAS = 405 FPM 5.0% @120KT IAS = 608 FPM 5.0% @160KT IAS = 810FPM 5.0% @200KT IAS =1013FPM	03L	Left	Restricted to a minimum climb gradient of 5.0% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 3 DME JSV or 6100' ALT, whichever is later, then turn left onto track 261°. Crossing 13 DME JSV turn left direct to GAV. Further climb will be under radar control. At GAV set course as per flight plan.
Communication Failure (GRASMERE 5B) (Squawk 7600)			
Comply with the GRASMERE FIVE BRAVO SID, climbing to 8700' ALT or maintain last assigned level, whichever is highest. At GAV set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At GAV proceed to NIBEX and comply with the NIBEX 2A RWY03R STAR Communication Failure Procedure.			
EXOBI ONE ALFA DEPARTURE (EXOBI 1A)			
EXOBI 1A DEPARTURE Note: Significant point "EXOBI" at position: S260252.2666 E0290851.3211 (R-101/50 DME "JSV") 4.2% ROC @140KTAS= 595ft/min 4.2% ROC @180KTAS= 766ft/min 4.2% ROC @220KTAS= 936ft/min	03L/R	Right	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to FL090, maintain RWY track to 5.5 DME JSV then turn right onto track 101°. At 15 DME JSV turn right onto track 126° to intercept R101 JSV (OUBD) to EXOBI. Cross 15 DME JSV at FL090 or above if cleared by ATC. Further climb will be under radar control. At EXOBI set course as per flight plan.
Communication Failure (EXOBI 1A) (Squawk 7600			
Comply with the EXOBI ONE ALPHA SID, climbing to FL090 or maintain last assigned level, whichever is highest. At EXOBI set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At EXOBI proceed to WIV and comply with the WITBANK 4A RWY03R STAR Communication Failure Procedure.			
EGMEN ONE CHARLIE RNAV (GNSS) DEPARTURE (EGMEN 1C)			
EGMEN 1C DEPARTURE Note: Significant point EGMEN at position: S253845.74 E0285805.53 (R070/50DME JSV) 4.1% @140KT IAS = 581 FPM 4.1% @180KT IAS = 747 FPM 4.1% @220KT IAS = 913 FPM	03L	Left	Restricted to a minimum climb gradient of 4.1% to the CTR boundary. Climb to FL090, maintain RWY track to JS031. At JS031 turn right to JS032. At JS032 turn left direct to EGMEN. Further climb will be under radar control. At EGMEN set course as per flight plan.

Clearance	RWY	Turn	Details
Communication Failure (EGMEN 1C) (Squawk 7600)			
Comply with the EGMEN ONE CHARLIE SID, climbing to FL090 or maintain last assigned level, whichever is highest. At EGMEN set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At EGMEN proceed to OKPIT and comply with the OKPIT 4A RWY03R STAR Communication Failure Procedure.			
APDAK ONE BRAVO RNAV (GNSS) DEPARTURE (APDAK 1B)			
APDAK 1B DEPARTURE Note: Significant point APDAK at position: S263303.55 E0290252.64 (R137/50DME JSV) 4.1% @140KT IAS = 581 FPM 4.1% @180KT IAS = 747 FPM 4.1% @220KT IAS = 913FPM	03L	Right	Restricted to a minimum climb gradient of 4.1% to FL090. Climb to FL090, maintain RWY track to JS029. At JS029 turn right to JS030. At JS030 turn right to APDAK. Further climb will be under radar control. At APDAK set course as per flight plan.
Communication Failure (APDAK 1B) (Squawk 7600)			
Comply with the APDAK ONE BRAVO SID, climbing to FL090 or maintain last assigned level, whichever is highest. At APDAK continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At APDAK proceed to STV and comply with the STANDERTON 6A RWY 03R STAR Communication Failure Procedure.			

11 JOHANNESBURG FIR

O R TAMBO INTERNATIONAL AIRPORT NOTE: SIMULTANEOUS USE OF PARALLEL RUNWAYS 03L/ 03R AND 21L/21R - O R TAMBO INTERNATIONAL AIRPORT

11.1 STANDARD INSTRUMENT DEPARTURES (SID) RWY 21R

11.1.1 Unless otherwise authorised by ATC, the maximum speeds applicable shall comply with noise abatement procedures as laid down in ENR 1.5 paragraph 8.1

11.1.2 At 6500 FT ALT contact Johannesburg Radar (APP) on the frequency provided in the ATC clearance. Advise Radar (APP) of level passing on first contact for Mode-C check.

11.1.3 Cross CTR BDRY at or above 8 000 FT ALT.

11.1.4 Where climb gradient required is greater than 3.3% see provisions contained within every specific procedure.

11.2 COMMUNICATION FAILURE PROCEDURE FOR SID:

11.2.1 Except in the event of an emergency, aircraft shall comply with the communication failure procedures for each SID irrespective of VMC or IMC.

11.2.2 Comply with the SID procedure, climb to MSA or maintain last assigned flight level, whichever is highest. At the SID termination position set course as per flight plan and climb to flight plan level.

RUNWAY 21

Clearance	RWY	Turn	Details
EGMEN TWO BRAVO DEPARTURE (EGMEN 2B)			
EGMEN 2B DEPARTURE Note: Significant point EGMEN at position: S253845.74 0285805.53E (R070/50 DME JSV) 4.3% @140KT IAS = 610 FPM 4.3% @180KT IAS = 784 FPM 4.3% @220KT IAS = 958 FPM	21R	Left	Restricted to a minimum climb gradient of 4.3% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 4.5 DME JSV then turn left onto track 111°. Intercept R253 WIV (INBD). Crossing R016 STV turn left onto track 054° to intercept R024 STV (OUBD) direct to EGMEN.
Communication Failure (EGMEN 2B) (Squawk 7600)			
Comply with EGMEN 2B SID, climbing to 8300' ALT or maintain last assigned level, whichever is highest. At EGMEN set course as per flight plan and climb to flight plan level.Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At EGMEN proceed to OKPIT and comply with the OKPIT 4B RWY21L STAR Communication Failure Procedure.			
APDAK TWO BRAVO DEPARTURE (APDAK 2B)			
APDAK 2B DEPARTURE Note: Significant point APDAK at position: 263303.55S 0290252.64E (R137/50 DME JSV) 4.2% @140 KT IAS = 596 FPM 4.2% @180 KT IAS = 766 FPM 4.2% @220 KT IAS =936 FPM	21R	Left	Restricted to a minimum climb gradient of 4.2% to CTR boundary. Climb to 8000' ALT, maintain RWY track to 4.5 DME JSV then turn left direct to APDAK. Cross 4.5 DME JSV at 7000' ALT or above. Further climb will be under radar control. At APDAK set course as per flight plan.
Communication Failure (APDAK 2B) (Squawk 7600)			
Comply with the APDAK 2B SID, climbing to 8300' ALT or maintain last assigned level, whichever is the highest. At APDAK continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At APDAK proceed to STV and comply with the appropriate STAR Communication Failure Procedure.			
VASUR THREE BRAVO DEPARTURE (VASUR 3B)			
VASUR 3B DEPARTURE Note: Significant point VASUR at position: 253346.76S 0275335.87E (R015/23DME LIV) 4.2% @140KT IAS = 596 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	21L/R	Right	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 9 DME JSV then turn right onto track 291°M. Passing 15 DME JSV turn right onto track 351°M to intercept R198 LIV (INBD). At LIV intercept R015 LIV (OUBD) to VASUR. Further climb will be under radar control. At VASUR set course as per flight plan.

Clearance	RWY	Turn	Details
Communication Failure (VASUR 3B) (Squawk 7600)			
Comply with VASUR 3B SID, climbing to 8700' ALT or maintain last assigned level, whichever is highest. At VASUR set course as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At VASUR proceed to AVAGO and comply with the AVAGO 2B RWY21 STAR Communication Failure Procedure.			
RAGUL ONE DELTA DEPARTURE (RAGUL 1D)			
RAGUL 1D DEPARTURE Note: Significant point RAGUL at position: 262654.35S 0273443.89E (FL110) 3.3% @140KT IAS = 468 FPM 3.3% @180KT IAS = 602 FPM 3.3% @220KT IAS = 736 FPM **Note:** This procedure is CO-DEPENDENT on the NIBEX 1D RNAV (GNSS) STAR RWY 21L procedure which needs to be published in order for the RAGUL 1D RNAV (GNSS) SID RWY 21R Communication Failure Procedure to be valid.	21R	Right	Restricted to a minimum climb gradient of 3.3%, until reaching CTR boundary. Climb to FL090. To OR389 on course 215°M, turn right to OR398 at FL090 or below, turn left to RAGUL at FL110 or above, set course as per flight plan.
Communication Failure Procedure (Squawk 7600)			
Comply with the **RAGUL ONE DELTA RNAV (GNSS) SID RWY 21R.** At RAGUL set course as per flight plan and climb to flight plan level. Aircraft wishing to return to FAOR must continue as per the RAGUL 1D RNAV (GNSS) SID to RAGUL. At RAGUL proceed to NIBEX and enter the NIBEX 1D RNAV (GNSS) STAR RWY 21L hold at FL110. Hold for 5 minutes. Thereafter, comply with the "**After NIBEX 1D RNAV (GNSS) STAR"** Communication failure procedure.			
OVALA ONE BRAVO DEPARTURE (OVALA 1B)			
OVALA 1B DEPARTURE Note: Significant point OVALA at position: 264903.39S 0283744.70E (R170/45DME JSV) 4.2% @140KT IAS = 595 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	21L/R	Left	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 4.5 DME JSV then turn left onto track 111° to intercept R170 JSV (OUBD) to OVALA. Cross 4.5 DME JSV at 7000' ALT or above. Further climb will be under RADAR control. At OVALA set course as per flight plan.
Communication Failure (OVALA 1B) (Squawk 7600)			
Comply with the OVALA 1B SID, climbing to 8300' ALT or maintain last assigned level, whichever is highest. At OVALA continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At OVALA route direct to STV and comply with the STANDERTON 5B RWY21L STAR Communication Failure Procedure.			

Clearance	RWY	Turn	Details
GRASMERE SIX CHARLIE DEPARTURE (GRASMERE 6C)			
GRASMERE 6C DEP Note: Significant point GAV at position:S263053.63 E0274035.17 5.3% @ 80KT IAS = 429 FPM 5.3% @120KT IAS = 644 FPM 5.3% @160KT IAS = 859 FPM 5.3% @200KT IAS =1073 FPM	21R	Right	Restricted to Turbo Prop aircraft only. Restricted to a minimum climb gradient of 5.3% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to JSV. At JSV turn right onto track 301° (Turn radius to remain within 2.5 DME JSV). Crossing 13 DME JSV turn left direct to GAV. At GAV set course as per flight plan.
Communication Failure (GRASMERE 6C) (Squawk 7600)			
Comply with the GRASMERE SIX CHARLIE SID, climbing to 8300' ALT or maintain last assigned level, whichever is highest. At GAV set course to the next fix outside 60DME JSV and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At GAV proceed to NIBEX and comply with the NIBEX 2C RWY21L STAR Communication Failure Procedure.			
EXOBI THREE BRAVO DEPARTURE (EXOBI 3B)			
EXOBI 3B DEPARTURE Note: Significant point EXOBI at position: S260252.27 E0290851.32 (R101/50DME JSV) 4.2% @140KT IAS = 595 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	21L/R	Left	Restricted to a minimum climb gradient of 4.2% to the CTR boundary Climb to 8000' ALT, maintain RWY track to 4.5 DME JSV then turn left onto track 111°. Cross 4.5 DME JSV at 7000' ALT or above. Passing 15 DME JSV turn left onto track 076° to intercept R101 JSV (OUBD) to EXOBI. Further climb will be under radar control. At EXOBI set course as per flight plan.
Communication Failure (EXOBI 3B) (Squawk 7600)			
Comply with the EXOBI THREE BRAVO SID, climb to 8300' ALT or maintain last assigned level, whichever is highest. At EXOBI continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At EXOBI proceed to WIV and comply with the WITBANK 3C RWY21L STAR Communication Failure Procedure.			
HEIDELBERG FIVE DELTA DEPARTURE (HEIDELBERG 5D)			
HEIDELBERG 5D DEPARTURE Note: Significant point HGV at position:S264148.50 E0281659.39 4.2% @140KT IAS = 595 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	21L/R	Left	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to 4.5 DME JSV then turn left direct to HGV. Cross 4.5 DME JSV at 7000' ALT or above. Further climb will be under radar control. At HGV set course as per flight plan.

Clearance	RWY	Turn	Details
Communication Failure (HEIDELBERG 5D) (Squawk 7600)			
Comply with the HEIDELBERG FIVE DELTA SID, climbing to 8300' ALT or maintain last assigned level, whichever is highest. At HGV continue as per flight plan. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At HGV proceed to STV and comply with the STANDERTON 5B RWY21L STAR Communication Failure Procedure.			
LANSERIA ONE CHARLIE DEPARTURE (LANSERIA 1C)			
LANSERIA 1C DEPARTURE Note: Significant point LIV at position:S255656.14 E0275448.86 5.3% @ 80KT IAS = 429 FPM 5.3% @120KT IAS = 644 FPM 5.3% @160KT IAS = 859 FPM 5.3% @200KT IAS =1073 FPM	21R	Right	Restricted to Turbo Prop aircraft only. Restricted to a minimum climb gradient of 5.3% to the CTR boundary. Climb to 8000' ALT, maintain RWY track to JSV. At JSV turn right onto track 301° (Turn radius to remain within 2.5 DME JSV). Crossing 13 DME JSV turn right direct LIV. At LIV intercept R015 LIV (OUBD) to VASUR. At VASUR set course as per flight plan.
Communication Failure (LANSERIA 1C) (Squawk 7600)			
Comply with the LANSERIA ONE CHARLIE SID, climbing to 8300' ALT or maintain last assigned level, whichever is highest. At VASUR set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At VASUR proceed to AVAGO and comply with the AVAGO 2B RW Y21 STAR Communication Failure Procedure.			
EGMEN ONE DELTA RNAV (GNSS) DEPARTURE (EGMEN 1D)			
EGMEN 1D DEPARTURE Note: Significant point EGMEN at position:S253845.74 E0285805.53 (R070/50 DME JSV) 3.8% @140KT IAS = 539 FPM 3.8% @180KT IAS = 693 FPM 3.8% @220KT IAS = 847 FPM	21R	Left	Restricted to a minimum climb gradient of 3.8% to the CTR boundary. Climb to FL090, maintain RWY track 214° to JS008. At JS008 turn left to JS004. At JS004 turn left to JS028. At JS028 turn left to EGMEN. Further climb will be under radar control. At EGMEN set course as per flight plan.Brakpan/Benoni, 5.5 NM SSE, circuit operates at 6000' ALT.
Communication Failure (EGMEN 1D) (Squawk 7600)			
Comply with the EGMEN ONE DELTA SID, climbing to 8400' ALT or maintain last assigned level, whichever is highest. At EGMEN set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At EGMEN proceed to OKPIT and comply with the OKPIT 4B RWY21L STAR Communication Failure Procedure.			

Clearance	RWY	Turn	Details
APDAK ONE DELTA RNAV (GNSS) DEPARTURE (APDAK 1D)			
APDAK 1D DEPARTURE Note: Significant point APDAK at position:S263303.55 E0290252.64 (R137/50 DME JSV) 3.8% @140KT IAS = 539 FPM 3.8% @180KT IAS = 693 FPM 3.8% @220KT IAS = 847 FPM	21R	Left	Restricted to a minimum climb gradient of 3.8% to the CTR boundary Climb to 8000' ALT, maintain RWY track 214° to JS006. At JS006 turn left to JS002. At JS 002 turn right to APDAK. At APDAK set course as per flight plan. Brakpan/Benoni, 5.5 NM SSE, circuit operates at 6000' ALT.
Communication Failure (APDAK 1D) (Squawk 7600)			
Comply with the APDAK ONE DELTA SID, climbing to 8400' ALT or maintain last assigned level, whichever is highest. At APDAK set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At APDAK proceed to STV and comply with the STANDERTON 5B RWY21L STAR Communication Failure Procedure.			
GEROX ONE CHARLIE DEPARTURE (GEROX 1C)			
GEROX 1C DEPARTURE Note: Significant point GEROX at position:S272249.01 E0284943.11 4.2% @140KT IAS = 595 FPM 4.2% @180KT IAS = 766 FPM 4.2% @220KT IAS = 936 FPM	21R	Left	Restricted to a minimum climb gradient of 4.2% to the CTR boundary. Climb to 8000' ALT, maintain RWY track 214° to JS007. At JS007 turn left to GEROX. At GEROX set course as per flight plan.Brakpan/Benoni, 5.5 NM SSE, circuit operates at 6000' ALT.
Communication Failure (GEROX 1C) (Squawk 7600)			
Comply with GEROX ONE CHARLIE SID, climbing to 8400' ALT or maintain last assigned level, whichever is highest. At GEROX set course as per flight plan and climb to flight plan level. Aircraft wishing to return must continue to the SID termination point and climb to last assigned level or MSA if last cleared level is below MSA. At GEROX proceed to STV and enter the STV hold descending to FL240, or if below FL240, hold at last assigned level for minimum 5 MIN. Comply with the STANDERTON 5B RWY21L STAR Communication Failure Procedure.			

12 SPECIAL PROCEDURES

Standard Instrument Departures and Standard Approach Terminal Routes, where in use, are shown on the charts in AD. All SIDs and STARs are subject to change without prior warning, especially during high surface wind and turbulent conditions, to accommodate opposite bound traffic.

OR TAMBO INTERNATIONAL AIRPORT

Applicable Only When Surveillance Radar Is In Operation.

1) Simultaneous use of parallel runways 03L/03R and 21L/21R - O R Tambo International Airport.
2) Simultaneous departures will be permitted, provided it is reasonably sure that radar identification with the respective aircraft will be established within 1 NM of the runway end and:

a) Tracks will diverge by 15º or more immediately after departure.
b) 3 NM longitudinal separation can be maintained between the aircraft until a track divergence of 15? or greater is established.

NOTE: Track divergence must be established within 7NM from the airport.

12.1 PARALLEL ILS APPROACHES

NOTE: Only applicable when aircraft are subject to straight-in or radar vectored approaches

a) A minimum of 1000FT vertical separation or minimum 5NM radar separation must be provided between aircraft during the turn-on.
b) A minimum of 5 NM radar separation must be provided between aircraft on the same localiser course (8NM in the case of heavy category aircraft.)
c) A minimum of 3 NM radar separation must be provided between successive aircraft on adjacent localiser courses provided that:-
d) This separation standard will only be applied after the aircraft are established on the respective localisers,
e) The aircraft intend to land off the approaches,

f) Aircraft will be informed when both runways are in use. (This information may be provided through the ATIS.)

12.2 PARALLEL APPROACHES (VISUAL/ILS) OR (VISUAL/ VISUAL)

NOTE: Only applicable when aircraft are subject to straight-in or radar vectored approaches.

1) A minimum of 1000 FT vertical separation or minimum 5NM radar separation will be provided between aircraft during the turn-on.
2) A minimum of 3NM radar separation will be provided between successive aircraft on adjacent final approach tracks
3) This separation will be applied only after the aircraft are established on their respective final approach tracks. (LOC/ VISUAL FINAL - VISUAL FINAL / VISUAL FINAL i.e. both aircraft on visual approaches.)

12.3 CAT II OPERATIONS

During category II operations there will be no parallel approaches unless the standard separations applicable to single runway operations can be maintained.

12.4 PARALLEL ARRIVALS AND DEPARTURES - SAME DIRECTION

1) When conditions dictate the use of one runway for landing and parallel runway for departure the following minima shall apply:-
   a) If the departing aircraft's flight path crosses the extended centre line of the parallel runway, take-off clearance will ensure a minimum of 5NM radar separation from the arriving aircraft.
   b) The departing aircraft's tracks will diverge by 15x or more away from the parallel runway immediately after take-off.
   c) 3NM separation will be maintained between the two aircraft until a track divergence of 15x or more is established between the two aircraft.

12.5 SIMULTANEOUS, OPPOSITE DIRECTION OPERATIONS ON PARALLEL RUNWAYS

1) Simultaneous, opposite direction operations on parallel runways shall be permitted when:-
   a) Conducted in VMC by DAY only: and
   b) When the aircraft operating in the non standard direction is operating under visual flight rules (VFR) and carrying out calibration operations for the Civil Aviation Authority.
   c) When the calibration flight conducts the circuit away from the parallel runway; and
   d) All flights arriving or departing on the runway in use are aware of the calibration operations from the opposite direction.

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ENR 1.6 RADAR SERVICES AND PROCEDURES

1 Primary Radar

1.1 Supplementary services

1.1.1 A radar unit normally operates as an integral part of the parent ATS unit and provides radar service to aircraft to the maximum extent practicable, to meet the operational requirement. Many factors, such as radar coverage, controller workload and equipment capabilities, may affect these services and the radar controller shall determine whether he is able to provide, or continue to provide, radar services in any specific case.

1.1.2 A pilot will know when radar services are being provided, because the radar controller will use the following phraseology:... (aircraft callsign) this is... Area / Approach, you are radar identified / or radar contact

a) Passing... (beacon);
b) ... (radial / DME) from ...;
c) executing radar turns VOR radial / DME ... from ... (station).

1.1.3 Radar facilities are established at the following ATC Centres in the RSA:-
Cape Town / Cape Town International Airport
Durban / King Shaka International Airport
East London / King Phalo Airport
Johannesburg / O R Tambo International Airport
Port Elizabeth / Chief Dawid Stuurman International Airport
Bloemfontein/Bram Fischer International Airport
George/George Airport

1.2 The application of radar control service

Radar coverage in controlled airspace at each of the centres mentioned in para 1.1.3 above is defined as per the Radar Minimum Altitude Charts in Aerodrome section of the AIP.

1.2.1 Controlled airspace

Radar identification is achieved according to the provisions specified by ICAO.
Radar control service is provided in controlled airspace to aircraft operating within radar range. This service may include;

a) Radar separation of arriving, departing and enroute traffic;
b) radar monitoring of arriving departing and enroute traffic to provide information on any significant deviation from normal flight path;
c) radar vectoring when required;
d) assistance to aircraft in emergency;
e) assistance to aircraft crossing controlled airspace;

f) warnings and position information on other aircraft considered to constitute a hazard;

g) information on observed weather conditions. when vectored by the radar controller, pilots will be assigned levels which will provide terrain clearance.

1.2.2 Uncontrolled airspace

When an aircraft which has been provided with radar control service leaves controlled airspace, the control service will automatically be terminated without the pilot being notified. However, ATC may provide either a radar advisory service or a radar information service in advisory or information airspace respectively. These services will only be provided at the discretion of the controller, in which case the pilot will be notified of the type of service provided.

1.3 Radar and radio failure procedures

1.3.1 Radar failure

In the event of a radar failure or loss of radar identification, instruction will be issued to restore non-radar standard separation and the pilot will be instructed to communicate with the parent ATS unit.

1.3.2 Radio failure

The radar controller will establish whether the aircraft radio receiver is working by instructing the pilot to carry out a turn or turns. If the turns are observed, the radar controller will continue to provide radar services to the aircraft.

If the aircrafts radio is completely unserviceable, the pilot should carry out the procedures for radio failure in accordance with local provisions. If radar identification has already been established, the radar controller will vector other aircraft clear of its track until such time as the aircraft leaves radar coverage.

2 Secondary surveillance radar (SSR)

For the present only, Bloemfontein/Bram Fischer International Airport, George/George Airport, Johannesburg / O R Tambo International Airport, Cape Town / Cape Town International Airport, Durban/King Shaka International Airport, Port Elizabeth/Chief Dawid Stuurman International Airport and East London/King Phalo Airport is equipped to provide secondary surveillance radar (SSR) service.

2.1 Emergency procedures

Except when encountering a state of emergency, pilots shall operate transponders and select modes and codes in accordance with ATC instruction. In particular, when entering Johannesburg FIR, pilots who have already received specific instruction from ATC concerning the setting of the transponder shall maintain the setting until otherwise instructed.

2.1.1 If the pilot of an aircraft encountering a state of emergency has previously been directed by ATC to operate the transponder on a specific code setting, this setting shall be maintained until otherwise advised. In all other circumstances the transponder shall be set to Mode A Code 77 (or 7700).

Note: A continuous monitoring of responses is maintained on -

Code 77 (7700) Aircraft emergency
Code 76 (7600) Radio failure
Code 75 (7500) Hijack or other act of violence.

2.1.2 Notwithstanding the procedures in para 2.1.1 above, a pilot may select the mode and code of his choice whenever the nature of the emergency is such that this appears to him to be the most suitable course of action.

OPERATION OF SSR TRANSPONDERS
Within South African airspace pilots must select the Transponder to Standby before affecting an SSR code change and returning the transponder to ON/ALT. This action is required to prevent possible loss of displayed aircraft position/label information and possible misidentification of aircraft in automated South African Air Traffic Control (ATC) systems due to temporarily selection (while making the changes) of a code already in use.

2.2 Radio communication failure and unlawful interference procedures

2.2.1 Radio communication failure procedure

In the event of a radio communication failure, a pilot shall select Mode A Code 76 (7600) and follow established procedures; subsequent control of aircraft will be based on these procedures.

2.2.2 Transponder failure procedures
Failure before intended departure

If the transponder fails prior to departure and cannot be repaired locally, pilots shall:

a) plan to proceed as directly as possible to the nearest suitable aerodrome where repairs can be effected.
b) inform ATC as soon as possible preferably before the submission of a flight plan. When granting clearance to such aircraft, ATC will take into account the existing and anticipated traffic situation and may require the modification of the time of departure, flight level or route of the intended flight;
c) insert in item 10 of the ICAO flight plan under SSR, the letter N for complete unserviceability of the transponder, or in the case of partial failure, the letter corresponding to the remaining transponder capability as specified in ICAO Doc 4444, Appendix 2.

Failure after departure.

If the transponder fails after departure or en route, ATS Units will endeavour to provide for continuation of the flight in accordance with the original flight plan. In certain traffic situations this may not be possible, particularly when the failure is detected shortly after take-off. The aircraft may then be required to return to the departure aerodrome

or to land at another aerodrome acceptable to the Operator and to ATC. After landing, pilots shall make every effort to have the transponder restored to normal operation. If the transponder cannot be repaired, provision as given in paragraph 2.2.2 shall apply.

2.2.3 Unlawful interference procedure

2.3 System of SSR Code assignment

2.3.1 Unless otherwise directed by air traffic control, the last assigned identity (Mode A) code in flight shall be retained. After landing pilots to ensure that Mode A 2000 is selected. If no identity code is assigned , Mode A 2000 shall be selected and retained.

2.3.2 While operating within South African Airspace all aircraft shall be equipped and operate a serviceable Mode A and C transponder to prevent occurrences of AIRPROX when;

a) Operating within or transiting any controlled or advisory airspace as listed in paragraph 2.3.3
b) Operating within 2000FT above or below such controlled or advisory airspace;
c) Operating below and within 5NM (vicinity) of defined lateral limits of controlled or advisory airspace boundaries;
d) Any other airspace where the operation of transponders have been prescribed by the Director of Civil Aviation
e) Recreational microlights, gliders, paragliders and hang gliders operating in the vicinity of any controlled airspace shall remain clear of all controlled airspace boundaries, while maintaining full radio communication and are exempt from clauses b and c of paragraph 2.3.2 until the entire paragraph 2.3.2 has been revised.

2.3.3 An example of radiotelephony phraseology to be used by ATC on transferring aircraft at a FIR boundary -
ZSMDC SQUAWK ALFA 2000 Contact Johannesburg Area on FREQ 120,300 MHz.

Scheduled and non-scheduled IFR traffic will be allocated different discreet codes by ATC to avoid confusion, on the radio.

Note 1:
Only Bram Fischer (FABL), Cape Town (FACT), George (FAGG), O R Tambo (FAOR), King Shaka (FALE), Chief Dawid Stuurman (FAPE) and King Phalo (FAEL) is presently equipped with SSR. Advice on further centres will be made available when they are suitably equipped.

Note 2:
All aircraft operating within the undermentioned airspace are to be equipped with Mode A and C transponder equipment.

Cape Town FIR

Cape Town Upper Control Area (UTA)
Cape Town Control Area (CTA)
Cape Town Terminal Control Area (TMA)
Cape Town Control Zone (CTR)

George Control Zone (CTR)
George Terminal Control Area (TMA)
Port Elizabeth Terminal Control Area (TMA)
Port Elizabeth Control Zone (CTR)
East London Terminal Control Area (TMA)
East London Control Zone (CTR)
All class 'C' ATS routes within the Cape Town FIR

Johannesburg FIR

Johannesburg Control Area. (CTA)
Johannesburg Terminal Control Area. (TMA)
Johannesburg Control Zone. (CTR) - O R Tambo.
Kruger Mpumalanga Control Zone (CTR)
Kruger Mpumalanga Terminal Control Area (TMA)
Lanseria Terminal Control Area (TMA) above 7 500 FT
Polokwane Control Zone (CTR)
Polokwane Terminal Control Area (TMA)
Bloemfontein Control Area (CTA)
Bloemfontein Control Zone (CTR) - Bram Fischer.
Bloemfontein Terminal Control Area (TMA)
Durban Control Area (CTA)
Durban Terminal Control Area (TMA)
Durban Control Zone (CTR) - King Shaka
Kimberley Terminal Control Area (TMA)
All class C ATS Routes within the Johannesburg FIR

2.3.4 An active surveillance control (MSSR) service is provided by Bloemfontein Approach Control (ATC) within the Bloemfontein TMA/CTR and Kimberley TMA (at or above 7000 FT ALT) where the following is applicable to all aircraft:

Aircraft must be equipped with a serviceable mode A & C transponder when operating below and within 5NM (vicinity) of the lateral limits of the Bloemfontein TMA or Kimberley TMA, unless operating within the Special Rules Area (SRA) for non-transponder operations below the Bloemfontein TMA as described within the SA AIP ENR 2.2 paragraph 1.1 or below the Kimberley TMA as described within the SA AIP ENR 2.2 paragraph 1.2

2.4 AFI PARTICIPATING AREAS

2.4.1 AFI has established four (04) Participating Areas (PAs) within which specific codes are allocated to enable assignment to aircraft. The four PAs consist of the following FIRs with associated States:

a) PA East (12) – Addis Ababa (Ethiopia & Djibouti), Juba (South Sudan), Mogadishu (Somalia), Asmara (Eritrea), Nairobi (Kenya), Entebbe (Uganda), Kigali (Rwanda), Bujumbura (Burundi), Dar-es-Salaam (Tanzania), Seychelles (Seychelles), Antananarivo (Madagascar, Comoros & La Reunion), and Mauritius (Mauritius).
b) PA South (9) – Lilongwe (Malawi), Lusaka (Zambia), Luanda (Angola), Beira (Mozambique), Harare (Zimbabwe), Gaborone (Botswana), Windhoek (Namibia), Johannesburg (South Africa, Swaziland & Lesotho), and Cape Town (South Africa).
c) PA Central (3) – Kinshasa (D. R. Congo), Brazzaville (Congo Brazzaville, Cameroon, Central African Republic, Gabon, Equatorial Guinea, Sao Tome and Principe), and N'Djamena (Chad, Part of Cameroon & Part of Central African Republic).
d) PA West (6) – SAL (Cabo Verde), Dakar (Senegal, Mauritania, Gambia, Guinea Bissau, Mali & Côte D'Ivoire), Roberts (Guinea Conakry, Sierra Leone & Liberia), Accra (Ghana, Togo & Benin), Niamey (Niger, Burkina Faso & Part of Mali), and Kano (Nigeria)

2.5 CODE ALLOCATION

2.5.1 International codes shall be assigned in accordance with the following principles governing the originating regional code assignment method (ORCAM):

a) when an aircraft enters the AFI Region (either when departing or during flight), the first ATS unit concerned in that PA shall assign to it a four-digit code;
b) each flight will keep the original code assigned on entering the AFI region for the whole flight time within that PA;
c) normally a code change will be required at the time a flight crosses (leaving) the AFI region and/or PA boundary. However, in specific cases and by specific arrangements agreed between the ATS units affected during the continuation of the flight, the assigned code may be retained beyond the AFI region and/or PA boundary. (Please ensure that similar international codes are not shared within different PA's when making these arrangements!).

2.5.2 Domestic codes are allocated for use by flights that, throughout their flight, remain within the boundaries of the agreed area of use of such codes (normally within one FIR).

2.5.3 Domestic codes will be assigned to flights and used only within one FIR.

2.6 MONITORING OF THE PLAN

2.6.1 While full implementation of the CMP must inevitably be achieved gradually, it is expected that progressive development of ground facilities will allow in future an increasing number of ATS providers to adhere to the provisions foreseen in the plan.

2.7 CODE SERIES FOR SOUTH AFRICA

FIR	Domestic	International
FAJA	4000 - 4077	7300 - 7377
	2700 - 2777	
	0400 - 0477	
	3500 - 3577	

	Domestic	International
FACA	0500 - 0577	4700 - 4777
	5400 - 5477	
	3100 - 3177	
	4500 - 4577	

3 Differences

PANS RAC (DOC 4444 - RAC/501) Part X, paragraph 2.7.1, 2.8 and 5.2.
The following differences exist and have been registered with the International Civil Aviation Organization (ICAO).

3.1 For the information of those aircraft operating within the Johannesburg and Waterkloof TMAs unidentified unknown targets performing as expected for general aviation within the confines of the Johannesburg Special Rules Area will be deemed to be separated from aircraft operating within the aforementioned TMAs by procedures as opposed to radar.

3.2 Pilots operating below the TMAs in the Special Rules Area should therefore ensure that they do not exceed the applicable altitude restrictions as stipulated (Johannesburg Special Rules Area.)

3.3 By virtue of the fact that uncontrolled VFR aircraft operate in the various training areas, below the Cape Town TMA and transit to/from these areas from/to FACT/FAYP/ FALW/ FAWN/FASH and FAMY, radar separation and information provided to aircraft operating within the Cape Town TMA will only take known identified targets into account.

3.4 For information of those aircraft operating within the Cape Town TMA, unidentified targets performing as expected for general aviation within the confines of the various flying training areas will be deemed to be separated from aircraft operating within the aforementioned TMA by procedures as opposed to radar.

3.5 Pilots operating below the TMA, within the flying training areas and transiting to/ from, should therefore ensure that they do not exceed the applicable altitude restrictions as stipulated and also remain below the TMA whilst routing to/from the training areas.

3.6 An active surveillance control (MSSR) service is provided by George Approach Control (ATC) within the George TMA/CTR where the following is applicable to all aircraft:
Aircraft must be equipped with a serviceable mode A & C transponder when operating below and within 5NM (vicinity) of the lateral limits of the George TMA.

4 Graphic portrayal of area of radar coverage.

4.1 All radar clearance charts are available from the SACAA web-site and Aerodrome section of the AIP.

5 Promulgation of special rules applicable to radar separation and information

5.1 JOHANNESBURG FIR

By virtue of the fact that uncontrolled VFR aircraft, operation within the Virginia Flying Training Area and between the Virginia Flying Training Area and Virginia Airport, are to remain below the Durban TMA, radar separation and information provided to aircraft operating within the Durban TMA will only take known identified targets into account.

For information of those aircraft operating within the Durban TMA, unidentified targets performing as expected for general aviation within the confines of the Virginia Flying Training Area and Virginia Airport will be deemed to be separated from aircraft operating within the aforementioned TMA by procedures as opposed to radar.

Pilots operating below the TMA, within those areas mentioned above, should therefore ensure that they do not exceed the applicable altitude restriction as stipulated.

5.2 CAPE TOWN FIR

By virtue of the fact that uncontrolled VFR aircraft operate in the various training areas, below the Cape Town TMA and transit to/from these areas from/to FACT/FAYP/FALW/FAWN/FASH and FAMY, radar separation and information provided to aircraft operating within the Cape Town TMA will only take known identified targets into account.

For information of those aircraft operating within the Cape Town TMA, unidentified targets performing as expected for general aviation within the confines of the various flying training areas will be deemed to be separated from aircraft operating within the aforementioned TMA by procedures as opposed to radar.

Pilots operating below the TMA, within the flying training areas and transiting to/from, should therefore ensure that they do not exceed the applicable altitude restrictions as stipulated and also remain below the TMA whilst routing to/from the training areas.

6 UNIFORM IMPLEMENTATION OF 10 MIN LONGITUDINAL SEPARATION

6.1 Letters of Procedure have been signed with the following Air Traffic Service Providers, detailing the Longitudinal Separation applied.

Air Traffic Service Provider	Effective date	Remarks
FAJO / FMMM ACC -FIC	10/09/2001	Longitudinal separation10 minutes.
FAJO / FQMA Approach	02/12/1999	Longitudinal separation10 minutes.
FAJA ACC / FQMA APP	02/12/1999	All regional flights: 10minute
FAJA ACC East / FQMA APP	24/07/2001	All regional flights: 10minute
FAJA ACC / FQBR ACC	02/12/1999	All regional flights: 10minute
FAJO / FIMM APP / FIC	NIL	Reaction to proposed letter still awaited from FIMM. They have acknowledged receipt of same on the 24/01/2000.
FAJO / FNLU FIC	24/02/2000	Longitudinal separation: 20 minutes. At this stage no RNP development envisaged. Awaiting implementation of AORRA.
FAJO / FYWH ACC	24/02/2000	Longitudinal separation: 20 minutes. - Intercontinental flights.
FAJA ACC / FYWH ACC	24/02/2000	All regional flights: 10minutes.
FAJA ACC / FVHA ACC	02/12/1999	All flights: 10 minutes.
FAJA ACC / FBSK APP	02/12/1999	All flights: 10 minutes.
FAJA ACC / FDMS APP	02/12/1999	All flights: 10 minutes.
FAJA ACC / FXMM APP	02/12/1999	All flights: 10 minutes.
NOTE: Effective date reflects the current Letter of Procedure, in some instances there were two or three versions signed covering periods from the 02/12/1999 to24/02/2000 hence discrepancy in effective date.		

7 RADAR SEPARATION ASSURANCE

7.1 Separation assurance using ATS surveillance as a primary aid in the area control environment is implemented within the FAJA and FACA FIR above FL195 (19500FT). All transponder equipped aircraft operating in all routes within South Africa above FL195 (19500FT) are tracked by at least 2 different ATS surveillance sensors.

7.2 Consequently the following ATM elements need to be considered. ATS Surveillance Control Service will be automatically transferred from Approach or from adjacent Area Control Sectors, which will mean that the frequency change will not include a termination of ATS Surveillance control Service. Pilots are to take note that the En-route separation of 10 minutes at same level may be reduced to 10NM, demanding appropriate vigilance, R/T discipline and accuracy.

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ENR 1.7 ALTIMETER SETTING PROCEDURES

1 Introduction

The altimeter setting procedures in use conform to those contained in ICAO Doc 4444 ATM/501 Procedures for Air Navigation Services and ICAO Doc 8168 OPS/611 Procedures for Air Navigation Services - Aircraft Operations and are given in full below.

1.1 Flights required to comply with Altimeter setting procedures. These altimeter setting procedures shall be observed by all aircraft operating in level flight at or above 1 500 feet above the ground or water irrespective of the weather conditions and irrespective of whether the flight is operating on a VFR or IFR flight plan.

1.2 This does not imply that all cross country flights must be conducted at more than 1 500 feet above the ground or water. A pilot electing to conduct a flight in VMC at less than

1 500 feet above the ground or water may conduct the whole flight on QNH (or QFE) and at any altitude (or height) irrespective of the aircraft's heading.

2 Basic element of the system

2.1 System of flight levels.

a) During its en route flight an aircraft shall be flown along surfaces of constant atmospheric pressure called flight levels and related to an altimeter setting 1013,2 hPa. Throughout its en route flight an aircraft's vertical position shall be expressed in terms of flight levels.
b) Flight level zero shall be located at the atmospheric pressure level of 1013,2 hPa. Consecutive flight levels shall be separated by a pressure interval corresponding to 500 feet in the Standard Atmosphere.
c) Flight levels shall be numbered according to the following table, where the corresponding height in the Standard Atmosphere is specified in feet:

Flight level number	Altimeter Indication	
	Feet	Meters
15	1500	450
20	2000	600
50	5000	1500
100	10000	3050
150	15000	4550
200	20000	6100

3 Transition Altitude

a) During flight in the vicinity of an aerodrome at or below a fixed altitude called the transition altitude, an aircraft shall be flown at altitudes determined from an altimeter set to sea level pressure (QNH) and its vertical position shall be expressed in terms of altitude.

b) Transition altitudes are specified as follows for the aerodromes listed hereunder:

Aerodrome	Transition Altitude
ALEXANDER BAY	6000 FEET
BHISHO (Ciskei)	7000 FEET
BLOEMFONTEIN - BRAM FISCHER INTERNATIONAL AIRPORT	8000 FEET
CAPE TOWN INTERNATIONAL AIRPORT	7500 FEET
KING PHALO	7000 FEET
GEORGE	8000 FEET
GEORGE DICK MONTSHIOA AIRPORT	7000 FEET
GIYANI	5500 FEET
JOHANNESBURG (RAND)	8000 FEET
JOHANNESBURG - O R TAMBO INTERNATIONAL AIRPORT	8000 FEET
KIMBERLEY	7000 FEET
KLEINSEE	4500 FEET
LADYSMITH	9500 FEET
DURBAN - KING SHAKA INTERNATIONAL AIRPORT	5500 FEET
LANSERIA INTERNATIONAL AIRPORT	8000 FEET
LICHTENBURG	8000 FEET
LYDENBURG	7500 FEET
MALELANE	7500 FEET
MARGATE	5000 FEET
MESSINA	7000 FEET
KRUGER MPUMALANGA INTERNATIONAL AIRPORT	9000 FEET
NEWCASTLE	9500 FEET
PHALABORWA	3500 FEET
PIETERMARITZBURG (ORIBI)	8500 FEET
POLOKWANE INTERNATIONAL AIRPORT	9000 FEET
PIETERSBURG (CIVIL)	9000 FEET
PILANESBERG INTERNATIONAL AIRPORT	7400 FEET
PONGOLA	6500 FEET

Aerodrome	Transition Altitude
CHIEF DAWID STUURMAN INTERNATIONAL AIRPORT	5500 FEET
WONDERBOOM / PRETORIA	8000 FEET
PULLENSHOPE (Hendrina)	8000 FEET
RICHARDS BAY	3500 FEET
SECUNDA	8000 FEET
SISHEN	8000 FEET
SKUKUZA	9000 FEET
TSWALU	8000 FEET
TUTUKA POWER STATION	8000 FEET
TZANEEN	8500 FEET
ULUNDI	7100 FEET
MTHATHA	7500 FEET
UPINGTON INTERNATIONAL AIRPORT	5500 FEET
VENETIA MINE	7000 FEET
VEREENIGING	8000 FEET
WELKOM	7000 FEET

c) For all points of departure and arrival within 25 nautical miles of the aerodrome listed in paragraph 3 (b), the transition altitude shall be the same as that listed for such aerodromes.

d) In VMC, flights departing from or arriving at points beyond 25 nautical miles from any of the aerodromes tabled above, shall observe a height of 2 000 feet above the ground or water as the transition altitude.

e) In IMC, flights departing from or arriving at points beyond 25 nautical miles from any of the aerodromes tabled above, shall observe the lowest safe cruising altitude as the transition altitude.

4 Transition Levels

a) The change in reference from flight level used while enroute to altitude used in the vicinity of an aerodrome, shall be made at a horizontal plane located above the transition altitude called the transition level.

b) Transition levels vary with variations in barometric pressure in such a way that no transition level will be less than 1 000 feet above the transition altitude within 25 nautical miles of an aerodrome with an Air Traffic Service Unit (ATSU).

c) If an ATSU is in existence at the aerodromes tables above the current transition level for each aerodrome and for points within 25 nautical miles thereof shall be included in the approach and landing instructions.

d) In VMC, flights intending to land at points beyond 25 nautical miles from any of the aerodromes, listed in paragraph 3 (b), shall observe a height of 3 000 feet above the ground or water as the transition level.

e) In IMC, flights intending to land at points beyond 25 nautical miles from any of the aerodromes, listed in paragraph 3 (b), shall observe the flight level 500 feet above the lowest safe altitude as the transition level.

5 Application of procedure

5.1 Take-off and climb

a) A QNH altimeter setting shall be made available to aircraft in the routine take-off and climb clearance.

b) A QFE altimeter setting shall be made available to aircraft upon request.

c) At least one altimeter in an aircraft shall be set to the QNH before take-off and the reading thereon shall then be confirmed by comparison with the ground elevation. The vertical positioning of such aircraft during climb shall be by reference to altitude until the transition altitude is reached.

d) On reaching the transition altitude, at least one altimeter within the aircraft shall be set to 1013,2 hPa and thereafter the vertical position of such an aircraft shall be by reference to flight levels.

Note: On reaching the transition altitude, pilots shall reset their altimeters to 1013,2 hPa without requesting Air Traffic Control (ATC) permission to do so and without notifying Air Traffic Control (ATC) that the change has been made.

6 Enroute

6.1 Vertical Separation

a) The vertical separation during en route flight shall be expressed in terms of flight levels.

b) The vertical position of an aircraft shall be expressed in terms of flight levels both in AIR-REPS and in air traffic service messages.

6.2 Terrain Clearance

a) The Meteorological Forecast Office will, on request, make available to pilots the forecast lowest en-route QNH to enable pilots to determine the lowest flight level that will ensure adequate terrain clearance for routes or segments of routes on which this information is required.

b) The lowest safe flight level may be determined in one of the following ways:
- if there is more than one altimeter in the aircraft, set the subscale of one of them to the forecast lowest QNH, and then compare the readings of this altimeter with elevations shown on the map of the aircraft's route to ensure the minimum 1 500 feet terrain clearance, where applicable; or
- make a preflight check to ensure that the flight level selected will provide the minimum terrain clearance by determining the relationship which will exist between the forecast lowest QNH and the altimeter subscale setting (1013,2 hPa).

REMEMBER THE DANGER SIGNAL IS:
When the QNH is lower than the subscale setting the aircraft will be lower than indicated.

7 Approach and landing

a) A QNH altimeter setting shall be made available in routine approach and landing clearances.

b) A QFE altimeter setting shall be made available on request in approach and landing clearances.

c) The vertical positioning of aircraft during approach shall be controlled by reference to flight levels until the transition level is reached.

d) Vertical positioning of aircraft above the transition level may be by reference to altitude (QNH) or height (QFE), provided that, after the descent to land is commenced, level flight above the transition altitude is not indicated or expected.

Note: This exception to 7 (c) is intended to apply primarily to jet aircraft, for which uninterrupted descents from high altitudes are desirable.

e) On reaching the transition level at least one altimeter within the aircraft shall be set to the QNH and thereafter the vertical positioning of such aircraft shall be by reference to altitudes.

Note 1: On reaching the transition level, pilots shall reset their altimeters to the QNH without requesting Air Traffic Control (ATC) permission to do so and without notifying Air Traffic Control (ATC) that the change has been made.
Note 2: This does not preclude a pilot from using a QFE setting for terrain clearance purposes during the final approach to the runway.

f) During the approach to land, terrain clearance may be determined by using either a QNH altimeter setting (giving altitude) or a QFE setting (giving height above the QFE datum)

8 Missed approach

The relevant parts of paragraphs 2.1 and 4 shall apply in the case of a missed approach.

9 Description of altimeter setting region

a) ATSU will ensure that the latest QNH is always readily available for passing to an aircraft and for determining the current transition level.
b) ATSU will pass to aircraft the QFE on request.
c) Both the QNH and QFE are rounded down to the nearest whole hectopascal before being passed to the pilot. However, the QNH and QFE are available to the nearest tenth of a hectopascal if required.

10 Procedures applicable to operators (including pilots)

10.1 The levels at which the en-route phase of an IFR flight is to be conducted shall be specified in the flight plan in terms of flight levels. Flights conducted in the vicinity of an aerodrome shall be flown at altitudes if below the transition altitude and at flight levels if above the transition altitude.

10.2 No VFR flight shall be required to state its intended flight level/ altitude in a flight plan; Provided that, where a level is stated, it shall be -

a) In terms of flight levels if the flight is to be conducted at or above 1500 feet above the surface; or
b) In terms of altitudes if the flight is to be conducted at less than 1500 feet above the surface.

10.3 The flight level or levels selected for a flight shall -

a) In IMC ensure adequate terrain clearance;
b) For IFR flights, satisfy ATC clearances; and
c) For all IFR flights and for VFR flights at or above 1 500 feet above the surface, be compatible with the application of the semi-circular rule.

Note: Pilots must take note of the procedures applicable to VFR flights as described - see AIP ENR 1.2.1

10.4 Procedures applicable to ATSU

a) ATSU shall ensure that the latest QNH is always readily available for passing to aircraft and for determining the current transition level.
b) Both the QNH and the QFE shall be rounded down to the nearest whole hectopascal before being passed to pilots. However the QNH and QNE shall be available to the nearest tenth of a hectopascal, if required.

11 Semi-circular rule

a) Unless otherwise directed by an air traffic service unit, the pilot in- command of an aircraft in level flight shall fly at an appropriate flight level selected according to magnetic track from the table below: -

b) Aircraft flown in accordance with VFR at a height of less than 1500 feet above the surface, shall not be required to comply with para (a) above, unless if otherwise directed by an air traffic service unit.

c) A flight conducted from flight level 200 and above, shall be flown in compliance with IFR.

MAGNETIC TRACK			
Flight Level			
From 000° to 179°		**From 180° to 359°**	
IFR	**VFR**	**IFR**	**VFR**
	15	20	25
30	35	40	45
50	55	60	65
70	75	80	85
90	95	100	105
110	115	120	125
130	135	140	145
150	155	160	165
170	175	180	185
190	195	200	
210		220	
230		240	
250		260	
270		280	
290		300	
310		320	
330		340	
350		360	
370		380	
390		400	
410		430	
450		470	
490		510	
etc.		etc.	

d) Note: For further application of the semi-circular rule, refer to ICAO Annex 2, Appendix A and B.

ENR 1.8 REGIONAL SUPPLEMENTARY PROCEDURES

1 All weather operations including low visibility procedures In terms of the Rules of the Air, General Operating Rules, Regulation 91.06.27 paragraphs 1 and 2, no pilot may conduct an instrument approach procedure from a facility unless a State approved instrument procedure has been promulgated for that facility.

1.1 Abbreviations (see appendix A)

1.2 Glossary of Terms

1.2.1 Aerodrome operating minima.

The limits of usability of an aerodrome for either take-off or landing, usually expressed in terms of visibility (VIS) or runway visual range (RVR), decision altitude/height or minimum descent altitude/height and cloud conditions.

1.2.2 All weather operations

Any take-off, en-route or landing operations in IMC and operated in accordance with IFR.

1.2.3 Alternate aerodrome for take-off.

An aerodrome to which a flight may proceed should the weather conditions at the aerodrome of departure preclude a return for landing. Such an aerodrome shall lie within the flying times given below, calculated at normal cruising speed in still air with a critical engine inoperative or critical systems on single engine aircraft becoming inoperative.

Number of Engines	Number of Engines
1	20 Minutes
2	1 Hour
3 or more	2 Hours

1.2.4 Alternate aerodrome for landing.

An aerodrome specified in a flight plan to which a flight may proceed when it becomes inadvisable to land at the aerodrome of intended landing.

1.2.5 Cloud break procedure.

A Cloud Break Procedure may be approved by the Director of Civil Aviation when one or more of the following conditions apply:

a) The runway and/or equipment does not comply with ICAO requirements for instrument approach procedures.
b) The runway is not aligned with the final approach track.
c) Local QNH may not be available. Note: Any cloudbreak procedure conducted outside Controlled Airspace is conducted entirely at the discretion of the Pilot-in-Command. In the event that such runway and/or equipment does not comply with ICAO requirements the OCA/H will not be lower than that specified for circling minima as applicable to aircraft category.

1.2.6 Approach categories of aeroplanes.

The following five approach categories of aeroplanes have been established on the basis of 1.3 times the stall speed in the landing configuration at maximum certificated landing mass:

CATEGORY A - Less than 91 KTS IAS. CATEGORY B - 91 KTS or more, but less than 121 KTS IAS. CATEGORY C - 121 KTS or more, but less than 141 KTS IAS. CATEGORY D - 141 KTS or more, but less than 166 KTS IAS. CATEGORY E - 166 KTS or more, but less than 211 KTS IAS.

1.2.7 Circling approach.

An extension of an instrument approach procedure to provide for visual circling of the aerodrome prior to landing, and ensuring obstacle clearance by restricting the radius of the circling approach as per ICAO document 8168.The visual manoeuvring area for a circling approach is determined by drawing arcs centred on each runway threshold and joining these arcs with tangent lines. The radius of the arc is related to:

a) Aircraft approach category;
b) Speed for each approach category;
c) Wind speed 25 KTS throughout the turn; and
d) Bank angle: 20 average or 3 /second, whichever requires less bank.

Determination method:

The radius is determined using the formulae as per attachment IIIE of ICAO document 8168 by applying 25 kt wind to true airspeed for each category of aircraft using visual manoeuvring IAS from table 1-1 of ICAO document 8168. The TAS is based on an aerodrome elevation of 2000 feet and a temperature of ISA + 15°C.

Example:

For determining radius for visual manoeuvring (circling) area for aerodromes above 2 000 feet MSL.

Approach category of aircraft/ IAS(KTS)	A/100	B/135	C/180	D/205	E/240
TAS at 2000 feet MSL + 25 KTS wind factor (KTS)	131	168	215	242	279
Radius (R) of turn (NM)	0.69	1.13	1.85	2.34	3.12
Category of aircraft/ IAS(KTS)	A/100	B/135	C/180	D/205	E/240
Straight segment (NM) this is a constant value	0.30	0.40	0.50	0.60	0.70
Radius (R) from threshold (NM)	1.68	2.66	4.20	5.28	6.94

Note 1: Radius from threshold (R) = 2 r + straight segment. Note 2: Circling visibility will not be less that approach visibility minima.

1.2.8 Cloud ceiling.

The height above the ground or water of the base of the lowest layer of cloud situated below 20 000 feet and covering more than half the sky.

1.2.9 Decision altitude/height (DA/H).

A specified altitude or height in a precision approach at which a missed approach is initiated if the required visual reference to continue the approach, has not been established.

Note: Decision altitude (DA) is referenced to Mean Sea Level (MSL) and Decision Height (DH) is referenced to the runway threshold elevation.

1.2.10 En-Route safe altitude.

An altitude which will ensure a separation height of at least 1 500 feet above the highest obstacle located within five nautical miles of the aircraft in flight.

1.2.11 Expected approach time (EAT).

a) The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding pattern to complete its approach for a landing.

Note: The actual time of leaving the holding pattern will depend upon the approach clearance.

b) Onward Clearance Time (OCT).

In spite of measures introduced to avoid airborne delays, weather, emergencies and other unpredictable or controllable events may necessitate en-route holding. Pilots are informed that OCT's will only be issued if the hold is expected to exceed 10 minutes.is expected to exceed 10 minutes.

1.2.12 Flight visibility.

The visibility forward from the cockpit of an aircraft in flight.

1.2.13 Final approach fix or point.

That fix or point of an instrument approach procedure where the final approach segment commences.

1.2.14 Initial approach fix.

The fix determined in terms of Instrument Approach Procedures which identifies the beginning of the initial approach segment.

1.2.15 Ground controlled approach (GCA).

A ground radar control service which encompasses all facets of the radar control service in the vicinity of a SAAF airbase i.e., vectoring, terrain clearance and radar final approach service.

No civilian pilot may conduct the final approach phase of a Ground Controlled Approach Procedure (GCA) consisting of the continuous talk down phase.

Note: The GCA is not approved by the Director of for Civil Aviation.

1.2.16 Initial approach altitude.

The lowest altitude in the holding pattern or on an arrival route of an instrument approach procedure, providing the required protection against obstacles. This altitude may be below Minimum Sector Altitude (MSA) and accepted by a pilot when being vectored under radar control.

1.2.16.1 Procedure turn approach.

A procedure turn approach may, with ATC approval where an ATS is operational be executed if approaching the navigational aid within 30DEG from the outbound track.

1.2.17 Instrument approach procedure.

A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route, to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle criteria apply.

1.2.18 Minimum descent altitude/height (MDA/H).

A specified altitude or height in a non-precision approach or circling approach below which descent may not be made without visual references for the intended runway or touch-down area.

Note: Minimum Descent Altitude (MDA) is referenced to Mean Sea Level (MSL) and Minimum Descent Height (MDH) is referenced to runway threshold or aerodrome elevation.

1.2.19 Minimum sector altitude (MSA).

The lowest altitude which may be used which will provide a minimum clearance of 1 500 ft (450 m) above all objects located in an area contained within a sector of a circle of 25 NM (46 km) radius centred on a radio aid to navigation significant point, the Aerodrome Reference Point (ARP) or the Heliport Reference Point (HRP).

Note: It is the responsibility of the pilot-in-command not to descend prematurely below MSA, unless being vectored under radar control.

1.2.20 Missed approach point (MAPt).

That point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

1.2.21 Missed approach procedure.

The procedure to be followed if the approach cannot be continued.

1.2.22 Non-precision approach.

a) An instrument approach for landing in which no electronic glide path guidance is provided.

b) In the case where there are two facilities utilised for the instrument approach procedure, the facility on which the instrument approach procedure is based shall be deemed to be the primary facility and the second facility shall be deemed to be the secondary facility.

c) In circumstances where the secondary facility is not available whilst executing an instrument approach procedure and the secondary facility, when operative, would have provided a lower MDA, then the aircraft may descend on a time basis to the specified altitude for the secondary facility, unless a different MDA/H has been specified in the event of such facility not being available.

1.2.23 Obstacle clearance altitude (OCA) or obstacle clearance height (OCH).

The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable, used in establishing compliance with appropriate obstacle clearance criteria.

Note 1. - Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approaches to the aerodrome elevation or the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. An obstacle clearance height for a circling approach is referenced to the aerodrome elevation.

Note 2. - For convenience when both expressions are used they may be written in the form obstacle clearance altitude/height and abbreviated OCA/H.

Note 3. - See Procedures for Air Navigation Services, Part I, Section 4, Chapter 5, 5.4 for specific applications of this definition.
Note 4. - See Part IV, Chapter 1 for Area navigation (RNAV) point-in-space (PinS) approach procedures for helicopters using basic GNSS receivers, Part IV, Chapter 1. The general criteria for OCA/H apply (Part I, Section 4, Chapter 5, 5.4) with the addition that the OCH is above the highest terrain/surface within 1.6 km (0.86 NM) of the MAPt.

1.2.24 Obstacle clearance criteria.

The criteria used by the State that provides vertical separation from obstacles to aircraft in flight in various phases of an instrument approach procedure and which under no circumstances will be less than the minima recommended by ICAO in document 8168/ OPS as amended.

1.2.25 Precision approach.

An Instrument Approach for landing in which precision azimuth guidance and precision glide path guidance are provided in accordance with the minima prescribed for the category of operation.

1.2.26 Required visual reference.

The runway environment, i.e. runway threshold, touch-down area, touch down zone lighting, or approach lighting which must be visible for sufficient time for the pilot to determine that the aircraft is in a position for a normal visual descent to land.

1.2.27 State approved procedures.

No pilot may conduct an instrument approach procedure from a facility under any circumstances unless a State approved instrument approach procedure has been promulgated by NOTAM/AIP or AIP SUP action for that facility.

1.2.28 RNAV approach

An instrument approach procedure which relies on aircraft area navigation equipment for navigation guidance.

1.2.29 Runway visual range (RVR).

The range over which the pilot of an aeroplane on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

1.2.30 Visibility.

The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night.

1.2.31 Visual approach

1) Subject to the conditions in paragraph 3 below, clearance for an IFR flight to execute a visual approach may be requested by a flight crew or initiated by the controller. In the latter case, the concurrence of the flight crew shall be required.
2) Controllers shall exercise caution in initiating a visual approach when there is reason to believe that the flight crew concerned is not familiar with the aerodrome and its surrounding terrain. Controllers should also take into consideration the prevailing traffic and weather conditions when initiating visual approaches.
3) An IFR flight may be cleared to execute a visual approach provided that the pilot can maintain visual reference to the terrain and:

a) the reported ceiling is at or above the approved initial approach ALT for the aircraft so cleared; or
b) the pilot reports at the initial approach level or at any time during the instrument approach procedure that the meteorological conditions are such that with reasonable assurance exists that a a visual approach can be completed; and
c) the aircraft is within 25 NM of the destination aerodrome.Separation shall be provided between an aircraft cleared to execute a visual approach and other traffic in the vicinity of the destination aerodrome.

1.2.32 Visual descent point (VDP).

A defined point on the final approach track of a non-precision straight-in approach procedure from which a normal descent from the MDA to the runway touchdown zone may be commenced, provided the approach threshold of that runway or approach lights or other markings are clearly visible to the pilot.

1.2.33 Clearance to descend subject to maintaining own separation while in visual meteorological conditions.

When requested by the pilot of an aircraft and if so prescribed by the appropriate ATS authority an arriving aircraft may be cleared to descend subject to maintaining own separation from other aircraft and remaining in visual meteorological conditions if reports indicate that this is possible.

2 AIRSPACE DEFINITIONS.

2.1 Advisory airspace:

An airspace of defined dimensions, within which air traffic advisory service is available.

Note:

This airspace may be designated advisory area (ADA) or advisory route (ADR).

2.2 Controlled Airspace.

An airspace of defined dimensions within which an air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification as prescribed in Regulation 172.02.2.

Note:

Controlled airspace is a generic term which covers ATS airspace classes A, B, C, D and E as defined in ICAO Annex 11, appendix 4.

3 AERODROME OPERATING MINIMA

3.1 Take-off minima

3.1.1 General

a) Take-off minima established by the operator must be expressed as visibility or RVR limits, taking into account all relevant factors for each aerodrome planned to be used and the aeroplane characteristics. Where there is a specific need to see and avoid obstacles on departures and/or for a forced landing, additional conditions (e.g. ceiling) must be specified.
b) The pilot-in-command may not commence take-off unless the weather conditions at the aerodrome of departure are equal to or better than the applicable minima for landing at that aerodrome unless a suitable take-off alternate aerodrome is available.
c) When the reported meteorological visibility is below that required for take-off and RVR is not reported, a take-off may only be commenced if the pilot-in-command can determine that the RVR/visibility along the take-off runway is equal to or better than the required minimum.
d) When no reported meteorological visibility or RVR is available, a take-off may only be commenced if the pilot-in-command can determine that the RVR/visibility along the take-off runway is equal to or better than the required minimum.

3.1.2 Visual reference

The take-off minima must be selected to ensure sufficient guidance to control the aeroplane in the event of both a discontinued take-off in adverse circumstances and a continued take-off after failure of the critical power unit.

3.1.3 Required RVR/Visibility

a) For multi-engine aeroplanes whose performance is such that, in the event of a critical power unit failure at any point during take-off, the aeroplane can either stop or continue the take-off to a height of 1500 feet above the aerodrome while clearing obstacles by the required margins, the take-off minima established by an operator must be expressed as RVR/Visibility values not lower than those given in Table 1 below except as provided in paragraph (3.1.4) below:

TABLE 1: RVR / VISIBILITY FOR TAKE-OFF

Take-off RVR / Visibility	
FACILITIES	**RVR/VISIBILITY (Note 3)**
Nil (day only)	500m
Runway edge lighting and/or centre line marking	250/300m (Notes 1 & 2)
Runway edge and centre line lighting	200/250m (Note 1)
Runway edge and centre line lighting and multiple RVR information	150/200m (Notes 1 & 4)
Note 1	The higher values apply to Category D aeroplanes
Note 2	For night operations at least runway edge and runway end lights are required.
Note 3	The reported RVR/visibility value representative of the initial part of the take-off run can be replaced by pilot assessment
Note 4	The required RVR value must be achieved for all of the relevant RVR reporting points with the exception given in Note 3 above.

b) For multi-engined aeroplane whose performance is such that they cannot comply with the performance conditions in subparagraph (3.1.3)(a) above in the event of a critical power unit failure, there may be a need to re-land immediately and to see and avoid obstacles in the take-off area. Such aeroplanes may be operated to the following take-off minima provided they are able to comply with the applicable obstacle clearance criteria, assuming engine failure at the height specified. The take-off minima established by an operator must be based upon the height from which the one engine inoperative net take-off flight path can be constructed. The RVR minima used may not be lower than either of the values given in Table 1 above or Table 2 below.

TABLE 2 : ASSUMED ENGINE FAILURE HEIGHT ABOVE THE RUNWAY VERSUS RVR / VISIBILITY	
TAKE OFF RVR / VISIBILITY - FLIGHT PATH	
Assumed engine failure height above the take-off runway	RVR/Visibility (Note 2)
< 50ft	200m
51 - 100 ft	300m
101- 150 ft	400m
151 - 200 ft	500m
201 - 300 ft	1 000m
> 300 ft	1 500 m (Note 1)
Note 1	1 500 m is also applicable if no positive take-off flight path can be constructed.
Note 2	The reported RVR/Visibility value representative of the initial part of the take-off run can be replaced by pilot assessment.

c) When reported RVR, or meteorological visibility is not available, the pilot-in-command may not commence take-off unless he or she can determine that the actual conditions satisfy the applicable take-off minima.

3.1.4 Exceptions to Paragraph (3.1.3)(a)

a) Subject to approval of the Director, and provided the requirements in paragraphs (i) to (v) below have been satisfied, an operator may reduce the take-off minima to 125 m RVR (Category A, B and C aeroplanes) or 150 m RVR (Category D aeroplanes) when:-
   i) Low visibility procedures are in force;
   ii) high intensity runway center line lights spaced 15 m or less and high intensity edge lights spaced 60 m or less are in operation;
   iii) flight deck crew members have satisfactorily completed training in a simulator approved for this procedure;
   iv) a 90 m visual segment is available from the cockpit at the start of the take-off run; and
   v) the required RVR value has been achieved for all of the relevant RVR reporting points.

b) Subject to the approval of the Director, an operator of an aeroplane using an approved lateral guidance system for take-off may reduce the take-off minima to an RVR less than 125 m (Category A, B and C aeroplanes) or 150 m (Category D aeroplanes) but not lower than 75 m provided runway protection and facilities equivalent to Category III landing operations are available.

3.2 NON-PRECISION APPROACH

3.2.1 System Minima

a) An operator must ensure that system minima for non-precision approach procedures, which are based upon the use of ILS without glide path (LOC only) VOR, NDB, SRA or VDF are not lower than the MDH values given in Table 3 below.

TABLE 3: SYSTEM MINIMA FOR NON-PRECISION APPROACH AIDS

SYSTEM MINIMA	
FACILITY	**LOWEST MDH**
ILS (no glide path - LOC)	250 ft
SRA (terminating at 1\2 NM)	250 ft
SRA (terminating at 1NM)	300 ft
SRA (terminating at 2 NM)	350 ft
VOR	300 ft
VOR/DME	250 ft
NDB	300 ft
VDF	300 ft

3.2.2 Minimum Descent Height

An operator must ensure that the minimum descent height for a non-precision approach is not lower than either -

a) the OCH/OCL for the category of aeroplane; or
b) the system minimum.

3.2.3 Visual Reference

A pilot may not continue an approach below MDA/MDH unless at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

a) Elements of the approach light system;
b) The threshold;
c) The threshold markings;
d) The threshold lights;
e) The threshold identification lights;
f) The visual glide slope indicator;
g) The touchdown zone or touchdown zone markings;
h) The touchdown zone lights;
i) Runway edge lights; or
j) Other visual references acceptable to the Director.

3.2.4 Required RVR

The lowest minima to be used by an operator for non-precision approaches are:

TABLE 4(a): RVR FOR NON-PRECISION APPROACH-FULL FACILITIES (Notes (1), (5), (6) and (7))				
RVR/Aeroplane category				
MDH	A	B	C	D
250 ft - 299 ft	800 m	800 m	800 m	1 200m
300 ft - 449 ft	900 m	1 000 m	1 000 m	1 400 m
450 ft - 649 ft	1 000 m	1 200 m	1 200 m	1 600 m
650 ft and above	1 200 m	1 400 m	1 400 m	1 800 m

TABLE 4(b): RVR FOR NON-PRECISION APPROACH-INTERMEDIATE FACILITIES				
Non-precision approach minima Intermediate facilities (Notes (2),(5),(6) and (7))				
MDH	**RVR/Aeroplane category**			
	A	**B**	**C**	**D**
250 ft - 299 ft	1 000 m	1 100 m	1 200 m	1 400 m
300 ft - 449 ft	1 200 m	1 300 m	1 400 m	1 600 m
450 ft - 649 ft	1 400 m	1 500 m	1 600 m	1 800 m
650 ft and above	1 500 m	1 500 m	1 800 m	2 000 m

TABLE 4(c): RVR FOR NON-PRECISION APPROACH-BASIC FACILITIEST				
Non- precision approach minima Basic facilities (Notes (3),(5),(6) and (7))				
MDH	**RVR/Aeroplane category**			
	A	**B**	**C**	**D**
250 ft - 299 ft	1 200 m	1 300 m	1 400 m	1 600 m
250 ft - 299 ft	1 300 m	1 400 m	1 600 m	1 800 m
450 ft - 649 ft	1 500 m	1 500 m	1 800 m	2 000 m
650 ft and above	1 500 m	1 500 m	2 000 m	2 000 m

TABLE 4(d): RVR FOR NON PRECISION APPROACH-NIL APPROACH LIGHT FACILITIES				
Non-precision approach minima Nil facilities (Notes (4),(5),(6) and (7))				
MDH	**RVR/Aeroplane category**			
	A	**B**	**C**	**D**
250 ft - 299 ft	1 500 m	1 500 m	1 600 m	1 800 m
300 ft - 449 ft	1 500 m	1 500 m	1 800 m	2 000 m
450 ft - 649 ft	1 500 m	1 500 m	2 000 m	2 000 m
650 ft and above	1 500 m	1 500 m	2 000 m	2 000 m
Note 1	Full facilities comprise runway markings, 720 m or more of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.			
Note 2	Intermediate facilities comprise runway markings, 420-719 m of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on			
Note 3	Basic facilities comprise runway markings, <420 m of HI/MI approach lights, any length of LI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.			
Note 4	Nil approach light facilities comprise runway markings, runway edge lights, threshold lights, runway end lights or no lights at all.			
Note 5	The tables are only applicable to conventional approaches with a nominal descent slope of not greater than 4. Greater descent slopes will usually require that visual glide slope guidance (e.g. PAPI) is also visible at the Minimum Descent Height.			
Note 6	The above figures are either reported RVR or meteorological visibility converted to RVR as in Technical Standard 121.07.7.8.			
Note 7	The MDH mentioned in Table 4(a), 4(b), 4(c) and 4(d) refers to the initial calculation of MDH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, e.g. conversion to MDA.			

3.2.5 Night Operations

At least runway edge, threshold and runway end lights must be on.

3.3 PRECISION APPROACH - CATEGORY 1 OPERATIONS

3.3.1 General

A Category I operation is a precision instrument approach procedure which provides for an approach to a decision height not lower than 200 ft and a visibility not less than 800m or RVR not less than 550m.

3.3.2 Decision Height

An operator must ensure that the decision height to be used for a Category I precision approach is not lower than -

a) the minimum decision height specified in the aeroplane flight manual (AFM) if stated;

b) the minimum height to which the precision approach aid can be used without the required visual reference;
c) the OCH/OCL for the category of aeroplane; or
d) 200 ft

3.3.3 Visual Reference

A pilot may not continue an approach below the Category I decision height determined in accordance with paragraph 2 above, unless at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

a) elements of the approach light system;
b) the threshold;
c) the threshold markings;
d) the threshold lights;
e) the threshold identification lights;
f) the visual glide slope indicator;
g) the touchdown zone or touchdown zone markings;
h) the touchdown zone lights; or
i) runway edge lights.

3.3.4 Required RVR

The lowest minima to be used by an operator for Category I operations are:

TABLE 5: RVR FOR CAT I APPROACH VS. FACILITIES AND DH

Category I minima

DH	Facilities / RVR (Note 5)			
	Full (Notes1&6)	**Interm (Notes2&6)**	**Basic (notes 3&6)**	**Nil (Notes 4&6)**
200 ft	550 m	700 m	800 m	1 000 m
201-250 ft	600 m	700 m	800 m	1 000 m
251-300 ft	650 m	800 m	900 m	1 200 m
301 ft and above	800 m	900 m	1 000 m	1 200 m
Note 1	Full facilities comprise runway markings, 720 m or more of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.			
Note 2	Intermediate facilities comprise runway markings, 420 - 719 m of HI/MI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.			
Note 3	Basic facilities comprise runway markings, <420 m of HI/MI approach lights, any length of LI approach lights, runway edge lights, threshold lights and runway end lights. Lights must be on.			
Note 4	Nil approach light facilities comprise runway markings, runway edge lights, threshold lights, runway end lights or no lights at all.			
Note 5	The above figures are either the reported RVR or meteorological visibility converted to RVR in accordance with Technical Standard 131.6.			

DH	Facilities / RVR (Note 5)			
	Full (Notes1&6)	**Interm (Notes2&6)**	**Basic (notes 3&6)**	**Nil (Notes 4&6)**
Note 6	The table is applicable to conventional approaches while a glide slope angle up to and including 4.			
Note 7	The DH mentioned in Table 5 refers to the initial calculation of DH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, e.g. conversion to DA.			

3.3.5 Single Pilot Operations

For single pilot operations, an operator must calculate the minimum RVR for all approaches in accordance with CAR 121.07.7 and this technical standard. An RVR of less than 800 m is not permitted except when using a suitable auto-pilot coupled to an ILS or MLS, in which case normal minima apply. The decision height applied may not be less than 1.25 X the minimum disengagement height for the autopilot.

3.3.6 Night Operations

For night operations at least runway edge, threshold and runway end lights must be on.

3.4 PRECISION APPROACH - CATEGORY II OPERATIONS

3.4.1 General

A Category II operation is an ILS approach procedure which provides for an approach to a decision height lower than 200 feet but not lower than 100 feet and a RVR of not less than 300m.

3.4.2 Decision Height

An operator must ensure that the decision height for a Category II operation is not lower than -

a) the minimum decision height specified in the AFM, if stated;
b) the minimum height to which the precision approach aid can be used without the required visual reference;
c) the OCH/OCL for the category of aeroplane; or
d) the decision height to which the flight crew is authorised to operate; or
e) 100 ft.

3.4.3 Visual Reference

A pilot may not continue an approach below the Category II decision height determined in accordance with paragraph (3.4.2) above, unless visual references containing a segment of at least 3 consecutive lights being the centre line of the approach lights, or touchdown zone lights, or runway centre line lights, or runway edge lights, or a combination of these is attained and can be maintained. This visual reference must

include a lateral element of the ground pattern, i.e. an approach lighting crossbar or the landing threshold or a barrette of the touchdown zone lighting

3.4.4 Required RVR

The lowest minima to be used by an operator for Category II operations are:

TABLE 6: RVR FOR CATEGORY II APPROACH VS DH		
Category II minima		
Decision height	**Auto-coupled to below DH (Note 1)**	
	RVR/Aeroplane Category A,B & C	**RVR/Aeroplane Category D**
100FT - 120FT	300M	300M (note 2) / 350M
121FT - 140FT	400M	400M
141FT and above	450M	450M
Note 1	The reference to auto-coupled to below DH in this table means continued use of the automatic flight control system down to a height which is not greater than 80% of the applicable DH. Thus airworthiness requirements may, through minimum engagement height for the automatic flight control system, affect the DH to be applied.	
Note 2	300M may be used for a Category D aeroplane conducting an autoland.	

3.5 PRECISION APPROACH - CATEGORY III OPERATIONS

3.5.1 General

Category III operations are subdivided as follows:

a) Category IIIA Operations

An ILS approach procedure which provides for an approach to a decision height lower than 100FT or with no decision height and with a RVR of not less than 200M.

b) Category IIIB operations.

An ILS approach procedure which provides for approach with either decision height lower than 50FT or no decision height and a RVR lower than 200M but not less than 75M.

c) Category IIIC operations.

An ILS approach procedure which provides for approach with no decision height and no runway visual range limitations.

3.5.2 Decision Height

For operations in which a decision height is used, an operator must ensure that the decision height is not lower than:-

a) the minimum decision height specified in the AFM, if stated;
b) the minimum height to which the precision approach aid can be used without the required visual reference; or
c) the decision height to which the flight crew is authorised to operate.

3.5.3 No Decision Height Operations

Operations with no decision height may only be conducted if:-

a) the operation with no decision height is authorised in the AFM;
b) the approach aid and the aerodrome facilities can support operations with no decision height; and
c) the operator has an approval for CAT III operations with no decision height.

Note: In the case of a Category III runway it may be assumed that operations with no decision height can be supported unless specifically restricted as published in the AIP or NOTAM.

3.5.4 Visual Reference

a) For Category IIIA operations, a pilot may not continue an approach below the decision height determined in accordance with paragraph 3.5.2 above unless a visual reference containing a segment of at least 3 consecutive lights being the centre line of the approach lights, or touchdown zone lights, or runway centre line lights, or runway edge lights, or a combination of these is attained and can be maintained.
b) For Category IIIB operations with a decision height a pilot may not continue an approach below the decision height, determined in accordance with paragraph 3.5.2 above, unless a visual reference containing at least one centre line light is attained and can be maintained.
c) For Category III operations with no decision height there is no requirement for visual contact with the runway prior to touch-down.

3.5.5 Required RVR

The lowest minima to be used by an operator for Category III operations are:

TABLE 7: RVR FOR CATEGORY III APPROACH VERSUS FLIGHT CONTROL SYSTEMS AND DH

Category III minima					
		Flight control system/ RVR (metres)			
		Fail - Passive	Fail - Operational		
			Without roll-out system	With roll-out guidance or control system	
Approach category	Decision height (ft)			Fail passive	Fail operational
III A	Less than100FT	175M (Note 1)	175M	175M	175M

TABLE 7: RVR FOR CATEGORY III APPROACH VERSUS FLIGHT CONTROL SYSTEMS AND DH					
III B	Less than50 ft	Not Authorised	Not Authorised	125 m	75 m
III C	No DH	Not Authorised	Not Authorised	Not Authorised	75 m
Note 1	For operations to actual RVR values less than 300 m a go-around is assumed in the event of an autopilot failure at or below DH.				

3.6 CIRCLING

3.6.1 The lowest minima to be used by an operator for circling are:

TABLE 8 VISIBILITY AND MDH FOR CIRCLING VS AEROPLANE CATEGORY				
	Aeroplane Category			
	A	**B**	**C**	**D**
Minimum OCH	295 ft	295 ft	394 ft	394 ft
MDH	400 ft	500 ft	600 ft	700 ft
Minimum meteorological visibility	1 500 m	1 600 m	2 400 m	3 600 m

3.6.2 Circling with prescribed tracks is an accepted procedure within the meaning of this paragraph.

3.7 VISUAL APPROACH

An operator may not use a RVR of less than 1 500m for a visual approach.

3.8 CONVERSION OF REPORTED METEOROLOGICAL VISIBILITY TO RVR

3.8.1 An operator must ensure that a meteorological visibility to RVR conversion is not used for calculating take-off minima, Category II or III minima or when a reported RVR is available.

3.8.2 When converting meteorological visibility to RVR in all other circumstances than those in paragraph (3.8.1) above, an operator must ensure that the following table is used:

TABLE 9: CONVERSION OF VISIBILITY TO RVR		
Lighting elements in operation	**RVR = Reported MET Visibility x**	
	Day	**Night**
HI approach and runway lighting	1.5	2
Any type of lighting installation other than above	1	1.5
No lighting	1	Not applicable

4 LOW VISIBILITY PROCEDURES (LVP's)

4.1 Introduction

These procedures have been devised to simplify the differing requirements of Category II and III operations.To achieve this, during the relevant weather conditions (see 2 below), the localizer sensitive area (LSA) is to be safe guarded. This ensures the protection of the localizer signal against interference and at the same time effectively meets the obstacle free zone (OFZ) requirements.

4.2 General

ATC Low Visibility Procedures become effective when:

a) The lowest RVR is less than 600 metres.
b) The cloud ceiling is 200 feet or less irrespective of the serviceability state of the ILS, lighting, standby power, e.t.c.

Pilots can expect ILS localizer and glide path signals to be fully protected from interference during the final approach, from the time that pilots are notified that LVP's are in operation until the time that pilots are notified that LVP's have been cancelled.

ATC will inform pilots when LVP's is in force. This may be obtained via the ATIS.

4.3 Localizer Sensitive Area (LSA)

For practicable purposes, the LSA is a rectangular area contained within parallel lines 150 m either side of the runway centreline and between the localizer aerial and the beginning of the runway demarcated by the airport authority.

No person, vehicle or aircraft is to be permitted to infringe the LSA from the time when:

a) An approaching aircraft is 10 NM from touchdown until it has vacated the LSA.
b) A departing aircraft has commenced its take-off run until it is airborne, and has passed the LOC antenna.

NOTE:
This means that landing or take-off clearance must not be issued if the LSA is known to be impaired.

4.4 Information to Pilots

In addition to the information normally transmitted by ATC, the following information must be passed by the appropriate controller to the pilot of every arriving aircraft: The current RVR readings for the landing runway.

4.5 Responsibility of Duty Airport Manager

The duty Airport Manager must notify all relevant instances including:

Avionicians

Electricians
Meteorological section
Police
All aircraft operators based on aerodrome
Fire Department
In-flight Catering Companies

Aerodrome Maintenance Personnel

i) That LVP's are in operation and to institute their respective ground safeguarding procedures.
ii) That LVP's are no longer in force.

4.6 Holding Points

In order to comply with the safeguarding requirements, aircraft awaiting take-off clearance must hold at the Category II holding positions, defined by painted taxiway markings, stopbar lights or at designated Category III holding positions, defined by stopbar lights and painted taxiway markings.

Above procedures are based on information contained in ECAC/CEAC document 17.

FAILED OR DOWNGRADED EQUIPMENT.		**EFFECT ON LANDING MINIMA.**	
		CAT II	**CAT III**
ILS(SEE NOTE 1).	ILS LOCALIZER DOWNGRADED TO CAT II.	NOT APPLICABLE.	NOT AUTHORISED.
	ILS LOCALIZER DOWNGRADED TO CAT I.	NOT AUTHORISED.	NOT AUTHORISED.
	ILS GLIDE PATH DOWNGRADED TO CAT II.	NOT AUTHORISED.	NOT AUTHORISED.
	ILS GLIDE PATH DOWNGRADED TO CAT I.	NOT AUTHORISED.	NOT AUTHORISED.
	ILS LOC AND/OR GP STANDBY TRANSMITTER U/S.	NOT ESSENTIAL.	NOT AUTHORISED.
	ILS TRANSMITTER STANDBY POWER SOURCE.	NOT AUTHORISED.	NOT AUTHORISED.
	OUTER MARKER.	USE ALTERNATIVE EG. LOCATOR NDB/ DME.	USE ALTERNATIVE MEANS EG LOCATOR NDB, DME.
	MIDDLE MARKER.	NOT REQUIRED.	NOT REQUIRED.
RVR (SEE NOTE 4)	TOUCHDOWN ZONE RVR NOT AVAILABLE.	NOT AUTHORISED.	NOT AUTHORISED.
	MIDPOINT RVR NOT AVAILABLE.	NOT AUTHORISED.	NOT AUTHORISED.

FAILED OR DOWNGRADED EQUIPMENT.		EFFECT ON LANDING MINIMA.	
APPROACH LIGHTS (SEE NOTES 1 & 3).	NO APPROACH LIGHTS.	NOT AUTHORISED.	FAIL OPERATIONAL AUTO LAND ONLY
	210M OF APPROACH LIGHTS AVAILABLE AS MEASURED FROM THRESHOLD.	NOT AUTHORISED	NO RESTRICTION.
	450M OF APPROACH LIGHTS AVAILABLE AS MEASURED FROM THRESHOLD.	NO RESTRICTION	NO RESTRICTION.
	SECONDARY POWER FOR APPROACH LIGHTS NOT AVAILABLE.	INCREASE RVR MINIMA TO 450M.	NO RESTRICTION.
RUNWAY LIGHTS (SEE NOTES 1 TO 4)	NO RUNWAY LIGHTS AVAILABLE (RWY EDGE THRESHOLD, END, CENTRE LINE AND TDZ LIGHTS U/S	NOT AUTHORISED	NOT AUTHORISED
	RUNWAY EDGE LIGHTS (INCLUDING THRESHOLD & END LIGHTS) NOT AVAILABLE. CENTRE LINE AND TDZ LIGHTS NORMAL	REQUIRED FOR MANUAL LANDINGS.	NOT REQUIRED.
	CENTRE LINE LIGHTS NOT AVAILABLE.	NOT AUTHORISED	NOT AUTHORISED
	TDZ LIGHTS NOT AVAILABLE.	DAY OPS AUTHORISED CLL MUST BE SERVICEABLE.	FULL OPS AUTO LAND ONLY. FAIL PASSIVE (DAY) AS FOR CAT II.
	SECONDARY POWER FOR RUNWAY LIGHTS NOT AVAILABLE. (ONLY REQUIRED FOR NIGHT OPERATION.	DAY OPS AUTHORISED IF RWY SURFACE MARKING CONTRAST IS GOOD.	NOT AUTHORIZED.
TAXIWAY LIGHTS.	TAXIWAY LIGHTING.	EDGE LIGHTS AND CL MARKS REQUIRED.	STOPBARS & CL LIGHTS REQUIRED. IF RVR IS LESS THAN 150M.
OTHER EQUIPMENT.	ANEMOMETER NORMALLY SERVING RWY IN USE.	USE OTHER SOURCE.	USE OTHER SOURCE.
	CEILOMETER.	NOT REQUIRED.	NOT REQUIRED.
	PAPI/VASI.	NOT REQUIRED.	NOT REQUIRED.

Note 1. In case of downgrading of ILS and deficiencies in lights determine first which approach category applies. Then check effect of lighting deficiencies for that category.

Note 2. For runway lights, multiple failures other than indicated in table are not approved.

Note 3. Deficiencies of approach and runway lights are treated separately and do not affect each other.

Note 4. Deficiencies in runway lights and RVR report, are not allowed together.

Note 5. 5% of any category of required lighting (ie. approach, TDZ, runway edge, centre line, taxiway lighting), may be inoperative, providing the pattern of lights is not distorted.

APPENDIX A

ABBREVIATION	DECODE
AIP SUP	Aeronautical Information Publication Supplement
ALT	Altitude
ATC	Air Traffic control
ATS	Air Traffic Service
C	Celsius
CAT	Category
CEAC	Common European procedures for the Authorization of CAT II and III operations
CLL	Centre Line Lights
DH	Decision Height
DA	Decision Altitude
EAT	Expected Approach Time
ECAC	European Civil Aviation Conference
ETA	Estimated Time of Arrival
FAF	Final Approach Fix
GCA	Ground Controlled Approach
HI	High Intensity
IAF	Initial Approach Fix
IAP	Instrument Approach Procedure
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
ILS	Instrument Landing System
KT/KTS	Knot/Knots
LI	Low Intensity
LOC	Localizer
LSA	Localizer Sensitive Area
LVP	Low Visibility procedures
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MET	Meteorology
MLS	Microwave Landing System
MSA	Minimum Sector Altitude

ABBREVIATION	DECODE
MSL	Mean Sea Level
NDB	Non Directional Beacon
NM	Nautical Mile
NOTAM	Notice to Airmen
OCA	Obstacle Clearance Altitude
OCH	Obstacle Clearance Height
OCT	Onward Clearance Time
OFZ	Obstacle Free Zone
PAR	Precision Approach Radar
RVR	Runway Visual Range
RWY	Runway
TAS	True Airspeed
TDZ	Touch Down Zone
THR	Threshold
VDP	Visual Descent Point
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VOR	Very High Frequency Omni-directional Range
VIS	Visibility

5 REDUCED VERTICAL SEPARATION MINIMUM (RVSM)

5.1 INTRODUCTION

Reduced Vertical Separation Minimum (RVSM) refers to vertical separation of aircraft by 1000 ft above Flight Level (FL) 290. Only State RVSM approved aircraft, will be permitted to operate in RVSM airspace within the South African Area of Responsibility (FAJA, FACA and FAJO FIRs).

After prior coordination with the appropriate ATC centre, State Aircraft (Military, Police and Customs) not RVSM approved will be cleared to operate within RVSM airspace within the South Africa Area of Responsibility, Two Thousand Foot (2000 ft) vertical separation will be applied to such aircraft.

Operators are to note that with the implementation of RVSM, FL 420 is no longer regarded as a valid Flight Level. The next available Flight Level will be FL 430.

In the event of a Two Thousand Feet (2000FT) separation being applied between aircraft within the RVSM flight level band, appropriate RVSM flight levels will be applied.

References: AFI Regional Supplementary Procedures (Doc 7030)ICAO Annex 2 Appendix 3 (a) refers.

5.2 OPERATION ABOVE FLIGHT LEVEL (FL) 410

Taking into consideration the extended distances of sectors which may be flown by operators,

allowance has been made for those non RVSM approved aircraft which are capable of operating at flight levels above FL410.

Restrictions placed on flights planning to operate at flight levels above FL410 require the climb to the planned flight level, once authorized and commenced under ATC clearance, to be conducted without interruption until clear of the RVSM flight level band. Conversely, once authorized and commenced under ATC clearance, descent from flight levels above FL410 are to be conducted without interruption until clear of the RVSM flight level band.

Non-RVSM approved aircraft intending to operate above FL 410 will need to flight plan in accordance with RVSM procedures of neighbouring Regions should the flight commence or terminate in those regions.

Reference: AFI Regional Supplementary Procedures (ICAO DOC. 7030)

5.3 DISCONTINUANCE OF OPERATIONS FOR NON RVSM APPROVED AIRCRAFT BETWEEN FLIGHT LEVEL (FL) 290 AND FLIGHT LEVEL (FL) 410 INCLUSIVE.

With the exception of State Aircraft non RVSM approved (Military, Police and Customs), all other non RVSM approved aircraft are permanently excluded from operations in the airspace between FL290 and FL410 inclusive.

Non RVSM approved aircraft are to plan for operations at FL280 or below, alternately above FL410.

5.4 IMPLEMENTATION OF REDUCED VERTICAL SEPARATION MINIMA (RVSM) WITHIN SOUTH AFRICAN AIRSPACE - Submission of Flight Plans for flight within RVSM airspace.

1) The following requirements when submitting flight plans for flight within the designated RVSM airspace are to be complied with.

2) The letter W shall be inserted in item 10 (Equipment) of the flight plan if the aircraft and operator have received RVSM State approval, regardless of the requested flight level. The aircraft registration shall be inserted in item 18 of the flight plan.
3) Operators of non-RVSM-approved State aircraft (Military, Police, Customs), with a requested flight level of 290 or above shall insert STS/NON RVSM in item 18 of the flight plan.

6 Aircraft lighting as a measure to prevent runway incursions

To reduce incidences of Runway incursions and to enhance situational awareness of an aircrafts intended movement, pilots should display aircraft exterior lights according to the guidelines stipulated below.

Prior to starting engines	Rotating Beacon on
Prior to taxi/push back	NAV lights on
Commencement of taxi	Taxi light on
Entering a runway for take off	Strobe light on
On receiving take off clearance	Landing light on
Crossing a runway	All above exterior lighting on (Including Strobe)

Pilots should endeavour to display those lights as are fitted to the aircraft as per the above guidelines however they may choose to make the aircraft more visible to other pilots or ground crew by any additional means or lighting, where the pilot in command deems it necessary (i.e. operating additional aircraft exterior lights on a congested Apron).

7 Callsign Appendices to annotate special handling requirements by ATC

Certain flights require specialised handling by Air Traffic Controllers to ensure optimum processing of the flight within the Air Traffic Management system. By using certain callsign appendices, the Air Traffic Controller is more aware of the type of flight and applicable service that should be provided to such flight. The use of the callsign appendix does not preclude the flight crew from completing normal notification on the Flight Plan and all required annotations that a flight requires special handling should still be made on the Flight Plan when this is filed before a flight. The use of the callsign appendix is an additional reminder of the requirement for special handling and in line with international best practice, flight crews should use the following callsign appendices when they wish to denote that the flight requires special handling.

Only the flight crew will use the callsign appendix and the ATC Unit handling the flight will not repeat the appendix of the callsign when issuing instructions to the flight.

The callsign appendix only needs to be used by the flight crew on first contact with the relevant ATC Sector.

a) Wake Turbulence

Heavy Wake Turbulence		
ACFT categorised as Heavy require ADDN spacing in front of other ACFT of lesser wake turbulence and incorrect spacing of a lighter ACFT behind a Heavy ACFT may result in the lighter ACFT encountering the wake turbulence of the heavy ACFT and be placed in danger.		
Callsign Appendix (Prefix or Suffix)	**Heavy**	**Suffix**
Flight Crew Actions	**ATC Actions**	
Flight crews of Heavy wake turbulence ACFT should use the suffix HEAVY on first contact with the following sectors; Clearance Delivery, Ground, Tower, Approach. It is not necessary to use the suffix with en- route/area sectors, as no additional spacing is required in these sectors.	ATC shall ensure that the correct departure, taxi route and runway allocation is issued to such ACFT. ATC shall also ensure that all following ACFT of lessor wake turbulence are adequately separated by the prescribed wake turbulence minima.	
Example	Tower, Airline 326 HEAVY.	

Super Heavy Wake Turbulence		
ACFT categorised as Super Heavy require ADDN spacing in front of other ACFT of lesser wake turbulence and incorrect spacing of a lighter ACFT behind a Super Heavy ACFT may result in the lighter ACFT encountering the wake turbulence of the heavy ACFT and be placed in danger.		
Callsign Appendix (Prefix or Suffix)	**Super**	**Suffix**
Flight Crew Actions	**ATC Actions**	
Flight crews of Super Heavy wake turbulence ACFT should use the suffix Super on first contact with the following sectors; Clearance Delivery, Ground, Tower, Approach. It is not necessary to use the suffix with en-route/area sectors, as no additional spacing is required in these sectors.	ATC shall ensure that the correct departure, taxi route and RWY allocation is issued to such ACFT. ATC shall also ensure that all FLW ACFT of lessor wake turbulence are adequately separated by the prescribed wake turbulence minima.	
Example	Tower, Airline992 Super.	

b) Medical Flights

Hospital Flights		
A Hospital flight is a medical flight that requires preferential routing, but can be subjected to a short delay provided that the delay is less than 10 minutes maximum. Usually an operator may use the callsign suffix Hospital when being dispatched to pick up a patient on a long route sector and the patient is not yet on board. The suffix may also be used when the patient is on board but not critical. However, flight crews are unable to determine the status of the patient unless a medical doctor on board has notified them of the patient's condition and is able to remain in direct contact with the flight crew. Hospital flights shall be annotated as STS/HOSP in field 18 of the Flight Plan. The purpose of the differentiation between Hospital and Medevac is that a controller shall still provide the Hospital flight with priority, but will not necessarily re-route other traffic that is marginally ahead or provides for a better sequence for a Hospital flight. A Hospital flight shall not normally be delayed for longer than 10 minutes maximum in holding. A Hospital flight may be upgraded to a Medevac flight at any stage in flight should the flight crew be advised that the patient's status is such that preferential treatment is needed.		
Callsign Appendix (Prefix or Suffix)	**Hospital**	**Suffix**
Flight Crew Actions	**ATC Actions**	
Flight crews of Medical flights which require priority handling but where a minimal delay can be accepted without having to re-route other aircraft shall use the prefix Hospital on first contact with all ATC Sectors. The term Hospital should not be used for ferry, test, training or positioning flights where there is no medical response needed.	ATC shall ensure that all Hospital flights receive the utmost priority, but shall not be required to re-route or position a Hospital flight ahead of another flight that may be marginally ahead or better positioned for the applicable sequence. A Hospital flight should not be delayed by more than 10 minutes as far as practical and if the delay is more than 10 minutes the flight crew shall immediately be advised thereof.	
Example	Approach, Airline574 Hospital.	

Medevac Flights		
A Medevac flight is a medical flight that requires preferential routing where no or minimal delay can be accepted due to the critical nature of the patient either on board or at the destination that the flight is routing to. Typically, the only time Medevac would be used by medical flights where no patient is on board is when responding to an accident scene or a case (in the case of EMS Helicopters or similar) or where a quick evacuation of the patient is required at the destination. Medevac flights require the highest level of preferential treatment and if necessary shall require other flights to be held or re-routed to ensure that no or minimal delay is afforded to the Medevac flight. Medevac flights shall be annotated as STS/MEDEVAC in field 18 of the Flight Plan.		
Callsign Appendix (Prefix or Suffix)	**Medevac**	**Suffix**
Flight Crew Actions	**ATC Actions**	
Flight crews of medical flights that require priority handling where no or minimal delay can be accepted due to the critical nature of the patient on board shall use the prefix Medevac on first contact with all ATC Sectors	ATC shall ensure that all Medevac flights receive the utmost priority and if necessary require other aircraft to be re-routed or held to accommodate the Medevac flight. A Medevac flight should not be delayed as far as practical and if a delay is inevitable the flight crew shall immediately be advised thereof.	

The Term Medevac should preferably only be used with a patient on board unless the flight is responding to an accident scene (i.e. EMS Helicopter) or the patient requires a quick evacuation from the destination aerodrome. In most other cases the term Hospital should be used when no patient is on board and the flight may be subjected to minor delays in sequencing. The Term Medevac should not be used for ferry, test, training or positioning flights where no medical response is needed.	
Example	Area, Airline786 Medevac.

c) Training Flights

Student Flights		
A Student flight is a flight where an ab-initio Student pilot is receiving flight instruction for a PPL (H-PPL). The prefix Student would be used by pilots holding a Student Pilot License only and not for pilots receiving conversion or higher training once having obtained a PPL.		
Callsign Appendix (Prefix or Suffix)	**Student**	**Prefix**
Flight Crew Actions	**ATC Actions**	
Student Pilots shall use the prefix Student on first contact with an ATC Sector to denote that ab-initio Student training is occurring on the flight for the acquisition of a PPL.	ATC shall be aware that the flight has an ab-initio student on board and where applicable shall provide progressive instructions or clearances.	
Example	Tower, Student ABC.	

Solo Student Flights		
A Solo Student flight is a flight where an ab-initio Student pilot has been sent solo in preparation for obtaining a PPL (H-PPL) and is doing solo circuits or GF work whilst still holding a Student Pilots License.The prefix Solo Student would only be used by pilots holding a Student Pilot License and not for pilots receiving conversion or higher training once having obtained a PPL		
Callsign Appendix (Prefix or Suffix)	**Solo - Student**	**Prefix**
Flight Crew Actions	**ATC Actions**	
Solo Student Pilots shall use the prefix Solo Student on first con-tact with an ATC Sector to denote that a Solo Student flight is occurring for the acquisition of a PPL.	ATC shall be aware that the flight has a student on board and where applicable shall provide progressive instructions or clearances.	
Example	Tower, Solo Student ABC.	

d) Flights that have Special Manoeuvring Characteristics

Helicopters		
A Helicopter is by nature more manoeuvrable than fixed wing aircraft; as such a helicopter can be requested to route at speeds and or routes not normally possible by fixed wing aircraft. Helicopters also have different VFR and minima from fixed wing aircraft and thus may be accommodated at lower minima than other fixed wing traffic.		
Callsign Appendix (Prefix or Suffix)	**Helicopter**	**Prefix**
Flight Crew Actions	**ATC Actions**	
A Helicopter pilot should consider using the prefix Helicopter on first contact with an ATC Sector to denote that the flight is being undertaken in a helicopter. Special consideration should be given in using this prefix when the registration marking does not make it easily discernable that the aircraft is a helicopter (i.e. not starting with H or R)	ATC shall provide routing and clearances as applicable to helicopter traffic.	
Example	Tower, Helicopter RBH.	

Gliders		
A glider is by nature less manoeuvrable than a powered fixed wing aircraft due to the fact that a glider cannot usually maintain an altitude fora sustained period of time. Gliders also have larger than normal wingspans and require special ground handling.		
Callsign Appendix (Prefix or Suffix)	**Glider**	**Prefix**
Flight Crew Actions	**ATC Actions**	
A glider pilot should consider using the prefix Glider on first contact with an ATC Sector or when broadcasting on a TIBA Frequency to de note that the flight is being undertaken in a glider. Special consideration should be given in using this prefix when the registration marking does not make it easily discernable that the ACFT is a helicopter (i.e. not starting with G)	ATC shall provide routing and clearances as applicable to glider traffic bearing in mind that an altitude may not be able to be maintained by the glider and that the glider may have to commence a number of turns whilst Thermalling to gain altitude.	
Example	Information, Glider GEL.	

Motor Gliders		
A Motor Glider may be as manoeuvrable as a powered fixed wing aircraft however the motor may not always be deployed on the glider and then aircraft will perform similar to a normal glider. Motor gliders have retractable power plant that when switched off shall normally fold away either into the nose cone or the fuselage of the aircraft. With the engine retracted the aircraft shall perform like a conventional glider and may not be able to maintain an altitude for a sustained period of time. Should the pilot need to deploy the engine again the time this takes for deployment and restart may vary depending on glider type.		
Callsign Appendix (Prefix or Suffix)	**Motor Glider**	**Prefix**
Flight Crew Actions	**ATC Actions**	

Motor Gliders	
A motor glider pilot should consider using the prefix Motor Glider on first contact with an ATC Sector or when broadcasting on a TIBA Frequency to denote that the flight is being undertaken in a Motor Glider.	ATC shall provide routing and clearances as applicable to glider traffic bearing in mind that an altitude may not be able to be maintained by the glider and that the glider may have to commence a number of turns whilst Thermalling to gain altitude.
Example	Information, Motor Glider GHC.

Hot Air Balloons		
A Hot Air Balloon is by nature less manoeuvrable than a powered fixed wing aircraft due to the fact that a balloon cannot usually control the direction of flight that it is moving in. The balloon pilot may be able to climb or descend however these commands shall take considerable time and depending on the altitude they are required to reach. Balloons also require special ground handling.		
Callsign Appendix (Prefix or Suffix)	**Balloon**	**Prefix**
Flight Crew Actions	**ATC Actions**	
A Hot Air Balloon Pilot should consider using the prefix Balloon on first contact with an ATC Sector or when broadcasting on a TIBA Frequency to denote that the flight is being undertaken in a Balloon.	ATC shall provide routing and clearances as applicable to balloon traffic bearing in mind that the direction of flight cannot be directly controlled by the pilot and is subject to wind and air movement.	
Example	Tower, Balloon BAL.	

Airships		
An Airship is by nature less manoeuvrable than a powered fixed wing aircraft due to the fact that the airship operates at slower speeds thana normal aircraft. The turning radius of an airship also differs vastly from that of a fixed wing aircraft. Although Airships are more manoeuvrable than Hot Air Balloons as they have full flight controls, they operate at speeds typically slower than most fixed wing traffic. Airships also usually require special ground handling.		
Callsign Appendix (Prefix or Suffix)	**Airship**	**Prefix**
Flight Crew Actions	**ATC Actions**	
An Airship pilot should consider using the prefix Airship on first contact with an ATC Sector or when broadcasting on a TIBA Frequency to de-note that the flight is being undertaken in an Airship.	ATC shall provide routing and clearances as applicable to Airship traffic bearing in mind that the speed and manoeuvrability of an air-ship differs from that of fixed wing traffic.	
Example	Tower, Airshop ZBC.	

e) Emergency Traffic

Mayday		
Usually when an aircraft declares an Emergency the radio transmission is started with the words Mayday, Mayday, Mayday however an air-craft that has been transferred from one frequency to another whilst still under the state of emergency should re-iterate that state that the aircraft has declared on first contact with each additional ATC Sector. Although ATCs are required to coordinate the emergency state prior to hand over the additional use also assists in allowing Emergency services and other traffic to identify the traffic requiring priority handling.		
Callsign Appendix (Prefix or Suffix)	**Mayday**	**Suffix**

Mayday	
Flight Crew Actions	**ATC Actions**
A Flight Crew that has declared and emergency shall on first contact with each new ATC Sector after declaring such, use the suffix Mayday with the callsign	ATC shall provide preferential routing and alerting services as required for the type of Emergency being experienced. Other traffic should be re-routed or held to accommodate the emergency traffic as far as practical.
Example	Approach, SEM Mayday...

Pan		
Usually when an aircraft declares a State of Urgency the radio transmission is started with the words Pan, Pan, Pan, however an aircraft that has been transferred from one frequency to another whilst still under the state of urgency should re-iterate that state that the aircraft has declared on first contact with each additional ATC Sector. Although ATCs are required to coordinate the Urgency state prior to hand over the additional use also assists in allowing Emergency services and other traffic to identify the traffic requiring priority handling.		
Callsign Appendix (Prefix or Suffix)	**Pan**	**Suffix**
Flight Crew Actions	**ATC Actions**	
A Flight Crew that has declared a state of Urgency shall on first contact with each new ATC Sector after declaring such, use the suffix Pan with the callsign.	ATC shall provide preferential routing and alerting services as required for the type of Emergency being experienced. Other traffic should be re-routed or held to accommodate the emergency traffic as far as practical.	
Example	Approach, WMN Pan...	

8 STRATEGIC LATERAL OFFSET PROCEDURES (SLOP) WITHIN THE SOUTH AFRICAN RNAV ROUTE STRUCTURE

8.1 Background

When Reduced Vertical Separation Minimum (RVSM) was implemented and the uptake of Global Navigation Satellite System (GNSS) became apparent, the risk of mid-air collision was increasing exponentially.

The obvious solution to reduce the vertical overlap risk in the system to meet the Target Level of Safety was to reduce the vertical overlap probability by recreating the randomness that RVSM and GNSS had removed from aircraft distribution. The result was the implementation of a lateral offset in increments of one mile.

Applying an offset to the right of track significantly reduces the collision risk between aircraft on same tracks and/or opposite tracks. The aircraft obtains lateral spacing from nearby aircraft that are immediately above and/or below.

8.2 Conditions

A flight crew should only apply SLOP if the following conditions are satisfied:

8.2.1 The appropriate ATS authority has authorised the application of SLOP in the airspace concerned and promulgated in aeronautical information publications (AIPs);

8.2.2 The aircraft is equipped with automatic offset tracking capability; and

8.2.3 The maximum allowed lateral offset for Phase I and II is detailed below. Only aircraft capable of offsetting in a fraction of a mile should apply SLOP.

NB - When operating in airspace where SLOP has been authorized, the decision to apply SLOP is the responsibility of the flight crew.

There is no ATC clearance required for this procedure and it is not necessary to advise ATC.

8.3 Application

Pilots are advised to use SLOP as standard operating procedure during normal operations on fixed RNAV route portions and FAJO airspace as described below to mitigate collision risk and wake turbulence;

8.3.1 Phase I

SLOP (Up to 0.5NM right of track) is approved on the following Bi-directional RNAV route portions listed below as published in the RSA AIP (ENR 3.3-12):

a) UQ21 (Between (ALENI – EGSOX)
b) UQ5 (Between (GEVIS – ESRET – RBV)
c) UQ17 (Between (ANVED – TGV)
d) UQ33 (Between (EPMAK – EKBOX – PEV)
e) UL211F (Between (APKIN – ITLIK)
f) UL224 (Between (APKIN – ITMEK)
g) UQ15 (Between (APKIN – OKDOG)

8.3.2 Phase II

SLOP (Up to 2NM right of track) is approved in FAJO airspace as published in the RSA AIP (ENR 2.1-37):

8.4 Conclusion

Aircraft utilising SLOP on the above mentioned RNAV route portions are to ensure that they immediately return to the nominal track of the specific RNAV's after exiting the areas of SLOP approval as listed in Phase I above.

Aircraft utilising SLOP in FAJO airspace are to ensure that they immediately return to the nominal track of RNAV/Routing's upon exiting FAJO as per adjoining airspace AIP requirements. Transiting from FAJO to FACA/FAJA airspace, the transition from 2NM SLOP to 0.5NM SLOP is required on the RNAV portions listed in Phase I above.

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ENR 1.9 AIR TRAFFIC FLOW MANAGEMENT AND AIRSPACE MANAGEMENT

1 AIRPORT SLOT ALLOCATION AND AIR TRAFFIC FLOW MANAGEMENT PROCEDURES

PART 1. AIRPORT SLOT ALLOCATION PROCEDURES.

AIRPORT SLOT COORDINATION SOUTH AFRICA:

Air Traffic and Navigation Services (ATNS) is the appointed and recognized International Air Transport Association (IATA) slot coordination for South African airports. The primary function of the team is airport slot coordination and monitoring operational slot compliance performed in accordance with:

-South African airports slot regulations
-IATA worldwide slot guidelines (WSG)
-IATA standard schedules information manual (SSIM)
-Airport specific local rules

Office hours are between 0600-1400 on weekdays (excluding public holidays). Contact numbers are +2711 928 6589, +2711 928 6473 and +2711 928 6434.

All slot requests are to be submitted to the following e-mail address: coord@atns.co.za.

After hours contact details:
Airports company South Africa (ACSA) provides a slot booking service from 1400-1900 daily, and 0600-1900 on weekends and public holidays.
Tel: + 2710 207 2001
E-mail: slots@airports.co.za

Note: Please note that the after hours service is limited to ad-hoc requests and does not facilitate slot information request (SIRS), slot availability query (SAQS), requests for series of slots, slot compliance queries or initial submissions. All slots for the following day must be received by the slot coordination office or after hours service (ACSA) within their relevant duty hours in order for the slot requests to be processed. Slot requests for the same day of operation must be submitted to the relevant airport manager. Delays may result if slots are not requested timeously.

PART 2: AIR TRAFFIC FLOW MANAGEMENT (ATFM) PROCEDURES

1) INTRODUCTION

1.1 The responsibility for the management of air traffic flow and capacity management within South African sovereign and delegated airspace resides with the Central Airspace Management Unit (CAMU) which is established at the Johannesburg ATC Centre. The units responsibility includes, apart from managing the functions of the slot allocation program, the management of the flexible use of airspace (FUA), facilitating military

exercises and operations, special and unusual events and any other activity which might require the use of airspace for a particular time period. The unit is also responsible for the re-routing of traffic, affected by adverse weather and temporary restricted or special use airspace in consultation with the aviation community in a collaborative decision making (CDM) process. In addition they will balance demand against capacity using the ATFM system after CDM with the appropriate aviation community members.

1.2 Air traffic flow and capacity management has become a vital part of air traffic management in exploiting the full capacity of the air transport system without running the risk of infringing upon safety caused by overload situations. In future the management of ATC capacity will become equally important as managing the traffic flows.

1.3 ATFM procedures in South Africa, in addition to the general description above are in conformance with the procedures set out in ICAO DOC 4444 - Air Traffic Management Operating procedures for the CAMU ATFM System (internal document) and the Enhanced ATFM Operators Manual (available for download at https://www.atns.com/PDF/ATFM/ENHANCED ATFM OPERATORS MANUAL.pdf).

1.4 The enhanced air traffic flow management (ATFM) service is established within South African sovereign and delegated airspace. The service will be provided from the CAMU, which is supported by Flow Management Positions (FMP) established in appropriate control centres.

1.5 The objectives of the enhanced ATFM services are to:

i) Reduce ground and en-route delays;
ii) Maximise capacity and optimise the flow of air traffic;
iii) Provide an informed choice between departure delay, re-routing and/or flight level selection;
iv) Alleviate unplanned in-flight rerouting;
v) Assist ATS Units in planning for and managing future workload in the light of forecast increased traffic flows within South Africa;
vi) Assessing the impact of FUAs and Temporary segregated areas (TSAs) on the air traffic control system;
vii) Provide improved solutions around predicted severe weather;
viii) Balance the demand against capacity of ATC sectors, air routes and aerodromes;
ix) Determine the necessity for an airspace/ground delay program and other traffic management initiatives (TMIs) and to enact them, and;
x) Enabling aircraft operators to operate as close to their preferred trajectories.

1.6 Responsibility for ATFM Measures

The CAMU, in co-operation with the Flow Management Positions, including regional ACCs, is responsible for the execution of ATFM measures within the Johannesburg, Cape Town and Johannesburg Oceanic FIRs.

1.7 ATFM Phases

ATFM has 3 phases:

i) Strategic Flow Management takes place two days or more prior to the day of operation and includes research, planning and coordination activities. This phase consists of analysing the evolution of the forecast demand, historical data and the identification of potential new problems and in evaluating possible solutions.

ii) Pre-Tactical Flow Management is applied during two days prior to the day of operation and consists of planning and coordination activities. This phase analyses and decides on the best way to manage the available capacity resources and on the need for the implementation of flow measures. One output is the Daily Airspace Plan (DAP) published via the ATNS website (https://atns.com/wp-content/uploads/2019/09/DAP-5.pdf) and sent via email to subscribers.

iii) Tactical Flow Management is applied on the day of the operation. This phase updates the daily airspace plan according to the actual traffic and capacity. The management of the traffic is made through ATC slot allocation and/or ad-hoc rerouting.

1.8 Areas subjected to ATFM

1.8.1 The ATFM adjacent area is the area, adjacent to Johannesburg and Cape Town FIRs; this includes all the regional airspaces adjoining South Africa.

The CAMU may apply ATFM Measures to flights which:

a) Depart or arrive at: OR Tambo (FAOR), Cape Town (FACT), King Shaka (FALE), Bram Fischer (FABL), Lanseria (FALA), George (FAGG), Chief Dawid Stuurman (FAPE), King Phalo (FAEL), and Kruger Mpumalanga INTL Airport (FAKN). Other aerodromes and airspaces within the Johannesburg and Cape Town FIRs could also be subjected to ATFM.

b) Enter the Johannesburg, Cape Town and Johannesburg Oceanic FIRs after departing from an adjacent Flight Information Region (FIR) within the ATFM adjacent area.

1.9 ATFM Measures

1.9.1 When adverse conditions affect an aerodrome or a part of the airspace, the capacity of that airspace could be affected, resulting in unoptimised traffic flows through the South African National Airspace, the following ATFM measures could be implemented:

i) Ground Delay Program (GDP) may be instituted so as to delay the flights on the ground and avoid excessive airborne holding or re-routings. An Airspace Flow Program (AFP) may also be instituted for an airspace constraint. When an Airspace Flow Program (AFP) is declared, the area subjected to the program will be called a Flow Constraint Area (FCA).

ii) When adverse conditions or major facility outages cause demand to exceed capacity to such a degree that gridlock occurs, then a Ground Stop (GS) may be declared at an aerodrome.

iii) Level capping, and;

iv) Rerouting of aircraft.

1.9.2 If an Aircraft Operator (AO) would benefit from a reroute or level capping in-lieu of a departure delay then a Reroute Proposal (RRP) would be offered. Aircraft Operators would be required to respond by the time indicated in the message, to take advantage of the RRP.

1.9.3 The emphasis for ATFM measures is not to use traffic management initiatives (TMIs) exclusively (delaying aircraft on the ground) but more towards capacity management. Only when no other option is available will traffic management initiatives be applied and tactical ATC slots issued in the form of calculated take off times (CTOTs).

1.10 Functions of the Air Traffic Flow Management Position

1.10.1 The Air Traffic Flow Management (ATFM) position within the CAMU, is manned by Air Traffic Flow Specialists (ATFS) who have Air Traffic Control experience and was established to further enhance CDM and its practical application in ATC operations. In pre-tactical flow management they manage the preparation of the Daily Airspace Plan (DAP). For all ATFM operations, the ATFS is the point of contact with the aviation community concerning ATFM measures.

1.10.2 ATFS will play an important role during special events and in the event of crisis situation in South Africa whereby they will lead coordination with the aviation community.

1.10.3 Through the daily activities of the CAMU, the ATFM position is the focal point for strategic, pre-tactical and tactical information about the airspace and ATFM situation in South Africa. The ATFS will liaise with all relevant aviation community members, aerodrome operators and ATS Units, proposing and implementing ATFM developments. The ATFS will continue to monitor the national airspace system and amend or implement TMIs as required, continually ensuring demand is balanced against capacity and the equity of all airspace users.

2 AIR TRAFFIC FLOW MANAGEMENT PROCEDURES

2.1 Information on ATFM Measures

Information on ATFM measures will be distributed by the CAMU via the following methods:

2.1.1 Bi-annual Airspace Operations Plan

The Bi-annual Airspace Operations Plan (AOP) document provides a consolidated view of the forecast seasonal ATFM situation which includes the traffic and capacity forecast, bottleneck identification and description of the associated ATFM and Traffic Management Initiatives (TMI). The AOP is the final result of the operations planning process which consolidates inputs from the aviation community involved in airspace management operations (i.e. ATS Units, Aerodromes, Airspace Users, Military, etc.). The AOP is published biannually by the CAMU - with summer and winter releases. Each release is usually updated twice per season.

2.1.2 The Daily Airspace Plan (DAP)

The Daily Airspace Plan (DAP) is produced the day prior to the day of operation. The Daily Airspace Plan (DAP) will provide a summary of planned ATFM measures for the 24 hours period. It is updated regularly. The current days Daily Airspace Plan (DAP) is the result of up to seven days of research, and historical data analysis within the CAMU ATFM system.

2.1.3 The ATFM Flow Advisory Message (FAM)

The Flow Advisory Message (FAM) providing information to ATS Units, Aerodrome Operators and Aircraft Operators about the implementation, revision, compression, and cancellation of a Ground Delay Program (GDP), Ground Stop (GS) and Airspace Flow Program (AFP) will be transmitted. Except for the cancellation of a Ground Delay Program (GDP) or Airspace Flow Program (AFP), the FAM may include the following items:

- Aerodrome or Airspace;
- Delay Assignment Mode;
- Time frame;
- Program Type (Optional);
- Program Rate;
- Flights Included (Optional, will be available on CAMU Web and on message exchange)
- Scope;
- Additional ATC Units Included;
- Exempt ATC Units;
- Delay Assignment Table Applies To (Optional);
- Maximum Delay or Delay Limit (As appropriate);
- Average Delay (Optional);
- Reason;
- Remarks.

The Daily Airspace Plan (DAP) and Flow Advisory Message (FAM) will be transmitted via AFTN and/or email to ATS Units and those Aircraft Operators and Aerodrome Operators who wish to be included in the address list.

2.1.4 Collaborative Decision Making (CDM) Teleconference (Telcon)

a) Collaborative Decision Making (CDM) will allow decisions to be taken; after collaboration of relevant aviation community members, on the basis of the most comprehensive, up-to-date and accurate information. This in turn will facilitate decisions about flights to be made according to the latest information available, thereby enabling the flight trajectory to be dynamically optimised to reflect near or real-time events. This CDM process is a key enabler of the ATFM process allowing the sharing of all relevant information between aviation community members so that the best gate to gate trajectory of flights can be achieved. This will enable the community members to update each other continuously on events from the strategic to tactical phase.

b) To be efficient and to reach the required objectives, CDM should have the following characteristics:
   - an inclusive process;
   - a transparent process; and;

– a process that builds trust between the aviation community.

c) The principles of CDM have been implemented in the CAMU day-to-day operations, planning and developments with active involvement of appropriate members of the aviation community. An ATFM CDM Telcon with all relevant ATS Units and appropriate aviation community members will be held at various times (to be published) to discuss current Daily Airspace Plan (DAP), weather impact, flow rates, flexible use of airspace (FUA), post event discussion, inputs from ATS Units regarding staffing, consolidation of ATC sectors, anticipated traffic management initiative (TMI), equipment, anticipated traffic volumes, constraints, current configuration and aerodrome arrival rates (AAR), anticipated configuration and aerodrome arrival rates (AAR), aerodrome departure rates (ADR), special events, military activities that impact ATFM, and flow constraint areas (FCA) - current and anticipated.

2.1.5 CAMUWEB

a) CAMUWEB is an important part of the enhanced ATFM system, as it allows Aircraft Operators, Aerodrome Operators and ATS Units, access to information about TMIs. AOs will be able to view flight details and manage their own ATC slots during a TMI. ATS Units and Aerodrome Operators will be able to view all flights arriving and departing from their aerodrome. Full details of CAMUWEB process are published in the Enhanced ATFM Operators Manual (Available for download at https://www.atns.com/PDF/ATFM/ENHANCED ATFM OPERATORS MANUAL.pdf).

b) Aircraft operators, Aerodrome Operators and ATS Units are advised to have computer equipment capable of connecting to the CAMU website https://www.camu.co.za via the internet and satisfying the following minimum technical requirements:
   – Recommended Web Browser: Designed for Mozilla Firefox 2.0 or newer;
   – Email capability;
   – Monitor Display Resolution: minimum of 1024 x 768 pixels; and
   – Printer.

2.2 Slot allocation

Slot allocation is an ATFM measure established to balance the demand against capacity. Airport slots are allocated during the strategic phase of ATFM. Air Traffic Control slots are allocated during the pre-tactical and tactical phase of flight when conditions are causing demand to exceed capacity. For the process to work effectively Aircraft Operators are to ensure they are fully informed on the following procedures:

– Strategic ATFM measures (e.g. strategic traffic routing/strategic airport slot allocation etc);
– General ATFM procedures including flight plan filing and CAMU web interaction; and;
– Current ATFM measures (e.g. specific measures applicable on the day in question) Aircraft Operators shall ensure that their crews are informed of, and adhere to, ATC slots issued by the ATFM service.

2.3 Slot allocation procedures

2.3.1 The airport slot allocation procedures remain in force as described in SA AIP ENR 1.9 part 1 and Aircraft Operators are to comply with their EOBT unless subjected to an Air Traffic Control Slot.

2.3.2 When other ATFM processes are exhausted, traffic management initiatives (TMIs) will be applied by CAMU to balance demand against capacity and departure times will be issued in the form of a Calculated Take Off Time (CTOT). AOs must plan their flight to be ready for take off at the calculated take off time (CTOT) (At the holding point). The calculated take off time (CTOT) is a nominal time with a tolerance of -5 to +10 minutes, this enables the ATC to manage traffic tactically.

2.3.3 The calculated take off time (CTOT) is generally issued not later than 2 hours before EOBT, however Aircraft Operators and ATS Units are to monitor the CAMU web for the latest information on calculated take off time (CTOT) as this could change as tactical conditions dictate.

2.3.4 The calculated take off time (CTOT) is included in a slot allocation message (SAM), which is sent by the CAMU to:

- The address notified in advance to the CAMU by the aircraft operator, or
- When the address is not known with the CAMU:
  - The ATC Tower of the aerodrome of departure, and
  - If different, the flight plan originator;
- The CAMU webs slot substitution and flight elements subpages.

2.3.5 Furthermore, ATC is informed about the calculated take off time (CTOT) issued. If no slot allocation message (SAM) is received before EOBT, it can be assumed that the flight concerned may depart in accordance with the filed EOBT.

2.3.6 Aircraft Operators shall arrange the departure of their flights to comply with the calculated take off time (CTOT) issued. A slot window is available to ATC to optimise the departure sequence. This is not for use by AOs who should plan an EOBT consistent with the CTOT.

2.3.7 All flights subjected to a calculated take off time (CTOT) will be displayed on the CAMU Webs Initiatives page.

2.3.8 Full details of the Slot Allocation Process are published in the Enhanced ATFM Operators Manual (Available for download at https://www.atns.com/PDF/ATFM/ENHANCED ATFM OPERATORS MANUAL.pdf).

2.4 Modification of Estimated Off Block Time (EOBT)

2.4.1 It is a requirement for both ATC and ATFM that the EOBT of a flight shall be an accurate EOBT. This applies to all flights, whether subject to ATFM or not. Any change to the EOBT of more than 15 minutes (+ or -)for any IFR flight must be addressed to CAMU via an amendment message (e.g. DLA or CHG). The Aircraft Operator (AO) will receive a new Slot Allocation Message (SAM) or Slot Revision Message (SRM), whichever is applicable.

2.4.2 Once a flight plan has been filed for a flight subject to ATFM measures, any change in EOBT of more than 15 minutes shall be submitted, using a DLA message or by cancelling the original FPL and filing a new flight plan.

2.4.3 Aircraft Operators will be able to interact with CAMU via the CAMU website, https://www.camu.co.za to amend calculated take off times (CTOT), suspend, re-instate and to perform a slot swap within own aircraft schedule or move the flight to the acceptable open slot in the future.

2.5 Responsibility of Air Traffic Service Units

2.5.1 ATS Units at aerodromes shall ensure that departing flights adhere to notified calculated take off time (CTOT) issued by the CAMU.

2.5.2 Flights failing to adhere to issued calculated take off time (CTOT) shall be denied start-up clearance until the Aircraft Operator has obtained a NEW CTOT. The AO will have to obtain a new slot on the CAMU WEB.

2.5.3 ATS Units shall make every effort to enable departing flights to comply with calculated take off time (CTOT) and flights should not be prevented from departing due to minor taxiing delays.

2.5.4 ATC shall provide all possible assistance to Aircraft Operators to meet a CTOT.

2.6 ATM/Aerodrome System Impact Reports

2.6.1 The CAMU is the focal point for the collection of information relating to operational system impacts; i.e., NAVAID/radar shut downs, runway closures, aerodrome constraints or any system event that has the potential to create an operational impact.

2.6.2 Therefore, all ATS Units/Aerodrome Operators shall ensure that a dissemination and communication process is established to keep the CAMU informed of all constraints and/or equipment malfunctions that could have a significant impact on capacity.

2.6.3 The ATSU are to provide the CAMU with advance notification of planned equipage outages, staff constraints, and runway closures e.t.c, that will impact the air traffic system capacity and additionally provide in writing a system impact report (available on www.camu.co.za) that describes in detail the following items:

- Description of outage/construction project;
- Dates/times of project or maintenance;
- Impact. Describe projected impact in regard to the operation;
- Specify the AAR under various conditions/scenarios, e.g., IFR/VFR;
- Delays. What type of delays can be expected?
- Traffic management initiatives. What type of initiatives can be expected?
- Notification to AOs/ATSU. Coordination/notification provided to AOs/ATSUs; and
- Any other pertinent information.

2.7 Flight plans

2.7.1 All aircraft operators are requested to file non-repetitive (ICAO) flight plans at least 3 hours before EOBT to provide CAMU with accurate forecast of potential air traffic demand. Early filing of flight plans will ensure that the calculated take off time (CTOT) issued is as close to the requested EOBT + published Taxi time as possible. Aircraft Operators (AOs) should be aware that filing a flight plan late may lead to a disproportionate delay. It is in the best interest of Aircraft Operators (AOs) to initiate prompt revisions or cancellations, thus permitting the system to maximise use of available capacity and minimise delay. The later the revision is made the greater the probability of a delay.

2.8 ATFM Messages

Each ATFM message comprises a number of fields some of which are mandatory and some optional. Their number varies according to the message type. The fields used ATFM messages are summarized as follows.

FIELDS	DEFINITION
ADEP	ICAO indicator of aerodrome of departure
ADES	ICAO indicator of aerodrome of destination
CTOT	Calculated Take-Off Time
EOBD	Estimated Off-Block Day.
EOBT	Estimated Off-Block Time
FILTIM	Date and time stamp of original message
NEWCTOT	Revised CTOT
NEWEOBT	Revised EOBT
NEWRTE	New Route
REGUL	Identifier for the restriction imposed (may include more than one)
RESPBY	Latest time by which a response is required
RVR	Runway Visual Range (this field is optional in certain messages)
COMMENT	Commentary
TAXITIME	Taxi Time
REGCAUSE	Regulation Cause
TITLE	Title of the message

2.9 ATFM Messages Lists

ATFM Messages issued by CAMU: SAM, SRM, SLC, FLS, DES, RRP.

2.10 ATFM Messages Examples

The following tables give examples of all ATFM messages currently in use. The tables include a brief description of each message and subsequent actions.

Message	Originator and Description	Action
- TITLE SAM - ARCID ABC123 - ADEP FAOR - ADES FACT - EOBD 100303 - EOBT 0925 - CTOT 1037 - REGUL FAOR - COMMENT CLDT 100303 1237 - COMMENT PR03 - TAXITIME 0010 - REGCAUSE CA 83	SAM: Slot Allocation Message Sent to AO/ATC 2 Hours before last received EOBT. CAMUWEB shows CTOT. The SAM is used to inform AOs & ATS of the Calculated Take-Off Time (CTOT) computed by CAMU for an individual flight, to which AOs/ATC must adhere.	Sent to AOs/ATS 2 hours before the last received EOBT. AOs/ATC must comply with the CTOT.

Message	Originator and Description	Action
- TITLE SRM - ARCID ABC123 - ADEP FAOR- ADES FACT - EOBD 100303 - EOBT 0925 - NEWCTOT 1037 - REGUL FAOR - COMMENT CLDT 100303 1237 - TAXITIME 0010 - REGCAUSE AD 89	SRM: Slot Revision Message Sent to AO/ATC to pass or confirm any revision to a CTOT following the issue of the initial SAM. This message may be used to indicate a delay increase or decrease.	The SRM notifies a significant change of slot. AOs/ATC must comply with the NEWCTOT.
- TITLE SLC - ARCID ABC123 - ADEP FAOR - ADES FACT - EOBD 100303 - EOBT 0925 - TAXITIME 0010	SLC: Slot Requirement Cancellation Message Sent to AO/ATC to advise that a flight which has received a CTOT is no longer subject to a restriction.	Flight may depart with-out restriction unless a new message is received later.
- TITLE FLS - ARCID ABC123 - ADEP FAOR - ADES FACT - EOBD 100303 - EOBT 0815 - TAXITIME 0010	FLS: Flight Suspension Message Sent to AO/ATC at or after Slot Issue Time to suspend a flight due to exceptional conditions or adverse weather conditions or AO delays flight will enter suspension mode on CAMU-WEB.	Flight must be de-suspended to become active again via the CAMUWEB.
- TITLE DES - ARCID ABC123 - ADEP FAOR - ADES FACT - EOBD 100303 - EOBT 0815 -COMMENT CLDT 100303 1015 -TAXITIME 0010	DES: Flight De-suspension Message Sent to AO/ATC to de-suspend, a SAM will be sent as well.	No action is normally required of AOs/ATS and the flight if subjected to ATFM regulation will be issued with a CTOT.
- ARCID ABC123 - ADEP FAOR - ADES FACT - EOBD 100303 - EOBT 0925 - ORGRTE N0280F180 RAGUL UQ10 WY DCT FACT - NEWRTE N0280F180 RAGUL BLV WY FACT - RESPBY 0755 - TAXITIME 0010	RRP: Rerouting Proposal Message This message is sent to an AO to offer a reroute avoid the need for a slot on a new route or to improve the CTOT. A "respond by time" is also added.	The message is sent to an AO to offer reroute to avoid or reduce a delay AO must respond by RESPBY time if contend with the RRP.

2.11 Delay Codes

Correlation between IATA delay codes and the CAMUs reasons for TMIs, the reasons are indicted in REGCAUSE field and in the FM.

2.12 Special status flights

2.12.1 It is possible for Aircraft Operators to obtain exemptions from the ATFM restrictions for certain flights through the use of STS/indicators in FPL. The STS indicator in field 18 of a flight plan will identify that a flight may require special handling.

2.12.2 Flights exempted from ATFM measures

The following flights are exempted from ATFM slot allocation and shall include, in Item 18 of the flight plan form, the appropriate STS indicator:

a) Flights in a state of emergency, including flights subject to unlawful interference; STS/EMER;

b) Flights conducting search and rescue operations; STS/SAR;
c) Flights carrying South African Head of State; STS/HEAD;
d) Flights for medical reasons, specifically declared by the medical authorities; STS/MERCY; and
e) Flights for humanitarian reasons; STS/ATFMEXEMPTAPPROVED.

2.12.3 The decision to use a particular status indicator is the responsibility of the Aircraft Operator. Unauthorised use of any of these indicators with the intention of avoiding flow regulations is considered as a serious breach of procedure.

2.13 Failure of CAMUWEB

During CAMUWEB failures, AO and ATS Units must rely on the ATFN messages being issued and may contact CAMU for email/fax printouts. However if no TMIs are in place AOs are to depart flights according to their EOBTs.

2.14 Contact details

Aircraft Operators, Aerodrome Operators and ATS Units having general queries on ATFM matters and on CAMU operations should contact the CAMU Helpdesk. The CAMU contact numbers and address is as follows;

Postal Address:
CAMU (ATNS)
Private Bag X1
Bonaero Park
1622
South Africa

Site Address:
CAMU (Johannesburg ATCC)
Gate 14
OR Tambo Intl Airport OPS Complex
Bonaero Drive
Bonaero Park
Kempton Park

TEL: +27 (0) 11 928 6433
FAX: +27 (0) 11 928 6420
Email: camuhelpdesk@atns.co.za

2.15 Hours of Duty will be MON-FRI: DLY 0200-1800 and SAT-SUN: DLY 0400-1800.

2.16 NEAR FIR/SECTOR BOUNDARY OPERATIONS

2.16.1 Pilots are requested to adopt the following procedures in the interest of safety. All flights intending to depart from aerodromes within 10NM of a boundary delineating services between separate ATM service providers, e.g. FIR boundary, must ensure that they make contact by whatever means available with the nearest ATSU, prior to departure. The ATSU must be provided with the ETD, the estimate for the boundary, the intended flight level, route and destination. The ETD and the ATD, or time as prior arranged, should not differ by more than 10 minutes.

2.17 ATM FOR THE PRESIDENTIAL AIRCRAFT AND ASSOCIATED FLIGHTS

The following ATM procedures are applicable for the handling of Presidential (President and Deputy President) flights, with the aim to ensure that the relevant ATM community is aware of the procedures to be applied.

2.17.1 Procedures for Presidential aircraft

2.17.1.1 General

- ATNS will give preference to Presidential flights when the President is on board.
- SAAF will file flight plans.
- SAAF will contact the relevant ATSUs prior to departure so as to facilitate the process.

The Presidential jet (B737 Business Jet, and Falcon 900 or 50) will under normal circumstances be allocated parking as directed by Apron Control

2.17.2 Procedures for the Oryx helicopter

The Oryx helicopter will be handled like any other flight and will land and depart as follows:

- FACT - Land as directed by ATC on the designated taxiway or runway and ground taxi to the Presidential Jet as directed by Apron Control.
  Departure will be via a ground taxi to the designated taxiway or runway and then as per ATC instructions.
- FALE - Land as directed by ATC on the designated taxiway or runway and ground taxi onto the apron.
  Departures will be via a ground taxi to the designated taxiway or runway and then as per ATC instructions.
- FAOR - Land as directed by ATC on the O R Tambo helipad.
  Departure will be as cleared by ATC from the helipad.

Conclusion

These procedures are implemented in accordance with the intent of ICAO Doc 4444, PANS/ATM para 7.6.3.3 (d) - Priority shall be given to other aircraft as may be determined by the appropriate authority.

ENR 1.10 FLIGHT PLANNING

1 Procedures for the submission of a flight plan

A flight plan shall be filed with the AIM Service Centre, who shall be responsible for transmitting the flight plan to all air traffic services units concerned with the flight.

A flight plan shall be filed in respect of -

a) all flights to be conducted in controlled or advisory airspace: Provided that this requirements shall not apply in respect of local flight, a flight crossing an airway or advisory route at right angles or a VFR flight entering or departing from an aerodrome traffic zone or control zone from or to an unmanned aerodrome, and where no other controlled or advisory airspace will be entered during the flight.

b) an international flight;

c) all flights in the public transport operation or public transport of cargo operation categories; and

d) a flight for which alerting action is required.

An air traffic control unit may instruct a flight for which a flight plan is prescribed and for which a flight plan has not been filed, to clear or to remain clear of controlled airspace and not to cross the border of the Republic or to enter its airspace until such time as the required flight plan has been filed.

1.1 TIME OF SUBMISSION

Unless otherwise authorised, a flight plan for a flight to be conducted in controlled or advisory airspace shall be filed not less than 30 minutes before departure. It is, however, encouraged that flight plans are filed as far in advance as possible, up to 120 hours. Flight-plans filed during flight, whilst outside controlled or advisory airspace, shall be filed with the responsible air traffic service unit at least 10 minutes before the aircraft is estimated to reach the intended point of entry into the controlled or advisory airspace.

If a flight plan has been filed prior to departure and is not activated with an air traffic services unit within one hour of the original estimated time of departure or amended estimated time of departure, such flight plan shall be cancelled.

1.2 PLACE OF SUBMISSION

1.2.1 METHODS OF FILING OF FLIGHT PLANS

Flight plans shall be filed by one of the following methods with the Aeronautical Information Management Service Centre:

Internet self briefing service: https://file2fly.atns.co.za

Telephone national call share number: 0860 359 669 (FLY NOW)
International calls:+27 11 928 6517/8

AFTN: FAORZPZX
SITA: JNBXTYF

1.2.2 OPERATOR

The name and telephone number of the operator must be included in field 18 of the flight plan for ATNS and Airports Company billing purposes. It is therefore necessary that the name and telephone number be that of the person or party responsible for paying the accounts according to tariffs published in the latest Government Gazette in this regard.

All foreign airlines OPR in terms of Class I and Class IV foreign operators permit or under a 'No Objection' clearance number are required to quote the clearance number in field 18 of the flight plan.

1.3 FORM OF AN AIR TRAFFIC SERVICE FLIGHT PLAN

1.3.1 An Air Traffic Service Flight Plan filed prior to departure must contain the following items:

a) Aircraft identification and transponder data.
b) Flight rules and type of flight
c) Number and type(s) of aircraft and wake turbulence category.
d) Radio communication, navigation and approach aid equipment.
e) Aerodrome of departure and time.
f) Cruising speed and flight level.
g) Route to be followed.
h) Destination aerodrome and total estimated elapsed time.
i) Alternate aerodrome(s).
j) Flight information region boundaries and estimated times.
k) Alerting action required.
l) Fuel endurance.
m) Total number of persons on board.
n) Emergency and survival equipment and colour of aircraft.
o) Other pertinent information.
p) Name, postal address, telephone and telefax number of the owner or operator of the aircraft.

1.3.2 An air traffic service flight plan filed in flight to comply with CAR 91.03.4 (6) must contain the following items:

a) Aircraft registration.
b) Flight rules.
c) Type of aircraft.
d) Aerodromes of departure.
e) Cruising speed and flight level.
f) Route to be followed and estimated as applicable.
g) Aerodrome of destination and estimated time of arrival.
h) Alternate aerodrome for IFR flights.
i) Alerting action required.
j) Fuel endurance if alerting action required.
k) Total number of persons on board.
l) Name, postal address, telephone and telefax number of the owner or operator of the aircraft.

1.4 ADHERENCE TO FLIGHT PLAN.

1.4.1 Except as prescribed in the following paragraph, the pilot-in-command shall ensure that the aircraft adheres to the current air traffic service flight plan filed for a controlled flight, unless a request for change has been made and accepted by the air-traffic control unit responsible for the controlled airspace in which the aircraft is operating, or unless an emergency situation arises which necessitates immediate action, in which event the responsible air traffic control unit shall, as soon as circumstances permit, be notified of the action taken and that his action was taken under emergency authority.

1.4.2 In event that a controlled flight inadvertently deviates from its current flight plan, the following action shall be taken:

a) If the aircraft is off track, action shall be taken forthwith to adjust the heading of the aircraft to regain track as soon as practicable;
b) If the average true airspeed at cruising level between reporting points varies, or is expected to vary from that given in the air traffic service flight plan by approximately five per cent or more of the true air speed, the responsible air traffic services unit shall be so informed.
c) If the estimated time at the next applicable reporting point, flight information region boundary, or aerodrome of intended landing, whichever comes first, is found to be in error in excess of 3 minutes from that notified to the responsible air traffic services unit, a revised estimate time shall be notified to such air traffic services unit as soon as possible.
d) If the aircraft deviates from its altitude, action shall be taken forthwith to correct the altitude of the aircraft.

Flight plans may be filed for any other flight not mentioned in the Regulation.

1.5 AUTHORIZATION FOR SPECIAL FLIGHTS.

1.5.1 Pilots filing non-schedule flight plans from the RSA to Angola are to present the plans to both the Customs and Immigration offices for approval prior to submission to ATC.

1.5.2 Pilots filing non-scheduled (N) flight plans from the RSA to any over-border destination are to quote the CAA number of the applicable RSA Air Services License number on the flight plan prior to submission to ATC.

2 FOREIGN AIRLINES

2.1 All foreign airlines operating in terms of Class I and Class IV foreign operators permits or under a 'No Objection' clearance number are required to quote the clearance number in field 18 of the flight plan.

2.2 All scheduled and non-scheduled foreign commercial air transport carrying more than 8 passengers are required to quote their foreign operators permit reference number in field 18 (EG: RMK/FN372022), operators shall not email the foreign operators permit to the flight planning office.

2.3 When filing a non-scheduled flight plan, operators shall indicate in field 18 of the flight plan if the flight is of a commercial or non-commercial nature (EG: RMK/ COMMERCIAL FLT or NONCOMMERCIAL FLT).

2.4 All cargo flight will stipulate in field 18 of the flight plan: RMK/CARGO FLT and whether the cargo is more or less than 1000KG.

2.5 The number of people on board shall be indicated on the processed flight plan. (EG: RMK/10 PAX).

2.6 Failure to indicate the above requirements in the flight plan will result in the flight plan being rejected by the flight planning office.

Refer to AIC 003/2022 for any further information on filing of flight plans.

3 MITIGATION AGAINST IMPROPER OR POOR ATS CO-ORDINATION AND NON RECEIPT OF FLIGHT PLANS

3.1 INTRODUCTION

a) In order for an automated Air Traffic Control system to function at optimum efficiency, the system needs to be updated with relevant and timely data in the form of a flight plan, which once activated, is presented to the Controller via the surveillance display providing information relating the flight call sign, flight level and speed, together with other relevant data. Should this data not be available to it, the system is unable to identify the particular flight, or recognize the flight as being relevant to the Air Traffic Controller (ATC). As such the ATC system workload is also increased, as once the flight reports on frequency, the ATC must instruct the system to track the flight, by means of creating a flight plan for the flight.

b) In the same manner, should improper or poor co-ordination between adjacent Flight Information Regions (FIR) occur, the quality of the information passed or not communicated at all, for example an incorrect flight level, can affect the safety of

that particular flight as well as that of other flights which may be opposing the flight as opposite direction traffic and requiring to climb through the incorrectly reported level. The implication being that while the flight requiring a level higher than that of the opposite direction incorrectly coordinated level, together with the ATC concerned, may believe that separation has been achieved but in the mean time the confliction in the climb through may not have been resolved.

3.2 IMPLEMENTATION

a) In order to mitigate against the above mentioned hazards with a view of avoiding at best a reduction in separation between opposing flights, the Johannesburg Flight Information Region (FAJA) requires all flights operating above FL245, other than those originating within the confines of the Cape Town or Johannesburg FIRs, including flights in the Johannesburg Oceanic area of responsibility not utilizing ADS/CPDLC to report on the appropriate Johannesburg R/T frequency at least ten minutes before arriving at the FIR boundary, providing; Call sign, Point of Departure, Destination, Flight level and Estimate for the FIR boundary together with any active transponder code, should one have been issued by the adjacent FIR through which the flight is transiting.

b) Should a transponder code not have been issued by the FIR through which the flight is transiting en route to the Johannesburg FIR, a transponder code will be issued to the flight along with the appropriate joining clearance into the Johannesburg FIR.

c) Operators/Flight Crew are to note that any joining clearance issued prior to the flight crossing into the Johannesburg FIR or control of the flight being transferred to Johannesburg from the adjacent FIR, will only be valid once the flight has entered the Johannesburg FIR. This is also valid for those flights operating in the Johannesburg Oceanic FIR.

4 ROUTE MATRIX

4.1 PREFERRED ROUTINGS TO BE USED FOR FLIGHT PLANNING PURPOSES WITHIN JOHANNESBURG (FAJA) and CAPE TOWN (FACA) FIRs

4.1.1 Introduction

The Route Matrix which was initially introduced in 2005 contains a list of preferred routings to be used in South African airspace by the flying community for Flight planning purposes. These routes are listed as preferred routings based on frequency that a specific route is assigned by Air Traffic Control (ATC) to an operator between specific city pairs.

4.1.2 Purpose

The purpose of the route matrix is to streamline the flight planning process to ensure a safe, systematic and efficient flow of air traffic between specified city pairs and en-route airspace leading towards predictability, orderliness and efficiency of the overall Air Traffic Management (ATM) System.

The route matrix is updated in-line with published changes to routes, Navaids, waypoints Standard Instrument Departures (SID) and Standard Terminal Arrival Route (STAR) amendments.

The route matrix detailed above can be found on the ATNS website by following the URL:

https://atns.com/products-services/aim/aeronautical-information-management/

4.1.3 Contacts

Any questions and assistance should be directed to:

Mr. Raoul Bester
+27 11 607 1248
RaoulB@atns.co.za

ENR 1.11 ADDRESSING OF FLIGHT PLAN MESSAGES

1) All Flight Plan and Air Traffic Service (ATS) messages shall be addressed to FAORZPZX.
2) Flight Plan and related ATS messages received from Foreign Air Traffic Service Units; AIMU will distribute these FPL/ATS messages to AFTN addresses within South Africa.
3) The AIM Service Centre will be responsible to distribute all flight-plans filed within South Africa to the following:

– DEP, DEST and ALTN aerodrome: ICAO location indicator followed by ZTZX or ZTZZ
– Crossed FIRs: ICAO location indicator followed by ZQZX.
– ATSU responsible for SAR: ICAO location indicator followed by ZTZX.

Aerodrome Addresses:

City	***ICAO Location Indicator***	***Address***
Bram Fischer (Bloemfontein)	FABL	FABLZTZX
Cape Town	FACT	FACTZTZZ
King Shaka (Durban)	FALE	FALEZTZX
King Phalo	FAEL	FAELZTZX
George	FAGG	FAGGZTZX
Grand Central	FAGC	FAGCZTZX
Polokwane	FAPP	FAPPZTZZ
Rand	FAGM	FAGMZTZX
Hoedspruit	FAHS	FAHSZTZZ
Kimberley	FAKM	FAKMZTZZ
Lanseria	FALA	FALAZTZX
Makhado AFB MIL	FALM	FALMZTZZ
Mthatha	FAUT	FAUTZTZX
Langebaanweg	FALW	FALWZTZX
George Dick Montshioa (Mafikeng)	FAMM	FAMMZTZX
Mariepskop	FAMR	FAMRYVYX
O R Tambo (Johannesburg)	FAOR	FAORZTZZ
Overberg	FAOB	FAOBZTZX
Chief Dawid Stuurman	FAPE	FAPEZTZX
Kruger Mpumalanga	FAKN	FAKNZTZZ
Pietermaritzburg	FAPM	FAPMZTZX
Pilanesberg	FAPN	FAPNZTZX
Richards Bay	FARB	FARBZTZX

City	*ICAO Location Indicator*	*Address*
Upington	FAUP	FAUPZTZX
Virginia	FAVG	FAVGZTZZ
Wonderboom	FAWB	FAWBZTZX
Waterkloof	FAWK	FAWKZTZX
Ysterplaat	FAYP	FAYPZTZX

South African ENROUTE addresses:

FIR/Sector	*ICAO Location Indicator*	*Address*
Johannesburg FIR	FAJA	FAORZPZX
Cape Town FIR	FACA	FAORZPZX
Lowveld Military Airspace Sector	FAMR	FAMRYVYX
Oceanic FIR	FAJO	FAORZPZX

ENR 1.12 INTERCEPTION OF CIVIL AIRCRAFT

1 Interception procedures

1.1 It may occasionally be necessary:

a) to investigate the identity of an aircraft;

b) to lead an aircraft away from a prohibited area;

c) to require an aircraft to land at a designated aerodrome.

1.2 An aircraft which has been intercepted should endeavour to establish communication with the interceptor on the VHF international distress frequency 121.5 MHz, and select squawk code 7700 if equipped with secondary surveillance radar (SSR) transponder mode A.

PHRASE	PRONUNCIATION	MEANING
CALL SIGN[2]	**KOL** SA-IN	My callsign is (callsign)
WILCO	**VILL**-KO	Understood. Will comply
CAN NOT	**KANN** NOTT	Unable to comply
REPEAT	REE-**PEET**	Repeat your instruction
AM LOST	**AM LOSST**	Position unknown
MAYDAY	**MAYDAY**	I am in distress
HIJACK[3]	**HI-JACK**	I have been hijacked
LAND (place name)	**LANND** (place name)	I request to land at (place name)
DESCEND	**DEE-SEND**	I require descent
1. Syllables to be emphasized are printed in bold letters.		
2. The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.		
3. Circumstances may not always permit, nor make desirable, the use of the phrase “HIJACK”		

1.2.1 If radio contact is established during interception but communication in a common language is not possible attempts shall be made to convey instructions, acknowledgements of instructions and essential information by using the phrases and pronunciations in the following table, transmitting each phrase twice.

1.2.2 The phrases shown in the table below shall be used by the intercepting aircraft and transmitted twice in the circumstances described in the preceding paragraph.

1.3 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

PHRASE	PRONUNCIATION	MEANING
CALL SIGN	KOL SA-IN	What is your call sign
FOLLOW	FOL-LO	Follow me
DESCEND	DEE-SEND	Descend for landing
YOU LAND	YOU LANND	Descend for landing

PROCEED	PRO-SEED	You may land.

1.3.1 Where instructions cannot be passed to the aircraft concerned by radio or other practical means, it will be necessary for the intercepting aircraft to use a system of visual signals for this purpose. These signals, which will be used over the Republic of South Africa and its territorial waters, together with the meanings assigned thereto are shown in the table below.

1.4 Adherence to flight plans and ATC procedures and the maintenance of a listening watch on the appropriate ATC radio frequencies will make the likelihood of and need for interception remote. Pilots, however, are warned, in their own interests, to comply without delay with any instructions passed to them by visual signals from any intercepting aircraft.

1.5 The following sub-paragraphs indicate briefly how the visual signals will be used:

1.5.1 When an aircraft has been intercepted, for identification only, the intercepting aircraft will use the SECOND series to show that the aircraft may proceed.

1.5.2 When an aircraft is to be led away from a prohibited area, the appropriate part of the FIRST series will be used and the SECOND series when the purpose has been achieved and the aircraft is released.

1.5.3 When an aircraft is required to land, the appropriate part of the FIRST series will first be used, followed by the THIRD series when in the vicinity of the designated landing area.

1.5.4 When the pilot of the intercepted aircraft considers the landing area which has been designated unsuitable for the aircraft type, he will use the fourth series to indicate this and new instructions will then be given by the intercepting aircraft.

1.6 When an intercepted aircraft is in distress the DISTRESS signals should be used where practical.

FIRST SERIES		
Signal by intercepter	**Meaning**	**Response by intercepted aircraft.**
Day		
Rocking wings while in front and to the left of intercepted aircraft.	Follow me away from a prohibited area	Rocking wings.
Rocking wings while in front and to the right of intercepted aircraft.	Follow me to a landing terrain.	Rocking wings.
When the above signals have been acknowledged make a slow level turn onto desired course.		Follow interceptor.
Night		
As for day and, in addition, flashing navigational and, if available, landing lights at irregular intervals.	Follow me away from a prohibited area.	Rocking wings if considered safe and showing steady landing light if carried.
As for day and, in addition, flashing navigational and, if available, landing lights at irregular intervals.	Follow me to a landing terrain.	Rocking wings if considered safe and showing steady landing light if carried.

As for day and, in addition, flashing navigational and, if available, landing lights at irregular intervals.		Follow interceptor.
NOTE: Meteorological conditions on terrain may require the intercepting aircraft to take up a position in front and to the right of the intercepted aircraft, and to make the subsequent turn to the right.		

SECOND SERIES		
Signal by intercepter	**Meaning**	**Response by intercepted aircraft**
Day or Night		
An abrupt break-away upwards of 90° or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	Rocking wings if considered safe and showing steady landing light if carried.

THIRD SERIES		
Signal by intercepter	**Meaning**	**Response by intercepted aircraft.**
DAY: Circling landing area, lowering landing gear and overflying the direction of landing. NIGHT: As for day and showing steady landing light.	Land on this landing area.	DAY OR NIGHT. Same as interceptor and proceed to land (where applicable) if considered safe, at night showing steady landing light if carried.

FOURTH SERIES		
Signal by intercepter	**Meaning**	**Response by intercepted aircraft.**
DAY		
Rocking wings (if fixed landing gear) or raising landing gear (whichever applicable) while passing over landing terrain at a height exceeding 1 000 feet (300 m) but not exceeding2 000 feet (600m)	Landing terrain unsuitable	FIRST or SECOND series dependant on what further action intercepting aircraft requires to be taken: either (a) “Follow me” or (b) “You may proceed”
NIGHT		
Flashing landing light or any other light available while passing over aerodrome at a height exceeding 1 000 feet (300m) but not exceeding 2 000 feet (600m) and continue circling	Landing terrain unsuitable	FIRST or SECOND series dependant on what further action intercepting aircraft requires to be taken: either(a) “Follow me” or (b) “You may proceed”

DISTRESS SIGNALS
The following signals, used either together or separately, means that grave and imminent danger threatens, and immediate assistance is requested
(a) A signal made by radiotelephony or by any other signalling method consisting of the group SOS (...---... in the morse code).
(b) A signal sent by radio telephony consisting of the spoken word MAYDAY.
(c) Rockets or shells throwing red lights, fired one at a time at short intervals.
(d) A parachute flare showing a red light.

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ENR 1.13 UNLAWFUL INTERFERENCE

1 General

The following procedures are intended as guidance for use by aircraft when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact, and ATS personnel reacting to acts of unlawful interference.

2 Aircrew Procedures

2.1 Unless considerations aboard the aircraft dictate otherwise, the pilot-in-command should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or within radar coverage.

Note: An aircraft equipped with a SSR transponder is expected to operate the transponder on Mode A Code 7500 to indicate specifically that it is the subject of unlawful interference. The aircraft may operate the transponder on Mode A Code 7700, to indicate that it is threatened by grave and imminent danger and requires immediate assistance.

2.2 When an aircraft subjected to an act of unlawful interference must depart from its assigned track or its assigned cruising level without being able to make radiotelephony contact with ATS, the pilot-in-command should, whenever possible:

a) Attempt to broadcast warnings on the VHF emergency frequency and other appropriate frequencies, unless considerations aboard the aircraft dictate otherwise. Other equipment such as on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and

b) Proceed at a level, which differs from the cruising levels normally used for IFR flight by:

1) 150M (500FT) in an area where a vertical separation minimum of 300M (1000FT) is applied; or

2) 300M (1000FT) in an area where a vertical separation minimum of 600M (2000FT) is applied.

Note: Action to be taken by an aircraft, which is intercepted while being subject to an act of unlawful interference is prescribed in ENR 1.12.

3 ATS Procedures

3.1 Whenever unlawful interference with an aircraft is known or suspected, or a bomb threat warning has been received, controllers shall promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the trajectory and at any aerodrome of intended landing, and shall take such action as is necessary to expedite the conduct of all phases of the flight.

3.2 ATSU's or Sectors shall:

a) Transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from the aircraft. No reference shall be made to the nature of the emergency unless it has first been referred to in communications from the aircraft involved and it is certain that such reference will not aggravate the situation.

b) Monitor and plot the progress of the flight with the means that are available, and co-ordinate transfer of control with adjacent ATS units or sectors without requiring transmissions or other responses from the aircraft, unless communication with the aircraft remains normal;

c) Inform and continue to keep informed, appropriate ATS units and sectors, including those in adjacent FIRs, which may be concerned with the progress of the flight;

Note: In applying this provision, account must be taken of all the factors, which may affect the progress of the flight, including fuel endurance and the possibility of sudden changes in route and destination. The objective is to provide, as far in advance as is practicable in the circumstances, each ATSU or sector with appropriate information as to the expected or possible penetration of the aircraft into its area of responsibility.

d) Notify:

1) The operator or its designated representative;

2) The appropriate rescue co-ordination centre in accordance with appropriate alerting procedures;

3) The designated security authority;

Note: It is assumed that the designated security authority and/or the operator will in turn notify other parties concerned in accordance with pre-established procedures.

e) Relay appropriate messages, relating to the circumstances associated with the unlawful interference, between the aircraft and designated authorities.

3.3 The following additional procedures shall apply if a threat is received indicating that a bomb or other explosive device has been placed on board a known aircraft. The ATSU receiving the threat information shall:

a) If in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or

b) If not in direct communication with aircraft, advise the flight crew by the most expeditious means through other ATS units, sectors or other channels.

3.4 The ATSU in communication with the aircraft shall ascertain the intentions of the flight crew and report those intentions to other ATSU's or sectors, which may be concerned with the flight.

3.5 The aircraft shall be handled in the most expeditious manner whilst ensuring, to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

3.6 Aircraft in flight shall be given a re-clearance to a requested new destination without delay. Any request to climb or descend for the purpose of equalizing or reducing the differential between the outside air pressure and cabin air pressure shall be approved as soon as possible.

3.7 Controllers shall not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.

3.8 An aircraft on the ground should be advised to remain as far away from other aircraft and installations as possible, and if appropriate, to vacate the runway. The aircraft should be instructed to taxi to a designated or isolated parking area. Should the flight crew disembark passengers and crew immediately, other aircraft, vehicles and personnel should be kept at a safe distance from the threatened aircraft.

3.9 An aircraft known or believed to be the subject of unlawful interference or which for other reasons needs isolation from normal aerodrome activities shall be cleared to the designated isolated parking position.

3.10 Where such an isolated parking position has not been designated, or if the designated position is not available, the aircraft shall be cleared to a position within the area or areas selected by prior agreement with the aerodrome authority.

3.11 The taxi clearance shall specify the taxi route to be followed to the parking position. This route shall be selected with a view to minimize any security risks to the public, other aircraft and installations at the aerodrome.

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ENR 1.14 AIR TRAFFIC INCIDENTS

General

The investigation of air traffic incidents is one of the best means available of identifying the steps that must be taken to promote aviation safety. In order to assist the CAA in identifying any problems and to take such steps as appear to be necessary, pilots and aircraft operators are requested to report such incidents as quickly as possible. The reporting procedures are described below.

1 Definition of air traffic incidents

An “air traffic incident” means a serious occurrence involving air traffic, such as-

1) a near collision; or
2) serious difficulty caused by:

a) faulty procedures or lack of compliance with applicable procedures; or
b) failure of systems or ground facilities.
c) Any other phenomena/action that has potential to jeopardise aircraft safety, while in the air or ground, for the purpose of flight.

A near collision is an occurrence in which a collision between two or more aircraft is prevented only by some fortuitous circumstances or the taking of some avoiding action by one or more of the pilots concerned.

It is emphasized that any incidents affecting air traffic safety should be reported by means of the procedure described herein.

2 Reporting of Air Traffic Incidents by pilots

2.1 A pilot who has been involved in an incident should proceed as follows:

a) During flight he/she should use the appropriate air/ground frequency for reporting an incident of major significance, particularly if it involves other aircraft, so as to permit the CAA to ascertain all relevant facts immediately.
b) As promptly as possible after landing he/she should submit a completed appropriate CSSR Form published on SACAA website.

i) for supplementing a report of an incident made initially as in (a) above, or making the initial report as such incident if it was not possible to report it by radio;
ii) for reporting an incident which did not require immediate notification at the time of occurrence.

2.2 An initial report made by radio should contain the following information:-

– Callsign of aircraft making a report
– Position
– Flight level, altitude or height
– Avoiding action taken, if any, including reasons thereof
– Time of incident where possible

NOTE: Incident report on Air/Ground radio should be kept as brief as possible, as the communication facility might be required for continued operations by Air Traffic Services. The Pilot in Command is required to complete and forward a comprehensive incident report on appropriate form after landing.

3 Purpose of reporting.

The purpose of the form is to provide the CAA with as complete information on an air traffic incident as possible in order that a proper investigation of the incident may be made and the necessary steps taken to avoid a recurrence of similar incidents. Where the form is completed properly, and in detail, it will normally not be necessary to call for further information and it will be possible to complete the investigation with the least possible delay.

4 CONFIDENTIAL AVIATION HAZARD REPORTING SYSTEM (CAHRS)

4.1 What is CAHRS

a) Confidential Aviation Hazard Reporting System is a voluntary, non-punitive, confidential reporting system established under the Civil Aviation Regulations (CAR) 12.01.10. As per this regulation, the Executive responsible for Aircraft Accident and Incident investigation and the designated body or institution referred to in regulation 12.01.2, shall establish a confidential aviation hazard reporting system to promote aviation safety and reduce the risk of accidents or incidents. The system provides a channel for the confidential reporting of aviation hazards or occurrences while protecting the reporter's identity.

b) Note: The CAHRS system does not eliminate the need for mandatory reporting of aircraft accidents and incidents to the Aircraft Incident Investigations Department (AIID) under the existing CAR 12.01 regulations. Studies indicate that mandatory occurrence reporting systems tend to collect more technical data (e.g. hardware failures) than human performance aspects. To address this limitation and enhance the comprehensiveness of safety reporting, the International Civil Aviation Organization (ICAO), urges member States to implement voluntary safety reporting systems such as the CAHRS.

4.2 The objectives of CAHRS

a) To prevent accidents and incidents by early identification of hazards before there is a loss of life, injury or damage.

b) To improve the safety awareness of the current aviation community.

c) To enhance the basis for human factors research and recommendations for future procedures, operations, facilities and equipment.

d) To foster a culture of learning from reported hazards by enabling the sharing of lessons learned across the aviation industry.

4.3 Why is it important to report hazards

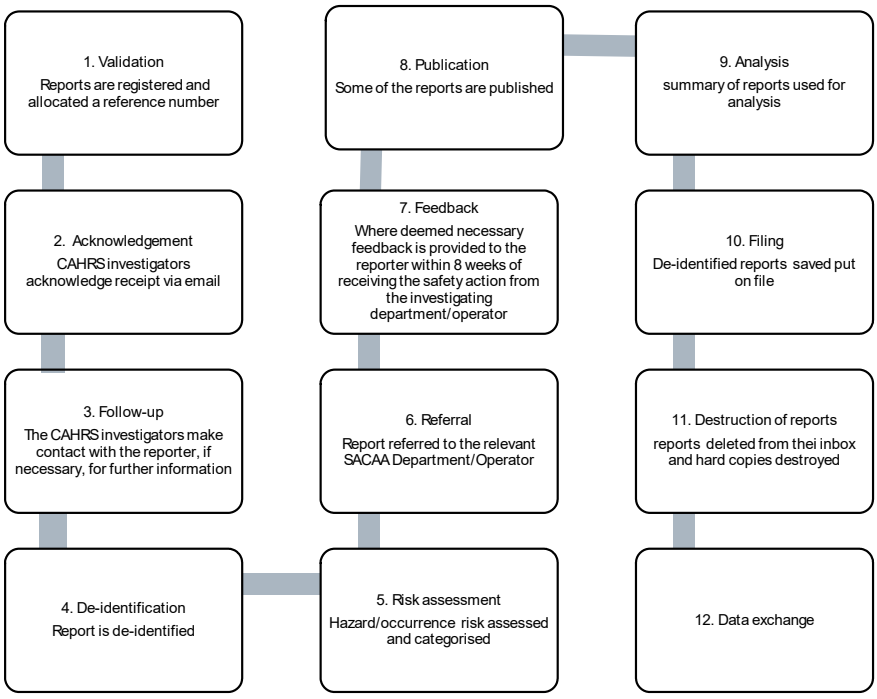
a) The timely, proactive reporting of hazards assists in identifying and mitigating aviation hazards and risks, that might lead to potential incidents and accidents. Unfortunately, some hazards may be overlooked until a tragic event occurs, resulting in loss of life and damage. By fostering a culture of hazard reporting and analysis, we can work together to enhance aviation safety and prevent such devastating consequences.

4.4 How to report a hazard

a) CAHRS reports may be submitted using the CAHRS form CA 12-37. This form is accessible on the SACAA website https://www.caa.co.za/information-for-the-public/reporting/#cahrs and can be requested via e-mail at cahrs@caa.co.za, or obtained from the SACAA AIID offices.

b) The reporter must complete the form and submit it electronically via e-mail at cahrs@caa.co.za or in person to the SACAA Building 2 receptionist at 16 Treur Close, Waterfall Park, Bekker Street, Midrand.

4.5 What happens after your report has been submitted



4.6 **Contact details of the CAHRS team**

Recipient	***E-mail address***	***Mobile / WhatsApp contact***
CAHRS Inbox	cahrs@caa.co.za	N/A
Lerato Sekhukhune	sekhukhunel@caa.co.za	+2771 600 8599
Lerato Boya	boyal@caa.co.za	+2783 451 2606
Soomesh Maharaj	soomeshm@caa.co.za	+2783 461 6027

4.7 CAHRS form

SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division: Accident and Incident Investigation Division
Telephone number: 011-545-1000 Fax Number: 0115451453
Physical address: Ikhaya Lokundiza, 16 Treur Close, Waterfall Park, Bekker Street, Midrand, Gauteng
Postal address: Private Bag X73, Halfway House 1685 Website: www.caa.co.za

Form Number: CA 12-37

CONFIDENTIAL AVIATION HAZARD REPORTING (CAHRS) FORM

Submitter's Details	
Please fill in all blanks. This section will be destroyed, no record will be kept.	
Full Name	
Telephone Number	
Email Address	
Postal Address	
Date of Submission	

In terms of Civil Aviation Regulation (CAR) 2011: regulation 12.02.5(2) Any person who notifies the designated body or institution referred to in regulation 12.01.2 of an accident or incident, shall not be absolved from the duty to notify the Executive responsible for aircraft accident and incident investigation of such accident or incident in terms of regulation 12.02.1, 12.02.2 or 12.02.3, as the case may be;

12.03.1 This report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and **not to establish legal liability**.

All identities contained in this report will be removed to assure complete reporter confidentiality

To be completed by all						
Select the appropriate box and complete sections affiliated to that selection						
This report refers to	**Flight Operations**	**Cabin**	**Air Traffic**	**Ground Hazards**	**Engineering**	**Other**
	Fill in Section A & D	*Fill in* Section A & D	*Fill in* Section B & D	*Fill in* Section C & D	*Fill in* Section C & D	*Fill in section D*
The Event - Specify Hazard Type:						
Location:						
Date of Occurrence		Vehicle Registration		Local Time		

Section A: For FLIGHT DECK and CABIN CREW related Hazard Reports																			
Crew Position								Crew Duty											
Light / Visibility		Day			Night			Dawn			Dusk								
Type of Operation		Schedule			Charter			Corporate			Other specify								
Type of Aircraft (Make/Model)																			
Flight Phase		Taxi		Takeoff		Climb		Cruise		Descent		Approach		Landing					
Missed Approach (GA)		Other Specify																	
Weather (if applicable		VMC		IMC		Ice		Snow		Mixed		Turbulence							
		Marginal		Storm		Rain		Wind shear		Fog		Other Specify							

Section B: For AIR TRAFFIC related Hazard Reports																							
Type of Aircraft (Make/Model)																							
Flight Phase		Taxi		Takeoff Climb		Cruise		Descent		Approach		Landing		Other specify									
Missed Approach (GA)										Other specify													
Position of Aircraft		Altitude												feet		AMSL		AGL					
		Distance and radial from airport																					
Type of Flight		VFR		IFR		SVFR		Other specify															
								None															
Flight Plan																							
Cloud/Visibility		Ceiling		feet		Visibility		meters		RVR		meters											
Name of ATC Facility																							
ATC Service being provided																							
Type(s) of Airspace								*(Class A, B,C,D,E,F,G/Special Use Airspace)*															
Control Status		Visual Approach				Radar Control		Radar Vectors		On SID/STAR													
		Nil Communications				Unknown		None		Other specify													
Ground Facility		Communications				Navigation		Surveillance															

Section C: For ENGINEERING and GROUND RELATED Hazard Reports													
Aircraft/ Engine Type													
System/Component													
Activity (Maintenance/Turn Around/Refueling etc. Around Refueling etc.)													
Weather (if applicable)		Rain		Windy		Wet		Thunderstorm					
		Snow		Icing		Fog		Hail					
Light / Visibility		Day		Night		Poor		Satisfactory					
		Good											
Area of Occurrence		Hangar		Run-Up Bay		Ramp		Gate					
		Parking		Other specify									

SAFETY INFORMATION								
Does the organization have a safety management program?	Yes	No	Does the organization have a quality assurance program?	Yes	No	Has the organization recently been subject to an outside audit?	Yes	No
Is there a safety department? If so, to whom does it report?	Yes	No	Report to? (CEO/Executive/etc.)	Has there been a formal hazard analysis of the operation?			Yes	No

Section D: COMPLETED BY ALL – Give a detailed account of the event
Keeping in mind the topics shown below, discuss those that you feel are relevant and anything else you think is important. Include what you believe caused the problem and what can be done to prevent recurrence or correct the situation (use extra pages if needed).
What Happened?

Why did it Happen? (Optional)
Was it fixed? (Optional)

Please provide us with physical evidence such as photographs, chart or diagrams
Any Recommendations? (Optional)

FOR OFFICE USE ONLY:			
REFERENCE NO.:		**Date Report Received:**	
SUBMITTING YOUR REPORT ***FAX or EMAIL your report*** **This is an email-locked and secure fax-based system** **Fax us on 011-545-1453 or Email: cahrs@caa.co.za** ***You can also POST your report*** **Please fold pages, enclose in a sealed, stamped envelope and mail to:** **Confidential Aviation Hazard Reporting System Private Bag x73** **Halfway House 1685** **FEEDBACK ON REPORTS AND CORRECTIVE ACTIONS TAKEN CAN BE VIEWED ON THE CAA WEBSITE:** **www.caa.co.za**			

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ENR 2 AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA and CTA

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
CAPE TOWN FLIGHT INFORMATION REGION (FIR)					
(a) From a point at 370000.00S 0150000.00E along a straight line to a point at 303000.00S 0150000.00E (b) Thence along a straight line to a point at 303025.00S 0211621.00E (c) Thence along a straight line to a point at 311949.00S 0234558.00E (d) Thence along a straight line to a point at 305544.78S 0255953.35E (e) Thence along a straight line to a point at 302825.17S 0281717.99E (f) Thence along a straight line to a point at 313631.96S 0293111.46E (g) Thence along a straight line to a point at 330000.00S 0320000.00E (h) Thence along a straight line to a point at 370000.00S 0280000.00E (i) Thence along a straight line to a point at 370000.00S 0222541.84E (j) Thence along a straight line back to the starting point at 370000.00S 0150000.00E	FL650 GND Class of airspace outside other regulated airspace: FL195 GND Class G FL460 FL200 Class A FL650 FL460 Class G	Cape Town Area Control	Cape Town Area English H24		
CONTROL AREAS WITHIN CAPE TOWN FIR					
CAPE TOWN CONTROL AREA (CTA) - AREA A					
(a) From a point at 325324.42S 0174000.01E thence a straight line to a point at 332000.00S 0174000.00E (b) Thence a straight line to a point at 333400.00S 0181900.00E (c) Thence a straight line to a point at 332900.00S 0184700.00E (d) Thence a straight line to a point at 331137.97S 0185828.10E (e) Thence a straight line to a point at 323944.52S 0185555.76E (f) Thence clockwise along the arc of a circle, radius 80NM, and centered at 335810.82S 0183618.19E, to a point at 341718.44S 0200953.25E (g) Thence a straight line to a point at 341739.88S 0193147.56E	FL195 FL145 Class C	ACC Cape Town	Cape Town Control English	125.1 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(h) Thence clockwise along the arc of a circle, radius 50NM and centered at 335810.82S 0183618.19E, to a point at 343650.03S 0191440.96E (i) Thence a straight line to a point at 342600.00S 0184900.00E (j) Thence a straight line to a point at 342000.00S 0184700.00E (k) Thence a straight line to a point at 342000.00S 0174230.00E (l) Thence a straight line to a point at 342002.82S 0170333.81E (m) Thence clockwise along the arc of a circle, radius 80NM, and centered at 335810.82S 0183618.19E back to the starting point at 325324.42S 0174000.01E.					

CAPE TOWN CONTROL AREA (CTA) AREA B					
(a) From a point at 325410.12S 0291203.38E, thence along a straight line to a point at 341843.33S 0254327.63E (b) Thence a straight line to a point at 342631.23S 0250619.02E (c) Thence a straight line to a point at 343029.94S 0222306.75E (d) Thence clockwise around the arc of a circle radius 30NM centered at point 340026.66S 0222233.62E to a point at 341419.20S 0215029.73E (e) Thence a straight line to a point at 341455.77S 0210001.62E (f) Thence clockwise around the arc of a circle radius 70NM centered at point 340026.66S 0222233.62E to a point at 325018.30S 0222127.66E (g) Thence a straight line to a point at 325018.24S 0245611.65E (h) Thence a straight line to a point at 324122.88S 0253550.38E (i) Thence a straight line to a point at 320152.05S 0270708.14E (j) Thence clockwise around the arc of a circle radius 70NM centered at point 330213.16S 0274923.36E back to the starting point at 325410.12S 0291203.38E.	FL195 FL145 Class C	ACC Cape Town	Cape Town Area West Cape Town Area East English	125.1 MHz 124.7 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC. Both FREQ (125.1 MHz and 124.7 MHz) in use depending on Area sector dimensions. See FACA ACC West and East definitions in ENR 2.1

Name *lateral limits*	*Vertical limits* *Class of Airspace*	*Unit providing service*	*Call signs* *Languages* *Area and conditions of use* *Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
CAPE TOWN TERMINAL CONTROL AREA A (TMA A)					
(a) From a point at 335134.41S 0181336.62E, clockwise along the arc of a circle, radius 20NM, and centred at 335810.82S 0183618.19E to a point at 334846.22S 0185731.05E. (b) Thence a straight line to a point at 335204.61S 0185006.39E. (c) Thence clockwise along the arc of a circle, radius 13NM, and centred at 335810.82S 0183618.19E to a point at 340318.23S 0185040.48E. (d) Thence a straight line to a point at 340500.67S 0185502.80E. (e) Thence clockwise along the arc of a circle, radius 17NM, and centred at 335810.82S 0183618.19E to a point at 341134.26S 0184856.05E. (f) Thence a straight line to a point at 341526.00S 0185046.90E. (g) Thence a straight line to a point at 341750.20S 0184817.70E. (h) Thence a straight line to a point at 342051.70S 0184903.20E. (i) Thence clockwise along the arc of a circle, radius 25NM, and centred at 335810.82S 0183618.19E to a point at 342226.94S 0182854.16E. (j) Thence a straight line to a point at 341400.00S 0182830.00E. (k) Thence a straight line to a point at 341100.00S 0182600.00E. (l) Thence a straight line to a point at 340810.00S 0182600.00E. (m) Thence a straight line to a point at 340600.00S 0182850.00E. (n) Thence a straight line to a point at 335530.00S 0182730.00E. (o) Thence a straight line back to the starting point at 335134.41S 0181336.62E.	FL085 2500 FT ALT Class C	APP Cape Town	Cape Town Approach English H24	119.7 MHz	Except where otherwise authorized, no aircraft is to be operated in this airspace unless two way radio contact is maintained with air traffic control VHF extended range relay station 119.7 MHz Jonaskop

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
CAPE TOWN TERMINAL CONTROL AREA B (TMA B)					
(a) From a point at 334846.22S 0185731.05E anti-clockwise along the arc of a circle, radius 20NM, and centred at 335810.82S 0183618.19E to a point at 335134.41S 0181336.62E. (b) Thence along a straight line to a point at 335530.00S 0182730.00E. (c) Thence a straight line to a point at 340600.00S 0182850.00E. (d) Thence a straight line to a point at 340810.00S 0182600.00E. (e) Thence a straight line to a point at 341100.00S 0182600.00E. (f) Thence a straight line to a point at 341400.00S 0182830.00E. (g) Thence a straight line to a point at 342226.94S 0182854.16E. (h) Thence anti-clockwise along the arc of a circle, radius 25NM, and centred at 335810.82S 0183618.19E to a point at 342051.70S 0184903.20E. (i) Thence a straight line to a point at 342551.18S 0185023.04E. (j) Thence clockwise along the arc of a circle, radius 30NM, and centred at 335810.82S 0183618.19E to a point at 334402.86S 0190805.81E. (k) Thence a straight line to a starting point at 334846.22S 0185731.05E.	FL085 4500 FT ALT Class C	APP Cape Town	Cape Town Approach English	119.7 MHz	Except where otherwise authorized, no aircraft is to be operated in this airspace unless two-way radio contact is maintained with air traffic control.
CAPE TOWN TERMINAL CONTROL AREA C (TMA C)					
(a) From a point at 340500.67S 0185502.80E, clockwise along the arc of a circle, radius 17NM, and centred at 335810.82S 0183618.19E to a point at 341134.26S 0184856.05E. (b) Thence a straight line to a point at 341526.00S 0185046.90E. (c) Thence a straight line to a point at 341750.20S 0184817.70E. (d) Thence a straight line to a point at 342551.18S 0185023.04E. (e) Thence anti-clockwise along the arc of a circle, radius 30NM, and centred at 335810.82S 0183618.19E to a point at 341024.40S 0190918.80E. (f) Thence a straight line back to the starting point at 340500.67S 0185502.80E.	FL085 5500 FT ALT Class C	APP Cape Town	Cape Town Approach English	119.7 MHz	Except where otherwise authorized, no aircraft is to be operated in this airspace unless two-way radio contact is maintained with air traffic control.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
CAPE TOWN TERMINAL CONTROL AREA D (TMA D)					
(a) From a point at 340434.89S 0185356.71E, anti-clockwise along the arc of a circle, radius 16NM, and centred at 335810.82S 0183618.19E to a point at 335039.64S 0185317.03E. (b) Thence a straight line to a point at 334402.86S 0190805.81E. (c) Thence clockwise along the arc of a circle, radius 30NM, and centred at 335810.82S 0183618.19E to a point at 341024.40S 0190918.80E. (d) Thence a straight line back to the starting point at 340434.89S 0185356.71E.	FL085 7500 FT ALT Class C	APP Cape Town	Cape Town Approach English H24	119.7 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
CAPE TOWN TERMINAL CONTROL AREA E (TMA E)					
(a) From a point at 330806.87S 0183832.67E, clockwise along the arc of a circle, radius 50NM, and centred at 335810.82S 0183618.19E to a point at 332423.97S 0175202.90E. (b) Thence a straight line to a point at 333252.88S 0181651.69E. (c) Thence clockwise along the arc of a circle, radius 30NM, and centred at 335810.82S 0183618.19E to a point at 332809.24S 0183431.25E. (d) Thence a straight line back to the starting point at 330806.87S 0183832.67E.	FL145 FL085 Class C	APP Cape Town	Cape Town Approach English H24	119.7 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
CAPE TOWN TERMINAL CONTROL AREA F (TMA F)					
(a) From a point at 335039.64S 0185317.03E along a straight line to a point at 335204.61S 0185006.39E. (b) Thence clockwise along the arc of a circle, radius 13NM, and centred at 335810.82S 0183618.19E to a point at 340318.23S 0185040.48E. (c) Thence a straight line to a point at 340434.89S 0185356.71E. (d) Thence anti-clockwise along the arc of a circle, radius 16NM, and centred at 335810.82S 0183618.19E back to a point at 335039.64S 0185317.03E.	FL085 4500 FT ALT Class C	APP Cape Town	Cape Town Approach English H24	119.7 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
EAST LONDON TERMINAL CONTROL AREA A (TMA A)					
(a) From a point 332158.40S 0274515.56E, thence clockwise along the arc of a circle, radius 20NM, and centered at 330213.21S 0274922.90E to a point at 325812.08S 0272604.46E. (b) Thence a straight line to a point at 325633.58S 0273019.14E (c) Thence clockwise along the arc of a circle, radius 17NM, centered at 330213.21S 0274922.90E to a point at 324538.59S 0274444.39E. (d) Thence a straight line to a point at 324440.13S 0274427.76E (e) Thence clockwise along the arc of a circle, radius 18NM, centered at 330213.21S 0274922.90E to a point at 331427.19S 0280509.42E a straight line to the starting point at 332158.40S 0274515.56E. (f) Thence a straight line to the starting point at 332158.40S 0274515.56E.	FL145 2500 FT ALT Class C	APP East London	East London Approach English	120.1MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
EAST LONDON TERMINAL CONTROL AREA B (TMA B)					
(a) From a point 330303.60S 0271340.60E clockwise along the arc of a circle, radius 30NM, and centered at 330213.21S 0274922.90E to a point at 325855.44S 0282451.07E. (b) Thence a straight line to a point at 331223.84S 0281033.74E. (c) Thence a straight line to a point at 331427.19S 0280509.42E (d) Thence anti-clockwise along the arc of a circle, radius 18NM, centered at 330213.21S 0274922.90E to a point at 324440.13S 0274427.76E. (e) Thence a straight line to a point at 324538.59S 0274444.39E (f) Thence anti-clockwise along the arc of a circle, radius 17NM, centered at 330213.21S 0274922.90E to a point at 325632.77S 0273019.47E. (g) Thence along a straight line to the starting point at 330303.60S 0271340.60E.	FL145 4500 FT ALT Class C	APP East London	East London Approach English	120.1MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
EAST LONDON TERMINAL CONTROL AREA C (TMA C)					
(a) From a point 332158.40S 0274515.56E, thence clockwise along the arc of a circle, radius 20NM, and centered at 330213.21S 0274922.90E to a point at 325813.22S 0272603.49E. (b) Thence a straight line to a point at 330303.60S 0271340.60E. (c) Thence anti-clockwise along the arc of a circle, radius 30NM, centered at 330213.21S 0274922.90E to a point at 332737.04S 0273011.68E. (d) Thence a straight line to the starting point at 332158.40S 0274515.56E	FL145 4500 FT ALT Class C	APP East London	East London Approach English	120.1MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
EAST LONDON TERMINAL CONTROL AREA D (TMA D)					
(a) From a point 332718.37S 0271208.16E, thence clockwise along the arc of a circle, radius 40NM, and centered at 330213.21S 0274922.90E to a point at 324943.46S 0283433.04E (b) Thence a straight line to a point at 325855.44S 0282451.07E (c) Thence anti-clockwise along the arc of a circle, radius 30NM centered at 330213.21S 0274922.90E to a point at 332103.12S 0272128.82E (d) Thence a straight line to the starting point at 332718.37S 0271208.16E.	FL145 6500FT ALT Class C	APP East London	East London Approach English	120.1MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
EAST LONDON TERMINAL CONTROL AREA E (TMA E)					
(a) From a point 333331.83S 0270247.70E, thence clockwise along the arc of a circle, radius 50NM, and centered at 330213.21S 0274922.90E to a point at 324119.93S 0284321.55E (b) Thence a straight line to a point at 324943.46S 0283433.04E (c) Thence anti-clockwise along the arc of a circle, radius 40NM, centered at 330213.21S 0274922.90E to a point at 332718.37S 0271208.16E (d) Thence a straight line to the starting point at 333331.83S 0270247.70E	FL145 FL105 Class C	APP East London	East London Approach English	120.1MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
GEORGE TERMINAL CONTROL AREA A (TMA A)					
(a) From a point at 340946.30S 0221137.93E, thence a straight line to a point at 341016.08S 0223250.43E. (b) Thence anti-clockwise along the arc of a circle, radius 13NM, and centered at 340026.66S 0222233.62E to a point at 340217.55S 0223802.71E. (c) Thence a straight line to a point at 340406.48S 0225332.38E. (d) Thence clockwise along the arc of a circle, radius 26NM, and centered at 340026.66S 0222233.62E to a point at 340827.32S 0225220.82E. (e) Thence a straight line to a point at 340900.90S 0225710.91E. (f) Thence clockwise along the arc of a circle, radius 30NM, centered at 340026.66S 0222233.62E to apoint at 342156.50S 0215716.59E (g) Thence a straight line to the starting point at 340946.30S 0221137.93E.	FL145 2000 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	VHF relay station Potjiesberg 128.20 MHz Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
GEORGE TERMINAL CONTROL AREA B (TMA B)					
(a) From a point at 335335.60S 0220232.46E, thence a straight line to a point at 335530.10S 0220805.74E (b) Thence a straight line to a point at 335638.69S 0221125.87E (c) Thence a straight line to a point at 335726.32S 0222230.74E (d) Thence a straight line to a point at 335614.31S 0223721.40E e) Thence a straight line to a point at 335436.79S 0224302.45E (f) Thence clockwise along the arc of a circle, radius 18NM, and centred at 340026.66S 0222233.62E to a point at 340259.68S 0224400.20E (g) Thence a straight line to a point at 340217.55S 0223802.71E (h) Thence clockwise along the arc of a circle, radius 13NM, and centred at 340026.66S 0222233.62E to a point at 341016.08S 0223250.43E (i) Thence a straight line to a point at 340946.30S 0221137.93E (j) Thence clockwise along the arc of a circle, radius 13NM, and centred at 340026.66S 0222233.62E to a point at 340103.43S 0220656.12E (k) Thence a straight line to a point at 340117.04S 0220055.56E (l) Thence clockwise along the arc of a circle, radius 18NM, and centred at 340026.66S 0222233.62E back to the starting point at 335335.60S 0220232.46E.	FL145 4500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
GEORGE TERMINAL CONTROL AREA C (TMA C)					
(a) From a point at 335436.79S 0224302.45E, thence a straight line to a point at 335200.23S 0225207.66E. (b) Thence clockwise along the arc of a circle, radius 26NM, and centered at 340026.66S 0222233.62E to a point at 340406.48S 0225332.38E. (c) Thence a straight line to a point at 340259.68S 0224400.20E. (d) Thence anti-clockwise along the arc of a circle, radius 18NM, and centered at 340026.66S 0222233.62E back to the starting point at 335436.79S 0224302.45E.	FL145 5500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
GEORGE TERMINAL CONTROL AREA D (TMA D)					
(a) From a point at 335200.23S 0225207.66E, thence a straight line to a point at 334406.64S 0231919.78E (b) Thence clockwise along the arc of a circle, radius 50NM, and centered at 340026.66S 0222233.62E to a point at 341144.91S 0232113.23E. (c) Thence a straight line to a point at 340827.32S 0225220.82E. (d) Thence anti-clockwise along the arc of a circle, radius 26NM, centered at 340026.66S 0222233.62E back to the starting point at 335200.23S 0225207.66E.	FL145 6500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
GEORGE TERMINAL CONTROL AREA E (TMA E)					
(a) From a point at 332522.58S 0222200.16E, thence a straight line to a point at 332447.04S 0230439.60E. (b) Thence clockwise along the arc of a circle, radius 50NM, and centered at 340026.66S 0222233.62E to a point at 334406.64S 0231919.78E. (c) Thence a straight line to a point at 335239.43S 0224951.42E. (d) Thence anti-clockwise along the arc of a circle, radius 24NM, centered at 340026.66S 0222233.62E to a point at 333623.89S 0222210.58E. (e) Thence a straight line back to the starting point at 332522.58S 0222200.16E.	FL145 FL085 Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
GEORGE TERMINAL CONTROL AREA F (TMA F)					
(a) From a point at 335117.82S 0215552.65E, thence clockwise along the arc of a circle, radius 24NM, and centered at 340026.66S 0222233.62E to a point at 335239.43S 0224951.42E. (b) Thence a straight line to a point at 335614.31S 0223721.40E (c) Thence a straight line to a point at 335726.32S 0222230.74E (d) Thence a straight line to a point at 335638.69S 0221125.87E (e) Thence a straight line to the starting point at 335117.82S 0215552.65E.	FL145 6500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
GEORGE TERMINAL CONTROL AREA G (TMA G)					
(a) From a point at 334554.95S 0214021.33E, thence a straight line to a point at 335335.60S 0220232.46E. (b) Thence anti-clockwise along the arc of a circle, radius 18NM, and centered at 340026.66S 0222233.62E to a point at 340117.04S 0220055.56E. (c) Thence a straight line to a point at 340208.58S 0213652.48E. (d) Thence clockwise along the arc of a circle 38NM, and centered at 340026.66S 0222233.62E back to the starting point at 334554.95S 0214021.33E.	FL145 5500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
GEORGE TERMINAL CONTROL AREA H (TMA H)					
(a) From a point at 334116.62S 0212704.58E thence a straight line to a point at 334554.95S 0214021.33E. (b) Thence anti-clockwise along the arc of a circle, radius 38NM, and centered at 340026.66S 0222233.62E to a point at 340208.58S 0213652.48E. (c) Thence a straight line to a point at 340237.25S 0212226.42E. (d) Thence clockwise along the arc of a circle 50NM, and centered at 340026.66S 0222233.62E back to the starting point at 334116.62S 0212704.58E.	FL145 7500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
GEORGE TERMINAL CONTROL AREA I (TMA I)					
(a) From a point at 340237.25S 0212226.42E thence a straight line to a point at 340103.43S 0220656.12E. (b) Thence anti-clockwise along the arc of a circle, radius 13NM, and centered at 340026.66S 0222233.62E to a point at 340946.30S 0221137.93E. (c) Thence a straight line to a point at 342156.50S 0215716.59E. (d) Thence clockwise along the arc of a circle 30NM, and centered at 340026.66S 0222233.62E to a point at 341419.20S 0215029.73E. (e) Thence a straight line to a point at 341440.42S 0212447.60E.	FL145 3500 FT ALT Class C	APP George	George Approach English MON-THU: 0430-1700 FRI: 0430-1800 SAT: 0630-1300 SUN: 0630-1730	128.20 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(f) Thence clockwise along the arc of a circle 50NM, and centered at 340026.66S 0222233.62E back to the starting point at 340237.25S 0212226.42E.					
NOTE: All Aircraft operating below George TMA area are to be on George QNH.					

OVERBERG TERMINAL CONTROL AREA (TMA)					
(a) From a point at 341720.00S 0205900.00E clockwise along the arc of a circle radius 40 NM and centred at 343322.03S 0201449.70E to a point at 342404.44S 0192753.82E (b) Thence anti-clockwise along the arc of a circle radius 50NM and centred at 335810.82S 0183618.19E along the Cape Town CTA A to a point at 341739.88S 0193147.56E (c) Thence a straight line to a point at 341718.44S 0200953.25E. (d) Thence a straight line back to the starting point at 341720.00S 0205900.00E	FL195 3500 FT AMSL Class C	APP Bredas-dorp	Bredasdorp Approach English		Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
All airways within the Cape Town FIR - See ENR 3-1					

PORT ELIZABETH TERMINAL CONTROL AREA A (TMA A)					
(a) From a point 342029.269S 0251025.266E, thence clockwise around the arc of a circle, radius 30NM centred at 335933.01S 0253620.75E to a point at 340801.42S 0250144.24E (b) Thence a straight line to a point at 335713.35S 0252324.83E. (c) Thence a straight line to a point at 334857.77S 0254001.15E. (d) Thence a straight line to a point at 334036.99S 0260419.481E. (e) Thence clockwise around the arc of a circle, radius 30NM, centred at 335933.01S 0253620.75E to a point at 335851. 62S 0261225.36E. (f) Thence a straight line to a point at 341406.65S 0254049.61E (g) Thence back to the starting point at 342029.269S 0251025.266E	FL145 2000 FT ALT Class C	APP Port Elizabeth	Port Elizabeth Approach English	120.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

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1	*2*	*3*	*4*	*5*	*6*
PORT ELIZABETH TERMINAL CONTROL AREA B (TMA B)					
(a) From the starting point 340801.42S 0250144.24E, clockwise around the arc of a circle radius 30NM, centred at 335933.01S 0253620.75E to a point at 335239.438S 0250114.709E. (b) Thence a straight line to a point at 335507.77S 0251906.361E. (c) Thence clockwise around the arc of a circle radius 15NM, centred at 335933.01S 0253620.75E to a point at 334841.613S 0252352.846E (d) Thence a straight line to a point at 333045.08S 0252600.24E. (e) Thence clockwise around the arc of a circle radius 30NM, centred at 335933.01S 0253620.75E to a point at 334036.99S 0260419.481E (f) Thence a straight line to a point at 334857.77S 0254001.15E (g) Thence a straight line to a point at 335713.35S 0252324.83E (h) Thence back to the starting point at 340801.42S 0250144.24E	FL145 2500 FT ALT Class C	APP Port Elizabeth	Port Elizabeth Approach English	120.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
PORT ELIZABETH TERMINAL CONTROL AREA C (TMA C)					
(a) From the starting at point 330951.714S 0252828.357E, clockwise around the arc of a circle radius 50NM, centred at 335933.01S 0253620.75E to a point at 334755.94S 0263446.63E (b) Thence a straight line to a point at 335851.68S 0261225.36E. (c) Thence anti-clockwise around the arc of a circle radius 30NM, centred at 335933.01S 0253620.75E to a point at 333045.08S 0252600.24E. (d) Thence a straight line to the starting point at 330951.714S 0252828.357E	FL145 6500 FT ALT Class C	APP Port Elizabeth	Port Elizabeth Approach English	120.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

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1	*2*	*3*	*4*	*5*	*6*
PORT ELIZABETH TERMINAL CONTROL AREA D (TMA D)					
(a) From the starting point at 342218.43S 0244239.36E, clockwise around the arc of a circle radius 50NM, centred at 335933.01S 0253620.75E to a point at 334919.218S 0243731.62E. (b) Thence a straight line to a point at 335239.438S 0250114.709E. (c) Thence anti-clockwise around the arc of a circle radius 30NM, centred at 335933.01S 0253620.75E to a point at 342029.269S 0251025.266E (d) Thence a straight line to the starting point at 342218.43S 0244239.36E.	FL145 6500 FT ALT Class C	APP Port Elizabeth	Port Elizabeth Approach English	120.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
PORT ELIZABETH TERMINAL CONTROL AREA E (TMA E)					
(a) From the starting point at 335239.438S 0250114.709E, clockwise around the arc of a circle radius 30NM, centred at 335933.01S 0253620.75E to a point at 333045.08S 0252600.24E. (b) Thence a straight line to a point at 334841.613S 0252352.846E. (c) Thence anti-clockwise around the arc of a circle radius 15NM centred at 335933.01S 0253620.75E to a point at 335507.77S 0251906.361E (d) Thence a straight line to the starting point at 335239.438S 0250114.709E	FL145 7500 FT ALT Class C	APP Port Elizabeth	Port Elizabeth Approach English	120.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

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1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG FLIGHT INFORMATION REGION (FIR)					
(a) From a point at 273000.00S 0150000.00E along a straight line to a point at 273000.00S 0195439.00E (b) Thence along a straight line to a point at 273000.00S 0210000.00E (c) Thence along a straight line to a point at 264927.00S 0210136.00E (d) Thence along the Orange River, the international boundary between the South Africa and Botswana to a point at 254528.17S 0252159.85E (e) Thence along the international boundaries between South Africa and Botswana to a point at 222727.73S 0285028.09E. (f) Thence clockwise along the international boundaries between South Africa, Botswana, Zimbabwe, Mozambique to a point at 255708.24S 0315830.52E (g) Thence along the international boundaries between Swaziland and Mozambique to a point 265024.88S 0320805.29E (h) Thence along the international boundaries between South Africa and Mozambique to a point 265030.00S 0325350.00E (i) Thence along a straight line to a point at 275000.00S 0350000.00E (j) Thence along a straight line to a point at 330000.00S 0320000.00E (k) Thence along a straight line to a point at 313631.96S 0293111.46E (l) Thence along a straight line to a point at 302825.17S 0281717.99E (m) Thence along a straight line to a point at 305544.78S 0255953.35E (n) Thence along a straight line to a point at 311949.00S 0234558.00E (o) Thence along a straight line to a point at 303025.00S 0211621.00E (p) Thence along a straight line to a point at 303000.00S 0150000.00E (q) Thence along a straight line to the starting point at 273000.00S 0150000.00E	FL650 GND Class of airspace outside other regulated airspace: FL195 1500FT AGL Class G FL460 FL200 Class A FL650 FL460 Class G	Johannes-burg Area Control	Johannesburg Information English H24 Johannesburg Area Control English H24	As per Johannes-burg Sector frequencies	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
BLOEMFONTEIN CONTROL AREA (CTA)					
(a) From a point 281618.52S 0262509.91E thence clockwise along the arc of a circle, radius 50NM, and centered at 290602.38S 0261802.31E to a point at 284225.96S 0270816.95E. (b) Thence a straight line to a point at 295554.06S 0262351.53E. (c) Thence clockwise along the arc of a circle, radius 50NM, and centered at 290602.38S 0261802.31E to a point at 295415.24S 0260222.79E. (d) Thence straight line to a point at 293147.12S 0243311.10E. (e) Thence clockwise along the arc of a circle, radius 45NM, and centered at 284759.81S 0244537.32E to a point at 285421.14S 0235448.96E. (f) Thence a straight line to a point at 280650.89S 0250403.55E. (g) Thence a straight line to the starting point at 281618.52S 0262509.91E	FL195 FL145 Class C	Johannes-burg Central	Johannesburg Central H24	120.3 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
BLOEMFONTEIN TERMINAL CONTROL AREA A (TMA A)					
(a) From a point 291309.93S 0255641.23E, anti-clockwise along the arc of a circle, radius 8NM and centered at 290530.00S 0255400.00E to a point at 285758.39S 0255709.09E. (b) Thence clockwise along the arc of a circle, radius 20NM, and centered at 290602.38S 0261802.31E back to the starting point at 291309.93S 0255641.23E	FL145 6500 FT ALT Class C	APP Bloemfon-tein	Bloemfontein Approach MON-FRI: 0400-1800 SAT: 0630-1400 SUN: 0630-1800	124.3 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
BLOEMFONTEIN TERMINAL CONTROL AREA B (TMA B)					
(a) From a point 283134.92S 0261030.98E, clockwise along an arc of a circle, radius 35NM, and centered at 290602.38S 0261802.31E, to a point at 284535.08S 0265026.50E. (b) Thence a straight line to a point at 284912.66S 0264622.72E (c) Thence clockwise along an arc of a circle, radius 30NM, and centered at 290602.38S 0261802.31E, to a point at 293538.85S 0262403.16E (d) Thence a straight line to a point at 294043.19S 0262406.48E. (e) Thence clockwise along an arc of a circle, radius 35NM, and centered at 290602.38S 0261802.31E, to a point at 292108.31S 0254155.82E. (f) Thence a straight line to a point at 291309.93S 0255641.23E. (g) Thence anti-clockwise along an arc of a circle, radius 20NM, and centered at 290602.38S 0261802.31E, to a point at 284732.83S 0260913.71E. (h) Thence a straight line back to the starting point at 283134.92S 0261030.98E.	FL145 FL085 Class C	APP Bloemfon-tein	Bloemfontein Approach MON-FRI: 0400-1800 SAT: 0630-1400 SUN: 0630-1800	124.3 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
BLOEMFONTEIN TERMINAL CONTROL AREA C (TMA C)					
(a)From a point 291309.93S 0255641.23E, clockwise along the arc of a circle, radius 8NM, and centered at 290530.00S 0255400.00E to a point at 285758.39S 0255709.09E. (b) Thence clockwise along the arc of a circle, radius 20NM, and centered at 290602.38S 0261802.31E to a point at 284732.83S 0260913.71E. (c) Thence a straight line to a point at 283134.92S 0261030.98E. (d) Thence anti-clockwise along the arc of a circle, radius 35NM, and centered at 290602.38S 0261802.31E to a point at 292108.31S 0254155.82E. (e) Thence a straight line back to the starting point at 291309.93S 0255641.23E.	FL145 FL085 Class C	APP Bloemfon-tein	Bloemfontein Approach MON-FRI: 0400-1800 SAT: 0630-1400 SUN: 0630-1800	124.3 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
BLOEMFONTEIN TERMINAL CONTROL AREA D (TMA D)					
(a) From a point 295049.39S 0262413.13E, clockwise along an arc of a circle, radius 45NM, and centered at 290602.38S 0261802.31E, to a point at 293851.66S 0254242.23E. (b) Thence a straight line to a point at 294206.63S 0253817.48E. (c) Thence clockwise along an arc of a circle, radius 50NM, and centered at 290602.38S 0261802.31E, to a point at 292902.07S 0252713.71E. (d) Thence a straight line to a point at 292108.31S 0254155.82E. (e) Thence anti-clockwise along an arc of a circle, radius 35NM, and centered at 290602.38S 0261802.31E, to a point at 294043.19S 0262406.48E (f) Thence a straight line back to the starting point at 295049.39S 0262413.13E.	FL145 FL105 Class C	APP Bloemfon-tein	Bloemfontein Approach MON-FRI: 0400-1800 SAT: 0630-1400 SUN: 0630-1800	124.3 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
BLOEMFONTEIN TERMINAL CONTROL AREA E (TMA E)					
(a) From a point 283134.92S 0261030.98E, clockwise along an arc of a circle, radius 35NM, and centered at 290602.38S 0261802.31E, to a point at 284535.08S 0265026.50E. (b) Thence a straight line to a point at 283821.96S 0265830.51E. (c) Thence anti-clockwise along an arc of a circle, radius 45NM, and centered at 290602.38S 0261802.31E, to a point at 282057.31S 0261610.52E. (d) Thence a straight line back to the starting point at 283134.92S 0261030.98E.	FL145 FL105 Class C	APP Bloemfon-tein	Bloemfontein Approach MON-FRI: 0400-1800 SAT: 0630-1400 SUN: 0630-1800	124.3 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
DURBAN CONTROL AREA A (CTA A)					
(a) From a point at 295622.82S 0311141.11E to a point at 305225.22S 0303710.73E (b) Thence clockwise around the arc of a circle, radius 80NM, centred at 293640.20S 0310729.03E to a point at 294946.72S 0323807.40E (c) Thence a straight line to a point at 294726.99S 0312650.75E (d) Thence clockwise around the arc of a circle, radius 20NM, centred at 293640.20S 0310729.03E to the starting point at 295622.82S E0311141.11E	FL200 FL145 Class C	Johannes-burg Area East	Johannesburg Area East English	129.1 MHz	
DURBAN CONTROL AREA B (CTA B)					
(a) From a point at 302522.72S 0305355.17E to a point at 303858.11S 0304531.93E (b) Thence clockwise around the arc of a circle, radius 65NM, centred at 293640.20S 0310729.03E to a point at 283400.42S 0312750.86E (c) Thence a straight line to a point at 284828.34S 0312310.88E (d) Thence anti-clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to the starting point at 302522.72S 0305355.17E	FL145 FL105 Class C	Johannes-burg Area East	Johannesburg Area East English	129.1 MHz	
DURBAN TERMINAL CONTROL AREA A (TMA A)					
(a) From a point at 285029.65S 0304514.83E a straight line to a point at 285943.78S 0304940.90E (b) Thence anti-clockwise around the arc of a circle, radius 40NM, centred at 293640.20S 0310729.03E to a point at 293215.39S 0302153.46E (c) Thence a straight line to a point at 293244.06S 0302013.23E (d) Thence anti-clockwise around the arc of a circle, radius 5NM, centred at 293729.97S 0302159.95E to a point at 294056.98S 0301750.19E (e) Thence a straight line to a point at 294523.13S 0302239.67E (f) Thence anti-clockwise around the arc of a circle, radius 40NM, centred at 293640.20S 0310729.03E to a point at 295212.20S 0302507.44E	FL145 FL075 Class C	APP Durban	Durban Approach English	125.75 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(g) Thence a straight line to a point at 295603.32S 0301430.12E (h) Thence clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to the starting point at 285029.65S 0304514.83E					
DURBAN TERMINAL CONTROL AREA B (TMA B)					
(a) From a point at 285029.65S 0304514.83E thence clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to a point at 284632.60S 0310730.00E (b) Thence a straight line to a point at 290635.69S 0310730.00E (c) Thence anti-clockwise around the arc of a circle, radius 30NM, centred at 293640.20S 0310729.03E to a point at 293219.58S 0303326.46E (d) Thence clockwise around the arc of a circle, radius 5NM, centred at 293529.92S 0302900.12E to a point at 293558.20S 0303442.71E (e) Thence a straight line to a point at 294322.32S 0303354.85E (f) Thence anti-clockwise around the arc of a circle, radius 30NM, centred at 293640.20S 0310729.03E to a point at 294820.05S 0303543.86E (g) Thence a straight line to a point at 295212.20S 0302507.44E (h) Thence clockwise around the arc of a circle, radius 40NM, centred at 293640.20S 0310729.03E to a point at 294523.13S 0302239.67E (i) Thence a straight line to a point at 294056.98S 0301750.19E (j) Thence clockwise around the arc of a circle, radius 5NM, centred at 293729.97S 0302159.95E to a point at 293244.06S 0302013.23E (k) Thence a straight line to a point at 293215.39S 0302153.46E (l) Thence clockwise around the arc of a circle, radius 40NM, centred at 293640.20S 0310729.03E to a point at 285943.78S 0304940.90E (m) Thence a straight line to the starting point at 285029.65S 0304514.83E	FL145 FL065 Class C	APP Durban	Durban Approach English	125.75 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
DURBAN TERMINAL CONTROL AREA C (TMA C)					
(a) From a point at 284632.60S 0310730.00E thence clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to a point at 285845.46S 0314453.55E (b) Thence a straight line to a point at 291008.50S 0313342.41E (c) Thence anti-clockwise around the arc of a circle, radius 35NM, centred at 293640.20S 0310729.03E to a point at 290421.65S 0312306.17E (d) Thence a straight line to a point at 291812.83S 0311626.08E (e) Thence anti-clockwise around the arc of a circle, radius 20NM, centred at 293640.20S 0310729.03E to a point at 291637.21S 0310730.00E (f) Thence a straight line to a point at 292137.96S 0310729.50E (g) Thence anti-clockwise around the arc of a circle, radius 15NM, centred at 293640.20S 0310729.03E to a point at 293624.00S 0305016.73E (h) Thence a straight line to a point at 293618.99S 0304432.64E (i) Thence anti-clockwise around the arc of a circle, radius 20NM, centred at 293640.20S 0310729.03E to a point at 295049.27S 0305112.69E (j) Thence a straight line to a point at 295753.11S 0304302.88E (k) Thence anti-clockwise around the arc of a circle, radius 30NM, centred at 293640.20S 0310729.03E to a point at 300432.21S 0305430.90E (l) Thence a straight line to a point at 302306.05S 0304547.97E (m) Thence clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to a point at 295603.32S 0301430.12E (n) Thence a straight line to a point at 294820.05S 0303543.86E (o) Thence clockwise around the arc of a circle, radius 30NM, centred at 293640.20S 0310729.03E to a point at 294322.32S 0303354.85E (p) Thence a straight line to a point at 293558.20S 0303442.71E	FL145 5500 FT ALT Class C	APP Durban	Durban Approach English	125.75 MHz	

Name *lateral limits*	*Vertical limits* *Class of Airspace*	*Unit providing service*	*Call signs* *Languages* *Area and conditions of use* *Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(q) Thence anti-clockwise around the arc of a circle, radius 5NM, centred at 293529.92S 0302900.12E to a point at 293219.58S 0303326.46E (r) Thence clockwise around the arc of a circle, radius 30NM, centred at 293640.20S 0310729.03E to a point at 290635.69S 0310730.00E (s) Thence a straight line to the starting point at 284632.60S 0310730.00E					
DURBAN TERMINAL CONTROL AREA D (TMA D)					
(a) From a point at 293618.99S 0304432.64E, a straight line to a point at 293624.00S 0305016.73E (b) Thence clockwise around the arc of a circle, radius 15NM, centred at 293640.20S 0310729.03E to a point at 292137.96S 0310729.50E (c) Thence a straight line to a point at 292638.71S 0310729.00E (d) Thence anti-clockwise around the arc of a circle, radius 10NM, centred at 293640.20S 0310729.03E to a point at 293958.07S 0305638.86E (e) Thence a straight line to a point at 294231.28S E0305137.46E (f) Thence anti-clockwise around the arc of a circle, radius 15NM, centred at 293640.20S 0310729.03E to a point at 295036.37S 0310100.83E (g) Thence a straight line to a point at 300432.21S 0305430.90E (h) Thence clockwise around the arc of a circle, radius 30NM, centred at 293640.20S 0310729.03E to a point at 295753.11S 0304302.88E (i) Thence a straight line to a point at 295049.27S 0305112.69E (j) Thence clockwise around the arc of a circle, radius 20NM, centred at 293640.20S 0310729.03E to the starting point at 293618.99S 0304432.64E	FL145 3500 FT ALT Class C	APP Durban	Durban Approach English	125.75 MHz	
DURBAN TERMINAL CONTROL AREA E (TMA E)					
(a) From a point at 291637.21S 0310730.00E, thence clockwise around the arc of a circle, radius 20NM, centred at 293640.20S 0310729.03E to a point at 291812.83S 0311626.08E	FL145 3000 FT ALT Class C	APP Durban	Durban Approach English	125.75 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(b) Thence a straight line to a point at 290421.65S 0312306.17E (c) Thence clockwise around the arc of a circle, radius 35NM, centred at 293640.20S 0310729.03E to a point at 291008.50S 0313342.41E (d) Thence a straight line to a point at 292646.53S 0311719.47E (e) Thence clockwise around the arc of a circle, radius 6NM, centred at 293059.50S 0311225.31E to a point at 293437.71S 0311754.06E (f) Thence a straight line to a point at 294505.32S 0310848.27E (g) Thence clockwise around the arc of a circle, radius 6NM, centred at 294126.74S 0310319.28E to a point at 294504.35S 0305749.60E (h) Thence a straight line to a point at 294717.00S 0305516.99E (i) Thence clockwise around the arc of a circle, radius 15NM, centred at 293640.20S 0310729.03E to a point at 294231.28S 0305137.46E (j) Thence a straight line to a point at 293958.07S 0305638.86E (k) Thence clockwise around the arc of a circle, radius 10NM, centred at 293640.20S 0310729.03E to a point at 292638.71S 0310729.00E (l) Thence a straight line to the starting point at 291637.21S 0310730.00E.					
DURBAN TERMINAL CONTROL AREA F (TMA F)					
(a) From a point at 292646.53S 0311719.47E, thence clockwise around the arc of a circle, radius 6NM, centred at 293059.50S 0311225.31E to a point at 293437.71S 0311754.06E (b) Thence a straight line to a point at 294505.32S 0310848.27E (c) Thence clockwise around the arc of a circle, radius 6NM, centred at 294126.74S 0310319.28E to a point at 294504.35S 0305749.60E (d) Thence a straight line to a point at 294717.00S 0305516.99E (e) Thence anti-clockwise around the arc of a circle, radius 15NM, centred at 293640.20S 0310729.03E to a point at 295036.37S 0310100.83E	FL145 2000 FT ALT Class C	APP Durban	Durban Approach English	125.75 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(f) Thence a straight line to a point at 302306.05S 0304547.97E (g) Thence anti-clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to a point at 302522.72S 0305355.17E (h) Thence a straight line to a point at 295622.82S 0311141.11E (i) Thence anti-clockwise around the arc of a circle, radius 20NM, centred at 293640.20S 0310729.03E to a point at 294726.99S 0312650.75E (j) Thence a straight line to a point at 294843.99S 0320312.79E (k) Thence anti-clockwise around the arc of a circle, radius 50NM, centred at 293640.20S 0310729.03E to a point at 285845.46S 0314453.55E (l) Thence a straight line to the starting point at 292646.53S 0311719.47E.					
DURBAN TERMINAL CONTROL AREA G (TMA G)					
(a) From a point at 285337.78S 0313647.59E, thence a straight line to a point at 283621.56S 0314550.55E (b) Thence clockwise along the arc of a circle, radius 19NM centred on 284416.00S 0320530.00E to a point at 290024.10S 0321701.01E (c) Thence a straight line to a point at 291127.06S 0315657.83E (d) Thence anti-clockwise along the arc of a circle, radius 50NM centred on 293640.20S 0310729.03E back to the starting point at 285337.78S 0313647.59E	FL145 2500 FT ALT Class C	APP Durban	Durban Approach English	125.75 MHz	
HOEDSPRUIT MILITARY TERMINAL CONTROL AREA (TMA)					
(a) A circle radius 30NM centred at 242049.93S 0310251.39E.	FL195 6000 FT ALT Class C	APP Hoedspruit	Hoedspruit Approach English	126.4 MHz	Outside ATC HR of SER, pilots to BCST on FREQ 126.4 MHz.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG CONTROL AREA (CTA)					
(a) From a point at 250840.00S 0281500.00E (b) Thence a straight line to a point at 241500S 0284450E (c) Thence a straight line to a point at 251000S 0282946E. (d) Thence clockwise around the arc of a circle radius 60NM centred at 260831.00S 0281415.00E to a point at 265149.66S 0290043.01E (e) Thence along a straight line to a point at 272001.48S 0291901.7E (f) Thence along a straight line to a point at 273902.69S 0284431.29E (g) Thence along a straight line to a point at 273000.00S 0283900.00E (h) Thence a straight line to a point at 273000.00S 0271245.00E (i) Thence a straight line to a point at 270030.00S 0274026.00E (j) Thence clockwise around the arc of a circle radius 60NM centred at a point 260831.00S 0281415.00E back to the starting point at 250840.00S 0281500.00E	FL195 FL110 Class C	ACC Johannes-burg	Johannesburg Control English H24	126.7 MHz Johannes-burg Area North 128.3 MHz Johannes-burg Area South	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
JOHANNESBURG TERMINAL CONTROL AREA (TMA)					
(a) From a point 254820.00S 0284545.00E a straight line to a point at 254500.00S 0291230.00E. (b) Thence a straight line to a point at 255520.00S 0291230.00E. (c) Thence a straight line to a point at 260610.00S 0285833.00E. (d) Thence clockwise around the arc of a circle, radius 40NM, centered at 260831.00S 0281415.00E to a point at 260931.15S 0272952.63E. (e) Thence a straight line to a point at 260930.00S 0273050.00E. (f) Thence a straight line to a point at 260150.00S 0273620.00E. (g) Thence clockwise around the arc of a circle, radius 35NM, centred at 260831.00S 0281415.00E to a point at 253400.00S 0280900.00E. (h) Thence anticlockwise along the Waterkloof TMA boundary to the starting point at 254820.00S 0284545.00E.	FL110 7600 FT ALT Class C		Johannesburg Radar	123.7MHz and 124.5 MHz	Pilots are warned to exercise caution as white flare activity can be expected at night below the Johannesburg TMA. Maximum height 1000 FT AGL.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG TERMINAL CONTROL AREA (APPROACH WEST)					
(a) From a point 253400.00S 0280900.00E anticlockwise along the Waterkloof TMA boundary to a point 255819.40S 0281757.23E. (b) Thence a straight line to a point at 263830.84S 0280529.04E. (c) Thence a straight line to a point at 264655.86S 0280146.88E. (d) Thence clockwise around the arc of a circle, radius 40NM, centered at 260831.00S 0281415.00E to a point at 260931.15S 0272952.63E. (e) Thence a straight line to 260930.00S 0273050.00E. (f) Thence a straight line to a point at 260150.00S 0273620.00E. (g) Thence clockwise around the arc of a circle, radius 35NM, centred at 260831.00S 0281415.00E to the starting point at 253400.00S 0280900.00E.	FL110 7600 FT ALT Class C	APP Johannesburg	Johannesburg Radar	123.7MHz	Pilots are warned to exercise caution as white flare activity can be expected at night below the Johannesburg TMA. Maximum height 1000FT AGL.
JOHANNESBURG TERMINAL CONTROL AREA (APPROACH EAST)					
(a) From a point 255819.40S 0281757.23E anticlockwise along the Waterkloof TMA boundary to a point 254820.00S 0284545.00E. (b) Thence a straight line to a point at 254500.00S 0291230.00E. (c) Thence a straight line to a point at 255520.00S 0291230.00E. (d) Thence a straight line to a point at 260610.00S 0285833.00E. (e) Thence clockwise around the arc of a circle, radius 40NM, centered at 260831.00S 0281415.00E to a point at 264655.86S 0280146.88E (f) Thence a straight line to a point at 263830.84S 0280529.04E to the starting point 255819.40S 0281757.23E.	FL110 7600 FT ALT Class C	APP Johannesburg	Johannesburg Radar	124.5 MHz	Pilots are warned to exercise caution as white flare activity can be expected at night below the Johannesburg TMA. Maximum height 1000FT AGL.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
KIMBERLEY TERMINAL CONTROL AREA A (TMA A)					
Clockwise along the arc of a circle, radius 20NM, and centered at 284759.81S 0244537.32E	FL145 5500 FT ALT Class C	APP Bloemfon-tein	Kimberley Approach English During Kimberley TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KIMBERLEY TERMINAL CONTROL AREA B (TMA B)					
(a) From a point 284406.49S 0251928.30E, clockwise along an arc of a circle, radius 30NM, and centered at 284759.81S 0244537.32E, to a point at 291623.40S 0243420.23E. (b) Thence a straight line to a point at 290726.21S 0244002.88E. (c) Thence anti-clockwise along an arc of a circle, radius 20NM, and centered at 284759.81S 0244537.32E, to a point at 284843.26S 0250822.34E. (d) Thence a straight line back to the starting point at 284406.49S 0251928.30E	FL145 FL085 Class C	APP Bloemfon-tein	Kimberley Approach English During Kimberley TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KIMBERLEY TERMINAL CONTROL AREA C (TMA C)					
(a) From a point 284406.49S 0251928.30E, anti-clockwise along an arc of a circle, radius 30NM, and centered at 284759.81S 0244537.32E, to a point at 281923.69S 0245609.86E. (b) Thence a straight line to a point at 282758.43S 0244424.26E. (c) Thence clockwise along an arc of a circle, radius 20NM, and centered at 284759.81S 0244537.32E, to a point at 284843.26S 0250822.34E. (d) Thence a straight line back to the starting point at 284406.49S 0251928.30E	FL145 FL085 Class C	APP Bloemfon-tein	Kimberley Approach English During Kimberley TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
KIMBERLEY TERMINAL CONTROL AREA D (TMA D)					
(a) From a point 283738.56S 0242608.72E, anti-clockwise along an arc of a circle, radius 20NM, and centered at 284759.81S 0244537.32E, to a point at 290726.21S 0244002.88E. (b) Thence a straight line to a point at 291623.40S 0243420.23E. (c) Thence clockwise along an arc of a circle, radius 30NM, and centered at 284759.81S 0244537.32E, to a point at 285646.14S 0241256.40E. (d) Thence a straight line back to the starting point at 283738.56S 0242608.72E.	FL145 FL085 Class C	APP Bloemfon-tein	Kimberley Approach English During Kimberley TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KIMBERLEY TERMINAL CONTROL AREA E (TMA E)					
(a) From a point 284406.49S 0251928.30E, anti-clockwise along an arc of a circle, radius 30NM, and centered at 284759.81S 0244537.32E, to a point at 281923.69S 0245609.86E. (b) Thence a straight line to a point at 280842.65S 0251043.96E. (c) Thence clockwise along an arc of a circle, radius 45NM, and centered at 284759.81S 0244537.32E, to a point at 283727.42S 0253523.02E. (d) Thence a straight line back to the starting point at 284406.49S 0251928.30E.	FL145 FL105 Class C	APP Bloemfon-tein	Kimberley Approach English During Kimberley TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KIMBERLEY TERMINAL CONTROL AREA F (TMA F)					
(a) From a point 285646.14S 0241256.40E, anti-clockwise along an arc of a circle, radius 30NM, and centered at 284759.81S 0244537.32E, to a point at 291623.40S 0243420.23E. (b) Thence a straight line to a point at 292938.13S 0242551.12E. (c) Thence clockwise along an arc of a circle, radius 45NM, and centered at 284759.81S 0244537.32E, to a point at 291207.53S 0240215.94E. (d) Thence a straight line back to the starting point at 285646.14S 0241256.40E.	FL145 FL105 Class C	APP Bloemfon-tein	Kimberley Approach English During Kimberley TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
KIMBERLEY TERMINAL CONTROL AREA G (TMA G)					
(a) From a point 283738.56S 0242608.72E, clockwise along an arc of a circle, radius 20NM, and centered at 284759.81S 0244537.32E, to a point at 282758.43S 0244424.26E. (b) Thence a straight line to a point at 281923.69S 0245609.86E. (c) Thence anti-clockwise along an arc of a circle, radius 30NM, and centered at 284759.81S 0244537.32E, to a point at 285646.14S 0241256.40E. (d) Thence a straight line back to the starting point at 283738.56S 0242608.72E.	FL145 FL085 Class C	APP Bloemfon-tein	Kimberley Approach English HOD: During FAKM TWR HOD	119.4 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
Please see ENR 2.2 page 2, paragraph 1.2 for rules applicable for VFR FLT operating within the Kimberley TMA					

LANSERIA TERMINAL CONTROL A (TMA A)					
(a) From a point at 254629.70S 0275706.78E (b) Thence a straight line to a point at 254729.47S 0275758.82E (c) Thence a straight line to a point at 254837.17S 0275932.41E (d) Thence a straight line to a point at 255048.61S 0280126.98E (e) Thence a straight line to a point at 255810.04S 0280131.84E (f) Thence a straight line to a point at 261033.60S 0275356.73E (g) Thence a straight line to a point at 261216.53S 0275236.49E (h) Thence a straight line to a point at 261232.99S 0275039.06E (i) Thence a straight line to a point at 261207.56S 0274937.64E (j) Thence a straight line to a point at 261153.17S 0274902.70E (k) Thence a straight line to a point at 261138.34S 0274835.07E (l) Thence a straight line to a point at 261115.40S 0274757.17E (m) Thence a straight line to a point at 261048.00S 0274718.36E (n) Thence a straight line to a point at 261012.01S 0274626.72E	7600 FT ALT 6500 FT ALT Class C	APP Lanseria	Lanseria Approach English		Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(o) Thence a straight line to a point at 260939.08S 0274547.34E (p) Thence a straight line to a point at 260328.40S 0273909.83E (q) Thence a straight line to a point at 260122.39S 0273611.64E (r) Thence clockwise along the arc of a circle, radius 35NM, centred at 260831.00S 0281415.00E to a point at 255422.54S 0273841.83E (s) Thence a straight line to a point at 254727.05S 0274827.02E (t) Thence a along a straight line back to the starting point at 254629.70S 0275706.78E					
LANSERIA TERMINAL CONTROL AREA B (TMA B)					
(a) From a point at 255219.64S 0273947.42E to a point at 254553.26S 0274851.97E (b) Thence a straight line to a point at 254506.31S 0275554.22E (c) Thence along a straight line to a point at 254621.07S 0275823.93E (d) Thence along a straight line to a point at 255026.79S 0280158.04E (e) Thence along a straight line to a point at 255744.22S 0280202.90E (f) Thence along a straight line to a point at 255810.04S 0280131.85E (g) Thence along a straight line to a point at 255048.61S 0280126.98E (h) Thence along a straight line to a point at 254837.17S 0275932.41E (i) Thence along a straight line to a point at 254729.47S 0275758.82E (j) Thence along a straight line to a point at 254629.70S 0275706.78E (k) Thence along a straight line to a point at 254727.05S 0274827.02E (l) Thence along a straight line to a point at 255422.54S 0273841.83E (m) Thence clockwise along the arc of a circle, radius 35NM, centered at 260831.00S 0281415.00E back to the starting point at 255219.64S 0273947.42E	7600 FT ALT 7000 FT ALT Class C	APP Lanseria (See Col.6)	Lanseria Approach English		Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
MAKHADO TERMINAL CONTROL AREA (MILITARY) TMA					
(a) From a point at 232700.000S 0290230.000E on a straight line to a point at 224856.161S 0291728.869E (b) Thence clockwise along the arc of a circle, radius 30NM, centred at 230930.55S 0294111.18E to a point at 231820.000S 301219.000E. (c) Thence a straight line to a point at 232700.000E 0300925.000E. (d) Thence a straight line to a point at 233858.00S 0300154.000E (e) Thence a straight line to a point at 234832.859S 0293738.144E (f) Thence a straight line to a point at 234305.000S 0293000.000E (g) Thence a straight line to a point at 233841.598S 0292352.817E (h) Thence a straight to line to the starting point at 232700.000S 0290230.000E.	FL195 8000 FT ALT Class C	APP Makhado	Makhado Approach English	121.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
LOWVELD MILITARY AIRSPACE SECTOR (LASS)					
(a) From a point at 253215.00S 0294630.00E along a straight line to a point at 235330S 0285200E (b) Thence along the eastern boundary of A405 to a point at 221754S 0292936E. (c) Thence a straight line to a point at 222130S 0293554E. (d) Thence a straight line to a point on the RSA/boundary with Zimbabwe at 220830S 0294406E. (e) Thence eastwards and southwards on the RSA boundary with Zimbabwe and Mozambique to a point at 252605.30S 0315921.52E. (f) Thence a straight line to a point at 251820.87S 0312810.73E. (g) Thence anti-clockwise along the arc of a circle. radius 20NM centered at 252251.70S 0310640.05E, to a point at 250428.11S 0305751.91E. (h) Thence a straight line to a point at 250332.91S 0305725.57E. (i) Thence anti-clockwise along the arc of a circle. radius 21 NM centered at 252251.70S 0310640.05E, to a point at 252150.65S 0304330.71E	FL195 1500 FT AGL Class G	Lowveld Sector Control Centre FIC	Lowveld Information English HR of SER: MON-FRI: 0600-1300. SAT/SUN/PUB HOL: 0700-1300. After HOD pilots to broadcast on FREQ 119.0 MHz	Primary frequency 119.0 MHz, Secondary frequency 129.4 MHz	Excluding controlled airspaces of Polokwane, Hoedspruit, Makhado, FAR 76, FAR 178, FAD 122, FAD 125 and FAD 170.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(j) Thence a straight line to a point at 252123.38S 0303335.50E. (k) Thence a straight line back to the starting point at 253215.00S 0294630.00E.					
Note: AFT Lowveld INFO HR of SER TFC to BCST on 119.0 MHz in the area designated as Lowveld INFO airspace. IFR TFC FL110 and ABV Intending to enter FAJA controlled airspace must CTC FAJA NE 134.40 MHz prior to entering for a joining CLR. TFC BLW FL110 must CTC FAJA FIS N 127.4 MHz at the Lowveld INFO BDRY, DRG FAJA FIS HR, AFT FAJA FIS HR TFC TO CTC FAJA NE ON 134.40 MHz. *When Lowveld Military Airspace Sector (LASS) FREQ 119.0 MHz and 129.4 MHz is CLSD, TFC FM the Lowveld area to CTC Kruger TWR on FREQ 119.2 MHz 10 NM or 10 MIN prior to entering FAKN airspace.*					
Re-allocation of the Lowveld Military Airspace Sector (LASS) *A1					
(a) From a point on the Matsapha TMA at 255400S 0310900E, southwards along the RSA/Swaziland border to a point 260415S 0310415E, (b) Thence southwest to a point 260645S 0310000E, (c) Thence a straight line to a point 255545S 0305050E, (d) Thence a straight line to a point at 255400S 0310900E.	FL195 1500 FT AGL	Lowveld Information	HR of SER: MON-FRI: 0600-1300. SAT/SUN/PUB HOL: 0700-1300.	119.0 MHz	For MIL activities Lowveld might be active outside these HR. Below 7500 FT ALT TFC to broadcast on FREQ 125.0 MHz. After HOD service transferred to Johannesburg ACC North/East FREQ *134.40* MHz
Re-allocation of the Lowveld Military Airspace Sector (LASS) *A2					
(a) From a point 255545S 0305050E a straight line to a point 255600S 0304730E, (b) Thence a straight line to a point 262948S 0304730E, (c) Thence along the RSA/Swaziland border to a point 260415S 0310415E, (d) Thence a straight line to a point 260645S 0310000E, (e) Thence a straight line to the starting point 255545S 0305050E.	FL195 1500 FT AGL	Lowveld Information	HR of SER: MON-FRI: 0600-1300. SAT/SUN/PUB HOL: 0700-1300.	119.0 MHz	After HOD service transferred to Johannesburg ACC North/East FREQ *134.40* MHz

Name *lateral limits*	*Vertical limits* *Class of Airspace*	*Unit providing service*	*Call signs* *Languages* *Area and conditions of use* *Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
Re-allocation of the Lowveld Military Airspace Sector (LASS) *B					
(a) From a point on the RSA/ Mozambique border at 254957S 0315612E, south along the border to a point 255700S 0315830E, (b) Thence northwards along the Matsapha TMA to a point 255124S 0313830E, (c) Thence a straight line to the starting point 254957S 0315612E.	FL195 1500 FT AGL	Lowveld Information	HR of SER: MON-FRI: 0600-1300. SAT/SUN/PUB HOL: 0700-1300.	119.0 MHz	Below 6600 FT ALT TFC to BCST on FREQ 125.0 MHz. After HOD service transferred to Johannes-burg ACC North/East FREQ. *134.40* MHz.
					Below 7100 FT ALT TFC to BCST on FREQ 125.0 MHz. After HOD service transferred to Johannes-burg ACC North/East FREQ. *134.40* MHz
***NOTE**: All aircraft departing FM unmanned airfields intending to climb 1500 FT AGL or above in the LASS airspace are to contact Lowveld FIS on frequency 119.0 MHz prior to departure and to Squawk 2000 once airborne.*					
***NOTE**: Due to MIL JET OPS taking place in portions of the lowveld MIL airspace SECT designated to FAHS and FALM, These areas will be allocated on a tactical level according to the principles of flexible use of airspace on a DLY basis. Only EPSEK and ORNAD will be used as exit and entry points to/FM FQBE FIR. FPL must be filed accordingly. REQ for DCT routings to DEST in the FQBE FIR will be considered on a tactical basis by FAJA ACC. Pilots can expect adjusted FPL routings. For DLY INFO on routings CTC the Central Airspace Management Unit (CAMU), TEL NR +27 11 928 6433. SFC - UNL*					

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
KRUGER MPUMALANGA TERMINAL CONTROL AREA A (TMA A)					
(a) From a point at 252517.23S 0305019.24E, thence a straight line to a point at 252438.61S 0305440.84E (b) Thence clockwise along the arc of a circle, radius 11NM, and centred at 252251.70S 0310640.05E, to a point at 251244.77S 0310149.27E (c) Thence a straight line to a point at 250428.11S 0305751.91E (d) Thence clockwise along the arc of a circle, radius 20NM centred at 252251.70S 0310640.05E to a point at 252127.89S 0312841.76E (e) Thence a straight line to a point at 252354.94S 0313414.96E (f) Thence a straight line to a point at 253024.26S 0312101.29E (g) Thence clockwise along the arc of a circle, radius 15NM, and centred at 252251.70S 0310640.05E to a point at 253751.21S 0310519.93E (h) Thence a straight line to a point at 254250.99S 0310447.84E (i) Thence clockwise along the arc of a circle, radius 20NM, and centred at 252251.70S 0310640.05E to a point at 253751.61S 0305159.40E (j) Thence a straight line to a point at 253406.80S 0305539.91E (k) Thence clockwise along the arc of a circle, radius 15NM, and centred at 252251.70S 0310640.05E back to the starting point at 252517.23S 0305019.24E	FL145 5500 FT ALT Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KRUGER MPUMALANGA TERMINAL CONTROL AREA B (TMA B)					
(a) From a point at 252438.61S 0305440.84E thence straight line to a point at 252614.92S 0304346.78E. (b) Thence clockwise along the arc of a circle, radius 21NM, and centred at 252251.70S 0310640.05E, to a point at 250332.91S 0305725.57E. (c) Thence a straight line to a point at 251244.77S 0310149.27E. (d) Thence anti-clockwise along the arc of a circle, radius 11NM, and centred at 252251.70S 0310640.05E, back to the starting point at 252438.61S 0305440.84E	FL145 6500 FT ALT Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
KRUGER MPUMALANGA TERMINAL CONTROL AREA C (TMA C)					
(a) From a point at 253406.80S 0305539.91E thence a straight line to a point at 253836.56S 0305115.27E. (b) Thence clockwise along the arc of a circle, radius 21NM, and centered at 252251.70S 0310640.05E, to a point at 252614.92S 0304346.78E. (c) Thence a straight line to a point at 252517.23S 0305019.24E. (d) Thence anti-clockwise along the arc of a circle, radius 15NM centred at 252251.70S 0310640.05E, back to the starting point at 253406.80S 0305539.91E	FL145 7500 FT ALT Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KRUGER MPUMALANGA TERMINAL CONTROL AREA D (TMA D)					
a) From a point at 253943.75S 0303912.58E, thence a straight line to a point at 253149.25S 0304540.31E; b) Thence clockwise along the arc of a circle, radius 21NM, and centred at 252251.70S 0310640.05E, to a point at 252150.65S 0304330.71E; c) Thence a straight line to a point at 252123.38S 0303335.50E; d) Thence anti-clockwise along the arc of a circle, radius 30NM centred at 252251.70S 0310640.05E, back to the starting point at 253943.75S 0303912.58E	FL145 8500 FT ALT Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KRUGER MPUMALANGA TERMINAL CONTROL AREA E (TMA E)					
a) From a point at 251040.91S 0312412.72E, thence a straight line to a point at 250620.97S 0312725.62E; b) Thence clockwise along the arc of a circle, radius 25NM, and centred at 252251.70S 0310640.05E, to a point at 252354.94S 0313414.96E; c) Thence a straight line to a point at 252127.89S 0312841.76E; d) Thence anti-clockwise along the arc of a circle, radius 20NM centred at 252251.70S 0310640.05E back to the starting point at 251040.91S 0312412.72E;	FL105 5500 FT ALT Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
KRUGER MPUMALANGA TERMINAL CONTROL AREA F (TMA F)					
a) From a point at 252354.94S 0313414.96E, thence a straight line to a point at 252616.06S 0313935.39E. b) Thence clockwise along the arc of a circle, radius 30NM, and centred at 252251.70S 0310640.05E, to a point at 254524.03S 0312839.07E c) Thence a straight line to a point at 254307.42S 0312458.96E d) Thence a straight line to a point at 254434.94S 0311857.04E e) Thence a straight line to a point at 254834.67S 0311548.85E f) Thence a straight line to a point at 255243.68S 0311042.74E g) Thence clockwise along the arc of a circle, radius 30NM centred at 252251.70S 0310640.05E to the point at 255250.61S 0310351.50E h) Thence a straight line to a point at 253751.21S 0310515.93E. i) Thence anti-clockwise along the arc of a circle, radius 15NM centred at 252251.70S 0310640.05E to the point at 253024.26S 0312101.29E j) Thence a straight line back to a starting point at 252354.94S 0313414.96E	FL145 FL105 Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.
KRUGER MPUMALANGA TERMINAL CONTROL AREA G(TMA G)					
a) From a point at 255250.61S 0310351.50E, thence a straight line to a point at 254250.99S 0310447.84E b) Thence clockwise along the arc of a circle, radius 20NM, and centred at 252251.70S 0310640.05E, to a point at 253751.61S 0305159.40E c) Thence a straight line to a point at 253836.56S 0305115.27E d) Thence clockwise along the arc of a circle, radius 21NM centred at 252251.70S 0310640.05E to the point at 253149.25S 0304540.31E e) Thence a straight line to a point at 253943.75S 0303912.58E f) Thence anti-clockwise along the arc of a circle, radius 30NM centred at 252251.70S 0310640.05E back to the starting point at 255250.61S 0310351.50E	FL145 7500 FT ALT Class C	Kruger APP	Kruger Tower English ATC HOD: MON-FRI: 0500-1700 SAT: 0500-1700 SUN: 0500-1700	119.2 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
POLOKWANE TERMINAL CONTROL AREA (TMA)					
(a) From a point at 232700.000S 0290230.000E thence a straight line to a point at 233841.598S 0292352.817E (b) Thence a straight line to a point at 234305.000S 0293000.000E (c) Thence a straight line to a point at 234832.859S 0293738.144E (d) Thence a straight line to a point at 234346.729S 0294944.373E (e) Thence a straight line to a point at 241955.152S 0293354.100E (f) Thence a straight line to a point at 242616.518S 0290953.623E (g) Thence a straight line to a point at 235330.000S 0285200.000E (h) Thence a straight line to the starting point 232700.000S 0290230.000E	FL105 7600 FT ALT Class C	Polokwane	Polokwane Tower English	119.75 MHz	Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC.

WATERKLOOF TERMINAL CONTROL AREA (MILITARY) TMA					
(a) From a point at 254820S 0284545E a straight line to a point at 260000S 0282345E. (b) Thence a straight line to a point at 255630S 0281140E. (c) Thence clockwise along the arc of a circle, radius 7 NM and centred on a point at 254929S 0281349E, to a point at 254930S 02806E. (d) Thence a straight line to a point at 253830S 0280600E. (e) Thence a straight line to a point at 253400S 0280900E. (f) Thence clockwise along the arc of a circle, radius 35NM and centred on 260925.62S 0281351.69E, to the starting point 254820S 0284545E	FL195 7600 FT ALT Class C	APP Waterkloof	Waterkloof Approach English ATC HOD: MON-FRI 0400-1700 Excluding public holidays Outside Waterkloof APP HOD, Pilots are to contact Johannesburg Radar on 124.5 MHz or 123.7 MHz		Except where otherwise authorized, no ACFT is to be operated in this airspace unless two way RDO contact is maintained with ATC. Irrespective of weather conditions, no civil aircraft may enter this airspace during the HR of operation of ATC without prior per-mission from military ATC at Waterkloof.
All airways within the Johannesburg FIR - See ENR 3.1					

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG OCEANIC FIR					
(a) From a point at 275000S 0350000E along a straight line to a point at 300000S 0400000E (b) Thence along a straight line to a point at 300000S 0570000E (c) Thence along a straight line to a point at 450000S 0570000E (d) Thence along a straight line to a point at 450000S 0750000E (e) Thence to the South Pole. (f) Thence along a straight line to a point at 200000S 0100000W (g) Thence along a straight line to a point at 180000S 0050000W (h) Thence along a straight line to a point at 180000S 0100000E (i) Thence along a straight line to a point at 273000S 0100000E (j) Thence along a straight line to a point at 273000S 0150000E (k) Thence along a straight line to a point at 303000S 0150000E (l) Thence along a straight line to a point at 370000S 0150000E (m) Thence along a straight line to a point at 370000S 0220000E (n) Thence along a straight line to a point at 370000S 0280000E (o) Thence along a straight line to a point at 330000S 0320000E (p) Thence along a straight line back to the starting point at 275000S 0350000E	FL650 MSL Class G: Below FL245 and above FL460 Class A: FL460 FL245	OR Tambo ATCC	Johannesburg Oceanic English H24	SAT: 3452; 5565; 6535; 8861; 11291; 13315; 17955 kHz INO: 3476; 5634; 8879; 13306; 17961 kHz. SATCOM for emergencies only: +27 11 928 6456. Johannesburg Filter: +27 11 9286454. Cape Town Filter +27 21 9371116. Durban Filter: +27 32 4365001	
See ENR 2.2 for communication contingency measures within the FAJO FIR					

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG FLIGHT INFORMATION REGION (FIR) SECTOR DIMENSIONS					
JOHANNESBURG CENTRAL					
(a) From a point at 280023.00S 0274555.00E along a straight line to a point 305544.78S 0255953.35E (b) Thence along a straight line to a point at 311949.00S 0234558.00E (c) Thence along a straight line to a point at 303025.00S 0211621.00E (d) Thence along a straight line to a point at 275901.45S 0242134.48E (e) Thence along a straight line to a point at 280107.00S 0273040.00E (f) Thence along a straight line to the starting point 280023.00S 0274555.00E	FL460 1500 FT AGL Class of airspace outside other regulated airspace: FL195 1500 FT AGL Class G FL460 FL200 Class A	Johannes-burg Central	Johannesburg English H24	120.3 MHz	
JOHANNESBURG EAST					
(a) From a point at 265030.00S 0325350.00E along a straight line to a point at 275000.00S 0350000.00E (b) Thence along a straight line to a point at 330000.00S 0320000.00E (c) Thence along a straight line to a point at 313631.96S 0293111.46E (d) Thence along a straight line to a point at 302825.17S 0281717.99E (e) Thence along a straight line to a point at 305544.78S 0255953.35E (f) Thence along a straight line to a point at 280023.00S 0274555.00E (g) Thence along a straight line to a point at 275759.00S 0291020.00E (h) Thence along a straight line to a point at 271812.00S 0311004.00E (i) Thence eastwards along the Swaziland TMA Boundary to a point at 272031.00S 0315222.00E (j) Thence north-eastwards along the Swaziland TMA Boundary to a point at 264835.05S 0320417.67E (k) Thence eastwards along the Swaziland international boundary to a point at 265024.88S 0320805.29E	FL460 1500FT AGL Class of airspace outside other regulated airspace: FL195 1500 FT AGL Class G FL460 FL200 Class A	Johannes-burg East	Johannesburg English H24	129.1 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
(l) Thence along the international boundaries between South Africa, Swaziland and Mozambique to the starting point at 265030.00S 0325350.00E					
JOHANNESBURG NORTH					
(a) From a point at 260925.63S 0281351.70E along a straight line to a point at 260150.00S 0273620.00E (b) Thence along a straight line to a point at 254933.23S 0253206.20E (c) Thence along a straight line to a point at 254757.00S 0252020.00E (d) Thence along a straight line to a point at 254528.17S 0252159.85E (e) Thence along the international boundaries between the South Africa and Botswana to a point at 222727.73S 0285028.09E. (f) Thence along a straight line back to the starting point at 260925.63S 0281351.70E	FL460 FL110 Class of airspace outside other regulated airspace: FL195 FL110 Class G FL460 FL200 Class A	Johannes-burg North	Johannesburg English H24	126.7 MHz	
JOHANNESBURG NORTHEAST					
(a) From a point at 260925.63S 0281351.70E along a straight line to a point at 222727.73S 0285028.09E (b) Thence clockwise along the international boundaries between South Africa, Botswana, Zimbabwe, Mozambique to a point at 255708.24S 0315830.52E (c) Thence anti-clockwise along the Swaziland TMA Boundary joining the following points consecutively: 255121.00S 0313849.00E 254303.23S 0312448.24E 254443.16S 0311909.63E 254853.05S 0311549.12E 255342.00S 0310947.00E 255548.00S 0304715.00E 263905.50S 0304708.61E (d) Thence along a straight line back to the starting point at 260925.63S 0281351.70E	FL460 FL110 Class of airspace outside other regulated airspace: FL195 FL110 Class G FL460 FL200 Class A	Johannes-burg North/East	Johannesburg English H24	134.40 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
Note: The following airspace is Class "C" **Lateral Limits:** a) From a point at 255528.00S 0305052.00E, thence a straight line to a point at 255026.14S 0305322.58E b) Thence clockwise along the arc of a circle, radius 30NM, and centred at 252251.70S 0310640.05E, to a point at 252123.38S 0303335.50E c) Thence a straight line to a point 254659.57S 0301157.88E d) Thence anti-clockwise along the arc of a circle, radius 55NM centred at 252251.70S 0310640.05E to a point at 260641.96S 0302941.26E e) Thence a straight line to a point at 260336.95S 0304713.85E f) Thence a straight line to a point at 255548.00S 0304715.00E g) Thence a straight line back to the starting point at 255528.00S 0305052.00E	FL195 FL110	Johannesburg North/East	Johannesburg English H24	134.40 MHz	
JOHANNESBURG SOUTHEAST					
(a) From a point at 260925.63S 0281351.70E along a straight line to a point at 263905.50S 0304708.61E (b) Thence along a straight line along the Swaziland TMA boundary to a point at 264918.00S 0304707.00E (c) Thence along a straight line to a point 271812.00S 0311004.00E (d) Thence along a straight line to a point 275759.00S 0291020.00E (e) Thence along a straight line to a point at 280023.00S 0274555.00E (f) Thence along a straight line to a point at 280107.00S 0273040.00E (g) Thence along a straight line back to the starting point 260925.63S 0281351.70E	FL460 FL110 Class of airspace outside other regulated airspace: FL195 FL110 Class G FL460 FL200 Class A	Johannesburg Southeast	Johannesburg English DLY BTN: 0400-1800	132.15 MHz	Outside HOD traffic to contact Johannesburg on 126.7 MHz

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG SOUTHWEST					
(a) From a point at 260925.63S 0281351.70E along a straight line to a point at 280107.00S 0273040.00E (b) Thence along a straight line to a point at 275901.45S 0242134.48E (c) Thence along a straight line to a point at 270215.47S 0252652.46E (d) Thence along a straight line to a point at 254933.23S 0253206.20E (e) Thence along a straight line to a point at 260150.00S 0273620.00E (f) Thence along a straight line back to the starting point at 260925.63S 0281351.70E	FL460 FL110 Class of airspace outside other regulated airspace: FL195 FL110 Class G FL460 FL200 Class A	Johannes-burg SouthWest	Johannesburg English H24	128.3 MHz	Outside HOD traffic to contact Johannes-burg on 126.7 MHz
JOHANNESBURG WEST					
(a) From a point at 273000.00S 0150000.00E along a straight line to a point at 273000.00S 0195439.00E (b) Thence along a straight line to a point at 273000.00S 0210000.00E (c) Thence along a straight line to a point at 264927.00S 0210136.00E (d) Thence along the Orange River, the international boundary between the South Africa and Botswana to a point at 254528.17S 0252159.85E (e) Thence along a straight line to a point at 254757.00S 0252020.00E (f) Thence along a straight line to a point 254933.23S 0253206.20E (g) Thence along a straight line to a point at 270215.47S 0252652.46E (h) Thence along a straight line to a point at 275901.45S 0242134.48E (i) Thence along a straight line to a point at 303025.00S 0211621.00E (j) Thence along a straight line to a point at 303000.00S 0150000.00E (k) Thence along a straight line back to the starting point at 273000.00S 0150000.00E	FL460 1500 FT AGL Class of airspace outside other regulated airspace: FL195 1500 FT AGL Class G FL460 FL200 Class A	Johannes-burg West	Johannesburg English H24	118.5 MHz West of E0195439 118.55 MHz East of E0195439	All ACFT entering Johannes-burg area W airspace FM FYWF FIR FL200 to FL460 to call Johannes-burg area W 10 MIN BFR FAJA on 118.50 MHz for an INBD CLR due to non-liaison.

Name *lateral limits*	*Vertical limits* *Class of Airspace*	*Unit providing service*	*Call signs* *Languages* *Area and conditions of use* *Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
JOHANNESBURG FLIGHT INFORMATION SERVICE (FIS) NORTH					
(a) From a point at 260925.63S 0281351.70E along a straight line to a point at 260150.00S 0273620.00E (b) Thence along a straight line along to a point at 254933.23S 0253206.20E (c) Thence along a straight line to a point 254757.00S 0252020.00E (d) Thence along a straight line to a point 254528.17S 0252159.85E (e) Thence along the international boundaries between the South Africa and Botswana to a point at 222727.73S 0285028.09E. (f) Thence clockwise along the international boundaries between South Africa, Botswana, Zimbabwe, Mozambique to a point at 255708.24S 0315830.52E (g) Thence anti-clockwise along the Swaziland TMA Boundary joining the following points consecutively: 255121.00S 0313849.00E 254303.23S 0312448.24E 254443.16S 0311909.63E 254853.05S 0311549.12E 255342.00S 0310947.00E 255548.00S 0304715.00E 263905.50S 0304708.61E (h) Thence along a straight line back to the starting point at 260925.63S 0281351.70E	FL105 1500 FT AGL Class G	Johannes-burg North	Johannesburg Information English H12	127.4 MHz	Outside HOD traffic to contact Johannes-burg Area on 126.7 MHz

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
FLIGHT INFORMATION SERVICE (FIS) JOHANNESBURG SOUTH					
(a) From a point at 260925.63S 0281351.70E along a straight line to a point at 263905.50S 0304708.61E (b) Thence along a straight line along the Swaziland TMA boundary to a point at 264918.00S 0304707.00E (c) Thence along a straight line to a point 271812.00S 0311004.00E (d) Thence along a straight line to a point 275759.00S 0291020.00E (e) Thence along a straight line to a point at 280023.00S 0274555.00E (f) Thence along a straight line to a point at 280107.00S 0273040.00E (g) Thence along a straight line to a point at 275901.45S 0242134.48E (h) Thence along a straight line to a point at 270215.47S 0252652.46E (i) Thence along a straight line to a point at 254933.23S 0253206.20E (j) Thence along a straight line to a point at 260150.00S 0273620.00E (k) Thence along a straight line back to the starting point at 260925.63S 0281351.70E	FL105 1500 FT AGL Class G	Johannes-burg South	Johannesburg Information English H12	119.5 MHz	Outside HOD traffic to contact Johannes-burg Area on 126.7 MHz

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
CAPE TOWN FLIGHT INFORMATION REGION (FIR) SECTOR DIMENSIONS					
CAPE TOWN WEST					
(a) From a point at 370000.00S 0150000.00E along a straight line to a point at 303000.00S 0150000.00E (b) Thence along a straight line to a point at 303025.00S 0211621.00E (c) Thence along a straight line to a point at 311949.00S 0234558.00E (d) Thence along a straight line to a point at 325448.40S 0223336.03E (e) Thence along a straight line to a point at 331930.39S 0222426.38E (f) Thence along a straight line to a point at 332522.58S 0222200.18E (g) Thence along a straight line to a point at 370000.00S 0222541.84E (h) Thence along a straight line back to the starting point at 370000.00S 0150000.00E	FL460 FL145 Class of airspace outside other regulated airspace: FL195 FL150 Class G FL460 FL200 Class A	Cape Town Area	Cape Town English H24	125.1 MHz	
CAPE TOWN EAST					
(a) From a point at 370000.00S 0222541.84E along a straight line to a point at 370000.00S 0280000.00E (b) Thence along a straight line to a point at 330000.00S 0320000.00E (c) Thence along a straight line to a point at 313631.96S 0293111.46E (d) Thence along a straight line to a point at 302825.17S 0281717.99E (e) Thence along a straight line to a point at 305544.78S 0255953.35E (f) Thence along a straight line to a point at 311949.00S 0234558.00E (g) Thence along a straight line to a point at 325448.40S 0223336.03E (h) Thence along a straight line to a point at 331930.39S 0222426.38E (i) Thence along a straight line to a point at 332522.58S 0222200.18E (j) Thence along a straight line back to the starting point at 370000.00S 0222541.84E	FL460 FL145 Class of airspace outside other regulated airspace: FL195 FL150 Class G FL460 FL200 Class A	Cape Town Area	Cape Town English H24	124.7 MHz	

Name lateral limits	*Vertical limits Class of Airspace*	*Unit providing service*	*Call signs Languages Area and conditions of use Hours of service*	*Frequency/ Purpose/ SATVOICE Nr*	*Remarks*
1	*2*	*3*	*4*	*5*	*6*
CAPE TOWN FLIGHT INFORMATION SERVICE (FIS) WEST					
(a) From a point at 370000.00S 0150000.00E along a straight line to a point at 303000.00S 0150000.00E (b) Thence along a straight line to a point at 303025.00S 0211621.00E (c) Thence along a straight line to a point at 311949.00S 0234558.00E (d) Thence along a straight line to a point at 325448.40S 0223336.03E (e) Thence along a straight line to a point at 331930.39S 0222426.38E (f) Thence along a straight line to a point at 332522.58S 0222200.18E (g) Thence along a straight line to a point at 370000.00S 0222541.84E (h) Thence along a straight line back to the starting point at 370000.00S 0150000.00E	FL145 1500 FT AGL Class	Cape Town Information	Cape Town Information English DLY BTN 0500-1700	131.125 MHz	Outside published HOD traffic to contact Cape Town Area on frequency 125.1 MHz
CAPE TOWN FLIGHT INFORMATION SERVICE (FIS) EAST					
(a) From a point at 370000.00S 0222541.84E along a straight line to a point at 370000.00S 0280000.00E (b) Thence along a straight line to a point at 330000.00S 0320000.00E (c) Thence along a straight line to a point at 313631.96S 0293111.46E (d) Thence along a straight line to a point at 302825.17S 0281717.99E (e) Thence along a straight line to a point at 305544.78S 0255953.35E (f) Thence along a straight line to a point at 311949.00S 0234558.00E (g) Thence along a straight line to a point at 325448.40S 0223336.03E (h) Thence along a straight line to a point at 331930.39S 0222426.38E (i) Thence along a straight line to a point at 332522.58S 0222200.18E (j) Thence along a straight line back to the starting point at 370000.00S 0222541.84E	FL145 1500 FT AGL Class G	Cape Town Information	Cape Town Information English DLY BTN 0500-1700	127.575 MHz	Outside published HOD traffic to contact Cape Town Area on frequency 124.7 MHz

ENR 2.2 OTHER REGULATED AIRSPACE

1 JOHANNESBURG FIR

1) An active surveillance control (MSSR) service is provided by Bloemfontein Approach Control (ATC) within the Bloemfontein TMA/CTR and Kimberley TMA (at or above 7000FT ALT), where the following is applicable to all aircraft.
2) Aircraft must be equipped with a serviceable mode A & C transponder when operating below and within 5NM (vicinity) of the lateral limits of the Bloemfontein TMA or Kimberley TMA, unless operating within the Special Rules Area (SRA) for non-transponder operations below the Bloemfontein TMA or below the Kimberley TMA as described within the SAAIP, ENR 2.2. para 1.1&1.2.

1.1 BLOEMFONTEIN AREA

1.1.1 RECOMMENDED VFR ROUTES FROM AND TO THE NEW TEMPE AIRFIELD

To enable VFR flights, not on flight plan, to remain clear of the Bloemfontein Control Zone (CTR) and TMA the following routes are to be flown in and out of New Tempe airfield:

NOTE:
All such flights are required to be conducted below the Bloemfontein TMA (i.e. below 6500FT ALT) and to route around and remain clear of the Bloemfontein CTR.
VFR or IFR flights on flight planned flights, departing New Tempe Airfield, are to comply with the routes below until a clearance to enter the Bloemfontein CTR or TMA is obtained from Bloemfontein APP.

a) Flights departing to or approaching from destinations South of Bloemfontein are to route West of the N1 highway and outside of 20NM South of 290602.38S 0261802.31E before setting course for destination.
b) Flights departing to or approaching from destinations North of Bloemfontein are to remain West of the Bloemfontein/ Bultfontein Road and route via the intersection of this road and the Modder River (Soetdoring) before setting course for destination.
c) For destinations East of the intersection mentioned in paragraph b above, aircraft are to route via the intersection (Soetdoring) and North of Brandfort station before setting course for destination.

VFR Routes for aircraft, not landing at New Tempe, to avoid the Bloemfontein CTR.

d) VFR flights wishing to fly abeam and to the South of Bloemfontein, in an Easterly or Westerly direction, are to route South of the Tierpoort Dam.
e) VFR flights wishing to fly abeam and to the North of Bloemfontein, in an Easterly or Westerly direction, are to route Soetdoring then North of Brandfort.

f) VFR flights wishing to fly abeam Bloemfontein in a Northerly or Southerly direction, are to route either East of Brandfort and East of Mockes Dam or route to the West of the Bloemfontein/Bultfontein Road and the N1, until 20NM South of 290602.38S 0261802.31E.

1.1.2 SPECIAL RULES AREA (SRA) FOR NON TRANSPONDER AIRCRAFT FROM AND TO THE NEW TEMPE AIRPORT (FATP)

Aircraft not equipped with a serviceable mode A and C transponder intending to operate from and to New Tempe airport (FATP) can route through and remain within the area bound by the following points and remaining clear of the Bloemfontein CTR:

Lateral boundary:

a) From a point 290528.83S 0261021.31E at the intersection of the R64 and N1 main roads.
b) Then westwards along the R64 road to a point 284252.56S 0254805.40E where this road intercepts the 35NM arc of the Bloemfontein TMA boundary.
c) Then clockwise along the 35NM arc centred at 290602.38S 0261802.31E to a point 283307.56S 0260413.44E where this arc intercepts the Bloemfontein/Bultfontein road.
d) Then southwards along the Bloemfontein /Bultfontein main road to a point 290018.68S 0261226.59E where the Bultfontein /Bloemfontein main road intercepts the Bloemfontein CTR boundary.
e) Then a straight line along the Bloemfontein CTR boundary to a point 290323.61S 0261226.42E where the Bloemfontein CTR boundary intercepts the N1 main road.
f) Then southwards along the N1 main road to the starting point 290528.83S 0261021.31E.

Vertical limit: GND/6000 FT ALT.

1.2 KIMBERLEY AREA

1.2.1 RULES APPLICABLE FOR VFR FLIGHTS OPERATING WITHIN OR BELOW THE FAKM TMA

1) All VFR flights operating on a filed flight plan intending to enter the Kimberley TMA are required to join the TMA via one of the following VFR Geographical points:

Boshoff (283252.7S 0251418.0E)
Perdeberg (285900S 0250500E)
Jacobsdal (290759S 0244602E)
Belmont (292530S 0242230E)

Plooysburg (290222.6S 0241409.0E)
Barkley West (283223.0S 0243156.9E)
Windsorton Road (282001.5S 0244219.8E)

All VFR flights routing in a North/South direction, or vice versa, passing East and South of Kimberley after joining the TMA via aforementioned points are required to follow the routing via Boshoff (283252.7S 0251418.0E) to Perdeberg (285900S 0250500E) to Jacobsdal (290759S 0244602E), or vice versa, thereafter set course as per flight plan.

All VFR flights routing in a North/South direction, or vice versa, passing west of Kimberley, after joining the TMA via afore-mentioned points are required to follow the routing via Barkley West (283223.0S 0243156.9E) to Plooysburg (290222.6S 0241409.0E), or vice versa, thereafter set course as per flight plan.

2) Aircraft routing below the Kimberley TMA intending to route clear of the Kimberley CTR should follow the following VFR routings:

Vertical Requirements: Aircraft to remain VFR below 5500 FT ALT.

Aircraft intending to route East of the Kimberley CTR in a North/South/North direction:
Route via or remain East of the Geographical Route directly between Boshoff (283252.7S 0251418.0E) to Olifantskop (285115.69S 245417.77E) to Jacobsdal (290759S 0244602E), or vice versa.
Aircraft intending to route North of the Kimberley CTR in a East/West/East direction:
Route via or remain North of the Geographical Point of Dronfield (283750S 0244602E) and remain clear of the Kimberley CTR.
Aircraft routing to the West of Kimberley CTR in a North/South/North direction:
Route via or remain West of the Geographical Direct Route from Dronfield (283750S 0244602E), remain West and clear of the CTR to Plooysburg (290222.6S 0241409.0E), or vice versa.
Aircraft routing South of Kimberley CTR in a East/West/East direction:
Route via or remain South of the Geographical Route directly between Jacobsdal (290759S 0244602E) to Ritchie (290218.89S 0243508.07E) to Plooysburg (290222.6S 0241409.0E), or vice versa.

3) These procedures are only applicable during daytime and whilst the Bloemfontein SSR is operating.
4) Any pilot who wishes to gain further information or clarification on these routings can contact Bloemfontein Approach on (051) 503 7201/2/3.

Vertical Limits: GND/FL145

1.2.2 SPECIAL RULES AREA (SRA) FOR NON TRANSPONDER AIRCRAFT FROM AND TO THE JOHN WESTON AIRFIELD

Aircraft not equipped with a serviceable mode A and C transponder intending to operate from and to John Weston airfield can route through and remain within the area bound by the following points and remaining clear of the Kimberley CTR:

Lateral boundary:

a) From a point 284644.44S 0243813.42E at the intersection of the Kimberley CTR boundary and the R357 main road to Douglas; then south-westwards along the R357 main road towards Douglas to a point 285726.72S 0240714.52E 35NM from 284759.81S 0244537.32E;
b) Then clockwise along the arc of a circle radius 35NM centred at 284759.81S 0244537.32E to a point 282232.07S 0241816.93E where this arc intercepts the R31 main road;
c) Then along the R31 main road to a point 284208.65S 0244024.69E where the R31 main road intercepts the Kimberley CTR boundary;
d) Then a straight line along the Kimberley CTR boundary to the starting point 284644.44S 0243813.42E.

Vertical limits: GND/5000 FT ALT

1.3 JOHANNESBURG SRA

1.3.1 SPECIAL RULES AREA

Airspace other than restricted airspace where special (non-standard) rules are applied to promote safety, efficiency and orderliness outside of controlled airspace.

The area below the Johannesburg TMA has been divided into three sectors known as the Eastern, Southern and Western sectors. These sectors each have their own frequency in order to minimize frequency congestion. Aircraft in the Eastern Sector should maintain a listening watch and broadcast regular position reports on frequency 125.4 MHz. Aircraft in the Southern Sector should maintain a listening watch and broadcast regular position reports on frequency 125.6 MHz. Aircraft in the Western Sector should maintain a listening watch and broadcast regular position reports on frequency 125.8 MHz.

The dividing line between the sectors runs as follows:

Name	FREQ	Lateral Limits
Special rules East	125.4 MHz	From a point S253405.629 E0280819.253 on the Wonderboom CTR southwards along the Wonderboom CTR to a point at S254225.411 E0281350.838 on the Wonderboom/Waterkloof CTR. Thence westwards along the Waterkloof CTR to a point at S254259.986 E0280600.359. Thence southwards along the Waterkloof CTR to a point at S255221.904 E0280640.317. Thence southwards along the OR Tambo CTR to a point at S261244.019 E0280420.527 on the OR Tambo CTR/Rand ATZ. Thence southwards along the OR Tambo CTR to a point at S262332.000 E0281139.000. Thence eastwards along the OR Tambo CTR to a point at S262226.965 E0281433.832. Thence southwards along the N3 highway to a point at S264700.833 E0282651.034 on the Johannesburg TMA. Thence Northeastwards along the Johannesburg TMA to a point at S254820 E0284545. Thence Northwestwards along the Waterkloof TMA back to the starting point.

Name	FREQ	Lateral Limits
Special rules West	125.8 MHz	From a point S253405.629 E0280819.253 on the Wonderboom CTR southwards along the Wonderboom CTR to a point at S254225.411 E0281350.838 on the Wonderboom/Waterkloof CTR. Thence westwards along the Waterkloof CTR to a point at S254259.986 E0280600.359. Thence southwards along the Waterkloof CTR to a point at S255221.904 E0280640.317. Thence southwards along the OR Tambo CTR to a point at S261244.019 E0280420.527 on the OR Tambo CTR/Rand ATZ. Thence westwards along the M2 highway to a point at S261244.803 E0280125.648 (M2/M1 intersection). Thence westwards in a direct line to a point north of the Soccer City Stadium at S261352.240 E0275905.430. Thence westwards in a direct line to a point north of the Orlando Power Station cooling towers at S261512.110 E0275536.110. Thence westwards in a direct line to a point at S261544.878 E0275324.306 at the intersection of the Potchefstroom Road and Klipspruit Valley Road. Thence westwards along the Potchefstroom Road to a point at S261740.034 E0275017.927 at the intersection of the Potchefstroom Road and the N12. Thence westwards along the N12 highway to a point at S262427.143 E0273317.290 on the Johannesburg TMA. Thence northwards along the Johannesburg TMA back to the starting point.

Name	FREQ	Lateral Limits
Special rules South	125.6MHz	From a point at S261244.019 E0280420.527 on the OR Tambo CTR/Rand ATZ westwards along the M2 highway to a point at S261244.803 E0280125.648 (M2/ M1 intersection). Thence westwards in a direct line to a point north of the Soccer City Stadium at S261352.240 E0275905.430. Thence westwards in a direct line to a point north of the Orlando Power Station cooling towers at S261512.110 E0275536.110. Thence westwards in a direct line to a point at S261544.878 E0275324.306 at the intersection of the Potchefstroom Road and Klipspruit Valley Road. Thence westwards along the Potchefstroom Road to a point at S261740.034 E0275017.927 at the intersection of the Potchefstroom Road and the N12. Thence westwards along the N12 highway to a point at S262427.143 E0273317.290 on the Johannesburg TMA. Thence southwards along the Johannesburg TMA to a point a S264700.833 E0282651.034 on the Johannesburg TMA. Thence northwards along the N3 highway to a point at S262226.965 E0281433.832 on the OR Tambo CTR. Thence westwards along the OR Tambo CTR to a point at S262332.000 E0281139.000. Thence northwards along the OR Tambo CTR back to the starting point.

1.3.2 RULES APPLICABLE WITHIN THE JOHANNESBURG SPECIAL RULES AREA

The airspace below the lateral boundaries of the Johannesburg and Waterkloof TMAs, excluding promulgated controlled airspace and flying training areas will be declared a special rules area - JOHANNESBURG SPECIAL RULES AREA.

a) Avoid controlled airspace unless otherwise authorised by Air Traffic Control.
b) Comply with the Traffic Information Broadcast by Aircraft (TIBA)
c) Procedures as laid down for the area.
d) Flights must be conducted at an indicated airspeed not exceeding 180 knots.
e) VFR flights operating from or to aerodromes situated within the Johannesburg Special Rules Area must not exceed 7500 FT ALT (FAOR QNH). Pilots wishing to exceed 7500 FT ALT must comply with the normal procedures for obtaining a clearance to enter controlled or advisory airspace.
f) It is recommended that, where possible aircraft have their landing lights switched on.
g) VFR flights on magnetic tracks between 090 DEG M and 269 DEG M included, must operate at 7000 FT ALT (FAOR QNH).
h) VFR flights on magnetic tracks between 270 DEG M and 089 DEG M included, must operate at 7500 FT ALT (FAOR QNH).

i) **All VFR flights, unable to comply with the procedures as laid down in paragraphs g and h must operate at or below 6500 FT ALT (FAOR QNH). All VFR flights are, however, required to comply with Regulation 91.06.32 of the Civil Aviation Regulations, 2011, i.r.o. minimum heights.**

j) **By virtue of the fact that uncontrolled VFR aircraft are to remain below the Johannesburg and Waterkloof TMAs radar separation and information provided to aircraft operating within the Johannesburg and Waterkloof TMAs will only take known identified targets into account.**

k) **For the information of those aircraft operating within the Johannesburg and Waterkloof TMAs, unidentified unknown targets, performing as expected for general aviation within the confines of the Johannesburg Special Rules Area will be deemed to separated from aircraft operating within the aforementioned TMAs by procedures as opposed to radar.**

l) **Pilots operating below the TMAs in the Special Rules Area should therefore ensure that they do not exceed the applicable altitude restrictions as stipulated.**

NOTE: Due to the nature of their operations Traffic Patrol helicopters have been granted dispensation to operate over the Greater Johannesburg area, as and when required, without complying with the recommendations in so far separation below the Johannesburg TMA. Frequent PSN reports will be made by the helicopters involved in the above mentioned operations. Times of operations will normally be between 0430-0800 UTC and 1400 -1530 UTC DLY.

1.3.3 The following procedures for flights in the Wonderboom/Waterkloof environs are to effect separation between civil and military aircraft:

a) **Aircraft flying between Wonderboom Airport and aerodromes East and South-East of Wonderboom must proceed East of Mamelodi township to accomplish better separation from aircraft taking off from Waterkloof. Where a pilot wishes to fly between Mamelodi township and Waterkloof CTR, clearance must be obtained from Air Traffic Control at Waterkloof on frequency 124.1 MHz.**

b) **ACFT operating to/from FABB must do so within the segment of the FAOR CTR between straight lines joining Ergo Slimes Dam/FABB or OR Tambo International at or below 6 000 FT ALT (FAOR QNH).**

c) **Pilots of aircraft equipped with a transponder are advised to obtain a SSR code from Johannesburg Information on first contact.**

1.4 JOHANNESBURG BUFFER ZONE

The Buffer Zone extends from a point on the Rand ATZ, South and East of the Johannesburg CTR to a point on the Waterkloof CTR. The co-ordinates related to this Buffer Zone are as follows:

a) **From a point bound at position S261952.00 E0280817.00 thence a straight line to a point at S262205.00 E0280640.00**

b) **Thence a straight line to a point at S262707.00 E0281035.00**

c) Thence a straight line to a point at S262503.00 E0281625.00
d) Thence a straight line to a point at S261753.00 E0282318.00
e) Thence a straight line to a point at S255800.00 E0282734.00
f) Thence a straight line to a point at S260002.00 E0282344.00
g) Thence a straight line to a point at S261632.00 E0282014.00
h) Thence a straight line to a point at S262232.00 E0281429.00
i) Thence a straight line to a point at S262332.00 E0281139.00
j) Thence a straight line back to the starting point at S261952.00 E0280817.00

All aircraft wishing to enter the Buffer Zone must communicate with Johannesburg Information on 119.5MHz between the hours of 0430 - 1600 UTC and between the hours of 1600 - 0430 UTC must communicate with Johannesburg Area on 126.7MHz

Pilots are advised to communicate with Johannesburg Information on 127.4MHz should they have no reply on 119.5MHz when trying to establish contact with them during their stipulated HOD as mentioned.

The Buffer zone is situated within 3NM of the Johannesburg CTR and its vertical limits are calculated from ground to 7500 feet altitude. It extends from a point on the Rand ATZ, South and East of the Johannesburg CTR to a point on the Waterkloof CTR. Traffic routing outside of the Buffer Zone while flying in the special rules area, and routing from west to east or vica versa, need to identify the following landmarks as visual reference points which includes an approximate distance outlining the boundary extremity of the Buffer Zone in order to remain clear of this airspace.

NOTE - Items 1 and 7 listed below indicate the beginning of the Buffer Zone which borders on the Johannesburg CTR boundary extremity:

1) Intersection the Sybrand van Niekerk Freeway and Kliprivier Drive interchange
2) South of the Kliprivier station
3) S/SE of the R550 and Ergo Slimes Dam
4) S/SE of the R23 / Alberton road interchange
5) East of Kwa-Thema
6) East of the Garsfontein / Pretoria road junction
7) Intersection of the Delmas road (R50) and Pretoria Road (R51)

1.5 Kyalami VFR Route

The Kyalami VFR route was established to address the safety issues within the corridor between the Lanseria CTR and the Waterkloof CTR/Swartkop ATZ that were highlighted through various forums.

Rules applicable within the Johannesburg Special Rules Area, as published in AIP ENR Paragraph 5, are still applicable and must be complied with.

Traffic unable to comply with this procedure must operate at or below 6500FT ALT (FAOR QNH), clear of controlled airspace and in compliance with CAR 91.06.31 i.r.o Minimum Heights.

Northbound Routing

Northbound traffic on magnetic tracks between 270 DEG and 089 DEG must operate at 7500 FT ALT (FAOR QNH) and within 1NM on either side of a track defined by the following route:

From Sandton City Tower (2606.3S 02803.1E) route direct to Kyalami Race Track (2559.6S 02803.5E) then direct to Attridgeville (2547.9S 02803.3E).

Southbound Routing

Southbound traffic on magnetic tracks between 090 DEG and 269 DEG must operate at 7000 FT ALT (FAOR QNH) and within 1NM on either side of a track defined by the following route:

From Attridgeville (2547.9S 02803.3E) route direct to Kyalami Race Track (2559.6S 02803.5E) then direct to Sandton City Tower (2606.3S 02803.1E)

Caution: 1. Pilots are reminded to exercise greater vigilance and accident avoidance techniques due to the increased accuracy of navigation through the use of GPS and increased traffic normally associated with defined routes and landmarks.

1.6 DURBAN SPECIAL RULES AREA

The airspace below the Durban TMA, excluding that part of the Virginia ATZ, the airspace below Durban TMA G and all Restricted Areas (FAR's), Prohibited Areas (FAP's) and Danger Areas (FAD's), is declared as a Special Rules Area and termed as the DURBAN SPECIAL RULES AREA.

This is to promote safety, efficiency and orderliness in the Durban Special Rules Area.

All aircraft operating in the Durban Special Rules Area shall maintain a listening watch and broadcast regular position reports on frequency 124.2 MHz.

By virtue of the fact that uncontrolled VFR aircraft are to remain below the Durban TMA radar separations and information provided to aircraft operating within the Durban TMA, will only take known identified targets into account.

For the information of those aircraft operating within the Durban TMA, unidentified unknown targets, performing as expected for general aviation within the confines of the Durban Special Rules Area will be deemed to be separated from aircraft operating within the Durban TMA, by procedures as opposed to radar.

Pilots operating below the Durban TMA should therefore ensure that they do not exceed the applicable altitude restriction as stipulated on SRA routings and also to remain at least 500 FT below the TMA whilst flying below the Durban TMA.

Pilots are requested to squawk transponder code 2000 at all times with altitude selected. Helicopters to squawk 2600 also with altitude selected.

The following routes will be applicable in the Durban Special Rules Area:

Routes for VFR Aircraft in the Durban Special Rules Area:

Gauteng Area to Virginia:

All VFR traffic is to route via Greytown, clear of the Durban TMA, then to the right of the Alvaston Mast at or below 5000 FT AMSL, then south of the N3 to the Coopers Lighthouse. Cross abeam Pinetown CBD at or below 3000 FT AMSL, cross the N2 at 1500 FT AMSL. Establish communication with Virginia prior to crossing the N2. If no contact, enter into a VFR orbit, at 1500 FT AMSL at Coopers Lighthouse till a joining clearance has been obtained.

Helicopter traffic is to route via the Umgeni River. Establish communication with Virginia prior to crossing the N2. Cross the Inanda Dam wall at or below 2000 FT AMSL, cross the N2 national road at or below 1000 FT AMSL and Umgeni River Mouth at 500 FT AMSL.

Virginia to North Western KwaZulu/Natal and Gauteng Area:

All VFR traffic is to route via the Durban CBD, then west of the Pinetown CBD, then south of the N3, to the right of the Alvaston Mast, then via Greytown. Cross the Durban CBD at or below 1500 FT AMSL, but above 1000 FT AMSL, cross the N2 at or below 1500 FT AMSL to pass west abeam the Pinetown CBD at, or below, 3000 FT AMSL, to the right of the Alvaston Mast at or below 5000 FT AMSL. Remain clear of the Durban TMA.

Helicopter traffic to route via the Umgeni River to the Inanda Dam. Remain in communication with Virginia until crossing the N2. Cross the Umgeni River Mouth at 500 FT AMSL, cross the National Road, N2 at or below 1000 FT AMSL, cross the Inanda Dam wall at or below 2000 FT AMSL.

Northern KwaZulu/Natal to Virginia:

All VFR traffic to route via Blythedale Beach (cross Blythedale Beach below 2000 FT AMSL), then seawards of the coastline (cross Tinley Manor not above 500 FT AMSL), transiting the King Shaka CTR, seawards of the coastline, not above 500 FT AMSL. VFR traffic transiting through the King Shaka CTR are then deemed to be separated from departing and arriving traffic at King Shaka Airport. All transiting traffic is regarded as circuit traffic, thus reduced separation minima can be applied, in the vicinity of the aerodrome.

The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC and the aircraft shall be Mode C transponder equipped.

Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

Virginia to Northern KwaZulu Natal:

All VFR traffic wishing to route seawards of the coastline, transiting the King Shaka CTR, are to remain seawards of the coastline, not above 500FT AMSL. VFR traffic transiting through the King Shaka CTR are then deemed to be separated from departing and arriving traffic at King Shaka Airport. All transiting traffic is regarded as circuit traffic, thus reduced separation minima can be applied, in the vicinity of the aerodrome.

The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC and the aircraft shall be Mode-C transponder equipped.

Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

Pietermaritzburg to Virginia:

All VFR traffic must route to the right of the Alvaston Mast, (cross abeam the Alvaston Mast below 5000FT AMSL), then route direct to the Coopers Lighthouse. Cross abeam Pinetown CBD at or below 3000FT AMSL, cross the N2 at 1500FT AMSL. Establish communication with Virginia prior to crossing the N2. If no contact, enter into a VFR orbit, at 1500FT AMSL at Coopers Lighthouse till a joining clearance has been obtained.

Helicopter traffic is to route via the Umgeni River. Establish communication with Virginia prior to crossing the N2. Cross the Inanda Dam wall at or below 2000FT AMSL, cross the National Road, N2 at or below 1000FT AMSL and Umgeni River Mouth at 500FT AMSL.

Virginia to Pietermaritzburg:

All VFR traffic is to route via the Durban CBD, then west of the Pinetown CBD, then south of the N3, to the right of the Alvaston Mast, then via the Nagle Dam.

Cross the Durban CBD at or below 1500FT AMSL, but above 1000FT AMSL, cross the N2 at or below 1500FT AMSL to pass west abeam the Pinetown CBD at, or below, 3000FT AMSL, to the right of the Alvaston Mast at or below 5000FT. Remain clear of the Durban TMA.

Helicopter traffic to route via the Umgeni River to the Inanda Dam. Remain in communication with Virginia until crossing the N2. Cross the Umgeni River Mouth at 500FT AMSL, cross the N2 national road at or below 1000FT AMSL, cross the Inanda Dam wall at or below 2000FT AMSL.

Virginia to the South:

All VFR traffic to route via the Harbour entrance, then seawards of the coastline.

Cross the Harbour entrance at 1000FT AMSL. Passing Amanzimtoti, climb to requested level, remaining clear of the Durban TMA.

Passing Sezela, change frequency to 124.8MHz and broadcast.

From the South to Virginia:

All VFR traffic is to route seawards of the coastline, via the harbour entrance to Virginia.

Remain clear of the Durban TMA. Passing Sezela, change frequency to 124.2MHz and broadcast.

Cross Scottburgh at 1500FT AMSL. Establish communication with Virginia prior to passing abeam Coopers Lighthouse. If no contact, enter into a VFR orbit, at 1500FT AMSL at Coopers Lighthouse, until a joining clearance has been obtained.

Virginia to FAD56:

All VFR traffic to route direct to the FAD56 at 1500FT AMSL or above, but to remain clear of the Durban TMA.

Traffic without SSR from the North Sector to Virginia

All traffic to route via Ndwedwe, then to the right of the Alvaston Mast, (cross abeam the Alvaston Mast below 5000FT AMSL), then route direct to the Coopers Lighthouse. Cross abeam Pinetown CBD at or below 3000FT AMSL, cross the N2 at 1500FT AMSL. Establish communication with Virginia prior crossing the N2. If no contact, enter into a VFR orbit, at 1500FT AMSL at Coopers Lighthouse till a joining clearance has been obtained.

FAD 56 to Virginia:

Exit the FAD56 via Amanzimtoti, then seawards of the coastline at 1500FT AMSL. Establish communication with Virginia prior to passing abeam Coopers Lighthouse. If no contact, enter into a VFR orbit, at 1500FT AMSL, at Coopers Lighthouse, until a joining clearance has been obtained.

Virginia to and from FAD58:

Helicopter traffic is to route via the Umgeni River. Establish communication with Virginia prior to crossing the N2. Cross the Inanda Dam wall at or below 2000FT AMSL, cross the N2 national road at or below 1000FT AMSL and Umgeni River Mouth at 500FT AMSL.

Note: The area east of the N2 national road, North of Coopers Lighthouse, to the Virginia ATZ boundary, 2NM seawards of the coastline, is regarded as a high density helicopter and general aviation operating area. All VFR traffic entering this area must be in communication and remain on the Virginia frequency 120.6MHz.

VFR traffic is to avoid flying below 1000FT AGL in this area.

Northern KwaZulu/Natal to Margate:

Traffic is to route west of Midmar Dam, clear of the Pietermaritzburg TMA then to Umzimkulu for Margate.

Gauteng Area to Pietermaritzburg:

All traffic to route via the Albert Falls dam then to Pietermaritzburg.

From the West to Pietermaritzburg

All traffic to route via Sweetwaters then to Pietermaritzburg.

From the South-west to Pietermaritzburg:

All traffic to route via Richmond then to Pietermaritzburg.

Richards Bay Area to Pietermaritzburg:

All traffic to route via Nagel dam then to Pietermaritzburg.

1.7 KRUGER SPECIAL RULES AREA (SRA) AND VFR ROUTINGS IN THE SRA AND CTR

The airspace below the Kruger Mpumalanga TMA A, B, C, D, G and portion of F, excluding the airspace below the Kruger Mpumalanga TMA E and that part of the Kruger National Park FAR 78, between ground level and 2500FT ALT, which falls below the Kruger Mpumalanga TMA, is declared as a SRA and termed as the Kruger SRA.
The Kruger SRA shall be defined as follows:

a) From a point on the Kruger Mpumalanga TMA A boundary 250428.11S 0305751.91E clockwise along the arc of a circle, radius 20NM and centered at 252251.70S 0310640.05E to a point 252127.89S 0312841.76E on the Kruger Mpumalanga TMA A boundary.

b) Thence along a straight line to 252354.94S 0313414.96E on the Kruger Mpumalanga TMA A boundary.

c) Thence along a straight line to a point 253024.26S 0312101.29E on the Kruger Mpumalanga TMA A boundary.

d) Thence clockwise along the arc of a circle, radius 15NM and centered at 252251.70S 0310640.05E to a point 253735.50S 0310959.65E on the Kruger Mpumalanga TMA F boundary

e) Thence along a straight line to a point 255250.55S 0310837.81E on the Kruger Mpumalanga TMA F boundary.

f) Thence clockwise along the arc of a circle radius 30NM and centered at 252251.70S 0310640.05E to a point 252123.38S 0303335.50E on the Kruger Mpumalanga TMA D boundary.

g) Thence along a straight line to a point 252150.65S 0304330.71E on the Kruger Mpumalanga TMA B boundary.

h) Thence clockwise along the arc of a circle radius 21NM and centered at 252251.70S 0310640.05E to a point 250332.91S 0305725.57E on the Kruger Mpumalanga TMA B boundary.

i) Thence along a straight line back to the starting point at 250428.11S 0305751.91E on the Kruger Mpumalanga TMA A boundary.

This is to promote safety, efficiency and orderliness in the Kruger Special Rules Area.

All aircraft operating in the Kruger Special Rules Area should maintain a listening watch and broadcast regular position reports on frequency 130.35 MHz.

Pilots operating below the Kruger TMA should therefore ensure that they do not exceed the applicable altitude restriction as stipulated on SRA routings and also to remain below the Kruger TMA.

Pilots are encouraged to squawk 2000, Mode C, at all times.

The following routes will be applicable in the Kruger Special Rules Area:

Routes for VFR aircraft in the Kruger Special Rules Area:

From the North and North-West to Kruger

All VFR traffic is to route via Hazyview, cross Hazyview at 5000 FT ALT, then Da Gama Dam, cross Da Gama Dam at 5000FT ALT, then via White River, cross White River at 4500FT ALT, then to Kruger/Mpumalanga International Airport. All VFR traffic is to remain clear of the Kruger TMA. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold north of White River at 4500FT ALT, till a joining clearance has been obtained.

From Kruger to the North and North-West

All VFR traffic is to route via the White River Sawmill at 4000FT ALT, then west of Legogote, at 4000FT ALT, then via Hazyview, cross Hazyview at 4500FT ALT.

From the North-North-East and North-West to Nelspruit

All VFR traffic is to route via Hazyview at 5000FT ALT, then via Da Gama Dam, cross Da Gama Dam at 5000FT ALT, then via the White River, cross White River at 5000FT ALT, then direct to Nelspruit Airport, cross the National Road (N4) maintaining 4500FT. All VFR traffic is to remain clear of the Kruger TMA/CTR.

From Nelspruit to the North, North-West and North-East

All VFR traffic is to route via the Mbombela stadium, at 4000FT ALT, then via White River Sawmill, at 4000FT ALT, then via Hazyview, cross Hazyview at 4500FT ALT. All VFR traffic is to remain clear of the Kruger TMA/CTR.

From the North-East to Kruger:

All VFR traffic is to route via Amor, at 4500FT ALT, then to FAKN. All VFR traffic is to remain clear of the Kruger TMA. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold east of Amor at 4500FT ALT, till a joining clearance has been obtained.

From Kruger to the North-East

All VFR traffic is to route via Amor, cross Amor at 4000FT ALT, then set course and climb to cruising ALT/Level. All VFR traffic is to remain clear of the Kruger TMA.

From the East and South-East to Kruger

All VFR traffic is to route via the Gorge, at 4500FT ALT, then via the Stadium in Kanyamazane then via the Reservoir East of FAKN, cross the Reservoir East of FAKN at 4500FT ALT. All VFR traffic is to remain clear of the Kruger TMA. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold east of the Gorge at 4500FT ALT, till a joining clearance has been obtained.

From Kruger to the East and South-East

All VFR traffic is to route via the Reservoir East of FAKN, cross the Reservoir East of FAKN at 4000FT ALT, then via the Stadium in Kanyamazane, then via the Gorge, at 4000FT ALT. Passing the Gorge set course and climb to ALT/Level as per flight plan.

From the East and South-East to Nelspruit

All VFR traffic is to route via the Gorge, at 4500FT ALT, then direct to Nelspruit, to remain south of the Regional Road (R104) and National Road (N4) at 4500FT ALT. All VFR traffic is to remain clear of the Kruger TMA. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold east of the Gorge at 4500FT ALT, till a joining clearance has been obtained.

From Nelspruit to the East and South-East

All VFR traffic is to route south of the Regional Road (R104) and the National Road (N4), direct to the Gorge, at 4000FT ALT. Passing the Gorge set course and climb to ALT/Level as per flight plan. The clearance shall only be valid during daylight hours, in VMC operations and in communication with ATC. Special VFR clearance may be issued by ATC, to one aircraft at a time only.

From the West and South-West to Kruger

All VFR traffic is to route via Ngodwana, cross Ngodwana at 8000FT ALT, then direct to Mbombela stadium, then direct to Rockys Drift. Cross the TMA C boundary, at 7000FT ALT, cross TMA A boundary at 5000FT ALT, cross Mbombela stadium at 4500FT ALT. All VFR traffic is to remain clear of the Kruger TMA/CTR. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold west of the Mbombela stadium, at 4500FT ALT, till a joining clearance has been obtained.

From Kruger to the West and South-West

All VFR traffic is to route via Rockys Drift or White River, cross Rockys Drift/White River at 3500FT ALT, then north of the National Road (N4), at 5000FT ALT direct to Elandsriver, cross TMA C at 7000FT ALT, cross Elandsriver below 8000FT ALT, then proceed to Ngodwana. Passing Ngodwana set course as per flight plan. All VFR traffic is to remain clear of the Kruger TMA/CTR.

From the West and South-West to Nelspruit

All VFR traffic is to route via Ngodwana, cross Ngodwana at 8000FT ALT, then direct to Nelspruit. Cross the TMA C boundary, at 7000FT ALT, cross TMA A boundary at 5000FT ALT, enter Nelspruit circuit at 4500FT ALT. All VFR traffic is to remain clear of the Kruger TMA.

From Nelspruit to the West and South-West

All VFR traffic is to route via the Mbombela stadium, at 4000FT ALT, then north of the National Road (N4), at 5000FT ALT direct to Elandsriver, cross TMA C at 7000FT ALT, cross Elandsriver below 8000FT ALT, then proceed to Ngodwana. Passing Ngodwana set course as per flight plan.

Transiting of Kruger CTR West to East

All VFR traffic is to route via Ngodwana, cross Ngodwana at 8000FT ALT, then direct to Mbombela stadium. Cross the TMA C boundary, at 7000FT ALT, cross TMA A boundary at 5000FT ALT, cross Mbombela stadium at 4000FT ALT, then direct to the Gorge. All VFR traffic transiting the Kruger CTR, are to remain south of the Regional Road (R104) and the National Road (N4), at 4000FT ALT. VFR traffic wishing to transit through the Kruger CTR must obtain an ATC clearance. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold west of Mbombela Stadium at 4000FT ALT, till a joining clearance has been obtained.

The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC. Special VFR clearance may be issued by ATC, to one aircraft at a time only.

Transiting of the Kruger CTR East to West

All VFR traffic is to route via the Gorge, at 4500FT ALT, then to the Mbombela Stadium, remaining south of the Regional Road (R104) and the National Road (N4) at 4500FT ALT till passing Nelspruit Central Business District, then proceed to the Mbombela Stadium, then north of the National Road (N4), at 5000FT ALT, then direct to Elandsriver, cross TMA C at 7000FT ALT, cross Elandsriver below 8000FT ALT, then proceed to Ngodwana. Passing Ngodwana set course as per flight plan. All VFR traffic is to remain clear of the Kruger TMA/CTR. If no contact or no ATC clearance into the Kruger CTR has been obtained, hold east of the Gorge at 4500FT ALT, till a joining clearance has been obtained.

The clearance shall only be valid during daylight hours, in VMC operations and in communication with ATC.

Special VFR clearance may be issued by ATC, to one aircraft at a time only.

Note: All VFR traffic with destinations to airfields below the Kruger TMA and within the Kruger CTR are to comply with the above routings to the nearest point on the route and then to the destination.

Frequency: 130.35 MHz within the Special Rules Area.

1.7.1 VFR ROUTINGS WITHIN THE KRUGER CTR AND THE KRUGER SPECIAL RULES AREA (SRA)

Note: All proposed VFR routes will be for use by day and in VMC only.

Standard VFR Departure Routes, leaving the Kruger CTR

Departing RWY 23

Leaving the Kruger CTR to the West and South-West:

Rockys Drift 23 VFR Departure

After departure runway 23, maintain runway track to 3300FT ALT, then turn right track 320 degrees and climb to 3500FT ALT. At 3500FT ALT, set course and join the SRA VFR route. Report crossing the National Road R40.

Leaving the Kruger CTR to the North-West

Legogote 23 VFR Departure

After departure runway 23, maintain runway track to 3300FT ALT, then turn right track 320 degrees and climb 4000FT ALT. At 4000FT ALT, set course and join the SRA VFR route. Report passing west of Legogote. Remain clear of the Kruger CTR.

Leaving the Kruger CTR to the North East

Amor 23 VFR Departure

After departure runway 23, maintain runway track to 3300FT ALT, then turn left track 140 degrees and climb to 4000FT ALT. At 4000FT ALT turn left set course to Amor. Passing Amor, set course as per flight plan. Report passing Amor.

Leaving the Kruger CTR to the East and South-East

Kanyamazane 23 VFR Departure

After departure runway 23, maintain runway track to 3300FT ALT, then turn left track 140 degrees and climb to 4000FT ALT. At 4000FT ALT set course to Kanyamazane. Passing Kanyamazane, join the SRA VFR route. Report passing Kanyamazane.

Departing RWY 05

Leaving the Kruger CTR to the North-East

Amor 05 VFR Departure

After departure runway 05, maintain runway track to 3300FT ALT, then turn right track 140 degrees, and climb 4000FT ALT, at 4000FT ALT set course to route Amor. Passing Amor, set course as per flight plan. Report passing Amor.

Leaving the Kruger CTR to the South-West

White River 05 VFR Departure

After departure runway 05, maintain runway track to 3300FT ALT, then turn left track 320 degrees and climb to 3500FT ALT. At 3500FT ALT set course and join the SRA VFR route. Report passing White River.

Leaving the Kruger CTR to the North-West

Hazyview 05 VFR Departure

After departure runway 05, maintain runway track to 3300FT ALT, then turn left track 320 degrees and climb 4000FT ALT, at 4000FT ALT proceed west of Legogote and join the VFR route to Hazyview. Report passing abeam Legogote

Leaving the Kruger CTR to the South-East

Kanyamazane 05 VFR Departure

After departure runway 05, maintain runway track to 3300FT ALT, then turn right track 140 degrees and climb to 4000 FT ALT. At 4000FT ALT set course to Kanyamazane. Report passing Kanyamazane.

STANDARD VFR ARRIVAL ROUTES

VFR routes to Kruger Airport, entering the CTR from the West and South West

Rockys Drift 05 or 23 VFR Arrival

VFR aircraft, inbound to Kruger, from the west and south-west, are to remain below the Kruger TMA and route to Rockys Drift via SRA VFR routes 4500FT ALT. From Rockys Drift comply with ATC instructions to join the circuit.

VFR routes to Kruger Airport, entering the CTR from the North West

Hazyview 05 or 23 VFR Arrival

VFR aircraft, inbound to Kruger, from the North West, are to remain below the Kruger TMA and to route via White River. Cross White River at 4500FT ALT. From White River comply with ATC instructions to join the circuit.

VFR routes to Kruger Airport, entering the CTR from the East and South East

Kanyamazane 05 or 23 VFR Arrival Kanyamazane

VFR aircraft, inbound to Kruger, from the east and south east are to remain below the Kruger TMA and route to Kanyamazane via SRA VFR routes. From Kanyamazane, route via the Reservoir East of FAKN. Cross the Kanyamazane at 4500FT ALT. From Kanyamazane comply with ATC instructions to join the circuit.

VFR routes to Kruger Airport, entering the CTR from the North East

Amor 05 or 23 VFR Arrival

VFR aircraft, inbound to Kruger, from the north east, are to remain below the Kruger TMA and route to Amor at 4500FT ALT. From Amor comply with ATC instructions to join the circuit.

Radio failure procedures for VFR flights to and from Kruger into the SRA.

En-route to the Special Rules Area - continue on the Standard VFR departure till clear of the Kruger CTR. Thereafter proceed to FANS and land. After landing contact ATC via telephone.

In the Special Rules Area - remain clear of controlled airspace and proceed to FANS and land. After landing contact ATC via telephone.

Inbound (once cleared inbound by ATC) - continue on the cleared Standard VFR arrival route, join the circuit and position in traffic, land and vacate RWY ASAP.

SIGNIFICANT POINTS:

- Amor - 252135.06S 0311636.18E
- Elandsriver - 252951S 0304154E
- Da Gama Dam - 250901.42S 0310101.84E
- Gorge - 253121.80S 0311302.50E
- Hazyview - 250235.39S 0310742.38E
- Kanyamazane - 252750.60S 0311119.60E
- Legogote - 251419.49S 0310544.22E
- Mbombela stadium - 252738S 0305544E
- Ngodwana - 253438.84S 0303939.30E
- Reservoir East of FAKN - 252338.40S 0311015.10E
- Rockys Drift - 252241.34S 0305908.03E
- White River - 251911S 0305815E

– White River Sawmill - 251941S 0305836E

1.8 MALELANE SPECIAL RULES AREA

A portion of the airspace below the Kruger Mpumalanga TMA F extending eastwards towards the South African and Mozambique International Boundary and southwards along the Matsapha TMA boundary is declared as a Special Rules Area and will be known as the Malelane SRA.

The Malelane SRA shall be defined as follows:

a) From a point on the Kruger Mpumalanga TMA F Boundary at 253735.50S 0310959.65E anti-clockwise around the arc of a circle, radius 15NM and centered at 252251.70S 0310640.05E, to a point at 253024.26S 0312101.29E on the Kruger Mpumalanga TMA F boundary.

b) Thence along a straight line to a point 252354.94S 0313414.96E on the Kruger Mpumalanga TMA F boundary.

c) Thence along a straight line to a point 252616.06S 0313935.39E on the Kruger Mpumalanga TMA F Boundary.

d) Thence along a straight line to a point 252659.36S 0314115.17E on the FAR 78 boundary.

e) Thence along the FAR 78 boundary to a point 252900.00S 0314130.00E on the FAR 78 boundary.

f) Thence along the FAR 78 boundary to a point 252555.96S 0315923.09Eon the South African and Mozambique International Boundary.

g) Thence along the international boundary between South Africa and Mozambique to the following points:

252714.94S 0315858.05E
253033.15S 0315841.57E
253046.11S 0315847.28E
253055.11S 0315859.58E
253109.61S 0315955.62E
253605.81S 0320036.71E
253916.26S 0320024.62E
254120.46S 0315852.99E
255019.44S 0315607.53E

h) Thence along the International boundary between South Africa and Mozambique to a point 255700.89S 0315844.42E on the Eswatini, Mozambique and South African Boundary.

i) Thence along a straight line to a point 255125.37S 0313843.37E on the Matsapha TMA

j) Thence along a straight line to a point 254256.92S 0312529.96E on the Matsapha TMA Boundary.

k) Thence along a straight line to a point 254426.57S 0311851.81E on the Matsapha TMA Boundary.

l) Thence along a straight line to a point 254753.99S 0311607.68E on the Matsapha TMA Boundary.
m) Thence along a straight line to a point 255250.55S 0310837.81E on the Matsapha TMA Boundary.
n) Thence along a straight line to the starting point at 253735.50S 0310959.65E FAKN TMA F boundary.

RULES APPLICABLE WITHIN MALELANE SRA

1. Malelane SRA is established to promote safety, efficiency and orderly operations in the Lowveld areas of Malelane and surrounds as defined.
2. Avoid controlled airspace unless otherwise authorised by ATC.
3. All aircraft operating in the Malelane special rules area shall maintain a listening watch and broadcast regular position reports on frequency 129.35 Mhz.
4. All aircraft outbound from Malelane, must establish contact with FAKN TWR/APP on frequency 119.20 MHz, before airborne.
5. Pilots are requested to squawk transponder code #2000 at all times with altitude selected. Helicopters to squawk #2600 with altitude selected.
6. Pilots to observe SA CARs semi-circular rules and minimum heights requirements within the Malelane SRA.
7. Pilots to ensure to obtain joining clearances from adjacent ATSUs prior to entering respective controlled and information airspaces, i.e., FAKN TWR/APP, FDSK TWR/APP, LASS, and FQMA TWR/APP.
8. Pilots operating in the SRA should ensure that they do not exceed the applicable altitude restrictions as defined.

Vertical limits: GND – FL105
- **Frequency:** 129.35 MHz.

1.9 SABI-SANDS SPECIAL RULES AREA

The portion of airspace from the Kruger Mpumalanga TMA A Northern boundary including the airspace below Kruger Mpumalanga TMA E extending Northwards towards the Hoedspruit Military TMA Boundary, extending eastwards towards the Kruger National Park FAR 78 boundary is declared as a SRA and will be known as the Sabi-Sands SRA. The Sabi-Sands SRA shall be defined as follows:

a) From a point on the Kruger Mpumalanga TMA A boundary 250428.11S0305751.91E along a straight line to a point 250332.91S 0305725.57E on the Kruger Mpumalanga TMA B boundary.
b) Thence along a straight line to 244957.00S 0305434.00E on the Hoedspruit Military TMA Boundary.
c) Thence anti-clockwise along the arc of a circle, radius 30NM and centered at 242049.93S 0310251.39E to a point at 243120.65S 0313342.91E on the FAR 78 boundary.

d) Thence along a straight line to a point at 243600.00S 0313500.00E on the FAR 78 Boundary.
e) Thence along a straight line to a point at 252659.36S 0314115.17E on the FAR 78 Boundary.
f) Thence along a straight line to a point at 252127.89S 0312841.76E on the Kruger Mpumalanga TMA A Boundary.
g) Thence anti-clockwise along the arc of a circle, radius 20NM and centered at 252251.70S 0310640.05E back to the starting point at 250428.11S 0305751.91E on the Kruger Mpumalanga TMA A boundary.

RULES APPLICABLE WITHIN SABI-SANDS SRA

1) Sabi-Sands SRA is established to promote safety, efficiency and orderly operations within the Sabi-Sands and surrounding lowveld areas.
2) Avoid controlled airspace unless otherwise authorised by ATC (Air Traffic Control).
3) All aircraft operating in the Sabi-Sands SRA shall maintain a listening watch and broadcast regular position reports on frequency 128.35 MHz.
4) All outbound aircraft intending to climb above 6000FT ALT, must establish contact with LASS (Lowveld FIS) 119.0 MHz, preferably before airborne or at the latest before passing 5000FT ALT on the climb.
5) Pilots are requested to squawk transponder code #2000 at all times with altitude selected, Helicopters to squawk #2600 with altitude selected.
6) Pilots to observe semi-circular rules and minimum heights requirements of the South African CARs within the Sabi-Sands SRA.
7) Pilots to ensure to obtain joining clearances from adjacent ATSUs prior to entering respective controlled and information airspaces, i.e., FAKN TWR/APP, FAHS TWR/APP and LASS.
8) Pilots operating in the SRA should ensure that they do not exceed the applicable altitude restrictions as stipulated.
9) Pilots to ensure to comply with the National Enviromental Management: Protected Areas Act (NEMPAA) as applicable.

Vertical limits: GND – 6000FT ALT
Frequency: 128.35 MHz

1.10 HOEDSPRUIT SPECIAL RULES AREA

a) Aircraft operating below the Hoedspruit TMA must contact LASS on frequency 119.0 MHz.
b) The airspace below the Hoedspruit TMA, excluding controlled airspace, will be declared a Special Rules Area - HOEDSPRUIT SPECIAL RULES AREA.

1.10.1 Mandatory VFR/IFR Routings in the LASS Area between the Kruger and Hoedspruit TMA's

Mandatory VFR/IFR routings are implemented in the LASS airspace, between the Kruger and Hoedspruit TMA.

This is to promote safety, efficiency and orderliness in this part of the LASS airspace. All aircraft operating in this airspace shall maintain a listening watch and make regular position reports to LASS on frequency 119.0 MHz. Pilots shall squawk 2000, Mode C, at all times. The following routes will be applicable in the airspace described above.

1.10.2 Mandatory routes for VFR Aircraft in the airspace between the Kruger and Hoedspruit TMAs:

a) All traffic below 5500 FT ALT need not comply with the mandatory VFR routes around the Kruger TMA, as the Kruger TMA A lower ALT only commences from 5500 FT.

b) All traffic below 6000 FT ALT need not comply with the mandatory VFR routes around the Hoedspruit TMA, as the Hoedspruit TMA lower ALT only commences from 6000 FT.

c) The areas below the Kruger and Hoedspruit TMAs have been declared Special Rules Areas and aircraft must comply with these rules as published.

d) All VFR traffic, above 5500 FT ALT, routing east bound to destinations east of Lydenburg, are to route via Lydenburg or north of Lydenburg, to Graskop to Mkhuhlu then to destination

e) All VFR traffic west bound, with departure points east of Lydenburg, above 5500 FT ALT, to route via Mkhuhlu, then to Graskop, then to Lydenburg or north of Lydenburg.

All traffic transiting this area, must be in contact with Lowveld or broadcast on the appropriate frequency, outside of the hours of duty of LASS.

1.10.3 Mandatory routes for IFR Aircraft in the airspace between the Kruger and Hoedspruit TMAs:

a) IFR traffic, eastbound, with destinations east of Lydenburg are to route via UNPAX (245054.86S 0310345.22E), before setting course to destination, unless otherwise instructed by Lowveld Information.

b) IFR traffic, westbound, with departure points east of a straight line between VOR HSV and PKV, are to route via UMVET (245555.67S 0310354.18E), unless otherwise instructed by Lowveld Information, before setting course to next fix or destination.

– Lydenburg: 250445.00S 0302532.00E
– Graskop: 245557.94S 0305038.97E
– Mkhuhlu: 245911.69S E311418.10E

1.11 MANDATORY VFR ROUTING FOR UPINGTON AERODROME

Flights from the West of FAUP

Unless otherwise cleared, flights approaching from destinations North or West of point 1 (280958.00S 0211006.00E) and South or West of Point 2 (283820.00S 0212113.00E) to route via UTSOS for downwind for the active runway.

Departing Upington to destinations North or West of point 1 (280958.00S 0211006.00E) and South or West of Point 2 (283820.00S 0212113.00E) to route via UTSOS after departure.

Flights from the East of FAUP

Unless otherwise cleared flights approaching from destinations East of point 1 (280958.00S 0211006.00E) and East of Point 2 (283820.00S 0212113.00E) to route via UVDIK for downwind for the active runway.

Departing Upington to destinations East of point 1 (280958.00S 0211006.00E) and East of Point 2 (283820.00S 0212113.00E) to route via UVDIK after take-off.

VFR Reporting Points

- UTSOS – 282858.00S 0205932.00E
- UVDIK – 281913.00S 0213142.00E

2 CAPE TOWN FIR

2.1 SPECIAL RULES AIRSPACE EAST LONDON

The airspace below the East London TMA, excluding that part of the Port Alfred General Flying Area (FAD192), which falls below the East London TMA, is declared as a Special Rules Area and termed as the EAST LONDON SPECIAL RULES AREA.

This is to promote safety, efficiency and orderliness in the East London Special Rules Area.

All aircraft operating in the East London Special Rules Area should maintain a listening watch and broadcast regular position reports on FREQ 125.2 MHz.

By virtue of the fact that uncontrolled VFR aircraft are to remain below the East London TMA radar separations and information provided to aircraft operating within the East London TMA, will only take known identified targets into account.

For the information of those aircraft operating within the East London TMA, unidentified unknown targets, performing as expected for general aviation within the confines of the East London Special Rules Area will be deemed to be separated from aircraft operating within the East London TMA, by procedures as opposed to radar.

Pilots operating below the East London TMA should therefore ensure that they do not exceed the applicable altitude restriction as stipulated on SRA routings and also to remain at least 500FT below the TMA whilst flying below the East London TMA.

Pilots are encouraged to squawk 2000 at all times.

The following routes will be applicable in the East London Special Rules Area:

Routes for VFR Aircraft in the East London Special Rules Area

From the North to King Phalo

All VFR traffic is to route via the Nahoon Dam, cross Nahoon Dam at 2000 FT AMSL. All VFR traffic is to remain clear of the East London TMA. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold north of the Nahoon Dam, at 2000 FT AMSL, till a joining clearance has been obtained.

From the North-East to King Phalo

All VFR traffic is to route east of the National Road (N2), at 2000 FT AMSL, via Gonubie, then seawards of the coastline. All VFR traffic is to remain clear of the East London TMA. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold east of Gonubie, at 2000 FT AMSL, till a joining clearance has been obtained. Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

From the East to King Phalo

All VFR traffic is to route via Cinsta, then Gonubie, remain seawards of the coastline at 1500 FT ALT. All VFR traffic is to remain clear of the East London TMA. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold east of Gonubie at 1500 FT AMSL, till a joining clearance has been obtained.Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

From the West to King Phalo

All VFR traffic is to route via Peddie, cross Peddie at 4000 FT AMSL, then Laing Dam, at 2000 FT AMSL, then the Nahoon Dam, at 2000 FT AMSL. All VFR traffic is to remain clear of the East London TMA and King Phalo CTR. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold west of the Laing Dam, at 2000 FT AMSL, till a joining clearance has been obtained.

From the South-West of King Phalo

All VFR traffic is to route seawards of the coastline via Hamburg, then Kaysers Beach, at 1500 FT AMSL. All VFR traffic is to remain clear of the East London TMA and King Phalo CTR. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold west of Kaysers Beach, at 1500 FT AMSL, till a joining clearance has been obtained.Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

Transiting of King Phalo CTR South-West to North-East

All VFR traffic is to route seawards of the coastline, transiting the King Phalo CTR, are to remain seawards of the coastline, at 1500 FT AMSL. VFR traffic wishing to transit through the King Phalo CTR must obtain an ATC clearance. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold west of Kaysers Beach, at 1500 FT AMSL, till a joining clearance has been obtained.

The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC and the aircraft shall be Mode-C transponder equipped.

Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

Transiting of the King Phalo CTR North-East to South-West

All VFR traffic is to route seawards of the coastline, transiting the King Phalo CTR, are to remain seawards of the coastline, at 1000 FT AMSL. VFR traffic wishing to transit through the King Phalo CTR must obtain an ATC clearance. If no contact or no ATC clearance into the King Phalo CTR has been obtained, hold east of Gonubie, at 1000 FT AMSL, till a joining clearance has been obtained.

The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC and the aircraft shall be Mode C transponder equipped. Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules. Following line features as per CAR 91.06.08.

Transiting of the East London SRA West to East

All VFR traffic is to route via Peddie, cross Peddie at 4000 FT AMSL, north of the Laing Dam, at 2000 FT AMSL, north of the Nahoon Dam, at 2000 FT AMSL, then via Cintsa at 4000 FT AMSL. All VFR traffic is to remain clear of the East London TMA and King Phalo CTR.

Transiting of the East London SRA West to East

All VFR traffic is to route via Cinsta at 2500 FT AMSL, north of the Nahoon Dam at 2000 FT AMSL, north of the Laing Dam at 2000 FT AMSL, then Peddie at 4000 FT AMSL. All VFR traffic is to remain clear of the East London TMA and King Phalo CTR.
Frequency: 125.200 MHz within the Special Rules Area.

2.2 VFR Routings within the King Phalo CTR and Special Rules Area.

VFR Routes:

Note: All proposed VFR routes will be for use by day and in VMC only.

Standard VFR Departure Routes, leaving the King Phalo CTR

Departing RWY 29

Leaving the King Phalo CTR to the West

KEYSERS BEACH 29 VFR Departure

After departure runway 29, maintain runway track to 1000 FT ALT, then turn left track 200 degrees, passing the coastline, set course for Keyser Beach and maintain 1000FT ALT. At Keyser beach follow the coastline to intercept the SRA VFR route. Report passing Keyser Beach.

Leaving the King Phalo CTR to the East

GONUBIE 29 VFR Departure

After departure runway 29, maintain runway track to 1000 FT ALT, then turn left track 200 degrees passing the coastline, set course for Gonubie, and maintain 1000 FT ALT. At Gonubie intercept the SRA VFR route. Report passing Gonubie.

Leaving the King Phalo CTR to the North West

NAHOON DAM 29 VFR Departure

After departure runway 29, maintain runway track to 1000 FT ALT, then turn right track 020 degrees and climb to 1500 FT ALT. At 1500 FT ALT set course to Nahoon Dam. Passing Nahoon Dam Bay, join the SRA VFR route. Report passing Nahoon Dam.

Leaving the King Phalo CTR to the North East

GOODSHEDS 29 VFR Departure

After departure runway 29, maintain runway track to 1000FT ALT, then turn right track 020 degrees, and climb 1500 FT ALT. At 1500 FT ALT, set course to Nahoon Dam. Crossing the National Road (N2), set course, remaining north of the N2. Report passing abeam Gonubie.

Departing RWY 11

Leaving the King Phalo CTR to the North East

GOODSHEDS 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then turn left track 020 degrees, and climb 1500 FT ALT. Crossing the National Road (N2), set course, remaining north of the N2. Report passing abeam Gonubie.

Leaving the King Phalo CTR to the West

KEYSERS BEACH 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then turn right track 200 degrees and climb to 1000 FT ALT. Crossing the coast line at 1000FT ALT set course for Keyser Beach and maintain 1000 FT ALT. At Keyser beach follow the coastline to intercept the SRA VFR route at Keyser Beach. Report passing Keyser Beach.

Leaving the King Phalo CTR to the East

GONUBIE 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then proceed seawards of the coastline to Gonubie, and maintain 1000 FT ALT. At Gonubie, follow the coastline to intercept the SRA VFR route. Report passing Gonubie.

Leaving the King Phalo CTR to the North West

NAHOON DAM 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then turn left track 020 degrees and climb to 1500 FT ALT. At 1500 FT ALT set course to Nahoon Dam. Passing Nahoon Dam Bay, join the SRA VFR route. Report passing Nahoon Dam.

2.2.1 STANDARD VFR ARRIVAL ROUTES - KING PHALO

VFR routes to King Phalo Airport, entering the CTR from the West:

Hamburg 11 or 29 VFR Arrival

VFR aircraft, inbound to King Phalo, from the west, are to remain below the East London TMA and route to Hamburg, to join the SRA VFR route. Passing Hamburg, follow the coast line feature to Kaysers Beach at 1000 FT ALT. From Kaysers Beach comply with ATC instructions to join the circuit.

VFR routes to King Phalo Airport, entering the CTR from the North and North West

Nahoon Dam 11 or 29 VFR Arrival

VFR aircraft, inbound to King Phalo, from the North West, are to remain below the East London TMA and to route via the SRA VFR route to Nahoon Dam at 1500 FT ALT. From Nahoon Dam comply with ATC instructions to join the circuit.

VFR routes to King Phalo Airport, entering the CTR from the East and North-East:

Gonubie 11 or 29 VFR Arrival

VFR aircraft inbound to King Phalo, from the east and North-East are to remain below the East London TMA and route to Gonubie via SRA VFR routes. From Gonubie, follow the coastline feature at 1500 FT ALT. From Gonubie comply with ATC instructions to join the circuit.

Transiting, seawards of the coastline through the King Phalo CTR

All VFR traffic wishing to route seawards of the coastline, through the King Phalo CTR, are to remain seawards of the coastline, not above 1000 FT ALT, subject to ATC instructions.

All transiting traffic is regarded as circuit traffic, thus reduced separation minima, in the vicinity of the aerodrome.The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC and the aircraft shall be transponder equipped.Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules, Following line features Regulation 91.06.08.

Radio failure procedures for circuit training and for training flights to / from the Special Rules Area

In Circuit:

Remain in circuit and position in traffic, land and vacate RWY in use ASAP. After landing contact ATC via telephone.

Flights to / from the SRA

En-route to the Special Rules Area - continue on the Standard VFR departure till clear of the King Phalo CTR. Thereafter proceed to a suitable airfield and land. After landing contact ATC via telephone.

In the Special Rules Area - remain clear of controlled airspace; proceed to a suitable airfield and land. After landing contact ATC via telephone.

Inbound (once cleared inbound by ATC) - continue on the cleared Standard VFR arrival route, join the circuit and position in traffic, land and vacate RWY ASAP. After landing contact ATC via telephone.

The areas defined as follows have been identified for all general and training flying:

Hamburg Area from a point at:

332100S 0272100E

331700S 0272800E

331000S 0272300E

331600S 0271800E

Cintsa Area from a point at:

325000S 0280700E

324600S 0281500E

323900S 0281200E

324300S 0280400E

SIGNIFICANT POINTS:

BRIDLE DRIFT DAM	325900S 0274500E
CINTSA	325000S 0280700E
GONUBIE	325700S 0280100E
GOODSHEDS	325757S 0275315E
KEYSERS BEACH	331243S 0273630E
LAING DAM	325700S 0273000E
NAHOON DAM	325500S 0274800E
WESLEY	331940S 0271900E

Frequency: 125.200 MHz within the Special Rules Area:

2.3 PORT ELIZABETH SPECIAL RULES AREA

The airspace below the Port Elizabeth TMA, excluding FAD193, will be declared as a Special Rules Area and termed as the "PORT ELIZABETH SPECIAL RULES AREA".

To prevent frequency congestion and to promote safety, efficiency and orderliness in the Port Elizabeth Special Rules Area, a dedicated frequency of 130.350 MHz, for Traffic Information Broadcast by Aircraft (TIBA) has been issued.

All aircraft operating in the Port Elizabeth Special Rules Areas shall maintain a listening watch and broadcast regular position reports on frequency 130.350 MHz.

The Chief Dawid Stuurman CTR is excluded from the Port Elizabeth Special Rules Area.

By virtue of the fact that uncontrolled VFR aircraft are to remain below the Port Elizabeth TMA radar separations and information provided to aircraft operating within the Port Elizabeth TMA, will only take known identified targets into account.

For the information of those aircraft operating within the Port Elizabeth TMA, unidentified unknown targets, performing as expected for general aviation within the confines of the Port Elizabeth Special Rules Area, will be deemed to be separated from aircraft operating within the Port Elizabeth TMA, by procedures as opposed to radar.

Pilots operating below the Port Elizabeth TMA should therefore ensure that they do not exceed the applicable altitude restriction as stipulated on Special Rules Area routings and also to remain at least 500 FT below the TMA whilst flying below the Port Elizabeth TMA.

Pilots are requested to squawk transponder code 2000 at all times with altitude selected. Helicopters to squawk 2600 also with altitude selected.

2.3.1 The following routes will be applicable in the Port Elizabeth Special Rules Area:

From the North:

All VFR traffic, from points of departures north of Chief Dawid Stuurman are to route via Addo, then to Coega River mouth, then to Swartkops River mouth (landside of the coast), then to Chief Dawid Stuurman.

VFR traffic is to cross Addo at or below 2000 FT ALT, Coega River mouth at or below 1500 FT ALT and Swartkops River mouth at 1500 FT ALT. VFR traffic to remain clear of the Port Elizabeth TMA. VFR traffic to contact FAPE APP, on 120.4 MHz, at Addo. If no contact or no ATC clearance into the Chief Dawid Stuurman CTR has been obtained from FAPE APP hold clear of the Chief Dawid Stuurman CTR, till a joining clearance has been obtained.

From Chief Dawid Stuurman to the North:

All VFR traffic, departing Chief Dawid Stuurman and with destinations north of Chief Dawid Stuurman, are to route either via Swartkops River mouth, Coega River mouth then to Addo or, runway dependent, Salt Lake, then to Addo before setting course.

Traffic is to cross Swartkops River mouth or Salt Lake at 1500 FT ALT, Coega River mouth at or below 1500 FT ALT, Addo at or below 2000 FT ALT. VFR traffic to report passing Swartkops River mouth or Salt Lake. VFR traffic wishing to route on an alternate route from Chief Dawid Stuurman, must obtain permission from ATC. VFR traffic to remain clear of the Port Elizabeth TMA.

From the North East:

All VFR traffic, with points of departure north east of Chief Dawid Stuurman, are to route via Nanaga, then to Coega River Mouth, then to the Swartkops River Mouth (landside of the coast), then to Chief Dawid Stuurman.

Traffic is to cross Nanaga at or below 2000 FT ALT, Coega River Mouth at or below 1500 FT ALT, Swartkops River Mouth at 1500 FT ALT. VFR traffic to remain clear of the Port Elizabeth TMA. VFR traffic to contact FAPE APP, on 120.4 MHz, at Nanaga. If no contact or no ATC clearance into the Chief Dawid Stuurman CTR has been obtained from FAPE APP, hold clear of the Chief Dawid Stuurman CTR, till a joining clearance has been obtained.

From Chief Dawid Stuurman to the North East:

All VFR traffic, departing Chief Dawid Stuurman and with destinations north east of Chief Dawid Stuurman, are to route either via Swartkops River mouth or Salt Lake, runway dependent, then seawards of the coast to the Coega River Mouth, then to Nanaga, before setting course. Traffic is to cross Swartkops River Mouth at 1500 FT ALT, Nanaga at or below 2000 FT ALT. VFR traffic to report passing Swartkops River mouth or Salt Lake. VFR traffic to remain clear of the Port Elizabeth TMA.

From the West to Chief Dawid Stuurman:

All VFR traffic, with points of departure west of Chief Dawid Stuurman, are to route via Gamtoos River Mouth, then to the Maitland River Mouth, then along the Kragga Kamma Road to Chief Dawid Stuurman.

Traffic is to cross Gamtoos River Mouth and Maitland River Mouth at or below 1500 FT. VFR traffic to remain clear of the Port Elizabeth TMA. VFR traffic to contact FAPE APP, on 120.4 MHz, at Gamtoos River Mouth. If no contact or no ATC clearance into the Chief Dawid Stuurman CTR has been obtained from FAPE APP, hold clear of the Chief Dawid Stuurman CTR, till a joining clearance has been obtained.

Note: Traffic must broadcast on 122.7 MHz passing the Progress circuit.

From Chief Dawid Stuurman to the West:

All VFR traffic, departing Chief Dawid Stuurman, and with destinations west of Chief Dawid Stuurman, are to route towards the Greenbushes Mast and follow the Kragga Kamma Road to the Maitland River Mouth, then to the Gamtoos River Mouth, before setting course. Traffic is to cross Maitland River Mouth and Gamtoos River Mouth at or below 1500 FT ALT. VFR traffic to report passing abeam Seaview. VFR traffic to remain clear of the Port Elizabeth TMA.

Note: Traffic must broadcast on 122.7 MHz passing the Progress circuit.

From the East to Chief Dawid Stuurman:

All VFR traffic, with points of departure east of Chief Dawid Stuurman, are to route abeam of Bird Island, then coastwise to the Sundays River Mouth, then to the Coega River mouth, then to the Swartkops River mouth (landside of the coast), then to Chief Dawid Stuurman.

Traffic is to cross abeam Bird Island at or below 6000 FT ALT, Sundays River Mouth at or below 1500 FT ALT, Coega River mouth at or below 1500 FT ALT, Swartkops River Mouth at 1500 FT ALT. VFR traffic to remain clear of the Port Elizabeth TMA. VFR traffic to contact FAPE APP, on 120.4 MHz, at Bird Island. If no contact or no ATC clearance into the Chief Dawid Stuurman CTR has been obtained, from FAPE APP, hold clear of the Chief Dawid Stuurman CTR, till a joining clearance has been obtained.

From Chief Dawid Stuurman to the East:

All VFR traffic, departing Chief Dawid Stuurman and with destinations east of Chief Dawid Stuurman, are to route either via Swartkops River mouth or Salt Lake, runway dependent, then seawards of the coast to the Coega River mouth, then to the Sundays River Mouth, then to abeam Bird Island, before setting course.

Traffic is to cross the Swartkops River Mouth at or below 1500 FT ALT, cross Coega River mouth at or below 1500 FT ALT, cross the Sundays River Mouth at or below 1500 FT ALT, cross abeam Bird Island at or below 6000 FT ALT. VFR traffic to report passing Swartkops River mouth or Salt Lake. VFR traffic to remain clear of the Port Elizabeth TMA.

From the General Flying Area:

Ready to return from the General Flying Area, VFR traffic to contact FAPE APP, on 120.4 MHz, overhead the Volkswagen factory, and comply with the Kash 26 or Kash 08 arrival, runway dependent. Traffic must then change frequency to the Special Rules Area frequency 130.350 MHz and broadcast.

VFR traffic is to cross SANTA or Salt Lake at or below 2000 FT ALT. VFR traffic to remain clear of the Port Elizabeth TMA. If no contact or no ATC clearance into the Chief Dawid Stuurman CTR has been obtained, from FAPE APP on 120.4 MHz, remain clear of the Chief Dawid Stuurman CTR, until a joining clearance has been obtained.

From Chief Dawid Stuurman to the General Flying Area:

All VFR traffic, departing Chief Dawid Stuurman to the General Flying Area, are to route either via SANTA or Salt Lake, runway dependent, then to the General Flying Area entry point.

Traffic is to cross SANTA or Salt Lake at 1500 FT ALT, remain at or below 1500 FT ALT till entering the General Flying Area. VFR traffic to broadcast on Special Rules Area frequency 130.350 MHz passing SANTA or Salt Lake. At KwaNobuhle change to General Flying Area frequency 124.2 MHz and broadcast. VFR traffic wishing to route on an alternate route from Chief Dawid Stuurman, must obtain permission from ATC. VFR traffic to remain clear of the Port Elizabeth TMA.

Crossing from West to East:

All VFR traffic, with departure points west of Chief Dawid Stuurman and transiting the Special Rules Area, are to route Gamtoos River Mouth, then to Van Stadens River bridge, then to Despatch, then to Sundays River Mouth or Nanaga before setting course. Traffic is to cross Gamtoos River Mouth at or below 1500 FT ALT, to cross Van Stadens River Mouth at or below 1500 FT ALT, cross Despatch at or below 1500 FT ALT, cross Sundays River Mouth at or below 1500 FT ALT, then to abeam Bird Island, at or below 6000 FT ALT or Nanaga at or below 2000 FT ALT. VFR traffic to remain clear of the Port Elizabeth TMA and the Progress Airfield and broadcast on Special Rules Area frequency 130.350 MHz

Note: Traffic must broadcast on 122.7 MHz passing the Progress circuit.

Crossing from East to West:

All VFR traffic, with departure points north east and east of Chief Dawid Stuurman and transiting the Special Rules Area, to route via Nanaga or abeam Bird Island, then to the Sundays River Mouth, then to Despatch, then to Van Stadens River bridge, then to the Gamtoos River Mouth, before setting course. Traffic is to cross Nanaga at or below 2000 FT ALT or abeam Bird Island at or below 6000 FT ALT, cross Sundays River Mouth at or below 1500 FT ALT, cross Despatch at or below 1500FT ALT, cross Van Stadens River bridge at or below 1500 FT ALT, cross the Gamtoos River Mouth at or below 1500 FT ALT before setting course. VFR traffic to remain clear of the Port Elizabeth TMA and the Progress Airfield and broadcast on Special Rules Area frequency 130.350 MHz.

Note: Traffic must broadcast on 122.7 MHz passing the Progress circuit.

2.3.2 VFR ROUTINGS WITHIN THE CHIEF DAWID STUURMAN CTR AND THE PORT ELIZABETH SPECIAL RULES AREA (SRA)

Note: All proposed VFR routes will be for use by day and in VMC only.

Standard VFR Departure Routes, leaving the Chief Dawid Stuurman CTR:

DEPARTING RWY 26:

Leaving the Chief Dawid Stuurman CTR to the General Flying Area, North-West, North, North East and East:

ALBAN 26 VFR Departure

After departure runway 26, maintain runway track to 1000 FT ALT, then turn right on track 350 degrees and climb to 1500 FT ALT. At 1500 FT ALT, set course for Salt Lake and maintain 1500 FT ALT. At Salt Lake, traffic with destinations in the north-east and east to proceed to the Coega River Mouth, seawards of the coast, to intercept the Special Rules Area VFR route. Traffic to the north area to route via Addo. Traffic destined for the General Flying Area to proceed to the General Flying Area entry point.

Leaving the Chief Dawid Stuurman CTR to the West:

GREENBUSHES 26 VFR Departure

After departure runway 26, maintain runway track to 1000 FT ALT, then turn right track 350 degrees and climb 1500 FT ALT, At 1500 FT ALT proceed direct to Greenbushes Mast. At Kragga Kamma Road set course (left turn) for Maitland River Mouth, routing south of the N2. Report passing abeam Seaview.

DEPARTING RWY 08:

Leaving the Chief Dawid Stuurman CTR to the North-West, North, North East, East and West:

COEGA 08 VFR Departure

After departure runway 08, maintain runway track to 1000FT ALT, then turn left to route seawards of the coast to Swartkops River mouth and climb 1500FT ALT. At Swartkops River mouth set course to Coega River Mouth, remaining seawards of the coast to join the Special Rules Area VFR route for destinations in the North-East and East.

Leaving the Chief Dawid Stuurman CTR to the General Flying Area:

SANTA 08 VFR Departure

After departure runway 08, maintain runway track to 1000 FT ALT, then turn left track 350 degrees and climb to 1500 FT ALT. At 1500 FT ALT, set course for SANTA and maintain 1500 FT ALT. At SANTA route to the General Flying Area entry point.

Leaving the Chief Dawid Stuurman CTR to the West:

GREENBUSHES 08 VFR Departure

After departure runway 08, maintain runway track to 1000FT ALT, then turn left, track 350 degrees and climb 1500 FT ALT, At 1500 FT ALT proceed direct to Greenbushes Mast, at Kragga Kamma Road set course (left turn) for Maitland River Mouth, routing south of the N2 road. Report passing abeam Seaview.

STANDARD VFR ARRIVAL ROUTES:

VFR routes to Chief Dawid Stuurman Airport, entering the CTR from the General Flying Area:

Kash 26 VFR Arrival (Runway 26 in use)

VFR aircraft, inbound to Chief Dawid Stuurman from the General Flying Area, are to remain below the Port Elizabeth TMA and route to SANTA at or below 1500 FT ALT. At SANTA contact FAPE TWR on 118.1 MHz. From SANTA comply with ATC instructions to join the circuit.

Kash 08 VFR Arrival (Runway 08 in use)

VFR aircraft, inbound to Chief Dawid Stuurman from the General Flying Area, are to remain below the Port Elizabeth TMA and route to Salt Lake at or below 1500 FT ALT. At Salt Lake contact FAPE TWR on 118.1 MHz. From Salt Lake comply with ATC instructions to join the circuit.

VFR routes to Chief Dawid Stuurman Airport, entering the CTR from the North, North-East and East:

Spies VFR Arrival

VFR aircraft, inbound to Chief Dawid Stuurman, from the north, north-east and east, are to remain below the Port Elizabeth TMA and route to Swartkops River Mouth via Special Rules Area VFR routes. At Swartkops River mouth contact FAPE TWR on 118.1 MHz. From Swartkops River mouth comply with ATC instructions to join the circuit.

Parsons VFR Arrival

VFR aircraft, inbound to Chief Dawid Stuurman from the west, are to remain below the Port Elizabeth TMA and route towards the Greenbushes Mast via Special Rules Area VFR routes. At Seaview contact FAPE TWR on 118.1 MHz. From Seaview comply with ATC instructions to join the circuit.

Radio failure procedures for circuit training and for training flights to / from the Special Rules Area BY DAY

In Circuit: Remain in circuit and position in traffic, land and vacate RWY in use as soon as possible. After landing contact ATC via telephone.

Flights to / from the Special Rules Area:

En-route to the Special Rules Area - continue on the Standard VFR departure until clear of the Chief Dawid Stuurman CTR. Thereafter set course to destination or to Uitenhage and land. After landing contact ATC via telephone. Do not return to Chief Dawid Stuurman.

In the Special Rules Area - remain clear of controlled airspace, proceed to Uitenhage and land. After landing contact ATC via telephone. Do not proceed to Chief Dawid Stuurman.

Inbound (once cleared inbound by ATC) - continue on the cleared Standard VFR arrival route, join the circuit and position in traffic, land and vacate RWY as soon as possible. After landing contact ATC via telephone.

Radio failure procedures for circuit training and for training flights to / from the Special Rules Area BY NIGHT

In Circuit: Remain in circuit and position in traffic, land and vacate RWY in use as soon as possible. After landing contact ATC via telephone.

Flights to / from the Special Rules Area:

En-route to the Special Rules Area - continue on the Standard VFR departure until clear of the Chief Dawid Stuurman CTR. Thereafter squawk 7600, climb to 2000 FT ALT, route back to overhead the airfield, join the circuit and position in traffic, land and vacate RWY as soon as possible. After landing contact ATC by telephone.

Traffic inbound with a RCF, squawk 7600, climb to 2000 FT ALT, route overhead the airfield, join the circuit and position in traffic, land and vacate RWY in use as soon as possible. After landing contact ATC via telephone.

SIGNIFICANT POINTS:

Addo 333151S 0253726E

Bird Island 335045S 0261700E

Coega 334600S 0253900E

Despatch 334800S 0252800E

Gamtoos River Mouth 335720S 0250100E

Greenbushes Mast 335610.32S 0252627.96E

KwaNobuhle 335100S 0252800E

Nanaga 333620S 0255540E

Salt Lake 335300S 0253300E

SANTA 335342S 0252820E

Sundays River Mouth 334309S 0255104E

Swartkops River Mouth 335157S 0253803E

Van Stadens River Bridge 335433S 0251150E

Maitland River Mouth 335918S 0251741E

Kragga Kamma Road 335810S 0252928E

(Railway crosses the road).

2.4 CAPE TOWN SPECIAL RULES AREA

The airspace below the Cape Town TMA is declared as a Special Rules Area and will be known as the CAPE TOWN SPECIAL RULES AREA. Aircraft operating in the western sector shall operate on frequency 125.8 MHz, in the eastern sector on 124.8 MHz and in the northern sector on 126.8 MHz. Aircraft operating within the special rules area below FACT TMA A must not exceed 2000 FT ALT.

The Special Rules Area shall comprise of three sectors divided as follows:

1) all the airspace below the Cape Town TMA east of a straight line starting from a point 330926S 0182252E to a point 335810.82S 0183618.19E and terminating at a point 344652S 0185000E excluding the Cape Town SRA north area, shall be known as the eastern sector of the Cape Town special rules area.

2) All the airspace below the Cape Town TMA west of a straight line starting from a point 330926S 0182252E to a point 335810.82S 0183618.19E and terminating at a point 344652S 0185000E excluding the Cape Town SRA north area, shall be known as the western sector of the Cape Town special rules area.

3) Northern SRA Sector:

a) From a point 334721.49S 0183840.59E on the FACT CTR boundary Northwards along Adderley Road to a point at 334437.84S 0183814.29E
b) Thence continuing northwards along the Adderley Road to the T-junction with Philadelphia Road at 334123.40S 0183818.54E
c) Thence Westwards along the Philadelphia Road to a point at 334042.96S 0183614.96E on the Philadelphia Road and Old Malmesbury Road intersection.
d) Thence South Westwards along the Old Malmesbury Road to a point at 334237.18S 0183457.98E at the Old Malmesbury Road, Botterberg Road and Van Schoorsdrift Road intersection.
e) Thence South Westwards along the Van Schoorsdrift Road to the Havana Hills entrance along the Van Schoorsdrift Road at 334321.77S 0183411.09E.
f) Thence along a straight line to a point at 334332.56S 0183413.25E.

g) Thence west along a straight line to the N7/M19 (Melkbosstrand Road) interchange at 334331.44S 0183239.93E.
h) Thence west along the M19 (Melkbosstrand Road) to the M19/R27 (Westcoast Road) crossing at 334333.45S 0182720.23E.
i) Thence along the R27 (Westcoast Road) to a point at 334327.93S 0182720.51E.
j) Thence clockwise along the arc of a circle, radius 2.5NM, and centered at 334100.00S 0182650.00E to a point at 333830.09S 0182644.12E on the R27 (Westcoast Road).
k) Thence North Westwards along the R27 (Westcoast Road) to a point at 333321.22S 0182234.92E.
l) Thence Westwards along a straight line to a point at 333400.00S 0181830.00E.
m) Thence Southwards along a straight line to a point at 334759.00S 0182154.00E.
n) Thence South Eastwards along a straight line to a point at 335222.07S 0182737.81E on the Ysterplaat ATZ boundary.
o) Thence clockwise along the arc of a circle radius 2.5NM and centered at 335404.00S 0182951.00E to a point at 335135.57S 0183018.52E on the FACT CTR Boundary.
p) Thence along a straight line to a point at 334930.23S 0182829.97E on the FACT CTR boundary
q) Thence clockwise along the arc of a circle radius 11NM centered at 335810.00S 0183621.00E back to the starting point at 334721.49S 0183840.59E.
Frequency: 126.8MHz

RULES APPLICABLE WITHIN THE CAPE TOWN SPECIAL RULES AREA

- Avoid controlled airspace unless otherwise authorised by Air Traffic Control.
- Comply with the Traffic Information Broadcast by Aircraft (TIBA.)
- The Cape Town Special Rules Area shall exclude all promulgated controlled airspace and FADs, FARs, FAPs.
- Flights must be conducted at an indicated airspeed not exceeding 180 knots.
- It is recommended that where possible aircraft have their landing lights switched on.
- Aircraft operating within the special rules area below FACT TMA A must not exceed 2000FT ALT.

2.5 STANDARD VFR TRAFFIC ROUTES AND OPERATIONS WITHIN CAPE TOWN CTR

1) VFR departures and arrivals and transit routes in the FACT CTR via:
   Kenilworth
   Bottleray hills
   Coastwise

2) AIM:
   To standardize VFR routes within the FACT CTR.

3) BENEFITS:
   Standard VFR routings within the CTR leads to:
   Reduced RT,
   Concise traffic information,

Reduced misunderstanding between pilot and ATC,
Reduced conflict between VFR flights,
Ease of separation between VFR and IFR traffic

4) VFR Routes

- The following VFR routes may be used by FACT Air Traffic Control (ATC).
- Aircraft instructed to follow a particular route should comply with all requirements and reporting points for the specific route.
- ATC will provide traffic information regarding other aircraft following the same route, and known conflicting traffic on other routes, or traffic not following a route. At all times keep a good lookout for known and unknown traffic.
- These routes will not be used exclusively, and shorter or alternate routes may be issued by ATC depending on ATM capacity.
- Before entering and after exiting the CTR aircraft are to broadcast on the relevant unmanned (TIBA) frequencies, comply with the rules of the Special Rules Areas and maintain a good lookout for aircraft exiting, entering or waiting to enter the CTR.
- Helicopters departing from and arriving at FACT may be allocated these routes.
- Helicopter and fixed wing operators are to notify ground control on start-up or taxi of preferred route by stating the associated name.
- All departing and arriving aircraft should keep a good lookout for helicopter circuit training operations being conducted on the threshold of runway 34.
- Aircraft are to report entering and leaving the CTR.
- Establishing contact with ATC must not be considered permission to enter the CTR. Aircraft to remain outside the CTR until a joining clearance is issued by ATC.
- Aircraft may be instructed to remain outside the CTR until ATM capacity is available to accommodate the aircraft into the CTR.
- VFR aircraft should not expect to be given routing to exit or enter the CTR from the North

WHEN RUNWAY 01 IS IN USE

DEPARTURES

1) VFR Departure RWY 01 to the East - Bottelary 01 departure:

- Climb to 1500 FT ALT.
- Route via the University of the Western Cape (335600S 0183800E) then overhead the R300/Voortrekker road interchange (335429S 0184025E).
- Then route North of the Kuilsriver Golf course (335404S 0184239E) then route towards the Devon Valley Golf course (335300S 0184800E) remaining immediately to the North of the Bottelary road (M23) until clear of the CTR.
- The CTR boundary is approximately abeam the Red and White tower on the Bottelary Hills (335533S 0184549E).
- Keep a good lookout for helicopter circuit training operations being conducted on Threshold of RWY 34.

2) VFR Departures RWY 01 to the West - Kenilworth 01 departure

– Climb to 1500 FT ALT.
– Route north of the Guguletu Vlei (335903S 0183245E) direct towards the northern point of Kenilworth Race Course (335922S 0182914E) until clear of the CTR.

ARRIVALS

1) VFR Arrival RWY 01 from the East - Bottelary 01 arrival:

– VFR aircraft wishing to enter the CTR from the East can expect to enter the CTR in the vicinity of the Devon Valley Golf course (335300S 0184800E) at the Bottelary Hills, remaining clear of the CTR.
– Once issued the BOTTELARY 01 ARRIVAL, enter the CTR at 1500 FT ALT South of the Bottelary road (M23).
– The CTR boundary is approximately abeam the Red and White tower on the Bottelary Hills (335533S 0184549E)
– Route South of Kuilsriver Golf course (335428S 0184242E) avoiding high terrain and route overhead Blackheath Industrial (335800S 0184200E).
– Join and report Right Downwind RWY 01 abeam the Threshold of RWY 34.
– Keep a good lookout for helicopter circuit training operations being conducted on Threshold of RWY 34.

2) VFR Arrival RWY 01 from the West - Kenilworth 01 arrival

– VFR aircraft wishing to enter the CTR from the West can expect to enter the CTR in the vicinity of the southern most point of Kenilworth race course (340007S 0182901E), remaining clear of the CTR.
– Once issued the KENILWORTH 01 ARRIVAL, enter the CTR at 1500 FT ALT south of the Guguletu Vlei (335954S 0183239E).
– Route directly towards the airport.
– Join and report Left Downwind RWY 01 abeam the ATC Tower

WHEN RUNWAY 19 IS IN USE

DEPARTURES

1) VFR Departures RWY 19 to the East - Bottelary 19 departure:

– Climb to 1500FT ALT.
– Route overhead Blackheath Industrial (S335800 E0184200) remaining south of Kuilsriver Golf course (S335428 E0184242).
– Route towards the Devon Valley Golf course (S335300 E0184800) remaining to the South of the Bottelary road (M23) until clear of the CTR avoiding high terrain.
– The CTR boundary is approximately abeam the Red and White tower on the Bottelary Hills (S335533 E0184549).

2) VFR Departures RWY 19 to the West - Kenilworth 19 departure:

– Climb to 1500FT ALT.
– Route south of the Guguletu Vlei (S335954 E0183239) direct towards the southern most point of the Kenilworth Race Course (S340007 E0182901) until leaving the CTR.

ARRIVALS

1) VFR Arrival RWY 19 from the East - Bottelary 19 arrival

– VFR aircraft wishing to enter the CTR from the East can expect to enter the CTR in the vicinity of the Devon Valley Golf course (335300S 0184800E), remaining clear of the CTR.
– Once issued the BOTTELARY 19 ARRIVAL, enter the CTR at 1500FT ALT immediately to the North of the Bottelary road (M23).
– The CTR boundary is approximately abeam the Red and White tower on the Bottelary Hills (335533S 0184549E)
– Route South of the Brickfields Quarry (335331S 0184340)E North of Kuilsriver Golf course (335404S 0184239E) and overhead R300/Voortrekker interchange (335429S 0184025E)
– Join and report Left Downwind RWY 19 abeam the Threshold of RWY 34.
– Keep a good lookout for helicopter circuit training operations being conducted on Threshold of RWY 34.

2) VFR Arrival RWY 19 from the West - Kenilworth 19 arrival

– VFR aircraft wishing to enter the CTR from the West can expect to enter the CTR in the vicinity of the northern most point of Kenilworth race course(335922S 0182914E), remaining clear of the CTR.
– Once issued the KENILWORTH 19 ARRIVAL, enter the CTR at 1500FT ALT route directly towards the airport route north of the Guguletu Vlei (335903S 0183245E).
– Join and report Right Downwind RWY 19 abeam the Radar tower. (Radar Tower on the Western side of the runway with the round encasing resembling a giant golf ball)

GENERAL

1) FAD200

– Flights to the FAD200 GFA to expect routing via the Kenilworth VFR routes.
– Upon leaving the CTR, broadcast on the relevant TIBA frequency and complying with the Special Rules Area rules, remain well clear of the CTR, and proceed to the FAD200 remaining below the Cape Town TMA
– Contact FAYP for routing through the FAYP ATZ
– Upon returning from the FAD200, route clear of the CTR to Kenilworth or the Bottelary Hills and request joining from FACT Tower.
– Do not enter the CTR or any other controlled airspace until given joining instructions.

2) COASTWISE ROUTING

– Aircraft wishing to transit the CTR from East to West and vice versa may be routed via the COASTWISE route.
– Routing coastwise below 1000 feet or as directed by ATC between Muizenberg (340520S 0183320E) and Macassar beach (340435S 0184420E) then along the northern boundary of FAP33 until leaving the CTR or vice versa.

3) Cape Peninsula

– Flights wishing to operate around the Cape Peninsula to expect routing via the Kenilworth VFR routes.

– Helicopters routeing between FACT and the V&A Waterfront to expect routing via the Kenilworth VFR route.
– Flights wishing to transit the CTR from West to East or vice versa are to expect routing North of the Tygerberg hills or via the COASTWISE route.
– Upon leaving the CTR, broadcast on the relevant TIBA frequency, remain well clear of the CTR, and comply with rules for operating within the Cape Town Special Rules Area. Do not enter the FAR149, FAR39 and FAR144 unless authorized to do so.
– Upon returning to FACT, expect routing via Kenilworth or Bottelary, and request joining from FACT Tower.
– Do not enter the CTR or any other controlled airspace until given joining instructions.

4) Helicopter operations within the CTR

– All helicopters departing from FACT are to request start on GMC frequency (121.9 MHz). Emergency Medical and emergency flight by SAPS may contact Tower directly (118.1 MHz) stating the nature of their flight to minimise delay.
– Helicopter training is conducted on the threshold of RWY34, during VMC daylight hours only.
– Only one helicopter is accommodated for training at THR34 at a time, on a first come first served basis.
– If THR34 is not available, taxiway D1 may be offered by ATC as an alternate.
– Training circuits are conducted to the east of THR34, at a maximum altitude of 1000 FT, no further north than abeam of THR19, no further south than abeam of THR01.
– No other helicopter training operations will be accommodated within the CTR.
– No helicopter circuit training will be accommodated from the General Aviation area of the airport.
– Helicopter circuit training at night will only be accommodated on RWY 01/19 between TWY C and B3 traffic permitting.
– Helicopter pilots operating in close proximity to IFR traffic are to be conscious of the possibility of their aircraft causing ACAS alerts on board IFR aircraft. Helicopters should not be flown on a trajectory that encroaches on the flight path of the IFR aircraft, but should rather operate on trajectories that will pass well abeam and behind the IFR aircraft.

5) Transponders

– The use of a Mode C transponder is compulsory for operations within the CTR. Unless issued a discreet code by ATC, all fixed wing aircraft must squawk A2000 and rotary wing aircraft must squawk A2600 at all times while operating within the CTR, and the Special Rules Areas.

6) Weather

– In the event of the CTR becoming IMC, VFR and SVFR flight by helicopters and SVFR flight by fixed wing aircraft will only be permitted subject to ATC approval. This will only be granted subject to weather conditions being suitable for safe operations, and subject to any IFR aircraft. As the FAYP ATZ falls within the FACT CTR, the same conditions apply to FAYP ATZ.

2.6 PROCEDURES APPLICABLE TO CONTERMANSKLOOF AIRFIELD

The following information and procedures applies to the airspace box around Contermanskloof airfield located inside the Northern boundary of the FACT CTR.

1) The Location of Contermanskloof airfield and dimensions of the Contermanskloof airspace box are as follows:
   a) Aerodrome reference point: 334804S 0183444E
   b) Vertical Limits: GND/1300 FT ALT
   c) Lateral Limits:
      – From a point 334717.01S 0183415.65E clockwise along the arc of FACT CTR, 11NM radius centered at 335810.82S 0183618.19E to a point 334708.69S 0183620.19E
      – Thence a straight line to a point 334827.00S 0183620.43E,
      – Thence a straight line to a point 334857.52S 0183516.58E,
      – Thence a straight line to a point 334816.91S 0183415.95E,
      – Thence a straight line back to the starting point 334717.01S 0183415.65E.
2) Procedures applicable to aircraft operating to, from and at Contermanskloof Airfield:
   a) Traffic wishing to fly to or from Contermanskloof Airfield, or operate within Contermanskloof Airfield will make necessary arrangement with the owner of this airfield, who will in turn be responsible for activating the Contermanskloof Airfield box.
   b) All aircraft will broadcast on the Special Rules Area East -below the Cape Town TMA frequency 124.8 MHz
   c) No aircraft shall fly without a serviceable mode C transponder.
   d) All aircraft shall squawk #4600.
   e) All Circuits will be flown to the East of the runway.
   f) Exit and entry from and to the box will be from the North and no aircraft shall fly through any other part of the FACT CTR without ATC approval.
   g) The circuit altitude shall be 1000 FT Altitude.
3) Procedures applicable to aircraft operating at FACT:
   a) All aircraft making visual approaches on runway 19 from the East and turning final approach outside 5 NM 335810.82S 0183618.19E must maintain 2500 FT until established on final Approach runway 19.
4) Other Procedures:
   a) Operation at Contermanskloof may only be authorised by ATC when MSSR is operational at FACT.
   b) Traffic in the Contermanskloof airspace box is deemed separated from traffic operating at FACT
   c) The Contermanskloof airspace box will be activated on an ad hoc basis. When the airspace box is activated the airspace will be Class G airspace and will not form part of the FACT CTR. When not activated the airspace box will be part of the FACT CTR and will be Class C airspace.

2.7 GEORGE SPECIAL RULES AREA

The airspace below the George TMA, excluding area below TMA E and that part of the Oudtshoorn ATZ below TMA F, will be declared as a Special Rules Area and termed as the GEORGE SPECIAL RULES AREA.

To prevent frequency congestion and to promote safety, efficiency and orderliness in the George Special Rules Area, the area will be divided into two sectors, to be known as the Western and Eastern Sectors, for Traffic Information Broadcast by Aircraft (TIBA).

The dividing line between the sectors is the line that runs as follows:

The Western Sector between R250 GRV, clockwise to R030 GRV, this includes FAMO.

The Eastern Sector between R030 GRV, clockwise to R250 GRV.

All aircraft operating in the Western Sector of the Special Rules Areas should maintain a listening watch and broadcast regular position reports on frequency 124.2 MHz.

All aircraft operating in the Eastern Sector of the Special Rules Areas should maintain a listening watch and broadcast regular position reports on frequency 124.8 MHz.

The George CTR and FAR150 are excluded from the George Special Rules Area.

By virtue of the fact that uncontrolled VFR aircraft are to remain below the George TMA radar separations and information provided to aircraft operating within the George TMA, will only take known identified targets into account.

For the information of those aircraft operating within the George TMA, unidentified unknown targets, performing as expected for general aviation within the confines of the George Special Rules Area will be deemed to be separated from aircraft operating within the George TMA, by procedures as opposed to radar. Pilots operating below the George TMA should therefore ensure that they do not exceed the applicable altitude restriction as stipulated on SRA routings and also to remain at least 500 FT below the TMA whilst flying below the George TMA. Pilots are requested to squawk transponder code 2000 at all times with altitude selected. Helicopters to squawk 2600 also with altitude selected.

The following routes will be applicable in the George Special Rules Area:

Transiting, seawards of the coastline through the George CTR:

All VFR traffic wishing to route seawards of the coastline, through the George CTR, are to remain seawards of the coast line, not above 1000 FT ALT. VFR traffic, transiting through the George CTR is then deemed to be separated from departing and arriving traffic at George Aerodrome.

All transiting traffic is regarded as circuit traffic, thus reduced separation minima can be applied, in the vicinity of the aerodrome.

The clearance shall only be valid during daylight hours, in VMC operations, in communication with ATC and the aircraft shall be transponder equipped.

Pilots to comply with the Aviation Legislation, as described in General Operating and Flight Rules in Part 91.06.8, regarding following line features.

From the North and North West:

All VFR traffic to route via Oudtshoorn, then to the Robinsons pass, then to Hartenbos, then coastwise to George.

Traffic is to cross Oudtshoorn at or below 6000 FT ALT, Robinsons pass at or below 4000 FT ALT, Hartenbos at or below 1500 FT ALT. VFR traffic to remain clear of the George TMA.

VFR traffic wishing to route via the Outeniqua pass to George, must obtain permission from ATC.

From George to the North and North West:

All VFR traffic, departing George, to route via Hartenbos, then to the Robinsons pass, then to Oudtshoorn before setting course.Traffic is to cross Hartenbos at or below 1500 FT ALT, Robinsons at or pass below 4000 FT ALT, Oudtshoorn at or below 6000 FT ALT. VFR traffic wishing to route via the Outeniqua pass from George, must obtain permission from ATC. VFR traffic to remain clear of the George TMA.

From the North and North East:

All VFR traffic to route via Willowmore, then to Avontuur, then to the Prince Alfred pass, then to Walker point, then coastwise to George.Traffic is to cross Willowmore at semi-circular level, Avontuur at or below 8000 FT ALT, Prince Alfred pass, at or below 6000 FT ALT, Walker point at 1500 FT ALT. VFR traffic to remain clear of the George TMA.

From George to the North and North East:

All VFR traffic departing George, to route via Walker point, then to the Prince Alfred pass, then to Avontuur, then to Willowmore, before setting course.Traffic is to cross Walker point at 1500 FT ALT, Prince Alfred pass at or below 6000 FT ALT, Avontuur, at or below 8000 FT ALT, Willowmore at semi circular level. VFR traffic to remain clear of the George TMA.

From the West to George:

All VFR traffic, to route via Heidelberg then to Hartenbos, then coastwise to George.

Traffic is to cross Heidelberg at semi circular level, cross TMA I boundary at or below 3000 FT ALT, Hartenbos at or below 1500 FT ALT. VFR traffic to remain clear of the George TMA.

From George to the West:

All VFR traffic, departing George, to route via Hartenbos, then to Heidelberg before setting course.Traffic is to cross Hartenbos at or below 1500 FT ALT, remain at or below 3000 FT till TMA I Boundary and cross Heidelberg at semi circular level. VFR traffic to remain clear of the George TMA.

From the East to George:

All VFR traffic, to route via Walker point, then coastwise to George.Traffic is to cross Walker point below 1500 FT ALT. VFR traffic to remain clear of the George TMA.

From George to the East:

All VFR traffic, departing George, to route via Walker point, before setting course.Traffic is to cross Walker point below 1500 FT ALT. VFR traffic to remain clear of the George TMA.

Crossing from West to East:

All VFR traffic to route via Heidelberg, then to Hartenbos, then coastwise, transiting the George CTR, to Knysna, before setting course.

Traffic is to cross Heidelberg at semi circular level, cross TMA I boundary at or below 3000 FT ALT, Hartenbos at or below 1500 FT ALT. Walker point at 1500 FT ALT. An ATC clearance must be obtained to transit the George CTR. VFR traffic to remain clear of the George TMA.

Crossing from East to West:

All VFR traffic to route via Walker point, then coastwise, transiting the George CTR, to Hartenbos, then to Heidelberg, before setting course.

Traffic is to cross Walker point at 1500 FT ALT, Hartenbos below 1500 FT ALT, En route Heidelberg, cross TMA I boundary at or below 3000 FT ALT. Cross Heidelberg at semi circular level. An ATC clearance must be obtained to transit the George CTR. VFR traffic to remain clear of the George TMA.

Heidelberg at semi circular level:

Alternately route: Traffic is to cross Walker point at 1500 FT ALT, Hartenbos below 1500 FT ALT, En route Heidelberg, cross TMA D boundary below 4000 FT ALT and TMA E boundary below 7000 FT ALT and Heidelberg at semi circular level. An ATC clearance must be obtained to transit the George CTR.

Traffic routing eastward along the coastline between Hartenbos and Walker point are to route with the coastline to the left of the aircraft at 1500 FT ALT or below. Except in the George CTR where the aircraft is subject to ATC.

Traffic routing Westward along the coastline between Walker point and Hartenbos are to route with the N2 roadway to the left of the aircraft at 1500 FT ALT or below. Except in the George CTR where the aircraft is subject to ATC.

The area defined as follows has been identified for all general and training flying:

From a point at 335549S 0213232E to a point at 335724S 0220000E.

Thence a straight line to a point at 341751S 0220000E.

Thence a straight line to a point at 342049S 0215608E.

Then clockwise along the 30 NM radius GRV to a point at 341400S 0215027E.

Thence a straight line to a point at 341709S 0213617E

Then clockwise along the 42 NM radius GRV back to the starting point at 335549S 0213232E.

2.8 VFR ROUTINGS WITHIN THE GEORGE CTR AND THE GEORGE SPECIAL RULES AREA (SRA)

Note: All proposed VFR routes will be for use by day and in VMC only.

Standard VFR Departure Routes, leaving the George CTR:

Departing RWY 29:

Leaving the George CTR to the South West:

GLENTANA 29 VFR Departure

After departure runway 29, maintain runway track to 1000FT ALT, then turn left track 200 degrees and climb to 1500 FT ALT. At 1500FT ALT, set course for Glentana Beach and maintain 1500FT ALT. At Glentana beach follow the coastline to intercept SRA, VFR route at Great Brak River. Report passing Great Brak River.

Leaving the George CTR to the North West:

EIGHT BELLS 29 VFR Departure

After departure runway 29, maintain runway track to 1000FT ALT, then turn right track 020 degrees and climb 1900 FT ALT, At 1900 FT ALT proceed direct to Geelhoutboom, at Geelhoutboom set course (left turn) for Eight Bells, on track Eight Bells, when passing Eight Bells set course as required, remaining clear of the George CTR. Report passing north of Wolwedansdam.

Leaving the George CTR to the South East:

HEROLDS BAY 29 VFR Departure

After departure runway 29, maintain runway track to 1000FT ALT, then turn left track 200 degrees and climb to 1500 FT ALT. At 1500 FT ALT turn left set course to Herolds Bay. Passing Herolds Bay, follow the coastline as a line feature to Wilderness and join the SRA VFR route. Report passing Kaaimans River.

Leaving the George CTR to the North East:

FANCOURT 29 VFR Departure

After departure runway 29, maintain runway track to 1000FT ALT, then turn right track 020 degrees and climb 1500 FT ALT, proceed direct to Fancourt and climb 1700 FT ALT, at Fancourt set course (right turn) to route north of the George town, to pass north of the Garden route dam. Once passed the Garden route dam position, set course for Wilderness and join the SRA VFR route. Report passing Garden route dam.

Departing RWY 11

Leaving the George CTR to the North East:

FANCOURT 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then turn left track 020 degrees, proceeding direct to Fancourt and climb 1700 FT ALT, at Fancourt set course (right turn) to route north of the George town, to pass north of the Garden route dam. Once passed the Garden route dam position, set course for Wilderness and join the SRA VFR route. Report passing Garden route dam.

Leaving the George CTR to the South West:

GLENTANA 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then turn right track 200 degrees and climb to 1500 FT ALT. At 1500 FT ALT set course for Glentana Beach and maintain 1500 FT ALT. At Glentana beach follow the coastline to intercept SRA VFR route at Great Brak River. Report passing Great Brak River.

Leaving the George CTR to the North West:

EIGHT BELLS 11 VFR Departure

After departure runway 11, maintain runway track to 1000FT ALT, then turn left track 020 degrees and climb 1900 FT ALT, at 1900 FT ALT proceed direct to Fancourt, at Fancourt set course (left turn) for Eight Bells, passing Eight Bells set course as required, remaining clear of the George CTR. Report passing abeam Wolwedans dam.

Leaving the George CTR to the South East:

HEROLDS BAY 11 VFR Departure

After departure runway 11, maintain runway track to 1000 FT ALT, then turn right track 200 degrees and climb to 1500 FT ALT. At 1500 FT ALT set course to Herolds Bay. Passing Herolds Bay, follow the coastline as a line feature to Wilderness and join the SRA VFR route. Report passing Kaaimans River.

STANDARD VFR ARRIVAL ROUTES:

VFR routes to George Airport, entering the CTR from the West:

HEROLDS BAY 11 or 29 VFR Arrival

VFR aircraft, inbound to George, from the west, are to remain below the George TMA and route to Great Brak River via SRA VFR routes. Passing Great Brak River, follow the coast line feature to Herolds Bay at 1500 FT ALT. From Herolds Bay comply with ATC instructions to join the circuit.

Alternate VFR routes to George Airport, entering the CTR from the West:

EIGHT BELLS 11 or 29 VFR Arrival

VFR aircraft, inbound to George, from the North West, are to remain below the George TMA and to route via Eight Bells (Ruitersbos). Passing Eight Bells, route north of the George CTR to Fancourt at 1500 FT ALT. From Fancourt comply with ATC instructions to join the circuit.

VFR routes to George Airport, entering the CTR from the East:

WILDERNESS 11 or 29 VFR Arrival

VFR aircraft, inbound to George, from the east, are to remain below the George TMA and route to Wilderness via SRA VFR routes. From Wilderness, follow the coast line feature at 1500 FT ALT to Herolds Bay. From Herolds Bay comply with ATC instructions to join the circuit.

Alternate VFR routes to George Airport, entering the CTR from the East:

FANCOURT 11 or 29 VFR Arrival

VFR aircraft, inbound to George, from the east, are to remain below the George TMA and route to Wilderness via SRA VFR routes. From Wilderness, route to a position north of the Garden route dam at 1700 FT ALT. Then route north around the George town to Fancourt. From Fancourt comply with ATC instructions to join the circuit.

Radio failure procedures for circuit training and for training flights to / from the Special Rules Area.

In Circuit: Remain in circuit and position in traffic, land and vacate RWY in use ASAP. After landing contact ATC via telephone.

FLIGHTS TO / FROM THE SRA:

En-route to the Special Rules Area - continue on the Standard VFR departure till clear of the George CTR. Thereafter proceed to FAMO and land. After landing contact ATC via telephone.

In the Special Rules Area - remain clear of controlled airspace, proceed to FAMO or FAPG and land. After landing contact ATC via telephone.

Inbound (once cleared inbound by ATC) - continue on the cleared Standard VFR arrival route, join the circuit and position in traffic, land and vacate RWY ASAP. After landing contact ATC via telephone.

SIGNIFICANT POINTS:

Fancourt 335715S 0222340E

Eight Bells (Ruiterbos) 335640S 0220205E

North of Wolwedansdam 335700S 0221200E

Great Brak River 340300S 0221320E

Glentana 340300S 0221910E

Herolds Bay 340320S 0222335E

North of Garden route dam 335715S 0223100E

Wilderness 335950S 0223500E

Geelhoutboom 335639S 0222056E

3 COMMUNICATION CONTINGENCY MEASURES WITHIN THE FAJO FIR

1) All ACFT operating over the Indian and Atlantic Oceans inside the South African area of responsibility and outside of VHF coverage of the relevant ACC are to communicate with Johannesburg Oceanic.
2) Flights operating west of positions EGSOX (S282331.94 E0344131.38), APLUK (S285213 E0342532), GEVIS (S294137.49 E0335737.56) and ANVED (S310939.47 E0330634.63) will be the responsibility of Johannesburg Area East.
3) Flights operating east of positions, OKTEL (S280753.81 E0150000.00) and UVGOD (S290943.27 E0150000.00) will be the responsibility of Johannesburg Area West.
4) Flights operating east of positions BUXIR (S320000.00 E0150000.00), OKDOG (S330500.00 E0150000.00), ITMEK (S341200.00 E0150000.00) and ITLIK (S351600.00 E0145957.00) will be the responsibility of Cape Town Area West.
5) Part of the Windhoek FIR from ILDIR (S180000.00 E0100000.00) south bound to a position S273000.00 E0100000.00, then eastbound to a position S273000.00 E0150000.00, then northwest bound through position NIGAM (S263356.00 E0143710.00), DULGO (S250000.00 E0135908.00), ANTEP (S240000.00 E0133604.00), NIBEK (S225831.00 E0131254.00), ETUDU (S214000.00 E0124321.18), NEVEP (S202000.00 E0121404.44), IBNEV (S184706.00 E0114005.00) then to a position S173000.00 E0111300.00, then westbound through position DIMIX (S174648.00 E0103000.00) back to starting point ILDIR (S180000.00 E0100000.00), is the responsibility of Johannesburg Oceanic due to limited range of Windhoek ACC frequency 124.7 MHz. All aircraft operating in this airspace must be in contact with Johannesburg Oceanic.
6) In the possible event of the Johannesburg HF system becoming unserviceable, aircraft operating into the Johannesburg Oceanic FIR are to comply with the following:
   - Airborne traffic is required to maintain last assigned flight level until clearing the Johannesburg Oceanic area of responsibility unless a level change has been approved through one of the communication sources listed,
   - Airborne traffic operating within the Oceanic FIR over the Atlantic Ocean should contact:
   - Luanda FIC on FREQ: 8903 kHz, 8960 kHz, 5565 kHz, 3461 & 2878 kHz or
   - Springbok Johannesburg on FREQ; 5532 kHz, 8933 kHz, 11354 kHz, 13330 kHz, 17925 kHz, 21943 kHz for relay purposes to Johannesburg Oceanic.

4 DELEGATION OF ESWATINI UPPER AIRSPACE TO SOUTH AFRICA

The Eswatini CAA has acknowledged that the AFI Region and ATM community in general stands to gain greater benefits from the introduction of the new integrated ICAO CNS/ATM Systems.

To ensure a cost effective, operationally orientated implementation of the integrated ICAO CNS/ATM System in Eswatini, the approach and strategy contained in the AFI Doc 003 was adopted, for use and compliance by the Eswatini CAA.

To achieve the above, the upper Eswatini airspace was delegated to South Africa for management by ATNS.

4.1 PURPOSE

The purpose of this document is to inform users that the Eswatini upper airspace i.e. the Matsapha TMA from FL195 and above will be delegated to South Africa for management by ATNS and controlled by Johannesburg Area Control.The sovereignty of the Eswatini airspace will not be compromised.

Note: Johannesburg Area Control (ACC South East) will only be operational during published hours of duty. Outside these hours of duty Matsapha Approach Control will transfer traffic to Johannesburg Area Control (ACC North East) 134.40 MHz or Johannesburg Area Control (ACC South West) 128.3 MHz.

4.2 AIRSPACE

The airspace delegation definition is as follows: Matsapha TMA

- From a point 255342S 0310947E on the South African/Eswatini border to a point at 254831.57S 0311552.72E,
- Thence along the border to a point at 254435.21S 0311855.22E,
- Thence along the border to a point at 254304.36S 0312453.25E,
- Thence along the border to a point at 255121.00S 0313849.00E,
- Thence along a straight line to a point at 255121.00S 0313849.00E,
- Then Southwards along the Eswatini/Mozambique border to a point at 263851.00S 0320745.00E,
- Thence along a straight line to a point at 272031.00S 0315222.00E,
- Thence along a straight line to a point at 271812.00S 0311004.00E,
- Thence along a straight line to a point at 264918.00S 0304707.00E,
- Thence along a straight line to a point at 255548.00S 0304715.00E,
- Thence along a straight line back to the starting point at 255342S 0310947E.

4.3 CONTACTS

Any questions and assistance should be directed to:

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5 DELEGATION OF ATS WITHIN FAJA FIR TO FYWF ACC/FIS:

5.1 Introduction

The airspace that is part of the FAJA FIR, has been delegated to FYWF ACC/FIS FM 1500FT AGL TO FL195:

5.2 Airspace

The airspace delegation definition is as follows:

Lateral limits: FM a point (273000S 0150000E) along a straight line to a point at (273000S 0195439E). Thence a straight line to a point at (282312S 0195453E). Thence clockwise along the INTL BDRY BTN South Africa and Namibia to a point (283548S 0162042E). Thence a straight line to a point (283548S 0150000E). Thence along a straight line back to the starting point at (273000S 0150000E).
FM 1500FT AGL to FL145 FIS will be provided by FYWF FIS on FREQ 123.8 MHz. This airspace is classified class G. HR of OPS is HJ. Outside these HR Pilots to CTC FYWF FIS on FREQ 124.7 MHz.
FM FL145 to FL195 controlled SER will be provided by FYWF ACC on FREQ 124.7 MHz. This airspace is classified class A. HR of OPS 24 HR.
FM FL200 to FL460 a controlled SER will be provided by FAJA ACC West on FREQ 118.5 MHz. This airspace is classified class A. HR of OPS 24 HR.

6 DELEGATION OF ATS WITHIN THE WINDHOEK FIR TO JOHANNESBURG OCEANIC FIR

6.1 Introduction

ATS within the Windhoek FIR. GND to FL650 has been delegated to Johannesburg Oceanic. ATS will be provided by Johannesburg Oceanic.

6.2 Airspace

The airspace delegation definition is as follows:

From a point 273000S 0150000E, along a straight line to a point at 273000S 0100000E,
Thence along a straight line to a point at 180000S 0100000E,
Thence along a straight line to a point at 173000S 0111300E
Thence along a straight line back to the starting point at 273000S 0150000E.

Hours of Operation:	H24
Frequency:	5565kHz, 6559kHz, 8861kHz, 13315kHz, 17955kHz and 21926kHz
Callsign:	Johannesburg Oceanic

7 TRAFFIC INFORMATION BROADCAST BY AIRCRAFT

The following procedures for aircraft operating outside of controlled airspace, within the boundaries of the RSA have been implemented.

7.1 All aircraft operating at or below 1500FT AGL outside the lateral limits of:-

a) The Johannesburg Special Rules Area
b) The Port Elizabeth Special Rules Area
c) The East London Special Rules Area
d) The Hoedspruit Special Rules Area
e) All promulgated General Flying Areas

should maintain a listening watch and broadcast regular position reports on frequency 124.8 MHz.

Aircraft operating within 5NM of an aerodrome where an ATSU is not in operation and where no specific frequency has been allocated, should make regular position reports relative to the aerodrome on frequency 124.8 MHz. (excluding those aerodromes situated within General Flying Areas. Refer to paragraph 7.4)

7.1.1 Where a specific frequency has been allocated to an aerodrome the position reports, relative to the aerodrome, should be made within 5NM of the aerodrome on the appropriate frequency.

7.1.2 En-route position reports should be made at regular intervals containing information useful for collision avoidance e.g. identification, route position/time, level/ altitude, next position and estimate. These position reports should be made with reference to prominent landmarks and/or navigational facilities.

7.2 Aircraft operating above 1500FT AGL outside the areas mentioned in paragraph 7.1 (a)-(e) should maintain a listening watch and should make regular position reports on the appropriate ATC FIS frequency allocated for that area. In the event that due to location or range, no contact can be established with the appropriate ATSU FIS, a listening watch should be maintained and regular position reports/broadcasts should be made on the frequency allocated for that area.

7.3 General Air-to-Air Aviation Frequency

7.3.1 To avoid the TIBA frequencies from being used for purposes other than essential traffic information broadcasting, the frequency 123.45 MHz is available for pilots to discuss general matters.

7.3.2 Messages should be kept short and a listening watch should be maintained on the appropriate TIBA frequency.

7.4 **Frequency for established General Flying Areas**.

Aircraft operating within designated General Flying Areas that do not have an assigned frequency should use 124.4 MHz

Note: Pilots operating at unmanned aerodromes situated within established General Flying Areas should use frequency 124.4 MHz.

7.5 The following table lists all aerodromes without ATSU's to which specific frequencies have been allocated:

Aerodrome	Frequency
Aggeneys	122.7 MHz
Alexander Bay	118.7 MHz
Arnot	122.2 MHz
Brakpan	122.7 MHz
Brits	124.2 MHz
Cape Winelands	131.10 MHz
Delmas	125.4 MHz
Estcourt	123.4 MHz
Grahamstown	123.5 MHz
Greytown	123.5 MHz
Groblersdal	122.4 MHz
Heidelberg	125.9 MHz
Howick	123.4 MHz
Kitty Hawk	120.65 MHz
Kleinsee	123.5 MHz
Klerksdorp	123.5 MHz
Komati	122.2 MHz
Kriel	122.2 MHz
Kroonstad	122.4 MHz
Krugersdorp	122.0 MHz
Lime Acres	123.5 MHz
Majuba	122.2 MHz
Margate	122.7 MHz
Middelburg (FAMB)	127.950 MHz
New Tempe	131.3 MHz
Orient	123.4 MHz
Oudtshoorn	131.100 MHz
Parys	123.5 MHz
Petit	133.2 MHz
Potchefstroom	123.00 MHz
Progress	122.7 MHz

Aerodrome	Frequency
Pullenshope (Hendrina)	122.2 MHz
Rustenburg	122.4 MHz
Saldanha/Vredenburg	122.7 MHz
Secunda	122.0 MHz
Sishen	123.5 MHz
Skukuza	125.250 MHz
Springs	122.4 MHz
Stellenbosch	119.3 MHz
Syferfontein	122.35 MHz
Tutuka	122.2 MHz
Uitenhage	124.2 MHz
Vanderbijlpark	122.3 MHz
Vereeniging	122.1 MHz
Welkom	118.0 MHz
Witbank	123.5 MHz

Pilots should make the appropriate broadcasts and take all necessary collision avoidance action prior to entering or leaving the area.

8 GABORONE CLIMB AND DESCENT COORDINATION AREA

The dimensions of the delegated South African airspace to Gaborone are as follows:

Gaborone Climb/Descent Coordination Area A
• From a point 244514.76S 0255051.54E along the international boundary between Botswana and South Africa to a point at 244115.69S 0261104.89E
• Thence clockwise along the arc of a circle, radius 20NM and centered at 243551.77S 0254956.84E (VOR GBV) to a point at 245552.18S 0255135.18E.
• Thence along the international boundary between Botswana and South Africa to a point at 245257.74S 0255319.31E.
• Thence along the international boundary between Botswana and South Africa back to the starting point at 244514.76S 0255051.54E.

Vertical Limits: 7000FT – FL200

Frequency: 128.20 MHz

Gaborone Climb/Descent Coordination Area B

• From a point at 244115.69S 0261104.89E along the international boundary between Botswana and South Africa to a point at 243915.24S 0261915.74E
• Thence along a straight line to a point at 245158.12S 0264157.43E
• Thence clockwise along the arc of a circle, radius 50NM and centered at 243551.77S 0254956.84E (VOR GBV) to a point at 251919.63S 0261724.20E
• Thence along a straight line to a point at 250200.85S 0254913.74E
• Thence along the international boundary between Botswana and South Africa to a point at 245552.18S 0255135.18E
• Thence anti-clockwise along the arc of a circle, radius 20NM and centered at 243551.77S 0254956.84E (VOR GBV) back to the starting point at 244115.69S 0261104.89E

Vertical Limits: 9000FT – FL200

Frequency: 128.20 MHz

ENR 3
ENR 3 ATS ROUTES
ENR 3.1 LOWER ATS ROUTES

Route designator ***RCP Type*** ***Name of significant points*** ***Coordinates***	***Route*** ***MAG*** ***Track*** ***MAG*** ***DIST***	***Upper limit*** ***Lower limit*** ***Classification***	***Lateral limits*** ***NM***	***Direction of cruising levels***		***Remarks*** ***Controlling unit*** ***Frequency*** ***SATVOICE*** ***Logon address***
				Odd	***Even***	
1	***2***	***3***	***4***	***5***		***6***
A402						
▲CAPE TOWN INTERNATIONAL AIRPORT (CTV) VOR/DME 335810.82S 0183618.19E						
	126° 306° 44 NM	FL 245 FL 145 Class A	10	↓	↑	
▲CALEDON (CDV) VOR 340646.68S 0192840.39E						
	113° 293° 145 NM	FL 245 FL 145 Class A	10	↓	↑	
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	117° 296° 161 NM	FL 245 FL 145 Class A	10	↓	↑	
▲CHIEF DAWID STUURMAN AIRPORT (PEV) VOR/DME 335933.01S 0253620.75E						
	091° 270° 125 NM	FL 245 FL 145 Class A	10	↓	↑	
▲KING PHALO AIRPORT (ELV) VOR/DME 330213.16S 0274923.36E						
	073° 251° 121 NM	FL 245 FL 145 Class A	10	↓	↑	
▲PORT ST JOHNS (PJV) VOR 313631.96S 0293111.49E						FAJA/FACA FIR BDRY

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	062° 240° 96 NM	FL 245 FL 145 Class A	10	↓	↑	
▲OKTAN 301758.32S 0303453.34E						
	060° 239° 50 NM	FL 245 FL 145 Class A	10	↓	↑	
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	117° 297° 50 NM	FL 245 FL 145 Class A	10	↓	↑	
▲EVIDO 293844.82S 0320448.90E						
	094° 273° 59 NM	FL 245 FL 145 Class A	10	↓	↑	
▲ESRET 291639.66S 0330805.46E						
	095° 275° 72 NM	FL 245 FL 145 Class A	10	↓	↑	
▲APLUK 285213.00S 0342532.00E						FAJA/FAJO FIR BDRY
	095° 274° 85 NM	FL 245 FL 145 Class A	10	↓	↑	
▲ETMOS 282224.00S 0355618.00E						FAJO/FQBE FIR BDRY

A405						
▲GREEFSWALD (GWV) VOR 221444.60S 0292437.21E						FAJA/FVHF FIR BDRY
	215° 038° 124 NM	FL 245 FL 145 Class A	10	↑	↓	
▲GABNA 241000.00S 0283400.00E						
	219° 041° 99 NM	FL 245 FL 145 Class A	10	↑	↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲UTRUK 254032.98S 0274957.29E						
	207° 028° 51 NM	FL 245 FL 145 Class A	10	↑	↓	
▲GRASMERE (GAV) VOR 263053.63S 0274035.17E						
	248° 069° 135 NM	FL 245 FL 145 Class A	10	↑	↓	
▲EKBEX 280039.10S 0254723.96E						
	249° 069° 28 NM	FL 245 FL 145 Class A	10	↑	↓	
▲APDUR 281919.65S 0252312.80E						
	249° 070° 44 NM	FL 245 FL 145 Class A	10	↑	↓	
▲KIMBERLEY AIRPORT (KYV) VOR/DME 284759.82S 0244537.32E						
	229° 052° 162 NM	FL 245 FL 145 Class A	10	↑	↓	
▲EGRUP 311005.95S 0231539.78E						FAJA/FACA FIR BDRY
	233° 053° 16 NM	FL 245 FL 145 Class A	10	↑	↓	
▲VICTORIA WEST (VWV) VOR 312349.00S 0230632.00E						
	269° 088° 142 NM	FL 245 FL 145 Class A	10	↑	↓	
▲SUTHERLAND (SLV) VOR 322700.00S 0203721.00E						
	255° 076° 77 NM	FL 245 FL 145 Class A	10	↑	↓	
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	248° 069° 60 NM	FL 245 FL 145 Class A	10	↑	↓	
▲CAPE TOWN INTERNATIONAL AIRPORT (CTV) VOR/DME 335810.82S 0183618.19E						

B529						
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	070° 250° 50 NM	FL 245 FL 145 Class A FL 145 FL 075 Class C	10	↓	↑	
▲ITMIL 290151.05S 0314838.40E						
	064° 244° 23 NM	FL 245 FL 145 Class A FL 145 FL 075 Class C	10	↓	↑	
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						

B534						
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						
	128° 309° 91 NM	FL 245 FL 145 Class A	10	↓	↑	
▲DUKRA 262024.43S 0304711.57						FAJA/FDMS TMA BDRY

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	149° 330° 27 NM	FL 245 FL 145 Class A	10	↓	↑	
▲MUVAL 263728.00S 0310957.00E						

G465						
▲OKTEL 280753.81S 0150000.00E						FAJA/FAJO FIR BDRY
	127° 306° 85 NM	FL 245 FL 200 Class A FL 195 FL 145 Class C	10	↓	↑	
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	108° 286° 236 NM	FL 245 FL 200 Class A FL 195 FL 145 Class C	10	↓	↑	
▲IBVIT 282453.62S 0210000.44E						
	106° 286° 14 NM	FL 195 FL 145 Class G	10	↓	↑	Class G between IBVIT and XUGUV until ATS Surveillance is established between IBVIT and XUGUV
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						
	083° 263° 103 NM	FL 195 FL 145 Class G	10	↓	↑	Class G between IBVIT and XUGUV until ATS Surveillance is established between IBVIT and XUGUV
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						

Route designator ***RCP Type*** ***Name of significant points*** ***Coordinates***	***Route*** ***MAG*** ***Track*** ***MAG*** ***DIST***	***Upper limit*** ***Lower limit*** ***Classification***	***Lateral limits*** ***NM***	***Direction of cruising levels***		***Remarks*** ***Controlling unit*** ***Frequency*** ***SATVOICE*** ***Logon address***
				Odd	***Even***	
1	***2***	***3***	***4***	***5***		***6***
	086° 266° 60 NM	FL 195 FL 145 Class G	10	↓	↑	Class G between IBVIT and XUGUV until ATS Surveillance is established between IBVIT and XUGUV
▲XUGUV 271613.43S 0240233.27E						
	087° 266° 223 NM	FL 245 FL 200 Class A FL 195 FL 145 Class C	10	↓	↑	
▲LANSERIA AIRPORT (LIV) VOR/DME 255656.14S 0275448.86E						
	102° 281° 70 NM	FL 245 FL 200 Class A FL 195 FL 145 Class C	10	↓	↑	
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						
	059° 240° 95 NM	FL 245 FL 200 Class A FL 195 FL 145 Class G	10	↓	↑	
▲ANVIT 244000.00S 0302300.00E						

G467						
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	069° 249° 20 NM	FL 245 FL 200 Class A	10	↓	↑	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲DUSKO 251028.74S 0312401.70E						
	069° 248° 42 NM	FL 245 FL 200 Class A	10	↓	↑	
▲TEVAP 244430.00S 0320006.00E						FAJA/FQBE FIR BDRY

G653						
▲ETOSA 244250.40S 0260312.98E						FAJA/FGBR FIR BDRY
	137° 318° 36 NM	FL 195 FL 145 Class A	10	↓	↑	Bidirectional
▲NESEK 250154.00S 0263700.00E						
	137° 317° 77 NM	FL 195 FL 145 Class A	10	↓	↑	Bidirectional
▲UTRUK 254032.98S 0274957.29E						
	161° 341° 36 NM	FL 195 FL 145 Class A	10	↓	↑	Bidirectional
▲O R TAMBO INTERNATIONAL AIRPORT (JSV) VOR/DME 260925.63S 0281351.70E						
	088° 267° 56 NM	FL 195 FL 145 Class A	10	↓	↑	Bidirectional
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						
	111° 81 NM	FL 195 FL 145 Class A	10	↓		Directional (Eastbound only)
▲OKRIP 255258.16S 0304133.91E						
	111° 25 NM	FL 195 FL 145 Class A	10	↓		Directional (Eastbound only)
▲ESRAS 255346.00S 0310914.02E						

Route designator ***RCP Type*** ***Name of significant points*** ***Coordinates***	***Route*** ***MAG*** ***Track*** ***MAG*** ***DIST***	***Upper limit*** ***Lower limit*** ***Classification***	***Lateral limits*** ***NM***	***Direction of cruising levels***		***Remarks*** ***Controlling unit*** ***Frequency*** ***SATVOICE*** ***Logon address***
				Odd	***Even***	
1	***2***	***3***	***4***	***5***		***6***
	111° 31 NM	FL 195 FL 145 Class A	10	↓		Directional (Eastbound only)
▲ESRUM 255439.72S 0314330.38E						
	111° 13 NM	FL 195 FL 145 Class A	10	↓		Directional (Eastbound only)
▲ORNAD 255500.00S 0315800.00E						FAJA/FQBE FIR BDRY

G655						
▲MASERU (MZV) VOR 293001.00S 0273226.00E						
	036° 212° 172 NM	FL 245 FL 145 Class A	10	↓	↑	
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	357° 176° 66 NM	FL 245 FL 145 Class A	10	↑	↓	
▲UTRUK 254032.98S 0274957.29E						
	026° 204° 93 NM	FL 245 FL 145 Class A	10	↓	↑	
▲ODKER 240830.00S 0280500.00E						
	023° 200° 92 NM	FL 245 FL 145 Class A	10	↓	↑	
▲TAVLA 223724.00S 0281736.00E						FAJA/FBGR FIR BDRY

G745		
▲O R TAMBO INTERNATIONAL AIRPORT (JSV) VOR/DME 260925.63S 0281351.70E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	268° 56 NM	FL 245 FL 145 Class A	10		↑	Directional (Westbound only)
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						
	273° 77 NM	FL 245 FL 145 Class A	10		↑	Directional (Westbound only)
▲DODOS 253032.17S 0303437.62E						
	273° 30 NM	FL 245 FL 145 Class A	10		↑	Directional (Westbound only)
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	308° 30 NM	FL 195 FL 145 Class A	10		↑	Directional (Westbound only)
▲GAGNO 253309.23S 0313749.16E						
	308° 21 NM	FL 195 FL 145 Class A	10		↑	Directional (Westbound only)
▲ANVAK 254020.71S 0315950.23E						
	309° 35 NM	FL 145 FL 095 Class C	10		↑	Directional (Westbound only)
▲MAPUTO (VMA) VOR 255208.00S 0323616.00E						FAJA/FQBE FIR BDRY

G853						
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	291° 111° 38 NM	FL 245 FL 145 Class A	10	↑	↓	
▲PIETERMARITZBURG (PMV) VOR/DME 293852.13S 0302401.28E						

Route designator ***RCP Type*** ***Name of significant points*** ***Coordinates***	***Route*** ***MAG*** ***Track*** ***MAG*** ***DIST***	***Upper limit*** ***Lower limit*** ***Classification***	***Lateral limits*** ***NM***	***Direction of cruising levels***		***Remarks*** ***Controlling unit*** ***Frequency*** ***SATVOICE*** ***Logon address***
				Odd	***Even***	
1	***2***	***3***	***4***	***5***		***6***
	353° 172° 73 NM	FL 245 FL 145 Class A	10	↑	↓	
▲LADYSMITH (LYV) VOR/DME 283616.21S 0294140.32E						
	349° 167° 60 NM	FL 245 FL 145 Class A	10	↑	↓	
▲WARDEN (WRV) VOR 274629.26S 0290410.10E						
	348° 166° 77 NM	FL 245 FL 145 Class A	10	↑	↓	
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	357° 176° 66 NM	FL 245 FL 145 Class A	10	↑	↓	
▲UTRUK 254032.98S 0274957.29E						
	341° 159° 84 NM	FL 245 FL 145 Class A	10	↑	↓	
▲ORKAN 243230.00S 0265500.00E						
	338° 158° 16 NM	FL 245 FL 145 Class A	10	↑	↓	
▲RUDAS 241924.00S 0264406.00E						FAJA/FBGR FIR BDRY
R987						
▲ERDAS 332450.10S 0191112.85E						
	022° 199° 122 NM	FL 245 FL 145 Class A	10	↓	↑	
▲NIEUWOUDTVILLE (NVV) VOR 312248.00S 0190416.00E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	009° 187° 117 NM	FL 245 FL 145 Class A	10	↓	↑	
▲AGGENEYS (AGV) VOR/DME 292851.67S 0183344.97E						
	013° 193° 36 NM	FL 245 FL 145 Class A	10	↓	↑	
▲IBRUN 285324.75S 0182900.19E						
	013° 191° 84 NM	FL 245 FL 145 Class A	10	↓	↑	
▲KEBAT 273000.00S 0181800.00E						FAJA/FYWF FIR BDRY

W64						
▲KIMBERLEY AIRPORT (KYV) VOR/DME 284759.82S 0244537.32E						
	085° 265° 45 NM	FL 145 FL 105 Class C FL 195 FL 145 Class A	10	↓	↑	
▲APMAK 282849.76S 0253155.21E						
	085° 265° 66 NM	FL 195 FL 145 Class A	10	↓	↑	
▲WELKOM (WMV) VOR/DME 280005.74S 0263940.13E						

W66		
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E		

Route designator ***RCP Type*** ***Name of significant points*** ***Coordinates***	***Route*** ***MAG*** ***Track*** ***MAG*** ***DIST***	***Upper limit*** ***Lower limit*** ***Classification***	***Lateral limits*** ***NM***	***Direction of cruising levels***		***Remarks*** ***Controlling unit*** ***Frequency*** ***SATVOICE*** ***Logon address***
				Odd	***Even***	
1	***2***	***3***	***4***	***5***		***6***
	055° 232° 187 NM	FL 245 FL 145 Class A	10	↓	↑	
▲OKSOP 311556.12S 0240832.74E						FAJA/FACA FIR BDRY
	052° 231° 61 NM	FL 245 FL 145 Class A	10	↓	↑	
▲PETRUSVILLE (PVV) VOR 302158.41S 0244142.06E						

W81						
▲CHIEF DAWID STUURMAN AIRPORT (PEV) VOR/DME 335933.01S 0253620.75E						
	032° 212° 50 NM	FL 245 FL 145 Class A	10	↓	↑	
▲EGTIM 330937.71S 0254125.96E						
	032° 210° 93 NM	FL 245 FL 145 Class A	10	↓	↑	
▲HOFMEYER (HMV) DVOR 313621.18S 0255038.40E						
	034° 213° 41 NM	FL 245 FL 145 Class A	10	↓	↑	
▲UTSEM 305604.65S 0255807.95E						FAJA/FACA FIR BDRY
	033° 212° 66 NM	FL 245 FL 145 Class A	10	↓	↑	
▲GEDOL 295037.49S 0261004.18E						
	032° 211° 45 NM	FL 245 FL 145 Class A	10	↓	↑	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						
W95						
▲VICTORIA WEST (VWV) VOR 312349.00S 0230632.00E						
	074° 254° 19 NM	FL 245 FL 145 Class A	10	↓	↑	
▲OKBIL 311244.26S 0232351.31E						FAJA/FACA FIR BDRY
	074° 254° 84 NM	FL 245 FL 145 Class A	10	↓	↑	
▲PETRUSVILLE (PVV) VOR 302158.41S 0244142.06E						
	069° 249° 113 NM	FL 245 FL 145 Class A	10	↓	↑	
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						
	037° 216° 45 NM	FL 245 FL 145 Class A	10	↓	↑	
▲AVUBU 282242.79S 0263218.00E						
	036° 216° 23 NM	FL 245 FL 145 Class A	10	↓	↑	
▲WELKOM (WMV) VOR/DME 280005.74S 0263940.13E						
	051° 229° 104 NM	FL 245 FL 145 Class A	10	↓	↑	
▲GRASMERE (GAV) VOR 263053.63S 0274035.17E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
R987F						
▲NIEUWOUDTVILLE (NVV) VOR 312248.00S 0190416.00E						
	009° 187° 117 NM	FL 195 FL 095 Class G	10	↓	↑	
▲AGGENEYS (AGV) VOR/DME 292851.67S 0183344.97E						
	013° 193° 36 NM	FL 195 FL 095 Class G	10	↓	↑	
▲IBRUN 285324.75S 0182900.19E						
	013° 191° 84 NM	FL 195 FL 095 Class G	10	↓	↑	
▲KEBAT 273000.00S 0181800.00E						FAJA/FYWF FIR BDRY

ENR 3.2 UPPER ATS ROUTES

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UA402						
▲CAPE TOWN INTERNATIONAL AIRPORT (CTV) VOR/DME 335810.82S 0183618.19E						
	126° 306° 44 NM	FL 280 FL 245 Class A	10	↓	↑	
▲CALEDON (CDV) VOR 340646.68S 0192840.39E						
	113° 293° 145 NM	FL 280 FL 245 Class A	10	↓	↑	
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	117° 296° 161 NM	FL 280 FL 245 Class A	10	↓	↑	
▲CHIEF DAWID STUURMAN AIRPORT (PEV) VOR/DME 335933.01S 0253620.75E						
	091° 270° 125 NM	FL 280 FL 245 Class A	10	↓	↑	
▲KING PHALO AIRPORT (ELV) VOR/DME 330213.16S 0274923.36E						
	073° 251° 121 NM	FL 280 FL 245 Class A	10	↓	↑	
▲PORT ST JOHNS (PJV) VOR 313631.96S 0293111.49E						FAJA/FACA FIR BDRY
	062° 240° 96 NM	FL 280 FL 245 Class A	10	↓	↑	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲OKTAN 301758.32S 0303453.34E						
	060° 239° 50 NM	FL 280 FL 245 Class A	10	↓	↑	
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	117° 297° 50 NM	FL 460 FL 280 Class A	10	↓	↑	
▲EVIDO 293844.82S 0320448.90E						
	094° 273° 59 NM	FL 460 FL 280 Class A	10	↓	↑	
▲ESRET 291639.66S 0330805.46E						
	095° 275° 72 NM	FL 460 FL 280 Class A	10	↓	↑	
▲APLUK 285213.00S 0342532.00E						FAJA/FAJO FIR BDRY
	095° 274° 85 NM	FL 460 FL 280 Class A	10	↓	↑	
▲ETMOS 282224.00S 0355618.00E						FAJO/FQBE FIR BDRY

UA405						
▲GREEFSWALD (GWV) VOR 221444.60S 0292437.21E						FAJA/FVHF FIR BDRY
	215° 038° 124 NM	FL 280 FL 245 Class A	10	↑	↓	
▲GABNA 241000.00S 0283400.00E						
	219° 041° 99 NM	FL 280 FL 245 Class A	10	↑	↓	
▲UTRUK 254032.98S 0274957.29E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	207° 028° 51 NM	FL 280 FL 245 Class A	10	↑	↓	
▲GRASMERE (GAV) VOR 263053.63S 0274035.17E						
	248° 069° 135 NM	FL 280 FL 245 Class A	10	↑	↓	
▲EKBEX 280039.10S 0254723.96E						
	249° 069° 28 NM	FL 280 FL 245 Class A	10	↑	↓	
▲APDUR 281919.65S 0252312.80E						
	249° 070° 44 NM	FL 280 FL 245 Class A	10	↑	↓	
▲KIMBERLEY AIRPORT (KYV) VOR/DME 284759.82S 0244537.32E						
	229° 052° 162 NM	FL 280 FL 245 Class A	10	↑	↓	
▲EGRUP 311005.95S 0231539.78E						FAJA/FACA FIR BDRY
	233° 053° 16 NM	FL 280 FL 245 Class A	10	↑	↓	
▲VICTORIA WEST (VWV) VOR 312349.00S 0230632.00E						
	269° 088° 142 NM	FL 280 FL 245 Class A	10	↑	↓	
▲SUTHERLAND (SLV) VOR 322700.00S 0203721.00E						
	255° 076° 77 NM	FL 280 FL 245 Class A	10	↑	↓	
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	248° 069° 60 NM	FL 280 FL 245 Class A	10	↑	↓	
▲CAPE TOWN INTERNATIONAL AIRPORT (CTV) VOR/DME 335810.82S 0183618.19E						

UB529						
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	070° 250° 50 NM	FL 460 FL 245 Class A	10	↓	↑	
▲ITMIL 290151.05S 0314838.40E						
	064° 244° 23 NM	FL 460 FL 245 Class A	10	↓	↑	
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						
	032° 210° 114 NM	FL 460 FL 245 Class A	10	↓	↑	
▲EPRET 265131.86S 0322546.72E						FAJA/FQBE FIR BDRY

UB534						
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						
	128° 309° 91 NM	FL 280 FL 245 Class A	10	↓	↑	
▲DUKRA 262024.43S 0304711.57						FAJA/FDMS TMA BDRY

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	149° 330° 27 NM	FL 280 FL 245 Class A	10	↓	↑	
▲MUVAL 263728.00S 0310957.00E						

UB540						
UTRUK 254032.98S 0274957.29E						
	013° 190° 148 NM	FL 460 FL 200 Class A	10	↓	↑	
ETMIT 231248.49S 0273742.69E						FAJA/FBGR FIR BDRY

UG465						
▲OKTEL 280753.81S 0150000.00E						FAJA/FAJO FIR BDRY
	127° 306° 85 NM	FL 280 FL 245 Class A	10	↓	↑	
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	108° 286° 236 NM	FL 280 FL 245 Class A	10	↓	↑	
▲IBVIT 282453.62S 0210000.44E						
	106° 286° 14 NM	FL 280 FL 245 Class A	10	↓	↑	
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	083° 263° 103 NM	FL 280 FL 245 Class A	10	↓	↑	
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						
	087° 266° 283 NM	FL 280 FL 245 Class A	10	↓	↑	
▲LANSERIA AIRPORT (LIV) VOR/DME 255656.14S 0275448.86E						
	102° 281° 70 NM	FL 280 FL 245 Class A	10	↓	↑	
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						
	059° 240° 95 NM	FL 280 FL 245 Class A	10	↓	↑	
▲ANVIT 244000.00S 0302300.00E						
	058° 238° 62 NM	FL 280 FL 245 Class A	10	↓	↑	
▲PHALABORWA (PHV) VOR 235402.73S 0310907.09E						
	055° 235° 35 NM	FL 280 FL 245 Class A	10	↓	↑	.
▲EPSEK 232715.00S 0313345.00E						FAJA/FQBE FIR BDRY
Subject to FUA approval through military airspace.						

UG467						
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	069° 249° 20 NM	FL 280 FL 245 Class A	10	↓	↑	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲DUSKO 251028.74S 0312401.70E						
	069° 248° 42 NM	FL 280 FL 245 Class A	10	↓	↑	
▲TEVAP 244430.00S 0320006.00E						FAJA/FQBE FIR BDRY

UG653						
▲ETOSA 244250.40S 0260312.98E						FAJA/FGBR FIR BDRY
	136° 317° 37 NM	FL 280 FL 195 Class A	10	↓	↑	
▲NESEK 250154.00S 0263700.00E						
	137° 316° 77 NM	FL 280 FL 195 Class A	10	↓	↑	
▲UTRUK 254032.98S 0274957.29E						

UG655						
▲MASERU (MZV) VOR 293001.00S 0273226.00E						
	036° 212° 172 NM	FL 280 FL 245 Class A	10	↓	↑	
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	357° 176° 66 NM	FL 280 FL 245 Class A	10	↑	↓	
▲UTRUK 254032.98S 0274957.29E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	026° 204° 93 NM	FL 280 FL 245 Class A	10	↓	↑	
▲ODKER 240830.00S 0280500.00E						
	023° 200° 92 NM	FL 280 FL 245 Class A	10	↓	↑	
▲TAVLA 223724.00S 0281736.00E						FAJA/FBGR FIR BDRY

UG853						
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	291° 111° 38 NM	FL 280 FL 245 Class A	10	↑	↓	
▲PIETERMARITZBURG (PMV) VOR/DME 293852.13S 0302401.28E						
	353° 172° 73 NM	FL 280 FL 245 Class A	10	↑	↓	
▲LADYSMITH (LYV) VOR/DME 283616.21S 0294140.32E						
	349° 167° 60 NM	FL 280 FL 245 Class A	10	↑	↓	
▲WARDEN (WRV) VOR 274629.26S 0290410.10E						
	348° 166° 77 NM	FL 280 FL 245 Class A	10	↑	↓	
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	357° 176° 66 NM	FL 280 FL 245 Class A	10	↑	↓	
▲UTRUK 254032.98S 0274957.29E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	341° 159° 84 NM	FL 280 FL 245 Class A	10	↑	↓	
▲ORKAN 243230.00S 0265500.00E						
	338° 158° 16 NM	FL 280 FL 245 Class A	10	↑	↓	
▲RUDAS 241924.00S 0264406.00E						FAJA/FBGR FIR BDRY

UR987						
▲ERDAS 332450.10S 0191112.85E						
	022° 199° 122 NM	FL 280 FL 245 Class A	10	↓	↑	
▲NIEUWOUDTVILLE (NVV) VOR 312248.00S 0190416.00E						
	009° 187° 117 NM	FL 280 FL 245 Class A	10	↓	↑	
▲AGGENEYS (AGV) VOR/DME 292851.67S 0183344.97E						
	013° 193° 36 NM	FL 280 FL 245 Class A	10	↓	↑	
▲IBRUN 285324.75S 0182900.19E						
	013° 191° 84 NM	FL 280 FL 245 Class A	10	↓	↑	
▲KEBAT 273000.00S 0181800.00E						FAJA/FYWF FIR BDRY

UW61	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲PIETERMARITZBURG (PMV) VOR/DME 293852.13S 0302401.28E						
	295° 116° 87 NM	FL 460 FL 200 Class A	10	↑	↓	
▲NIDEM 293409.50S 0284409.10E						
	295° 115° 63 NM	FL 460 FL 200 Class A	10	↑	↓	
▲MASERU (MZV) VOR 293001.00S 0273226.00E						
	311° 131° 69 NM	FL 460 FL 200 Class A	10	↑	↓	
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.30E						
UW66						
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	055° 232° 187 NM	FL 280 FL 245 Class A	10	↓	↑	
▲OKSOP 311556.12S 0240832.74E						FAJA/FACA FIR BDRY
	052° 231° 61 NM	FL 280 FL 245 Class A	10	↓	↑	
▲PETRUSVILLE (PVV) VOR 302158.41S 0244142.06E						

UW81		
▲CHIEF DAWID STUURMAN AIRPORT (PEV) VOR/DME 335933.01S 0253620.75E		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	032° 212° 50 NM	FL 280 FL 245 Class A	10	↓	↑	
▲EGTIM 330937.71S 0254125.96E						
	032° 210° 93 NM	FL 280 FL 245 Class A	10	↓	↑	
▲HOFMEYER (HMV) DVOR 313621.18S 0255038.40E						
	034° 213° 41 NM	FL 280 FL 245 Class A	10	↓	↑	
▲UTSEM 305604.65S 0255807.95E						FAJA/FACA FIR BDRY
	033° 212° 66 NM	FL 280 FL 245 Class A	10	↓	↑	
▲GEDOL 295037.49S 0261004.18E						
	032° 211° 45 NM	FL 280 FL 245 Class A	10	↓	↑	
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						

UW95						
▲VICTORIA WEST (VWV) VOR 312349.00S 0230632.00E						
	074° 254° 19 NM	FL 460 FL 245 Class A	10	↓	↑	
▲OKBIL 311244.26S 0232351.31E						FAJA/FACA FIR BDRY
	074° 254° 84 NM	FL 460 FL 245 Class A	10	↓	↑	
▲PETRUSVILLE (PVV) VOR 302158.41S 0244142.06E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	069° 249° 113 NM	FL 460 FL 245 Class A	10	↓	↑	
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						
	037° 216° 45 NM	FL 460 FL 245 Class A	10	↓	↑	
▲AVUBU 282242.79S 0263218.00E						
	036° 216° 23 NM	FL 460 FL 245 Class A	10	↓	↑	
▲WELKOM (WMV) VOR/DME 280005.74S 0263940.13E						
	051° 229° 104 NM	FL 460 FL 245 Class A	10	↓	↑	
▲GRASMERE (GAV) VOR 263053.63S 0274035.17E						

ENR 3.3 AREA NAVIGATION ROUTES

1 RANDOM RNAV OPERATIONS ACROSS THE SOUTH ATLANTIC OCEANS

1.1 South Africa has the delegated responsibility of providing service over the high seas in those areas of airspace which have been identified as part of and included within the South African Oceanic FIR. These areas have variously been identified as the Atlantic Ocean Random Routing Area (AORRA). Operating within these areas facilitate freedom to flight plan and operate along random tracks according to operational requirements, thereby contributing to operational and economic efficiency and at the same time advancing the quest to reduce carbon emissions.

2 INTRODUCTION

2.1 The Purpose of this section is to advise users of the implementation and to publish the proposed procedures and associated dimensions of the Atlantic Ocean Random Routing Area (AORRA).

2.2 The users will benefit by being able to utilise the most convenient flight trajectory. Compliance with RNAV10 will ensure the navigation precision required for operations in the area of RNAV operations.

3 GENERAL CONDITIONS FOR PARTICIPATION IN THE AORRA

3.1 Only those aircraft certified for RNAV 10 operations would be permitted to operate within the AORRA. Authorised operators indicate compliance by entering "X" in field 10 of the ATS Flight Plan.

3.2 This requirement shall ensure the level of navigation accuracy required for RNAV operations.

4 DESCRIPTION OF AORRA AIRSPACE

4.1 AORRA is designated as the area with vertical limits FL290 and FL410 within the, Atlántico, Dakar, Comodoro Rivadavia, Ezeiza, Johannesburg Oceanic, Luanda Oceanic and Montevideo FIRs bounded by a line joining the following coordinates:

4.1.1 Defined Area of the AORRA

Commencing at	600000S	0150000E
A straight line to	273000S	0150000E

Then straight lines to each of the following co-ordinates:

	173000S	0111300E

	094000S	0112400E (ONTAR)
Then via a 120 NM arc centered on Luanda to		
	074800S	0113000E (OPAPO)
	052000S	0100000E
	053000S	0085000E
	041000S	0063500E
	000000S	0063500E
	000000S	0263400W
	085400S	0315600W
	115500S	0325300W
	153400S	0361800W
	183000S	0384500W
	194300S	0345500W
	264500S	0434500W
	340000S	0500000W
	340000S	0513320W
	364530S	0531147W
	582106S	0530000W
	600000S	0530000W
	600000S	0150000E

Flights operating within the AORRA shall enter and exit AORRA via the following gates:

Johannesburg Oceanic	IBNEV	184706.00S	0114005.00E
	NIBEK	225831.00S	0131254.00E
	NIGAM	263356.20S	0143710.00E
	OKTEL	280753.81S	0150000.00E
	UVGOD	290943.27S	0150000.00E
	ALDOV	303712.00S	0150000.00E
	BUXIR	320000.00S	0150000.00E
	OKDOG	330500.00S	0150000.00E
	ITMEK	341200.00S	0150000.00E
	ITLIK	351600.00S	0145957.00E
	NEPUM	321551.00S	0322743.00E
	EGVOL	340249.00S	0310146.00E

	EPNET	37 00 34.00S	023 59 04.00E
	GEPAB	37 00 41.00S	018 30 42.00E
	IMKAM	31 14 20.00S	015 00 31.00E
	ANTOM	29 50 00.00S	015 00 00.00E
	GEPEV	35 04 42.00S	029 59 12.00E
	ETBOR	37 00 05.00S	027 42 42.00E
	NERAX	36 01 07.00S	029 01 40.00E
	AVANA	37 00 00.00S	026 00 00.00E

Luanda	URAPI	09 49 07.00S	003 48 07.00W
	OSUKO	09 01 01.00S	001 36 04.00W
	GAPEL	08 17 06.00S	000 19 00.00E
	TERBA	04 47 09.00S	000 35 00.00E
	OPAPO	07 48 00.00S	011 30 00.00E
	ONTAR	09 40 00.00S	011 24 00.00E

Atlántico	CIDER	24 07 49.00S	040 16 23.00W
	EKALO	22 26 00.00S	038 08 48.00W
	GARUP	18 51 48.00S	037 40 24.00W
	PORGA	18 40 48.00S	038 14 36.00W
	POLVO	18 35 24.00S	038 31 12.00W

Montevideo	BIVEN	36 35 00.00S	053 05 10.00W

Ezeiza	GUXOR	37 22 30.00S	053 00 00.00W
	BISUL	43 31 22.00S	053 00 00.00W
Comodoro Rivadavia	EGLAS	48 00 00.00S	053 00 00.00W
	IRIRO	60 00 00.00S	053 00 00.00W

4.2 **Automatic Dependent Surveillance / Controller Pilot Data Link Communication (ADS/CPDLC)**

4.2.1 ADS/CPDLC will be utilised in AORRA airspace by suitably equipped service providers to provide an ATS service to aircraft able to take advantage of this form of communication. Operators are to note that in some sectors of the random routing airspace, ADS/CPDLC is the primary form of communication, with HF as secondary means of communication.

4.3 Required Navigation Performance (RNAV) 10 procedures for aircraft operations within the AORRA

4.3.1 Only those aircraft certified for RNAV10 operations shall operate within the AORRA.

4.3.2 No aircraft shall flight plan to operate in the AORRA airspace unless it is RNAV10 certified to operate in this airspace by the State of Registry or the State of operator, as the case may be, except in the following circumstances:

i) The aircraft being initially delivered to the State of Registry or the State of the operator;

ii) The aircraft is certified but experienced navigation degradation and is being flown back to base or to a maintenance facility for repairs;

iii) The aircraft is engaged on a humanitarian or mercy flight;

iv) State aircraft.

4.4 APPROVAL OF AIRWORTHINESS/OPERATIONS

4.4.1 RNAV10 Approval - The operating or intending to operate in AORRA airspace shall obtain RNAV10 approval from the State's registry or States operator as appropriate and which user complies with the following conditions:

4.4.2 The aircraft satisfies specifications of "Minimum aircraft system performance specifications" (MASPS) of the State's registry.

4.4.3 The aircraft is operated under the conditions indicated in the RNAV10 operational approval issued by the user's State.

4.5 FLIGHT PLANNING IN AORRA

4.5.1 When it is intended to operate an aircraft in AORRA airspace, RNAV10 compliance shall be indicated by placing an "R" in box 10 of the flight plan form.

4.5.2 Flight plans shall contain entry and exit points to the AORRA and the estimated time for every 5° of longitude.

4.5.3 Those operators operating under the circumstances stipulated in paragraph 4.3.2 shall insert STS/NON RNAV10, in field 18 of the ICAO FPL.

4.5.4 Aircraft meeting the navigation requirements may flight plan any preferred track between the entry and exit gates.

4.5.5 Additionally, a waypoint shall be included for each FIR crossing.

4.6 OPERATIONAL PROCEDURES BEFORE ENTERING AORRA AIRSPACE

4.6.1 Before entering AORRA airspace the pilot-in-command shall verify that the required equipment to fly within AORRA airspace is operating normally and verify with the greatest possible accuracy the position of the aircraft through external air navigation aids.

4.6.2 If any equipment is not operating normally, the pilot should notify ATC before entering the AORRA airspace.

4.7 OPERATIONAL PROCEDURES AFTER ENTERING THE AORRA AIRSPACE

4.7.1 General Procedures

4.7.2 If an aircraft cannot continue the flight in compliance with the ATC clearance issued and/or cannot maintain the precision required for the specified navigation performance in the airspace, ATC is to be advised immediately.

4.8 Position reporting shall be required at Entry/Exit gate.

As well as any other position required by ATC.

05E
10E
15E
00 E/W
05W
10W
15W
20W
25W
30W
35W
40W
45W
50W

4.9 ROUTES IMPLEMENTATION IN AORRA

4.9.1 In order to enhance access to and from that portion of the AORRA which falls under the responsibility of Johannesburg Oceanic Control, the following entry/exit gates to the AORRA as reflected in the table below, in addition to the already existing entry/exit gates, have been established on that part of the Johannesburg Oceanic FIR (FAJO) boundary adjoining the Windhoek FIR Continental airspace. The establishment of the additional entry/exit gates coincides with the establishment of fixed continental routes transiting the Windhoek FIR in order to facilitate access to and from the entry/exit gates, complimenting the current established route network.

	LATITUDE	LONGITUDE
NEVEP	202000.00S	0121404.44E
ETUDU	214000.00S	0124321.18E

ANTEP	240000.00S	0133604.00E
DULGO	250000.00S	0135908.00E

4.9.2 Operators are to note that other than in emergency access/exit to/from the AORRA are restricted to the published entry and exit gates.

***NOTE**: In addition to the existing route system, the following ATS route segment has been implemented in the Johannesburg Flight Information Region (FAJA):*

UT394 Bi-directional

POSITION	COMMENT	LATITUDE	LONGITUDE
AVUSA	*X UQ19	272955.1042S	0221330.0871E
UTANI	FIR/FIR	271346.73S	0210034.80E

** The X indicates the route or portion of the route which crosses another route at the position indicated.*

Note:

a) Additionally to the above route segment, the following route, UT396 has been implemented between Windhoek and Johannesburg FIR's.

UT396 Bi-directional

POSITION	COMMENT	LATITUDE	LONGITUDE
UMTOL	FIR/FIR	272955.15S	0203940.57E
UDLON	*X UQ11	274350.57S	0204847.32E
UPV	VOR	282406.31S	0211537.48E

5 DESCRIPTION OF ATS ROUTES SUSPENDED WITHIN AORRA AIRSPACE

5.1 ATS routes contained within the boundaries of the AORRA suspended as indicated below:

Johannesburg Oceanic FIR

UQ11 UBVER (275522S 0141741E) to OKTEL (280753.81S 0150000E)

UA405 ETOBO (233900S 0100000W) to OKDOG (330500.00S 0150000E)

UL224 ITGIV (325600S 0100000W) to ITMEK (341200.00S 0150000E)

UL211F MUNES (402000S 0100000W) to ITLIK (351600.00S 0145957E)

5.2 Aircraft may track via a flight plan preferred track between these gates. Prior to entering or after exiting the AORRA at a particular gate, aircraft are to comply with the fixed route structure associated with that particular entry or exit point or as instructed by ATC, and are required to flight plan accordingly.

5.3 Prior to entering or after exiting the AORRA from/to Angolan Oceanic airspace, operators are to flight plan so as to cross the Angolan Oceanic FIR boundary at the significant point established on the FIR boundary and which is associated with the fixed route on which they intended operating while in that airspace.

6 RNAV / RNP ROUTE STRUCTURE WITHIN SOUTH AFRICAN AIRSPACE

6.1 The South-African Civil Aviation Authority (CAA) and Air Traffic and Navigation Services Company (ATNS) have concluded the trial period of the RNAV/RNP Routes.

6.2 The following RNAV/RNP routes are now permanently operational:

a. Johannesburg to Cape Town

b. Johannesburg to Durban

c. Durban to Cape Town

d. Johannesburg to East London

e. Johannesburg to George

f. Johannesburg to Port Elizabeth

g. Durban to Port Elizabeth and Cape Town

h. Cape Town across the Atlantic Ocean to destination (Oceanic)

i. Johannesburg across the Atlantic Ocean to destination (Oceanic)

j. Johannesburg to Zimbabwe and Botswana

k. Johannesburg to Mozambique and the Middle East

l. Johannesburg to Mozambique and the Far East

m. Johannesburg to Swaziland

n. Johannesburg to Richards Bay

6.3 Operators are to take note that non-compulsory reporting points (waypoints) have been included in the vicinity of crossing points to assist ATC in setting up separations. These reporting points (waypoints) must be available in the FMS in the event that ATC requires a flight to report at the reporting point (waypoint) for separation purposes.

6.4 The RNAV/RNP route structure will be applicable from FL200 and above.

6.4.1 Operators are to note that the RNAV are designed to RNP4 criteria, however aircraft which are capable of operating to RNP5 criteria will be permitted to operate on the routes provided there is continuous radar coverage.

6.4.2 Operators are advised that the next phase will be the implementation of RNP4 on the above mentioned routes. This will have an effect on the accuracy requirement of the airborne navigation equipment and operators who wish to continue to utilise these routes should take note of the following items.

a. REFERENCE MATERIAL:

The latest publication of ICAO document 9613 AN/937 - Manual on Required Navigation Performance (RNP).

b. REFERENCE MATERIAL:

RNP may be specified for a route, a number of routes, an area, volume of airspace or any airspace of defined dimensions (ICAO Doc 9613 AN/937-2.3.1).

c. AIRCRAFT NAVIGATION PERFORMANCE:

The concept of RNP is based on the expected navigation performance accuracy of the population of aircraft using the airspace. This in turn places demands on individual aircraft,

manufacturers of aircraft and aircraft operators to achieve the navigation performance required for a specific RNP type airspace on each flight. (ICAO DOC 9613-2.4.1).

d. CONTAINMENT PROBABILITY:

RNP types for en-route operations are established according to navigation performance accuracy in the horizontal plane, that is, lateral and longitudinal position fixing. The containment value is the distance from the intended position within which flights would be found for at least 95% of the total flight time.

e. REQUIRED NAVIGATION PERFORMANCE (RNP) TYPES.

RNP types (ICAO Doc 9613 AN/937-3.3.2) The RNP types most commonly used are 1.0, 4.0, 10, 12.6 and 20. The RNP type to be used within the South African domestic RNAV route structure will be RNP4. (Ref. Para 6.4.1 and 6.4.2).

f. AIRWORTHINESS APPROVAL FOR RNAV/RNP OPERATION

(See ICAO Doc 9613 AN/937 Chapter 5 & 6 and RSA AIP ENR 1.3) Operators who wish to make use of the benefits offered by RNAV operation will have to ensure that the navigation equipment required for RNAV/RNP use, installed in their aircraft, is approved by the Airworthiness section of the CAA. (TEL: (011) 545 1129, Contact Person: Carel Raath, or email at raathc@caa.co.za.) This includes onboard equipment associated with VOR/DME, which may be used, where the facilities are within range of the route flown.

g. BENEFITS OF RNAV/RNP ROUTES:

More direct routes permitting a reduction in flight distance.

Dual or parallel routes to accommodate a greater flow of enroute traffic.

Bypass routes for aircraft over flying high-density terminal areas.

Alternate or contingency routes on either a planned or an ad hoc basis.

Optimum locations for holding patterns.

Reduction in the number of ground navigation facilities.

h. FLIGHT CREW TRAINING REQUIREMENTS

(See ICAO Doc 9613 AN/937 Chapter 6-6.2/6.2.1-6.2.4). The training requirements of operators in respect of equipment and operating procedures should be adequately covered in the relevant operations and training manuals, where available. As a minimum, States should include training in equipment and operating procedures in pilots' training syllabi, such as instrument ratings, aircraft type ratings and refresher training.

6.5 The training should ensure that flight crews:

a. have a general knowledge of the application of RNP;

b. have a thorough understanding of the equipment;

c. are aware of equipment limitations;

d. have been trained in the operating procedures and safeguards necessary to obtain optimum efficiency and maintenance of required navigational accuracy;

e. are in current practise and have received recent training on the equipment;

f. appreciate the need to advise ATC should the accuracy of their navigation be in doubt; and

g. are conversant with contingency procedures.

Flight crew will have to prove competence in accordance with chapter 6 6.2.3 and satisfy the CAA.

6.6 AIR TRAFFIC CONTROL TRAINING

Air Traffic Controllers, will be required to be competent in accordance with ICAO Doc 9613 AN/937 Chapter 6 (6.2.5/6/7).

From the ATC point of view, the handling of traffic along RNP fixed and contingency routes will not be changed significantly.

The introduction of RNP areas including random tracks may bring about changes to the operation of ATC which would make it essential that additional training be provided, taking into account matters such as:

a. potentially different RNP type routes in the same sector;

b. transition between different RNP type areas;

c. radiotelephony (RTF) procedures (see 6.3);

d. revised military/civil and civil/civil co-ordination procedures;

e. conflict prediction and resolution along unpublished tracks; and

f. revised contingency procedures."

As more sophisticated navigation applications become more widely used (e.g. parallel offset capability, RNAV standard instrument departure (SID), and standard instrument arrivals (STAR), holding and approaches), their integration into ATC procedures will require that controllers are trained to accept and exploit the use of these advanced capabilities."

6.7 ATC NOTIFICATION

Pilots and/or operators intending to utilize the RNAV/RNP route structure are to flight plan appropriately.

7 . UPR GEOGRAPHICAL ZONE INSPIRE

7.1 Introduction

7.1.1 The Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) is a partnership between Air Traffic and Navigation Services (ATNS) of South Africa, Air services Australia and Airports Authority of India. These partners are collaborating with peer Air Navigation Service Providers (ANSPs) across the Arabian Sea and Indian Ocean and a number of airline partners, to establish a User Preferred Route (UPR) Geographic Zone that will make UPRs available across the entire Indian Ocean area.

7.1.2 A User Preferred Route (UPR) during the oceanic phase of flight is defined as a lateral profile developed for each individual flight by the flight operator. These lateral profiles are customized in order to meet the specific needs of the aircraft operator for that flight, such as fuel optimisation, cost-index performance, or specific mission requirements.

7.1.3 Typically a UPR will be calculated by an aircraft operator's flight dispatch based on factors such as forecasted winds, aircraft type and performance, convective weather and scheduling requirements.

7.1.4 UPR's are a favoured enhancement to oceanic operations where air traffic control (ATC) limitations previously required that aircraft fly on fixed air traffic service (ATS) routes, or published flexible track systems. This enhancement is directly attributable to the implementation of ground and airborne improvements such as automated conflict prediction, conformance monitoring and automatic dependent surveillance (ADS).

7.1.5 When UPR's are created based on fuel optimisation considerations, the corresponding savings in greenhouse gas emissions can be substantial.

7.1.6 ATNS, with INSPIRE partners and peer ANSPs, are participating in a UPR trial program as part of INSPIRE.

7.1.7 IORRA and associated procedures are cancelled and replaced by UPR Geographical Zone.

7.2 Procedures

7.2.1 INSPIRE airline partners that have received prior approval from INSPIRE, may use the following procedures within the Johannesburg Oceanic Flight Information Region (FAJO) Indian Ocean:

7.2.2 Flights must enter or exit the FAJO FIR via published waypoints or position of whole degrees of latitude and longitude described in degrees and minutes.

7.2.3 UP's must be constructed via published waypoints, navigation aids, or whole degrees of latitude and longitude.

7.2.4 UPRs may include air routes.

7.3 Access to UPR

7.3.1 Airspace users may only flight plan a User Preferred Route (UPR) Geographic Zone if they meet the following minimum criteria:

a. RNAV10, and

b. ADS-C/CPDLC equipped.

Note: The minimum criteria listed above must be notified in the Flight Plan.

7.3.2 Suspension of UPR Operations. In the event of a contingency situation, the UPR Operations shall be suspended.

7.4 Contacts

Any questions and assistance should be directed to:

Mr Martin Cooper

Phone: +27 11 928 6436 or +27 79 500 8871
E-Mail: martinc@atns.co.za

or

Ms Ramona Abrahams

Phone: +27 11 928 6439 or +27 82 569 9838

E-mail: Ramonaa@atns.co.za

RNAV ROUTES AND WAYPOINTS

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Q31	ENR 3.3-62	UQ31	ENR 3.3-63	Z35	ENR 3.3-80	UZ35	ENR 3.3-80		
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Q63	ENR 3.3-101	UQ63	ENR 3.3-101						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
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	244° 89 NM	FL245 FL200 Class A	10		↓	
▲APMIN 280038.45S 0255128.05E						
	245° 50 NM	FL245 FL200 Class A	10		↓	
▲EVESI 283554.70S 0251112.70E						
	246° 199 NM	FL245 FL200 Class A	10		↓	
▲EGNOM 305403.37S 0222635.25E						
	250° 188 NM	FL245 FL200 Class A	10		↓	
▲NOKOX 330114.23S 0194303.34E						
	250° 20 NM	FL245 FL200 Class A	10		↓	
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						

UQ10						
▲RAGUL 262654.35S 0273443.89E						
	242° 42 NM	FL460 FL245 Class A	10		↓	
▲UTEBA 265711.00S 0270214.28E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
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	250° 188 NM	FL460 FL245 Class A	10		↓	
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▲AXOPA 331742.26S 0195833.41E						
	073° 200 NM	FL245 FL200 Class A	10	↓		
▲EGTIL 310223.29S 0225155.48E						
	70° 230 NM	FL245 FL200 Class A	10	↓		
▲UNRAG 282149.12S 0260109.16E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	066° 30 NM	FL245 FL200 Class A	10	↓		
▲APRAX 280031.67S 0262508.12E						
	065° 68 NM	FL245 FL200 Class A	10	↓		
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	060° 30 NM	FL245 FL200 Class A	10	↓		
▲NIBEX 264925.56S 0274013.41E						

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	073° 200 NM	FL 460 FL 245 Class A	10	↓		
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	066° 30 NM	FL 460 FL 245 Class A	10	↓		
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	065° 68 NM	FL 460 FL 245 Class A	10	↓		
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Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
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	195º 36 NM	FL245 FL200 Class A	10		↓	
▲IXARA 275827.43S 0285340.08E						
	212º 154 NM	FL245 FL200 Class A	10		↓	
▲OKBUS 302947.44S 0281845.93E						
	216º 25 NM	FL 245 FL 200 Class A	10		↓	
▲ETLUR 305425.43S 0281254.69E						
	217º 24 NM	FL245 FL200 Class A	10		↓	
▲APMUL 311747.38S 0280718.59E						
	217º 13 NM	FL245 FL200 Class A	10		↓	
▲TIDAX 313034.55S 0280413.34E						
	217º 42 NM	FL245 FL200 Class A	10		↓	
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Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UQ7						
▲APDAK 263303.54S 0290252.64E						
	212º 51 NM	FL460 FL245 Class A	10		↓	
▲GEROX 272249.01S 0284943.11E						
	195º 36 NM	FL460 FL245 Class A	10		↓	
▲IXARA 275827.43S 0285340.08E						
	212º 154 NM	FL460 FL245 Class A	10		↓	
▲OKBUS 302947.44S 0281845.93E						
	216º 25 NM	FL460 FL245 Class A	10		↓	
▲ETLUR 305425.43S 0281254.69E						
	217º 24 NM	FL460 FL245 Class A	10		↓	
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	217º 13 NM	FL460 FL245 Class A	10		↓	
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Q9						
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Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
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	236º 168 NM	FL245 FL200 Class A	10		↓	
▲ETGIS 310511.89S 0250856.95E						
	240º 100 NM	FL245 FL200 Class A	10		↓	
▲ESVAX 322602.43S 0240006.71E						
	241º 38 NM	FL245 FL200 Class A	10		↓	
▲GERUT 325639.54S 0233320.68E						
	242º 58 NM	FL245 FL200 Class A	10		↓	
▲XALIN 334308.69S 0225201.48E						

UQ9						
▲NEVEN 272859.15S 0280257.10E						
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Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
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	241º 38 NM	FL460 FL245 Class A	10		↓	
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	242º 58 NM	FL460 FL245 Class A	10		↓	
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▲KATOR 332919.46S 0223834.37E						
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▲XANDA 330859.08S 0225623.03E						
	062º 38 NM	FL245 FL200 Class A	10	↓		
▲AVEXA 323836.27S 0232245.08E						
	061º 108 NM	FL245 FL200 Class A	10	↓		
▲NIDOX 311058.78S 0243646.21E						
	059º 198 NM	FL245 FL200 Class A	10	↓		
▲OKTIG 282838.68S 0264640.84E						
	055º 34 NM	FL245 FL200 Class A	10	↓		
▲EGSAN 280010.72S 0270835.76E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
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	062° 38 NM	FL460 FL245 Class A	10	↓		
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	061° 108 NM	FL460 FL245 Class A	10	↓		
▲NIDOX 311058.78S 0243646.21E						
	059° 198 NM	FL460 FL245 Class A	10	↓		
▲OKTIG 282838.68S 0264640.84E						
	055° 34 NM	FL460 FL245 Class A	10	↓		
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Q12		
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Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	111° 32 NM	FL245 FL200 Class A	10	↓		
▲XUGOL 341034.13S 0201127.59E						
	091° 27 NM	FL245 FL200 Class A	10	↓		
▲APKAP 335918.93S 0204131.63E						
	091° 16 NM	FL245 FL200 Class A	10	↓		
▲UNRES 335243.30S 0205856.24E						
	091° 79 NM	FL245 FL200 Class A	10	↓		
▲EXELO 331930.39S 0222426.38E						
	094° 29 NM	FL245 FL200 Class A	10	↓		
▲XANDA 330859.08S 0225623.03E						
	094° 33 NM	FL245 FL200 Class A	10	↓		
▲GERUT 325639.54S 0233320.68E						
	094° 153 NM	FL245 FL200 Class A	10	↓		
▲IXEBI 315753.02S 0262047.33E						
	092° 26 NM	FL245 FL200 Class A	10	↓		
▲OKPUN 314733.63S 0264840.64E						
	092° 59 NM	FL245 FL200 Class A	10	↓		
▲DUDVU 312352.27S 0275136.50E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	091° 15 NM	FL245 FL200 Class A	10	↓		
▲APMUL 311747.38S 0280718.59E						
	091° 42 NM	FL245 FL200 Class A	10	↓		
▲OKLOL 310028.20S 0285145.51E						
	091° 66 NM	FL245 FL200 Class A	10	↓		
▲IMLID 303238.38S 0300129.69E						
	078° 30 NM	FL245 FL200 Class A	10	↓		
▲DUNSA 301406.71S 0302914.71E						

UQ12						
▲OKTED 341312.00S 0193330.00E						
	111° 32 NM	FL460 FL245 Class A	10	↓		
▲XUGOL 341034.13S 0201127.59E						
	091° 27 NM	FL460 FL245 Class A	10	↓		
▲APKAP 335918.93S 0204131.63E						
	091° 16 NM	FL460 FL245 Class A	10	↓		
▲UNRES 335243.30S 0205856.24E						
	091° 79 NM	FL460 FL245 Class A	10	↓		
▲EXELO 331930.39S 0222426.38E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	094° 29 NM	FL460 FL245 Class A	10	↓		
▲XANDA 330859.08S 0225623.03E						
	094° 33 NM	FL460 FL245 Class A	10	↓		
▲GERUT 325639.54S 0233320.68E						
	094° 153 NM	FL460 FL245 Class A	10	↓		
▲IXEBI 315753.02S 0262047.33E						
	092° 26 NM	FL460 FL245 Class A	10	↓		
▲OKPUN 314733.63S 0264840.64E						
	092° 59 NM	FL460 FL245 Class A	10	↓		
▲DUDVU 312352.27S 0275136.50E						
	091° 15 NM	FL460 FL245 Class A	10	↓		
▲APMUL 311747.38S 0280718.59E						
	091° 42 NM	FL460 FL245 Class A	10	↓		
▲OKLOL 310028.20S 0285145.51E						
	091° 66 NM	FL460 FL245 Class A	10	↓		
▲IMLID 303238.38S 0300129.69E						
	078° 30 NM	FL460 FL245 Class A	10	↓		
▲DUNSA 301406.71S 0302914.71E						

Route designator Name of significant points Coordinates	*Route MAG Track MAG DIST*	*Upper limit Lower limit Classification*	*Lateral limits NM*	*Direction of cruising levels*		*Remarks Controlling unit Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Q13						
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	152º 48 NM	FL245 FL200 Class A	10	↓		
▲UVITI 255542.74S 0314511.76E						

UQ13						
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	152º 48 NM	FL460 FL245 Class A	10	↓		
▲UVITI 255542.74S 0314511.76E						

Z3						
▲TUBIN 300201.29S 0301754.66E						
	265º 30 NM	FL245 FL200 Class A	10		↓	
▲NAMGU 301704.14S 0294758.45E						
	270º 69 NM	FL245 FL200 Class A	10		↓	
▲EVUVA 304535.88S 0283542.17E						
	271º 22 NM	FL245 FL200 Class A	10		↓	
▲ETLUR 305425.43S 0281254.69E						
	271º 16 NM	FL245 FL200 Class A	10		↓	
▲XADUP 310048.50S 0275613.14E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	271° 54 NM	FL245 FL200 Class A	10		↓	
▲IXAKU 312230.06S 0265846.63E						
	272° 26 NM	FL245 FL200 Class A	10		↓	
▲XABDO 313246.19S 0263047.81E						
	272° 139 NM	FL245 FL200 Class A	10		↓	
▲ESVAX 322602.43S 0240006.71E						
	273° 34 NM	FL245 FL200 Class A	10		↓	
▲AVEXA 323836.27S 0232245.08E						
	274° 45 NM	FL245 FL200 Class A	10		↓	
▲ETKAL 325448.40S 0223336.03E						
	270° 81 NM	FL245 FL200 Class A	10		↓	
▲GADNU 332851.57S 0210631.19E						
	271° 71 NM	FL245 FL200 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

UZ3						
▲TUBIN 300201.29S 0301754.66E						
	265° 30 NM	FL460 FL245 Class A	10		↓	
▲NAMGU 301704.14S 0294758.45E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	270º 69 NM	FL460 FL245 Class A	10		↓	
▲EVUVA 304535.88S 0283542.17E						
	271º 22 NM	FL460 FL245 Class A	10		↓	
▲ETLUR 305425.43S 0281254.69E						
	271º 16 NM	FL460 FL245 Class A	10		↓	
▲XADUP 310048.50S 0275613.14E						
	271º 54 NM	FL460 FL245 Class A	10		↓	
▲IXAKU 312230.06S 0265846.63E						
	272º 26 NM	FL460 FL245 Class A	10		↓	
▲XABDO 313246.19S 0263047.81E						
	272º 139 NM	FL460 FL245 Class A	10		↓	
▲ESVAX 322602.43S 0240006.71E						
	273º 34 NM	FL460 FL245 Class A	10		↓	
▲AVEXA 323836.27S 0232245.08E						
	274º 45 NM	FL460 FL245 Class A	10		↓	
▲ETKAL 325448.40S 0223336.03E						
	270º 81 NM	FL460 FL245 Class A	10		↓	
▲GADNU 332851.57S 0210631.19E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	271° 71 NM	FL460 FL245 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

Q8						
▲NEVEN 272859.15S 0280257.10E						
	218° 32 NM	FL245 FL200 Class A	10		↓	
▲ATUXO 275935.97S 0275207.27E						
	219° 33 NM	FL245 FL200 Class A	10		↓	
▲IXEKI 283043.45S 0274036.85E						
	220° 142 NM	FL245 FL200 Class A	10		↓	
▲EGTAP 304616.63S 0264903.41E						
	223° 49 NM	FL245 FL200 Class A	10		↓	
▲XABDO 313246.19S 0263047.81E						
	224° 26 NM	FL245 FL200 Class A	10		↓	
▲IXEBI 315753.02S 0262047.33E						
	224° 28 NM	FL245 FL200 Class A	10		↓	
▲TIKER 322402.12S 0261016.18E						
	225° 28 NM	FL245 FL200 Class A	10		↓	
▲XOXOR 325008.37S 0255939.92E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	225° 22 NM	FL245 FL200 Class A	10		↓	
▲ALKAT 331100.54S 0255107.43E						

UQ8						
▲NEVEN 272859.15S 0280257.10E						
	218° 32 NM	FL460 FL245 Class A	10		↓	
▲ATUXO 275935.97S 0275207.27E						
	219° 33 NM	FL460 FL245 Class A	10		↓	
▲IXEKI 283043.45S 0274036.85E						
	220° 142 NM	FL460 FL245 Class A	10		↓	
▲EGTAP 304616.63S 0264903.41E						
	223° 49 NM	FL460 FL245 Class A	10		↓	
▲XABDO 313246.19S 0263047.81E						
	224° 26 NM	FL460 FL245 Class A	10		↓	
▲IXEBI 315753.02S 0262047.33E						
	224° 28 NM	FL460 FL245 Class A	10		↓	
▲TIKER 322402.12S 0261016.18E						
	225° 28 NM	FL460 FL245 Class A	10		↓	
▲XOXOR 325008.37S 0255939.92E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	225° 22 NM	FL460 FL245 Class A	10		↓	
▲ALKAT 331100.54S 0255107.43E						

Z5						
▲ITKIT 332137.27S 0260950.41E						
	047° 43 NM	FL245 FL200 Class A	10	↓		
▲XARVI 324125.16S 0262636.17E						
	046° 32 NM	FL245 FL200 Class A	10	↓		
▲IMROG 321042.91S 0263914.43E						
	045° 24 NM	FL245 FL200 Class A	10	↓		
▲OKPUN 314733.63S 0264840.64E						
	045° 26 NM	FL245 FL200 Class A	10	↓		
▲IXAKU 312230.06S 0265846.63E						
	044° 44 NM	FL245 FL200 Class A	10	↓		
▲EVEMU 304104.75S 0271517.92E						
	043° 151 NM	FL245 FL200 Class A	10	↓		
▲XORER 281735.22S 0281037.24E						
	040° 19 NM	FL245 FL200 Class A	10	↓		
▲IMGEV 275909.30S 0281732.10E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	038º 32 NM	FL245 FL200 Class A	10	↓		
▲OKTEK 272835.55S 0282748.16E						
	045º 33 NM	FL245 FL200 Class A	10	↓		
▲AVILO 265854.69S 0284315.62E						
	044º 19 NM	FL245 FL200 Class A	10	↓		
▲STANDERTON (STV) VOR 264148.19S 0285202.86E						

UZ5						
▲ITKIT 332137.27S 0260950.41E						
	047º 43 NM	FL460 FL245 Class A	10	↓		
▲XARVI 324125.16S 0262636.17E						
	046º 32 NM	FL460 FL245 Class A	10	↓		
▲IMROG 321042.91S 0263914.43E						
	045º 24 NM	FL460 FL245 Class A	10	↓		
▲OKPUN 314733.63S 0264840.64E						
	045º 26 NM	FL460 FL245 Class A	10	↓		
▲IXAKU 312230.06S 0265846.63E						
	044º 44 NM	FL460 FL245 Class A	10	↓		
▲EVEMU 304104.75S 0271517.92E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	043º 151 NM	FL460 FL245 Class A	10	↓		
▲XORER 281735.22S 0281037.24E						
	040º 19 NM	FL460 FL245 Class A	10	↓		
▲IMGEV 275909.30S 0281732.10E						
	038º 32 NM	FL460 FL245 Class A	10	↓		
▲OKTEK 272835.55S 0282748.16E						
	045º 33 NM	FL460 FL245 Class A	10	↓		
▲AVILO 265854.69S 0284315.62E						
	044º 19 NM	FL460 FL245 Class A	10	↓		
▲STANDERTON (STV) VOR 264148.19S 0285202.86E						

Q14						
▲UVIKU 332734.47S 0173425.87E						
	355° 173° 201 NM	FL245 FL200 Class A	10	↑	↓	
▲IMLUT 303035.90S 0154102.74E						
	357° 176° 88 NM	FL245 FL200 Class A	10	↑	↓	
▲UVGOD 290943.27S 0150000.00E						

UQ14		
▲UVIKU 332734.47S 0173425.87E		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	355° 173° 201 NM	FL460 FL245 Class A	10	↑	↓	
▲IMLUT 303035.90S 0154102.74E						
	357° 176° 88 NM	FL460 FL245 Class A	10	↑	↓	
▲UVGOD 290943.27S 0150000.00E						

Q15						
▲APKIN 340500.64S 0170059.32E						
	324° 144° 117 NM	FL245 FL200 Class A	10	↑	↓	
▲OKDOG 330500.00S 0150000.00E						

UQ15						
▲APKIN 340500.64S 0170059.32E						
	324° 144° 117 NM	FL460 FL245 Class A	10	↑	↓	
▲OKDOG 330500.00S 0150000.00E						

Q19						
▲AVUSA 272955.10S 0221330.09E						
	086º 192 NM	FL245 FL200 Class A	10	↓		
▲TEXIP 261303.77S 0253025.47E						
	083º 45 NM	FL245 FL200 Class A	10	↓		
▲ETBUX 255423.80S 0261558.08E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels* *Odd*	*Even*	*Remarks* *Controlling unit* *Frequency*
1	***2***	***3***	***4***	***5***		***6***
	083° 35 NM	FL245 FL200 Class A	10	↓		
▲PEDIL 253933.67S 0265134.05E						
	114° 32 NM	FL245 FL200 Class A	10	↓		
▲AVAGO 254309.90S 0272639.36E						

UQ19						
▲AVUSA 272955.10S 0221330.09E						
	086° 192 NM	FL460 FL245 Class A	10	↓		
▲TEXIP 261303.77S 0253025.47E						
	083° 45 NM	FL460 FL245 Class A	10	↓		
▲ETBUX 255423.80S 0261558.08E						
	083° 35 NM	FL460 FL245 Class A	10	↓		
▲PEDIL 253933.67S 0265134.05E						
	114° 32 NM	FL460 FL245 Class A	10	↓		
▲AVAGO 254309.90S 0272639.36E						

Q11						
▲AVUSA 272955.10S 0221330.09E						
	278° 098° 76.5 NM	FL245 FL200 Class A	10	↑	↓	
▲UDLON 274350.57S 0204847.32E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	278° 099° 118.7 NM	FL245 FL200 Class A	10	↑	↓	
▲ITKOT 280341.17S 0183640.38E						
	273° 093° 14.3 NM	FL245 FL200 Class A	10	↑	↓	
▲EGTAR 280738.17S 0182105.08E						
	273° 093° 12.8 NM	FL245 FL200 Class A	10	↑	↓	
▲ETUPO 281107.96S 0180709.80E						
	273° 093° 12.7 NM	FL245 FL200 Class A	10	↑	↓	
▲ITNOX 281434.29S 0175321.38E						
	273° 093° 14.9 NM	FL245 FL200 Class A	10	↑	↓	
▲EKBON 281834.94S 0173706.30E						
	273° 094° 44.6 NM	FL245 FL200 Class A	10	↑	↓	
▲ANTIL 283022.76S 0164820.05E						
	274° 094° 14.9 NM	FL245 FL200 Class A	10	↑	↓	
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	307° 127° 14.9 NM	FL245 FL200 Class A	10	↑	↓	
▲PAREK 282943.84S 0161557.51E						
	307° 127° 70.5 NM	FL245 FL200 Class A	10	↑	↓	
▲OKTEL 280753.81S 0150000.00E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	307° 127° 24.5 NM	FL245 FL200 Class A	10	↑	↓	
▲ANVAR 280009.00S 0143344.45E						
	307° 127° 15.0 NM	FL245 FL200 Class A	10	↑	↓	
▲UBVER 275521.71S 0141740.93E						
	307° 127° 15.0 NM	FL245 FL200 Class A	10	↑	↓	
▲EGRAP 275037.51S 0140136.97E						

UQ11						
▲AVUSA 272955.10S 0221330.09E						
	278° 098° 76.5 NM	FL460 FL245 Class A	10	↑	↓	
▲UDLON 274350.57S 0204847.32E						
	278° 099° 118.7 NM	FL460 FL245 Class A	10	↑	↓	
▲ITKOT 280341.17S 0183640.38E						
	273° 093° 14.3 NM	FL460 FL245 Class A	10	↑	↓	
▲EGTAR 280738.17S 0182105.08E						
	273° 093° 12.8 NM	FL460 FL245 Class A	10	↑	↓	
▲ETUPO 281107.96S 0180709.80E						
	273° 093° 12.7 NM	FL460 FL245 Class A	10	↑	↓	
▲ITNOX 281434.29S 0175321.38E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	273º 093º 14.9 NM	FL460 FL245 Class A	10	↑	↓	
▲EKBON 281834.94S 0173706.30E						
	273º 094º 44.6 NM	FL460 FL245 Class A	10	↑	↓	
▲ANTIL 283022.76S 0164820.05E						
	274º 094º 14.9 NM	FL460 FL245 Class A	10	↑	↓	
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	307º 127º 14.9 NM	FL460 FL245 Class A	10	↑	↓	
▲PAREK 282943.84S 0161557.51E						
	307º 127º 70.5 NM	FL460 FL245 Class A	10	↑	↓	
▲OKTEL 280753.81S 0150000.00E						
	307º 127º 24.5 NM	FL460 FL245 Class A	10	↑	↓	
▲ANVAR 280009.00S 0143344.45E						
	307º 127º 15.0 NM	FL460 FL245 Class A	10	↑	↓	
▲UBVER 275521.71S 0141740.93E						
	307º 127º 15.0 NM	FL460 FL245 Class A	10	↑	↓	
▲EGRAP 275037.51S 0140136.97E						

Q1		
▲NESAN 252948.88S 0280705.56E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	027º 41 NM	FL245 FL200 Class A	10	↓		
▲IMKUP 244915.70S 0281420.65E						
	018º 72 NM	FL245 FL200 Class A	10	↓		
▲IMPOD 233643.21S 0281607.85E						
	016º 59 NM	FL245 FL200 Class A	10	↓		
▲TAVLA 223724.00S 0281736.00E						

UQ1						
▲NESAN 252948.88S 0280705.56E						
	027º 41 NM	FL460 FL245 Class A	10	↓		
▲IMKUP 244915.70S 0281420.65E						
	018º 72 NM	FL460 FL245 Class A	10	↓		
▲IMPOD 233643.21S 0281607.85E						
	016º 59 NM	FL460 FL245 Class A	10	↓		
▲TAVLA 223724.00S 0281736.00E						

Z6						
▲RAGUL 262654.35S 0273443.89E						
	274º 55 NM	FL245 FL200 Class A	10		↓	
▲EXOKU 264010.40S 0263440.15E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	***2***	***3***	***4***	***5***		***6***
	275º 62 NM	FL245 FL200 Class A	10		↓	
▲UNGEK 265428.31S 0252726.37E						
	276º 176 NM	FL245 FL200 Class A	10		↓	
▲AVUSA 272955.10S 0221330.09E						

UZ6						
▲RAGUL 262654.35S 0273443.89E						
	274º 55 NM	FL460 FL245 Class A	10		↓	
▲EXOKU 264010.40S 0263440.15E						
	275º 62 NM	FL460 FL245 Class A	10		↓	
▲UNGEK 265428.31S 0252726.37E						
	276º 176 NM	FL460 FL245 Class A	10		↓	
▲AVUSA 272955.10S 0221330.09E						

Z7						
▲TAVLA 223724.00S 0281736.00E						
	179º 74 NM	FL245 FL200 Class A	10		↓	
▲UTIGU 234947.99S 0283708.32E						
	184º 68 NM	FL245 FL200 Class A	10		↓	
▲NESAG 245648.20S 0285103.54E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	208° 31 NM	FL245 FL200 Class A	10		↓	
▲OKPIT 252744.22S 0284432.56E						

UZ7						
▲TAVLA 223724.00S 0281736.00E						
	179° 74 NM	FL460 FL245 Class A	10		↓	
▲UTIGU 234947.99S 0283708.32E						
	184° 68 NM	FL460 FL245 Class A	10		↓	
▲NESAG 245648.20S 0285103.54E						
	208° 31 NM	FL460 FL245 Class A	10		↓	
▲OKPIT 252744.22S 0284432.56E						

Z8						
▲AVAVA 265456.32S 0292710.11E						
	147° 63 NM	FL245 FL200 Class A	10	↓		
▲ETMAL 273422.09S 0302300.51E						
	148° 114 NM	FL245 FL200 Class A	10	↓		
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						

UZ8		
▲AVAVA 265456.32S 0292710.11E		

Route designator Name of significant points Coordinates	*Route MAG Track MAG DIST*	*Upper limit Lower limit Classification*	*Lateral limits NM*	*Direction of cruising levels*		*Remarks Controlling unit Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	147° 63 NM	FL460 FL245 Class A	10	↓		
▲ETMAL 273422.09S 0302300.51E						
	148° 114 NM	FL460 FL245 Class A	10	↓		
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						

Z9						
▲ALENI 265835.54S 0320937.89E						
	301° 75 NM	FL245 FL200 Class A	10		↓	
▲APNON 264537.86S 0304652.79E						
	299° 62 NM	FL245 FL200 Class A	10		↓	
▲TETIK 263414.18S 0293825.33E						
	278° 42 NM	FL245 FL200 Class A	10		↓	
▲STANDERTON (STV) VOR 264148.19S 0285202.86E						

UZ9						
▲ALENI 265835.54S 0320937.89E						
	301° 75 NM	FL460 FL245 Class A	10		↓	
▲APNON 264537.86S 0304652.79E						
	299° 62 NM	FL460 FL245 Class A	10		↓	
▲TETIK 263414.18S 0293825.33E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	278° 42 NM	FL460 FL245 Class A	10		↓	
▲STANDERTON (STV) VOR 264148.19S 0285202.86E						
Z10						
▲ETOSA 244250.40S 0260312.98E						
	158° 37 NM	FL245 FL200 Class A	10	↓		
▲UDBUL 251203.81S 0262800.52E						
	158° 35 NM	FL245 FL200 Class A	10	↓		
▲PEDIL 253933.67S 0265134.05E						
UZ10						
▲ETOSA 244250.40S 0260312.98E						
	158° 37 NM	FL460 FL245 Class A	10	↓		
▲UDBUL 251203.81S 0262800.52E						
	158° 35 NM	FL460 FL245 Class A	10	↓		
▲PEDIL 253933.67S 0265134.05E						
Z11						
▲GREEFSWALD (GWV) VOR 221444.60S 0292437.21E						
	204° 112 NM	FL245 FL200 Class A	10		↓	
▲DUMGO 240510.31S 0290150.64E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	206° 52 NM	FL245 FL200 Class A	10		↓	
▲NESAG 245648.20S 0285103.54E						

UZ11						
▲GREEFSWALD (GWV) VOR 221444.60S 0292437.21E						
	204° 112 NM	FL460 FL245 Class A	10		↓	
▲DUMGO 240510.31S 0290150.64E						
	206° 52 NM	FL460 FL245 Class A	10		↓	
▲NESAG 245648.20S 0285103.54E						

Z13						
▲XUGOL 341034.13S 0201127.59E						
	111° 109 NM	FL245 FL200 Class A	10	↓		
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	109° 224 NM	FL245 FL200 Class A	10	↓		
▲XAKIM 332622.65S 0264747.86E						
	108° 7 NM	FL245 FL200 Class A	10	↓		
▲ETKON 332508.00S 0265621.52E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UZ13						
▲XUGOL 341034.13S 0201127.59E						
	111° 109 NM	FL460 FL245 Class A	10	↓		
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	109° 224 NM	FL460 FL245 Class A	10	↓		
▲XAKIM 332622.65S 0264747.86E						
	108° 7 NM	FL460 FL245 Class A	10	↓		
▲ETKON 332508.00S 0265621.52E						

Z16						
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	213° 49 NM	FL245 FL200 Class A	10		↓	
▲NEVEN 272859.15S 0280257.10E						

UZ16						
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	213° 49 NM	FL460 FL245 Class A	10		↓	
▲NEVEN 272859.15S 0280257.10E						

Z17						
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	163º 50 NM	FL245 FL200 Class A	10	↓		
▲GEROX 272249.01S 0284943.11E						

UZ17						
▲HEIDELBERG (HGV) VOR 264148.50S 0281659.39E						
	163º 50 NM	FL460 FL245 Class A	10	↓		
▲GEROX 272249.01S 0284943.11E						

Z18						
▲OVALA 264903.39S 0283744.70E						
	237º 50 NM	FL245 FL200 Class A	10		↓	
▲NEVEN 272859.15S 0280257.10E						

UZ18						
▲OVALA 264903.39S 0283744.70E						
	237º 50 NM	FL460 FL245 Class A	10		↓	
▲NEVEN 272859.15S 0280257.10E						

Z21						
▲VASUR 253346.76S 0275335.87E						
	338º 40 NM	FL245 FL200 Class A	10		↓	
▲ITROL 250207.97S 0272605.37E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UZ21						
▲VASUR 253346.76S 0275335.87E						
	338º 40 NM	FL460 FL245 Class A	10		↓	
▲ITROL 250207.97S 0272605.37E						

Z22						
▲EVIPI 245200.20S 0275054.35E						
	219º 56 NM	FL245 FL200 Class A	10		↓	
▲AVAGO 254309.90S 0272639.36E						

UZ22						
▲EVIPI 245200.20S 0275054.35E						
	219º 56 NM	FL460 FL245 Class A	10		↓	
▲AVAGO 254309.90S 0272639.36E						

Z23						
▲VASUR 253346.76S 0275335.87E						
	041º 48 NM	FL245 FL200 Class A	10	↓		
▲IMKUP 244915.70S 0281420.65E						

UZ23						
▲VASUR 253346.76S 0275335.87E						
	041º 48 NM	FL460 FL245 Class A	10	↓		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲IMKUP 244915.70S 0281420.65E						

Z26						
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						
	257º 16 NM	FL245 FL200 Class A	10		↓	
▲ERDAS 332450.10S 0191112.85E						

UZ26						
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						
	257º 16 NM	FL460 FL245 Class A	10		↓	
▲ERDAS 332450.10S 0191112.85E						

UQ2						
▲EGMEN 253845.74S 0285805.53E						
	065º 18 NM	FL460 FL245 Class A	10	↓		
▲UNDIT 252647.15S 0291216.04E						
	065º 53 NM	FL460 FL245 Class A	10	↓		
▲NEVUK 245020.43S 0295524.24E						
	065º 10 NM	FL460 FL245 Class A	10	↓		
▲XARMA 244331.61S 0300328.12E						
	064º 10 NM	FL460 FL245 Class A	10	↓		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲XATNU 243642.99S 0301131.77E						
	064° 102 NM	FL460 FL245 Class A	10	↓		
▲EPSEK 232715.00S 0313345.00E						

Q2						
▲EGMEN 253845.74S 0285805.53E						
	065° 18 NM	FL245 FL200 Class A	10	↓		
▲UNDIT 252647.15S 0291216.04E						
	065° 53 NM	FL245 FL200 Class A	10	↓		
▲NEVUK 245020.43S 0295524.24E						
	065° 10 NM	FL245 FL200 Class A	10	↓		
▲XARMA 244331.61S 0300328.12E						
	064° 10 NM	FL245 FL200 Class A	10	↓		
▲XATNU 243642.99S 0301131.77E						
	064° 102 NM	FL245 FL200 Class A	10	↓		
▲EPSEK 232715.00S 0313345.00E						

T122						
▲EXOBI 260252.27S 0290851.32E						
	106° 79 NM	FL245 FL200 Class A	10	↓		
▲ESVEV 255913.02S 0303619.18E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	106º 28 NM	FL245 FL200 Class A	10	↓		
▲IMKID 255743.38S 0310701.21E						
	106º 6 NM	FL245 FL200 Class A	10	↓		
▲DULPU 255723.71S 0311325.26E						
	106º 29 NM	FL245 FL200 Class A	10	↓		
▲UVITI 255542.74S 0314511.76E						
	106º 12 NM	FL245 FL200 Class A	10	↓		
▲ORNAD 255500.00S 0315800.00E						

UT122						
▲EXOBI 260252.27S 0290851.32E						
	106º 79 NM	FL460 FL245 Class A	10	↓		
▲ESVEV 255913.02S 0303619.18E						
	106º 28 NM	FL460 FL245 Class A	10	↓		
▲IMKID 255743.38S 0310701.21E						
	106º 6 NM	FL460 FL245 Class A	10	↓		
▲DULPU 255723.71S 0311325.26E						
	106º 29 NM	FL460 FL245 Class A	10	↓		
▲UVITI 255542.74S 0314511.76E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	106º 12 NM	FL460 FL245 Class A	10	↓		
▲ORNAD 255500.00S 0315800.00E						

T125						
▲ANVAK 254020.71S 0315950.23E						
	309º 21NM	FL245 FL200 Class A	10		↓	
▲GAGNO 253309.23S 0313749.16E						
	309º 30 NM	FL245 FL200 Class A			↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						

UT125						
▲ANVAK 254020.71S 0315950.23E						
	309º 21NM	FL460 FL245 Class A	10		↓	
▲GAGNO 253309.23S 0313749.16E						
	309º 30 NM	FL460 FL245 Class A			↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						

T433						
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	322º 142º 70 NM	FL245 FL200 Class A	10	↑	↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲XARMA 244331.61S 0300328.12E						
	321º 141º 25 NM	FL245 FL200 Class A	10	↑	↓	
▲UTUPU 242925.25S 0294048.28E						
	320º 140º 43 NM	FL245 FL200 Class A	10	↑	↓	
▲DUMGO 240510.31S 0290150.64E						
	320º 139º 27 NM	FL245 FL200 Class A	10	↑	↓	
▲UTIGU 234947.99S 0283708.32E						
	319º 139º 23 NM	FL245 FL200 Class A	10	↑	↓	
▲IMPOD 233643.21S 0281607.85E						
	319º 138º 10 NM	FL245 FL200 Class A	10	↑	↓	
▲EKBAP 233100.95S 0280657.94E						
	318º 138º 32.46 NM	FL245 FL200 Class A	10	↑	↓	
▲ETMIT 231248.49S 0273742.69E						

UT433						
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	322º 142º 70 NM	FL460 FL245 Class A	10	↑	↓	
▲XARMA 244331.61S 0300328.12E						
	321º 141º 25 NM	FL460 FL245 Class A	10	↑	↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲UTUPU 242925.25S 0294048.28E						
	320º 140º 43 NM	FL460 FL245 Class A	10	↑	↓	
▲DUMGO 240510.31S 0290150.64E						
	320º 139º 27 NM	FL460 FL245 Class A	10	↑	↓	
▲UTIGU 234947.99S 0283708.32E						
	319º 139º 23 NM	FL460 FL245 Class A	10	↑	↓	
▲IMPOD 233643.21S 0281607.85E						
	319º 138º 10 NM	FL460 FL245 Class A	10	↑	↓	
▲EKBAP 233100.95S 0280657.94E						
	318º 138º 32.46 NM	FL460 FL245 Class A	10	↑	↓	
▲ETMIT 231248.49S 0273742.69E						

T444						
▲DUTGI 251743.77S 0320125.26E						
	282º 50 NM	FL245 FL200 Class A	10		↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						

UT444						
▲DUTGI 251743.77S 0320125.26E						
	282º 50 NM	FL460 FL245 Class A	10		↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						

T446						
▲UNPEN 250643.41S 0320157.14E						
	270º 53 NM	FL245 FL200 Class A	10		↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	273º 30 NM	FL245 FL200 Class A	10		↓	
▲DODOS 253032.17S 0303437.62E						
	273º 77 NM	FL245 FL200 Class A	10		↓	
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						

UT446						
▲UNPEN 250643.41S 0320157.14E						
	270º 53 NM	FL460 FL245 Class A	10		↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	273º 30 NM	FL460 FL245 Class A	10		↓	
▲DODOS 253032.17S 0303437.62E						
	273º 77 NM	FL460 FL245 Class A	10		↓	
▲WITBANK (WIV) VOR 254946.29S 0291141.13E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Q4						
▲EXOBI 260252.27S 0290851.32E						
	120° 90 NM	FL245 FL200 Class A	10	↓		
▲DUKRA 262024.43S 0304711.57E						
	129° 31 NM	FL245 FL200 Class A	10	↓		
▲IXESU 263038.00S 0311959.00E						
	142° 53 NM	FL245 FL200 Class A	10	↓		
▲ALENI 265835.54S 0320937.89E						

UQ4						
▲EXOBI 260252.27S 0290851.32E						
	120° 90 NM	FL460 FL245 Class A	10	↓		
▲DUKRA 262024.43S 0304711.57E						
	129° 31 NM	FL460 FL245 Class A	10	↓		
▲IXESU 263038.00S 0311959.00E						
	142° 53 NM	FL460 FL245 Class A	10	↓		
▲ALENI 265835.54S 0320937.89E						

Q5						
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						
	144º 325º 64 NM	FL245 FL200 Class A	10	↓	↑	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲ESRET 291639.66S 0330805.46E						
	145º 326º 50 NM	FL245 FL200 Class A	10	↓	↑	
▲GEVIS 294137.49S 0335737.56E						

UQ5						
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						
	144º 325º 64 NM	FL460 FL245 Class A	10	↓	↑	
▲ESRET 291639.66S 0330805.46E						
	145º 326º 50 NM	FL460 FL245 Class A	10	↓	↑	
▲GEVIS 294137.49S 0335737.56E						

Q6						
▲IMKUP 244915.70S 0281420.65E						
	036º 63 NM	FL245 FL200 Class A	10	↓		
▲UTIGU 234947.99S 0283708.32E						
	040º 104 NM	FL245 FL200 Class A	10	↓		
▲GREEFSWALD (GWV) VOR 221444.60S 0292437.21E						

UQ6						
▲IMKUP 244915.70S 0281420.65E						
	036º 63 NM	FL460 FL245 Class A	10	↓		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲UTIGU 234947.99S 0283708.32E						
	040º 104 NM	FL460 FL245 Class A	10	↓		
▲GREEFSWALD (GWV) VOR 221444.60S 0292437.21E						

Q17						
▲GREYTOWN (GYV) VOR/DME 290728.99S 0303508.05E						
	40.6 NM	FL245 FL200 Class A	10	↓	↑	
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	138.62NM	FL245 FL200 Class A	10	↓	↑	
▲ANVED 310939.47S 0330634.63E						

UQ17						
▲GREYTOWN (GYV) VOR/DME 290728.99S 0303508.05E						
	40.6 NM	FL460 FL245 Class A	10	↓	↑	
▲KING SHAKA (TGV) VOR/DME 293640.20S 0310729.03E						
	138.62 NM	FL460 FL245 Class A	10	↓	↑	
▲ANVED 310939.47S 0330634.63E						

Q20		
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E		

Route designator Name of significant points Coordinates	*Route MAG Track MAG DIST*	*Upper limit Lower limit Classification*	*Lateral limits NM*	*Direction of cruising levels*		*Remarks Controlling unit Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	323º 77 NM	FL245 FL200 Class A	10		↓	
△ESVIR 280518.54S 0304943.75E						
	322º 48 NM	FL245 FL200 Class A	10		↓	
▲EVARI 274048.91S 0300315.19E						
	322º 56 NM	FL245 FL200 Class A	10		↓	
▲EPSAK 271154.98S 0290941.52E						

UQ20						
▲RICHARDS BAY (RBV) VOR/DME 284426.49S 0320536.91E						
	323º 77 NM	FL460 FL245 Class A	10		↓	
△ESVIR 280518.54S 0304943.75E						
	322º 48 NM	FL460 FL245 Class A	10		↓	
▲EVARI 274048.91S 0300315.19E						
	322º 56 NM	FL460 FL245 Class A	10		↓	
▲EPSAK 271154.98S 0290941.52E						

Q21						
▲ALENI 265835.54S 0320937.89E						
	144º 326º 159.2 NM	FL245 FL200 Class A	10	↓	↑	
▲EGSOX 282331.94S 0344131.38E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UQ21						
▲ALENI 265835.54S 0320937.89E						
	144° 326° 159.2 NM	FL460 FL245 Class A	10	↓	↑	
▲EGSOX 282331.94S 0344131.38E						

Q23						
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						
	219° 135 NM	FL245 FL200 Class A	10		↓	
▲NEXIT 303127.92S 0202233.37E						
	222° 118 NM	FL245 FL200 Class A	10		↓	
▲XALVA 322228.31S 0193400.22E						
	224° 28 NM	FL245 FL200 Class A	10		↓	
▲OKLOK 324829.22S 0192237.92E						
	197° 27 NM	FL245 FL200 Class A	10		↓	
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						

UQ23						
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						
	219° 135 NM	FL460 FL245 Class A	10		↓	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲NEXIT 303127.92S 0202233.37E						
	222º 118 NM	FL460 FL245 Class A	10		↓	
▲XALVA 322228.31S 0193400.22E						
	224º 28 NM	FL460 FL245 Class A	10		↓	
▲OKLOK 324829.22S 0192237.92E						
	197º 27 NM	FL460 FL245 Class A	10		↓	
▲CERES (CSV) VOR/DME 331508.27S 0192617.22E						

Q24						
▲VASUR 253346.76S 0275335.87E						
	316º 44 NM	FL245 FL200 Class A	10		↓	
▲EVOPO 251224.18S 0271138.40E						
	312º 33 NM	FL245 FL200 Class A	10		↓	
▲DUSLI 245824.27S 0263901.66E						
	311º 36NM	FL245 FL200 Class A	10		↓	
▲ETOSA 244250.40S 0260312.98E						

UQ24						
▲VASUR 253346.76S 0275335.87E						
	316º 44 NM	FL460 FL245 Class A	10		↓	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲EVOPO 251224.18S 0271138.40E						
	312º 33 NM	FL460 FL245 Class A	10		↓	
▲DUSLI 245824.27S 0263901.66E						
	311º 36NM	FL460 FL245 Class A	10		↓	
▲ETOSA 244250.40S 0260312.98E						

Q25						
▲ITROL 250207.97S 0272605.37E						
	334º 153º 57 NM	FL245 FL200 Class A	10	↑	↓	
▲RUDAS 241924.00S 0264406.00E						

UQ25						
▲ITROL 250207.97S 0272605.37E						
	334º 153º 57 NM	FL460 FL245 Class A	10	↑	↓	
▲RUDAS 241924.00S 0264406.00E						

Q28						
▲GEROX 272249.01S 0284943.11E						
	172º 40 NM	FL245 FL200 Class A	10	↓		
▲TESUN 275744.49S 0291104.73E						
	173º 106 NM	FL245 FL200 Class A	10	↓		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲GETOK 293046.69S 0300917.83E						

UQ28						
▲GEROX 272249.01S 0284943.11E						
	172º 40 NM	FL460 FL245 Class A	10	↓		
▲TESUN 275744.49S 0291104.73E						
	173º 106 NM	FL460 FL245 Class A	10	↓		
▲GETOK 293046.69S 0300917.83E						

Q29						
▲OKTAN 301758.32S 0303453.34E						
	240º 30 NM	FL245 FL200 Class A	10		↓	
▲UTIMO 304240.38S 0301506.53E						
	249º 64 NM	FL245 FL200 Class A	10		↓	
▲APLIP 312917.17S 0292312.75E						
	250º 73 NM	FL245 FL200 Class A	10		↓	
▲ETOVU 322122.29S 0282343.33E						
	258º 104 NM	FL245 FL200 Class A	10		↓	
▲XAKIM 332622.65S 0264747.86E						
	259º 37 NM	FL245 FL200 Class A	10		↓	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲EPVUV 334903.31S 0261320.42E						

UQ29						
▲OKTAN 301758.32S 0303453.34E						
	240º 30 NM	FL460 FL245 Class A	10		↓	
▲UTIMO 304240.38S 0301506.53E						
	249º 64 NM	FL460 FL245 Class A	10		↓	
▲APLIP 312917.17S 0292312.75E						
	250º 73 NM	FL460 FL245 Class A	10		↓	
▲ETOVU 322122.29S 0282343.33E						
	258º 104 NM	FL460 FL245 Class A	10		↓	
▲XAKIM 332622.65S 0264747.86E						
	259º 37 NM	FL460 FL245 Class A	10		↓	
▲EPVUV 334903.31S 0261320.42E						

Q30						
▲ITKIT 332137.27S 0260950.41E						
	079º 112 NM	FL245 FL200 Class A	10	↓		
▲AXOXI 321215.60S 0275404.32E						
	075º 85 NM	FL245 FL200 Class A	10	↓		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲NIBOP 311515.73S 0290750.85E						
	073º 63 NM	FL245 FL200 Class A	10	↓		
▲IMLID 303238.38S 0300129.69E						

UQ30						
▲ITKIT 332137.27S 0260950.41E						
	079º 112 NM	FL460 FL245 Class A	10	↓		
▲AXOXI 321215.60S 0275404.32E						
	075º 85 NM	FL460 FL245 Class A	10	↓		
▲NIBOP 311515.73S 0290750.85E						
	073º 63 NM	FL460 FL245 Class A	10	↓		
▲IMLID 303238.38S 0300129.69E						

Q31						
▲ESPOG 331104.75S 0265046.66E						
	280º 36 NM	FL245 FL200 Class A	10		↓	
▲ITKIT 332137.27S 0260950.41E						
	289º 145 NM	FL245 FL200 Class A	10		↓	
▲GABGO 334003.20S 0231723.41E						
	289º 46 NM	FL245 FL200 Class A	10		↓	
▲ETGAX 334524.05S 0222220.04E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	290º 70 NM	FL245 FL200 Class A	10		↓	
▲UNRES 335243.30S 0205856.24E						
	290º 59 NM	FL245 FL200 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

UQ31						
▲ESPOG 331104.75S 0265046.66E						
	280º 36 NM	FL460 FL245 Class A	10		↓	
▲ITKIT 332137.27S 0260950.41E						
	289º 145 NM	FL460 FL245 Class A	10		↓	
▲GABGO 334003.20S 0231723.41E						
	289º 46 NM	FL460 FL245 Class A	10		↓	
▲ETGAX 334524.05S 0222220.04E						
	290º 70 NM	FL460 FL245 Class A	10		↓	
▲UNRES 335243.30S 0205856.24E						
	290º 59 NM	FL460 FL245 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

Q33		
▲CHIEF DAWID STUURMAN AIRPORT (PEV) VOR/DME 335933.01S 0253620.75E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE* *Logon address*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	231º 052º 60 NM	FL245 FL200 Class A	10	↑	↓	
△EKBOX 345446.09S 0250741.54E						
	230º 052º 133.2 NM	FL245 FL200 Class A	10	↑	↓	
▲EPMAK 365812.62S 0240531.84E						

UQ33						
▲CHIEF DAWID STUURMAN AIRPORT (PEV) VOR/DME 335933.01S 0253620.75E						
	231º 052º 60 NM	FL460 FL245 Class A	10	↑	↓	
△EKBOX 345446.09S 0250741.54E						
	230º 052º 133.2 NM	FL460 FL245 Class A	10	↑	↓	
▲EPMAK 365812.62S 0240531.84E						

Q34						
▲IMSOM 335603.90S 0180031.24E						
	347º 36 NM	FL245 FL200 Class A	10		↓	
▲UVIKU 332734.47S 0173425.87E						

UQ34						
▲IMSOM 335603.90S 0180031.24E						
	347º 36 NM	FL460 FL245 Class A	10		↓	
▲UVIKU 332734.47S 0173425.87E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Q35						
▲UVIKU 332734.47S 0173425.87E						
	168º 48 NM	FL245 FL200 Class A	10	↓		
▲ASPIK 340618.32S 0180800.81E						

UQ35						
▲UVIKU 332734.47S 0173425.87E						
	168º 48 NM	FL460 FL245 Class A	10	↓		
▲ASPIK 340618.32S 0180800.81E						

Q36						
▲IMSOM 335603.90S 0180031.24E						
	283º 50 NM	FL245 FL200 Class A	10		↓	
▲APKIN 340500.64S 0170059.32E						

UQ36						
▲IMSOM 335603.90S 0180031.24E						
	283º 50 NM	FL460 FL245 Class A	10		↓	
▲APKIN 340500.64S 0170059.32E						

Q37						
▲APKIN 340500.64S 0170059.32E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	115° 56 NM	FL245 FL200 Class A	10	↓		
▲ASPIK 340618.32S 0180800.81E						

UQ37						
▲APKIN 340500.64S 0170059.32E						
	115° 56 NM	FL460 FL245 Class A	10	↓		
▲ASPIK 340618.32S 0180800.81E						

Q40						
▲NESAN 252948.88S 0280705.56E						
	355° 40 NM	FL245 FL200 Class A	10		↓	
▲EVIPI 245200.20S 0275054.35E						

UQ40						
▲NESAN 252948.88S 0280705.56E						
	355° 40 NM	FL460 FL245 Class A	10		↓	
▲EVIPI 245200.20S 0275054.35E						

Q41						
▲VASUR 253346.76S 0275335.87E						
	014° 42 NM	FL245 FL200 Class A	10	↓		
▲EVIPI 245200.20S 0275054.35E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UQ41						
▲VASUR 253346.76S 0275335.87E						
	014° 42 NM	FL460 FL245 Class A	10	↓		
▲EVIPI 245200.20S 0275054.35E						

Q42						
▲KODES 330840.00S 0184520.00E						
	081° 37 NM	FL245 FL200 Class A	10	↓		
▲OKLOK 324829.22S 0192237.92E						

UQ42						
▲KODES 330840.00S 0184520.00E						
	081° 37 NM	FL460 FL245 Class A	10	↓		
▲OKLOK 324829.22S 0192237.92E						

Q43						
▲KODES 330840.00S 0184520.00E						
	001° 169 NM	FL245 FL200 Class A	10	↓		
▲UTUMI 303219.28S 0172742.93E						
	358° 127 NM	FL245 FL200 Class A	10	↓		
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UQ43						
▲KODES 330840.00S 0184520.00E						
	001° 169 NM	FL460 FL245 Class A	10	↓		
▲UTUMI 303219.28S 0172742.93E						
	358° 127 NM	FL460 FL245 Class A	10	↓		
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						

Q44						
▲ITROL 250207.97S 0272605.37E						
	195° 41 NM	FL245 FL200 Class A	10		↓	
▲AVAGO 254309.90S 0272639.36E						

UQ44						
▲ITROL 250207.97S 0272605.37E						
	195° 41 NM	FL460 FL245 Class A	10		↓	
▲AVAGO 254309.90S 0272639.36E						

UN181						
▲TETUS 253134.40S 0253820.71E						
	113° 67 NM	FL460 FL200 Class A	10	↓		
▲PEDIL 253933.67S 0265134.05E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UN188						
▲UVIKU 332734.47S 0173425.87E						
	013° 178 NM	FL460 FL245 Class A	10	↓		
▲TEXAB 303203.80S 0165619.09E						
	011° 119 NM	FL460 FL245 Class A	10	↓		
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	002° 182° 15 NM	FL460 FL245 Class A	10	↓	↑	
▲ETMUS 281959.79S 0162705.83E						
	002° 181° 51 NM	FL460 FL245 Class A	10	↓	↑	
▲XUDAN 273041.21S 0161006.65E						

UN186						
▲KODES 330840.00S 0184520.00E						
	015° 158 NM	FL460 FL245 Class A	10	↓		
▲XAVMU 303228.70S 0181704.20E						
	013° 124 NM	FL460 FL245 Class A	10	↓		
▲DUDMO 282926.82S 0175551.82E						
	013° 15 NM	FL460 FL245 Class A	10	↓		
▲ITNOX 281434.29S 0175321.38E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	015º 15 NM	FL460 FL245 Class A	10	↓		
▲UVILA 275940.06S 0175212.23E						
	014º 29 NM	FL460 FL245 Class A	10	↓		
▲NEVAR 273048.35S 0174957.80E						

UN185						
▲KEBAT 273000.00S 0181800.00E						
	194º 23 NM	FL460 FL245 Class A	10		↓	
▲MITAR 275243.46S 0181951.86E						
	194º 15 NM	FL460 FL245 Class A	10		↓	
▲EGTAR 280738.17S 0182105.08E						
	188º 15 NM	FL460 FL245 Class A	10		↓	
▲UNGOS 282225.46S 0182410.84E						
	188º 132 NM	FL460 FL245 Class A	10		↓	
▲OKRUL 303223.92S 0185203.44E						
	191º 104 NM	FL460 FL245 Class A	10		↓	
▲GEXIP 321459.57S 0191458.08E						
	192º 34 NM	FL460 FL245 Class A	10		↓	
▲OKLOK 324829.22S 0192237.92E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Z27						
▲TAVLA 223724.00S 0281736.00E						
	204° 54.3 NM	FL245 FL200 Class A	10		↓	
▲EKBAP 233100.95S 0280657.94E						
	204° 82 NM	FL245 FL200 Class A	10		↓	
▲EVIPI 245200.20S 0275054.35E						

UZ27						
▲TAVLA 223724.00S 0281736.00E						
	204° 54.3 NM	FL460 FL245 Class A	10		↓	
▲EKBAP 233100.95S 0280657.94E						
	204° 82 NM	FL460 FL245 Class A	10		↓	
▲EVIPI 245200.20S 0275054.35E						

Z29						
▲GREYTOWN (GYV) VOR/DME 290728.99S 0303508.05E						
	349° 93 NM	FL245 FL200 Class A	10		↓	
▲BEBAS 274918.48S 0293654.69E						
	347° 44 NM	FL245 FL200 Class A	10		↓	
▲EPSAK 271154.98S 0290941.52E						
	352° 34 NM	FL245 FL200 Class A	10		↓	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲STANDERTON (STV) VOR 264148.19S 0285202.86E						

UZ29						
▲GREYTOWN (GYV) VOR/DME 290728.99S 0303508.05E						
	349º 93 NM	FL460 FL245 Class A	10		↓	
▲BEBAS 274918.48S 0293654.69E						
	347º 44 NM	FL460 FL245 Class A	10		↓	
▲EPSAK 271154.98S 0290941.52E						
	352º 34 NM	FL460 FL245 Class A	10		↓	
▲STANDERTON (STV) VOR 264148.19S 0285202.86E						

Z33						
▲EPSEK 232715.00S 0313345.00E						
	110.6 NM	FL245 FL200 Class A	10		↓	
▲TIDUP 242415.07S 0295011.79E						
	10 NM	FL245 FL200 Class A	10		↓	
▲UTUPU 242925.25S 0294048.28E						
	10 NM	FL245 FL200 Class A	10		↓	
▲APMUX 243435.59S 0293124.49E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	42.9 NM	FL245 FL200 Class A	10		↓	
▲NESAG 245648.20S 0285103.54E						

UZ33						
▲EPSEK 232715.00S 0313345.00E						
	110.6 NM	FL460 FL245 Class A	10		↓	
▲TIDUP 242415.07S 0295011.79E						
	10 NM	FL460 FL245 Class A	10		↓	
▲UTUPU 242925.25S 0294048.28E						
	10 NM	FL460 FL245 Class A	10		↓	
▲APMUX 243435.59S 0293124.49E						
	42.9 NM	FL460 FL245 Class A	10		↓	
▲NESAG 245648.20S 0285103.54E						

Z36						
▲TEVAP 244430.00S 0320006.00E						
	249° 070° 42 NM	FL245 FL200 Class A	10	↑	↓	
▲DUSKO 251028.74S 0312401.70E						
	250° 070° 20 NM	FL245 FL200 Class A	10	↑	↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	235º 056º 30 NM	FL245 FL200 Class A	10	↑	↓	
▲TILIR 254652.27S 0304640.37E						
	236º 056º 8 NM	FL245 FL200 Class A	10	↑	↓	
▲OKRIP 255258.16S 0304133.91E						
	236º 056º 8 NM	FL245 FL200 Class A	10	↑	↓	
▲ESVEV 255913.02S 0303619.18E						
	236º 057º 41 NM	FL245 FL200 Class A	10	↑	↓	
▲UTSEV 263154.91S 0300837.61E						
	237º 059º 94 NM	FL245 FL200 Class A	10	↑	↓	
▲WARDEN (WRV) VOR 274629.26S 0290410.10E						
	239º 059º 15 NM	FL245 FL200 Class A	10	↑	↓	
▲IXARA 275827.43S 0285340.08E						
	264º 085º 24 NM	FL245 FL200 Class A	10	↑	↓	
▲OKDIN 280916.75S 0282923.84E						
	265º 085º 19 NM	FL245 FL200 Class A	10	↑	↓	
▲XORER 281735.22S 0281037.24E						
	265º 085º 30 NM	FL245 FL200 Class A	10	↑	↓	
▲IXEKI 283043.45S 0274036.85E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels* *Odd*	*Even*	*Remarks* *Controlling unit* *Frequency*
1	*2*	*3*	*4*	*5*		*6*
	265º 085º 17 NM	FL245 FL200 Class A	10	↑	↓	
▲EPTOT 283803.09S 0272343.09E						
	265º 086º 23 NM	FL245 FL200 Class A	10	↑	↓	
▲NIDIG 284806.79S 0270018.48E						
	270º 090º 11 NM	FL245 FL200 Class A	10	↑	↓	
▲UTONU 285216.19S 0264835.09E						
	264º 085º 30 NM	FL245 FL200 Class A	10	↑	↓	
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.30E						

UZ36						
▲TEVAP 244430.00S 0320006.00E						
	249º 070º 42 NM	FL460 FL245 Class A	10	↑	↓	
▲DUSKO 251028.74S 0312401.70E						
	250º 070º 20 NM	FL460 FL245 Class A	10	↑	↓	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	235º 056º 30 NM	FL460 FL245 Class A	10	↑	↓	
▲TILIR 254652.27S 0304640.37E						
	236º 056º 8 NM	FL460 FL245 Class A	10	↑	↓	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲OKRIP 255258.16S 0304133.91E						
	236º 056º 8 NM	FL460 FL245 Class A	10	↑	↓	
▲ESVEV 255913.02S 0303619.18E						
	236º 057º 41 NM	FL460 FL245 Class A	10	↑	↓	
▲UTSEV 263154.91S 0300837.61E						
	237º 059º 94 NM	FL460 FL245 Class A	10	↑	↓	
▲WARDEN (WRV) VOR 274629.26S 0290410.10E						
	239º 059º 15 NM	FL460 FL245 Class A	10	↑	↓	
▲IXARA 275827.43S 0285340.08E						
	264º 085º 24 NM	FL460 FL245 Class A	10	↑	↓	
▲OKDIN 280916.75S 0282923.84E						
	265º 085º 19 NM	FL460 FL245 Class A	10	↑	↓	
▲XORER 281735.22S 0281037.24E						
	265º 085º 30 NM	FL460 FL245 Class A	10	↑	↓	
▲IXEKI 283043.45S 0274036.85E						
	265º 085º 17 NM	FL460 FL245 Class A	10	↑	↓	
▲EPTOT 283803.09S 0272343.09E						
	265º 086º 23 NM	FL460 FL245 Class A	10	↑	↓	

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲NIDIG 284806.79S 0270018.48E						
	270° 090° 11 NM	FL460 FL245 Class A	10	↑	↓	
▲UTONU 285216.19S 0264835.09E						
	264° 085° 30 NM	FL460 FL245 Class A	10	↑	↓	
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.30E						

Q48						
▲APDAK 263303.54S 0290252.64E						
	154° 31 NM	FL245 FL200 Class A	10	↓		
▲AVAVA 265456.32S 0292710.11E						
	164° 56 NM	FL245 FL200 Class A	10	↓		
▲EVARI 274048.91S 0300315.19E						
	165° 48 NM	FL245 FL200 Class A	10	↓		
△APKIK 281949.54S 0303433.16E						
	167° 34 NM	FL245 FL200 Class A	10	↓		
▲APMAT 284723.78S 0305659.63E						

UQ48		
▲APDAK 263303.54S 0290252.64E		

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	154° 31 NM	FL460 FL245 Class A	10	↓		
▲AVAVA 265456.32S 0292710.11E						
	164° 56 NM	FL460 FL245 Class A	10	↓		
▲EVARI 274048.91S 0300315.19E						
	165° 48 NM	FL460 FL245 Class A	10	↓		
△APKIK 281949.54S 0303433.16E						
	167° 34 NM	FL460 FL245 Class A	10	↓		
▲APMAT 284723.78S 0305659.63E						

Q49						
▲OKRAV 335929.87S 0243612.57E						
	296° 111 NM	FL245 FL200 Class A	10		↓	
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	296° 50 NM	FL245 FL200 Class A	10		↓	
▲ETBUL 335956.49S 0212224.14E						
	297° 34 NM	FL245 FL200 Class A	10		↓	
▲APKAP 335918.93S 0204131.63E						
	297° 44 NM	FL245 FL200 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UQ49						
▲OKRAV 335929.87S 0243612.57E						
	296º 111 NM	FL460 FL245 Class A	10		↓	
▲GEORGE AIRPORT (GRV) VOR/DME 340026.46S 0222233.46E						
	296º 50 NM	FL460 FL245 Class A	10		↓	
▲ETBUL 335956.49S 0212224.14E						
	297º 34 NM	FL460 FL245 Class A	10		↓	
▲APKAP 335918.93S 0204131.63E						
	297º 44 NM	FL460 FL245 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

Q16						
▲EVIPI 245200.20S 0275054.35E						
	009º 99.6 NM	FL245 FL200 Class A	10	↓		
▲ETMIT 231248.49S 0273742.69E						

UQ16						
▲EVIPI 245200.20S 0275054.35E						
	009º 99.6 NM	FL460 FL245 Class A	10	↓		
▲ETMIT 231248.49S 0273742.69E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Z35						
▲ETMIT 231248.49S 0273742.69E						
	199º 109.49 NM	FL245 FL200 Class A	10		↓	
▲ITROL 250207.97S 0272605.37E						

UZ35						
▲ETMIT 231248.49S 0273742.69E						
	199º 109.49 NM	FL460 FL245 Class A	10		↓	
▲ITROL 250207.97S 0272605.37E						

Q52						
▲OKLOK 324829.22S 0192237.92E						
	072º 183 NM	FL245 FL200 Class A	10	↓		
▲APLEN 304538.77S 0220119.80E						
	069º 238 NM	FL245 FL200 Class A	10	↓		
▲GEPES 280036.99S 0251747.83E						
	068º 133 NM	FL245 FL200 Class A	10	↓		
▲ANIXU 263020.13S 0270738.66E						
	075º 25 NM	FL245 FL200 Class A	10	↓		
▲EGPOP 261653.97S 0273039.44E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UQ52						
▲OKLOK 324829.22S 0192237.92E						
	072º 183 NM	FL460 FL245 Class A	10	↓		
▲APLEN 304538.77S 0220119.80E						
	069º 238 NM	FL460 FL245 Class A	10	↓		
▲GEPES 280036.99S 0251747.83E						
	068º 133 NM	FL460 FL245 Class A	10	↓		
▲ANIXU 263020.13S 0270738.66E						
	075º 25 NM	FL460 FL245 Class A	10	↓		
▲EGPOP 261653.97S 0273039.44E						

Z30						
▲KODES 330840.00S 0184520.00E						
	049º 59 NM	FL245 FL200 Class A	10	↓		
▲GEXIP 321459.57S 0191458.08E						
	048º 113 NM	FL245 FL200 Class A	10	↓		
▲APKEK 303139.17S 0201015.32E						
	046º 139 NM	FL245 FL200 Class A	10	↓		
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						

Route designator *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
UZ30						
▲KODES 330840.00S 0184520.00E						
	049º 59 NM	FL460 FL245 Class A	10	↓		
▲GEXIP 321459.57S 0191458.08E						
	048º 113 NM	FL460 FL245 Class A	10	↓		
▲APKEK 303139.17S 0201015.32E						
	046º 139 NM	FL460 FL245 Class A	10	↓		
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						

Z37						
▲UTIMO 304240.38S 0301506.53E						
	259º 65 NM	FL245 FL200 Class A	10		↓	
▲NEXUL 312137.95S 0291448.76E						
	259º 85 NM	FL245 FL200 Class A	10		↓	
▲AXOXI 321215.60S 0275404.32E						
	275º 80 NM	FL245 FL200 Class A	10		↓	
▲XARVI 324125.16S 0262636.17E						
	275º 24 NM	FL245 FL200 Class A	10		↓	
▲XOXOR 325008.37S 0255939.92E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	276° 145 NM	FL245 FL200 Class A	10		↓	
▲GABGO 334003.20S 0231723.41E						

UZ37						
▲UTIMO 304240.38S 0301506.53E						
	259° 65 NM	FL460 FL245 Class A	10		↓	
▲NEXUL 312137.95S 0291448.76E						
	259° 85 NM	FL460 FL245 Class A	10		↓	
▲AXOXI 321215.60S 0275404.32E						
	275° 80 NM	FL460 FL245 Class A	10		↓	
▲XARVI 324125.16S 0262636.17E						
	275° 24 NM	FL460 FL245 Class A	10		↓	
▲XOXOR 325008.37S 0255939.92E						
	276° 145 NM	FL460 FL245 Class A	10		↓	
▲GABGO 334003.20S 0231723.41E						

Q56						
▲XUGOL 341034.13S 0201127.59E						
	117° 60 NM	FL245 FL200 Class A	10	↓		
▲AXEMU 341211.61S 0212400.41E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	117° 49 NM	FL245 FL200 Class A	10	↓		
▲UVGUK 341259.00S 0222247.68E						
	117° 112 NM	FL245 FL200 Class A	10	↓		
▲OKSET 341301.09S 0243821.03E						

UQ56						
▲XUGOL 341034.13S 0201127.59E						
	117° 60 NM	FL460 FL245 Class A	10	↓		
▲AXEMU 341211.61S 0212400.41E						
	117° 49 NM	FL460 FL245 Class A	10	↓		
▲UVGUK 341259.00S 0222247.68E						
	117° 112 NM	FL460 FL245 Class A	10	↓		
▲OKSET 341301.09S 0243821.03E						

Q58						
▲GABGO 334003.20S 0231723.41E						
	089° 164 NM	FL245 FL200 Class A	10	↓		
▲TIKER 322402.12S 0261016.18E						
	088° 28 NM	FL245 FL200 Class A	10	↓		
▲IMROG 321042.91S 0263914.43E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	087° 68 NM	FL245 FL200 Class A	10	↓		
▲EXABU 313756.12S 0274846.39E						
	087° 15 NM	FL245 FL200 Class A	10	↓		
▲TIDAX 313034.55S 0280413.34E						
	086° 52 NM	FL245 FL200 Class A	10	↓		
▲DULRI 310459.02S 0285639.08E						
	086° 64 NM	FL245 FL200 Class A	10	↓		
▲IMLID 303238.38S 0300129.69E						

UQ58						
▲GABGO 334003.20S 0231723.41E						
	089° 164 NM	FL460 FL245 Class A	10	↓		
▲TIKER 322402.12S 0261016.18E						
	088° 28 NM	FL460 FL245 Class A	10	↓		
▲IMROG 321042.91S 0263914.43E						
	087° 68 NM	FL460 FL245 Class A	10	↓		
▲EXABU 313756.12S 0274846.39E						
	087° 15 NM	FL460 FL245 Class A	10	↓		
▲TIDAX 313034.55S 0280413.34E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	086° 52 NM	FL460 FL245 Class A	10	↓		
▲DULRI 310459.02S 0285639.08E						
	086° 64 NM	FL460 FL245 Class A	10	↓		
▲IMLID 303238.38S 0300129.69E						

Z20						
▲ETBIN 321231.24S 0274145.21E						
	036° 35 NM	FL245 FL200 Class A	10	↓		
▲EXABU 313756.12S 0274846.39E						
	036° 14 NM	FL245 FL200 Class A	10	↓		
▲DUDVU 312352.27S 0275136.50E						
	035° 23 NM	FL245 FL200 Class A	10	↓		
▲XADUP 310048.50S 0275613.14E						
	035° 30 NM	FL245 FL200 Class A	10	↓		
▲OKREV 303135.33S 0280200.66E						
	034° 144 NM	FL245 FL200 Class A	10	↓		
▲OKDIN 280916.75S 0282923.84E						
	031° 10 NM	FL245 FL200 Class A	10	↓		
▲DUVPI 275912.05S 0283117.44E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	015º 31 NM	FL245 FL200 Class A	10	↓		
▲OKTEK 272835.55S 0282748.16E						

UZ20						
▲ETBIN 321231.24S 0274145.21E						
	036º 35 NM	FL460 FL245 Class A	10	↓		
▲EXABU 313756.12S 0274846.39E						
	036º 14 NM	FL460 FL245 Class A	10	↓		
▲DUDVU 312352.27S 0275136.50E						
	035º 23 NM	FL460 FL245 Class A	10	↓		
▲XADUP 310048.50S 0275613.14E						
	035º 30 NM	FL460 FL245 Class A	10	↓		
▲OKREV 303135.33S 0280200.66E						
	034º 144 NM	FL460 FL245 Class A	10	↓		
▲OKDIN 280916.75S 0282923.84E						
	031º 10 NM	FL460 FL245 Class A	10	↓		
▲DUVPI 275912.05S 0283117.44E						
	015º 31 NM	FL460 FL245 Class A	10	↓		
▲OKTEK 272835.55S 0282748.16E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Z34						
▲ETGEB 323014.57S 0283503.45E						
	069º 72 NM	FL245 FL200 Class A	10	↓		
▲UTOXO 313621.38S 0293059.82E						
	068º 97 NM	FL245 FL200 Class A	10	↓		
▲DUKMU 302248.58S 0304500.43E						

UZ34						
▲ETGEB 323014.57S 0283503.45E						
	069º 72 NM	FL460 FL245 Class A	10	↓		
▲UTOXO 313621.38S 0293059.82E						
	068º 97 NM	FL460 FL245 Class A	10	↓		
▲DUKMU 302248.58S 0304500.43E						

Z31						
▲XAGEN 260344.92S 0271904.08E						
	246º 32 NM	FL245 FL200 Class A	10		↓	
▲XANRO 262507.09S 0265233.55E						
	245º 22 NM	FL245 FL200 Class A	10		↓	
▲EXOKU 264010.40S 0263440.15E						
	245º 117 NM	FL245 FL200 Class A	10		↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲IMSIR 275945.73S 0245801.19E						
	245º 232 NM	FL245 FL200 Class A	10		↓	
▲NESUS 304028.10S 0214554.26E						
	250º 152 NM	FL245 FL200 Class A	10		↓	
▲XALVA 322228.31S 0193400.22E						

UZ31						
▲XAGEN 260344.92S 0271904.08E						
	246º 32 NM	FL460 FL245 Class A	10		↓	
▲XANRO 262507.09S 0265233.55E						
	245º 22 NM	FL460 FL245 Class A	10		↓	
▲EXOKU 264010.40S 0263440.15E						
	245º 117 NM	FL460 FL245 Class A	10		↓	
▲IMSIR 275945.73S 0245801.19E						
	245º 232 NM	FL460 FL245 Class A	10		↓	
▲NESUS 304028.10S 0214554.26E						
	250º 152 NM	FL460 FL245 Class A	10		↓	
▲XALVA 322228.31S 0193400.22E						

Q51		
▲ESRUK 335810.48S 0194826.84E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	268° 11 NM	FL245 FL200 Class A	10		↓	
▲GETEN 340326.38S 0193611.70E						

UQ51						
▲ESRUK 335810.48S 0194826.84E						
	268° 11 NM	FL460 FL245 Class A	10		↓	
▲GETEN 340326.38S 0193611.70E						

UL211F						
▲APKIN 340500.64S 0170059.32E						
	257° 079° 122 NM	FL460 FL200 Class A	10	↑	↓	
▲ITLIK 351600.00S 0145957.00E						
	271° 094° 261 NM	FL460 FL200 Class A	10	↑	↓	
▲ANTES 365100.00S 0100000.00E						
	274° 100° 494 NM	FL460 FL200 Class A	10	↑	↓	
▲EKBED 3391300.00S 0000000.00W						
	282° 108° 467 NM	FL460 FL200 Class A	10	↑	↓	
▲MUNES 402000.00S 0100000.00W						

UL224		
▲APKIN 340500.64S 0170059.32E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	289° 111° 101 NM	FL460 FL200 Class A	10	↑	↓	
▲ITMEK 3341200.00S 00150000.00E						
	290° 113° 249 NM	FL460 FL200 Class A	10	↑	↓	
▲ETULA 342100.00S 0100000.00E						
	293° 119° 498 NM	FL460 FL200 Class A	10	↑	↓	
▲GERAM 340300.00S 0000000.00W						
	299° 125° 506 NM	FL460 FL200 Class A	10	↑	↓	
▲ITGIV 325600.00S 0100000.00W						

UL435						
▲O R TAMBO INTERNATIONAL AIRPORT (JSV) VOR/DME 260925.63S 0281351.70E						
	341° 161° 36 NM	FL460 FL200 Class A	10	↑	↓	
▲UTRUK 254032.98S 0274957.29E						
	318° 137° 77 NM	FL460 FL200 Class A	10	↑	↓	
▲NESEK 250154.00S 0263700.00E						FAJA/FBGR FIR BDRY

UT915						
▲ITMIL 290151.05S 0314838.40E						
	011° 189° 105 NM	FL460 FL290 Class A	10	↓	↑	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲GERAX 271857.48S 0312310.91E						
	018º 197º 48 NM	FL460 FL290 Class A	10	↓	↑	
▲IXESU 263038.00S 0311959.00E						
	010º 189º 34 NM	FL460 FL290 Class A	10	↓	↑	
▲DULPU 255723.71S 0311325.26E						
	009º 189º 6 NM	FL460 FL290 Class A	10	↓	↑	
▲NEXIS 255115.01S 0311212.83E						
	009º 188º 29 NM	FL460 FL290 Class A	10	↓	↑	
▲KRUGER MPUMALANGA (PKV) VOR 252251.69S 0310640.05E						
	020º 197º 89 NM	FL460 FL245 Class A	10	↓	↑	
▲PHALABORWA (PHV) VOR 235402.73S 0310907.09E						
	011º 189º 95 NM	FL460 FL245 Class A	10	↓	↑	
▲GESIL 221900.00S 0310000.00E						

UT916						
▲UDLUM 251622.00E 0232313.09E						
	221º 044º 147 NM	FL 460 FL 290 Class A	10	↑	↓	
▲AVUSA 272955.10S 0221330.09E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	242º 063º 75 NM	FL 460 FL 290 Class A	10	↑	↓	
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						

Q59						
▲ESPUV 254945.36S 0244255.80E						
	236º 059º 143 NM	FL245 FL200 Class A	10	↑	↓	
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						

UQ59						
▲ESPUV 254945.36S 0244255.80E						
	236º 059º 143 NM	FL460 FL245 Class A	10	↑	↓	
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						

Q60						
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						
	237º 220 NM	FL245 FL200 Class A	10		↓	
▲NEXIT 303127.92S 0202233.37E						

UQ60		
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	237° 220 NM	FL460 FL245 Class A	10		↓	
▲NEXIT 303127.92S 0202233.37E						

Q61						
▲APKEK 303139.17S 0201015.32E						
	063° 228 NM	FL245 FL200 Class A	10	↓		
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						

UQ61						
▲APKEK 303139.17S 0201015.32E						
	063° 228 NM	FL460 FL245 Class A	10	↓		
▲SISHEN (SSV) VOR/DME 273907.83S 0230010.99E						

Z39						
▲TETAN 333948.00S 0192458.00E						
	089° 54 NM	FL245 FL200 Class A	10	↓		
▲TEXIS 331556.01S 0202256.73E						
	075° 193 NM	FL245 FL200 Class A	10	↓		
▲EGRUP 311005.95S 0231539.78E						
	073° 133 NM	FL245 FL200 Class A	10	↓		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲IBTEK 294304.04S 0251247.52E						
	080° 68 NM	FL245 FL200 Class A	10	↓		
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						

UZ39						
▲TETAN 333948.00S 0192458.00E						
	089° 54 NM	FL460 FL245 Class A	10	↓		
▲TEXIS 331556.01S 0202256.73E						
	075° 193 NM	FL460 FL245 Class A	10	↓		
▲EGRUP 311005.95S 0231539.78E						
	073° 133 NM	FL460 FL245 Class A	10	↓		
▲IBTEK 294304.04S 0251247.52E						
	080° 68 NM	FL460 FL245 Class A	10	↓		
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						

Z40						
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						
	249° 113 NM	FL245 FL200 Class A	10		↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲PETRUSVILLE (PVV) VOR 302158.41S 0244142.06E						
	251° 80 NM	FL245 FL200 Class A	10		↓	
▲TIKIL 311522.20S 0233202.10E						
	252° 213 NM	FL245 FL200 Class A	10		↓	
▲UVDEX 333359.30S 0202034.70E						
	253° 36 NM	FL245 FL200 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

UZ40						
▲BRAM FISCHER INTL AIRPORT (BLV) VOR/DME 290602.38S 0261802.31E						
	249° 113 NM	FL460 FL245 Class A	10		↓	
▲PETRUSVILLE (PVV) VOR 302158.41S 0244142.06E						
	251° 80 NM	FL460 FL245 Class A	10		↓	
▲TIKIL 311522.20S 0233202.10E						
	252° 213 NM	FL460 FL245 Class A	10		↓	
▲UVDEX 333359.30S 0202034.70E						
	253° 36 NM	FL460 FL245 Class A	10		↓	
▲ESRUK 335810.48S 0194826.84E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
Z41						
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						
	113° 129 NM	FL245 FL200 Class A	10	↓		
▲UTERI 283214.47S 0234208.26E						
	113° 79 NM	FL245 FL200 Class A	10	↓		
▲EVESI 283554.70S 0251112.70E						
	93° 46 NM	FL245 FL200 Class A	10	↓		
▲UNRAG 282149.12S 0260109.16E						

UZ41						
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						
	113° 129 NM	FL460 FL245 Class A	10	↓		
▲UTERI 283214.47S 0234208.26E						
	113° 79 NM	FL460 FL245 Class A	10	↓		
▲EVESI 283554.70S 0251112.70E						
	93° 46 NM	FL460 FL245 Class A	10	↓		
▲UNRAG 282149.12S 0260109.16E						

Z38		
▲DUGPA 261329.04S 0222534.83E		

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
	205º 026º 77 NM	FL245 FL200 Class A	10	↑	↓	
▲AVUSA 272955.10S 0221330.09E						

UZ38						
▲DUGPA 261329.04S 0222534.83E						
	205º 026º 77 NM	FL460 FL245 Class A	10	↑	↓	
▲AVUSA 272955.10S 0221330.09E						

UT394						
▲AVUSA 272955.10S 0221330.09E						
	302º 122º 67 NM	FL460 FL245 Class A	10	↑	↓	FAJA ACC WEST 118.55 MHz
▲UTANI 271346.73S 0210034.80E						

UT396						
▲UPINGTON AIRPORT (UPV) VOR/DME 282406.31S 0211537.48E						
	349º 168º 47 NM	FL460 FL245 Class A	10	↑	↓	FAJA ACC WEST 118.55 MHz
▲UDLON 274350.57S 0204847.32E						
	348º 168º 16 NM	FL460 FL245 Class A	10	↑	↓	FAJA ACC WEST 118.55 MHz
▲EGNOR 272955.15S 0203940.57E						

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
T949						
▲TONKA 260724.00S 0320618.00E						FQBE FIR/ FDMS TMA BDRY
	253º 074º 26 NM	FL245 FL200 Class A	10	↑	↓	
▲SIKHUPHE (VSK) VOR 262245.90S 0314302.70E						FDMS TMA
	269º 089º 22 NM	FL245 FL200 Class A	10	↑	↓	
▲IXESU 263038.00S 0311959E						
	253º 073º 11 NM	FL245 FL200 Class A	10	↑	↓	
▲MUVAL 263728.00S 0310957.00E						
	268º 089º 22 NM	FL245 FL200 Class A	10	↑	↓	
▲APNON 264537.86S 0304652.79E						FAJA FIR/FDMS TMA BDRY
	256º 078º 110 NM	FL245 FL200 Class A	10	↑	↓	
▲WARDEN (WRV) VOR 274629.26S 0290410.10E						

UT949						
▲TONKA 260724.00S 0320618.00E						FQBE FIR/ FDMS TMA BDRY
	253º 074º 26 NM	FL460 FL245 Class A	10	↑	↓	
▲SIKHUPHE (VSK) VOR 262245.90S 0314302.70E						FDMS TMA
	269º 089º 22 NM	FL460 FL245 Class A	10	↑	↓	

Route designator *RCP Type* *Name of significant points* *Coordinates*	*Route* *MAG* *Track* *MAG* *DIST*	*Upper limit* *Lower limit* *Classification*	*Lateral limits* *NM*	*Direction of cruising levels*		*Remarks* *Controlling unit* *Frequency* *SATVOICE*
				Odd	*Even*	
1	*2*	*3*	*4*	*5*		*6*
▲IXESU 263038.00S 0311959E						
	253º 073º 11 NM	FL460 FL245 Class A	10	↑	↓	
▲MUVAL 263728.00S 0310957.00E						
	268º 089º 22 NM	FL460 FL245 Class A	10	↑	↓	
▲APNON 264537.86S 0304652.79E						FAJA FIR/FDMS TMA BDRY
	256º 078º 110 NM	FL460 FL245 Class A	10	↑	↓	
▲WARDEN (WRV) VOR 274629.26S 0290410.10E						

Q62						
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	185º 121 NM	FL245 FL200 Class A	10		↓	
▲UVBUD 303208.64S 0170448.56E						
	187º 220 NM	FL245 FL200 Class A	10		↓	
▲ASPIK 340618.32S 0180800.81E						

UQ62						
▲ALEXANDER BAY (ABV) VOR/DME 283414.35S 0163201.80E						
	185º 121 NM	FL460 FL245 Class A	10		↓	
▲UVBUD 303208.64S 0170448.56E						

	187° 220 NM	FL460 FL245 Class A	10		↓	
▲ASPIK 340618.32S 0180800.81E						

Q63						
▲APMAT 284723.78S 0305659.63E						
	236° 36 NM	FL245 FL200 Class A	10		↑	
▲APGAP 281711.47S 0311946.86E						
	026° 204° 58 NM	FL245 FL200 Class A	10	↓	↑	
▲GERAX 271857.48S 0312310.91E						

UQ63						
▲APMAT 284723.78S 0305659.63E						
	236° 36 NM	FL460 FL245 Class A	10		↑	
▲APGAP 281711.47S 0311946.86E						
	026° 204° 58 NM	FL460 FL245 Class A	10	↓	↑	
▲GERAX 271857.48S 0312310.91E						

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ENR 3.4 HELICOPTER ROUTES

1 JOHANNESBURG FIR

1) Operations inside the O R Tambo International Airport - (FAOR) CTR (Not landing at or departing from FAOR)

a) Unless otherwise instructed by FAOR Tower (TWR), all helicopters are to squawk A2600 with altitude encoding prior to entering the FAOR CTR. Individual squawks will be issued on first contact for identification purposes. This squawk must be used whilst operating in the CTR. On exiting the CTR, squawk 2600 should be re-selected.

b) Medical rescue or crime prevention helicopter flights must squawk the transponder code as allocated by FAOR TWR for their special operations.

c) Helicopter routing between Rand Airport (FAGM) and Grand Central Airport (FAGC) are to remain clear of the FAOR CTR at all times.

d) All flights crossing the extended centre-lines of any runways between the FAOR CTR boundary and 4 NM from the runway thresholds, are to operate at 6000 FT ALT or below on the QNH (important - see paragraph (h) below) as broadcasted on the FAOR ATIS (115.2 MHz). All other operations may be conducted at a maximum altitude of 6500 FT ALT.

e) Approved survey, vehicle hijack response, SAPS/SAAF crime prevention flights (see paragraph (l) below) must conduct their operations not closer than 2 NM West of RWY 03L/21R extended centre lines till they are 4 NM from the respective runway thresholds, unless authorised by ATC.

f) Traffic information will not be provided between helicopters beyond 4 NM from the respective runway thresholds and departing or arriving traffic at FAOR.

g) Helicopters responding to medical emergencies may upon request, be accommodated on direct routings closer or over the FAOR Airport, for which clearances are to be obtained prior to the crossing any of the runways extended centre-lines.

h) All transit flights East-West or West-East through the FAOR CTR must plan to route along either the:-

1) Southern Helicopter Corridor:-
- South of the Primrose hill,
- South of the N17 highway, (pilots are to ensure that they route at least 2NM South of the old JN NDB position 261317.40S 0281349.58E).
- and then at least till 1NM south of the Brakpan/Benoni Aerodrome
- This route must be flown at 6000FT or below and
- outside the Rand ATZ

Note: Pilots are reminded of their obligation in respect of minimum height over built-up areas, and therefore if necessary this may be altered further south to comply with altitude restrictions.

2) Northern Helicopter Corridor: -
- North of Tembisa,
- South of the Olifantsfontein road, and then

- along the railway line towards the Sentre Rand Railway junction until clear of the FAOR CTR.
- This route must be flown at 6000FT or below.

Note: All pilots not familiar with these routings must remain clear of the FAOR CTR.

Traffic information will not be passed between helicopters operating along the Northern/Southern corridors and arriving and departing traffic from FAOR, they will be deemed separated.

i) Helicopter pilots must broadcast on the Benoni Heliport (123.3 MHz) or on the Brakpan-Benoni Airport (FABB) 122.7 MHz frequencies prior to entering their respective circuits. ATC will not remind helicopter pilots to transmit on the respective frequencies for the Benoni/Brakpan Aerodrome and the Benoni Heliport.

j) Helicopters operating West of FAOR are to remain clear of the Modderfontein Prohibited Area (FAP 68) without having to be reminded by ATC to do so.

k) All helicopters are to remain clear of the FAOR CTR until such time that a joining clearance has been obtained from Johannesburg TWR on 118.1 MHz / 118.6 MHz. (after 2000 at night, frequencies will be combined onto 121,9 MHz and should be used to obtain clearance) This includes helicopters exiting the FAGM ATZ East-bound.

l) Survey-type operations, pipe-line and power-line inspections will only be accommodated with prior notification from the TWR ATC on TEL: (011) 928 6459, during the following periods:
SAT and SUN - before 0700 GMT

Any of the above ad hoc operations required outside of the above times must be arranged through the office of the Manager Air Traffic Services O R Tambo (FAOR) ATCC (TEL: 011- 928 6526/6439 or FAX 011- 395 1045). Operators with ad hoc permission can expect to be accommodated between 1000 and 1100 GMT MON-THU.

m) Helicopter pilots are reminded that a continuous listening watch on the TWR frequency (118.1 MHz / 118.6 MHz. After 2000 at night, frequencies will be combined onto 121,9 MHz and should be used to obtain clearance) is necessary while operating inside the FAOR CTR in order to copy traffic information about other helicopters in their immediate area, or to alter their routes as required by ATC.

3) VFR flights (Helicopters) within the Johannesburg CTR

a) Tower east is responsible for all helicopter traffic in the eastern sector of the CTR as well as landing and departing traffic on RWY 03R/21L and all taxiways East of RWY 03L/21R.

b) Tower west is responsible for all helicopter traffic in the western sector of the CTR as well as landing and departing traffic on RWY 03L/21R and traffic crossing RWY 03L/21R.

c) With Runway 03 in use at O.R.Tambo International Airport. All helicopter traffic have to contact Tower East on 118.6 MHz before entering the Johannesburg CTR from the East between points 260348S 0282246E and 260629S 0281500E and 261313S 0281254E and 261419S 0281041E.
d) Note: Tower East Hours of Operation: DLY BTN 0500-1700
e) All Helicopter traffic have to contact Tower West on 118.1 MHz before entering the FAOR CTR from the West between points 261419S 0281041E and 261313S 0281254E and 260629S 0281500E and 260348S 0282246E.
f) Note: After hours of service, Tower West assumes responsibility for the eastern sector of the CTR as well as RWY 03R/21L. Ground Movement Control assumes responsibility for taxiways East of RWY 03L/21R.
g) With Runway 21 in use at O.R.Tambo International Airport. All helicopter traffic have to contact Tower East on 118.6 MHz before entering the Johannesburg CTR from the East between points 261433S 0282038E and 260952S 0281409E and 260434S 0281551E and 260241S 0280645E
h) Note: Tower East Hours of Operation: DLY BTN 0500-1700
i) All helicopter traffic have to contact Tower West on 118.1 MHz before entering the Johannesburg CTR from the West between points 260241S 0280845E and 260434S 0281551E and 260952S 0281409E and 261433S 0282038E.
j) Helicopter pilots to verify the runway in use at O.R. Tambo International Airport on ATIS 126.2 MHz prior to entering the Johannesburg CTR.
k) Any queries can be directed to Air Traffic Service, O.R. Tambo International Airport. TEL: +27 11 928 6526.
l) For further information consult the AD section of the AIP FAOR AD 2.16

2 HELICOPTER OPERATIONS AT DRAGON PEAKS MOUNTAIN RESORT

In order to minimize noise levels the following regulations apply to all flights operating from Dragon Peaks, Champagne Castle Areas and area under the control of the Ezimvelu Kwazulu Natal Wildlife (EKZW). The only exceptions will be commercial operators, South African Air Force and SAPS helicopters on emergency and security flights and helicopters working for the EKZW with special authority to operate in designated areas.

2.1 General

a) Over flying of built-up areas, resorts and houses must be avoided. A minimum height of 2000 FT applies over regulated areas and must be avoided as far as possible.
b) All flight operations conducted from El Mirador, Champagne Sports resort and Cayley must avoid the built-up area of Cathkin and observe the minimum altitudes stipulated above.
c) The runway direction at Dragon Peaks Park is 06/24. Runway 06 is usually used for take-off and runway 24 approach and landing. The elevation of the runway is 3900 FT AMSL.

d) The Drakensberg Boys Choir School practice times are from 09H00 to 10H00 on Mondays to Saturdays with public concerts held every Wednesday between 14H00 and 17H00. Pilots must try to avoid operations during these times.

2.2 Military Operations

a) South African Air Force (SAAF) deployments and training camps must not be planned during national school holiday periods or over long weekends. Where possible deployments of different SAAF helicopter Squadrons must be combined in order to minimize the noise levels to certain periods outside of holiday seasons.
b) The EKZW must be notified when SAAF deployments to Dragon Peaks Mountain Resort will be held.
c) Prior permission from the Controlling Authority of the SAAF operations is required before approaching the field.
d) SAAF contact details are: TEL: 036 468 1116

2.3 Take-off

All helicopters must call before lifting. When safe, take-off can commence. Take-off is usually done in a 060deg magnetic direction. After take-off aircraft must turn left 360deg magnetic to "hug" the mountain's side to the left. After crossing the high-tension wires route to the left of the residence on the ridge. Helicopter must fly left of the Drakensberg Sun road that is aligned with the 360deg flight path. Once across the ridge keep left and "hug" the mountain whilst routing for the Little Berg ridge. Helicopters must report crossing the Little Berg ridge.

2.4 Approaches

Standard approaches must be used at Dragon Peaks Mountain Resort at rather low heights to reduce noise levels. All approaches, if possible, should be done on runway 24. Helicopters returning from the Little Berg ridge must fly over the Culfargie area again “hugging” the ridge on the right. Crossing the ridge towards Dragon Peaks Mountain Resort must be done to avoid the built-up area on the ridge and the Drakensberg Sun. Radio communication is essential to avoid collisions over that area. Helicopters must pass each other “right on right” so that commanders have each other visible during the crossing. Turning in on final approach must be as close to the ridge as possible avoiding departing traffic and the power lines.

2.5 Routing inbound

All routes inbound to Dragons Peaks Mountain Resort must be planned via Arthur's Seat (2854S 02926E) then to Bellpark Kop (2856S 02924E); this includes routes from the East and South East. The approach route described above (para.3) must then be joined.

2.6 Aviation Safety

Due to the type of operations conducted during South African Air Force deployments at Dragon Peaks Mountain Resort, radio calls and lookout are of the utmost importance.

2.7 Frequencies

During SAAF operations, all pilots should monitor 128.70 MHz within 10 nautical miles of Dragon Peaks Mountain Resort.

2.8 Civilian Operations

a) Resident civilian operators must follow similar routes as outlined for the SAAF operations.
b) Runways 24 and 06 are allowed for take-off and landing. Fixed wing aircraft are restricted to landing on runway 24 and take-off on runway 06.
c) The approaches should be planned to be is such a way the circuits are flown to the north of the airfield. (i.e. right hand downwind for runway 24 and left hand downwind for runway 06)
d) Pilots unfamiliar with Dragons Peaks Mountain Resort must join overhead the field at 6000' AMSL. Do a tight turn ending on right hand downwind runway 24. Pilots should remain within one nautical mile of the airfield.
e) All non-resident operators must contact Management of Dragon Peaks Mountain Resort before approaching the field. This regulation also applies to periods of SAAF operations.
f) Dragons Peaks Mountain Resort: TEL: 036 468 1031

2.9 Route Description

a) Out: Hug the high ground on the left hand side of runway 06 and exit at point 290035S 0292627E. Turn left and fly left of kink in secondary road; 290003S 0292558E. Fly up along the tree line as it goes up a small valley and exit at point 285932S 0292526E.
b) In: Enter routing at point 285934S 0292558E and be cautious of wires. Fly left of the kink in the secondary road; 285934S 0292605E. Fly a wider routing in than for the routing out and fly for the large solitary tree before turning final approach runway 24; 290019S 0292632E.

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ENR 3.5 Other routes

3.5.1 Bloemfontein SAAF Operations

a. Pilots are reminded that ground firing with trajectories in excess of 10 000 feet, airground firing, bombing, rocket firing and parachute jumping take place at the De Brug Range.

b. The De Brug Range is situated within a circle radius 8 NM centred on a point at S290530 E0255400.
Vertical limits: GND/FL195

c. To ensure that en-route aircraft are properly separated from military aircraft operating within the De Brug Range, all en-route aircraft flying between the New Tempe or Bram Fischer International (Bloemfontein) airport and the west must route over the road bridge where the main Bloemfontein-Dealesville road crosses the Modder River (325(R) BLV 21 DME) (IBRIS). Traffic to and from the west must not route to the south of the De Brug Range.

d. Due to high speeds and the restricted manoeuvring space within FAR 29 SAAF aircraft fly up to 3 000 feet above ground and 6 NM outside this area. During irregular weapons exercises routing of civil aircraft will be notified by Class I NOTAM.

e. Operating altitudes and routes of military jet aircraft between Bram Fischer International (Bloemfontein) airport and FAR 29 are as follows:

f. Outbound at 8 000 feet altitude, routing 5 NM north of New Tempe aerodrome and return at 7 000 feet altitude to the south of Bloemfontein city.

g. Military Allouette helicopters operate regularly within 50 NM radius of Bram Fischer International (Bloemfontein) airport from ground level to 400 feet above ground level. These helicopters make use of taxiways at Bram Fischer International (Bloemfontein) airport for landings and take-offs and operate at a circuit height of 800 feet.

h. Military free fall and parachute jumping from 1 000 feet AGL takes place at:-

i) Tempe aerodrome.

3.5.2 JOHANNESBURG FIR

3.5.2.1 PINEDENE VFR ROUTE

a. Due to air traffic congestion in the Johannesburg Special Rules Area and the high costs associated with flying, the need exists for economical routes for flights between the eastern and western side of the OR Tambo INTL CTR.

b. In the past flights have, on an Ad Hoc basis, been cleared through the Waterkloof CTR. Pilots have often not followed the route they were cleared on and as a result there have been violations of the OR Tambo INTL CTR.

c. To accommodate VFR flights to/from the eastern/western side of the OR Tambo INTL CTR the following route, subject to the listed conditions, have been approved:

Route	***Description***
East-bound routing	Traffic must join the Pinedene VFR Route via the N14/R55 interchange (S255336.6362 E0280615.7212) and route for the Pinedene Station (S255447.74 E0281343.40), remaining clear of the Swartkop ATZ and the SA Mint (Coinworld S255454.0000 E0280924.0000). From the Pinedene Station, route along the 5 rows of high-tension power lines in an easterly direction, remaining clear of the Rietvlei Nature Reserve, until past the Corobrick factory (S255504.7600 E0281940.3680). Once past the Corobrick factory, traffic can set course to exit the Waterkloof CTR to the east.
West-bound routing	Traffic inbound from the east must route directly for the Corobrick factory (S255504.7600 E0281940.3680). From the Corobrick factory traffic must route along the 5 rows of high-tension power lines to the Pinedene Station (S255447.74 E0281343.40), remaining clear of the Rietvlei Nature Reserve. From the Pinedene Station, traffic must route to the N14/R55 interchange (S255336.6362 E0280615.7212), remaining clear of The SA Mint (Coinworld S255454.0000 E0280924.0000) and the Swartkop ATZ, to exit the Waterkloof CTR to the west.

Route	*Description*
Caution: 1.Pilots are requested to remain clear of the SA Mint (Coinworld S255454.0000 E0280924.0000). The SA Mint is the building complex just to the north of the 5 rows of high-tension power lines and situated between the N1 (Ben Schoeman) Highway and the Old Johannesburg/Pretoria road. 2.Pilots are reminded to exercise greater vigilance and accident avoidance techniques due to the increased accuracy of navigation through the use of GPS and increased traffic normally associated with defined routes and landmarks.	

3.5.2.1.1 Use of the routes are subject to the following conditions.

a. Flights are restricted to 6000 FT ALT MAX (Waterkloof QNH) whilst within controlled airspace.

b. Flights are conducted by day and under VFR. Flights for which IFR flight plans have been submitted will not be permitted to make use of the route to bypass departure delays.

c. Pilots are to comply with the laid down frequency requirements at all times and broadcast their intentions on the applicable Johannesburg Special Rules Area frequency.

d. Clearance is to be obtained from Waterkloof ATC prior to entering the Pinedene VFR Route.

3.5.2.1.2 Pilots are to broadcast their intentions on 120.65 MHz (Kitty Hawk Traffic) when east of the Waterkloof CTR.

3.5.2.1.3 Pilots are to call Grand Central Radio on 122.8 MHz on exiting, or prior to entering, the route from the west for traffic information.

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ENR 3.6 EN-ROUTE HOLDING

1) CAPE TOWN

Facility	Inbound Heading/radial	MAX FL MIN FL	Remarks
ASPIK 340618.3199S 0180800.8068E (R-275/25 DME CTV)	095°M/R275	FL460 FL080	Left hand racecourse pattern. 1 MIN at or below FL140. 1 MIN 30 SEC above FL140
ERDAS 332450.10S 0191112.85E (R-065/44.2 DME CTV)	245°M/R065	FL460 FL100	Right hand racecourse pattern. 1 MIN at or below FL140. 1 MIN 30 SEC above FL 40
CDV VOR 340646.68S 0192840.39E (R126/44.4DME CTV)	305°M/R125 CDV	FL140 FL100	Right hand racecourse pattern. 1 MIN at or below FL140 NOTE: Sector 3 Entry only.
GETEN 340326.38S 0193611.70E (R120/50.1 DME CTV)	300°M/R120	FL460 FL100	Right hand racecourse pattern. 1 MIN at or below FL140. 1 MIN 30 SEC above FL 140
UTREV 334604.43S 0182442.63E	100°M/075.24°T	FL080 6100	Left hand racecourse pattern. 1 MIN outbound leg. MAX 250 KT IAS
EKBEV 341159.7600S 0183158.0700E	100°M/075.17°T	FL080 6100	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 250KT IAS
DUGLU (RNAV) (RNP) HOLDING 334758.450S 0182152.100E (R334/15.7 DME CTV)	135°M/R315 DUGLU	FL140 6100FT ALT	Right hand racecourse pattern. 1 Minute at or below FL140
DUGLU (ENR HOLDING) 334758.450S 0182152.100E (R334/15.7 DME CTV)	135°M/R315 DUGLU	FL460 6100FT ALT	Right hand racecourse pattern. 1 Minute at or below FL140 1 Minute 30 seconds above FL140

2) DURBAN TMA/CTA

Facility	Inbound Heading/radial	MAX FL MIN FL	Remarks
GETOK 293046.69S 0300917.83E (R301/51DME TGV)	121°M / R301(096.993°T/ 276.367°T)	FL280 FL120	Right hand racecourse pattern. 13 NM outbound leg.
ITMIL 290151.05S 0314838.40E (R070/50DME TGV)	244°M/ R070	FL280 FL150	Left hand racecourse pattern. 13 NM outbound leg.

Facility	Inbound Heading/radial	MAX FL MIN FL	Remarks
APMAT 284723.7768S 0305659.6292E (R014/50DME TGV)	169°M / R014	FL280 FL150	Left hand racecourse pattern. 13 NM outbound leg.
OKTAN 301758.3152S 0303453.3352E (R239/50DME TGV)	059°M/ R239	FL280 FL150	Right hand racecourse pattern. 13 NM outbound leg.
ENULO 295229.2260S 0305322.0992E (R242/20 DME TGV)	062°M/ R242	FL140 FL080	Right hand racecourse pattern. 1 MIN at or below FL140.
VABOG 292034.6668S 0312109.2268E (R060/20 DME TGV)	241°M/R061	FL140 FL080	Right hand racecourse pattern. 1 MIN at or below FL140.

3) JOHANNESBURG TMA

Facility	Inbound Heading/ Radial	MAX FL MIN FL	Remarks
AVAGO 254309.9003S 0272639.3573E (R-320/50 DME JSV)	140°M/R320	FL280 FL110	Left hand racecourse pattern 13 NM outbound leg.
OKPIT 252744.2163S 0284432.5553E (R-052/50 DME JSV)	231°M/R052		Left hand racecourse pattern. 1 MIN at or below FL140. 1 MIN 30 SEC above FL 140
WIV 254946.29S 0291141.13E (R088/56 DME JSV)	261°M/R088	FL280 FL090	Left hand racecourse pattern. 1 MIN at or below FL140. 1 MIN 30 SEC above FL 140
STV 264148.19S 0285202.86E (R152/47 DME JSV)	351°M/R171		Right hand racecourse pattern. 13 NM outbound leg.
NIBEX 264925.56S 0274013.41E (R235/50 DME JSV)	055°M/R235	FL280 FL110	Right hand racecourse pattern. 13 NM outbound leg

4) JOHANNESBURG CTA

Facility	Inbound Heading/ Radial	MAX FL MIN FL	Remarks
Grasmere VOR GAV	065°M/R245	FL460 FL110	Right hand racecourse pattern. 1 MIN at or below FL140. 1 MIN 30 SEC above FL140
Heidelberg VOR HGV	360°M/R180		

5) WELKOM

Facility	Inbound Heading/ Radial	MAX FL MIN FL	Remarks
Welkom VOR WMV 280005.74S 0263940.13E	060°M/R-240 WMV	FL460/ FL200	Right hand race-course pattern 1 MIN 30 SEC
MAX Speed	280 KIAS (0.8 Mach)		

6) CHIEF DAWID STUURMAN

Facility	Inbound Heading/ Radial	MAX FL MIN FL	Remarks
NERUR 341037.10S 0252825.57E	356°M/328.2°T	6000 FT ALT 3900 FT ALT	Left hand racecourse pattern. 1 MIN outbound leg. MAX 230KT IAS
TESUP 334808.17S 0254430.82E	176°M/148.1°T	6000 FT ALT 5000 FT ALT	Left hand racecourse pattern. 1 MIN outbound leg. MAX 230KT IAS
UNRAD 335820.66S 0255207.59E	356°M/328.1°T	6000 FT ALT 3800 FT ALT	Right hand racecourse pattern. 1 MIN outbound leg. MAX 230KT IAS

7) PIETERMARITZBURG

Facility	Inbound Heading/Radial	MAX FL MIN FL	MAX SPEED	Remarks
DUDMA 292119.38S 0301030.96E	175°M/151°T	TRANSITION LEVEL	180KT IAS	Left hand racecourse pattern. 1 MIN outbound leg.
ESTEX 292356.26S 0302504.81E	256°M/232°T	8000 FT ALT 6500 FT ALT		
AVUSO 295702.02S 0303317.09E	014°M/350°T	FL140 6500 FT ALT		
NEXAB 294058.87S 0304019.76E	256°M/232°T	FL140 6000 FT ALT		Right hand racecourse pattern. 1 MIN outbound leg.

8) MTHATHA

Facility	Inbound Heading/Radial	MAX FL MIN FL	Remarks
ESTUB 313416.142S 0282253.195E	052°M/024.1°T/ 232°M/240.0°T	FL140 6800 FT ALT	Right hand racecourse pattern. 1 MIN outbound. MAX 250KT IAS.
USUNI 314449.371S 0285033.451E	051°M/023.7°T	FL140 4800 FT ALT	Left hand racecourse pattern.1 MIN Outbound leg. MAX 250 KT IAS.

9) GEORGE

Facility	Inbound Heading/Radial	MAX FL MIN FL	Remarks
TILAS 340653.888S 0223634.164E	024°M/357.7°T	8000 4600	Right hand racecourse pattern. 1 MIN outbound leg. MAX 230KT IAS
UTELU 340642.1200S 0220400.7700E	026°M/359.3°T	7000 5500	Right hand racecourse pattern. 1 MIN outbound leg. MAX 230KT IAS
XALIN 334308.6900S 0225201.4800E	289°M/261.82°T	FL280 FL160	Right hand racecourse pattern. 1 MIN 30 seconds.
AXEMU 341211.6100S 0212400.4100E	103°M/076.7°T	FL280 FL200	Right hand racecourse pattern. 1 MIN 30 seconds.

10) MALELANE

Facility	Inbound Heading/Radial	MAX FL MIN FL	Remarks
UVBUV 252629.5493S 0314016.0612E	270°M/251°T	6000 FT ALT	Right hand racecourse pattern. 1 MIN MAX MAX 230KT IAS

11) KRUGER MPUMALANGA

Facility	Inbound Heading/Radial	MAX FL MIN FL	Remarks
DUMGA 252004.6106S 0310207.8323E	143.55°M/125.34°T	6500 FT ALT	Left hand racecourse pattern. 1 MIN MAX MAX 230KT IAS

12) BRAM FISCHER

Facility	Inbound Track	MAX FL MIN FL	Remarks
IBMAD 291630.1508S 0262455.8462E	293°M/270.4°T	8000' 6700'	Left hand racecourse pattern. 1 MIN MAX MAX 230KT IAS
UNLOD 285505.3500S 0262503.3600E	292°M/270°T	FL100 FL080	Right hand racecourse pattern. 1 MIN MAX
UTONU 285216.1900S 0264835.0900E	243°M/220.7°T	FL200 FL150	Left hand racecourse pattern. 1 MIN 30 seconds MAX 230KT IAS

13) KIMBERLEY

Facility	Inbound Track	MAX FL MIN FL	Remarks
UVKIS 285927.5100S 0243905.7700E	111°M/089.86°T	FL110 FL090	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 250KT IAS
ETBAB 285925.7500S 0245246.7900	291°M/269.86°T	FL110 FL090	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 250KT IAS
GADSO 283728.2800S 0245241.8600E	291°M/269.87°T	FL110 FL090	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 250KT IAS

14) KING PHALO

Facility	Inbound Track	MAX FL MIN FL	Remarks
OKBUR 330932.5900S 0273811.8100E	020°M/352.07°T	FL105 4500'	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS
EGRAL 330638.3800S 0280238.1000E	020°M/351.85°T	FL105 4500	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS

15) OVERBERG

Facility	Inbound Track	MAX FL MIN FL	Remarks
EGPAX 342735.4800S 0200130.4000E	082°M/055.50°T	FL100 3700	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS
AVOBI 344707.4300S 0201745.6300E	082°M/055.34°T	FL100 3600	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS

16) MARGATE

Facility	Inbound Track	MAX FL MIN FL	Remarks
UNDAV 310130.0115S 0302313.8263E	319°M/293°T	3700FT ALT	Right hand racecourse pattern. 1 MIN Outbound leg.
EVURU 304508.0746S 0303113.4448E	319°M/293°T	3800FT ALT	Right hand racecourse pattern. 1 MIN Outbound leg.

17) GREYTOWN

Facility	Inbound Track	MAX FL MIN FL	Remarks
ETMUP 290247.84S 0304721.95E	336°M/311.4°T	8100 6900	Left hand racecourse pattern. 1 MIN Outbound leg.

18) ST FRANCIS FIELD

Facility	Inbound Track	MAX FL MIN FL	Remarks
XABIS 341714.47S 0244220.94E	020°M/351.72°T	3700	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 170KT IAS
XAMTA 341502.25S 0245945.58E	020°M/351.26°T	3400	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 170KT IAS

19) POLOKWANE

Facility	Inbound Track	MAX FL MIN FL	Remarks
EPRUP 235535.3560S 0291504.9271E	144°M/128.0°T	FL100 8800	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 220KT IAS

20) KRUGER MPUMALANGA

Facility	Inbound Track	MAX FL MIN FL	Remarks
MASHO 253548.6423S 0305643.8088E	053°M/034.2°T	FL100 8000	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 210KT IAS
TILIR 254652.2700S 0304640.3700E	091°M/072.0°T	FL200 FL110	Left hand racecourse pattern. 1 MIN 30 seconds MAX 220KT IAS

21) GRAAFF REINET

Facility	Inbound Track	MAX FL MIN FL	Remarks
UVLES 322233.8088S 0243931.5540E	332°M/305.8°T	8300	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 180KT IAS

22) GARDEN ROUTE AERO

Facility	Inbound Track	MAX FL MIN FL	Remarks
XARSA 340857.1039S 0230921.3538E	037°M/009.30°T	3500	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS
UDNEG 340311.7959S 0230423.4551E	127°M/099.40°T	4300	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS
UNGOR 341131.2528S 0232812.7503E	037°M/009.30°T	3500	Right hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS
GENUV 340723.1207S 0233507.8024E	307°M/279.30°T	4200	Left hand racecourse pattern. 1 MIN Outbound leg. MAX 230KT IAS

23) NEWCASTLE

Facility	Inbound Track	MAX FL MIN FL	Remarks
OKDOV 275200.3625'S 0294118.2862E	024°M/001.0°T	FL100 8600'	Left hand racecourse pattern. 1 Minute MAX 150KT IAS

ENR 4 NAVIGATION AIDS/SYSTEMS
ENR 4.1 RADIO NAVIGATION AIDS— EN-ROUTE

Name Of Station	ID	Frequency (CH)	Hours of Operation	Coordinates	ELEV DME antenna	Remarks
1	2	3	4	5	6	7
AGGENEYS VOR/DME	/AGV	116.7MHz (CH 114X)	H24	292851.67S 0183344.97E	NIL INFO AVBL	VOR PWR Output 25W. CH 114X co-located with VOR
ALEXANDER BAY VOR/DME	/ABV	112.1MHz (CH 58X)	H24	283414.35S 0163201.80E	NIL INFO AVBL	CH 58X coaxially co-located with the VOR
BRAM FISCHER INTL AIRPORT VOR/DME	/BLV	114.1MHz (CH 88X)	H24	290602.38S 0261802.31E	4416 FT	CH 88X coaxially co-located with VOR
CALEDON DVOR/DME	/CDV	114.9MHz	H24	340646.68S 0192840.39E	NIL INFO AVBL	Power Output 50W
CAPE TOWN INTERNATIONAL AIRPORT VOR/DME	/CTV	115.7MHz (CH 104X)	H24	335810.82S 0183618.19E	146FT	CH 104X coaxially co-located with the VOR
CERES DVOR/DME	/CSV	114.2MHz (CH 89X)	H24	331508.27S 0192617.22E	NIL INFO AVBL	On radial 075 (CSV/ SLV). the VOR coverage/range was greater than 120NM at FL280 Power Output 50W
CHIEF DAWID STUURMAN AIRPORT VOR/DME	/PEV	112.9MHz (CH 76X)	HS	335933.01S 0253620.75E	215FT	CH 76X coaxially co-located with the VOR
ELLISRAS VOR/DME	/ERV	116.3MHz (CH 110X)	H24	233730.79S 0275751.70E	3790FT	NIL
GEORGE AIRPORT DVOR/DME	/GRV	116.6MHz (CH 113X)	H24	340026.46S 0222233.46E	656FT	Power Output 50W
GEORGE DICK MONTSHIOA AIRPORT VOR/DME	/MMV	112.9MHz (CH 76X)	H24	254933.23S 0253206.20E	NIL INFO AVBL	CH 76X coaxially co-located with the VOR
GRASMERE VOR	/GAV	115.5MHz	H24	263053.63S 0274035.17E	NIL INFO AVBL	NIL
GREEFSWALD VOR	/GWV	117.9MHz	H24	221444.60S 0292437.21E	NIL INFO AVBL	NIL
GREYTOWN DVOR/DME	/GYV	113.5MHz (CH 82X)	H24	290728.99S 0303508.05E	3639FT	Power Output 50W
HEIDELBERG VOR	/HGV	116.7MHz	H24	264148.50S 0281659.39E	NIL INFO AVBL	NIL
HOEDSPRUIT (MIL) VOR/DME	/HSV	114.0MHz (CH 87X)	H24	242049.93S 0310251.39E	1664FT	NIL
HOFMEYER DVOR	/HMV	113.4MHz	H24	313621.18S 0255038.40E	NIL INFO AVBL	Power output: 50W Coverage: 110 NM
KIMBERLEY AIRPORT VOR/DME	/KYV	113.2MHz (CH 79X)	H24	284759.82S 0244537.32E	NIL INFO AVBL	CH 79X coaxially co-located with VOR

Name Of Station	ID	Frequency (CH)	Hours of Operation	Coordinates	ELEV DME antenna	Remarks
1	2	3	4	5	6	7
KING PHALO AIRPORT VOR/DME	/ELV	114.5MHz (CH 92X)	H24	330213.16S 0274923.36E	NIL INFO AVBL	NIL
KING SHAKA DVOR/DME	/TGV	115.6MHz (CH 103X)	H24	293640.20S 0310729.03E	108FT	CH 103X coaxially co-located with VOR Power Output 50W
KRUGER MPUMALANGA DVOR/DME	/PKV	112.5MHz (VOR) 1159 MHz (DME)	H24	252251.69S 0310640.05E	2868FT	Power Output 50W
LADYSMITH DVOR/DME	/LYV	116.5MHz (CH 112X)	H24	283616.21S 0294140.32E	3825FT	Power Output 50W
LANGEBAANWEG (MIL) VOR/DME	/LWV	117.0MHz (CH 117X)	HO	325858.28S 0180949.94E	NIL INFO AVBL	CH 117X coaxially located with VOR
LANSERIA AIRPORT DVOR/DME	/LIV	117.4MHz (CH 121X)	H24	255656.14S 0275448.86E	4570FT	CH 121X co-located with DVOR
MAKHADO (MIL) VOR/DME	/LTV	115.0MHz (CH 97X)	H24	230930.71S 0294111.08E	NIL INFO AVBL	CH 97X coaxially co-located with the VOR
NIEUWOUDTVILLE DVOR	/NVV	116.1MHz	H24	312248.00S 0190416.00E	NIL INFO AVBL	Power Output 50W
O R TAMBO INTERNATIONAL AIRPORT DVOR/DME	/JSV	115.2MHz (CH 99X)	H24	260925.63S 0281351.70E	NIL INFO AVBL	CH 99X coaxially co-located with VOR Power Output 50W
OVERBERG (MIL) VOR/DME	/OBV	115.4MHz (CH 101X)	HO	343322.03S 0201449.70E	43	CH 101X coaxially co-located with the VOR
PETRUSVILLE VOR	/PVV	112.7MHz	H24	302158.41S 0244142.06E	NIL INFO AVBL	NIL
PHALABORWA VOR	/PHV	115.3MHz	NIL INFO AVBL	235402.73S 0310907.09E	1528FT	NIL
PIETERMARITZBURG VOR/DME	/PMV	117.9MHz (CH 126X)	H24	293852.13S 0302401.28E	NIL INFO AVBL	NIL
POLOKWANE INTL. VOR/DME	/PPV	114.5MHz (CH 92X)	H24	235023.35S 0292738.04E	4023FT	CH 92X co-located with VOR Power output 80W
PILANESBERG DVOR/DME	/PNV	112.6MHz (CH 73X)	H24	252345.03S 0270721.74E	NIL INFO AVBL	CH 73X coaxially co-located with VOR Power Output 50W
PORT ST JOHNS DVOR	/PJV	115.9MHz	H24	313631.96S 0293111.49E	NIL INFO AVBL	Power Output 50W
RAND VOR/DME	/RAV	117.7MHz (CH 124X)	H24	261443.39S 0280916.26E	5570FT	Power Output 100W CH 124X coaxially co-located with VOR
RICHARDS BAY VOR/DME	/RBV	113MHz (CH 77X)	H24	284426.49S 0320536.91E	93FT	CH 77X co-located with VOR
SISHEN VOR/DME	/SSV	113.6MHz (CH 83X)	H24	273907.83S 0230010.99E	3887FT	Power Output 50W CH 83X co-located with VOR
SOMERSVELD VOR	/SVV	113.0MHz	H24	331457.65S 0182842.20E	NIL INFO AVBL	Power Output 50W

Name Of Station	ID	Frequency (CH)	Hours of Operation	Coordinates	ELEV DME antenna	Remarks
1	2	3	4	5	6	7
STANDERTON VOR	/STV	116MHz	H24	264148.19S 0285202.86E	NIL INFO AVBL	NIL
SUTHERLAND VOR	/SLV	113.3MHz	H24	322700.00S 0203721.00E	NIL INFO AVBL	NIL
ULUNDI DME	/UL	CH 101X	H24	281854.20S 0312514.00E	NIL INFO AVBL	NIL
UPINGTON AIRPORT VOR/DME	/UPV	116.5MHz (CH 112X)	H24	282406.31S 0211537.48E	2754FT	CH 112X coaxially co-located with the VOR
VICTORIA WEST VOR	/VWV	113.7MHz	NIL INFO AVBL	312349.00S 0230632.00E	NIL INFO AVBL	NIL
WARDEN VOR	/WRV	112.8MHz	H24	274629.26S 0290410.10E	NIL INFO AVBL	NIL
WATERKLOOF (MIL) VOR/DME	/WKV	116.9MHz (CH 116X)	HO	255000.04S 0281313.31E	4903FT	NIL
WELKOM VOR/DME	/WMV	116.4MHz (CH 111X)	NIL INFO AVBL	280005.74S 0263940.13E	NIL INFO AVBL	Power Output 50W
WITBANK VOR	/WIV	113.3MHz	H24	254946.29S 0291141.13E	5054FT	Power Output 50W
WONDERBOOM DVOR	/DPV	112.20 MHz	H24	253921.30S 281312.27E	4080.997 FT	NIL
WONDERBOOM DME	/DPV	CH 59X	H24	253921.44S 0281311.80E	4088.618 FT	NIL
ZONDERWATER VOR/DME	/CZV	114.3 MHz/CH 90X	NIL INFO AVBL	254123.32S 0283302.96E	NIL INFO AVBL	NIL

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ENR 4.2 Special navigation systems

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ENR 4.3 Global Navigation Satellite System (GNSS)

Nil information available.

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ENR 4.4 Name-code designators of significant points

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
ALENI	265835.54S 0320937.89E	Q4-Q21-UQ21-UQ4-Z9-UZ9
ALKAT	331100.54S 0255107.43E	Q8-UQ8
ANIXU	263020.13S 0270738.66E	Q52-UQ52
ANTES	365100.00S 0100000.00E	UL211F
ANTIL	283022.76S 0164820.05E	Q11-UQ11
ANTOM	295000.00S 0150000.00E	
ANVAK	254020.71S 0315950.23E	G745-T125-UT125
ANVAR	280009.00S 0143344.45E	Q11-UQ11
ANVED	310939.47S 0330634.63E	Q17-UQ17
ANVIT	244000.00S 0302300.00E	G465-UG465
APDAK	263303.54S 0290252.64E	Q7-Q48-UQ48-UQ7
APDUR	281919.65S 0252312.80E	A405-UA405
APGAP	281711.47S 0311946.86E	Q63-UQ63
APKAP	335918.93S 0204131.63E	Q12-Q49-UQ12-UQ49
APKEK	303139.17S 0201015.32E	UZ30-Z30-Q61-UQ61
APKID	281200.00S 0000000.00E	A405-UA405
APKIK	281949.54S 0303433.16E	Q48-UQ48
APKIN	340500.64S 0170059.32E	UL211F-UL224-Q15-UQ15-Q36-UQ36-Q37-UQ37
APLEN	304538.77S 0220119.80E	Q52-UQ52
APLIP	312917.17S 0292312.75E	Q29-UQ29

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
APLUK	285213.00S 0342532.00E	A402-UA402
APMAK	282849.76S 0253155.21E	W64
APMAT	284723.78S 0305659.63E	Q48-UQ48-Q63-UQ63-FALE HOLD
APMIN	280038.45S 0255128.05E	Q10-UQ10
APMUL	311747.38S 0280718.59E	Q12-UQ12-Q7-UQ7
APMUX	243435.59S 0293124.49E	UZ33-Z33
APNON	264537.86S 0304652.79E	Z9-UZ9-T949-UT949
APRAX	280031.67S 0262508.12E	Z2-UZ2
ASONI	292000.00S 0100000.00E	
ASPIK	340618.32S 0180800.81E	Q35-UQ35-Q37-UQ37-Q62-UQ62-FACT HOLD
ATUXO	275935.97S 0275207.27E	Q8-UQ8
AVAGO	254309.90S 0272639.36E	Q19-UQ19-Q44-UQ44-Z22-UZ22-FAOR HOLD
AVANA	370000.00S 0260000.00E	
AVAVA	265456.32S 0292710.11E	Q48-UQ48-Z8-UZ8
AVEPA	324154.539S 0262206.491E	
AVEXA	323836.27S 0232245.08E	UZ3-UZ4-Z3-Z4
AVILO	265854.69S 0284315.62E	UZ5-Z5
AVOBI	344707.43S 0201745.63E	FAOB HOLD
AVUBU	282242.79S 0263218.00E	UW95-W95

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
AVUSA	272955.10S 0221330.09E	Q19-Q11-UQ11-UQ19-UT394-UZ6-Z6-Z38-UZ38-UT916
AVUSO	295702.02S 0303317.09E	FAPM HOLD
AXEMU	341211.61S 0212400.41E	Q56-UQ56-FAGG HOLD
AXOPA	331742.26S 0195833.41E	Z2-UZ2
AXOXI	321215.60S 0275404.32E	Q30-Q7-UQ30-UQ7-UZ37-Z37
BEBAS	274918.48S 0293654.69E	Z29-UZ29
BIGSA	401300.00S 0570000.00E	
BOLUM	192000.00S 0050000.00W	
BUXIR	320000.00S 0150000.00E	
DABUR	262000.00S 0050000.00E	
DODOS	253032.17S 0303437.62E	G745-T446-UT446
DUDMA	292119.38S 0301030.96E	FAPM HOLD
DUDMO	282926.82S 0175551.82E	UN186
DUDVU	312352.27S 0275136.50E	Q12-UQ12-UZ20-Z20
DUGLU	334758.45S 0182152.10E	FACT HOLD
DUGPA	261329.04S 0222534.83E	Z38-UZ38
DUKMU	302248.58S 0304500.43E	UZ34-Z34
DUKRA	262024.43S 0304711.57E	B534-UB534-Q4-UQ4
DULPU	255723.71S 0311325.26E	T122-UT122-UT915
DULRI	310459.02S 0285639.08E	Q58-UQ58

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
DUMGA	252004.6106S 0310207.8323E	FAKN HOLD
DUMGO	240510.31S 0290150.64E	T433-UT433-Z11-UZ11
DUNSA	301406.71S 0302914.71E	Q12-UQ12
DUSKO	251028.74S 0312401.70E	G467-UG467-UZ36-Z36
DUSLI	245824.27S 0263901.66E	Q24-UQ24
DUTGI	251743.77S 0320125.26E	T444-UT444
DUVPI	275912.05S 0283117.44E	UZ20-Z20
EGMEN	253845.74S 0285805.53E	Q2-UQ2
EGNOM	305403.37S 0222635.25E	Q10-UQ10
EGPAX	342735.4800S 0200130.4000E	FAOB HOLD
EGPOP	261653.97S 0273039.44E	Q52-UQ52
EGRAL	330638.38S 0280238.10E	FAEL HOLD
EGRAP	275037.51S 0140136.97E	Q11-UQ11
EGRUP	311005.95S 0231539.78E	A405-UA405-Z39-UZ39
EGSAN	280010.72S 0270835.76E	UZ4-Z4
EGSOX	282331.94S 0344131.38E	Q21-UQ21
EGTAP	304616.63S 0264903.41E	Q8-UQ8
EGTAR	280738.17S 0182105.08E	UN185-Q11-UQ11
EGTIL	310223.29S 0225155.48E	Z2-UZ2
EGTIM	330937.71S 0254125.96E	UW81-W81
EGVOL	340249.00S 0310146.00E	

Name-code designator	Coordinates	ATS route or other route
1	2	3
EKBAP	233100.95S 0280657.94E	T433-UT433-Z27-UZ27
EKBED	391300.00S 0000000.00E	UL211F
EKBEX	280039.10S 0254723.96E	A405-UA405
EKBEV	341159.7600S 0183158.0700E	FACT HOLD
EKBON	281834.94S 0173706.30E	Q11-UQ11
ENULO	295229.2260S 0305322.0992E	FALE HOLD
EKBOX	345446.09S 0250741.54E	Q33-UQ33
EPMAK	365812.62S 0240531.84E	Q33-UQ33
EPNET	370034.00S 0235904.00E	
EPRET	265131.86S 0322546.72E	UB529
EPRUP	235535.3560S 0291504.9271E	FAPP HOLD
EPSAK	271154.98S 0290941.52E	Q20-UQ20-Z29-UZ29
EPSEK	232715.00S 0313345.00E	Q2-UG465-UQ2-UZ33-Z33
EPTOT	283803.09S 0272343.09E	UZ36-Z36
EPVUV	334903.31S 0261320.42E	Q29-UQ29
ERDAS	332450.10S 0191112.85E	R987-UR987-UZ26-Z26-FACT HOLD
ESPOG	331104.75S 0265046.66E	Q31-UQ31
ESPUV	254945.36S 0244255.80E	Q59-UQ59
ESRAS	255346.00S 0310914.02E	G653
ESRET	291639.66S 0330805.46E	A402-UA402-Q5-UQ5

Name-code designator	Coordinates	ATS route or other route
1	2	3
ESRUK	335810.48S 0194826.84E	Q31-Q49-Q51-UQ31-UQ49-UQ51-UZ3-Z3-Z40-UZ40
ESRUM	255439.72S 0314330.38E	G653
ESTAM	280849.03S 0142515.43E	
ESTEX	292356.26S 0302504.81E	FAPM HOLD
ESTUB	313416.142S 0282253.195E	FAUT HOLD
ESVAX	322602.43S 0240006.71E	Q9-UQ9-UZ3-Z3
ESVEV	255913.02S 0303619.18E	T122-UT122-UZ36-Z36
ESVIR	280518.54S 0304943.75E	Q20-UQ20
ETBAB	285925.7500S 0245246.7900	FAKM HOLD
ETBIN	321231.24S 0274145.21E	UZ20-Z20
ETBOR	370005.00S 0274242.00E	
ETBUL	335956.49S 0212224.14E	Q49-UQ49
ETBUX	255423.80S 0261558.08E	Q19-UQ19
ETGAX	334524.05S 0222220.04E	Q31-UQ31
ETGEB	323014.57S 0283503.45E	UZ34-Z34
ETGIS	310511.89S 0250856.95E	Q9-UQ9
ETKAL	325448.40S 0223336.03E	UZ3-Z3
ETKON	332508.00S 0265621.52E	UZ13-Z13
ETLUR	305425.43S 0281254.69E	Q7-UQ7-UZ3-Z3
ETMAL	273422.09S 0302300.51E	Z8-UZ8

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
ETMIT	231248.49S 0273742.69E	UB540-Q16-UQ16-T433-UT433-Z35-UZ35
ETMOS	282224.00S 0355618.00E	A402-UA402
ETMUP	290247.84S 0304721.95E	FAGY HOLD
ETMUS	281959.79S 0162705.83E	UN188
ETOBO	233900.00S 0100000.00W	A405-UA405
ETOSA	244250.40S 0260312.98E	G653-UG653-Q24-UQ24-UZ10-Z10
ETOVU	322122.29S 0282343.33E	Q29-UQ29
ETULA	342100.00S 0100000.00E	UL224
ETUPO	281107.96S 0180709.80E	Q11-UQ11
EVARI	274048.91S 0300315.19E	Q20-UQ20-Q48-UQ48
EVEMU	304104.75S 0271517.92E	UZ5-Z5
EVESI	283554.70S 0251112.70E	Q10-UQ10-Z41-UZ41
EVIDO	293844.82S 0320448.90E	A402-UA402
EVIPI	245200.20S 0275054.35E	Q16-UQ16-Q40-UQ40-Q41-UQ41-Z22-UZ22-Z27-UZ27
EVOPO	251224.18S 0271138.40E	Q24-UQ24
EVUKI	331000.74S 0182101.85E	
EVURU	304508.0746S 0303113.4448E	FAMG HOLD
EVUVA	304535.88S 0283542.17E	UZ3-Z3
EXABU	313756.12S 0274846.39E	Q58-UQ58-UZ20-Z20
EXANO	263748.51S 0265035.04E	

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
EXATA	294558.00S 0300115.00E	
EXELO	331930.39S 0222426.38E	Q12-UQ12
EXOBI	260252.27S 0290851.32E	Q4-T122-UQ4-UT122
EXOKU	264010.40S 0263440.15E	UZ31-UZ6-Z31-Z6
GABGO	334003.20S 0231723.41E	Q31-Q58-UQ31-UQ58-UZ37-Z37
GABNA	241000.00S 0283400.00E	A405-UA405
GADNU	332851.57S 0210631.19E	UZ3-Z3
GADSO	283728.28S 0245241.86E	FAKM HOLD
GAGNO	253309.23S 0313749.16E	G745-T125-UT125
GEDOL	295037.49S 0261004.18E	UW81-W81
GENUV	340723.1207S 0233507.8024E	FAPG HOLD
GEPAB	370041.00S 0183042.00E	
GEPES	280036.99S 0251747.83E	Q52-UQ52
GEPEV	350442.00S 0295912.00E	
GERAM	340300.00S 0000000.00E	UL224
GERAX	271857.48S 0312310.91E	UT915-Q63-UQ63
GEROX	272249.01S 0284943.11E	Q28-Q7-UQ28-UQ7-Z17-UZ17
GERUT	325639.54S 0233320.68E	Q12-Q9-UQ12-UQ9
GESIL	221900.00S 0310000.00E	UT915
GETEN	340326.38S 0193611.70E	Q51-UQ51-FACT HOLD
GETOK	293046.69S 0300917.83E	Q28-UQ28-FALE HOLD

Name-code designator	Coordinates	ATS route or other route
1	2	3
GEVIN	274153.95S 0141008.31E	
GEVIS	294137.49S 0335737.56E	Q5-UQ5
GEXIP	321459.57S 0191458.08E	UN185-UZ30-Z30
IBMAD	291630.1508S 0262455.8462E	FABL HOLD
IBMES	272318.814S 0223326.879E	
IBRIS	285200.00S 0255700.00E	
IBRUN	285324.75S 0182900.19E	R987-R987F-UR987
IBTEK	294304.04S 0251247.52E	Z39-UZ39
IBVIT	282453.62S 0210000.44E	G465-UG465
IMGEV	275909.30S 0281732.10E	UZ5-Z5
IMKAM	311420.00S 0150031.00E	
IMKID	255743.38S 0310701.21E	T122-UT122
IMKUP	244915.70S 0281420.65E	Q6-Q1-UQ1-UQ6-Z23-UZ23
IMLID	303238.38S 0300129.69E	Q12-Q30-Q58-UQ12-UQ30-UQ58
IMLUT	303035.90S 0154102.74E	Q14-UQ14
IMPOD	233643.21S 0281607.85E	Q1-UQ1-T433-UT433
IMPOK	273000.00S 0140330.00E	
IMROG	321042.91S 0263914.43E	Q58-UQ58-UZ5-Z5
IMSIR	275945.73S 0245801.19E	UZ31-Z31
IMSOM	335603.90S 0180031.24E	Q34-UQ34-Q36-UQ36
ITGAD	314300.00S 0100000.00E	A405-UA405

Name-code designator	Coordinates	ATS route or other route
1	2	3
ITGIV	325600.00S 0100000.00W	UL224
ITKIT	332137.27S 0260950.41E	Q30-Q31-UQ30-UQ31-UZ5-Z5
ITKOT	280341.17S 0183640.38E	Q11-UQ11
ITLIK	351600.00S 0145957.00E	UL211F
ITMEK	341200.00S 0150000.00E	UL224
ITMIL	290151.05S 0314838.40E	B529-UB529-UT915-FALE HOLD
ITNOX	281434.29S 0175321.38E	UN186-Q11-UQ11
ITROL	250207.97S 0272605.37E	Q25-UQ25-Q44-UQ44-Z21-UZ21-Z35-UZ35
IXAKU	312230.06S 0265846.63E	UZ3-UZ5-Z3-Z5
IXARA	275827.43S 0285340.08E	Q7-UQ7-UZ36-Z36
IXEBI	315753.02S 0262047.33E	Q12-Q8-UQ12-UQ8
IXEKI	283043.45S 0274036.85E	Q8-UQ8-UZ36-Z36
IXESU	263038.00S 0311959.00E	Q4-UQ4-UT915-T949-UT949
KATOR	332919.46S 0223834.37E	UZ4-Z4
KEBAT	273000.00S 0181800.00E	R987-R987F-UN185-UR987
KODES	330840.00S 0184520.00E	Q43-UN186-Q42-UQ42-UQ43-UZ30-Z30
MASHO	253548.6423S 0305643.8088E	FAKN HOLD
MITAR	275243.46S 0181951.86E	UN185
MUNES	402000.00S 0100000.00W	UL211F
MUVAL	263728.00S 0310957.00E	B534-UB534-T949-UT949

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
NAMGU	301704.14S 0294758.45E	UZ3-Z3
NEPUM	321551.00S 0322743.00E	
NERAX	360107.00S 0290140.00E	
NERUR	341037.10S 0252825.57E	FAPE HOLD
NESAG	245648.20S 0285103.54E	Z11-UZ11-UZ33-Z7-UZ7-Z33
NESAN	252948.88S 0280705.56E	Q1-UQ1-Q40-UQ40
NESEK	250154.00S 0263700.00E	G653-UG653-UL435
NESUS	304028.10S 0214554.26E	UZ31-Z31
NEVAR	273048.35S 0174957.80E	UN186
NEVEN	272859.15S 0280257.10E	Q8-Q9-UQ8-UQ9-Z16-UZ16-Z18-UZ18
NEVUK	245020.43S 0295524.24E	Q2-UQ2
NEXAB	294058.87S 0304019.76E	FAPM HOLD
NEXIS	255115.01S 0311212.83E	UT915
NEXIT	303127.92S 0202233.37E	Q23-UQ23-Q60-UQ60
NEXUL	312137.95S 0291448.76E	UZ37-Z37
NIBEX	264925.56S 0274013.41E	Z2-UZ2-FAOR HOLD
NIBOP	311515.73S 0290750.85E	Q30-UQ30
NIDEM	293409.50S 0284409.10E	UW61
NIDIG	284806.79S 0270018.48E	Q9-UQ9-UZ36-Z36
NIDOX	311058.78S 0243646.21E	UZ4-Z4
NOKOX	330114.23S 0194303.34E	Q10-UQ10

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
ODKER	240830.00S 0280500.00E	G655-UG655
OKBIL	311244.26S 0232351.31E	UW95-W95
OKBUR	330932.59S 0273811.81E	FAEL HOLD
OKBUS	302947.44S 0281845.93E	Q7-UQ7
OKDIN	280916.75S 0282923.84E	UZ20-UZ36-Z20-Z36
OKDOG	330500.00S 0150000.00E	A405-UA405-Q15-UQ15
OKDOV	275200.3625S 0294118.2862E	FANC HOLD
OKLIL	244910.64S 0301232.84E	
OKLOK	324829.22S 0192237.92E	Q23-Q52-UN185-UQ23-Q42-UQ42-UQ52
OKLOL	310028.20S 0285145.51E	Q12-UQ12
OKPIT	252744.22S 0284432.56E	Z7-UZ7-FAOR HOLD
OKPUN	314733.63S 0264840.64E	Q12-UQ12-UZ5-Z5
OKRAV	335929.87S 0243612.57E	Q49-UQ49
OKREV	303135.33S 0280200.66E	UZ20-Z20
OKRIP	255258.16S 0304133.91E	G653-UZ36-Z36
OKRUL	303223.92S 0185203.44E	UN185
OKSAD	264920.00S 0304800.00E	
OKSET	341301.09S 0243821.03E	Q56-UQ56
OKSOP	311556.12S 0240832.74E	UW66-W66
OKTAN	301758.32S 0303453.34E	A402-Q29-UA402-UQ29-FALE HOLD
OKTED	341312.00S 0193330.00E	Q12-UQ12

Name-code designator	Coordinates	ATS route or other route
1	2	3
OKTEK	272835.55S 0282748.16E	UZ20-UZ5-Z20-Z5
OKTEL	280753.81S 0150000.00E	G465-UG465-Q11-UQ11
OKTIG	282838.68S 0264640.84E	Z4-UZ4
ORKAN	243230.00S 0265500.00E	G853-UG853
ORNAD	255500.00S 0315800.00E	G653-T122-UT122
OSEPA	230000.00S 0000000.00E	
OVALA	264903.39S 0283744.70E	Z18-UZ18
PAREK	282943.84S 0161557.51E	Q11-UQ11
PEDIL	253933.67S 0265134.05E	Q19-UN181-UQ19-UZ10-Z10
RAGUL	262654.35S 0273443.89E	Q10-UQ10-UZ6-Z6
RUDAS	241924.00S 0264406.00E	G853-UG853-Q25-UQ25
TAVLA	223724.00S 0281736.00E	G655-UG655-Q1-UQ1-Z27-UZ27-Z7-UZ7
TESUN	275744.49S 0291104.73E	Q28-UQ28
TESUP	334808.17S 0254430.82E	FAPE HOLD
TETAN	333948.00S 0192458.00E	Z2-UZ2-Z39-UZ39
TETIK	263414.18S 0293825.33E	Z9-UZ9
TETUS	253134.40S 0253820.71E	UN181
TEVAP	244430.00S 0320006.00E	G467-UG467-UZ36-Z36
TEVAR	271221.37S 0271833.24E	Z2-UZ2-UZ4-Z4
TEXAB	303203.80S 0165619.09E	UN188
TEXIP	261303.77S 0253025.47E	Q19-UQ19

Name-code designator	Coordinates	ATS route or other route
1	2	3
TEXIS	331556.01S 0202256.73E	Z39-UZ39
TEXON	251026.70S 0280040.66E	
TIDAX	313034.55S 0280413.34E	Q58-Q7-UQ58-UQ7
TIDUP	242415.07S 0295011.79E	UZ33-Z33
TIKER	322402.12S 0261016.18E	Q58-Q8-UQ58-UQ8
TIKIG	270100.888S 0222415.778E	
TIKIL	311522.20S 0233202.10E	Z40-UZ40
TILAS	340653.888S 0223634.164E	FAGG HOLD
TILIR	254652.27S 0304640.37E	UZ36-Z36-FAKN HOLD
TONKA	260724.00S 0320618.00E	T949-UT949
TUBIN	300201.29S 0301754.66E	UZ3-Z3
UBVER	275521.71S 0141740.93E	Q11-UQ11
UDBUL	251203.81S 0262800.52E	Z10-UZ10
UDLON	274350.57S 0204847.32E	Q11-UQ11-UT396
UDLUM	251622.00S 0232313.09E	UT916
UDMEV	254727.35S 0283340.81E	
UDNEG	340311.7959S 0230423.4551E	FAPG HOLD
UMTOL	272955.15S 0203940.57E	UT396
UMVET	245555.67S 0310354.18E	
UNDAV	310130.0115 0302313.8263E	FAMG HOLD
UNDIT	252647.15S 0291216.04E	Q2-UQ2

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
UNGEK	265428.31S 0252726.37E	UZ6-Z6
UNGOR	341131.2528S 0232812.7503E	FAPG HOLD
UNGOS	282225.46S 0182410.84E	UN185
UNLOD	285505.3500S 0262503.3600E	FABL HOLD
UNPAX	245054.86S 0310345.22E	
UNPEN	250643.41S 0320157.14E	T446-UT446
UNRAD	335820.66S 0255207.59E	FAPE HOLD
UNRAG	282149.12S 0260109.16E	Z2-UZ2-Z41-UZ41
UNRES	335243.30S 0205856.24E	Q12-Q31-UQ12-UQ31
USENA	182748.00S 0060712.00W	
USUNI	314449.371S 0285033.451E	FAUT HOLD
UTANI	271346.73S 0210034.80E	UT394
UTEBA	265711.00S 0270214.28E	Q10-UQ10
UTELU	340642.1200S 0220400.7700E	FAGG HOLD
UTERI	283214.47S 0234208.26E	Z41-UZ41
UTIGU	234947.99S 0283708.32E	Q6-UQ6-T433-UT433-Z7-UZ7
UTIMO	304240.38S 0301506.53E	Q29-UQ29-UZ37-Z37
UTONU	285216.1900S 0264835.0900E	FABL HOLD-Z36-UZ36
UTOXO	313621.38S 0293059.82E	UZ34-Z34
UTREV	334604.43S 0182442.63E	FACT HOLD

Name-code designator	*Coordinates*	*ATS route or other route*
1	*2*	*3*
UTREX	245820.00S 0311518.10E	SKUKUZA ENTRY/EXIT WAYPOINT
UTRUK	254032.98S 0274957.29E	A405-UA405-G655-UG655-G853-UG853-G653-UG653-UB540-UL435
UTSEM	305604.65S 0255807.95E	UW81-W81
UTSEV	263154.91S 0300837.61E	UZ36-Z36
UTSOS	282858.00S 0205932.00E	
UTUMI	303219.28S 0172742.93E	Q43-UQ43
UTUPU	242925.25S 0294048.28E	T433-UT433-UZ33-Z33
UVBUD	303208.64E 0170448.56S	Q62-UQ62
UVBUV	252629.5493S 0314016.0612E	FAMN HOLD
UVDEX	333359.30S 0202034.70E	Z40-UZ40
UVDIK	281913.00S 0213142.00E	
UVGOD	290943.27S 0150000.00E	Q14-UQ14
UVGUK	341259.00S 0222247.68E	Q56-UQ56
UVIKU	332734.47S 0173425.87E	Q14-UN188-UQ14-Q34-UQ34-Q35-UQ35
UVILA	275940.06S 0175212.23E	UN186
UVITI	255542.74S 0314511.76E	Q13-T122-UQ13-UT122
UVKIS	285927.51S 0243905.77E	FAKM HOLD
UVKIX	324119.717S 0264859.918E	
UVLES	322233.8088S 0243931.5540E	FAGR HOLD

Name-code designator	Coordinates	ATS route or other route
1	2	3
VABOG	292034.67S 0312109.23E	FALE HOLD
VASUR	253346.76S 0275335.87E	Q24-UQ24-Q41-UQ41-Z21-UZ21-Z23-UZ23
XABDO	313246.19S 0263047.81E	Q8-UQ8-UZ3-Z3
XABIS	341714.47S 0244220.94E	FACF HOLD
XADUP	310048.50S 0275613.14E	UZ20-UZ3-Z20-Z3
XAGEN	260344.92S 0271904.08E	UZ31-Z31
XAKIM	332622.65S 0264747.86E	Q29-UQ29-UZ13-Z13
XALIN	334308.69S 0225201.48E	Q9-UQ9-FAGG HOLD
XALVA	322228.31S 0193400.22E	Q23-UQ23-UZ31-Z31
XAMTA	341502.25S 0245945.58E	FACF HOLD
XANDA	330859.08S 0225623.03E	Q12-UQ12-UZ4-Z4
XANRO	262507.09S 0265233.55E	UZ31-Z31
XARMA	244331.61S 0300328.12E	Q2-UQ2-T433-UT433
XARSA	340857.1039S 0230921.3538E	FAPG HOLD
XARVI	324125.16S 0262636.17E	UZ37-UZ5-Z37-Z5
XATNU	243642.99S 0301131.77E	Q2-UQ2
XAVMU	303228.70S 0181704.20E	UN186
XORER	281735.22S 0281037.24E	UZ36-UZ5-Z36-Z5
XOTOP	275948.66S 0273806.53E	Q9-UQ9
XOXOR	325008.37S 0255939.92E	Q8-UQ8-UZ37-Z37
XUDAN	273041.21S 0161006.65E	UN188
XUGOL	341034.13S 0201127.59E	Q12-Q56-UQ12-UQ56-UZ13-Z13
XUGUV	271613.43S 0240233.27E	G465

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ENR 4.5 Aeronautical ground lights - en-route

4.5.1 Nil information

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ENR 5 NAVIGATION WARNINGS
ENR 5.1 PROHIBITED, RESTRICTED AND DANGER AREAS

1 Prohibited, restricted and danger areas.

All airspaces in which a potential hazard to aircraft operations exist and all areas over which the operation of civil aircraft are restricted or prohibited are classified according to the following three types of areas as defined by ICAO:-

1.1 DANGER AREA

An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times. This term is used only when the potential danger to aircraft has not led to the designation of the airspace as restricted or prohibited. The effect of the danger area is to caution operators or pilots of aircraft that it is necessary for them to assess the dangers in relation to their responsibility for the safety of their aircraft.

1.2 PROHIBITED AREA

An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of civil aircraft within the designated airspace is not permitted at any time under any circumstances.

1.3 RESTRICTED AREA

An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions. This term is used whenever the flight of civil aircraft within the designated airspace is not absolutely prohibited but may be made only if specified conditions are complied with. Thus, prohibition of flight except at certain specified times leads to the designation of the airspace a “restricted area” as would prohibition except in certain meteorological conditions. Similarly, prohibition of flight unless special permission had been obtained, leads to the designation of a restricted area. However conditions of flight imposed as a result of application of rules of the air or air traffic service practices or procedures (for example, compliance with minimum safe heights or with rules stemming from the establishment of controlled airspace) do not constitute calling for designation as a restricted area. Each area is numbered and a single series of numbers is used for all areas, regardless of type, to ensure that a number is never duplicated.

The type of area involved is indicated by the letter “P” for prohibited area. “R” for restricted areas and “D” for danger areas, preceded by the nationality letters “FA”, e.g. FAP1, FAD2, FAD3, FAP4, FAR5, FAD6, e.t.c.

Each area is described in the tabulations below which indicates its lateral and vertical limits, the type of restriction or hazard involved, the times at which it applies and other pertinent information.

These areas are also shown on World Aeronautical Charts ICAO 1:1 000 000 using the chart symbols shown in GEN 2.3 The upper and lower limits are shown in the manner indicated. Altitude and height are given in feet.

Information concerning such areas established in Botswana and Swaziland are published in AIP Botswana and AIP Swaziland and/or in NOTAM issued by these States and are not, therefore, included in AIP South Africa. The above mentioned relevant documents are available for reference at the Briefing Office, O R Tambo International Airport.

1.4 BUFFER AREAS

Buffer areas of at least the minimum applicable lateral separation standard shall be required between Temporary Segregated Areas (TSA) and controlled airspaces. If otherwise determined, a Safety Case Study taking all relevant factors into consideration must be performed. The following vertical buffer areas shall be applicable to these areas unless otherwise determined by a Safety Case Study:

a. at least 500FT between 1500AGL to FL195.

b. at least 1000FT between FL200 to FL280.

c. at least 2000FT between FL290 to FL650.

2 Entry procedures into restricted and danger areas.

The following entry procedures regarding Restricted and Danger Areas under SAAF jurisdiction will be implemented.

a. Air Force Headquarters will be responsible for the granting of authority and clearances to:-

(i) Foreign Military Flights.

(ii) Foreign State Flights.

(iii)Aerial Photographic/ Survey Flights.

Application must be made in writing to:-

The Chief South African Air Force; Air Force Headquarters

for attention: OC AFCP

Private bag X199

PRETORIA

0001

FAX: (012) 3232796

TEL: (012) 3122034/5 - or to any person designated by him.

Note:

Authority to carry out flights as described in (a) (i) (ii) and (iii) above, must also be obtained from the specific controlling authority responsible for the Restricted or Danger area within which the flight will be undertaken. [refer to paragraph b].

b. No person shall operate a civil aircraft in any SAAF Restricted area without obtaining prior permission.

A specific controlling authority will be allocated to each of the SAAF restricted and Danger areas.

Contact with the controlling authority of Restricted areas must, and of Danger areas should be established as follows:-

(i) by two way radio on the appropriate frequency.

(ii) by telephone.

Note:

Civil aircraft operating inside SAAF Restricted areas will, when necessary be required to deviate from flight plan route and or level when in conflict with military flying activities.

Within Danger areas a flight information service will be provided by the designated ATSU.

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Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
DUE TO THE RATIONALISATION OF THE FIR's ALL FAP's, FAR's AND FAD's WILL BE PUBLISHED IN NUMERICAL ORDER				
PROHIBITED AREAS				
FAP 24 GANSPAN				
Circle: Radius 2 NM Centre: 275800S 0244700E	4000 FT AGL GND	Explosives store	No person shall in any ACFT whatsoever, fly into this area.	
FAP 31 ZOMERVELT (WELKOM)				
Circle: Radius 1.5 NM Centre: 280038S 0265324E	1000 FT AGL GND	Explosives factory	No person shall in any ACFT whatsoever, fly into this area.	
FAP 33 FIRGROVE				
The area bounded by lines drawn as FLW: a) From a point at 340329.845S 0184605.882E along a straight line to a point at 340318.847S 0184725.864E b) Thence clockwise along the arc of a circle radius 1.2NM and centred at 340430S 0184740E to a point at 340541.153S 0184754.142E c) Thence along a straight line to a point at 340552.155S 0184634.123E d) Thence clockwise along the arc of a circle radius 1.2NM and centred at 340441S 0184620E back to the starting point at 340329.845S 0184605.882E.	1500 FT AGL GND		No person shall in any ACFT whatsoever, fly into this area.	
FAP 35 LANGEBAAN NATURE RESERVE				
The area is situated on either side of the Saldanha Bay Lagoon, bounded by straight lines joining the following points consecutively: 330545S 01801E, 330710S 0180530E, 331250S 01810E, 331455S 0180650E, 330810S 01758E, 3306S 01756E, 330545S 01801E	500 FT AGL GND	Nature reserve	No person shall in any ACFT whatsoever, fly into this area.	
FAP 38 KRANTZKOP				
The area bounded by straight lines joining the following points consecutively: 332947S 0190538E, 333148S 0190504E, 333048S 0185951E, 332846S 0190025E, 332947S 0190538E	2000 FT AGL GND		No person shall in any ACFT whatsoever, fly into this area.	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAP 60 VOORTREKKER MONUMENT				
Circle of 0.5 NM radius centred on the point 254635S 0281035E	1000 FT AGL GND	National Monument	No person shall, in any ACFT whatsoever, fly into this area.	
FAP 64 PELINDABA				
a) From a point at 254651.01S 0275355.72E a straight line to a point at 254700.68S 0275730.55E b) Thence a straight line to a point at 254851.97S 0275727.45E c) Thence a straight line to a point at 254926.63S 0275532.35E d) Thence a straight line to a point at 254827.01S 0275344.47E e) Thence a straight line to the starting point at 254651.01S 0275355.72E	6500FT ALT GND	Nuclear Energy Plant	No person shall, in any ACFT whatsoever, fly into this area.	South African Nuclear Energy Corporation (NECSA) TEL: (012) 3053333, Fax: (012) 3056362
FAP 66 PRETORIA (ISCOR)				
FAP 66 Pretoria (ISCOR) Circle of 0.5 NM radius centred on the point 254611S 0280756E	1000 FT AGL GND	Iron & Steel Works	No person shall, in any ACFT whatsoever, fly into this area.	
FAP 67 VANDERBIJLPARK				
Circle of 1 NM radius centred on the point 264010S 0274905E	1000 FT AGL GND	Steel Works	No person shall, in any ACFT whatsoever, fly into this area.	
FAP 68 MODDERFONTEIN				
Circle of 1 NM radius centred on the point 260443S 0280935E	1000 FT AGL GND	Explosives Factory	No person shall, in any ACFT whatsoever, fly into this area.	
FAP 80 DANTEX EXPLOSIVES (PTY) LTD.				
Circle of 1 NM radius centred on the point 261155S 0275400E	1000 FT AGL GND		No person shall, in any ACFT whatsoever, fly into this area.	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAP 145 KEURBOOM NATURE RESERVE				
The area bounded by lines joining the following points consecutively: 340002S 0232405E 335755S 0232235E 335740S 0232335E 335625S 0232405E 335710S 0232655E 335820S 0232550E 335840S 0232510E 335855S 0232520E 335840S 0232600E Thence along the Plettenberg Bay Humansdorp road to a point 335950S 0232610E Then a straight line joining the following points consecutively: 335950S 0232610E, 335955S 0232435E, 340002S 0232405E	1000 FT AGL GND		No person shall, in any ACFT whatsoever, fly into this area.	
FAP 146 KEURBOOM BIRD COLONY				
Circle with 0.5 NM Radius centred on the point 340210S 0232310E	1000 FT AGL GND		No person shall, in any ACFT whatsoever, fly into this area.	
FAP 177 ROEDTAN AMMUNITION				
Circle of 1.5 NM radius centred on the point 244330S 0284700E	4000 FT AGL GND	Explosives Factory	No person shall, in any ACFT whatsoever, fly into this area.	
RESTRICTED AREAS				
FAR 20 SCHMIDTSDRIF MILITARY SHOOTING RANGE				
Lateral limits- the area bounded by straight lines joining the following points consecutively: 2834S 02406E 2836S 02407E 2851S 02400E 2847S 02354E 2842S 02356E 2841S 02359E 2837S 02357E 2836S 02403E 2834S 02406E	FL195 GND	Military firing range	No persons shall, without prior authority fly any ACFT into this area.	Commanding Officer Danie Theron Combat School, Kimberley or any person designated by him, Pilots wishing to fly into this airspace must contact Schmidtsdrif on FREQ 132.1 MHz or 132.3 MHz.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 22 DE AAR				
Circle of 2 NM radius centred on the point 304010S 0235720E	4000 FT AGL GND	Ammunition depot	No persons shall, without prior authority fly any ACFT into this area.	Commanding Officer, 97 Ammunition Depot, De Aar or any person designated by him.
FAR 23 BOTTELDUIM MILITARY SHOOTING RANGE				
Circle of 14 NM radius centred on the point 274500S 0213000E	FL195 GND	Military firing range	No persons shall, without prior authority fly any ACFT into this area.	Ops Coordinator AFB Waterkloof TEL: (012) 6723260, or any person designated by him
FAR 25 GA-TLHOSE/MAREMANE MILITARY SHOOTING RANGE				
The area is bounded by straight lines drawn as follows: 273800S 0233020E 274300S 0230420E 281000S 0230400E 281000S 0233500E 280000S 0233730E 273800S 0233020E	FL195 GND	Military firing range	No persons shall, without prior authority fly any ACFT into this area	Commanding Officer, Combat School, Lohatla,or any person designated by him
FAR 29 DE BRUG RANGE				
Circle of 8 NM radius centred on the point 290530S 0255400E	FL195 GND	Ground-air firing, air-ground firing, bombing and rocket firing range.	Restrictions: As in ENR 5-1 para 2 a and b SAAF ACFT at times operate up to 3000 FT GND and 6 NM outside this area due to high speeds and the restricted manoeuvring area of the range.	Officer Commanding AFB Bloemspruit. TEL: (051) 405 6911 FAX: (051) 405 6166

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 32 MOSSEL BAY HARBOUR				
Mossel Bay Harbour The area bounded by straight lines joining the following points consecutively: 341109.92S 0220923.13E 341046.52S 0220905.37E 341048.54S 0220905.13E 341048.57S 0220904.46E 341048.67S 0220902.32E 341048.61S 0220900.81E 341049.22S 0220900.53E 341050.11S 0220859.95E 341050.64S 0220859.34E 341051.19S 0220858.43E 341051.59S 0220857.53E 341051.24S 0220857.41E 341051.74S 0220856.13E 341051.91S 0220854.60E 341051.91S 0220852.07E 341051.82S 0220851.00E 341051.32S 0220849.11E 341051.20S 0220849.17E 341050.66S 0220847.57E 341050.40S 0220847.50E 341049.92S 0220846.71E 341049.30S 0220845.96E 341045.51S 0220842.20E 341045.06S 0220841.66E 341044.72S 0220841.15E 341044.43S 0220840.57E 341044.16S 0220839.77E 341043.97S 0220838.94E 341043.87S 0220837.96E 341043.89S 0220837.00E 341044.13S 0220835.62E 341044.85S 0220835.56E 341044.90S 0220835.92E 341045.63S 0220835.86E 341045.59S 0220835.16E 341044.89S 0220835.18E 341044.19S 0220835.24E 341044.36S 0220834.02E 341044.47S 0220833.29E 341044.67S 0220832.41E 341044.93S 0220831.62E 341045.66S 0220829.64E 341045.88S 0220829.05E 341046.52S 0220827.24E 341046.75S 0220826.19E 341046.56S 0220826.00E 341036.96S 0220811.59E 341021.24S 0220756.42E 341002.96S 0220714.62E 340949.10S 0220639.00E 340838.68S 0220637.30E 340835.82S 0220640.46E 340703.77S 0220722.09E 340656.52S 0220720.38E 340535.78S 0220850.56E 340524.84S 0220825.82E 340519.63S 0220833.84E 340524.92S 0220900.10E 341109.92S 0220923.13E	500 FT ALT GND	Harbour Area	No person shall fly over this harbour area below an altitude of 500 FT, except whilst taking off or landing, therein without prior authorisation	Port authority.
FAR 36 KOEBERG NUCLEAR POWER STATION				
Circle with 2.5 NM radius centred on the point 334100S 0182650E excluding area East of R27.	2000 FT AGL GND		No person shall without prior authority fly any ACFT into this area.	Power Station Manager, TEL: +2721 550 4911 FAX: +2721 550 5100

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 39 SIMONSTOWN				
Circle of 2.5 NM radius centred on the point 3411S 01826E	1500 FT ALT GND	Naval Base	No person shall without prior authorisation, fly any ACFT into this area.	Commanding Officer Simonstown Silvermine or of any person designated by him.
FAR 40 DONKERGAT				
Circle of 1.5 NM radius centred on the points 3305S 01759E	FL030 GND		Restrictions: As in ENR 5-1 para 2 a and b	Controlling authority: Chief ATC AIr Force Base TEL: +2722 706 2259 FREQ: 122.5 MHz.
FAR 41 SKURWERUG				
Circle of 1 NM radius centred on the point 330054S 0180314E	1500 FT AGL GND		Restrictions: As in ENR 5-1 para 2 a and b	Controlling authority: Chief ATC Air Force Base TEL: +2722 706 2259 FREQ: Langebaan APCH 122.5 MHz
FAR 42 LANGEBAANWEG RANGE				
This area bounded by lines joining the following points consecutively: 324500S 0174000E 324500S 0174900E 325800S 0175500E 330600S 0175600E 330810S 0175800E 331455S 0180550E 332100S 0180900E 332900S 0180430E 332700S 0175900E 330000S 0174000E 324500S 0174000E	1500 FT AGL GND	SAAF training area Air-ground firing, bombing and rocket firing range.	Restrictions: As in ENR 5-1 para 2 a and b	Controlling authority: Chief ATC Air Force Base TEL: +2722 706 2259 FREQ: Langebaan APCH 122.5 MHz

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 43 TABLE BAY HARBOUR				
The area bounded by straight lines joining the following points consecutively: 334852.85S 0182226.70E 334854.50S 0182819.99E 335142.88S 0182921.51E 335155.46S 0182921.60E 335216.08S 0182920.85E 335232.90S 0182918.18E 335243.11S 0182914.97E 335305.30S 0182906.94E 335318.79S 0182903.41E 335321.34S 0182902.74E 335321.48S 0182902.97E 335326.53S 0182900.94E 335328.69S 0182859.91E 335328.60S 0182856.67E 335328.97S 0182856.50E 335334.64S 0182853.80E 335350.65S 0182846.19E 335350.72S 0182846.42E 335339.19S 0182854.87E 335339.11S 0182854.95E 335336.01S 0182858.46E 335334.16S 0182901.65E 335334.36S 0182902.09E 335335.36S 0182901.35E 335336.70S 0182900.09E 335339.71S 0182856.28E 335345.63S 0182851.85E 335359.92S 0182841.20E 335401.71S 0182839.98E 335403.85S 0182838.52E 335405.09S 0182837.71E 335406.98S 0182836.65E 335413.76S 0182833.22E 335415.52S 0182832.25E 335417.26S 0182831.18E 335418.92S 0182830.02E 335420.56S 0182828.78E 335422.16S 0182827.45E 335430.07S 0182820.44E 335431.32S 0182819.20E 335432.49S 0182817.86E 335436.28S 0182812.90E 335437.23S 0182812.07E 335438.38S 0182810.35E 335439.27S 0182809.17E 335439.78S 0182808.60E 335440.60S 0182807.72E 335443.59S 0182804.58E 335445.62S 0182802.34E 335449.06S 0182758.35E 335451.51S 0182755.36E 335451.72S 0182755.09E 335453.75S 0182752.33E 335455.79S 0182749.29E 335457.39S 0182746.64E 335459.35S 0182743.38E 335501.87S 0182739.57E 335504.09S 0182735.99E 335506.30S 0182732.04E 335505.97S 0182730.43E 335506.13S 0182729.78E 335507.91S 0182727.66E 335509.98S 0182724.48E 335513.03S 0182719.39E 335515.83S 0182714.60E 335515.92S 0182706.88E 335516.42S 0182706.90E 335516.46S 0182705.34E 335516.34S 0182704.92E 335516.32S 0182704.24E 335516.28S 0182703.80E 335516.27S 0182702.76E 335517.28S 0182658.02E 335517.29S 0182656.82E 335515.75S 0182655.84E 335515.79S 0182652.53E 335516.02S 0182650.42E 335516.45S 0182647.53E 335516.26S 0182647.49E 335516.39S 0182645.02E 335516.45S 0182642.92E 335516.52S 0182637.66E 335516.47S 0182632.21E 335516.56S 0182632.21E	500 FT ALT GND	Harbour Area	No person shall fly over this harbour area below an altitude of 500 FT, except whilst taking off or landing, or take-off or land therein without prior authorisation	Port authority.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
335516.51S 0182630.11E 335516.19S 0182623.38E 335516.13S 0182622.88E 335516.06S 0182622.39E 335515.93S 0182621.75E 335515.69S 0182620.78E 335515.53S 0182620.13E 335515.33S 0182619.49E 335515.17S 0182618.99E 335514.92S 0182618.28E 335514.62S 0182617.54E 335514.36S 0182616.99E 335514.02S 0182616.31E 335513.76S 0182615.81E 335513.44S 0182615.26E 335513.03S 0182614.61E 335512.64S 0182614.02E 335512.18S 0182613.38E 335510.61S 0182611.25E 335509.64S 0182609.93E 335509.54S 0182609.88E 335506.56S 0182605.84E 335506.87S 0182605.54E 335502.59S 0182556.98E 335500.77S 0182554.47E 335457.09S 0182549.38E 335457.46S 0182548.99E 335457.14S 0182548.55E 335456.90S 0182548.21E 335455.08S 0182550.09E 335449.81S 0182542.81E 335448.62S 0182539.86E 335446.37S 0182534.02E 335442.88S 0182525.02E 335441.47S 0182524.50E 335441.07S 0182523.89E 335440.80S 0182523.56E 335440.49S 0182523.27E 335440.16S 0182523.02E 335439.79S 0182522.79E 335439.41S 0182522.62E 335439.01S 0182522.51E 335438.64S 0182522.44E 335438.26S 0182522.44E 335437.64S 0182522.53E 335437.15S 0182522.70E 335436.79S 0182522.87E 335436.45S 0182523.10E 335436.13S 0182523.37E 335435.84S 0182523.68E 335435.75S 0182523.79E 335435.12S 0182524.58E 335434.92S 0182524.85E 335434.51S 0182525.37E 335431.64S 0182528.42E 335423.71S 0182538.37E 335416.67S 0182547.19E 335415.64S 0182546.01E 335415.43S 0182546.28E 335415.23S 0182546.05E 335413.37S 0182548.35E 335412.84S 0182543.67E 335411.70S 0182542.35E 335411.56S 0182542.35E 335411.57S 0182543.13E 335411.44S 0182543.13E 335411.43S 0182540.16E 335407.98S 0182536.24E 335407.57S 0182536.21E 335405.50S 0182533.82E 335404.42S 0182534.76E 335402.27S 0182533.71E 335401.34S 0182534.17E 335400.24S 0182536.35E 335358.72S 0182541.97E 335358.39S 0182543.21E 335357.79S 0182542.98E 335357.36S 0182542.81E 335357.08S 0182542.71E 335400.09S 0182531.57E 335404.74S 0182525.72E 335403.16S 0182524.02E 335404.53S 0182515.02E 335405.50S 0182514.62E 335409.21S 0182506.74E 335407.90S 0182502.61E 335404.41S 0182457.29E 335404.92S 0182455.32E 335403.62S 0182454.46E 335402.91S 0182455.73E				

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
335403.00S 0182456.85E 335402.80S 0182456.88E 335402.65S 0182455.66E 335402.87S 0182454.53E 335403.43S 0182454.04E 335405.09S 0182359.73E 334852.85S 0182226.70E				
FAR 45 LANGEBAANWEG MILITARY FLYING AREA				
AREA A (a) The area bounded by straight lines joining the following points consecutively, but excluding the Langebaanweg CTR: 320540S 0181900E 320900S 0184400E 321100S 0185340E 331200S 0185900E. (b)Thence anti-clockwise along the arc of a circle, radius 50 NM centred on 335810S 0183621E to a point at 330900S 0183700E. (c) Thence straight lines joining the following points consecutively: 333100S 0183530E 333400S 0181900E 332000S 0174000E 322000S 0174000E (d) Thence a straight line to the starting point at 320540S 0181900E **AREA B** (a) The area bounded by straight lines joining the following points consecutively: 331200S 0185900E 332900S 0184700E 333100S 0183530E 330900S 0183700E (b) Thence clockwise along the arc of a circle, radius 50NM centred on 335810S 0183621E to the starting point at 331200S 0185900E.	Area "A" FL 195 1500 FT AGL Area "B" FL195 FL120	SAAF Training Area	Restrictions: As in ENR 5-1 para 2 a and b No person shall, without the authorisation of the Chief Air Traffic Controller, Flying Training School, Langebaanweg or of any person designated by him, fly any civil ACFT into these areas.	SAAF Training area Chief ATC Air Force Base TEL: +2722 706 2259 FREQ: Langebaan APCH 122.5 MHz Aircrew wishing to utilize FAR 45 BTN 1500 FT AGL and FL195 must establish CTC during HR of SER, and BCST outside HR of SER on FREQ 122.5 MHz callsign "Langebaan".
FAR 46 TOUWS RIVER WEAPONS TRAINING AREA				
a) From a point at 331600S 0194400E to a point at 331600S 0195700E. b) Thence to a point at 332300S 0195700E. c) Thence back to the starting point at 331600S 0194400E.	FL080 GND	Shooting range/ Mortar fire/ Small arms fire		Area Support base (ASB) Western Cape Range Safety TEL: +2721 787 1859
FAR 47 OUDTSHOORN MILITARY SHOOTING RANGE				
Circle of 3.8 NM radius centred on the point 333203S 0220840E	FL195 GND	Air-ground firing, bombing and rocket firing range	No person shall, without prior authorisation fly any ACFT into this area.	Commanding Officer, Artillery School, TEL: +2744 203 4141 or by any person designated by him.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 48 SALDANHA BAY HARBOUR				
The area bounded by straight lines joining the following points consecutively: 330300.84S 0174957.31E 330140.00S 0175326.00E 330157.60S 0175337.67E 330200.70S 0175345.01E 330207.43S 0175346.21E 330208.06S 0175350.30E 330223.73S 0175347.21E 330223.55S 0175403.66E 330234.80S 0175408.96E 330237.87S 0175413.80E 330247.45S 0175409.11E 330256.57S 0175432.18E 330303.42S 0175432.31E 330306.98S 0175441.02E 330240.85S 0175523.61E 330214.56S 0175619.28E 330154.79S 0175559.11E 330135.03S 0175621.14E 330135.78S 0175629.22E 330132.11S 0175631.83E 330134.79S 0175710.26E 330143.64S 0175717.32E 330143.31S 0175728.51E 330142.87S 0175728.65E 330142.03S 0175728.98E 330141.70S 0175729.09E 330141.05S 0175729.23E 330140.79S 0175728.80E 330140.55S 0175728.33E 330139.82S 0175728.02E 330139.15S 0175727.77E 330138.84S 0175727.65E 330138.52S 0175727.47E 330137.98S 0175727.08E 330136.38S 0175725.80E 330135.88S 0175725.38E 330135.61S 0175725.07E 330135.46S 0175724.87E 330135.13S 0175724.16E 330135.30S 0175721.17E 330135.11S 0175720.75E 330132.50S 0175722.04E 330123.79S 0175701.37E 330119.50S 0175648.15E 30107.88S 0175647.06E 330059.24S 0175654.78E 330100.27S 0175658.15E 330053.99S 0175656.73E 3330050.87S 0175700.90E 330049.43S 0175700.23E 330049.22S 0175658.62E 330042.72S 0175700.21E 330041.01S 0175704.15E 330038.08S 0175703.03E 330037.86S 0175659.76E 330029.48S 0175651.05E 330025.94S 0175644.63E 330001.35S 0175713.40E 325945.47S 0175800.55E 325943.48S 0175824.26E 325941.71S 0175837.06E 325940.55S 0175837.04E 325940.60S 0175834.00E 325926.78S 0175834.09E 325918.60S 0175834.13E 325911.03S 0175834.18E 325909.86S 0175836.11E 325916.04S 0175836.08E 325921.08S 0175856.27E 325922.07S 0175913.01E 325916.26S 0175913.58E 325916.95S 0175914.98E 325920.84S 0175922.90E 325921.69S 0175922.34E 325923.96S 0175927.03E 325921.91S 0175928.42E 325922.50S 0175929.64E 325922.80S 0175931.31E 325922.98S 0175933.81E 325923.13S 0175940.99E 325924.06S 0175953.82E 325924.57S 0175955.73E 325925.21S 0175956.86E 325926.70S 0175956.60E	500 FT ALT GND	Harbour Area	No person shall fly over these harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off or land therein without prior authority	Port authority

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
325927.44S 0175957.35E 325928.91S 0180002.83E 325930.06S 0180004.40E 325906.37S 0180015.06E 325855.94S 0180019.76E 325852.46S 0180027.38E 325914.61S 0180017.41E 325939.99S 0180005.97E 325940.48S 0180006.97E 325950.42S 0180027.61E 330000.16S 0180047.81E 330004.61S 0180058.55E 330016.69S 0180118.53E 330025.57S 0180104.12E 330033.34S 0180051.53E 330104.24S 0180128.94E 330126.14S 0180150.06E 330132.69S 0180154.35E 330158.49S 0180208.91E 330207.16S 0180211.49E 330207.35S 0180210.05E 330227.83S 0180216.16E 330230.96S 0180210.54E 330239.02S 0180211.98E 330242.71S 0180221.99E 330243.00S 0180226.12E 330246.03S 0180230.31E 330250.17S 0180229.62E 330252.64S 0180233.48E 330312.69S 0180234.44E 330316.92S 0180231.43E 330321.22S 0180233.82E 330339.33S 0180231.55E 330343.57S 0180228.71E 330345.66S 0180228.86E 330415.33S 0175942.47E 330417.48S 0175924.52E 330401.36S 0175846.19E 330529.45S 0175850.41E 330546.54S 0175836.21E 330557.45S 0175805.85E 330540.37S 0175735.85E 330611.86S 0175724.73E 330624.76S 0175708.39E 330644.37S 0175741.11E 330646.24S 0175808.44E 330740.41S 0175840.93E 330809.77S 0175812.96E 330832.42S 0175839.26E 330858.00S 0175958.00E 331100.81S 0175657.35E 330300.84S 0174957.31E				
FAR 49 PORT NOLLOTH HARBOUR				
The area bounded by straight lines joining the following points consecutively: 291533.00S 0164836.00E 291427.00S 0165118.00E 291449.46S 0165203.17E 291524.20S 0165204.37E 291524.27S 0165204.36E 291524.21S 0165205.40E 291524.13S 0165205.75E 291525.08S 0165206.04E 291525.28S 0165205.88E 291525.55S 0165205.73E 291525.82S 0165205.62E 291525.99S 0165205.58E 291526.16S 0165205.58E 291529.24S 0165206.40E 291529.29S 0165206.17E 291536.01S 0165209.60E 291550.96S 0165211.05E 291556.41S 0165203.19E 291558.65S 0165216.29E 291621.06S 0165226.82E 291633.19S 0165240.10E 291704.80S 0165246.20E 291709.41S 0165238.57E 291713.44S 0165242.77E 291725.82S 0165240.54E 291728.00S 0165235.00E 291827.00S 0165008.00E 291533.00S 0164836.00E	500 FT ALT GND		No person shall fly over these harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off or land therein without prior authority	Port authority

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 50 DURBAN				
Area bounded by lines drawn as FLW: a) From a point at 295833.78S 0305557.56E thence a straight line to a point at 295733.59S 0305637.54E b) Thence a straight line to a point at 295659.06S 0305713.23E c) Thence a straight line to a point at 295819.91S 0305916.26E (0.5NM out to sea) d) Thence a straight line to a point at 300006.13S 0305726.07E (0.5NM out to sea) e) Thence a straight line back to the starting point at 295833.78S 0305557.56E	500 FT ALT GND		Class G Airspace	Prior permission to enter airspace to be obtained from the Officer Commanding at the base. TEL: +2731 450 4712
FAR 51 DURBAN HARBOUR				
The area bounded by straight lines joining the following points consecutively: 294843.00S 0310230.99E 294842.99S 0310728.99E 295407.00S 0310728.99E 295406.99S 0310226.99E 295408.62S 0310226.46E 295406.97S 0310224.49E 295404.67S 0310225.27E 295358.36S 0310228.59E 295340.24S 0310242.08E 295328.94S 0310252.36E 295307.80S 0310311.12E 295304.73S 0310313.84E 295257.98S 0310318.48E 295259.27S 0310319.82E 295258.20S 0310321.09E 295256.95S 0310322.22E 295254.82S 0310323.80E 295252.94S 0310325.24E 295248.87S 0310328.22E 295247.75S 0310329.09E 295243.64S 0310332.46E 295239.63S 0310335.60E 295238.80S 0310336.20E 295237.92S 0310336.78E 295236.92S 0310337.36E 295235.95S 0310337.83E 295234.89S 0310338.19E 295231.76S 0310339.13E 295231.70S 0310339.03E 295225.83S 0310340.11E 295221.63S 0310338.72E 295219.88S 0310337.59E 295218.62S 0310336.12E 295218.60S 0310334.16E 295219.10S 0310333.02E 295224.46S 0310328.48E 295227.06S 0310324.75E 295232.88S 0310320.31E 295242.24S 0310316.39E 295246.73S 0310313.37E 295250.48S 0310309.59E 295254.57S 0310305.11E 295256.81S 0310300.54E 295259.48S 0310256.98E 295300.78S 0310255.26E 295305.72S 0310250.97E 295311.04S 0310245.58E 295316.37S 0310241.36E 295324.19S 0310230.71E 295328.61S 0310227.54E 295332.33S 0310221.43E 295332.97S 0310222.45E 295334.05S 0310221.42E 295332.61S 0310220.96E 295333.53S 0310217.30E 295336.83S	500 FT ALT GND	Harbour Area	No person shall fly over the harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off or land therein, without prior authority	Port authority

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
0310217.18E 295341.04S 0310227.46E 295349.54S 0310220.01E 295350.86S 0310215.20E 295354.12S 0310209.79E 295353.52S 0310209.06E 295352.91S 0310209.71E 295352.41S 0310209.05E 295352.47S 0310208.59E 295352.83S 0310208.21E 295346.05S 0310159.88E 295341.51S 0310200.95E 295331.84S 0310205.11E 295331.75S 0310204.86E 295331.79S 0310204.84E 295331.59S 0310204.25E 295330.92S 0310203.90E 295330.66S 0310203.17E 295330.30S 0310203.33E 295330.15S 0310202.90E 295330.01S 0310202.42E 295329.96S 0310202.20E 295329.92S 0310202.01E 295329.88S 0310201.81E 295329.86S 0310201.62E 295329.84S 0310201.43E 295329.82S 0310201.23E 295329.81S 0310201.03E 295329.80S 0310200.83E 295329.81S 0310200.64E 295329.80S 0310200.42E 295329.81S 0310200.23E 295329.86S 0310200.01E 295329.88S 0310159.74E 295329.93S 0310159.45E 295329.98S 0310159.26E 295330.03S 0310159.07E 295330.11S 0310158.79E 295330.24S 0310158.43E 295330.42S 0310158.05E 295330.57S 0310157.75E 295330.77S 0310157.43E 295330.98S 0310157.11E 295331.22S 0310156.82E 295331.53S 0310156.49E 295331.94S 0310156.12E 295332.74S 0310155.61E 295333.67S 0310155.14E 295333.92S 0310153.35E 295334.75S 0310152.57E 295338.79S 0310145.71E 295338.87S 0310145.77E 295339.33S 0310144.88E 295339.19S 0310144.79E 295340.24S 0310142.50E 295340.32S 0310141.87E 295340.23S 0310141.31E 295340.16S 0310141.00E 295340.10S 0310140.74E 295340.50S 0310140.26E 295340.73S 0310140.13E 295340.94S 0310140.00E 295340.96S 0310139.78E 295341.57S 0310138.85E 295342.12S 0310138.92E 295342.54S 0310138.22E 295342.91S 0310137.95E 295343.19S 0310138.14E 295344.51S 0310136.24E 295347.92S 0310130.49E 295351.54S 0310124.39E 295352.58S 0310122.25E 295353.11S 0310120.23E 295353.28S 0310118.49E 295353.25S 0310115.46E 295353.55S 0310112.62E 295355.21S 0310106.31E 295355.92S 0310104.57E 295357.24S 0310102.70E 295359.08S 0310101.27E 295359.00S 0310101.00E 295405.91S 0310058.99E 295412.18S 0310057.24E 295413.94S 0310056.47E 295413.64S 0310055.89E 295415.33S 0310054.46E 295420.37S 0310047.08E 295424.73S 0310036.18E 295424.75S 0310035.65E 295424.11S 0310034.66E 295418.88S				

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
0310039.47E 295418.54S 0310039.01E 295422.76S 0310032.86E 295421.48S 0310031.02E 295419.85S 0310030.58E 295419.84S 0310030.38E 295419.87S 0310029.65E 295418.64S 0310025.59E 295417.53S 0310024.01E 295359.75S 0310012.77E 295357.74S 0310011.54E 295351.78S 0310007.73E 295352.00S 0310007.26E 295351.75S 0310006.67E 295336.17S 0305957.09E 295334.88S 0305956.20E 295333.95S 0305955.42E 295332.95S 0305954.42E 295331.73S 0305952.94E 295326.66S 0305946.56E 295326.20S 0305946.15E 295318.97S 0305936.83E 295317.94S 0305934.80E 295317.73S 0305933.85E 295317.30S 0305930.98E 295316.93S 0305930.09E 295316.98S 0305930.06E 295316.56S 0305929.31E 295316.64S 0305929.23E 295315.69S 0305927.88E 295315.26S 0305927.32E 295314.34S 0305926.35E 295312.91S 0305925.46E 295312.84S 0305925.45E 295311.08S 0305925.21E 295309.48S 0305925.88E 295308.47S 0305926.69E 295307.10S 0305925.01E 295305.99S 0305925.83E 295304.97S 0305926.72E 295252.49S 0305941.59E 295250.87S 0305943.52E 295249.06S 0305945.41E 295244.65S 0305949.64E 295243.27S 0305950.65E 295240.18S 0305952.92E 295239.21S 0305953.70E 295234.64S 0305957.04E 295233.32S 0305958.19E 295227.48S 0310003.82E 295211.30S 0310021.16E 295210.69S 0310021.75E 295208.01S 0310024.96E 295206.66S 0310026.16E 295206.70S 0310026.22E 295206.03S 0310026.81E 295206.11S 0310026.94E 295203.93S 0310028.72E 295202.93S 0310029.54E 295201.31S 0310031.29E 295159.88S 0310032.87E 295159.01S 0310031.80E 295157.12S 0310034.31E 295156.98S 0310034.69E 295156.84S 0310035.29E 295156.78S 0310035.73E 295156.76S 0310036.94E 295157.01S 0310038.15E 295157.17S 0310038.55E 295157.34S 0310038.92E 295157.44S 0310039.09E 295157.54S 0310039.27E 295157.64S 0310039.44E 295157.76S 0310039.60E 295157.86S 0310039.77E 295159.10S 0310041.49E 295159.42S 0310041.94E 295159.18S 0310042.17E 295159.75S 0310042.78E 295159.61S 0310042.94E 295200.64S 0310044.25E 295201.23S 0310046.74E 295201.25S 0310047.60E 295201.02S 0310049.32E 295200.64S 0310050.77E 295159.96S 0310052.49E 295157.83S 0310056.45E 295159.02S 0310055.01E 295158.59S 0310055.83E 295158.63S 0310055.84E 295156.47S				

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
0310059.85E 295156.38S 0310059.70E 295155.75S 0310100.87E 295155.68S 0310100.86E 295155.05S 0310102.02E 295154.30S 0310103.31E 295153.69S 0310104.24E 295153.19S 0310104.93E 295153.05S 0310105.10E 295146.33S 0310113.76E 295146.33S 0310113.84E 295146.31S 0310114.02E 295146.35S 0310114.24E 295146.45S 0310114.41E 295146.68S 0310114.64E 295146.74S 0310114.77E 295146.77S 0310114.88E 295146.74S 0310115.01E 295146.07S 0310116.05E 295145.61S 0310116.95E 295145.18S 0310118.05E 295144.87S 0310119.31E 295144.77S 0310120.06E 295144.73S 0310120.56E 295144.69S 0310120.73E 295144.57S 0310120.93E 295144.38S 0310121.02E 295143.89S 0310121.13E 295143.60S 0310121.35E 295142.37S 0310149.18E 295142.23S 0310149.17E 295142.07S 0310150.86E 295142.08S 0310151.70E 295142.13S 0310152.53E 295142.22S 0310153.36E 295142.34S 0310154.18E 295142.39S 0310154.48E 295142.44S 0310154.78E 295142.62S 0310155.63E 295142.89S 0310156.75E 295143.78S 0310157.24E 295144.65S 0310158.20E 295142.85S 0310158.83E 295142.50S 0310201.22E 295140.06S 0310200.74E 295140.00S 0310201.05E 295140.15S 0310202.35E 295138.89S 0310209.78E 295140.12S 0310210.97E 295202.84S 0310222.74E 295203.58S 0310223.12E 295204.69S 0310223.90E 295205.07S 0310224.26E 295205.56S 0310224.71E 295206.42S 0310225.90E 295207.16S 0310227.67E 295208.23S 0310230.97E 295208.72S 0310232.20E 295209.43S 0310233.19E 295211.19S 0310234.84E 295215.17S 0310236.91E 295218.32S 0310241.60E 295218.88S 0310243.24E 295220.10S 0310246.79E 295220.69S 0310248.50E 295221.41S 0310250.60E 295222.45S 0310253.78E 295223.40S 0310258.74E 295223.34S 0310259.12E 295223.58S 0310300.66E 295224.38S 0310304.48E 295214.31S 0310312.52E 295213.26S 0310312.73E 295212.67S 0310313.83E 295155.28S 0310246.03E 295144.39S 0310238.49E 295129.34S 0310231.20E 295110.74S 0310224.92E 295052.52S 0310218.36E 295032.11S 0310213.88E 295012.67S 0310213.31E 294950.11S 0310212.76E 294930.83S 0310215.13E 294911.73S 0310220.65E 294843.00S 0310230.99E				

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 52 RICHARDS BAY HARBOUR				
284939.54S 0321340.22E 285520.51S 0320726.20E 285106.26S 0320235.84E 285034.02S 0320307.36E 285008.13S 0320234.93E 285003.69S 0320224.61E 284935.70S 0320201.51E 284830.08S 0320119.94E 284815.01S 0320049.71E 284803.12S 0315915.28E 284756.10S 0315858.99E 284750.21S 0315907.56E 284756.10S 0315912.53E 284807.31S 0320044.61E 284803.76S 0320050.38E 284655.23S 0320117.83E 284650.51S 0320103.31E 284649.16S 0320103.85E 284651.88S 0320112.63E 284651.77S 0320112.67E 284650.24S 0320113.28E 284649.70S 0320111.54E 284649.79S 0320116.76E 284652.74S 0320126.28E 284651.09S 0320131.73E 284655.07S 0320149.45E 284653.90S 0320419.85E 284653.78S 0320420.36E 284653.77S 0320421.48E 284653.88S 0320422.09E 284703.78S 0320439.15E 284711.44S 0320446.59E 284712.88S 0320447.56E 284714.54S 0320447.91E 284715.16S 0320447.91E 284715.93S 0320447.72E 284728.83S 0320439.54E 284730.03S 0320439.16E 284731.30S 0320439.20E 284731.97S 0320439.37E 284734.27S 0320439.85E 284734.28S 0320439.80E 284735.90S 0320440.14E 284735.86S 0320440.39E 284736.08S 0320440.44E 284736.12S 0320440.24E 284738.35S 0320440.71E 284738.22S 0320441.55E 284738.31S 0320441.57E 284738.05S 0320443.15E 284738.22S 0320443.18E 284738.03S 0320444.38E 284736.28S 0320444.03E 284736.20S 0320444.47E 284800.46S 0320523.80E 284803.62S 0320533.27E 284804.88S 0320532.87E 284805.22S 0320533.32E 284809.04S 0320538.61E 284722.92S 0320644.93E 284939.54S 0321340.22E	500 FT ALT GND	Harbour Area	No person shall fly over the harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off or land therein, without prior authority.	Port authority
FAR 62 HEYSTEKRAND				
The area bounded by straight lines joining the FLW points consecutively: 2509S 02715E - 2508S 02724E - 2517S 02719E - 2517S 02717E - 2509S 02715E	1000 FT AGL GND	Ammunition Depot	No person shall, without prior authorisation fly any aircraft into this area.	Factory Manager, or any person designated by him Mankwe Explosives Factory, PB 1234, Heystekrand 0302.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 63 SECUNDA				
The area bounded by straight lines joining the following points consecutively: 263248S 0291046E 263417S 0291054E 263504S 0290821E 263312S 0290812E 263248S 0291046E	FL080 GND	Explosives Factory	No person shall, without prior authorisation, fly any aircraft into this area.	Chief Manager of Sasol Two, or any person designated by him
FAR 65 SASOLBURG				
The area bounded by the arcs of circles with radius of 1 NM and centre points: 264935S 0275052E and 264821S 0275117E and the other common tangents to these circles.	1000 FT AGL GND		No person shall, without prior authority to fly any aircraft into this area.	General Manager or Assistant General Manager of the South African Coal, Oil and Gas Corporation
FAR 71 TRANSVAAL MILITARY MIDDLE FLYING AREA				
The area bounded by lines drawn as follows, but excluding FAR 181: a) From the starting point 220815S 0293710E on the Limpopo River, Eastwards and Southwards along the RSA boundary with Zimbabwe and Mozambique to a point 252600S 0315900E. b) Then a straight line to a point at 251820.87S 0312810.73E. c) Then anti-clockwise along the arc of a circle, radius 20NM centred at 252251.70S 0310640.05E, to a point at 250428.11S 0305751.91E. d) Then a straight line to a point at 250332.91S 0305725.57E. e) Then anti-clockwise along the arc of a circle, radius 21NM centred at 252251.70S 0310640.05E, to a point at 252150.65S 0304330.71E. f) Then a straight line to a point at 252123.38S 0303335.50E. g) Then a straight line to a point at 253311S 0293614E h) Then a straight line to a point at 244252S 0302648E i) Then a straight line to a point at 243558S 0301839E j) Then a straight line to a point at 254054S 0291320E on the arc of a circle, radius 60 NM, centred on 260831S 0281415E k) Then anti-clockwise along this arc to a point at 251000S 0282946E l) Then a straight line to a point at 242628S 0290910E m) Then a straight line to a point at 235940S 0285450E	FL195 FL105	SAAF Training Area	Restrictions: As in ENR 5-1 para 2 a and b	ATC Executive Lowveld Airspace Control Sector TEL: +2715 799 2251 Lowveld FIS: FREQ 119.0 MHz.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
n) Then a straight line to the starting point at 220815S 0293710E.				
FAR 75 POTCHEFSTROOM MILITARY SHOOTING RANGE				
Circle of 7 NM radius centred on the point 263800S 0265900E	FL195 GND	Mortar, machine gun, armoured vehicle and bombing range.	Restrictions: As in ENR 5-1 para 2 a and b.	Officer Commanding (Range Management & Safety) Army Support Base TEL: (018) 289 3388 / 3381
FAR 76 ROODEWAL				
The area bounded by lines drawn as follows: (a) From a point at 234305.000S 0293000.000E along a straight line to a point at 232703.592S 0293523.009E. (b) Thence a straight line to a point at 232702.102S 0295730.771E (c) Thence a straight line to a point at 233858.000S 0300154.000E. (d) Thence a straight line to a point at 234346.729S 0294944.373E (e) Thence a straight line to a point at 234832.859S 0293738.144E (f) Thence a straight line back to the starting point 234305.000S 0293000.000E.	FL195 GND	Air-ground firing range.	Restrictions: As in ENR 5.1 para 2 a and b Note: When not active FAR 76 becomes part of Makhado CTR/ TMA.	Chief ATC Air Force Base Makhado TEL: (015) 5772240 FREQ: Makhado APCH 121.2 MHz. Makhado TWR 119.8 MHz
FAR 78 KRUGER NATIONAL PARK RESTRICTED AREA				
The area bounded by lines drawn as follows: (a) From a point at 2220S 0303630E on the Limpopo river, Eastwards and Southwards along the RSA. International boundary with Zimbabwe and Mozambique to a point at 2526S 03159E (b) Thence a straight line to a point at 2529S 0314130E (c) Thence a straight line to a point at 2436S 03135E (d) Thence a straight line to a point at 241030S 03128E (e) Thence a straight line to a point at 2329S 03102E (f) Thence a straight line to the starting point.	FL 105 GND	SAAF Training Area	Restrictions: As in ENR 5-1 para 2 a and b	ATC Executive Lowveld Airspace Control Sector TEL: (015) 799 2251 Lowveld FIS: FREQ 119.0 MHz.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 82 PIENAARS RIVER				
The area bounded by straight lines joining the following points consecutively: 252200S 0281800E 251600S 0281815E 251600S 0282200E 252100S 0282200E 252200S 0281800E	FL105 GND		Restrictions: As in ENR 5-1 para 2 a and b	Officer Commanding SA Air Force Command Post TEL: (012) 312 2034/5 FAX: (012) 323 2796
FAR 86 GRAHAMSTOWN MILITARY SHOOTING RANGE				
The area bounded by straight lines joining the following points consecutively: 331153S 0263005E 331306S 0263459E 331200S 0263431E 331245S 0263719E 331327S 0263745E 331438S 0263659E 331449S 0263553E 331430S 0263352E 331354S 0263210E 331610S 0263026E 331533S 0262803E 331351S 0262706E 331154S 0262738E 331153S 0263005E	FL120 GND	Military Firing Range	No person shall, without prior authorisation fly any civil ACFT into this area.	Commanding Officer, 6 SA. Infantry, Grahamstown, or any person designated by him.
FAR 87 EAST LONDON HARBOUR				
The area bounded by straight lines joining the following points consecutively: 325950.90S 0275706.24E 330018.56S 0275804.73E 330312.55S 0275531.74E 330238.81S 0275355.86E 330237.69S 0275351.71E 330237.22S 0275351.58E 330235.78S 0275357.33E 330234.72S 0275400.83E 330232.02S 0275405.98E 330229.55S 0275409.67E 330227.55S 0275412.30E 330225.58S 0275414.85E 330223.31S 0275417.17E 330222.21S 0275418.31E 330209.55S 0275429.28E 330156.11S 0275440.92E 330155.68S 0275440.84E 330152.83S 0275443.31E 330152.71S 0275443.34E 330152.44S 0275443.40E 330152.01S 0275443.29E 330146.31S 0275434.05E 330146.18S 0275432.52E 330146.14S 0275432.14E 330145.90S 0275429.40E 330145.36S 0275423.39E 330145.31S 0275422.75E 330144.79S 0275421.39E 330143.56S 0275418.24E 330143.22S 0275417.04E 330140.52S 0275410.85E 330139.92S 0275408.93E 330139.25S 0275408.14E 330137.93S 0275404.95E 330137.63S 0275404.07E 330136.34S 0275400.76E 330134.31S 0275401.88E 330133.34S 0275359.38E 330135.36S 0275358.27E 330133.85S 0275354.69E 330132.23S 0275353.23E 330131.36S 0275352.38E 330130.56S 0275351.03E 330130.21S 0275350.08E 330129.43S 0275345.43E 330128.83S 0275343.81E 330128.08S 0275342.67E 330128.25S 0275341.47E 330129.03S 0275341.09E 330128.94S	500 FT ALT GND	Harbour Area	No ACFT shall fly over these harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off and land therein, without prior authorisation	Port authority

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
0275340.90E 330129.38S 0275339.29E 330128.87S 0275337.93E 330128.55S 0275336.60E 330128.57S 0275336.13E 330127.64S 0275336.23E 330127.95S 0275332.59E 330128.47S 0275329.93E 330128.60S 0275328.92E 330129.23S 0275327.04E 330129.57S 0275326.44E 330130.06S 0275326.33E 330130.67S 0275325.82E 330130.56S 0275323.63E 330128.40S 0275323.07E 330122.16S 0275328.49E 330119.20S 0275327.86E 330117.81S 0275336.48E 330117.58S 0275340.36E 330107.61S 0275341.20E 330105.08S 0275341.04E 330105.32S 0275343.16E 330106.57S 0275343.45E 330108.10S 0275344.39E 330110.80S 0275344.63E 330111.29S 0275344.72E 330112.45S 0275345.48E 330112.38S 0275346.38E 330114.28S 0275350.19E 330114.63S 0275350.94E 330115.28S 0275351.91E 330116.15S 0275355.01E 330117.22S 0275356.90E 330117.80S 0275357.79E 330118.24S 0275359.72E 330117.25S 0275402.20E 330117.56S 0275403.33E 330117.73S 0275403.44E 330120.09S 0275406.26E 330118.83S 0275407.74E 330118.91S 0275409.37E 330119.82S 0275409.71E 330119.85S 0275411.45E 330119.72S 0275412.01E 330120.34S 0275412.74E 330120.61S 0275413.56E 330122.10S 0275417.10E 330122.44S 0275417.39E 330122.52S 0275417.42E 330123.18S 0275418.88E 330123.11S 0275419.19E 330124.66S 0275425.61E 330124.68S 0275426.22E 330124.47S 0275427.14E 330123.93S 0275428.38E 330123.49S 0275429.01E 330122.51S 0275429.74E 330121.71S 0275429.97E 330120.37S 0275430.01E 330115.86S 0275428.40E 330115.47S 0275428.99E 330114.15S 0275429.57E 330113.97S 0275429.54E 330113.33S 0275429.91E 330112.21S 0275430.58E 330111.56S 0275430.35E 330111.51S 0275433.24E 330111.31S 0275433.75E 330110.13S 0275434.12E 330106.60S 0275435.93E 330106.31S 0275437.17E 330108.19S 0275437.90E 330112.69S 0275435.54E 330113.48S 0275435.54E 330114.21S 0275434.56E 330114.88S 0275433.86E 330114.98S 0275433.78E 330115.07S 0275433.73E 330118.13S 0275433.78E 330118.98S 0275433.92E 330121.11S 0275436.03E 330120.24S 0275437.28E 330122.24S 0275437.73E 330123.73S 0275436.99E 330125.64S 0275437.21E 330126.28S 0275437.71E 330126.60S 0275439.45E 330126.23S 0275439.56E 330127.01S 0275441.15E 330127.47S 0275442.77E 330128.01S				

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
0275442.70E 330130.54S 0275442.70E 330130.82S 0275443.33E 330131.06S 0275444.24E 330130.75S 0275444.47E 330130.68S 0275444.68E 330130.56S 0275445.24E 330127.53S 0275449.03E 330126.63S 0275450.50E 330127.07S 0275451.49E 330127.71S 0275451.21E 330128.41S 0275451.18E 330130.48S 0275451.13E 330131.16S 0275451.80E 330118.93S 0275504.17E 330058.81S 0275515.62E 330037.68S 0275522.47E 330019.98S 0275554.15E 330006.24S 0275634.19E 325950.90S 0275706.24E				
FAR 88 PORT ELIZABETH HARBOUR				
335148.31S 0253806.31E 335147.99S 0253908.91E 340144.02S 0254305.08E 340130.35S 0254156.80E 340126.41S 0254154.18E 340123.92S 0254150.44E 340121.25S 0254149.05E 340116.56S 0254145.13E 340111.75S 0254141.92E 340105.35S 0254139.55E 340051.23S 0254133.57E 340037.99S 0254128.74E 340036.87S 0254126.43E 340027.74S 0254122.49E 340019.15S 0254119.67E 340017.58S 0254119.15E 340010.88S 0254116.05E 340002.35S 0254110.82E 335958.61S 0254105.73E 335947.58S 0254057.41E 335942.78S 0254053.65E 335934.92S 0254045.29E 335932.07S 0254041.13E 335927.29S 0254035.63E 335921.61S 0254027.43E 335913.67S 0254022.19E 335902.21S 0254016.80E 335901.57S 0254016.30E 335902.40S 0254012.40E 335858.78S 0254002.87E 335856.68S 0253955.13E 335854.46S 0253939.09E 335850.50S 0253932.38E 335848.03S 0253930.43E 335848.60S 0253926.69E 335844.70S 0253917.65E 335842.95S 0253913.58E 335836.07S 0253859.90E 335833.99S 0253855.59E 335833.73S 0253855.78E 335833.57S 0253855.83E 335832.97S 0253855.81E 335832.81S 0253855.68E 335832.41S 0253855.18E 335831.86S 0253853.77E 335831.11S 0253852.42E 335830.99S 0253852.07E 335830.93S 0253851.62E 335830.93S 0253851.20E 335831.02S 0253850.87E 335831.15S 0253850.71E 335814.07S 0253847.23E 335806.91S 0253845.77E 335811.73S 0253838.49E 335812.03S 0253838.77E 335817.56S 0253830.52E 335817.62S 0253826.22E 335818.19S 0253825.48E 335819.26S 0253826.03E 335818.67S 0253824.87E 335819.21S 0253824.08E 335817.63S 0253818.30E 335817.75S 0253818.22E 335817.57S 0253817.55E 335815.91S 0253813.24E 335815.65S 0253812.74E	500 FT ALT GND	Harbour Area	No ACFT shall fly over these harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off and land therein, without prior authorisation	Port authority

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
335813.56S 0253809.55E 335812.85S 0253810.11E 335812.69S 0253809.01E 335812.44S 0253807.99E 335812.15S 0253807.14E 335810.34S 0253803.27E 335810.02S 0253803.49E 335807.89S 0253758.86E 335806.44S 0253756.39E 335806.06S 0253756.64E 335804.16S 0253753.91E 335801.71S 0253750.83E 335801.51S 0253750.58E 335758.92S 0253748.29E 335758.61S 0253747.80E 335755.91S 0253746.09E 335751.56S 0253743.65E 335750.63S 0253742.77E 335750.27S 0253742.48E 335749.06S 0253741.69E 335743.30S 0253738.96E 335741.45S 0253737.26E 335740.98S 0253736.57E 335739.60S 0253734.06E 335739.13S 0253733.39E 335738.61S 0253732.80E 335737.99S 0253732.13E 335737.48S 0253731.58E 335737.38S 0253731.47E 335729.53S 0253722.55E 335729.16S 0253722.04E 335725.51S 0253716.34E 335724.28S 0253714.11E 335713.11S 0253656.65E 335711.31S 0253654.23E 335709.96S 0253652.74E 335708.43S 0253651.32E 335706.94S 0253650.15E 335703.60S 0253647.88E 335702.56S 0253647.21E 335701.82S 0253646.79E 335701.13S 0253646.48E 335700.05S 0253646.12E 335654.01S 0253644.72E 335652.17S 0253644.38E 335633.86S 0253641.67E 335550.68S 0253640.04E 335548.20S 0253640.04E 335544.97S 0253640.00E 335534.93S 0253641.94E 335510.67S 0253646.60E 335504.90S 0253647.71E 335452.73S 0253651.37E 335450.84S 0253653.16E 335449.23S 0253654.67E 335447.32S 0253655.88E 335446.35S 0253656.34E 335435.20S 0253700.45E 335431.90S 0253701.54E 335338.08S 0253717.69E 335331.69S 0253719.42E 335324.73S 0253721.05E 335321.48S 0253721.71E 335315.53S 0253723.62E 335217.24S 0253750.41E 335214.41S 0253744.76E 335156.91S 0253752.83E 335148.31S 0253806.31E				

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 88 PORT ELIZABETH HARBOUR (PORT OF NGQURA PORTION)				
The area bounded by straight lines joining the following points consecutively: 334315.86S 0255112.50E 334351.45S 0255155.36E 340144.02S 0254305.08E 335147.99S 0253908.91E 335148.31S 0253806.31E 334926.18S 0253944.87E 334920.72S 0253935.75E 334859.44S 0253900.24E 334825.67S 0253914.05E 334810.29S 0253920.24E 334804.22S 0253922.82E 334801.13S 0253924.20E 334758.29S 0253925.59E 334756.81S 0253926.40E 334755.46S 0253927.47E 334754.30S 0253928.84E 334753.38S 0253930.44E 334752.74S 0253932.22E 334752.39S 0253934.12E 334752.36S 0253936.07E 334752.63S 0253937.98E 334753.01S 0253939.19E 334753.21S 0253939.80E 334754.90S 0253943.12E 334757.93S 0253947.88E 334756.39S 0253949.30E 334753.19S 0253944.27E 334751.94S 0253942.63E 334750.71S 334751.94S 0253942.63E 334750.71S 0253941.33E 334749.33S 0253940.32E 334747.80S 0253939.69E 334736.21S 0253936.86E 334734.85S 0253936.70E 334733.24S 0253936.90E 334731.70S 0253937.50E 334730.77S 0253938.25E 334729.77S 0253938.42E 334727.60S 0253939.62E 334722.54S 0253942.90E 334715.71S 0253948.02E 334713.86S 0253949.96E 334705.61S 0253954.72E 334703.75S 0253955.32E 334658.96S 0253956.85E 334655.16S 0253957.91E 334652.03S 0253958.96E 334648.60S 0254000.10E 334645.11S 0254001.06E 334641.53S 0254003.06E 334636.43S 0254004.66E 334636.74S 0254005.16E 334632.37S 0254005.77E 334630.94S 0254006.14E 334628.03S 0254007.45E 334625.31S 0254009.27E 334622.76S 0254011.41E 334620.44S 0254013.90E 334617.10S 0254019.24E 334612.88S 0254026.14E 334611.85S 0254027.82E 334606.97S 0254035.79E 334603.73S 0254040.21E 334601.22S 0254044.70E 334558.83S 0254049.27E 334556.18S 0254054.74E 334553.53S 0254059.54E 334547.77S 0254111.78E 334544.30S 0254119.14E 334538.87S 0254131.07E 334632.58S 0254252.95E 334709.77S 0254209.78E 334716.69S 0254216.85E 334315.86S 0255112.50E	500 FT ALT GND	Harbour Area	No ACFT shall fly over these harbour areas below an altitude of 500 FT, except whilst taking off or landing, or take-off and land therein, without prior authorisation	Port authority

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 105 JAN KEMPDORP DEMOLITION RANGE				
Circle: Radius 2.5 NM Centre: 280430S 0244300E	4000 FT AGL GND	Demolition range	No persons shall, without prior authority fly any ACFT into this area	Commanding Officer, 93 Ammunition Depot, Jan Kempdorp, or any person designated by him
FAR 144 CAPE OF GOOD HOPE NATURE RESERVE				
The area bounded by lines drawn as follows: From a point at 341200S 0182230E (Scarborough on the Atlantic coast) a straight line Eastwards to 341600S 0182820E (Smitswinkel Bay on the False Bay coast) Thence clockwise along the coastline to the starting point.	2000 FT ALT GND		No person shall fly any aircraft, other than an aircraft engaged in search and rescue operations under the directions of a Rescue Coordination Centre or a helicopter engaged on marine operations requiring to land to refuel, within this area.	Rescue Coordination Centre
FAR 147 OVERBERG (CP)				
The area bounded by lines drawn as follows, but excluding the Overberg TMA and CTR/ATZ: a) From a point at 341739.88S 0193147.56E a straight line to a point at 341718.44S 0200953.25E. b) Thence a straight line to a point at 341720.00S 0205900.00E c) Thence a straight line to a point at 341714.51S 0211925.47E d) Thence a straight line to a point at 341440.42S 0212447.60E e) Thence a straight line to a point at 341419.20S 0215029.73E f) Thence Anti-Clockwise along the arc of a circle radius 30NM and centred at 340026.66S 0222233.62E to a point at 342356.66S 0220000.00E g) Thence a straight line to a point at 350311.36S 0220000.00E h) Thence a straight line to a point at 351300.00S 0220000.00E i) Thence a straight line to a point at 351300.00S 0190400.00E j) Thence a straight line to a point at 344241.29S 0190400.00E	FL195 GND	Flight Test area	No person shall without prior authorisation fly any civil aircraft into this area;	Base command post.Chief Air Traffic Controller OVERBERG TEL: +2728 425 4081 After Hours: +2728 425 4182 ACFT to broadcast on FREQ 119.8 MHz whilst in FAR 147

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
k) Thence Anti-Clockwise along the arc of a circle radius 50NM and centred at 335810.82S 0183618.19E to a point at 343650.03S 0191440.96E l) Thence Anti-Clockwise along the arc of a circle radius 50NM and centred at 335810.82S 0183618.19E to a point at 342404.44S 0192753.82E m) Thence Anti-Clockwise along the arc of a circle radius 50NM and centred at 335810.82S 0183618.19E back to the starting point at 341739.88S 0193147.56E.				
FAR 148 ALKANTPAN TEST RANGE				
The area bounded by lines joining the following points consecutively: 300045S 0211724E 294659S 0211724E 294659S 0214308E 295324S 0221234E 295512S 0221638E 295753S 0221633E 295842S 0221439E 300320S 0215125E 300045S 0213649E 300045S 0211724E	FL195 GND		No aircraft may be operated within this airspace without the permission of the controlling authority.	Gerotek Toetsfasiliteite (Edms) Bpk Chief of Security TEL: +2753 355 5000 FAX: +2753 355 5001
FAR 149 VALS BAY				
The area bounded by lines drawn as follows:- excluding FAP 33 and FAR 39: (a) From a point at 340520S 0183330E a straight line to a point at 340600S 0182850E (b) Thence a straight line to a point at 340810S 0182600E (c) Thence a straight line to a point at 341100S 0182600E (d) Thence a straight line to a point at 341400S 0182830E (e) Thence a straight line to a point at 342000S 0183000E (f) Thence a straight line to a point at 342000S 0184930E (g) Thence a straight line to a point at 341800S 0184830E (h) Thence a straight line to a point at 341440S 0185120E (i) Thence a straight line to a point at 341120S 0184845E (j) Thence a straight line to a point at 340930S 0185200E (k) Thence a straight line to a point at 340530S 0184830E (l) Thence a straight line to a point at 340500S 0184650E (m) Thence clockwise along the arc of a circle, radius 11 NM and centre at 335810S 0183621E to a point 340909S 0183430E	2500 FT ALT MSL	Weapons Firing Range	No person shall without prior authorisation fly any aircraft into this area. No weapons firing of any description shall take place in this area unless authorisation is obtained from and continuous radio communication is maintained with Cape Town International Airport Air Traffic Control via Sector Control on frequency 132.7 MHz	Manager ATS Cape Town International Airport TEL: +2721 937 1116 FREQ: Cape Town APCH 119.7 MHz

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
(n) Thence a straight line to a point at 340520S 0183330E				
FAR 150 MOSSGAS				
Circle of 1 NM radius centred on 341010S 0215900E	1500 FT ALT GND	No person shall, without the prior authorisation fly any aircraft into this area.	Plant Protection Manager or the Security Manager TEL: +2744 490 2911 Fax: +2744 490 2904	Plant Protection Manager or the Security Manager MOSSGAS or any person designated by them.
FAR 151 VOORBAAI				
Area bounded by lines drawn as follows: a) From 340844.01S 0220610.84E a straight line to a point at 340844.01S 0220649.88E b) Thence a straight line to a point at 340900.23S 0220649.88E c) Thence a straight line to a point at 340900.23S 0220610.84E (d) Thence a straight line to the starting point at 340844.01S 0220610.84E	1000 FT ALT GND	No person shall, without prior authorisation fly any aircraft into this area.	PetroSA Tank Farm Complex, Mossel Bay Plant Protection Manager or the Security Manager PetroSA: TEL: +2744 601 2911 FAX: +2744 601 2390	Plant Protection Manager or the Security Manager PetroSA or any person designated by them.
FAR 171 WALLMANSTHAL WEAPONS RANGE				
The area bounded by straight lines joining the following points consecutively: 252200S 0281800E 253100S 0281740E 253100S 0282500E 252100S 0282200E 252200S 0281800E	FL140 GND	Military Firing Range	Restrictions: As in ENR 5-1 para 2 a and b	Officer Commanding SA Air Force Command Post TEL: +2712 312 2034/5 FAX: +2712 323 2796
FAR 172 HARTBEESHOEK COMMUNICATION STATION				
Circle radius 1 NM Centre: 2553S 02741E	1000 FT AGL GND		No person shall, without prior authorisation fly any aircraft into this area.	Postmaster General, Telecommuni-cations Division, PB x74, Pretoria, 0001
FAR 173 BOSKOP MUNITIONS FACTORY				
1.8 NM radius centered at 263400S 0270950E	7500 FT ALT GND	Ammunitions testing	Permission to enter restricted airspace should be directed to Head of Security on TEL: +2718 299 8500	NASCEM Division of Denel (Boskop Factory)

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAR 178 MESSINA WEAPONS RANGE				
The area bounded by lines drawn as follows: (a) From a point 221640S 0300455E South Eastwards along the Limpopo river to a point at 221835S 0300730E (b) Thence South Westward along the Sand river to a point at 222130S 0300558E (c) Thence a straight line to a point at 222030S 0300358E (d) Thence a straight line to a point at 221800S 0300420E (e) Thence a straight line to the starting point at 221640S 0300455E	1500 FT AGL GND	Military firing range	No person shall, without prior authorisation, fly any aircraft into this area.	Officer Commanding Far North Command or of any person designated by him. TEL: (01521) 3982 Telex: 28317
FAR 179 HOEDSPRUIT: NORTHERN RESTRICTED AREA				
Northern Restricted Area (a) From a point 232145S 0303420E a straight line to a point at 231910S 0305800E (b) Thence a straight line to a point at 232900S 0310200E (c) Thence a straight line to a point at 233630S 0310645E (d) Thence a straight line to 234030S 0310220E (e) Thence anticlockwise along the arc of a circle radius 15NM centred at 235402.73S 0310907.09E to 234900S 0305330E (f) Thence a straight line to 234320S 0303305E Excluding the Tzaneen Flying Training Area (FAD 170) (g) Thence to the starting point 232145S 0303420E	FL105 GND	SAAF Training Area	Restrictions: As in ENR 5-1 para 2 a and b	ATC Executive Lowveld Airspace Control Sector TEL: +2715 799 2251 Lowveld FIS: FREQ 119.0 MHz.
FAR 181 GRAVELOTTE: RESTRICTED AREA				
Lateral limits: (a) From a point at 234900S 0305030E a straight line to Rubbervale station 235500S 0303300E (b) Thence a straight line to 234320S 0303300E (c) Thence to the starting point 234900S 0305030E	FL140 GND	Military Firing Range SAAF Training Area	Restrictions: As in ENR 5-1 para 2 a and b	ATC Executive Lowveld Airspace Control Sector TEL: +2715 799 2251 Lowveld FIS: FREQ 119.0 MHz.

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
DANGER AREAS				
FAD 28 BLOEMFONTEIN MILITARY LOW FLYING AREA				
The area bounded by lines drawn as FLW: (a) From a point at 291000S 0263500E thence a straight line to a point at 291218S 0265024E. (b) Thence a straight line to a point at 291100S 0270000E. (c) Thence a straight line to a point at 292400S 0270000E. (d) Thence a straight line to Uysklip Station at 292307S 0263809E. (e) Thence a straight line to Dewetsdorp at 293207S 0263844E. (f) Thence a straight line to a point at 293434S 0264214E. (g) Thence a straight line to a point at 294104S 0265616E. (h) Thence a straight line to Jammersdrif at 294045S 0265718E. (i) Thence a straight line to a point at 300559S 0262911E. (j) Thence a straight line to a point at 293944S 0260904E. (k) Thence a straight line to a point at 293637S 0260812E. (l) Thence a straight line to a point at 293450S 0260825E. (m) Thence a straight line to a point at 292528E 0261225E. (n) Thence anti-clockwise along the arc of a circle, radius 20NM, centred at a point 290602,38S 0261802,31E to a point at 292525S 0262352E. (o) Thence a straight line to a point at 292011S 0262352E. (p) Thence anti-clockwise around the arc of a circle, radius 15NM, centred at a point 290602,38S 0261802,31E back to the starting point at 291000S 0263500E.	1000 FT AGL GND	SAAF Training Area	On request the Bloemfontein Flight Information Centre will inform pilots whether or not military flying is taking place in this area.	Chief ATC Bloemfontein Airport TEL: +2751 503 7201/6 FREQ: Bloemfontein APCH 124.3 MHz

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 29 BEAUFORT WEST GENERAL FLYING AREA				
The area bounded by lines drawn as follows: (a) From a point at 322000.00S 0220000.00E, thence a straight line to a point at 322437.09S 0222806.96E. (b) Thence a straight line to a point at 321946.52S 223530.92E. (c) Thence anti-clockwise along the arc of a circle, radius 4 NM, centred at 321812.00S 0223952.00E, to a point at 322141.89S 0224211.51E. (d) Thence a straight line to a point at 321932.82S 0224640.62E. (e) Thence anti-clockwise along the arc of a circle, radius 4 NM, centred at 321603.00S 0224421.00E to a point at 321354.73S 0224821.13E. (f) Thence a straight line to a point at 321600.00S 0231800.00E. (g) Thence a straight line to a point at 325400.00S 0230900.00E. (h) Thence a straight line to a point at 325400.00S 0220000.00E. (i) Thence a straight line back to the start point at 322000.00S 0220000.00E	8000 FT ALT GND		124.4 MHz	
FAD 46 LANGEBAANWEG MILITARY LOW FLYING AREA				
The area bounded by lines drawn as follows: (a) From Lamberts Bay a straight line to the Graafwater railway station (b) Thence along the railway line to the Het Kruis railway station. (c) Thence a straight line to the point 325400S 0183515E on the Groot Berg river (d) Thence Westwards along the river to the Langebaanweg CTR boundary. (e) Thence Northwards along the CTR boundary to the coast. (f) Thence along the coast to Lamberts Bay.	1500 FT AGL GND	SAAF Training Area		Chief ATC Air Force Base TEL: +2722 706 2259 FREQ: Langebaan APCH 122,5 MHz

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 55 MARGATE GENERAL FLYING AREA				
The area bounded by lines drawn as follows: (a) From a point at 310230.00S 0301030.00E, thence a straight line to a point 311400.00S 0300000.00E. (b) Thence a straight line to a point 310730.00S 0294500.00E. (c) Thence a straight line to a point 310300.00S 0293200.00E. (d) Thence a straight line to a point at 305300.00S 0293700.00E. (e) Thence a straight line to a point 304230.00S 0294800.00E. (f) Thence a straight line to a point 304700.00S 0295700.00E. (g) Thence a straight line to a point 305200.00S 0300600.00E. (h) Thence a straight line to a point 305600.00S 0300900.00E. (i) Thence a straight line back to the starting point at 310230.00S 0301030.00E.	8000 FT ALT GND Class G airspace		FREQ 124.4 MHz	
FAD 56 DURBAN/VIRGINIA GENERAL FLYING AREA				
(a) From the starting point at Umbumbulu, 295916.22S 0304213.31E (b) thence along a straight line to a point at Dududu 301131.67S 0303651.16E (c) thence a straight line to a point at Renishaw 301604.50S 0304518.63E (d) thence along the National Road, N2, to a point at Toti/Doonside 300409.45S 0305219.72E e) thence a straight line back to the starting point at Umbumbulu, 295916.22S 0304213.31E.	5000 FT ALT GND		FREQ 124.4 MHz	
FAD 57 NSHONGWENI MILITARY HELICOPTER FLYING TRAINING AREA				
Lateral limits -The area bounded by lines drawn as follows: 295320S 0304630E; 295600S 0304430E; 295530S 0304020E; 295400S 0303530E; 295000S 0303645E 295130S 0304010E; 295000S 0304230E; 295020S 0304500E; 295320S 0304630E	500 FT AGL GND			

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 58 DURBAN/VIRGINIA HELICOPTER GENERAL FLYING AREA				
The area bounded by lines drawn as follows: (a) From a point 292316.56S 0305948.93E, thence along the Mhlali River to a point 292428.78S 0310704.58E. (b) From the point 292428.78S 0310704.58E, thence anti-clockwise along the arc of a circle, radius 8NM, centered at the point 293059.50S 0311225.31E to a point 292607.62S 0310507.97E. (c) From the point 292607.62S 0310507.97E, thence a straight line to a point 293635.46S 0305600.71E, thence anti-clockwise along the arc of a circle, radius 8NM, centered at the point 294126.74S 0310319.28E to a point 293817.33S 0305452.95E. These consecutive three lines ensure a 2NM buffer along FALE CTR. (d) From the point 293817.33S 0305452.95E, thence a straight line to a point 294028.06S 0305325.92E, thence a straight line to a point 293651.90S 0304518.94E. (e) From the point 293651.9S 0304518.94E, thence along the Mqeku River to a point 293153.41S 0304448.31E, thence a straight line to the starting point 292316.56S 0305948.93E.	2500 FT ALT GND	Pilots are to exercise extra caution when operating in this airspace as certain areas of terrain exceed 3000FT ALT.	FREQ 124.4MHz	
FAD 59 PIETERMARITZBURG FLYING TRAINING AREA				
The area bounded by lines drawn as follows: (a) From a point 294953S 0302400E thence a straight line to a point at 300700S 0302100E (b) Thence a straight line to a point at 300800S 0300400E. (c) Thence a straight line to a point at 294511S 0301339E. (d) Thence a straight line back to the starting point at 294953S 0302400E.	6000 FT ALT GND			
FAD 60 NYLSTROOM FLYING TRAINING AREA				
The area bounded by lines drawn as follows: (a) From a point at 244641.69S 0282826.39E (N1 highway/R33 intersection) eastwards along the R33 road to a point at 245209.78S 0285057.92E (R33/R516 road intersection).	FL085 GND		FREQ: 131.1 MHz	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
(b) Thence westwards along the R516 road to a point at 245507.61S 0282222.08E (R516/N1 highway intersection). (c) Thence northwards along the N1 highway to the starting point.				
FAD 69 STELLENBOSCH GENERAL FLYING AREA				
Area A: (a) From the starting point 334409.2775S 0185328.0833E thence along the R44 Road to a point 333433.7518S 0185835.4465E (b) From the point 333433.7518S 0185835.4465E, thence anticlockwise along the arc of a circle, radius 30NM, and centred at 335810.82S 0183618.19E to a point 332911.5572S 0184553.5309E (c) From the point 332911.5572S 0184553.5309E, thence a straight line to a point 333004.9026S 0184047.5822E (d) From a point 333004.9026S 0184047.5822E, thence southwards along the Kalbaskraal Road to a point 333809.4753S 0183734.3945E. (e) From the point 333809.4753S 0183734.3945E, thence clockwise along the arc of a circle, radius 20NM, and centred at 335810.82S 0183618.19E to the starting point 334409.2775S 0185328.0833E	4000FT ALT GND		FREQ 124.200 MHz	
Area B: (a) From the starting point 333433.7518S 0185835.4465E, thence northwards along the R44 Road to a point 331851.7212S 0190244.7000E. (b) From the point 331851.7212S 0190244.7000E, thence anticlockwise along the arc of a circle, radius 45NM, and centred at 335810.82S 0183618.19E to a point 331315.3336S 0184140.8041E. (c) From the point 331315.3336S 0184140.8041E, thence a straight line to a point 331839.2885S 0184119.4565E. (d) From the point 331839.2885S 0184119.4565E, thence southwards along the N7 Road to a point 332827.0968S 0184145.0407E. (e) From the point 332827.0968S 0184145.0407E, thence a straight line to the point 332911.5572S 0184553.5309E.	8000FT ALT GND		FREQ 124.200 MHz	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
(f) From point 332911.5572S 0184553.5309E, thence clockwise along the arc of a circle, radius 30NM, and centred at 335810.82S 0183618.19E to the starting point 333433.7518S 0185835.4465E.				
FAD 70 MAGALIESBERG FLYING TRAINING AREA (EAST SECTOR)				
FAD 70 (East Sector) (a) From a point at 255630S 0272900E along a straight line to 254130S 0272900E (Marikana); (b) Then eastwards along the railway line to 254020S 0274030E (Wolhuterskop); (c) Then southwards along a straight line to 255100S 0274055E (Road); (d) Then south westwards along the road to 255640S 0273100E (Cross Roads); (e) Then westwards along the road to the starting point.	FL100 GND	Combined Civilian/ SAAF Flying Training Area	VHF Frequency: 124.8 MHz Call sign: Magaliesberg Flying Training Area-East	Chief ATC Air Force Base TEL:+2712 672 3251/3264 FREQ: 124.8 MHz.
NIL EMERG Training manoeuvres permitted BTN GND/1500FT AGL in the southern part of FAD70E REF Part 91.06.32(1)(B) MIN HGT is applicable WI FAD70. Area bounded by straight lines joining FLW points consecutively by coordinates: 255002S 0273430E, 254955S 0273540E, 254835S 0273555E, 254830S 0273600E, 254740S 0273850E, 254700S 0274000E, 255005S 0274055E, 255045S 0274000E, 255230S 0274100E, 255300S 0274020E, 255250S 0273940E, 255335S 0273930E, 255430S 0273900E and back to the start PSN 255002S 0273430E. GND - 1500FT AGL. EXC on weekdays BTN 0700-1400 and SAT and SUN BTN 0800-1200.				
FAD 70 MAGALIESBERG FLYING TRAINING AREA (WEST SECTOR)				
FAD 70 (West Sector) The area bounded by lines drawn as follows: (a) From a point at 255630S 0272900E north westwards along the road to 254800S 0271420E (Olifantsnekdam); (b) Then along the road northwards to 254020S 0271500E (Rustenburg Railway Station); (c) Then eastwards along the railway line to 254130S 0272900E (Marikana); (d) Then southwards along a straight line to the starting point.	FL100 GND	Combined Civilian/ SAAF Flying Training Area	VHF Frequency 124.8 MHz Call sign: Magaliesberg Flying Training Area-West	Chief ATC Air Force Base TEL:+2712 672 3251/3264 FREQ: 124.8 MHz.
FAD 71 HARTEBEESPOORT DANGER AREA				
2 NM radius centred at 254230S 0275300E	7600 FT ALT GND	Paragliding		
FAD 84 BETHAL EXPLOSIVES FACTORY				
Circle of 1.5 NM radius centred on the point S262730 E0293200	2000 FT AGL GND			
FAD 89 SADA MILITARY SHOOTING RANGE				
Circle: radius 3 NM centre 320810S 0264500E	3500 FT AGL GND	Small Arms Shooting Range		

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 106 BLOEMFONTEIN/ NEW TEMPE FLYING AREA				
(a) From a point at 285225.31S 0255954.52E a straight line to a point at (Dealesville) 284059.98S 0254600.00E (b) Thence a straight line to a point at 283907.05S 254725.75E (c) Thence eastwards along the ESKOM power lines to a point at 283107.73S 0260413.53E (d) Thence Southwards along the Bultfontein/Bloemfontein road to a point at 284831.42S 0260633.23E (e) Thence Westwards along the Modderriver to the starting point at 285225.31S 0255954.52E	6500 FT ALT GND			
FAD 107 BLOEMFONTEIN MILITARY FLYING AREAS				
FAD 107 Bloemfontein Military Helicopter Northern Flying Area -The area bounded by lines drawn as follows: (a) From a point at 290500S 0263200E, thence a straight line to a point at 290514S 0262857E. (b) Thence a straight line to a point at 290350S 0262757E. (c) Thence a straight line to a point at 290318S 0262713E. (d) Thence a straight line to a point at 290323S 0262351E. (e) Thence a straight line to a point at 285804S 0262351E. (f) Thence a straight line to a point at 285500S 0263100E. (g) Thence a straight line back to the starting point at 290500S 0263200E.	6000 FT ALT GND	SAAF Training Area		
FAD 107 BLOEMFONTEIN MILITARY FLYING AREAS				
Bloemfontein Military Helicopter Southern Flying Area -The area bounded by lines drawn as follows: (a) From a point at 291200S 0263100E a straight line to a point at 291600S 0263000E. (b) Thence a straight line to a point at 291446S 0262352E. (c) Thence a straight line to a point at 291059S 0262351E. (d) Thence a straight line back to the starting point at 291200S 0263100E.	6000 FT ALT GND	SAAF Training Area		

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 108 KIMBERLEY GENERAL FLYING TRAINING AREA				
Lateral limits -The area bounded by lines drawn as follows: (a) From the McFarlane railway station 283300S 0244615E westwards along the railway line to the Fieldsview railway station 283455S 0243950E (b) Thence Northwards along the railway line to the Vaalriver railway bridge 283115S 0243600E (c) Thence a straight line to a point at 283000S 0243300E on the tar road between Barkley-West and Windsorton. (d) Thence north and eastwards along this road to Windsorton Road railway station 282100S 0244930E (e) Thence Southwards along the railway line to the starting point at 283300S 0244615E	5000 FT ALT GND		This area is situated below the Kimberley TMA. The lower limit of the TMA is 5500 FT ALT. The TMA is declared Class C airspace. Aircraft wishing to operate above 5000 FT ALT whilst remaining within the lateral limits of the training area, must obtain a clearance to enter controlled airspace.	Kimberley Tower on 118.2 MHz.
FAD 110 WELKOM FLYING TRAINING AREA				
The area bounded by lines drawn as follows: (a) From Ganspan 275530S 0262700E a straight line to Wesselsbron 275100S 0262130E (b) Thence a straight line to a point at 275100S 0260000E (c) Thence a straight line to a point at 280230S 0261800E (d) Thence a straight line to the starting point at Ganspan 275530S 0262700E.	FL090 GND			
FAD 122 LOUIS TRICHARDT LOW-FLYING AREAS				
Area A: Lateral limits - The area bounded by the lines drawn as follows: (a) From a point at 230000S 0292245E a straight line to a point at 224939S 0292850E. (b) Thence along a straight line to a point at 224124.02S 0295240.95E. (c) Thence clockwise along the arc of a circle, radius 30NM centred at 230930.55S 0294111.18E to a point at 224842.42S 0300437.65E. (d) Thence a straight line to a point at 230000.000S 0300017.000E (e) Thence along a straight line back to the starting point at 230000S 0292245E.	8000 FT ALT GND	SAAF Training Area		

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
Area B: Lateral limits - The area bounded by the lines drawn as follows: (a) From a point at 224124.02S 0295240.95E a straight line to a point at 223000S 0302517E. (b) Thence along a straight line to a point at 224842.42S 0300437.65E. (c) Thence anti-clockwise along the arc of a circle, radius 30NM centred at 230930.55S 0294111.18E to the starting point at 224124.02S 0295240.95E.	FL105 GND	SAAF Training Area		
FAD 123 MAFIKENG GENERAL FLYING AREA				
Lateral limits - The area bounded by lines drawn as follows: (a) From a point 255932.72S 0253304.23E a straight line to a point at 263430.85S 0253628.66E. (b) Thence clockwise along the arc of a circle, radius 45 NM, centred on 254933.21S 0253206.19E to a point 254816.40S 0244215.66E on the international boundary between South Africa and Botswana. (c) Thence clockwise along the international boundary to a point at 254442.87S 0252226.64E (d) Thence anti-clockwise along the arc of a circle, radius 10NM centred on 254933.21S 0253206.19E to the starting point at 255932.72S 0253304.23E.	FL105 GND		FREQ: 124.4 MHz	
FAD 125 PHALABORWA FLYING TRAINING AREA				
Lateral limits -The area bounded by lines drawn as follows: 235515S 0310530E 235520S 0305420E 234835S 0310000E 234900S 0310415E 235515S 0310530E	6000 FT ALT GND except for that portion below the Hoedspruit TMA which will have an upper limit of 5000FT ALT			ATC Executive Lowveld Airspace Control Sector TEL: +2715 799 2251 Lowveld FIS:FREQ 119.0 MHz.
FAD 126 PILANESBERG GENERAL FLYING AREA				
Lateral limits -The area bound by the lines drawn as follows: (a) From a point at 252000S 0270000E a line skirting the Game Reserve then direct to a point at 250500S 0265530E (b) Thence along the road to a point at 251200S 0264800E (c) Thence along the Rustenburg road to the starting point.	8500 FT ALT GND			

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 127 PRETORIA FLYING TRAINING AREA I				
Lateral limits -The area bounded by lines drawn as follows: (a) From a point 253230S 0281630E on the Wonderboom CTR boundary. A straight line North to a position at 252330S 0281800E (b) Thence West and Southwards along the Bophuthatswana international boundary to Mabopane (c) Thence Southwards along the railway line to a point at 253430S 0280530E on the Johannesburg TMA boundary (d) Thence clockwise along the arc of a circle, radius 35 NM and centred on a point at 260831S 0281415E to a point at 2534S 02809E on the Wonderboom CTR boundary (e) Thence North and Eastwards along the Wonderboom CTR to the starting point at 253230S 0281630E	FL100 GND		Communication Frequency: 124.4 MHz	
FAD 128 PRETORIA FLYING TRAINING AREA II				
Lateral limits - The area bounded by lines drawn as follows: (a) From a point 253520S 0282630E on the Wonderboom CTR, clockwise along the arc of a circle radius 35 NM and centred on a point 260831S 0281415E to a point at 254820S 0284545E (b) Thence Northwards along the main road between Bronkhorstspruit and Groblersdal to a point at Verena position 252920S 0290145E (c) Thence a straight line to a point at Leeuwdraai at position 252045S 0283545E (d) Thence a straight line to a point at S252100 E0282500 (e) Thence a straight line to a point at 253100S 0282500E (f) Thence a straight line to a point at 253230S 0282200E on the Wonderboom CTR boundary (g) Thence clockwise along the Wonderboom CTR boundary to starting point at 253520S 0282630E	FL100 GND			
FAD 129 BRITS/GRAND CENTRAL FLYING TRAINING AREA				
The area bounded by lines drawn as follows: (a) From a point at 253920S 0280250E (Cross Roads) northwards along a straight line to 252745S 0280000E (Klipgat); (b) Then westwards along a straight line to 252900S 0274920E (Cross Roads);	7500 FT ALT GND		VHF Frequency: 124.8 MHz. Call sign: Brits/ Grand Central Flying Training Area	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
(c) Then southwards along a straight line to 253930S 0275630E (Road); (d) Then eastward along the road to the starting point at 253920S 0280250E.				
FAD 143 WEST CAPE FLEET TRAINING AREA				
(a) The area bounded by lines drawn as follows: (b) From a point at 343700S 0191500E clockwise along the arc of a circle, radius 50 NM, and centre at 335810S 0183621E, to a point at 342000S 0174230E (c) Thence a straight line to a point at 342000S 0184700E (d) Thence a straight line to a point at 342600S 0184900E (e) Thence a straight line to a point at 343700S 0191500E	FL 195 GND			
FAD 153 CAPE TOWN MARITIME FLYING TRAINING AREA				
Lateral limits -The area bounded by lines drawn as follows: (a) From a point 333400S 0181830E a straight line to a point 334759S 0182154E. (b) Thence a straight line to a point 335540S 0180000E. (c) Thence a straight line to a point 332700S 0180000E. (d) Thence back to the starting point 333400S 0181830E.	2000 FT ALT MSL			
FAD 157 WORCESTER/ROBERTSON GENERAL FLYING AREA				
Lateral limits - The area bounded by lines drawn as follows: (a) From Worcester along the railway line to Robertson; (b) Thence along the road to McGregor. (c) Thence a straight line to Genadendal; (d) Thence a straight line to Worcester.	FL070 GND			
FAD 159 YSTERPLAAT MILITARY HELICOPTER MOUNTAIN FLYING AREA				
Lateral limits -The area bounded by lines drawn as follows: 334000S 0190000E 334000S 0191500E 335200S 0191500E 335200S 0190000E 334000S 0190000E	1000 FT AGL GND			

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 170 TZANEEN FLYING TRAINING AREA				
(a) From a point at 234300S 0301400E, NE to a point at 233500S 0302700E (b) Thence SE along the Merekome river to the Letaba river to a point at 233800S 0303700E (c) Thence SW along the Letaba river to the Mwanedzi river to a point at 234500S 0302800E (d) Thence a straight line Westward to the starting point.	FL090 GND			
FAD 182 JOHANNESBURG FLYING TRAINING AREA				
(a) From a point at 261800S 0274850E along the railway line to a point at 262600S 0275150E (b) Thence South Westwards along the road to a point at 263710S 0274650E (c) Thence Westwards along the road to a point at 263740S 0273030E (d) Thence Northwards along the road, via Fochville to a point at 262630S 0272900E (e) Thence North-Eastwards along the road to the starting point at 261800S 0274850E	FL100 GND		Excluding the area under the Johannesburg TMA where the upper limit of FAD 182 will be 7600FT ALT. Communication FREQ: 122.35MHz	
FAD 183 JOHANNESBURG HELICOPTER GENERAL FLYING AREA				
Lateral limits -The area bounded by lines drawn as follows: (a) From the road intersection at a point at 261900S 0280350E, Westwards along the road to a point at 261930S 0280000E (b) Thence a straight line to a point at 262800S 0280000E (c) Thence along the road in a South-Easterly direction to a point at 262920S 0280330E (d) Thence Northwards along the R26 to a point at 262100S 0280600E (e) Thence North-Westwards along the road to the road to the starting point at 261900S 0280350E.	6500FT ALT GND		FREQ: 124.4MHz	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 184 SYFERFONTEIN AEROBATIC AREA				
Circle: 0.6 NM Radius Centre: 262047S 0274631E	FL090 GND	Aerobatic area	Communication FREQ 122.35 MHz callsign RABBIT. Area available on SAT & SUN from SR-SS, WED and Public HOL from 0800-SS. All days require prior liaison with JHB Radar at TEL +2711 928 6448/9 or before entering the area on FREQ 124.5 MHz or 123.7 MHz. As part of this area falls in the JHB Special Rules Area users must also listen out & report on FREQ 125.6 MHz	
FAD 185 EAST RAND FLYING TRAINING AREA				
(a) From Nigel along the road R42 to the intersection with road R29 (b) Thence along the R29 to Devon (c) Thence Westwards along the road to the starting point at Nigel.	7600FT ALT GND	Flying Training Area	Communication FREQ: 124.4 MHz.	
FAD 192 PORT ALFRED FLYING TRAINING AREA				
Lateral limits - The area bounded by lines drawn as follows: (a) From a point at 333525.00S 0271249.00E along a straight line to the Fish River Mouth. (b) Thence northwards along the Fish River to where it passes under the N2 highway (331500.00S 0265930.00E) (c) Thence westwards along the N2 highway to the junction of the N2 highway and the Grahamstown / Kenton-on-Sea road (via Salem) (332300.00S 0262800.00E). (d) Thence along the Kenton-on-Sea road through Kenton-on-Sea to a point at 334725.00S 0264339.00E. (e) Thence a straight line back to the starting point at 333525.00S 0271249.00E.	FL085 GND Class 'G' airspace			

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 193 PORT ELIZABETH AND UITENHAGE CIVIL GENERAL FLYING AREA				
Lateral limits -The area bounded by lines drawn as follows: a) From a point at 334656.07S 0252251.00E in a straight line to Glensomer. (b) Thence along the crest of the Groot Winterberg mountain range to Groot Cockcomb (333416.57S 0244704.47E). (c) Thence a straight line to Patensie. (d) Thence a straight line to Sunnyside railway station. (e) Thence a straight line to Witteklip (335410.57S 0251525.65E). (f) Thence along the R334 back to the starting point at 334656.07S 0252251.00E.	FL060 GND Class 'G' airspace		FREQ: 124.2 MHz	
FAD 194 OUDTSHOORN GENERAL FLYING AREA				
AREA A The area bounded by lines joining the following points: (a) From a point at 332733S 0213622E a straight line to a point at 332655S 0220032E. (b) Thence a straight line to a point at 333611.58S 0220501.00E (c) Thence anti-clockwise along the arc of a circle 5NM centered at 333600S 0221100E to a point at 333959.85S 0220723.33E (d) Thence a straight line to a point at 333950.16S 0213901.90E (e) Thence a straight line back to the starting point at 332733S 0213622E	8000FT ALT GND		122.35MHz	
AREA B (a) From a point at 333950.16S 0213901.90E a straight line to a point at 333959.85S 0220723.33E (b) Thence anti-clockwise along the arc of a circle 24NM centered at 340026.66S 0222233.62E to a point at 335117.82S 0215552.65E (c) Thence a straight line to a point at 334554.95S 0214021.33E (d) Thence a straight line back to the starting point at 333950.16S 0213901.90E	8000FT ALT GND		122.35MHz	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 195 OUDTSHOORN GENERAL FLYING AREA				
AREA A (a) From a point at 332741S 0221507E a straight line to a point at 333202.21S 0221439.96E (b) Thence clockwise along the arc of a circle 5NM centered at 333600S 0221100E to a point at 333651.88S 0221653.89E (c) Thence clockwise along the arc of a circle 24NM centered at 340026.66S 0222233.62E to a point at 333838.29S 0223442.42E (d) Thence a straight line to a point at 333703.29S 0231537.69E (e) Thence anti-clockwise along the arc of a circle 50NM centered at 340026.66S 0222233.62E to a point at 332447.04S 0230439.60E (f) Thence a straight line to a point at 332522.58S 0222200.16E (g) Thence a straight line back to the starting point at 332741S 0221507E	8000FT ALT GND		122.35MHz	
AREA B (a) From a point at 333838.29S 0223442.42E a straight line to a point at 333703.29S 0231537.69E (b) Thence clockwise along the arc of a circle 50NM centered at 340026.66S 0222233.62E to a point at 334406.64S 0231919.78E (c) Thence a straight line to a point at 335239.43S 0224951.42E (d) Thence anti-clockwise along the arc of a circle 24NM centered at 340026.66S 0222233.62E back to the starting point 333838.29S 0223442.42E	8000FT ALT GND		122.35MHz	

Identification and Name *Lateral Limits*	*Upper Limit* *Lower Limit*	*Type of hazard or Restriction*	*Remarks*	*Controlling authority*
FAD 200 CAPE TOWN FLYING TRAINING AREA				
The area bounded by lines joining the following points: **Area A:** (a) From a point 333936.716S 0182714.027E (on the R27 road) southwards along the R27 road to a point 334338.590S 0182714.022E (R27/M19 road intersection). (b) Thence eastwards along the M19 road to a point 334333.037S 0183235.289E (M19/N7 intersection). (c) Thence a straight line to a point at 334332.995S 0183410.415E on the Kalbaskraal road. (d) Thence northwards along the Kalbaskraal road to point at 333809.477S 0183734.397E (e) Thence anti-clockwise along a circle, radius 20 NM, centered at 335810.82S 0183618.19E to the starting point.	2000FT ALT GND		124.4 MHz	
The area bounded by lines joining the following points: **Area B:** (a) From a point 333936.716S 0182714.027E (on the R27 road) northwards along the R27 road to a point 333322.571S 0182226.828E. (b) Thence a straight line to a point 333004.895S 0184047.586E on the Malmesbury/Kalbaskraal road. (c) Thence southwards along the Kalbaskraal road to a point 333809.477S 0183734.397E. (d) Thence anti-clockwise along a circle, radius 20 NM, centered at 335810.82S 0183618.19E to the starting point.	4000FT ALT GND		124.4 MHz	
FAD 201 NEW CASTLE GENERAL FLYING AREA				
The area bounded by lines drawn as follows: (a) From a point at 273955S 0301743E, thence a straight line to a point at 280023S 0300304E. (b) Thence a straight line to a point at 281314S 0304013E. (c) Thence a straight line to a point at 275848S 0304350E. (d) Thence a straight line back to the starting point at 273955S 0301743E.	9000FT AMSL GND			

ENR 5.2 Military exercise and training areas

5.2.1 See ENR 5.1, ENR 3.5 paragraph 3.5.1

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ENR 5.3 OTHER ACTIVITIES OF A DANGEROUS NATURE AND OTHER POTENTIAL HAZARDS

Lateral Limits Coordinates	***Vertical Limits***	***Advisory Measures***	***Authority responsible for INFO***	***Remarks Time of ACT***
1	2	3	4	5
Constitution Hill, Braamfontein, Johannesburg 5NM centred 261121S 0280233E	9150FT AMSL GND	NIL	NIL INFO AVBL	Sunset-Sunrise 30 times 2KW vertical narrow beam LGT FM GND - 3350FT AGL emitting 200 000 Lumens each. Intensity of beams reduced by 50% at midnight.

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ENR 5.4 AIR NAVIGATION OBSTACLES – EN-ROUTE

1) See AIC B008/2021.

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ENR 5.5 AERIAL SPORTING AND RECREATIONAL ACTIVITIES

Aviation Recreation is a subset of General Aviation
SACARS Part 1 Definitions

(a) "General Aviation Operation" means an aircraft operation other than a commercial air transport, air ambulance or aerial work operation.
(b) "Aviation Recreation" means flying microlight, glider, balloon, gyroplane, hang-glider, paraglider, model aircraft, light sport aeroplane, touring motor glider, parachute, or involvement in aviation events.
Aviation recreation is South Africa is conducted in terms of Part 94 and Part 105 of the SACARS.
This document relates to the approval of aviation recreation operational flying areas, airfields, drop zones, launch and landing sites and the conducting of aviation events at certain areas as listed below:

1) Para-Gliding launch and landing sites Permanent/Temporary.
2) Hang Gliding launch and landing sites Permanent/Temporary.
3) Radio controlled model aircraft operational areas and Radio-controlled model aircraft operations.
4) Gliding and soaring operational areas.
5) Aerobatic (acrobatic) operational areas & cylinders.
6) Manned Free Balloons, Captive Balloons, Unmanned Free Balloons Blimps, tethered balloons.
7) Parachute Drop Zone.

Contact SACAA
For all Aviation Recreation operational enquiries or operational approvals contact:
The South African Civil Aviation Authority
General Aviation Department: Operations
Tel. +2711 545 1000
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www.caa.co.za

Purpose
The purpose of this publication is to alert and inform all pilots and operators of aviation recreational operations conducted in airspace and areas in the Republic that may present risk or affect their operations and intended flight, in order to properly plan, maintain a constant lookout and radio watch and to avoid such airspace and areas in the interests of safety.

All pilots and operators are reminded that in terms of Part 91 of the SACARS it is their responsibility to be familiar with regulations, procedures and adhere to the duties of the PIC during flight preparation as extracted below:

Laws, regulations and procedures
91.02.6 (1) The PIC of an aircraft shall be familiar with the laws, regulations and procedures pertinent to the performance of his or her duties, prescribed for the areas to be traversed, the aerodromes to be used and the air navigation facilities relating thereto and shall ensure that other members of the flight crew are familiar with such laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aircraft.

(2) Subject to subregulation (3), the PIC of an aircraft shall comply with the regulations contained in this Part unless they conflict with the rules published by the State having jurisdiction over the territory over flown: Provided that if any regulation of this Part is more restrictive and may be followed without violating the rules of that State, it shall be complied with.

(3) In an emergency situation which endangers, or is likely to endanger the aircraft, persons on board such aircraft, or persons or property on the surface, the PIC shall take any action which he or she considers necessary under the circumstances.

(4) If a PIC deviates from any law, regulation or operational procedure in an emergency situation referred to in subregulation (3), he or she shall notify the appropriate authority of the State within or over the territory of which the deviation occurs, of such deviation without delay.

Duties of PIC regarding flight preparation
91.02.7

(2) The PIC of an aircraft shall
(a) not commence a flight unless he or she has ascertained through the relevant NOTAM, AIC, IAIP or IAIP Supplement that the aerodromes, navigation aids and communication facilities are adequate for the manner in which the flight is to be conducted;

GLIDER AREAS

1 South African Approved Glider Areas

1.1 Gliding operations take place, mostly over weekends and public holidays, at the aerodromes listed below. Adjacent to these locations, gliders may be encountered by day in VMC (Visual Meteorological Conditions) in Class G airspace up to FL195 as far as 50NM from their aerodromes of departure.

1.2 Glider areas in Class C airspace are downgraded to Class G airspace on an operational basis and IFR traffic is routed around the Glider windows by ATC.

1.3 Gliding operations are VFR flights which take advantage of thermal activity and can be expected to fly to the limits of VFR cloud base minima. All pilots are therefore advised to be especially vigilant when flying in these areas.

1.4 Winch launches may tow gliders up to 3000FT AGL at climb rate of APRX 1800FPM. When crossing glider fields where winch launching takes place, pilot shall remain vigilant, maintain a visual and listening watch and ensure that the crossing height is not less than 4000FT AGL and 1NM lateral distance away.
If intending to overfly an active winch launch airfield, contact the gliding aerodrome ground radio on 123.4 MHz or published aerodrome frequency for launch information

1.5 The below-mentioned areas have been approved to perform Glider Operations at the locations listed below.

1.6 Abbreviations: A - Aerotow, S - Self Launch (motor glider), W - Winch, SR - SS sunrise to Sunset.

1.7 Aviation Events I.e. Glider camps and competitions shall apply to SACAA for operational approval.

1.8 Prior to operational approval the applicant shall obtain FUA (Flexible Use of Airspace) from CAMU for the required airspace and NOTAM or AIRAC notification process.

1.9 Any operations to be conducted within Controlled Airspace require approval from the relevant ATSU and a signed Letter of Procedure (LoP) with the ATSU.

1.10 Aerodromes marked with an asterisk (*) are active only on occasional weekends or for fixed period camps which will be notified via NOTAM.

1.11 Hours of operations are always SR-SS unless otherwise specified.

Designation and lateral limits	***Vertical limits***	***Remarks and time of Activity***
1	*2*	*4*
Adamsfontein gliding club 303455S 0251534E	Refer Paragraph 1.3	A / S
Akavlieg© potchefstroom 264252S 0270549E	Refer Paragraph 1.3	W / A
Bloemfontein gliding club 290159S 0260947E	Refer Paragraph 1.3	W / A
Cape gliding club 333952S 0192513E	Refer Paragraph 1.3	W / A / S
Douglas Gliding Centre 290403S0234703E	Refer Paragraph 1.3	A / S
Drakensberg soaring club 294506S 0293009E	Refer Paragraph 1.3	W
East rand gliding club 261457S 0282350E	Refer Paragraph 1.3	S

Designation and lateral limits	***Vertical limits***	***Remarks and time of Activity***
1	*2*	*4*
Eastern province gliding 334706S 0252300E	Refer Paragraph 1.3	W / A / S
El mirador gliding club * 283451S 0294524E	Refer Paragraph 1.3	A
Estcourt aero club 283453S 0294435E	Refer Paragraph 1.3	W
Gariep gliding centre 303400S 0253149E	Refer Paragraph 1.3	A
Goldfields gliding club 280149S 0270500E	Refer Paragraph 1.3	W / A / S
Harrismith * 281410S 0290650E	Refer Paragraph 1.3	A
Howick gliding club 292917S 0301347E	Refer Paragraph 1.3	W
Kranskop gliding club 253156S 0274629E	Refer Paragraph 1.3	A
Kroonstad gliding club 273958S 0271847E	Refer Paragraph 1.3	W
Kuruman gliding Club 272724S 0232441E	Refer Paragraph 1.3	
Mafikeng * 254826S 0253240E	Refer Paragraph 1.3	A
Magalies gliding club 260232S 0273544E	Refer Paragraph 1.3	W / A / S
Middleburg gliding club 254105S 0292638E	Refer Paragraph 1.3	W
Swellengrebel gliding club 340253S 0202835E	Refer Paragraph 1.3	W
Soaring safaris 290159S 0260947E	Refer Paragraph 1.3	W / A / S
Vaal river gliding club 265201S 0263928E	Refer Paragraph 1.3	W / S
Victoria West * 312400S 0230900E	Refer Paragraph 1.3	W / A
Vryheid wings club 274712S 0304740E	Refer Paragraph 1.3	W
Whispering wings 265313S 0273018E	Refer Para 4.1	W

JOHANNESBURG FIR

1.12 New Tempe Glider Area (Window)

GENERAL

1.12.1 During the activation period of the glider window that part of the Bloemfontein TMA or Johannesburg CTA within which the glider window falls will be reclassified as Class G airspace.

1.12.2 The notification that the glider window is activated will be via NOTAM or direct requests to ATC via the R/T or telephone during ATS operational hours.

1.12.3 Standard separation will not apply -pilots are to maintain own separation.

1.12.4 Aircraft may, when the glider window is activated, transit this airspace at their own discretion.

1.12.5 Pilots are required to keep a careful lookout at all times whilst operating within the window.

1.12.6 When the Glider Window is active it is recommended that the New Tempe circuit traffic and the New Tempe Glider Window traffic operate on a common frequency, therefore the New Tempe frequency 131,3 MHz will be extend to include the operations within the Glider Window.

1.12.7 The glider window is not a general flying area but airspace approved for glider operations.

1.12.8 Flights are authorized to operate within the window during the day and in VMC only.

DESIGNATION AND LATERAL LIMITS	VERTICAL LIMITS	OPERATOR / USER TEL NO.	REMARKS: WINDOW ACTIVATION / DEACTIVATION AND WINDOW FREQUENCY
JOHANNESBURG FIR			
New Tempe Glider Area (Window): From a point 290528.83S 0261021.31E at the intersection of the R64 and N1 main roads, then westwards along the R64 to a point 290333.86S 0260754.02E at the intersection of the Bainsvlei road, then westwards along the Bainsvlei road to a point 285445.00S 0254007.00E where this road intercepts the 35 nm arc of the Bloemfontein TMA boundary, then clockwise along the 35 nm arc centred at BLV (290602.38S 0261802.31E) to a point 283259.00S 0260409.00E where this arc intercepts the Bloemfontein/ Bultfontein road, then southwards along the Bloemfontein / Bultfontein main road to a point 290018.68S 0261226.59E where the Bultfontein / Bloemfontein main road intercepts the Bloemfontein CTR boundary, then a straight line along the Bloemfontein CTR boundary to a point 290323.61S 0261226.42E where the Bloemfontein CTR boundary intercepts the N1 main road, then southwards along the N1 main road to the starting point 290528.83S 0261021.31E	FL145 GND	ATC: +2751 - 5037201-6 Glider Club:+2751 - 446 1762 / 451 1503	The local Kenilworth Glider Club representative will telephonically contact Bloemfontein ATS for approval to activate the New Tempe Glider Area (Window) and an activation time will be confirmed by the duty ATC. A minimum activation time of 30 minutes is required, as ATC will issue the appropriate NOTAM. Aircraft operating within the Glider Window will be required to monitor 131,3 MHz and make broadcasts as appropriate. The local Kenilworth Glider Club representative will telephonically advise Bloemfontein ATS when the last glider has landed, whereby the duty ATC will close the glider window.
1.When the glider window is activated during ATC hours of operation, the ATC will route IFR flights operating within the Bloemfontein TMA onto inbound tracks to the IFR clearance limit, which will ensure that the sector entry will not enter the glider window. 2. New Tempe AD has been allocated a dedicated frequency of 131.3 MHz			

1.13 GLIDER OPERATIONS OUTSIDE THE DEFINED WINDOW: CROSSING OF AIRWAYS / CONTROLLED AIRSPACE AND OPERATIONS WITHIN CONTROLLED AIRSPACE.

The following will apply:-

1.13.1 Crossing of airways will be right angles.

1.13.2 Pilots are to establish radio communication with ATC ten (10) minutes prior entering controlled airspace.

1.13.3 Pilots must maintain two way radio communication with ATC on the appropriate frequency.

1.13.4 Gliders must be equipped with mode C transponders when operating within the Bloemfontein/Johannesburg controlled airspace.

1.13.5 Pilots wishing to enter controlled airspace must file a flight plan except when crossing an airway at right angles.

1.13.6 Powered aircraft operating on flight plans will have priority and crossing of controlled airspace by gliders will only be approved, traffic permitting.

1.14 WELKOM / HENNEMAN GLIDER AREA (WINDOW)

GENERAL

1.14.1 Aircraft may, when the glider window is activated, transit this airspace at their own discretion. Pilots are to keep a careful lookout at all times whilst operating within the window.

1.14.2 Standard separation will not apply - pilots are to maintain own separation.

1.14.3 The glider window is not general flying area but airspace approved for glider operations.

Designation and lateral limits	Vertical limits	Operator / userTel Nr	Remarks and time of ACT
JOHANNESBURG FIR			
Welkom / Henneman Glider Area (Window) (a)From a point at 274220S 0271100E (the intersection of the Virginia / Kroonstad power lines and the Odendaalsrus / Kroonstad road (R34) on the old Welkom TMA boundary) southwards along the power lines to the Geneva railway station. (b)Thence southwards along the railway line to Virginia. (c)Thence south eastwards along the road to Aldam (Allemanskraal-dam). (d)Thence anti clockwise along the 30NM arc of a circle centred at the point 275820.23S 0264211.08E to the starting point at 274220S 0271100E.	FL105 GND		ATC Johannesburg Central will release the window for the benefit of glider operations with 30 minutes prior notice. The ATC Johannesburg Central will be advised telephonically +2711 928 6452 when gliding commences and when the last glider has landed. In the event of the telephone system being unserviceable, ATC Johannesburg Central will be advised on frequency 120.3MHz Pilots are to comply with the Traffic information Broadcast by Aircraft (TIBA) when operating within this window.The maximum level permitted within the window will be FL 105. Requests for higher levels may be submitted and authorization for such flight may, subject to traffic, be delayed or refused.
Note 1:Glider flights are authorized to operate within the window during the day in VMC only.			

1.15 GLIDER OPERATIONS OUTSIDE THE DEFINED WINDOW: CROSSING OF AIRWAYS / CONTROLLED AIRSPACE AND OPERATIONS WITHIN CONTROLLED AIRSPACE.

The following will apply:-

1.15.1 Crossing of airways will be at right angles.

1.15.2 Pilots are to establish radio communication with ATC ten (10) minutes prior to entering controlled airspace.

1.15.3 Pilots must maintain two way radio communication with ATC on the appropriate frequency.

1.15.4 Gliders must be equipped with mode C transponder when operating within the Johannesburg controlled airspace.

1.15.5 Pilots wishing to enter controlled airspace must file flight plans except when crossing an airway at right angles.

1.15.6 Powered aircraft operating on flight plans will have priority and such crossing of controlled airspace will only be approved, traffic permitting.

1.16 JOHN WESTON AIRFIELD

Pilots wanting to OPR at John Weston airfield must first CTC FAKM ATC on Tel: (+2753) 851 1012 or FREQ 118.2 MHz during HR of OPR. Pilots are also reminded to remain clear of FAKM CTR due different FREQ in use. Joining clearance can be obtained from FAKM TWR on FREQ 118.2 MHz before entering the CTR.

1.17 PARAGLIDING OPS WITHIN 5NM OF FAWM

Pilots to exercise caution due to paragliding operations taking place within 5NM of Welkom Airfield. Vehicle winch launches on runways. Static winch launches alongside runways. Free flying and landings. RWY07/25 and 15/33 will be utilized. Airband will be monitored during activities on freq 118.0MHz. Daily between SR-SS.
GND/10 000FT AGL.

1.18 MAGALIES/ORIENT GLIDER AREA (WINDOW).

GENERAL

1.18.1 During glider operations the part of the window within JHB CTA will be deemed to be uncontrolled airspace.

1.18.2 Aircraft may transit this airspace at their own discretion - pilots are to keep a careful lookout at all times whilst within the window.

1.18.3 Standard separation will not apply -pilots are to maintain own separation.

1.18.4 Window is not a general flying area but airspace approved for glider operations.

1.18.5 Gliders will maintain a listening watch on FREQ 126.7 MHz whilst inside the glider window.

Designation and lateral limits	Vertical limits	Operator / userTel Nr	Remarks and time of ACT
JOHANNESBURG FIR			
Magalies/Orient glider Area (Window): (a) From 261510S 0270820E on the Southern tip of the Western Edge of the Klerkskraaldam. (b) Thence the JSV 60DME arc, coinciding with the Johannesburg CTA boundary, to a point 261510S 0271420E (c) Thence North East along this road to a point 261040S 0272800E where the powerlines cross the R47. (d) Thence North East along the powerlines to where they cross the Brandvlei/Orient road at 260510S 0273510E. (e) Thence a straight line to a point on the Tarlton /Magaliesburg Road at the road junction which is the entrance to the Tarlton raceway 260328S 0273836E. (f) Thence along the Tarlton Magaliesburg road to a point 260220S 0273627E on the Johannesburg TMA. (g) Thence a straight line to the Magalies Tower 255137S 0273148E; (h) Thence a straight line to a point 254210S 0271455E to the Southern edge of Rustenburg. (i) Thence to the starting point 261510S 0270820E.	FL145 FL110		The shift supervisor or senior ATC O R Tambo Inter-national will be advised telephonically (+2711 928 6439/40) when gliding commences and when last glider has landed. In the event of the telephone system being unservice-able, ATC will be advised on FREQ 119.5/126.7 MHz. Glider may be raised on airfield FREQ 123.4 MHz.
Note 1:Gliders are to remain south of the town of Rustenburg and at least 2 NM South of the Southern most point of Buffelspoortdam. Note 2:Glider flights are authorized to operate VMC only within the gliding area. Note 3:Gliders are to remain West of the Tarlton/Magaliesburg main road and to the North of the power lines whilst at FL 110 and above. Note 4:Pilots to exercise caution due to the recommencement of winch launching and aero tow FLT at Orient. Winch launching is extremely hazardous to transient TFC. Not only is the cable virtually invisible, a glider that appears stationary at the end of a RWY can be airborne in 100M and climb to 1800FT AGL in APRX 45 seconds. Special rules FREQ: 125.8 MHz Orient AD: 123.4 MHz. GND to 1800 FT AGL.			

1.19 WEEKDAY OPERATIONS

The following will apply:-

1.19.1 ATC FAOR will release the window for the benefit of glider operations with 30 minutes prior notice.

1.19.2 Maximum flight level will be FL 145 within the window (request for higher may be submitted).

1.19.3 Glider window above FL 105 will only be available between 0800 - 1400.

1.19.4 The authorization for flights above FL105 may be delayed or refused in case of high traffic density in the airspace concerned.

1.19.5 Pilots to listen out on 126.7 MHZ when above FL105.

1.20 WEEKEND OPERATION.

The following will apply:-

1.20.1 ATC FAOR will release the window for the benefit of Glider operation with 30 minutes prior notice.

1.20.2 Maximum height within the window will be FL185.

1.20.3 The glider window will be available between the hours 0800 - 1600. Outside these hours operations will only be approved with prior liaison.

1.20.4 Pilots to listen out on 126.7 MHz when above FL105.

1.21 GLIDER OPERATION OUTSIDE THE ABOVE WINDOW.

This is subject to normal controlled airspace restrictions e.g.. not above 7500 FT below the JHB TMA and not above FL 105 below the JHB CTA.

1.22 PUBLIC HOLIDAYS.

Public holidays will be treated as normal working days. The weekend operation may be applied on an ad hoc basis with prior arrangement with ATC i.e. check on the morning in question if ATC can accommodate gliders above FL 145. The authorization may be delayed or refused in case of high traffic density in the airspace concerned.

1.23 SPECIAL DAYS ON LONG WEEKENDS.

Glider clubs may submit their requests to Chief ATC FAOR for consideration and approval. Such request will be submitted timeously to allow for necessary NOTAM action.

1.24 CROSSING OF AIRWAYS/CONTROLLED AIRSPACE OTHER THAN THE WINDOW

The following will apply:-

1.24.1 Pilots must have two way communication on the appropriate FREQ.

1.24.2 Gliders must be equipped with serviceable mode C transponder.

1.24.3 Crossing of airways will be at right angles.

1.24.4 Pilots are to establish R/T communication with ATC 10 minutes prior to entering controlled airspace.

1.24.5 File the necessary flight plan when pilot wishes to enter controlled airspace except when crossing an airway at right angles.

1.24.6 Powered aircraft operating on flight plans will have priority and such crossing of controlled airspace will only be approved traffic permitting.

2 South African approved Hot Air Ballooning areas

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Skeerpoort 25NM radius centred 254800S 0274400E	7500FT AMSL GND	(excluding controlled and restricted airspace)
Entabeni Game Reserve 25NM radius centred 241400S 0284000E	7500FT AMSL GND	
Mabula Game Reserve 25NM radius centred 240700S 0275400E	7500FT AMSL GND	
Kloofzicht Lodge, Cradle of Human Kind 25NM radius centred 255800S 0274900E	7500FT AMSL GND	(excluding controlled and restricted airspace)
Valley Lodge, Magaliesburg 25NM radius centred 274712S 0304740E	7500FT AMSL GND	(excluding controlled and restricted airspace)

3 South African Approved Radio Controlled Model Aircraft Flying Areas

3.1 The under mentioned clubs are approved to perform Radio-Controlled Model Aircraft Operations.

3.2 All Radio Modelling Operations are conducted strictly according to an approved Manual of Procedures.

3.3 Temporary increased height approvals may apply as per FUA (Flexible Use of Airspace) / CAMU (Central Airspace Management Unit) processes and for NOTAM publication.

3.4 Any operations to be conducted within Controlled Airspace require approval from the relevant ATSU and Letter of Procedure (LoP) with the ATSU.

3.5 All radio modelling sites will be a 0.5NM radius centred around the coordinates, unless otherwise specified.

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Port Elizabeth Radio Flyers 1NM radius centred 335233S 0252103E	400FT AGL GND	6KM from FAUH. Occasional temporary height request to 1 000FT AGL
Border Radio Flyers – Blaney 1NM radius centred 325142S 0273046E	400FT AGL GND	
East London Model Aeroplane Club 1NM radius centred 330252S 0275202E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAEL ATSU.
Sundays River Valley Radio Flyers - Addo Polo 1NM radius centred 333110S 0253953E	400FT AGL GND	
Sundays River Valley Radio Flyers – Dunbrody 1NM radius centred 332919S 0253404E	400FT AGL GND	
Pyrates of the Sky - Standerwick Farm 1NM radius centred 333110S 0265500E	400FT AGL GND	All operations subject to Defence Force permission and regulations.
Uitenhage Radio Flyers 1NM radius centred 334602S 0252217E	400FT AGL GND	
Grahamstown Radio Flyers New 1NM radius centred 331723S 0262941E	400FT AGL GND	
FPV Fanatics 1NM radius centred 335705S 0253322E	150FT AGL GND	
Welkom Model Aircraft Club 1NM radius centred 275820S 0264130E	400FT AGL GND	
Central Radio Flyers 1NM radius centred 291125S 0261147E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FABL ATSU.
Bethlehem Radio Flyers 1NM radius centred 280935S 0281535E	400FT AGL GND	
Bloemfontein Radio Aero Team 1NM radius centred 291351S 0260503E	400FT AGL GND	
Frankfort Fun Flyers 1NM radius centred 271721S 0283047E	400FT AGL GND	

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Wonderfontein Radio Flyers 1NM radius centred 264651S 0274859E	400FT AGL GND	
Langenhoven Park Flyers 1NM radius centred 290646S 0290930E	400FT AGL GND	
Ficksburg Flyboys 1NM radius centred 284935S 0275411E	400FT AGL GND	
Durban Deep Radio Flyers 1NM radius centred 260416S 0275212E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALA ATSU.
Barnstormers Kempton Park 1NM radius centred 260044S 0281743E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU.
Johannesburg Model Aircraft Club: 1NM radius centred 255737S 0275928E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALA ATSU.
Modderfontein Model Aero Club 1NM radius centred 260631S 0281032E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU.
Pretoria Radio Flyers: 1NM radius centred 255259S 0281925E	400FT AGL GND	12KM from FAKT - Occasional temporary height request to 1000FT AGL
Rand Model Aeronautic Club 1NM radius centred 261915S 0280325E	400FT AGL GND	Located within FAD183 - Occasional temporary height request to 1000FT AGL
Silverton Model Flying Club 1NM radius centred 254951S 0283202E	400FT AGL GND	
North Eastern Radio Flyers 1NM radius centred 260418S 0280617E	400FT AGL GND	Occasional temporary height request to 1000FT AGL
Irene Radio Flyers 1NM radius centred 255434S 0281313E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAWK ATSU.
White Hills Radio Flyers 1NM radius centred 255202S 0280512E	400FT AGL GND	
West Rand Aeromodelling Club 1NM radius centred 260247S 0275010E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALA ATSU.

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Silverton Gliding Club 1NM radius centred 254546S 0282339E	400FT AGL GND	
Aero Aces Nigel 1NM radius centred 262227S 0282737E	400FT AGL GND	
Umbila Radio Flyers 1NM radius centred 261553S 0283220E	400FT AGL GND	
Warthog Radio Flyers 1NM radius centred 253314S 0282220E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAWB ATSU.
SA Modelsport Academy 1NM radius centred 261025S 0282056E	400FT AGL GND	
Henley Model Aircraft and Family Entertainment 1NM radius centred 263442S 0280422E	400FT AGL GND	Occasional temporary height request to 1000FTAGL
Bartlett Egg Radio Gliders 1NM radius centred 260221S 0274747E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALA ATSU.
Flying Unlimited 1NM radius centred 254949S 0280538E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FASK ATSU.
Edenvale Park Flyers 1NM radius centred 260831S 0280947E	400FT AGL GND	
Moot Radio Flyers 1NM radius centred 254235S 0280401E	400FT AGL GND	
Mount Ridge RC Flying Club 1NM radius centred 253529S 0275329E	400FT AGL GND	
Greenfields Eastern Model Soarers 1NM radius centred 255943S 0282203E	400FT AGL GND	
Delmas Radio Vlieëniers 1NM radius centred 261004S 0293934E	400FT AGL GND	
Jailbirds 1NM radius centred 261645S 0281728E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU.

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Centurion Sport Park Control Line site 1NM radius centred 254937S 0281230E	150FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAWK ATSU.
Midstream Park Fliers 1NM radius centred 255514S 0281143E	150FT AGL GND	
Eagle Canyon 1NM radius centred 260503S 0275453E	The Joshua Castle Drone Club 1NM radius centred 260548S 0280253E	
A.B.O RC Park 1NM radius centred 263822S 0280601E	400FT AGL GND	
Vildebeest 1NM radius centred 253852S 0280049E	400FT AGL GND	
The Joshua Castle Drone Club 1NM radius centred 260548S 0280253E	150FT AGL GND	
Durban Model Aircraft Club 1NM radius centred 294443S 0303524E	400FT AGL GND	Occasional temporary height request to 1000FTAGL
Newcastle Model Aircraft Club 1NM radius centred 274612S 0295833E	400FT AGL GND	
Richards Bay Radio Flyers 1NM radius centred 284515S 0315901E	400FT AGL GND	
Shongweni Model Flying Club 1NM radius centred 294748S 0304427E	400FT AGL GND	
Cato Manor Model Flying Club 1NM radius centred 295209S 0305749E	400FT AGL GND	
Valley Radio Control Model Club 1NM radius centred 295425S 0305720E	400FT AGL GND	
Ladysmith RC Club 1NM radius centred 283025S 0294257E	400FT AGL GND	
Summerveld Estate Gliding Durban MAC 1NM radius centred 294943S 0304223E	400FT AGL GND	

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Cliffdale Slope Site DMAC 1NM radius centred 294642S 0304137E	150FT AGL GND	
Winston Park Slope Site DMAC 1NM radius centred 294904S 0304808E	150FT AGL GND	
Fudu Ridge Switchblade Slope Site - Durban MAC 1NM radius centred 295351S 0304442E	150FT AGL GND	
South Coast Association of Radio Flyers Oribi 1NM radius centred 304026S 0301438E	400FT AGL GND	
Inanda Slope Site - Durban MAC 1NM radius centred 293837S 0305023E	150FT AGL GND	
Mavericks 1NM radius centred 295841S 0305634E	400FT AGL GND	
Ballito RC Club 1NM radius centred 293149S 0311139E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU.
Karkloof Radio Flyers 1NM radius centred 292250S 0301553E	400FT AGL GND	
East Coast Aerotow Nomads 1NM radius centred 294434S 0291600	400FT AGL GND	
Drakensberg Soaring Club 1NM radius centred 294842S 0292351E	400FT AGL GND	
Harlequins 1NM radius centred 295528S 0310040E	150FT AGL GND	
Capricorn Radio Model Flying Club 1NM radius centred 235224S 0292845E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAPP ATSU.
Bela Bela Valke 1NM radius centred 245443S 0281831E	400FT AGL GND	
Ermelo Radio Flyers 1NM radius centred 263547S 0295803E	400FT AGL GND	

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Sky Blazers 1NM radius centred 230500S 0295447	400FT AGL GND	
Lowveld Model Aircraft Club 1NM radius centred 252225S 0305745E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAKN ATSU.
Witbank Radio Flyers 1NM radius centred 255725S 0291241E	400FT AGL GND	
TEKSA RC Model Club 1NM radius centred 262906S 0291312E	400FT AGL GND	
Piet Retief Aeromodellers 1NM radius centred 270148S 0304843E	400FT AGL GND	
Ngodawana Model Engineering 1NM radius centred 253517S 0303738E	400FT AGL GND	
Doornhoek RC 1NM radius centred 251610S 0304221E	400FT AGL GND	
Nakuphi Float Flyers 1NM radius centred 250833S 0310055E	400FT AGL GND	
Klerksdorp Radio Flyers 1NM radius centred 265217S 0264135E	400FT AGL GND	Occasional temporary height request to 1000FTAGL
Midwest Model Club 1NM radius centred 264608S 0270427E	400FT AGL GND	
Brits Model Aero Club 1NM radius centred 253157S 0274632E	400FT AGL GND	
The Coves 1NM radius centred 254626S 0274750E	400FT AGL GND	
Wild Dog at Harrop's RC Club 1NM radius centred 254852S 0274417E	400FT AGL GND	
Rustenburg Model Flying Club 1NM radius centred 254547S 0271919E	400FT AGL GND	
Upington Radio Vlieëniers 1NM radius centred 282354S 0210942E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAUP ATSU.

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Kimberley Model Aircraft Club 1NM radius centred 284433S 0243955E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAKM ATSU.
Namaqualand Aero Sports Association 1NM radius centred 294121S 0175613E	400FT AGL GND	
Black Rock Radio Control Flyers 1NM radius centred 270727S 0225030E	400FT AGL GND	
Kimberley Park Flyers 1NM radius centred 284514S 0244501E	400FT AGL GND	
Upington Radio Flyers – Droogehout Farm Site 1NM radius centred 282253S 0205909E	400FT AGL GND	
Somerset College FPV 1NM radius centred 340215S 0184844E	150FT AGL GND	
Southern Soaring Club Dreyersdal 1NM radius centred 340314S 0182705E	400FT AGL GND	
Riversdale Radio Flyers - Riversdal 1NM radius centred 340638S 0211534E	400FT AGL GND	
Riversdale Radio Flyers – Still Bay 1NM radius centred 342108S 0212520E	400FT AGL GND	
Boland Model Aircraft Club 1NM radius centred 334502S 0185227E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU Occasional temporary height request to 1000FT AGL
Fish Hoek Electric Radio Control Flyers 1NM radius centred 340730S 0182430E	150FT AGL GND	
Bredasdorp Model Aircraft Club 1NM radius centred 343834S 0200328E	400FT AGL GND	
Two Oceans Slope Soarers Chapman's Peak 1NM radius centred 340440S 0182149E	150FT AGL GND	
Knysna Radio Flyers 1NM radius centred 335739S 0225801E	400FT AGL GND	

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Atlantic Flying Club Signal Hill Slope Site 1NM radius centred 335517S 0182352E	150FT AGL GND	
Weskus Radio Flyers 1NM radius centred 330130S 0180320E	400FT AGL GND	
Two Oceans Slope Soarers - Red Hill Simonstown 1NM radius centred 341037S 0182511E	150FT AGL GND	
Two Oceans Slope Soarers Soetwater Kommetjie 1NM radius centred 340910S 0181936E	150FT AGL GND	
Two Oceans Slope Soarers White Cross Kommetjie 1NM radius centred 340838S 0181940E	150FT AGL GND	
Two Oceans Slope Soarers Smitswinkel Bay 1NM radius centred 341544S 0182800E	150FT AGL GND	
Two Oceans Slope Soarers Monkey Valley 1NM radius centred 340546S 0182122E	150FT AGL GND	
Shark Coast Radio Flyers 1NM radius centred 343531S 0192420E	400FT AGL GND	
Cape FPV Flyers 1NM radius centred 340254S 0182538E	400FT AGL GND	
Citrusdal Radio Flyers 1NM radius centred 324233S 0190333E	400FT AGL GND	
K.P.A (Kandrift) 1NM radius centred 333924S 0220924E	400FT AGL GND	
Dieprivier Farm FPV Site 1NM radius centred 341048S 0192555E	150FT AGL GND	
West Coast FPV 1NM radius centred 335046S 0183111	150FT AGL GND	
Dieprivier Farm FPV Site 1NM radius centred 341048S 0192555E	150FT AGL GND	

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
Plaas – Gediertefontein, MK17 1NM radius centred 341507S 0211919E	400FT AGL GND	
Still Bay Radio Flyers 1NM radius centred 342108S 0212521E	400FT AGL GND	
Stofpad Radio Flyers 1NM radius centred 340135S 0232208E	400FT AGL GND	
Cango Flying Club 1NM radius centred 333358S 0221153E	400FT AGL GND	
Area 51 RC Flyers 1NM radius centred 235546S 0292843E	400FT AGL GND	
Robertson Radio Flyers 1NM radius centred 334843S 0195448E	400FT AGL GND	
Stellenbosch Model Aircraft Academy 1NM radius centred 335051S 0184755E	400FT AGL GND	
Mosselbay Radio Flyers 1NM radius centred 340851S 0215716E	400FT AGL GND	
Drakesberg Soaring Club 1NM radius centred 29484020S 29235253E	400FT AGL GND	
Tygerberg Model Flying Club 1NM radius centred 334218S 0184354E	400FT AGL GND	
Helderberg Radio Flyers 1NM radius centred 340248S 0184425E	400FT AGL GND	
Kraaifly 1NM radius centred 334912.93S 0184225.06E	400FT AGL GND	
Snoopy's Squadron Radio Control Flying Club 1NM radius centred 260747S 0274429E	400FT AGL GND	
Wynland Mode lvlieg klub 1NM radius centred 333921.75S 0192501.5E	400FT AGL GND	
Capricorn Model Flying Club 1NM radius centred 235224S 0292845E	400FT AGL GND	

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
1	*2*	*4*
George Radio Flyers 1NM radius centred 335929S 0222556E	400FT AGL GND	
BOT Walker Bay Radio Flyers 1NM radius centred 341640S 0191007E	400FT AGL GND	
KAR Walker Bay Radio Flyers 1NM radius centred 342132S 0190848E	400FT AGL GND	
West Coast Heli Flyers 1NM radius centred 3304029S 1821513E	400FT AGL GND	
Nitida Estate Helicopter Site 1NM radius centred 335008S 0183541E	400FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU
Ceres Model Aircraft Club 1NM radius centred 331908S 0192513E	400FT AGL GND	
Cape Radio Flyers 1NM radius centred 334017S 0182952E	400FT AGL GND	
BushHawk Radio Control 1NM radius centred 255532S 0272932E	400FT AGL GND	
Namaqualand Aero Sport Association 1NM radius centred 294137S 0175633E	400FT AGL GND	

4 South African Approved Hang and Paragliding Glider Launch and landing sites

4.1 All Hang and Paragliding launch sites published herein are for Recreational Aviation hang and paragliding operations only.

4.2 A 1 NM Radius is applied to all Hang and Paragliding launching sites.

4.3 Hang and Paragliders are to remain clear of all controlled airspace as published in the Aeronautical Information Products when leaving the defined launch sites listed here.

4.4 Any operations to be conducted within Controlled Airspace require approval from the relevant ATSU and a signed Letter of Procedure (LoP) with the ATSU.

4.5 Hours of operations are always SR-SS unless otherwise specified.

KEY TABLE:

T = Training
T-B = Training to Basic
B = Basic
S = Sport
HGN = Novice
HGA = HG A Class
HGB= HG B Class
HGC = HG C Class
PHG = Powered HG

Cape Town FIR

Designation and lateral limits	Vertical limits	Operator/user Tel Nr	Remarks and time of ACT
CAPE TOWN FIR			
George Paragliding: (a) From a point 335500.09S 0223852.40E clockwise around an arc of 1NM centred at 335554.40S 0223923.30E to point 335552.14S 0224035.37E (b) Thence a straight line to a point 340018.54S 0224047.43E (c) Thence clockwise around an arc of radius 1NM centred at 340020.80S 0223935.30E to a point 340106.11S 0224022.74E (d) Thence a straight line to a point 340140.31S 0223935.63E (e) Thence following the coastline 1NM out to sea to a point 340054.28S 0223322.36E (f) Thence clockwise around an arc of radius 1NM centred at 335955.50S 0223337.50E to a point 340014.59S 0223229.05E (g) Thence a straight line to a point 335955.19S 0223221.26E (h) Thence clockwise around an arc of radius 1NM centred at 335936.10S 0223329.70E to a point 335908.87S 0223225.36E (i) Thence a straight line to a point 335720.78S 0223331.28E (j) Thence clockwise around an arc of radius 1NM centred at 335748.00S 0223435.60E to a point 335653.66S 0223404.74E (k) Thence a straight line back to starting point 335500.09S 0223852.40E	1500FT ALT		Daily during official daylight hours and in VMC, unless otherwise instructed by George ATC.
Note: Paragliding operations in the defined area can only be conducted in strict accordance with the Letter of Agreement between FAGG ATSU and the Paragliding Operations.			

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Addo 1NM radius centred 333540S 0253852E	2500FT ALT GND	Not above 2500FT ALT - FAPE TMA B		
Agatha 1NM radius centred 240000S 0300000E	3000FT AGL GND			
Alain's Krantz 1NM radius centred 330859S 0261723E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	B	
Amatava 1NM radius centred 240806S 0290506E	7600FT ALT GND	Not above 7600FT ALT - FAPP TMA	T-B	
Amatava_NW 1NM radius centred 240818S 0290523E	7600FT ALT GND	Not above 7600FT ALT - FAPP TMA	B	
Amatava_SW 1NM radius centred 240650S 0290507E	7600FT ALT GND	Not above 7600FT ALT - FAPP TMA	B	
Antbear Lodge North West 1NM radius centred 290906S 0294922E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A		
Arch Rock 1NM radius centred 340000S 0232659E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Athlone 1NM radius centred 300141S 0305443E	3500FT ALT GND	Not above 3500FT ALT - FALE TMA D		
Aviators Paradise 1NM radius centred 254130S 0274658E	14000FT ALT GND	Not above 11000FT ALT - FAOR CTA	B /HGN	
Bachelors Hill 1NM radius centred 311423S 0280447E	3000FT AGL GND		T-B	
Bambi 1NM radius centred 252937S 0301757E	3000FT AGL GND		T-B	
Barberton 1NM radius centred 254806S 0310321E	8500FT ALT GND	Not above 8500FT ALT - FAKN TMA A	T-B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Barrydale 1NM radius centred 335248S 0204311E	3000FT AGL GND		B	
Battlefields Country Lodge 1NM radius centred 280756S 0301708E	3000FT AGL GND		B	
Beacon Hill 1NM radius centred 302507S 0303037E	10500FT ALT GND	Not above 10500FT ALT - FALE CTA B		
Bedford 1NM radius centred 323824S 0260447E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Bedford Mountain 1NM radius centred 323726S 0260144E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	T-B / HGB	+3
Beervlei Dam 1NM radius centred 330412S 0232819E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	B / HGA	+3
Bettys Bay 1NM radius centred 341947S 0185135E	5500FT ALT GND	Not above 5500FT ALT - FACT TMA C	B	
Black Ridge 1NM radius centred 293335S 0301912E	100FT AGL GND	Subject to requirements as defined in the Letter of Procedure (LOP) with FAPM ATSU.	B	
Bloemhofdam 1NM radius centred 273824S 0253824E	3000FT AGL GND			
Bluff 1NM radius centred 295247S 0310148E	3000FT AGL GND		T-B	
boca do inferno 1NM radius centred 300312S 0221450E	3000FT AGL GND			
Bokkiesberg 1NM radius centred 301912S 0291912E	3000FT AGL GND			
Bolela 1NM radius centred 295447S 0294357E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A		

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Bonamanzi Lodge 1NM radius centred 250930S 0294941E	3000FT AGL GND			
Bonnievale 1NM radius centred 334947S 0214912E	5500FT ALT GND	Not above 5500FT ALT - FAGG TMA G		
BoPlaas 1NM radius centred 335921S 0243918E	6500FT ALT GND	Not above 6500FT ALT - FAPE TMA D	T-B / HGA	
Borderline 1NM radius centred 302955S 0224005E	3000FT AGL GND			
Boschpoort 1NM radius centred 263610S 0260930E	14000FT ALT GND	Not above 14000FT ALT- ATS Route G465		
Botshabelo 1NM radius centred 291423S 0264311E	8500FT ALT GND	Not above 8500FT ALT - FABL TMA B	T-B	
Bredasdorp Airfield 1NM radius centred 343748S 0200300E	3000FT AGL GND		B	
Brenton on sea 1NM radius centred 340336S 0230036E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D	B	
Bronkhostspruit 1NM radius centred 253824S 0283824E	11000FT ALT GND			
Buffelsnek 2.7 NM radius centred 335405S 0231012E	2500FT ALT GND		B	
Buffles Bay 1NM radius centred 340503S 0225826E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D	B	
Bulembu Road 1NM radius centred 254311S 0310447E	5500FT ALT GND	Not above 5500FT ALT - FAKN TMA A	B	
Bulwer 600 1NM radius centred 294835S 0294410E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A	T-B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Burgerspass 1NM radius centred 334311S 0194800E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A	T-B	
Burgerspass, Robertson 1NM radius centred 334500S 0194959E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A		
Bushmans 1NM radius centred 335248S 0250447E	2500FT ALT GND	Not above 2500FT ALT - FAPE TMA B		
Cape Agulhas 1NM radius centred 344908S 0200103E	3000FT AGL GND			
Carnarvon 1NM radius centred 305917S 0220753E	3000FT AGL GND		B	
Castleton 1NM radius centred 340259S 0232023E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D		
Ceres Mountain 1NM radius centred 331500S 0192800E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A	B / HGC	+1
Cerro Argentino 1NM radius centred 332126S 0220319E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Circus Airfield 1NM radius centred 262919S 0280331E	7600FT ALT GND			
Copperton 1NM radius centred 295429S 0221716E	3000FT AGL GND			
Cradock tower 1NM radius centred 320728S 0253831E	3000FT AGL GND			
Dana Bay 1NM radius centred 341123S 0220111E	3500FT ALT GND	Not above 3500FT ALT - FAGG TMA I	B	
Dasklip Pass, Porterville 1NM radius centred 325422S 0190215E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A	B	+2

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
De Aar 1NM radius centred 304147S 0240149E	14000FT ALT GND	Not above 14000FT ALT- ATS Route W95	B	
De Aar Airfield 1NM radius centred 304459S 0240404E	14000FT ALT GND	Not above 14000FT ALT- ATS Route W95	B	
De Aar Renosterberg 1NM radius centred 302833S 0235928E	3000FT AGL GND		T-B	
Dealsville 1NM radius centred 283824S 0254311E	14500FT ALT GND	Not above 14500FT ALT - FABL CTA		
Dennegeur Farm 1NM radius centred 305913S 0253802E	3000FT AGL GND			
Devils Peak 1NM radius centred 335648S 0182621E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	B /HGC	+4
Doornkloof 1NM radius centred 262347S 0273451E	3000FT AGL GND		B	
Doringkop 1NM radius centred 252848S 0294800E	3000FT AGL GND		B	
Douglas 1NM radius centred 290525S 0234324E	3000FT AGL GND		B	
Du Toits Kloof Pass 1NM radius centred 334145S 0190407E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	T-B	B+3
Du Toits LangKloof 1NM radius centred 334648S 0222848E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA B	S	
Dumbe 1NM radius centred 272359S 0304800E	3000FT AGL GND		T-B	
Dunes 1NM radius centred 325248S 0275248E	2500FT ALT GND	Not above 2500FT ALT - FAEL TMA A		

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Dunnottar 1NM radius centred 262114S 0282811E	7600FT ALT GND		T-B	
Durban Bluff 1NM radius centred 295742S 0305900E	2000FT ALT GND	Not above 2000FT ALT - FALE TMA F	T-B	
Eagle Rock 1NM radius centred 310447S 0280936E	3000FT AGL GND			
Edgehill 1NM radius centred 273335S 0232848E	3000FT AGL GND		B	
Eersterivier 1NM radius centred 340407S 0241246E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	B / HGA	
Elandskloof 1NM radius centred 323757S 0190854E	14500FT ALT GND	Not above 14500FT ALT - FAGG TMA D		
Eselsfontein 1NM radius centred 324947S 0190523E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A		
Eshowe 1NM radius centred 284800S 0311912E	5500FT ALT GND	Not above 5500FT ALT - FALE TMA C	T-B	
Fort Mistake 1NM radius centred 280831S 0295709E	3000FT AGL GND		B	
Founds Hollow 1NM radius centred 291754S 0301256E	10500FT ALT GND	Not above 10500FT ALT - FALE CTA B		
Franschoek 1NM radius centred 335411S 0190925E	7500FT ALT GND	Not above 7500FT ALT - FACT TMA D	T-B	+4
Gansbaai 1NM radius centred 343223S 0192436E	3000FT AGL GND		B	
Gerdau 1NM radius centred 262808S 0260356E	3000FT AGL GND			

Designation	***Vertical limits***	***Remarks and time of Activity***	**Site Grading**	**Extra Criteria (+ means additional # of sign off flights)**
1	*2*	*3*	*4*	*5*
Gerricke's Point 1NM radius centred 340152S 0224549E	5500FT ALT GND	Not above 5500FT ALT - FAGG TMA C	B	
Glacis 1NM radius centred 321316S 0272236E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Glen Cullen Fire Tower 1NM radius centred 310447S 0281423E	3000FT AGL GND			
Glendale Heights 1NM radius centred 291925S 0310716E	5500FT ALT GND	Not above 5500FT ALT - FALE TMA C		
Glueckstadt 1NM radius centred 275436S 0310036E	3000FT AGL GND			
Gods Window 1NM radius centred 245424S 0305156E	3000FT AGL GND		S	
Greenlandmountain 1NM radius centred 340747S 0190557E	7500FT ALT GND	Not above 7500FT ALT - FACT TMA D		
Greyton 1NM radius centred 340345S 0193612E	8500FT ALT GND	Not above 8500FT ALT - FACT TMA E		
Groblershoop Airfield 1NM radius centred 285443S 0215934E	3000FT AGL GND		B	
Groenberg 1 1NM radius centred 333513S 0190244E	8500FT ALT GND	Not above 8500FT ALT - FACT TMA E	B	+4
Grotto Bay 1NM radius centred 333028S 0181849E	3000FT AGL GND			
Gydo Pass 1NM radius centred 331412S 0191927E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A	B	
Haaspoort 1NM radius centred 331639S 0243756E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Hamburger Hill 1NM radius centred 334708S 0183734E	100FT AGL GND	Subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU.		
Hanglip 1NM radius centred 230000S 0294800E	3000FT AGL GND		B	
Harnett's Farm 1NM radius centred 331424S 0262736E	3000FT AGL GND	FAR86 - Military shooting range	B	
Hartbeespoortdam 1NM radius centred 254239S 0275306E	7600FT ALT GND		S	
Hartenbos 1NM radius centred 335646S 0190459E	7500FT ALT GND	Not above 7500FT ALT - FACT TMA D	S	
Haystacks 1NM radius centred 334558S 0183957E	2500FT ALT GND	Not above 2500FT ALT - FACT TMA A	T-B / HGA	
Heidelberg Airfield 1NM radius centred 262923S 0282135E	7600FT ALT GND			
Hella Hella 1NM radius centred 294800S 0300936E	10500FT ALT GND	Not above 10500FT ALT - FALE CTA B		
Hermanus 1NM radius centred 342406S 0191434E	8500FT ALT GND	FACT TMA E		
Hersham 1NM radius centred 340259S 0221423E	100FT AGL GND	Subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU.		
Highlands Farm 1NM radius centred 331759S 0262359E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Hoeksfontein 1NM radius centred 322359S 0250952E	3000FT AGL GND			
Hoggsback 1NM radius centred 323223S 0264835E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Holiday Inn / Wilderness Beach Hotel 1NM radius centred 335957S 0223648E	1500FT ALT GND	FAGG CTR - FAGG Paragliding area - not above 1500FT ALT	B	+ 100 FLIGHTS + 5 SIGN OFF
Hotazel Airstrip 1NM radius centred 270936S 0225247E	3000FT AGL GND		B	
Howick Airfield 1NM radius centred 293318S 0301243E	7500FT ALT GND	Not above 7500FT ALT - FALE TMA A	B	
Ifafa 1NM radius centred 301912S 0303924E	5500FT ALT GND	Not above 5500FT ALT - FALE TMA C	B	
Igoda 1NM radius centred 330603S 0274636E	100FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAEL ATSU.	T-B	
JantjiesHoek Njoni 1NM radius centred 271728S 0305101E	3000FT AGL GND			
JB's 1NM radius centred 335445S 0222425E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA B		
Jongens Fontein 1NM radius centred 342359S 0211912E	3000FT AGL GND			
Kaapse Hoop 1NM radius centred 253824S 0304311E	8500FT ALT GND	Not above 8500FT ALT - FAKN TMA D	S	
Kabeljous Lagoon 1NM radius centred 340046S 0245550E	6500FT ALT GND	Not above 6500FT ALT - FAPE TMA D		
Kalkbay 1NM radius centred 340935S 0182624E	2500FT ALT GND	Not above 2500FT ALT - FACT TMA A	S	
Kamala Somerset East 1NM radius centred 324035S 0252810E	3000FT AGL GND		B	
Kanonkop 1NM radius centred 334759S 0185247E	2500FT ALT GND	Not above 2500FT ALT - FACT TMA A		

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Kelershoogte 1NM radius centred 334012S 0220712E	3000FT AGL GND	FAOH ATZ - Not above 6500FT ALT - FAGG TMA F		
Keurboom Strand 2.7 NM radius centred 340005S 0232620E	2500FT ALT GND		T-B	
Klein Kanonkop 1NM radius centred 334836S 0185135E	2500FT ALT GND	Not above 2500FT ALT - FACT TMA A		
Kleinkrantz 1NM radius centred 340021S 0223933E	1500FT ALT GND	FAGG CTR - FAGG Paragliding area - not above 1500FT ALT	T-B	
Kombegana 1NM radius centred 254723S 0272359E	3000FT AGL GND			
Kommetjie 1 1NM radius centred 340849S 0181928E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	B / HGA	
Kommetjie 2 1NM radius centred 341026S 0182117E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	B	
Koringberg 1NM radius centred 330321S 0184044E	3000FT AGL GND		B	
Kranskop 1NM radius centred 331352S 0242613E	400FT AGL GND	Not above 14500FT ALT - FACT CTA B		
Kriel 1NM radius centred 261423S 0291423E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	B	
Krugersdorp 1NM radius centred 260356S 0274844E	3000FT AGL GND		B	+10
Kuruman Airfield 1NM radius centred 272359S 0232359E	3000FT AGL GND		B	
Kushke 1NM radius centred 240138S 0291926E	100FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAPP ATSU.	B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Lady Slipper 1NM radius centred 335329S 0251554E	7500FT ALT GND	Not above 7500FT ALT - FAPE TMA E	T-B / HGB	
Landies 1NM radius centred 294446S 0295719E	10500FT ALT GND	Not above 10500FT ALT - FALE CTA B	B	
Langberg 1NM radius centred 253335S 0274311E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	B	
Langeni Pass 1NM radius centred 312819S 0282651E	3000FT AGL GND			
Laudium 1NM radius centred 254500S 0280447E	7600FT ALT GND	Not above 7600FT ALT - FAOR TMA	T-B	
Leuwkop airstrip 1NM radius centred 265101S 0280423E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA		
Lions Head (Cape Town) 1NM radius centred 335635S 0182253E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	B	+4
Llandudno 1NM radius centred 340101S 0182036E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	B	+4
Lone Tree 1NM radius centred 254311S 0310936E	5500FT ALT GND	Not above 5500FT ALT - FAKN TMA A	T-B	
Lonetree Hill 1NM radius centred 254659S 0310334E	8500FT ALT GND	Not above 8500FT ALT - FAKN TMA A	B	
Long Tom Pass 1NM radius centred 250851S 0303713E	3000FT AGL GND		B	
Loskop 1NM radius centred 291912S 0301423E	7500FT ALT GND	Not above 7500FT ALT - FALE TMA A	T-B	
Maanhaarrand 1NM radius centred 255213S 0272612E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	T-B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Macassar Beach 1NM radius centred 340422S 0183910E	100FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU.	B / HGB	
Maitlands 1NM radius centred 335913S 0251801E	2000FT ALT GND	Not above 2000FT ALT - FAPE TMA A	B / HGA	
Majuba Mountain 1NM radius centred 272838S 0295101E	3000FT AGL GND		B	
Malva Ridge 1NM radius centred 335320S 0232135E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D		
Maniacs 1NM radius centred 330935S 0181912E	3000FT AGL GND		B	+1
Map of Africa 1NM radius centred 335936S 0223335E	1500FT ALT GND	FAGG CTR - FAGG Paragliding area - not above 1500FT ALT	T-B	B
Marcomeniasita 1NM radius centred 295237S 0295237E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A		
Marydale East 1NM radius centred 292410S 0221432E	3000FT AGL GND			
Mauchberg(MacMac) 1NM radius centred 245955S 0304539E	3000FT AGL GND			
Mauchberg(Sabie Ridge) 1NM radius centred 250150S 0304522E	3000FT AGL GND			
Melodie 1NM radius centred 254311S 0274800E	7600FT ALT GND	Not above 7600FT ALT - FAOR TMA		
Middelburg Carlton Heights 1NM radius centred 311809S 0245545E	3000FT AGL GND		B / HGA	
Mokopane Potgietestesrus 1NM radius centred 241344S 01295906E	3000FT AGL GND			

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Monk's Cowl 1NM radius centred 290333S 0292344E	3000FT AGL GND		B	
Montgomery 1NM radius centred 240747S 0290635E	3000FT AGL GND			
Mount Carmel 1NM radius centred 252419S 0304524E	6500FT ALT GND	Not above 6500FT ALT - FAKN TMA B	T-B	
Mount Gilboa 1NM radius centred 291741S 0301749E	7500FT ALT GND	Not above 7500FT ALT - FALE TMA A		
Mountain Drive 1NM radius centred 331912S 0261423E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Mr. Methan Hill 1NM radius centred 293800S 0231224E	3000FT AGL GND			
Mt Anderson 1NM radius centred 250507S 0304014E	3000FT AGL GND			
Mt. Temple 1NM radius centred 280936S 0223824E	3000FT AGL GND			

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Mtunzini / Umlalazi Game Reserve 1NM radius centred 285726S 314640E		Permission to be granted by Mr Trueman Buthelezi +2776 754 7716. All pilots have valid, current NPL 2. Request permission call Gerhard Pretorius +27832513966 or numbers listed in Item 6. 3. All Flights to be registered via this uplink which will be given with call. 4. Additional Rules as per Ezemvelo Email 5. Stay out of marine protected area - Starts on the Beach at the High-water mark 6. Sign in and pay entrance Fee into park and confirm that registered completed. 7. No Flying too low over the Public 8. DO NOT disturb any Flora or Fauna or Sea Life 9. Call and get directions to the specific designated sites +27832513966 or +2782 444 5554 or +2783 642 0600 10. NO Littering 11. Fly safely	T-B	
Mullersberg 1NM radius centred 332100S 0252359E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Nairobi 1NM radius centred 303541S 0225106E	3000FT AGL GND			
Ngodwana 1NM radius centred 253736S 0303731E	8500FT ALT GND	Not above 8500FT ALT - FAKN TMA D	T-B / HGN	
Noordhoek Peak 1NM radius centred 340438S 0182305E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	S	
Noordhoek SW 1NM radius centred 340336S 0182135E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	S	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Normandien 1NM radius centred 275846S 0294221E	3000FT AGL GND		B	
North of Copperton 1NM radius centred 294825S 0221134E	400FT AGL GND		B	
North of Vanwyksvlie 1NM radius centred 300322S 0214140E	3000FT AGL GND			
Ntywenka 1NM radius centred 310447S 0275247E	3000FT AGL GND			
Olivershook 1NM radius centred 283335S 0290447E	3000FT AGL GND		S	
One tree 1NM radius centred 273036S 0294800E	3000FT AGL GND		B	
Orkney Airfield 1NM radius centred 265719S 0264519E	3000FT AGL GND		B	
Ossewa 1NM radius centred 272359S 0301423E	3000FT AGL GND		T-B	
OssewaKop wakkerstroom 1NM radius centred 272327S 0300855E	3000FT AGL GND		B	
Ottos Bluff 1NM radius centred 292848S 0302359E	6500FT ALT GND		S	
Oubergpas Sutherland 1NM radius centred 322447S 0202113E	3000FT AGL GND		B	
Oubos 1NM radius centred 335926S 0241247E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	T-B /HGA	+5
Oudtshoorn Air Field 1NM radius centred 333412S 0221012E	3000FT AGL GND	FAR47 - military shooting range	C	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Paarl Rock 1NM radius centred 334424S 0185659E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	S	
Pampoenfontein 1NM radius centred 325535S 0190214E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA A	B /HGA	+2
Paradise Falls 1NM radius centred 252022S 0304806E	6500FT ALT GND	Not above 6500FT ALT - FAKN TMA B	B	
Paradise Ridge 1NM radius centred 340045S 0224121E	4500FT ALT GND	Not above 4500FT ALT - FAGG TMA B	B	
Parys Glider Airfield 1NM radius centred 265345S 0272952E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	B	
Parys Winch Park 1NM radius centred 265624S 0273412E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	T-B	
Pedrocella 1NM radius centred 302235S 0204632E	3000FT AGL GND			
Pevensey 1NM radius centred 284311S 0301912E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A	S	
Piekerniersкloof Pass 1NM radius centred 323804S 0185646E	3000FT AGL GND			
Piesang Valley 1NM radius centred 340332S 0232221E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D		
Piketberg 1NM radius centred 324759S 0184311E	3000FT AGL GND		T-B / HGB	
Pilots View 1NM radius centred 340447S 0230335E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D		
Platberg 1NM radius centred 281423S 0290936E	3000FT AGL GND			

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Post Tower 1NM radius centred 335248S 0244311E	400FT AGL GND	Not above 6500FT ALT - FAPE TMA D		
Postmasburg 1NM radius centred 282016S 0230423E	3000FT AGL GND		B	
Prentjiesberg 1NM radius centred 310936S 0280936E	3000FT AGL GND		B	
Pressure Point 1NM radius centred 301456S 0304016E	5500FT ALT GND	Not above 5500FT ALT - FALE TMA C		
Prieska 1NM radius centred 294050S 0224627E	3000FT AGL GND		B	
Proud Foot 1NM radius centred 290948S 0301441E	10500FT ALT GND	Not above 10500FT ALT - FALE CTA B		
Putzonderwater 1NM radius centred 291642S 0215338E	3000FT AGL GND			
RBHS School 1NM radius centred 255603S 0275549E	3000FT AGL GND			
Renosterkop 1NM radius centred 253526S 0285706E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	B	
Rhino Ridge 1NM radius centred 333433S 0192733E	8500FT ALT GND	Not above 8500FT ALT - FACT TMA E		
Riemvasmaak 1NM radius centred 282952S 0201322E	400FT AGL GND			
Rietfontein 1NM radius centred 332827S 0234155E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Rondebosch 1NM radius centred 341132S 0245022E	6500FT ALT GND	Not above 6500FT ALT - FAPE TMA D	B / HGA	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Rondebosh 1NM radius centred 335739S 0244716E	6500FT ALT GND	Not above 6500FT ALT - FAPE TMA D	T	
Rondebossie 1NM radius centred 334311S 0183824E	2500FT ALT GND	Not above 2500FT ALT - FACT TMA A		
Rooikranz 1NM radius centred 283335S 0275247E	3000FT AGL GND			
Rozwell 1NM radius centred 335547S 0232726E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Rusty Gate 1NM radius centred 340155S 0192210E	8500FT AGL GND	Not above 8500FT ALT - FACT TMA E		
Sand Road to Sodium off N12 1NM radius centred 301616S 0233231E	3000FT AGL GND			
Sannieshof 1NM radius centred 262708S 0255514E	3000FT AGL GND		B	
Scnellskop 1NM radius centred 234740S 0295720E	3000FT AGL GND			
SedgeField, Cloud 9 1NM radius centred 340021S 0224738E	5500FT ALT GND	Not above 5500FT ALT - FAGG TMA C	B	
Sedgeview 1NM radius centred 340021S 0224736E	5500FT ALT GND	Not above 5500FT ALT - FAGG TMA C	TB - B	
Shongweni 1NM radius centred 294859S 0304536E	5500FT ALT GND	Not above 5500FT ALT - FALE TMA C	B	
Signal Hill Bench 1NM radius centred 335517S 0182351E	5500FT ALT GND	Not above 4500FT ALT - FACT TMA B	S	
Silverstream 1NM radius centred 290508S 0305632E	3576FT AMSL GND		T-B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Sir Lowry s Pass 1NM radius centred 340854S 0185538E	5500FT ALT GND	Not above 5500FT ALT - FACT TMA C	B / HGB	
Skeerpoort 1NM radius centred 254536S 0274311E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA		
Skurweberg 1NM radius centred 254918S 0302350E	3000FT AGL GND		B	
Slipper Back 1NM radius centred 335710S 0253647E	100FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAPE ATSU.		
South Side 1NM radius centred 253824S 0280936E	100FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAWB ATSU.		
Soutpansberg 1NM radius centred 225942S 0295403E	3000FT AGL GND		B	
Springfield 1NM radius centred 294800S 0310000E	100FT AGL GND	Not above 14500FT ALT - FALE CTA A	B	
Spritkopf 1NM radius centred 323552S 0185530E	3000FT AGL GND		S	
St Faiths 1NM radius centred 303451S 0302110E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A		
Steynsburg SW Bowl 1NM radius centred 311538S 0254814E	3000FT AGL GND		B / HGB	
Stillbaai 1NM radius centred 264914S 0281100E	3000FT AGL GND		T-B	
Strandfontein 1NM radius centred 314437S 0181322E	3000FT AGL GND			
Sun City 1NM radius centred 294800S 0294933E	14500FT ALT GND	Not above 14500FT ALT - FALE CTA A	B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Suurberg Steynsburg 1NM radius centred 311124S 0253645E	3000FT AGL GND		B / HGB	
Suurplaat 1NM radius centred 254311S 0272359E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA		
Swartberg Pass 1NM radius centred 331912S 0220000E	400FT AGL GND	Not above 14500FT ALT - FACT CTA B	S	
Swartkops 1NM radius centred 293533S 0301524E	7500FT ALT GND	Not above 7500FT ALT - FALE TMA A		
Swartkrans Ysterberg 1NM radius centred 240824S 0291311E	7600FT ALT GND	Not above 7600FT ALT - FAPP TMA		
Swellendam 1NM radius centred 335248S 0201912E	3000FT AGL GND			
Table Mountain Runway 1NM radius centred 335743S 0182441E	4500FT ALT GND	Not above 4500FT ALT - FACT TMA B	S	
Tafelberg 1NM radius centred 322446S 0191142E	3000FT AGL GND		B	
Tamatie Berg 1NM radius centred 271912S 0294800E	3000FT AGL GND		T-B	
Tamatieberg Volksrust 1NM radius centred 271829S 0295253E	3000FT AGL GND		B	
Thaba Nchu 1NM radius centred 290936S 0264311E	8500FT ALT GND	Not above 8500FT ALT - FABL TMA B		
Thabazimbi 1NM radius centred 243824S 0271912E	3000FT AGL GND		T-B / HG	
The Farm 1NM radius centred 253824S 0303335E	3000FT AGL GND			

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
The Peninsula 1NM radius centred 265722S 0280843E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA		
The Ranges 1NM radius centred 322341S 0235029E	3000FT AGL GND			
The Spot 1NM radius centred 300613S 0301257E	5500FT ALT GND	Not above 5500FT ALT - FALE TMA C		
Tomason 1NM radius centred 235129S 0295307E	3000FT AGL GND			
Trifolia 1NM radius centred 340139S 0242537E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B	B	CLOSED
Trifolia EC 1NM radius centred 340157S 0242805E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Uitenhage Airfield 1NM radius centred 334711S 0252250E	7500FT ALT GND	Not above 7500FT ALT - FAPE TMA E		
Umvoti Gorge 1NM radius centred 290936S 0303824E	6500FT ALT GND	Not above 6500FT ALT - FALE TMA B	S	
Uplands 1NM radius centred 340447S 0231648E	6500FT ALT GND	Not above 6500FT ALT - FAGG TMA D	B	
Vaal Dam 1NM radius centred 264800S 0281423E	3000FT AGL GND		B	
Vaal Kop 1NM radius centred 254805S 0303735E	3000FT AGL GND		T-B	
Valley of Desolation 1NM radius centred 321424S 0242848E	3000FT AGL GND		B	
Van Rhyn's Pass 1NM radius centred 311912S 0190447E	3000FT AGL GND		B	+2

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	4	5
Vanwyksvlei 1NM radius centred 302101S 0215131	3000FT AGL GND			
Vanzylsrus 1NM radius centred 265253S 0220320E	3000FT AGL GND			
Voorberg 1NM radius centred 342057S 0185317E	5500FT ALT GND	Not above 5500FT ALT - FACT TMA C		
Vryburg Airfield 1NM radius centred 265247S 0243824E	3000FT AGL GND		B	
Wakkerstrom 1NM radius centred 272912S 0301423E	3000FT AGL GND		B	
Walkerville 1NM radius centred 261912S 0280000E	7600FT ALT GND	Not above 7600FT ALT - FAOR TMA	B	
Warmbaths airfield 1NM radius centred 245434S 0281833E	3000FT AGL GND		B	
Welkom 1NM radius centred 280000S 0263824E	14000FT ALT GND	Not above 14000FT ALT - ATS Route A405/W95	B	
Westo 1NM radius centred 331424S 0261912E	14500FT ALT GND	Not above 14500FT ALT - FACT CTA B		
Wigwam 1NM radius centred 254732S 0271720E	11000FT ALT GND	Not above 11000FT ALT - FAOR CTA	T-B	
Wilderness Swartflei 1NM radius centred 340151S 0224556E	5500FT ALT GND	Not above 5500FT ALT - FAGG TMA C	B	
Wilderness, Serpentine 1NM radius centred 335857S 0223655E	1500FT ALT GND	FAGG CTR - FAGG Paragliding area - not above 1500FT ALT	B	+10
Windy Corner 1NM radius centred 281912S 0291912E	3000FT AGL GND		B	

Designation	*Vertical limits*	*Remarks and time of Activity*	Site Grading	Extra Criteria (+ means additional # of sign off flights)
1	*2*	*3*	*4*	*5*
Winston Park 1NM radius centred 284311S 0304311E	10500FT ALT GND	Not above 10500FT ALT - FALE CTA B	S	
Witbank Dam 1NM radius centred 254800S 0291912E	3000FT AGL GND			
Witteberg Private Nature Reserve 1NM radius centred 332130S 0202957E	3000FT AGL GND			
Ysterberg aka Highlands 1NM radius centred 240914S 0291415E	7600FT ALT GND	Not above 7600FT ALT - FAPP TMA		
Yzerfontein 1NM radius centred 332018S 0180934E	3000FT AGL GND			
Zaire 1NM radius centred 305630S 0221444E	3000FT AGL GND			
Zandvlei 1NM radius centred 340601S 0182822E	2500FT ALT GND	Not above 2500FT ALT - FACT TMA A		

5 South African Approved Aerobatic Areas

5.1 In terms of the approved Aviation Recreation Organisation (ARO) Manual of Procedure (MOP) for Sports Aerobatics the aerobatics cylinder is a 1NM radius centred around the coordinates.

5.2 Any operations to be conducted within Controlled Airspace require approval from the relevant ATSU and/or Letter of Procedure (LoP) with the ATSU.

5.3 Such aerobatic cylinder (Boxes) shall be activated / de -activated with the relevant ATSU prior to being used or closed for any aerobatic practice, training or competitions as per the agreed operations procedures as contained in an approved operational Manual of Procedures (MOP).

5.4 All aerobatic cylinders shall be from ground level to a maximum of 4000ft AGL, unless otherwise specified below.

5.5 Hours of operations are always SR-SS unless otherwise specified.

5.6 Please note that unless the aerobatic cylinder is in regular use, consult with the South African Civil Aviation Authority prior to utilizing as there may be certain restrictions that need to be considered/advised on.

Designation and lateral limits	***Vertical limits***	***Remarks and time of Activity***
1	***2***	***4***
Baragwanath 1NM radius centred 262047S 0274631E	7500FT ALT GND	Operations above 7500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU.
Brits 1NM radius centred 253159S 0274640E	7500FT ALT GND	Operations above 7500FT subject to requirements as defined in the Letter of Procedure (LOP).
Durban 1NM radius centred 295817S 0305719E	2000FT ALT GND	Operations above 2000FT subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU.
Ladysmith 1NM radius centred 283447S 0294501E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC East.
Margate 1NM radius centred 305124S 0302016E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC East.
Marks Field 1NM radius centred 332458S 0264346E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACA ACC East.
Middelburg 1NM radius centred 254125S 0292621E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC North East.
Morning Star 1NM radius centred 334559S 0182641E	2500FT ALT GND	Operations above 2500FT subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU.
Mosselbay 1NM radius centred 340914S 0220318E	3500FT ALT GND	Operations above 3500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU.
New Tempe 1NM radius centred 290158S 0290929E	6500FT ALT GND	Operations above 6500FT subject to requirements as defined in the Letter of Procedure (LOP) with FABL ATSU.
Oudtshoorn 1NM radius centred 333611S 0221109E	4000FT AGL GND	Operations above 4000FT subject to requirements as defined in the Letter of Procedure (LOP) with FACA ACC West.
Parys 1NM radius centred 265329S 0273029E	4000FT AGL GND	Operations above 4000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC South West

Designation and lateral limits	*Vertical limits*	*Remarks and time of Activity*
PC Pelser – Klerksdorp 1NM radius centred 265201S 0264321E	4000FT AGL GND	Operations above 4000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC South West
Pietersburg 1NM radius centred 235551S 0292915E	7600FT ALT GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAPP ATSU.
Plettenberg Bay 1NM radius centred 340506S 0231946E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACA ACC East.
Potchefstroom 1NM radius centred 264024S 0270503E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC South West.
RhinoPark 1NM radius centred 255018S 0283230E	7600FT ALT GND	Operations above 7600FT subject to requirements as defined in the Letter of Procedure (LOP) with FAWK ATSU.
Robertson 1NM radius centred 334843S 0195448E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACA ACC West
Saldanha 1NM radius centred 325739S 0175753E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALW ATSU.
Sea View 1NM radius centred 340017S 0252106E	2000FT ALT GND	Operations above 2000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAPE ATSU.
Tzaneen 1NM radius centred 234922S 0301934E	1500FT AMSL GND	Operations above 1500FT subject to requirements as defined in the Letter of Procedure (LOP) with LASS ATSU.
Uitenhage 1NM radius centred 334110S 0252312E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACA ACC East
Vereeniging 1NM radius centred 263414S 0275754E	7500FT AMSL GND	Operations above 7500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU.
Kitty Hawk 1NM radius centred 255141S 0282641E	7500FT AMSL GND	Operations above 7500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR
Heidelberg 1 NM radius centred 263040S 0282415E	4000FT AGL GND	Operations above 7500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR
Wings Park, East London 1 NM radius centred 324951S 0275021E	4000FT AGL GND	Operations above 2500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAELATSU
Phalaborwa 1 NM radius centred 235609S 0310937E	4000FT AGL GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAHS ATSU

6 South African Approved Parachute Drop Zones

6.1 All permanent parachute (skydiving) drop zone approvals are approved for Aviation Recreational operations at bona fide parachute clubs approved hereunder.

6.2 A listening watch and position reporting must be maintained on the appropriate frequencies by all aircraft operating from or to the areas stipulated.

6.3 Where an air traffic control unit is in operation and within controlled airspace, permission prior to dispatching parachutists/skydivers must be obtained from the responsible Air Traffic Service Unit.

6.4 Parachute jumps away from approved drop zones i.e., temporary drop zones or demonstration parachute jumps, will require prior operational approval from the SACAA.

6.5 Any parachute/skydiving operations to be conducted within Controlled Airspace shall require approval from the relevant ATSU and/or Letter of Procedure (LoP) with the ATSU.

6.6 All Parachute Drop Zones flight areas shall be within a cone of 5NM radius centred on the co-ordinates of the approved landing area, unless specified otherwise.

6.7 All persons conducting a parachute/skydive descent shall land on a parachute landing area approved by the SACAA.

Designation and lateral limits	Vertical limits	Remarks and time of Activity
Angels Way Farm,Eston, KZN 5NM radius centred 295132S 0303055E	FL160 GND	Operations above 5500FT subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU.
Pietermaritzburg 5NM radius centred 293841S 0302350E	FL145 GND	Operations above 5500FT subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU.
Talla Valley Citrus Estate, 5NM radius centred 294940S 0303021E	FL150 GND	Operations above 5500FT subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU.
Grahamstown 5NM radius centred 331700S 0263000E	FL145 GND	
Carletonville, North West 5NM radius centred 262159S 0272059E	FL160 GND	Operations above 11000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC South West.
Potchefstroom 5NM radius centred 264018S 0270459E	FL165 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC South West.
Swartkops AFB 5NM radius centred 254834S 0280952E	FL140 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAWK ATSU.

Designation and lateral limits	Vertical limits	Remarks and time of Activity
Wonderboom Airport 5NM radius centred 253947S 0281304E	FL150 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAWB ATSU.
Delta 200 Airfield 5NM radius centred 333850S 0182812E	FL155 GND	Operations above 2500FT subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU
Melkbosstrand beach 5NM radius centred 334253S 0182623E	FL155 GND	Operations above 2500FT subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU
New Tempe Aerodrome 5NM radius centred 290212S 0260918E	FL155 GND	Operations above 6500FT subject to requirements as defined in the Letter of Procedure (LOP) with FABL ATSU
Mossel Bay Airfield 5NM radius centred 340932S 0220336E	FL145 GND	Operations above 2000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU
Mossel Bay Beach 5NM radius centred 341002S 0220713E	FL145 GND	Operations above 2000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU
John Weston airfield 5NM radius centred 284429S 0244000E	FL150 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAKM ATSU
Oudtshoorn Airfield 5NM radius centred 333604S 0221101E	FL150 GND	Operations above 6500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU
Garden Route Aero Airfield 5NM radius centred 340518S 0231936E	FL105 GND	Operations above 6500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU
Plettenberg Bay Beach 5NM radius centred 340337S 0232240E	FL105 GND	Operations above 6500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU
Uitenhage Aerodrome 5NM radius centred 334700S 0252300E	FL185 GND	Operations above 2500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAPE ATSU
Robertson Airfield 5NM radius centred 334839S 0195436E	FL120 GND	
Rustenburg Airfield 5NM radius centred 253841S 0271607E	FL145 GND	Operations above 11000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC North East.
Nylstroom (Modimolle Airfield) 5NM radius centred 244112S 0282630E	FL145 GND	Operations above 11000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC North East.
Witbank Airfield 5NM radius centred 254946S 0291141E	FL150 GND	Operations above 7600FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU

Designation and lateral limits	Vertical limits	Remarks and time of Activity
Witbank Airfield 5NM radius centred 254946S 0291141E	FL150 GND	Operations above 7600FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU
Stonehenge in Africa - Parys 5NM radius centred 265405S 0272335E	FL165 GND	Operations above 11000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU
Parys Airfield 5NM radius centred 265330S 0272947E	FL165 GND	Operations above 11000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ATSU
Farm Wagfontein – NW of FAPN 5NM radius centred 260242S 0284825E	FL160 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAPN ATSU
Ballito 5NM radius centred 292436S 0311645E	FL120 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU
Margate 5NM radius centred 305100S 0302100E	FL125 GND	
Highway Field, Rheenendal 5NM radius centred 335700S 0225845E	FL145 GND	Operations above 6500FT subject to requirements as defined in the Letter of Procedure (LOP) with FAGG ATSU
Scottburg 5NM radius centred 301822S 0304408E	FL125 GND	Operations above 5500FT subject to requirements as defined in the Letter of Procedure (LOP) with FALE ATSU
Leeukop Farm Airfield 5NM radius centred 265202S 0280418E	FL160 GND	Operations above 11000FT subject to requirements as defined in the Letter of Procedure (LOP) with FAJA ACC South West
Graskop Airfield 5NM radius centred 245700S 0305100E	FL160 GND	Operations above 1500FT subject to requirements as defined in the Letter of Procedure (LOP) with LASS
Diepkloof Airfield 5NM radius centred 332049S 0184151E	FL190 GND	Operations above 8500FT subject to requirements as defined in the Letter of Procedure (LOP) with FACT ATSU
Leobo Private Reserve 5NM radius centred 240919S 0282406E	FL170 GND	
Diemerskraal Airfield 5NM radius centred 333440S 0185408E	FL165 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FACT
Vlakteplaas 5NM centred 335800S 0245636E	FL150 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAPE
Secunda Airfield 5NM centred 263114S 0291020E, excluding FAR 63.	FL165 GND	Operations above FL110 subject to requirements as defined in the Letter of Procedure (LOP) with FAOR ACC South / FAR 63

Designation and lateral limits	Vertical limits	Remarks and time of Activity
Hazyview Airfield 5NM centred 250300S 0310755E	FL120 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAOR
Farm Dwarsfontein 5NM centred 260242S 0284825E	FL165 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAOR
Golden Mile Estate 5NM centred 255710S 0291727E	FL165 GND	Operations subject to requirements as defined in the Letter of Procedure (LOP) with FAOR

ENR 5.6 Bird migration and areas with sensitive fauna

5.6.1 NIL INFORMATION AVAILABLE

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