

ENR 1. GENERAL RULES AND PROCEDURES

✦ ENR 1.1 GENERAL RULES

1. GENERAL

1.1 The air traffic rules and procedures applicable to air traffic in MAURITIUS conform with Annex 2 and 11 to the Convention on International Civil Aviation and to those portions of the *Procedures for Air Navigation Services -- Rules of the Air and Air Traffic Services*, applicable to aircraft and of the *Regional Supplementary Procedures* applicable to the AFI Region, except for the differences listed in GEN 1.7.

Service Designation	Call Sign	Frequencies		Hours of Operation
		VHF (MHZ)	HF (KHZ)	
Oceanic Control Service	Mauritius Centre	129.3	13306 8879 5634 3476	H24

1.2 As no radar service is available in the Republic of Mauritius, ENR 1.6 has been omitted.

1.3 As Air Traffic Flow Management is not implemented in the Republic of Mauritius, ENR 1.9 has been omitted.

1.4 As there are no special navigational systems in use, ENR 4.2 has been omitted.

1.5 ENR 5.2, ENR 5.3 and ENR 5.5 have been omitted since they have not yet been developed. They will be introduced with forthcoming amendments.

2. DESIGNATION OF UPPER AIRSPACE

2.1

(a) All airspace within Mauritius FIR above FL245 to FL460 is classified as Class A Airspace.

(b) The upper limit of the Mauritius TMA (Class C airspace) is reduced to FL245

3. PROVISION OF OCEANIC CONTROL SERVICE WITHIN CLASS A AIRSPACE

3.1 An Area/Oceanic Control Service is provided to all aircraft entering Class A airspace by the Mauritius Area Control Centre (Callsign "Mauritius Centre").

ATS Voice communications facilities are as follows:

✦ 4. IMPLEMENTATION OF RNP 4 AS THE NAVIGATION SPECIFICATION WITHIN THE MAURITIUS FIR

4.1 In accordance with the South Asia/Indian Ocean ATM Coordination Group (ASIOACG) recommendations, Mauritius is implementing 30NM laterally separated ATS routes within the oceanic airspace of Mauritius FIR. The PBN specification for these new ATS routes will be designated as RNP 4.

4.2 ADS-C and CPDLC capabilities of the aircraft are required for the RNP 4 operations within Mauritius FIR.

4.3 Aircraft operators must have the relevant RNP 4 operational approval from the State of Registry or State of Operator to use the new RNP 4 Routes.

4.4 RNP 4 capability is not mandated within Mauritius FIR.

4.5 Operations by aircraft not meeting RNP 4 Requirements

4.5.1 ATC will endeavour to accommodate aircraft that are unable to meet the minimum navigational requirements for RNP 4 operations within the designated airspace but aircraft meeting RNP 4 will be given priority over aircraft not meeting RNP 1, subject to traffic disposition.

4.5.2 RNAV equipped aircraft may use the RNP 4 Routes or as directed by ATC subject to traffic disposition. Priority of Level will be for RNP 4 quipped aircraft.

4.5.3 Non-RNAV equipped aircraft may still fly within Mauritius airspace, however, they shall abide strictly to the instructions of ATC.

5. RNP 4 ATS ROUTES WITHIN THE OCEANIC AIRSPACE OF THE MAURITIUS FIR

5.1 The upper airspace of Mauritius FIR has been updated to implement RNP 4 ATS routes. The waypoints currently used to ensure the transitions between Mauritius FIR and neighbouring FIRs have changed and will remain in use.

5.2 The RNP 4 ATS route network is composed of uni-directional routes (one-way airways) between FIMP TMA and Mauritius FIR boundaries aiming at improving safety and efficiency in the oceanic airspace.

5.3 In addition, the ATS Routes crossing the Mauritius FIR (UM314, R212 and R348) are bi-directional RNP 4 routes.

5.4 The RNP 4 ATS route description within the Mauritius FIR is provided as follows:

- RNP 4 ATS Routes - Outbound routes from FIMP TMA to Mauritius (FIMM) FIR boundaries are at page ENR 3.2-1 – ENR 3.2-5
- RNP 4 ATS Routes – Inbound routes from FIMM FIR boundaries to FIMP are at page ENR 3.2-7– ENR 3.2-9
- RNP 4 ATS Routes Crossing Mauritius FIR are at page ENR 3.2.9 – 3.2.15
- RNP 4 Route from FIMP TMA to FIMR and FMEE are at page ENR 3.2.16 to ENR 3.2.20
- FIMM En-Route Chart is at page ENR 6.1
- FIMM Area Chart is at page AD 2 – FIMP 33.1

3.5 The RNP 4 ATS routes extend from FIMP TMA lateral boundaries to Mauritius FIR lateral boundaries. For traffic transiting above FIMP TMA and staying above FL245 (where no RNP 4 routes are implemented), the transit will be performed using the UPR (User preferred route) concept.

6. RNP 1 AS THE NAVIGATION SPECIFICATION WITHIN THE MAURITIUS TMA

6.1 RNP 1 navigation specification is established as the standard navigation specification for FIMP TMA SIDs and STARs

6.2 Aircraft operators must have the relevant RNP 1 operational approval from the State of Registry or State of Operator to use the new RNP 1 Procedures.

6.3 RNP 1 capability is not mandated within FIMP TMA.

6.4 Operations by aircraft **Not** meeting RNP 1 Requirements

6.4.1 ATC will endeavour to accommodate aircraft that are unable to meet the minimum navigational requirements for RNP 1 operations within the designated airspace but aircraft meeting RNP 1 will be given priority over aircraft not meeting RNP 1, subject to traffic disposition.

6.4.2 Non-RNAV equipped aircraft may still fly within Mauritius airspace, however, they shall abide strictly to the instructions of ATC.

7. RNP 1 SIDs AND STARs WITHIN FIMP TMA

7.1 RNP 1 SIDs and STARs accommodates Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO).

7.2 The SID Procedures implemented at SSR International airport are as follows:

- DEPARTURES RWY14 NORTH (RNP 1) at page AD 2 – FIMP 34.1
- DEPARTURES RWY14 DUPNA TRANSITION at page AD 2 – FIMP 34.2
- DEPARTURE RWY14 UTRUP TRANSITION at page AD 2 – FIMP 34.3
- DEPARTURE RWY14 EAST (RNP 1) at page AD 2 – FIMP 34.4
- DEPARTURE RWY14 WEST (RNP 1) at page AD 2 -FIMP 34.5
- DEPARTURE RWY32 EAST (RNP 1) at page AD 2 – FIMP 35.1
- DEPARTURE RWY32 WEST (RNP 1) at page AD 2 – FIMP 35.2

7.3 The STAR Procedures implemented at SSR International airport are as follows:

- .ARRIVAL RWY14 IMKOV (RNP 1) at page AD 2 – FIMP 36.1
- ARRIVAL RWY14 EKBAL (RNP 1) at page AD 2 – FIMP 36.2
- ARRIVAL RWY14 MP143 (RNP 1) at page AD 2 – FIMP 36.3
- ARRIVAL RWY32 EAST (RNP 1) at page AD 2 – FIMP 37.1
- ARRIVAL RWY32 WEST (RNP 1) at page AD 2 – FIMP 37.2

The STAR system ends on 3 new Initial Approach Fix (IAF) for RWY14 (MP143, IMKOV, EKBAL) and on the current IAF for RWY32 (ESTEK).

7.4 With the introduction of the new RNP 1 SIDs and STARS, the actual Basic RNAV SIDs and STARS will be limited to the following and will eventually phase out.

1. Basic RNAV SIDs

- a) SID (RNAV) RWY 14 NORTH
 - i. OSKAR ONE DEPARTURE
 - ii. GABKI ONE DEPARTURE
- b) SID (RNAV) RWY 14 WEST
 - i. EVANA ONE DEPARTURE
 - ii. IBISIS ONE DEPARTURE
 - iii. ETGOR ONE DEPARTURE

2 Basic RNAV SIDs RWY 32 and STARS RWY14 and 32 will be removed.

Note: Basic RNAV SIDs and RNP 1 SIDs and STARS shall not be used simultaneously.

8. Airworthiness approval of RNP 1/RNP 4

8.1 RNP approval is provided by the State of Registry or the State of the Operator, as appropriate. The approval process is based on the United States FAA circular AC_90-105A

9. Flight Planning.

9.1 With the implementation of NEW RNP 1 SIDs and STARS within the TMA most of the Basic RNAV SIDs and STARS have been modified or removed.

9.2 Hence Departures flying to Europe overflying the Madagascar FIR shall flight-plan their flight either via OKMAR or NIBIS as these waypoints will be the only exit points

outbound the Mauritius TMA towards the Northwest.

9.3 Likewise, Arrivals planning to land in Mauritius via PBN 1 STARS shall flight plan their flight via TIBAG or RASMA

Example 1

A Flight, planning to depart from Mauritius bound to Europe shall flight plan in field 15 as follows:

UTRU1A - UTRUP – OKMA2C - OKMAR - UT665 - AMBOD - then per flight requirement or,

NIBI2A - NIBIS – UG661 - then per flight requirement or,

RASM2A - RASMA -then as per flight requirement. (Note that this is a longer route).

Example 2

A Flight, planning to land in Mauritius from Europe via Madagascar FIR shall flight plan in field 15 as follows:

UL433 - APKOT – TIBAG – TIBA2E or UA400 – RASMA – RASM2E

9.4 As most of the ATS routes have become unidirectional routes Airspace users shall file their flight plan according to the route designated for outbound or inbound traffic.

Example. 3

A Flight, planning to depart from Mauritius bound to Singapore will flight plan in field 15 as follows:

UTRU1A - UTRUP - EXIP1A - EXIPU - UT633 - PEDPI - N633- PANDU

Note: EXIPU (EXIP1A) is a transition of UTRU1A.

Example 4

A Flight, planning to depart from Singapore bound to Mauritius will flight plan in field 15 as follows:

PANDU – N633 - PEDPI – UT632 – UTROD – UTRO1E – FIMP

Example 5

A Flight, planning to depart from Malaysia bound to Mauritius along route L774 to LELED will flight plan in field 15 as follows:

UBNIS – L774 – LELED – **DCT** – UVUBI –
UT632 – **UTROD** - **UTRO1E** FIMP

Example 6

A Flight, planning to depart from Mauritius bound to Malaysia along route L774 will flight plan in field 15 as follows:

UTRU1A - **UTRUP** - **EXIP1A** - **EXIPU** -
UT633 – **ETGEG** – **DCT** – LELED – L774 -
UBNIS

- 9.5 **Aircraft overflying the Mauritius TMA will file in DCT within the TMA.**

Example. 7

Aircraft from Johannesburg overflying the Mauritius TMA bound to Singapore will flight plan in field 15 as follows:

SDG - UA401F – **SOBAT** – **DCT** – **EXIPU** –
UT633 – PEDPI – N633 - PANDU

Example 8

Aircraft from Singapore overflying the Mauritius TMA bound to Johannesburg will flight plan in field 15 as follows:

PANDU – N633 - **PEDPI** – **UT632** –
UTROD – **DCT** – **SOBAT**- UA401F - SDG
.....

- 9.6 Flight plan coding to represent the New RNP 1 SIDs and STARs during Flight planning (see next page) as follows:

Example.9

Aircraft plan to depart Mauritius via SID UTRUP1A and UTRUP TRANSITION OKMAR to EUROPE will add in field 15:

UTRU1A – **UTRUP** -**OKMA2A** – **OKMAR**
-**UT665** – KARAT- AMBOD

Example 10

Aircraft plan to land Mauritius via STAR RASMA 2E will add in field 15:

RASMA – **RASM2E**

9.6 Code to be used during flight planning

RNP 1 SIDs	Code to be used during flight planning
SIDs RWY 14	
SID (RNP1) RWY 14 NORTH	
DUPNA 1A	DUPN1A
UTRUP 1A	UTRU1A
DUPNA (RNP 1) TRANSITIONS	
TIDUM	TIDU1A
DURDA	DURD1A
OKMAR	OKMA2A
UTRUP (RNP 1) TRANSITIONS	
EXIPU	EXIP1A
TEVOD	TEVO1A
TIKOL	TIKO1A
TIDUM	TIDU1C
DURDA	DURD1C
OKMAR	OKMA2C
SID (RNP1) RWY 14 EAST	
IMPAN 1A	IMPA1A
OKROS 1A	OKRO1A
ATLOP 2A	ATLO2A
SID (RNP1) RWY 14 WEST	
ETGOR 1A	ETGO1A
PASAR 2A	PASA2A
SOBAT 2A	SOBA2A
RASMA 2A	RASM2A
NIBIS 2A	NIBI2A

RNP 1 SIDs	Code to be used during flight planning
SIDs RWY 32	
SID (RNP1) RWY 32 EAST	
UVDAG 1B	UVDA1B
UVDAG 1B TRANSITIONS	
TIKOL	TIKO1B
TEVOD	TEVO1B
EXIPU	EXIP1B
UVDAG 1D	UVDA1D
UVDAG 1D TRANSITIONS	
TIKOL	TIKO1D
TEVOD	TEVO1D
EXIPU	EXIP1D
IMPAN 1D	IMPA1D
OKROS 1D	OKRO1D
ATLOP 2B	ATLO2B
IMPAN 1B	IMPA1B
OKROS 1B	OKRO1B
SID (RNP1) RWY 32 WEST	
PASAR 2B	PASA2B
SOBAT 2B	SOBA2B
RASMA 2B	RASM2B
IMKOV 1B	IMKO1B
IMKOV 1B TRANSITIONS	
OKMAR	OKMA1B
DURDA	DURD1B
TIDUM 1B	TIDU1B

RNP 1 STARs	Code to be used during flight planning
STARs RUNWAY14	
STAR (RNP 1) RWY14 IMKOV	
RASMA 2E	RASM2E
TIBAG 2E	TIBA2E
DUNRI 1E	DUNR1E
UNPUG 1E	UNPU1E
STAR (RNP 1) RWY14 EKBAL	
IMRUL 1E	IMRU1E
IMRUL 1G	IMRU1G
PASAR 2E	PASA2E
EPTEK 2E	EPTE2E
STAR (RNP 1) RWY14 MP143	
OKBOG 1E	OKBO1E
UVARI 1E	UVAR1E
UTROD 1E	UTRO1E
IMPAN 1E	IMPA1E

RNP 1 STARs	Code to be used during flight planning
STARs RUNWAY32	
STAR (RNP 1) RWY 32 East	
UNPUG 1F	UNPU1F
OKBOG 1F	OKBO1F
UVARI 1F	UVAR1F
UTROD 1F	UTRO1F
IMRUL 1F	IMRU1F
IMPAN 1F	IMPA1F
STAR (RNP 1) RWY 32 West	
DUNRI 1F	DUNR1F
TIBAG 2F	TIBA2F
RASMA 2F	RASM2F
EPTEK 2F	EPTE2F
PASAR 2F	PASA2F

**10. REVISED INSTRUMENT APPROACHES
 RWY 14 and RWY32**

10.1 New RNP 1 to ILS RWY14 transitions are implemented. These transitions allow to connect the new RNP 1 STAR system (IAFs) to the existing ILS, LLZ DME and VOR PLS DME IPL.

Note: The above procedures remain unchanged after the IF (BIGAR) but linked the new missed approach procedure.

10.2 The RNP approach RWY14 has been extensively revised and includes the following changes compared to the existing RNP approach:

- o New transition from the new IAFs (MP143, IMKOV, EKBAL) to the Intermediate Fix (IF) (GERUS).
- o Revised VPA for smoother descent in final approach (3.3° instead of 3.5°)
- o Addition of LNAV/VNAV minima
- o New RNP 1 missed approach re-joining the new IAF
- o Due to the PAPI set at 3.5° for ILS there may be a mismatch with PAPI as this procedure is a BARO VNAV

10.3 The RNP approach RWY32 has been revised and includes the following:

- o Addition of LNAV/VNAV minima
- o New RNP 1 missed approach re-joining the IAF

10.4 The Revised Instrument approaches to RWY14 and RWY32 are as follow:

RNP 1 to ILS RWY14	AD 2 – FIMP 38.1
RNP Z RWY14 (LNAV/VNAV)	AD 2 – FIMP 38.2
RNP1 to LLZ DME RWY 14	AD 2 – FIMP 38.3
RNP to VOR PLS DME IPL RWY14	AD 2 – FIMP 38.4
RNP Z RWY32 (LNAV/VNAV)	AD 2 – FIMP 39.1
RNP1 to VOR DME PLS RWY32	AD 2 – FIMP 39.2

11. Non RNP1 aircraft and conventional aircraft

11.1 Non-RNP 1 Aircraft and conventional aircraft will used the revised existing approaches as follows:

ILS DME RWY14	AD 2 – FIMP 38.5
LLZ DME IPL RWY14	AD 2 – FIMP 38.6
VOR PLS DME IPL RWY14	AD 2 – FIMP 38.7
VOR DME PLS RWY32	AD 2 – FIMP 39.3

11.2 Pilots shall follow the instructions on the charts or any further instruction from ATC

12. RNP 1 ATS Routes within FIMP TMA

12.1 New RNP 1 ATS routes within FIMP TMA are implemented to facilitate the transit of aircraft to/from La Reunion in the TMA.

12.2 These new RNP 1 routes aims at:

- o Providing dedicated, unidirectional (one-way) routes for La Reunion traffic to safely Climb inside FIMP TMA to join the RNP 4 ATS routes; and
- o Providing dedicated, unidirectional (one-way) routes for La Reunion traffic to safely descend inside FIMP TMA to join FMEE STARs; and
- o Providing dedicated, unidirectional (one-way) routes for La Reunion traffic to transit through FIMP TMA to/from Rodrigues island.

12.3 The transition between the RNP 1 ATS routes and the Mauritius FIR new RNP 4 ATS routes will be based on DCT legs:

12.3.1 For traffic climbing on the RNP 1 ATS routes, a DCT leg is expected between the last waypoint of the RNP 1 route (MP204) and the first waypoint of the intended RNP 4 route (waypoint located at FIMP TMA boundary).

10.3.2 For aircraft descending on the RNP 1 ATS routes, a DCT leg is expected between the last waypoint of the RNP 4 ATS route and the first waypoint of the RNP 1 ATS route (OKMIN).

10.3.3 MP204 and OKMIN have been respectively located to correspond to the average top of Climb and top of Descent for traffic going to / coming from la Reunion.

10.4 The RNP 1 ATS routes within Mauritius TMA are as follow:

RNP 1 ATS Routes – Routes within Mauritius TMA to Descend to Reunion Island

RNP 1 ATS Routes – Routes within Mauritius TMA to Climb from Reunion Island

RNP 1 ATS Routes – Routes overflying Mauritius TMA from Reunion Island to Rodrigues Island

RNP 1 ATS Routes – Routes overflying Mauritius TMA from Rodrigues Island to Reunion Island

13. REVISED FIMP CTR

9.1 FIMP CTR is reshaped to accommodate the new RNP and RNP AR procedures, as well as reduce the number of radio communication between the control tower and VFR traffic.

9.2 FIMP CTR Airspace is classified Class C Airspace.

9.3 The new FIMP CTR characteristics are described in Chart page ENR 2.1

14. AIR TRAFFIC SERVICES DATA LINK OPERATIONS

14.1 Introduction

14.1.1 The Department of Civil Aviation implements ATS Data Link operations within Class A and Class C airspace. The ATS Data Link applications which utilise the SITA AirCOM (VHF and Satellite) network is addressed to FANS-1/A equipped aircraft.

14.1.2 Flight crews using these data link facilities must be trained in the use of data link equipment to a level approved by the State of Registry. Receipt of a logon request will notify ATC that flight crews meet this requirement.

14.1.3 The data link applications supported by the FANS-1/A system are Controller Pilot Data link Communications (CPDLC) and Automatic Dependent Surveillance (ADS).

The CPDLC function supports:

- a. Emergency alerting,
- b. Uplink of ATC clearances and instruction,
- c. Downlink of position reports and clearance requests, and

- d. Free text as a supplement to preformatted elements.

The ADS function supports:

- (a) Emergency alerting, and
- (b) Automatic reporting by the aircraft’s Flight Management System (FMS) of aircraft position and intent information in accordance with parameters established in contracts by the ground system.

14.1.4 Before ADS and CPDLC connection can be established, the aircraft must “LOGON” to the ground system. This is achieved via the ATS Facility Notification (AFN) LOGON. This process is initiated by the pilot in accordance with company procedures.

14.2 LOGON Procedures

- (a) The LOGON address for the Mauritius FIR is FIMM
- (b) To avoid automatic rejection of the logon, the flight identification number and the aircraft registration contained in the logon message must be identical to the flight identification number and tail number filed in the flight plan.
- (c) Aircraft proceeding inbound to Mauritius FIR from a non-CPDLC FIR and requesting data link services must logon between 45 and 15 minutes prior to the estimate for entering the FIR.
- (d) Aircraft departing from airports in Mauritius, requesting data link service, should logon as per the following table:

Airport	Address	Logon Timing
SSR International Airport	FIMM	At 40 NM or more from “PLS”.
Other airports	FIMM	On the ground or shortly after departure.

- (e) Aircraft departing Mauritius airspace to an adjoining CPDLC – capable FIR can expect to be Address Forwarded to that FIR prior to the FIR Boundary.
- (f) Logons prior to departure must not occur earlier than 15 minutes prior to

ETD to avoid automatic rejection of the logon.

- (g) The provision of Pre-Departure Clearance (PDC) via CPDLC to departing aircraft is not available as part of the initial stages of the Mauritius ATM program.

14.3 CPDLC Applications

14.3.1 General

- (a) CPDLC is the primary means of communications between ATC and FANS-1/A equipped aircraft beyond the range of VHF voice. Voice is used as the backup communications medium. The controller communicating by CPDLC will hold the responsibility for SAR and communications alerting.
- (b) Standard pre-formatted message elements must be used whenever possible. Free text message elements should be used only when an appropriate pre-formatted message element does not exist, or to supplement an existing pre-formatted message element. The use of free text should be kept to a minimum.
- (c) To ensure correct synchronisation of messages, controller/pilot dialogues opened by voice must be closed by voice wherever possible. Controller/pilot dialogues opened by CPDLC must be closed by CPDLC.
- (d) To avoid ambiguity, a CPDLC downlink message should not contain more than one clearance request.
- (e) If multiple clearance requests are contained in a single downlink message and the controller cannot comply with all requests, the uplink message element UNABLE will be sent as a response to the entire message. A separate message containing a response to those requests that can be complied with will then be sent by the controller.
- (f) If any ambiguity exists as to the intent of a particular message, clarification must be sought by voice.
- (g) Due to inherent integrity checks and a coded reference to any preceding related message contained within

CPDLC dialogues, a clearance issued by CPDLC requires only the appropriate CPDLC response, not a read-back as would be required if the clearance had been delivered by voice.

- (h) The downlink response WILCO indicates that the pilot accepts the full terms of an entire uplink message including any CLEARANCE or INSTRUCTION.
- (i) The use of the STANDBY message element notifies the receiver that the request is being assessed and a short-term delay of less than 10 minutes can be expected until a response will be sent. The original message remains open.
- (j) The use of the REQUEST DEFERRED message element notifies the receiver that the request is being assessed and a longer-term delay of greater than 10 minutes can be expected until a response will be sent. The original message remains open.

14.3.2 Message Restrictions

- a. ATS will not issue uplink instructions relating to cruise climbs, or the uplink element CRUISE [altitude]. As an alternative, controllers will endeavour, where possible, to issue block clearances.
- b. Owing to different interpretations in meaning, ATS will not issue uplink instructions containing the “AT PILOT DISCRETION” element. In response to a downlink request containing this message element, ATS may instead offer a block level clearance.
- c. Due to cockpit display limitations, any instruction containing a Conditional Clearance (e.g. “AT {time/place} CLIMB/DESCEND TO AND MAINTAIN {altitude}”), will be prefixed with an instruction to remain at the currently cleared level; e.g.

“MAINTAIN 330. AT 2215 CLIMB TO AND MAINTAIN 370”

14.3.3 Position Reporting

- (a) The following apply with regard to position reporting:
- i) Inbound to The Mauritius Airspace:
 1. CPDLC connected aircraft inbound to the Mauritius FIR are required to downlink a CPDLC position report entering the FIR. This is to establish the appropriate FIR (i.e. FIMM) as the Current Data Authority.
 2. Aircraft that are not CPDLC connected entering the airspace are required to downlink a CPDLC position report when the CPDLC connection is established.
 - ii) Departing or Transiting Mauritius Airspace:
 1. An aircraft is required to downlink a CPDLC position report when instructed on voice to transfer to data link.
- (b) Following the initial CPDLC position report, ADS reporting will fulfill normal position reporting requirements within the FIR. Neither CPDLC position reports nor voice position reports will be required while ADS reporting is operational.
- (c) In the event of ADS failure, the pilot shall be instructed to resume normal reporting by either voice or CPDLC as appropriate.

- (b) If required, a pilot may advise a revised estimate in one of the following manners:
- i) By voice; or
 - ii) By downlinking a CPDLC position report containing the revised estimate; or
 - iii) By downlinking the free text message “REVISED ETA {position} {time}”.

14.3.5 Transfers to and from CPDLC

- a. Where CPDLC is to be used as the primary means of communications (beyond VHF voice coverage) pilots will be instructed on voice when a transfer to CPDLC is required by use of the phraseology:

“TRANSFER TO MAURITIUS CENTRE ON DATA LINK. MONITOR [frequency]”.
- b. On transfer to data link, the pilot is required to downlink a CPDLC position report. Following this initial position report, ADS reporting will fulfill normal position reporting requirements within the FIR.
- c. Pilots departing the Mauritius FIR into a non-CPDLC FIR will be instructed to CONTACT the next unit by voice.
- d. Pilots departing the Mauritius FIR into a CPDLC-capable FIR will be instructed to MONITOR the next unit by voice. CPDLC remains the primary means of communication.
- e. Due to size limitations in the uplink message elements “CONTACT [unit name][frequency]” and “MONITOR [unit name][frequency]”, only the primary HF frequency will be notified to the pilot. The secondary frequency will be available on request.
- f. The CONTACT [unit name][frequency] message and the END SERVICE message will be

14.3.4 Revision of Estimates

- (a) Under normal circumstances, an aircraft position reporting via ADS is not required to advise ATC of any revised way-point estimates. Exceptions to this are:
- i) Revisions of greater than two (2) minutes to a previous pilot advised estimate (i.e. by voice or CPDLC); or
 - ii) Following a pilot initiated action (e.g. speed change) resulting in an amended estimate of greater than two (2) minutes.

sent as separate messages. The END SERVICE message will be sent after receipt of the WILCO response to the CONTACT message.

14.3.6 Specific Procedures

- (a) Specific procedures in the Mauritius FIR are as follows:
- i. For aircraft inbound to destinations within the Mauritius FIR, CPDLC and ADS connections will be maintained until the aircraft has landed. Pilots will be instructed when the transfer to VHF voice is required by use of the CPDLC uplink element: CONTACT MAURITIUS CENTRE [frequency].
 - ii. For aircraft departing from airports within the FIMM FIR, a CPDLC connection will be established manually by the Air Traffic controller when CPDLC is required.

15. Performance Based Navigation (PBN) Separation Minima

- 15.1 ATC separation minima Performance -Based Navigation on RNP 4 routes will be applied accordingly for aircraft which are approved for RNP 4 operations
- 15.2 RCP240 and RSP180 performance specifications shall be required for the application of the Performance-Based Longitudinal Separation Minima and in accordance with ICAO Doc 4444 PANS-ATM paragraph 5.4.2.9.2.
- 15.3 Pilots shall inform ATC of any deterioration or failure of the navigation systems below the navigation requirements for RNP 4. ATC shall then provide alternative separation and / or alternative routing.
- 15.4 An aircraft not meeting the RNP 4 approved requirement flight above FL290 will be subjected to ATC approval in accordance with RNP4 traffic already flying on the requested route.
- 15.5 Lateral Separation
- a. In Oceanic Class A airspace all routes have been designed as RNP4 unidirectional parallel routes separated by 30 nm miles

- b when with an aircraft not meeting the RNP4 navigation requirements is approved to operate at or above FL 290 vertical separation shall be applied with aircraft operating on adjacent routes
- c Within The TMA, new RNP1 SIDs and STARs have been designed to cater for growing traffic.
 - i. Within 30 nm of the ARP the minimum lateral separation is 5nm.
 - ii Outside of the 30 nm radius to the TMA boundary the lateral separation minima is 7 nm.

Note: Within the the 30 nm radius of the ARP the SIDs and STARs are provided with continuous climb and continuous descend procedures to maintain separation between incoming and outgoing aircraft. Outside of the 30 nm radius ATC shall used LATSEP points provided to maintain vertical separation until lateral separation is achieved.

15.6 Longitudinal separation

- a. 80NM or 10 minutes (or less) Mach Number Technique (MNT) separation minima may be applied between aircraft in situations where DCPC could not be maintained or when RCP240 / RSP180 performance requirement could not be complied.

Note: the maximum ADS-c periodic reporting interval of 12 minutes shall be used for RNP4 approved aircraft.

- b. 50NM longitudinal separation may be applied between RNP4 / RNP 10- approved aircraft which are LOGON to CPDLC or in VHF range on the RNP4 routes.
- c. 30 NM longitudinal separation may be applied between RNP 4 approved aircraft cruising , climbing or descending on same track or crossing track (provided that the angle is less than 90 degrees) which are LOGON to CPDLC or within VHF range with RCP 240 / RSP 180 and ADS-C with a refresh time of 12 minutes

ATC shall constantly monitor the longitudinal distance to maintain minima.

In case an ADS-C report is not obtained within 3 minutes of the time of periodic change event ATC shall take action to obtain a position report via CPDLC.

D MACH NUMBER TECHNIQUE (MNT)

When the Mach number technique is applied, minimum longitudinal separation must be:

10 minutes, provided that:

The preceding aircraft maintains a Mach number equal to, or greater than that maintained by the following aircraft; or

When the following aircraft is faster than the preceding aircraft, at least 10 minutes exists until another form of separation is achieved; or

Between 9 and 5 minutes inclusive, provided that the preceding aircraft is maintaining a Mach number greater than the following aircraft in accordance with the following:

9 minutes, if the preceding aircraft is Mach 0.02 faster than the following aircraft;

8 minutes, if the preceding aircraft is Mach 0.03 faster than the following aircraft;

7 minutes, if the preceding aircraft is Mach 0.04 faster than the following aircraft;

6 minutes, if the preceding aircraft is Mach 0.05 faster than the following aircraft;

5 minutes, if the preceding aircraft is Mach 0.06 faster than the following aircraft.

NOTE- A “rule-of-thumb” may be applied to assist in providing the required estimated spacing over the oceanic exit point when either conflict probe is not in use or when requested by another facility. This rule-of-thumb can be stated as follows: For each 600 NM in distance between the entry and exit points of the area where the Mach Number Technique is used, add 1 minute for each 0.01 difference in Mach number for the two aircraft concerned to compensate for the fact that the second aircraft is overtaking the first aircraft.

Application of the Mach Number Technique When the Following Aircraft is Faster

Difference in Mach	Distance to Fly and Separation (in Minutes) Required at Entry Point				
	001-600 NM	601-1200 NM	1201-1800 NM	1801-2400 NM	2401-3000 NM
0.01	11	12	13	14	15
0.02	12	14	16	18	20
0.03	13	16	19	22	25
0.04	14	18	22	26	30
0.05	15	20	25	30	35
0.06	16	22	28	34	40
0.07	17	24	31	38	45
0.08	18	26	34	42	50
0.09	19	28	37	46	55
0.10	20	30	40	50	60

The RNP 4 parallel route network was been designed to meet at a single exit/entry point at the FIR. This gives rise to on one leg of the flight the track mile will be more. In order to alleviate airlines, pilots may request to fly the shortest route. However, ATC will try to accommodate is there is no conflicting traffic on the opposite route.

16. APPLICATION OF ADS

- 16.1 To facilitate reliable ADS monitoring, pilots must ensure that ADS is left ARMED.
- 16.2 ADS Periodic and Event contracts will be established automatically on receipt of the LOGON.
- 16.3 Following an initial CPDLC position report on first contact, ADS reporting will fulfill normal position reporting requirements within the

FIR. CPDLC or voice position reports will not be required while ADS is operational.

- 16.4 ADS contracts will be terminated automatically at a system parameter time after the aircraft has left the FIR.

17. DATA LINK FAILURE

17.1 Flight crew recognising a failure of a CPDLC connection must immediately establish communications on the appropriate voice frequency. When voice communications have been established, voice must continue to be used as the primary medium until a CPDLC connection has been re-established and the controller has authorised the return to data link.

17.2 In the event of an unexpected CPDLC shutdown, the controller will advise all data link connected aircraft of the failure by voice. Instructions will continue to be issued by voice until the return of the data link system. The return of the system to an operational state will require a new AFN logon from affected aircraft.

18. NOTIFICATION OF EMERGENCY

18.1 Depending on the nature of the emergency condition experienced, flight crew should notify ATS of the circumstances by the most efficient means (voice or data link).

18.2 If a CPDLC MAYDAY or PAN message is received by the ground system, the controller will respond with the free text uplink message ROGER MAYDAY (PAN). The controller will not expect a ROGER response to the uplink until being notified that the emergency situation has been cancelled or stabilised to the extent that messages are able to continue being exchanged (if data link is considered to be the best communications medium for the situation).

18.3 If the emergency situation no longer exists, the pilot should cancel the ADS emergency mode.

19. HF SELCAL CHECK

19.1 For aircraft departing Mauritius, a SELCAL check is not mandatory. However, flight crews wishing to satisfy themselves with HF performance should perform a SELCAL check after departure, but prior to being transferred to CPDLC. The primary HF frequency will be advised with the transfer instruction. The HF

operator will confirm the primary and secondary HF frequencies on first contact.

20. RADIO COMMUNICATION FAILURE

20.1 In the event that radio communication failure prevents an aircraft flying within the Mauritius FIR, from maintaining a continuous listening watch on the appropriate radio frequency, and from making contact as necessary, the aircraft shall:

- a) If in visual meteorological conditions:
1. Continue to fly in visual meteorological conditions;
 2. Land to the nearest suitable aerodrome; and
 3. Report its arrival by the most expeditious means to the appropriate air traffic control unit; or

b) If in instrument meteorological conditions or when conditions are such that it does not appear likely that the pilot will complete the flight in accordance with a) above:

1. 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;
2. 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 paragraph 3 below, hold over this aid or fix until commencement of descent;
3. Commence descent from the navigation aid or fix specified in paragraph 2 above, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time (EAT) has been received and acknowledged, at, or as close as possible to, the estimated time of arrival (ETA) resulting from the current flight plan;
4. Complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

5. Land if possible, within 30 minutes after estimated time of arrival specified in (iii) or the last acknowledged expected approach time, whichever is later.
- 20.2 For information, ATC will act in the following manner unless it is known that the aircraft is not adhering to the flight plan received:
- a) Maintain separation between aircraft on the assumption that aircraft experiencing radio failure will adopt the abovementioned procedures;
 - b) Transmit on the appropriate air/ground channels the altitude, route and EAT, or ETA, to which it is assumed the aircraft is adhering, and the weather conditions at the destination aerodrome and suitable alternates (when this information is already being transmitted on the appropriate channels either by routine broadcast, or in messages to other aircraft, a special transmission will be made only at the discretion of ATC). If practicable, the weather conditions in the area, or areas, suitable for a descent through cloud procedure will also be transmitted;
 - c) Endeavour by means of any possible relay through which the operator (ACARS etc.), aircraft station whether the aircraft is receiving, and able to comply with instructions from ATC, and subsequently, to give all possible guidance to the aircraft;
 - d) Inform the operator concerned or his designated representative;
 - e) Inform ATC at the alternate aerodrome, or the appropriate ACC, of the circumstances; if (by agreement with the operator or his designated representative) instructions to divert are transmitted to the aircraft, transmit the latest weather report and any current unserviceability report of approach aids at the alternate, and request the appropriate ATC unit to attempt to establish communication with the aircraft;
 - f) Before presuming that the aircraft has proceeded to another area or aerodrome, ATC will allow:
 - i. A period of 30 minutes after the last acknowledged EAT;
 - ii. If no EAT has been acknowledged, a period of 30 minutes after the last acknowledged ETA; or
 - iii. If no ETA has been acknowledged, a period of 30 minutes after the last ETA computed from the last acknowledged position report and the flight plan times for subsequent sectors of the flight.
 - g) If the aircraft has not reported or landed by the end of the appropriate period, alerting action will be initiated and pertinent information concerning the aircraft will be given to the operating agencies and/or the pilots of any aircraft concerned and normal operations resumed if they so desire. It is the responsibility of the operating agencies and/ or pilots of aircraft to determine whether they will resume normal operations or take other action.
- 20.3 The period referred in the para f) above will be reduced when:
- a) Through the use of electronic or other aids, (e.g. ADS-C) ATC can determine the position of the aircraft experiencing the failure, and can determine that action contrary to that prescribed above can be taken without impairing safety; or
 - b) It becomes known that the aircraft has landed.