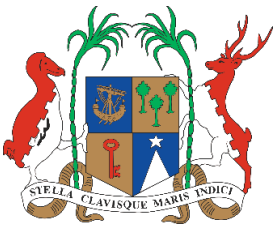


REPUBLIC OF MAURITIUS

DEPARTMENT OF CIVIL AVIATION

Sir Seewoosagur Ramgoolam International Airport, Plaine Magnien

FINAL INVESTIGATION REPORT

TCAS RA INCIDENT OF MAU293 (A330/243) and REU 121 (B777-39/M(ER)) AIRCRAFT, ON 3 JANUARY 2024

Issue 1 – 14 February 2024

DCA Investigating team

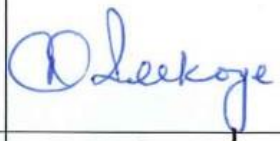
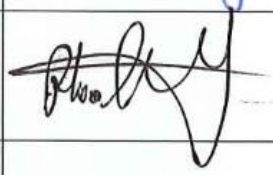
Investigator Team	Position	Function	Signature
Pierre André SABITTONI	Flight Operations Inspector	Lead Investigator	
Mr. Mayanand REEKOYE	Division Head Airworthiness	Investigator	
Mr. Ramprakash LOOLCHAND	ATC Supervisor	Investigator	
Mr. René SÁNCHEZ	ANS Inspector	Investigator	

Table of Content

Abbreviation

ACAS	Airborne Collision Avoidance System
ALT	Altitude
APP	Approach Control
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATIS	Automatic Terminal Information Service
ATPL	Air Transport Pilot Licence
CCO	Continuous Climb Operations
CDO	Continuous Descent Operations
CVR	Cockpit voice recorder
DCA	Department of Civil Aviation
EASA	European Aviation Safety Agency
ETD	Estimated time of departure
FDR	Flight data recorder
FCU	Flight Control Unit
GNSS	Global Navigation Satellite System
FIMP/MRU	SSR International Airport IATA/ICAO CODE
FL	Flight level
FMGS	Flight Management and Guidance System
hPa	Hectopascal
IR	Instrument rating
Kt	Knot
L/H	Left hand
L/OPC	Line/Operations Proficiency Check
MCAR	Mauritius Civil Aviation Requirements
MFD	Multi Function Display
MHz	Mega Hertz
MK	Air Mauritius
MLW	Max landing weight
PBN	Performance based navigation
PF	Pilot flying
PM	Pilot monitoring
QNH	Query Nautical Height
FCU	Flight Control Unit
FL	Flight Level

R/H	Right Hand
SAFA	Safety Assessment of Foreign Aircraft
SPD	Speed
TWR	Aerodrome Control
TCAS	Traffic alert & Collision Avoidance System
UTC	Coordinated universal time
VHF	Very High Frequency
SSR	Sir Seewoosagur Ramgoolam
STAR	Standard Terminal Arrival Route
SID	Standard Instrument Departure

Introduction

The Department of Civil Aviation was notified of the incident on Thursday 4 January 2024. An investigation team was set-up on 5 January 2024 to carry out the investigation.

In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of aircraft accident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the prevention of accidents and incidents.

Operator	: Air Mauritius
Aircraft Type and Registration	: A330/243, 3B-NCL
Year of Manufacture	: 20 April 2006 (MSN: 751)
Category	: Transport (Passengers)
Location	: STAR (EPTEK 2F), Region of Black River Gorges National Park
Date & Time (UTC)	: 3 January 2024 at 14:21 UTC
Type of Flight	: Commercial (MAU 293 FMEE-FIMP)
Persons on Board	: Crew - 10 Passengers – 255 + infants
Injuries	: NIL
Nature of Damage	: N/A

Operator	: Air Austral
Aircraft Type and Registration	: B777-39M(ER), F-OREU
Year of Manufacture	: December 2010 (MSN: 37434)
Category	: Transport (Passengers)
Location	: SID (SOBAT 2B), Region of Black River Gorges National Park
Date & Time (UTC)	: 3 January 2024 at 14:21 UTC
Type of Flight	: Commercial (REU 121 FIMP-FMEE)
Persons on Board	: Crew - 12 Passengers – 437 + 10 infants
Injuries	: NIL
Nature of Damage	: N/A

This final investigation report is published to provide information gathered from ground inspection, meteorological data, recorded images and other sources.

Note: *This final report contains facts which have been determined up to the time of issue. It is published to inform the aviation industry and the public of the general circumstances of accidents and serious incidents.*

1. Synopsis

On Wednesday 03 January 2024 an AIRPROX event happened between an Air Mauritius A330 aircraft and an Air Austral B777 aircraft.

The occurrence has been observed over the Region of Black River Gorges National Park at 18:21 hrs. local time on Wednesday 03 January 2024 between Air Mauritius flight MAU 293 and Air Austral flight REU 121.

The Air Mauritius aircraft was operating the flight between Roland Garros Airport (Reunion) (FMEE) and SSR International Airport (FIMP), flight MAU 293. Air Mauritius flight contacted the SSR International Airport approach at 18:10 hrs. and the latter cleared the flight for an approach to land on runway 32 facing Northwest on a descent / approach path called EPTEK 2 F and had just left flight level 100 (10,000ft), also cleared to descend to flight level 60 by the controller. The estimated time of arrival at SSR International Airport was 18:43 hrs. The Standard Arrival Route (STAR) approach procedure includes geographical reference points on a defined heading and at a defined altitude, which must be strictly complied with by the crews, which, after analyzing the Air Mauritius approach flight, was the case.

The Air Austral flight a Boeing 777 was departing from SSR International airport to Roland Garros Airport, flight REU 121. The flight was cleared by the tower Air Traffic Controller at 18:09 hrs. to Roland Garros Airport (Reunion) based on a Standard Instrument Departure (SID) Route called SOBAT two Bravo, via SID, flight level 180 (18 000 ft.) and take off at 18:17 hrs. on runway 32 at SSR International Airport, following by a first climb to 4000 ft. and left turn after takeoff. The REU 121 flight continued its climb to find itself at the time of the AIRPROX event at 18:21 hrs., less than 5 nautical miles from the trajectory of the flight MAU 293. The Air Austral pilot announced to ATC that he had a TCAS resolution advisory at flight level 080 (8000ft.). The pilot announced that he was resuming his normal flight path. Investigation demonstrate that the aircraft was at flight level 080 at that particular point whereas, according to the published procedure, it should not have been above flight level 070.

At 18:41 hrs., both aircraft flying within a circle of less than 5 nautical miles, all directions combined, had an activation of the automatic system called TCAS (Traffic alert & Collision Avoidance System) and thus avoided a possible collision between both aircraft. The approach controller was informed by both crew, who were authorised to continue their approach and departure as per the SID and STAR procedure.

2. Factual information

Tower controller had cleared REU 121 TO ROLAND GARROS SOBAT TWO BRAVO FLIGHT PLAN ROUTE CLIMB VIA SID FL180; however, when REU 121 read back the clearance, he did not read back the CLIMB VIA SID and the tower controller did not ensure that the read back was correct, telling the crew “THAT IS CORRECT” (stating that the read back was correct).

Prior take off the tower controller gave instructions to REU 121 to comply with SID SOBAT 2B departure and to climb to 4000 feet which REU 121 read back and took off. Tower handed over REU121 with Approach Control.

Approach control had already cleared MAU 293 EPTEK 2F STAR to descend via STAR to FL060 (complying with all flight levels and speed restrictions of the STAR due to REU 121 departing) which MAU 293 was complying, that is as per AIP chart the aircraft should maintain FL080 or above at MP531.

On first contact with REU 121, Approach cleared REU 121 on SOBAT 2B to climb via SID to FL180 (REU 121 was expected to comply with all flight levels and speed restrictions of the SID due to MAU 293). REU 121 read back the climb via SID instruction which should bring REU121 at MP603 at or below FL070.

These two procedures SID and STAR have been tested to comply with CCO and CDO under a PBN airspace structure, if aircraft follow and comply with all restrictions of the SIDs and STARs when required by ATC, aircraft would be well separated.

As a preliminary report, it seems that REU 121 had already passed FL080 before MP603 which is not conformed to the SID SOBAT 2B when climbing via SID.

At 14:21:27 UTC MAU 293 reported TCAS RA and that will call back.

At 14:21:52 UTC REU 121 reported that they had a traffic resolution and that will call back on track in a while.

At 14:22 UTC MAU 293 reported that they were back on the STAR proceeding to MP531.

According to ICAO PANS ATM (Doc. 4444), 6.3.2.4 “Clearances on a SID”, when an aircraft is instructed to CLIMB VIA SID it means the following:

CLIMB VIA SID TO *(level)*:

i) climb to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the SID; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

Based on the instructions given by approach control, REU 121 was required to comply with all altitudes/flight levels and speed constraints (restrictions) of the SID; however, REU 121 did not comply with such restrictions.

When both traffics notified approach control that they have encountered a TCAS RA, the approach controller instructed MAU 293 and REU 121 to comply with the STAR and the SID respectively, to which both traffics told approach control that they had to follow the RA procedure and unable to comply with the ATC approach controller instructions. The approach controller did not follow the TCAS RA procedure, which according to PANS ATM 15.7.3.2 is “When a pilot reports an ACAS resolution advisory (RA), the controller shall not attempt to modify the aircraft flight path until the pilot reports Clear of Conflict”.

2.1 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	*Nil*	*Nil*	*Nil*
Serious	*Nil*	*Nil*	*Nil*
Minor	*Nil*	*Nil*	*Nil*

2.2 Damage to aircraft

Damage to aircraft: *nil*
Other damage: *nil*

2.3 Other damage

Damage to other aircraft: *nil*
Other Damage to other facilities: *nil*

2.4 Crew and Personal Information

Air Mauritius

Commander:

Commander's Licence : Valid Mauritian ATPL
Commander's age : 46 years

Flying experience on type:
Last 90 days : 140 hours
Last 28 days : 52 hours

First Officer:

First officer's Licence : Valid Mauritian ATPL
First officer's age : 34 years

Flying experience on type:
Last 90 days : 162 hours
Last 28 days : 72 hours

Air Austral

Commander:

Commander's Licence : Valid French ATPL
Commander's age : 46 years
Commander's total flight hours :
Flying experience on type:
Last 90 days : 185 hours
Last 28 days : 20 hours

First Officer:

First officer's Licence : Valid French ATPL
First officer's age :
First Officer total flight hours :
Flying experience on type:
Last 90 days :
Last 28 days :

ATC

All ATC crew duly certified by DCA as per the following table:

GRADE	QUALIFICATION	VALIDITY	MEDICAL
ATC SUP	Aerodrome control Approach Control Area Control	01.01.2024 07.02.2024 10.02.2024	19.07.2024
ATCO 01	Aerodrome control Approach Control Area Control	24.01.2024 11.12.2024 29.11.2024	02.09.2024
ATCO 02	Aerodrome control	08.10.2024	23.08.2025

2.5 Aircraft information

The A330 243, 3B-NCL, is a twin-engine, 254 passenger's configuration, powered by 2 turbofans TRENT-772B-60. The aircraft was manufactured at the Airbus facilities in Toulouse, France, in May 2006. The aircraft has a valid certificate of airworthiness issued on 21 April 2023 by the DCA, following a satisfactory inspection and review of technical records. It remains valid until 20 April 2024
It is to be noted that the A330 243 is not equipped with an automatic Resolution Advisory system. In this case the pilot has manually performed the manoeuvre to avoid the conflict with the Air Austral aircraft, climbing to a higher level and recovering the descend path after being clear of conflict.

The B777-39 Extended Range (ER), F-OREU, is a twin-engine, 452 passenger's configuration, powered by 2 turbofans 2 x GE GE90-115BL2. The aircraft was manufactured at the Boeing facilities in Seattle, USA, in December 2010. The aircraft Manufacturer Serial Number is 27434 and has a valid EASA certificate of airworthiness.

2.6 Meteorological information

The weather between 14:00-15:00 UTC was good with winds from the North East (020/012 Kt) and partly cloudy. There was no precipitation, no significant weather and a QNH of 1008 hPa. (METAR Data)

Note: ATC data. QNH reduced to sea level

2.7 Aids to Navigation

EPTEK 2 F Arrival expecting RNP Z approach on RWY 32 for MAU293
SOBAT 2 B Standard Instrument Departure

2.8 Communication

Permanent contact with VHF on Tower Frequency and Approach Control Frequency

2.9 Aerodrome Information

AIP Reference : AD2-FIMP-37.2
Aerodrome Name : SSR international Airport
GNSS STAR : RNP 1 RWY 32 W

AIP Reference : AD2-FIMP-35.2
Aerodrome Name : SSR international Airport
GNSS SID : RNP 1 RWY 32 W

2.10 Flight Recorders:

Flight Recorder: This incident has been recorded in the FDR of the Air Mauritius Aircraft

2.11 Impact information

There was no impact involved to any other aircraft or facilities around.

2.12 Medical and pathological information

There was no stress or panic on-board reported. (Passengers & Cabin crew).

2.13 Fire

The incident did not involve any fire on-board.

2.14 Survival aspects

Not applicable

2.15 Tests and research

Not applicable

2.16 Organizational and management information

Pertinent information was received from Air Mauritius for the access of operational records as the Digital Flight Data Recorder was made available at Air Mauritius Flight Safety Office.

Information from ATC were made available; all recorded communication for both flights were heard over a dedicated session at the Area Control Centre

2.17 Additional information

Not applicable

2.18 Useful or effective investigation techniques.

- Face-to-face interview of ATC on-duty Controllers and Supervisor
- Air Mauritius Cockpit Crew interview
- Air Austral Cockpit Crew interview
- Analysis of operational documentations and AIPs
- Analysis of data from Air Mauritius flight MAU 293 on the basis of Digital Flight Data Recorder (DFDR) data
- Analysis of aircraft trajectories
- Hearing of recordings of ATC-Traffic exchanges on the "Approach" (119.1 MHz) and "Tower" (118.1 MHz) frequencies

3. Analysis

The Investigation Team has obtained and reviewed the following:

1. hearing of recordings of ATC-Traffic exchanges on the "Approach" (119.1 MHz) and "Tower" (118.1 MHz) frequencies
2. Air Mauritius Digital Flight Data Recorder (DFDR) of the A330 flight.

The Department has also called the following staff involved with the incident on 03 January 2024 for an interview:

1. Air Mauritius Flight MAU 293 Flight Crew
2. Air Austral Flight REU 121 Flight Crew
3. Air Austral representative at SSR International Airport
4. Tower and approach Air Traffic Controllers
5. ATC supervisor

3.1 Analysis of ATC Recording

An investigation was carried out by the DCA investigation team. The latter has listened to ATC-Traffic exchanges on the "Approach" (119.1MHz) and "Tower" (118.1MHz) frequencies, whereby the followings were noted:

- The read back of the clearance SID (SOBAT 2B) of Air Austral crew was incomplete. Analysis of this particular demonstrates that this was not the main cause of the TCAS RA event and all constraints of the SID were entered correctly in the FMS by Air Austral PM before being cancelled after take-off by an inadvertent setting from the Air Austral PM.
- Both ATC and Approach controllers did not advise about traffic in the same area where Air Austral and Air Mauritius were flying.

3.2 Analysis of the Flight Data Recorder

The Flight Data Recorder has been removed from the Air Mauritius A330 aircraft and the data made available in the Quick Access Recorder and transferred to the Air Mauritius Flight Safety office for analysis. A dedicated Data Analysis of the record has been carried out by DCA investigation team showing the following results:

- Air Mauritius had followed the STAR for approach RWY 32 as per the published AIP, cleared by the approach controller without being aware of the departing aircraft. The reproduction of the exact time of the TCAS RA event clearly showed that the PF reacted promptly changing in climbing asset as per TCAS instruction. Further analysis also showed a normal recovery to the STAR procedures after the event.
- The analysis of the Data recorder also allowed to draft the estimated trajectory of the Air Mauritius A330 aircraft as shown in Appendix 1.

3.3 Air Austral Pilot Report (PIREP)

A pilot report received on 06 January 2024 from Air Austral has been analysed and the following important facts have been noted such as:

- There was an inexperienced co-pilot on MRU-RUN route flying (PF) on the Air Austral flight who had never fly in /out of Mauritius before, thus creating additional stress/tension in the cockpit.
- The co-pilot was the pilot flying (PF) the SID manually for a departure procedure never practiced before.
- After departure with a first clearance for 4000ft, the Captain (PM) had inadvertently pressed the flight switch twice, which cancelled the second constraint in the FMC limiting the maximum climb on the SID to FL070 (7000ft). authorised over the Way Point MP603.

3.4 Interview of the Air Austral pilots

Both Air Austral pilots confirmed that the PIREP report contains all facts corresponding to the TCAS event and in addition mentioned that they were never informed about eventual conflicting traffic with the SID by the ATC.

3.5 Interview of the Air Mauritius Captain

Air Mauritius Captain was the PF at the time of the event. He reports during the interview that he was not informed about the departing traffic and did not look for other aircraft in the area and was surprised once TCAS RA happened. He took all necessary action in such case and resumed its own navigation on the STAR after the event.

3.6 Flight operations

3.6.1 Crew qualifications

Flight Crew of Air Mauritius were type rated and current on the type.

The Captain is an A330/350 type rated Captain Pilot since February 2013, holder of a valid Medical Certificate and his last L/OPC – IR recurrent training dated November 2023, valid up to 31 May 2024.

The First Officer is an A330/350 type rated pilot since June 2022, holder of valid Medical Certificate and his last L/OPC – IR recurrent training dated 27 June 2023, valid up to 30 June 2024.

3.6.2 Operational procedures

(See Section 2. Factual information)

Flight Crew

Air Mauritius Flight Crew

Analysis of the data for flight MAU 293 shows that the pilots complied with all the constraints, heading and flight levels, of the STAR procedure authorised for an approach and landing on runway 32 at SSR international airport.

Air Austral Flight Crew

It results from the Air Safety report received from Air Austral that the Captain (Pilot Monitoring), when setting the cleared flight level, has pressed the switch twice, hence deleting a constraint in the FMC which limits the climb on the SID to cross the waypoint MP603 at or below flight level 70.
It is also to be noted that the copilot was the pilot flying and he was flying the aircraft manually for practicing.

Cabin Crew:

Not being involved in the TCAS RA event.

3.6.3 Weather

No adverse weather condition

3.6.4 Air traffic control

Both traffics were with Mauritius Approach Control

3.6.5 Communications

All communications were performed in accordance with standards.

3.6.6 Aids to navigation

All aids to navigation were available.

3.6.7 Aerodrome

As per Section 2.9

3.6.8 Damage to aircraft

NIL

3.6.9 The Line Transit Check

Not Applicable on this case. Both aircraft were airworthy, all system functioning.

4. Conclusion

1) The crew of Air Mauritius MAU 293 complied fully with the trajectories, waypoints and reference levels of the published chart "Standard Arrival Route" Reference AD2-FIMP 37.2. The only deviation from the descent profile occurred at the time of the AIRPROX event, when the Pilot in Command (PF) deviated manually upward. The crew resumed control of the aircraft after the event, returning it to its initial descent path. (see MAU 293 flight profile in annex 1)

2) With regard to Air Austral flight REU 121, it should be noted that the flight's parameters and FDR data were not available. However, according to ATC and flight trajectory data, it is clear that the crew of REU 121 did not comply with the procedure published constraints in the "Standard Departure Chart - Instrument" reference AD2 -FIMP-35.2 (SOBAT TWO Bravo Departure). The Boeing was at waypoint MP 603 at flight level 080 when it should not have been flying above flight level 070 over this waypoint, hence the proximity alert with the Air Mauritius flight descending in the same area between flight level 100 and flight level 060. (see REU 121 Flight profile in annex 2)

3) In recap, Air Mauritius was flying above flight level 080 when its path was crossed by REU 121, which was also flying around flight level 080 when it should have been below flight level 070 with a separation of 1000 feet or more.

4) It should also be noted that the tower controller, on receiving the read back of the ATC clearance given to the crew of Air Austral flight REU 121, did not ensure that the read back was incomplete; *“REU121 CLEAR TO ROLAND GARROS SOBAT TWO BRAVO FLIGHT PLAN ROUTE CLIMB VIA SID FL180”*
“VIA SID” was omitted from the read back of the REU 121 flight crew and this "VIA SID" means respecting the waypoints on the route and at the maximum / minimum altitude or level (to comply with all altitude/flight level and speed restrictions of the departure).

5) Traffic information was not given to none of the two aircraft by the approach controller. One of the main reasons for giving traffic information is to raise pilots’ situational awareness.

6) Even though the air traffic services have a TCAS RA procedure, which is to be used in case aircraft report a TCAS RA, this was not properly implemented.

4.1 Findings.

1. Error from the PM (Captain Pilot) who press twice the ALT switch cancelling the second altitude constraint of the departure SOBAT Two Bravo.
2. REU 121 did not comply with all altitude/flight level and speed restrictions of the departure (SID).
3. Clearance “read back” by the PM was incomplete.
4. The tower controller did not inform the Air Austral pilot of an incomplete “read back”.
5. The Approach controller did not give Traffic Information to none of the aircraft.

4.2 Causes/Contributing Factors.

1. Approximately twenty minutes before, the runway in use was changed from RWY 14 to RWY 32, forcing the Air Austral crew to reprogram a SID while calculating limiting performance under stress with the time pressure of the “white worm” due to the aircraft's delay.
2. The Air Austral co-pilot (PF) was flying for the first time on MRU- RUN route and on Mauritius Airport procedures.
3. Specific PBN phraseology used by Mauritian air traffic control authorising a climb via the SID phraseology which is the subject of a bulletin (The Air Austral crew learnt about it afterwards from a colleague) which should have been included in the flight file, and which was not in the REU flight file, but present in flight files of flights 108/109 and 102/103 (information source: Air Austral Pilot report (PIREP)).
4. An error of the Captain (Pilot Monitoring), when setting the cleared flight level, he pressed the switch twice, hence deleting a constraint in the FMC which limits the climb on the SID to cross the way point MP603 at or below flight level 70. (information source: Air Austral Pilot report (PIREP)).
5. The lack of compliance with SID’s numerous altitude constraints on runway 32, and never operated by this Air Austral flying crew.
6. **Human factors issues;**
    - additional stress due to Pilot Flying manually for practicing for the first time. (reported by the Captain).
    - Error from the PM (Captain Pilot) who press twice the ALT switch.

5. Safety Recommendations

5.1 Flight Operations

1. SIDS AND STARS CONSTRAINTS (Recommendations for operators at SSR International Airport – to be inserted in their Operations Manual Parts A and D)

Operators on SSR International Airport shall inform their crews to read back the departure / arrival clearance correctly, as per ICAO DOC 4444. E.g “Climb via SID or Descend via STAR”, which means that ALL altitude constraints on the SID/STAR shall be adhered to.

Altitude change shall be acknowledged verbally and confirmed by both flight crew members. Once the clearance is acknowledged verbally and confirmed by both flight crew members, PF shall set correct altitude on the AFS Control panel. Actions done by the PF shall be cross-confirm by the PM.

During the cockpit preparation, the PF shall set the initial expected altitude, SID altitude or MSA on the FCU as applicable. Once the departure clearance is received, the crew must verify and set the new altitude/FL on the FCU if different from what was set at preparation stage.

When the FMGS preparation is completed for departure or arrival, the PM must cross-check all constraints with the relevant SID/STAR chart. He/she may include the speed and altitude restrictions in the departure/arrival briefing if required during the threat and error management briefing

The PM shall ensure that he/ she has the correct MFD/FMS page with SPD/ALT selected on their side and check the display of the correct cleared FL/ALT on the PFD whenever the FCU FL/ALT has been changed.

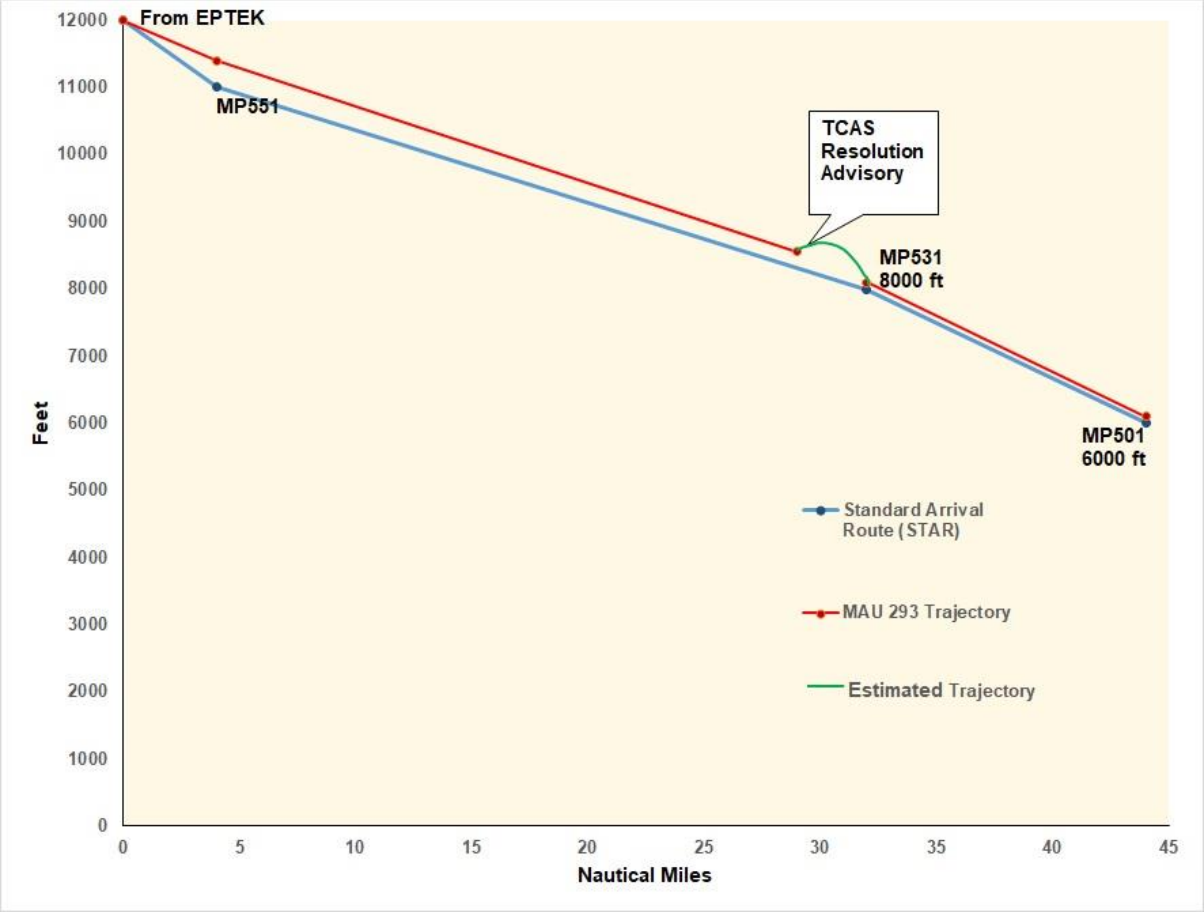
2. Particular surveillance via SAFA should be carried out on aircraft operating at SSR International Airport, regarding PBN arrival and departure procedures.

5.2 Air Traffic Services

1. Air traffic controllers should always pay close attention to the read back from the flight crews, they should listen not just heard. If a controller does not ensure that a read back is correct, this could become into a serious incident or even an accident.
2. Recurrent training should be delivered to air traffic controllers, ensuring that one of the topics be when and how to provide aircraft with traffic information, by doing so pilots situational awareness will be raised.
3. The air traffic services should ensure through the ATC Supervisor on duty, that air traffic controllers provide traffic information whenever there is eventual conflicting traffic.
4. Even though most air traffic controllers are familiar with the air traffic services TCAS RA procedure, theoretical and practical training should be delivered to all controllers on this matter. This type of training should be addressed in recurrent training.

6. Appendices

6.1 Appendix 1 – MAU 293 Trajectory on STAR


From EPTEK
MP551
TCAS Resolution Advisory
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MP501 6000 ft
Standard Arrival Route (STAR)
MAU 293 Trajectory
Estimated Trajectory
Feet
Nautical Miles
12000
11000
10000
9000
8000
7000
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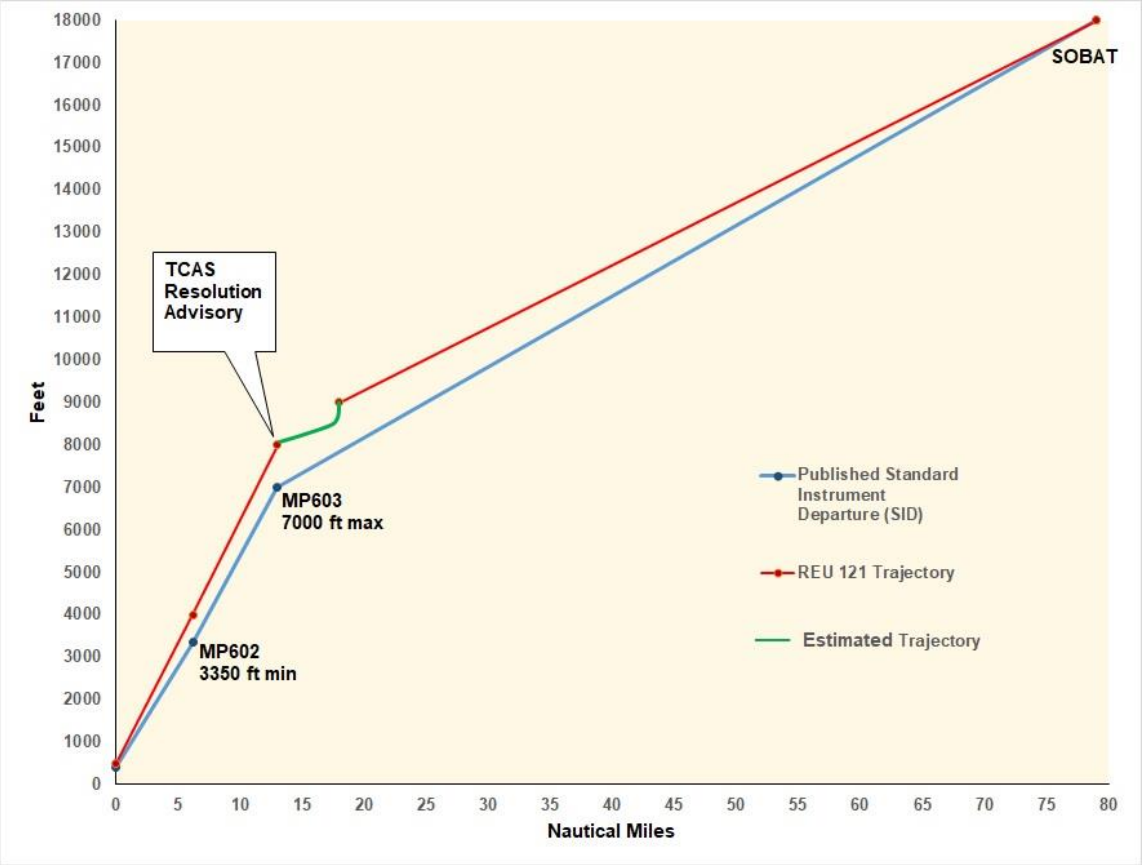
6.2 Appendix 2 – REU 121



6.3 Appendix 3 – Cockpit parameters reproduction at the moment of the TCAS event