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AIC
AIC 05/24
05 JAN 2024

LIMA (SPIM)

SAM REGIONAL RAIM PREDICTION AVAILABILITY SERVICE (SATDIS) ON LIMA FLIGHT INFORMATION REGION (FIR)

1 PURPOSE

1.1 The intent of this AIC is to inform the aeronautical community about the renewal of the RAIM Availability Prediction Service at LIMA FIR, known as SATDIS, effective from January 1, 2024.

1.2 The purpose of this service is to predict if during a flight there will be an interruption in the signal of any GPS constellation satellite necessary for RNAV/RNP navigation, in compliance with the requirements of Document 9613 - Performance-Based Navigation Manual (PBN).

1.3 This AIC supersedes AIC 08/15 "PRE-OPERATIONAL IMPLEMENTATION OF THE RAIM PREDICTION AVAILABILITY SERVICE IN LIMA FIR AIRSPACE".

2 BACKGROUND

2.1 With the emergence of mechanisms enabling advance prediction of satellite geometry, ICAO initiated activities in the SAM region from 2013 to implement the requirements of ICAO Document 9613. It stipulates that all users or operators intending to conduct RNP flights must ensure the integrity of the signals used for navigation, even before commencing the flight, through a RAIM availability prediction service.

2.2 GPS satellites (typically 24) orbit the Earth in various orbits, causing constant changes in the number of satellites available in the GPS constellation for users. Each receiver requires a minimum number of satellites signals in the constellation to determine its position on Earth (known as GDOP – Geometric Dilution of Precision). Geometric constellation requirements increase with precision requirements indicating that not all received satellite signals may be usable. It is also possible for some satellites to be temporarily out of service or, in some cases, fail. This leads to limitations in GPS constellation availability for navigation.

2.3 In response to such limitations, IFR-certified GPS receivers have a feature called Receiver Autonomous Integrity Monitoring (RAIM), which monitors navigation integrity. RAIM alerts, detects, and excludes a GPS satellite that has failed or is transmitting invalid information by comparing position and time information from various necessary satellites required for position determination. There may not always be a sufficient number of satellites in view to guarantee GPS integrity, potentially causing GPS accuracy to fall below safe requirements for air navigation.

2.4 The demand for coverage of at least five (5) satellites may not always be met by the current GPS constellation. Unavailability times are subject to significant fluctuations and depend on various parameters, including the receiver location, receiver used, and masking angle, which is the altitude angle above the horizon used to reject satellites.

2.5 Interruptions lasting thirty (30) minutes or more may occur in specific locations. In light of this, it is recommended that aircraft users or operators, before conducting PBN operations, perform a RAIM availability check through a prediction service to ensure GPS signal availability for the intended operation, considering the routes to be flown and the destination and alternate aerodromes, thereby avoiding endangering the planned PBN operation.

2.6 According to ICAO Document 9613, if continuous loss of satellite signals for more than five (05) minutes is confirmed through the RAIM Prediction Availability Service, the operation should be delayed, advanced or canceled.

2.7 In view of this, the DGAC, in coordination with the ICAO South American Regional Office, makes the SATDIS Prediction Service available in the Lima FIR.

3 SATDIS

3.1 SATDIS is a tool that enables the determination of satellite availability necessary for the proposed operation. However, it does not guarantee that the desired scenario for the operation, as stated in the flight plan, will be available. Users or aircraft operators should be aware that RAIM availability may be lost during the flight, and alternative procedures should be established if this occurs.

3.2 This service differs from the onboard GPS integrity monitoring system, which is inherent to avionics and provides real-time integrity measure during aircraft operation. A RAIM Availability Prediction Service like SATDIS forecasts the GPS satellite constellation geometry, that unlike an aircraft on-board receiver, includes satellites with known failures, maintenance, or outages reported through "NANU" (Notice Advisory to Navstar Users) transmissions issued by the U.S. Coast Guard – USNO.

3.3 SATDIS is available for users flying ATS routes and non-precision GPS-based approaches to RNP APCH specification. GPS prediction should be part of pre-flight planning when the GPS system is used as the primary means of navigation or as part of the navigation system.

3.4 Availability increases if GPS receivers can incorporate barometric altitude information, commonly referred to as Baro-Aid. This information effectively simulates a satellite located directly overhead the observer. Therefore, Baro-Aid means that the RAIM requirement for 5 or 6 satellites can be reduced to 4 or 5, respectively. SATDIS allows adjustment options for both Baro-Aid and Non-Baro-Aid scenarios.

4 SATDIS MAIN TOOLS

4.1 AERODROME RAIM PREDICTION TOOL

4.1.1 PURPOSE

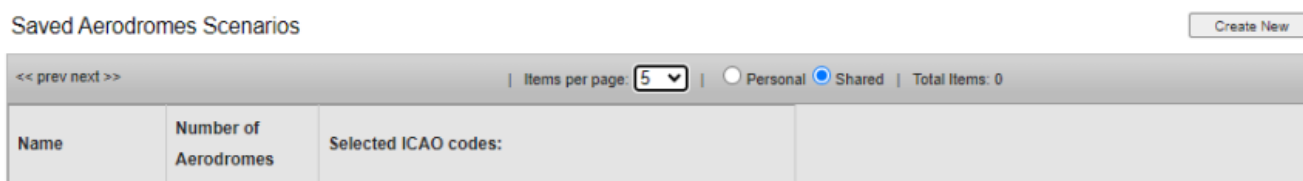
4.1.1.1 The "Aerodromes" Tool allows users to calculate RAIM Predictions for selected aerodromes for user-configurable GPS receiver and at user-selected times.

4.1.2 SELECTING THE TOOL

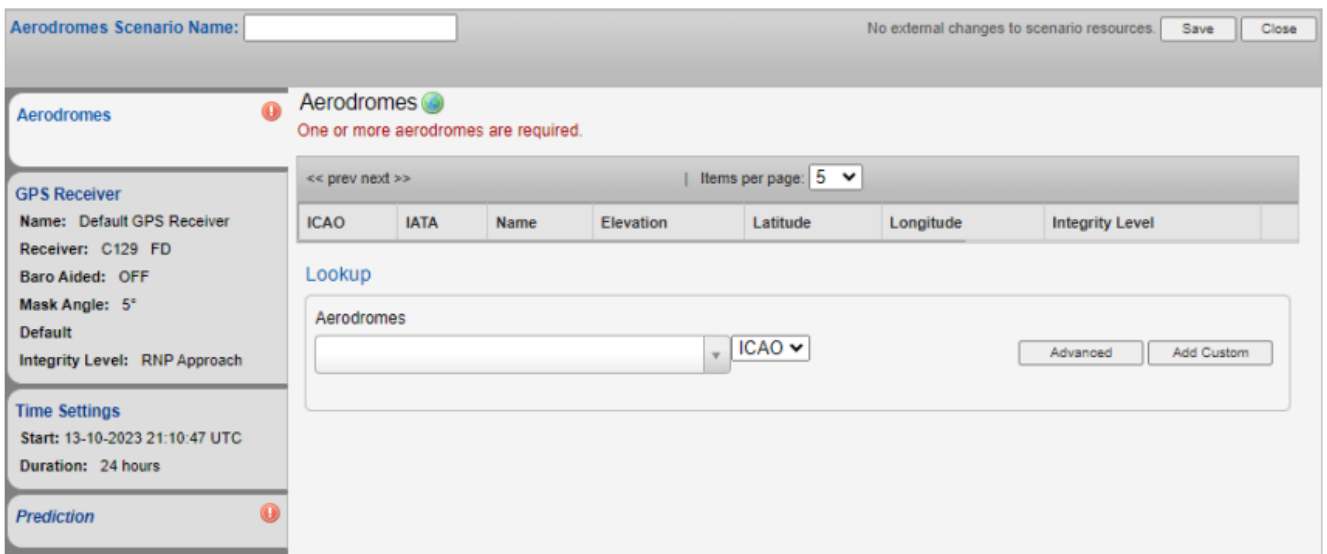
4.1.2.1 Once logged in, the user selects Tools → Aerodromes from the navigation menu bar.



4.1.2.2 You will receive two options: Personal or Shared. A personal scenario is an aerodrome scenario that, when saved, will be only viewable by the user. The shared scenario can be viewed by other users in the team. Click the "create new" scenario button to move to the next step.



4.1.2.3 The following screen shall appear allowing users to input all data required for an aerodrome RAIM prediction.



4.1.2.4 The following steps are required to create an aerodrome RAIM prediction.

Step 1: Add Aerodromes

Type in the first 3 letters of the aerodrome ICAO or IATA code and choose the aerodrome from the drop-down list.

Once selected, the aerodrome appears in the list along with its relevant data:

ICAO	IATA	Name	Elevation	Latitude	Longitude	Integrity Level	
SPJC	LIM	JORGE CHAVEZ ...	112ft	-12.021°	-77.121°	RNP Approach	✖

- ICAO Code: For example, SPJC.
- IATA Code: For example, LIM.
- Name: Full name, for example Jorge Chavez Intl.
- Elevation: In feet.
- Latitude: In decimal degrees.
- Longitude: In decimal degrees.

By clicking on the aerodrome in the list a new window appears showing all the information relating to the aerodrome as well as showing the data domain of the aerodrome.

ICAO: SPJC
IATA: LIM
Name: JORGE CHAVEZ IN
Elevation: 112 feet
Latitude: -12.021 degrees
Longitude: -77.121 degrees
Owner: Standard
Action: Detach
Integrity Level: RNP Approach
OK

The aerodrome data is shown greyed-out as users are unable to edit the information related to the aerodrome. In order to edit the information, users press the **Detach** button.

Once the aerodrome has been detached then the user may edit the data.

Up to 20 aerodromes can be added to a single RAIM prediction.

Users may remove aerodromes from the list by pressing the (X) button located to the right of the list item.

Users can select the number of items per page from the drop-down list above the list. Either 1, 5, 10, 15 or 20 items per page can be viewed.

<< prev 1 next >> | Items per page: 5

ICAO	IATA	Name	Elevation	Longitude	Integrity Level	
SPJC	LIM	JORGE CHAVEZ ...	112ft	-77.121°	RNP Approach	X

Lookup

If the total number of aerodromes selected exceeds the number of items visible per page, then users can navigate between pages using the page number and arrow buttons that appear above the list.

Step 2: GPS Receiver Configuration

By clicking on the GPS Receiver section users are able to load a preconfigured GPS Receiver or configure a new receiver.

The screenshot shows a configuration window titled "GPS Receiver". It contains several fields and controls:

- Name:** A text box containing "Default GPS Receiver".
- Receiver Type:** A dropdown menu showing "C129".
- Algorithm:** A dropdown menu showing "FD".
- SA:** A dropdown menu showing "OFF".
- Baro Aided:** A dropdown menu showing "OFF".
- Mask Angle:** A text box containing "5" followed by the label "degrees".
- Default Integrity Level:** A dropdown menu showing "RNP Approach".
- Multiplier:** A label with two buttons: "Default" and "Edit".
- Owner:** A text box that is currently empty.
- Action:** A text box that is currently empty.

At the bottom of the window are two buttons: "OK" and "Lookup".

Users can configure the parameters for their GPS Receiver:

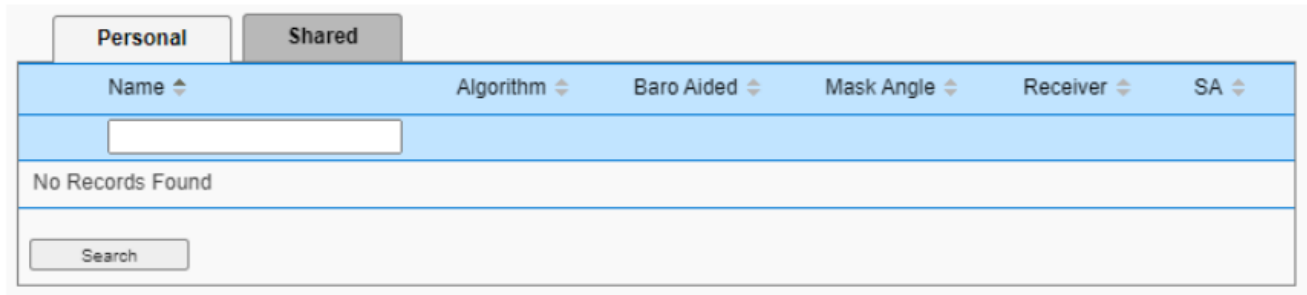
- Name: A Username selected to describe the GPS Receiver setting. Up to 75 characters.
- Receiver Type: C129 or C145/C146.
- Algorithm: FD or FDE. If the C145/C146 receiver has been selected, then the FD option is automatically selected and greyed-out and cannot be configured by the user.
- SA: On or Off. If the C145/C146 receiver has been selected then the "Off" option is automatically selected and greyed out and cannot be configured by the user.
- Baro Aided: On, Off or Both.
- Mask Angle: Between -20 and 25 degrees and to 1 decimal place only.
- Integrity Level: RNP1, RNAV1, RNAV2, RNP Approach. If some of these options are not available, then contact the Administrator.

Press OK to save the GPS Receiver configuration. The updated GPS Receiver configuration panel now displays the updated configuration.

The screenshot shows the updated configuration panel with the following information:

- GPS Receiver**
- Name:** Default GPS Receiver
- Receiver:** C129 FD
- Baro Aided:** OFF
- Mask Angle:** 5°
- Default**
- Integrity Level:** RNP Approach

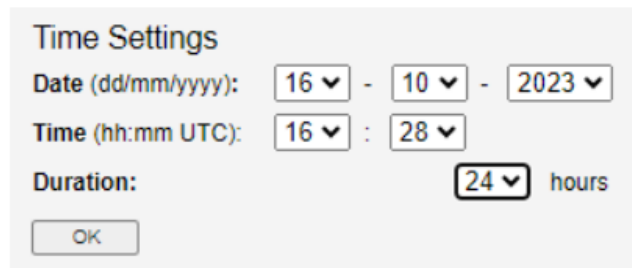
Alternatively, Users can recall an existing GPS Receiver configuration. Press Lookup and the selection panel appears. Users can select pre-configured GPS Receivers from their Personal list or from the Shared list.



Press **Select** to choose the desired GPS Receiver or **Cancel** or **(X)** to exit the screen.

Step 3: Time Settings

User selects **time settings** to choose the start time and duration of the prediction.



Users select the following parameters:

- Date: Start date for the prediction in dd/mm/yyyy format.
- Time: Start time for the prediction in UTC time in hh:mm format.
- Duration: 24, 48 or 72 hours.

Press **OK** to store the Time Settings.

The updated time settings are now displayed in the time settings panel:

4.1.3 CALCULATING A RAIM PREDICTION

4.1.3.1 Once a Scenario has been configured, users can calculate a RAIM prediction by pressing the prediction panel on the left side of the screen.


4.1.4 AERODROME RAIM PREDICTION RESULTS

4.1.4.1 Once the RAIM prediction has been calculated, the results are displayed on a prediction summary page with details and aerodrome chart tabs available for selection. In addition, a printable version of the prediction is available by pressing printable version.

4.1.4.2 The Summary Tab shows the high-level results of the prediction.

Prediction

Summary Details Map Aerodrome Chart

Printable Version 

Aerodromes			RAIM Outage Predictions	
ICAO	IATA	Integrity Level	Name	Non-Baro
SPJC	LIM	RNP Approach	JORGE CHAVEZ INTERNATIONAL	4

Calculation Time: 16-10-2023 16:32:52 UTC
Almanac: 236 319488
Active NANUs: None

4.1.4.3 The Scenario aerodromes are listed by ICAO or IATA code and Name showing the number of RAIM Outages Predictions with both, Baro and Non-Baro aided receivers:

- Where there are no outages, the cell is shaded green and 0 is displayed.
- Where there are 1 or more outages the total number of outages are displayed and the cell is shaded pink.
- In addition, the calculation time, and the identities of the applicable Almanac and any applicable NANUs are displayed.

4.1.4.4 The Details Tab shows the data of the RAIM Prediction for each aerodrome in the Scenario. There is a tab for each aerodrome, labelled with the ICAO Code of the aerodrome.

Prediction

Summary Details Map Aerodrome Chart

Printable Version

SPJC

Name	JORGE CHAVE...	Start Time:	16-10-2023 16:28:40 UTC
Latitude:	-12.021 degrees	Duration:	24 Hours
Longitude:	-77.121 degrees	End Time:	17-10-2023 16:28:40 UTC
Elevation:	112 feet	Mask Angle:	10 degrees
		Integrity Level:	RNP Approach

Non-Baro Aided Outages			
Start	End	Duration	Min. Visible Satellites
16-10-2023 17:39:10 UTC	16-10-2023 17:47:10 UTC	8m	7
16-10-2023 23:34:10 UTC	16-10-2023 23:52:10 UTC	18m	8
17-10-2023 15:01:10 UTC	17-10-2023 15:07:10 UTC	6m	6
17-10-2023 15:13:10 UTC	17-10-2023 15:24:10 UTC	11m	6

Calculation Time:	Almanac:	Active NANUs
16-10-2023 16:32:52 UTC	236 319488	None

- Name of the aerodrome.
- Latitude, longitude and elevation of the aerodrome.
- Start Time, End Time and Duration of the prediction.
- Mask Angle.
- Integrity Level.

4.1.4.5 The tables beneath the RAIM prediction details show RAIM outages by Baro Aided and Non-Baro Aided, either or both depending if they were included within the GPS Receiver configuration.

4.1.4.6 Where no outages have been predicted the cell is shaded green and “No outages” is displayed.

4.1.4.7 Where there are outages these are detailed with the following data:

- Start: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format..
- End: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- Duration of the outage in minutes and hours.
- Minimum Visible Satellites during the outage.
- In addition, the calculation time, and the identities of the applicable Almanac and any applicable NANUs are displayed.

4.1.4.8 The Aerodrome Map Tab visualizes the outages through a red ringed area on a world map. Users can navigate around the map by clicking and dragging the frame or using the blue toggle buttons found on the top left corner. Users can zoom in and out using the blue scroll button found under the toggle switch on the left.

4.1.4.9 Where no outages have occurred, the prediction area will be circled with a green ring.

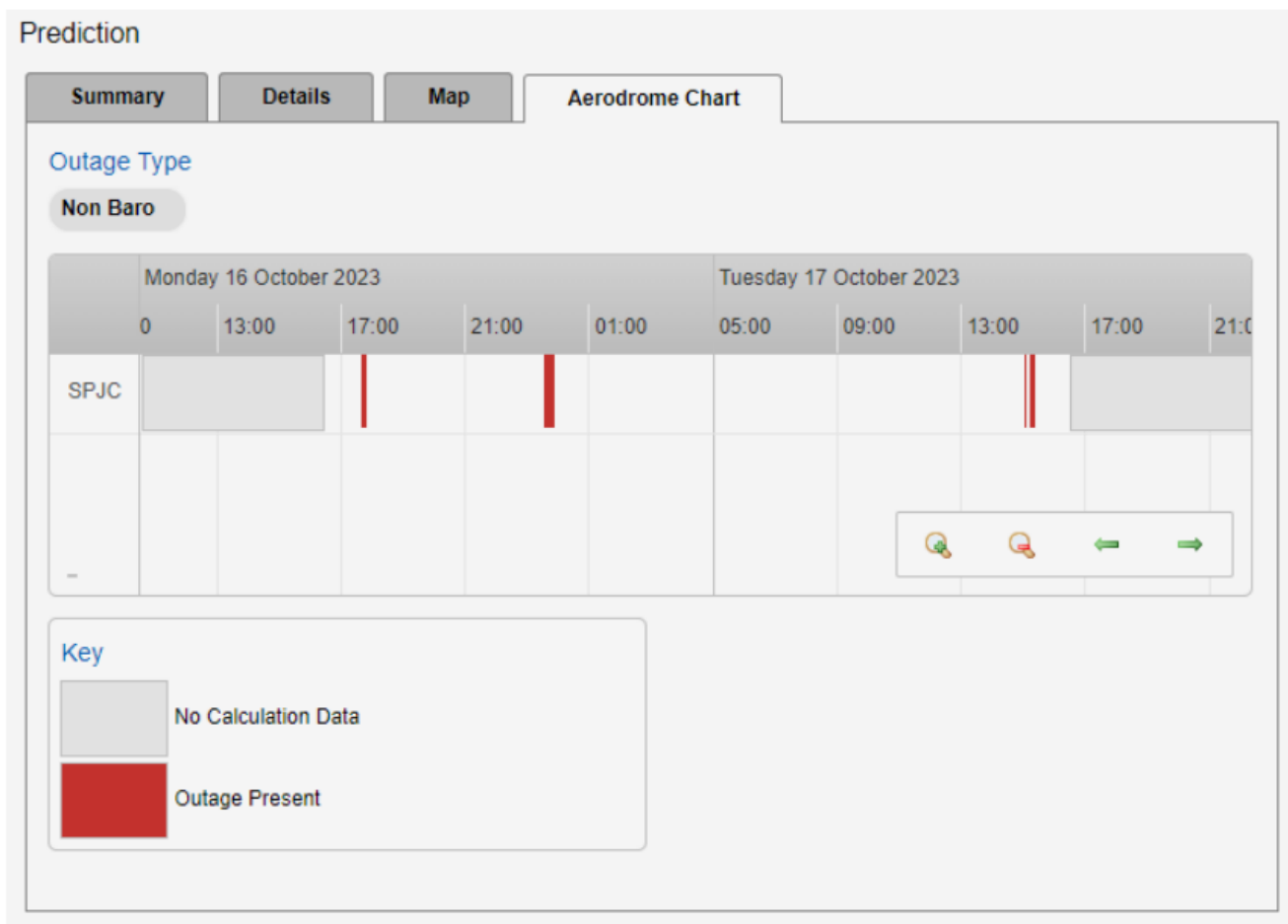
4.1.4.10 Where there are outages, details can be listed by clicking on the red ring at the location of the outage on the map. Clicking the red ring will list the following:



- Start: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- End: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- The Latitude and Longitude of the outage area.

4.1.4.11 The Aerodrome Chart Tab visualizes the outages on an interactive chart. Users can navigate around the chart and zoom in and out using the navigation buttons:

	Zoom in.
	Zoom out.
	Scroll left.
	Scroll right.



4.1.4.12 Outages are depicted as red bars with their width representing the duration of the outage. By clicking on a red bar, the outage changes to pink, the ICAO code and the start and end times and dates are beneath the chart.

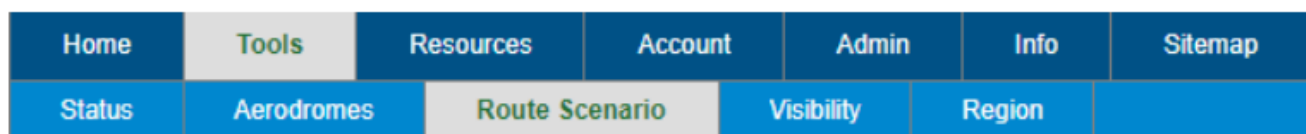
4.2 ROUTE RAIM PREDICTION TOOL

4.2.1 PURPOSE

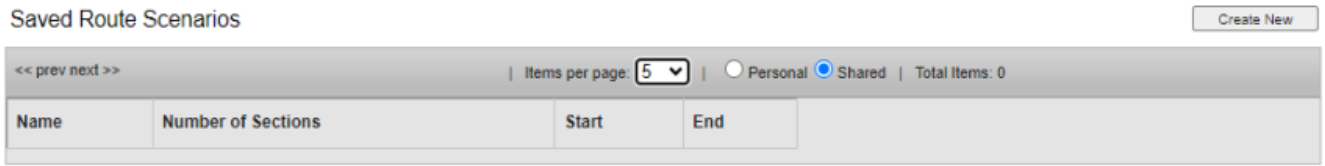
4.2.1.1 The "Route Scenario" tool calculates the predicted RAIM availability for points along a defined route as well as aerodromes for user-configurable GPS receiver and at user-selected times.

4.2.2 SELECTING THE TOOL

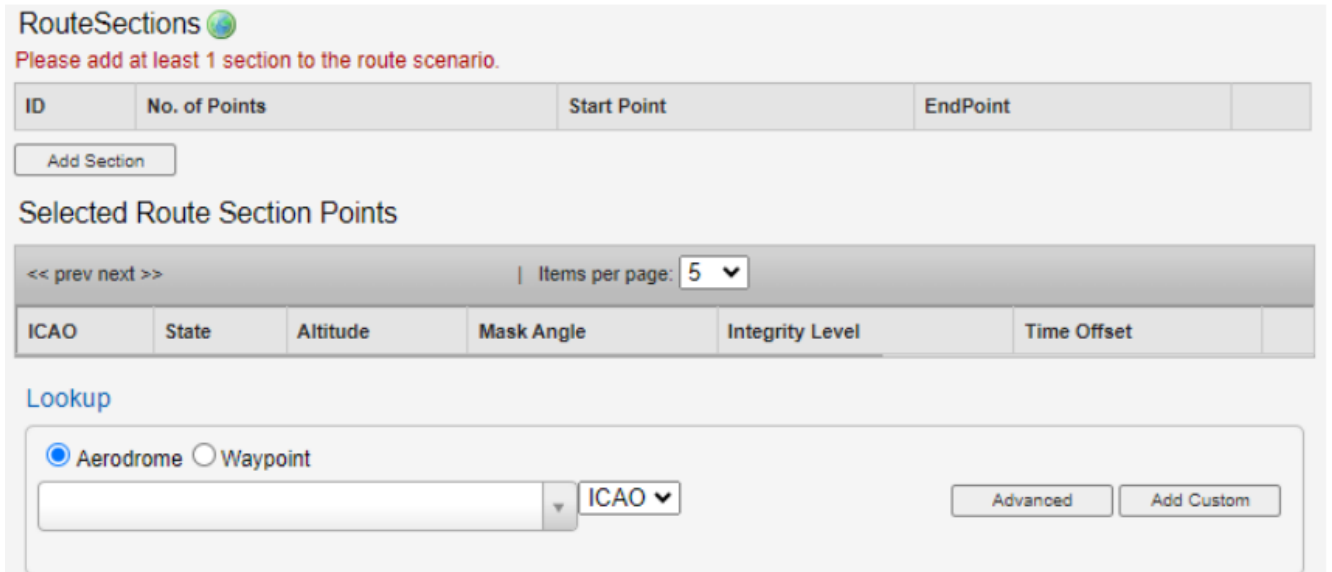
4.2.2.1 Once logged in, the user selects Tools → Route Scenario from the navigation menu bar.



4.2.2.2 Click on the 'Create new' button to proceed to the next step.



4.2.2.3 The following screen shall appear allowing users to input all data required for a route RAIM prediction.



4.2.2.4 The following steps are required to create a route RAIM prediction.

Step 1: Start Creating a Route




A route is made up of one or more route sections. Route sections are composed of a series of up to 100 user selected/ configured waypoints. Users can set the number of section points displayed by selecting either 1, 5, 10, 15 or 20 items per page from the drop-down list.

To add the start point of the route, use the lookup function to select the aerodrome or waypoint. Users select the type of aerodrome or waypoint look-up they wish to use, either by ICAO or IATA Code.





Type in the first 3 letters of the IATA or ICAO code and choose the relevant aerodrome from the list by clicking on the name of the aerodrome.

The aerodrome/waypoint, or Section Point, shall now appear in the Selected Route Section Points list, showing:

Selected Route Section Points						
<< prev		1	next >>		Items per page: 5	
ICAO	State	Altitude	Mask Angle	Integrity Level	Time Offset	
SPJC	SP	112ft	5°		0mins	  

- ICAO Identifier.
- State.
- Altitude.
- Mask Angle.
- Integrity Level: To be configured by the user (see below).
- Time Offset.

To configure the Section Point, the user can click on the entry to see the following panel:

ICAO:	<input type="text" value="SPJC"/>
Latitude:	<input type="text" value="-12.021"/> degrees
Longitude:	<input type="text" value="-77.121"/> degrees
State:	<input type="text" value="SP"/>
Type:	<input type="text" value="Choose One"/>
Time Offset:	<input type="text" value="0"/> minutes
Altitude:	<input type="text" value="112"/>  feet
Mask Angle:	5.0  degrees
Integrity Level:	Choose One 
Owner:	Standard
Action:	<input type="button" value="Detach"/>
	<input type="button" value="OK"/>

Non-configurable fields are shaded in grey. The user can configure other fields by clicking on the link icon where necessary to show the broken link icon indicating that the parameter can be changed. The user can configure the following fields:

- Type: Select from Waypoint, NDB Navaid or VHF Navaid.
- Time Offset: The total flying time from the starting Section Point in minutes, automatically broken down in 5-minute increments.
- Altitude: Feet.
- Mask Angle: Angle in degrees between -20° and 25° and up to one decimal place.
- Integrity Level: The appropriate integrity level for the subsequent leg from the drop-down list.

When configuring the Altitude, Mask Angle and Integrity Levels, the same selection will be cascaded automatically to the subsequent section points. Users can add a custom waypoint by press the Add Custom button and fill in the fields of the dialogue box that appears.

Users complete the same fields as above, as well as the following fields:








- ICAO Identifier: The ICAO identifier or one of the users choosing between 1 and 10 characters long and using uppercase alphanumeric characters.
- Latitude / Longitude: In decimal degrees up to 3 decimal places.
- State: State identifier up to 5 characters long.

The newly created Section is identified in the left-hand side route sections panel with the first and last section point with the total number of points in brackets

Step 2: Add a New Section

To add a new Section, press the Add Section button above the selected route section points and add new sections points as required, using the same method described in Step 1.

A summary of the existing section is shown at the top of the page, and the newly created section is identified in the left-hand side route sections panel with the first and last section point with the total number of points in brackets:

RouteSections 				
ID	No. of Points	Start Point	EndPoint	
1	2	SPJC	JCL	  
2	2	JUL	SBSC	  

Users can add as many sections as required.

Step 3: Set Alternate Aerodromes

Click on the left-hand Aerodromes panel to select alternate destination aerodromes for which a RAIM Prediction shall be calculated. Up to 20 aerodromes can be selected.

ICAO	IATA	Name	Elevation	Mask Angle	Integrity Level	
SBSI	OPS	PRESIDENTE JOAO BATIS...	1,227ft	5°	RNP Approach	✘

This section is identical to the Aerodrome Section found through the "Aerodromes Scenario" Tools function.

Step 4: GPS Receiver Configuration

This is identical to the process for the Aerodrome Tool.

Note: Users must ensure that the GPS Receiver selected for the RAIM prediction has been configured to allow for the integrity levels selected for the section waypoints.

Step 5: Time Setting

This is identical to the process for the aerodrome tool.

4.2.3 CALCULATING A RAIM PREDICTION

4.2.3.1 Users can calculate a RAIM Prediction using that scenario by pressing the Prediction panel on the left side of the screen.

4.2.4 ROUTE RAIM PREDICTION RESULTS

4.2.4.1 Once the RAIM prediction has been calculated the results are displayed on a prediction summary page with details, route chart and aerodrome chart tabs available for selection. In addition, a printable version of the prediction is available by pressing Printable Version. The Printable Version contains all the information from the Details tab as well as all the input parameters.

4.2.4.2 The scenario route sections are listed indicating outages against 7-time offsets from -15 minutes to the selected time offset to +15 minutes, and at 5 minutes intervals between:

- The scenario aerodromes are listed by ICAO code, IATA code and Name, showing the number of RAIM Outages Predictions against both Baro and Non-Baro aided receivers or whichever one has been selected.
- Where there are no outages, the cell is shaded green and 0 is displayed.
- Where there are 1 or more outages the total number of outages are displayed, and the cell is shaded pink.
- In addition, the calculation time, and the identities of the applicable Almanac and any applicable NANUs are displayed.

Prediction

Summary
Details
Map
Route Chart
Aerodrome Chart

[Printable Version](#)

Route - RAIM Outage Predictions							
Section	Time Offsets						
	(minutes relative to OTD)						
	-15	-10	-5	0	+5	+10	+15
Section 1:	0	0	0	0	0	0	0
Section 2:	0	0	0	0	0	0	0

Calculation Time:	Almanac:	Active NANUs
16-10-2023 20:45:30 UTC	236 319488	None


Aerodromes			RAIM Outage Predictions	
ICAO	IATA	Integrity Level	Name	Non-Baro
SBSI	OPS	RNP Approach	PRESIDENTE JOAO BATISTA FIGUEI	0

Calculation Time:	Almanac:	Active NANUs
16-10-2023 20:45:30 UTC	236 319488	None

4.2.4.3 The Details Tab shows tabs for each Section and for the alternate aerodromes.

Prediction

Summary Details Map Route Chart Aerodrome Chart

Printable Version 

Section 1 Section 2 Aerodromes

By Leg By Outage

Leg	Time Offset (minutes)						
	-15	-10	-5	0	+5	+10	+15
SPJC - JCL	0	0	0	0	0	0	0
JCL - SCO	0	0	0	0	0	0	0
SCO - SPZO	0	0	0	0	0	0	0

Time Offset (minutes)	Outages	Legs Affected
-15	0	-
-10	0	-
-5	0	-
0	0	-
+5	0	-
+10	0	-
+15	0	-

Calculation Time: 16-10-2023 21:38:07 UTC
Almanac: 236 319488
Active NANUs: None

4.2.4.4 An example with outages present is pasted below:

Prediction

Summary Details Map Route Chart Aerodrome Chart

Printable Version

Section 1 Section 2 Aerodromes

By Leg By Outage

Leg	Time Offset (minutes)						
	-15	-10	-5	0	+5	+10	+15
SPJC - JCL	1	1	1	1	1	1	1
JCL - SCO	1	1	1	1	1	1	1
SCO - SPZO	1	1	1	1	1	1	1

Time Offset (minutes)	Outages	Legs Affected
-15	1	SPJC - JCL JCL - SCO SCO - SPZO
-10	1	SPJC - JCL JCL - SCO SCO - SPZO
-5	1	SPJC - JCL JCL - SCO SCO - SPZO
0	1	SPJC - JCL JCL - SCO SCO - SPZO
+5	1	SPJC - JCL JCL - SCO SCO - SPZO
+10	1	SPJC - JCL JCL - SCO SCO - SPZO
+15	1	SPJC - JCL JCL - SCO SCO - SPZO

Calculation Time: 16-10-2023 21:54:11 UTC Almanac: 236 319488 Active NANUs: None

4.2.4.5 For each section, users can view the outages By "Leg" or By "Outage" by selecting the appropriate radio button on the top right hand side of the window:

4.2.4.5.1 By "Leg": Displays a table indicating which legs at which time offsets have outages and below which time offsets by which leg have outages. Where there are no outages, the cell is shaded green and 0 is displayed. Where there are 1 or more outages the total number of outages are displayed, and the cell is shaded pink.

4.2.4.5.2 By "Outage": List all outages in time offset order. Each offset shows the following:

- Start: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- End: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- Duration of the outage in minutes and hours, for example 6m or 1h28m.
- Minimum Visible Satellites during the outage, for example 5.

4.2.4.6 In addition, the calculation time, and the identities of the applicable Almanac and any applicable NANUs are displayed.

4.2.4.7 Any RAIM outages are shown with the start time, end time and duration of the outage. If there are not any RAIM outages, these will be highlighted on a green background.

Section 1		Section 2		Aerodromes	
<input type="radio"/> By Leg <input checked="" type="radio"/> By Outage					
-15 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
-10 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
-5 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
0 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
+5 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
+10 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
+15 minute offset					
Start	End	Duration	Legs	Min. Visible Satellites	
No Outages					
Calculation Time:		Almanac:		Active NANUs	
16-10-2023 21:57:10 UTC		236 319488		None	

4.2.4.8 Under the Aerodromes tab are the details of the prediction for each alternate aerodrome in the scenario. There is a tab for each alternate aerodrome, labelled with the ICAO Code of the aerodrome. The prediction scenario information is:

- Name of the aerodrome.

- Latitude, longitude, and elevation of the aerodrome.
- Start Offset.
- Start Time, End Time, and Duration of the prediction.
- Mask Angle.
- Integrity Level.

Prediction

Summary Details Map Route Chart Aerodrome Chart

Printable Version

Section 1 Section 2 Section 3 Aerodromes

SPCL

Name	DAVID ARMAN...	Start Time:	29-11-2023 15:55:31 UTC
Latitude:	-8.378 degrees	Duration:	12 Hours
Longitude:	-74.574 degrees	End Time:	30-11-2023 03:55:31 UTC
Elevation:	516 feet	Mask Angle:	5 degrees
Start Offset:	0 minutes	Integrity Level:	RNP Approach

Non-Baro Aided Outages			
Start	End	Duration	Min. Visible Satellites
No outages			

Calculation Time:	Almanac:	4Active NANUs
29-11-2023 15:59:06 UTC	242 503808	2023044, 2023064, 2023066, 2023067





4.2.4.9 The tables beneath the Scenario Summary show the scenario without Baro Aid, depending if they were included within the GPS Receiver configuration.

4.2.4.10 Where no outages have been predicted the cell is shaded green and “No outages” is displayed.

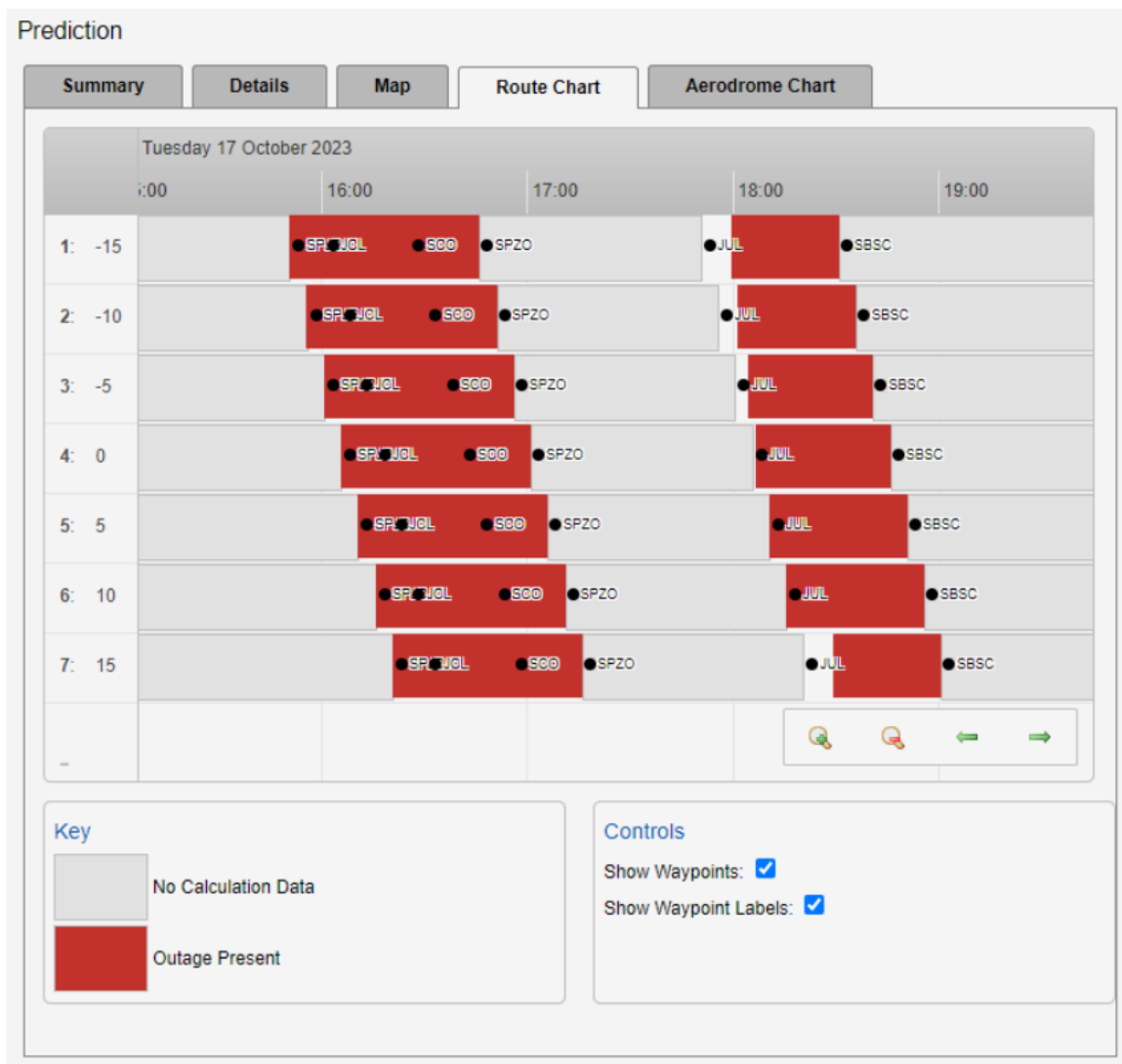
4.2.4.11 Where there are outages they are detailed with:

- Start: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- End: Date and Time in UTC in dd-mm-yyyy hh:mm:ss format.
- Duration of the outage in minutes and hours, for example 6m or 1h28m.
- Minimum Visible Satellites during the outage, for example 5.
- In addition, the calculation time, and the identities of the applicable Almanac and any applicable NANUs are displayed.

4.2.4.12 The Route Chart Tab and Aerodrome Chart Tab visualize the outages on interactive charts. Users can navigate around the chart and zoom in and out using the navigation buttons:

	Zoom in.
	Zoom out.
	Scroll left.
	Scroll right.

4.2.4.13 For the Route Chart: Outages are depicted as red bars with their width representing the duration of the outage. Clicking on the red bar will change the outage colour to pink and will provide the start and end times and dates beneath the chart.



5. ACCESS AND LOG IN

5.1 SATDIS is available to the entire aeronautical community from any device with a web browser and internet connection at the following link:

<https://satdis.gnss.navblue.cloud/satdis/home.html?3>

5.2 Access to SATDIS requires a username and password, which should be requested to the DGAC at the following e-mail addresses:

- Sady Orlando Beaumont Valdez (sbeaumont@mtc.gob.pe)
- Oscar Max Saavedra Angelats (osaavedra@mtc.gob.pe)