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CADENA: CONTINGENCY PLANNING AND RESPONSE

For: Aviation Safety Campaign
 Date: June 8 and 9, 2023
 By: CADENA Team - Midori Tanino

1

Key Points of Aviation Safety Campaign



- Regional Cooperation on time of Crises
- Better Prepared for Humanitarian Assistance and Response to Disasters

Regional stakeholder communication, cooperation, and information sharing prior to a time of crisis ... results in improved

- ✓ Disaster preparation
- ✓ Response time and delivery of humanitarian assistance

2


2

Key Points from CADENA

- Collaboration among stakeholders during a contingency event is a **MUST**
 - Collaboration starts with information sharing
- All stakeholders must always be prepared for contingency events
- CADENA has proven its effectiveness during contingency events
- CADENA is willing to collaborate stakeholders who focuses on humanitarian assistances and responses

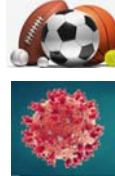
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3

CADENA: Contingency Planning and Response

- CADENA has gained extensive experience in dealing with disruptions to Air Traffic operations in the LAC region since 2016
- CADENA understands the importance of preparing for disruptions and gathering and sharing operational information



4

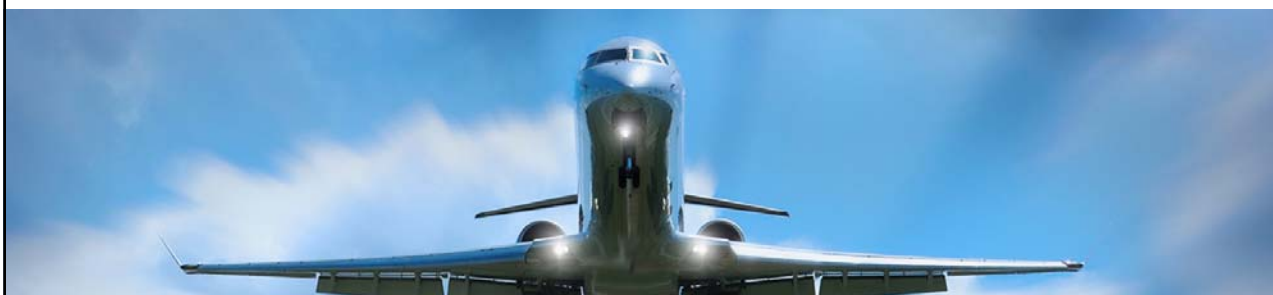


4

No Country Left Behind (NCLB)

The **No Country Left Behind** (NCLB) initiative highlights ICAO's efforts to assist States in implementing ICAO Standards and Recommended Practices (SARPs). The main goal of this work is to help ensure that SARP implementation is better harmonized globally so that all States have access to the significant socio-economic benefits of safe and reliable air transport.

The NCLB effort also promotes ICAO's efforts to resolve Significant Safety Concerns (SSCs) brought to light through ICAO's safety oversight audits as well as other safety, security and emissions-related objectives.



5



5

Included in PfA to Annex 11 and PANS-ATM Doc 4444

(Annex 11) 3.7.5.1 States shall ensure that an air traffic flow management (ATFM) service is established and that it supports cross-border ATFM collaboration.

(Annex 11) 3.7.5.3 The appropriate ATS authority shall determine the capacity of the air traffic control services in the form of declared capacity and operational capacity for the following: a) all controlled airspace; b) all controlled aerodromes included in the regional air navigation plan; and c) other controlled aerodromes identified by the State.

(Doc 4444) 3.2.1.2 The appropriate ATS authority shall establish ATFM unit(s) and designate the area(s) of responsibility.

(Doc 4444) 3.2.1.5 Flow management positions should be established for each appropriate ATC unit to support ATFM units and to ensure proper conduct of ATFM activities.

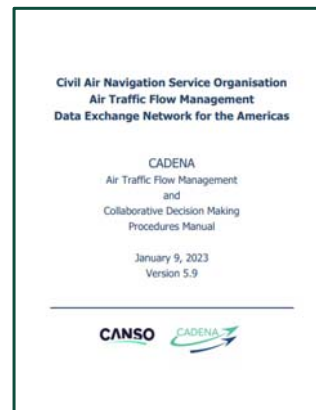
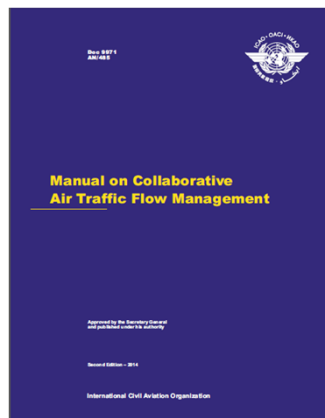
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6

In Concert with ICAO

CADENA is designed to implement the processes and procedures from ICAO DOC 9971



7



7

Operational Coordination and Information Sharing

CADENA became operational quickly and all ANSPs/airlines can participate with a small investment

- 2016 Jun – Established
- 2016 Aug – 1st CADENA meeting
- 2016 Dec – Started regional ATFM/CDM Operational Planning Web Conferences
- 2017 Aug – Initial version of the CADENA Operational Information System (OIS) launched



You need only:

1. Computer
2. Internet Access
3. Human Resource

8



8

CADENA Operational Information System (OIS)



<https://www.cadenaois.org> Public domain for read only. Member domain to read and upload information.

Exchange:

- MS documents (Word, PPT, Excel)
- Text, pdf, and picture

Enter:

- ATM Solutions
- Advisories/Notices
- Airport delay
- ATFM Daily Plan
- Calendars
- PASA Route Request

Store:

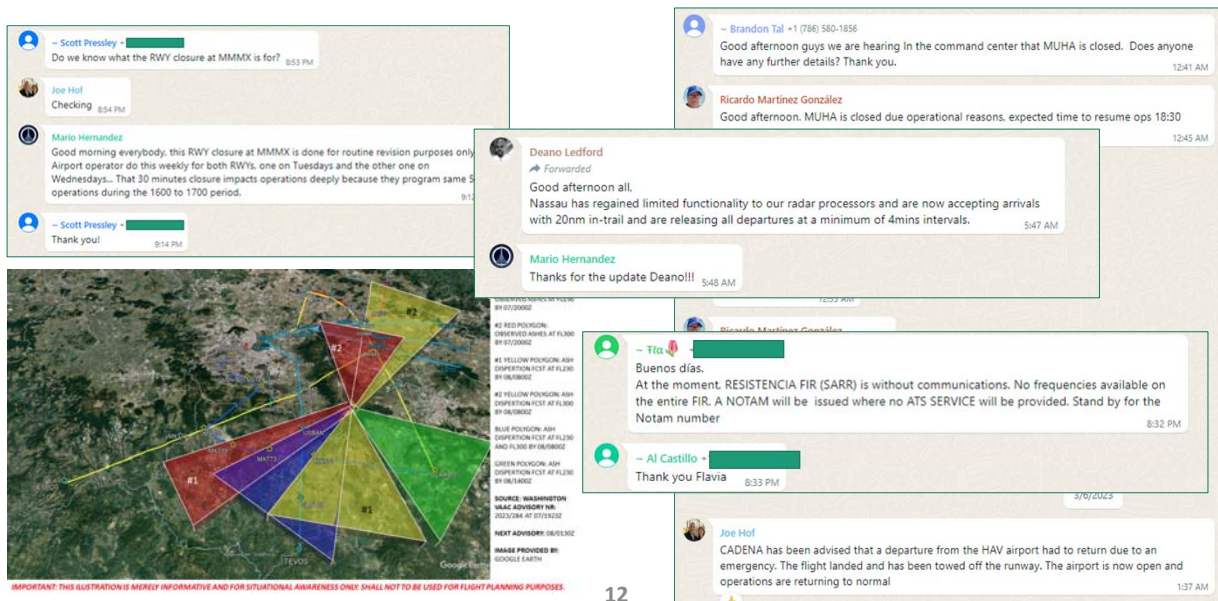
- Routes (PASA, UPR)
- Forms (Contingency)
- Capacity info (Airport/Airspace)



11

11

WhatsApp CADENA OPS Group



12

12

Contingency Events

15 Contingency Events

ACCs

- Evacuation
- Radar failure
- A/G communication failure
- Telephone or landline failure
- Power failure
- FDPS failure
- ATFN outage
- Staffing shortages
- Work stoppages (strikes)

Severe weather / natural phenomena

- Hurricanes / tropical storms
- Volcanic eruption
- Earthquakes

Airports

- Aircraft accidents / incidents

FMU outages

- FMU services not available

Off-Nominal (Unusual) Events

- Off-Nominal event

13



13

ANSP Contingency Form - Supports Information Gathering

CANSO CADENA
ANSP CONTINGENCY FORM

Impacted Facility / Sector: _____
REF #: _____

Type of Contingency
☐ Communication ☐ Facility ☐ Surveillance ☐ Staffing ☐ Other

Detail
Click here to enter text.

Traffic Management measures
☐ Miles-in-trail (MIT) ☐ Minutes-in-trail (MINIT) ☐ Re-routing
☐ Fix Balancing ☐ Level Capping ☐ Tunnelling
☐ Airborne Holding ☐ Ground Delay Program (GDP) ☐ Ground Stop (GS)
☐ Airspace Flow Program (AFP)

Detail
Click here to enter text.

FIRs Affected
☐ TTZP ☐ TIZS ☐ SVZM ☐ TNCF ☐ MDGS
☐ MTEG ☐ KZMA ☐ KZMY ☐ KZHU ☐ MUFG
☐ MKJK ☐ MMFR ☐ MHCC ☐ MPZL ☐ SKEC
☐ SKED ☐ SARR ☐ SAEF ☐ SAVF
☐ _____ ☐ _____

Start Time
Click here to enter text.

End Time
Click here to enter text.

ANSP Contingency Form – used to help collect pertinent contingency event information and to display all of the available information in one form

Enter the Contingency Form via CADENA OIS

- Impacted Facility/Sector
- Type of Contingency
- Traffic Management Measures
- FIRs Affected
- Start Time and End Time

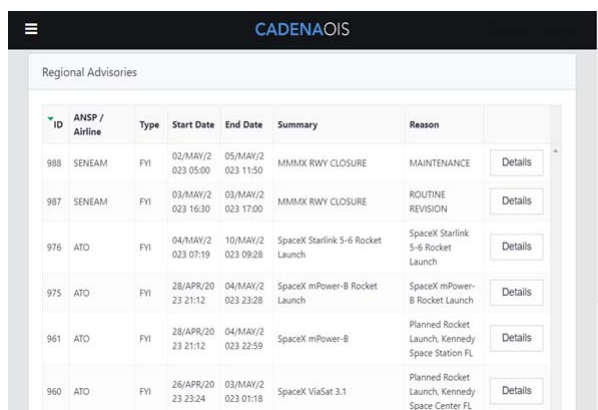
Entered Contingency Form is publically shared via CADENA OIS

14



14

CADENA Advisory



ID	ANSP / Airline	Type	Start Date	End Date	Summary	Reason	
988	SENEAM	FYI	02/MAY/2023 05:00	05/MAY/2023 11:50	MMMX RWY CLOSURE	MAINTENANCE	Details
987	SENEAM	FYI	03/MAY/2023 16:30	03/MAY/2023 17:00	MMMX RWY CLOSURE	ROUTINE REVISION	Details
976	ATO	FYI	04/MAY/2023 07:19	10/MAY/2023 09:28	SpaceX Starlink 5-6 Rocket Launch	SpaceX Starlink 5-6 Rocket Launch	Details
975	ATO	FYI	28/APR/2023 21:12	04/MAY/2023 23:28	SpaceX mPower-8 Rocket Launch	SpaceX mPower-8 Rocket Launch	Details
961	ATO	FYI	28/APR/2023 21:12	04/MAY/2023 22:59	SpaceX mPower-8	Planned Rocket Launch, Kennedy Space Station FL	Details
960	ATO	FYI	26/APR/2023 23:24	03/MAY/2023 01:18	SpaceX ViaSat 3.1	Planned Rocket Launch, Kennedy Space Center FL	Details

- Advisory is entered via the CADENA OIS

- Advisory Type: Urgent or FYI
- Start Time and End Time
- Summary
- Reason
- Details – including NOTAM(s)

- Entered Advisory is publicly shared via CADENA OIS

- Email push notification is sent, if registered

15



15

Contingency Events and Checklists

1: Evacuation of an ACC	Impacted Facility: ACC (Name)
Initial ATFM Action	Follow-Up ATFM Actions
• Whichever FMU receives the information first, notify your adjoining FMUs • Stop departure traffic under your FMU's jurisdiction that is filed to/through the impacted ACC's airspace • Coordinate airborne holding, if necessary • Coordinate re-routes for existing, airborne traffic, if necessary • Notify stakeholders, as able • Post an Urgent Advisory on the CADENA OIS	• Notify CADENA and ICAO leadership as soon as possible • Gather information on: ◦ How long is the ACC expected to be out of service? ◦ What is the impact to demand and capacity? ◦ Have aircraft diverted? ◦ If so, how many and to which airports? • CADENA leadership will, as soon as possible, schedule and conduct a CADENA CDM web conference, including airspace users, to relay available information and establish next steps NOTE: The situation may require scheduling a daily webex for the first few days of the event • For a potential long-term evacuation, discuss and coordinate alternate routes • Evaluate potential demand on the alternate routes and coordinate TMMs, as applicable • Ensure the appropriate NOTAM is issued and updated

Contingency Event Checklists -- mitigate the impact of such events through a ready-reference checklists when the unexpected happens. They describe the initial and follow-up ATFM actions that the impacted ANSPs should take, depending on the event.

16



16

CADENA Ad Hoc Web Conferences

CADENA Ad Hoc Web Conferences allow participating ANSPs and stakeholders to discuss and work on solutions to disruptive operational issues

- Any CADENA member can initiate and host the CADENA Ad Hoc Web Conference
- Responsibilities of Ad Hoc Web Conference Host and participants are described in the CADENA Procedures Manual section 3.4
 - Pre-conference responsibilities
 - Conference responsibilities
 - Post-conference responsibilities
- Use Virtual Support Team (VST) for support



17

17

Some Statistics (as of May 2023)

CADENA has held 125 contingency ad-hoc CDM web conferences and 11 high-impact Space Launch and Recovery CDM web conferences

	Hurricanes and Tropical Storms	Volcanic	ATC-Zero	Equipment outages	Airport incidents	Space launch impact
2017	4		3	1	1	
2018	3	1		6	5	
2019	4		2	3	3	
2020	9		12	1	6	4
2021	7	3	9	9	7	2
2022	6	2	5	5	5	2
2023			1	1	1	3



18

18

Contingency Event Training

Our goal is to train like we respond!

- Operational and personnel safety come first!
- Ensure good communication and teamwork among all the stakeholders.
- Use the capabilities of the CADENA VST.
- Use the procedures in the CADENA ATFM/CDM Procedures Manual.
- Use the capabilities in the CADENA OIS, Flight Radar 24, and CADENA WhatsApp.



CADENA ATFM and CDM Procedures Manual consists of sections that describe contingency event handling and contingency related forms and checklists.

- CADENA offers annual hurricane training every spring (since 2017).
- CADANA also offers quarterly contingency training.
- CADENA's contingency training is realistic and scenario-based and ANSPs, airlines, and other stakeholders play their roles to ensure that they became proficient in the procedures.

19



19

Hurricane Briefing Template

HURRICANE (NAME) UPDATE – 1400 UTC – DATE



ANSP Name

PROJECTED PATH IN YOUR AIRSPACE

- THE CADENA HOST WILL ADD A GRAPHIC OF THE PROJECTED PATH
- ADD SLIDES, IF NEEDED
- Recommend a screenshot from: <https://www.nhc.noaa.gov/>

HURRICANE (NAME) UPDATE – 1400 UTC – DATE



ANSP Name

IMPACTED ROUTES

- ADD GRAPHICS, IF ABLE
- ADD SLIDES, IF NEEDED
- Recommend a screenshot from a website like: <https://skyvector.com/>
- Use "World Hi"
- Add layers, if applicable

PLANNED TRAFFIC MANAGEMENT MEASURES

- FOR EXAMPLE: REROUTES, MIT, MINIT
- LIST THE IMPACTED NEIGHBORING ANSPs

HURRICANE (NAME) UPDATE – 1400 UTC – DATE



ANSP Name

PROJECTED IMPACT

DAY 1
AIRPORT CLOSING (DATE/TIME)
STAFFING ISSUES
EQUIPMENT OUTAGES

DAY 2
AIRPORT CLOSING (DATE/TIME)
STAFFING ISSUES
EQUIPMENT OUTAGES

WHEN APPLICABLE
AIRPORT RE-OPENING (DATE/TIME)

HURRICANE (NAME) UPDATE – 1400 UTC – DATE



ANSP Name

OTHER ISSUES

- 1
- 2
- 3

"TELL US WHAT WE DO NOT KNOW"

"PLEASE KEEP YOUR NOTAMS UP-TO-DATE"

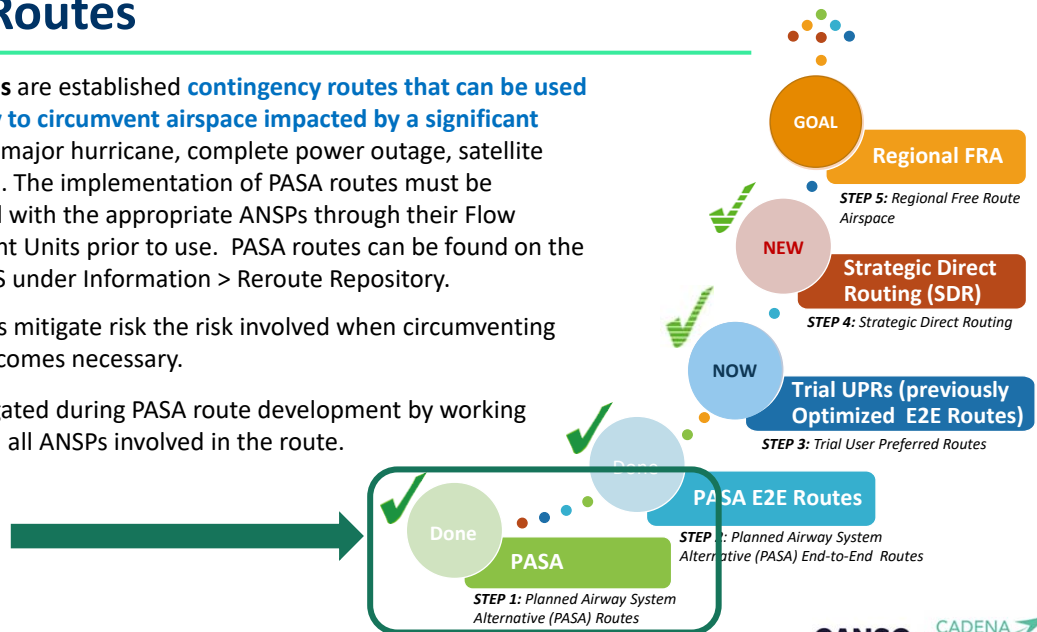
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20

PASA Routes

- **PASA Routes** are established **contingency routes that can be used temporarily to circumvent airspace impacted by a significant event** (e.g., major hurricane, complete power outage, satellite outage etc.). The implementation of PASA routes must be coordinated with the appropriate ANSPs through their Flow Management Units prior to use. PASA routes can be found on the CADENA OIS under Information > Reroute Repository.
- PASA Routes mitigate risk the risk involved when circumventing airspace becomes necessary.
- Risk is mitigated during PASA route development by working closely with all ANSPs involved in the route.



23

23

CADENA OIS PASA Routes Repository

CANSO

AVOID ZHU THROUGH ZAB

ORIG	DEST	EASTBOUND THROUGH KZMA		
MEXICO	KMIA AND BEYOND	... AXOMU UM346 CANOA ...	AVOID KHU - EAST	BI-DIRECTIONAL ROUTE
CENAMER	KMIA AND BEYOND	... CTM ANIKO C2M UG765 FIS ...	AVOID KZHU - EAST	BI-DIRECTIONAL ROUTE
MMUN	KMIA AND BEYOND	MMUN NUDAL UV106 FRANT UG765 FIS ...	AVOID KZHU - EAST	
MMUN	KATL	... CUN UJ18 URTOK UG765 MAXIM G765 FIS FLYER JAWJA DAWWN ...	AVOID ZHU - EAST	INCLUDES ZMA FEEDBACK
ORIG	DEST	WESTBOUND THROUGH ZMA		
KATL	MMUN	... WALET YUESS OTK TEPEE BRDGE RSW KARTR Q81 TUNSL Y196 CANOA U8879 CUN ...	AVOID ZHU - EAST	WITH SENEAM DATA
ZMA	MMMX	... ENDEW Q81 TUNSL Y196 CANOA UM346 AXOMU URS22 PAZ UJ55 DATUL ...	AVOID KHU - EAST	
ORIG	DEST	WESTBOUND THROUGH ZAB		
MEXICO	KZAB AND BEYOND	... MOV MRF ...	AVOID KZHU - WEST	
ZMA	KZAB AND BEYOND	... CANOA ELUNI COFRE UM506 SESNO UJ15 MOV UJ2 CUU UJ47 CJS ELP ...	AVOID KZHU - WEST	

KZHU = Houston Center Airspace

CANOA .. ELP

CANOA ELUNI COFRE UM506 SESNO UJ15 MOV UJ2 CUU UJ47 CJS ELP



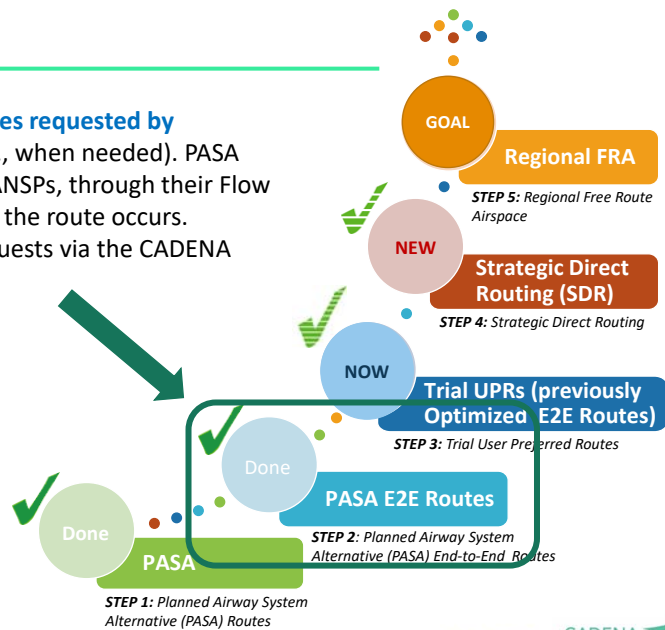
Used during radar outages, hurricane, and ATC Zero events

24

24

PASA E2E Routes

- PASA End-to-End Routes** are **temporary routes requested by airlines/stakeholders on an ad hoc basis** (i.e., when needed). PASA End-to-End Routes must be approved by all ANSPs, through their Flow Management Units, in which any segment of the route occurs. Airlines/stakeholders submit these route requests via the CADENA Operational Information System webpage.
- PASA Route risk is mitigated by following a standardized coordination process that involves all impacted ANSPs and by having a centralized point of coordination (i.e. CADENA).



25



25

CADENA OIS: PASA E2E Routes

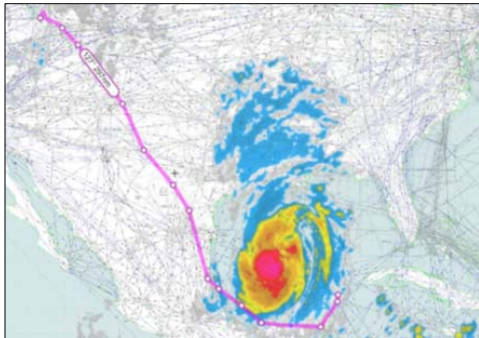
The screenshot shows the CADENA OIS interface for Delta Air Lines. A red arrow points to the 'PASA Route Requests' link in the left sidebar. The main content area displays a 'Create new PASA Route Request' form. The form includes fields for 'To ANSP(s)', 'Flight #', 'Flight Date', 'Dept Time', 'City Pair', and 'En-Route'. The 'Route' field contains the text: 'SPJC ISRENZ ISREN DCT GYV DCT TINPA DCT LEVOR DCT GCM DCT IKBIX Y183 PEAKY Q87 MATLK Q77 SHRKS DCT LAIRI DCT LARZZ JJEDI2 KATL'. Below the form, there is a map showing the route path across the Atlantic Ocean. A red box highlights the form fields.

26



26

Samples: CADENA PASA E2E Routes



PASA ROUTE REQUEST OCT 7, 2020



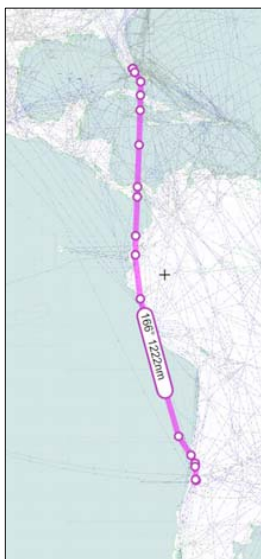
PASA ROUTE REQUEST NOV 16, 2020

27



27

CADENA PASA E2E Routes for Vaccine Flights



AA 957 Dec 31, 2020 Santiago, Chile



Dec 31, 2020:
AAL957
KMIA-SCEL

Jul 20, 2021: AAL9702 KORD-MGGT
Aug 18, 2021: FDX55 KMEM-MZBZ
Aug 19, 2021: FDX55 KMEM-MKJP
Aug 24, 2021: FDX71 KMIA-SYCJ

Nov 3, 2021: FDX55 KMEM-MKJP
Nov 4, 2021: FDX55 KMEM-MZBZ
Nov 4, 2021: FDX55 MZBZ-MPTO

28



28

World Pandemic

COVID Situation

- Display of:
 - The daily COVID-19 operational limitations report
 - Alternate aerodromes information
 - Airline and ANSP outlook for future air traffic operations
- Coordination regarding:
 - ATC-Zero events (ACC closures)
 - Vaccine Priority Flights
 - PASA Route Requests
- Push email notifications

29



29

World Pandemic

Information to stop the spread of COVID-19 from Eastern/CAR States/Territories

#	STATE/ TERRITORY	ENRTY RESTRICTIONS	PERIOD (yy/mm/dd/UTC)	REF./S
1	British Virgin Islands (BVI) - Tortola	TUPJ - Due to the COVID-19 pandemic, the Government of British Virgin Islands is prohibiting all flight operations into and out of the Terrance B Lettsome International airport with the exception of cargo, freight and medical evacuation flights. All exempted arriving flight crews, with the exception of those involved in a medical evacuation, shall remain in the immediate environs of their aircraft.	From: 2004221518 To: 2006011100	NOTAMR A0865 /20
2	Guadeloupe (FWI)	TFFR - Due to COVID-19 pandemic, aerodrome reserved for scheduled commercial aircraft, medevac and state aircraft. For non-scheduled commercial aircraft, 72hr Prior Permission Required (PPR). Call +590 690 57 92 55.	From: 2005051757 To: 2006121500	NOTAMN A0932 /20
3	Guadeloupe (FWI)	TFFR - Due to COVID-19 pandemic, aerodrome reserved for scheduled commercial aircraft, medevac and state aircraft. For non-scheduled commercial aircraft, 72hr Prior Permission Required (PPR). Call +590 690 57 92 55.	From: 2005051757 To: 2006121500	NOTAMN A0932 /20

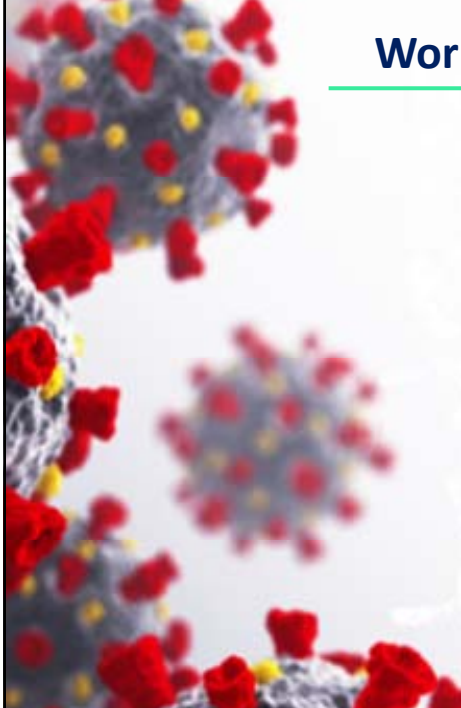
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30

World Pandemic

Alternate Airports






CADENA Update

Alternate Airports Available by ANSP

Updated: March 19, 2020 (1545 UTC)

Disclaimer: This update does not contain all pertinent NOTAM information. It represents summary information provided by the CADENA stakeholders as of this date and time.

		and domestic flights. Immigration limitations apply.
(NICARAGUA)	MNMG	Without any limitations.
(COSTA RICA)	MRLB, MROC	Available as alternate in case of emergency.
VENEZUELA		
BOGOTA	SKCL, SKRG, SKBQ	Only available for emergency.

Colombia is facing an airport capacity issue as the airlines are utilizing airport space to park their planes.




31

31

OIS BENEFITS - Operational Examples

La Soufrière Volcano in Saint Vincent and Grenadines

La Soufrière volcano began visibly active in December 2020, before a full-blown eruption on 9 April 2021



Event was Communicated via

- WhatsApp CADENA Ops Group
- CADENA OIS Urgent Advisories and the associated push email notifications
- CADENA Ops Group email notifications
- Weekly Operational Web Conferences
- Piarco ACC updates posted on the CADENA OIS



32

Key Points of Aviation Safety Campaign



- Regional Cooperation on time of Crises
- Better Prepared for Humanitarian Assistance and Response to Disasters

Regional stakeholder communication, cooperation, and information sharing prior to a time of crisis ... results in improved

- ✓ Disaster preparation
- ✓ Response time and delivery of humanitarian assistance

CADENA is ready and willing to collaborate with LAC region stakeholders who focus on humanitarian assistance and disaster response

35



35

Questions?

Thank You!



36