

Port Resiliency Program (PReP)

Final Report of Pilot Project at Juan Santamaria International Airport

San Jose, Costa Rica

24-25 August 2015

Ms. Dulce Boza
Executive Director
AmericasRelief Team

Dr. Jim Smith
Technical Director
Port Resiliency Program

Captain Ricardo Garcia
Exercise Coordinator
Port Resiliency Program

4 December 2015

Points of contact for further information:

General: Ms. Dulce Boza

Executive Director
AmericasRelief Team
tb@oaausa.org
+1 (305) 884-0441

Technical:

Dr. Jim Smith
PReP Technical Director
Smith-Woolwine Associates
jfsmith@smith-woolwine.com
+1 (540) 239-1206

October 19, 2015
DOA-300-15

Mr. James F. Smith, PhD, P.E.
Capt USNR (Ret)
President
Smith-Woolwine Associates Inc
Virginia, USA

Dear Mr. Smith:

We have the pleasure to manifest our satisfaction with PReP, for the interaction held on August 24 and 25 of this year, when we participated in the training offered by the AmericasRelief Team (ART), which aims to provide logistical support humanitarian and educational programs for victims of disasters in the Americas and develop sustainable programs that provide long-term benefits for the needy.

The table top exercise consisted of the analysis of a series of natural events that affect larger scale in airports, roads, hospitals and buildings in the metropolitan area, among others. Therefore, the participation of the governmental entities that make up the Emergency Committee of this International Airport, was essential to get valuable feedback and coaching, with international aid based approach, and in order that the Airport and institutions first emergency response strengthen their resilience.

The information received helped us a lot, and the comments of our national authorities were very satisfactory. In fact, we can say that our Emergency Plan included important information to be taken into account in a future emergency case.

Once more, thank you so much for your time, your resources and the expertise given. We would like to take this opportunity to ask that in a near future, our Juan Santamaria International Airport will be considered for another future training.

Best regards.

Atentamente,



Juan Belliard
Director de Operaciones y Seguridad

Port Resiliency Program (PReP 2.0)

Final Report for Juan Santamaria International Airport

San Jose, Costa Rica

Introduction

Purpose

The Port Resiliency Program (PReP) prepares airports in Caribbean and Latin America to be more resilient in face of natural disasters by applying lessons learned in Hurricane Katrina and the Haiti earthquake. PReP's focus is on support for essential employees and their families, rapid damage assessment and repair, interagency cooperation, and mutual aid. AmericasRelief Team, a nongovernmental organization, is the program's initiator.

PReP 2.0 as delivered in San Jose, Costa Rica, incorporates the changes and enhancements made to PReP as a result of the pilot project performed at Las Americas International Airport, Santo Domingo, Dominican Republic, in February 2013.

Approach

PReP 2.0 uses a three-step process:

- (1) Initial self-assessment by the airport using materials provided by PReP
- (2) Site visit to present targeted training to enhance the preparedness of the airport
- (3) Table top exercise based on airport's hazard assessment to assess learning outcomes

Commitment to Continuous Improvement

AERIS (the operator of Juan Santamaria International Airport), PReP, AmericasRelief Team, and the sponsors are fully committed to the continuous improvement process. Every step will be subjected to self-evaluation and external evaluation, and the findings will be used to improve the program.

Sponsors

FedEx is the primary sponsor of PReP with Miami-Dade Aviation Department (Miami International Airport) and Smith-Woolwine Associates as additional sponsors.

Selection of Site

AERIS requested PReP for 2015. Merida International Airport in Mexico will be the second airport served in 2015.

Participants

The participants in the training and table top exercise on 24-25 August 2015 are listed in Appendix A. Altogether, 74 individuals representing ___ organizations participated.

AERIS participants were Mr. Juan Belliard (Director of Operations), Ms. Adriana Boza (Operations Analyst and liaison for PReP), Mr. César Tello (Operations and Security Manager),

Ms. Yeseny Méndez (Terminal Services Supervisor), Ms. Kattia Boza (Cargo Facilities Chief), Mr. Yader Montenegro (Badging Office Coordinator), Mr. Luis Torres (Certification & Safety Management System Coordinator), and Mr. José Arias (Signage & Administrative Support).

The PReP Team consisted of Ms. Ms. Dulce Boza (ART), Dr. Jim Smith (Smith-Woolwine Associates), Capt. Ricardo Garcia (Miami-Dade Fire Rescue – retired), and Mr. Nelson Mejias (Miami-Dade Aviation Department).

Process

Self-Evaluation

Working together, the airport’s liaison to PReP and the PReP technical director did the self-evaluation of the airport’s plans and procedures for dealing with emergencies and disasters. The tool was an Excel-based PReP 2.0 Self-Assessment Packet. The packet contained seven checklists and worksheets:

1. Existing Plans Checklist
2. Hazard Inventory Checklist
3. Vulnerability Analysis (Risk Analysis) Worksheet
4. Airport Emergency Plan (AEP) outline
5. Partner and Stakeholder Identification Worksheet
6. Inventory of Emergency Equipment for Response and Recovery
7. Airport Emergency Post-event Recovery Practices Checklist (from Smith, Kenville & Sawyer, 2015, ACRP Synthesis 60)

Analysis of the completed checklists and worksheets was done by the airport managers and staff. Questions, which were few, were directed to the PReP technical director.

Training

Ten and a half hours of training were presented by the PReP Team. One topic of great interest to the participants—the airport’s volcanic ash contingency plan was presented by Mr. Belliard. Topics presented were

1. Meaning of “resilience”
2. Command and control during emergency response and recovery
3. Local mutual aid arrangements
4. Airport-to-airport mutual aid
5. Alternative communications in emergencies
6. Post-event recovery procedures
7. Pre-contracting for response and recovery services
8. Rapid engineering assessment/damage assessment
9. Prioritizing services to recovering airport
10. Coordinating commercial recovery and humanitarian operations
11. Support for essential employees and their families
12. Stranded passenger procedures
13. Juan Santamaria International Airport’s Volcanic Ash Contingency Plan (Mr. Belliard, PowerPoint available from AERIS)

The training materials are available from Dr. Smith.

Table top exercise (TTX)

Captain Garcia designed and led the table top exercise. Mr. Belliard and Ms. Boza of AERIS requested that the scenario include volcanic ash and an earthquake. They also passed on the wishes of national agencies for the TTX to include surface traffic disruptions and other features of a major national disaster. Captain Garcia's PowerPoint with the entire TTX appears as Appendix B.

For the exercise, the group was divided into groups at separate tables:

- Administracion de Aeropuerto (Airport Administration)
- Operaciones de Aeropuerto (Airport Operations)
- Aerolíneas (Airlines)
- Comisión Nacional de Emergencias (National Emergency Management Comision)
- Grupos de Primera Respuesta (First Responder Groups)
- Recursos 1 (Resources 1)
- Recursos 2 (Resources 2)

The level of interactions among the participants was very high. The TTX lasted about five hours.

Outcomes

The Preparedness of the Airport and Its Partners

The self-evaluation, discussions during the training, and the results of the TTX indicate that Juan Santamaria International Airport is overall very well prepared for natural disasters. Furthermore, the relationships between the airport and Costa Rican national agencies are strong and productive, as are relations with the airlines and cargo carriers at the airport. The informal agreement between Juan Santamaria International Airport and Liberia International Airport is promising, especially should a major regional disaster befall either the west coast (e.g., a Pacific hurricane) or the central and eastern region of Costa Rica (e.g., a Caribbean hurricane, volcanic eruption, flood, or earthquake).

Many unanticipated questions arose during the TTX discussions. The triggers for these questions and the issues raised as well as possible solutions are presented in Appendix C – Lessons Learned from the TTX.

The primary conclusion is that Juan Santamaria International Airport is very well prepared to respond to and recover from natural disasters. The airport appears to be highly resilient. The major challenges involve surface traffic access during emergencies and criteria for saying that the runway can be reopened after volcanic ash removal.

Evaluation of Training and TTX

The training and the table top exercise were evaluated by the participants themselves. In general, the evaluations ranged from good to outstanding, with the median rating as highly valuable/very good. The intensity of the training and TTX were viewed favorably as was the nature of training

topics presented. The participants liked the informal nature of the sessions, especially the free-flowing discussions.

Overall PReP 2.0 Program

The changes made to PReP as a result of the pilot project were verified as being practical and effective. PReP 2.0 is ready to deliver to Merida International Airport in December 2015 and at other airports in the Caribbean and Latin America in 2016 and beyond.

Cost data for delivering PReP in Costa Rica are given in Appendix D. The in-kind match by AERIS and Juan Santamaria International Airport was 15 percent of the total cost.

Acknowledgments

AmericasRelief Team and the PReP Team wish to thank the ART Board of Directors and FedEx Corporation for their unstinting support as PReP has been developed over the past three years. Credit also goes to the other organizations that have given financial or in-kind assistance: AERIS, Miami-Dade Aviation Department and Miami International Airport, and Smith-Woolwine Associates. The ART staff made the arrangements and did the translations. Ms. Adriana Boza handled coordination with Juan Santamaria International Airport. AERIS, especially Mr. Belliard and Ms. Méndez extended wonderful fellowship and hospitality during the site visit to San Jose.

Appendix A – Participants during Training and Table Top Exercise, San Jose, Costa Rica, 24-25 August 2015

Organization	Number of Participants
Aduanas	1
AERIS	7
ART/PReP	4
Avianca	3
Bomberos	2
CCSS	1
Comisión Nacional de Emergencias (CNE)	5
CORIPORT Aeropuerto Liberia	2
Cruz Roja Costarricense	3
Dirección General de Aviación Civil (DGAC) Accidentes e Incidentes	2
DGAC Aeropuerto Daniel Oduber Quirós	1
DGAC Aeropuerto Tobías Bolaños	1
DGAC ATC AIJS	1
DGAC ATC Liberia	1
DGAC AVSEC-FAL	1
DGAC Coordinación Aeropuertos	2
DGAC Dirección	1
DGAC Navegación Aérea	4
DGAC Navegacion Aérea	1
DGAC Navegación Aérea - ATC AIJS	1
DGAC Navegacion Aérea - Gestor CNS	1
DGAC Navegación Aérea - Gestora Calidad	1
DGAC Navegación Aérea - Radar AIJS	1
DHL	2
DIS	2
DUE K-9	1

Organization	Number of Participants
Juzgado Penal Alajuela	1
Ministerio de Agricultura (MAG)	1
OFGI	1
Organismo de Investigación Judicial (OIJ)	1
Observatorio Vulcanológico y Sismológico de Costa Rica (OVSICORI)	1
Recope (Fuel Provider)	1
Salud Area Rectora de Salud de Alajuela 1	1
Servicio de Vigilancia Aérea (Policía Aeroportuaria)	10
Tampa Carguera	1
Tránsito	1
UEI	1
Unidades Especiales DUE	1
United Airlines	1
Grand Total	74

Appendix B – Table Top Exercise



OBJECTIVE

- To strengthen the resistance of Juan Santamaria International Airport to a disaster of national magnitude.
- To evaluate the preparation and resilience of the airport, identifying gaps in resources, determining capacity limits, and resolving conflicts in operation and coordination.

EXERCISE GUIDE

- This is an low stress, open discussion, non-retribution environment, encouraging different points of view, and understand disagreements may exist.
- Your answer should be based on your knowledge of your current plans and capabilities (for example, only use existing resources) and knowledge derived from this exercise.

EXERCISE GUIDE (cont.)

- The comments may not reflect the official position of your organization on a given topic. This is an opportunity to discuss and present multiple options and possible solutions.
- The exercise will be used by airport management and other participating institutions, to further develop further concepts of airport resiliency.

EXERCISE ORGANIZATION

The exercise is divided into four stages:

- Before event impact.
 - Approximately 8 months before impact.
 - 2 weeks before impact.
 - 1 week before impact
- First 48 hours after event impact.
- 72 hours after event impact.
- One week after event impact.

Note: The scenario uses notice and no-notice events — that is, no advanced warning of some of the events will occur.

EXERCISE ORGANIZATION (cont.)

The room is divided into four types of tables

- National Government Group
- Airport Executive Group
- Airport Operations Group
- Airlines/Private Sector Group

Select a table spokesperson.

Work as a team, as you would in a real situation.

EXERCISE ORGANIZATION (cont.)

We will present a situation, after each “What do I do” slide discuss the situation within your group, and:

- Determine priorities
- Actions to be taken
- With whom and how to coordinate
- Required resources and how to acquire them
- Identify problems encountered and possible solution



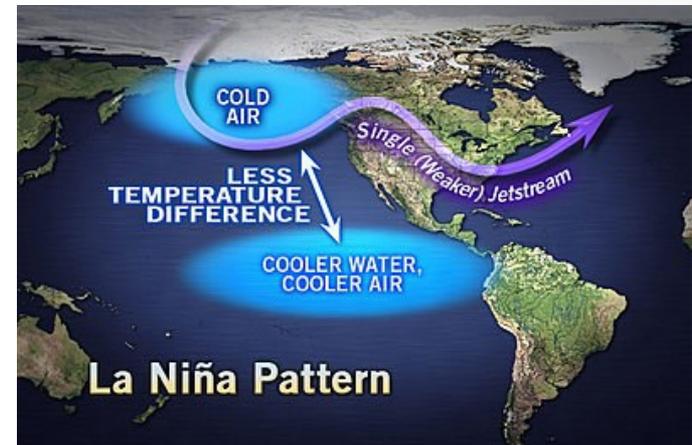
Write you conclusions on the chart paper and have your spokesperson present them to the whole room.

Relax

January of this Year

The Comisión Interinstitucional para el Estudio del Fenómeno El Niño-Oscilación del Sur (COENOS) del Instituto Meteorológico Nacional (IMN) in consultation with international meteorological institutions are predicting the beginning of a strong cycle of “LA Niña”, which will be in its most intense phase in the last six months of the year.

Historically a strong “la Niña” phase during those months causes heavy rains and subsequent flooding in the Pacific zones and the Central Valley.



What do I do?



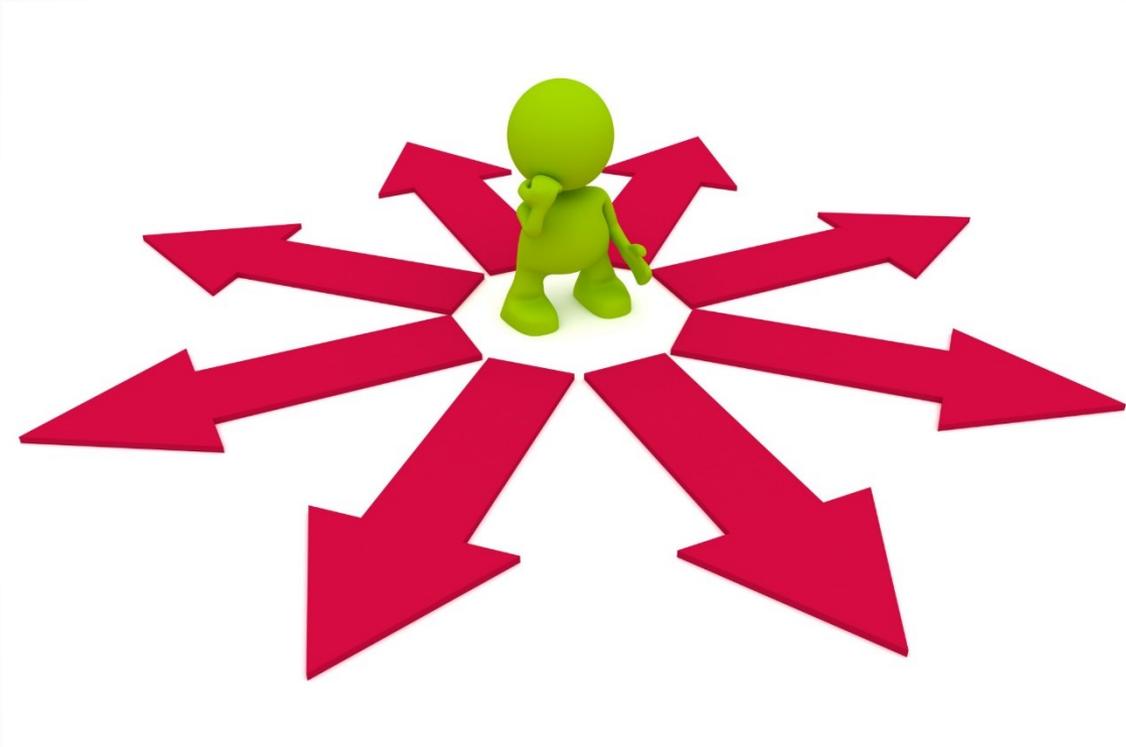
Two Weeks Ago

The Comisión Nacional de Emergencias de Costa Rica reports: 25 dead, 1600 persons in 27 shelters, 1200 persons sheltering with family, 70,000 people indirectly affected, on a national level 34 of 81 counties affected, 117 communities reporting damages, 18 bridges collapsed y 58 roads with problems.

The Instituto Meteorológico Nacional informed that in one evening they received the average rainfall for the month, which saturated the ground and caused the mud slides.



What do I do?



One Weeks Ago

The Turrialba volcano continues to show activity in its temperature, seismic activity, off gassing, and small eruptions. The Comisión Nacional de Emergencias (CNE) is maintaining the Yellow Alert, and restricting the Access to the Volcán Turrialba National Park.



What do I do?



Today Thursday

0800 Hours

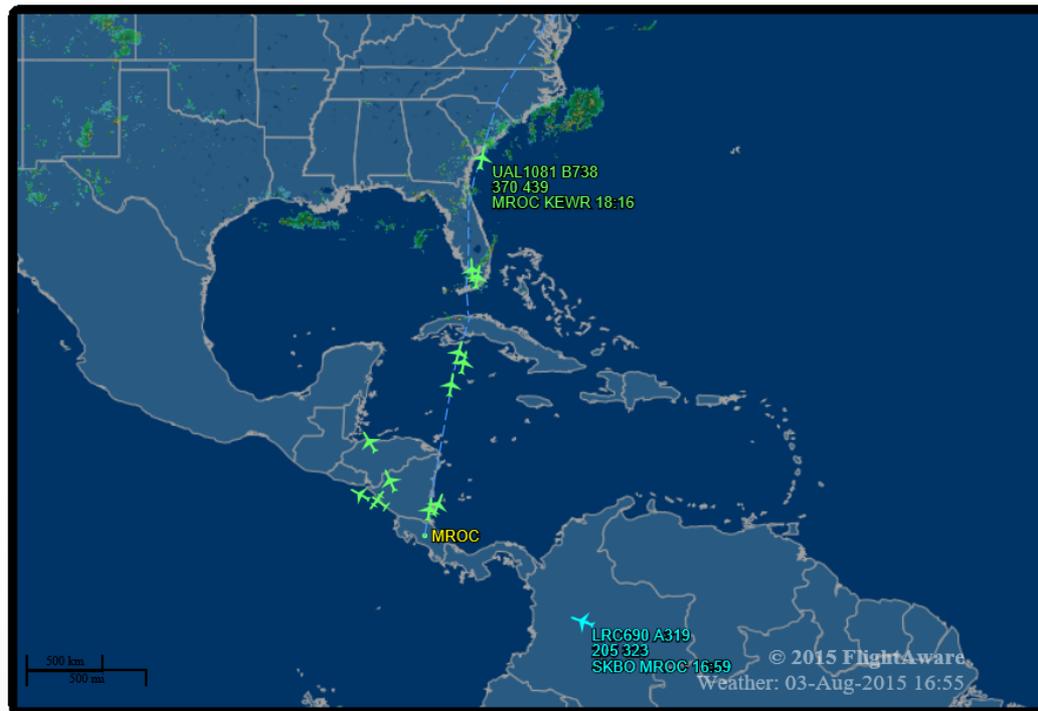
First clear day after one month of heavy rains.





- Wind 090 (East) at 20 Km/h
- Visibility over 15 Km
- Clear skies
- Runway 07 in operation

- Four flights have arrived in the last two hours and are clearing immigrations and customs.
- Four flights have just landed and are taxiing to gates.
- 13 flights are scheduled to arrive within the next two hours.
- 22 flights are scheduled to depart in the next three hours.



RED ALERT

An alert is received from the CNE. The Turrialba volcano has erupted again today, with seismic activity and an ash column over 1 km high, the winds are expected to push the ash cloud over the airport, and ash will start falling within one and half hour.



0804 Hours

ARRIVALS



LRC 1023 (E190) Tamarindo, Departed Thu 06:43 CST, Arrives Thu 07:33 CST
CMP 392 (B737) Guatemala, Departed Thu 06:18 CST, Arrives Thu 07:39 CST
DAL 1388 (B752) Los Angeles, Departed Thu 01:30, Arrives Thu 07:39 CST
LRC 1053 (E190) Liberia, Departed Thu 07:00 CST Arrives Thu 07:45 CST
RPB 536 (E190) Panamá, Departed Thu 07:52 EST Arrives Thu 07:53 CST
CMP 536 (B737) Panamá, Departed Thu 07:52 EST Arrives Thu 07:53 CST
IBE6 313 (A345) Madrid, Departed Thu 05:56 CEST Arrives Thu 07:55 CST
LRC 1033 (E190) Golfito, Departed Thu 07:06 CST Arrives Thu 07:56 CST
ICL 311 (DHC6) Tamarindo, Departed Thu 07:25 CST Arrives Thu 08:16 CST
CMP 163 (B737) Managua, Departed Thu 08:06 CST Arrives Thu 08:50 CST
ICL 131 (DHC6) La Managua, Departed Thu 08:30 CST Arrives Thu 08:52 CST

ARRIVALS (cont.)



LRC 1081 (E190) Tambor, Departed Thu 08:22 CST Arrives Thu 08:54 CST
AVA 697 (A320) Bogotá, Departed Thu 08:05 COT Arrives Thu 08:57 CST
CMP144 (B738) Panamá, Departed Thu 09:06 EST Arrives Thu 09:05 CST
LRC1003 (E190) La Managua, Departed Thu 08:38 CST Arrives Thu 09:05 CST
LRC1005 (E-190) La Managua, Departed Thu 08:50 CST Arrives Thu 09:17 CST
LRC 697 (A319) Bogotá, Departed Thu 08:05 COT Arrives Thu 09:25 CST
AVA 718 (A320) Panamá, Departed Thu 09:25 EST Arrives Thu 09:26 CST
AVA 641 (A320) Guatemala, Departed Thu 08:05 CST Arrives Thu 09:26 CST
JBU 39 (A320) Ft. Lauderdale, Departed Thu 08:24 EDT Arrives Thu 09:37 CST
AVA 671 (A320) San Salvador, Departed Thu 08:50 CST Arrives Thu 09:58 CST

DEPARTURES



- LRC 1004 (E190) La Managua, Departs Thu 08:10 CST
- DAL 1396 (B757) Los Ángeles, Departs Thu 08:12 CST
- AAL 2436 (B738) Dallas, Departs Thu 08:25 CST
- CMP 392 (B737) Panamá, Departs Thu 08:31 CST
- ICL 316 (DHC6) Tambor, Departs Thu 08:35 CST
- RPB 536 (E190) Guatemala, Departs Thu 08:46 CST
- CMP 536 (B737) Guatemala, Departs Thu 08:46 CST
- LRC 1070 (E190) Palmar Sur, Departs Thu 09:25 CST
- LRC 1082 (E190) Tambor, Departs Thu 09:25 CST
- CMP 144 (B738) Tegucigalpa, Departs Thu 09:51 CST
- JBU 38 (A320) Ft. Lauderdale, Departs Thu 10:09 CST

DEPARTURES (cont.)



CFG 3235 (B767) Santo Domingo, Departs Thu 10:10 CST (Delayed)

AVA 696 (A320) Bogotá, Departs Thu 10:20 CST

LRC 1006 (E190) La Managua, Departs Thu 10:45 CST

LRC 716 (E190) Managua, Departs Thu 10:47 CST

LRC 1058 (E190) Tamarindo, Departs Thu 10:47 CST

AVA 699 (A320) Panamá, Departs Thu 10:50 CST

ICL 420 (DHC6) La Fortuna, Departs Thu 11:05 CST

UAL 1081 (B739) Newark, Departs Thu 11:30 CST

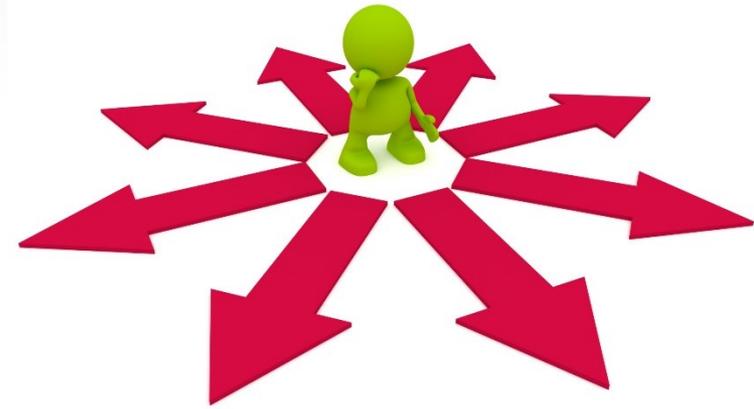
IBE 6314 (A345) Madrid, Departs Thu 11:25 CST

CMP 163 (B737) Panamá, Departs Thu 11:32 CST

ICL 334 (DHC6) Tambor, Departs Thu 11:45 CST



What do I do?



- Who and how do we evaluate conditions?
- What do we do with the passengers who are boarding and deplaning?
- What do we do with arriving and departing aircraft.
- Do we allow the flights ready for push-back to depart or we deplane?

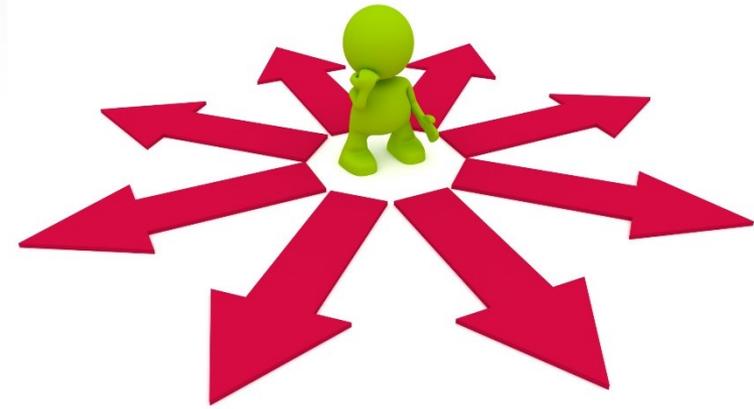
RED ALERT (cont.)

Ash has continued to fall, but the rain that had stayed away for a week has now returned, and a slight drizzle is falling.



1130 Hours

What do I do?



- Who and how do we evaluate the new conditions?
- How does this change our previous evaluations?
- What do we do with the passengers who are still at the airport?
- How do we change our work plan?

An earthquake with high intensity and long duration is felt at the airport.

1700 Hours

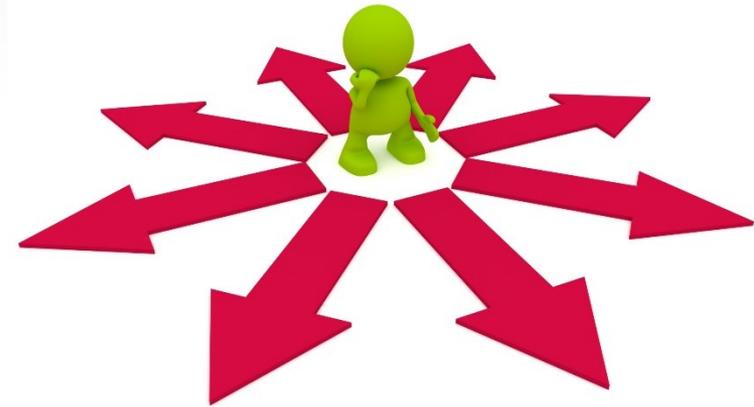


1705 Hours

- Several people searching for a secure area after the tremor, report that they saw smoke and flames coming from the area of the emergency electric generator.



What do I do?



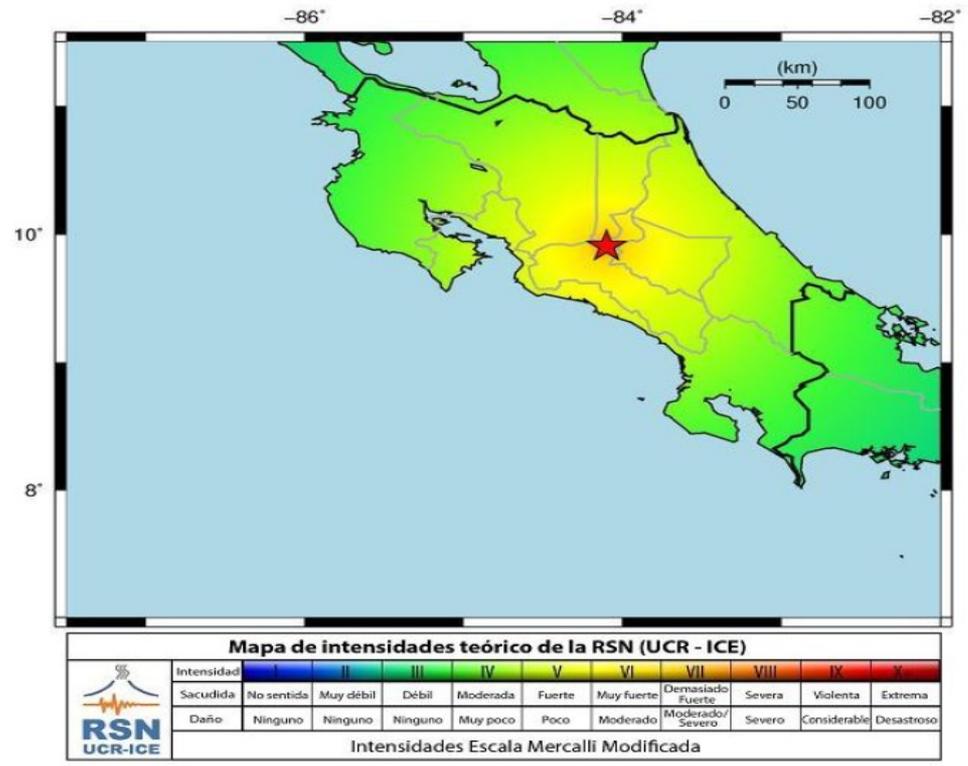
- What do we evaluate now?
- How does this change our previous evaluations?
- What do we do with the passengers who are still at the airport?
- Do we evacuate the terminal?
- How do we, again, change our work plan?

CURRENT SITUATION

The Red Sísmica Nacional informed that the earthquake occurred at:

- Local Time = 16:59
- Magnitude = 6.6 Mw
- Location = Alajuelita, San Jose
- Depth = 7 Km
- Latitude = 9.904° N
- Longitude = 84.102° W
- Intensity = VII MM

**1710
Hours**



CURRENT SITUATION (cont.)

- 25 % of the country has no electric energy.
- Distribution is not consistent.
- Those who have electricity are receiving limited information from radio, television and internet.
- Cellular service is spotty and there is no signal at the airport.
- There are reports the tremor has caused numerous land slides.

CURRENT SITUATION (cont.)

Airport Situation Reports:

- There is no external electrical power.
- Slight damage to the control tower.
- Runway and taxiway lights non operational.
- The runway appears to have suffered no damage.
- NAVAIDS are inoperative.
- Moderate damage to the terminal.

CURRENT SITUATION (cont.)

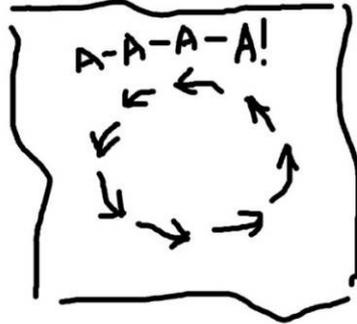
- The emergency electric generator that supplies emergency electrical power to the terminal is on fire. The power is out in the terminal and only battery powered emergency lights are on.





IT'S GOING TO GET DARK

PLAN OF EVACUATION



CURRENT SITUATION (cont.)

- While the damage is being assessed a flight due to arrive declares an emergency and requests to land in San Jose. The nature of the emergency is unknown.



What do I do?



- Which agency receives the information?
- Who and how is it disseminated?
- Is the information coordinated and contain same instructions?
- What plans do we have in place?
- Do we have alternate evacuation plans and routes?

CURRENT SITUATION

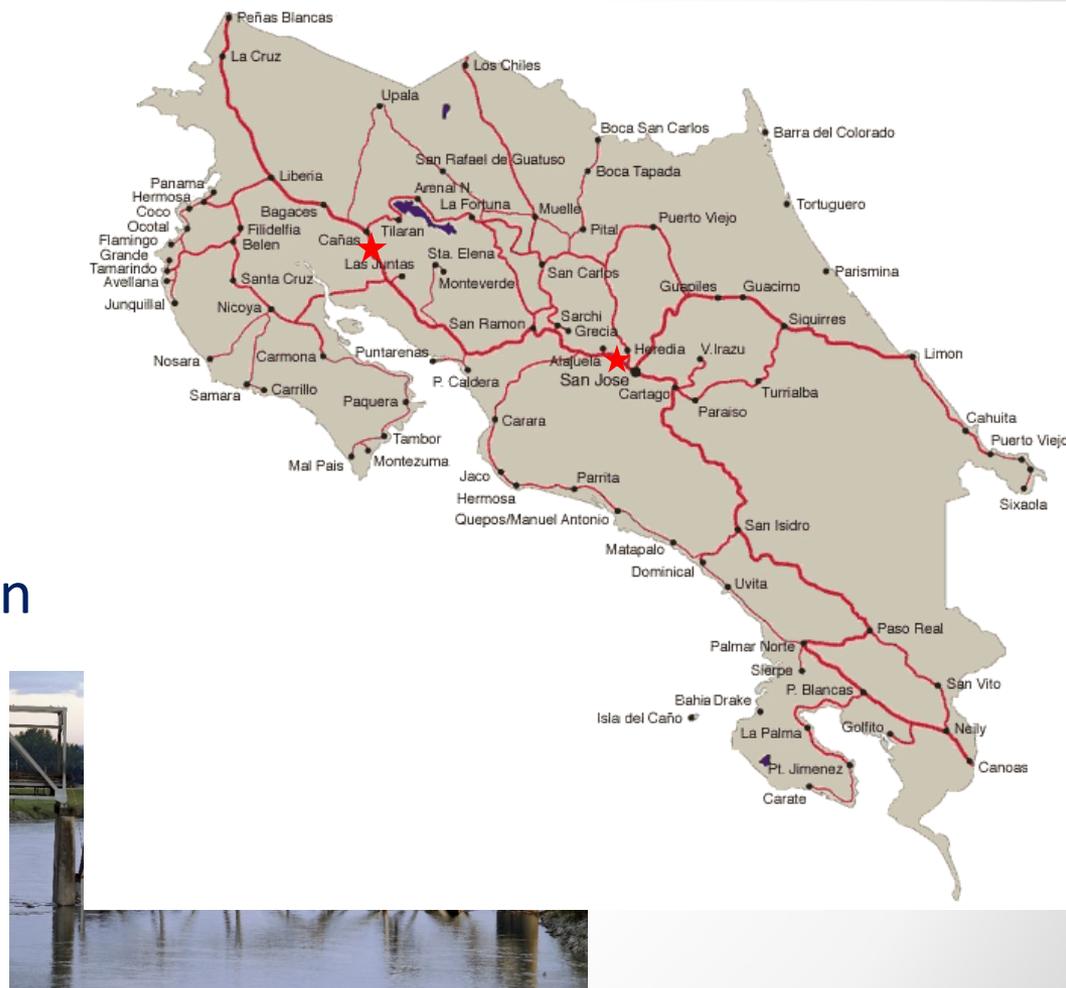
Situation Reports:

- Some districts are reporting collapsed buildings, with varying degrees of damage.
- People asking for medical help, and assistance in rescuing trapped family members and friends.
- La Guacima, Atenas and Santa Ana are reporting land slides with multiple trapped victims



CURRENT SITUATION (cont.)

- The bridge over the Abangares River in Guanacaste has collapsed cutting the Pan American Highway.
- The bridge over the Virilla River in San Jose has structural damage.
- There is no estimates yet on when repairs can be made or alternate routes set up.



CURRENT SITUATION (cont.)



- Little or no electrical, radio, and cellular service.



CURRENT SITUATION (cont.)

- Streets and primary roads blocked by collapsed buildings, and debris.
- Two overpasses on the Pan-American Highway, just north of the airport have collapsed and are blocking the highway, compromising fuel delivery from La Garita.
- Highway 27 is blocked by a landslide.



CURRENT SITUATION (cont.)

- The fuel lines from La Garita and Ochomongo tanks farms to the Central Valley have structural damages and fuel distribution has been interrupted.
- Several hotels in the metropolitan area are reporting structural damage and are closing their doors.
- Some hospitals in the Central Valley are also reporting structural damages.
- The morgue has collapsed due to the high volume of dead bodies.

What do I do?



- How do I get there?
- How do we communicate?
- What are my backups?

CURRENT SITUATION (cont.)

Airport Situation Reports:

- There are no life threatening injuries to passengers and personnel.
- But three deaths due to medical causes, heart attack, diabetes, hypertension, have been reported..
- Two passengers are reporting the death of their pets and want to travel back home with their remains.

CURRENT SITUATION (cont.)

- Many passengers are seeking shelter in the terminal.
- The on-shift personal is worried about their families and would like to go home.
- The earthquake has affected the whole nation, the damage is on a national level.



What do I do?



- How do we support our staff?
- How do we restore services?
- How do we remove the debris and trash?
- How do we evacuate civilians?
- What is the status of water, basic services, food, shelter?

CURRENT SITUATION

- The runway, taxiways, and ramp have been cleared, but the parking spots for planes are still covered with ash.
- The Tower and NAVAIDS are fully operational.



CURRENT SITUATION (cont.)



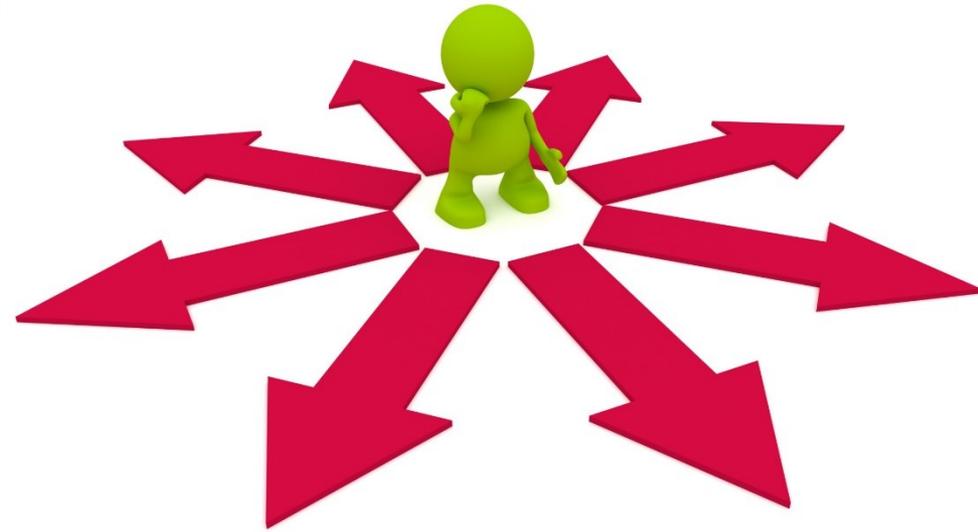
- Military flights with humanitarian assistance and urban search & rescue (USAR) teams are starting to arrive.

CURRENT SITUATION (cont.)

- Passengers have been evacuated by land and some by air.
- Only one third of the personnel has reported for work.
- Fuel distribution is strained, too much demand not enough deliveries.



What do I do?



- How do we provide relief to the staff?
- How do we manage operations with reduced services?
- How do we provide support to families?

CURRENT SITUATION

- All routes are now open.
- Electrical power has been restored.
- Runways, taxiways, ramp and parking spots are operational.
- Fuel deliveries are normal, but demand is very high.

One Week Later

CURRENT SITUATION (cont.)



- There is a large amount of humanitarian assistance flights.
- There are many unfamiliar aircraft operating from the airport.

CURRENT SITUATION (cont.)

- There are large quantities of humanitarian assistance goods stored at the airport.



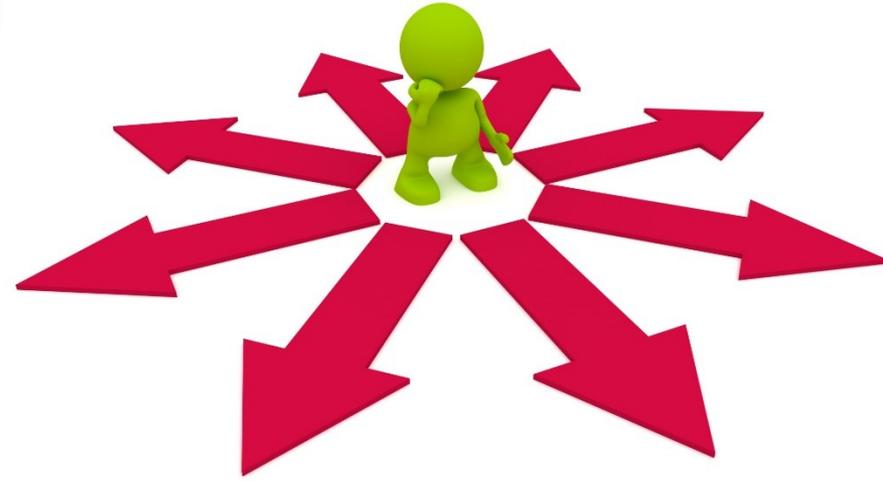
CURRENT SITUATION (cont.)



- The airlines want to reestablish commercial flights.



What do I do?



- The airlines want to fly immediately.
- How do we handle the demand for increased operations?
- How do we handle the competition for our services?
- Evacuations, public relations, disaster tourists etc.

HOW DID WE DO?

Self-Evaluation: Please use the questionnaire provided to comment on the things that work and what needs to improve, for the following points:

- Airport Emergency Plan
 - Organizational structure, number of personnel, procedures, and annexes
- Communications, internal and external
- Coordination, internal, and with governmental and private entities
- Sufficiency and safety of the personnel.
 - Shelter, food, water, medical care, and rest periods
- Sufficiency and acquisition of additional resources

HOW DID WE DO? (cont.)

Evaluation of the TTX: Please use the questionnaire provided and comment on the things that

- You liked in the TTX?
- You disliked in the TTX?
- How we can improve the usefulness of the TTX?
- How we can improve the learning value of the TTX?



THANK YOU!



Airport Resiliency,
Table Top Exercise

Appendix C – Lessons Learned from TTX

8 months before: prediction of a strong La Niña cycle with associated extreme rain events.

Although the meteorological community is well aware of cyclical events like El Niño and La Niña, and they notify the emergency response institutions. The airport and their stakeholders need to be plugged into the system to allow them to take precautionary measures.

2 weeks before: mudslides, collapsed bridges and roadways, many injured and dead.

Localized emergencies in other parts of the country can affect the airport operations, with increased passenger traffic and disruption of the timely arrival of passengers at the airport. Proper warning, such as allowing additional travel time, need to be given to the passengers to assure their timely arrival and check-in.

The arrival and departure of family members of the injured and deceased can also pose problems for both the airlines and airport operator. These passengers might need especial emotional support and handling, so coordination needs to exist between the governmental agencies and the airport to identify these passengers.

1 week before: Turrialba volcano shows increased activity with possible eruption.

This information needs to be widely disseminated to the airport stakeholders so that preventive measures such as:

- Safeguarding equipment from ashes.
- Major cleaning equipment rental contracts and availability is confirmed.
- Sufficient personal protection equipment is on hand or easily procured.
- Alternate routes for approaches and departures are identified.
- Alternate airfields for arriving flights, which will not be affected by a volcanic events, are identified.
- Passenger diversion schemes are in place and reviewed in case they are needed.

Red Alert: the volcano has erupted and ash will start falling in 1 ½ hours.

The airport has a strong volcanic ash response plan and has learned and applied many lessons from previous events. Some improvements were identified, such as enlisting the assistance of the Hotel industry to keep their departing passengers at the hotel or arrange for lodging at other hotels if necessary. The hotel can be the point of information for their guests, if provided accurate information from both the airport and stakeholders, and the CNE.

Red Alert continues: a slight rain has started to fall wetting the fallen and falling ash.

Airport infrastructure needs to be reevaluated in light of the increased roof loads that wet ash would impose.

The ash response plan does not encompass a wet ash event and needs to be expanded to cover this very real eventuality. Additional protection schemes for operational equipment which would be damaged by hardening wet ash needs to be contemplated.

Vehicular movement needs to be reconsidered in view of the very dangerous slippery road conditions.

Earthquake: while responding to the volcanic event a major earthquake strikes.

The structural integrity of the response installations needs to be evaluated, having to evacuate the terminal, and the Operations Coordination Center (CCO, in Spanish) would severely complicate the recovery of the airport from both ash and earthquake events, alternate installations need to be identified in case the CCO needs to be relocated.

A fire in the generator room is identified during evacuation.

A prompt realistic evaluation of events of this type needs to be undertaken immediately, since outside assistance would be severely restricted post major earthquake.

Although the airport has dual electrical grid feeds, decentralized backup generators for different areas of the terminal and tower, and UPS for additional backup. There is no backup for the switching systems and there are no bypasses for these switches in case of failure or a way to reroute power from one functioning generator to a malfunctioning generators area of coverage.

In an event of national magnitude everyone and specially the airport needs to be self-sufficient in its everyday needs, not just fuel, for at least 72 hours and longer if feasible. Outside assistance will be severely restricted.

72 hours to one week later: Long term operations with increased demand, unusual aircraft, and increased storage at the airport of humanitarian assistance.

Costa Rica has a strong plan for soliciting and receiving assistance post disaster. The airport has to contend with the need to provide operational space for the various institutions that receive, dispatch and coordinate these assistance; goods and people.

Assistance is also affected by cargo arriving in commercial flights which might not be regulated by the national plan. This cargo might be as important as the humanitarian assistance, since many private entities will be reconstructing their installations outside of governmental channels. There is also the chance that unneeded and unwanted goods are shipped via private cargo bypassing the governmental controls and complicating the storage and distribution capacity of the airport.

Appendix D – Detailed Evaluation Comments on Table Top Exercise

PReP English

1. Answers

- a. 8 part of the time
- b. 31 most of the time
- c. 12 all the time
- d. 1 not sure

2. Comments

- Inventory of available resources
- Catea Air Emergency Technical Advisory Committee
- Lack detail in specific emergency situations or assignment of responsibility
- Updating existing and improvements in other areas not covered
- Accessibility, communications
- Unify procedures
- Even short of logistical support tasks
- institutions will involve more
- Lack of adequate resources and protocols for emergency
- Training staff
- There are insufficient

3. Most important strengths of the plans

- Resource Cooperation
- Emergency Capacity annealing
- Interact and reach a mutual agreement
- Filter ideas, plans, procedures for an emergency
- Confidence among operators, authorities
- Institutional coordination
- Good vision of what a disaster
- The individual strengths found
- Standard
- Detailed
- Updated
- Links exist
- There is coordination between institutions
- There are good amount of technology
- Assignment of responsibilities
- clear understanding of the participants
- What are realistic and achievable plans
- The interagency communication
- Establishment immediate command post

- Plan immediate attention of victims
- Resources should be checked to establish and adjust our plans
- ground passenger transportation
- aid Flights
- Communication
- Coordination
- Protocols
- Logistics
- Food and staff rotation
- The lack of planning
- Improve existing equipment
- making it more difficult when there are so many descriptions
institutions involved
- Coordination between involved
- Constant updating plan
- Communication
- Advance preparation
- Actions to restore service
- Cooperation
- Coordination
- Attention
- Planning
- Establish contingency plans
- Revision of emergency plan
- constant and accurate information (reliable)
- Existence of standard procedures to follow in case of such a
situation
- Inventories of what we have
- Resource Management Plan
- Lack of call center
- Good resources
- Good communication
- Prevention, Preparation
- Coordination
- Update plans
- Exercises
- Socialization
- Communication
- Recovery airports
- Commitment of different directions

- Inductor in addressing these situations
- Ability to care for emergency short plans
- The protocols established by each institution
- Implementation
- C.O.E.
- C.N.E
- Coordination
- Your application
- CCO
- Agreements among all units
- Contingencies
- Communication
- People Management
- Recovery of the airport
- Communication
- Risk measurement
- Planning for future emergency events
- appropriate communication systems
- multisector cooperation
- Communication
- Assistance food, basic services
- Streets vehicle
- All institutions speak one language
- information Dysfunction
- Require improvements and adjustments
- Communication
- Expansion of the existing plan
- Safety standards

4. The most important weaknesses of the plans

- There should be a single direct communication of what s elbow in emergencies
- Better planning
- Inter-agency coordination
- Current scope of the emergency plan
- No plan if in case of lack of fuel at the airport
- Communications
- Assistance to passengers with family
- Statement alert firemen part
- Better planning prevention
- Lack of information on the plans of other institutions

- Communications
- Information management
- Ignorance of the functions of each institution is
- All decisions
- The lack of supplies in storage for the care crisis
- To agree to actors
- Maximize resources
- Lack of medical communication
- Alternative Frequencies
- unforeseen contingencies
- Controls on time
- Lack of infrastructure
- Community Help
- Diversity of institutions
- separated entity Protocols
- Lack of speaking the same language or know the procedures
- Lack of capitation
- alternate plans in case of technological failures
- Appeal to address situations that are located on the site
- Having the ability to achieve operating address these situations
- Coordination between the institutions involved
- Knowledge of procedures
- Help employees to not abandon posts
- Lack of unity of firefighters to structures
- Lack resources
- Do not regularly updated
- Political Party
- Lack of knowledge of the plans
- Contingency plans
- Coordination with stable institutions
- That all entities consistently manage
- Operational plans
- Lack of call center
- Lack of response
- Lack of natural disasters simulators
- Recovery of personnel who worked to this airport
- Resource Management Plan
- Failure to define actions
- Long line in making decisions
- Government

- Airport
- Media
- Support communications
- Plan you continue by closing roads
- Accessibility
- Put in writing all kinds of example to learn better
- Be proactive
- Lack of resources, materials
- A single terminal area in our country for aircraft
- Lack of resources to care for passengers
- Lack of knowledge on the part of all participants
- Constant updating and publication
- Scope of procedure, sometimes one area is limited
- There are communication problems
- Missing some interagency agreements
- Lack of resources
- Not all those involved know
- Almost no training
- Communication (poor and outdated)
- Planning
- Coordination
- Having written all procedures and that is not all
- Disseminate all existing plans
- consider such complex situations as sight analyzed to improve the plan

5. On the basis of the TTX, I would recommend the following changes,

- Make / simulate make a small airport where all participate
- prompt review of the current plan to update it
- Make evacuation drill terminal
- Improved institutional coordination
- Preparation sufficient time
- A plan formed to plan more together
- Exercises table to take more constant confidence
- More exercises / simulations
- A single communication channel area
- Having a spokesman in the press
- Have a better plan official assistance to families and victims
- communication instruments or contingency
- Help engine when attention of officials and families
- Inclusion of structural units in fire

- Improve communication equipment only
- Consider the need for incident response team
- Training in incident command system
- Document all procedures
- Greater transparency in the reality of the plans
- Link between NEC and airport
- Have available frequencies
- Have alternative communication channels to not saturate
- Few people in decision-making
- More simulate in table
- Consolidate the plan changes
- Better support admitted
- Prioritize response to emergency
- Management Plan
- Add a call center
- An annual simulate natural disaster
- Program all participatory coaches in preventive action plans and participation during the emergency
- Review of the joint procedures with disasters between national
- Improve legislation
- They should be more realistic and built collectively
- Be active
- The subject is incorporated Technologic
- To train more staff to deal with such events.
- Improve communication systems
- Establish plans that adhere to the country's reality
- Rating needs permeant way
- Unification of the objectives during and after.
- Train staff
- Practice the procedures
- Draw it
- The communication
- Training
- More redundancies
- alternate communication equipment
- Write everything we do
- Do everything we write
- In forming the CCO to be the people who decide
- Publication of proceedings in a website
- What procedures familiar instructions

- Implementation of the scope of the current plan
 - preimplantation of possible scenarios
 - The airport evacuation plans are not the best
 - Management of information through media efforts
6. On the basis of the TTX, I would recommend the following equipment to my agency/airport/airlines/NGO to improve resiliency
- Have a very good communication
 - Get training (tabletop exercises for all staff)
 - Logistics in reserve for a certain time to supply employees, passengers
 - Training plans
 - Analysis of contingency plans and equipment
 - follow-up reviews at least every 3 months
 - Review activity monitoring horn
 - Improve communication between all agencies of the airport for emergencies
 - Need a little more order / organization
 - The ability to communicate between the airport communities
 - It must do more actual practices
 - Better coordination so that all these institutions are in training
 - Better communication in case of emergency
 - Getting emergency plan
 - Training staff in crisis care
 - Drills and exercises with staff
 - Improve communications between the institutions performing the act.
 - Activities care
 - Better information of the entities involved
 - Training
 - simulated exercises
 - more practical emergency
 - A voice in world
 - Since trained Control
 - Will work
 - Practice
 - Information Procedures
 - Approach with the other institutions
 - Resource / reserve / technology / logistics / human talent
 - Training
 - Diversity of topics to achieve better respond to available resources
 - Treat all institutions that work on the same level
 - More personnel or human resource

- More training on the subject
- Less political party interference
- Improving communication
- A truthful information by those involved
- Invite the airlines to participate in these events
- Strengthen human resources
- Personal Responsibility
- Personal preparation
- Coordination and support
- Training staff
- Have alternative media available
- Improve coordination between institutions
- More human and technical resources
- Technical assistance and external advice
- Cooperation
- they exalted staff
- Human resource training replacement
- Take immediate decisions CCO
- Information opportunity for all operational staff
- Synergy between institutions
- Greater investment in SAP
- Increased human resources
- Increased financial resources
- Have better communication logistics
- Disclosure
- Increased resources for brilláoslo
- Create a personal care plan and information

7. Regarding the TTX itself
 - a. 4 Part of the time
 - b. 19 Most of the time
 - c. 29 All of the time
8. The exercise duration
 - a. 6 too long
 - b. 38 just right
 - c. 5 too short
 - d. 1 not sure
9. The use of Technology was appropriate
 - a. 11 part of the time
 - b. 16 most of the time
 - c. 25 all of the time

10. During the TTX, communication were clear and adequate
 - a. 2 part of the time
 - b. 12 most of the time
 - c. 37 all of the time
11. During the TTX, table coordination was good
 - a. 1 part of the time
 - b. 20 most of the time
 - c. 29 all of the time
 - d. 1 not sure
12. Would you find TTX activities helpful for future resiliency efforts
 - a. 2 some what
 - b. 49 Absolutely
13. Overall the exercise facility (room) layout was adequate
 - a. 1 part of the time
 - b. 17 most of the time
 - c. 34 all of the time
14. During the TTX, main exercise facilitator was good
 - a. 1 part of the time
 - b. 12 most of the time
 - c. 39 all of the time
15. Recommended changes
 - It's okay
 - Distribute more efficiently time since the second day of the activity becomes very tired
 - Any
 - Place names of people with the entity they represent, as we all do not know
 - Raise awareness that we are vulnerable in any emergency
 - Better leadership and guidance
 - None , very complete and very important information , as well as what is taught and exercised
 - Reduce total exercise time
 - Tracing routes on flat squared treasuries Airport
 - Put into something more dynamic test and that the actual level egerate
 - Distribution space for participants
 - The focus could have been consider exarcado about another country with better plans
 - It is important to know which cases have been handled excited coordination implemented

16. Comments

- Interesting exercises for information
- From an air accident investigation is important to implement the plan of assistance to families and victims
- Excellent exercise prep feedback and experiences of staff is excellent. They have really contributed to the self-critical thinking.
- Excellent exercise care with essential principles of incidents
- Best big book and guidance
- Thank and congratulate / I miss the evaluators and observers of the exercise
- I thank Glad we taken into account and helping us become better
- Great exercise! Thank you!
- It is important to present visual elements.
- The exercise allowed discover flaws emergency care for each institution does the same but often unknown ways
- Very consistent comments to try to unify criteria in an emergency and speak the same language to make every effort to take emergency

17. Affiliations

- a. 13 Airport
- b. 25 Government Agency
- c. 6 Airlines
- d. 3 NGO
- e. 6 Other

Appendix E --Costs of Delivering PReP 2.0 to Juan Santamaria International Airport

Outreach Aid to the Americas, Inc.

Profit & Loss

July through September 2015

TOTAL

	<u>TOTAL</u>
Ordinary Income/Expense	
Expense	
5520 - Office Expenses	
5522 - Postage & Delivery	25.50
Total 5520 - Office Expenses	<u>25.50</u>
5570 - Professional Services	
5571 - Consultants	4,000.00
Total 5570 - Professional Services	<u>4,000.00</u>
5580i - Travel Expenses International	
5581i - Transportation	3,093.58
5582i - Lodging	2,172.30
5583i - Meals	80.67
5586i - Other	152.08
Total 5580i - Travel Expenses International	<u>5,498.63</u>
5600 - Conferences & Training	
5602 - Other	9,686.25
Total 5600 - Conferences & Training	<u>9,686.25</u>
Total Expense	<u>19,210.38</u>
Net Ordinary Income	<u>-19,210.38</u>
Net Income	<u><u>-19,210.38</u></u>