International Civil Aviation Organization

Aerodrome Certification - Setting the scene

Aerodrome Certification workshop

ICAO SAM Regional Office, Lima, 12-16 June 2017

Avner Shilo, Technical Officer

Airport Operations and Infrastructure (AOI) section, ICAO

Certification of Aerodromes –

Why needed?


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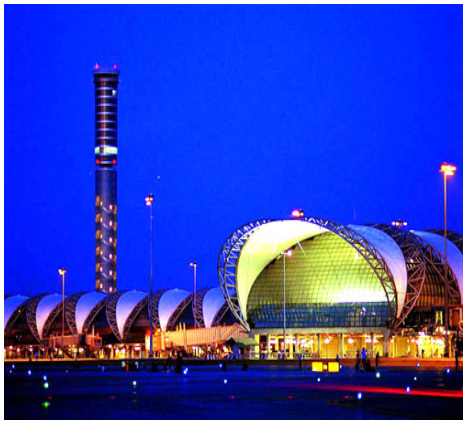
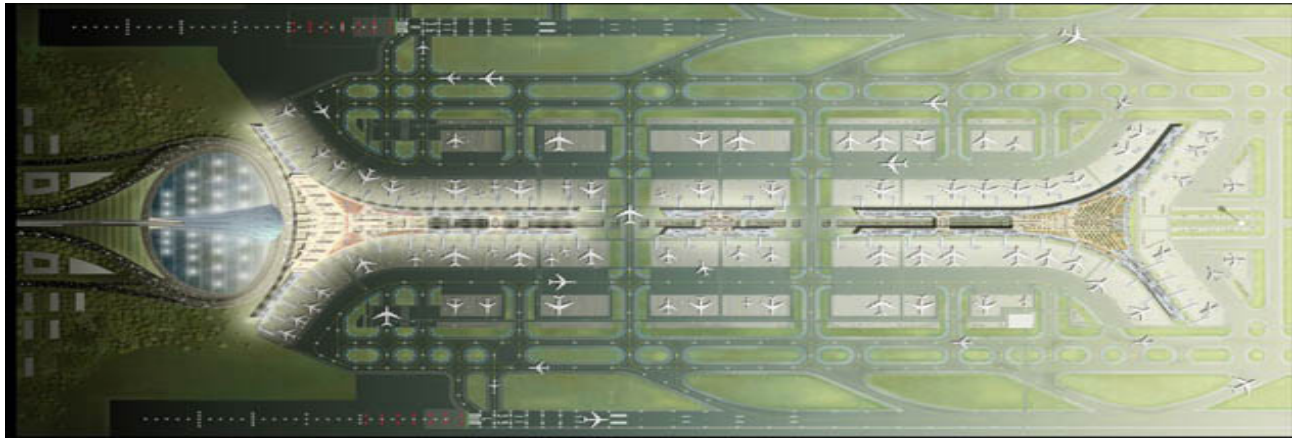
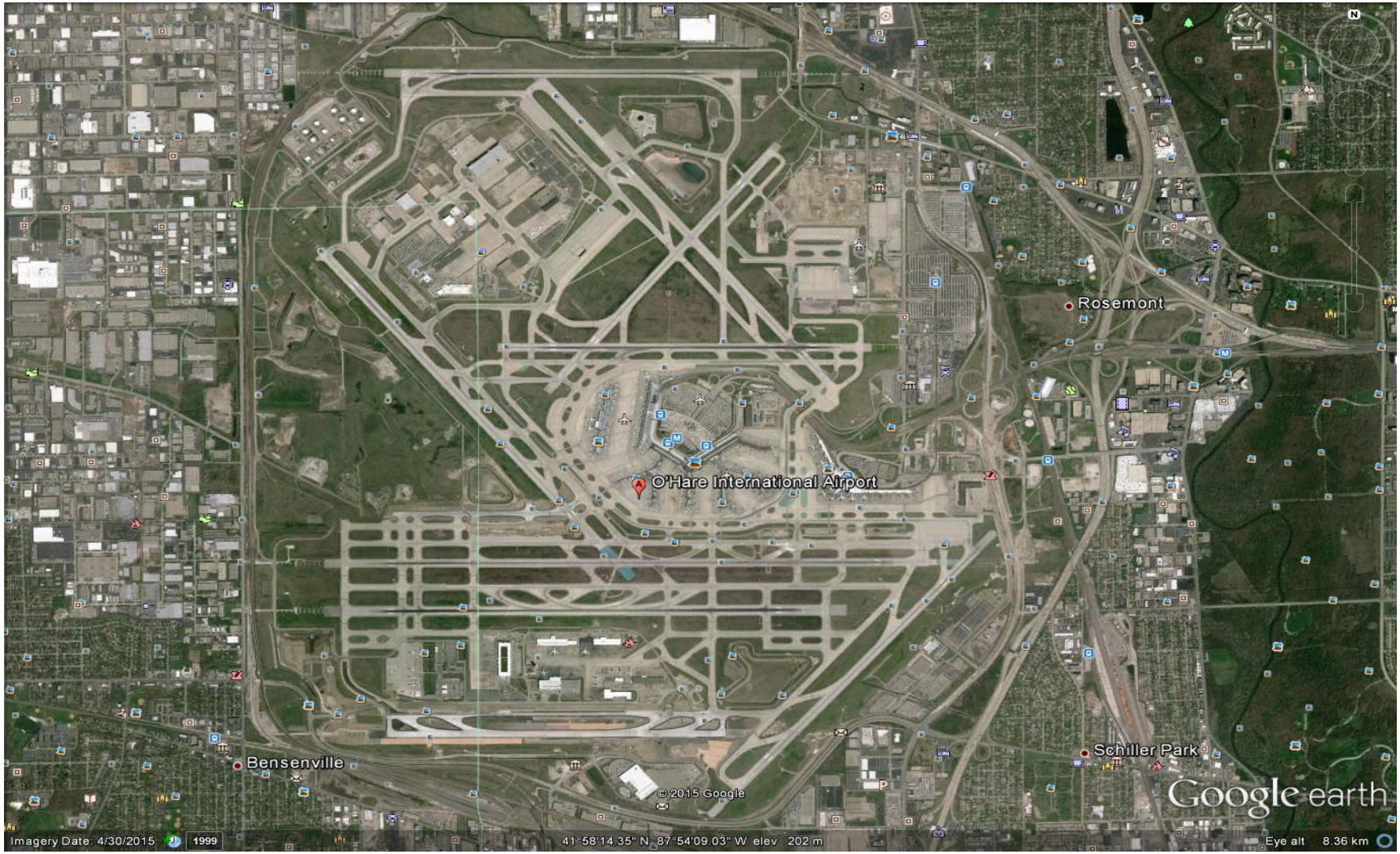





Initial Impact
Left Wing Gear
No.1 Engine
05R
05L
No.2 Engine
N4
N5
NP
N6
N8
Right Wing


Rosemont
O'Hare International Airport
Bensenville
Schiller Park
© 2015 Google
Google earth
Imagery Date: 4/30/2015
1999
41°58'14.35" N 87°54'09.03" W elev 202 m
Eye alt 8.36 km

TODAY'S AVIATION ENVIRONMENT:

- **Large, global & complex industry**
- **Highly sophisticated technologies**
- **Highly complex & integrated systems**

  (… Increased technology/human interfaces failures… training needs...).
- **Greater commercial pressure - costs & time**
- **Greater public expectations on safety issues**
- **By 2030 – more than 6 Billion passengers annually, on over 60 million flights, whilst the number of aerodromes will not change siginificantly.**

Aviation is a ***system*** that needs a systematic approach to its regulation, as well as operation.

AERODROMES

Local ATM
Annex 11
PANS-ATM

Local CNS
Annex 10

AIRSIDE SAFETY:

OPERATIONS, SERVICES, RFF, ENGNG, MAINT, OBSTACLES, WHM ETC. (Annex 14)

ENVIRON
Annex 18

Local MET
Annex 3

Local AIS/MAP
Annex 3
Annex 15

FLT OPS
Annex 6
PANS-OPS

SECURITY
Annex 17

Main Challenges at the Aerodromes arena:

- Capacity - Airport congestion;
- Safety - Airside accidents/incidents, Runway safety;
- New larger Aircraft/Aerodrome compatibility.

NEW LARGE AIRCRAFT

	Boeing 747-400	Airbus A380-100	Boeing 747-8/8F
Passengers	416	555	467
Wingspan	64.40 m	79.75 m	68.40 m
Length	71.00 m	72.60 m	76.40 m
Height	19.40 m	24.00 m	19.50 m
MTOW	400 tons	560 tons	440 tons

Compliance with Annex 14 and certification of Aerodromes – obligation of States under the Convention.

(many states implemented aerodrome certification/licensing long before ICAO adopted the requirement in Annex 14).

Issues and challenges in the aerodromes field identified by ICAO USOAP CMA audits

Avner Shilo

Technical Officer, Airport Operations and Infrastructure, ICAO

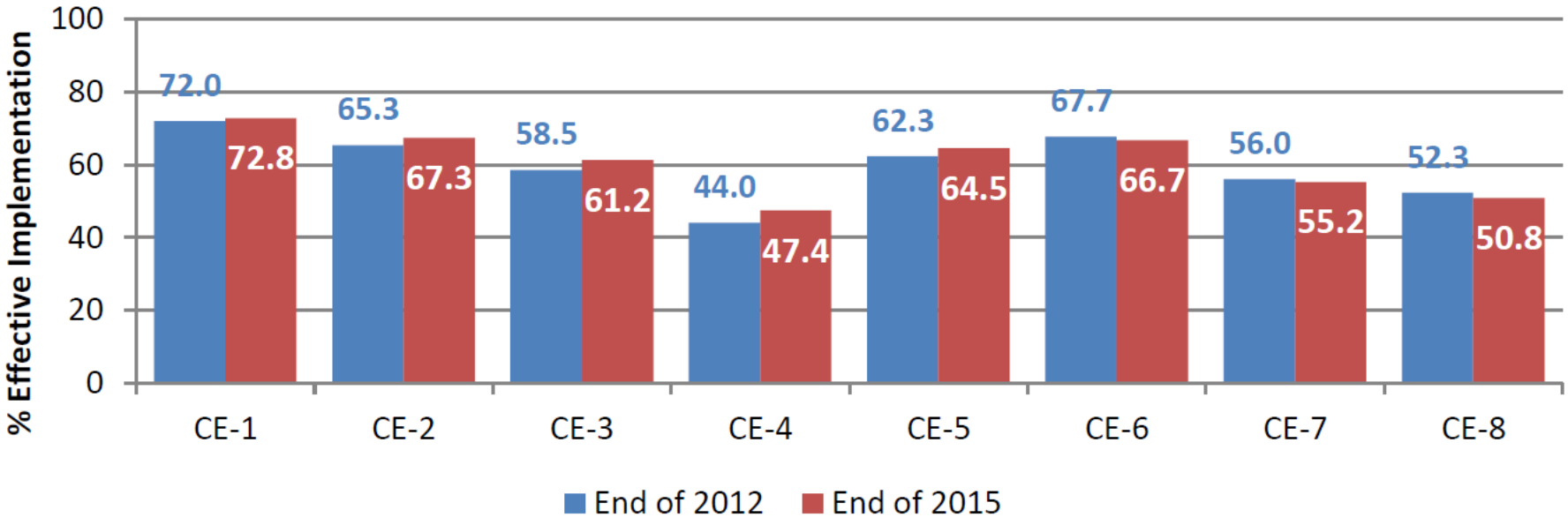
Overview

- Covering period: 1 January 2013 to 31 December 2015
- Critical elements (CEs) and Effective implementation (EI) – global and regional perspectives
- Issues identified in the AGA area

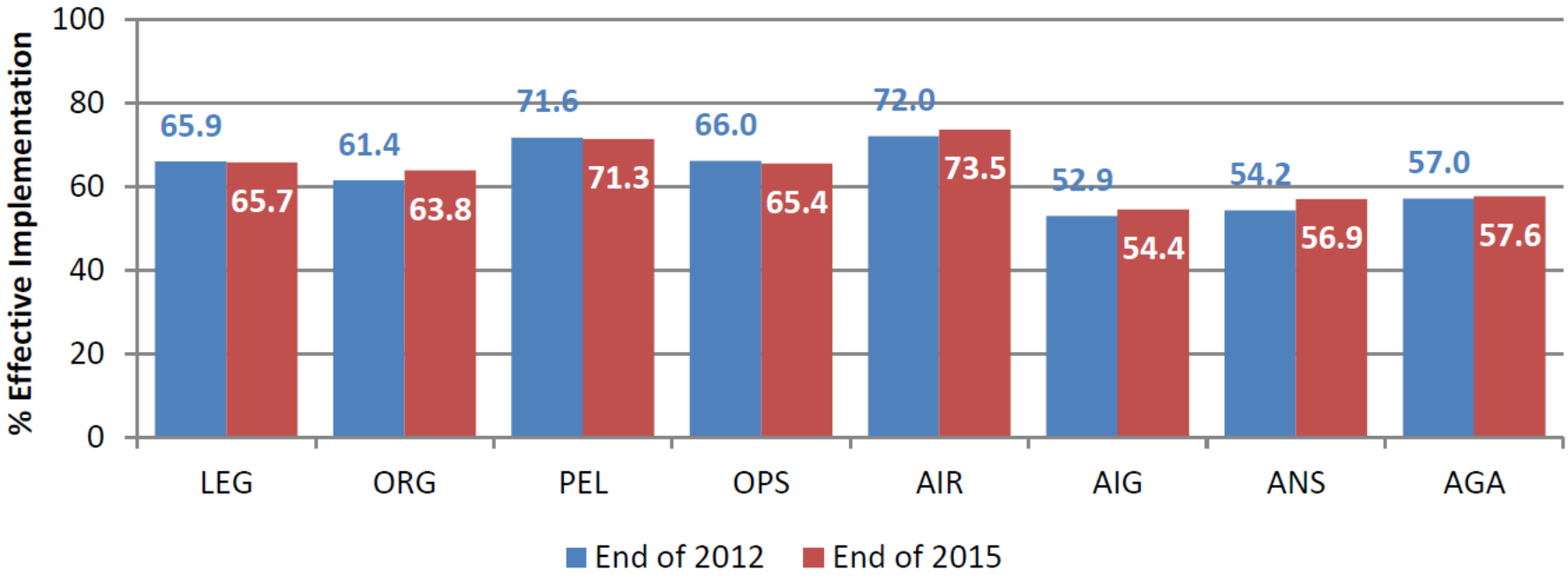
Critical elements

- CE-1 Primary aviation legislation
- CE-2 Specific operating regulations
- CE-3 State system and functions
- CE-4 Qualified technical personnel
- CE-5 Technical guidance, tools and provision of safety-critical information
- CE-6 Licensing, certification, authorization and/or approval obligations
- CE-7 Surveillance obligations
- CE-8 Resolution of safety issues

EI by CE (end of 2012 vs end of 2015)



EI by audit area (end of 2012 vs end of 2015)



Highlights of issues identified in the AGA area

- Implementing **aerodrome certification** requirements.
- Ensuring that aerodrome operators receiving international flights have implemented an **SMS** acceptable to the State.
- Establishing and implementing a **formal surveillance programme** for certified aerodromes, with associated procedures and plans.
- Establishing and implementing integrated strategies, including Runway Safety Teams, for **runway incursions** and collisions avoidance at aerodromes.
- Establishing and implementing a **quality system** to ensure the accuracy, consistency, protection and integrity of aerodrome-related safety data published in the State's AIP.

Implementing aerodrome certification requirements

- Almost 60 per cent of the States have not fully implemented the requirements for the **certification of aerodromes**.
- More than 50 per cent of the States have not established a comprehensive **aerodrome certification process**, including all the necessary assessments.
- Almost 60 per cent of the States have not established, in the framework of their certification process, a mechanism based on safety assessments, for **reviewing and accepting non-compliances** with established requirements.
- In almost 70 per cent of the States, the CAA does not have a sufficient number of qualified and experienced **aerodrome technical staff** with the appropriate mix of technical disciplines to be able to cover all aspects involved in the certification of aerodromes.

Implementing aerodrome certification requirements

The challenge is to ensure that, after the audit of their aerodrome operators, further steps, such as the conduct of safety assessments of all the identified non-compliances, are necessarily taken by the aerodrome regulatory authority. These steps should enable:

- the **categorization of the identified deficiencies**, based on their impact on safety and using a risk assessment mechanism
- the determination of the **mitigation measures** to be taken to reduce the risk to an acceptable level, if necessary;
- the granting of associated **exemptions**, if required; and
- the issuance of the **aerodrome certificate with the necessary limitations/specifications**.

Implementation of SMS

- More than 80 per cent of the States have not ensured that aerodrome operators receiving international flights have implemented an SMS acceptable to the State, as part of their aerodrome certification process.
- Almost 70 per cent of the States do not have a system in place to ensure that aerodrome operators collect, monitor and analyze safety occurrences and trends and take appropriate action.
- Most of these States have not defined the maturity level required for the first acceptance of the aerodrome operator's SMS, expressed in terms of the requisite SMS components and elements.
- In most cases, aerodrome inspectors have not received all necessary training regarding the acceptance and surveillance of an aerodrome operator's SMS, including aspects related to safety performance indicators and the associated target and alert levels, which should be agreed upon by the State's CAA.

surveillance programme for certified aerodromes

- More than 50 per cent of the States have not established and implemented a formal surveillance programme for their certified aerodromes with associated procedures and periodic surveillance plans.
- States are required to establish and implement a surveillance programme to ensure that aerodrome certificate holders meet, on a continuous basis, their obligations under the certificate and the requirements of the accepted/approved aerodrome manual.
- This would normally include surveillance procedures for each type of surveillance activities, as well as periodic surveillance plans with adequate frequencies reflecting the maturity of the certificate holder.
- Continuous surveillance should also include unannounced inspections, as needed.

Runway incursions and collisions avoidance at aerodromes

- More than 60 per cent of the States do not ensure that their aerodrome operators have established and implemented integrated strategies, including Local Runway Safety Teams (LRSTs), for the prevention of runway incursions and other accidents and incidents at aerodromes.
- The primary role of LRSTs should be to develop an action plan for runway safety, advise management, as appropriate, on potential runway safety issues and recommend strategies for hazard removal and mitigation of the residual risk.

Runway incursions and collisions avoidance at aerodromes – cont'd

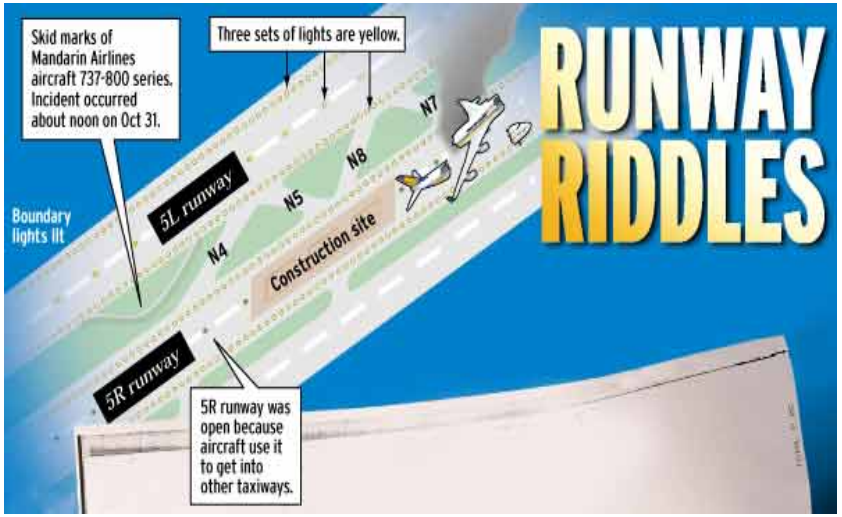
- The creation and effective operation of LRSTs remain affected by a number of challenges. These include:
  - the lack of regulatory framework and/or guidance material issued at State level;
  - the possible resistance to share data among the various stakeholders (including the aerodrome operator, ANS provider and air operators involved); and
  - the possible lack of maturity of the stakeholders' SMS, in particular with respect to hazard identification and risk assessment and mitigation.

Quality system to ensure the accuracy, consistency, protection and integrity of aerodrome-related safety data

- More than 70 per cent of the States have not established and implemented a quality system to verify the accuracy of aerodrome data to ensure compliance with the regulations, and to ensure that the accuracy, integrity and protection requirements for aeronautical data reported by the aerodrome operator are met throughout the data transfer process from the survey/origin to the next intended use.
- This generally results in the publication of inaccurate or outdated data in the AIP of these States.

Singapore Airlines 006, B744, October 2000


CHINA AIRLINES


Skid marks of Mandarin Airlines aircraft 737-800 series. Incident occurred about noon on Oct 31.
Three sets of lights are yellow.
RUNWAY RIDDLES
N7
N8
N5
N4
5L runway
Boundary lights lit
Construction site
5R runway
5R runway was open because aircraft use it to get into other taxiways.

FINDINGS

"A number of items of the airport did not meet the level of internationally accepted standards and recommended practices"

"There was a lack of specified safety regulation monitoring organization and mechanism within the CAA that resulted in the absence of a mechanism to highlight conditions at the airport for twys and rwys lighting, marking & signage that did not meet internationally accepted safety standards & practices"

FINDINGS

"There was a lack of safety oversight mechanism within the CAA that could have provided an independent audit/assessment of the airport to ensure that its facilities met internationally accepted safety standards and practices"


North American Central American and Caribbean (NACC) Office MexicoCity
South American (SAM) Office Lima
ICAO Headquarters Montreal
Western and Central African (WACAF) Office Dakar
European and North Atlantic (EUR/NAT) Office Paris
Middle East (MID) Office Cairo
Eastern and Southern African (ESAF) Office Nairobi
Asia and Pacific (APAC) Office Bangkok

Thank You