Normal Aircraft Tracking

International Air Safety Summit

Miami FL, Nov 2015

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Topics

- **Background**
- **Brief description of the concept**
- **Description of provisions**
- **Next Steps**

AF447

June

MH370

Mar.

Vulnerability

Timely identification and location of aircraft in distress

Availability and sharing of valuable information

Effective and regularly trained procedures

t day

✈ **Know where aircraft fly**

✈ **Know when aircraft are in distress**

✈ **Enhance ability to rescue**

✈ **Enhance ability to recover**

ICAO UNITING AVIATION

Different levels of

ATS
Automation
Information sharing
Surveillance
Training

Alerting and SAR needs

Instant and accurate information
Instant cooperation
Instant action
Global

Need for a consistent "overlay"

Maritime example:
GMDSS: Global Maritime Distress and Safety System;
LRIT: Long Range Identification and Tracking

Global Aircraft Tracking

March, 2014 Malaysia Airlines Flight MH370 disappeared and remains missing

12-13 May 2014 **Multi-disciplinary** meeting with States, Industry, Chairs and co-chairs of several panels, and related specialists
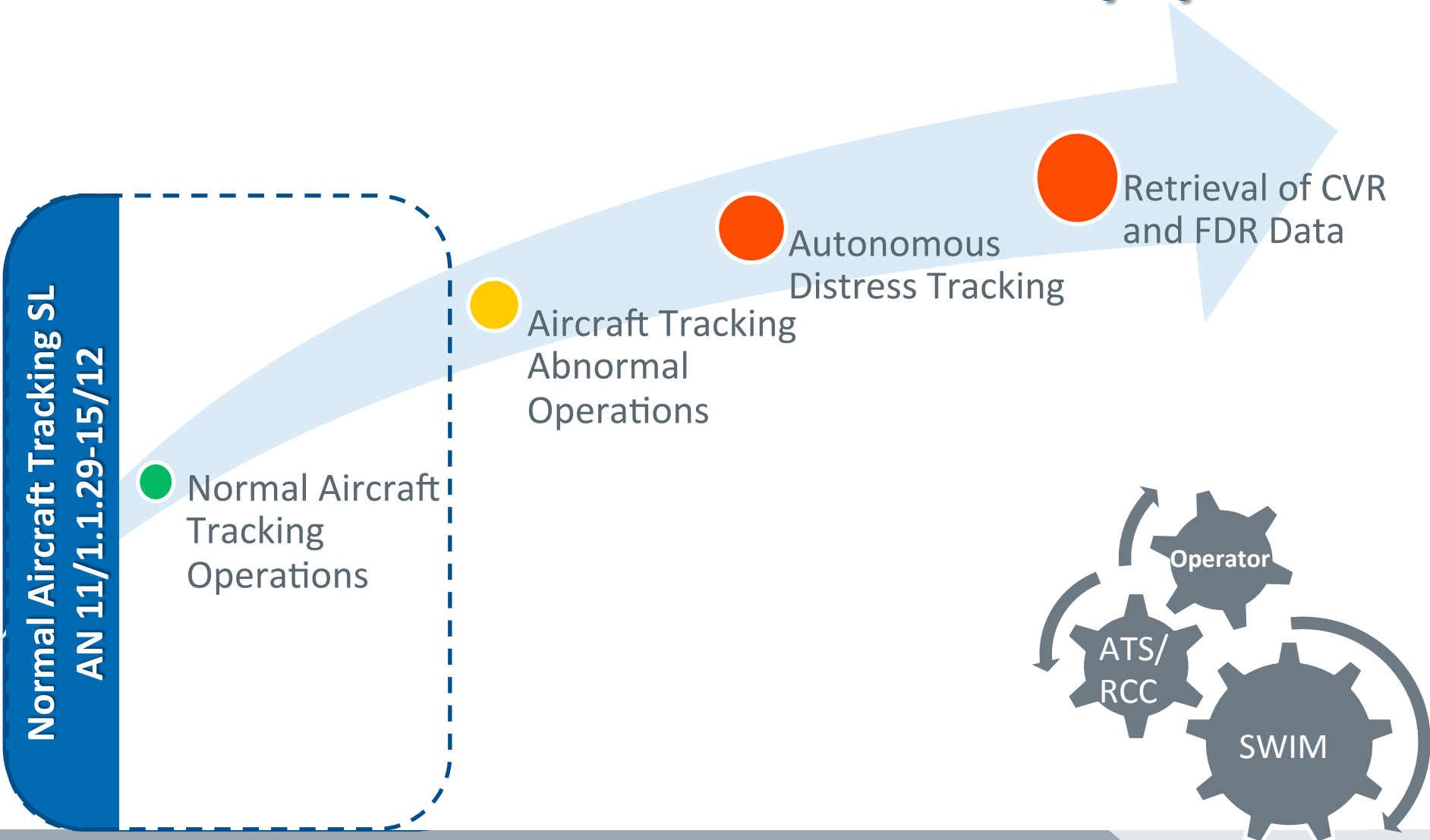
Attendees: **207** participants from

- **44** Member States
- **19** International Organizations
- **5** Industry representatives
- **8** Panel chairs

ICAO | GLOBAL FLIGHT TRACKING MEETING
Montréal, Canada, 12 - 13 May 2014

Outcomes:

- *Consensus that **aviation's near-term priority was to track airline flights**, no matter the location or destination*
- Industry to initiate **global tracking on a voluntary basis**, and establish an Aircraft Tracking Task Force (ATTF) to provide recommendations on best practices
- 6 **Conclusions,** 10 **Recommendations**

Global Aeronautical Distress & Safety System

Normal Aircraft Tracking SL AN 11/1.1.29-15/12

🟢 Normal Aircraft Tracking Operations

🟡 Aircraft Tracking Abnormal Operations

🔴 Autonomous Distress Tracking

🔴 Retrieval of CVR and FDR Data

Operator

ATS/RCC

SWIM

NORMAL TRACKING

60 minute ATC reporting environment

AOC tries to establish contact

AOC

Incident at 1 minute

Elapsed Time from Incident: **44** min

CURRENT

Elapsed Time from Incident: **89** min

EMERGENCY PHASE

GADSS CONCEPT

RESCUE COORDINATION CENTER

SARPs Development

Performance-based Standards and recommended practices for normal flight tracking
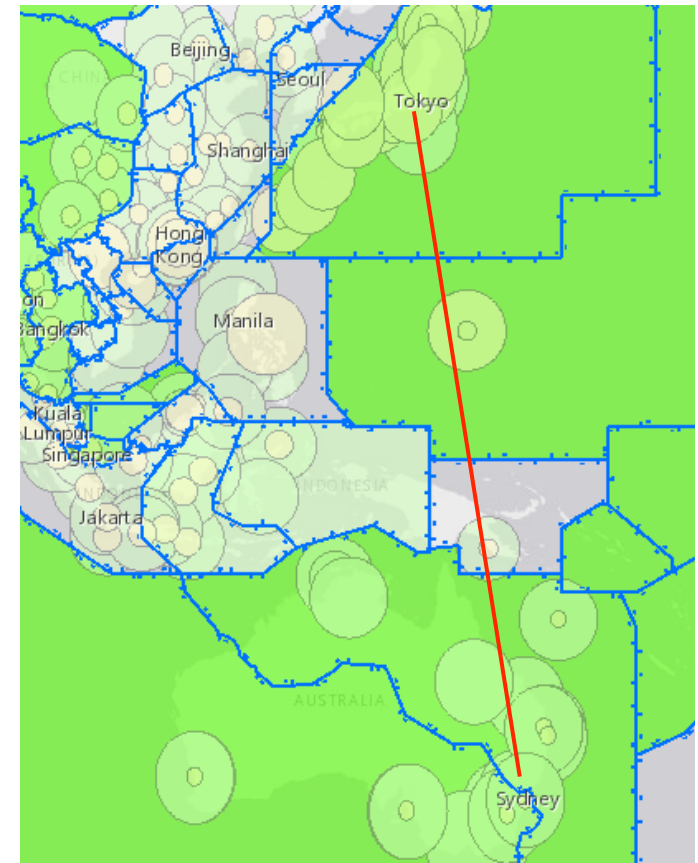
- Initial proposal for industry to voluntarily implement

- Proposed SARPs based on ATTF and GADSS

- Normal Aircraft Tracking Implementation Initiative (NATII)

    - Recommendations for the proposed SARPs

    - Recommendations for complementary SARPs

- ANC took into consideration NATII Recommendations
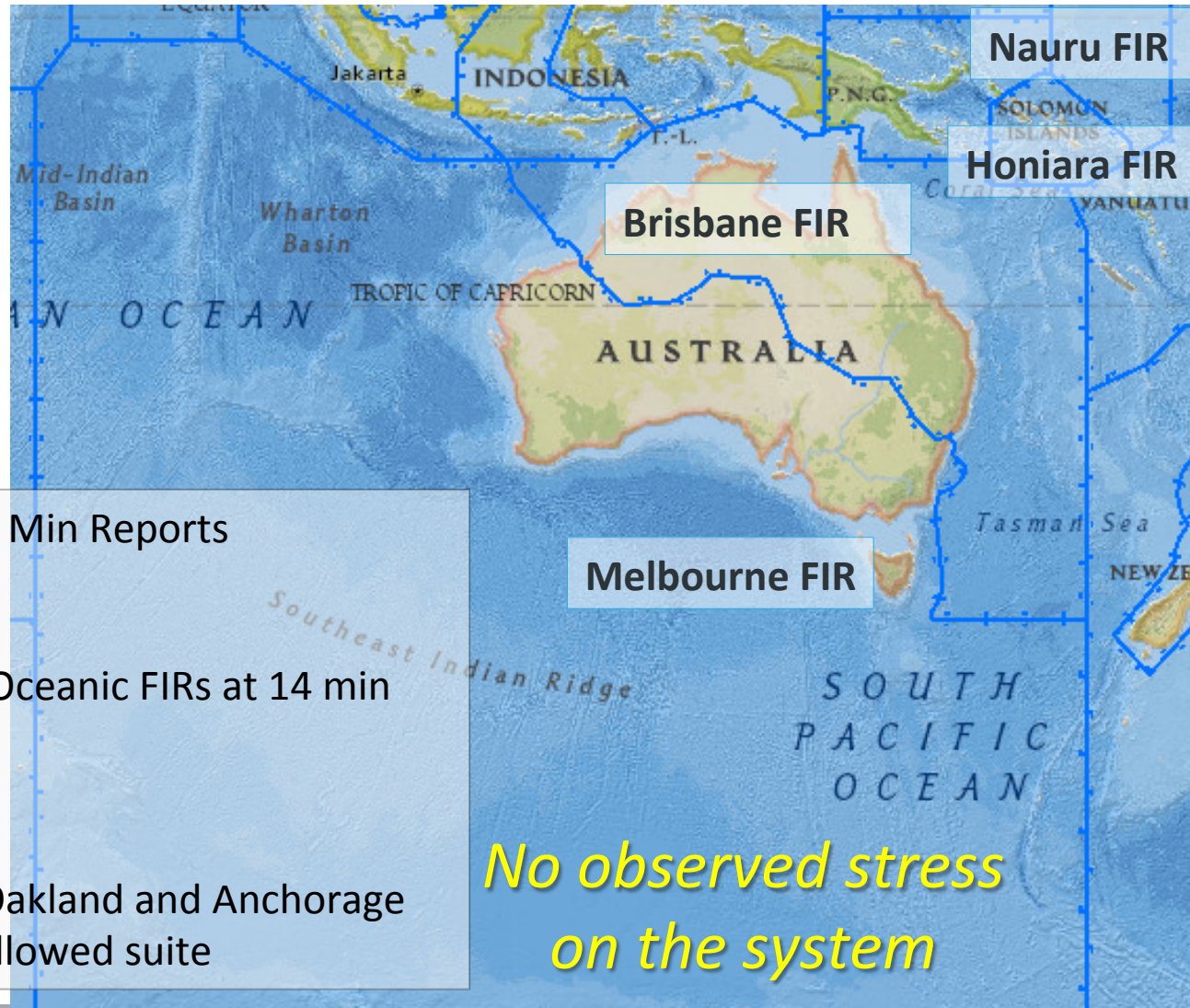
Timelines

- **January 2015**
    - Preliminary review by ICAO ANC

- **February 2015**
    - HLSC 2015
    - Expedite provisions
    - State Letter 15/12

- **Feb – Aug NATII**
    - Australia ADS-C Trial
    - Com & A/C Tracking SP Workshop
    - Table top Exercise

- **October 2015**
    - ICAO ANC final review

Normal Tracking Implementation Initiative

- **The theater of operations is the ASIA/PAC.**
  - Chosen as a representative area
- **The implementation initiative was conducted in a multi-national context**
  - Led by ICAO with support from States and industry stakeholders
  - NATII steering committee established
  - Over 30 telecoms and 1 meeting over the summer
- **The implementation initiative helped craft the SARP proposal.**

Australian ADS- C Trial

Nauru FIR

Honiara FIR

Brisbane FIR

Melbourne FIR

Started with 10 Min Reports
-   2 Airlines

Ended with all Oceanic FIRs at 14 min reports
-   All airlines

New Zealand, Oakland and Anchorage Oceanic FIRs followed suite

No observed stress on the system

NATII Comm & A/C Tracking Workshop

- **22 Industry Presentations**
- **Divided into three main areas:**
  - Satellite service providers
  - Re purposed on-board ATC equipment
  - Alternative aircraft tracking systems
- **Only companies with deployed equipment were invited to present**
  - All meet the proposed normal tracking requirement
  - Wide range of options (i.e. tracking only, passenger entertainment, engine monitoring, data streaming)

Table Top Exercise (TTX)

Scenario 1

Sydney (SYD/YSSY) to Narita (NRT/RJAA)
International Operator (INT/IO)
Flight 313 B777 ADS-C equipped

NATII Tabletop Exercise
16-18 June 2015, Sydney

Scenario 2

Singapore (SIN/WSSS) to Port Moresby (POM/AYPY)
International Flight (IO) 323
B777 ADS-C equipped

NATII Tabletop Exercise
16-18 June 2015, Sydney

Scenario 3

Sydney (SYD/YSSY) to Santiago (SCL/SCEL)
International Flight (IO) 333
A340 CPDLC only equipped

NATII Tabletop Exercise
16-18 June 2015, Sydney
28

Scenario 4

Sydney (SID/YSSY) to Christchurch (CHC/NZCH)
International Flight (IO) 343
B757 HF only

35

Scenario 5

San Francisco (SFO/KSFO) to Narita (NRT/RJAA)
International Flight (IO) 353
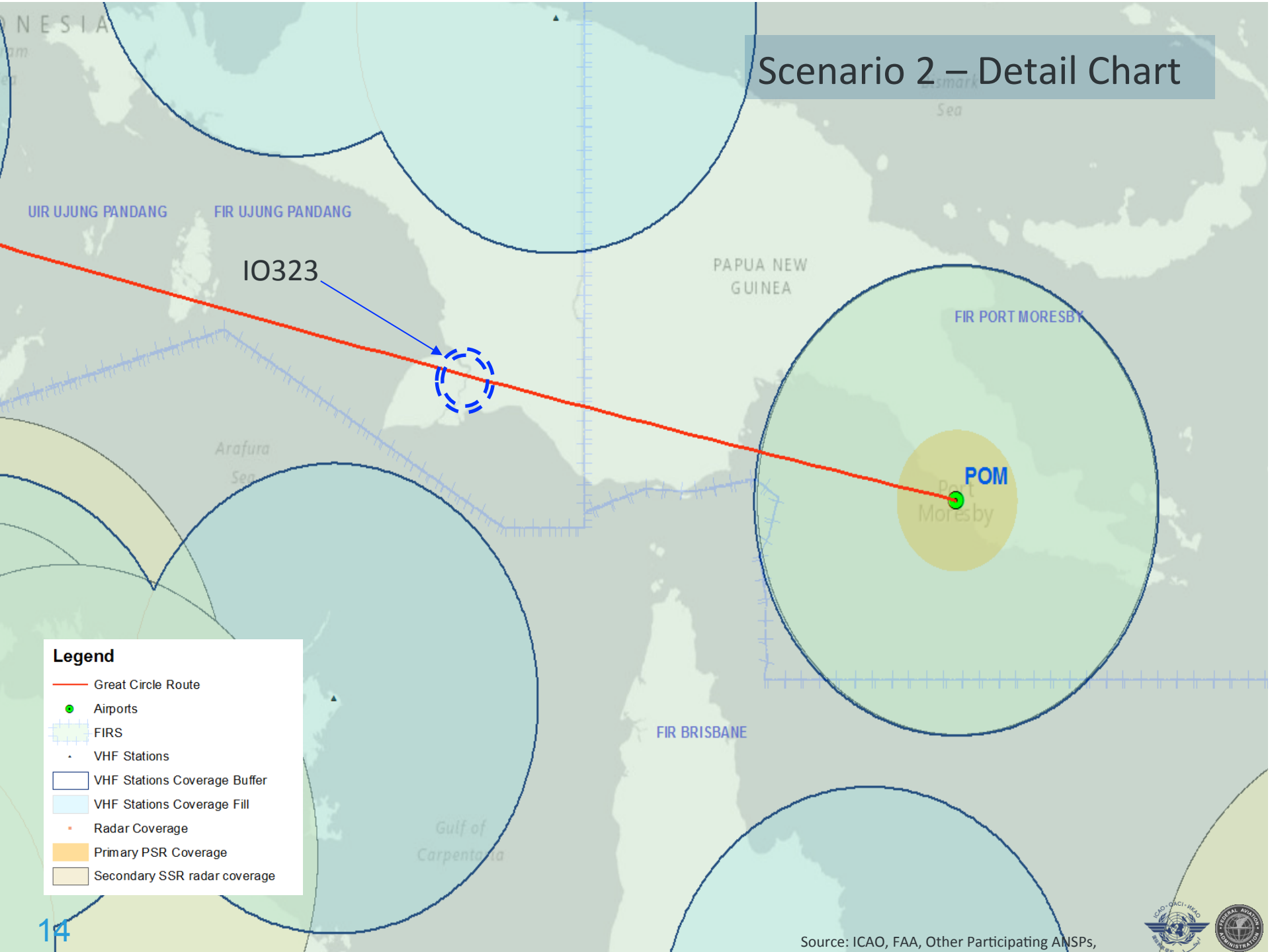B747 ADS-C equipped but failed just prior to
departure

44

Scenario 6

Cairns (CNS/YBCS) to Port Morseby (POM/AYPY)
International Flight (IO) 363
Q400 Alternate Tracking System/HF equipped

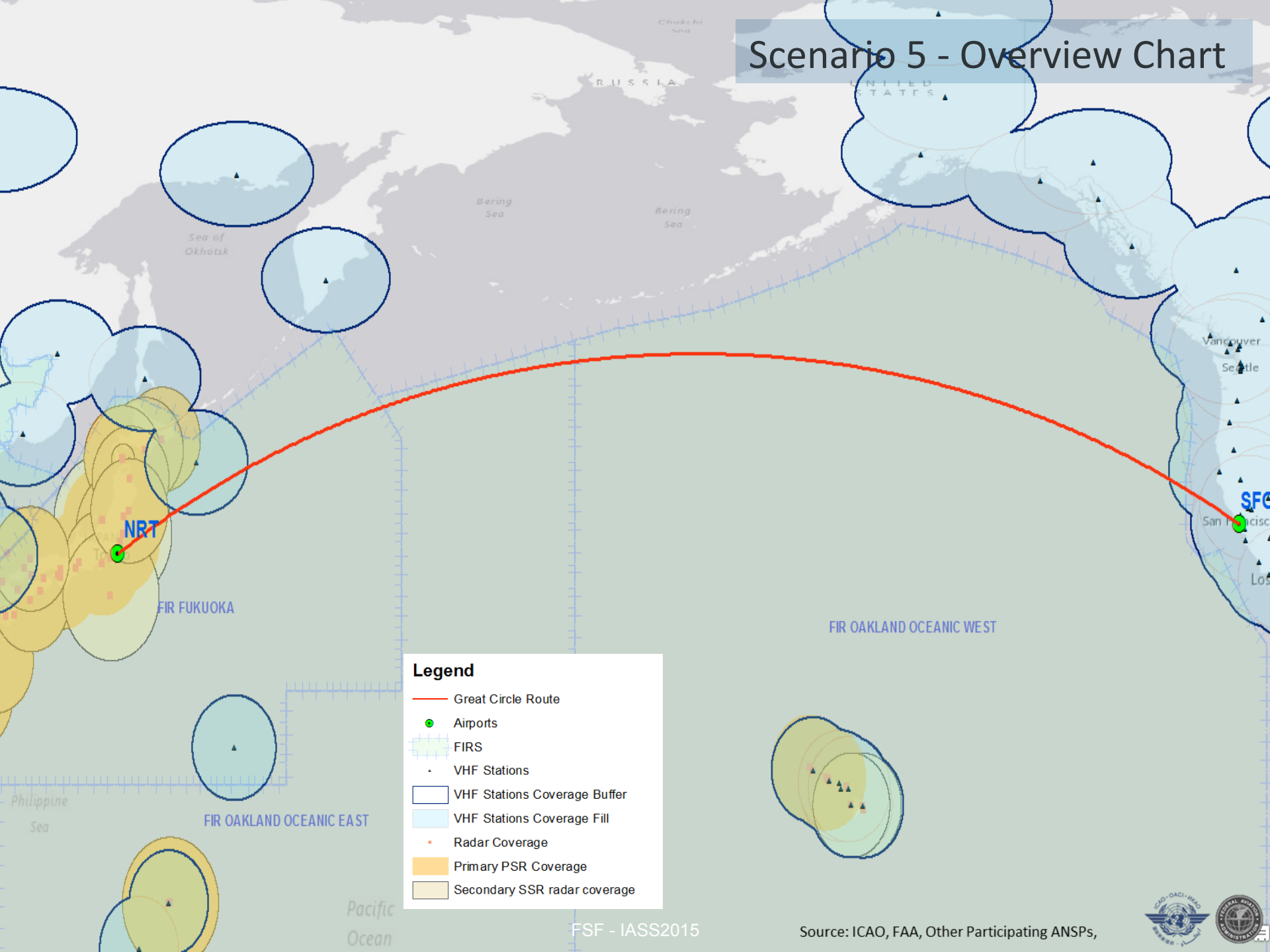NATII Tabletop Exercise
16-18 June 2015, Sydney
50

Legend

─── Great Circle Route

● Airports

▨ FIRS

▴ VHF Stations

☐ VHF Stations Coverage Buffer

☐ VHF Stations Coverage Fill

▪ Radar Coverage

☐ Primary PSR Coverage

☐ Secondary SSR radar coverage

FIR FUKUOKA

FIR OAKLAND OCEANIC WEST

FIR OAKLAND OCEANIC EAST

NRT

SFO

San Francisco

Los

Vancouver

Seattle

FSF - IASS2015

Source: ICAO, FAA, Other Participating ANSPs,

Normal Aircraft Tracking
(All)

"A process, established by the operator that maintains and updates at standardised intervals a ground based record of the four dimensional position of individual aircraft in flight"

- Operators will need to establish an aircraft tracking capability for their area of operations.

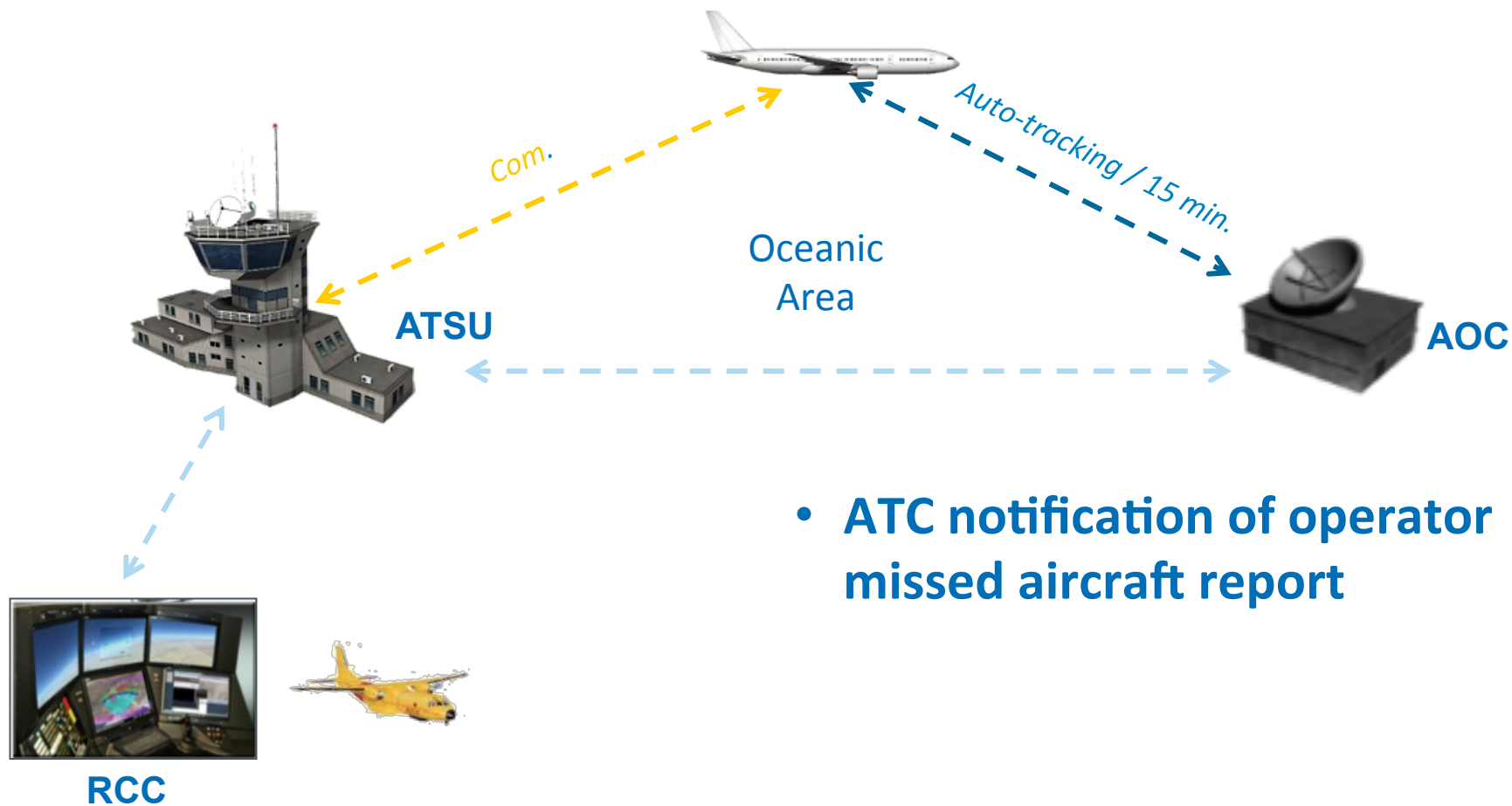# Normal Aircraft Tracking (Fidelity)

- **Where ATC does not provide the service, operators need to automatically track aircraft:**
  - MTOW > 27.000 kg → Should (everywhere)
  - MTOW > 45.500 kg → Shall (oceanic areas)

> 19 seats

- Data retention for last known aircraft location purposes

Normal Aircraft Tracking (Coordination)

Com.

Auto-tracking / 15 min.

Oceanic Area

ATSU

AOC

RCC

- **ATC notification of operator missed aircraft report**

Normal Tracking SARPs
(Summary)

Performance-based Standards and recommended practices for normal flight tracking

- No change to ATC procedures

- Not technology-specific

- Establish operator responsibility to track

- Recommendation to automatically track where ATC gets position information at more than every 15 min

- Standard to automatically track in oceanic areas where ATC gets position information at more than every 15 min

- Data retention for last aircraft location purposes

Timelines

✓ **January 2015**
  – Preliminary review by ICAO ANC

✓ **February 2015**
  – State Letter

✓ **October 2015**
  – ICAO ANC final review
  – ANC Rec to Council

November 2015
  – Council expected to adopt

November 2018
  – Expected applicability

Next Steps

- **Develop complementary Provisions addressing:**
  – Guidance material (circular & manual)
  – MEL
  – Polar areas
- **Establish procedures for information sharing**
  – ATSU coverage & contact information
  – Operator contact information
- **Share experience**

Implementation Timelines

- **November 2015**
  – Proposed SARPs Adopted

- **March 2016**
  – Proposed SARPs Effective
  – Implementation Circular

- **March 2018**
  – Complementary SARPs Adopted

- **July 2018**
  – Complementary SARPs Effective
  – Complementary Procedures available
  – Updated Guidance (Manual)

- **November 2018**
  – Proposed and Complementary SARPs Applicable

IMPLEMENTATION PERIOD

- Clarity on the requirements
- Allows time for additional provisions to be developed
- Operators can establish implementation plans
- Encourages early implementation