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
The Need

Vulnerability
Timely identification and location of aircraft in distress
Availability and sharing of valuable information
Effective and regularly trained procedures

-know where aircraft fly
-know when aircraft are in distress
-enhance ability to rescue
-enhance ability to recover

AF447
March 2009
June 2009

MH370

2 November 2015
FSF - IASS2015
Different levels ofATS 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

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 Operations
- Abnormal Operations
- Autonomous Distress Tracking
- Retrieval of CVR and FDR Data

SWIM
ATS/RCC
Operator

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

2 November 2015
Elapsed Time from Incident: 89 min

NO TRACKING
60 minute ATC reporting environment

Incident at 1 minute

EMERGENCY PHASE

RESCUE COORDINATION CENTER
Incident at 1 minute

AOC tries to establish contact

Elapsed Time from Incident: 44 min

CURRENT

Elapsed Time from Incident: 89 min

GADSS CONCEPT

Rescue Coordination Center

Normal Tracking
60 minute ATC reporting environment

Emergency Phase
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
- **Dec – 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

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

Scenario 2
Singapore (SIN/WSSS) to Port Moresby (POM/AYPY)
International Flight (IO) 323
B777 ADS-C equipped

Scenario 3
Sydney (SYD/YSSY) to Santiago (SCL/SCEL)
International Flight (IO) 333
A340 CPDLC only equipped

Scenario 4
Sydney (SID/YSSY) to Christchurch (CHC/NZCH)
International Flight (IO) 343
B757 HF only

Scenario 5
San Francisco (SFO/KSFO) to Narita (NRT/RJAA)
International Flight (IO) 353
B747 ADS-C equipped but failed just prior to departure

Scenario 6
Cairns (CNS/YBCS) to Port Moresby (POM/AYPY)
International Flight (IO) 363
Q400 Alternate Tracking System/HF equipped
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)

- Data retention for last known aircraft location purposes
Normal Aircraft Tracking (Coordination)

- ATC notification of operator missed aircraft report
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
Aviation is safe because it has the culture to react and take lessons out of rare events

Henk Hoff Adhoc WG Chair

THANK YOU

http://www.icao.int/safety/globaltracking