## ICAO Inter-regional SAR Workshop 2016

Global Aeronautical Distress and Safety System (GADSS) - Implications for Search And Rescue Services

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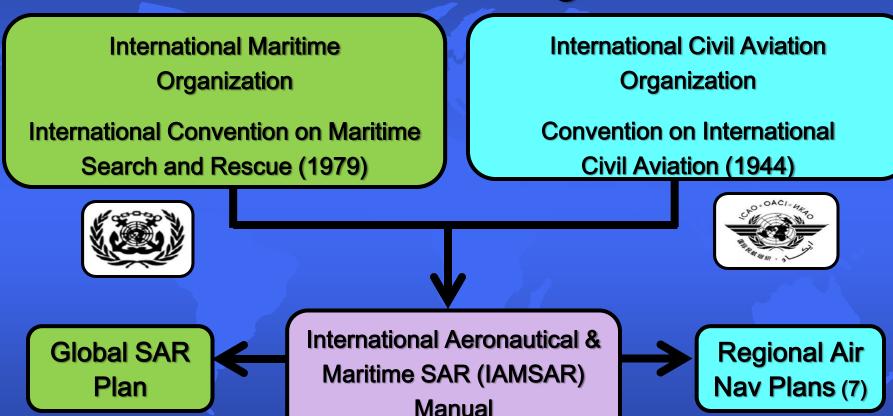
(ICAO/IMO JWG)

## What happens when...



your transoceanic flight becomes oceanic?

### **International SAR Organization**



## GADSS...The Beginning: ICAO HQ initiative

- -The disappearance of Malaysia Airlines flight MH370 on 8 March 2014, en-route from Malaysia to China, triggered an extensive search until 2016.
- In 2009, a two-year search was required to recover the flight data recorders of <u>Air France flight 477</u> which was lost in the Atlantic Ocean en-route from Brazil to France.
- -The GADSS concept of operations describes the actions which may be taken in the short-, medium- and long-term to address the global tracking of flights.

## **GADSS** main components:

#### Aircraft Tracking

#### Abnormal Operations

- Triggered by abnormal events
- Provides flight location data at least once per minute
- Controllable by flight crew
- multiple solutions

#### Aircraft Tracking

#### Normal Operations

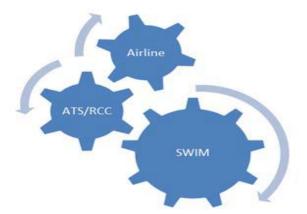
- Possible Subset of ATS Surveillance
- Used for Airline Operational Functions
- · Controllable by Flight Crew
- multiple solutions

#### Autonomous Distress Tracking (ADT)

- A Distress Signal
- Auto Triggered by very specific events
- ·May be manually activated
- Can not be isolated

#### Flight Data Recovery

- ADFR
- Automatically deployed
- Floatable
- Contains ELT to aid location
- Alternate Solution
- Performance Based
- Provides a minimum CVR and FDR dataset
- · Operation Approval Required



#### **GADSS** evolution into 3 functions?

#### Autonomous Distress Tracking (ADT)

- Provides automatic A/C position at least once every minute
- Must be active prior to accident event
- Operates autonomously of aircraft power,
- Results in a Distress Signal to appropriate SAR FIR
- May be manually activated
- Can not be isolated

Aircraft Tracking

Multiple solutions

Provides automatic A/C position

at least once every 15 minutes

ATS Surveillance may be utilised

 May have airline defined triggers for abnormal operations with higher reporting rate

Can be isolated by Flight Crew

#### Flight Data Recovery

- •Performance Based Solution
- Ensures a minimum dataset of CVR and FDR information
- Operation Approval Required
- ADFR
- Automatically deployed
- Floatable
- Contains an ELT to aid location

# Airline ATS/RCC

## Operator responsible for aircraft tracking

- Normal Tracking position reports by 2018: 4D/15
  - 4 Dimension position: Latitude, Longitude, altitude and time at 15 minute intervals or less
  - Operator obtains OR Sent from aircraft to ATS
- Distress Tracking position reports by 2021: 4D/1 at least once per minute for duration of flight
- Autonomous distress tracking (ADT): broadcast position information independent of aircraft power or systems (an independent facility on board)

#### Current roles within aeronautical community

- Aircraft operator (owner or company)
  - 'missed report' to ATSU
  - distress alert/report' to ATSU
- Air traffic services unit (ATSU) normal role
  - advised of emergency by ATS system, operator, pilot, others
  - notify the RCC (ARCC/MRCC/JRCC)
  - notify/advise the operator
- •Aeronautical Rescue Coordination Center (ARCC)
  - coordinate SAR response or hand off to MRCC

## Roles between aero and SAR community — current and to be developed

- Operator-ATS: Good now; bigger role for operator
- ATS-ARCC: Depends on the country
- ARCC-MRCC (JRCC?): Need to verify
- ATS-JRCC or MRCC: verify lead RCC
- Operator-JRCC or MRCC: not much now but could be critical in the future

## Alert Distribution/Routing – to be developed

- 'Other technology' Operator or ATS gets once-a minute reports BUT alerts may fall outside of current distress routing system. Which aero system? Back-up?
- 406 MHz ELT-Distress Tracking (ELT-DT)
  - New style ELT (no homing signal); alerts could be automatically sent through Cospas-Sarsat data distribution network
- "Other Technology" should be as good as Cospas-Sarsat standard for 'Activation of alert-to-RCC"

## Things for You to Think About

- Your gaps in surveillance (radar coverage) remote areas in Africa, Asia, Middle East and oceanic areas
- Automatic Dependent Surveillance-Broadcast (ADS-B) on "Iridium NEXT" satellites being launched starting September 2017.
  - Enables Aireon's ADS-B satellite-based system to provide global aircraft surveillance in real time.
- 406 MHz ELT-Distress Tracking (ELT-DT) 4D/1 alerts direct to RCC
- Your ATS and rescue coordination centers reaction?

## Now we can get back to our normal seas — ...plus working with our aeronautical buddies

