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Autonomous Distress Tracking (ADT)

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GADSS has three main elements

- Aircraft tracking – typically between the ATS unit and the aircraft operator; in place since November 2018
- Location of an aircraft in distress – achieved through autonomous distress tracking of aircraft in flight
- Post-flight localization and recovery – mainly for SAR and accident investigation; ICAO Annex 6 amended to essentially retain the 121.5 MHz homing signal

Presentation focus is on ADT

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ADT can greatly assist SAR in the oceanic regions and remote land regions (limited ATC surveillance)

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Documents applicable for ADT implementation

- ICAO Annex 6 (ICAO technical requirement)
- International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual guidance:
  - Volume I Appendix G
  - Volume II Appendix V
- ICAO Doc 10165 Manual on Global Aeronautical Distress and Safety System – now available
- ‘LADR and OPS Control User Manual’ (discussed later)

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ADT details

- Specific type of device but not technology-specific
- Required on new-built long-haul aircraft, cargo and passenger, starting 1 January 2024
- For aircraft in flight
- Requirement is for the aircraft operator (company) to receive the information … details later
- Intent is to retain ICAO Annex 11 alerting process

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ADT details, continued

- ADT device triggered (activated) manually by the pilot; OR,
- Automatically based on “aircraft behavior events” including:
  - Unusual attitudes
  - Unusual speed conditions
  - Collision with terrain/ground proximity warning
  - Total loss of thrust/propulsion on all engines

Deactivated by the method it was activated

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ADT details, continued

- ICAO established ‘location of an aircraft in distress repository (LADR)’ to store ADT information
- LADR **notifies** operator, ATS unit and rescue coordination center (RCC) it has ADT info – it does not send ADT info
- Stakeholders need to log into the LADR for the information
- ELT(DT) is an ADT device, and different from an ELT
- ELT(DT) message goes to RCC **and** the LADR
- ATS culture can be different from SAR culture, for example

 - Notification vs alert - in flight emergency vs SAR

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ADT components for now

1. ADT device and message – the ELT(DT)
2. Supporting infrastructure – LADR and OPS Control directory within EUROCONTROL (network for air traffic coordination).
3. Operational procedures among stakeholders
4. Message distribution: Cospas-Sarsat Mission Control Center (MCC)

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Operational control (OPS CTRL) directory

1. ICAO's single global database of contact details for ATS units, RCCs and operators.
2. Access to OPS CTRL will lead to access to the LADR
3. ICAO State letter AN 11/1/1.29-24/16 dated 25 June 2024 provides basic info on registering.
4. Detailed info provided in the "LADR and OPS Control User Manual"
5. Operators, ATS units and RCCs are required to maintain up-to-date operational contact details

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Location of an aircraft in distress repository (LADR)

1. LADR often pronounced as “Ladder”
2. LADR is a geographic display showing an icon for each ADT notification in the flight information region
3. ADT and potentially other information is sent to the LADR
4. LADR is operational (ICAO State letter 25 June 2024)
5. RCCs are required by ICAO Annex 12 – *Search and Rescue*, to maintain up-to-date contact details and subscribe to the LADR - subscription is free

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LADR content

1. LADR is the central repository for all information
2. Info from the ADT device plus other info that could be uploaded
3. Mandatory ADT information is:
   - latitude and longitude;
   - date and time (both transmission/position and receipt);
   - operator 3-letter designator (3LD); and
   - aircraft identification (aircraft nationality & registration mark...)
4. Optional info [from Cospas-Sarsat message] could include: altitude; ELT(DT) Hex ID; and activation method (manual, automatic, parameter exceedance triggering).

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ELT(DT) and LADR

1. ELT(DT) is the only ADT device in use. Cospas-Sarsat sends SIT 185 formatted message to RCCs, NOT to Operator but potentially to air traffic services unit if it is designated as a SAR Point of Contact (SPOC)
2. Cospas-Sarsat SIT 185 message will NOT go into the LADR but certain parts of its information will
3. ELT(DT) info into the LADR via mission control centers. French MCC might soon serve globally until other nodal MCCs arrange with EUROCONTROL
4. Might need to adjust current RCC procedures for reception of ELT(DT) SIT 185 message and receipt of LADR notification

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Establishing access to LADR

1. Establish **national Focal Point Account for each stakeholder**
   - **Email to:** aircrafttracking@icao.int
   - Reply from Aircraft Tracking/ICAO advises on three steps:
     - Step 1: Create DNA account here: https://ladr.eurocontrol.int/ops/frontend **using your email address**
     - Step 2: Verification from ICAO to activate your DNA account
     - Step 3: You may access the LADR
2. "Users" added as an account by Focal Point – Focal Point and User do not receive ADT email notification.
3. "Operational Contact Details" added by Focal Point and receives ADT email notification.

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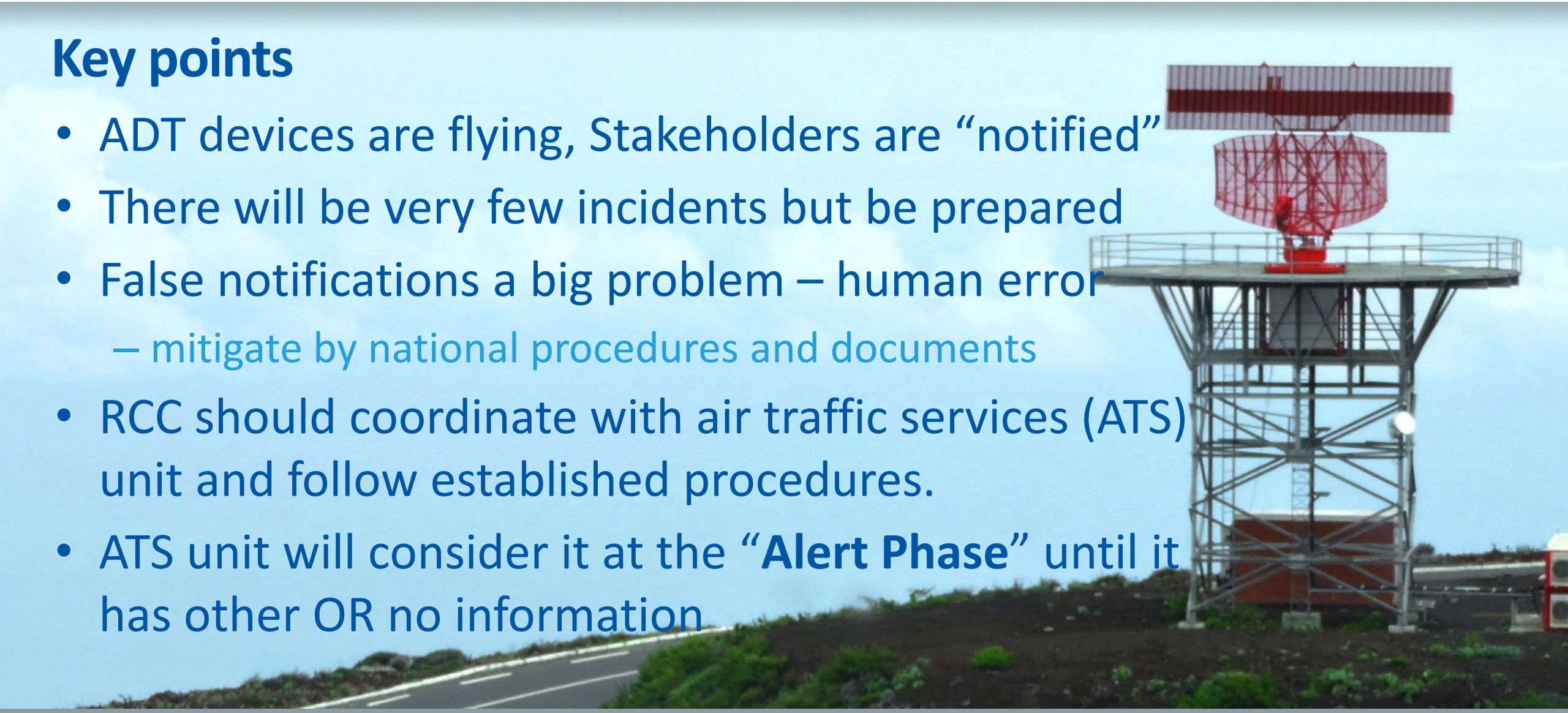
Key points

- ADT devices are flying, Stakeholders are “notified”
- There will be very few incidents but be prepared
- False notifications a big problem – human error
  - mitigate by national procedures and documents
- RCC should coordinate with air traffic services (ATS) unit and follow established procedures.
- ATS unit will consider it at the “**Alert Phase**” until it has other OR no information



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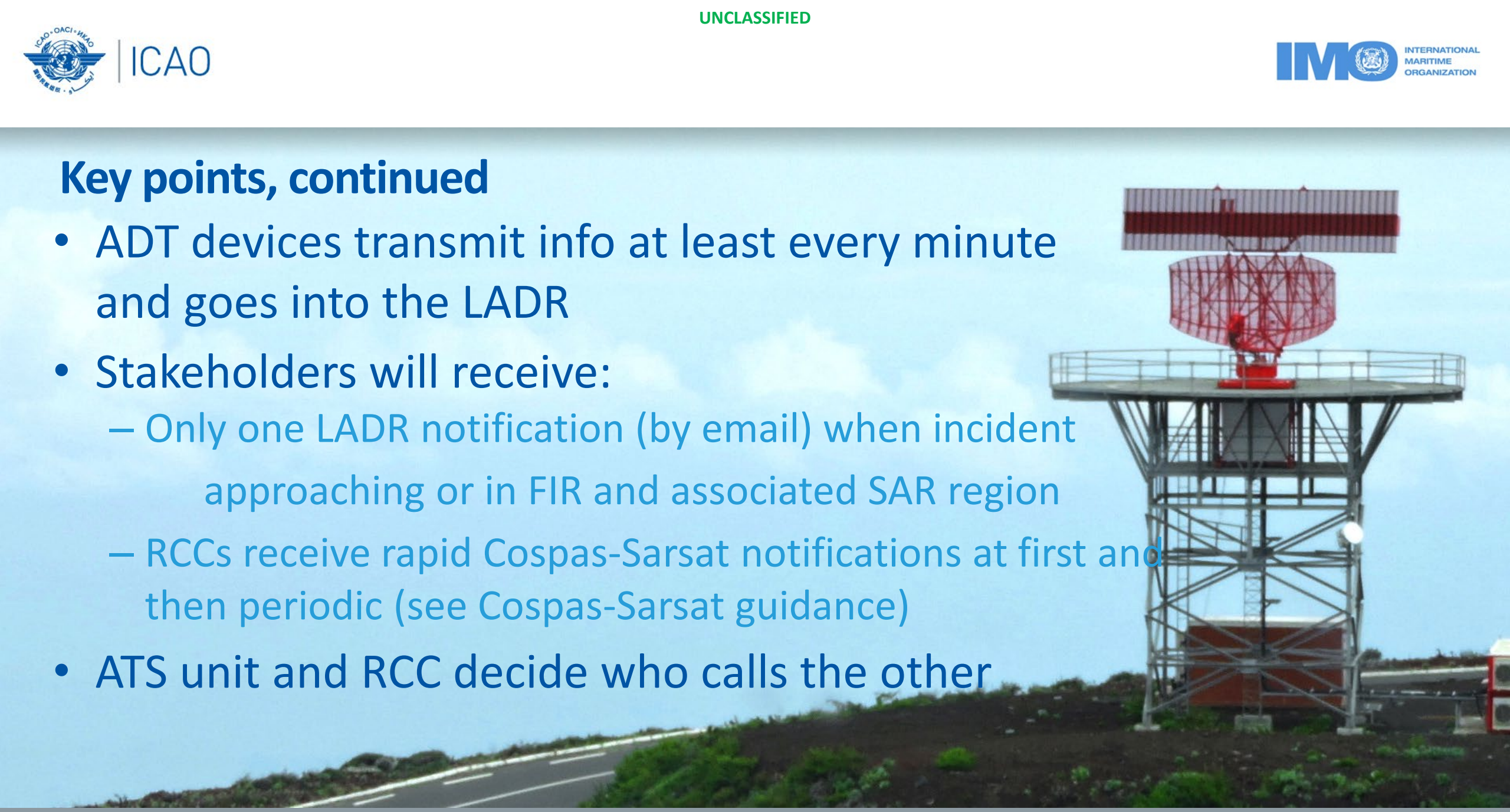
Key points, continued

- ADT devices transmit info at least every minute and goes into the LADR
- Stakeholders will receive:
  - Only one LADR notification (by email) when incident approaching or in FIR and associated SAR region
  - RCCs receive rapid Cospas-Sarsat notifications at first and then periodic (see Cospas-Sarsat guidance)
- ATS unit and RCC decide who calls the other



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The Way Forward

- You now have a general understanding of ADT.
- The IAMSAR Manual, Volume II, Appendix V, provides a flowchart.
- Stakeholders need to develop common procedures & practices and documentation.
- Details in *LADR and OPS Control User Manual*.

The End