



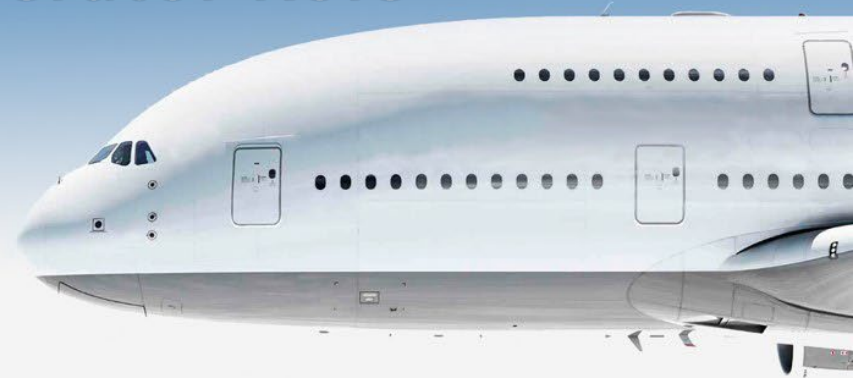
ICAO SAFETY

Module 7

Outline of the Aircraft Operator Role

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**Global Aeronautical Distress and Safety System (GADSS)
Workshop**

Online from 8 to 10 February 2022



Objective

- ✈ The purpose of this module is to raise awareness regarding the role of Air Operators for the GADSS and promote discussion to enhance the development and implementation of adequate operational procedures to ensure the effectiveness of the GADSS functioning.



Review: *Purpose of the GADSS*

- ✈ The Global Aeronautical Distress and Safety System (GADSS) was established to mitigate challenges in the global air navigation system, regarding the timely identification and localization of aircraft in distress, such as occurred with the accidents of Air France flight AF447 and Malaysia Airlines flight MH370.
- ✈ GADSS provides an effective and globally consistent approach to enhancing the alerting procedures of search and rescue services by addressing a number of key improvement areas.



Review: *GADSS components*

GADSS contains three main elements:

1. Aircraft tracking;
2. Location of an aircraft in distress (achieved through autonomous distress tracking (ADT) of aircraft in flight); and
3. Post-flight localization and recovery (PFLR).



Review: *GADSS requirements for Air Operators*

Annex 6 — Operation of Aircraft Part I

6.18.1 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with Appendix 9.

6.18.2 Recommendation.— All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023, should autonomously transmit information from which a position can be determined at least once every minute, when in distress, in accordance with Appendix 9.

6.18.3 The operator shall make position information of a flight in distress available to the appropriate organizations, as established by the State of the Operator.

Note.— Refer to 4.2.1.3.1 for operator responsibilities when using third parties.

The operator shall develop policies and procedures for third parties that perform work on its behalf.



APPENDIX 9. LOCATION OF AN AEROPLANE IN DISTRESS

(Chapter 6, 6.18, refers)

1. PURPOSE AND SCOPE

Location of an aeroplane in distress aims at establishing, to a reasonable extent, the location of an accident site within a 6 NM radius.

2. OPERATION

2.1 An aeroplane in distress shall automatically activate the transmission of information from which its position can be determined by the operator and the position information shall contain a time stamp. It shall also be possible for this transmission to be activated manually. The system used for the autonomous transmission of position information shall be capable of transmitting that information in the event of aircraft electrical power loss, at least for the expected duration of the entire flight.

2.2 An aircraft is in a distress condition when it is in a state that, if the aircraft behaviour event is left uncorrected, can result in an accident. Autonomous transmission of position information shall be active when an aircraft is in a distress condition. This will provide a high probability of locating an accident site to within a 6 NM radius. The operator shall be alerted when an aircraft is in a distress condition with an acceptable low rate of false alerts. In case of a triggered transmission system, initial transmission of position information shall commence immediately or no later than five seconds after the detection of the activation event.

Note 1.— Aircraft behaviour events can include, but are not limited to, unusual attitudes, unusual speed conditions, collision with terrain and total loss of thrust/propulsion on all engines and ground proximity warnings.

Note 2.— A distress alert can be triggered using criteria that may vary as a result of aircraft position and phase of flight. Further guidance regarding in-flight event detection and triggering criteria may be found in the EUROCAE ED-237, Minimum Aviation System Performance Specification (MASPS) for Criteria to Detect In-Flight Aircraft Distress Events to Trigger Transmission of Flight Information.

2.3 When an aircraft operator or an air traffic service unit (ATSU) has reason to believe that an aircraft is in distress, coordination shall be established between the ATSU and the aircraft operator.

2.4 The State of the Operator shall identify the organizations that will require the position information of an aircraft in an emergency phase. These shall include, as a minimum:

- a) air traffic service unit(s) (ATSU); and
- b) SAR rescue coordination centre(s) (RCC) and sub-centres.

Note 1.— Refer to Annex 11 for emergency phase criteria. Note 2.— Refer to Annex 12 for required notifications in the event of an emergency phase.

2.5 When autonomous transmission of position information has been activated, it shall only be able to be deactivated using the same mechanism that activated it.

2.6 The accuracy of position information shall, as a minimum, meet the position accuracy requirements established for ELTs.



AUTONOMOUS DISTRESS TRACKING (ADT)

Several significant functional requirements are necessary to permit the effective implementation of autonomous distress tracking of aircraft in flight, including:

1. Detection of a distress condition;
2. Autonomous transmission of information from which a position can be determined, including a time stamp. This could take the form of, inter alia, transmitted GNSS coordinates, or a radio signal which can be triangulated. The system used for this transmission shall be capable of transmitting the information in the event of aircraft electrical power loss, at least for the expected duration of the entire flight;
3. A means for the aircraft operator to receive such transmitted position information;
4. Validation by the aircraft operator of the distress condition (i.e. it is valid and not the result of a faulty ADT device or some other reason) to avoid unnecessary burdens to SAR services; and
5. Means for the aircraft operator to make the position information of a flight in distress available to the appropriate organizations, as established by the State of the Operator.



LADR/ADT Services

The minimum requirements are for the information to be made available to air traffic service units (ATSUs) and SAR rescue coordination centres (RCCs), as described in Annex 6, Part I, Appendix 9, § 2.4.

- ✈ The LADR serves this purpose
- ✈ The operator is required to subscribe to the LADR.



El Sistema de ADT detecta la condición de peligro/la tripulación de vuelo activa manualmente el dispositivo de ADT



El dispositivo de ADT empieza a transmitir los datos



El LADR recibe la información sobre la posición



El LADR envía una notificación acerca de la presencia de la información sobre la posición al operador de la aeronave



El operador de la aeronave valida la activación del dispositivo de ADT y la naturaleza del suceso



ADT system detects distress condition/flight crew manually activate ADT device



ADT device begins transmitting data



Position information is received by LADR



LADR sends notification of presence of position information to aircraft operator



Aircraft operator validates the activation of the ADT device, and the nature of the incident





El operador de la aeronave informa de los resultados de la



La dependencia ATS determina la fase de emergencia adecuada, de conformidad con el capítulo 5 del anexo 11



La dependencia ATS se pone en contacto con el RCC,



El RCC comprueba la información sobre la posición más reciente en el repositorio para la localización de una aeronave en peligro (LADR)



Aircraft operator informs appropriate ATS unit of outcome of validation



ATS unit determines appropriate emergency phase, as per Annex 11 chapter 5



ATS unit contacts RCC, as per Annex 11 chapter 5



RCC checks the location of an aircraft in distress repository (LADR) for latest position information



El operador de la aeronave informa de los resultados de la



La dependencia ATS determina la fase de emergencia adecuada, de conformidad con el capítulo 5 del anexo 11



La dependencia ATS se pone en contacto con el RCC



El RCC comprueba la información sobre la posición más reciente en el repositorio para la localización de una aeronave en peligro (LADR)



Aircraft operator informs appropriate ATS unit of outcome of validation



ATS unit determines appropriate emergency phase, as per Annex 11 chapter 5



ATS unit contacts RCC, as per Annex 11 chapter 5



RCC checks the location of an aircraft in distress repository (LADR) for latest position information



Summary of Requirements

✈ Equipage

- ✈ aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023, shall autonomously transmit information from which a position can be determined by the operator

✈ Procedures

1. Aircraft tracking
2. ADT validation
3. Information sharing to the appropriate organizations, as established by the State of the operator, as a minimum:
 - a) air traffic service unit(s) (ATSU); and
 - b) SAR rescue coordination centre(s) (RCC) and sub-centres.



Key points for operators

- ✈ Coordination shall be established between the ATSU and the aircraft operator.
- ✈ The operator should have policies and procedures in place to analyze notifications from the ADT system and determine the proper time to alert the ATSU of a distress condition.
 - ✈ Although operators should be careful to avoid false alerts, an early alert from the ATSU to the RCC of a potential situation that can lead to an accident may improve search and rescue efforts towards rescuing potential survivors.
- ✈ Tracking an aircraft in distress is the responsibility of the operator.
 - ✈ The operator may contract part or all of the ADT functionality out to a third party such as a service provider. In this case, the operator is responsible for evaluating the performance of the system to ensure it meets the requirements of the provisions of Annex 6, Part I
- ✈ Outline the role of the company's flight operations center and if ADT system makes any changes.
 - ✈ The operator shall develop policies and procedures for third parties that perform work on its behalf.



Discussion

- ✈ What step(s) do you consider are missing from this procedures?
- ✈ What step(s) do you consider redundant?
- ✈ Identify Main challenges for a successful completion
- ✈ What Challenges can you identify to keep information updated?



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THANK YOU!