SECOND SECTION

EXECUTIVE POWER

SECRETARY OF COMMUNICATIONS AND TRANSPORT

Official Mexican STANDARD NOM-022-SCT3-2011, which establishes the use of flight recorders installed in aircraft operating in Mexican airspace, as well as their characteristics.

In the margin a stamp with the National Coat of Arms, which reads: United Mexican States.- Secretariat of Communications and Transportation.- 4.002/DGAC/NOM-022-SCT3-2011.

OFFICIAL MEXICAN STANDARD NOM-022-SCT3-2011, WHICH ESTABLISHES THE USE OF FLIGHT RECORDERS INSTALLED IN AIRCRAFT OPERATING IN MEXICAN AIRSPACE, AS WELL AS ITS CHARACTERISTICS.

FELIPE DUARTE OLVERA, Undersecretary of Transportation of the Ministry of Communications and Transportation and President of the National Advisory Committee for the Standardization of Air Transportation, based on articles 36 sections I, IV, VI, XII and XXVII of the Organic Law of Public Administration Federal; 1, 38 section II, 40 sections I, III, XVI, 41, 43, 45, 47, 73 and 74 of the Federal Law on Metrology and Standardization; 1, 4, 6 section III and final paragraph, 7 sections I, V and VI, 7 bis sections IV and VII, 17, 32, 35 and 79 of the Civil Aviation Law; 116 section III and 127 of the Regulation of the Civil Aviation Law; 28, 33 and 80 to 82 of the Regulation of the Federal Law on Metrology and Standardization; 2 sections III and XVI, 6 sections XIII and 21 sections XIII, XV, XXVI and XXXI of the Internal Regulations of the Ministry of Communications and Transportation, I have had the pleasure of ordering the publication in the Official Gazette of the Federation of the Official Mexican Standard NOM -022-SCT3-2011 approved by the National Advisory Committee for Air Transport Standardization on February 23, 2011 and which establishes the use of flight recorders installed in aircraft operating in Mexican airspace, as well as their characteristics.

This Official Mexican Standard is published so that it enters into force after 60 days natural, counted from the date of its publication in the Official Gazette of the Federation.

Sincerely

Mexico, DF, January 26, 2012.- The Undersecretary of Transport and President of the Advisory Committee National Standardization of Air Transport, **Felipe Duarte Olvera.-** Heading.

FELIPE DUARTE OLVERA, Undersecretary of Transportation of the Ministry of Communications and Transportation and President of the National Advisory Committee for the Standardization of Air Transportation, based on articles 36 sections I, IV, VI, XII and XXVII of the Organic Law of Public Administration Federal; 1, 38 section II, 40 sections I, III, XVI, 41, 43, 45, 47, 73 and 74 of the Federal Law on Metrology and Standardization; 1, 4, 6 section III and final paragraph, 7 sections I, V and VI, 7 bis sections IV and VII, 17, 32, 35 and 79 of the Civil Aviation Law; 116 section III and 127 of the Regulation of the Civil Aviation Law; 28, 33 and 80 to 82 of the Regulation of the Federal Law on Metrology and Standardization; 2 sections III and XVI, 6 sections XIII and 21 sections XIII, XV, XXVI and XXXI of the Internal Regulations of the Ministry of Communications and Transportation, I have had the pleasure of ordering the publication in the Official Gazette of the Federation of the Official Mexican Standard NOM 022 -SCT3-2011 approved by the National Advisory Committee for Air Transport Standardization on February 23, 2011 and which establishes the use of flight recorders installed in aircraft operating in Mexican airspace, as well as their characteristics.

This Official Mexican Standard is published so that it enters into force after 60 days natural, counted from the date of its publication in the Official Gazette of the Federation.

MEXICAN OFFICIAL STANDARD NOM-022-SCT3-2011, WHICH ESTABLISHES THE USE OF RECORDERS FLIGHT LIGHTS INSTALLED IN AIRCRAFT OPERATING IN MEXICAN AIR SPACE, AS WELL LIKE ITS CHARACTERISTICS

PREFACE

The Civil Aviation Law establishes the powers of the Ministry of Communications and Transportation in civil aviation, among which is the issuance of Official Standards Mexican and other administrative provisions;

The Civil Aviation Law establishes that in the provision of air transport services, the necessary measures must be adopted to guarantee the maximum safety conditions of the aircraft and its operation, in order to protect the physical integrity of users and their goods, as well as that of third parties, for which it attributes to the Ministry of Communications and Transportation, the power to require permit holders,

concessionaires and air operators, who meet certain requirements, in order to maintain the safety levels indicated;

The Civil Aviation Law establishes that the concessionaires and permit holders and, in the case of non-commercial private air transport service, the owners or holders of aircraft, must provide themselves with the necessary technical equipment for the prevention of air accidents and incidents;

The Civil Aviation Law states that civil navigation in airspace over national territory is governed, in addition to the provisions of said law, by the treaties to which the United States of Mexico is a party, being the case that Mexico is a signatory. of the Convention on International Civil Aviation, concluded in the city of Chicago, Illinois, United States of America in 1944, in which Annex 6 Parts I, II and III, establishes that aircraft must be equipped with the flight data recorder (FDR), the flight crew cockpit voice recorder (CVR), a data link recorder (DLR) and an airborne image recorder (AIR);

Aeronautical operations must be strictly and timely regulated through Official Standards
Mandatory application Mexican, in order to guarantee the safety of aircraft and their crew and passengers;

By having a standard that establishes the use of the FDR, CVR, DLR and AIR installed in aircraft operating in Mexican airspace, as well as their characteristics, the safety of aircraft and their operation is imminently preserved and, with this, to the safety of people, avoiding irreparable or irreversible damage, since the objective of flight recorders, both the FDR, CVR, DLR and AIR, is to facilitate the investigation of air accidents or incidents and as a method of prevention to increase the safety of aeronautical operations;

In compliance with the procedure established in the Federal Law on Metrology and Standardization (LFMN), for the issuance of Official Mexican Standards, on October 6, 2010, the Official Mexican Standard Project PROY- was published in the Official Gazette of the Federation. NOM-022-SCT3-2010, Which establishes the use of flight recorders installed in aircraft operating in Mexican airspace, as well as their characteristics, to the effect that in terms of articles 47 of the Federal Law on Metrology and Standardization and 33 of its Regulations, the interested parties will submit comments to the Project within a period of 60 calendar days from the date of publication of the Official Mexican Standard Project.

After this period of 60 calendar days, and in compliance with articles 47 of the Federal Law on Metrology and Standardization and 33 of its Regulations, the comments on the Project were submitted and evaluated by the National Advisory Committee for Air Transport Standardization. of the Official Mexican Standard, approving the same, as well as the Official Mexican Standard, and said response to the comments was published in the Official Gazette of the Federation on November 4, 2011.

The National Advisory Committee for Air Transport Standardization, in accordance with subparagraph d) of section II of article 28 of the Regulations of the Federal Law on Metrology and Standardization, which indicates that the code of the standard must refer to the year in which is approved by the corresponding National Standardization Advisory Committee, was pleased to approve the update of the key or code of the Official Mexican Standard NOM-022-SCT3-2011, which establishes the use of flight recorders installed in aircraft that operate in Mexican airspace, as well as its characteristics, as well as the Official Mexican Standard, in its ordinary session held on February 23, 2011.

By virtue of this and by what is established in article 47 section IV of the Federal Law on Metrology and Standardization, I have been pleased to issue the following: Official Mexican Standard NOM-022-SCT3-2011, which establishes the use of installed flight recorders in aircraft operating in Mexican airspace, as well as their characteristics.

The following participated in the elaboration of this Official Mexican Standard:

SECRETARY OF COMMUNICATIONS AND TRANSPORTATION.

General Directorate of Civil Aviation.

Navigation Services in the Mexican Air Space.

NATIONAL POLYTECHNIC INSTITUTE.

Higher School of Engineering, Mechanics and Electrical-Ticomán Unit.

ATTORNEY GENERAL OF THE REPUBLIC.

General Directorate of Air Services.

COLLEGE OF MEXICAN AERONAUTICAL ENGINEERS, AC

COLLEGE OF AVIATOR PILOTS OF MEXICO, AC

NATIONAL CHAMBER OF AIR TRANSPORTS.

FEDERATION OF ASSOCIATIONS OF PILOTS AND OWNERS OF AGRICULTURAL AIRCRAFT OF THE MEXICAN REPUBLIC, AC

ASSOCIATION OF AERONAUTICAL ENGINEERS, AC

NATIONAL AIRLINES SA DE CV

AEROLITORAL, SA DE CV

AEROVIAS DE MEXICO, SA DE CV

MEXICAN AVIATION COMPANY, SA DE CV

CONCESSIONAIRE VUELA COMPAÑIA DE AVIACION SA DE CV

AERONAUTICAL SERVICES Z, SA DE CV

TRANSPORTS AEROMAR, SA DE CV

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1. Objective and field of application

The objective of this Official Mexican Standard is to establish the use, type and characteristics of flight recorders in civil and State aircraft, other than military, fixed-wing and rotary-wing, and applies to concessionaires, permit holders and air operators that fly or intend to fly in Mexican airspace.

2. References

There are no Official Mexican Standards or Mexican standards that are essential to consult for the application of this Official Mexican Standard.

3. Definitions and abbreviations For

the purposes of this Official Mexican Standard, the following definitions and abbreviations are considered:

3.1. Accident: Any event that causes death or serious injury to people on board the aircraft or causes structural damage or breakage to the aircraft, or for which the aircraft disappears or is in an inaccessible place.

3.2. ADRS: Aircraft Data Recording System.

3.3. Aircraft: Any vehicle capable of autonomous transit in airspace with people, cargo or mail

3.4. Fixed-wing aircraft: A mechanically propelled, heavier-than-air aircraft that owes its lift in flight primarily to aerodynamic reactions exerted on surfaces that remain stationary under given conditions.

3.5. Rotary-wing aircraft: Heavier-than-air aircraft that is kept aloft by the reaction of air on one or more rotors, powered by an engine, rotating about vertical or near-vertical axes.

3.6. AIR: On-board image recorder.

3.7. AIRS: On -board image recording system.

3.8. Aeronautical Authority: The Ministry of Communications and Transportation through the Directorate General of Civil Aeronautics.

3.9. Civil Aviation Authority: Governing authority, in aeronautical matters, of a permit holder or foreign air operator.

3.10. CARS: Flight crew cabin audio recording system.

3.11. Concessionaire: Commercial company constituted in accordance with Mexican laws, to which the Ministry of Communications and Transportation grants a concession for the operation of the regular national public air transportation service, and is for passengers, cargo, mail, or a combination of these, is subject to national routes, itineraries and fixed frequencies, as well as to the registered rates and the schedules authorized by the Secretariat.

3.12. CVR: Flight crew cockpit voice recorder.

3.13. Applicable legal provision: Aeronautical technical publications such as: Alerts, Policy Letters, Mandatory Circulars and Advisory Circulars, which must be considered explanatory and regulatory in nature, where appropriate.

3.14. DLR: Data Link Recorder.

3.15. DLRS: Data Link Recording System.

3.16. DME: Distance Measuring Radio Distance Equipment.

3.17. State of Design: The State that has jurisdiction over the entity responsible for type design.

3.18. EGT: Exhaust gas temperature.

3.19. EPR: Engine pressure ratio.

3.20. FDR: Flight Data Recorder.

3.21. GCAS: Ground Collision Avoidance System.

3.22. GNSS: GNSS is a global positioning and timing system, which includes one or more satellite constellations, aircraft receivers, and system integrity monitoring, and is

may be increased, as necessary, in support of required navigation performance (RNP) during the ongoing phase of operation.

3.23. GPWS: Ground Proximity Warning System.

3.24. ILS: Instrument Landing System.

3.25. INS: Inertial Navigation Systems.

3.26. Incident: Any event related to the use of an aircraft, which does not become a accident that affects or may affect the safety of operations.

3.27. Minimum Equipment List (MEL): List of minimum equipment for the operation of an aircraft, in accordance with the minimums prescribed by the Aeronautical Authority.

3.28. MLS: Microwave Landing System.

3.29. N1: Low pressure compressor speed (two-stage compressor); blower speed (three stage compressor).

3.30. N2: High pressure compressor speed (two-stage compressor); compressor speed intermediate pressure (three stage compressor).

3.31. N3: High pressure compressor speed (three-stage compressor).

3.32. ICAO: International Civil Aviation Organization.

3.33. Commercial air transport operation: Operation of aircraft for the transport of passengers, cargo or mail for profit.

3.34. Air operator: Owner or possessor of a State aircraft, as well as air transport private non-commercial, Mexican or foreign.

3.35. Permittee: Moral or physical person, in the case of commercial private air service, national or foreign, to which the Ministry of Communications and Transport grants a permit to carry out its activities, which may be the provision of regular international air transport service. , national and international non-regular and private commercial.

3.36. Recommended: The recommendation of the Aeronautical Authority for the installation of recorders of flight for a certain type of aircraft, but should not be considered as a mandatory action.

3.37. Flight recorder: Any type of certified recorder or recorder installed in the aircraft, in order to facilitate the investigation of accidents or incidents.

3.38. TAWS: Terrain Proximity Warning and Impact Alarm System (Terrain Awareness and Warning System).

3.39. Flight time: Total time elapsed since the aircraft begins to move under its own power to take off, until it stops at the end of the flight. Note: Flight time, as defined herein, is synonymous with general-purpose “between chocks” time, which is counted from the time the aircraft starts moving at the loading point, until it comes to a stop at the loading point. the discharge point.

3.40. TLA: Thrust lever angle.

3.41. VOR: Very High Frequency Omnidirectional Radio Beacon.

4. General provisions

4.1. All concessionaires, permit holders and air operators, who own aircraft with the weight and characteristics described in this standard, for which they intend to have the Certificate of Airworthiness granted or renewed in accordance with the Civil Aviation Law, must comply with the provisions in this Official Mexican Standard.

4.2. All aircraft indicated in numeral 4.1. of this standard, must use flight recorder equipment of the type corresponding to the characteristics of that aircraft.

5. Flight recorders

5.1. Flight recorder characteristics.

5.1.1. Crash protected flight recorders consist of four systems: a flight data recorder (FDR), a flight crew cockpit voice recorder (CVR), a data link recorder (DLR) and an on-board image recorder (AIR), the image information and data link can be recorded in the CVR or in the FDR.

5.1.2. Lightweight flight recorders comprise four systems: an Aircraft Data Recording System (ADRS), a Crew Cabin Audio Recording System (CARS), an Airborne Image Recording System (AIRS) and a data link recording system (DLRS).

Image and data link information may be recorded in CARS or ADRS.

5.2. General requirements for flight recorders.

5.2.1. The containers where the flight recorder systems are located must: **(a)** Be painted in a

conspicuous orange or yellow colour;

(b) Carry reflective materials on its exterior to facilitate its location; Y

(c) Have an automatic underwater location device safely integrated.

5.2.2. Flight recorder systems must be installed so that:

(a) The probability of damage to records is minimal. In the case of fixed-wing aircraft, to satisfy this requirement, it must be placed as far as possible towards the rear of the aircraft's fuselage, and in the case of those equipped with a pressure cabin, it must be placed in the vicinity of the airframe bulkhead. back pressure;

(b) Receive their electrical power from a busbar that offers maximum reliability for the operation of the flight recorder systems, without compromising service to essential or emergency loads;

(c) There is an auditory or visual device to verify before the flight that the systems of the flight recorders are working satisfactorily; Y

(d) If the flight recorder systems have an instant erase device, the Installation must be designed to prevent the device from operating during flight or due to impact.

5.2.3. When flight recorder systems are tested using the methods defined by the Civil Aviation Authority of the component's State of Design, they must show complete suitability for operation in the extreme environmental conditions among which their operation has been planned.

5.2.4. Arrangements must be made to achieve a precise time correlation between the records from flight recorder systems.

5.3. The manufacturer provides the Civil Aviation Authority of the State of Design of the component with the following information regarding flight recorder systems:

(a) Operating instructions, equipment limitations, and installation procedures established by the manufacturer;

(b) Origin or source of the parameters and equations that relate the values with measurement units;
Y

(c) Test reports carried out by the manufacturer.

6. Flight Data Recorder (FDR) and Aircraft Data Recording System (ADRS)

6.1. The FDR must start recording before the aircraft begins to move under its own power and must continue recording until the end of the flight when the aircraft can no longer move under its own power.

6.2. The FDR for fixed-wing aircraft are classified into types I, IA, II and IIA, and in the case of rotary-wing aircraft they are classified into types IV, IVA and V, depending on the number of parameters that must be recorded and the time required. for the conservation of registered information.

6.3. FDR types.

6.3.1. The FDR of types I and IA must record the necessary parameters to accurately determine the flight path, speed, attitude, power or thrust of the engines, configuration and operation of a fixed-wing aircraft.

6.3.2. The FDR of types II and IIA must record the necessary parameters to accurately determine the flight path, speed, attitude, power or thrust of the engines and configuration of the lift devices and aerodynamic resistance of a fixed-wing aircraft.

6.3.3. The type IV FDR must record the necessary parameters to accurately determine the flight path, speed, attitude, power or thrust of the engines and operation of a rotary wing aircraft.

6.3.4. The IVA type FDR must record the necessary parameters to accurately determine the flight path, speed, attitude, power or thrust of the engines, configuration and operation of a rotary wing aircraft.

6.3.5. The V-type FDR must record the parameters necessary to accurately determine the flight path, speed, attitude, and power or thrust of the engines of a rotary-winged aircraft.

6.4. Parameters to be recorded by the FDRs.

6.4.1. Parameters that satisfy the FDR requirements are listed in 6.4.1.1., 6.4.1.2., 6.4.1.3., 6.4.1.4. and 6.4.1.5. of this standard. The number of parameters to be recorded depends on the complexity of each fixed-wing aircraft. Parameters not marked with an asterisk (*) are mandatory and must be recorded regardless of the complexity of the fixed-wing aircraft. In addition, parameters marked with an asterisk (*) must be recorded if the fixed-wing aircraft systems or flight crew use a parameter information data source for fixed-wing aircraft operation. However, these parameters may be substituted by other parameters, due consideration being given to the type of fixed-wing aircraft and the characteristics of the recording equipment.

6.4.1.1. The following parameters satisfy the requirements regarding the flight path and the speed:

- Pressure altitude.
- Indicated airspeed or calibrated airspeed.
- Air-ground situation and air-ground sensor of each leg of the landing gear, if possible.
- Total temperature or outside air temperature.
- Heading (of the aircraft) (primary reference of the flight crew).
- Normal acceleration.
- Lateral acceleration.
- Longitudinal acceleration (axis of the aircraft).
- Time or timing relative to time.
- Navigation data*: drift angle, wind speed and direction, latitude/longitude.
- Speed with respect to the ground*.
- Radio altimeter altitude*.

6.4.1.2. The following parameters satisfy the attitude requirements:

- Pitch attitude.
- Roll attitude.
- Yaw or skid angle*.
- Attack angle*.

6.4.1.3. The following parameters satisfy the requirements regarding the power or thrust of the engines:

- Engine Thrust/Power: Thrust/propel power on each engine, throttle lever position thrust/power in the flight crew cabin.
- Thrust reverser position*.
- Engine thrust control*.
- Selected engine thrust*.

- Engine bleed valve position*.

- Other engine parameters*: EPR, N1, indicated vibration level, N2, EGT, TLA, flow of fuel, fuel cut off lever position, N3.

6.4.1.4. The following parameters satisfy the configuration requirements:

- Position of the pitch compensation surface.

-Flaps*: position of the trailing edge flap, selected position indicator in the cockpit of the flight crew.

- Flaps*: position of the leading edge flaps, indicator selected position in the flight crew cabin.

- Landing gear*: landing gear, position of the landing gear selector control.

- Position of the yaw compensation surface*.

- Position of the roll compensation surface*.

- Pitch trim control position in the flight crew cabin*.

- Roll trim command position in the flight crew cabin*.

- Yaw trim command position in the flight crew cabin*.

- Ground spoilers and airbrakes*: position of ground spoilers, selected position of ground spoilers, position of airbrakes, selected position of airbrakes.

- Selected indicator of defrost or antifreeze systems*.

- Hydraulic pressure (each of the systems)*.

- Amount of fuel in the tail tank CG*.

- Condition of the electrical bars (buses) of alternating current (AC)*.

- Condition of the electrical bars (buses) of direct current (DC)*.

- Position of the auxiliary power unit (APU) purge valve*.

- Calculated center of gravity*.

6.4.1.5. The following parameters satisfy the requirements regarding the operation:

- Notices

- Primary flight control surface and pilot action on primary flight control: pitch axis, roll axis, yaw axis.

- Pass by radio beacon.

- Frequency selection of each navigation receiver.

- Manual control of radio transmission and CVR/FDR synchronization reference.

- Condition and mode of engagement of the autopilot/automatic throttle/automatic flight control system (AFCS)*.

- Adjustment of the selected barometric pressure*: pilot, co-pilot.

- Selected altitude (all modes of operation selectable by the pilot)*.

- Selected speed (all modes of operation selectable by the pilot)*.

- Selected speed in mach number (all modes of operation selectable by the pilot)*.

- Selected vertical speed (all modes of operation selectable by the pilot)*.

- Selected heading (of the aircraft) (all modes of operation selectable by the pilot)*.

- Selected flight path (all modes of operation selectable by the pilot)*: heading (navigate beam)/desired track (DSTRK), angle of the path.

- Selected decision height*.

- Presentation format of the electronic flight instrument system (EFIS)*: pilot, co-pilot.

- Multifunctional presentation format/engines/alerts*.

- GPWS/TAWS/GCAS* status: terrain display mode selection, including inset display status, terrain alerts, both cautions and advisories, and advisory, on/off switch position.

- Low pressure warning*: hydraulic pressure, pneumatic pressure.

- Computer failure*.

- Loss of cabin pressure*.

- Traffic alert and collision avoidance system/airborne collision avoidance system (TCAS/ACAS)*.

- Icing detection*.

- Warning of vibrations in each motor*.

- Warning of excess temperature in each motor*.

- Low oil pressure warning on each engine*.

- Overspeed warning on each motor*.

- Wind shear warning*.

- Protection against operational loss, activation of shaker and lever pusher*.

- All action forces on the flight controls in the flight crew cabin*: action forces in the flight crew cabin on the steering wheel, joystick, rudder.

- Vertical deviation*: ILS glide path, MLS elevation, GNSS approach path.

- Horizontal deviation*: ILS localizer, MLS azimuth, GNSS approach path.

- Distances DME 1 and 2*.

- Primary navigation system reference*: GNSS, INS, VOR/DME, MLS, Loran C, ILS.

- Brakes*: brake pressure left and right, position of the left and right brake pedal.

- Date*.

- Event indicator button*.

- Holographic projection activated*.

- Paravisual presentation activated*.

6.4.2. The parameters that satisfy the requirements of the FDR of type IV, IVA and V are indicated in numerals 6.4.2.1., 6.4.2.2., 6.4.2.3., 6.4.2.4. and 6.4.2.5. of this standard. The number of parameters to be recorded depends on the complexity of each rotary wing aircraft. Parameters not marked with an asterisk (*) are mandatory and must be recorded regardless of the complexity of the rotary-winged aircraft. In addition, parameters marked with an asterisk (*) must be recorded if the rotary-wing aircraft systems or the flight crew employ a data source of parameter information for rotary-wing aircraft operation. However, these parameters may be replaced by other parameters, due consideration being given to the type of rotary-wing aircraft and the characteristics of the recording equipment.

6.4.2.1. The following parameters satisfy the requirements for flight path and speed:

- Pressure altitude.

- Indicated airspeed.

- Outside air temperature.

- Heading of the aircraft.

- Normal acceleration.

- Lateral acceleration.

- Longitudinal acceleration (axis of the aircraft).

- Time or timing relative to time.

- Navigation data*: drift angle, wind speed and direction, latitude/longitude.

- Radio altimeter altitude*.

6.4.2.2. The following parameters satisfy the attitude requirements:

- Pitch attitude.

- Roll attitude.

- Yaw attitude.

6.4.2.3. The following parameters satisfy the requirements regarding motor power:

- Power in each engine: turbine speed at free power (Nf), engine torque, generator speed engine throttle (Ng), throttle position in flight crew cabin.

- Rotor: main rotor speed, rotor brake.

- Main gearbox oil pressure*.

- Gearbox oil temperature*: main gearbox oil temperature, intermediate gearbox oil temperature, tail rotor gearbox oil temperature.

- Engine exhaust gas temperature (T4)*.

- Turbine intake temperature (TIT/ITT)*.

6.4.2.4. The following parameters satisfy the configuration requirements:

- Position of the landing gear or of the landing gear selector control*.

- Amount of fuel*.

- Water content in the icing detector*.

6.4.2.5. The following parameters satisfy the requirements regarding the operation:

- Low hydraulic pressure.

- Notices.

- Primary flight control surface and pilot action on primary flight control: pitch axis, roll axis, yaw axis.

- Primary flight controls - position of the pilot's control or result of the actuation: general pitch, longitudinal cyclic pitch, lateral cyclic pitch, tail rotor pedal, adjustable stabilizer, hydraulic selection.

- Pass by radio beacon.

- Frequency selection of each navigation receiver.

- Condition and mode of engagement of the automatic flight control system (AFCS)*.

- Coupling of the stability increase system*.

- Indicated sling load force*.

- Vertical beam deviation*: ILS glide path, MLS elevation, GNSS approach path.

- Horizontal beam deviation*: ILS localizer, MLS azimuth, GNSS approach path.

- Distances DME 1 and 2*.

- Altitude variation regime.

- Water content in the icing detector*.

- Rotary-wing aircraft equipment condition and use monitoring system (HUMS)*: engine data, chip detectors, track timing, excessive values of discrete positions, broadband average engine vibration.

6.5. Parameters to be recorded.

6.5.1. Type I FDR.

This recorder must be capable of recording, depending on the type of fixed-wing aircraft, the first 32 parameters indicated in the Regulatory Appendix A table 1 of this Official Mexican Standard.

6.5.2. Type IA FDR.

This recorder must be capable of recording, depending on the type of fixed-wing aircraft, the 78 parameters indicated in the Regulatory Appendix A table 1 of this Official Mexican Standard.

6.5.3. FDR of types II and IIA.

This recorder must be capable of recording, depending on the type of fixed-wing aircraft, the first 16 parameters indicated in Regulatory Appendix A, table 1 of this standard. The Type IIA FDR, in addition to having a recording duration of 30 minutes, must retain sufficient information from the preceding takeoff for calibration purposes.

6.5.4. Type IV FDR.

This recorder must be capable of recording, depending on the type of rotary wing aircraft, the first 30 parameters indicated in Regulatory Appendix A table 2 of this Official Mexican Standard.

6.5.5. VAT type FDR.

This recorder must be able to record, depending on the type of rotary wing aircraft, the 48 parameters indicated in the Regulatory Appendix A table 2 of this Official Mexican Standard.

6.5.6. V-type FDR.

This recorder must be capable of recording, depending on the type of rotary wing aircraft, the first 15 parameters indicated in Regulatory Appendix A table 2 of this Official Mexican Standard.

6.5.7. SARD

The ADRS must be able to record, depending on the type of aircraft, the essential parameters (E) indicated in Regulatory Appendix B of this Official Mexican Standard.

6.5.8. The measurement interval, the recording interval and the accuracy of the parameters of the installed equipment are normally verified by applying methods defined by the Civil Aviation Authority of the State of Design of the component.

6.5.9. Concessionaires, permit holders and air operators must keep the documentation related to the assignment of parameters, conversion equations, periodic calibration and other information on operation/maintenance. The documentation must be sufficient to ensure that the Aeronautical Authority and/or the Authority in charge of the accident investigation have the necessary information to read the data in technical measurement units.

6.6. Record duration.

6.6.1. All FDRs of types I, IA and II, must keep the information registered during the last 25 hours of its operation; in the case of type IIA FDRs, they must keep the information recorded during the last 30 minutes of their operation.

6.6.2. All FDRs of types IV, IVA and V must keep the information registered during the last 10 hours of operation.

6.7. Applicability for the use of FDR, AIR and ADRS.

6.7.1. All fixed-wing turbine aircraft belonging to or in the possession of concessionaires and permit holders, having a configuration of 10 or more passengers, excluding flight crew seats; or with a maximum certificated take-off weight of 5,700 kilograms, for which the type certificate was first issued on or after January 1, 2016, must be equipped with:

(a) A Type II FDR; or **(b)** A

class C AIR capable of recording the flight path and speed parameters displayed to the pilot(s); either

(c) An ADRS capable of recording the essential parameters indicated in Appendix B Regulation of this Official Mexican Standard.

6.7.2. It is recommended that all fixed-wing turbine aircraft belonging to or in the possession of concessionaires and permit holders, that have a configuration of 10 or more passengers, excluding the seats for the flight crew; or with a maximum certificated take-off weight of 5,700 kilograms, for which the individual certificate of airworthiness was first issued on or after January 1, 2016, must be equipped with:

(a) A Type II FDR; either

(b) A class C AIR capable of recording the flight path and speed parameters displayed to the pilot(s); either

(c) An ADRS capable of recording the essential parameters indicated in Appendix B Regulation of this Official Mexican Standard.

6.7.3. All rotary wing aircraft having a configuration of more than 10 passengers, for which the individual certificate of airworthiness was first issued on or after January 1, 2016, must be equipped with an IVA type FDR.

6.7.4. All aircraft required to record normal acceleration, lateral acceleration and longitudinal acceleration, for which the type certificate was first issued on or after January 1, 2016, and which are required to be equipped with an FDR, must record these parameters. at a maximum sampling and recording interval of 0.0625 seconds.

6.7.5. All aircraft required to record pilot action on primary flight control or primary flight control surface position (pitch, roll, yaw), whose type certificate was first issued on January 1, 2016 or later, and which are required to be equipped with an FDR, must record such parameters at a maximum sampling and recording interval of 0.125 seconds.

6.7.6. Use of FDRs on fixed-wing and rotary-wing aircraft whose certificate of airworthiness individual certificate was first issued on or after January 1, 1989.

6.7.6.1. All fixed-wing aircraft with a maximum certificated take-off weight greater than 27,000 kilograms, must be equipped with a type I FDR.

6.7.6.2. All fixed-wing aircraft belonging to or in the possession of concessionaires and permit holders, which have a configuration of 10 or more passengers, excluding flight crew seats; or with a maximum certificated takeoff weight of 5,700 kilograms and up to and including 27,000 kilograms of maximum certificated takeoff weight, must be equipped with a type II FDR. This same provision is recommended for those aircraft belonging to or in the possession of air operators.

6.7.6.3. It is recommended for multi-engine turbine fixed-wing aircraft, belonging to or in the possession of concessionaires and permit holders, that have a configuration of 9 or fewer passengers, excluding flight crew seats; or with a maximum certified take-off weight equal to or less than 5,700 kilograms and which have been certified by the State of Design on or after January 1, 1990, must be equipped with a Type IIA FDR.

6.7.6.4. All rotary-wing aircraft with a maximum certificated take-off weight greater than 7,000 kilograms, or with a configuration of more than 19 passengers, excluding flight crew seats, must be equipped with a Type IV FDR.

6.7.6.5. It is recommended for rotary wing aircraft that have a configuration of more than 10 passengers, excluding seats for the flight crew and up to and including 7,000 kilograms of maximum certificated take-off weight, to be equipped with a type V FDR.

6.7.7. Use of FDRs on fixed-wing aircraft for which an individual certificate of airworthiness has been first issued on or after January 1, 1987, but before January 1, 1989.

6.7.7.1. All turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a configuration of 10 or more passengers, excluding the seats for the flight crew; or with a maximum certified takeoff weight of 5,700 kilograms, except those indicated in numeral 6.7.7.3. of this standard, must be equipped with an FDR that records time or time reference, altitude, airspeed, normal acceleration, and heading.

6.7.7.2. It is recommended for turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a configuration of 10 or more passengers, excluding the seats for the flight crew; or with a maximum certified takeoff weight of 5,700 kilograms, except those indicated in numeral 6.7.7.3. of this standard, must be equipped with an FDR that records time or time reference, altitude, airspeed, normal acceleration, heading, and other parameters necessary to determine pitch attitude, roll attitude, radio transmission control, and power or thrust of each engine.

6.7.7.3. All turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a maximum certified take-off weight greater than 27,000 kilograms, and whose prototype has been certified by the State of Design after September 30, 1969, must be equipped with a type II FDR.

6.7.8. Use of FDRs on fixed-wing aircraft for which the individual certificate of airworthiness was first issued before January 1, 1987.

6.7.8.1. All turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a configuration of 10 or more passengers, excluding the seats for the flight crew; or with a maximum certified takeoff weight of 5,700 kilograms, must be equipped with an FDR that records the time or time reference, altitude, airspeed, normal acceleration, and heading.

6.7.8.2. It is recommended for turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a maximum certified take-off weight greater than 27,000 kilograms and whose prototype has been certified by the State of Design after September 30, 1969, to be equipped with a FDR that registers, in addition to the time or time reference, altitude, airspeed, normal acceleration and heading, the additional parameters that are necessary to meet the objectives to determine:

(a) The attitude of the aircraft upon reaching its flight path, and

(b) The basic forces acting on the aircraft leading it to the achieved flight path and the origin of such forces.

6.7.9. All fixed-wing aircraft belonging to or in the possession of concessionaires and permit holders, which have a configuration of 10 or more passengers, excluding flight crew seats; or with a maximum certificated take-off weight of 5,700 kilograms, whose certificate of airworthiness was first issued on or after January 1, 2005, must be equipped with a Type IA FDR.

6.7.10. Combined recorders.

6.7.10.1. All fixed-wing aircraft, with a maximum certificated take-off weight of more than 15,000 kilograms, whose type certificate was issued for the first time on or after January 1, 2016, which in accordance with this standard must be equipped with an FDR and CVR, they must be equipped with two combination recorders (FDR/CVR). They must be installed according to what is established in numeral 5.2.2. Subsection (a) of this Official Mexican Standard.

6.7.10.2. It is recommended that all fixed-wing aircraft, with a maximum certificated take-off weight of more than 5,700 kilograms, whose type certificate was issued for the first time on or after January 1, 2016, that in accordance with this standard need to be equipped with both an FDR and CVR, are equipped with two combination recorders (FDR/CVR).

6.7.10.3. It is recommended that all fixed-wing aircraft with a maximum certificated take-off weight of more than 5,700 kilograms, which in accordance with this standard must be equipped with an FDR and CVR, may alternatively be equipped with two combined recorders (FDR/CVR).

6.7.10.4. It is recommended that all fixed-wing multi-engine turbine aircraft, belonging to or in the possession of concessionaires and permit holders, with a maximum certified take-off weight of 5,700 kilograms or less, which in accordance with this standard must be equipped with an FDR and CVR , can alternatively be equipped with a combined recorder (FDR/CVR).

6.7.10.5. Combined recorders (FDR/CVR), in order to comply with the flight recorder equipment requirements, can only be used as specifically indicated in this Official Mexican Standard.

6.7.11. Discontinuation.

6.7.11.1. The use of metallic tape FDR is not permitted.

6.7.11.2. It is recommended to discontinue the use of analog FDRs in frequency modulation (FM).

6.7.11.3. As of January 1, 2012, the use of analog FDRs in frequency modulation (FM) is not allowed.

6.7.11.4. The use of photographic film FDR is not permitted.

6.7.11.5. As of January 1, 2011, it is recommended that the use of magnetic tape FDRs be discontinued.

6.7.11.6. As of January 1, 2016, the use of magnetic tape FDRs is not allowed.

**7. Flight crew cockpit voice recorder (CVR) and voice recording system.
audio in the cabin of the flight crew (CARS)**

7.1. CVR and CARS must start recording before the aircraft begins to move under its own power and must continue recording until the end of the flight when the aircraft can no longer move under its own power. In addition, depending on the availability of electrical power, the CVR and CARS should start recording as soon as possible during the pre-engine start flight crew cabin check, at the start of the flight, until the cabin check. of the flight crew that is carried out at the end of the flight, immediately after the engine is shut down.

7.2. The CVR must record, on four or more separate channels, the following:

(a) Voice communications transmitted or received in the aircraft by radio;

(b) The sound environment of the flight crew cabin;

(c) Oral communications from crew members in the flight crew cabin, transmitted by the aircraft intercom, when such system is installed;

(d) Oral or auditory signals that identify navigation or approach aids received through a headset or speaker; Y

(e) Oral communications of the crew members through the loudspeaker system intended for the passengers, when such a system is installed.

7.3. The CARS must record, in two or more separate channels, the following:

(a) Voice communications transmitted or received in the aircraft by radio;

(b) The sound environment of the flight crew cabin; and **(c)** Oral

communications from crewmembers in the flight crew cabin, transmitted by the aircraft intercom, when such a system is installed.

7.4. operating requirements.

7.4.1. The CVR must simultaneously record four channels, unless it is of the type indicated in numeral 7.4.2. of this standard. For magnetic tape CVRs, to ensure accurate time correlation between channels, the CVR must operate in the immediate record format. If a bi-directional configuration is used, the immediate record format and channel assignment must be preserved in both directions.

7.4.2. The preferred channel assignment is as follows:

(a) Channel 1 - Co-pilot headset and "live" boom microphone

(b) Channel 2 - Pilot headset and "live" boom microphone

(c) Channel 3 - Environment microphone

(d) Channel 4 - Time reference, main rotor speed or vibration environment in the flight crew cabin, in the case of rotary-wing aircraft, plus headphones for the third or fourth crew member and "live" microphone , where appropriate.

Note 1 - Channel 1 should be closest to the bottom of the recording head.

Note 2 - In the preferred channel assignment, it has been assumed that current conventional magnetic tape transport mechanisms are used and is specified because the outer edges of the tape are at greater risk of damage than its middle. This is not intended to exclude the use of other recording media that do not have such restrictions.

7.5. Record duration.

7.5.1. As of January 1, 2016, all CVRs installed on fixed-wing and rotary-wing aircraft, they must keep the recorded information during the last 2 hours of their operation.

7.5.2. All CVRs must keep the information recorded during the last 30 minutes of their operation, except for the aircraft included in numeral 7.5.3. of this Official Mexican Standard.

7.5.3. All fixed-wing aircraft belonging to or in the possession of concessionaires, permit holders and air operators, with a maximum certified take-off weight greater than 5,700 kilograms, whose individual airworthiness certificate was issued for the first time on January 1, 2003 or on later date, they must be equipped with a CVR with the capacity to keep the information registered during the last 2 hours of its operation.

7.5.4. It is recommended that the CVR, installed in fixed-wing aircraft belonging to or in the possession of concessionaires, permit holders and air operators, that have a maximum certified take-off weight greater than 5,700 kilograms, whose individual airworthiness certificate was issued for the first time on 1 January 1990 or later, please retain the information recorded for the last 2 hours of operation.

7.5.5. It is recommended that the CVR, installed in rotary-wing aircraft whose certificate of airworthiness was issued for the first time on or after January 1, 1990, keep the information recorded during the last 2 hours of its operation.

7.6. Applicability for the use of CVR and CARS.

7.6.1. All fixed-wing turbine aircraft belonging to or in the possession of concessionaires and permit holders, whose type certificate was issued for the first time on January 1, 2016, or on a later date, and that require more than one pilot for their operation. , must be equipped with a CVR or a CARS.

7.6.2. It is recommended that all fixed-wing turbine aircraft belonging to or in the possession of concessionaires and permit holders, whose individual airworthiness certificate was issued for the first time on January 1, 2016, or on a later date, and that require more than one pilot for their operation, be equipped with a CVR or a CARS.

7.6.3. Use of CVRs in fixed-wing and rotary-wing aircraft whose certificate of airworthiness individual certificate was first issued on or after January 1, 1987.

7.6.3.1. All fixed-wing aircraft belonging to or in the possession of concessionaires and permit holders, which have a maximum certified take-off weight greater than 5,700 kilograms, must be equipped with a CVR.

7.6.3.2. All fixed-wing aircraft belonging to or in the possession of air operators, having a maximum certificated take-off weight greater than 27,000 kilograms, must be equipped with a CVR.

7.6.3.3. It is recommended that fixed-wing aircraft belonging to or in the possession of air operators, which have a maximum certified takeoff weight greater than 5,700 and up to 27,000 kilograms inclusive, must be equipped with a CVR.

7.6.3.4. All rotary wing aircraft with a maximum certificated takeoff weight greater than 7,000 kilograms must be equipped with a CVR. In the case of rotary wing aircraft that are not equipped with an FDR in accordance with the provisions of this standard, they must record the main rotor speed on the CVR.

7.6.3.5. It is recommended that all rotary wing aircraft with a maximum certificated takeoff weight greater than 3,180 kilograms must be equipped with a CVR. In the case of rotary wing aircraft that are not equipped with an FDR in accordance with the provisions of this standard, they must record the main rotor speed on the CVR.

7.6.4. Use of CVRs in fixed-wing and rotary-wing aircraft whose individual certificate of airworthiness was first issued before January 1, 1987.

7.6.4.1. All fixed-wing turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a maximum certified take-off weight greater than 27,000 kilograms, and whose prototype has been certified by the State of Design after September 30, 1969, must be equipped with a CVR.

7.6.4.2. It is recommended that all fixed-wing turbine aircraft belonging to or in the possession of concessionaires and permit holders, which have a maximum certified take-off weight greater than 5,700 and up to 27,000 kilograms inclusive, and whose prototype has been certified by the State of Design after the September 30, 1969, must be equipped with a CVR.

7.6.4.3. All rotary wing aircraft to carry out international commercial air transport operations that have a maximum certified takeoff weight greater than 7,000 kilograms must be equipped with a CVR. In the case of rotary wing aircraft that are not equipped with an FDR in accordance with the provisions of this standard, they must record the main rotor speed on the CVR.

7.7. Discontinuation.

7.7.1. As of January 1, 2016, the use of wireless and magnetic tape CVRs is not allowed.

7.7.2. As of January 1, 2011, it is recommended that the use of wireless CVRs and magnetic tape be discontinued.

8. Data Link Recorder (DLR)

8.1. Applications that must be registered.

8.1.1. When the flight path of the fixed-wing and rotary-wing aircraft has been authorized or controlled through the use of data link messages, all data link messages, both upstream (sent to the aircraft) and downstream (sent from the aircraft). To the extent possible, the time the screen messages were displayed to flight crew members should be recorded, as well as the time of the responses.

8.1.2. Applications without an asterisk (*) are required and must be registered regardless of system complexity. Also, applications that have an asterisk (*) should be registered to the extent feasible, depending on the system architecture. Messages relating to the applications listed below should be logged:

(a) Data link initiation capability; **(b)** Controller-
pilot data link communications; **(c)** Data link flight information
services; **(d)** Automatic dependent surveillance – contract;
(e) Automatic dependent surveillance – broadcast *; and **(f)**
Control of aeronautical operations*.

8.2. Record duration.

8.2.1. The minimum duration of the record must be equivalent to the duration of the CVR.

8.3. Correlation of records.

8.3.1. The data link records must be able to be correlated with the audio records in the flight crew cabin.

8.4. Applicability for DLR use.

8.4.1. All fixed-wing and rotary-wing aircraft whose individual airworthiness certificate was issued for the first time on or after January 1, 2016, that use any of the applications to establish data link communications listed in numeral 8.1. 2 of this standard, and that must carry a CVR, must record all data link communications messages on a flight recorder.

8.4.2. All fixed-wing and rotary-wing aircraft that on January 1, 2016 or later, have been modified to be able to install and use any of the applications to establish data link communications listed in numeral 8.1. 2 of this standard, and that must carry a CVR, must record the data link communications messages on a flight recorder.

Note 1 - Currently, the aircraft that can establish data link communications are those with FANS 1/A or ATN-based equipment.

Note 2 - Where it is impractical or prohibitively expensive to record inter-aircraft data link communications application messages in an FDR or CVR, such messages may be recorded using a Class B AIR.

9. On-Board Image Recorder (AIR)

9.1. The AIR must start recording before the aircraft begins to move under its own power and must continue recording until the end of the flight, when the aircraft can no longer move under its own power. In addition, depending on the availability of electrical power, the AIR should begin recording as soon as possible during the pre-engine start flight crew cabin check, at the start of the flight, until the crew cabin check. of flight that is carried out at the end of the flight, immediately after the engine is turned off.

9.2. Types of AIR

9.2.1. A Class A AIR captures the general area of the flight crew cabin to provide data complementary to that of conventional flight recorders.

9.2.2. A Class B AIR captures the images of data link messages.

9.2.3. A Class C AIR captures images of the dashboards and instruments.

Note 1 - A Class C AIR may be considered as a means of recording flight data when it is not feasible, or when it is prohibitively onerous to record it in an FDR, or when an FDR is not required.

Note 2 - To respect the privacy of the crew, the image taken of the flight crew cabin may be arranged so that the head and shoulders of the crew members are not visible while they are seated in their position normal during the operation of the aircraft.

10. Construction and installation of flight recorders 10.1.

Flight recorders must be constructed, located, and installed in such a way as to provide the maximum possible protection for the records, so that they can be preserved, retrieved, and transcribed. Flight recorders must meet established specifications for impact resistance and fire protection.

11. Operation of flight recorders

11.1. Flight recorders must not be switched off during flight time.

11.2. In order to preserve the records contained in the flight recorders, they must be turned off after the flight time is complete after an accident or incident, and not turned back on until such records have been removed.

Note 1 - The need to remove the recordings from the aircraft's flight recorders is determined by the Aviation Authority and/or Authority in charge of the investigation, taking due account of the seriousness of the incident and the circumstances, including the consequences for the licensee, permit holder and air operator.

Note 2 - The responsibilities of the concessionaire, permit holder and air operator, with respect to the conservation of the recordings of the flight recorders are indicated in numeral 12.5. of this Official Mexican Standard.

12. Continued proper functioning of flight recorders

12.1. The concessionaire, permit holder and air operator must carry out operational verifications and evaluations of the recordings of the flight recorder systems, with the sole purpose of ensuring their constant proper functioning.

12.2. Inspections of flight recorder systems.

12.2.1. Before the first flight of the day, the built-in test mechanisms of the flight recorders and the flight data acquisition equipment (FDAU), when installed, should be checked by means of manual and/or automatic checks.

12.2.2. An annual inspection must be carried out, which must be carried out as follows:

(a) The analysis of the data recorded in the flight recorders must verify the operation of the recorder during the nominal recording time;

(b) The FDR analysis must assess the quality of the recorded data to determine if the bit error rate (including those introduced by the recorder, the acquisition unit, the aircraft data source, and the instruments used) to extract data from the logger) is within acceptable limits and determine the nature and distribution of errors;

(c) At the end of a flight recorded in the FDR, it must be examined in technical measurement units to assess the validity of the recorded parameters. Special attention should be paid to parameters coming from FDR sensors. It is not necessary to verify the parameters obtained from the aircraft electrical bus system if its proper functioning can be detected by other aircraft systems;

(d) The reading equipment must have the necessary software to accurately convert the values recorded in technical measurement units and determine the status of discrete signals;

(e) An annual review of the signal recorded on the CVR must be carried out by reading the CVR recording. Installed on the aircraft, the CVR must record test signals from each aircraft source and from relevant external sources to check that all required signals meet intelligibility standards;

(f) Whenever possible, during the annual review, a sample of the CVR flight recordings should be analyzed to determine if the signal intelligibility is acceptable under actual flight conditions;
Y

(g) An annual examination of the images recorded in the AIR must be carried out by reproducing the recording of the AIR. While installed on the aircraft, the AIR must record test images from all aircraft sources and from relevant external sources to ensure that all required images meet the registry's quality standards.

12.2.3. Flight recorder systems should be considered out of service if poor quality data, unintelligible signals are obtained for a considerable time, or if one or more mandatory parameters are not recorded correctly.

12.3. Concessionaires, permit holders and air operators must keep the latest report on annual evaluations.

12.4. FDR System Calibration:

12.4.1. For parameters with sensors dedicated exclusively to the FDR and that are not controlled by other means, a recalibration must be carried out according to the established maintenance program or every five years, to determine possible discrepancies in the conversion routines to technical values of the parameters. mandatory parameters and ensure that parameters are being recorded within calibration tolerances, and

12.4.2. When the altitude and airspeed parameters come from special sensors for the FDR system, a new calibration must be carried out, as recommended by the sensor manufacturer or every two years.

12.5. Securing the recordings of the flight recorders.

In the event that any fixed-wing or rotary-wing aircraft is involved in an accident or incident, the concessionaire, permit holder and air operator must ensure, as far as possible, the preservation of all recordings related to the accident. or incident contained in the flight recorders and, if necessary, their preservation; as well as its custody, as established in the regulations and/or applicable legal provision.

12.6. Disclosure of records.

12.6.1. The Aeronautical Authority must disclose the information corresponding to the recordings of the conversations in the cabin of the flight crew and their transcripts, as established in the regulations and/or applicable legal provision.

13. Flight recorder installation specifications

13.1. Flight recorders that are installed in aircraft at the service of concessionaires, permit holders and air operators, due to the requirements of this standard, which are not part of their Type Certificate, must comply with the specifications and procedures of installation of numeral 13. of this Official Mexican Standard.

13.2. In the case of aircraft with Mexican nationality and registration marks, for the installation of flight recorders in aircraft, the technical specifications of the State of equipment design or equivalent technical regulations issued by another State of design must be taken as a basis. as long as he is also the owner, possessor or has validated the type certificate of the aircraft on which said equipment is intended to be installed or installed.

13.3. The concessionaire, permit holder and air operator must have the make, model, part number and series of the FDR, CVR, DLR and AIR, as well as the data of the aircraft in which it is intended to be installed.
Likewise, it must have the engineering documentation of the installation of the flight recorder, which must contain the following, as applicable:

13.3.1. Location plans of the equipment and its components.

13.3.2. Installation diagrams, including interfaces with other aircraft equipment and systems and electrical, with its corresponding load analysis.

13.3.3. Technical justification of the modification that must be made to the aircraft. For example, Dashboard instruments, wiring, among others.

13.3.4. Supplement to the Flight Manual.

13.3.5. Review of the aircraft maintenance program.

13.3.6. Review of the Aircraft Minimum Equipment List.

13.3.7. Test guide.

13.3.8. Review of the General Maintenance Manual.

13.3.9. Review of the General Operations Manual.

13.4. It is the responsibility of the concessionaire, permit holder and air operator to determine the new weight and center of gravity of the aircraft after installation or modification, as established in the regulations and/or applicable legal provisions.

13.5. For aircraft that on the date of entry into force of this standard already have the flight recorders indicated in this standard installed, and that do not have the certification of their installation, concessionaires, permit holders, and air operators must review the installation documentation of the flight recorders in accordance with the requirements of this standard, as well as carrying out a physical inspection of your aircraft in order to verify that the installation requirements specified in numeral 13 of this Standard have been met Mexican official.

13.6. Concessionaires, permit holders and air operators must take into consideration that on the date of entry into force of this standard, the flight recorders required by it may already be previously installed in their aircraft, not considered by their type certificate. in accordance with the installation procedures of any civil aviation authority, or for those who, complying with the regulations and/or applicable legal provision, intend to install them abroad, so that in either of the two cases, the requirements must be met indicated in numerals 13.3.4. to 13.3.9. of this Official Mexican Standard.

13.7. It is the responsibility of the concessionaire, permit holder and air operator to ensure that prior to their operation, the flight recorders comply with the requirements of numeral 13 of this Official Mexican Standard.

13.8. Aircraft with a Mexican nationality mark and registration must comply with the certification of the installation of flight recorders in accordance with the provisions of numeral 17 of this Official Mexican Standard.

13.9. Aircraft with nationality and registration marks other than the Mexican ones operated by Mexican concessionaires and permit holders must comply with the installation requirements established by the State of registration of the aircraft.

13.10. The aircraft of foreign permit holders must comply with the installation requirements established by the State of registration thereof.

14. Degree of agreement with international standards and guidelines and with Mexican standards taken as the basis for its elaboration

14.1. This Official Mexican Standard is consistent with article 37 of the Convention on International Civil Aviation and with the standards and methods recommended in Annex 6, Part I, Chapter 6, Number 6.18., Annex 6, Part II, Chapter 2, Number 2.4. 13 and in Annex 10 Volume IV, Chapter 4, Number 4., issued by the International Civil Aviation Organization.

14.2. There are no Mexican standards that have served as the basis for its preparation, since at the moment there are no precedents in this regard.

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16. Observance of this rule

16.1. The monitoring of compliance with this Official Mexican Standard corresponds to the Aeronautical Authority.

17. Conformity assessment

17.1. It is the authority of the Aeronautical Authority to verify compliance with the regulatory administrative provisions, both national and international, that guarantee the operational safety of civil aircraft, as well as its authority to verify that the specifications and technical procedures of this Standard are complied with. Mexican Official, which establishes the use of flight recorders installed in aircraft operating in Mexican airspace, as well as their characteristics.

17.2. They will be subject to conformity assessment, through the certification of the installation of flight recorders, supervision of the installation of flight recorders in aircraft, the evaluation of their characteristics and the acceptance of the procedures implemented for maintenance. and the operation, as well as in the physical observation of the equipment and its operation, the concessionaires, permit holders and air operators.

17.3. In accordance with what is indicated in numeral 13 of this regulation, the concessionaire, permit holder and air operator must request the certification of the installation of flight recorders in aircraft that operate in Mexican airspace.

17.4. The application for certification of the flight recorder installation mentioned in numeral 17.3. of this standard must comply with the following:

17.4.1. The request must be prepared and submitted to the Directorate of Engineering, Standards and Certification, dependent on the General Directorate of Civil Aeronautics, the request in free writing indicating the name, denomination or company name of the person or persons promoting, if applicable, their legal representative. , address to receive notifications, as well as the name of the person or persons authorized to receive them, the request that is made, the facts or reasons that give rise to the request, the administrative body to which they are addressed and the place and date of their issuance. The document must be signed by the interested party or his legal representative, in case

they do not know or cannot sign, their fingerprint must be printed. With the aforementioned writing, the documentation listed below must be attached, and manifest to the Aeronautical Authority your willingness to be evaluated within the provisions of this Official Mexican Standard:

a) Power of attorney(s) of the legal representative(s) (1 original or 1 certified copy).

b) The engineering documentation of the installation of the flight recorders referred to in the numeral 13.3. of this Official Mexican Standard.

Once the complete application has been received, the Aeronautical Authority must resolve the application within the term established in the following numeral in order to carry out the verification and evaluation of conformity with compliance with this Official Mexican Standard.

17.5. Response time:

Three months counted from the date on which the duly integrated application was submitted.

If at the end of the maximum response period, the Authority has not responded, it will be understood that the request was resolved negatively to the petitioner.

Legal basis: Article 17, Federal Law of Administrative Procedure.

The Authority has a maximum period of 30 calendar days from the date of submission of the application to request the missing information from the petitioner.

17.6. To comply with the provisions of section 17.2. of this standard, the concessionaire, permit holder, and air operator must have the corresponding information mentioned in the application to certify the installation of the equipment, described in Regulatory Appendix "D" of this Official Mexican Standard.

18. Validity

18.1. This Official Mexican Standard will enter into force 60 calendar days after its publication in the Official Gazette of the Federation.

Mexico, DF, on January 26, 2012.

REGULATORY APPENDIX “A”

LIST OF PARAMETERS OF FLIGHT DATA RECORDERS PROTECTED AGAINST ACCIDENTS

TABLE 1

TYPES I, IA, II AND IIA

NUMBER	PARAMETER	INTERVAL OF MEASUREMENT	INTERVAL MAXIMUM OF SAMPLING AND REGISTRATION (Seconds)	LIMITS OF PRECISION (ENTRY OF SENSOR COMPARED TO FDR OUTPUT)	RESOLUTION OF REGISTRATION
-	Time (UTC when available, no, relative timing or sync with GPS time))	24 hours.	4	±0.125% per hour	1 second
2	pressure altitude	-300 m (-1,000 ft) to the maximum certified altitude of the aircraft +1,500 m (+5,000 ft)	-	± 30 m to ± 200 m (±100 feet to ±700 feet)	1.5m (5ft)
3	airspeed indicated or speed calibrated aerodynamics	95 km/h. (50 kt) at maximum Vso (Note 1) Vs a 1.2 VD (Note 2)	-	±5% ±3%	1 kt (recommended 0.5 kt)
4	Heading (primary flight crew reference)	360°	-	± 2°	0.5°
5	Normal acceleration (Note 3)	- 3g + 6g	0.125	±1% of maximum range excluding reference error of ±5%	0.004g
6	pitch attitude	± 75° or interval	0.25	± 2°	0.5°

		usable, whichever is greater			
7	roll attitude	±180°	0.25	± 2°	0.5°
8	radio transmission control	On-off (discrete position)	-		
9	Power or thrust of each engine (Note 4)	Total	- (per engine)	±2%	0.2% of the total range or the resolution necessary for the operation of the aircraft
10*	Trailing edge flap and selected position indicator in flight crew cabin	Total or at each discrete position	2	± 5% or according to indicator of the pilot	0.5% of the total range or the resolution necessary for the operation of the aircraft
eleven*	Leading edge flap and selected position indicator in flight crew cabin	Total or at each discrete position	2	± 5% or according to indicator of the pilot	0.5% of the total range or the resolution necessary for the operation of the aircraft
12*	Reverse position of each motor	entrenched, in transit, investment complete	- (per engine)		
13*	Ground spoilers/airbrakes (selection and position)	Total or at each discrete position	-	± 2% unless higher precision is specially required	0.2% of full range
14	outside temperature	sensor interval	2	±2°C	0.3°C
fifteen*	Pilot/Auto/Auto Throttle/AFCS Engagement Condition and Mode	Appropriate combination of discrete positions	-		
16	Acceleration longitudinal (Note 3)	±1g	0.25	±0.015 g excluding reference error of ±0.05 g	0.004g
NOTE: The above 16 parameters satisfy the requirements of Type II FDRs. For type IIA see also numeral 6.5.3. of this Official Mexican Standard.					
17	Lateral acceleration (Note 3)	ÿ 1g	0.25	ÿ 0.015 g excluding reference error of ÿ 0.05g	0.004g
18	action of pilot and/or control surface position-primary controls (Pitch, Roll, Yaw) (Note 5) (Note 6)	Total	0.25	±2° unless higher accuracy is specially required	0.2% of full span or depending on installation
19	pitch trim position	Total	-	±3% unless higher accuracy is specially required	0.3% of full span or depending on installation
twenty*	radio altimeter altitude	-6m to 750m (-20 feet to 2,500 feet)	-	± 0.6 m (± 2 ft) or ÿ 3% taking the greater of those values below 150 m (500 ft) and ÿ 5% above 150 m (500 ft)	1 ft (0.3 m) below 500 ft (150 m) 1 ft (0.3 m) + 0.5% of full range above 500 ft (150 m)
twenty-one*	Vertical beam deviation (glide path ILS/GPS/GLS, elevation of MLS, vertical deviation of IRNAV/IAN)	signal interval	-	±3%	0.3% of full range
22*	Horizontal beam deviation (locator ILS/GPS/GLS, azimuth of MLS, lateral deviation of IRNAV/IAN)	signal interval	-	±3%	0.3% of full range
23	Radio beacon passage	discreet positions	-		

24	main annunciator panel	discreet positions	-		
25	selection of frequencies each NAV receiver (Note 7)	Total	4	According to installation	
26*	DME 1 and 2 distances include distance to the runway threshold (GLS) and distance to the missed approach point (IRNAV/IAN (Notes 7 and 8)	From 0 to 370 km (0 – 200NM)	4	According to installation	1,852 m (1 NM)
27	air/ground condition	discreet positions	-		
28*	Condition of GPWS/TAWS/GCAS (terrain display mode selection, including screen pop mode) and (impact alerts, both cautions and warnings and notices) and (on/off key position)	discreet positions	-		
29*	attack angle	Total	0.5	According to installation	0.3% of full range
30*	Hydraulic systems (low pressure)	discreet positions	2		0.5% of full range
31*	Navigation data (latitude/longitude position, ground angle and drift (Note 9)	According to installation	-	According to installation	
32*	Landing gear and selector stick position	discreet positions	4	According to installation	
NOTE: The above 32 parameters satisfy the requirements for Type I FDRs.					
33*	Speed With respect to land	According to installation	-	The data should be obtained of more accurate system	1 kt
3. 4	Brakes (left right brake pressure, and left and right brake pedal position)	measured maximum braking power, discrete positions or total range	-	±5%	2% of full range
35*	Additional parameters of the engine (EPR, N1, indicated vibration level, N2, EGT, fuel flow, fuel cut off lever position, N3)	According to installation	each engine to every second	According to installation 2%	of the total interval
36*	TCAS/ACAS (traffic anti-collision alert system) Y	discreet positions	-	According to installation	
37*	Wind Shear Warning Discrete Positions		-	According to installation	
38*	co-pilot barometric selected setting) (pilot,	According to installation	64	According to installation	0.1 mb (0.01 in-Hg)
39*	Selected altitude (all pilot selectable modes of operation)	According to installation	-	According to installation	Enough to determine crew selection
40*	Speed selected (all modes of	According to installation	-	According to installation	Enough to determine crew selection

	pilot selectable operation)				
41*	Selected Mach (all modes of operation selectable by pilot)	According to installation	-	According to installation	Enough to determine crew selection
42*	Speed vertical Selected (all modes of operation selectable by pilot)	According to installation	-	According to installation	Enough to determine crew selection
43*	Selected Heading (all modes of operation pilot selectable)	According to installation	-	According to installation	Enough to determine crew selection
44*	Selected flight path (all modes of operation pilot selectable) {heading/ DSTRK, track angle, final approach path (IRNAV/IAN)}		-	According to installation	
Four. Five*	Height of decision selected	According to installation	64	According to installation	Enough to determine crew selection
46*	EFIS submission format (pilot, co-pilot)	discreet positions	4	According to installation	
47*	Multi-function display format/engine/ alerts	discreet positions	4	According to installation	
48*	Bar Condition (buses) electrical of alternating current (AC)	discreet positions	4	According to installation	
49*	Bar Condition (buses) electrical of direct current (DC)	discreet positions	4	According to installation	
fifty*	valve position engine bleed	discreet positions	4	According to installation	
51*	valve position auxiliary power unit (APU) purge	discreet positions	4	According to installation	
52*	computer failures	discreet positions	4	According to installation	
53*	Engine power or thrust control	According to installation	2	According to installation	
54*	Power – push selected engine	According to installation	4	According to installation 2% of the total interval	
55*	Hub of gravity calculated	According to installation	64	According to installation	1% of full range
56*	amount of fuel in the CG tail tank	According to installation	64	According to installation	1% of full range
57*	head high display In use	According to installation	4	According to installation	
58*	Indicator paravisual on off	According to installation	-	According to installation	
59*	Operational stall protection, shaker activation and stick pusher	According to installation	-	According to installation	
60*	system reference navigation primary	According to installation	4	According to installation	

	(GNSS, INS, VOR/DME, MLS, Loran C, localizer, glide slope)				
61*	Icing detection According to installation		4	According to installation	
62*	Warning of vibrations in each engine	According to installation	-	According to installation	
63*	notice of excess temperature in each engine	According to installation	-	According to installation	
64*	Low oil pressure warning on each engine	According to installation	-	According to installation	
65*	overspeed warning in each engine	According to installation	-	According to installation	
66*	Position of the yaw compensation surface	Total	2	±3% unless higher precision is required a exclusively	0.3% of full range
67*	Position of the roll compensation surface	Total	2	±3% unless higher precision is required a exclusively	0.3% of full range
68*	Yaw or skid angle	Total	-	±5%	0.5%
69*	selected indicator of the systems of defrost antifreeze Y	discreet positions	4		
70*	Hydraulic pressure (each system)	Total	2	±5%	100psi
71*	cabin pressure loss	discreet positions	-		
72*	knob position pitch trim in flight crew cabin	Total	-	±5%	0.2% of full range or according to installation
73*	knob position roll compensation in the flight crew cabin	Total	-	±5%	0.2% of full range or according to installation
74*	knob position yaw compensation in the cockpit of the flight crew	Total	-	±5%	0.2% of full range or according to installation
75*	All the controls of the flight crew cabin (steering wheel, joystick, rudder pedal)	Total {±311N (±70lbf), ±378N (±85lbf), ±734N (±165lbf)}	-	±5%	0.2% of full range or according to installation
76*	indicator button events	discreet positions	-		
77*	date	365 days	64		
78*	ANP or EPE or EPU	According to installation	4	According to installation	
NOTE: The above 78 parameters satisfy the requirements for Type IA FDRs.					

NOTES:

(1).- Vso = Stall speed or uniform flight speed in landing configuration.

(2).- VD = Calculation speed for descent.

(3).- See numeral 6.7.4. of this standard, additional registration requirements.

(4).- Register enough data to determine the power or thrust.

(5).- The "o" will be applied in the case of fixed-wing aircraft with control systems in which the movement of the control surfaces changes the position of the controls in the cabin of the flight crew (back -drive) and the "and" in the case of aircraft with control systems in which the movement of the control surfaces does not cause a change in the position of the controls. In the case of aircraft with split surfaces, an appropriate combination of actions is accepted instead of recording each surface separately.

(6).- See numeral 6.7.5. of this standard, additional registration requirements.

(7).- If the signal is available in digital form.

(8).- The registration of latitude and longitude from the INS or another navigation system is a preferable alternative.

(9).- If the signals are quickly available.

If more logging capacity is available, logging of the following additional information should be considered:

(a) Operational information from electronic display systems, such as electronic flight instrument systems (EFIS), electronic centralized aircraft monitor (ECAM), and engine parameter and crew alert system (EICAS). Use the following order of priority:

1) The parameters selected by the flight crew in relation to the desired flight path, for example, the barometric pressure setting, the selected altitude, selected airspeed, the decision height, and the indications on engagement and flight mode. autopilot system, if not registered from another source;

2) Selection/condition of display system, eg SECTOR, PLAN, ROSE, NAV, WXR, COMPOSITE, COPY, etc.;

3) Notices and alerts;

4) The identification of the pages presented on the screen for the purpose of emergency procedures and lists of check; Y

(b) Information on braking systems, including brake application, for use in investigating long landings and rejected takeoffs.

TABLE 2

TYPES IV, VAT AND V

NUMBER	PARAMETER	INTERVAL OF MEASUREMENT	MAXIMUM INTERVAL SAMPLING AND REGISTRATION (Seconds)	PRECISION LIMITS (SENSOR INPUT COMPARED TO OUTPUT FDR)	RESOLUTION OF REGISTRATION	
-	Time (UTC when available, no, relative timekeeping or sync with GPS time)	24 hours	4	±0.125% per hour	1 second	
2	pressure altitude	-300 m (-1,000 ft) to maximum certified wing aircraft altitude rotary +1,500 m (+5,000 ft)	-	±30m to ±200m(±100ft to ±700ft)	1.5m (5ft)	
3	indicated speed	According to measurement and presentation system for pilot installed	-	±3%	1 kt	
.4	Course	360°	-	± 2°	0.5º	
5	normal acceleration	- 3g + 6g	0.125	±0.09 g excluding reference error of ±0.045 g	0.004g	
6	pitch attitude	± 75° or 100% of available range, whichever is greater	0.5	± 2°	0.5º	
7	roll attitude	±180°	0.5	± 2°	0.5º	
8	radio transmission control	On-off (one discrete position)	-			
9	Power or thrust of each motor	Total	- (per engine)	±2%	0.1% of total	

10	main rotor speed rotor brake	50 - 130% discreet position	0.51	±2%	0.3% of the total	
eleven	Pilot action and/or control surface position - primary controls (General pitch, lateral cyclic, longitudinal cyclic, tail rotor pedals)	Total	0.5 (0.25 is recommended)	± 2° unless higher precision is specially required	0.5% of the operating interval	
12	Hydraulic systems (low pressure selection) Y	discreet positions	–			
13	outside temperature	sensor interval	2	±2°C	0.3ºC	
14*	Autopilot / Autothrottle / AFCS engagement mode and condition	Appropriate combination of discrete positions	–			
fifteen*	Stabilizer system coupling	discreet positions	–			
NOTE: The above 15 parameters satisfy the requirements for Type V FDRs.						
16*	Main transmission oil pressure	According to installation	–	According to installation	6,895 Kn/m2 (1 psi)	
17*	Main transmission oil temperature	According to installation	2	According to installation	1ºC	
18	Yaw Acceleration (or Yaw Rate)	± 400º/second	0.25	±1.5% of maximum span excluding ±5% reference error	± 2º/ s	
19*	Sling Load Strength	0 to 200% of certified load	0.5	±3% of maximum range	0.5% for the maximum certified load	
twenty	Longitudinal acceleration ± 1 g		0.25	±0.015 g excluding reference error of ±0.05 g	0.004g	
twenty one	Lateral acceleration	±1g	0.25	±0.015 g excluding reference error of ±0.05 g	0.004g	
22*	Radio altimeter altitude -6 m to 750 m (-20 to 2,500 feet)		–	±0.6 m (±2 ft) or ±3% whichever is greater below 150 m (500 ft) and ±5% above 150 m (500 ft)	1 ft (0.3 m) below 500 ft (150 m), 1 ft (0.3 m) + 0.5% of maximum range above 500 ft (150 m)	
23*	vertical beam deviation	signal interval	–	±3%	0.3% of the total	
24	horizontal beam deviation	signal interval	–	±3%	0.3% of the total	
25	Radio beacon passage	discreet positions	–			
26	Warnings	discreet positions	–			
27	Frequency selection of each navigation receiver	Enough to determine the selected frequency	4	According to installation		
28*	DME Distances 1 and 2	0-370 km (0 – 200 ND)	4	According to installation	1,852 m (1 NM)	
29*	Navigation data (latitude/ longitude, ground speed, drift angle, , wind direction)	According to installation	2	According to installation	According to installation	
30*	Landing gear and selector position	discreet positions	4			
NOTE: The above 30 parameters satisfy the requirements for Type IV FDRs.						
31*	Engine exhaust gas temperature (T4)	According to installation	–	According to installation		
32*	Turbine intake temperature (ITT/ITT)	According to installation	–	According to installation		
33*	fuel content of	According to installation	4	According to installation		
3. 4*	Altitude variation rate	According to installation	–	According to installation		
35*	ice detection	According to installation	4	According to installation		
36*	Vibration monitoring system and use of rotary wing aircraft	According to installation		According to installation		

37*	Engine control modes	discreet positions	–		
38*	Selected barometric setting (driver and co-driver)	According to installation	64 (4 recommended)	According to installation	0.1 mb (0.01 inch of mercury)
39*	Altitude selected (all modes of operation pilot selectable)	According to installation	–	According to installation	Enough to determine crew selection
40*	Selected speed (all modes of operation pilot selectable)	According to installation	–	According to installation	Enough to determine crew selection
41*	mach number selected (all modes of operation selectable by pilot)	According to installation	–	According to installation	Enough to determine crew selection
42*	Selected vertical speed (all modes of operation pilot selectable)	According to installation	–	According to installation	Enough to determine crew selection
43*	selected course (all modes of operation pilot selectable)	According to installation	–	According to installation	Enough to determine crew selection
44*	Selected flight path (all modes of operation selectable by pilot)	According to installation	–	According to installation	Enough to determine crew selection
Four. Five*	Selected decision height	According to installation	4	According to installation	Enough to determine crew selection
46*	Presentation of EFIS format (pilot and co-pilot)	discreet positions	4		
47*	Format of multifunction display/engine/alert s	discreet positions	4		
48*	event indicator	discreet positions	–		

NOTE: The above 48 parameters satisfy the requirements of the IVA type FDRs.

REGULATORY APPENDIX "B"

PARAMETER LIST FOR AIRCRAFT DATA RECORDING SYSTEMS

NUMBER	PARAMETER	CATEGORY OF PARAMETER	INTERVAL MINIMUM OF REGISTRATION	INTERVAL MAXIMUM OF REGISTRATION IN SECONDS	PRECISION MINIMUM OF REGISTRATION	RESOLUTION MINIMUM OF REGISTRATION	COMMENTS
–	Heading (Magnetic or True)	R*	±180°	–	± 2°	0.5°	*Yes not this available, register indices
2	pitch attitude	AND*	±90°	0.25	± 2°	0.5°	*Yes not this available, register indices
3	roll attitude	AND*	±180°	0.25	± 2°	0.5°	*Yes not this available, register indices
4	yaw rate	AND*	±300°/s	0.25	± 1% + drift from 360°/hr	2°/s	*Essential, if data is lacking course
5	pitch index	AND*	±300°/s	0.25	± 1% + drift from 360°/hr	2°/s	*Essential, if lacks data on pitch attitude
6	roll rate	AND*	±300°/s	0.25	± 1% + drift from 360°/hr	2°/s	*Essential, if data is lacking roll attitude

7	System of determination of the position: latitude/longitude	AND	Latitude: ±90° Length: ±180°	2 (1 if available)	According to installation (0.00015° recommended)	0.00005°	
8	Estimated error in the determination of the position	AND*	Interval available	2 (1 if has)	According to installation	According to facility	*If available
9	System of determination of the position: altitude	AND	-300 m (-1000 ft) at a certified altitude maximum of aircraft of + 1500m (5000 feet)	2 (1 if available)	Depending on installation {± 15 m (± 50 ft) recommended}	1.5m (5ft)	
10	System of determination of the position: hour*	AND	24 hours	–	±0.5 second	0.1 seconds	*Hour UTC preferred, if available
eleven	System of determination of the position: ground speed	AND	0 – 1000 kt	2 (1 if has)	According to installation (± 5 kt recommended)	1 kt	
12	System of determination of the position: channel	AND	0 – 360°	2 (1 if available)	According to installation (± 2° recommended)	0.5°	
13	normal acceleration	AND	-3ga + 6g (*)	0.25 (0.125 if available)	According to installation (± 0.09 g excluding an error of ± 0.05 reference g recommended)	0.004g	
14	Acceleration longitudinal	AND	±1g (*)	0.25 (0.125 if is available)	According to installation (± 0.015 g excluded a mistake of ± 0.05 reference g recommended)	0.004g	
fifteen	Lateral acceleration	AND	±1g (*)	0.25 (0.125 if available)	According to installation (± 0.015 g excluded a mistake of ± 0.05 reference g recommended)	0.004g	
16	Static pressure external (or pressure altitude)	R.	34.4 mb (3.44 in-Hg) to 310.2 mb (31.02 in-Hg) or interval of sensors available	–	Depending on installation (± 1 mb (0.1 in-Hg)	0.1 mb (0.01 in Hg) or 1.5 m (5 ft)	
17	Outside air temperature (or total air temperature)	R.	-50° to +90° C or interval of sensors available	2	According to installation (± 2° C recommended)	1°C	
18	air speed indicated	R.	According to the system measurement installed for the display of pilot or interval of sensors available	–	According to installation (± 3% recommended)	1 kt (0.5 kt recommended)	
19	Engine RPM	R.	Totals, including status overspeed	By engine, by second	According to installation	0.2% of total interval	
twenty	oil pressure engine	R.	Total	per engine per second	According to installation (5% of the interval	2% of interval total	

					total recommended)		
—	engine oil temperature	R.	Total	By engine, by second	According to installation (5% of the interval total recommended)	2% of interval total	
22	flow or pressure gas	R.	Total	By engine, by second	According to installation	2% of the interval total	
23	intake pressure R		Total	By engine, by second	According to installation	0.2% of total interval	
24	parameters of push/power/ engine torque required to determine the thrust/power* of propulsion	R.	Total	By engine, by second	According to installation	0.1% of total interval	* will be recorded parameters enough (eg. RPE/N1 — torque/Np) as appropriate for the engine in particular in order to decide the power, in normal and negative thrust. be calculated Should a overspeed margin
25	speed of engine gas generator (Ng)	R.	0 – 150%	By engine, by second	According to installation	0.2% of total interval	
26	turbine speed free power (Nf)	R.	0 – 150%	per engine per second	According to installation	0.2% of total interval	
27	temperature of refrigerant	R.	Total	–	According to installation (± 5°C recommended)	1°C	
28	main voltage	R.	Total	By engine, by second	According to installation	1 volt	
29	cylinder head temperature	R.	Total	By engine, by second	According to installation	2% of the interval total	
30	flap position R		total or each discreet position	2	According to installation	0.5°	
31	position of the primary flight control surface	R.	Total	0.25	According to installation	0.2% of total interval	
32	Amount of gas	R.	Total	4	According to installation	1% of the interval total	
33	exhaust gas temperature	R.	Total	By engine, by second	According to installation	2% of the interval total	
3. 4	emergency voltage R		Total	per engine per second	According to installation	1 volt	
35	position of the surface of compensation	R.	total or each discreet position	–	According to installation	0.3% of total interval	
36	train position landing	R.	Each discrete position*	by engine, every two seconds	According to installation		*When be possible, record the position “retracted and locked” or “deployed locked” Y
37	Innovative/unique features of The aircraft	R.	As appropriate	As appropriate	As appropriate	As appropriate	

NOTES:

(1).- E: Essential parameters.

(2).- R: Recommended parameters.

REGULATORY APPENDIX "C"

LIST OF APPLICATIONS FOR DATA LINK RECORDERS

NUMBER	TYPE OF APPLICATION	APPLICATION DESCRIPTION	CONTENT OF REGISTRATION
-	data link interval	Includes any application that is used to enter or start a data link service. In FANS-1/A and ATN, these are the ATS Service Equipment Notification (AFN) and the Context Management (CM) application, respectively.	C.
2	Controller/pilot communication	It includes any application that is used to exchange requests, clearances, instructions, and reports between the flight crew and controllers on the ground. In FANS-1/A and ATN, the CPDLC application is included. It also includes applications used for the exchange of ocean clearances (OCL) and departure clearances (DCL), as well as the transmission of taxi clearances by data link.	C.
3	targeted surveillance	It includes any surveillance application where ground contracts are established for the provision of surveillance data. In FANS-1/A and ATN, it includes the Automatic Dependent Surveillance — Contract (ADS-C) application. Where parameter data is indicated in the message, such data shall be recorded, unless data from the same source is recorded in the FDR.	C.
4	Flight information	Includes any service used for the provision of flight information to a specific aircraft. Includes, for example, D-METAR, D-ATIS, D-NOTAM and other textual data link services	C.
5	Aircraft broadcast surveillance	It includes elementary and enriched surveillance systems, as well as the data issued by ADS-B. When parameter data is indicated in the message sent by the aircraft, such data shall be recorded, unless data from the same source is recorded in the FDR.	M*
6	Data on control of aeronautical operations	Includes any application that transmits or receives data used for AOC (as defined by ICAO AOC)	M*

NOTES:

(1).- C = Complete contents are recorded.

(2).- M = Information that allows the correlation with other related records stored separately from the aircraft.

(3).- * = Applications that will be registered only to the extent that it is feasible according to the architecture of the system.

REGULATORY APPENDIX "D"

APPLICATION TO CERTIFY THE EQUIPMENT INSTALLATION

DATE: __(1)___ __OF_____(2)___ ___ OF 20_(3)__ ___

INSTALLATION TO CERTIFY (4)

ELT	XPDR	GPWS	ACAS/TCAS
CVR	fdr	HF	VHF
GPS	OTHER		

SPECIFY: (5)_____

TEAM INFORMATION:

BRAND: (6)_____

MODEL: (7)_____

PART NUMBER: (8)_____

SERIAL NUMBER: (9)_____

AIRCRAFT INFORMATION:

BRAND: (10)_____ MODEL: (11)_____

REGISTRATION: (12)_____ SERIAL NUMBER: (13)_____

NATIONALITY: _(14)_____

DOCUMENTATION SUBMITTED IN SINGLE COPY (15)

MANUFACTURER LIST FAA FORM 337 DGAC FORM 46

OTHER SPECIFY: __(16)_____

HOLDER INFORMATION:

NATURAL PERSON (17) LEGAL PERSON (18)

HOLDER'S NAME / FULL COMPANY NAME:

(19)_____

ADDRESS: (20)_____

CITY: (21)_____ STATE: (22)_____ ZIP CODE: (23)_____ ____

PHONE: (24)_____ EMAIL: (25)_____

SERVICE FOR WHICH IT IS DESTINED: (26)

AIR TAXI	COMMERCIAL	FREIGHTER
PRIVATE	GOVERNMENTAL	OTHER

SPECIFY: (27)_____

_____(28)_____

NAME AND SIGNATURE OF THE PROMOVANT

Note: An application must be completed for each equipment installation that is certified

APPLICATION TO CERTIFY THE EQUIPMENT INSTALLATION

(INSTRUCTIONS FOR FILLING AND SUBMISSION)

a) General considerations for filling out the application to certify the installation of the equipment: The application must be filled out in a typewriter or by hand with legible print letters.

Use ink, preferably black.

Deletions or amendments are not allowed.

Copies of the application are available at the filing window of the procedure.

It must be presented in original.

It must be filled out in its entirety, otherwise it will not be received, considering the following filling guide:

Box 1: Clearly write down the day of the month on which the request is made.

Box 2: Clearly write down the month in which the request is made.

Box 3: Clearly write down the year in which the request is made.

Box 4: Indicate with an "X" inside the box, the option of the equipment that you want to certify your installation.

Box 5: If the “other” option in box 4 has been selected, the equipment must be described different from those shown in the format.

Box 6: Clearly write down the brand of the equipment that was installed.

Box 7: Clearly write down the model of the equipment that was installed.

Box 8: Clearly write down the part number of the equipment that was installed.

Box 9: Write down clearly and for the only occasion, the serial number of the equipment that was installed, in case of don't have the part number.

Box 10: Clearly write down the make of the aircraft in which the equipment was installed.

Box 11: Clearly write down the model of the aircraft in which the equipment was installed.

Box 12: Clearly write down the registration of the aircraft in which the equipment was installed, if there is no assigned registration, write down the legend "registration in process of assignment".

Box 13: Clearly write down the serial number of the aircraft in which the equipment was installed.

Box 14: Clearly write down the nationality of the aircraft in which the equipment was installed.

Box 15: Indicate with an "X" inside the box, the option of the documentation that you present in simple copy to endorse the certification of the installation of the equipment.

Box 16: If the "other" option in box 15 has been selected, you must describe what the Documentation presented to support the certification of the installation of the equipment.

Box 17: Indicate with an "X" inside the box, if the holder is a natural person.

Box 18: Indicate with an "X" inside the box, if the holder is a legal person.

Box 19: Clearly write down the full name or business name of the holder.

Box 20: Clearly write down the full address of the holder.

Box 21: Clearly write down the City.

Box 22: Clearly write down the State.

Box 23: Write clearly the Postal Code.

Box 24: Clearly write down the holder's telephone number.

Box 25: Clearly write down the email address of the holder.

Box 26: Indicate with an "X" inside the box, the option of the service for which the request is intended. aircraft.

Box 27: If the "other" option in box 26 has been selected, you must describe what the service for which the aircraft is intended.

Box 28: Indicate the full name of the petitioner of the procedure, as well as its signature. **b) Windows for submitting the procedure:** Deputy General Directorate of Aviation of the General Directorate of Civil Aeronautics.

Providencia Street 807, 3rd. floor,

Col. Del Valle, CP 03100, Mexico, DF

Hours of operation: From 9:00 a.m. to 2:00 p.m., Monday through Friday.

c) Legal-administrative basis of the procedure:

Conformity assessment procedure indicated in numeral 17.6. of the Official Standard Mexican NOM-022-SCT3-2010, in force. **d) Attached documents: i)** The request must be prepared

and submitted to the Engineering, Standards and Certification Directorate, dependent on the General Directorate of Civil Aeronautics, the request in free writing indicating the name, denomination or company name of the person or persons promoting, in your case of your legal representative, address to receive notifications, as well as the name of the person or persons authorized to receive them, the request that is made, the facts or reasons that give rise to the request, the administrative body to which they are directed and place and date of issue. The document must be signed by the interested party or their legal representative, in case they do not know or cannot sign, their fingerprint must be printed. Likewise, with the aforementioned document, the documentation listed below must be attached, and the Aeronautical Authority must be informed of its willingness to be evaluated within the provisions of this Official Mexican Standard:

ii) Power of attorney(s) of the legal representative(s) (1 original or 1 certified copy). **iii)** Copy of the

corresponding document that supports the installation of the flight recorder equipment in the aircraft, which are listed in box 15 or 16 of the format to certify the installation of the equipment according to the case.

e) Response time: Response

time 3 months.

Following calendar days, counted from the one in which the application was submitted.

Legal basis: Article 17, Federal Law of Administrative Procedure.

If at the end of the maximum response period, the authority has not responded, it will be understood that the request was resolved in the negative.

The authority has a maximum period of 30 calendar days to request the missing information from the individual.

f) Telephone number and email for inquiries about the procedure:

Ministry of Communications and Transportation
General Directorate of Civil Aviation

Engineering, Standards and Certification Address Calle

Providencia 807, 3rd. floor, Col. Del Valle, Mexico, DF

Hours of operation: 9:00 a.m. to 2:00 p.m., Monday through Friday

Telephones: 50 11 64 17 and fax 55 23 62 75 E-mail:

pcarranp@sct.gob.mx **g) Telephone number for**

complaints: In case you have any problem in the

attention to your procedure, you can present your complaint or complaint in:

Internal control organ

Xola s/n, 1st floor, Body "A", West wing
Cologne: Narvarte

ZIP Code: 03028, Mexico, District, Federal

Telephone(s): 55192931

Hours of attention to the public: From 9:00 a.m. to 3:00 p.m. Monday through Friday.

From 5:00 p.m. to 6:00 p.m., Monday through Friday.

Public Function Secretary

SACTEL

In the Federal District: 1454-2000

Inside the Republic: 01 800 112 05 84
From the United States: 1 800 475-2393

Email: sactel@funcionpublica.gob.mx, quejas@funcionpublica.gob.mx

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