ETHIOPIAN CIVIL AVIATION AUTHORITY

Return to Service (RTS) of Boeing 737MAX Aeroplane

14 December 2021

Contents

APPROVAL PAGE

DIRECTIVE (DIR) REF:	ECAA/DG/DIR/002/2021
Subject:	Return to Service (RTS) of Boeing 737-8,-9 (MAX) Aeroplanes
Issue No.:	Issue No.3
Effective Date:	14 December 2021
Applicability:	This Directive is applicable to Aircraft Operators intending to return the Boeing 737-8,-9 (MAX) Aeroplanes to service.

This Directive contains mandatory information regarding return to service (RTS) of Boeing 737-8,-9 (MAX) aeroplanes. It is published to provide mandatory guidelines that shall be used by operators to ensure the safe return to service of Boeing 737-8,-9 (MAX) aeroplanes

Air Operators must ensure that this document is copied to all members of their staff who are required to take appropriate action or who may have an interest in the information.

This Directive is approved by the undersigned for use by all to whom it applies and will remain in effect until further notice.

By:.....

Wosenyeleh Hunegnaw (Col.)
Director General

Subject: Boeing 737 MAX Aeroplanes - Return to Service

PURPOSE. This Safety Directive contains mandatory information and its purpose is to set out requirements that need to be met by air operators intending to return Boeing 737 MAX airplanes to service.

1. General.

The Boeing 737 MAX was grounded worldwide in March 2019 following the second of two accidents within just six months, which together claimed 346 lives. The root cause of these tragic accidents was traced to software known as the MCAS (Maneuvering Characteristics Augmentation System), intended to make the plane easier to handle. However, the MCAS, guided by only one Angle of Attack (AoA) sensor, kicked in repeatedly if that sensor malfunctioned, pushing the nose of the aircraft downward multiple times. In both accidents, pilots finally lost control of their plane, resulting in a crash with total loss of aircraft.

The results of safety investigations conducted by the authorities of the States where these events occurred have confirmed that, with affected FCC OPS installed, a single erroneous high angle-of-attack (AOA) sensor input to the FCC on an affected aeroplane during manual flight with flaps up may prompt the Manoeuvring Characteristics Augmentation System (MCAS) to input incremental nose down trim. In this scenario, the flight crew may be unable to respond appropriately by applying opposing nose-up stabilizer trim, returning the aeroplane to a trimmed state, and by actuating the stab trim cut-out switches.

This condition, if not corrected, could lead to a stabilizer position that cannot be fully countered with elevator input, possibly resulting in loss of control of the aeroplane.

Prompted by those findings, Boeing developed new OPS for FCC and MDS DPC and issued the associated Service Bulletins to provide instructions for OPS in-service installation. Boeing also updated the applicable flight crew training programme(s), introducing new training to ensure pilot understanding of the MCAS functions, the consequences of introducing the new OPS, and the new ‘Airspeed unreliable’ procedure.

Alongside with FAA some authorities such as EASA, Transport Canada, and ANAC Brazil conducted a comprehensive review of the measures proposed by Boeing, including flight testing, and consider that these measures adequately address the above described unsafe condition. ECAA

has assessed the evaluations made by those authorities and recognizes their recommendations.

In addition, EASA has gathered factual evidence that, upon single failure of an AOA sensor during a "Required Navigation Performance - Authorization Required" (RNP-AR) approach, all flight guidance that allows the pilot to guide the aeroplane along the intended flight path is lost, and therefore the crew is left with no means to ensure that the aeroplane's trajectory can be maintained within the tolerated lateral deviation. This condition, if not corrected, may constitute an unsafe condition in case the RNP-AR approach has been implemented because of terrain or obstacle constraints in the vicinity of the airfield.

For the reasons described above, after the actions required by this Directive have been accomplished, the affected Boeing 737-8 and 737-9 aeroplanes can be used to perform flights with the limitation not to perform RNP-AR approach operations.

In order to ensure safe operation of the affected Boeing 737-8 and 737-9 aeroplanes upon return to service, this SD requires that pilots perform the return to service (RTS) training, including ground and flight training in a suitable full flight simulator (FFS), prior to operating the affected aeroplanes.

2. Required Action(s) and Compliance Time(s).

Before the first commercial air transport flight performed by Boeing 737-8 and 737-9 aeroplanes, each operator shall:

(1) Implement all requirements contained in Federal Aviation Administration (FAA) AD 2020-24-02.

(2) Ensure all pilots operating flights conducted by Boeing 737-8 and 737-9 aeroplanes, have undergone the RTS training contained in FAA Flight Standardization Board (FSB) Report for Boeing 737, Revision 17, Appendix 7 (Boeing 737 MAX Special Training for Flight Crews).

Note 1: Further to complying with FAA AD 2020-24-02 requirements, operators may also accomplish any differing requirements in EASA AD 2021-0039R2, if any, and if operators find it necessary for the safe operation of their aircraft.

Note 2: The content of Appendix 7 of FAA FSB Report for Boeing 737,

Revision 17, is equivalent to the RTS training specified in EASA AD 2021-0039R2.

(3) Ensure FFS used to deliver RTS training to pilots are capable to support the required RTS training elements contained in FAA FSB Report for Boeing 737, Revision 17, Appendix 7 (Boeing 737 MAX Special Training for Flight Crews).

To mandate the design changes described in the Summary of the FAA's Review of the Boeing 737 MAX -- Return to Service of the Boeing 737 MAX Aircraft Report. Dated: November 18, 2020 for airplanes that have already received a Certificate of Airworthiness or an Export Certificate of Airworthiness, the FAA issued a new AD that provides specific instructions about steps an owner or operator must take to address the unsafe condition on the 737 MAX.

The AD requires the following actions:

- Installing new FCC OPS software and doing software installation verification.

- Revising the existing AFM to remove the information from the applicable sections that was required by AD 2018-23-51, because that information is no longer applicable based on the design changes specified in the new AD, and to incorporate new and revised information and procedures.

The new AD also requires accomplishment of the:

- Boeing Alert Requirements Bulletin 737-22A1342 RB, dated November 17, 2020, describes procedures for installation of FCC OPS software on FCC A and FCC B, a software installation verification, and corrective actions.

- Boeing Special Attention Service Bulletin 737-31-1860, Revision 1, dated July 2, 2020, describes procedures for installation of MDS software, a software installation verification and corrective actions, and removal of certain INOP markers on the EFIS control panels.

- Boeing Special Attention Service Bulletin 737-27-1318, Revision 2, dated November 10, 2020, describes procedures for changing of the horizontal stabilizer trim wire routing installations.

- Boeing Special Attention Service Bulletin 737-00-1028, dated July 20, 2020, describes procedures for an AOA sensor system test and an operational readiness flight.

In addition, the new AD will allow dispatch of an airplane with certain inoperative systems only if certain provisions are incorporated in the operator's existing ECAA-approved minimum equipment list (MEL).

In summary, the FAA AD 2020-24-02 and EASA Airworthiness Directive 2021-0039R2 mandate the following main actions:

- Software updates for the flight control computer, including the MCAS.
- Software updates to display an alert in case of disagreement between the two AoA sensors.

- Physical separation of wires routed from the cockpit to the stabilizer trim motor.

- Updates to flight manuals: operational limitations and improved procedures to equip pilots to understand and manage all relevant failure scenarios.

- Mandatory training for all 737 MAX pilots before they fly the plane again, and updates of the initial and recurrent training of pilots on the MAX.

- Tests of systems including the AoA sensor system.

- An operational readiness flight, without passengers, before commercial usage of each aircraft to ensure that all design changes have been correctly implemented and the aircraft successfully and safely brought out of its long period of storage.

For details, see the text of the Airworthiness Directive.

Note 3: The ***Airworthiness Directive***, which details the aircraft and operational suitability changes, including crew training requirements, must be carried out before each individual airplane returns to service. However, scheduling of these mandated actions is a matter for the aircraft operators, under the oversight of ECAA, meaning that the actual return to service may take some time.

Briefly, Return to Service (RTS) Requirements must include:

- the installation of the FCC P12.1.2 software standard (implementing the new stabilizer trim control architecture and new MCAS activation logics);
- the installation of the MAX Display System (MDS) software update to fully require on all aircraft the "AOA Disagree" annunciation functionality;
- changes in the stabilizer trim control wiring;
- the update of the AFM including changed operating procedures (Airspeed Unreliable, Runaway Stabilizer, Stabilizer Trim Inoperative, Speed Trim Fail, Stabilizer out of Trim, AOA Disagree, ALT Disagree, IAS Disagree), general procedures for the management of alerts, and additional limitations;
- the update of the MEL to remove certain flight control system alleviations;
- the update of the OSD-FC training requirements including five new TASEs requiring practical training
- and a one-time pre-RTS flight crew mandatory exercise covering these areas;
- an AOA sensor system test;
- Operational readiness flight.

Note 4: Prior to returning to service each 737 MAX airplane, operators are required to demonstrate to ECAA that they have fully complied with all prescribed requirements.

3. New Maintenance Requirements:

a) Software Upload Considerations

b) Instructions for Continued Airworthiness (ICA) and Maintenance Procedures

c) Maintenance Planning Document

d) Airplane Maintenance Manual Updates

e) Fault Isolation Updates

In case the details are not covered by the AD 2020-24-02 with respect to the above mentioned maintenance requirements, they shall be accomplished in accordance with the instructions set forth in applicable Boeing Service

Bulletins and any other material published by Boeing for the purpose of safe return to service of Boeing 737 MAX airplanes, whenever necessary or applicable.

4. Minimum Equipment List (MEL)

The following changes have been approved by FAA in recent revisions to the Master Minimum Equipment List (MMEL). Because of the design change and new MCAS functional changes built into the flight-control software, dispatch with certain functions inoperative is no longer permissible. The most significant operational impact is that both FCCs must be functional for dispatch.

MMEL Item 22-11-01 effectively allowed dispatch with a single FCC operative. *In general, the specific changes below no longer allow dispatch of the aircraft (passenger carrying operations) with inoperative FCC, STS, certain STS warning lights, or inoperative control wheel trim switches.*

MMEL items modified or removed:

- 22-10-02 Autopilot Disengage Aural Warning System – the ECAA will no longer allow dispatch of the Autopilot Disengage Aural Warning System (Item Removed).

- 22-11-08-01A Autopilot (A/P) Disengage Light (One Inoperative) – as a condition for dispatch, the ECAA will require that the autopilot disengage aural warning system operates normally.

- 22-11-10A - Control Wheel Autopilot Disengage Switches (One Inoperative) – as a condition for dispatch, the ECAA will require that the Mode Control Panel autopilot DISENGAGE bar also operates normally, autopilot is not used below 1,500 feet Above Ground Level, and Approach Minimums do not require the use of autopilot.

- 22-11-01 Speed Trim Function – the ECAA will no longer allow dispatch with this item inoperative (Item Removed).

- 22-11-02 SPEED TRIM FAIL Light – the ECAA will no longer allow dispatch with this light inoperative (Item Removed).

- 27-41-01 Control Wheel Trim Switch – the ECAA will no longer allow dispatch with one of these switches inoperative (Item Removed).

- 22-10-03 STAB OUT OF TRIM Light – the ECAA will no longer allow dispatch with this light inoperative (Item Removed).

- 22-10-01B Autopilot System (Item Removed)

The air operator's Minimum Equipment List (MEL) shall be revised to incorporate the changes made to MMEL and must be approved prior to return to service of Boeing 737 MAX airplanes.

5. Flight crew Training

The ground training must include, but is not limited to, the following elements: MCAS function description and conditions for operation; automatic autopilot disengagement; temporary flight-director removal (bias out of view) manual stabilizer trim operation and trimming techniques; effects of airspeed and aerodynamic loads on manual stabilizer trim operation; and recognition of flight-deck effects of an unreliable airspeed condition (e.g., AOA disagree or failed). The FSB report also states that the ground training may be completed using computer-based training.

The simulator training must include, but is not limited to, the following events:
MCAS activation during an impending stall (or full stall) and recovery;
A runaway stabilizer condition that requires the pilot to use manual stabilizer trim;
Operation of each manual trim technique as defined by Boeing (which includes two-pilot intervention); and
Erroneous high AOA on takeoff that leads to an unreliable airspeed condition with special emphasis on the flight director biasing out of view.

5.1 Airman Experience.

Airmen receiving initial, differences, upgrade, or transition training are assumed to have previous airman experience. Applicable previous experience may include multiengine transport turbojet aircraft, new generation avionics, high altitude operations, military, or flight management system (FMS). Pilots without this experience may require additional training.

5.2 Special Emphasis Areas.

NOTE: References to "pilots" in this section include both pilots in command (PIC) and seconds in command (SIC) unless otherwise specified.

5.2.1 Pilots must receive special emphasis on the following areas during ground training:

5.2.1.1 Multiple flight deck alerts during non-normal conditions. Training must include instances where a single malfunction results in multiple flight deck alerts, and flightcrew alert prioritization and analysis of the need to conduct additional NNCs. This training must be included in initial, upgrade, transition, and recurrent training.

5.2.1.2 Automatic landings. When an operator is authorized for autoland operations, ground training is required during a preflight briefing prior to flight training. This item must be included in initial, upgrade, transition, differences, and recurrent training. The 737NG and 737 MAX autoland systems are identical and do not require differences training unless transitioning between the Fail Passive system and the Fail Operational system.

5.2.1.3 Enhanced Digital Flight Control System (EDFCS). When an EDFCS that supports Fail Operational autoland operations with a Fail Passive Rollout system is used, ground training is required during a preflight briefing prior to flight training. This item must be included in initial, upgrade, transition, differences, and recurrent training. The 737NG and 737 MAX autoland systems are identical and do not require differences training unless transitioning between the Fail Passive system and the Fail Operational system.

5.2.1.4 737 MAX flight control system. The Elevator Jam Landing Assist system and the Landing Attitude Modifier (LAM) ground training must address the system functions and associated flight spoiler deployments. These items must be included in initial, transition, differences, and recurrent training.

5.2.1.5 737 MAX FCC. MCAS ground training must address the latest FCC system description, functionality, and associated failure conditions to include flightcrew alerting. This training must be included in initial, transition, differences, and recurrent training.

5.2.1.6 HUD. Training must address appropriate ground training elements for both HUD and non-HUD operations as specified in FAA Flight Standardization Board (FSB) Report for Boeing 737, Revision 17, Appendix 5, HEAD-UP GUIDANCE TRAINING. This item must be included in initial, upgrade, transition, differences, and recurrent training.

5.2.1.7 737 MAX gear handle. Gear handle operation to address normal and non-normal procedures. This item must be included in initial, transition, differences, and recurrent training.

5.2.2 Pilots must receive special emphasis on the following areas during flight training.

5.2.2.1 Automatic landings. When an operator is authorized for autoland operations, flight training must occur with the appropriate autopilot (AP) autoland systems (e.g., Fail Operational vs. Fail Passive). This training can occur in either a full flight simulator (FFS) or airplane. Flight training must ensure appropriate AFM limitations are addressed and complied with. This item must be included in initial, upgrade, transition, differences, and recurrent training. The 737NG and 737 MAX autoland systems are identical and do not require differences training unless transitioning between the Fail Passive system and the Fail Operational system.

5.2.2.2 EDFCS. When an EDFCS that supports Fail Operational autoland operations with a Fail Passive Rollout system is used, flight training can occur in either an FFS or airplane and should address dual channel AP approaches. This item must be included in initial, upgrade, transition, differences, and recurrent training. The 737NG and 737 MAX autoland systems are identical and do not require differences training unless

transitioning between the Fail Passive system and the Fail Operational system.

5.2.2.3 HUD. When HUD is installed and an operator is authorized HUD operations, training must address appropriate flight training elements for both HUD and non-HUD operations. This item must be included in initial, upgrade, transition, differences, and recurrent training.

5.2.2.4 Stabilizer trim.

5.2.2.4.1 Training must emphasize the following during electric and manual stabilizer trim operations:

a) Manufacturer recommended procedures for the proper use of main electric stabilizer trim during normal and non-normal conditions, and manual stabilizer trim during normal and non-normal conditions;

b) The different manual trim techniques recommended by the manufacturer; and

c) The effects of airspeed and aerodynamic loads on the stabilizer and the resulting trim forces in both the nose-up and nose-down directions during operations at low and high airspeeds.

d) Use of manual stabilizer trim during approach, go-around, and level off.

5.2.2.4.2 Electric and manual stabilizer trim operation during normal and non-normal conditions. This item must be included in initial or transition training and must be accomplished at least once every 36 months during recurrent training.

5.2.2.5 Runaway stabilizer. Training must emphasize runaway stabilizer recognition and timely pilot actions required by the Runaway Stabilizer NNC. Demonstrate control column functionality and its effect on a runaway

stabilizer condition. Emphasize the need to attempt to reduce control column forces with main electric stabilizer trim prior to selecting STAB TRIM cutout. This item must be included in initial or transition training and must be accomplished at least once every 36 months during recurrent training.

5.2.2.6 Multiple flight deck alerts during non-normal conditions. Training must include scenario-based training where a single malfunction results in multiple flight deck alerts that require timely pilot actions to include recognition and interpretation of the non-normal condition and prioritization of the required pilot actions. This training must be included in initial, upgrade, transition, and recurrent training.

5.2.2.7 Unreliable airspeed. This training applies to pilots flying the 737NG, 737 MAX, or conducting 737NG/737 MAX Mixed Fleet Flying (MFF). Training must include erroneous high angle of attack (AOA) malfunctions. This training must also include a demonstration of Flight Director (FD) behavior (biasing out of view) during a go-around or missed approach. This item must be included in initial, transition, and differences training and must be accomplished at least once every 36 months during recurrent training. Either pilot may serve as pilot flying (PF) for this training task. Recurrent training may be accomplished in either a 737NG or 737 MAX FFS.

5.3 Seat-Dependent Tasks.

Pilots must receive training in these seat-dependent tasks.

a) HUD (left seat, right seat, when installed); initial, transition, upgrade, and recurrent training.

b) Nosewheel steering (left seat, right seat, when installed); initial, transition, upgrade, and recurrent training.

c) Manual Landing Gear Extension (right seat); initial, transition and recurrent training.

5.4 FSTD.

The enhanced flight vision system (EFVS) must be trained in a Level C or higher FFS in both day and night conditions.

5.5 Training Equipment.

There are no specific systems or procedures that are unique to the 737 that require specific training equipment.

5.6 Differences Training Between Related Aircraft.

Pilots must receive differences training between the 737 and 737CL, 737CL electronic flight instrument system (EFIS) and 737CL non-EFIS, 737CL and 737NG, certain variations of 737NG, 737NG and 737 MAX, and variations of 737 MAX.

5.6.1 737NG to 737 MAX Ground Training.

Ground training is required for differences between the 737NG and 737 MAX.

5.6.2 737NG to 737 MAX Flight Training.

Flight training is required for differences between the 737NG and 737 MAX.

The following elements shall be included in the training curriculum:

- Flight Mode Annunciator (FMA) differences.
- AFDS status annunciator.
- Vertical speed display.
- Airspeed bugs and flap maneuvering speeds.
- Compass rose.
- Pitch limit indicator.
- Airspeed trend vector.
- Minimum and maximum speeds.
- Landing altitude reference bar.
- Altimeter setting.
- Localizer (LOC) and glideslope (GS) deviation.
- Selected altitude indication (BUG).

- Ground speed display.
- Radio altitude display.
- Traffic Alert and Collision Avoidance System (TCAS) resolution advisories.
- Time critical warnings.
- Approach reference area.
- Marker beacon indication.
- System failures and flags.
- No “compact display” (display unit (DU) switching only).

5.6.4 Blended, Split Scimitar, and Advanced Technology Winglet.

Operators engaged in MFF 737 aircraft with and without winglets must address differences at the A/A level, including:

- Physical/dimensional differences, with emphasis on lower strake clearance considerations during ground operations.
- Takeoff crosswind guidelines.
- Landing crosswind guidelines.
- Ground contact angles for normal landings.

5.6.5 Roll Command Alerting System (RCAS). RCAS consists of a ROLL/YAW ASYMMETRY alert, ROLL AUTHORITY alert and a Roll Command Arrow. RCAS is optional equipment on the 737NG and standard on the 737 MAX. The FSB found Level B training to be sufficient for differences.

5.6.6 Runway Situational Awareness Tools (RSAT) System. RSAT consists of On-Ground Overrun Warning, In-Air Overrun Warning, and a Speedbrake Warning. RSAT is optional equipment on the 737NG and 737 MAX. The FSB found Level B training to be sufficient for differences.

5.6.7 Rockwell Collins Head-Up Guidance System (HGS)-4000 and HGS-6000. The HGS-4000 and HGS-6000 is optional equipment on the 737NG and 737 MAX. The FSB found for pilots already qualified on one system that Level A differences training is sufficient to qualify on the other Rockwell Collins HGS.

5.6.8 Integrated Standby Flight Display (ISFD). Training for ISFD may be satisfied with Level B differences training for all 737 aircraft. No flight training required.

5.6.9 Display Installation. Universal avionics flat panel display/FMS installations (Supplemental Type Certificate (STC) No. ST03355AT/ST03356AT) into 737-300 series or Innovative Solutions & Support (IS&S) flat panel display installation (No. ST03125NY) into the 737-400 series. The FSB found Level D differences training to be sufficient.

5.6.10 FMS for 737-200 Series. Universal avionics FMS installations (STC No. ST03362AT) into the 737-200 series. The FSB found Level C differences training to be sufficient.

5.6.11 Future Air Navigation System (FANS). Differences training for FANS 1 and/or FANS 2 may be satisfied with Level C training in accordance with AC 90-117, Data Link Communications (as amended) for all 737 aircraft. Flightcrew who have completed FANS 1 training may qualify on FANS 2 with Level A training.

5.6.12 Alternate Navigation System (ANS). The ANS consists of use of the ISFD and Alternate Navigation Control Display Unit (ANCDU) as a means to provide alternate navigation guidance in the event of an all Flight Management Computer (FMC) fail situation. It is standard equipment on the 737 MAX BBJ. The FSB has determined Level A training to be sufficient for differences.

5.6.13 FMS for 737NG and 737 MAX. On the 737NG and the 737 MAX, the FMS consists of a single or dual FMC with software U13 or newer.

5.6.13.1 Flightcrew qualified on FMC U13 may qualify on a FMC U14 with Level A training.

5.7 Special Training.

Completion of the ground and flight training specified in Appendix A is required before flying the 737 MAX.

APPENDIX A. BOEING 737 MAX SPECIAL TRAINING FOR FLIGHTCREWS

The purpose of this appendix is to describe ground and flight training requirements associated with pilot qualification on the 737 MAX as contained in FAA Flight Standardization Board (FSB) Report for Boeing 737, Revision 17, Appendix 7 (Boeing 737 MAX Special Training for Flight Crews).

No pilot may operate the 737 MAX unless the ground and flight training documented in this appendix has been completed. References to "pilots" in this section include both PICs and SICs unless otherwise specified. These Special Training segments can be standalone or embedded into another training curriculum. The required training is as follows:

1. GROUND TRAINING

1.1 Training on the following NNCs:

- Runaway Stabilizer.
- SPEED TRIM FAIL.
- STABILIZER OUT OF TRIM.
- Stabilizer Trim Inoperative.
- Airspeed Unreliable.
- ALT DISAGREE.
- AOA DISAGREE.

1.2 Training in this section emphasizes the design differences associated with FCC software version P12.1.2 for the 737 MAX. This training also emphasizes necessary ground training between the 737NG and 737 MAX with FCC software version P12.1.2 or later. Pilots may complete this training by accomplishing the applicable 737 MAX CBT provided by Boeing or an FAA-approved equivalent.

1.2.1 ATA 22 – Autoflight – FCC – MCAS:

- MCAS function description.
- Conditions for operation.
- Erroneous FCC trim commands.
- Flight deck alerting of the failure of the MCAS function.

1.2.2 ATA 22 – Autoflight – FCC – AFDS:

- Automatic AP disengagement.

- Temporary FD removal.
- AFDS pitch mode changes following stick shaker.
- Inhibiting of AP nose up trim.

1.2.3 1.2.3 ATA 22 – Autoflight – FCC – STAB OUT OF TRIM:

- Alert illumination logic (ground vs. flight).
- Revised NNC.

1.2.4 1.2.4 ATA 22 – Autoflight – FCC – SPEED TRIM FAIL:

- Function of the SPEED TRIM FAIL light.
- Revised NNC.

1.3 Training on the following bullet points that emphasize Boeing-recommended procedures. Pilots may complete this training by accomplishing the applicable 737 CBT provided by Boeing or an FAA-approved equivalent.

1.3.1 737 Manual Trim Operation:

- Manual stabilizer trim operation.
- Manual stabilizer trimming techniques.
- Effects of airspeed and aerodynamic loads on manual stabilizer trim operation.

1.3.2 737 Unreliable Airspeed – Determining a Reliable Airspeed:

- Recognition of flight deck effects of an unreliable airspeed condition.
- Memory pitch and thrust settings associated with the NNC.
- Determination of reliable airspeed indication.

2. FLIGHT TRAINING

Training is required to be conducted in a 737 MAX Level C or D FFS. The following bullet points emphasize the objectives of each maneuver. This training applies to pilots flying the 737 MAX, or conducting 737NG/737 MAX MFF. A 737NG Level C or D FFS may be used for some conditions where noted below.

2.1 Demonstration of MCAS activation accomplished by each pilot acting as PF.

2.1.1 MCAS activation during an impending stall (or full stall) and recovery demonstration during manual flight in a clean configuration.

2.1.2 Demonstrate MCAS activation stabilizer trim responses:

- Stabilizer trim in the nose down direction when above threshold AOA for MCAS activation during stall.
- Stabilizer trim in the nose up direction when below threshold AOA for MCAS activation during recovery.

2.2 Runaway stabilizer condition requiring use of manual stabilizer trim accomplished by each pilot acting as PF.

2.2.1 Runaway stabilizer training as described in subparagraph 5.2.2.5.

2.2.2 Operation of each manual trim technique (as defined by Boeing).

2.2.3 This training can be completed in a 737 MAX or 737NG FFS.

2.3 Use of manual stabilizer trim during approach, go-around, and level off accomplished by each pilot acting as PF.

2.3.1 Use of manual stabilizer trim as described in subparagraph 5.2.2.4.

2.3.2 This training can be completed in a 737 MAX or 737NG FFS.

2.4 A Cross-FCC Trim Monitor activation demonstration accomplished by either pilot acting as PF.

2.4.1 Condition must terminate in a landing in order to demonstrate the updated STAB OUT OF TRIM light functionality.

2.5 Erroneous high AOA during takeoff that leads to an unreliable airspeed condition accomplished by either pilot acting as PF.

2.5.1 Demonstrates flight deck effects (i.e., aural, visual, and tactile) associated with the failure.

2.5.2 Fault occurring during the takeoff procedure.

2.5.3 Must include a go-around or missed approach flown with erroneous high AOA condition.

2.5.3.1 Special emphasis placed on FD behavior biasing out of view upon selecting takeoff/go-around (TO/GA).

Appendix B: Acronyms

AC	Advisory Circular
AD	Airworthiness Directive
ADIRS	Air Data Inertial Reference System
ADIRU	Air Data Inertial Reference Unit
ADRC	Additional Design Requirements and Conditions
ADS-B	Automatic Dependent Surveillance-broadcast
AEG	Aircraft Evaluation Group
AFM	Airplane Flight Manual
AMM	Airplane Maintenance Manual
AMO	Approved Maintenance Organization
ANAC	Civil Aviation National Agency of Brazil
ANU	Airplane Nose-up
AOA	Angle of Attack
ALT HLD	Altitude Hold
ARP	Aerospace Recommended Practice
ATA	Airline Transport Association
ATC	Air Traffic Control
BITE	Built-in-test Equipment
BOV	Bias Out of View
CDU	Cockpit Display Unit
CMM	Component Maintenance Manual
CMR	Certification Maintenance Requirement
COS	Continued Operational Safety
CPU	Central Processing Unit
CWS	Control Wheel Steering
DFCS	Digital Flight Control System
DFDR	Digital Flight Data Recorder
DPC	Display Processing Computer
EASA	European-Union Aviation Safety Agency
EDFCS	Enhanced Digital Flight Control System
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FCC	Flight Control Computer
FCTM	Flightcrew Training Manual
FDR	Flight Data Recorder
FFS	Full Flight Simulator
FLT CONT	Flight Control
FO	First Officer
FSB	Flight Standardization Board
GPWS	Ground Proximity Warning System
IAS	Indicated Airspeed

ICA	Instructions for Continued Airworthiness
IFIM	Interactive Fault Isolation Manual
JOEB	Joint Operations Evaluation Board
LVL CHG	Level Change
MCAI	Mandatory Continued Airworthiness Information
MCAS	Maneuvering Characteristics Augmentation System
MMEL	Master Minimum Equipment List
MPD	Maintenance Planning Document
MRBR	Maintenance Review Board Report
MSI	Maintenance Significant Item
MVS	Middle Value Select
NNC	Non Normal Checklist
PFD	Primary Flight Display
QRH	Quick Reference Handbook
RTS	Return To Service
SB	Service Bulletin
SDS	System Description Sections
STM	Stabilizer Trim Motor
STS	Speed Trim System
TAB	Technical Advisory Board
TC	Type Certificate
TCCA	Transport Canada
TCDS	Type Certificate Data Sheet
VNAV	Vertical Navigation

Reference Publications:

FAA AD 2020-24-02 dated 18 November 2020.

BOEING 737 MAX FAA FSB Report, Revision 17 dated 16 November 2020.