



Safety Information Bulletin

Airworthiness

SIB No.: 2016-20

Issued: 20 December 2016

Subject: ATR Flight Controls – Crew Resource Management – Avoiding Dual and Opposite Flight Control Inputs

Ref. Publications:

ATR All Operators Message (AOM) 42/72/2016/03 issue 1, dated 05 February 2016; and ATR AOM 42/72/2016/13 issue 1, dated 19 July 2016, ATR Service Bulletin (SB) ATR42-55-0015 and SB ATR72-55-1008, both dated 19 July 2016.

Applicability:

ATR42 and ATR72 aeroplanes, all models, all serial numbers.

Description:

Aircraft accidents and incidents in the past 15 years have indicated that rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw, and full control inputs in more than one axis at the same time, should be avoided as they may result in structural failures at any speed, including below the maneuvering speed.

Crew Resource Management principles should be emphasized to avoid abrupt, harsh, dual or antagonist inputs by operating crews.

At high speed, pitch control inputs should be done with care, as resulting vertical acceleration may lead to overstressing the airframe.

Specifically ATR aeroplanes are equipped with a pitch uncoupling mechanism (PUM) which allows the disconnection of both elevators in case one control channel is jammed. Thereafter, pitch control is ensured through the free control column. In-service experience shows cases where the flight crew disconnected the PUM through dual and opposite inputs on the control columns. In pitch disconnect configuration, the combination of dual inputs and large opposite elevator deflection at high speed can induce structural damage to the horizontal stabilizer due to the resulting torsion loads.

ATR issued AOM 42/72/2016/03 to inform all ATR operators about the release of new operational and maintenance instructions to address in-flight pitch disconnect occurrences. ATR also issued AOM 42/72/2016/13, SB ATR42-55-0015 and SB ATR72-55-1008, applicable to specific configuration aeroplanes equipped with carbon horizontal and vertical stabilizers (ATR modification 4441), to provide additional inspection instructions and to ensure that there have been no unreported occurrences.

This is information only. Recommendations are not mandatory.



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In addition, ATR plans to update the existing Flight Crew Operating Manuals (FCOM), by releasing a Temporary Revision (TR), in order to address more generally the avoidance of large flight control inputs, in any axis, at any speed. This is expected to be issued first quarter of 2017. A corresponding revision of the Aircraft Flight Manual (AFM) is also expected.

At this time, the safety concern described in this SIB is not considered to be an unsafe condition that would warrant Airworthiness Directive (AD) action under Regulation (EU) [748/2012](#), Part 21.A.3B.

Recommendation(s):

EASA recommends operators of the affected aeroplanes to review and implement the actions recommended by ATR, as specified in the referenced service publications.

Contact(s):

For further information contact the EASA Safety Information Section, Certification Directorate.

E-mail: ADs@easa.europa.eu.

For further technical or operation assistance, or to obtain a copy of the applicable service publication(s), contact ATR Techdesk, 1 Allee Pierre Nadot, 31712 Blagnac CEDEX, France
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ALL OPERATORS MESSAGE

Date: 05 February 2016

Ref. AOM: 42/72/2016/03 issue 1

This AOM is for information only and does not give instructions to Operators. It advises Operators of matters, which are currently, either under investigation or dealt with by ATR. However, Operators may consider initiating their own action. This AOM may be reissued to inform Operators of the closing action (Service Bulletin, No action required, etc...).

Aircraft models: All

ATA: 27/55

SUBJECT: Flight controls - pitch

REASON

To inform ATR operators that the operational and maintenance documentation related to pitch control system and pitch disconnect occurrences have been updated.

DESCRIPTION

ATR aircraft are equipped with a specific device (PUM – Pitch Uncoupling Mechanism) which allows the disconnection of both elevators in case one control channel is jammed. Thereafter pitch control is performed through the free control column.

In service experience shows cases where the flight crew inadvertently disconnected the PUM through dual and opposite input on the control columns.

At high speed, pitch control inputs should be done with care as resulting vertical acceleration may lead to overstressing the airframe. This applies to pitch disconnect configuration, where the combination of dual inputs and large opposite elevator deflection at high speed can induce structural damage to the horizontal stabilizer due to the resulting torsion loads.

ACTION

ATR conducted a review of both maintenance and operational documentation related to Pitch Disconnection and as a result, launched the following actions:

- The creation of a dedicated Job Instruction Card (JIC 55-10-00-DVI-10000) to perform a Detailed Visual Inspection (DVI) after any reported pitch disconnection in flight.
- ATR is contacting customers operating aircraft for which a pitch disconnect in flight occurrence was reported in the past, to request the above mentioned inspection.
- The revision of the JIC dedicated to the re-clutching of the pitch uncoupling mechanism (27-31-42-REA-10000) to call for the new DVI for any reported pitch disconnection in flight.
- The revision of the FCOM and QRH “Procedures following failure – Flight Control - Pitch disconnect” instructing for maintenance action before reconnecting the system after a disconnection in flight.
- The revision of the AFM supplement “FERRY FLIGHT WITH PITCH ELEVATORS DISCONNECTED” instructing for maintenance action before dispatch.

- The revision of the FCOM “Procedures and Techniques – Flight Controls – Pitch” to include the following:

In flight aggressive or large elevator input at high speed should be avoided. Such inputs can lead to high loads and can result in structural damage to the horizontal stabilizer.

To maintain aircraft controllability in case of control surface jamming, elevators can be uncoupled.

Elevators uncoupling :

- requires the application of a high effort (52 daN/114 lbs) between both control columns (to minimize the risk of untimely disconnection).
- triggers a red warning « PITCH DISCONNECT » on the CAP.
- allows the flight to be safely completed: refer to procedures following failures.

Caution : Dual input in opposite direction may result in a pitch disconnect.

In any of the following configurations, the aircraft must be controlled from one control column only :

- Normal configuration, both elevators connected
- Pitch Disconnect with one elevator jammed
- Pitch disconnect without any elevator jammed

In the event of a pitch disconnect without any jamming, the pilot monitoring input on the other control column may disturb aircraft controllability feedback for the pilot flying. Without any input on the control column, the unused elevator will stay at null aerodynamic effort.

RECOMMENDATION

The updated maintenance documentation is now available for all ATR operators. ATR recommends the operators to familiarize themselves with the updated maintenance documentation.

ATR recommends operators ensure their pilots are aware of the updated operational material (see above) when incorporated in the FCOM.

We also recommend pitch disconnect events are reported to ATR.

REFERENCE DOCUMENTS

AMM JIC 55-10-00-DVI-10000

AMM JIC 27-31-42-REA-10000

FCOM - 1.09.30 - Description – Flight Controls – Pitch

FCOM - 2.02.06 - Procedures and Techniques – Flight Controls – Pitch

FCOM – 2.05.06 - Procedures following failure – Flight Control - Pitch disconnect

QRH – 2.34 – Following Failures – Flight Control – Pitch Disconnect

AFM – 7.02.12 - Supplement – Ferry Flight with Pitch Elevator Disconnected



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ALL OPERATORS MESSAGE

Date: 19 July 2016

Ref AOM: 42/72/2016/13 issue 1

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Aircraft model: All ATR42-500 and ATR72-212A

ATA: 55

SUBJECT: INSPECTION OF HORIZONTAL TO VERTICAL STABILIZER JUNCTION.

APPLICABILITY

All ATR42-500 and ATR72-212A equipped with carbon Horizontal and Vertical Stabilizers (modification 4441).

REASON

Recently, damage has been found on an ATR72-212A at the junction of the Horizontal to Vertical Stabilizers during a schedule maintenance check. Although the origin of the damage has not been identified yet, this occurrence might be related to aircraft used beyond normal operation limitations (including but not limited to the combination of in-flight dual inputs, a pitch disconnect and large opposite elevator deflection at high speed).

AOM 42/72/2016/03 issue 1 was published on Feb 2016, to inform about the release of new maintenance and operational documentation related to in-flight pitch disconnect occurrences. ATR wants to ensure that prior to the implementation of this new set of maintenance and operational documentation, there has been no unreported occurrence.

RECOMMENDATION

ATR recommends operators to:

- Perform a one-time inspection of the horizontal to vertical stabilizer junction as per the instructions provided within the SB ATR42-55-0015 or ATR72-55-1008 as applicable, at the next convenient opportunity, no later than 6 months from the release of this AOM.
- Contact ATR technical desk for further instruction in case of findings;
- Send the SB accomplishment report to techdesk@atr-aircraft.com

REFERENCE DOCUMENTS

- SB ATR42-55-0015,
- SB ATR72-55-1008
- AOM: 42/72/2016/03 issue 1

ATTACHED DOCUMENTS

- SB ATR42-55-0015,
- SB ATR72-55-1008

A handwritten signature in black ink, appearing to read "D. CAILHOL", is positioned above the printed name.

D. CAILHOL

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