

 <b>適航指令發布單</b> <b>Airworthiness Directive Issuance Form</b>			
民航局 AD 編號 AD number	CAA-2015-12-003A	發布日期 Date issued	2015/12/31
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	ATR 42-500 and ATR 72-212A aeroplanes, all manufacturer serial numbers modified in production by incorporating ATR modification 5948 (New Avionics Suite installation), except aeroplanes modified in production in accordance with ATR modification 6977 (New Avionics Suite Standard 2) or modified in service by incorporation of ATR Service Bulletin (SB) ATR42-31-0091 (applicable to ATR 42-500 aeroplanes) or ATR SB ATR72-31-1092 (applicable to ATR 72-212A aeroplanes).		
主旨摘要	ATA 22 - Auto Flight - Auto Pilot and Yaw Damper - Operational Limitations Master Minimum Equipment List - Amendment		
民航局 CAA <input type="checkbox"/> 本國產品 Native products <input type="checkbox"/> 其他個案 Other	設計國民航主管機構 Original Authorities <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> FAA  <input checked="" type="checkbox"/> EASA  <input type="checkbox"/> Brazil  <input type="checkbox"/> Transport Canada Civil Aviation  <input type="checkbox"/> DGAC             </div> <div> <input type="checkbox"/> Germany LBA  <input type="checkbox"/> CAA-NL  <input type="checkbox"/> UK CAA  <input type="checkbox"/> Japan CAB  <input type="checkbox"/> CAA of Israel  <input type="checkbox"/> Other _____             </div> </div>		
	設計國 AD 編號 Original AD number	2015-0237R1	
	1. 直接採用原 AD 之內容?(Is the original AD directly adopted?) <input checked="" type="checkbox"/> 是(Yes) <input type="checkbox"/> 否(No) _ a. 生效日期另訂為(Re-specify the effective date as) : _____ b. 執行時限另訂為(Re-specify the compliance time or period as) : _____ 2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do Users need to report the status of compliance to the CAA?) <input type="checkbox"/> 是(Yes) <input checked="" type="checkbox"/> 否(No)		
備註 Note	ATA 22.Ref. This AD revises EASA AD 2015-0237(CAA-2015-12-003) dated 15 December 2015, which superseded EASA AD 2015-0230(CAA-2015-12-001) dated 01 December 2015. Publications: ATR SB ATR42-31-0091, dated 17 December 2014. and ATR SB ATR72-31-1092, dated 07 October 2014.		
註: 1. AD 內容後附。 2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。 3. 如有任何問題, 請聯絡交通部民用航空局初始適航科。Tel: (02)2349-6331~3, Fax: (02)2545-8464, e-mail: <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a> Note: 1. The AD text is enclosed. 2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval. 3. For further information, please contact Civil Aeronautics Administration on Tel: (02)2349-6331~3, Fax: (02)2545-8464, e-mail: <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a>			

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CAA Form ACS-P08-02

第一頁/共一頁



## Airworthiness Directive

**AD No.:** 2015-0237R1

**Issued:** 16 December 2015

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

**Design Approval Holder's Name:**

ATR-GIE AVIONS DE TRANSPORT RÉGIONAL

**Type/Model designation(s):**

ATR 42 and 72 aeroplanes

**Effective Date:** 29 December 2015 [same as the original issue]

**TCDS Number(s):** EASA.A.084

**Foreign AD:** Not applicable

**Revision:** This AD revises EASA AD 2015-0237 dated 15 December 2015, which superseded EASA AD 2015-0230 dated 01 December 2015.

### ATA 22 – Auto Flight – Auto Pilot and Yaw Damper – Operational Limitations Master Minimum Equipment List – Amendment

**Manufacturer(s):**

ATR-GIE Avions de Transport Régional (ATR), formerly Aerospatiale – Aeritalia, Aerospatiale – Alenia, Aerospatiale ATR – Alenia, EADS ATR – Alenia

**Applicability:**

ATR 42-500 and ATR 72-212A aeroplanes, all manufacturer serial numbers modified in production by incorporating ATR modification 5948 (New Avionics Suite installation), except aeroplanes modified in production in accordance with ATR modification 6977 (New Avionics Suite Standard 2) or modified in service by incorporation of ATR Service Bulletin (SB) ATR42-31-0091 (applicable to ATR 42-500 aeroplanes) or ATR SB ATR72-31-1092 (applicable to ATR 72-212A aeroplanes).

**Reason:**

During flight evaluations performed on Flight Synthetic Test Devices of ATR aeroplanes equipped with New Avionics Suite (also known as 'Glass Cockpit'), with one Air Data Computer (ADC) or one Attitude and Heading Reference System (AHRS) inoperative, it was found that, after engine failure during autopilot (AP) or Yaw Damper (YD) re-engagement, the YD unit commanded the rudder to return to neutral position leading to inadequate balancing of the asymmetric power.



Subsequent flight tests confirmed the YD unit behaviour observed during flight simulator evaluation and identified that a software issue is the root cause of this system reaction.

Additionally, it was identified that the failure of one of the Direct Current (DC) Generators with a concurrent shutdown of the opposite engine leads to loss of the AHRS#2 and ADC#2 and resulting in YD command the rudder into neutral position.

This condition, if not corrected, could result in loss of control of the aeroplane.

To address this potential unsafe condition EASA issued AD 2015-0230 to introduce operational restrictions affecting in-flight use of AP and/or YD with an inoperative AHRS, or ADC and the relevant dispatch limitations.

Since that AD was issued, it was determined that aeroplanes modified in service by incorporating New Avionics Suite Standard 2 are not affected and that the operation of an aeroplane with combination of inoperative ADC, AHRS and DC Generator items is allowed. Additional investigation have resulted in prohibiting the use of AP or YD also in case of both engine operative, when an ADC or an AHRS becomes inoperative.

For the reasons described above, this AD retains the requirements of EASA AD 2015-0230, which is superseded, and introduces AP or YD operational restrictions applicable for dual engine operation.

This AD is considered an interim action and further AD action may follow.

This AD is revised to specify the Reason leading to AD issuance.

#### **Required Action(s) and Compliance Time(s):**

Required as indicated, unless accomplished previously:

- (1) From the effective date of this AD, **do not use** AP nor YD during flight, when one of the following fault messages appears in Amber on the Engine & Warning Display:
  - (1.1) ADC, or
  - (1.2) AHRS.
- (2) Amending the Aircraft Flight Manual (AFM) of an aeroplane by inserting a copy of this AD into the applicable AFM of an aeroplane and, concurrently, informing all flight crews is acceptable to comply with the requirements of paragraph (1) of this AD for that aeroplane.
- (3) Not later than on 15 December 2015 [the effective date of EASA AD 2015-0230], amend the applicable ATR Master Minimum Equipment List (MEL), on the basis of which the operator's MEL is established, by incorporating the dispatch restrictions as listed in Appendix 1 of this AD, inform all flight crews and, thereafter, operate the aeroplane accordingly.

Note: For affected ATR operators registered in Europe, amending the operator's MEL after any applicable change to the MMEL is required by Commission Regulation (EU) 965/2012.



- (4) From the effective date of this AD, dispatch of an aeroplane with inoperative equipment, as identified in paragraph (4.1) or (4.2) or (4.3) of this AD is allowed, provided that the MEL of that aeroplane has been amended to be consistent with the Master MEL restrictions as specified in Appendix 1 of this AD.
- (4.1) One of 2 ADC's inoperative,
- (4.2) One of 2 AHRS's inoperative,
- (4.3) One of 2 DC Generator's inoperative.
- (5) Amending the ATR Master MEL of an aeroplane by inserting a copy of this AD or incorporating a later Master MEL revision which includes the same dispatch restrictions as detailed in Appendix 1 of this AD and concurrently informing all flight crews is acceptable to comply with the requirements of paragraph (3) of this AD for that aeroplane.
- (6) Modification of an aeroplane, after the effective date of this AD, in accordance with ATR SB ATR42-31-0091 or ATR SB ATR72-31-1092, as applicable to aeroplane model, is an acceptable method to comply with the requirements of this AD.

**Ref. Publications:**

ATR SB ATR42-31-0091, dated 17 December 2014.

ATR SB ATR72-31-1092, dated 07 October 2014.

The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.

**Remarks:**

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).
4. For any question concerning the technical content of the requirements in this AD, please contact:  
 ATR - GIE Avions de Transport Régional,  
 Continued Airworthiness Service,  
 Tel.: +33 (0)5 62 21 62 21 - Fax: +33 (0) 5 62 21 67 18;  
 E-mail: [continued.airworthiness@atr-aircraft.com](mailto:continued.airworthiness@atr-aircraft.com).



## Appendix 1 – MMEL amendment

(1) **DC Generator loss**

## (1.1) Dispatch conditions

ATA 24 – ELECTRICAL POWER (Continued)				
ATA CHAPTER	1	2 - REPAIR INTERVAL CATEGORY		
		3 - NUMBER INSTALLED		
ITEM				4 - NUMBER REQUIRED FOR DISPATCH
				5 - REMARKS OR CONDITIONS
<b>DC</b>				
30-1 DC generator channel (generator + related GCU)	A	2	1	* (o) (m) May be inoperative except for ETOPS, provided: (a) The Autopilot and Yaw Damper are deactivated, and (b) TRU is checked operative prior to each departure, and (c) Aircraft does not fly extended overwater routes, and (d) Two engines taxi is performed, and (e) Aircraft does not line up until 6 minutes elapsed after operative generator comes on line, and (f) Operations are limited to two flights

Note: This new dispatch condition only supersedes the related current approved MMEL items applicable to ATR 42-500 and ATR 72-212A fitted with ATR Modification 5948, except aeroplanes modified in accordance with ATR modification 6977, the others dispatch conditions remain valid.



## Appendix 1 – MMEL amendment (continued)

## (1.2) Associated procedures

Dispatch Deviation Guide
<b>ATA 24 – ELECTRICAL POWER</b>
<b>30-1 DC generator channel (generator + related GCU)</b>
<b>OPERATIONAL PROCEDURES :</b>
<ul style="list-style-type: none"> <li>➤ Check of remaining generator feeder integrity: 6 minutes are necessary to establish the temperature difference between the feeders if one line is broken. So aircraft should not line up until 6 minutes elapsed after operative generator comes on line.</li> <li>➤ Operational test of TRU (if installed): <u>Note:</u> During the test, the ACW electrical network must be available (The AC GPU connected or ACW generators running). Checking are performed only on Main Electrical Panel (left hand panel): <ul style="list-style-type: none"> <li>- Switch OFF the pushbutton DC EXTERNAL POWER (if selected ON)</li> <li>- Switch OFF the pushbuttons DC GEN 1 &amp; 2 (if selected ON)</li> </ul> </li> </ul>
<p>On Main Electrical Panel; check that the following caution lights are switched ON:</p> <ul style="list-style-type: none"> <li>- BATTERY ARROWS</li> <li>- Both BUS OFF</li> <li>- INVERTER 2 FAULT</li> <li>- Both DC BUS OFF</li> <li>- SHED LEGEND OF DC SVCE/UTLY BUS</li> </ul>
<p>Check that the following systems are supplied:</p> <ul style="list-style-type: none"> <li>- VHF 1</li> <li>- FUEL QTY INDICATOR</li> <li>- FLAPS POSITION INDICATOR</li> </ul>
<p>On Main Electrical Panel; press the TRU push-button; then check that:</p> <ul style="list-style-type: none"> <li>- The TRU push-button is switched ON</li> <li>- The TRU ARROW caution light is switched ON</li> <li>- The BATTERIES ARROWS caution lights are not illuminated</li> <li>- The UNDV legend of OVRD/UNDV push-button is not illuminated</li> </ul>
<p>On Main Electrical Panel, check that the BATTERY AMMETER shows zero load either if BAT selector switch is placed in EMER or MAIN position.</p>
<p>Check that the following systems are still supplied:</p> <ul style="list-style-type: none"> <li>- VHF 1</li> <li>- FUEL QTY INDICATOR</li> <li>- FLAPS POSITION INDICATOR</li> </ul>
<p>On Main Electrical Panel, switch off the TRU push-button; then check that:</p> <ul style="list-style-type: none"> <li>- The TRU push-button is not illuminated</li> <li>- The TRU ARROW caution light is not illuminated</li> <li>- The BATTERY ARROWS caution lights are switched ON</li> </ul>
<b>MAINTENANCE PROCEDURES :</b>
<ul style="list-style-type: none"> <li>- Pull C/B AFCS/YAW SERVO, secure and tag</li> </ul>



## Appendix 1 – MMEL amendment (continued)

(2) **ADC or AHRS fault**

## (2.1) Dispatch conditions

ATA 34 – NAVIGATION				
ATA CHAPTER  ITEM	1	2 - REPAIR INTERVAL CATEGORY		
		3 - NUMBER INSTALLED		
		4 - NUMBER REQUIRED FOR DISPATCH		
		5 - REMARKS OR CONDITIONS		
- <b>Air Data System</b>				
11-1 Air Data Computer (ADC)	A	2	1	* (o) (m) One ADC may be inoperative provided: (a) The Autopilot and Yaw Damper are deactivated, and (b) The TLU manual mode is operative (c) The IESI is operative, and (d) All the IOM DC are operative, and (e) The operations are limited to two flights, and (f) For day VMC flight only, and (g) For ETOPS, the ADC#1 must be operative  <u>Note</u> : When TLU automatic mode is inoperative <b>Refer to MMEL 27 item 23-2</b>
- <b>Attitude – Heading</b>				
20-1 AHRS	A	2	1	* (m) One may be inoperative, provided: (a) The Autopilot and Yaw Damper are deactivated, and (b) The IESI is operative, and (c) For day VMC flight only, and (d) Operations are limited to two flights, and (e) For ETOPS, AHRS#1 must be operative

This new dispatch condition only supersedes the related current approved MMEL items applicable to ATR 42-500 and ATR 72-212A fitted with ATR Modification 5948, except aeroplanes modified in accordance with ATR modification 6977, the others dispatch conditions remain valid.





## Appendix 1 – MMEL amendment (end)

## (2.2) Associated procedures

Dispatch Deviation Guide
<b>ATA 34 – NAVIGATION</b>
<b>11-1 ADC</b>  <b>OPERATIONAL PROCEDURES :</b>  ADC switching must be set to valid ADC  TLU manual mode check: <ul style="list-style-type: none"> <li>➤ Select HI SPD and check alert is generated after 25 seconds: MC, SC, FLT CTL TLU on FWS and TLU FAULT light</li> <li>➤ Check rudder travel is limited</li> <li>➤ Select AUTO and check alert stops after 15 seconds</li> <li>➤ Check rudder travel is not limited</li> </ul> <b>MAINTENANCE PROCEDURES :</b>  - Pull C/B AFCS/YAW SERVO, secure and tag
<b>20-1 AHRS</b>  <b>OPERATIONAL PROCEDURES :</b>  None for this chapter  <b>MAINTENANCE PROCEDURES :</b>  - Pull C/B AFCS/YAW SERVO, secure and tag.

