(iii) The AMOC specified in letter AIR—731A—20—179, dated May 11, 2020, approved previously for AD 2019—23—02 Amendment 39—19795 (84 FR 64725, November 25, 2019), is approved as an AMOC for the corresponding provisions of EASA AD 2022—0187 and of EASA AD 2023—0015 that are required by paragraph (j) of this AD for Model A330—200 and A330—300 series airplanes modified from a passenger to freighter configuration under the provisions of FAA Supplemental Type Certificate ST04038NY.

(2) Contacting the Manufacturer: For any requirement in this AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, International Validation Branch, FAA; or EASA; or Airbus SAS's EASA Design Organization Approval (DOA). If approved by the DOA, the approval must include the DOA-authorized signature.

### (n) Additional Information

For more information about this AD, contact Tim Dowling, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone: 206–231–3667; email: timothy.p.dowling@faa.gov.

### (o) Material Incorporated by Reference

- (1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.
- (2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.
- (3) The following service information was approved for IBR on [DATE 35 DAYS AFTER PUBLICATION OF THE FINAL RULE].
- (i) European Union Aviation Safety Agency (EASA) AD 2022–0187, dated September 13, 2022.
- (ii) European Union Aviation Safety Agency (EASA) AD 2023–0015, dated January 19, 2023.
- (4) The following service information was approved for IBR on October 20, 2022 (87 FR 56566, September 15, 2022).
- (i) European Union Aviation Safety Agency (EASA) AD 2021–0261, dated November 22, 2021.
  - (ii) [Reserved]
- (5) For EASA AD 2021–0261, EASA AD 2022–0187, and EASA AD 2023–0015, contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; telephone +49 221 8999 000; email ADs@easa.europa.eu; website easa.europa.eu. You may find these EASA ADs on the EASA website at ad.easa.europa.eu.
- (6) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.
- (7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email fr.inspection@nara.gov, or go to: www.archives.gov/federal-register/cfr/ibrlocations.html.

Issued on July 21, 2023.

#### Victor Wicklund,

Deputy Director, Compliance & Airworthiness Division, Aircraft Certification Service.

[FR Doc. 2023-15999 Filed 7-27-23; 8:45 am]

BILLING CODE 4910-13-P

### **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

### 14 CFR Part 39

[Docket No. FAA-2023-1641; Project Identifier MCAI-2023-00598-T]

### RIN 2120-AA64

## Airworthiness Directives; ATR—GIE Avions de Transport Régional Airplanes

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking

(NPRM).

**SUMMARY:** The FAA proposes to supersede Airworthiness Directive (AD) 2021–10–20, which applies to certain ATR-GIE Avions de Transport Régional Model ATR42-500 and ATR72-212A airplanes. AD 2021-10-20 requires revising the existing aircraft flight manual (AFM) and applicable corresponding operational procedures to update a systems limitation, limiting dispatch with certain equipment inoperative, performing an operational test of a certain contactor and an electrical test of a certain battery toggle switch, and performing corrective actions if necessary. Since the FAA issued AD 2021-10-20, new procedures for modifying the wiring and replacing the battery toggle switch have been developed that would terminate the AD requirements. This proposed AD would continue to require certain actions in AD 2021-10-20, and would require modifying the battery toggle switch wiring and replacing the battery toggle switch, and would revise the applicability to include additional airplanes, as specified in a European Union Aviation Safety Agency (EASA) AD, which is proposed for incorporation by reference (IBR). This proposed AD would also prohibit the installation of affected parts. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by September 11, 2023.

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to regulations.gov. Follow the instructions for submitting comments.
  - Fax: 202-493-2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M— 30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at regulations.gov under Docket No. FAA–2023–1641; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The street address for Docket Operations is listed above.

Material Incorporated by Reference:

- For the EASA AD identified in this NPRM, you may contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; telephone +49 221 8999 000; email: ADs@easa.europa.eu; website: easa.europa.eu. You may find this material on the EASA website: ad.easa.europa.eu. It is also available at regulations.gov under Docket No. FAA–2023–1641.
- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th Street, Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

### FOR FURTHER INFORMATION CONTACT:

Shahram Daneshmandi, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 206–231–3220; email: shahram.daneshmandi@faa.gov.

## SUPPLEMENTARY INFORMATION:

# **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include "Docket No. FAA-2023-1641; Project Identifier MCAI-2023-00598-T" at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

### **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Shahram Daneshmandi, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 206-231–3220; email: shahram.daneshmandi@faa.gov. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket

## Background

for this rulemaking.

The FAA issued AD 2021–10–20, Amendment 39–21553 (86 FR 26373, May 14, 2021) (AD 2021–10–20), for certain ATR–GIE Avions de Transport Régional Model ATR42–500 and ATR72–212A airplanes. AD 2021–10–20 was prompted by an MCAI originated by EASA, which is the Technical Agent for the Member States of the European Union. EASA issued Emergency AD 2021–0120–E, dated May 3, 2021, to correct an unsafe condition.

AD 2021–10–20 requires revising the existing AFM and applicable corresponding operational procedures to update a systems limitation, limiting dispatch with certain equipment inoperative, performing an operational test of a certain contactor and an electrical test of a certain battery toggle switch, and performing corrective actions if necessary. The FAA issued AD 2021–10–20 to address reports of temporary loss of all display units and the integrated electronic standby

instrument (IESI), which could result in loss of control of the airplane.

# Actions Since AD 2021–10–20 Was Issued

The preamble to AD 2021–10–20 explained that the FAA considered the requirements "interim action" and was considering further rulemaking. The FAA has now determined that further rulemaking is indeed necessary, and this proposed AD follows from that determination.

Since the FAA issued AD 2021-10-20, EASA superseded EASA Emergency AD 2021–0120–E, dated May 3, 2021, and issued EASA AD 2023-0078R1, dated April 20, 2023 (EASA AD 2023-0078R1) (also referred to as the MCAI), to correct an unsafe condition for all ATR-GIE Avions de Transport Régional Model ATR42–400 and –500 airplanes and ATR72-101, -102, -201, -202, -211, -212, -212A airplanes. Model ATR42-400 airplanes are not certificated by the FAA and are not included on the U.S. type certificate data sheet; this proposed AD therefore does not include those airplanes in the applicability. The MCAI states that new modification instructions have been published that would terminate the requirements of AD 2021-10-20, and expands the applicability to include Model ATR72-101, -102, -201, -202, –211, and –212 airplanes. Temporary loss of all display units and the IESI, if not corrected, could result in loss of control of the airplane.

The FAA is proposing this AD to address the unsafe condition on these products. You may examine the MCAI in the AD docket at *regulations.gov* under Docket No. FAA–2023–1641.

### **Explanation of Retained Requirements**

Although this proposed AD does not explicitly restate the requirements of AD 2021–10–20, this proposed AD would retain certain requirements of AD 2021–10–20. Those requirements are referenced in EASA AD 2023–0078R1, which, in turn, is referenced in paragraph (g) of this proposed AD.

### Related Service Information Under 1 CFR Part 51

EASA AD 2023–0078R1 specifies procedures for revising the existing AFM to update a systems limitation for the transformer rectifier unit (TRU), limiting dispatch with certain equipment inoperative (which can be done by amending the operator's minimum equipment list (MEL)), performing an operational test of the contactor FIN 1PA for discrepancies (i.e., a lack of power supply to DU 4 or a static inverter 1 INV FAULT not being

displayed on 29VU), replacing the battery toggle switch FIN 7PA, modifying the wiring, and performing corrective actions. Corrective actions include replacing the contactor FIN 1PA and restoring wiring. EASA AD 2023–0078R1 also prohibits the installation of affected parts.

This material is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

### **FAA's Determination**

This product has been approved by the aviation authority of another country and is approved for operation in the United States. Pursuant to the FAA's bilateral agreement with this State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI referenced above. The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop in other products of the same type design.

# Proposed AD Requirements in This NPRM

This proposed AD would retain certain requirements of AD 2021–10–20. This proposed AD would add airplanes to the applicability and require accomplishing the actions specified in EASA AD 2023–0078R1 described previously, except for any differences identified as exceptions in the regulatory text of this proposed AD.

### **Compliance With MEL Revision**

EASA AD 2023–0078R1 requires operators to "inform all flight crews" of revisions to the existing AFM and MEL, and thereafter to "operate the aeroplane accordingly." However, this proposed AD would not specifically require those actions as those actions are already required by FAA regulations.

FAA regulations require operators furnish to pilots any changes to the AFM (for example, 14 CFR 121.137), and to ensure the pilots are familiar with the AFM (for example, 14 CFR 91.505). As with any other flightcrew training requirement, training on the updated AFM content is tracked by the operators and recorded in each pilot's training record, which is available for the FAA to review. FAA regulations also require pilots to follow the procedures in the existing AFM including all updates. 14 CFR 91.9 requires that any person operating a civil aircraft must comply with the operating limitations specified in the AFM. FAA regulations (14 CFR 121.628(a)(2)) require operators to provide pilots with access to all of the

information contained in the operator's MEL. Furthermore, 14 CFR 121.628(a)(5) requires airplanes to be operated under all applicable conditions and limitations contained in the operator's MEL. Therefore, including a requirement in this proposed AD to operate the airplane according to the revised AFM and MEL would be redundant and unnecessary.

# **Explanation of Required Compliance Information**

In the FAA's ongoing efforts to improve the efficiency of the AD process, the FAA developed a process to use some civil aviation authority (CAA) ADs as the primary source of information for compliance with

requirements for corresponding FAA ADs. The FAA has been coordinating this process with manufacturers and CAAs. As a result, the FAA proposes to incorporate EASA AD 2023-0078R1 by reference in the FAA final rule. This proposed AD would, therefore, require compliance with EASA AD 2023-0078R1 in its entirety through that incorporation, except for any differences identified as exceptions in the regulatory text of this proposed AD. Using common terms that are the same as the heading of a particular section in EASA AD 2023-0078R1 does not mean that operators need comply only with that section. For example, where the AD requirement refers to "all required

actions and compliance times," compliance with this AD requirement is not limited to the section titled "Required Action(s) and Compliance Time(s)" in EASA AD 2023–0078R1. Service information required by EASA AD 2023–0078R1 for compliance will be available at regulations.gov under Docket No. FAA–2023–1641 after the FAA final rule is published.

## **Costs of Compliance**

The FAA estimates that this AD, if adopted as proposed, would affect 21 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

### **ESTIMATED COSTS FOR REQUIRED ACTIONS**

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Retained actions from AD 2021–10–20 New proposed actions	3 work-hours × \$85 per hour = \$255	\$0	\$255	\$3,825
	10 work-hours × \$85 per hour = \$850	0	850	17,850

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some or all of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

### **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or

on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

# PART 39—AIRWORTHINESS DIRECTIVES

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

# § 39.13 [Amended]

- 2. The FAA amends § 39.13 by:
- a. Removing Airworthiness Directive 2021–10–20, Amendment 39–21553 (86 FR 26373, May 14, 2021); and
- b. Adding the following new Airworthiness Directive:

# ATR-GIE Avions de Transport Régional:

Docket No. FAA-2023-1641; Project Identifier MCAI-2023-00598-T.

### (a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by September 11, 2023.

### (b) Affected ADs

This AD replaces AD 2021–10–20, Amendment 39–21553 (86 FR 26373, May 14, 2021) (AD 2021–10–20).

### (c) Applicability

This AD applies to all ATR–GIE Avions de Transport Régional Model ATR42–500, and ATR72–101, –102, –201, –202, –211, –212, and –212A airplanes, certificated in any category.

### (d) Subject

Air Transport Association (ATA) of America Code: 24, Electrical Power.

# (e) Unsafe Condition

This AD was prompted by reports of temporary loss of all display units and the integrated electronic standby instrument (IESI). The FAA is issuing this AD to address temporary loss of all display units and the IESI, which could result in loss of control of the airplane.

### (f) Compliance

Comply with this AD within the compliance times specified, unless already done.

### (g) Requirements

Except as specified in paragraph (h) of this AD: Comply with all required actions and compliance times specified in, and in accordance with, European Union Aviation Safety Agency (EASA) AD 2023–0078R1, dated April 20, 2023 (EASA AD 2023–0078R1).

### (h) Exceptions to EASA AD 2023-0078R1

- (1) Where EASA AD 2023–0078R1 refers to "05 May 2021 [the effective date of EASA AD 2021–0120–E]," this AD requires using May 14, 2021 (the effective date of AD 2021–10–20).
- (2) Where EASA AD 2023–0078R1 refers to its effective date, this AD requires using the effective date of this AD.
- (3) Where paragraphs (1), (2), and (5) of EASA AD 2023–0078R1 specify to "inform all flight crews, and, thereafter, operate the aeroplane accordingly," this AD does not require those actions as those actions are already required by existing FAA operating regulations (see 14 CFR 91.9, 91.505, and 121.137).
- (4) Where paragraph (4) of EASA AD 2023–0078R1 specifies actions if "discrepancies are detected," for this AD a "discrepancy" is defined as a lack of power supply to DU 4 or a INV FAULT is not triggered.
- (5) This AD does not adopt the "Remarks" section of EASA AD 2023–0078R1.

### (i) No Reporting Requirement

Although certain service information referenced in EASA AD 2023–0078R1 specifies to submit certain information to the manufacturer, this AD does not include that requirement.

### (j) Additional AD Provisions

The following provisions also apply to this AD:

- (1) Alternative Methods of Compliance (AMOCs): The Manager, International Validation Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the International Validation Branch, send it to the attention of the person identified in paragraph (k) of this AD. Information may be emailed to: 9-AVS-AIR-730-AMOC@faa.gov. Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.
- (2) Contacting the Manufacturer: For any requirement in this AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, International Validation Branch, FAA; or EASA; or ATR-GIE Avions de Transport Régional's EASA Design Organization Approval (DOA). If approved by the DOA, the approval must include the DOA-authorized signature.

## (k) Additional Information

For more information about this AD, contact Shahram Daneshmandi, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 206–231–3220; email shahram.daneshmandi@faa.gov.

## (l) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

- (2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.
- (i) European Union Aviation Safety Agency (EASA) AD 2023–0078R1, dated April 20, 2023.
  - (ii) [Reserved]
- (3) For EASA AD 2023–0078R1, contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; telephone +49 221 8999 000; email: ADs@easa.europa.eu; website: easa.europa.eu. You may find this EASA AD on the EASA website: ad.easa.europa.eu.
- (4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th Street, Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.
- (5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email fr.inspection@nara.gov, or go to: www.archives.gov/federal-register/cfr/ibrlocations.html.

Issued on July 21, 2023.

### Victor Wicklund,

Deputy Director, Compliance & Airworthiness Division, Aircraft Certification Service.

[FR Doc. 2023–15987 Filed 7–27–23; 8:45 am]

BILLING CODE 4910-13-P

### DEPARTMENT OF TRANSPORTATION

# **Federal Aviation Administration**

### 14 CFR Part 39

[Docket No. FAA-2023-1639; Project Identifier MCAI-2023-00109-T]

RIN 2120-AA64

## Airworthiness Directives; MHI RJ Aviation ULC (Type Certificate Previously Held by Bombardier, Inc.) Airplanes

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking

(NPRM)

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for all MHI RJ Aviation ULC Model CL-600-2B19 (Regional Jet Series 100 & 440), CL-600-2C10 (Regional Jet Series 700, 701 & 702), CL-600-2C11 (Regional Jet Series 550), CL-600-2D15 (Regional Jet Series 705), CL-600-2D24 (Regional Jet Series 900), and CL-600-2E25 (Regional Jet Series 1000) airplanes. This proposed AD was prompted by reports of power control unit (PCU) rod end fractures due to pitting corrosion, and a determination that new or more restrictive airworthiness limitations are necessary. This proposed AD would, for certain airplanes, require revising the

existing maintenance or inspection program, as applicable, to incorporate new or more restrictive airworthiness limitations. This proposed AD would also require accomplishing certain aircraft maintenance manual (AMM) tasks and corrective actions following short-term or long-term storage. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by September 11, 2023

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to regulations.gov. Follow the instructions for submitting comments.
  - Fax: 202-493-2251.
- *Mail*: U.S. Department of Transportation, Docket Operations, M– 30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at regulations.gov under Docket No. FAA–2023–1639; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The street address for Docket Operations is listed above.

Material Incorporated by Reference:

- For service information identified in this NPRM, contact MHI RJ Aviation Group, Customer Response Center, 3655 Ave. des Grandes-Tourelles, Suite 110, Boisbriand, Québec J7H 0E2 Canada; North America toll-free telephone 833–990–7272 or direct-dial telephone 450–990–7272; fax 514–855–8501; email thd.crj@mhirj.com; website mhirj.com.
- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

# FOR FURTHER INFORMATION CONTACT:

Gabriel Kim, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516–228–7300; email *9-avs-nyaco-cos@faa.gov.* 

### SUPPLEMENTARY INFORMATION: