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BOMBARDIER BUSINESS AVIATION SERVICES

ADVISORY WIRE
700T-0103

DATE: February 24, 2003	**PAGE:** 1 OF 8 (incl. Detailed Battery Troubleshooting Report)
ADDRESS TO: **DESTINATAIRE**	**A/C:**
FAX NUMBER: NUMÉRO DE FAX:	
FROM/DE: Bombardier Aerospace, Business Aircraft	

ADVISORY WIRE

REFERENCE NO: 700T-0103

SUBJECT: "AV BATT FAIL" & "APU BATT FAIL" CAS Messages Summary

EFFECTIVITY: BD700-1A10 (A/C 9002 & Sub)

ATA: 24-32

Si vous ne recevez pas toutes les pages, veuillez rappeler (514)-855-7469
If you do not receive all the pages, call (514) 855-7469
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1.0 REFERENCES

1.1 FCOM, Volume 1, Section 04-04-3 & AMM
Tasks 24-32-01-710-801/24-32-09-710-801
1.2 AW 700T-0083 Fault Isolation Procedures
AV & APU BATT FAIL CAS Messages
1.3 AW 700T-0048 AV BATT FAIL CAS Message
1.4 Detailed battery removal troubleshooting report (attached)

2.0 INTRODUCTION

This Advisory Wire is to provide details and explanations of the different conditions that may cause Battery System EICAS messages to be posted. It also provides clarification to help determine if a message shall be considered a nuisance or indicate an actual system malfunction.

3.0 DESCRIPTION

The following provides details of different conditions that can cause the "AV BATT FAIL" and/or "APU BATT FAIL" CAS messages to be posted as well as providing steps that can be taken to troubleshoot the message.

3.1 Messages posted with BATT MASTER switch selected ON:

The “APU BATT FAIL” and/or “AV BATT FAIL” message will be posted if the associated battery was disconnected and reconnected. This message indicates that the battery power was lost. As indicated in the FCOM and AMM reference 1.1, the message will be cleared as soon as AC power is applied to the aircraft and no further action is required.

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3.0 DESCRIPTION (cont'd)

3.2 Messages posted with BATT MASTER switch & AC POWER ON:

The "APU BATT FAIL" and/or "AV BATT FAIL" may be posted if the associated battery was left connected while the aircraft was not powered for a certain amount of time. Perform the procedure as detailed in the reference 1.2 AW to establish whether the CAS message is due to a nuisance charger cell imbalance fault detection or actual system fault.

3.3 Messages posted during the APU start:

3.3.1 The "APU BATT FAIL" may be posted if the APU battery voltage drops below 15 VDC during the APU start. The message will clear itself when the APU GEN comes online. This momentary message is considered as a nuisance. No further action is required. A logic change will be introduced in the IAC Batch 2 upgrade (Q3/03) to eliminate this nuisance message occurrence.

3.3.2 The "AV BATT FAIL" message may be posted if the avionics battery capacity is too low to support the aircraft systems during the power shedding that occurs during APU start. This may result in momentary blanking of display units and/or the "ELEC SYS FAULT" EICAS message being posted (on aircraft post Build 4.0, SB 700-24-045) during the APU start. To avoid this situation:

- Ensure that the SB 700-24-046 (A/C 9002-9106) for the electrical lugs inspection is incorporated.
- Check the Avionics battery electrical connection and ground return to the structure.

If the message persists after the above two steps have been carried out, it is recommend that the avionics battery be sent for servicing and testing.

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3.0 DESCRIPTION (cont'd)

3.4 Messages posted with AC POWER ON while operating in hot weather:

The "APU BATT FAIL" and/or "AV BATT FAIL" may be posted if the associated battery internal temperature exceeds + 57º C. Check the battery temperature on the EICAS DC SYNOPTIC page. If the temperature is >+57C, the battery temperature must be lowered. Refer to the reference 1.3 AW for operational recommendations to reduce the battery temperature.

In all cases, if the "APU BATT FAIL" and/or "AV BATT FAIL" messages are posted and none of the above conditions are present, then the system is indicating that the charger has detected a fault in the associated battery system. Carry out troubleshooting in accordance with the applicable AMM Tasks (ref. 24-32-00-710-801, 24-32-01-710-801, 24-32-09-710-801) to isolate the cause of the battery system failure.

Notes:

1) On Build 4.0 aircraft (SB 700-24-045), the "ELEC SYS FAIL" message may accompany the APU BATT FAIL message.

2) The avionics and APU battery synoptic page amber box outlines may be displayed in conjunction with the "AV BATT FAIL" and / or "APU BATT FAIL". The amber box outlines should be treated the same as "AV BATT FAIL" and / or "APU BATT FAIL" messages.

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4.0 ACTION

In order to minimize the time related to troubleshooting nuisance fault messages and battery system issues, Bombardier recommends that the procedures mentioned above be considered each time an "AV BATT FAIL" and / or "APU BATT FAIL" CAS message is posted.

In the case where a battery is replaced, we would appreciate if you could take the time to complete the attached questionnaire (Reference 1.4). This information is very valuable to us for our ongoing investigation into battery issues.

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Detailed Battery Troubleshooting Report

INSTRUCTIONS

Bombardier is gathering detailed troubleshooting information on the most frequently removed GX components. To assist in the technical investigation, FSRs and service centers are requested to complete a condition report and this questionnaire when involved in the troubleshooting, removal or scheduled maintenance of a GX Battery (BX00101 & BX00201)

Completed condition reports and questionnaires are to be returned:

- by the Lotus Notes Condition Report Application (with questionnaire as an electronic attachment)
- or by e-mail at: FRACAS.Montreal@notes.canadair.ca
- or by fax at : (514) 855-8798

Fax a copy of the SAFT Nickel-Cadmium Battery Service Record sheet from the logbook to (514) 855-8798

For general inquiries, call Christian Bonin (514) 855-8309

SECTION A

Reference Condition Report Number:

Aircraft and Component Identification

Complete table if information is not provided in Condition Report.

A/C S/N	A/C Hours	A/C Landings	Unit P/N	Unit S/N

Position in A/C:	☐ APU	☐ Avionics	Contact Name	Telephone Number

Removal Type

☐ Unscheduled (Snag) Complete Section B & C	☐ Scheduled or Time Limits/Maintenance Check Complete Section C

SECTION B

Aircraft Setup Information during Snag

☐ Battery Master Switch set to ON	☐ APU start	☐ Engine start	☐ After aircraft storage with battery connected and no AC power. Number of hours:
☐ External AC PBA switch set to ON	☐ APU running	☐ Engine running or in flight	☐ After aircraft storage with battery disconnected and no AC power Number of hours:

Aircraft Operation Information

Typical Flight profile	% per month
0 to 2 hrs	
2 to 4 hrs	
4 to 14 hrs	

Typical Aircraft Locations (Specify Top 3 City/Country only)	% per year

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Detailed Battery Troubleshooting Report

Flight Deck Effect

EICAS message	☐ AV Battery Fail	☐ APU Batt Fail	☐ AV Batt Chgr Fail	☐ APU Batt Chgr Fail	Duration if intermittent:
	Reset Procedure: ☐Charger CB reset ☐FIM 24-32-00-810-803 or -806 ☐Others:				

DC Synoptic Page (DC power only)	Voltage:	Current:	Temperature:	
	APU or AV Batt outline	☐green ☐amber	APU or AV Batt Charger annunciation	☐yes, amber ☐no
DC Synoptic Page (DC & AC power)	Voltage:	Current:	Temperature:	
	APU or AV Batt outline	☐green ☐amber	APU or AV Batt Charger annunciation	☐yes, amber ☐no

Additional Snag Information

Record ambient temperature:		deg C	What is APU Cycle?		
Date & time snag (mm/dd/yy hh:mm)		Date & time of last power up (DC & AC):		Date of last battery maintenance:	
Reason for Removal:					

SECTION C

Battery Shop Information

Complete section if contact different than in Section A

Contact Name	Phone Number	Date	Time

C1 – If performing scheduled maintenance, charge battery for 1:30 hour with aircraft power prior to removal. Battery charged on aircraft prior to removal: Yes ☐ No ☐

C2 - When performing the regular check of the avionics battery (CMM 24-32-01) and/or the APU battery (CMM 24-32-09) – refer to figure 502, record the following:

C3 - Before initial discharge test, record the initial voltage per cell (refer to table 1)

C4 - Perform initial discharge test and record the time at the start of the discharge.		T_S =	min
C5 - Record the time that the first cell reaches 1.0 volts.	T_{CC} = min	Cell #	
C6 - Record the time when the battery terminal voltage reaches 20 volts (Avionics Battery) and/or 21 volts (APU Battery)		T_{DD} =	min

C7 - Record the voltage per cell when the battery terminal voltage reaches 20 volts (Avionics Battery) or 21 volts (APU Battery) (refer to table 1)

C8 - Continue with battery maintenance per CMM figure 502 and note the voltages and water added at the end of each charge cycles.

C9 – Explain the failure condition, if any:

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Detailed Battery Troubleshooting Report

TABLE 1

	Initial Discharge		Cycle 1					Cycle 2		Cycle 3	
			Charge			Capacity Test		Capacity Test		Capacity Test	
	Initial Voltage	End Voltage	Initial Voltage	End Voltage	Water (Qty added)	Initial Voltage	End Voltage	Initial Voltage	End Voltage	Initial Voltage	End Voltage
Cell #	Step C3	Step C7	Step C8	Step C8	Step C8	Step C8	Step C8	Step C8	Step C8	Step C8	Step C8
1											
2											
3											
4											
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