

ADVISORY WIRE

AW300-27-0077

DATE: December 6, 2007

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FROM: BOMBARDIER CUSTOMER SERVICES BUSINESS AIRCRAFT

ADVISORY WIRE

REFERENCE NO: AW300-27-0077

SUBJECT: Troubleshooting Guide for Spoiler Electronic Control Unit and Horizontal Stabilizer Trim Electronic Control Unit.

EFFECTIVITY: BD100-1A10 (20003 - 20999)

ATA: 27

This Advisory Wire contains Maintenance Information

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1.0 REFERENCES:

- 1.1 Troubleshooting Guide for Horizontal Stabilizer Trim Electronic Control Unit (HSTECU) (MRM21633), Revision A (attached)
- 1.2 Troubleshooting Guide for Spoiler Electronic Control Unit (SECU) (MRM21632), Revision A (attached)

2.0 INTRODUCTION:

This Advisory Wire is to provide Operators with Troubleshooting Guidelines regarding HSTECU and SECU issues. The guides will help to reduce the number of No Fault Found (NFF) removals.

3.0 DESCRIPTION:

A high number of HSTECUs and SECUs are being removed from different aircraft and sent to the vendor for repair. Many of the removed units once tested, end up being NFF.

As a result of the high NFF rate, the vendor has created troubleshooting guides for HSTECU and SECU which contain clear directives on how to resolve in-service issues pertaining to the pitch trim, rudder limiter and spoiler system. These guides will help reduce the quantity of NFF units and will also provide more technical details to the vendor when a faulty component is returned.

4.0 ACTION:

We recommend that, in order to reduce the possibility of NFF removals, Operators familiarize themselves with Ref. 1.1 and Ref. 1.2 troubleshooting guides. The guides should be used when troubleshooting HSTECU and SECU issues.

**TROUBLESHOOTING GUIDE
FOR
HORIZONTAL STABILIZER TRIM ELECTRONIC
CONTROL UNIT (HSTECU)
(P/N'S C47329-003 AND -004)**

MOOG Part Number	MOOG Model Number	Customer Part Number

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TEST ENGR	A	E - RELEASED	20070627	D. MCGUIRE	
QUALITY ENGR					
MATERIALS					
RELIABILITY					

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MRM21633

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1. PURPOSE

The purpose of this document is to provide a troubleshooting guide for the BD-100 horizontal stabilizer trim electronic control unit (HSTECU).

2. REFERENCE DOCUMENTS

DSS10506	Interface Data Document PTCS to Maintenance Diagnostics Computer BD-100
DSS10505	Electrical Interface Control Document Pitch Trim Control System to EICAS Bombardier BD-100
DSS10504	Electrical Interface Data Document Pitch Trim Control System to Data Concentrator Unit Bombardier BD-100
DSS10691	Tier II Specification Pitch Trim Control System BD-100
DSS10499	Electrical Interface Document Pitch Trim Control System
DSS10744	Hardware Requirements Specification Pitch Trim Control System BD-100
MRM12323	HSTECU ATP Software Requirement Specification BD-100
C62736	Automated Test Equipment
C62684	BD-100 HSTECU Automated Test Harness
C84180	BD-100 HSTECU Box Level Production Test Software
C84182	BD-100 HSTECU Box Level ATP Software

3. TROUBLESHOOTING MATRIX

See the following labels: 352, 353 and 354.

See also DSS10506.

3.1 CONFIG STAB TRIM Message

3.1.1 Description

- Warning (Red)
- Displayed when the aircraft Channel is selected and failed; is on ground prior to takeoff and one or more of the following conditions exist:

1. Stabilizer trim is outside of the green band and buffer; or
 2. There is insufficient integrity to ensure that the stabilizer trim position is inside the green band; or
 3. The Primary Channel is selected and failed ; or
 4. The Primary channel is not selected and not failed ; or
 5. The Secondary Channel is selected and failed ; or
 6. Neither the Primary nor the Secondary Channel is selected.
- The CONFIG STAB TRIM message will be associated with the CONFIGURATION aural alert.
 - The pilot action is to ensure that the Pitch Trim Select switch is selected to the PRI or SEC position, stabilizer trim is operative via the pilot's and co-pilot's trim switches, and the stabilizer is trimmed within the green band. The SEC position should only be selected in the event the Primary Channel is failed.

3.1.2 EICAS Logic

CONFIG STAB TRIM =

EICAS Takeoff Configuration condition *
 [Stabilizer Trim Outside of Green Band and buffer +
 .NOT. (Sufficient Stabilizer Trim Position Integrity) +
 (Primary Channel Selected * Primary Channel Failed) +
 (.NOT.(Primary Channel Selected) * .NOT.(Primary Channel Failed)) +
 (Secondary Channel Selected * Secondary Channel Inoperative) +
 .NOT.(Primary Channel Selected + Secondary Channel Selected)]

EICAS Takeoff Configuration Condition is defined by Collins.

Stabilizer Trim Outside of Green Band and buffer =
 Displayed STAB TRIM Valid *
 {[(Displayed STAB TRIM , -6.17 Degrees +
 Displayed STAB Trim , -0.33 Degrees)] +
 [Previous (Stabilizer Trim Outside of Green Band and buffer) *
 .NOT.(Stabilizer Trim Inside of Green Band)]}

Stabilizer Trim Inside of Green Band =
 Displayed STAB TRIM Valid *
 (Displayed STAB TRIM , -6.03 Degrees *
 Displayed STAB TRIM , -0.47 Degrees)

Displayed STAB TRIM and Displayed STAB TRIM Valid are defined as follows :

If HSTECM-1 Label 314 is Valid Then

Revision A

Label 352

Bit	Function	Bit Definitions	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
29	Pad											
28	Pad											
27	Copilot Manual Trim Switch Failure	Figure 45	Check wiring to Trim Switch	Check wiring at HSTECU to ground from switch.	Replace switch.	Replace HSTECU.						
26	Pilot Manual Trim Switch Failure	Figure 45	Check wiring to Trim Switch	Check wiring at HSTECU to ground from switch.	Replace switch.	Replace HSTECU.						
25	Pad											
24	Pad											
23	Pad											
22	Secondary HST Engage Relay Failure	Table 7	Check wiring to Engage Relay	Swap relays K45 and K44 and see if fault follows.	If fault follows, replace Secondary relay. If fault remains, replace HSTECU.							
21	Primary HST Engage Relay Failure	Table 7	Check wiring to Engage Relay	Swap relays K45 and K44 and see if fault follows.	If fault follows, replace Primary relay. If fault remains, replace HSTECU.							
20	Pad											
19	HSTA Primary Motor Failure	1 = Failed				Check Motor coils, 16 to 2 ohms from D to A and from D to B. Also check RVDT resistance = Excitation pins 7 to 8, 30 to 40 ohms. Secondary windings 113 to 150 ohms from D to A and from D to B. Check RVDT excitation at connector pins 7 to 8 Approx 5 vac.	Check engagement relays K44 and K45 by swapping and wiring check-out per electrical wiring diagram.	Replace HSTECU.	Replace Primary Motor.	Replace HSTA.	Replace MCU.	
18	HSTA Secondary Brake 3 Failure	Table 38 , 39 , 51		Check Voltage and resistance at Brake 3 and out of HSTECU. Compare it to Brake 1. Brake resistance is 32-34 ohms. Voltage is 14 vdc min.	Check wiring from HSTA to MCU per electrical wiring diagram.	Replace motor.	Replace HSTECU.					
17	HSTA Primary Brake 1 Failure	Table 38 , 39 , 51		Check Voltage and resistance at Brake 1 and out of HSTECU. Compare it to Brake 3. Brake resistance is 32-34 ohms. Voltage is 14 vdc min.	Replace motor.	Replace HSTECU.						
16	HSTA LVDT 2 Failure	Table 2 , 51	Check wiring to LVDT2 per electrical wiring diagram.	Check for Vex Approx Specs from HSTECU at LVDT 2 pins 1 to 2 and at HSTECU pins A16 to A20. Compare to LVDT 1.	Check VA pins 4 to 5 and VB pins 5 to 6 at LVDT with BOB or jumpers.	Switch LVDTs if possible and see if fault follows. If so replace LVDT.	Replace HSTECU.					
15	HSTA LVDT 1 Failure	Table 2 , 51	Check wiring to LVDT1 per electrical wiring diagram.	Check for Vex Approx Specs from HSTECU at LVDT 1 pins 1 to 2 and at HSTECU pins A1D to A20. Compare to LVDT 2.	Check VA pins 4 to 5 and VB pins 5 to 6 at LVDT with BOB or jumpers.	Switch LVDTs if possible and see if fault follows. If so replace LVDT.	Replace HSTECU.					
14	HSTECU Failure	Table 3 -16 , 17 , 20 -21 , 23 - 25 , 27 -29 , 32 , 40 , 41 , 44 , 51 , 52	Check other labels and bits that are set first. See Terr II Tables for other bits.	Download NVRAM and analyze.	Check wiring to Engage Relay per electrical wiring diagram.	Check wiring from MCU to HSTECU per electrical wiring diagram.	Check HSTA per electrical wiring diagram.	Check Autopilot trim enable wiring to HSTECU per electrical wiring diagram. (If Stab Trim Fault With AP Engaged.)	Check wiring from SECU if faulted while spoiler trimming.	Check PSEU wiring to HSTECU per electrical wiring diagram if go into maintenance Mode.	Check RTL wiring per electrical wiring diagram if faulted when RTL test is initiated.	Check Flap Position wiring per electrical wiring diagram if faulted when flap firm.
13	MCU Primary Channel Failure	Table 51 , 6 , 4 , 3	Download NVRAM and analyze.	Check wiring from MCU to HSTA per electrical wiring diagram.	Check wiring from MCU to HSTECU (Motor velocity and RPM).	Monitor condition during next flight.	Replace HSTECU.	Replace MCU.				
12	HSTA No Back Failure	1 = Failed	Check aircraft flight conditions	Download NVRAM and analyze.	Check wiring from MCU to HSTA per electrical wiring diagram.	Check wiring from MCU to HSTECU (Motor velocity and RPM).	Monitor condition during next flight.	Replace HSTECU.	Replace MCU.	Replace HSTA.		
11	Pad											



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LABEL 353

Bit	Function	Bit Definitions	Step 1	Step 2	Step 3
29	Pad				
28	Pad				
27	SECU-2 Input	Loss of Spoiler Trim only.	Check Aircraft for other SECU 2 Faults	Check wiring from SECU to HSTECU per electrical wiring diagram.	
26	SECU-1 Input	Loss of Spoiler Trim only.	Check Aircraft for other SECU 1 Faults	Check wiring from SECU to HSTECU per electrical wiring diagram.	
25	SPC Channel B Input (from RIO)	Will inhibit RTLA Preflight test.	Check Aircraft for other SPC Faults	Check wiring from SPC to IOC per electrical wiring diagram.	
24	SPC Channel A Input (from LIOC)	Will inhibit RTLA Preflight test.	Check Aircraft for other SPC Faults	Check wiring from SPC to IOC per electrical wiring diagram.	
23	PSEU Channel B Input	Most likely to inhibit Maintenance mode.	Check Aircraft for other PSEU Faults	Check wiring from PSEU to IOC per electrical wiring diagram.	Check aircraft MLG WOW wiring to PSEU per electrical wiring diagram
22	PSEU Channel A Input	Most likely to inhibit Maintenance mode.	Check Aircraft for other PSEU Faults	Check wiring from PSEU to IOC per electrical wiring diagram.	Check aircraft MLG WOW wiring to PSEU per electrical wiring diagram
21	Flap Position Input (sensed from RIO)	Loss of Flap Trim only.	Check Aircraft for other Flap Faults	Check wiring from flap computer to the SPC per electrical wiring diagram.	Check wiring from SPC to IOC per electrical wiring diagram.
20	Flap Position Input (sensed from LIOC)	Loss of Flap Trim only.	Check Aircraft for other Flap Faults	Check wiring from flap computer to the SPC per electrical wiring diagram.	Check wiring from SPC to IOC per electrical wiring diagram.
19	Autopilot R-FGC Input	Loss of Autopilot Trim only.	Check Aircraft for other FGC Faults	Check Autopilot trim enable wiring to HSTECU per electrical wiring diagram.	Check FGC wiring to DCU per electrical wiring diagram.
18	Autopilot L-FGC Input	Loss of Autopilot Trim only.	Check Aircraft for other FGC Faults	Check Autopilot trim enable wiring to HSTECU per electrical wiring diagram.	Check FGC wiring to DCU per electrical wiring diagram.
17	Air Data Computer ADC 2 Input	Annunciation only unless other ADC is faulted.	Check Aircraft for other ADC Faults	Check ADC wiring to IOC per electrical wiring diagram.	
16	Air Data Computer ADC 1 Input	Annunciation only unless other ADC is faulted.	Check Aircraft for other ADC Faults	Check ADC wiring to IOC per electrical wiring diagram.	
15	ARINC L-GP-5 Input From IOC	Annunciation only unless other IOC is faulted.	Check Aircraft for other bussing issues.	Check wiring from L-GP 5 Buss per electrical wiring diagram.	
14	ARINC R-GP-5 Input from IOC	Annunciation only unless other IOC is faulted.	Check Aircraft for other bussing issues.	Check wiring from R-GP 5 Buss per electrical wiring diagram.	
13	Pad				
12	Pad				
11	Pad				

NOTE: These singular bits being set will usually cause a Cyan Message. Two of these being set will cause an Amber Message.

LABEL 354

Bit	Function	Bit Definitions	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
29	Pad							
28	Pad							
27	Pad							
26	Pad							
25	Pad							
24	Pad							
23	Pad							
22	Pad							
21	Pad							
20	Pad							
19	RTLA Secondary Channel Failure	1 = Failed	Perform RTLA operational test per AMM TASK 27-21-27-710-801 or applicable FTP.	Perform RTLA electronic rigging per AMM TASK 27-820-801.	Switch HSTECU to secondary channel to reconfirm fault.	Check wiring to the RTLA per electrical wiring diagram.	Replace HSTECU and Monitor for fault.	Replace RTLA if Fault comes back.
18	RTLA Disconnect	1 = Failed	Perform RTLA electronic rigging per AMM TASK 27-21-27-820-801 or applicable FTP.	Switch HSTECU to secondary channel to see if fault clears.	Check Rudder RVDVT for proper rigging.	Check wiring to the RTLA per electrical wiring diagram.	Perform RTLA operational test per AMM TASK 27-21-27-710-801 or applicable FTP.	Replace HSTECU and Monitor for fault.
17	RTLARVDVT Failure	1 = Failed	Perform RTLA electronic rigging per AMM TASK 27-21-27-820-801 or applicable FTP.	Check RVDVT wiring to the HSTECU per electrical wiring diagram.	Check Rudder RVDVT for proper rigging.	Replace HSTECU if Step 3 failed.		
16	RTLA 1 Failure	1 = Failed	Perform RTLA electronic rigging per AMM TASK 27-21-27-820-801 or applicable FTP.	Switch HSTECU to secondary channel to see if fault clears. If Fault clears you need only to be concerned with Primary channel components in the following steps.	Check Rudder RVDVT for proper rigging.	Check wiring to the RTLA per electrical wiring diagram.	Replace HSTECU and Monitor for fault.	Replace RTLA if Fault comes back.

Revision A

15	RTLA Position 1 Failure	1 = Failed	Perform RTLA electronic rigging per AMM TASK 27-21-27-820-801 or applicable FTP.	Switch HSTECU to secondary channel to see if fault clears. If Fault clears you need only to be concerned with Primary channel components in the following steps.	Check Rudder RVDT for proper rigging.	Check wiring to the RTLA per electrical wiring diagram.	Perform RTLA operational test per AMM TASK 27-21-27-710-801 or applicable FTP.	Replace HSTECU and Monitor for fault.
14	Pad							
13	Pad							
12	Pad							
11	Pad							

TROUBLESHOOTING GUIDE FOR SPOILER ELECTRONIC CONTROL UNIT (SECU) (P/N'S C47330-004, -005 AND -006)

MOOG Part Number	MOOG Model Number	Customer Part Number

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TEST ENGR				
QUALITY ENGR				
MATERIALS				
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1. PURPOSE

The purpose of this document is to provide a troubleshooting guide for the BD-100 spoiler electronic control unit (SECU).

2. REFERENCE DOCUMENTS

DSS10495	Electrical Interface Control Document SCS to Maintenance Diagnostics Computer BD-100
DSS10494	Electrical Interface Control Document Spoiler Control System to EICAS Bombardier BD-100.
DSS10493	Electrical Interface Data Document Spoiler Control System to Data Concentrator Unit Bombardier BD-100
DSS10690	Tier II Specification Spoiler Control System BD-100
DSS10485	Electrical Interface Document Spoiler Control System
MRM12324	SECU ATP Software Requirement Specification BD-100
C62736 OR C8673	Automated Test Equipment
C62683	BD-100 SECU Automated Test Harness
C84181	BD-100 SECU Box Level Production Test Software
MRE12571	Software Configuration Index for the BD-100 SECU Box Level Production Test Software
MRA12770	SECU ADI Card ATP

3. TROUBLESHOOTING MATRIX

See the following labels: 352, 353 and 354.

See also DSS10495.

Label 352									
Bit	Function	Terr. I Figures	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7
29	Pad								
28	Left Inboard Wheel Speed Failure	Figure 44, Figure 148	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Perform test per FTP S100-276001 K para 5.6.3 for wheel speed function with part #S100-324001-TFIX05 simulator	Check wiring from BCU to SECU per electrical wiring diagram.	Check wiring from Wheel Speed Sensors to BCU per electrical wiring diagram.	Check Wheel Speed Sensors per AMM.		
27	Right Inboard Wheel Speed Failure	Figure 44, Figure 148	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Perform test per FTP S100-276001 K para 5.6.3 for wheel speed function with part #S100-324001-TFIX05 simulator	Check wiring from BCU to SECU per electrical wiring diagram.	Check wiring from Wheel Speed Sensors to BCU per electrical wiring diagram.	Check Wheel Speed Sensors per AMM.		
26	Ground Spoiler Select Switch Failure	Figure 31	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check wiring from Ground Spoiler Select switch to SECU per electrical wiring diagram.	Check Ground Spoiler Select switch and grounds per electrical wiring diagram.	Replace Ground Spoiler Select switch.			
25	FSCL RVDT 2 Failure	Figure 20, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check RVDT wiring to SECU per electrical wiring diagram.	Check RVDT coil resistance for differences between J1 and J2 pins 16 to 17, 19 to 20, 9 to 10, 10 to 11 per electrical wiring diagram.	Check Vexa output from SECU. Approx. 5 vac. If no output replace SECU.	Replace FSCL.	
24	FSCL RVDT 1 Failure	Figure 20, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check RVDT wiring to SECU per electrical wiring diagram.	Check RVDT coil resistance for differences between J1 and J2 pins 16 to 17, 19 to 20, 9 to 10, 10 to 11 per electrical wiring diagram.	Check Vexa output from SECU. Approx. 5 vac. If no output replace SECU.	Replace FSCL.	
23	Roll Disconnect Switch Failure	Figure 26, Figure 28	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check wiring from Roll Disconnect switch to SECU per electrical wiring diagram.	Check Roll Disconnect switch and grounds per electrical wiring diagram.	Replace Roll Disconnect switch.			
22	Roll Spoiler Off Switch Failure	Figure 30	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check wiring from Roll Spoiler OFF switch to SECU per electrical wiring diagram.	Check Roll Spoiler OFF switch and grounds per electrical wiring diagram.	Replace Roll Spoiler OFF switch.			
21	Right TOA Idle Switch 1 Failure	Figure 34, Figure 38	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check TOA wiring to SECU per electrical wiring diagram.	Check TOA switches for proper operation at Idle and MTO per electrical wiring diagram.	Replace TOA.			
20	Left TOA Idle Switch 1 Failure	Figure 32, Figure 36	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check TOA wiring to SECU per electrical wiring diagram.	Check TOA switches for proper operation at Idle and MTO per electrical wiring diagram.	Replace TOA.			
19	Copilot Control Wheel Resolver 3 Fault	Figure 10, Figure 12, Figure 14, Figure 16, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check Resolver wiring to SECU per electrical wiring diagram.	Check Resolver coil resistance per electrical drawing. Primary coil approx. 110 ohms. Secondary coil approx. 160 ohms.	Check Vexa output from SECU. Approx. 5 vac. If no output replace SECU.	Replace RVDT.
18	Pilot Control Wheel Resolver 1 Fault	Figure 9, Figure 11, Figure 14, Figure 16, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check Resolver wiring to SECU per electrical wiring diagram.	Check Resolver coil resistance per electrical drawing. Primary coil approx. 110 ohms. Secondary coil approx. 160 ohms.	Check Vexa output from SECU. Approx. 5 vac. If no output replace SECU.	Replace RVDT.
17	GSSV 1 Failure	Figure 94, Figure 95, Figure 105, Figure 106, Figure 107, Figure 128, Figure 130, Figure 132, Figure 148	If no loss of functionality run latency check. See Table 1.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check aircraft panel operation. PLD,ROLL,GLD.	Check associated GSSV wiring to SECU per electrical wiring diagram.	If wiring issue found repeat step 1.	Check GSSV coil values. Pins 8 to 9, 10 to 11, 12 to 13 = 65 to 75 ohms	Replace GSSV.
16	Right Inboard MFS 7 LVDT Failure	Figure 23, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check LVDT wiring to SECU per electrical diagram.	Check LVDT coil resistance. Pins 7 to 8 = 300 to 700 ohms 12 to 13, 9 to 10, 10 to 11 = 50 to 150 ohms	Check Vexa output from SECU. Approx. 5 vac. If no output replace SECU.	Replace Actuator.
15	Left Inboard MFS 2 LVDT Failure	Figure 22, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check LVDT wiring to SECU per electrical diagram.	Check LVDT coil resistance. Pins 7 to 8 = 300 to 700 ohms 12 to 13, 9 to 10, 10 to 11 = 50 to 150 ohms	Check Vexa output from SECU. Approx. 5 vac. If no output replace SECU.	Replace Actuator.
14	SECU # Failure	See figures and table throughout section 4.	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check all other faults to correct wiring.				
13	Program Pin Failure	Figure 40	Check program pin jumpers on the SECU to ground per electrical drawing.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.					

12	Right Inboard MFS 7 RVDT Failure	Figure 25, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check RVDT wiring to SECU per electrical diagram.	Check Vexc at RVDT approx. 5 vac output from SECU. If no output, replace SECU.	Check Va and Vb (brakeout box at the RVDT) output from RVDT. If no output replace RVDT. Check for small AC voltage varying on panel position.	
11	Left Inboard MFS 2 RVDT Failure	Figure 24, Figure 148	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check RVDT wiring to SECU per electrical wiring diagram..	Check Vexc (brakeout box at the rvdt) output from SECU. If no output replace SECU.	Check Va and Vb (brakeout box at the RVDT) output from RVDT. If no output replace RVDT. Check for small AC voltage varying on panel position.	

TABLE 1

LATENCY CHECK PROCEDURE

IF USING AIRCRAFT DCMP

1. Pull C/B of the SECU Not under test.
2. Center control wheels.
3. Select FSCL to EMER position.
4. Select GSSS to Manual.
5. Select FSCL to Slow.
6. Select GSSS to Auto.
7. Listen to the spoilers until three clicks are heard in fifteen seconds.
8. Select GSSS to Off.
9. Pull Spoiler C/B under test.
10. Reset both Spoiler C/Bs.

IF USING AIRCRAFT EDPs OR A MULE

1. Pull C/B of the SECU Not under test.
2. Center control wheels.
3. Select GSSS to Manual.
4. Select GSSS to Auto.
5. Listen to the spoilers until three clicks are heard in fifteen seconds.
6. Select GSSS to Off.
7. Pull Spoiler C/B under test.
8. Reset both Spoiler C/Bs.

Label 353

Bit	Function	Bit Definitions	Step 1	Step 2	Step 3	Step 4
29	Pad					
28	Pad					
27	Pad					
26	Pad					
25	Pad					
24	Cross Channel ARINC Input	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check SECU cross channel wiring per electrical wiring diagram.		
23	Flap Position Input (sensed from R-GP)	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other Flap Faults	Check wiring from flap computer to the SPC per electrical wiring diagram.	Check wiring from SPC to IOC per electrical wiring diagram.
22	Flap Position Input (sensed from L-GP)	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other Flap Faults	Check wiring from flap computer to the SPC per electrical wiring diagram.	Check wiring from SPC to IOC per electrical wiring diagram.
21	Radar Altimeter Input (from RIOG)	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other Radar Altimeter Faults	Check Radar Altimeter Antenna connections.	Check wiring from the Radar Altimeter to IOC per electrical wiring diagram.
20	Radar Altimeter Input (from LIOC)	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other Radar Altimeter Faults	Check Radar Altimeter Antenna connections.	Check wiring from the Radar Altimeter to IOC per electrical wiring diagram.
19	Left Hydraulic Input (from RIOG)	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other Hydraulic Pressure Faults	Check Hydraulic Pressure wiring to DCU per electrical wiring diagram.	Check wiring from DCU to IOC per electrical wiring diagram.
18	Left Hydraulic Input (from LIOC)	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other Hydraulic Pressure Faults	Check Hydraulic Pressure wiring to DCU per electrical wiring diagram.	Check wiring from DCU to IOC per electrical wiring diagram.
17	Air Data Computer 2 Input	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other ADC Faults	Check ADC wiring to IOC per electrical wiring diagram.	

16	Air Data Computer 1 Input	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other ADC Faults	Check ADC wiring to IOC per electrical wiring diagram.	
15	ARINC L-GP-5 Input from IOC	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other bussing issues.	Check wiring from L-GP 5 Buss per electrical wiring diagram.	
14	ARINC R-GP-5 Input from IOC	Annunciation only unless other IOC is faulted.	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other bussing issues.	Check wiring from R-GP 5 Buss per electrical wiring diagram.	
13	Pad					
12	Pad					
11	Pad					

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Bit	Function	Terr II Figure	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
29	Pad							
28	Right Inboard MFS Failure	Figure 23, Figure 86, Figure 88, Figure 126	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check mechanical rigging.	Check wiring from SECU to Acuator per electrical wiring diagram.	Replace actuator.
27	Left Inboard MFS Failure	Figure 22, Figure 85, Figure 87, Figure 124	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check mechanical rigging.	Check wiring from SECU to Acuator per electrical wiring diagram.	Replace actuator.
26	Right Inboard GS Failure	Figure 100, Figure 102	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check mechanical rigging.	Check wiring from SECU to GSSV per electrical wiring diagram.	Check GS prox-switch per electrical wiring diagram. (Replace actuator.)
25	Left Inboard GS Failure	Figure 99, Figure 101	Re-rig SECU	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Re-rig SECU	Check mechanical rigging.	Check wiring from SECU to GSSV per electrical wiring diagram.	Check GS prox-switch per electrical wiring diagram. (Replace actuator.)
24	Pad							
23	FADEC RB TLA Input (from RIO)	Figure 53	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
22	FADEC RB TLA Input (from LIOC)	Figure 53	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
21	FADEC RA TLA Input (from RIO)	Figure 53	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
20	FADEC RA TLA Input (from LIOC)	Figure 53	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
19	FADEC LB TLA Input (from RIO)	Figure 52	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC.			

18	FADEC LB TLA Input (from LIOC)	Figure 52	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
17	FADEC LA TLA Input (from RIOG)	Figure 52	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
16	FADEC LA TLA Input (from LIOC)	Figure 52	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other FADEC issues.	Check wiring from FADCE to IOC per electrical wiring diagram.			
15	PSEU Channel B Input	Figure 55, Figure 64, Figure 66, Figure 80	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other PSEU issues.	Check wiring from MLG sensors to PSEU per electrical wiring diagram.	Check wiring from PSEU to IOC per electrical wiring diagram.		
14	PSEU Channel A Input	Figure 55, Figure 64, Figure 66, Figure 80	Visually inspect the back of the box for pin damage or in the rack. Move SECU 1 to 2. If problem follows replace SECU. If not check wiring.	Check Aircraft for other PSEU issues.	Check wiring from MLG sensors to PSEU per electrical wiring diagram.	Check wiring from PSEU to IOC per electrical wiring diagram.		
13	Pad							
12	Pad							
11	Pad							