CHAPTER - 31 HIGHLIGHTS
(Summary of Changes)

Revision No. TR31-3 Aug 19/19

TO: HOLDERS OF THE AIRCRAFT MAINTENANCE MANUAL (06-123838)

Pages that have been added or revised are summarized below. Remove and insert the affected pages as listed, and enter the above revision number with issue date into the Record of Revisions sheet.

This Temporary Revision incorporates and supersedes previously released temporary revisions for the chapters listed below.

Do not remove this page. Keep it in place as a record of previous changes.

CH/SE/SU Page Block No.	Description of Change
31-40-00 PgBlk 501	Added FADEC Fault test with engine run.

THIS PAGE INTENTIONALLY LEFT BLANK

AIRCRAFT COMPUTER SYSTEMS - ADJUSTMENT/TEST

AMM-31-40-00-071-801

1. General

A. This task lists the procedures to do an adjustment/test of the Aircraft Computer System.

The Avio Processing Center (APC) consists of two sub-components:

- Aircraft Computer System (ACS)
- Full Authority Digital Engine Controller (FADEC)

These sub-components cannot be replaced individually during line maintenance. The APC must be replaced if one of the sub-components is defective.

Table 501. Component Test Matrix (Use for Left APC)

Left APC Tests
MFD Electrical Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ECB Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FUEL Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ENG Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ICE Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD Flap System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FLCS (Flight Control) Synoptic Page - Trim System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
ACS Maintenance Practices AMM-31-40-00-051-801 – Aircraft Computer Systems - Maintenance Practices.
CAS Monitoring System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
Single Left ACS Test SUBTASK AMM-31-40-00-071-701-001
GPS Operation Test SUBTASK AMM-31-40-00-071-701-012
Vapor Cycle System (VCS) Doors Adjustment Test AMM-21-10-10-071-801 – Vapor Cycle System (VCS) Doors - Adjustment/Test
Left VORE Calibration AMM-21-40-00-071-801 – Heating System - Adjustment/Test
Left FACV Calibration AMM-21-40-00-071-801 – Heating System - Adjustment/Test

Left APC Tests
Dual Power Source Test for Avionics (Left ACS) AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Battery Heater Test AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Fuel Probe Acceptance Test (ATP) Data Entry Procedure AMM-28-40-00-071-801 – Fuel Indicating - Adjustment/Test
Fuel Probe Dry Calibration AMM-28-40-00-071-801 – Fuel Indicating - Adjustment/Test
Fuel Gauging (Wet) Test AMM-28-40-00-071-801 – Fuel Indicating - Adjustment/Test
Power Interrupt to FADEC Test AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Fuel System Check AMM-28-00-00-071-801 – Fuel System - Adjustment/Test
Anti-Ice/De-Ice AMM-30-00-00-071-801 – Ice Protection - Adjustment/Test
APC Pressure Sensors Test AMM-21-30-01-071-801 – CPCS Outflow Valve - Adjustment/Test
Full Authority Digital Controller Trim Value Programming AMM-73-20-10-071-801 – Full Authority Digital Controller - Adjustment/Test
Collecting FADEC Faults from a Ground Engine Run SUBTASKS AMM-73-20-10-071-701-001, AMM-73-20-10-071-701-004, and AMM-73-20-10-071-921-002 AMM-73-20-10-071-801 – Full Authority Digital Controller - Adjustment/Test
For ACS Software Update, do the following:
MFD Electrical Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ECB Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FUEL Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ENG Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ICE Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD Flap System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FLCS (Flight Control) Synoptic Page - Trim System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
CAS Monitoring System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
GPS Operation Test SUBTASK AMM-31-40-00-071-701-012

Left APC Tests
Power Interrupt to FADEC Test AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Starter Generator Test With Engines Running AMM-80-00-00-071-801 – Starter Generator - Adjustment/Test

Table 502. Component Test Matrix (Use for Right APC)

Right APC Tests
MFD Electrical Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ECB Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FUEL Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD Engine Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ICE Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD Flap System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FLCS (Flight Control) Synoptic Page - Trim System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
ACS Maintenance Practices AMM-31-40-00-051-801 – Aircraft Computer Systems - Maintenance Practices.
CAS Monitoring System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
Single Right ACS Test SUBTASK AMM-31-40-00-071-701-002
GPS Operation Test SUBTASK AMM-31-40-00-071-701-012
Vapor Cycle System (VCS) Doors Adjustment Test AMM-21-10-10-071-801 – Vapor Cycle System (VCS) Doors - Adjustment/Test
Right VORE Calibration AMM-21-40-00-071-801 – Heating System - Adjustment/Test
Right FACV Calibration AMM-21-40-00-071-801 – Heating System - Adjustment/Test
Dual Power Source Test for Avionics (Right ACS) AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Battery Heater Test AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Fuel Probe Acceptance Test (ATP) Data Entry Procedure AMM-28-40-00-071-801 – Fuel Indicating - Adjustment/Test

Right APC Tests
Fuel Probe Dry Calibration AMM-28-40-00-071-801 – Fuel Indicating - Adjustment/Test
Fuel Gauging (Wet) Test AMM-28-40-00-071-801 – Fuel Indicating - Adjustment/Test
Power Interrupt to FADEC Test AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Fuel System Check AMM-28-00-00-071-801 – Fuel System - Adjustment/Test
Anti-Ice/De-Ice AMM-30-00-00-071-801 – Ice Protection - Adjustment/Test
APC Pressure Sensors Test AMM-21-30-01-071-801 – CPCS Outflow Valve - Adjustment/Test
Full Authority Digital Controller Trim Value Programming AMM-73-20-10-071-801 – Full Authority Digital Controller - Adjustment/Test
Collecting FADEC Faults from a Ground Engine Run SUBTASKS AMM-73-20-10-071-701-001, AMM-73-20-10-071-701-004, and AMM-73-20-10-071-921-002 AMM-73-20-10-071-801 – Full Authority Digital Controller - Adjustment/Test
For ACS Software Update, do the following:
MFD Electrical Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ECB Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FUEL Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD Engine Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD ICE Synoptic Page Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD Flap System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
MFD FLCS (Flight Control) Synoptic Page - Trim System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
CAS Monitoring System Test AMM-31-10-00-071-801 – Displays and Control Panels - Adjustment/Test.
GPS Operation Test SUBTASK AMM-31-40-00-071-701-012
Power Interrupt to FADEC Test AMM-24-00-00-071-801 – Electrical Power - Adjustment/Test
Starter Generator Test With Engines Running AMM-80-00-00-071-801 – Starter Generator - Adjustment/Test

2. Equipment and Materials

Table 503. Special Tools and Equipment

Name and Part Number
Ground Power Unit (GPU). AllStar 450 or AllStar G.S.E. or Hobart GPU-400 or Hobart GPU- 600 or Bycan PS-28100
Multi-Meter with FLUKE 52 II - Type K Thermocouple Thermometer or equivalent

3. Job Set-Up

SUBTASK AMM-31-40-00-071-921-001

A. Make aircraft safe for maintenance. Refer to AMM-20-00-01-051-801 – Make Safe For Maintenance.

B. Make sure that the following are pushed in:
- MECHANICAL CIRCUIT BREAKER - INSTRUMENT PANEL, LEFT: L ACS
and
- MECHANICAL CIRCUIT BREAKER - INSTRUMENT PANEL, LEFT: L PFD - 1
or
- MECHANICAL CIRCUIT BREAKER - INSTRUMENT PANEL, LEFT: L PFD CNS 1.

C. Make sure that L GEN and R GEN switches are in the OFF position.

D. Connect the ground power cart to electrical utility connector. Connect the ground power cart to the aircraft EXTERNAL POWER RECEPTACLE and turn on power on the cart. Ensure the green EXT POWER light on the IPL is on. But do not turn on aircraft's power. Refer to AMM-24-40-00-051-801 – External Power - Maintenance Practices.

E. Make sure that the green EXT POWER indicator is ON.

F. On the IPL set the SYS BATT and START BATT Switches to the ON (up) position and BUS TIE to AUTO (up) position. On MFD push the RH PROCEED LSK. Clear any "MASTER CAUTIONS" and "MASTER WARNINGS" as needed.

G. Set BUS TIE switch to AUTO.

4. Single Left ACS Test

SUBTASK AMM-31-40-00-071-701-001

CAUTION: TAKE PROPER SAFETY PRECAUTIONS DURING THIS TEST TO PROTECT PERSONAL BECAUSE THERE WILL BE FLIGHT CONTROL MOVEMENT.

A. Do Single Left ACS Test as follows:

(1) On the MFD ECB synoptic page, select the ECB BY SYSTEM LSK.

(2) On the MFD ECB synoptic page, use the inner DCK to select the AVIONICS system, and the outer DCK to highlight the following ECB:

- ECB - R AIRCRAFT COMPUTER (L FWD Bus)

(3) On the MFD ECB synoptic page, select the PULL LSK.

(4) Use the outer DCK to highlight the following ECB:

- ECB - R AIRCRAFT COMPUTER (R FWD Bus)

(5) On the MFD ECB synoptic page, select the PULL LSK.

(6) On the MFD ECB synoptic page, make sure the following ECBs show as PULLED:

- ECB - R AIRCRAFT COMPUTER (L FWD Bus)
- ECB - R AIRCRAFT COMPUTER (R FWD Bus)

(7) Push the pilot's control grip trim switch to NOSE DOWN.

- Left elevator trim tab moves and MFD trim display shows movement.

(8) Push the pilot's control grip trim switch to LWD and hold.

- Aileron trim tabs move and MFD trim display shows movement.

(9) Return trim tab to neutral.

(10) On the throttle quadrant, move the rudder trim knob to NOSE LEFT and/or NOSE RIGHT and hold.

- Make sure that rudder trim does not move.
- Scroll to FLT CTRLS synoptic page on MFD, display shows white dashes and no movement.
- Make sure that all three green lights for landing gear indicator are illuminated on the MFD.

(11) Make sure flap handle is in the UP position if not previously accomplished.

- Flap position displayed on the MFD is UP.

(12) Set flap handle to the T/O position.

- Flap position displayed on the MFD is TO.
- Check for flap movement.

(13) Set flap handle to the UP position.

- Flap position displayed on the MFD is UP.

- Make sure flaps return to the up position.

(14) Scroll to the MFD ELECT synoptic page by using the lower left/right LSK and check for the following:

(15) Make sure that voltages and contactor settings that follow are correct:

(a) System battery is 28 ±0.5 VDC

(b) System battery monitor is green outlined

(c) System battery contactor is engaged (green)

(d) Start battery is 28 ±0.5 VDC

(e) Start battery monitor is green outlined

(f) Start battery contactor is engaged (green)

(g) L BBC contactor is engaged (green)

(h) R BBC contactor is disengaged (white)

(i) Bus tie is engaged (green)

(j) L FWD-AFT breaker is engaged (green)

(k) R FWD-AFT breaker is engaged (green)

(l) External power contactor is engaged (green)

(m) L GEN contactor is disengaged (white)

(n) R GEN contactor is disengaged (white)

NOTE: System & Start Battery Monitors “may” toggle from green to amber at times.

(16) On the MFD ECB synoptic page, select the ECB BY SYSTEM LSK.

(17) On the MFD ECB synoptic page, use the inner DCK to select the AVIONICS system, and the outer DCK to highlight the following ECB:

- ECB - R AIRCRAFT COMPUTER (L FWD Bus)

(18) On the MFD ECB synoptic page, select the RESET LSK.

(19) Use the outer DCK to highlight the following ECB:

- ECB - R AIRCRAFT COMPUTER (R FWD Bus)

(20) On the MFD ECB synoptic page, select the RESET LSK.

5. Single Right ACS Test

SUBTASK AMM-31-40-00-071-701-002

A. Single Right ACS Test

(1) Remove power to the left hand ACS.

(2) On the INSTRUMENT PANEL, LEFT, Pull the following breaker:

- L Aircraft Computer System (L-ACS)

(3) On the MFD ECB synoptic page, use the inner DCK to select the AVIONICS system, and the outer DCK to highlight the following ECB:

- ECB - L AIRCRAFT COMPUTER (R FWD Bus)

(4) On the MFD ECB synoptic page, select the PULL LSK.

(5) On the MFD ECB synoptic page, make sure the following ECBs show as PULLED:

- ECB - L AIRCRAFT COMPUTER (R FWD Bus)

(6) On the throttle quadrant, move the rudder trim knob to NOSE LEFT and/or NOSE RIGHT hold.

(7) Make sure that trim tab moves and display shows movement.

(8) Return trim tab to neutral.

(9) Push the Pilots control grip trim switch to NOSE DOWN

(10) Make sure that right elevator trim tab moves and display shows movement.

(11) Return trim tab to neutral.

(12) Push the Pilots control grip trim switch to LWD and hold.

(13) Aileron DOES NOT move and the display shows no movement.

(14) Make sure that all three green lights for landing gear indicator are illuminated.

(15) Make sure flap handle is in the UP position if not already accomplished.

(16) Make sure that flap position displayed on MFD is UP.

(17) Set flap handle to T/O position.

(18) Make sure that flap position displayed on MFD is TO and make sure flaps move.

(19) Set flap handle in UP position.

(20) Make sure that flaps return to up position.

(21) Select electrical synoptic page on MFD.

(22) Make sure that voltages and contactor settings that follow are correct:

(a) System battery is 28 ±0.5 VDC

(b) System battery monitor is green outlined

(c) System battery contactor is engaged (green)

(d) Start battery is 28 ±0.5 VDC

(e) Start battery monitor is green outlined

(f) Start battery contactor is engaged (green)

(g) L BBC contactor is engaged (green)

(h) R BBC contactor is disengaged (white)

(i) Bus tie is engaged (green)

(j) L FWD-AFT breaker is engaged (green)

(k) R FWD-AFT breaker is engaged (green)

(l) External power contactor is engaged (green)

(m) L GEN contactor is disengaged (white)

(n) R GEN contactor is disengaged (white)

NOTE: System & Start Battery Monitors “may” toggle from green to amber at times.

(23) Apply electrical power to the left hand ACS.

(24) On the INSTRUMENT PANEL, LEFT, Reset the following breaker:

- L Aircraft Computer System (L-ACS)

(25) On the MFD ECB synoptic page, use the inner DCK to select the AVIONICS system, and the outer DCK to highlight the following ECB:

- ECB - L AIRCRAFT COMPUTER (R FWD Bus)

(26) On the MFD ECB synoptic page, select the RESET LSK.

6. GPS Operation Test

SUBTASK AMM-31-40-00-071-701-012

A. GPS Operation Test:

NOTE: Aircraft should be parked outside to receive adequate GPS signals.

(1) On MFD, scroll to SETUP page and press the SENSORS line select key.

(a) Press GPS LSK.

(2) Press GPS SELECT LSK to select GPS1.

(a) Make sure “IN USE” is displayed above the word “LEFT” in the GPS RECEIVER section of the page.

(b) Make sure that POSITION LAT, POSITION LONG, and UTC display no dashes.

(3) Press GPS SELECT LSK to select GPS2.

(a) Make sure “IN USE” is displayed above the word “RIGHT” in the GPS RECEIVER section of the page.

(4) Make sure that POSITION LAT, POSITION LONG, and UTC display has no dashes.

(5) Press GPS SELECT LSK to select AUTO.

(6) Press BACK TO SENSORS LSK.

(7) Press BACK TO SETUP LSK.

7. Job Close-Up

SUBTASK AMM-31-40-00-071-921-002

A. Set SYS BATT and START BATT switches to the OFF position.

B. Set BUS TIE switch to OPEN.

C. Remove external electrical power from aircraft. Refer to AMM-24-40-00-051-801 – External Power - Maintenance Practices.

D. Remove all tools, equipment and unwanted material from work area.

E. If all other maintenance is complete, return aircraft to service. Refer to AMM-20-00-02-051-801 – Return To Service (After Maintenance).