

## FAST ENGINE TREND MONITORING SYSTEM - ADJUSTMENT/TEST

### 1. General

A. This section gives the configuration procedures for the FAST processor.

### 2. Tools and Equipment

A. For a list of required tools and equipment, refer to the FAST Engine Trend Monitoring System - Description And Operation.

### 3. Configure and Initialize Parameters in FAST Processor

A. Configure the FAST Processor

- (1) Use a laptop configured with the MonitorTM program and connect to the internet.
- (2) Launch the MonitorTM program and click on the "Sync to Webserver" button to retrieve the FAST configuration file.

**NOTE:** This function will also upload log files to the Webserver and download any updates to the MonitorTM program.

- (3) Connect the Communication Cable between the laptop computers USB port and the FAST J3 Comm Port.
- (4) Make sure that the airplane battery is connected.
- (5) Put the battery switch to the ON position.
- (6) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
- (7) Click on the "Sync to Aircraft" button using the MonitorTM program to load the configuration file into the FAST processor.

**NOTE:** This function will also download any log files from the FAST processor.

B. Initialize Parameters in FAST Processor

- (1) Connect the communication cable between the laptop computer's USB port and the FAST J3 Comm Port.
- (2) Make sure that the airplane battery is connected.
- (3) Put the battery switch to the ON position.
- (4) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
- (5) Launch the MonitorTM program and select "View/Change Monitor Parameter" function under the "Monitor" menu in the program.
- (6) In the New value column, enter the following parameters obtained from the engine logbooks (power Section for PT and Gas Generator for CT). Refer to Table 501.
- (7) Select the Write button to write the new values in the FAST processor.
- (8) Make sure that the current values are now updated with the new values.

**NOTE:** If the PT (Power Section) and the CT (Gas Generator) creep values are not known, refer to the EMM.

**Table 501. Engine Parameter Initialization**

Engine Information	Current Value (Value displayed)	New Value (Type new value)
Engine Serial Number (VAXXXX)		
Cumulative Creep CT (%)		
Cumulative Creep PT (%)		
Cumulative Engine Run Time (hours)		
Cumulative Engine Starts		
Cumulative Flight Time (hours)		
Cumulative Flight Cycles		

### 4. Retrieve and View FAST Data

A. Method A: Access data by using the internet based data management service.

**NOTE:** Current internet data management service account is required

- (1) Data can be transmitted to data management service through a GSM connection if a cellular SIM card is installed and

activated.

- (a) Troubleshoot FAST Transmission if data is not present on the data management service account. Refer to FAST Engine Trend Monitoring System - Troubleshooting.
- (2) Data can be uploaded to data management service using the MonitorTM program.
  - (a) Connect the Communication Cable between the laptop computer's USB port and the FAST J3 Comm Port.
  - (b) Make sure that the airplane battery is connected.
  - (c) Put the battery switch to the ON position.
  - (d) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
  - (e) Launch the MonitorTM program and click on the "Sync to Aircraft" button to retrieve the FAST log data.
  - (f) Connect the laptop computer to the internet.
  - (g) Click on the "Synch to Webserver" button using the MonitorTM program to upload the log files to data management service.

B. Method B: Access data by downloading from FAST processor.

- (1) Download data from FAST processor.
  - (a) Connect the communication cable between the laptop computer's USB port and the FAST J3 Comm Port.
  - (b) Make sure that the airplane battery is connected.
  - (c) Put the battery switch to the ON position.
  - (d) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
  - (e) Launch the MonitorTM program and click on the "Sync to Aircraft" button and only select the ETM files to be downloaded.
- (2) Convert data downloaded from FAST processor.
  - (a) Convert ETM Files by using "Convert Log" function under "Expert" Menu in the MonitorTM program.
- (3) View Data downloaded from FAST processor.
  - (a) Open data in GBSLite for viewing by using "View Data in GBSLite" function under "View" Menu in the MonitorTM program.

C. Method C: Access creep and cycle value data by connection to FAST box.

- (1) Connect the Communication Cable between the laptop computer's USB port and the FAST J3 Comm Port.
- (2) Make sure that the airplane battery is connected.
- (3) Put the battery switch to the ON position.
- (4) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
- (5) Click on the MonitorTM icon to launch the MonitorTM transfer module program.
- (6) Select the View/Change Monitor Parameter function under the Monitor Menu in the MonitorTM transfer module program.
- (7) From the Current Value column, record the parameters of Engine Serial Number, the Cumulative Creep CT and PT, the Cumulative engine run time, and the Cumulative engine cycles and note them in the engine logbooks.
- (8) Select the command View Creep Fault. If a creep fault is shown, note the date/time of the creep fault and refer to the CREEP FAULT troubleshooting chart.

## 5. FAST Processor Test

A. Do a test of the FAST Processor.

- (1) Make sure that the airplane battery is connected.
- (2) Put the battery switch to the ON position.
- (3) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
- (4) If a PREV EXCEED message is shown, push the TRND/ACK softkey to clear the message.

**NOTE:** This will clear the message until FAST has had a power cycle. Use the MonitorTM program to clear the latched PREV EXCEED message.

- (a) Retrieve log data to find cause of the message.

- 1 Method A: Access data by using Internet based data management service.
  - 2 Method B: Access data by downloading the FAST processor and viewing in the Monitor™ program. Refer to FAST Engine Trend Monitoring System - Troubleshooting (PREV EXCEED).
- (5) If an ETM FAULT message is shown, view recent faults. Refer to FAST Engine Trend Monitoring System - Troubleshooting.
  - (6) If the processor is configured and CAS messages do not operate correctly, do system troubleshooting. Refer to FAST Engine Trend Monitoring System - Troubleshooting.

## 6. Live Data Sensor Test – Engine Off

### A. Do the Live Data Sensor Test – Engine Off Tests.

- (1) Connect the Download Cable to the FAST and laptop Computer.
- (2) Click on the LIVE DATA button on the Monitor™ program.
- (3) Select all the sensors to view by placing a checkmark next to them.
- (4) Click “Retrieve Selected”
- (5) Confirm that all sensors are valid (no red sensors).
  - (a) If any invalid sensors are shown (shown in red), perform Live Data Troubleshooting. Refer to FAST Engine Trend Monitoring System - Troubleshooting.

**NOTE: Start and Stop recording buttons allow you to record all the live data which can be later viewed in the Monitor™ program.**
- (6) Complete a check of the BLEED AIR HEAT switch.
  - (a) Set the BLEED AIR HEAT switch to the OFF position.
    - 1 Make sure that the LIVE DATA shows 0.0000.
  - (b) Set the BLEED AIR HEAT switch to the ON position.
    - 1 Make sure that the LIVE DATA shows 1.0000.
  - (c) Set the BLEED AIR HEAT switch to the OFF position.
    - 1 Make sure that the LIVE DATA shows 0.0000.
- (7) Complete a check of the Emergency Power Lever (EPL).
  - (a) Make sure that the engine is off.
  - (b) Cut and remove the frangible/shear wire from the EPL.
  - (c) Set the EPL to the NORM position.
    - 1 Make sure that the LIVE DATA shows 0.0000.
  - (d) Set the EPL to the MAX position.
    - 1 Make sure that the LIVE DATA shows 1.0000.
  - (e) Set the EPL to the NORM position
    - 1 Make sure that the LIVE DATA shows 0.0000.
  - (f) Install the frangible/shear wire. Refer to Chapter 76, Emergency Power Lever Frangible/Shear Wire Removal/Installation.
- (8) Complete a check of the INERTIAL SEPARATOR handle.
  - (a) Push the INERTIAL SEPARATOR handle to the NORMAL position.
    - 1 Make sure that the LIVE DATA shows 0.0000.
  - (b) Pull the INERTIAL SEPARATOR handle to the BYPASS position.
    - 1 Make sure that the LIVE DATA shows 1.0000.
  - (c) Push the INERTIAL SEPARATOR handle to the NORMAL position.
    - 1 Make sure that the LIVE DATA shows 0.0000.
- (9) Complete a check of the MFSOV.
  - (a) MFSOV in OPEN position (Fuel Boost OFF).

1 Make sure that the LIVE DATA shows 1.0000.

**NOTE:** The normal value for the MFSOV is 1, not 0.

(b) MFSOV in CLOSED position. (Fuel Boost ON).

1 Make sure that the LIVE DATA shows 0.0000.

(c) MFSOV in OPEN position (Fuel Boost OFF).

1 Make sure that the LIVE DATA shows 1.0000.

(10) Make sure all sensor values agree with values shown on PFD1, PFD2, and MFD.

(a) Record the values.

(11) Click on the Close button to STOP LIVE DATA in the MonitorTM program.

## 7. Live Data Sensor Test – Engine Ground Run

A. Do the Live Data Sensor Test – Engine Ground Run.

**WARNING: Immediately shut down the engine if an exceedance occurs in any of the engine operating limitations, or if any incorrect engine operation occurs during any of the procedures that follow. Refer to the P&W Maintenance Manual for the applicable procedure.**

(1) Make sure that the engine is stable.

(2) Push the ENGINE softkey.

(3) Push the TRND/ACK softkey.

(4) Hold engine parameters steady for at least 5 seconds.

**NOTE:** No message will appear to show that data is recorded.

(5) Record the cockpit instrument values.

**NOTE:** The values are recorded on a generic form equivalent to Table 502, Engine Ground Run Data.

(6) Connect the download cable between the communication port and the laptop USB port.

**NOTE:** The communication port is located on the front face of the FAST processor (J3). The FAST ETM Processor is located on the right side of the aft fuselage and is accessible via the small access panel on the right side of the aft cabin bulkhead. The USB serial port is on the laptop computer.

(7) Apply power to the laptop.

(8) Retrieve Data from FAST.

(a) Open the MonitorTM program and select "Sync to Aircraft".

(b) If the MonitorTM program is not able to communicate with the FAST, perform FAST Communication Troubleshooting. Refer to System Start-Up and Communication.

(9) Select the ETM files only to be downloaded.

(10) Convert ETM Files using "Convert Log" function under "Expert" Menu in the Monitor TM program.

(11) Open data in GBSLite for analysis by using "View Data in GBSLite" function under the "View" menu in the MonitorTM program.

(12) Make sure that the time/date stamp of the snapshot data agrees with the time/date of the hand-recorded data.

(13) Compare the average indications (not the maximum indications) from the data to the entries recorded in generic form.

(a) Make sure that the indications are in the ranges shown on Table 502, Engine Ground Run Data.

(b) If all the sensor indications are not in tolerance, do the steps that follow.

(c) Make sure wiring to the FAST processor is correct.

(d) Make sure the data on the G1000 is correct.

1 If the incorrect data is shown, do the Live Data troubleshooting. Refer to FAST Engine Trend Monitoring System - Troubleshooting.

2 If the correct data is shown, contact Cessna Customer Care for assistance. Refer to the Introduction, How to Get Customer Assistance.

**Table 502. Engine Ground Run Data**

Engine Run Ground Test	Cockpit Indicator Reading	FAST ETM Reading	Difference	Maximum Deviation
Ng				+0.3 or -0.3 percent
Np				+3.0 or -3.0 percent
ITT				+5.0 or -5.0 °C
Wf				+5.0 or -5.0 percent
Torque				+2 or -2 percent

**8. FAST Processor Transmission Test**

- A. A GSM SIM Card must be activated and installed in the FAST Processor.
- B. Transmission Test of the FAST Processor.
  - (1) Connect the Communication Cable between the laptop computer's USB port and the FAST J3 Comm Port of the FAST ETM located on the right side of the tailcone.
  - (2) Make sure the battery is connected.
  - (3) Put the battery switch to the ON position.
  - (4) Put the AVIONICS 1 and AVIONICS 2 switches to the ON position.
  - (5) After power is ON for a minimum of two minutes (boot-up time), put the AVIONICS 1 and AVIONICS 2 switches to the OFF position, and turn the battery switch to the OFF position.
 

**NOTE:**     **The cellular GSM Transmission will only occur when the aircraft Bus Power is switched OFF. The FAST will latch to the HOT Battery Bus for a maximum of 10 minutes.**
  - (6) Launch the MonitorTM program and click on "Test Monitor Transmission" and confirm that all status messages indicate "PASS".
    - (a) If a "FAIL" message is shown, troubleshoot the FAST Transmission. Refer to FAST Engine Trend Monitoring System - Troubleshooting