AEROSPACE MAINTENANCE COMPETITION

ELECTRICAL SYSTEMS ANALYSIS & TROUBLESHOOTING

ULTRAX AEROSPACE

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THE CHALLENGE

In this challenge, an engine torque fault will be introduced into the Simulator. The competition team will be responsible for isolating and documenting the fault. The team will use **CBI™** to increase knowledge relative to the condition of the aircraft. They will use this knowledge, along with their current understanding of the problem, to make an informed troubleshooting decision.

The fault could be a malfunctioning LRU, a damaged wire bundle, or a poor connection due to excessive wear or substandard repair technique.

Before starting, each contestant will be issued all supplies needed to complete the challenge.

Condition-Based Intelligence (CBI™) incorporates traditional DMM measurements. However, rather than measuring a single pin at a time and discarding the unimportant measurements, CBI understands all DMM measurements matter and, when examined together, have a story to tell.

In a matter of minutes, the UxValidator app (for iOS and Android) 'listens' by creating a digital snapshot of the aircraft electrical system, converting it to actionable and accurate knowledge for use during the competition.

SUPPLIES NEEDED

(provided by ULTRAX)

A smartphone with the UxValidator App installed and an account created

A CBI™ Sensor

AMC Simulator Adapters

CHALLENGE STEPS - OVERVIEW

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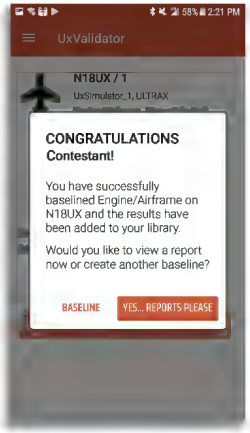
1. Identify and Log the Fault

2. Remove All Aircraft Power

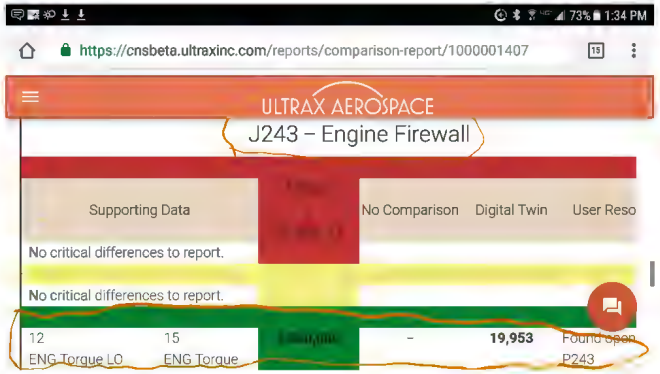
3. Prepare to create a DMM Baseline

4. Connect the DMM Sensor



5. Take a CBI™ Digital DMM Snapshot

6. Generate a CBI™ Comparison Report



7. Identify the Source of the Fault

STEP 1: IDENTIFY AND LOG THE FAULT

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A. The contestant is given a Reported Fault.

B. The simulator will be powered up with a torque annunciation indicated on the center MFD.

C. Take a photo of the annunciator with the supplied mobile device.

A

Sim Team ULTRAX - Log Page					No. 12345678
A/C#	N18UX	STA	ORL	A/C Type	Simulator
Date		Defect Type	Pilot	Reported By	B. Lincoln
Reported Fault					
TORQUE FAILED IN FLIGHT					

B

STEP 2: REMOVE ALL AIRCRAFT POWER

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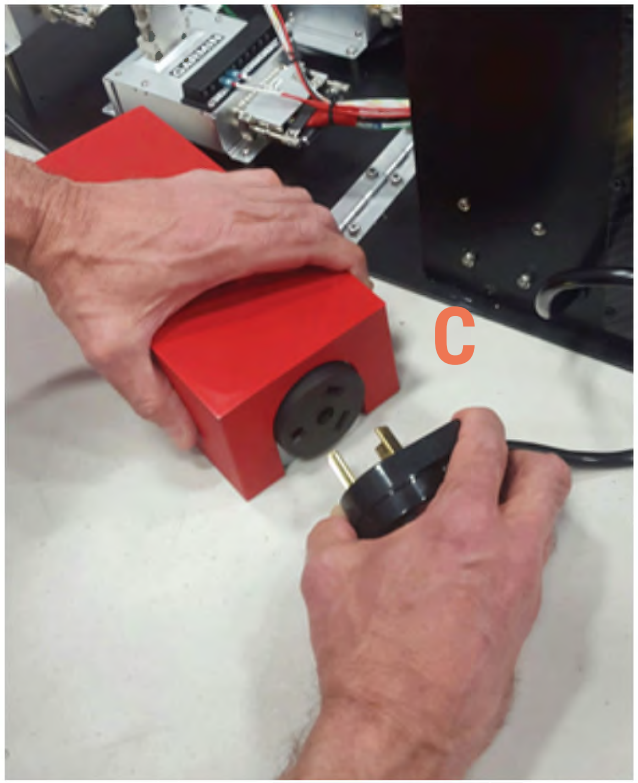
POWER DOWN THE SIMULATOR!!!

A. Turn off the MSTR AVI Switch.

B. Turn off the MSTR Switch.

C. Disconnect the Battery.



STEP 3: PREPARE TO CREATE A DMM BASELINE

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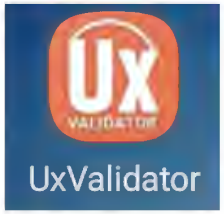
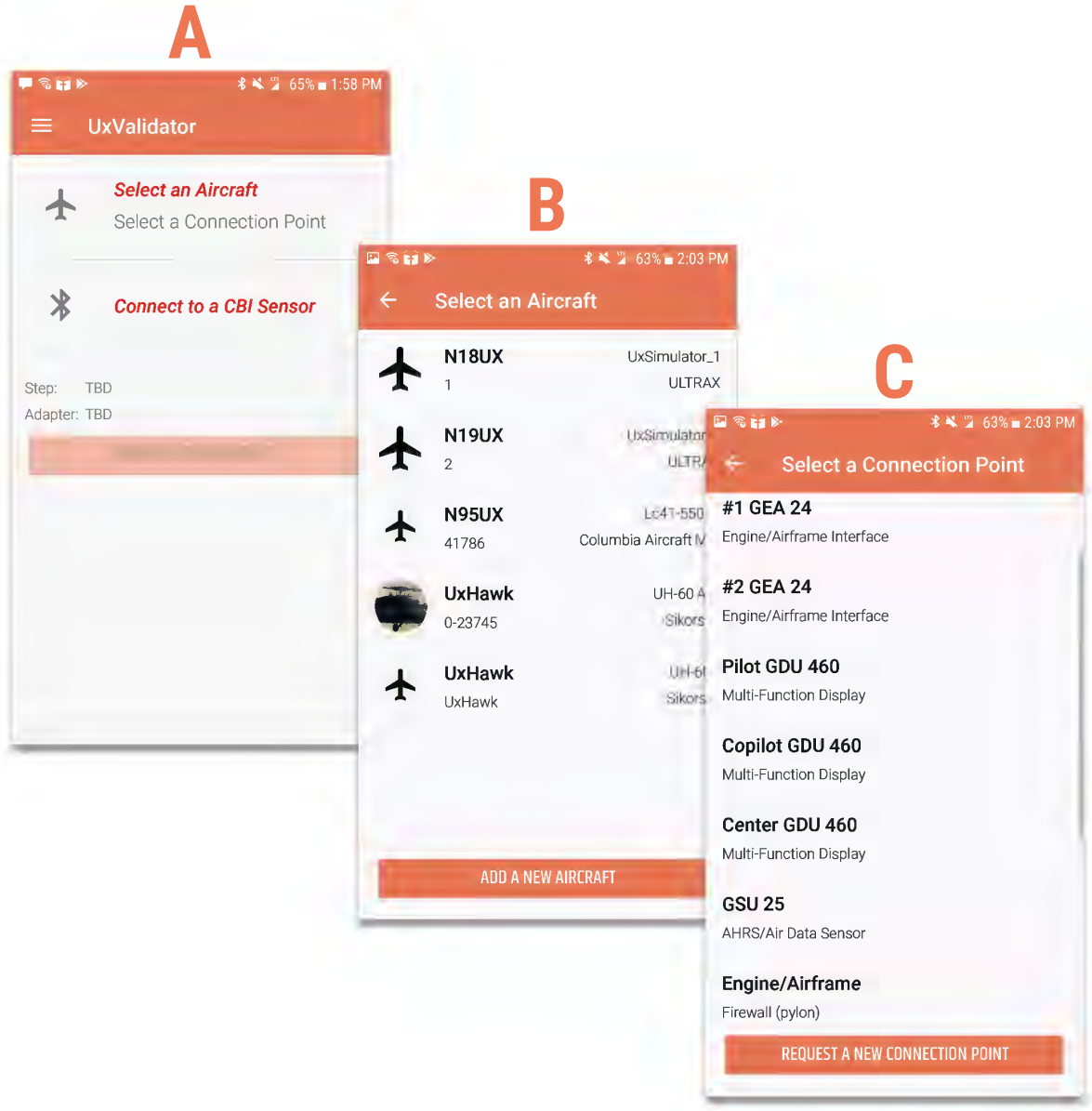
A. On the ULTRAX-supplied mobile device click on



to start the CBI™ app.

B. Select an Aircraft - Select either the N18UX or N19UX as shown on the Simulator registration plate.

C. Select a Connection Point - Engine /Airframe, GEA 24 #1.



STEP 4: CONNECT THE DMM SENSOR

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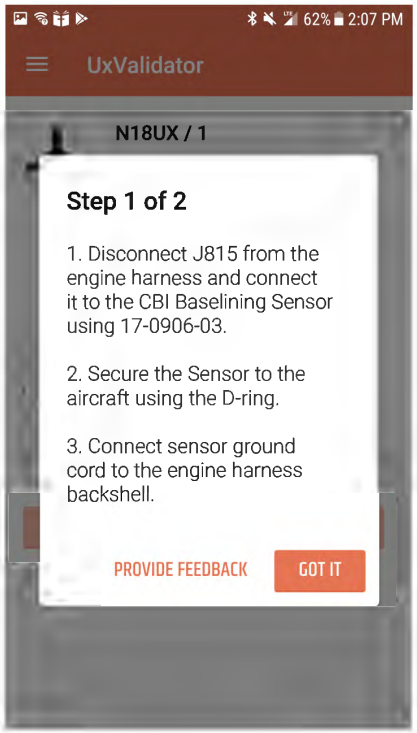
A. Confirm power is removed.

B. On the Baseline Overview page, select NEXT.

C. Connect adapters to the simulator as described in the CBI™ UxValidator app instructions.

D. IMPORTANT – Remember the ground clip!

B



C

STEP 5: CREATE A CBI™ DIGITAL DMM BASELINE

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A. Connect the mobile device to the Sensor via Bluetooth. (Select by serial number.)

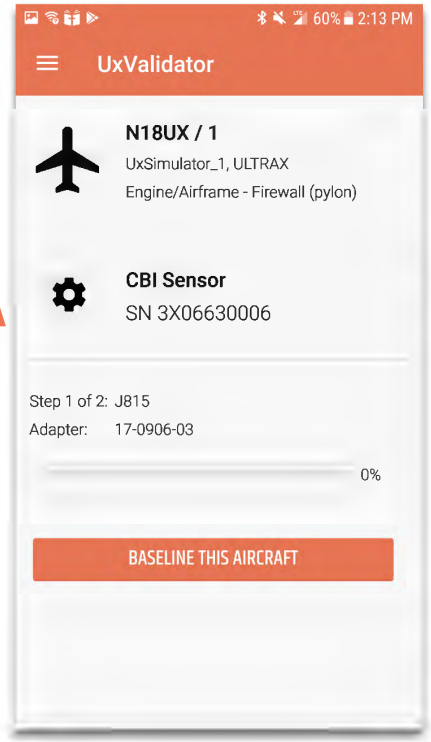
B. Select *BASELINE THIS AIRCRAFT*.

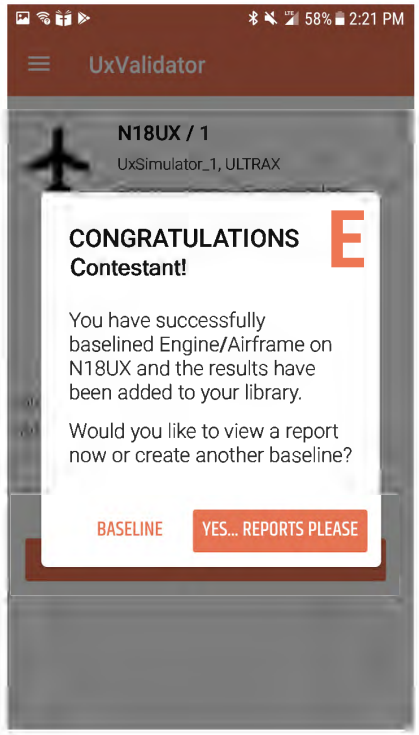
C. The app will display *Capturing* as the baseline is generated.

D. Continue with additional steps as needed for the baseline.

E. Enter 'YES' to take notes on the baseline. Add the picture of the fault annunciator from STEP 1.

F. *CONGRATULATIONS* indicates that the baseline is complete.





STEP 6: GENERATE A CBI™ COMPARISON REPORT

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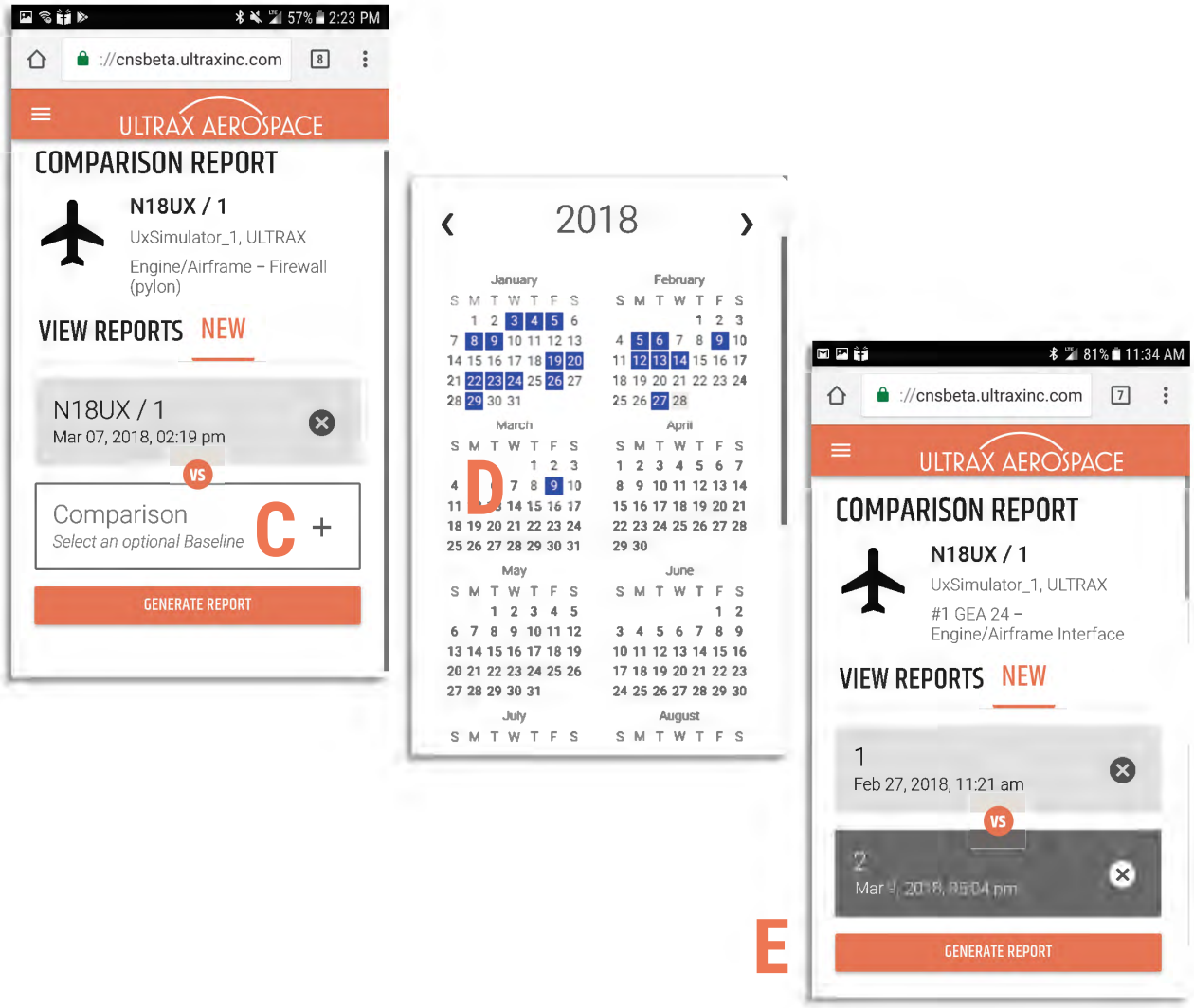
A. On the CBI™ UxValidator app, select *YES… REPORTS PLEASE*.

B. SELECT THIS REPORT to start a report.

C. Your baseline will be shown in the gray box. Select *Comparison* and a calendar will appear. From here click on the Month / Day where there is a blue STAR. This is the last-known good baseline for the comparison.

D. GENERATE REPORT to create the report.



STEP 7: IDENTIFY THE SOURCE OF THE FAULT

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F. Scroll down and select *DMP – Data Management Professional Analysis*

G. Click *ACCESS DMP ANALYSIS*

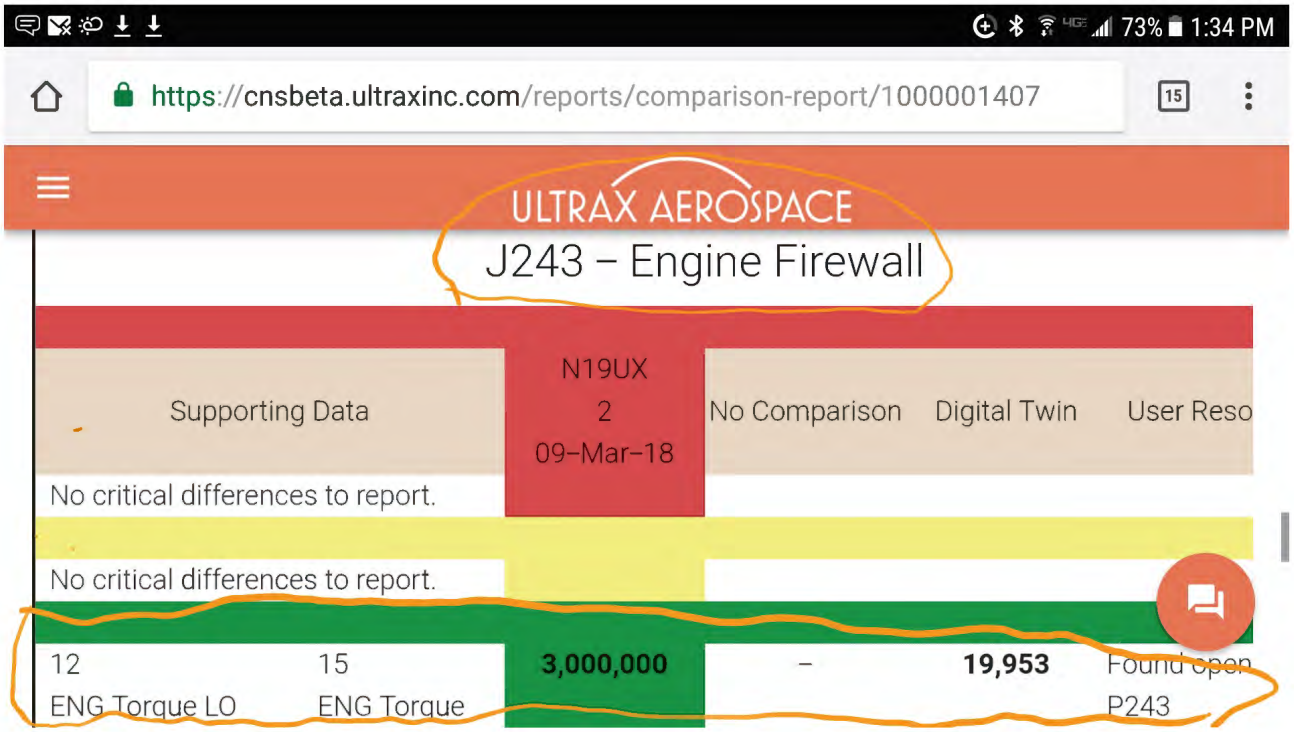
H. Click *Enterprise Agreement* to show *AMC2018*.

I. Click *BUY*

J. Scroll down to Review the detail. Match detail with the original problem.

K. Show the judge the report with the correct actionable information.

L. Contest Time Stops



GETTING STARTED and PRACTICE

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CBI™ Welcome Packet

- To receive your team's welcome packet, please contact Travis Fisher at 816-595-4472 or tfisher@ultraxinc.com to confirm team name and shipping details.

UxValidator App

- Download the UxValidator App, available for Android (Google Play) and iOS (iTunes) mobile devices (search for *UxValidator*).
- Launch the App and create/login to your CBI™ account.
- Complete the challenge steps using the DMM Sensor provided in your welcome packet.

  Note: All challenge steps can be practiced without physical access to simulator.

Video Training

- Watch the demonstration video of the 2018 ULTRAX AMC challenge, which introduces the event simulator and each step of the challenge. **www.ultraxinc.com/amc2018**.

Training in Orlando

- The ULTRAX CBI Support Vehicle will be in Orlando several days early. Please contact Travis Fisher to coordinate practice time on the simulators before the show.

Appendix A –
System Block Diagram

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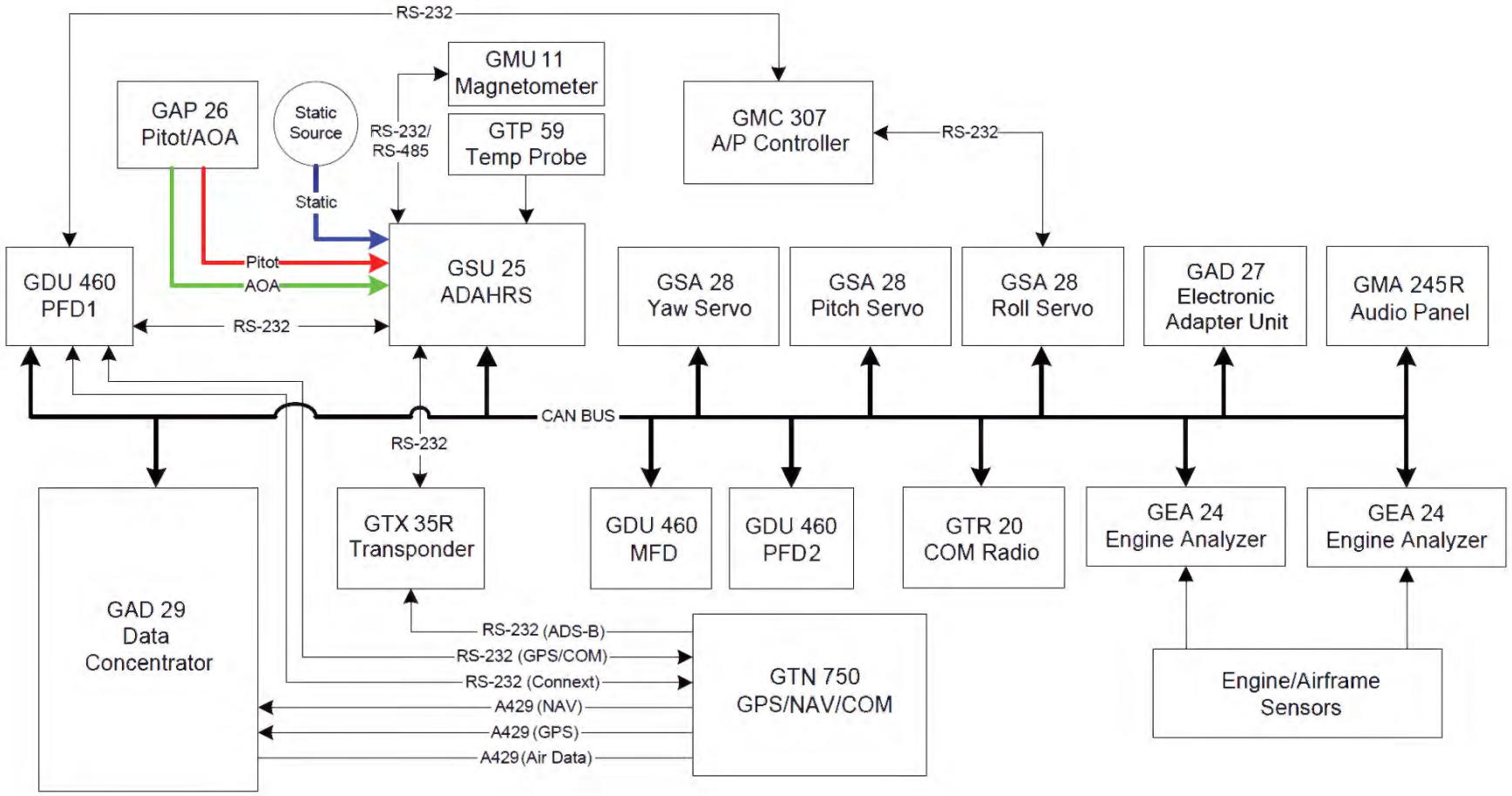

APPENDIX B: Associate a Fault to an LRU

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Annunciation	Associated LRU(s)
	Engine / Firewall (pylon) GEA 24 #1
	
	
	
	
	
	GSU 25
	GSU 25 GMU 11
	GSU 25
	GTN 750

Annunciation	Associated LRU(s)
	GSU 25
	GSU 25
	GTX 35R
	GMA 245R
	GMC 307
	GTR 20

APPENDIX C: LOCATE THE LRU

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In the simulator, locate the LRU(s) associated with the annunciation on the Log Page.