

# Delivering concurrency for the C-5 Electrical System Trainer.

## The Customer

United States Air Force  
C-5 MATS Program Office

## The Situation

### Trainer lacks concurrency with aircraft.

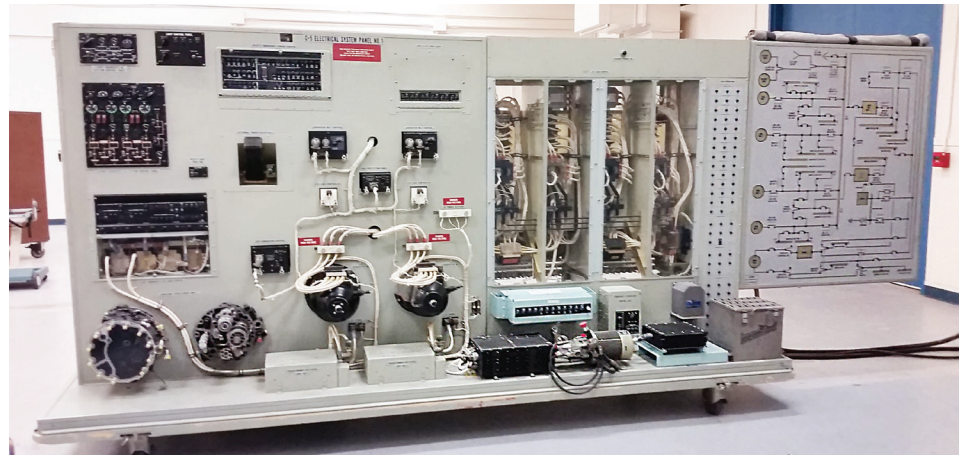
- The C-5 Electrical System Trainer (EST) supports the training requirements for electro-environmental, crew chief, propulsion and hydraulics maintenance students. But the two ESTs at Travis AFB, CA and Dover, DE AFB were not concurrent with the aircraft because of deficiencies with the Emergency Power System (EPS). The following modifications were required of both trainers:
- Replacement of faulty electronic equipment
- Aircraft configuration update
- Additional new trainer capabilities
- Correction of trainer depiction board
- Update of technical documentation

## The Solution

Nakuuruq implemented the following solutions:

**Faulty Equipment Replacement**—The current DC power supply did not meet the trainer power requirements. A dedicated DC power supply was installed that provided the required DC power under maximum loading.

**Aircraft Configuration Update**—The Battery Charger Electronics Module (BCEM) is not concurrent with the model currently used on the C-5 aircraft. The EST was updated to simulate the BCEM operation including the proper model of the BCEM.



Nakuuruq's work on the EST resulted in a lower cost, safer and concurrent product with additional functionality.

### Additional Trainer Capabilities—

- **Maintenance Battery Disconnect/Discharge**—When the battery function was properly simulated, a battery Disconnect and Discharge was no longer necessary.
  - **Battery Imbalance Condition**—The EST battery simulation properly simulated battery imbalance conditions: normal, low imbalance, high imbalance.
  - **BIT Initiation Switch**—After proper simulation of the BIT Initiation Switch, two indicator lamps were added: one that indicated the outcome of the BIT and one that indicated battery imbalance to simulate BIT test functions.
- Correction of Trainer Depiction Board**—The Trainer Depiction Board enables students to see how different components of the aircraft work with one another.
- **Fill-in Activation**—This modification corrected and updated the fill-in activation on the trainer light depiction board.
  - **Isolated DC Bus Depiction**—The current incorrect depiction was corrected.

- **BCEM Operational Depiction**—This modification corrected the current paths taken by the BCEM.

**Correction of Technical Documentation**—The Operational Procedures, Systems Diagrams and Illustrated Parts Breakdown (IPB) reflected the changes implemented and were delivered in editable electronic format.

**Training**—Nakuuruq provided a training course for maintenance personnel on how to maintain the modified components of the EST.

## The Benefits

Nakuuruq determined that upgrading and simulating the BCEM box would be more advantageous than simulating an actual aircraft BCEM. By stimulating the box, we provided cost savings, a safer product that required less electrical current and added functionality in the form of new faults that could be simulated by the Simulated Battery Charger (SBC) running the BCEM simulation.



13873 Park Center Road, Suite 400N  
Herndon, VA 20171 ■ 703-766-6750  
[www.nakuuruq.com](http://www.nakuuruq.com)