

Eleazar Nepomuceno
Aviation Accident Investigator
Aviation Safety - Western Pacific Region

Date: March 1, 2023

Subject: WPR22LA284, Horizontal Stabilizer Trim Electronic Control Unit (HSTECU) Examination Summary

Contact: Michael Tremblay, Moog Staff Project Engineer, Party Coordinator

HSTECU C47329-012-013 Serial No. 379 Phase 1 Test Results

Objective: This document provides the test results from Phase 1 testing of HSTECU C47329-012-013 sn 379 which was conducted on January 11, 2023, at Moog facility in East Aurora, NY

No HSTECU latched faults indicated

Review of NVM data

- On the CMD channel NVM fault codes back to July 26, 2022, are recorded
- On the MON channel NVM fault codes back to July 24, 2022, are recorded.
- The reported aircraft accident occurred on July 27, 2022, around 1240 Pacific standard time, so the HSTECU NVM data covers the time of the reported aircraft accident
- CMD channel NVM on July 27, 2022, there was a "FlapMiscomp".
- It is believed there was no pilot CAS message posted which tends to indicate the duration of the FlapMiscomp was short.
- No latched faults indicated in NVM

HSTECU C47329-012-013 Serial No. 379 Phase 2 Test Results

Objective: This document provides the test results from Phase 2 testing of HSTECU C47329-012-013 sn 379 which was conducted on February 01, 2023 at Moog facility in Salt Lake City (SLC), UT.

HSTECU testing on CL300 System Rig. MRE66703 Section 4, Step 19, 20

- HSTECU sn 379 was placed into the CL300 System Rig and was then electrically rigged to the CL300 System Rig Horizontal Stabilizer Trim Actuator (HSTA).
- The HSTECU electrical rigging was conducted using TDS 12074 section 1 and then the HSTECU rigging was checked using TDS MRM12073 section 2 and 9.1.
 - o The HSTA contains two position sensors (LVDT#1, LVDT#2). The gain and offset of these two LVDTs are set in the HSTECU by running the System Rig simulated aircraft Maintenance Diagnostic Computer (MDC) HSTA rigging function. The HSTA position sensor rigging is conducted by moving the HSTA to the Nose Down (ND) mechanical end stop and then to the Nose UP (NU) mechanical end stop.
- Conducted HSTECU System Level Testing per redline of TDS MRM12077 Rev D.
 - o DS MRM12077 checks the HSTECU response to autopilot inputs.
 - The HSTECU operated per design and no autopilot anomalies were observed.

Auto Pilot test results of TDS MRM12077 Rev D Redline

- TDS MRM12077 Rev D reline checks HSTECU response to autopilot commands.
 - o No HSTECU anomalies found. HSTECU operated per design.

HSTECU Electrical Rigged to the System Rig HSTA per TDS MRM12074 (Witnessed Testing)

- TDS12074: HSTECU was successfully rigged to the HSTA position sensors. System Rig Checkout per TDS MRM12073

- TDS MRM12073 functionally checks the operation of the Challenger 300 System Rig.
 - o Checked Challenger 300 System Rig ARINC429 for proper operation; No anomalies noted.

Horizontal Stabilizer Trim Electronic Control Unit C47329-012-013 Serial No. 379 Phase 3 Test Results

Objective: This document provides the test results from Phase 3 testing of HSTECU C47329-012-013 S/N 379 which was conducted on February 13, 2023 at Moog facility in East Aurora, NY.

HSTECU SN 379 was shipped to Moog East Aurora, NY from Moog Salt Lake City, UT, following the completion of Phase 2 testing on Feb 1, 2023.

- Packaging containing the HSTECU showed no visible damage.
- There was no visible damage to the HSTECU when removed from the packaging.
- HSTECU was electrically connected to the CL300 ATP rig. HSTECU was then loaded with the ATP software, which replaces the Operation Flight Program (OFP).
- Conducted HSTECU ATP MRA11423 Rev M. All HSTECU ATP tests passed. See attached ATP data sheet.
- All ATP tests passed. HSTECU phase 3 testing passed.