

CUSTOMER NATIONAL TRANSPORTATION SAFETY		INVESTIGATION NO 1130524	
CUSTOMER ORDER NONE	WOODWARD SALES ORDER 3476294	WOODWARD WORK ORDER 8388527	
CUSTOMER REJECTION DOCUMENT (CAR, QN, RFA, DMR, ETC.) N/A	WARRANTY DISPOSITION N/A	PRODUCT STATUS 1 RCVD	
PROGRAM/ENGINE TYPE P&WC PT6		ITEM RECEIVED 8063-098	ENGINE MFR MODEL RECEIVED N/A
PROGRAM CODE 83212	SERIAL NUMBER 17718651	ITEM SHIPPED 8063-098	ENGINE MFR MODEL SHIPPED N/A
PARENT ITEM NUMBER 8063-098	PARENT ITEM SERIAL NUMBER 17718651	FIRST SHIPPED 16-NOV-2011	LAST SHIPPED 16-NOV-2011
CUSTOMER SERIAL NUMBER 602-1219	APPLICATION PT6A-60AG	VESSEL TYPE & VESSEL NUMBER AT602 N2049D	SITE & LOCATION GRID ID N/A
TIME/CYCLES SINCE NEW, OVERHAUL, OR REPAIR N/A			
DATE REPORT OPENED N/A		DATE PART REMOVED N/A	DATE RECEIVED 06-NOV-2017

TEAM MEMBERS (D1)

Product Engineer: Mark A. Stratemeyer
 Customer QA Engineer: Daniel Hintz
 Tech Advisor/Reviewer: Brad R. Mueller
 Customer Service Rep: Angelique Stuckey
 Compliance: Steven A. Krugler

REASON FOR INVESTIGATION (D2)

Reported Issue: UNIT WAS REPORTED INVOLVED IN AN INCIDENT ON MARCH 19, 2017 IN MINTER CITY MS. DURING AERIAL APPLICATION FLIGHT, AIRCRAFT COLLIDED WITH TRESS AND TERRAIN. AIRPLANE WAS DESTROYED BY IMPACT AND POSTCRASH FIRE. AIR TRACTOR AT-602 TAIL NUMBER N2049D

INVESTIGATION SUMMARY (D4)

Confirmation Text: DID NOT CONFIRM REASON FOR INVESTIGATION/RETURN OR NO PREEXISTING FAULT FOUND
 Discrepant Item Number: NA
 Discrepancy: Product Not Testable
 Finding: Other
 Conclusion: Unit was investigated 06 Nov2017 under FAA and NTSB supervision. Removal of fittings from ports showed that packings had been damaged by heat from fire, making it unlikely that unit could be tested (see Figure 3). Removal of base plate confirmed packing degradation and found that the soft solder joints of the CDP bellows had re-flowed. Since the CDP bellows is under a slight extension spring force at rest, the bellows joints separated when the solder re-flowed, making testing impossible (see Figures 4 through 6). A complete tear down was then performed, which did not find anything that could have affected the operation of the fuel control (see Figures 7 through 10).


Figure 1 - FCU Nameplate

Figure 2 - Exterior condition as-received



Figure 3 - Typical port with degraded seal visible

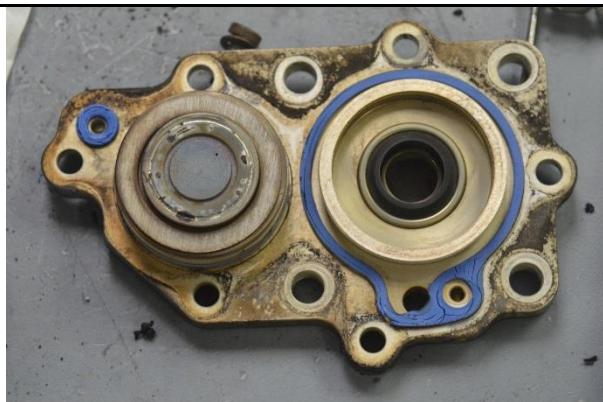


Figure 4 – Baseplate showing bellows bottom plate (left) with re-flowed solder joint



Figure 5 – Remainder of bellows showing other side of re-flowed solder joint



Figure 6 – Spring removed from bellows



Figure 7 – Wear pattern showing operational area of cam



Figure 8 – Fuel Valve assembly showing heat degraded packings.



Figure 9 – Shutdown valve



Figure 10 – Part layout

ROOT CAUSE (D4)

Origin of Cause: No problem found.

General Cause: No problem found or identified.

Cause: None

CORRECTIVE ACTION PLAN (D5)

General Corrective Action: None required.

Specific Corrective Action: None required.

CUSTOMER NATIONAL TRANSPORTATION SAFETY			INVESTIGATION NO 1130523
CUSTOMER ORDER NONE	WOODWARD SALES ORDER 3476207		WOODWARD WORK ORDER 8383163
CUSTOMER REJECTION DOCUMENT (CAR,QN RFA DMR,ETC.) N/A	WARRANTY DISPOSITION N/A		PRODUCT STATUS 1 RCVD
PROGRAM/ENGINE TYPE P&WC PT6 CSU		ITEM RECEIVED 8210-311	ENGINE MFR. MODEL RECEIVED N/A
PROGRAM CODE 83053 CSU	SERIAL NUMBER 17844063	ITEM SHIPPED 8210-311	ENGINE MFR. MODEL SHIPPED N/A
PARENT ITEM NUMBER 8210-311	PARENT ITEM SERIAL NUMBER 17844063	FIRST SHIPPED 02-DEC-2011	LAST SHIPPED 02-DEC-2011
CUSTOMER SERIAL NUMBER N/A	APPLICATION N/A	VESSEL TYPE & VESSEL NUMBER AirTractor AT-602 N2049D	SITE & LOCATION GRID ID N/A N/A
TIME/CYCLES SINCE NEW, OVERHAUL, OR REPAIR			
DATE REPORT OPENED 06-NOV-2017		DATE PART REMOVED N/A	DATE RECEIVED 06-NOV-2017
TEAM MEMBERS (D1) Product Engineer: Mark Naretto Customer QA Engineer: Daniel Hintz Tech Advisor/Reviewer: David S. Kuchinski Customer Service Rep: Angelique Stuckey Product Integrity Coordinator: Steven A. Krugler			
REASON FOR INVESTIGATION (D2) Reported Issue: UNIT WAS REPORTED INVOLVED IN AN INCIDENT ON MARCH 19, 2017 IN MINTER CITY MS. DURING AERIAL APPLICATION FLIGHT, AIRCRAFT COLLIDED WITH TRESS AND TERRAIN. AIRPLANE WAS DESTROYED BY IMPACT AND POSTCRASH FIRE. AIR TRACTOR AT-602 TAIL NUMBER N2049D			
CONTAINMENT/IMMEDIATE ACTIONS (D3)			
INVESTIGATION SUMMARY (D4) Confirmation Text: DID NOT CONFIRM REASON FOR INVESTIGATION/RETURN OR NO PREEXISTING FAULT FOUND Discrepant Item Number: 8210-311 Discrepancy: PART IS DAMAGED Finding: BROKEN/ CRACKED/ FRACTURED/ SEPARATED Conclusion: As-received visual inspection found torque sealant missing from the airbleed stop screw and the eccentric indicating adjustment by a facility other than Woodward. There was also non-Woodward lockwire on the eccentric. The governor was received in poor condition with damage in several areas. The boss and stop screw post on the cover were missing and there was damage to the feather valve. There was a zip tie strip on the body next to the beta cap. The control was completely disassembled and examined. The majority of the parts looked acceptable and moved without restriction. There was some evidence on the inside top of the cover, where the boss was broken off, of some dirty areas and slight surface rust. The flyweights, yolk, drive gear and idler gear, and airbleed section all looked acceptable wiith typical signs of usage but no significant wear. The orifice lever was dirty with some surface rust. The beta valve showed minor evidence of being dirty at the valve to body interface. The damage on the cover made it impossible to do an as-received test on the governor. It was noted that the drive gear rotated smoothly and the beta valve moved normally without any interference. The as-received inspection of the governor and the disassembled parts did not show any indications of a condition that could have contributed to an issue with operation of the governor.			
ROOT CAUSE (D4) Origin of Cause: FIELD / END CUSTOMER (OWNER) General Cause: NONE Cause: NOT REQUIRED Cause Notes: Governor was damaged due to impact and unable to be tested. Inspection of the governor and the internal components did not find any indications of a condition that could have contributed to an issue with operation of the governor.			
CORRECTIVE ACTION PLAN (D5) General Corrective Action: None Required Specific Corrective Action: None Required Corrective Action:			

CORRECTIVE ACTION IMPLEMENTATION (D6)

Corrective Action Status: NO ACTION



U.S. Department
of Transportation
**Federal Aviation
Administration**

Aviation Safety

Flight Standards Service
General Aviation Safety Assurance
General Aviation A (AFG-100)

DuPage Flight Standards District Office
Des Plaines, IL [REDACTED]
[REDACTED] (FAX)

Mr. Timothy W. Monville
Senior Air Safety Investigator
National Transportation Safety Board
45065 Riverside Parkway
Ashburn, VA 20147

Dear Mr. Monville,

This letter is in response to your request dated October 12, 2017, to provide FAA oversight for teardown and evaluation of engine components, involving the accident of Air Tractor N2049D.

With regard to the above components, I hand delivered both the fuel control and the propeller governor to the Woodward facility on November 6, 2017. I witnessed the unboxing and examination of both components. I have read Woodward Investigation reports 1130523 and 1130524 and concur with the findings in each.

Both components remained at Woodward in a state of disassembly awaiting instructions from your office.

Sincerely,

Vic Liberatore
Principal Maintenance Inspector