



Beechcraft

BY TEXTRON AVIATION

## Air Safety Investigations Aircraft Incident/Accident Technical Report

Aircraft Incident/ Accident Information	Year: 1975	Make: Cessna	Model: 414
	Serial number: 414-0603		Registration: N1996G
Location: Monongahela, PA		Date: 06-19-22	Time: 1304 EDT
Aircraft Owner		Aircraft Operator	
Caiolinn Chelsea Ertel [REDACTED] Spokane Valley, WA 99037-8543		Same as Aircraft Owner	
Report Information			
Senior Air Safety Investigator: Ernest C. Hall		Report #: ASI-22-BN-T	Report date: 09-06-22

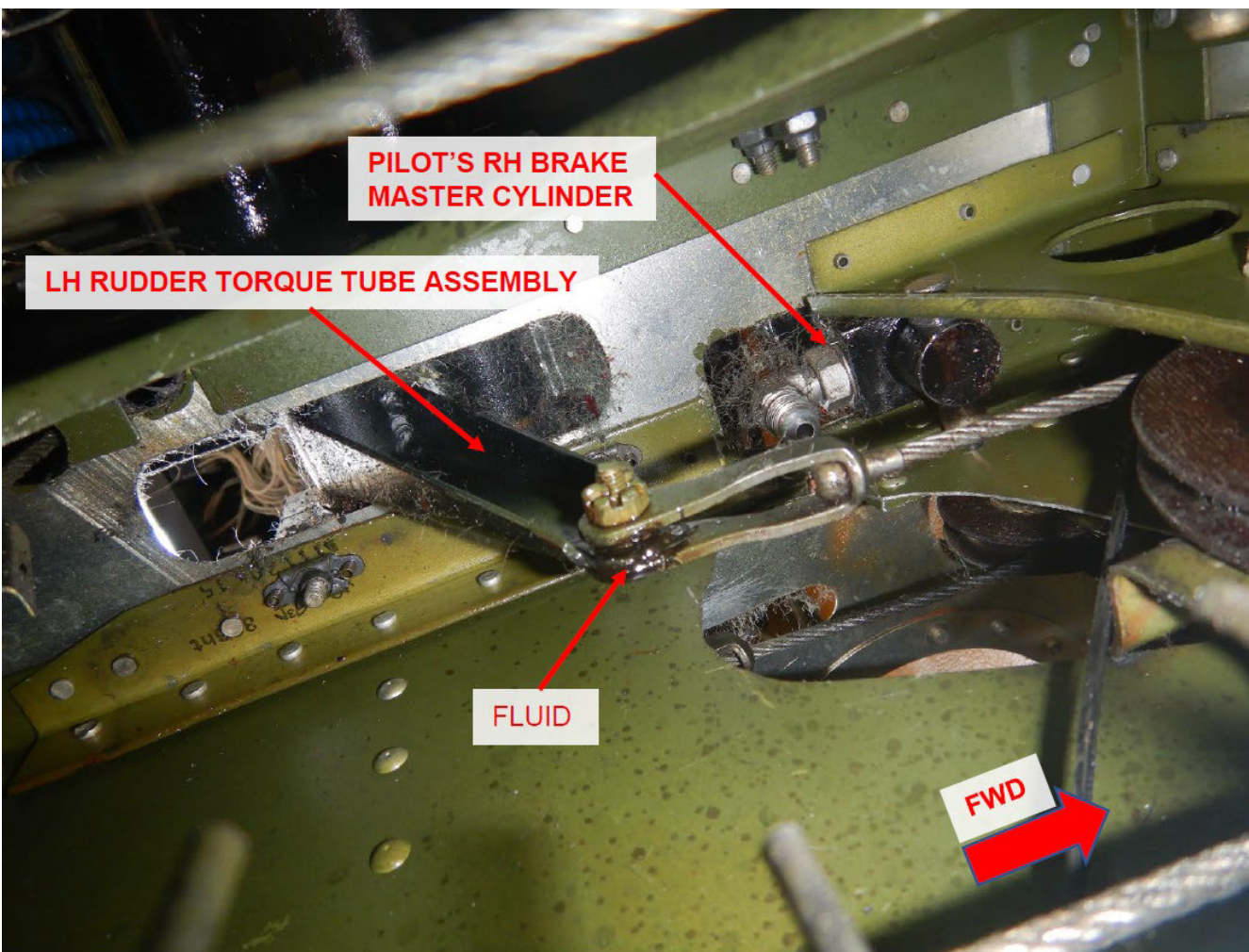
### Investigation Information

At the request of the NTSB, Textron Aviation examine the brake system. On 07-12-22, an FAA-led team examined the aircraft brake system at Rostraver Airport (KFWQ), Monongahela, PA. The NTSB-IIC was present by cell phone video.

### Research and Testing

The aircraft was viewed at KFWQ after it had been moved from the accident site. The brake units (rotors and stators) of the main landing gears were visually examined. The left main landing gear brake cylinder and pressure plate were found disassembled and laying on the ground next to the gear. The right main landing gear brake unit remained installed on the gear, but the brake hose was cut by recovery crew according to the FAA.

The pilot's side, cockpit floorboard carpet and panels were removed to access below the floorboard to examine the brake hoses and fittings. After removing the exterior access panel on the bottom of the aircraft just aft of the nose landing gear bay, hydraulic (brake) fluid was observed in the area. One of the connections between the pilot's right brake master cylinder and the connecting brake hose was found loose.



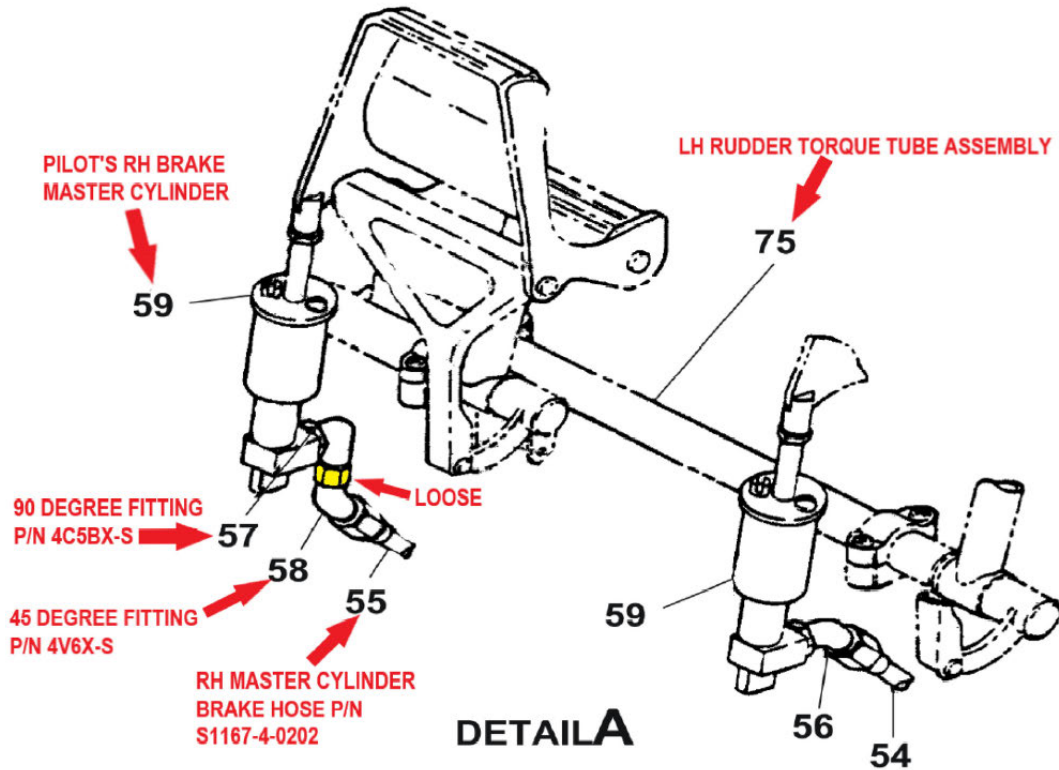
Textron Aviation - ASI-BN-019 – Looking Up Through Exterior Access Panel

Each connection was checked for tightness by hand. Each part number listed are per the applicable aircraft model IPC. The pilot's RH brake master cylinder 90° fitting, part number 4C5BX-5, was found to be tightly secured to the cylinder. The 45° fitting, part number 4V6X-S, that attaches to the 90° fitting was found loose. The brake hose, part number S1167-4-0202, that attaches to the 45° fitting, part number 4V6X-S, was found to be tight. The other end of the brake hose that attaches to the parking park valve assembly, part number C165007-0201, was found to be tight.

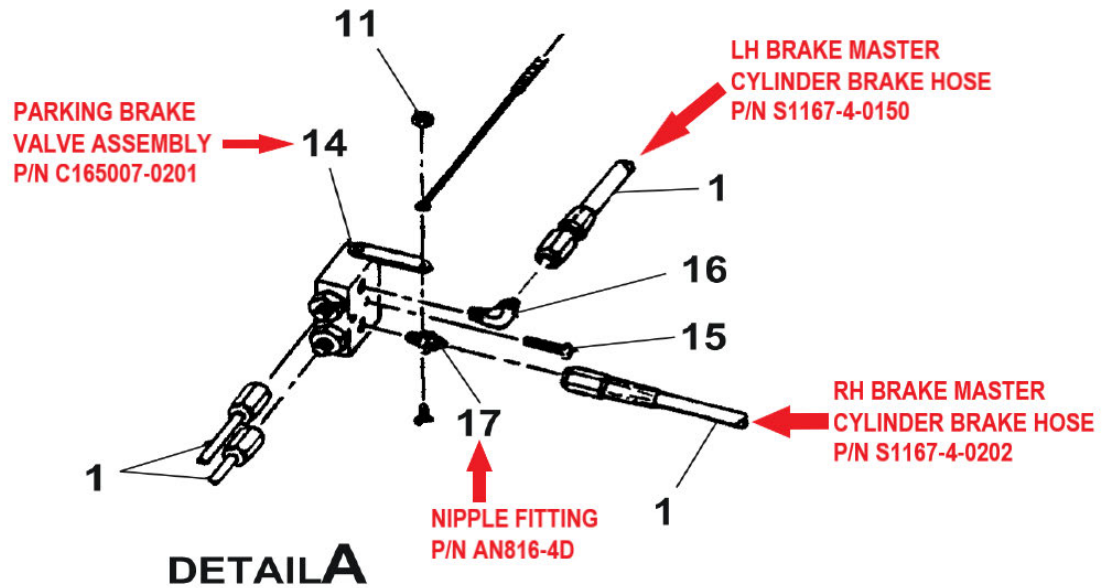
The brake hose found installed was a different part number, 111417-4S0520, than what is called out in the applicable aircraft model IPC. According to S1167 specification, it indicates: "Hose shall conform to MIL-H-8794. Approved sources & hose designation: Aeroquip, Type 303 & Stratoflex, Type 111." The installed hose assembly appeared to be similar standard MIL and AN style spec fitting hose assembly. Review of the aircraft logbook, two brake hose's part number 111417-4S0520, LH & RH, were installed on 10-15-12.

The RH brake master cylinder brake hose was disconnected from the master cylinder fitting, there was no fluid in the hose and no fluid drained out of the master cylinder. The pilot's LH brake master cylinder brake hose was disconnected from the master cylinder fitting, there was fluid in the hose and an undetermined amount of brake fluid drained out of the master cylinder.

The pilot's RH brake master cylinder hose was removed from the aircraft and examined. The 45° fitting was reinstalled to the brake hose and tightened. The nipple fitting, part number AN816-4D, that attaches to the parking brake valve assembly and the brake hose was removed and reinstalled on the removed brake hose. The end with the 45° fitting was capped with an aluminum plug fitting and a tygon clear tube was connected to the nipple fitting. An undetermined amount of air was applied to the hose and no air leakage could be heard.



Extract From IPC 32-40-00-09 – Brake System



Extract From IPC 32-40-00-11 – Parking Brake Installation



Cropped – Textron Aviation – ASI-22-BN-021

According to the applicable aircraft maintenance manual, Section 2A – Inspection, Inspection Time Limits, page 13, sub-section L – Landing Gear, item 25 – Brake System Plumbing, it states, “Inspect for leaks, hoses for bulges and deterioration, parking brake for operation.” Reviewing the model 414A sub-section J – Hydraulic Systems, item 3 - Hydraulic Hoses, it states, “Inspect for hardness, deterioration, looseness and bulging.”

CESSNA®  
**MODEL 414**  
SERVICE MANUAL

		<b>First 100 Hours</b>	<b>Every 100 Hours</b>	<b>Every 200 Hours</b>	<b>Hours</b>	<b>Months</b>
<b>J.</b>	<b>(414A0001 Thru 414A1212) Hydraulic System (Section 4).</b>					
3.	Hydraulic Hoses - Inspect for hardness, deterioration, looseness and bulging.		•			<b>Every 12</b>
<b>L.</b>	<b>Landing Gear (Section 4).</b>					
25.	Brake System Plumbing - Inspect for leaks, hoses for bulges and deterioration, parking brake for operation.	•		•		<b>Every 12</b>

Cropped – Extract from Maintenance Manual