-----SYSTEMS GROUP CHAIRMAN'S FACTUAL REPORT -------

A. ACCIDENT:

Location:	McKinneyville, California
Date:	July 29, 2016
Time:	About 0105 Pacific Daylight Time
Aircraft:	Piper PA-31T
Registration:	N661TC

B. SYSTEM'S GROUP:

Chairman:	Michael Bauer National Transportation Safety Board Washington, D.C.
Investigator in Charge:	Brice Banning National Transportation Safety Board Anchorage, AK.
Fire Investigator:	Nancy McAtee National Transportation Safety Board Washington, D.C.
Member:	Dan Butler Federal Aviation Administration Oakland, CA.
Member:	Charlie Little Piper Aircraft
Member:	Dan Brattain Cal-Ore Life Flight
Member:	Bob Bareggi Cal-Ore Life Flight

C. SUMMARY

On July 29, 2016, about 0105 Pacific daylight time, a twin-engine, turbine-powered, Piper PA-31T Cheyenne II airplane, N661TC, reported smoke in the cockpit and subsequently sustained an in-flight breakup and collision with tree-covered terrain near Arcata/Eureka Airport, McKinneyville, California. The accident airplane was being operated by Cal-Ore Life Flight as an instrument flight rules (IFR) air transport medical flight under the provisions of Title 14, CFR Part 135. The airline transport pilot, two medical personnel, and one patient were fatally injured; the airplane sustained substantial damage. Dark night, instrument meteorological conditions prevailed. The flight departed Crescent City, California, at 0045, destined for Oakland International Airport, Oakland, California.

D. DETAILS OF THE INVESTIGATION:

An initial wreckage examination was conducted by the IIC and the Fire Group Chairman shortly after the accident. A systems group was formed after these initial examinations. A second wreckage examination was conducted and at the time the Systems group was formed. The second wreckage examination, which included inspecting exemplar aircraft at the operator's facility, took place from October 31st, 2016 through November 3rd, 2016. Specific details related to the exemplar aircraft inspections can be found in the Systems Group Chairman's Factual Report – Exemplar Aircraft Examinations, located in the public docket.

The accident aircraft, serial number 31T-8120022, was manufactured in 1981.

D.1 Electrical System Description

The Piper Cheyenne is equipped with a 28 VDC electrical system powered by a battery and two starter generators. External power provisions are available for ground operational requirements.

The typical power distribution system is of split-bus design with individual circuit protection and separate pilot accessible bus-tie circuit breakers, including diode protection, providing operational flexibility during single engine or single alternator operation.

The main tie bus circuit breakers are located on a panel on the floor between the pilot and copilot's seats. The panel contained at the time of delivery twelve circuit breakers (C/B) in two rows of six with current ratings ranging from 50 A to 200 A. The accident aircraft also contained a supplemental type certificate (STC) modification, Lifeport STC (SA00528SE), for cabin medical equipment, which accommodated additional power requirements for medical equipment installed in the aircraft. The STC modification introduced two additional circuit breakers to the main bus tie panel with ratings of 30A and 50A. Figure 1 shows a similar installation in an exemplar aircraft. Based on a review of the aircraft wreckage and

discussions with the owner, the 50A C/B "EMS INV" was located next to the "Right Generator" C/B on the first row and the 30A C/B "EMS PWR" was located next to the "R Main 2" C/B on the second row.

Figure 1 – Main bus tie circuit breaker panel from exemplar aircraft with additional STC circuit breakers identified (Note: accident aircraft STC C/B's were in a different position on the panel).

In the structural bay, below the floor where the main bus tie panel was located, additional wiring and components for the left and right starter solenoids were mounted.

Figure 2 is an excerpt from the aircraft's service manual showing a schematic of the electrical system. In area A (refer to Figure 2), power is supplied from either the aircraft battery or the external power receptacle to the electrical system. Power from the battery or the external power receptacle is controlled by the Battery Master switch located in the overhead panel, refer to the red box on Figure 3.

In areas B and C (refer to Figure 2), power is supplied from left and right (respectively) starter/generators to the electrical system. Generator power from each engine is controlled by placing the appropriate starter/generator three position switch in the "GENERATOR" position, refer to the green boxes on Figure 3.

Area D (refer to Figure 2), highlights the area in the schematic where the additional electrical components for the LifePort STC were connected to the aircraft electrical system. As stated previously, the STC installs two additional circuit breakers, but the installation also installs an 80 Amp thermal fuse upstream of the two additional circuit breakers. The thermal fuse was installed in the structural bay, below the floor where the main bus tie panel was located.

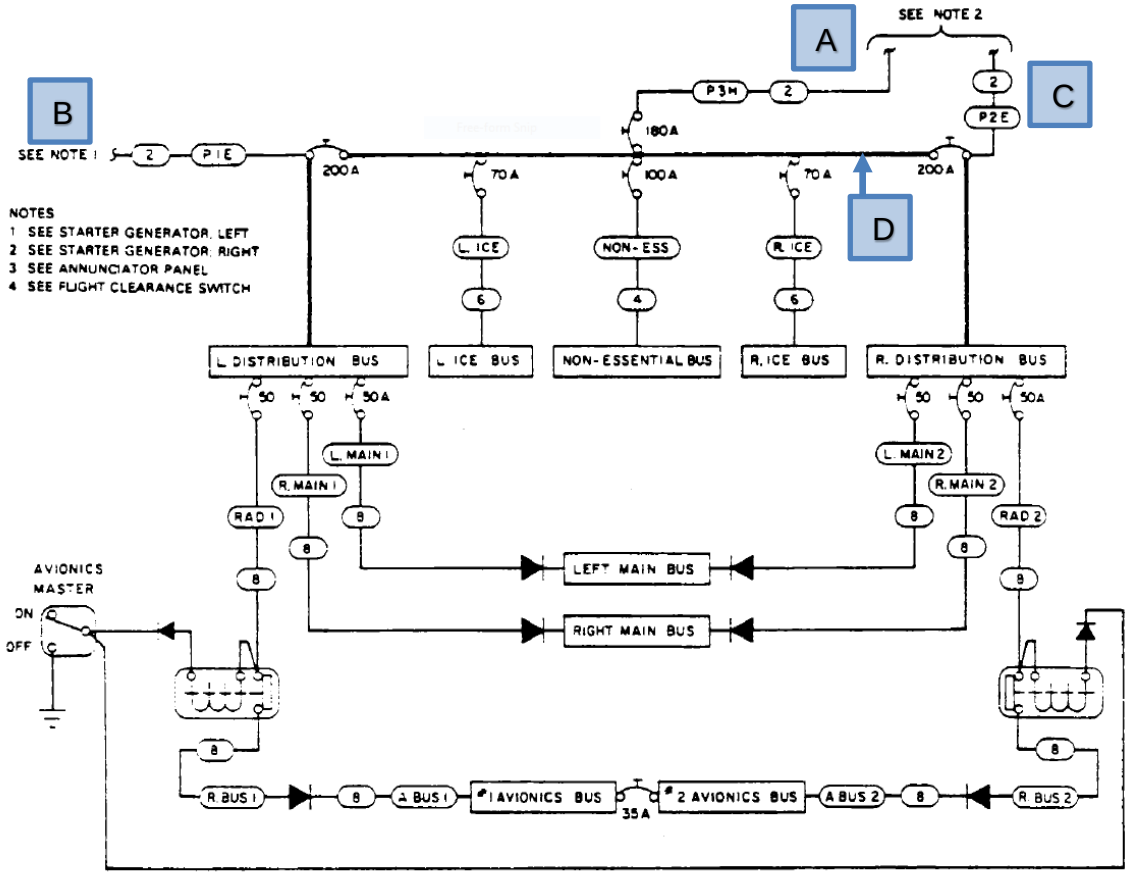

Figure 2 – Excerpt from Electrical System Schematic from Piper Cheyenne Service Manual (dated 2/6/81) Courtesy of Piper Aircraft.

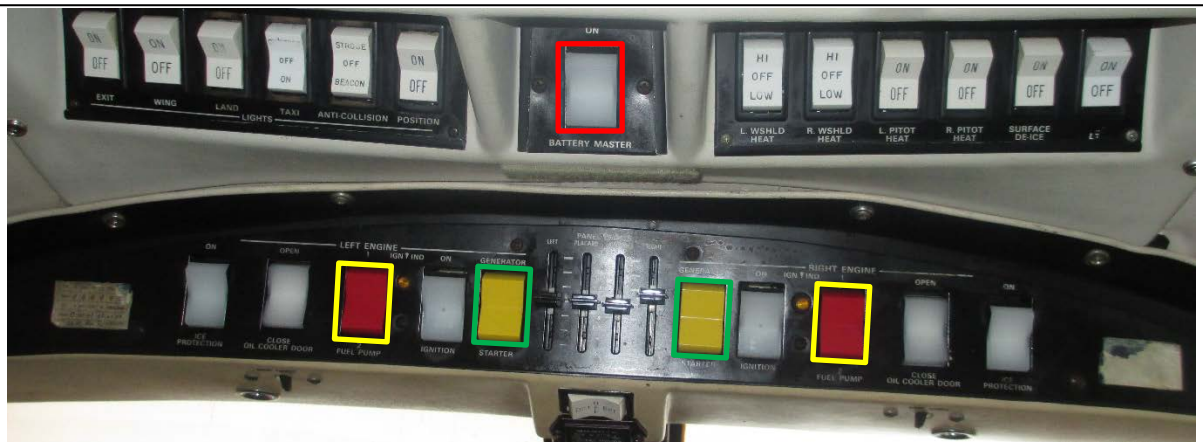

Figure 3 - Overhead panel from exemplar aircraft (older model) with, battery master, generator and fuel pump switches highlighted

Figure 4 and Figure 5 contain excerpts of the starter generator system. Wiring and components (solenoids) from the starter generator system are located in the structural bay beneath the circuit breaker panel.

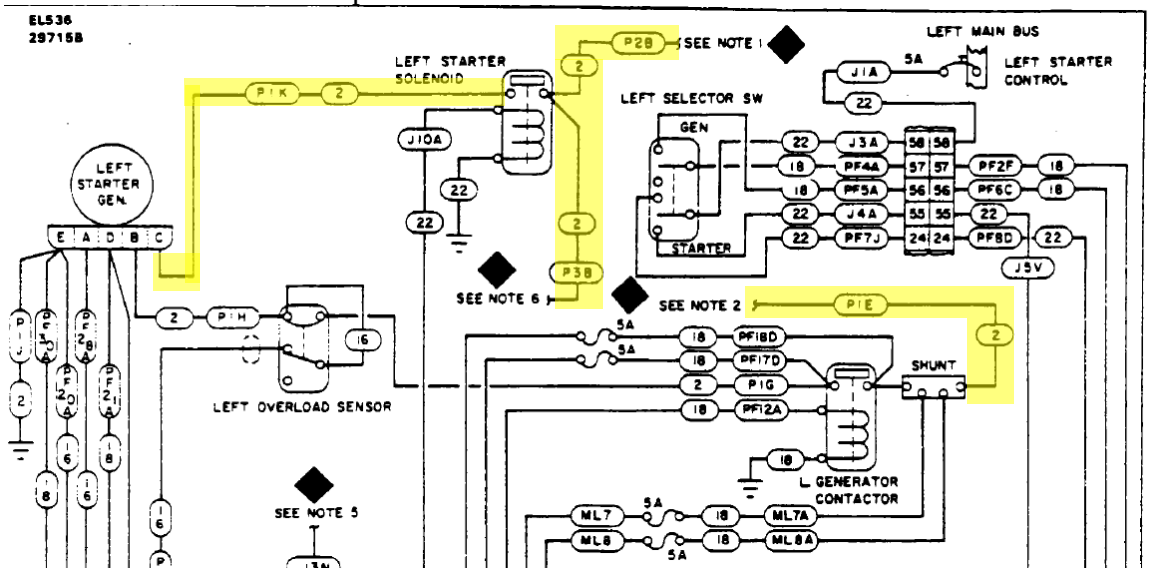

Figure 4 - Excerpt from Left Starter Generator System Schematic from Piper Cheyenne Service Manual (dated 2/6/81) Courtesy of Piper Aircraft., wires recovered in wreckage are highlighted.

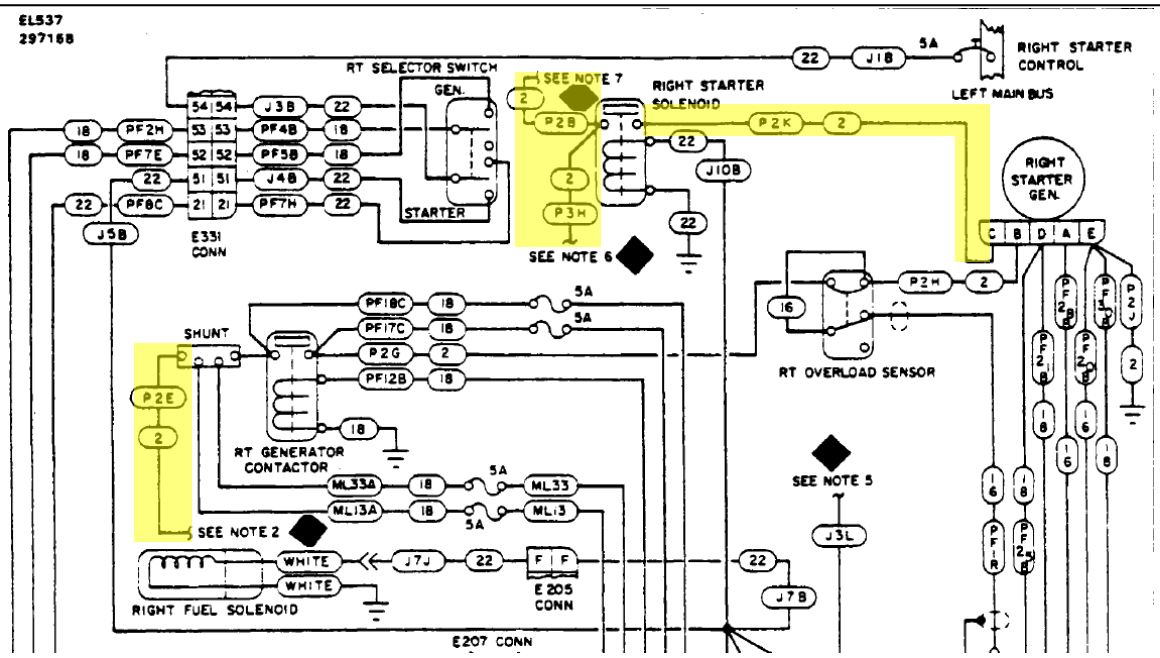

Figure 5 - Excerpt from Right Starter Generator System Schematic from Piper Cheyenne Service Manual (dated 2/6/81) Courtesy of Piper Aircraft., wires recovered in wreckage are highlighted.

The Cheyenne has a pressurized cabin. The cockpit floor/circuit breaker panel serves as a pressure floor, which separates the pressurized area (above the panel) and the unpressurized area (below the circuit breaker panel). Access to the area beneath the circuit breaker panel is by either removing the circuit breaker panel from the cockpit, or via an electrical inspection panel on the bottom of the aircraft from the exterior fuselage.

D.2 Hydraulic System Description

The aircraft contains a hydraulic system which operates the retractable landing gear and gear doors. A separate system is used for the aircraft's braking system. The nominal system operating pressure is 1900 psi. The system remains pressurized during gear extension and retraction operations. The hydraulic fluid used by the aircraft system is MIL-H-5606.

A hand pump, located in the cockpit floor just forward of the circuit breaker panel was installed to serve as an emergency pump, in the event of failure of the engine driven pumps. The pump is accessed by a door in the cockpit floor and the handle can be extended to allow pump operation. The pump handle, when in the stowed position, is partially located in the structural bay which contains the electrical circuit breakers.

Four hydraulic lines for the main landing gear travel from the hydraulic reservoir along the fuselage below the floor, through the main spar and then to the left and right main landing gear actuators and door actuators. A production break of the hydraulic line sections is located below the circuit breaker panel, where each of the lines are joined using AN-type union fittings. Aft of the main spar the lines connect to AN-type tee-fittings and proceed to the main gear bays in the left and right wing structure. The four hydraulic lines are labelled "Gear Down", "Gear Up", "Door Open", and "Door Closed". The hydraulic lines are constructed from 5052-0 aluminum tubing.

D.3 Fuel System Description

The following description only covers the portion of the fuel system in the area of the main spar and the circuit breaker panel between the wing roots.

The aircraft contains a fuel system consisting of independent left and right fuel systems that are connected to each other by a crossfeed system. The left and right inboard fuel tanks contain two submerged fuel boost pumps. One fuel pump must be operating any time its respective engine is in operations in order to supply the fuel under pressure to the engine driven fuel pump. Fuel pump operation for each side is controlled by a three-position switch on the overhead panel, refer to the yellow boxes on Figure 3.

Each set of wings tanks contain a fuel shutoff valve mounted on the inboard side of its respective wing root. The fuel crossfeed valve is mounted on the inboard side of the left wing root. Each valve is operated by a push-pull control lever which is mounted on the cockpit on the floor against the main spar housing just aft of the circuit breaker panel.

Figure 6 - Fuel shutoff and crossfeed valve panel from an exemplar aircraft (view looking down towards cockpit floor)

The crossfeed fuel system line from the right fuel system to the left fuel system is routed underneath the cockpit floor along the forward face of the main spar. A tee is located in the fuel line along the right-hand side of the aircraft in the fuselage to provide fuel for the Janitrol heater located in the nose of the aircraft. No portion of the fuel lines are located in the structural bay which contains the circuit breaker panel.

D.4 Additional Systems Information

In the structural bay below the circuit breaker panel, some additional tubing is routed through the bay.

The "stability augmentor emergency override" system has a portion of tubing, made from Monel (nickel-copper) alloy material tubing, traversing the bay, from the forward section to the aft section just beneath the floor panels along the right-hand side of the aircraft. A portion of the tubing through the bay is covered with a rubber-like material hose. The tubing, when the system has been activated, provides the flow of carbon dioxide (CO_2) from the CO_2 cartridge to a pneumatic actuator located in the rear of the aircraft.

The pressurization/pneumatic air supply system has a portion of tubing, made from 3003-0 aluminum alloy tubing, traversing the bay, from the forward section to the aft section just beneath the floor panels along the right-hand side of the aircraft. The tubing provides engine driven pressurized air to the pneumatic de-ice system and certain cockpit instruments, notably the turn-and-bank indicator and vacuum suction gauge.

D.5 Wreckage Examination

The systems group reconvened at the aircraft wreckage storage facility and inspected the aircraft wreckage on November 2-3, 2016. The wreckage examination was the second wreckage examination and concentrated on the area around the floor mounted circuit breakers and the main spar/wing root area.

During the second wreckage examination, electrical bus feeder wires and additional components were removed for further examination by both the system and fire group. Further information on detailed component inspections conducted at the NTSB materials lab and by the Fire Group examinations can be found in the Materials Laboratory Fire Factual Report.

D.5.1 Electrical System Components

The circuit breaker panel and the wire identified as L MAIN 2 were recovered during the initial aircraft wreckage examination and were provided to the NTSB Materials laboratory for inspection prior to the systems group examination.

The group removed multiple sections of wiring that were originally connected to the floor mounted circuit breaker panel and starter generator components located in the bay.

All references to the wire identification are per the Piper Service Manual schematics, reference Figure 2, Figure 4 and Figure 5. Most wires exhibited signs of heat damage and loss of insulation, generally in the area of the floor circuit breaker panel. The following sections document the general condition of the recovered wiring and components noted by the Systems Group. The NTSB Materials Laboratory performed additional examinations of the recovered wiring and hydraulic tubing. Further information regarding the additional examinations can be found in the NTSB Materials Laboratory Fire Factual Report.

D.5.1.1 Starter Generator Wiring

Wires identified as P1E, P1K, P2B, P2E, P2K, P3B, and P3H were recovered from the wreckage.

Wire P2B runs between the left and right starting solenoids. The insulation on the wire was present over a majority of the wire run. Terminal lugs and attaching hardware to the remaining portions of the starting solenoids were present.

Wire P3B runs between the left starter solenoid and the battery contactor. The wire insulation was not present and the wire was unraveled. The one end remained connected with its attachment hardware to the remaining portion of the left starter solenoid.

Wire P3H runs between the right starting solenoid and the battery circuit breaker. There was no insulation present on the wire. Terminal lugs and attaching hardware to the remaining portions of the starting solenoid were present. Terminal lugs and attaching hardware to the remaining portions of the battery circuit breaker were present. At approximately mid length of the wire the conductors were fused together.

Figure 7 - Wire "P3H" with area of fused conductors highlighted.

Wire P2K runs between the right starting solenoid and the right starter/generator. The insulation on the wire was present over a majority of the wire run except for approximately 6-8 inches from the starter solenoid contact. Terminal lugs and attaching hardware to the remaining portions of the starting solenoids was present. The wire end that would be connected to the right starter/generator was not present and was separated in the approximate area of the right wing root end.

Wire P2E runs between the shunt by the right generator contactor and the right generator circuit breaker. The insulation on the wire was present over a majority of the wire run except

for approximately 10-12 inches from the right generator circuit breaker contact. Terminal lugs and attaching hardware to the remaining portions of the circuit breaker and the right distribution bus were present. The wire end that would be connected to the shunt by the right generator contactor was not present and was separated in the approximate area of the right wing root end.

Wire P1K runs between the left starting solenoid and the left starter/generator. The insulation on the wire was present over a majority of the wire run except for approximately 10-20 inches from the starter solenoid contact. Terminal lugs and attaching hardware to the remaining portions of the circuit breaker and the right distribution bus were present.

Wire P1E runs between the shunt by the left generator contactor and the left generator circuit breaker. The insulation on the wire was present over a majority of the wire run except for approximately 10-20 inches from the left generator circuit breaker contact. The shunt was present and the wire remained connected at the shunt, the termination where the left generator circuit breaker was not present.

D.5.1.2 Electrical System Wiring

Wires identified as L MAIN 1, R MAIN 1, R MAIN 2, NON-ESS, L ICE, R ICE, R BUS1, R BUS 2, RAD 1 and RAD 2 were recovered and removed from the wreckage.

The L MAIN 1 wire runs between the pilot's circuit breaker and the floor circuit breaker panel. The wire showed signs of thermal damage and loss of insulation in the area of the floor circuit breaker panel. To facilitate removal the wire was cut below the pressure seal feed-through at the floor level. The diode and heatsink on the wire run remained attached to the left circuit breaker panel.

The R MAIN 1 wire runs between the right side circuit breaker and the floor circuit breaker panel. The wire showed signs of thermal damage both above and below the floor structure and loss of insulation in the area of the floor circuit breaker panel. The diode and heatsink on the wire run remained attached to the right circuit breaker panel. A portion of the circuit breaker attachment hardware and terminal lug was present.

The R MAIN 2 wire runs between the right side circuit breaker and the floor circuit breaker panel. The wire showed signs of thermal damage and loss of insulation in the area of the floor circuit breaker panel. The wire was cut at the pressure seal feed-through above the floor level. The diode and heatsink on the wire run remained attached to the right circuit breaker panel. The circuit breaker attachment hardware and terminal lug were not present.

The NON-ESS wire runs between the pilot's circuit breaker panel and floor circuit breaker panel. The wire showed signs of thermal damage and loss of insulation in the area of the floor

circuit breaker panel. The wire remained connected to the pilots' circuit breaker panel and the hardware was removed to facilitate removal. The circuit breaker attachment hardware and terminal lug were not present.

The L ICE wire runs between the left side circuit breaker panel and floor circuit breaker panel. The wire showed signs of thermal damage and loss of insulation in the area of the floor circuit breaker panel. To facilitate removal the wire was cut below the pressure seal feed-through at the floor level. The wire remained connected to the left side circuit breaker panel. The circuit breaker attachment hardware was not present and the terminal lug was broken along the middle of the mounting hole.

The R ICE wire runs between the left side circuit breaker panel and floor circuit breaker panel. The wire showed signs of thermal damage and loss of insulation in the area of the floor circuit breaker panel. The wire remained connected to the left side circuit breaker panel and the hardware was removed to facilitate removal. The circuit breaker attachment hardware and terminal lug were not present.

Only portions of the wires RAD 1 and RAD 2 were removed. The wire runs between the floor circuit breaker and the avionics master switch relay behind the instrument panel. No obvious signs of thermal damage on either wire were noted.

The R BUS 1 and R BUS 2 wires were cut behind the instrument panel in the vicinity of the avionics master relays to facilitate removal. The wires were both connected to their respective diodes and heatsinks on the right side circuit breaker panel.

D.5.1.3 Lifeport STC System Wiring

Portions of the EMS INV PWR and EMS PWR wires were recovered. The end nearest the cabin disconnect was cut to facilitate the removal. The ends nearest to the floor circuit breaker panel exhibited signs of heat damage and missing insulation. No terminal hardware was present on either wire.

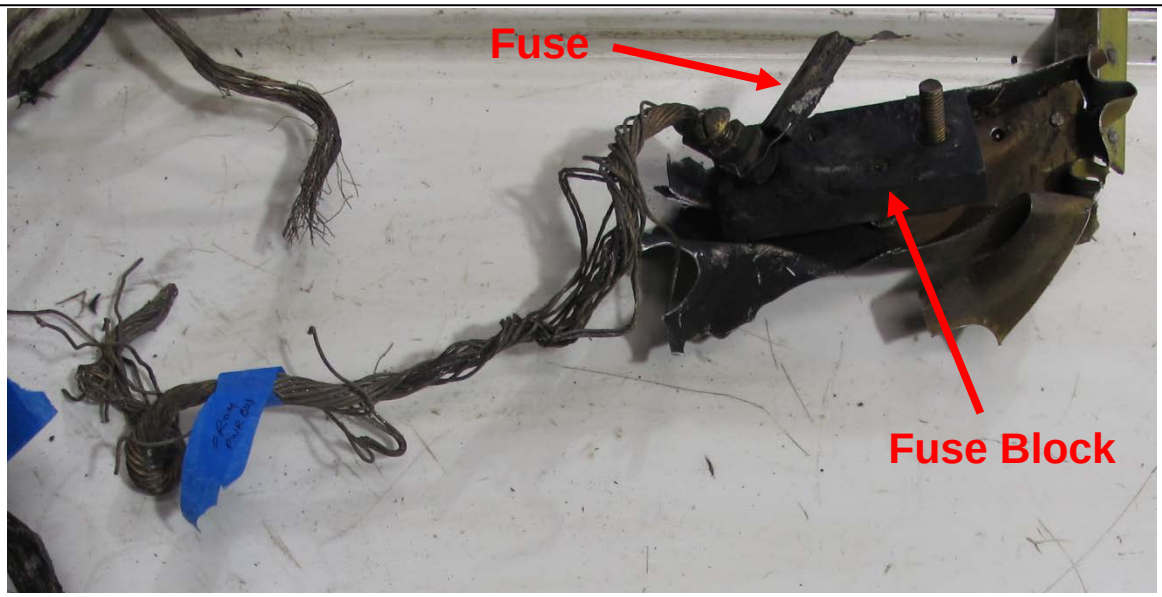

Figure 8 - STC fuse and fuse block installation as removed.

The installation also contained an 80 Amp fuse installed between the power bus and two EMS circuit breakers. The fuse and mounting block was located and removed from the wreckage. Only one wire, identified to be from the power bus to the fuse block, remained attached to the fuse. A multi-meter was used and the fuse was found on the open condition. The mounting block for the fuse showed signs of heat damaged around the area of one connection.

D.5.2 Hydraulic System Components

All of the hydraulic lines in the area beneath the floor circuit breaker panel were thermally damaged and discontinuous.

The line identified as "GEAR DOWN" was removed from the aft section of the fuselage wreckage. Approximately seven linear inches of tubing was recovered from the t-fitting t towards the forward union beneath the floor circuit breaker panel. The total length of an undamaged tubing section is normally 19.7 linear inches. The end of the tubing which would normally connect to a union fitting beneath the circuit breaker panel was not present. The union fitting was also not recovered. The mating tube b-nut was also not present.

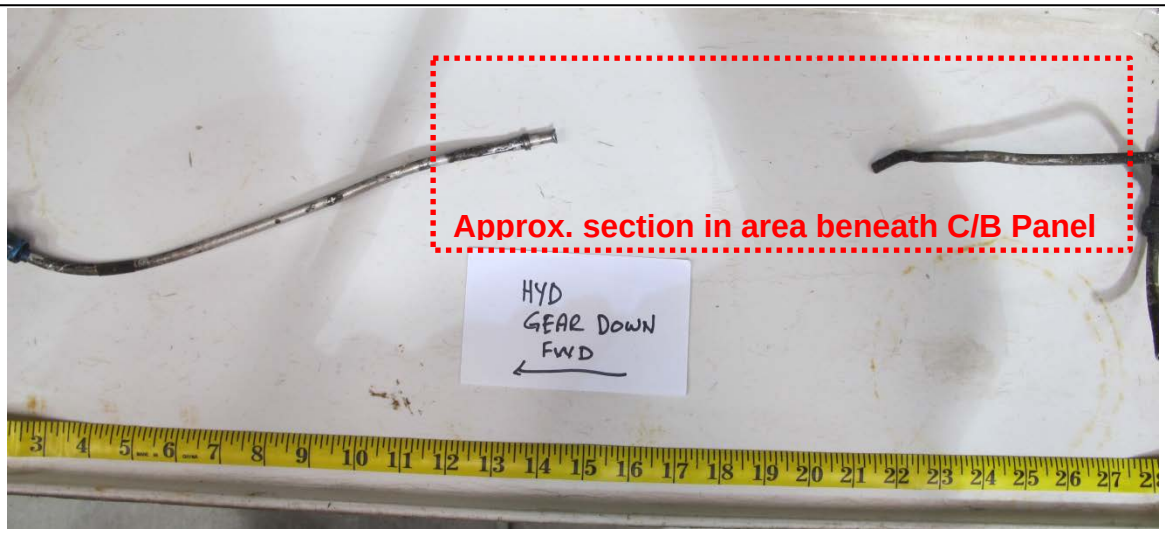

Figure 9 - Portions of hydraulic line "GEAR DOWN", with area beneath the circuit breaker panel highlighted.

The line identified as "GEAR UP" was removed in two separate pieces from the forward section of fuselage wreckage and from the aft section of the fuselage wreckage. Approximately two linear inches of tubing were recovered from the union beneath the floor circuit breaker panel. Approximately six linear inches of tubing were recovered from the t-fitting towards the forward union beneath the floor circuit breaker panel. The total length of an undamaged tubing section is normally 18.5 linear inches.

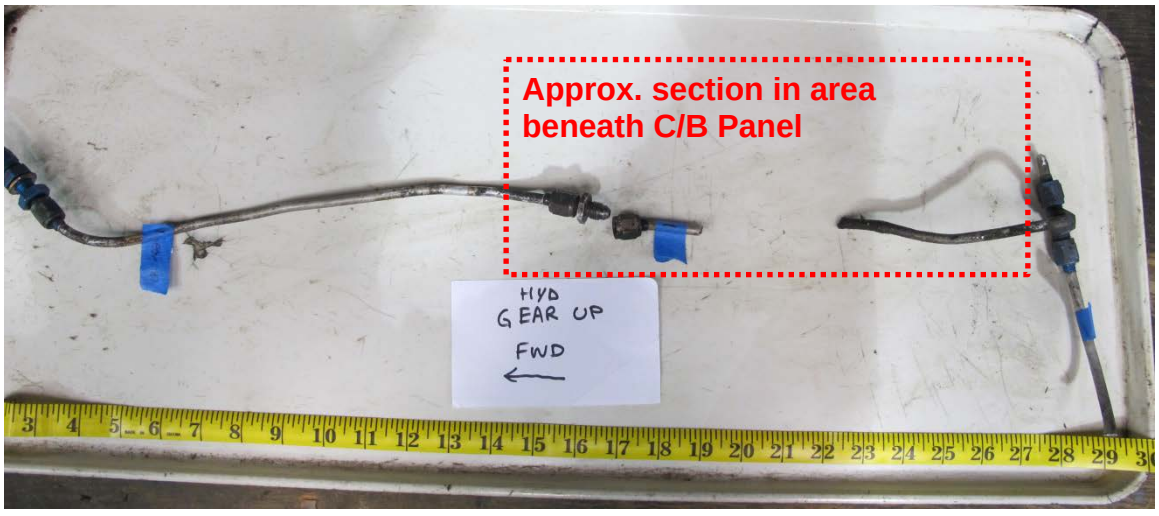

Figure 10 - Portions of hydraulic line "GEAR UP", with area beneath the circuit breaker panel highlighted.

The line identified as "DOOR CLOSED" was removed in two separate pieces from the forward section of fuselage wreckage and from the aft section of the fuselage wreckage. Approximately three linear inches of tubing were recovered from the union beneath the floor circuit breaker panel. Approximately eight linear inches of tubing were recovered from the t-fitting t towards the forward union beneath the floor circuit breaker panel. The total length of an undamaged tubing section is normally 18.6 linear inches.

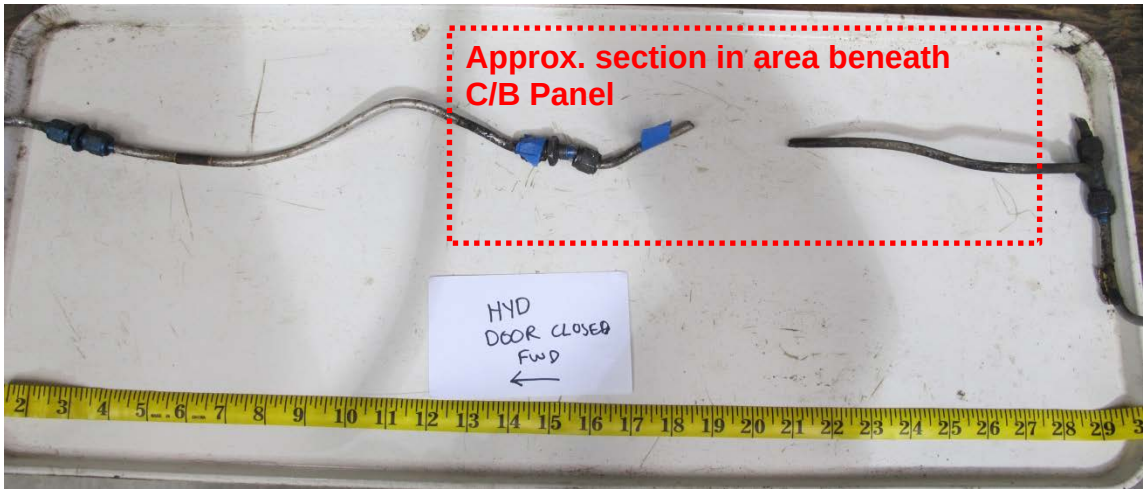

Figure 11 - Portions of hydraulic line "DOOR CLOSED", with area beneath the circuit breaker panel highlighted.

The line identified as "DOOR OPEN" was removed in two separate pieces from the forward section of fuselage wreckage and from the aft section of the fuselage wreckage. Approximately three linear inches of tubing were recovered from the union beneath the floor circuit breaker panel. Approximately ten linear inches of tubing were recovered from the t-fitting t towards the forward union beneath the floor circuit breaker panel. The total length of an undamaged tubing section is normally 20.0 linear inches.

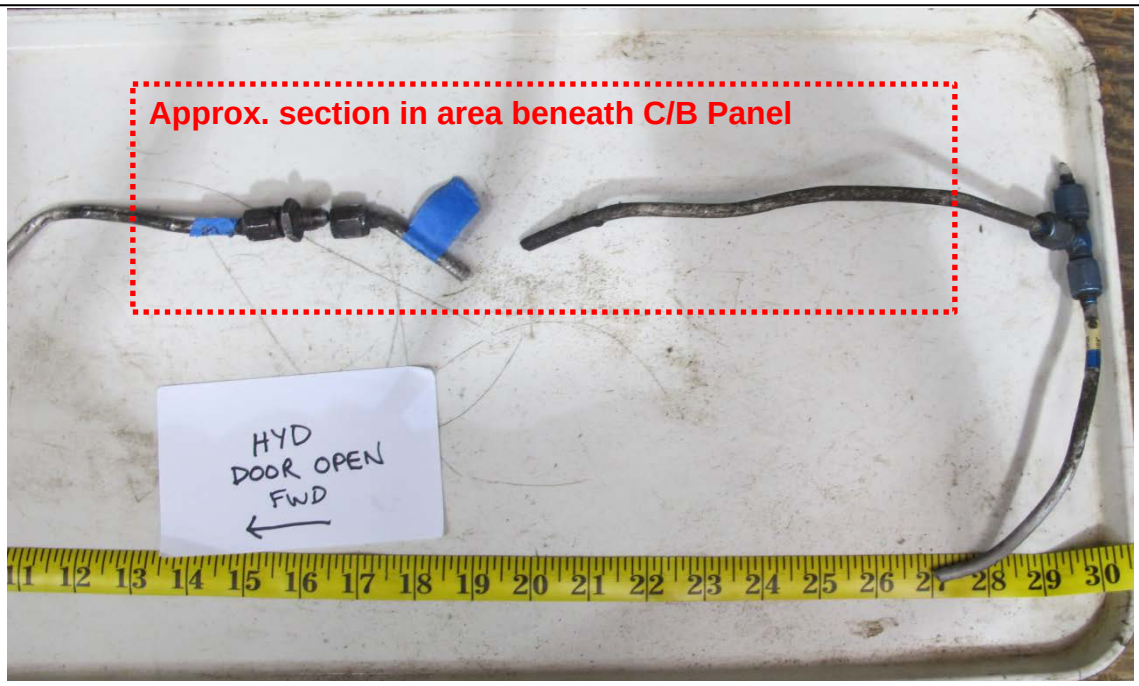

Figure 12 - Portions of hydraulic line "DOOR OPEN", with area beneath the circuit breaker panel highlighted

A portion of the four hydraulic lines was removed forward of the union fittings beneath the C/B panel to a bend in the tubing at approximately fuselage station 110.0. The tubing was removed to facilitate line identification and they were cut in the location of a structural feed-through.

The hydraulic hand pump was identified in the wreckage and removed. The pump is located in the bay just forward of the floor circuit breaker panel. The pump showed signs of heat damage and the presence of soot. The red plastic knob was charred and cracked in numerous places. After removal the pump was actuated by hand and hydraulic fluid was present.

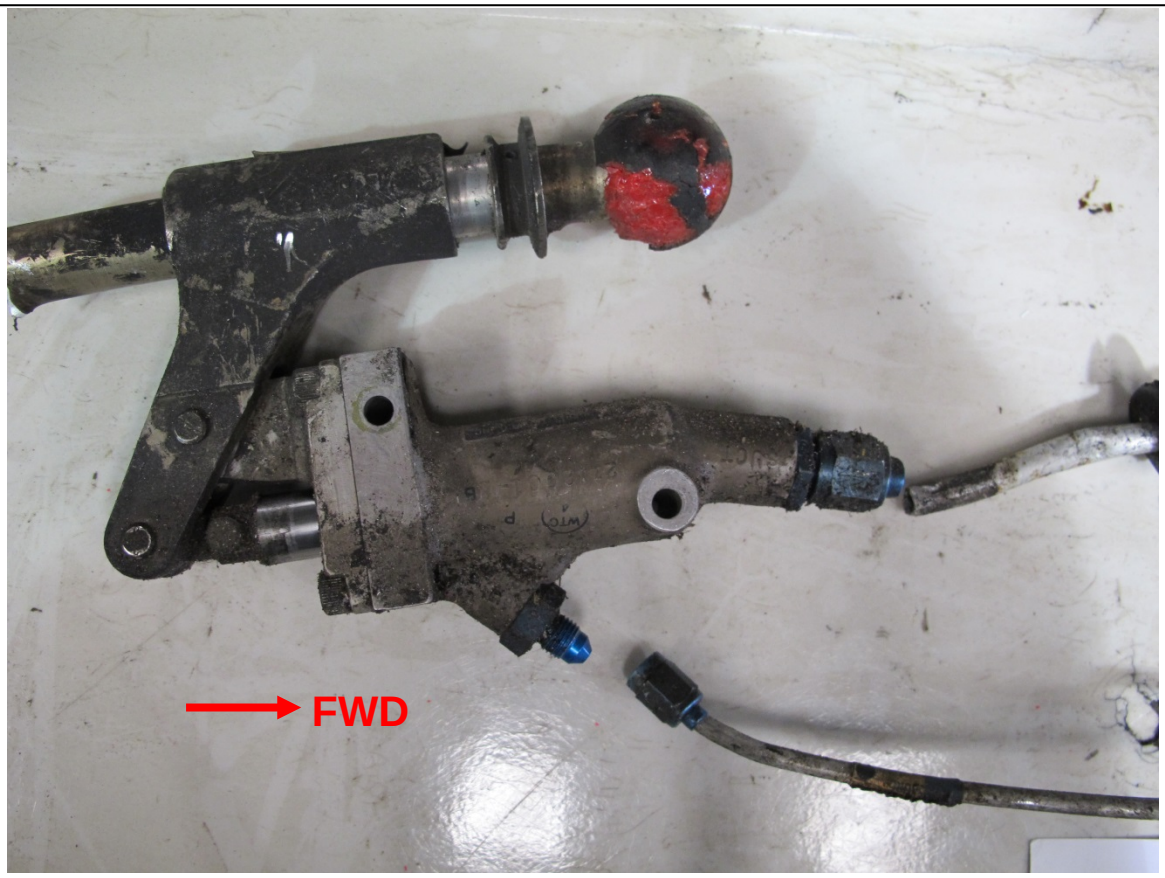

Figure 13 - Hydraulic hand pump as recovered.

D.5.3 Fuel System Components

The left fuel shutoff valve (SOV) was found attached to a small portion of the forward spar, Figure 14. The left fuels pumps and the fuel cross-feed valve were attached to a piece of the left wing structure, Figure 15. The fuel tubing between the left hand fuel pump cross fitting and the fuel shutoff valve was not present except for the B-nut. A small portion of the fuel tubing that runs from the fuel SOV to the engine supply, including the 90° AN[1] fitting was present. The rubber position of the p-clamps used to mount the SOV was not present. The valve showed signs of heat damage. The valve was found in the OPEN position. The fuel shutoff valve is actuated via a cable-lever assembly located on the floor between the crew seats.

[1] The term AN fitting is used to describe components based on United States military-derived specification dating back to World War II. The joint standards noted as AN were agreed upon by the Army and Navy.

Figure 14 - Left hand Fuel SOV as recovered

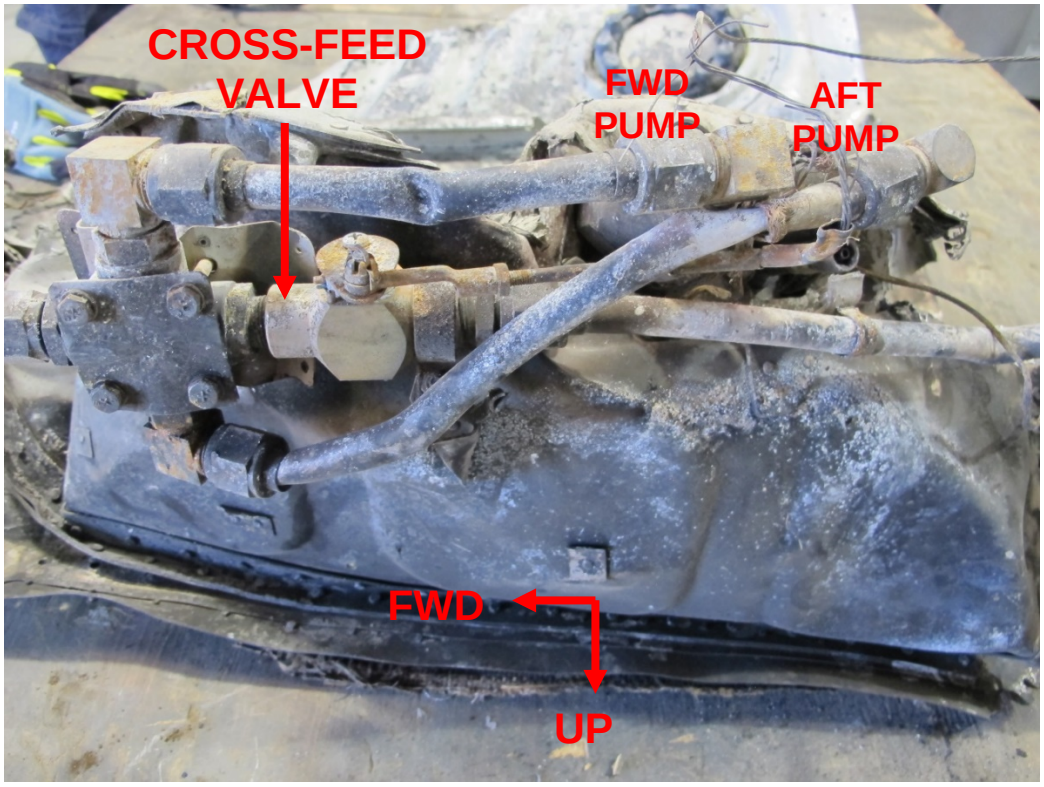

Figure 15 - Left hand side wing structure and forward and aft fuel pumps

A portion of the structure of the left wing was recovered which contained the two, forward and aft, fuel pumps and the fuel cross-feed valve. The fuel tubing from both fuel pumps to the cross fitting was present. The fuel line from the aft fuel pump showed signs of buckling approximately two to three inches from each end of the fuel line. The fuel line from the forward fuel pump showed signs of buckling at approximately mid length. Approximately twelve to fifteen inches of the fuel line which runs from the cross-feed valve to the heater supply line and right wing tank was present. Approximately five inches of the fuel line which runs from the right fuel pump cross fitting to the right fuel shut-off valve was present. In order to visually verify the position of the cross-feed valve, the fuel line was removed and the cross-feed valve was found in an intermediate position, Figure 16. The cross-feed valve is actuated via a cable-lever assembly located on the floor between the crew seats.

Figure 16 - Fuel cross-feed valve position

The right fuel shutoff valve was found attached to a small portion of the forward spar and forward wing skin, Figure 17. A small portion of the fuel tubing between then right hand fuel pump cross and the fuel shutoff valve was present. A small portion of the fuel tubing that runs from the fuel SOV to the engine supply, including the 90° AN fitting was present. The rubber position of the p-clamps used to mount the SOV was not present. The valve showed signs of heat damage. The valve was found in the CLOSED position. The fuel shutoff valve is actuated via a cable-lever assembly located on the floor between the crew seats.

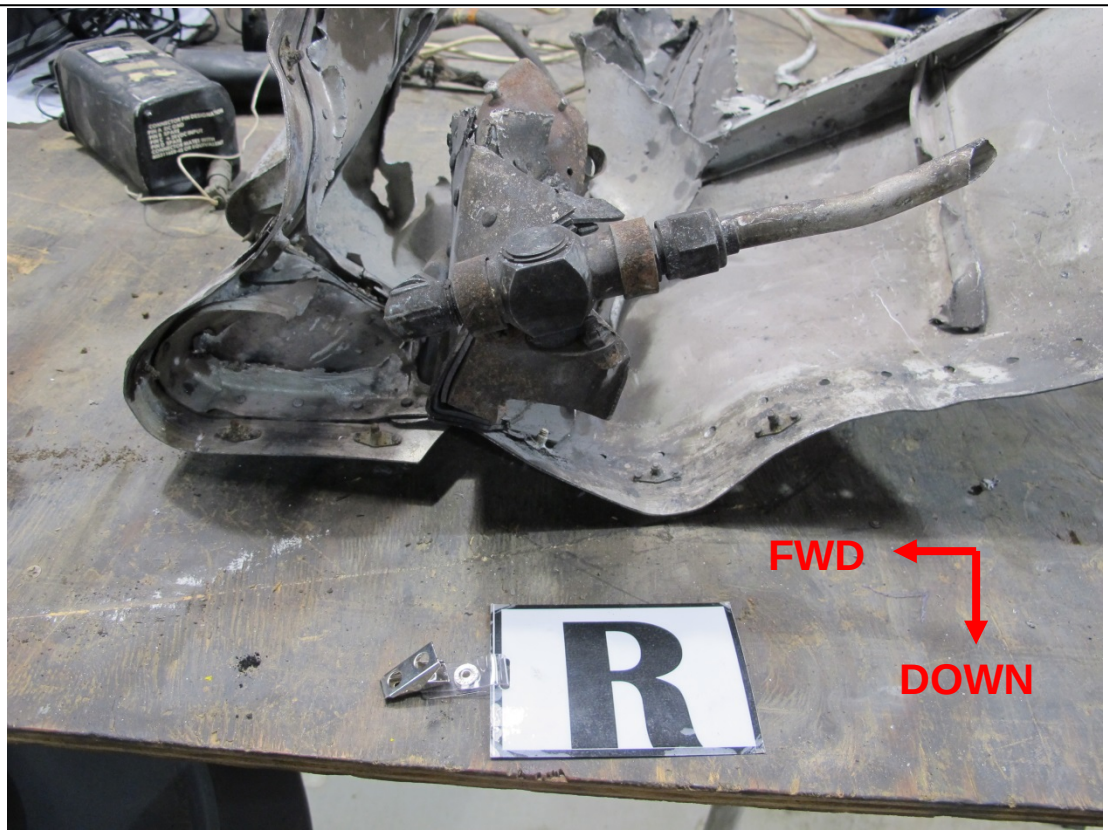

Figure 17 - Right hand Fuel SOV as recovered

A portion of the structure of the right wing was recovered which contained the two, forward and aft, fuel pumps, Figure 18. The fuel tubing from both fuel pumps to the cross fitting was present. The fuel line from the aft fuel pump showed signs of buckling at approximately mid length. The fuel line from the aft fuel pump was also fractured approximately one to two inches from the fuel pump-check valve connection. The fuel line from the forward fuel pump showed signs of buckling at approximately mid length. The fuel line which would run from the cross to the fuel cross-feed valve and heater supply line was not present except for the b-nut attached to the cross fitting. The fuel line which would run from the cross to the right fuel shut-off valve was not present except for the b-nut attached to the cross fitting.

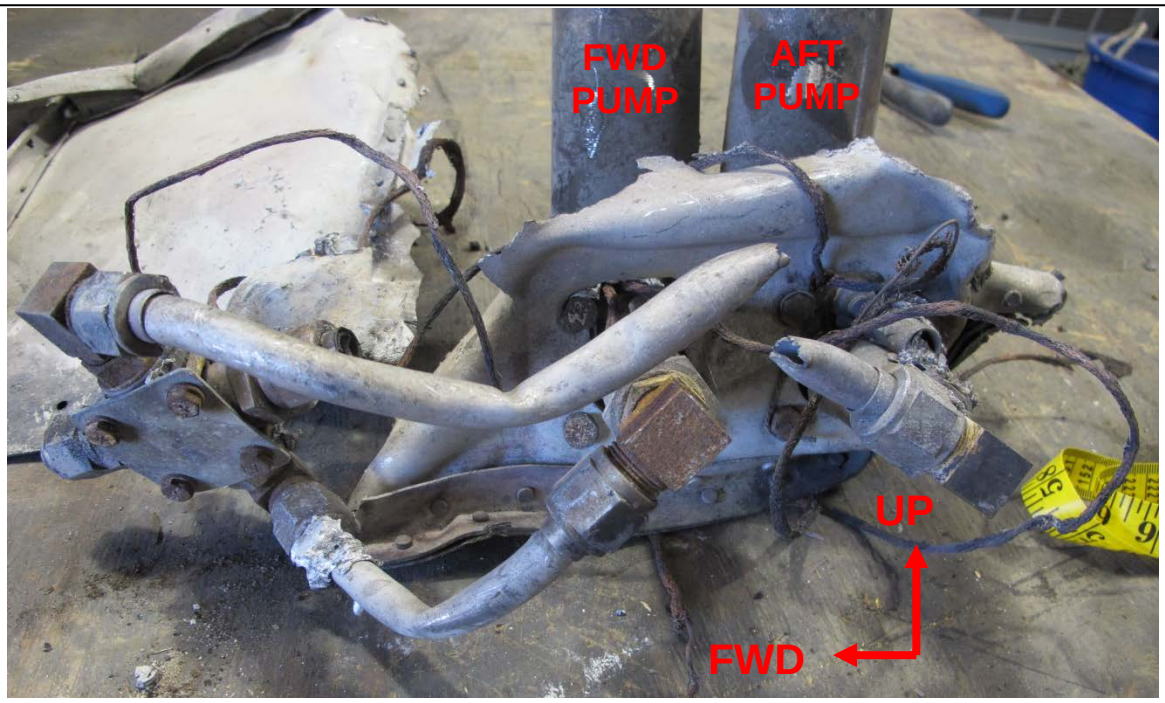

Figure 18 - Right hand side wing structure and forward and aft fuel pumps

D.5.4 Pressurization System Components

The outflow valves were visually examined. The valves were in their closed position.

The cabin dump switch was located in the wreckage. The panel with the cabin dump switch exhibited signs of crush damage. The panel was separated from the cockpit wreckage and straightened in order to view the switch position, Figure 19. The cabin dump switch was bent towards the right (when looking forward) and the switch was pointed in a direction consistent with the "NORMAL" position. The rear portion of the switch, Figure 20, on the back side of the panel, was not present on the removed panel.

Figure 19 - Cabin Pressurization Panel-Front View

Figure 20 - Cabin Pressurization Panel-Rear View

D.5.5 Floor Board Components

The floor boards in the cockpit area are part of the pressure floor. In order to attach the floor boards to the aircraft structure and maintain a pressure seal, each attach screw typically contains a flat washer and a rubber seal. Four screws were removed from a floor board on the right-hand side of the cockpit area to inspect the rubber seals around the screws. Two of the screws contained rubber seals and two did not.

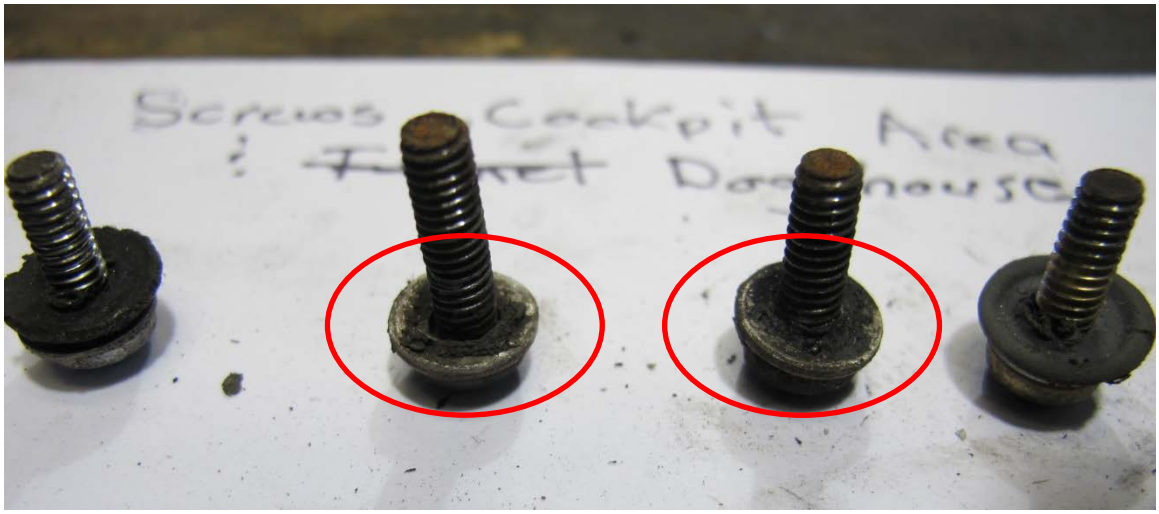

Figure 21 - Floor board attach hardware, screws missing rubber seals circled.

D.6 Aircraft Inspection Requirements

The accident aircraft was maintained and serviced in accordance with the Piper Progressive Inspections on a 100-hour cycle per Piper document 791-664 dated October 27, 1994.

Based on information from the IIC, the Hobbs meter at the time of the accident read 539.5 hours.

Two-event inspections are performed during the progressive inspections. The Event 1 inspections are performed at 100 hours and every 200 flying hour interval following (i.e. 100, 300, 500, etc.). During an Event 1 inspection, a detailed inspection of the main fuselage[2] is

[2] The maintenance program includes inspections of all areas and components of the aircraft (i.e. wings, empennage, engines, etc.). This report only covers the inspections of the area around the floor mounted circuit breaker panel.

carried out. The detailed inspection consists of removal of all inspection panels and floor panels. All the electrical wiring, fuel and hydraulic lines in the area are inspected for security.

Per the aircraft maintenance log books, the date of the last Event 1 inspection was July 14th, 2016. The aircraft Hobbs time was 517.1 hours and the Total Time Airframe (TTAF) was 7,286.6 hours. The next Event 1 inspection was due at 717.1 hours (Hobbs).

The Event 2 inspections are performed at 200 hours and every 200 flying hour interval following (i.e. 200, 400, 600, etc.). During an Event 2 inspection, a routine inspection of the main fuselage is carried out. The routine inspection is mainly an exterior inspection of the aircraft skins, windows and antennae. Inspection panels in the area of the floor mounted circuit breaker panel are not removed unless necessary for other maintenance.

Per the aircraft maintenance log books, the date of the last Event 2 inspection was April 15th, 2016. The aircraft Hobbs time was 419.0 hours. The next Event 2 inspection was due at 617.1 hours (Hobbs).

D.7 Safety Accomplishments during the investigation

On December 16th, 2016, the Federal Aviation Administration (FAA) issued a Special Airworthiness Bulletin (SAIB), CE-17-05, concerning wiring on Piper aircraft including the PA-31T series. The SIAB provided information on wiring conditions in the area below the floor mounted circuit breaker panels that could lead to chafing, thermal stress, or arcing. The SAIB recommended best practices for securing high electrical current wires in the aircraft.

On January 6th, 2017, Piper Aircraft, Inc. issued Service Bulletin (SB) 1301. The SB described procedures for visually inspecting the area below the main circuit breaker panel and rerouting and replacing wires and/or parts as necessary.

Based on the SAIB, SB and preliminary results from the investigation, on January 10th, 2017 the National Transportation Safety Board issued an Urgent Safety Recommendation A-17-001 concerning unsafe wiring conditions that may lead to arcing and cause fires on Piper PA-31T series aircraft to the Federal Aviation Administration. The urgent recommendation requested that the FAA:

> "Issue an emergency airworthiness directive (AD) that requires owners and operators of Piper PA-31T-series airplanes to take the actions recommended in Special Airworthiness Information Bulletin CE-17-05 immediately after the AD is issued"

On February 7th, 2017, the FAA issued an Airworthiness Directive (AD), 2017-02-06, requiring repetitive detailed visual inspection of the wiring below the floor mounted circuit breaker panels per the Piper SB 1301. The AD effective date was February 22nd, 2017 and required the initial inspection to be accomplished within 30 days after the effective date, and then at repetitive intervals not to exceed 12 months.