

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



DCA25LA061

STRUCTURES

Group Chair's Factual Report

March 6, 2026

A. ACCIDENT

Location: St. Mary's, Alaska
Date: December 18, 2024
Time: 1600 Alaska Standard Time (AKST)
0100 Coordinated Universal Time (UTC) December 19, 2024
Airplane: Lockheed 382G-44K-30, S/N 4590, N403LC

B. STRUCTURES GROUP

Group Chair	Clinton R. Crookshanks National Transportation Safety Board Aurora, Colorado
Group Member	Hank Pszczola Lockheed Martin Corporation Marietta, Georgia
Group Member	Michelle Fabry Lynden Air Cargo Anchorage, Alaska
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C. DETAILS OF THE INVESTIGATION

Lynden Air Cargo, LLC (Lynden) discovered a fracture in the forward pressure bulkhead during an inspection following an in-flight rapid depressurization. The fractured portion of the bulkhead was removed and shipped to the NTSB Materials Laboratory in Washington, DC. The group examined the fractured bulkhead in the NTSB lab April 15-17, 2025.

D. FACTUAL INFORMATION

1.0 Aircraft

The Lockheed 382G is a four turbine engine, propeller driven, high wing, pressurized, cargo airplane that is the civilian version of the military C-130 Hercules. The airplane is equipped with a conventional tail, retractable tricycle landing gear, and has a maximum takeoff weight of 155,000 pounds. The airplane is 112 feet, 9 inches long, 38 feet, 3 inches tall at the tail, and has a wingspan of 132 feet, 7 inches.

2.0 Accident Aircraft Examination

Lynden reported the airplane was climbing through flight level (FL) 220 when the crew “heard a loud bang and experienced a rapid depressurization”. The crew descended to 13,000 feet and continued to their destination where they landed safely. Post flight inspection of the fuselage station (FS) 93 forward pressure bulkhead behind the radome (Figure 1) found a fracture, about 14 inches long, in the canted web area adjacent to the fasteners along the centerline of the airplane at buttock line (BL) 0 (Figure 2).

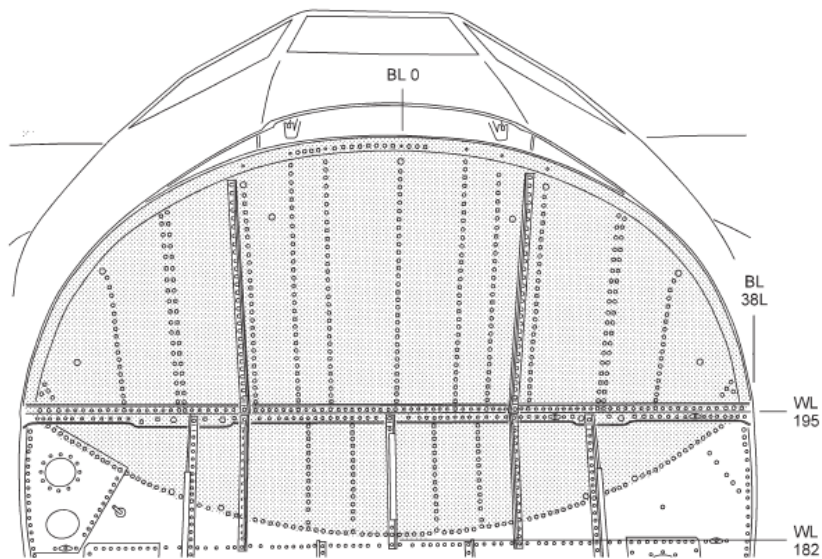


Figure 1. Lockheed L-382G forward pressure bulkhead, view looking aft (Lockheed drawing).

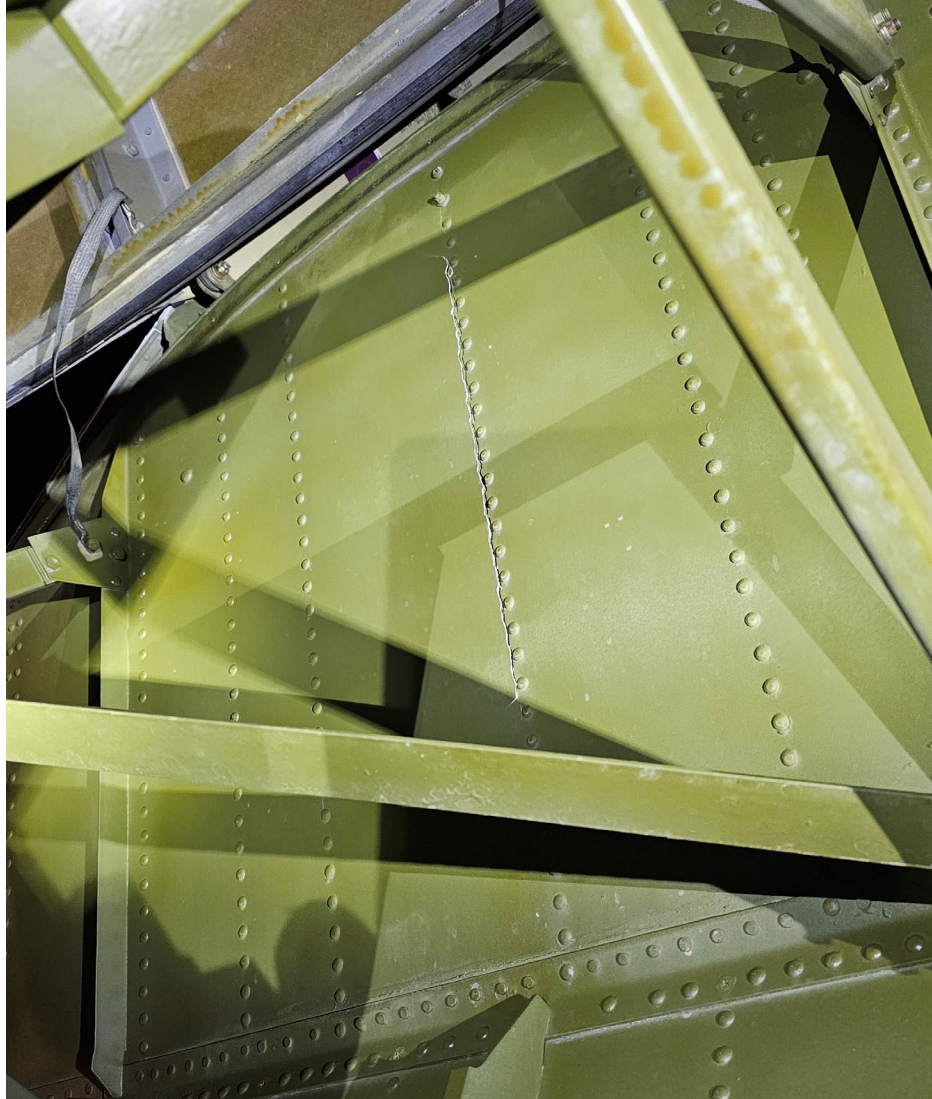


Figure 2. Fracture in forward pressure bulkhead near BL 0, N403LC (Lynden photo).

Lynden excised the fractured area of the canted web and shipped it to the NTSB Materials Lab for examination. See the NTSB Materials Laboratory Factual Report 25-056 in the public docket for the details of the exam. Lynden repaired the canted web by installing a patch repair where the fracture was removed (Figure 3).

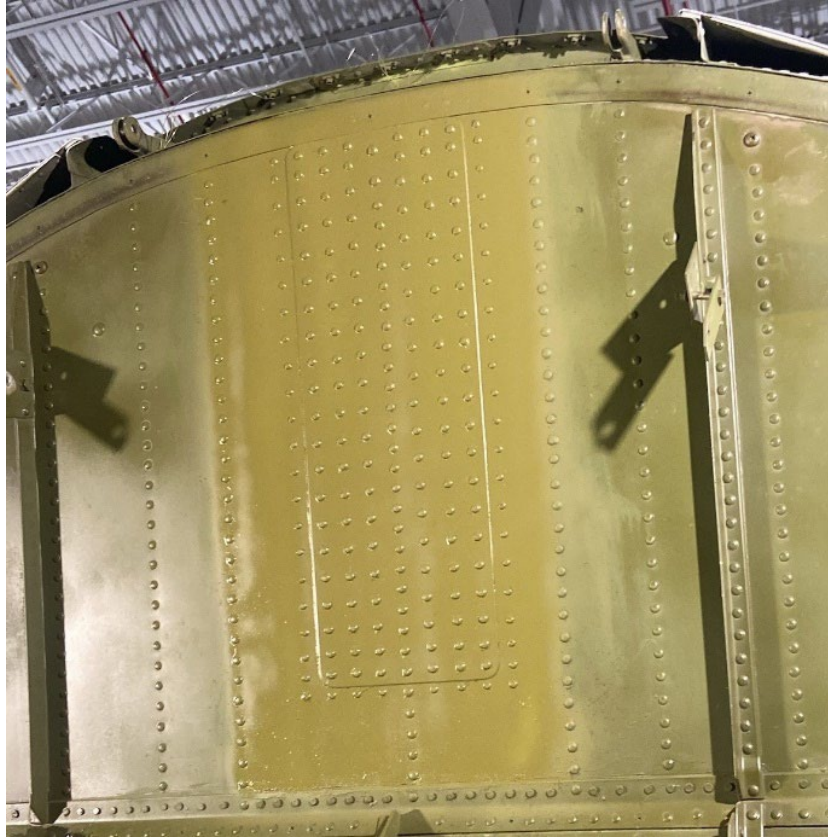


Figure 3. N403LC patch repair of FS 93 canted bulkhead (Lynden photo).

Following this accident, Lynden discovered FS 93 canted bulkhead web cracking near BL 0 on another airplane (N406LC) during ultrasonic inspection of the web. Additional cracking was discovered near the fasteners along installed stiffeners at left buttock line (LBL) 8 and right buttock line (RBL) 8 (See Section E. 2.0 for details). Lynden elected to perform an ultrasonic inspection of the entire canted bulkhead web on the accident airplane while the airplane was undergoing a scheduled B-3 check on April 6, 2025, after the airplane had accrued 70,888:57 hours and 36,099 cycles. The inspection found crack indications adjacent to at least 6 fasteners at LBL 8 and at least 6 fasteners at RBL 8. The entire FS 93 canted bulkhead web, including the previously repaired area, was replaced. The removed web was sent to Lockheed for analysis (See Section E. 3.0 for details).

3.0 Maintenance Information

The accident airplane, S/N 4590, was manufactured in 1975, purchased by Lynden in 1997, and had accrued 70,704:36 hours and 36,034 cycles at the time of the accident. The airplane was maintained under a Continuous Airworthiness Inspection program. After a similar previous accident in 2016, Lockheed developed an alert service bulletin (SB) recommending a detailed visual inspection of the forward side of the FS 93 bulkhead web for cracks and any loose or missing fasteners (see Section E 4.1 for details). The first SB inspection of the accident airplane

bulkhead web was accomplished on March 23, 2016, after the airplane had accrued 63,827:54 hours and 31,705 cycles with no discrepancies. Subsequent SB inspections of the bulkhead web were accomplished on September 11, 2016 (64,217:31 hours / 32,021 cycles), July 30, 2019 (66,552:24 hours / 33,465 cycles), and November 7, 2022 (68,898:23 hours / 34,728 cycles) with no discrepancies reported. The most recent SB inspection was signed off in the logbook in November 2022. The airplane was in C-check from July to November 2022. There was no record of any previous repairs to the canted bulkhead web on the accident airplane.

E. TESTS AND RESEARCH

1.0 Previous Accident (DCA16LA096)

On February 12, 2016, about 0745 Alaska standard time, a Lynden Air Cargo, LLC., Lockheed 382G airplane, N401LC, experienced a rapid depressurization during cruise flight. The flight crew declared an emergency and diverted to the nearest airport where they landed safely. The NTSB investigated the accident and determined the probable cause was the fatigue failure of the forward pressure bulkhead canted web that originated from stress corrosion cracking areas. Contributing to the failure were inspection procedures and intervals inadequate to identify the crack.

The investigation found multiple fatigue cracks that initiated from the aft and forward faces of the web adjacent to 21 consecutive rivet holes at the centerline of the airplane at BL 0. The fatigue fractures from the aft face propagated through 85%-90% of the web thickness while the fatigue fractures from the forward face propagated through the remaining thickness. Several of the individual fatigue fractures had linked up to form a continuous crack about 10.5 inches long that showed evidence of black deposits on and adjacent to the fractures. A fatigue crack striation study performed for the investigation indicated that the cracks likely initiated about 5,000 cycles prior to the accident flight.

2.0 N406LC Inspection and Findings

Based on the preliminary information for this accident and before the NTSB laboratory examination was complete, Lockheed began developing an ultrasonic test procedure to detect fatigue cracking in the forward bulkhead canted web. The draft test procedure was provided to Lynden to test the instructions on their Lockheed 382G airplane, N406LC, S/N 4676, that was undergoing scheduled maintenance. The airplane was inspected on April 2, 2025, after it had accrued 57,776:06 hours and 35,498 cycles. Ultrasonic inspection of the forward side of the canted bulkhead web found crack indications adjacent to the right side of multiple rivets along the BL 0 rivet line and adjacent to the lower four fasteners along the LBL 8 rivet line. There were no indications along the RBL 8 rivet line. The entire canted bulkhead web was removed and sent to Lockheed for analysis.

Lockheed performed a fluorescent dye penetrant inspection (FPI) of the aft side of the web along the BL 0 fastener holes. Crack indications, referred to as eyebrow cracking, were noted adjacent to 15 of the 33 BL 0 fastener holes. All BL 0 crack indications were confirmed with a surface eddy current (SEC) inspection. The remainder of the aft side of the web was inspected using SEC with crack indications noted near 16 holes associated with vertical stiffener locations on the left side and near the two lower left corner holes. One hole associated with a vertical stiffener location on the right side and the two lower right corner holes also had crack indications. Additionally, two holes in the upper right circumference had crack indications on the forward side. The crack locations along BL 0 were mechanically opened in the lab and subjected to further optical and scanning electron microscope (SEM) examination. All the fractures to the right of the BL 0 fasteners were attributed to fatigue initiating from the aft surface that propagated forward partially through the thickness of the part. The exact origin locations could not be determined due to oxidation and mechanical damage. At most locations there was also evidence of very small fatigue cracks that initiated from the forward surface of the web. None of the cracks on the forward surface were detected by FPI or SEC. The lower left and right corner cracks also initiated and propagated by fatigue with less oxidation and damage than the BL 0 cracks. The composition, hardness, electrical conductivity, and microstructure of the bulkhead web material was consistent with 7075-T6 aluminum as specified.

3.0 N403LC Lockheed Inspection

The entire FS 93 canted bulkhead web from the accident airplane was removed and sent to Lockheed for inspection after the ultrasonic inspection performed in April 2025. The bulkhead had a cut out area along BL 0 where the repair was performed after the accident flight. There was an additional area that was cut out on the right side of the bulkhead for unknown reasons. Lockheed performed a SEC inspection of the entire aft surface of the bulkhead web. Crack indications were found adjacent to the right side of additional BL 0 fastener holes. There was an indication that extended from the upper edge of the BL 0 cut out area and an indication to the right of the first BL 0 fastener hole above the cut out. There were indications to the right of the two BL 0 fastener holes below the cut-out area. Additional crack indications were found to the right of 4 fastener holes at RBL 7, 5 fastener holes at RBL 15, 2 fastener holes at RBL 27, 2 fastener holes at LBL 15, and 5 fastener holes at LBL 27. One of the indications at LBL 27 had progressed through the thickness of the web. Through-thickness crack indications were also found adjacent to the lower left fastener hole and the two lower right fastener hole locations in the bulkhead web.

4.0 Lockheed Published Service Information

4.1 Alert Service Bulletin A382-53-67

On March 10, 2016, Lockheed published Alert Service Bulletin A382-53-67 applicable to all model 382, 382B, 382E, 382F, and 382G FAA Certified airplanes based on preliminary information from investigation DCA16LA096. The bulletin recommended a detailed visual inspection of the entire FS 93 canted bulkhead web and lower vertical web for cracking, missing fasteners, loose fasteners, evidence of bulkhead web movement, cracked paint around fastener heads, evidence of corrosion, or streaking marks indicating pressure leakage. The bulletin specified the initial inspection should be performed within 90 days on any aircraft that had accrued more than 15,000 flight cycles with repetitive inspections recommended every C-check not to exceed 3 years or 3,000 flight cycles.

Lockheed reported that a new Service Bulletin is in development to add an ultrasonic inspection of the FS 93 bulkhead web for cracking. They estimated that the bulletin would be completed and FAA approved by the end of 2026. Lockheed also anticipated that a maintenance action to remove and replace the FS 93 bulkhead web after a specified number of cycles would be added to the maintenance program once their engineering analysis was completed.

4.2 Limit of Validity

As a result of the FAA widespread Fatigue Damage Rule published in November 2010, Lockheed established a limit of validity (LOV) for the L-382G airplane. The LOV of 58,800 flight cycles and 75,000 flight hours was published in the FAA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness. The limitation stated that no aircraft may be operated beyond the LOV without an FAA approved extension.