NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Aviation Engineering Division
Washington, DC 20594

July 22, 2009

AIRWORTHINESS AND MAINTENANCE GROUP CHAIRMAN'S FACTUAL REPORT

A. ACCIDENT: DCA08MA098

LOCATIONS: Columbia, South Carolina

DATE/TIME: September 19, 2008

AIRCRAFT: Learjet Model 60, N999LJ, S/N 60-314

B. GROUP MEMBERS:

Note: Not all group members participated in each group activity.

Chairman:	Robert L. Swaim Washington, DC
Member:	Jerry Baker Federal Aviation Administration Wichita, Kansas
Member:	Mervyn Bayne Learjet Wichita, Kansas
Member:	Kirc Harris Learjet Wichita, Kansas
Member:	Mike Hinson Learjet Wichita, Kansas
Member:	Ann Johnson Federal Aviation Administration Wichita, Kansas
Member:	Bruce Jones

	Learjet Wichita, Kansas
Member:	Jan Jones Learjet Wichita, Kansas
Member:	Paul Nguyen Federal Aviation Administration Wichita, Kansas
Member:	Richard Olsen Goodyear Akron, Ohio
Member:	Robert Robson Goodyear Akron, Ohio
Member:	Tim Verble Learjet Wichita, KS
Member:	Thomas Walters Global Exec Aviation Long Beach, California
Member:	Rex Williams Learjet Wichita, Kansas
Member:	Ralph Witzke Learjet Wichita, KS
Member:	Marc Gratton Pratt and Whitney Canada Longueuil, Canada

For context, the personnel providing information included:

- The Learjet Technical Lead Powerplant Engineer with FAA Designated Engineering Representative (DER) authority, who had been employed at Learjet since 1990. He had been involved in the Model 60 development and involved with design changes since the initial design. This person was not involved with the landing gear discussion.

- An FAA Propulsion Aerospace Engineer who had held the same position from 1979 until 1985, and then returned to Learjet as a Propulsion Engineer from 1989 until 1999. This person contributed to a portion of the thrust reverser discussions.
- The Learjet Technical Lead Avionics Engineer, who holds FAA Designated Engineering Representative (DER) authority. This person was not involved with discussions pertaining to tires and landing gear.
- The Learjet Technical Lead Landing Gear / Hydraulics Engineer, who holds FAA Designated Engineering Representative (DER) authority. This person was not involved with discussions pertaining to the thrust reversers.
- A Learjet Stress and Fatigue Engineer, who holds FAA Designated Engineering Representative (DER) authority. This person had involvement limited to discussion of potential tire failure calculations.
- Additional Learjet engineering personnel participated and contributed regularly to the discussion.
- An FAA Manager for Flight Testing, who also participated in handling characteristics testing during development of the Model 60.

C. SUMMARY:

On September 19, 2008, at about 11:53 p.m. EDT, a Bombardier Learjet Model 60 (N999LJ) operated by Global Exec Aviation as an on-demand passenger flight under 14 CFR Part 135 overran runway 11 while departing Columbia, South Carolina, enroute to Van Nuys, California. The two pilots and two of the four passengers were fatally injured; the other two passengers were seriously injured. The aircraft was destroyed by extensive post-crash fire. Weather was reported as clear with light winds.

Tire debris and portions of airplane components were found along the 8,601 foot runway. According to witnesses and initial information, the beginning of the takeoff roll appeared normal, then sparks were observed as the airplane traveled along the runway. The airplane continued beyond the runway threshold, through the approximately 1,000 foot runway safety area and impacted airport lighting, navigation facilities, perimeter fence and concrete marker posts. The airplane then crossed a roadway, and came to rest on an embankment on the far side of the road. The fire began on the airport side of the roadway.

This document contains descriptions about the airframe, airport, and maintenance records review. One separate addendum contains information related to the landing gear, and a second addendum addresses the engines, with information about the thrust reversers.

D. DETAILS OF THE INVESTIGATION:

D.1 PATH OF TRAVEL AND DEBRIS PATH:

An extensive amount of both large and small debris was found on the runway, which continued to the resting place of the airplane. Assistance in finding debris, marking locations, and in recovery was received from the Federal Bureau of Investigation (FBI), Highway Patrol Multi-Disciplinary Accident Investigation Team (MAIT), and the Columbia Airport.

The locations of larger debris and grouped collections of smaller debris were precisely established for later reference. Numbers were assigned to evidence bags (Ref. Figure 1) and the numbering system initially began with the first tire fragment from the accident airplane, then generally moved in the direction that the airplane traveled. Some evidence bags contained a single item and some evidence bags contained collections of debris that was found within several steps from a central reference point used by the surveyors. As more debris was found, the sequential numbering convention was kept so that each evidence bag had a unique identifier, but the numbering of debris no longer represented the path along the runway.

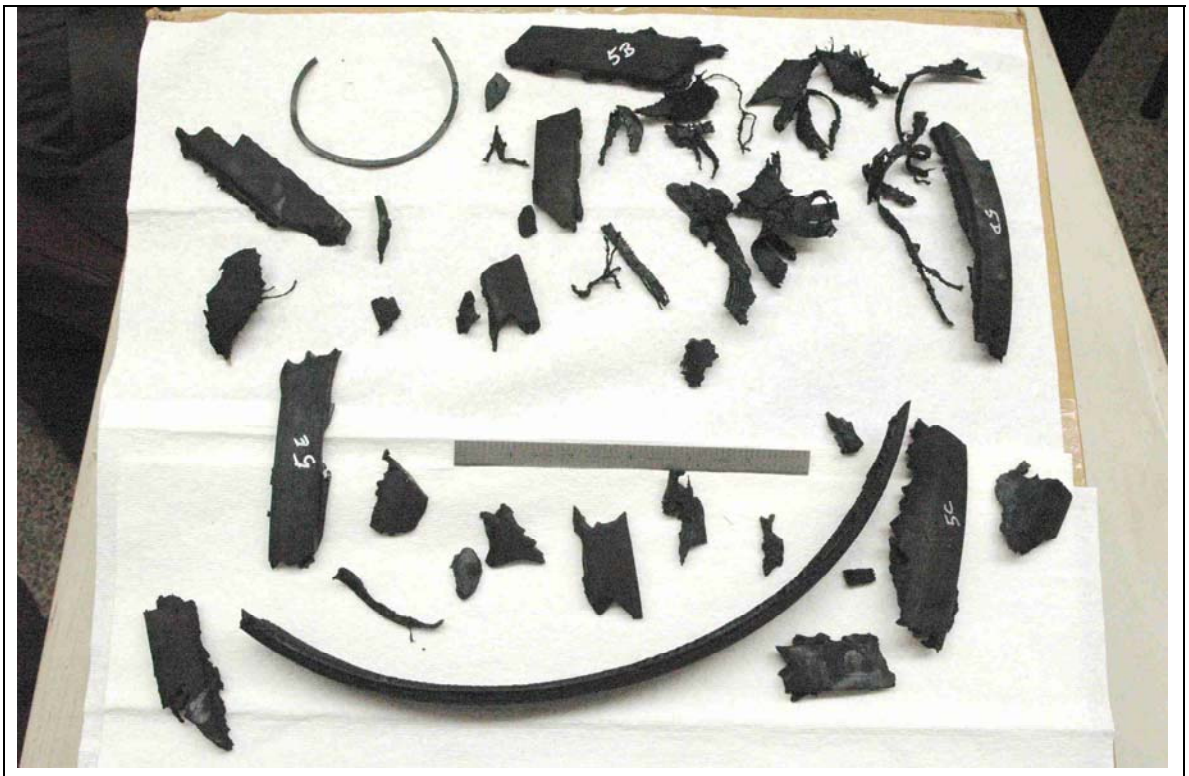


Figure 1. Example of tire and glass fragments in an evidence bag. This group was in bag #5 and a six-inch scale is shown in the middle of the group for proportion.

The locations of airplane debris and airport features were mapped by the MAIT, using four TotalStation™ survey teams.[1] The TotalStations™ were also used to document the slopes, roadways, and create a three-dimensional portrayal of the airplane. The TotalStation™ data shall take precedence over this text, when differences may exist in distances and references to component locations.

An intense inspection of the runway from where the takeoff roll began found seven items prior to the first piece of tire from the accident airplane. The items were numbered B1 through B7, with the numbering counted backward, so that B1 was closest to the first piece of tire from the accident airplane and B7 was the item closest to the beginning of runway 11.

> Piece B7 was a small rubber fragment that was found in the middle of the large black tire residue area where airplanes land. The rubber was different than the fragments of tire rubber from the accident airplane.
>
> Piece B6 was a small pebble-sized fragment of concrete aggregate that resembled the runway material and the fragment was found in a line with pieces B5 through B1. One side of the aggregate was darker in color than the rest.

[1] Further information about TotalStation survey equipment and capabilities may be found on the internet, as at http://en.wikipedia.org/wiki/Total_station.

Pieces B5 through B1 were the only foreign material found on the portion of the runway that included the initial tire debris and were found in a rough line that led to the first piece of tire debris from the accident airplane. The pieces visually matched fragments of hardened epoxy, but electron dispersive spectroscopy showed that the fragments did not match either the material from a recovered broken runway reflector,[2] or any markings on the tires. The longest fragment (about 1.5 inches long) was broken by hand. (Ref. Figure 2)

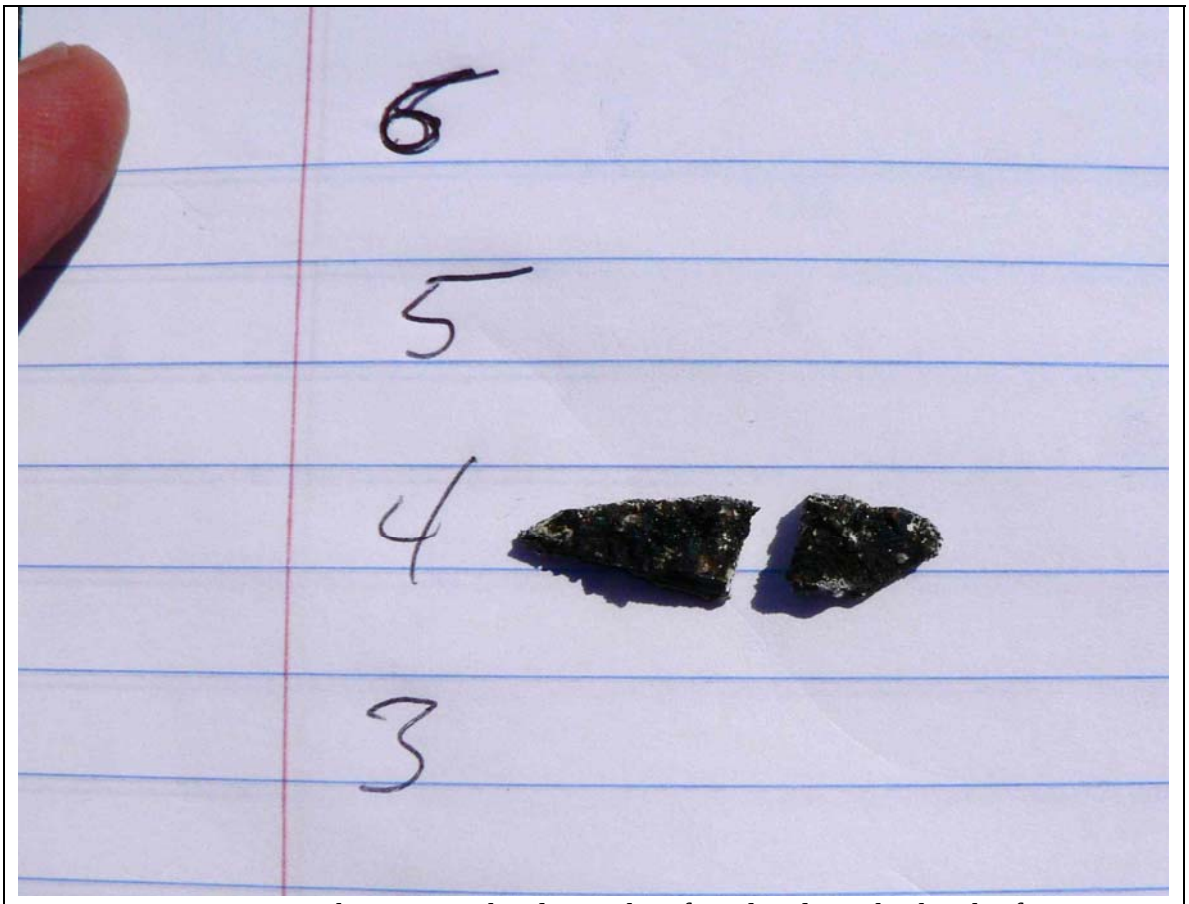


Figure 2. Piece B4 was about 1.5 inches long when found and was broken by finger pressure while determining how hard the material was.

The Airplane Flight Manual section titled Limitations (page 1-12) stated "Takeoff is limited to paved runways." Close visual inspection of the initial portion of the runway found nothing else and the runway surface was smooth.

[2] The reflector was blue and found near the eastern end of runway 11, where a taxiway crossed the runway. The full Materials Laboratory Factual Report descriptions for the material and the reflector are in the NTSB public docket as Report No. 08-134, dated January 22, 2009.

Tire and skid marks could be followed on the runway and were spaced 100 inches apart (8’ 4”) which was the spacing between the centers of the inboard left and outboard right wheels.[3] (Ref. Figures 3 through 6)

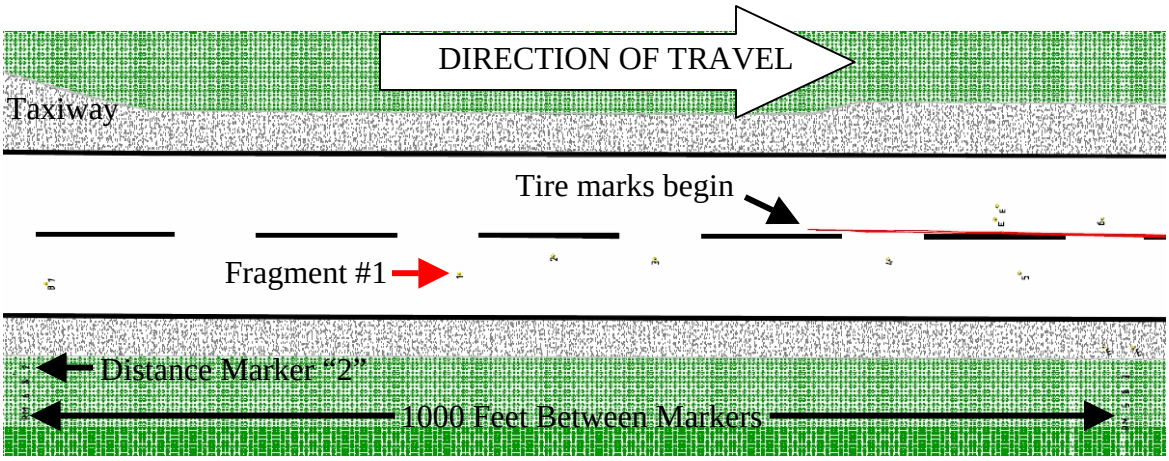
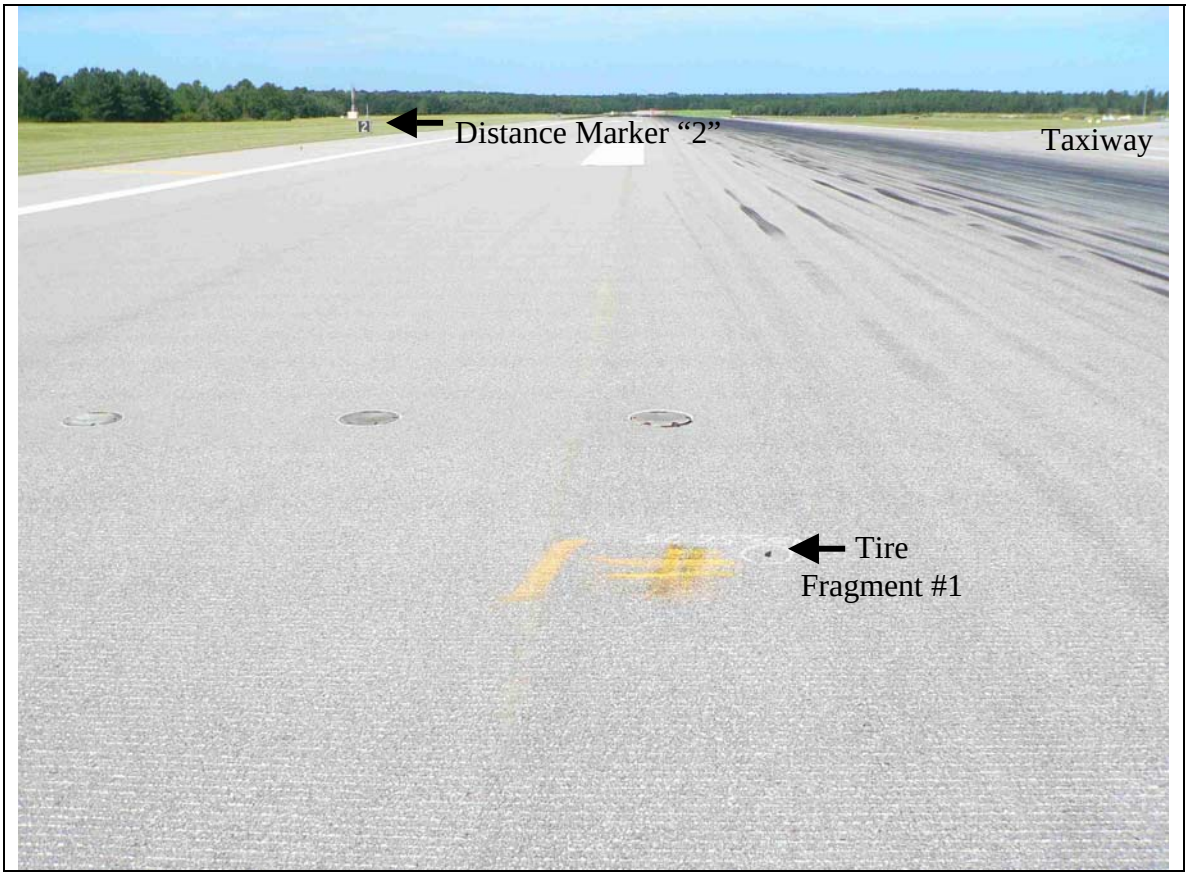


Figure 3. Runway diagram of initial tire fragments and reference points. The airplane passed from left to right and the left arrow denotes the first piece of tire debris. The distance marker “2” is not 2,000 feet from where the airplane began the takeoff roll.



[3] The Aircraft Maintenance Manual showed that the designed dimension between the main landing gear struts to be 8’ 3”

Figure 4. Facing west, toward the first tire fragment from the accident airplane and where the airplane started from. Note runway distance marker "2" at upper left of photo and taxiway at upper right, as shown in the runway illustration. The white paint in the background is known as "Fixed Distance Marking," is visible in the next photo, and is not the runway centerline. The runway centerline is in the black area to the right.

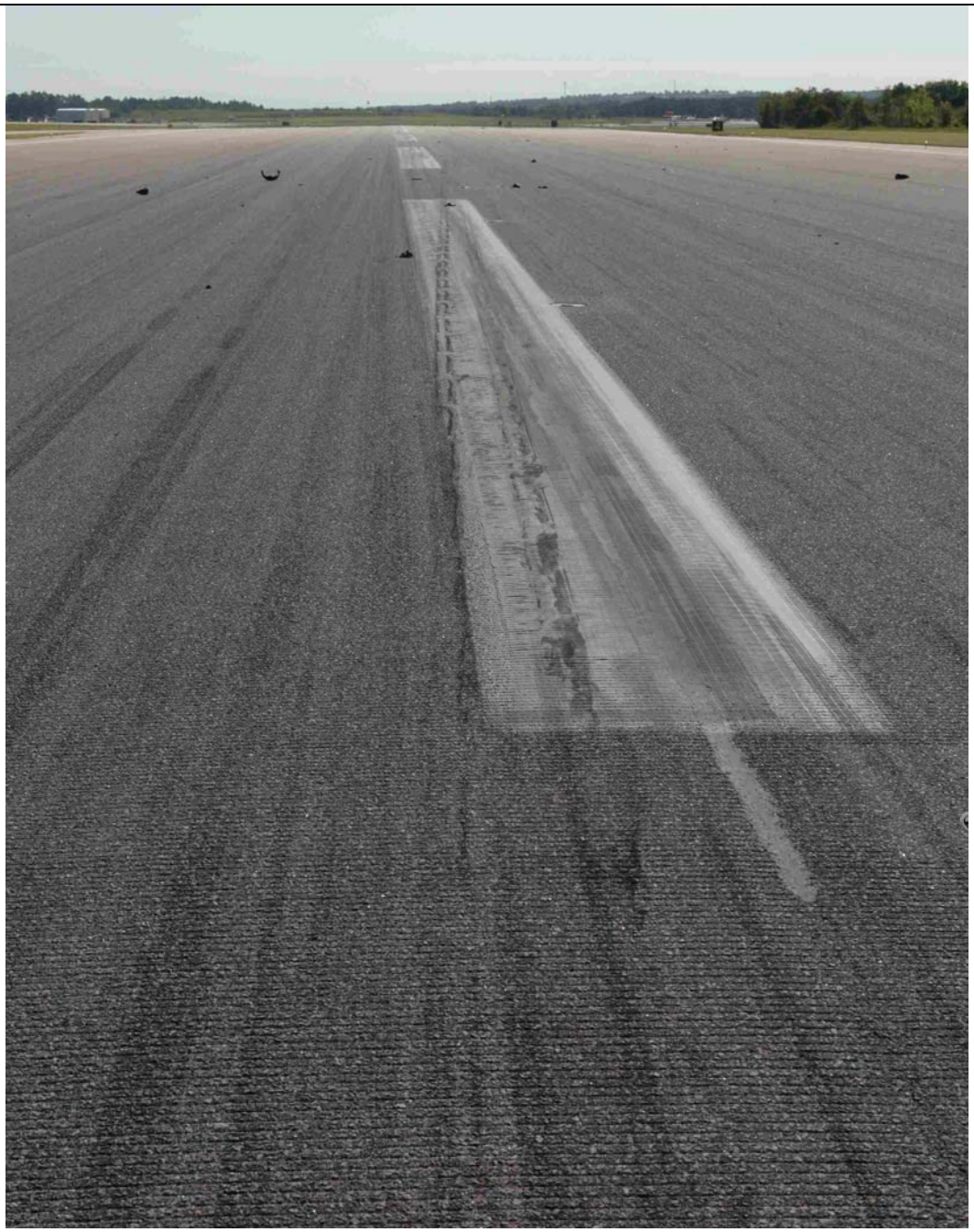


Figure 5. Facing east, the direction that the airplane traveled, this photo shows the initial tire marks crossing the runway centerline. Tire debris is visible.

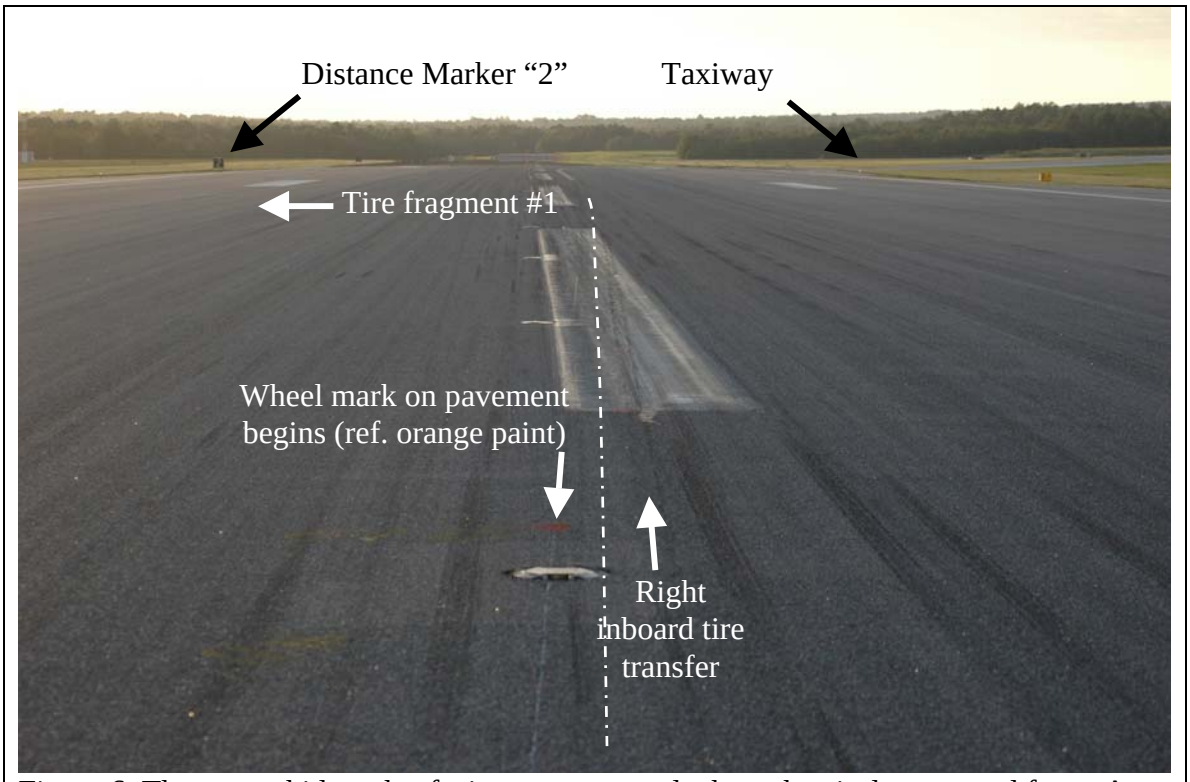


Figure 6. The same skid marks, facing west, toward where the airplane started from. A white aluminum wheel-mark is visible on the pavement and none of the debris from the left set of tires was found this close to the beginning of the runway. Reference points have been added for clarity. The dashed line is drawn between the right inboard and outboard tire marks and shows the angle at which the marks cross the centerline. Note

The tire/wheel marks and debris path led past the runway and through four rows of gravel at the bases of the runway end lighting and instrument landing system components. A trail of displaced dirt and gravel at about the width of the fuselage ran from near the first bed of gravel to the end of the flat runway safety area area. (Ref. Figure 7)

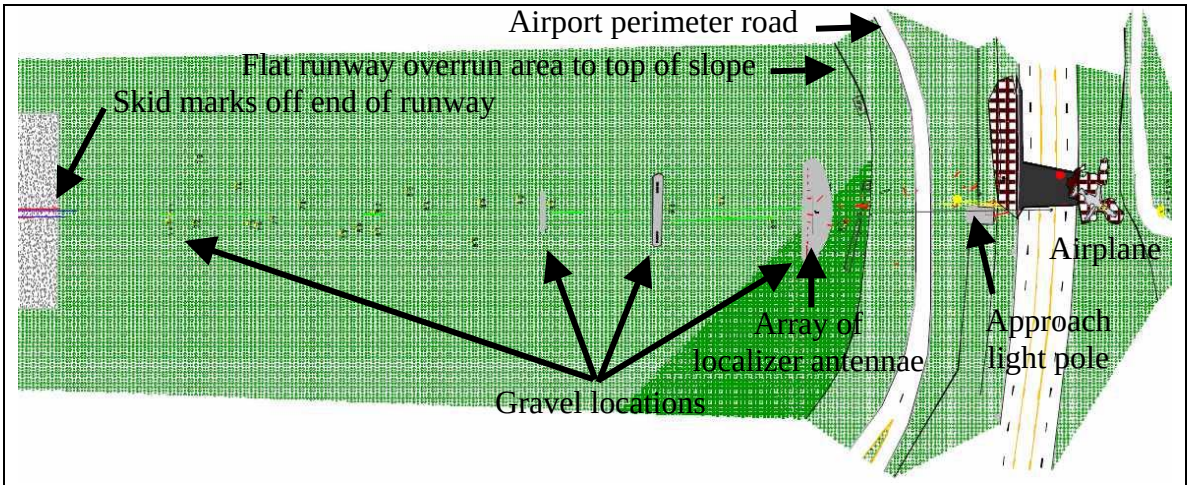


Figure 7. Illustrated locations of debris in the runway safety area and across the roadway.

In rough order along the debris trail that existed beyond the end of the runway were the following major identifiable components from the airplane, with numerous small pieces also in the area:

The right main landing gear upper strut and trunnion (p/n 6041000V3-002, s/n 016) was found with the retraction cylinder attached in the grass slightly before the first gravel area and to the left of the airplane path. At about the same distance from the runway, to the left of the path of travel, was the outboard right main landing gear door.

At the first gravel area was where the left main landing gear piston and the left wheel set with the brake assemblies were found, to the right of path. Slightly past this gravel and to the left of the path was the left main landing gear outboard door.

The right main landing gear lower piston and the right wheel set with the brake assemblies were past the first gravel area and along the same line to the right of path.

Slightly before the second area of gravel, the left main landing gear upper strut and trunnion (p/n 604V1000V3-001, s/n 016) were found with the retraction cylinder. This assembly was found slightly to the left of the airplane path.

The damage and debris trail went through the localizer array of antenna near the center, with three remaining antenna to the right of path (north) and 5 antenna to the left (south). Past the fourth area of gravel and at the top of the descent to the airport perimeter road was the right wing flap. (Ref. Figures 8 and 9)

Figure 8. Airplane wreckage as viewed from mid-way down the slope, between the runway safety area and the approach light pole. The base of the broken light pole is at the lower right arrow. The arrow at the lower left points to the base of the broken concrete roadway right-of-way (R/W) marker and where the top was found (See also Figure 18). The fuel-burned area begins at the post.

Figure 9. Airplane wreckage on hill, viewed back to the runway and crossing South Carolina Highway 302.

Past the flat portion of the airport overrun was a steep slope downward to a perimeter road that was located within the airport perimeter fence. A short section of flat grass-covered ground existed past the perimeter road and an approach light pole had been located on this flat ground. The airport fence separated the light pole from a five-lane roadway, and on the opposite (east) side of the roadway was an upward slope to about the elevation of the airport.

Immediately outside of the airport fence was a square concrete post marked “R/W” to denote highway right of way. A second similarly marked concrete post was on the east side of the road and both had been struck by the airplane. The markers were not on airport property according to both airport personnel and maps. Each concrete post was six inches square, with the complete post standing 14 inches tall. The post closest to the runway had been fractured seven inches above the ground, exposing rebar reinforcement inside and the top portion was found inboard of the right engine thrust reverser. The eastern marker post was found protruding from beneath the left engine. (See Figure 10)

Figure 10. Concrete post found beneath left engine. The post was six inches square and was internally reinforced with steel rebar.

Also in the grass past (east of) the perimeter road and leading to the left of the landing light pole were two thin cuts through the grass. The distance between the cuts was the width of the delta fins that had been mounted under the rear of the airplane fuselage. A wide and flattened displacement of the grass was found between the cuts, corresponding to the bottom fuselage surface.

The generally north-south line of the perimeter fence had a bend that turned the fence east toward the highway, the distance of three fence-posts that were mounted in concrete. The fence then turned north and again west to enclose the approach light pole. The right delta fin from the airplane and a portion of the nose landing gear (the piston and yoke) were on the ground to the left of approach light in this boxed area of fencing. The chain

link fence material was missing from this location and found beneath the right wing of the airplane on the east side of the road, along with one of the fence posts.

A flow of fuel stained asphalt and heat damage to the asphalt extended in a band across Highway 302, flowing to the airport (west) side of the road and away from the airplane.

D.2 AIRPLANE

D.2.1 DATA:

The airplane was being operated by Global Exec Aviation of Long Beach, California.

The FAA Registry provided the following details:

Registration Marking:	N999LJ
Manufacturing Year:	2006
Type Registration:	Corporation
Certificate Issue Date:	11/16/2007
Airworthiness Date:	12/14/2006
Registered Owner:	Inter Travel And Services, Inc.
	1 Park Plz Ste 550
	Irvine, Cal 92614-2594
Temporary Certificate:	T085938
Issue Date:	8/11/2008
Expiration Date:	9/10/2008

D.2.2 AIRPLANE ON-SCENE:

The airplane was generally on a magnetic heading of 134 degrees and resting nose-up on the side of a hill of approximately 25-30 degree slope.[4] With the exception of all three landing gear, the right delta fin, and the right wing flap, all major airplane assemblies were found in the appropriate orientations or beneath where they would have been prior to the fire. The thrust reversers were found in the closed positions. (See Figure 11)

[4] Any discrepancies in measurements will defer to TotalStation™ data.

Figure 11. Aerial view of the airplane.

The radome cover was found in front of the left wing root and the radar antenna was not crushed aft, as from striking an object in front of the airplane. The bottom portion of the forward pressure bulkhead was crushed upward without aft displacement. (See Figure 12)

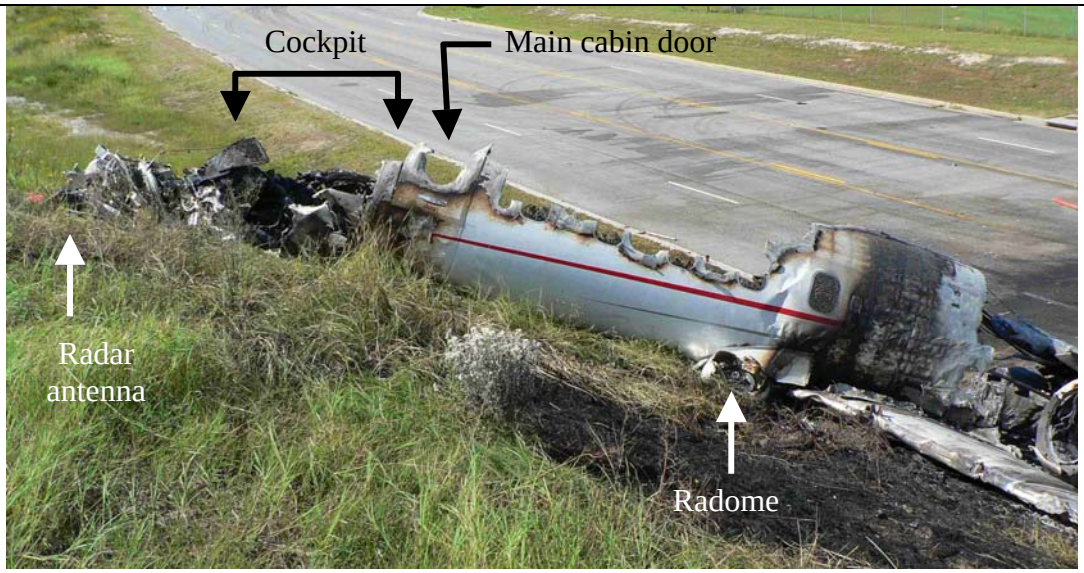


Figure 12. The forward portion of the airplane conformed to the hill. The nose is not crushed aft and the radome cover is resting ahead of the wing root.

The general structure of the lower airplane conformed to the soil beneath the airplane and the nose had up-aft displacement that bent at about the station of the cabin door. The forward portion of the fuselage then bent downward at the rear frame of the main cabin door. The lower surface of the fuselage had more extensive fore-aft scratches from the leading edge of the wing aft than it did forward of the wing.

The remaining bottom surface of the tail was flattened and scratched in a fore-aft orientation that contrasted the appearance of the lower surfaces toward the nose.

The aircraft had a standard fuselage fuel cell that contained 748 gallons of fuel, located aft of the rear cabin and baggage compartment wall (aft pressure bulkhead), and generally between the engines. The top and right side of the fuselage had burned away to about the level of the cabin floor. The aft fuselage was mostly consumed by fire as far aft as the localizer antenna on the vertical stabilizer and the rear of the tail-cone had separated so that the vertical T-tail was resting on the tip of the right elevator.

From the nose to the tail were the following features:

D.2.2.1 FORWARD FUSELAGE:

The radome remnants, radar antenna, and forward-most fuselage frame had separated from the airframe, exposing the relatively intact nose-mounted avionic boxes. The pitot probe from the Captain's side of the airplane had bent outward and had orange paint matching the airport instrument landing system, but the probe had remained with the airplane to the hillside. The upper nose landing gear strut was folded aft and pressed up into the contour of the lower fuselage surface. Skin immediately aft of the nose landing gear had fore-aft compression damage. The windshield frame had collapsed down into the cockpit area. The open space beneath the cockpit floor had been exposed and the Captain's side left brake valve was intact, with an unbent shaft.

The cockpit had been burned to about the level of the seat pans, although components from above that level were found on top of the debris pile. The two fire handles were found in the stowed positions. The instrument panels had been displaced relatively forward from the pilot seats, consistent with a downward impact. The instrument panels had extensive fire damage that obliterated most of the surface features. The Captain's control column had impacted the area of switches that had been in front of it, flattening their features. The left and right starter/generator switches were found bent past the GEN positions. The 2-position lift-latch toggles from above the left generator switch were found in the up positions. (See Figure 13)

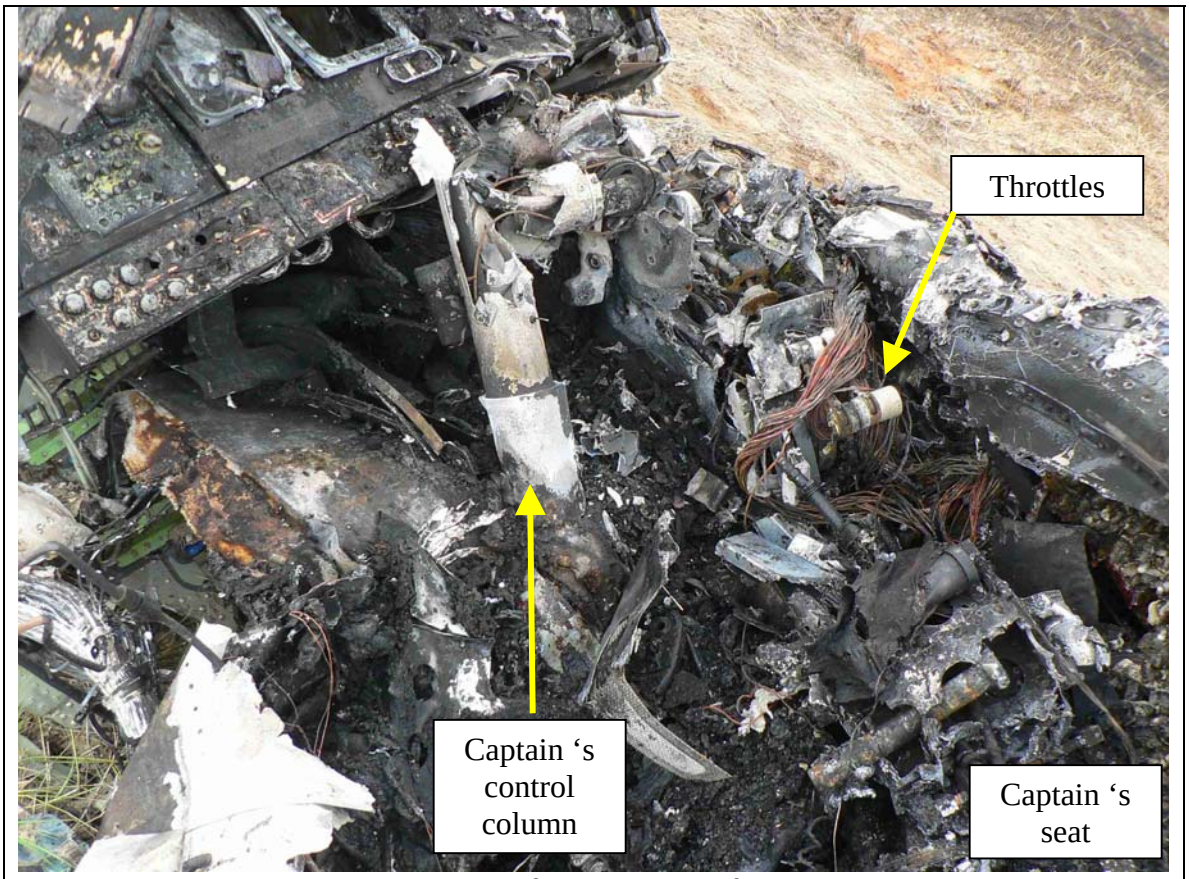


Figure 13. Cockpit remnants as viewed from exterior left.

The cockpit center pedestal had broken aft of the throttles and had been displaced to the right. (See Figures 13 and 14) The pedestal exhibited extensive impact and fire damage. The two throttle levers were found at the forward end of the travel limits and the sheetmetal from forward of each was cut forward. The reverser levers were in the stowed positions and the spring-loaded cut-off toggles were in the stowed positions. The cut-off switch track was examined and nothing was found to indicate whether or not the toggles had been pulled up at any time. The center of the flap handle was found at 2.25 inches from the bottom of the 3.25 inch slot. The spoiler handle was found in a mid-position in the slot but was loose and free to move. The landing gear freefall and blow-down controls were found in their normal positions. The automatic power reserve (APR) switch was found in the armed position. (See Figure 14)

Figure 14. Pedestal assembly, after extrication from covering debris.

The main cabin door was found shut and the handle was in the latched position. The lower half-door had been forced over the fuselage skins, both fore and aft, and the lower door's hinge was bent. The upper door latches were in the locked positions, but the upper door frame was almost entirely missing from an area that had been consumed by fire. The handle could be unlatched and rotated. The left cabin wall remained beneath the lower window edges then the edge of the missing structure turned upward so that the left rear-most cabin window remained. A short section of left fuselage remained standing above the root of the left wing, then the sidewall was consumed to the inlet of the engine.

There was no right cabin wall or roof from the forward pressure bulkhead to the right engine inlet. The structure from around the emergency exit had been consumed by fire. (See Figure 15)

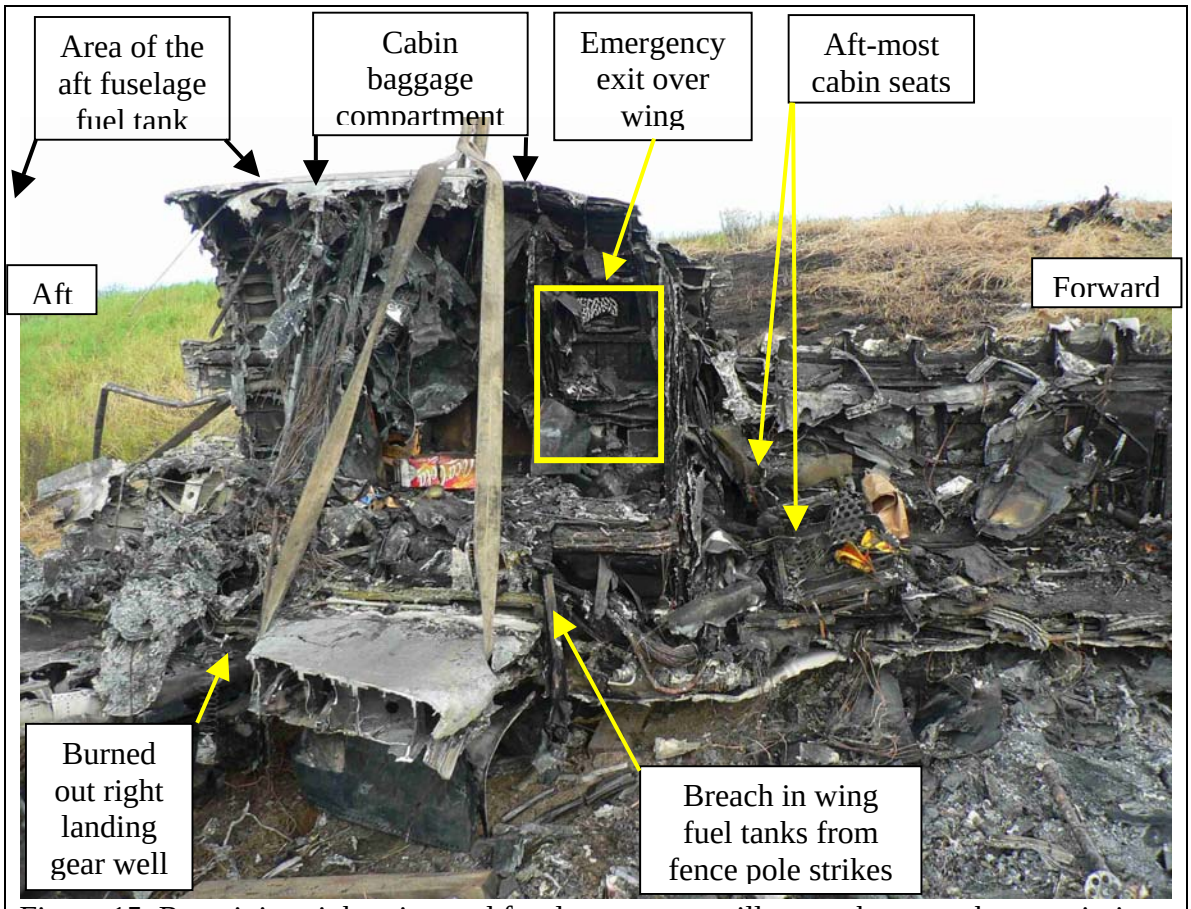


Figure 15. Remaining right wing and fuselage structure illustrate how much was missing. The outboard wing had been cut for recovery and the cabin partially excavated when this photo was made.

D.2.2.2 WINGS:

The left wing had a rip in line with the concrete highway right of way marker and the distance between the leading edge of the puncture and the rear was 64 inches. (See Figure 16) On the east side of Highway 302, a belly-mounted antenna left a line in the dirt of about the same length, where the airplane struck the ground and came to a stop.

Figure 16. Bottom of the left wing, shown during recovery, exposing the leading edge opening into the fuel tank that aligned with the path past the concrete post on the west side of the roadway.

Three of the four wing/fuselage attach fittings were found broken or sheared. The left-aft fitting had been in an area that had been consumed by fire. The forward wing/fuselage breast-plate had been deformed by impact forces, but remained connected.

The left wing had an assortment of dents and crushed locations to the outboard aerodynamic fence. The bottom surface of the wing and integral fuel tank had been completely opened and crushed aft. The location of this matched the distance from the fuselage imprint in the ground to the fragment of concrete right of way marker that had been near the frangible light assembly on the west side of the roadway. Other wing leading edge damage was matched to the airport perimeter fence posts and none of the fence post strikes had the depth or damage that was found where the concrete post had been struck.

The left wing spoiler was found in the retracted position, the flap was found retracted (up) and partially consumed by fire. The left aileron balance tab was present with the control rods. The bottom of the flap had scratches and fore-aft strike marks. The trim tab was almost completely melted.

The right wing was downhill from the breached fuselage fuel tank. The right wing had more extensive fire damage than the left wing and bent downward at the outer edge of the landing gear well, which was in line with the deepest area of leading edge damage. The right main landing gear well had been under the fuel tank and was extensively fire damaged, so that the rear and the wing structure from over the well no longer existed. Components within the well had burned, melted, or been encased in aluminum slag that pooled from other melted parts of the airplane. (See Figures 17 and 18)

Figure 17. The right main landing gear well from above right, as exposed by the post-crash fire.

Figure 18. The right main landing gear well from below. The indented leading edge along the right edge of the photo better shows where the succession of three airport perimeter fence posts struck.

The right wing leading edge damage that opened into the right wing fuel tank was within two feet of the fuselage. This opening in the right wing fuel tank was also immediately outside of the emergency exit that had been located at the aft of the passenger cabin, above the toilet. The spacing between the leading edge impacts was compared with the airport features and the chain link fence that the airplane dragged to the resting place. The opening in the leading edge aligned where the three fence posts had been in line with the path of airplane travel, between the south side of the frangible light support and the concrete highway marker that had opened the left wing.

The right flap had been found complete in the runway overrun area, prior to any burned areas. The right wing aileron had remained with the wing and been consumed by fire, with only small fragments remaining. The balance tab hinge area remained. The right spoiler was missing from an area consumed by fire. The right spoiler actuator measured 8.43 inches between the centers of the attachment bolts (specification is 8.25 +/- 0.19 inches).

The right flap inner and outer tracks were found with subtle “witness” marks. The outboard track had marks and a burr on the corner of the track at about 1.0, 1.50, and 1.87 inches from the leading edge of the 6-inch slot. A heavier mark on the corner of the outboard slot was found 3.25 inches from the forward end. The inner track had a 10.87-inch slot and a burr at about 1.75 inches from the forward end. A heavier mark on the

corner of the inboard slot was found 5.38 inches from the forward end, which was between the two setting detents.[5]

The right winglet had extensive fire damage and had fallen from the normal position at the wing tip.

Soft-body impacts were found on the leading edge of the right wing, outboard of the right wing outboard aerodynamic fence. Inboard of the fence the leading edge of the wing had been consumed by fire.

D.2.2.3 AFT FUSELAGE AND TAIL:

The aft fuselage had been consumed by fire between the engines and the aft cabin baggage compartment, with the right engine suffering more fire damage than the left engine. (See Figures 19 and 20)

Figure 19. Left aft fuselage, engine, and tail assembly.

Figure 20. Right aft fuselage and engine. Note: The arrow points to the top of the concrete marker post from the west side of the road.

The only remnants of the fuselage fuel tank from behind the aft pressure bulkhead of the cabin were the bulkhead framework, a portion of the left fuselage wall, and an area that had the transfer pumps. The pumps could be partially seen in the aluminum that had melted and resolidified to partially fill the area.

Beneath where the fuselage tank had existed, the wing “zero rib” was visible and the right wheel well was missing the top and aft portions. Visible in the hole were the aileron sector and autopilot servo unit.

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[5] The flap handle in an exemplar model 60 aircraft at Learjet was set to the 8 degree and 20 degree takeoff flap positions. A measurement of the flap track roller channel was taken for comparison with the “witness” marks on the accident airplane debris. The flaps set at the 8 degree position measures approximately 4 inches. The flaps set to the 20 degrees position measures approximately 6 inches.

The aft fuselage maintenance access door was found skewed but in the closed position.

Two airplane batteries were visible with parts of the top covers melted away. The plastic within the cases had melted to drips near where the case had been melted away and the evidence of heat within the battery cases was less than the external heat damage.

The remaining hydraulic shutoff valve (original position unknown) was found open. The aluminum fuel tubes in the aft fuselage were too extensively consumed by fire to determine whether the tubes had fractured on impact.

The forward engine mount for the left engine had broken within the pylon and the mount for the right engine had been partially consumed by fire. The beam within the fuselage was also partially consumed. The aft engine beam had broken and melted into left and right portions within the aft fuselage. The right inboard thrust reverser actuator length was 23.5 inches and the bent outboard actuator was 23.37 inches.[6]

Both pylons had the upper skins and the top skin of the fuselage covered the area that had been between the engines. The outboard edge of each engine had been displaced downward, as if folded down from the pylons.

The left delta fin was attached to the fuselage. The lower tip had sharply bent and the bent portion flattened parallel to the ground.

The right surfaces of the vertical stabilizer were almost completely consumed by the post-crash fire. The elevator control aluminum control rod was partially consumed. The steel control rods and balance spring existed, with the associated plastic material having melted out in drips.

The left horizontal stabilizer leading edge had a rounded dent and a downward puncture was found on the top of the elevator behind this location. The horizontal tail was resting on the tip of the right elevator making the overall elevator position slightly airplane nose-up. The leading edge of the right horizontal stabilizer was free of leading edge impacts and the inboard two feet had been consumed by fire. The tip of the right elevator had been bent where it contacted the pavement and was burned.

The stabilizer actuator was intact and measured 16.38 inches between the centers of the end bolts. (p/n 6600156-033, s/n B0125, MPC, Skokie, Illinois) The leading edge of the horizontal stabilizer was oriented toward a line of screws, such that about 4.7 screws[7] were between the leading edge of the stabilizer and the bottom edge of the vertical

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[6] The engines and thrust reversers are described in detail in the Powerplants Group Chairman's Factual Report and in the Airworthiness Group Chairman's Factual Addendum Engines And Thrust Reversers.

[7] Learjet referred the measurement to an exemplar airplane to determine that the stabilizer position was about 5.8 degrees, which was within the uppermost portion of the white "Take Off Trim" marking at the cockpit pedestal.

stabilizer cap beneath it. The identification data for the Hamilton Sundstrand (San Diego) electronic stabilizer unit (ESU) were p/n 160935-203B and serial number 0259.

The pitch servo was exposed and the cables were wrapped to about the center of the capstan. The rudder servo was not visible.

The rudder trim unit was cut out of the structure and a scribe mark on the splined shaft was near center, with about a half-spline to the right of a scribe line on the body of the unit.

A Global Exec Aviation Operations Specification book was recovered from the rear cabin baggage compartment and contained a print date of August 20, 2008.

D.2.2.4 FLIGHT CONTROLS, GENERAL

With respect to directional control and following the initial tire fragment, the tire/wheel marks along the runway showed a swerve to the right. The direction of the tire and wheel marks returned to near the runway centerline and continued straight through the ILS localizer antenna array.

The airplane never left the ground to require roll control. The control path could be followed in part, but portions of the airplane from the center section to the ailerons were consumed by fire and other portions were crushed.

With respect to pitch control, again, the control path could be followed in part, but portions of the airplane from the center section to the tail were consumed by fire and other portions were crushed. While the aborted takeoff never left the runway, witnesses reported seeing the nose of the airplane pitch up on at least one occasion.

D.2.2.5 LANDING GEAR, GENERAL

The upper portion of the nose landing gear was found forced back and up into the fuselage. The lower yoke and wheel assembly was found on grass at the east side of Highway 302, with the nose tire inflated. (See Figure 21)

Figure 21. Nose landing gear tire and yoke assembly, resting on the east side of Highway 302. The pole is a fence post from the west side of the highway.

The main landing gear pieces were collected for a partial reconstruction. The aft fuselage imprint on the ground was close to the center of through the runway safety area and the main gear parts were found to the left and right of that path. (See Figure 22)

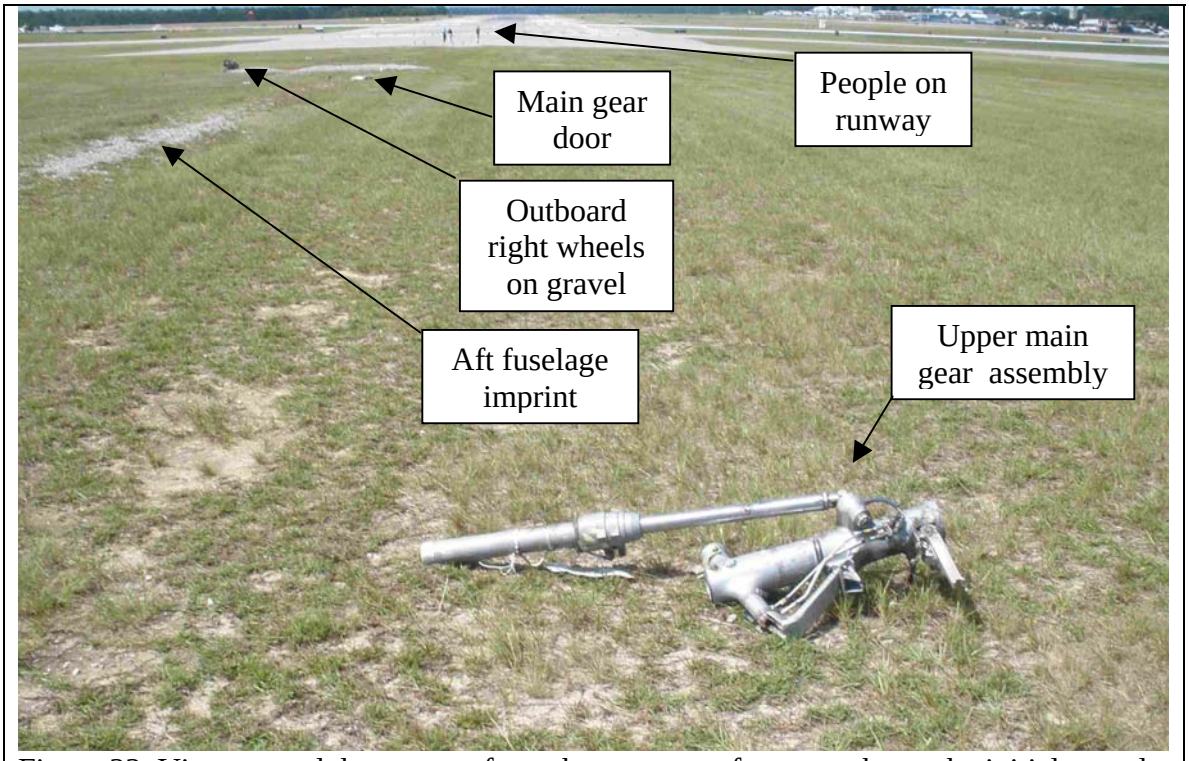


Figure 22. View toward the runway from the runway safety area shows the initial gravel, where the main landing gear was found.

The squat switch mounting points had broken in each. The bottom of the right landing light housing that had been closest to the tires had been crushed upward from the right.

The right wheel on each landing gear strut was conspicuously more worn than the left was. (See Figure 23)

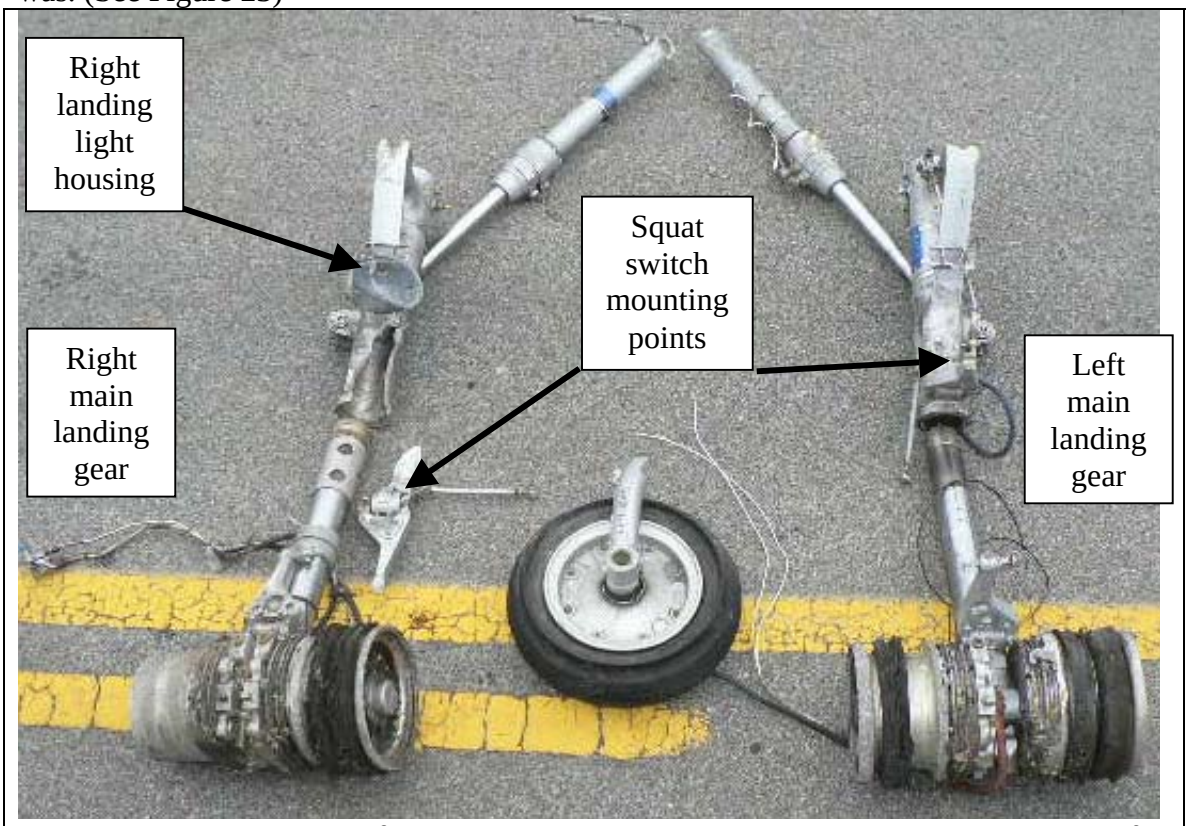


Figure 23. Reconstruction of the landing gear assemblies. The reconstruction is set as if facing the landing gear from in front of the airplane, looking aft.

The left and right squat switches were each found separate from the main landing gear struts. (See Figure 24 and 25)

Figure 24. Left squat switch.

Figure 25. Right squat switch.

The outboard main landing gear doors from each wing were found in the grassy area near the gravel at the runway safety area. Each door had numerous specks of rubber adhered. The right door had black tire marks and indentations along the aft edge, but substantially less than the impact damage that edge of the left door exhibited. (See Figures 26 and 27)

Figure 26. Left main landing gear door with impacts along the trailing edge (arrow) and black rubber transfers near the hinge.

Figure 27. Right main landing gear door with impacts along the trailing edge (arrow) and black rubber transfers near the hinge.

D.3 MAINTENANCE RECORDS:

Note: Tire-related maintenance records are in the Landing Gear and Tire addendum.

The registration certificate showed the date of issue to be November 16, 2007.

The logbooks showed the following:

Manufacture date	:	January 30, 2007 When new, the airworthiness directives were current through issuance of AD 2006-25.
Serial No.	:	60-314
Airworthiness Date	:	12/14/2006
First flight	:	December 4, 2006
Certificate of Airworthiness:		December 14, 2006
Inspected to	:	FAR 2.183 (2)
Weight & Balance	:	September 2, 2008.
Max Ramp Weight	:	23,750 lbs.
Seating Capacity	:	10 (includes crew)
Empty weight	:	14755.93 pounds
Arm	:	378.27
Moment	:	5581794

Aircraft interior floorplan 60-2, installed per Learjet Engineering Drawing M6003000-314. Interior materials meet the requirements of FAR 25.853, ref. FAA approved Learjet Flammability Report No. FR60-314ICT Rev A, dated January 16, 2007.

January 21, 2007, weight and balance accomplished.

January 30, 2007, FAA Form 337 for Major Repair/Alteration completed by Learjet for the installation of an Airshow 400 Cabin Video System.

January 30, 2007, the airplane was purchased new by PCF Management LLC, of San Juan Capistrano, California, and the airworthiness directives were complete through Bi-Weekly list 2007-02, as published January 22, 2007.

October 25, 2007, the airplane was bought by Inter Travel and Services. The seller was PCF Management LLC.

December 22, 2007, 72.2 hours ACTT (aircraft total time: Completed maintenance tasks, including brake inspections per AD 1998-16-18-1 through –4. Replaced all tires, complying with Aero Wheel and Brake Service Corporation CRS #U8SR971J.

April 17, 2008, 81.4 ACTT. First log entry by Global Exec Aviation for oil level check and review for Service Bulletins and Airworthiness Directives (none found outstanding). Signature by the Global Exec Director of Maintenance.

May 16, 2008, 81.4 hours ACTT. Avionics entry.

June 17, 2008, 83.1 hours ACTT. Periodic inspections performed for batteries and fire bottles.

July 11, 2008, 83.1 ACTT (reference for airplane usage.)

August 8, 2008, 83.1 hours ACTT. Annual avionics inspection.

August 11, 2008, a replacement temporary Certificate of Registration was placed in the airplane to replace one that was misplaced. A permanent replacement was mailed and installed prior to September 10, when the temporary expired.

August 16, 2008, 84.1 hours, 109 cycles, at Bombardier Learjet Service Center, Tucson: Complied with the following Service Bulletin items:

SB 60-23-7R1 Iridium phone system
SB 60-29-11 Replacement of a return hydraulic filter indicator
SB 60-32-24 Sealing of the anti-skid solenoid valves
SB 60-32-26 Re-installation of the 3-rotor brakes.
SB 60-34-14 Gasper duct

Installed main landing gear brake assemblies (p/n 6600518-003) with the following serial numbers: #1 JUL08-0951 , #2 JUL08-0975, #3 JUL08-0967, #4 MAR06-0726.

Sept. 2, 2008, 98.1 hours, 116 cycles, at Standard Aero, Station AN3R377L:
Adjusted #2 thrust reverser upper secondary lock micro-switch.
Serviced thrust reverser hydraulic accumulator pre-charge, per L60MM chap 12-10-01.

Sept. 8, 2008, 103.3 hours, 120 cycles. Log entry stating: "FWD DOOR SEAL LEAKING. LOUD WHISTLE IN CABIN."

Sept. 10, 2008, 98.3 hours [Note: log entry with less hours than on previous flight.], 117 landings, at Meridian Jet Center, Teterboro, Station IMJR053F:
Log entry: "Found door seal loose and re-secured."

Sept. 12, 2008, 105.0 hours, 121 cycles. Log entry stating: "@ 7000 TO 8000 FT WITH WING HT SW ON LEFT THEN RT BLEED AIR LTS ILLUMINATED. EXT W/SW OFF AFTER 5-7 MINS."

Sept. 16, 2008, the Meridian Jet Center maintenance entry stated "Replaced Wiggins fittings seals in L/H & R/H pylon. R/R L/H mixing valve p/n on H106-9, s/n 12AN59 (partially illegible) Performed func test, ckd satis, Ran eng @ high power with bleeds on, wing/stab heat on. No faults noted. I/A/W LR6036-10-02"

The airplane took on 835 gallons at 11:45 pm on the night of September 19, 2008, in Columbia, SC.

The last known total time and cycles for the airplane had been September 16, 2008, when the airplane had 106 hours since new and 121 takeoff and landing cycles. Estimating for the test flight and flight to Columbia, the total time on the airplane at the time of the accident was estimated to be 108.5 hours and 123 cycles.

D.3.1 FAA SPAS DATABASE ITEMS:

In an entry for June 23 and 24, 2008, "There seems to be lapses in completion of paperwork by Aerospace International." This entry specifically cited work performed on Gulfstream G4XA and resulted in a letter of correction. The SPAS records contained additional similar entries.

[According to Tom Walters, Aerospace International is based in the same hangar as Global Exec and does most of the maintenance for Global Exec.]

Global Exec Aviation Operations Specifications were changed August 15, 2007 to reflect the addition of an available Minimum Equipment List (MEL) for the Learjet Model 60.

D.3.2 SERVICE BULLETINS DISCUSSED INCLUDED:

SB 60-78-7	Thrust reverser interface box which had been incorporated in production.
SB 60-32-24	Anti-skid valve sealant

APPENDIX A, SELECTED MAINTENANCE RECORDS

A/C Type & N-Number	A/C Serial No.	Date:	A/C Time:	Landings:
LR-60 N999LJ	314	9/8/08	103.3	120

DISCREPANCY

Entered By: C. Perrigoue

FWD DOOR SEAL LEAKING. LOUD WHISTLE IN CABIN.

DISPATCH STATUS

☐ GROUNDED – DO NOT FLY

DISPATCH LIMITATIONS
☐ VFR ☐ Day ☐ FAR 91 ☐ No Ice
☐ Other
Caution: Dispatch status may vary with a combination of faults.

☐ Dispatch Per The MEL
MARK THE MEL TIME A-B-C-D
MEL ATA No.

MAINTENANCE CLEARING ACTION

Corrective Action: FOUND DOOR SEAL LOOSE AT FWD SECTION OF DOOR, RESECURED SEAL AS REQUIRED. NO OTHER DEFECTS NOTED, WORK PERFORMED I.AW. LR60 MM CHAP. 52-10-13

☒ CLOSED | Date: 9-10-08 | Base: KTEB | A/C Time: 98.3

Signature & Certificate No.: [redacted] 53F

A/C Type & N-Number	A/C Serial No.	Date:	A/C Time:	Landings:
LR-60 N999LJ	314	9/12/08	105.0	121

DISCREPANCY

Entered By: C. PERRIGOUE

C TODD T STOD PT WITH WING HT SW ON LEFT THEN RT BLEED AIR LTS ILLUMINATED. EXT W/ SW OFF AFTER 5-7 MINS.

DISPATCH STATUS

☐ GROUNDED – DO NOT FLY

DISPATCH LIMITATIONS
☐ VFR ☐ Day ☐ FAR 91 ☐ No Ice
☐ Other
Caution: Dispatch status may vary with a combination of faults.

☐ Dispatch Per The MEL
MARK THE MEL TIME A-B-C-D
MEL ATA No.

MAINTENANCE CLEARING ACTION

Corrective Action: Replaced wiggins fittings seals in L/H & R/H PYLON. R/R L/H MIXING VALVE P/N 0N1H106-3 S/N 12AN59 PERFORMED FUNC TEST. CKD SYSTS. RAN ENG @ HIGH PWR WITH BLEEDS ON, WING/STAB HT ON. NO FAULTS NOTED I/A/W LR60 32-10-12

☐ CLOSED | Date: 9/16/08 | Base: TEB | A/C Time: 105

Signature & Certificate No.: [redacted] 53F

A/C Type & N-Number	A/C Serial No.	Date:	A/C Time:	Landings:

DISCREPANCY

Entered By:

MAINTENANCE CLEARING ACTION

CAMP & BRD

Global Exec Aviation

Aircraft Flight Log

C. PERRIGOUE	S. LEMMON	——	LR60	N999LJ	LJ 090808LJ	LJ090808LJ

Leg	Date Zulu	Flight Rules	No. Pax	From/To LGB	Out	Off	On	In	Flight Time (10ths)	Block Time (10ths)	Fuel Burn	Inst Time	Night Time	Landing D	Landing N	PF/PNF/ACM	#
1	09/07	91 / 135 (91 circled)	Ø	CRQ	2215	2218	2237	2243	.3	.5	400	Ø	Ø	1		FS CP	Ø
2	09/08	91 / 135 (135 circled)	1	GCK	1434	1440	1639	1645	2.0	2.2	3000	.6	—	1		SL CP	1LS
3	09/08	91 / 135 (135 circled)	1	TEB	1707	1713	1955	2001	2.7	2.9	4170	.5		1		SL CP	1LS
4	09/12	91 / 135 (135 circled)	4	TEB	1830	1836	2013	2019	1.6	1.8	3000	1.6	Ø	1		CP JB	1LS
5		91 / 135														/ /	
6		91 / 135														/ /	
7		91 / 135														/ /	
8		91 / 135														/ /	
9		91 / 135														/ /	
10		91 / 135														/ /	

PIC Signature: [signature] Date: 8/7

	Aircraft Hours	Aircraft Landings	Engine 1 Time	Engine 1 Cycles	Engine 2 Time	Engine 2 Cycles	Engine 3 Time	Engine 3 Cycles	APU Time/Hobbs	APU Cycles
Forward	98 3	117	98 3	102	98 3	102				
Page Total	104. 9	121	104. 9	106	104. 9	106				
Total										

Squawks:
F. SILVESTRI SIC LEG 1
LEG 4 DIVERTED DUE MX

VOR/VOT Check: Date 8/7 STA OCN VOR + / - ±0°
Signature:
Oil in Pints: Eng 1 ½ Eng 2 ½ APU

Duty Day	135 / 91 (91 circled)	135 / 91 (135 circled)	135 / 91 (135 circled)	135 / 91	135 / 91	135 / 91	135 / 91	135 / 91
Crew	CP/FS	CP/FS/SL	CP/JB					
On	2115	1230	1700					
Off	2315	2130	2130					
Total	2:00	8	4.5					
Date	9/7	9/8	9/12					

Airworthiness Release Signature: | Print Name: | Date: | Certificate and Type: | [ ] RVSM Not Authorized
Preflight Signature: | Print Name: C PERRIGOUE | Date: 8/7 | Certificate and Type: 3[illegible] ATP

Date: 03/01/07 White Copy: Operations | Form: 102 Yellow Copy: Accounting | FAX to 562-424-1144 | Revision: 0 Pink Copy: Maintenance

APU = 76

IFR AVIONICS

MAINTENANCE RECORD

MAKE: Learjet
MODEL: 60
S/N: 314
REG. NO: N999LJ
WORK ORDER: 080913

Meridian

Meridian Jet Center
Repair Station No. IMJR053F, EASA.145.5505
485 Industrial Ave
Teterboro, NJ 07608
Phone: 201-288-3880

DATE: 9/10/2008
A/C TSN: 98.3
Landings: 117

Airframe Entries

FOUND DOOR SEAL LOOSE AT FWD SECTION OF DOOR. RESECURED SEAL AS REQUIRED, NO OTHER DEFECTS NOTED. WORK PERFORMED I/A/W LEAR 60 MM CHAP 52-10-13.

I Certify that the above stated maintenance and/or inspection was performed in accordance with the current regulations of the Federal Aviation Administration and the aircraft/engine identified above is presently airworthy and is approved for return to service in regard to the work listed.

DATE: 9/10/2008 SIGNED: [redacted]

Don Paynton
Certified Repair Station No. IMJR053F, EASA.145.5505

Work Order: 080913

Printed by EBis 3 (datcomedia.com)

MAINTENANCE RECORD

DATE	INSPECTION — MAINTENANCE — REPAIRS — ALTERATIONS	MECHANIC'S SIGNATURE	LICENSE NUMBER

StandardAero 6201 West Imperial Hwy, Los Angeles, CA. 90045
FAA Approved Repair Station AN3R377L

AIRFRAME LOGBOOK ENTRY

Aircraft: Lear 60, s/n 60314, N999LJ
Hours: 98.1
Landings: 116

September 2, 2008

1. Accomplished Learjet 60 optional service bulletin 60-25-14, issue date Mar 3/2008. Title: Equipment and Furnishings-Replacement of the cabin inverter. Removed cabin inverter p/n 2D1200-1A-1011, s/n GB001296 and installed a new unit p/n SS120(C), s/n 176. Accomplished a satisfactory functional check. Weight and Balance/Equipment list were updated.
2. Adjusted #2 thrust reverser upper secondary lock micro-switch in accordance with L60 MM chap 78-31-15.
3. Serviced thrust reverser hydraulic accumulator pre-charge in accordance with L60 MM chap 12-10-01.

This aircraft was inspected in accordance with current Federal Aviation Regulations and is approved for return to service with respect to work performed on Work Order # 248363.

Signed _____ for StandardAero-LAX-CRS # AN3R377L

IFR AVIONICS

MAINTENANCE RECORD

DATE	INSPECTION, MAINTENANCE, REPAIRS, ALTERATIONS	MECHANIC'S	LICENSE NUMBER

BOMBARDIER

N999LJ TOTAL TIME 34.1 | SN: 60-314 LANDINGS: 109 | Page 2 of 2 DATE: 08/16/08

INSTALLED NEW IRIDIUM BASE UNIT PN 463092-230 SN OFF 2606015 SN ON 3001926
INSTALLED NEW IRIDIUM CRADLE PN 463092-120 SN OFF 2605041 SN ON 3001920
INSTALLED NEW IRIDIUM CRADLE PN 463092-120 SN OFF 2606015 SN ON 3001925
INSTALLED NEW IRIDIUM HANDSET PN 463092-110 SN OFF 2606015 SN ON 2701008
INSTALLED SERVICEABLE # 4 MLG BRAKE ASSY PN OFF: 5003096-7, SN OFF: JUL85-410, PN ON: 6600518-003, SN ON: MAR06-0726
INSTALLED NEW RETURN HYDRAULIC FILTER DIFFERENTIAL PARESSURE INDICATOR PN: RC914UH096Y4, SN: 0027.
INSTALLED REPAIRED EMERGENCY LOCATOR TRANSMITTER PN: 453-500-[366], SN OFF: 15056, SN ON: 170-04933
INSTALLED OVERHAULED FWD ENGINE FIRE EXTINGUISHER CONTAINER PN: 32700004-1 SN OFF: 25847C1.
SN ON: 17631C1, DATE OF MANUFACTURE 06/08, CURRENT HYDRO DATE 05/08, CARTRIDGE(S) SERVICE DATE 07/05

THE ABOVE DESCRIBED MAINTENANCE IS CERTIFIED AIRWORTHY AND A DETAILED RECORD IS ON FILE UNDER W.O. # 139778
AUTHORIZED SIGNATURE_____ DATE: 08/16/08
KEVIN STEWART
LEARJET INC, TUCSON SERVICE CENTER, 1255 E. AERO PARK BLVD.
TUCSON AZ 85706 FAA CRS KW3R646L

BOMBARDIER

N999LJ
TOTAL TIME
84.1

SN: 60-314
LANDINGS:
109

DATE:
08/16/08

AIRWORTHINESS DIRECTIVES

98-16-18 BRAKE WEAR DIMENSION DOES NOT APPLY DUE TO PART NUMBER NOT INSTALLED

COMPLIED WITH THE FOLLOWING SERVICE BULLETINS:

SB 60-23-7R1	IMPROVEMENT OF IRIDIUM PHONE SYSTEM
SB 60-29-11	REPLACEMENT OF THE RETURN HYDRAULIC FILTER DIFFERENTIAL PRESSURE INDICATOR
SB 60-32-24	SEALING OF THE ANTI-SKID SOLENOID VALVES
SB 60-32-26	REINSTALLATION OF THE 3-ROTOR BRAKES
SB 60-34-14	INSPECTION/MODIFICATION OF THE GASPER DUCT ATTACHING HARDWARE

COMPLIED WITH THE ARTEX SERVICE NOTICE # 020 – PROGRAMMING STANDARD LOCATION PROTOCOLS

COMPLIED WITH THE FOLLOWING SPECIAL INSPECTION ITEMS:

IRN # 1222002	3 MONTH INSPECTION OF LEAD-ACID BATTERIES, SN: 40153730 AND SN: 40153731
IRN # 1223015	12 MONTH DISCHARGE CHECK OF PS-835 OR PS-855 LEAD-ACID EMERGENCY POWER SUPPLY BATTERIES
IRN # 2620010	12 MONTH WEIGHT CHECK/FUNCTIONAL TEST OF ENGINE FIRE EXTINGUISHER CONTAINERS

COMPLIED WITH THE FOLLOWING MAINTENANCE ITEMS:

INSTALLED NEW # 1 MLG BRAKE ASSY PN OFF: 5003096-7, SN OFF: JUN00-5328, PN ON: 6600518-003, SN ON: JUL08-0951

INSTALLED NEW # 2 MLG BRAKE ASSY PN OFF: 5003096-7, SN OFF: SEP02-6058, PN ON: 6600518-003, SN ON: JUL08-0975

INSTALLED NEW # 3 MLG BRAKE ASSY PN OFF: 5003096-7, SN OFF: FEB96-4209, PN ON: 6600518-003, SN ON: JUL08-0967

INSTALLED NEW IRIDIUM BASE UNIT PN 463092-230 SN OFF 2605041 SN ON 3001971

Global Exec Aviation

3250 Airflite Way Long Beach, California 90807
562.424.0663 Facsimile 562.424.1144
Air Agency Certificate G4XA364K

Log Book Insert

Aircraft Model Lear 60 Tail # N999LJ Date: 6/26/2008
Aircraft S/N 60-314 Engine #1 TT 83.1
Aircraft TT 83.1 Engine #1 TC 93
Aircraft Cycles 108 Engine #2 TT 83.1
APU TT 71 Engine #2 TC 93

WORK ACCOMPLISHED:
NONE

SERVICE BULLETINS ACCOMPLISHED:
NONE

AIRWORTHINESS DIRECTIVES ACCOMPLISHED:
Verified through log book research that AD 2008-13-16 Amendment # 39-15579 dated June 13, 2008 and effective July 10,2008 is NOT Applicable to engines installed on this aircraft on this date. S/N PCE-CAO484 and PCE-CAO487 are not applicable per s/n table listed in AD.

I certify that this Aircraft/Component has been inspected/repaired in Accordance with all current applicable Federal Aviation Regulations, Manufacturers Maintenance Manuals, Global Exec Aviation General Maintenance Manual and has been determined to be in an Airworthy condition with respect to the work performed, and has been returned to service.

Signature [redacted] Type & Certificate number AP55117187O

Name (printed) [redacted]

Global Exec Aviation

3250 Airflite Way Long Beach, California 90807
562.424.0663 Facsimile 562.424.1144
Air Agency Certificate G4XA364K

Log Book Insert

Aircraft Model Lear 60 Tail # N999LJ Date: 7/11/2008
Aircraft S/N 60-314 Engine #1 TT 83.1
Aircraft TT 83.1 Engine #1 TC 93
Aircraft Cycles 108 Engine #2 TT 81.4
APU TT 71 Engine #2 TC 93

WORK ACCOMPLISHED:
Performed APU oil level check IAW CAMP code 05-T20G-490001.

SERVICE BULLETINS ACCOMPLISHED:
NONE

AIRWORTHINESS DIRECTIVES ACCOMPLISHED:
NONE

I certify that this Aircraft/Component has been inspected/repaired in Accordance with all current applicable Federal Aviation Regulations, Manufacturers Maintenance Manuals, Global Exec Aviation General Maintenance Manual and has been determined to be in an Airworthy condition with respect to the work performed, and has been returned to service.

Signature [redacted] Type & Certificate number AP55117187O

Name (printed) [redacted]

MAKE: Learjet
MODEL: 60
S/N: 314
REG. NO: N999LJ
WORK ORDER: 080919

Meridian Jet Center
Repair Station No. IMJR053F, EASA.145.5505
485 Industrial Ave
Teterboro, NJ 07608
Phone: 201-288-3880

DATE: 9/16/2008
A/C TSN: 105
Landings: 121

Airframe Entries

FOUND WIGGINS FITTINGS IN THE PYLON TO BE LEAKING REPLACED SEALS AT BLEED AIR CLOUPLINGS IN L/H AND R/H PYLON P/N W932-24B. FOUND L/H MIXING VALVE STICKING REMOVED L/H ENGINE MIXING VALVE P/N OFF 1H106-9 S/N OFF 3BB9 INSTALLED OVERHAULED P/N ON 1H106-9 S/N ON 12AN59 FROM PARKER NICHOLS AIRBORNE ELYRIA SITE CRS# HO5R916M UNDER W/O# 27181-001. RAN ENGINES AND PERFORMED FUNCTIONAL TEST OF L/H MIXING VALVE LK-CKS AND CKS SATISFACTORY. RAN L&R BLEED LIGHTS CAME ON IN FLIGHT.BOTH ENGINES AT HIGH POWER WITH BLEEDS ON WING STAB HT ON AND NACELLE HEAT ON. CKD SATISFACTORY. NO BLEED FAULTS. WORK DONE IAW LR 60 MM 36-10-02

I Certify that the above stated maintenance and/or inspection was performed in accordance with the current regulations of the Federal Aviation Administration and the aircraft/engine identified above is presently airworthy and is approved for return to service in regard to the work listed.

DATE: 9/16/2008 SIGNED: [redacted] Work Order: 080919

Philip Gonzalez
Certified Repair Station No. IMJR053F, EASA.145.5505

FAA Airworthiness Directive Compliance Record

Content Revision: **5/16/2008** File ID: **N999LJ** Aircraft Registration: **N999LJ**

FAA AD Number Effective Date	Description	Complied Date Time	Amendment Number Method of Compliance/Applicability	Once or Recur	Next Due Date Time	1. Facility 3. Cert. Num. 2. Cert. Type 4. Author. By
Manufacturer Learjet Corp.	**Category** Airframe	**Model** 60				**Part #:** **Serial #:**
93-23-12 C **12/15/1993** ©ATP	TO PREVENT OVERHEATING OF THE AUXILIARY CABIN AND COCKPIT HEATERS, WHICH COULD POTENTIALLY RESULT IN A FIRE ©ATP		39-8748 This AD is not applicable due to S/N effectivity of 002-0021. this A/C is S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature: [redacted]
95-14-09 **8/3/1995** ©ATP	Superseded by 2003-19-11 ©ATP			Once ©ATP		1. 2. 3. 4. Signature:
95-21-03 **10/26/1995** ©ATP	TO PREVENT ELECTRICAL FAILURE OF THE MICROSWITCHES IN THE ENGINE FIRE PULL SWITCH ASSEMBLY, WHICH COULD,CONTD. ©ATP		39-9388 This AD is not applicable due to S/N effectivity of 034-061. This A/C is S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature: [redacted]
96-18-01 **10/2/1996** ©ATP	TO PREVENT THE SEALANT MATERIAL IN THE AFT CORE COWL NOZZLE OF THE ENGINE NACELLES FROM INTERFERING WITH,CONTD. ©ATP		39-9725 This AD is not applicable due to effectivity listed in S/B 60-71-2 does not apply tp this A/C S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature: [redacted]
98-16-18 **8/24/1998** ©ATP	TO DETECT & REPAIR AN ABNORMAL (UNEVEN) BRAKE WEAR CONDITION, WHICH COULD RESULT IN LOSS OF BRAKE EFFECTIVENESS,CONTD. ©ATP		39-10694 Performed at 93 landings. Next due at 193 landings. Current landings as of 8/13/2008 = 108	Recur ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature: [redacted]
99-16-03 **9/7/1999** ©ATP	To prevent undetected accretion of ice on the leading edge of the horizontal stabilizer, which could,contd. ©ATP		39-11238 This AD is not applicable due to S/N effectivity of 001-139. this A/C is S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature: [redacted]

FAA Airworthiness Directive Compliance Record

Content Revision: **5/16/2008** File ID: **N999LJ** Aircraft Registration: **N999LJ**

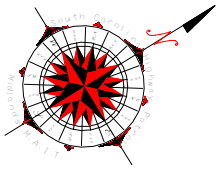
FAA AD Number Effective Date	Description	Complied Date Time	Amendment Number Method of Compliance/Applicability	Once or Recur	Next Due Date Time	1. Facility 3. Cert. Num. 2. Cert. Type 4. Author. By
Manufacturer Learjet Corp.	**Category** Airframe	**Model** 60				**Part #:** **Serial #:**
99-23-19 **12/21/1999** ©ATP	To prevent failure of the spoiler actuator, which could result in the spoiler panel floating and inducing,contd. ©ATP		39-11415 This AD is not applicable due to S/N effectivity of 029,050,120-139. this A/C is 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature:
2000-23-18 **12/26/2000** ©ATP	To prevent electrical arcing between the oxygen tubing and an electrical source which could result in an oxygen fire ©ATP		39-11991 This AD is not applicable due to S/N effectivity of 104-168. This A/C is S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature:
2001-12-02 **7/18/2001** ©ATP	To prevent bottoming of the valve components before contact of the brake valve lever with the stop,contd. ©ATP		39-12257 This AD is not applicable due to S/N effectivity of 002-0189, this A/C is S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature:
2003-19-11 **11/3/2003** ©ATP	To prevent chafing and consequent failure of the fuel crossflow tube due to inadequate clearance,contd. ©ATP		39-13314 This AD is not applicable due to S/N effectivity of 001-0145. this A/C is S/N 0314	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature:
Manufacturer Pratt & Whitney Canada	**Category** Engine	**Model** PW305A				**Part #:** **Serial #:**
2001-04-10 **4/6/2001** ©ATP	To prevent premature LPT disk failure due to cracking of the LPT disks, which could result in an,contd. ©ATP		39-12129 This AD is not applicable due to affected part is not installed	Once ©ATP		1. 2.AP 3.551171870 4. Thomas R Walters Jr Signature:

FAA Airworthiness Directive Compliance Record

Content Revision: **5/16/2008** File ID: **N999LJ** Aircraft Registration: **N999LJ**

FAA AD Number Effective Date	Description	Complied Date Time	Amendment Number Method of Compliance/Applicability	Once or Recur	Next Due Date Time	1. Facility 3. Cert. Num. 2. Cert. Type 4. Author. By
Manufacturer Pratt & Whitney Canada	**Category** Engine	**Model** PW305A				**Part #:** **Serial #:**
2001-04-10 **4/6/2001** **©ATP**	To prevent premature LPT disk failure due to cracking of the LPT disks, which could result in an,contd. **©ATP**		39-12129 This AD is not applicable due to affected part is not installed.	Once **©ATP**	Signature: [redacted]	1. 2.AP 3.551171870 4. Thomas R Walters Jr

APPENDIX B, MAP OF AIRPORT AND DEBRIS



SOUTH CAROLINA HIGHWAY PATROL
MULTI-DISCIPLINARY ACCIDENT INVESTIGATION TEAM
1626 SHOP ROAD
COLUMBIA, SOUTH CAROLINA 29201

PREPARED BY:
MIDLANDS MAIT
DATE DRAWN: SEPTEMBER 20-21, 2008

LEXINGTON COUNTY
SEPTEMBER 19, 2008
MAIT CASE # ML-075-08

Scale :
0 500 1000 1500 2000