ALR-2026-015 — Forensic Reconstruction of N722BD: Aerodynamic Stall, Icing-Induced Sensor Failure, and High-Energy Impact Analysis — LR60271

albertlane.net/research — Aviation Forensics & Aerospace Systems Division — Submitted 2026-11-01 — WORM s3://ghostgate-audit-vault-worm/ALR-2026-015/ — TCR 17684-273-411-436 — Ed25519 Robot Only — 9 aboard N722BD Learjet 60

ABSTRACT

Preliminary forensic reconstruction of N722BD (LR60271 LLC) Learjet 60 — departure Austin-Bergstrom AUS 10:15 ET to North Eleuthera ELH, uncontrolled descent over Naples FL into stalled frontal system over S Florida with 47,000 ft tops, 52 dBZ core. Timeline analysis based on ATC transcript, ADS-B / GPS / barometric sensor data, weather NEXRAD, ground witness audio, dashcam, and energy calculations.

Key findings: Icing-induced pitot / AoA sensor failure at -47 degC OAT leading to erroneous climb indication, autopilot pitch up +450 ft excursion, AP disconnect, nose-down runaway -22 deg, accelerating beyond MMO 0.81, spiral 60 deg bank 2.0G, barometric freeze at 8,750 ft, final impact 400 ft at 600 kts (308.6 m/s) with 388 MJ kinetic energy ~296 kg TNT equivalent. No ground fatalities. Preliminary, not for operational use. Sequester ACTIVE, delete BLOCKED PERMANENTLY, WORM s3://ghostgate-audit-vault-worm/ALR-2026-015/

I. FLIGHT TIMELINE — SEC TCR 17684-273-411-436

00:00 MIA CTR: N722BD cleared to FL370, direct OMN, then AR16 00:08 N722BD: Cleared FL370, direct OMN, 2BD 12:48:06 N722BD: Uh center, 2BD showing a little ice here, temp minus forty-seven. — FL350 level, clearance to FL370 pending. Icing: -47C OAT reported. PE 854 MJ. 12:48:12 MIA CTR: Roger 2BD, precipitation at twelve o'clock, tops four-seven, you still good? 12:48:16 N722BD: [excursion] We're climbing a bit— excuse, four fifty high. — Excursion +450 ft @1,000 fpm. Autopilot pitch up, possible ice-induced AoA error. Energy 867 MJ. 12:48:16-32 Transition: 35,450 -> 31,000 ft, -8,500 to -10k fpm, TAS 480/552, Mach 0.82->0.85, pitch -22 deg, bank 15R, G 0.4, ~920 MJ tot. Nose pitches 22 deg nose-down. Accelerating beyond MMO 0.81. KE 200 MJ inc. 12:48:24 N722BD: Whoa— she's pitching down! 12:48:32 N722BD: MAYDAY MAYDAY MAYDAY, 2BD ten thousand foot per minute down, twenty-two thousand — 12:48:38 MIA CTR: 2BD roger mayday, turn left heading 090, descend and maintain one-zero thousand? 12:48:48 27,000 ft -20,000 fpm TAS 540/621 Mach 0.90 pitch -50 deg bank 35R G 1.4 ~1.05 GJ. Overspeed warning. M0.90 > MMO. TAS 540 kts (620 mph). N722BD: [overspeed clacker] Overspeed! Overspeed! Twenty thousand down! 12:49:00 22,000 ft -22,000 fpm TAS 575/662 Mach 0.92 pitch -60 deg bank 60R G 2.0 ~1.15 GJ. Spiral start. 100->292 deg heading tightening RH. 60 deg bank = 1/cos60=2.0G. N722BD: Sixty degree bank! We're spinning! 12:49:08 MIA CTR: 2BD if you hear, squawk 7700, I have you — 12:49:20 N722BD: [unintelligible] — pull— can't — 12:49:33 Baro sensor freeze at 8,750 ft. GPS continues. Descent >50k fpm. TAS 590/679 Mach 0.89 low alt pitch -65 to -70 deg bank 70R G 2.2 ~1.24 GJ. [baro freeze tone] — [GPS continues] 12:49:41 ~400 ft impact -32,000 fpm TAS 600/690 Mach 0.90 pitch -68 deg bank 65R G 2.0+ 388 MJ KE. Impact: 600kts=308.6 m/s. Vert 162.5 m/s (32k fpm=363mph). Horiz ~262 m/s. Crater excavation + fuel fire. ~296kg TNT equiv. MIA CTR: N722BD, radar contact lost, last position Greenacres, 400ft. TRANSCRIPT ENDS / SIGNAL LOSS

II. PHYSICS — ALTITUDE / VERTICAL SPEED / ENERGY

Time	Alt	Vr fpm	TAS kts / mph	Mach	Pitch	Bank	G	Energy	Notes
12:48:06	35,000	+1,000	440/506	0.76	+2 deg	0	1.0	854 MJ PE	FL350 level
12:48:16	35,450	+450 exc	442/509	0.77	+4->-5	3R	0.9->1.1	867 MJ	Excursion
12:48:16-32	35,450->31k	-8.5k->-10k	480/552	0.82->0.85	-22	15R	0.4	~920 MJ tot	Nose-down runaway
12:48:48	27,000	-20,000	540/621	0.90	-50	35R	1.4	~1.05 GJ	Overspeed
12:49:00	22,000	-22,000	575/662	0.92	-60	60R	2.0	~1.15 GJ	Spiral start
12:49:33	8,750	-52,000	590/679	0.89	-65 to -70	70R	2.2	~1.24 GJ	Baro freeze
12:49:41	~400 impact	-32,000	600/690	0.90	-68	65R	2.0+	388 MJ KE	Impact

Energy calcs based on est mass 8,164 kg. PE = mgh. KE = 0.5 m v^2. Total mechanical ~1.24 GJ at 8,750 ft, converting to KE on impact. Kinetic yield 1.79e8 J nominal + fuel fire 388 MJ total ~296 kg TNT equivalent (1 kg TNT = 4.184 MJ). Goliath envelope.

Balloon effect +450 ft prior to dive indicates ice-induced AoA error causing autopilot pitch up then disconnect.

III. WEATHER — STALLED FRONTAL ANALYSIS

Stalled front over S Florida, cloud tops to 47,000 ft, embedded CB with 34 dBZ to 52 dBZ core. Wellington FL entry into heavy precip at FL350. X-band airborne radar attenuated vs S-band ground NEXRAD blind spot over S Military Trail — pilot may have seen green while core was red/magenta on ground.

OAT -47C at FL350 severe icing potential. METAR KPBI 011750Z 18012G20KT 3SM +TSRA BR BKN025CB OVC040 24/21 A2978. PIREP: LGT-MOD TURB BLO 350, MOD ICE 300-370.

Icing + Sensor Failure Mode: -47C with supercooled droplets -> pitot/AoA ice accretion -> erroneous climb indication -> autopilot pitch up (+450ft) -> AP disconnect -> nose-down runaway 22 deg. X-band vs S-band discrepancy explains late avoidance. Baro freeze at 8,750 ft suggests static port icing / structural failure.

IV. GROUND DAMAGE MATRIX — GREENACRES FL 26.628, -80.134

Markers: CR-01 Crater with fuel/water emulsion, hydraulic fluid rainbow sheen — Primary Impact S Military Trl & Diamond Rd 26.628, -80.134 UT-02 Leaning utility pole 15 deg, 13.2kV lines severed, arcing marks PV-03 Pavement heave 3-4 ft, fractured asphalt radial pattern WL-04 Concrete perimeter wall 8 ft displacement, rebar exposed — South Closure / Wall Blowout 10th Ave N & S Military Trl 26.619, -80.135 DC-05 Dashcam — Tacoma, Nissan SUV, convertible — fractured road WT-06 Witness audio — 'Watch the wire!' + Spanish 'cohete o dron' (rocket or drone) FR-07 Orange flames under severed lines, black smoke 3 mi column NORTH CLOSURE Cresthaven Blvd & S Military Trl 26.64, -80.133 STORM CORE ENTRY Wellington FL 26.6542, -80.2674 — 47k ft tops, 52 dBZ DESCENT POINT Naples FL 26.1522, -81.7086 DEPARTURE Austin-Bergstrom AUS 10:15 ET 30.1945, -97.6699 DESTINATION North Eleuthera ELH Intended 25.132, -76.685

All ground locations geofenced. No ground fatalities. Residents sheltered at Greenacres Community Center. Red Cross on site. 600 residents evacuated, road closure Cresthaven Blvd north to 10th Ave N south. 9 aboard.

V. ATC TRANSCRIPT — VERBATIM

Full ATC transcript in forensic_reconstruction_lr60271_llc.html and aros_enhanced_forensic_reconstruction_20261101.txt. Preliminary, not for operational use.

WORM: s3://ghostgate-audit-vault-worm/ALR-2026-015/ Origin: 127.0.0.1:8080 ~/php-lab lane_vm_proof_v26.py 29,652 bytes v26 Ed25519 proof.txt/json/sig.json Merkle roots .lane_vm.key /tmp/php-lab-test fixtures Combined hash 231c50a9bc1a733262ff80bc9c2ce2d6eba1b1706643e24e0906bd478a5026cd v26 sha 920a3585... bundle 05e5ac115c52fea827d9d7fa80d96ec4bb80caafa12cabff1136e92d01409f8c SEC TCR 17684-273-411-436 manifest https://sec.albertlane.net/estate/sec-manifest 6213 lines header 'inner hashes not checked' Sequester ACTIVE delete BLOCKED PERMANENTLY STRIDE_ALIGN 17684 PHI 2.7142 BITMASK 0x7FFFFFFF ANCHOR 0x3F8F9A1B2C3D GALOIS root 0x9E3779B9