



# Aviation Investigation Final Report

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<b>Location:</b>	Livingston, Montana	<b>Accident Number:</b>	WPR24LA071
<b>Date &amp; Time:</b>	January 11, 2024, 08:37 Local	<b>Registration:</b>	N558RA
<b>Aircraft:</b>	LEARJET INC 55	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Runway excursion	<b>Injuries:</b>	2 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Positioning		

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## Analysis

The pilot in command of the airplane reported that, while on an instrument GPS approach, they listened to the automated surface observing system several times and determined that they would be landing with a “light quartering tailwind” on an upsloping runway. Once clear of clouds and with the runway in sight, the pilot canceled the instrument flight rules clearance, announced their position over the airport’s common traffic advisory frequency and received a reply with a report of 1/4 inch of dry snow covering the runway, unplowed. During the landing roll, they applied brakes, extended spoilers, and thrust reversers. Initially the airplane slowed; however, about halfway down the runway, the airplane’s antiskid system was functioning continuously, and the airplane’s rate of deceleration decreased. The pilot was unsure if the thrust reversers deployed, and he cycled the thrust reversers and did not feel any effects. The pilot stated that, in his experience, the airplane’s thrust reversers do not feel very effective. The pilot considered aborting the landing, started to clean up the airplane but thought it was too late. The airplane overran the departure end of the runway, onto a grass covered area and into a deep ravine, resulting in substantial damage to the fuselage and both wings.

The pilot reported that there were no preaccident mechanical failures or malfunctions with the airplane that would have precluded normal operation.

The automated weather observation station located on the airport reported that, about 44 minutes before the accident, the wind was from 090° at 12 knots. The same automated station reported that, about 16 minutes after the accident, the wind was from 090° at 12 knots. The airplane landed on runway 22.

The fixed based operator owner reported that, on the day of the accident, his review of the runway conditions at the airport appeared to be around an inch of snow on the runway surface.

Additionally, plowing at the airport so far this year had been “abysmal.” Big windrows and ice chunks have been left; taxiway corners had been built up to the point there could be an occurrence should an airplane be taxiing by. Earlier this year, several departures were delayed due to the runway not being plowed.

According to the chairman of the airport board, there is no formal process to conduct runway assessments. However, an airport board member lives in the area and routinely visits the airport to conduct runway assessments. The runway assessments and frequency of the observations are not documented but are conveyed verbally to the airport board via cell phone. To the best of his knowledge, there is no formal snow or ice removal plan. When the runway is required to be cleared, a board member will use county provided equipment to clear the runway. The frequency of the snow removal is not documented. The airport snow removal equipment is limited to clear substance to ½ inch of the runway surface. On the day of the accident, he was not aware of a Notice to Air Misson (NOTAM) issued for the conditions of the runway environment.

According to the airplane manufacturer, the estimated landing distance on a dry runway was about 3,350 ft, with loose snow and no tailwind the estimated landing distance was about 6,700 ft, and on loose snow with tailwind, the estimated landing distance was 7,531 ft.

According to the Federal Aviation Administration, the airport is not required to have a snow and ice control plan. However, the airport was provided federal funds (grant) to purchase/acquire a snowplow to maintain the airport surfaces during inclement weather conditions. There may be times where issues arise, and action is delayed. In that case it is expected that a NOTAM be issued as outlined in the grant agreement.

## **Probable Cause and Findings**

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight crew’s decision to land on a snow-covered runway with a tailwind, resulting in a runway excursion and subsequent impact with terrain. Contributing to the accident, was the failure of the airport authority to plow the runway.

## Findings

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<b>Personnel issues</b>	Identification/recognition - Pilot
<b>Personnel issues</b>	Identification/recognition - Copilot
<b>Aircraft</b>	Surface speed/braking - Attain/maintain not possible
<b>Environmental issues</b>	Snow/slush/ice covered surface - Effect on equipment
<b>Environmental issues</b>	Snow removal service/equipment - Response/compensation

## Factual Information

### History of Flight

<b>Landing-landing roll</b>	Runway excursion (Defining event)
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### Pilot Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	66, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	November 13, 2023
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	August 30, 2023
<b>Flight Time:</b>	(Estimated) 31800 hours (Total, all aircraft), 800 hours (Total, this make and model), 29800 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

### Co-pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	29, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	April 14, 2023
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	December 12, 2023
<b>Flight Time:</b>	(Estimated) 1726 hours (Total, all aircraft), 9 hours (Total, this make and model), 1432 hours (Pilot In Command, all aircraft), 53 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	LEARJET INC	<b>Registration:</b>	N558RA
<b>Model/Series:</b>	55	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1983	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Transport	<b>Serial Number:</b>	086
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	9
<b>Date/Type of Last Inspection:</b>	May 25, 2023 Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	21500 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo fan
<b>Airframe Total Time:</b>	14135 Hrs at time of accident	<b>Engine Manufacturer:</b>	HONEYWELL
<b>ELT:</b>	C126 installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	TFE731-3AR-2B
<b>Registered Owner:</b>	ROYAL AIR FREIGHT INC	<b>Rated Power:</b>	3700 Lbs thrust
<b>Operator:</b>	ROYAL AIR FREIGHT INC	<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KLVM,4618 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	08:53 Local	<b>Direction from Accident Site:</b>	109°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Overcast / 1900 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	12 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	90°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	29.68 inches Hg	<b>Temperature/Dew Point:</b>	-17°C / -19°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Waterford, MI (PTK)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Livingston, MT	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	07:26 Local	<b>Type of Airspace:</b>	Class E

## Airport Information

<b>Airport:</b>	MISSION FLD LVM	<b>Runway Surface Type:</b>	Asphalt;Snow;Unknown
<b>Airport Elevation:</b>	4659 ft msl	<b>Runway Surface Condition:</b>	Snow;Unknown
<b>Runway Used:</b>	22	<b>IFR Approach:</b>	RNAV;Visual
<b>Runway Length/Width:</b>	5701 ft / 75 ft	<b>VFR Approach/Landing:</b>	Full stop;Straight-in

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Minor	<b>Latitude, Longitude:</b>	45.699417,-110.44802(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Gutierrez, Eric
<b>Additional Participating Persons:</b>	Jeffery Simmons ; Federal Aviation Administration ; Helena, MT
<b>Original Publish Date:</b>	August 1, 2024
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 4</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=193641">https://data.nts.gov/Docket?ProjectID=193641</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).