



Aviation Investigation Final Report

Location:	Fort Lauderdale, Florida	Accident Number:	ERA20LA162
Date & Time:	April 24, 2020, 15:18 Local	Registration:	YV3427
Aircraft:	IAI 1125	Aircraft Damage:	Substantial
Defining Event:	Runway excursion	Injuries:	3 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, during the takeoff roll and at rotation speed, the airplane did not respond when he pulled back on the control yoke. He tried to rotate again, about 130 knots, which was above decision speed. With no response, he performed a rejected takeoff with maximum braking and full reverse thrust. The airplane departed the end of the runway, proceeded through the paved overrun, and into the grass beyond the runway. The nose gear separated, and the right main gear collapsed. The airplane pivoted to the left and came to a stop in the grass, near the perimeter access road. The airframe sustained substantial damage to the fuselage and right wing.

The pilot was using takeoff performance data for a flaps 20° takeoff, for which the maximum allowable takeoff weight was 22,000 lbs for the temperature at the time (the reported temperature at the time of the accident was 35° C). The pilot estimated that the airplane weighed about 22,620 lbs; however, he did not weigh the cargo on board and did not compute a center of gravity prior to the accident flight. FAA inspectors weighed the cargo with a calibrated scale after the accident. Given the actual weight of the cargo, the total weight of the airplane was about 24,206 lbs, or 2,206 lbs above the maximum weight for that configuration. Additionally, postaccident examination of the airplane, including an operational check of the elevator and trim, did not reveal evidence of a mechanical malfunction or anomaly. Data download from the digital electronic engine controls also showed that the engines were operating normally and as demanded during the takeoff and accident sequence. Given this information, it is likely that the airplane did not rotate as expected during the accident takeoff because it had been loaded in excess of the weight that was appropriate for the configuration and temperature.

Probable Cause and Findings

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

The pilot's inadequate preflight planning, resulting in an attempted takeoff in excess of the airplane's maximum allowable weight given it's configuration and the temperature.

Findings

Aircraft	Configuration - Capability exceeded
Personnel issues	Weight/balance calculations - Pilot

Factual Information

History of Flight

Takeoff	Miscellaneous/other
Takeoff-rejected takeoff	Runway excursion (Defining event)

On April 24, 2020, about 1518 eastern daylight time, an Israel Aircraft Industries 1125 Astra SP, Venezuelan registration YV3427, was substantially damaged when it was involved in an accident at Fort Lauderdale, Florida. The pilot, copilot, and one passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he was conducting the takeoff on runway 27 at Fort Lauderdale Executive Airport (FXE), Fort Lauderdale, Florida, with the intended destination of Simón Bolívar International Airport (CCS), Maiquetía, Venezuela. During the takeoff roll, at rotation speed, the airplane reportedly did not respond when the pilot pulled back on the control yoke. He tried to rotate a second time at an airspeed of about 130 knots, which was greater than decision speed (V1). With no response to the elevator input, he performed a rejected takeoff with maximum braking and full reverse thrust. The airplane departed the end of runway 27, proceeded through a paved overrun, and into grass beyond the runway. The airplane pivoted to the left and came to a stop in the grass, near the perimeter access road, about 1,550 ft beyond the paved surface. The crew and passengers exited the airplane and were met by first responders.

Federal Aviation Administration (FAA) inspectors responded to the accident site and examined the wreckage. The nose and right main landing gear collapsed during the accident sequence and the forward fuselage and right wing were substantially damaged. The passenger cabin was loaded with cargo. First responders found fuel leaking from the right-wing fuel tank.

An operational check of the elevator and trim was performed after the accident and the elevator and trim tab moved freely with no binding. The adjustable stabilizer was set at -7°.

The cargo was offloaded and weighed with a calibrated scale. There were no open seats in the cabin; cargo was placed on the available seats. A large box was positioned at the main cabin door, and an adult passenger was seated on the box at the time of takeoff. Cargo was offloaded from the cabin, baggage compartment, and battery compartment. The total cargo weight was 3,778 lbs. The crew purchased 485 gallons of fuel at FXE. The FAA inspector computed a total fuel weight of 6,798 lbs, resulting in a total aircraft weight of 24,206 lbs, including fuel, cargo, and three adult occupants on board.

The pilot reported that he used the takeoff planning chart for 20° flaps and sea level conditions. He estimated the aircraft weight to be 22,620 lbs and he used the 22,000 lbs chart for the takeoff, which was the highest weight allowable for that configuration and outside air

temperature. Although the pilot completed a company weight and balance/performance form prior to the flight, he stated that he did not weigh the cargo or compute a center of gravity prior to the accident flight.

The airplane was equipped with two Digital Electronic Engine Controls (DEECs), one for each engine. The recorders contained data from the entire accident sequence as well as previous flights. A review of the data revealed that both engines were rotating, operating, and responding to power lever inputs throughout the takeoff and accident sequence. No evidence of a loss of thrust during the takeoff roll was observed. Both DEECs recorded faults consistent with secondary aircraft damage due to the runway excursion.

Pilot Information

Certificate:	Airline transport	Age:	37,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	September 3, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	4462 hours (Total, all aircraft), 211 hours (Total, this make and model)		

Co-pilot Information

Certificate:	Commercial	Age:	24,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Unknown	Last FAA Medical Exam:	
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	1950 hours (Total, all aircraft), 15 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	IAI	Registration:	YV3427
Model/Series:	1125 Astra SP	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Transport	Serial Number:	054
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	March 13, 2020 AAIP	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	2 Turbo fan
Airframe Total Time:	8959 Hrs as of last inspection	Engine Manufacturer:	Honeywell
ELT:	Installed	Engine Model/Series:	TFE731-3C-200
Registered Owner:	Inversiones SC 2012 C.A	Rated Power:	3700 Lbs thrust
Operator:	Inversiones SC 2012 C.A	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KFXE, 14 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	18:53 Local	Direction from Accident Site:	214°
Lowest Cloud Condition:	Scattered / 6000 ft AGL	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	12 knots / 22 knots	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	230°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	35°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fort Lauderdale, FL (FXE)	Type of Flight Plan Filed:	IFR
Destination:	Maiquetía, OF (CCS)	Type of Clearance:	IFR
Departure Time:	15:18 Local	Type of Airspace:	Class C

Airport Information

Airport:	Fort Lauderdale Executive FXE	Runway Surface Type:	Asphalt
Airport Elevation:	13 ft msl	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	None
Runway Length/Width:	6002 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	26.197221,-80.170829(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Daniel Sullivan; FAA/FSDO; Miramar, FL Thomas Huff; Gulfstream; Savannah, GA Allie Engel; Honeywell; Phoenix, AZ
Original Publish Date:	June 21, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=101209

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](#).