



Aviation Investigation Final Report

Location:	HALSTAD, Minnesota	Accident Number:	CHI94DER02
Date & Time:	July 28, 1994, 07:00 Local	Registration:	N3611Z
Aircraft:	AIR TRACTOR AT-301	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

THE COMMERCIAL PILOT ATTEMPTED TO TAKEOFF ON A SOFT GRASS AIRSTRIP, LOADED WITH 2,720 POUNDS OF CHEMICALS FOR AERIAL APPLICATION. THE PILOT STATED THE AIRPLANE LIFTED OFF, BUT THE TAILWHEEL STRUCK AN EMBANKMENT. THE AIRPLANE PITCHED NOSE DOWN ON REBOUND FROM THE TAIL STRIKE, AND CAME TO REST UPSIDE DOWN IN A FIELD. THE AIRPLANE MANUAL RECOMMENDS A MAXIMUM GROSS WEIGHT OF 5,000 POUNDS. HOWEVER THE ACCIDENT AIRPLANE WAS CERTIFICATED IN THE RESTRICTED CATEGORY, AND WAS OPERATING AT AN ESTIMATED 7,003 POUNDS.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the commercial pilot's failure to maintain clearance from terrain during the attempted takeoff. Related factors are the soft terrain and the deterioration in aircraft performance due to the high gross weight.

Findings

Occurrence #1: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: TAKEOFF

Findings

1. (F) TERRAIN CONDITION - SOFT
2. (F) AIRCRAFT PERFORMANCE - DETERIORATED

- 3. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
- 4. (F) TERRAIN CONDITION - BERM

Occurrence #2: NOSE OVER
Phase of Operation: OTHER

Factual Information

On July 28, 1994, at 0700 central daylight time, an Air Tractor AT-301, N3611Z, operated by a commercial pilot engaged in aerial application, struck a roadway and nosed over during an attempted takeoff at a private airstrip near Halstad, Minnesota. The airplane sustained substantial damage, and 320 gallons of water mixed with pesticide were spilled. The commercial pilot, the sole occupant, reported no injuries. Visual meteorological conditions prevailed for the local flight, no flight plan was filed. The flight operated under 14 CFR Part 137.

The pilot stated although the weather was good at the time of the event, the previous evening had produced heavy rain showers in the area. He reported the grass strip was heavily soaked and was soft and spongy in feel, and resulted in a longer than normal takeoff roll. The pilot stated the airplane barely lifted off at the end of the grass strip, and "...was in such a tail low (attitude)...that the tail wheel struck the ditch bank. This action forced the tail into the air and the aircraft hit the ground on the other side of the road causing the aircraft to roll completely onto its back."

The airplane had been loaded with 320 gallons of ASANA chemical and water mix for a total load of 2,720 pounds. The basic weight of the airplane with 8 gallons of oil and 50 gallons of fuel was 4,283 pounds. Computed weight and balance showed the airplane to be 7,003 pounds at 22.62", placing the center of gravity inside the aft limit by .38" but 2,003 pounds over the recommended gross weight of 5,000 pounds.

This airplane was certificated as a restricted category aircraft, with structural requirements of FAR 23, February 1, 1965, as amended. Flight criteria, propulsion, system and equipment items were certificated Appendix B, CAM 8, November 15, 1951, as amended. The Agricultural Aircraft section of CAM 8 states in part: "...it is not required that a maximum weight be established as an operating limitation for agricultural aircraft." This airplane was flight checked and displayed appropriate placards in accordance with the procedures outlined in CAM 8.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	31, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical—no waivers/lim.	Last FAA Medical Exam:	December 29, 1993
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	5166 hours (Total, all aircraft), 627 hours (Total, this make and model), 4717 hours (Pilot In Command, all aircraft), 410 hours (Last 90 days, all aircraft), 137 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AIR TRACTOR	Registration:	N3611Z
Model/Series:	AT-301 AT-301	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	301-0341
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	April 6, 1994 Annual	Certified Max Gross Wt.:	5000 lbs
Time Since Last Inspection:	400 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2882 Hrs	Engine Manufacturer:	P&W
ELT:		Engine Model/Series:	R1340-AN-1
Registered Owner:	SOLUM, DEAN R.	Rated Power:	600 Horsepower
Operator:		Operating Certificate(s) Held:	
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	CKN ,900 ft msl	Distance from Accident Site:	30 Nautical Miles
Observation Time:	06:55 Local	Direction from Accident Site:	10°
Lowest Cloud Condition:	Clear	Visibility	7 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:	0°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	14°C / 12°C
Precipitation and Obscuration:	N/A - None - Smoke		
Departure Point:	(NONE)	Type of Flight Plan Filed:	None
Destination:	(NONE)	Type of Clearance:	None
Departure Time:	07:00 Local	Type of Airspace:	Class G

Airport Information

Airport:	WIESE AIRPORT NONE	Runway Surface Type:	Grass/turf
Airport Elevation:	790 ft msl	Runway Surface Condition:	Soft
Runway Used:	0	IFR Approach:	None
Runway Length/Width:	2640 ft / 75 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	47.349063,-96.820404(est)

Administrative Information

Investigator In Charge (IIC): Frampton, O.

Additional Participating Persons:

Original Publish Date: March 27, 1995

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=9348>

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](#).