Aviation Investigation Final Report

Location:	MESA, Arizona	**Accident Number:**	LAX98LA298
Date & Time:	September 18, 1998, 18:00 Local	**Registration:**	N44529
Aircraft:	Aero Vodochody Aero. Works L-39	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

While attempting a simulated flame out (SFO) approach, the pilots initiated a go-around at 300 feet agl. They applied full throttle but the engine did not spool up right away and they were not able to arrest their sink rate. About 10 to 12 seconds later the aircraft landed hard 700 feet short of the runway then veered off to the right. The second pilot got the airplane airborne again then touched down in the dirt. At that point the PIC took the controls and attempted to return to the runway, but the aircraft struck the localizer antenna with the right wing tip, which he had not been able to see from the back seat. About 150 yards before the airplane came to a stop, the second pilot ejected from the aircraft without warning. The aircraft came to rest upright in the desert brush. The aircraft pilot's operating handbook directs the pilot to decide whether to continue the landing or eject at a decision height of 800 feet agl. The handbook also indicates that the spool-up time for the aircraft engine is 9 to 12 seconds. The PIC stated that he had expected the engine to spool up in '4 to 5 seconds.' Postaccident examination revealed that the flaps were at the takeoff position, 25 degrees down. The PIC reported that he thought the flaps were still full down at the time of impact. He had also reported that during the descent, it felt like 'the bottom fell out.' Bringing the flaps up before establishing a positive rate of climb can cause a sink rate of 500 to 700 feet per minute. The PIC further stated that he hadn't experienced any problems with the engine prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper flare and his failure to follow the proper procedures for the aircraft and to maintain control of the aircraft.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: DESCENT - UNCONTROLLED

Findings
1. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND
2. EMERGENCY PROCEDURE - SIMULATED - PILOT IN COMMAND
3. GO-AROUND - ATTEMPTED - PILOT IN COMMAND
4. CLIMB - NOT ATTAINED - PILOT IN COMMAND
5. (C) FLARE - IMPROPER - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING - ROLL

Findings
6. OBJECT - ANTENNA
7. BAIL-OUT/EMERGENCY EJECTION - PERFORMED - COPILOT/SECOND PILOT

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING - ROLL

Findings
8. TERRAIN CONDITION - HIGH VEGETATION

Factual Information

On September 18, 1998, about 1800 hours mountain standard time, an experimental Aero Vodochody L-39 (single engine imported jet trainer), N44529, landed short of the runway and struck a localizer antenna at the Williams Gateway Airport, Mesa, Arizona. The aircraft sustained substantial damage and there was damage to the antenna. Neither pilot was injured. The aircraft was being operated under the provisions of 14 CFR Part 91 by Advanced Training Systems International, Inc., Higley, Arizona, in preparation for work on a U.S. government contract. The local flight had begun about 1700 and was terminating at the time of the accident. Visual meteorological conditions prevailed and no flight plan was filed.

The first pilot was a commercial airplane rated pilot and the second pilot was an airline transport rated pilot. The first pilot reported that he had 20 hours in the L-39 and was flying as pilot-in-command (PIC) and safety pilot in the rear seat of the aircraft. He held a Letter of Operational Authority (LOA) issued by the Federal Aviation Administration (FAA), which authorized him to act as PIC in the L-39. The second pilot was in the front seat, flying his first flight in the L-39.

The PIC reported that after practicing standard maneuvers, they returned to the airport to conduct pattern work. After the first touch-and-go landing, they climbed to 3,000 feet to prepare for a simulated flame out (SFO) approach to runway 30C. He reported that the second pilot configured the aircraft with the landing gear down, full flaps at 44 degrees, speed brakes out, and power set at 70 percent. He stated that about 300 feet agl, the second pilot realized he was a little slow so he decided to go around. The second pilot moved the throttle full forward and retracted the speed brakes. The PIC stated that "the engine did not seem to respond properly and we were not arresting our sink rate." He further stated that the engine "didn't quit, but didn't seem to produce any additional thrust." About "10 to 12 seconds" later the aircraft landed hard 700 feet short of the runway in the asphalt over-run area. After touchdown, the aircraft veered about 15 degrees to the right and off the runway. The second pilot got the airplane airborne again, but only for a few hundred yards. The PIC stated that they touched down again in the dirt and at that point he took the controls. He reported that he intended to return to the runway, but the aircraft struck the localizer antenna with the right wing tip, which he had not been able to see from the back seat. The PIC reported that he attempted to maintain a level attitude and stop the aircraft. About 150 yards before the airplane came to a stop, the second pilot ejected from the aircraft without warning. The aircraft came to a rest in an upright attitude in the desert brush. The PIC stated that he hadn't experienced any problems with the engine prior to the accident.

The pilot's operating handbook for the accident aircraft was reviewed and relevant portions are appended to this file. The handbook indicated that the pilot should decide whether to continue the landing or eject while at a decision height of 800 feet agl. The handbook further indicated

that the spool-up time for the aircraft engine was 9 to 12 seconds. In two interviews with the Safety Board, the PIC stated that he expected the engine to spool up in "4 to 5 seconds."

The aircraft owner reported that he saw the accident aircraft immediately following the accident and noted the flaps to be in the takeoff position of 25 degrees. He further stated that the PIC reported that during the descent, it felt as if "the bottom fell out." Post-crash examination of the aircraft by the Safety Board revealed that the flaps were at 25 degrees down. In an interview with the Safety Board investigator, the pilot reported that he thought the flaps were still full down at the time of impact.

Following the accident, an L-39 flight instructor simulated the circumstances of the accident. He climbed to about 5,000 feet, added full power from an idle position, and brought the flaps up from the full down position to the takeoff position. He reported that the aircraft immediately sank about 600 feet. The flight instructor reported that it has always been his experience that raising the flaps before establishing a positive rate of climb will cause the aircraft to sink between 500 to 700 feet per minute.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	January 8, 1998
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	7400 hours (Total, all aircraft), 20 hours (Total, this make and model), 7100 hours (Pilot In Command, all aircraft), 32 hours (Last 90 days, all aircraft), 19 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aero Vodochody Aero. Works	**Registration:**	N44529
Model/Series:	L-39 L-39	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	432938
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	August 12, 1998 AAIP	**Certified Max Gross Wt.:**	11220 lbs
Time Since Last Inspection:	12 Hrs	**Engines:**	1 Turbo fan
Airframe Total Time:	1222 Hrs	**Engine Manufacturer:**	Ivchenko
ELT:		**Engine Model/Series:**	AI-25TL
Registered Owner:	AIR USA INC.	**Rated Power:**	3784 Lbs thrust
Operator:	ADVANCED TRAINING SYSTEMS INT	**Operating Certificate(s) Held:**	None
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:	IWA ,1380 ft msl	**Distance from Accident Site:**	
Observation Time:	17:45 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 2000 ft AGL	**Visibility**	30 miles
Lowest Ceiling:	Unknown	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	39°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(IWA)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	
Departure Time:	17:00 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	WILLIAMS GATEWAY IWA	**Runway Surface Type:**	Asphalt
Airport Elevation:	1380 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30C	**IFR Approach:**	
Runway Length/Width:	10201 ft / 150 ft	**VFR Approach/Landing:**	Simulated forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	33.439971,-111.849884(est)

Administrative Information

Investigator In Charge (IIC):	Rich, Jeff
Additional Participating Persons:	EDDIE OCHOA; SCOTTSDALE , AZ
Original Publish Date:	March 31, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=44075