Aviation Investigation Final Report

Location:	Henderson, Nevada	**Accident Number:**	WPR23LA316
Date & Time:	August 10, 2023, 06:40 Local	**Registration:**	N72GX
Aircraft:	REMOS ACFT GMBH FLUGZEUGBAU REMOS GX	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The accident flight was an introductory lesson for the student. After departure, the flight instructor began to demonstrate basic maneuvers. About 15 minutes into the flight, the engine began sputter. He noted that the fuel gauges indicated that the tank was empty. The engine lost complete power and the flight instructor performed an off-airport landing and nosed over after encountering a ditch.

The fuel tank was found empty at the accident site. A postaccident examination of the fuel system revealed no evidence of preimpact mechanical malfunctions or failures that would have precluded normal operation. Because the fuel system was intact and there was no evidence of any leaks, it is likely that the instructor was mistaken about the fuel quantity at takeoff and the engine lost power due to fuel exhaustion.

Probable Cause and Findings

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

The flight instructor's failure to ensure there was adequate fuel onboard before departure, which led to a loss of engine power due to fuel exhaustion.

Findings

Personnel issues	Fuel planning - Instructor/check pilot
Aircraft	Fuel - Fluid management
Aircraft	Fuel - Fluid level

Factual Information

History of Flight

Maneuvering	Fuel exhaustion (Defining event)
Landing	Nose over/nose down

On August 10, 2023, about 0640 Pacific daylight time, a Remos GX, N72GX, was substantially damaged when it was involved in an accident in Henderson, Nevada. The flight instructor and student pilot were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The accident flight was an introductory lesson for the student. The flight instructor stated that, before departure, he thought that the airplane had 7.5 gallons of fuel onboard, which would have been equivalent to about 1 hour and 30 minutes of flight time. He departed to the south and began to demonstrate basic maneuvers. After completing around 3 turns, which occurred about 15 minutes into the flight, the engine sputtered. The flight instructor turned toward a dry lakebed and began troubleshooting. The engine continued to sputter and was losing power. The engine instruments showed nothing unusual, but he noted that the fuel gauge indicated that the tank was empty.

The engine lost complete power and the flight instructor glided toward a dirt road. The airplane touched down on the road and the airplane nosed over after encountering a ditch. After egressing the airplane, the flight instructor verified that there was no fuel in the visual fuel tube, indicating there was no fuel in the system.

An examination was performed by a mechanic under the auspice of a Federal Aviation Administration inspector.The mechanic removed the seats, and panels in the cabin were opened to access the fuel tank and fuel lines. No defects or evidence of leaks were found. The fuel cap was secure, and the fuel filler cap O-ring was present and in good condition. No evidence of a leak was found on the fuselage or tail behind the fuel filler cap. The mechanic sumped the fuel tank, revealing an operable sump valve and no signs of leakage or damage. There was a small amount of "unusable" fuel in the tank.

A visual inspection of the fuselage fuel lines, and the fuel shutoff valve revealed no defects or evidence of leaks. Upon inspecting fuel lines forward of the firewall to carburetors, no anomalies were found. The mechanic removed the carburetor’s fuel bowls and they were empty. Removal of the lower spark plugs revealed they were light grey, consistent with a lean engine operation. The examination revealed no evidence of preimpact mechanical malfunction or failure that would have precluded normal operation.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	40,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	March 22, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	November 17, 2022
Flight Time:	1486 hours (Total, all aircraft), 167 hours (Total, this make and model), 1276 hours (Pilot In Command, all aircraft), 130 hours (Last 90 days, all aircraft), 41 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	REMOS ACFT GMBH FLUGZEUGBAU	**Registration:**	N72GX
Model/Series:	REMOS GX	**Aircraft Category:**	Airplane
Year of Manufacture:	2008	**Amateur Built:**	
Airworthiness Certificate:	Experimental light sport (Special)	**Serial Number:**	275
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	May 29, 2023 100 hour	**Certified Max Gross Wt.:**	1320 lbs
Time Since Last Inspection:	61 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1462 Hrs	**Engine Manufacturer:**	Rotax
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	912 UL
Registered Owner:	WHITAIR LLC	**Rated Power:**	100
Operator:	WHITAIR LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KHND,2458 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	06:56 Local	**Direction from Accident Site:**	33°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	29°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Henderson, NV (HND)	**Type of Flight Plan Filed:**	None
Destination:	Henderson, NV (HND)	**Type of Clearance:**	None
Departure Time:	06:25 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	35.84257,-115.24302

Administrative Information

Investigator In Charge (IIC):	Keliher, Zoe
Additional Participating Persons:	Chuck Gomez; Federal Aviation Administration; Las Vegas, NV
Original Publish Date:	May 14, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=192878