Aviation Investigation Final Report

Location:	Fort Scott, Kansas	**Accident Number:**	CHI04CA141
Date & Time:	June 6, 2004, 18:45 Local	**Registration:**	N369RV
Aircraft:	Doerr Raymond R RV-9A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The experimental amateur-built airplane experienced a loss of engine power during cruise flight when fuel pressure decreased to a level below the normal operating range. The fuel pressure continued to be below normal after the airplane's secondary fuel pump automatically actuated. The pilot then executed a forced landing on a field where the airplane impacted a ditch and nosed over. Inspection of the airplane revealed that the airplane was fueled with automotive fuel. The pilot reported an ambient temperature of 80 degrees Fahrenheit. A post accident engine run did not duplicate a loss of engine power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The vapor lock of the airplane fuel system and the ditch encountered during the emergency landing..

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH

Findings
1. (C) FUEL SYSTEM - VAPOR LOCK

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Occurrence #4: NOSE OVER
Phase of Operation: EMERGENCY LANDING

Findings
2. (C) TERRAIN CONDITION - DITCH
3. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED - PILOT IN COMMAND

Factual Information

On June 6, 2004, at 1845 central daylight time, a Doerr RV-9A, owned and piloted by a private pilot, impacted terrain and nosed over during a forced landing. The airplane experienced a total loss of engine power during cruise flight. Visual meteorological conditions prevailed a the time of the accident. The 14 CFR Part 91 personal flight was not operating on a flight plan. The pilot received minor injuries. The flight departed from Fort Scott Municipal Airport, Fort Scott, Kansas, at 1840 and was en route to Butler Memorial Airport, Butler, Missouri.

The pilot stated, "I flew from IDX (New Century) to FSK (Fort Scott) on a 80 degree day with no issues whats so ever [sic]. I landed at FSK (about 35 minute flight), and then taxi'ed [sic] back to the runway. I sat there for around 2 minutes with the engine running while I dialed in my next hop on the GPS. I departed FSK in a climb at 110 - 120mph with the VSI at 1,000 ft/min. Coolant temp on climbout was 218 with oil 5-7 degrees hotter. Once I reached 3,000 ft MSL I backed the MT Prop off to 2100 (engine 3800) and started cruise flight to BUM (Butler, MO). A minute went by when the engine stumbled briefly, than [sic] a few seconds later, all engine power was loss [sic]. At this same time I noticed the Fuel Pressure was 5 - 7 PSI and the AUX pump kicked it [sic], but did not resolve the fuel pressure issue. I switched from the left tank (which had 12 gal remaining) to the right tank (full). I tried the pump switch in AUX, then Main and back again. I switched the Master to Bypass and still nothing. I switched the MP Prop to Manual and fully feathered the prop for best glide of 80mph and headed back to FSK. All of this was done in around 15 seconds. I had FSK in site when I realized I didn't have enough ALT to make the field, now I was 1000 AGL, I spotted a suitable landing area in a field. I landing [sic] in the field fine around 60-65 mph and rolled out into a wheat field. The bad luck was a small ditch between the two fields which the nose wheel got stuck in, even though I had full back elevator. The rest was a complete nose over at around 30 - 40 mph. The last image in my mind was seeing the prop go into the ground and break, my thoughts were, this can't be good. The next image I had was hanging upside down and the smell of fuel. It took a few seconds to figure out what happened, and then I release [sic] my belt and silenced the ELT so I could talk on 121.5. The only one to hear me was a overhead plane which relayed all my messages back to ATC. My next mission was to get out of the trapped cockpit. Thank God the top of the caopy [sic] broke, because I was unable to break the sides to crawl under. I had to start at the top of the canopy which was now against the ground and break off small pieces at a time until I had a hole big enough to crawl through. This is where I got the most cuts on my hands! Once outside I took my headset and was able to talk on 121.5 by pressing the PTT^ on the stick. I had shutoff the fuel valve after the crash (something I should have done earlier), but there was fuel still pouring out. I couldn't figure this out, but after words [sic] it made sense. The engine was against the ground upside down with the Vert Stab up much higher. This made the tanks higher than the vent lines which were spilling out all the remaining fuel. At this point the ambulance came..."

Examination of the airplane by the Federal Aviation Administration revealed that the airplane was powered by a Subaru EJ25 engine, serial number B087372 engine, which was fueled by auto fuel at the time of the accident. The airplane was equipped with two fuel pumps, which were selected to an automatic setting. An engine run following the accident did not duplicate the loss of engine power.

The pilot reported an ambient temperature of 80 degrees Fahrenheit.

Pilot Information

Certificate:	Private	**Age:**	38,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:	Class 3	**Last FAA Medical Exam:**	October 28, 2002
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	74 hours (Total, all aircraft), 41 hours (Total, this make and model), 14 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Doerr Raymond R	**Registration:**	N369RV
Model/Series:	RV-9A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	90442
Landing Gear Type:	Tricycle	**Seats:**	
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Subaru
ELT:		**Engine Model/Series:**	EJ25
Registered Owner:	Raymond R. Doerr	**Rated Power:**	
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Fort Scott, KS (FSK)	**Type of Flight Plan Filed:**	None
Destination:	BUTLER, MO (BUM)	**Type of Clearance:**	VFR
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	FORT SCOTT MUNI FSK	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	
Total Injuries:	1 Minor	**Latitude, Longitude:**	37.79861,-94.769447

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	
Original Publish Date:	September 1, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59480