

August 3, 2020

Center Line Aero

Victoria, Texas 77905

Ludvik J. (Lou) Svetlik

A&P / IA

TO: Mr. Thomas L Ballard ASI (A/W)
San Antonio Flight Standards District Office SW-17
Reunion Place, STE 200
San Antonio, Texas 78216

Subject: Accident N9891B

Mr. Ballard, I have been a licensed pilot for over 40 years and I have worked in General Aviation as a mechanic and inspector for over 45 years. I feel that I have spent a reasonable amount of time inspecting this aircraft and engine following this accident, and I feel that my findings are consistent with similar failures I have seen in my career. I am including the following information and findings support my opinion in regards to the cause of the accident and resulting fire:

A.

- (1) Mr. Evans description of the engine partial, but significant power loss
- (2) Visual evidence of mechanical failure of engine component (initiating event)
- (3) Visual evidence of damage to engine components from aircraft impacting tree(s) when landing
- (4) Visual evidence of location and intensity of heat and fire
- (5) Mr Evans description of actions taken that resulted in the fire being extinguished following impact with the trees

B. Attachments: Photos of condition of aircraft and engine, as found (at date of inspection)

- 1) Evident damage to engine and components from heat and fire – forward of the firewall.
- 2) All four cylinders rocker covers previously removed
- 3) Most of exhaust components previously removed
- 4) Evident stuck exhaust valve #3 cylinder
- 5) #3 cylinder intake and exhaust piping previously removed
- 6) #3 cylinder pushrods and housings previously removed
- 7) #3 cylinder base nuts previously loosened
- 8) Evidence of carburetor detached from the intake manifold plenum with evidence of a part of the intake manifold burned away

C. Mr. Evans description of the incident:

Mr Evans described how he had been flying over the bay at Approx. 500 feet AGL when the engine suddenly experienced a significant loss in power, described as "still running, but unable to maintain altitude". He immediately began searching for a suitable place on land for an emergency landing. Not able to make an intended landing site, he landed the airplane in a mott of trees near the shoreline. He specifically stated that until the aircraft contacted the trees, he had observed no smoke or fire. After the impact, he noted that there was "white smoke", followed by "black smoke and flames". He reported to have switched the fuel supply valve to the engine to the OFF position, exited the airplane, and the smoke and fire ceased.

D. Observations noted during the inspection (8/2/2020)

1. The engine and components firewall-forward were significantly damaged by heat and fire.
2. The evidence of the amount of area burned and extent of damage gives suspicion that the fuel supply for the resulting fire was aviation gasoline, and that the fire had ceased when the fuel valve was turned off.
3. The carburetor was observed to be broken from the manifold it mounts to, and lying beneath the engine at about 45 degrees from level, and the aluminum (or magnesium?) manifold is believed to have partially burned as a result of the fire.
- 4) The engine oil sump showed indications of impact damage from the carburetor assembly being pushed backward into the tank during the impact with the trees.
- 5) The fuel gascolator appeared to have minimal impact from the fire and fuel supply hose to the carburetor were observed to be connected, with the exterior insulation burned from it.
- 6) Removal of #3 cylinder from the crankcase revealed no other defects than the stuck exhaust valve. The stuck valve did not protrude far enough to have caused any impact damage to the #3 cylinder piston.
- 7) Visual inspection of the engine camshaft through the removed #3 cylinder hole showed no defects to the camshaft or cam followers.
- 8) Visual check of the valve springs on all cylinders indicated multiple springs having diminished spring action, with one spring set on #2 cylinder appearing normal (this is noted to be suspect, but springs could have been annealed during the fire).

E. Determinations based on observations:

- 1) It is of my opinion that the initiating event of the incident is that there was partial, but significant engine power loss created by the failure of the #3 cylinder exhaust valve, found to be stuck open. The assignable cause to why the valve stuck is undetermined, but further investigation by inspection of the valve, guide, and springs may be warranted.
- 2) It is my opinion that the subsequent fire was caused by the dislocation of the carburetor from the intake manifold by the aircraft impacting the trees, with leaking fuel being ignited by the hot exhaust, and burning components in the area of the carburetor and intake manifold, spreading to other combustible materials and components.

Signed: _____

Ludvik J. Svetlik

A & P / IA

Date: _____