

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Materials Laboratory Division
Washington, D.C. 20594



May 25, 2015

MATERIALS LABORATORY FACTUAL REPORT

Report No. 15-055

A. ACCIDENT INFORMATION

Place : West Memphis, Arkansas
Date : October 15, 2014
Vehicle : Cessna P210, N731QV
NTSB No. : CEN15LA015
Investigator : Courtney Liedler, ASI-DEN

B. COMPONENTS EXAMINED

#2 Piston pieces, Rod and Piston Pin
from Continental Motors engine IO-550-P6B, s/n 1006549

C. DETAILS OF THE EXAMINATION

The pieces of the #2 piston are displayed in figure 1. The piston was broken into multiple pieces as shown. The pieces comprised the entire head and estimate 50% of the skirt. The majority of both pin bosses was also present. The entire upper compression ring was also received but no other rings or pieces.

Visual and magnified optical examinations revealed features and patterns indicative of overstress separation on all of the received piston fractures. Some of the pieces were darkly colored consistent with baked on oil deposit while other mating pieces were clean. The crown of the piston was clean and had small valve dents corresponding to the intake and exhaust valve locations. The crown was marked "654857C" and "U 07EKG".

The #2 connecting rod and piston pin are shown in figure 2. The pin was intact but the aluminum pin plugs were mechanically damaged as shown. The connecting rod was fractured through both main bearing straps. The fracture features were partially obscured by post fracture mechanical damage but the visible fracture features were consistent with bending overstress separations. The adjacent area of the rod displayed surface coloration and oxide formation consistent with exposure to very high temperatures. The bearing surface of the rod showed heavy flow and smearing of the material. The rod was impression marked "AE12BA770" on one side and "050B0616126-Y" in raised letters on the other side.

Joe Epperson
Sr. Metallurgist



Figure 1. An overall view of the piston fragments including the top compression ring.



Figure 2. Overall view of the received fractured connecting rod with the piston pin above.