

When we checked the engine oil at the accident site, there was an indication of 2 quarts on the dipstick. This engine holds 12 quarts of oil. There was no indication of large oil leaks on the ground, on the aircraft or on the engine.

We removed engine cowling, there were signs of small oil leaks on the bottom of the cowling at # 1 cylinder. There was fresh oil along with older oil stains indicating the leak had been doing so for some time. We removed the aircraft from the accident location a few days later to an inside hangar for inspection.

We visually inspected the engine for oil leaks. There were small oil leaks around all cylinder push rod housings, #1 cylinder was the worse. These small leaks would not add up to the loss of 7 quarts of oil within one hour of flight time. We removed oil screen [no oil filter installed on this engine]. There was a small amount of metal found. We removed top spark plugs to check compression, all spark plugs were dark indicating oil burn, #1 spark plug was loose in cylinder. We tried to check the compression on #1 cylinder, the piston was not moving, indicating a broken connection rod. We bore scoped the oil fill location and found damage inside of the engine case. We removed the valve cover on #1 cylinder and noted a large amount of clearance between the rocker arms and valves. We removed rocker arms and push rods, both exhaust and intake push rods were bent. When we tried to remove #1 cylinder we had to pry off the cylinder from the engine case. We eventually did remove the cylinder from the case finding the connection rod was off the crankshaft. The crankshaft #1 journal was black; this is an indication of lack of oil. I spoke to the pilot who stated one hour prior to this incident, the dip stick showed 9 quarts of oil in the engine.

My observation did not indicate the loss of 7 quarts of engine oil in that amount of flight time. From my experience operating these Continental IO-520 engines we operated with no less than 10 quarts of oil.