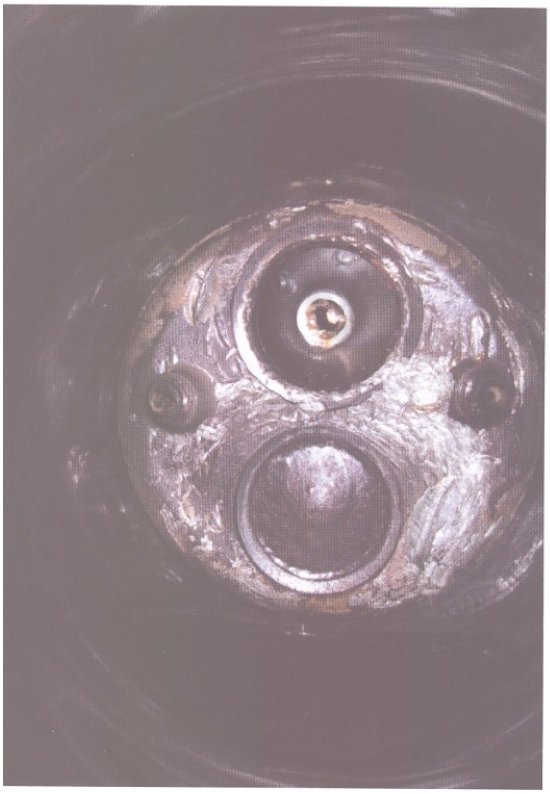
Lycoming IO540AE1A5, Failed Intake Valve, ATA 8520

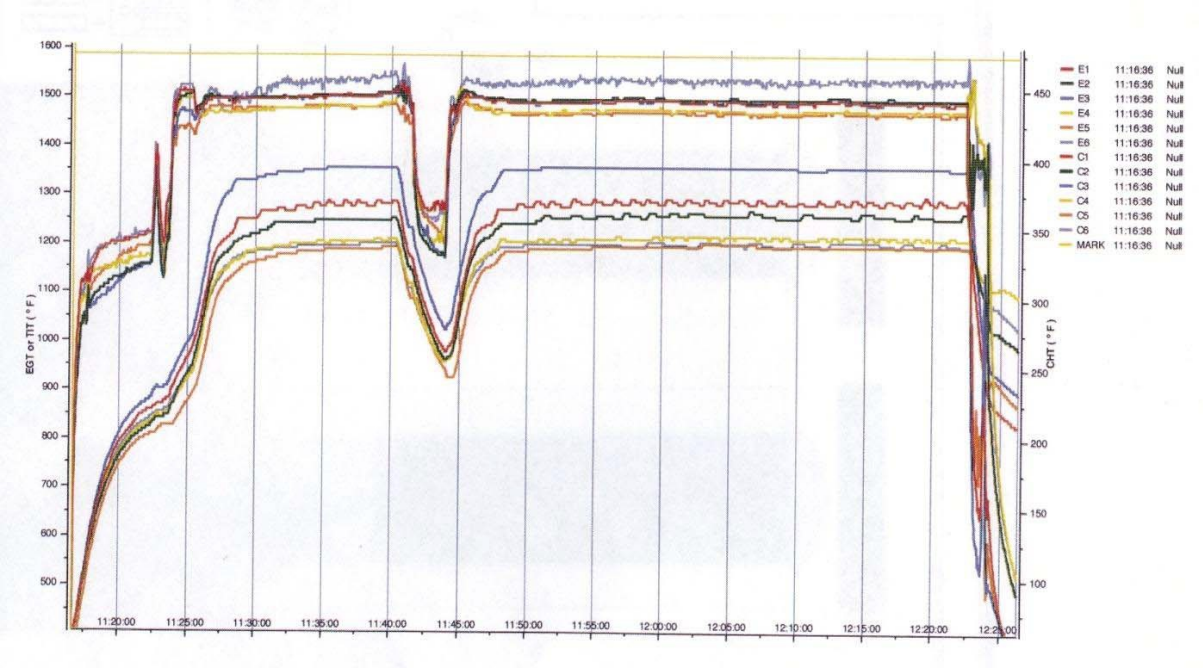
(The following description references a Robinson R44 Raven II helicopter.)

"Removal of the number one cylinder for visual inspection revealed a failure of the intake valve," says this technician. "Subsequent analysis from the data recorded by the JPI graphical engine monitor showed massive ingestion of engine oil into the remaining cylinders, causing loss of power—oil fouling the remaining (otherwise) unaffected spark plugs. Closer inspection of the effected cylinder showed catastrophic damage to the piston and combustion area from (piston/valve/head) multiple contacts. Fractured valve parts became wedged in the induction tube and in the common manifold area. When the intake rocker assembly was removed it was discovered the top portion of the valve stem above the 'keepers' was the area of separation/failure. A 30X power microscope was used for inspection. It is (our) opinion the failure of the intake valve may have been caused from a stress riser created during manufacturing at either the machining, heat treating process, or perhaps at the molecular level during creation of the raw material. It should be noted the aircraft was in compliance with Lycoming Service Bulletin SB388C exactly 85.8 hours earlier. No defect or abnormalities were noted at the time of the inspection."

Lycoming IO540AE1A5, Failed Intake Valve, ATA 8520



Lycoming IO540AE1A5, Failed Intake Valve, ATA 8520



(Intake valve P/N: LW13622. There are eleven of these part numbers reflected in the SDRS database.)

Part Total Time: 381.0 hours