

## July 2007

**Subject:** Pressure Testing Liquid Fuel Nozzles

**Applies to:** Most GE Gas Turbine Models, including MS5001 (D, K, L, M, N & P), MS6001B and MS7001B & C

A client recently experienced an unusual combustion system problem on a MS5001L turbine. One combustion chamber ruptured during operation on this turbine from the late 1960s. The chamber was noticed to be glowing “cherry red” during operation and the turbine was shut down immediately.



Fig. 1: Typical MS5001 Combustion Chamber with fuel nozzle

The client removed the fuel nozzle, opened the chamber and found that the liner was burned out and the chamber damaged through rupture. No other chambers were found to be damaged. See Fig 1 above for a typical combustion chamber (not a damaged one).

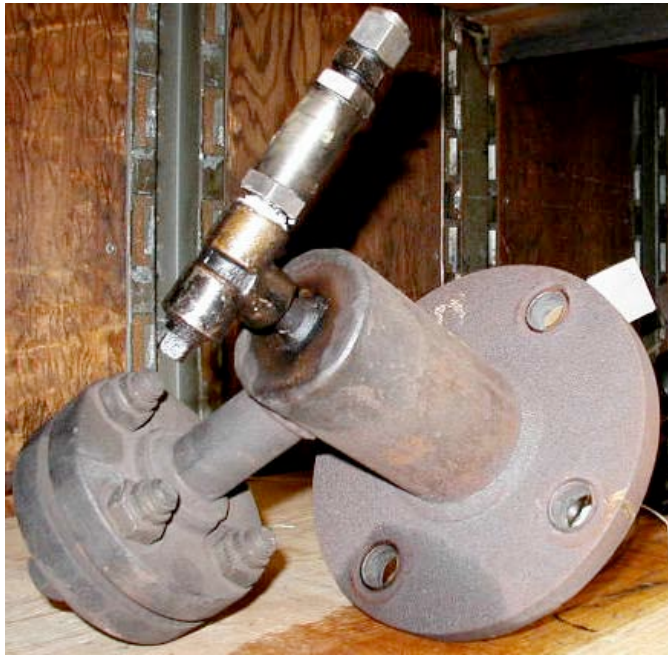


Fig. 2: Typical Fuel Nozzle Assembly with Liquid Fuel Check Valve.

The turbine in question was a liquid-fuel-only machine but did not have atomizing air. See Fig. 2 above and Fig. 3 below. It has an RVG fuel nozzle tip inside a nozzle body casting. Notice that the vortex generator and nozzle tip are badly coked.



Fig. 3: Coked up RVG Liquid Fuel Nozzle (as viewed from discharge end)

The fuel nozzle was inspected, cleaned and reinstalled. The turbine was restarted and the same problem persisted. However, before the chamber could be damaged, the turbine was tripped. The fuel nozzle assembly in its entirety was replaced and the turbine restarted. The problem had been eliminated.

Upon testing of the fuel nozzle removed from the turbine, it was found that the nozzle body was internally “cracked” and the body needed to be scrapped. Thereafter, the client instituted a testing procedure, as part of its preventive maintenance (PM) program, to always pressure test the fuel nozzle assemblies when doing combustion inspections.

For more information regarding the testing of fuel nozzles, please contact Dave Lucier of ***PAL Engineering*** by email at [dave@pondlucier.com](mailto:dave@pondlucier.com) or his cellular phone: 518-330-4801.