

“KEEPING PACE” - #82

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HOT FILAMENT STRUNG OUT BY THE FORCES OF IMPACT:

“Keeping Pace” - #1 (April, 1984) discussed how accident investigators can tell whether the incandescent headlamps in vehicles were “On” or “Off” at the time of impact. If a filament is hot, it is ductile, which means that it can be strung out, as shown in the parking lamp bulb above. If the filament is cold, it cannot string out, but it can only break apart, in what is termed a “cold fracture.” There can also be other indications as to whether the lamp was energized, such as the coloration on the filament.

In some cases, the headlamp filaments are completely lost or destroyed. But if the parking lamps are proved to have been “On,” that is some indication that the headlamps were also “On.” It is not proof, however, because the parking lamps can be energized separately from the headlamps.

(Editor’s Note: There is no known method yet for analyzing solid state, or laser activated lamps, for “On” or “Off.”)

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TURBOCHARGER FIRE:

Before the fire, this semi-tractor had so many embellishments that it had been on the cover of a national trucking magazine. One day, as it was being driven, the engine suddenly started to race at full RPM. The driver could not stop the engine from racing, no matter what he did. After five or ten minutes, the overheated engine finally set the semi-tractor on fire.

The red arrow in the photograph points to the turbocharger. Exhaust gases from the engine spin one end of a turbine as they exit the engine. (A turbine is a set of high speed fan blades, like the ones in a jet engine.) Via a steel shaft, this first turbine spins a second turbine which forces air into the engine intake, to create more power in the engine.

There are rubber seals inside the turbocharger around the shaft which connects the two turbines, and engine oil is continuously circulated around this shaft for lubrication. In this fire, one of those rubber seals failed, and allowed engine oil to enter the compartment which contained the turbine which pumped air into the diesel engine's cylinders. A diesel engine will burn oil just as well as diesel fuel, so the continuous supply of engine oil caused the vehicle engine to run-away. Shutting off the ignition key had no effect.