

WP 501 Work Report October 2018

- Seth Adams



1. Attempted to flush diesel system to find fuel pump fuse blew each time pump was operated. Inspected pump and found fuel pump was locked. Removed pump head from motor and determined pump was locked while motor was able to freely spin. Disassembled pump, cleaned, and reassembled pump to find problem still existed. I believe water may have frozen in pump and bent something causing it to bind. Replaced pump with one from stock.
2. Reattempted to flush diesel system to find pump could not get suction. Reset emergency stop valve. No suction. Added fuel to bottom 1" of sight glass. Got suction and pressure to 20#. Primed fuel system to engine inlet by purging into bucket. Reattached fuel line to engine.
3. Cleaned and refilled oil bath air filters on air compressor.
4. Checked oil level and operation of oil level float on air compressor. Found in satisfactory condition. Will eventually change out oil with an R&O Turbine oil.
5. Filled sump and strainer box with 110 gallons of oil.
6. Topped off oil in governor.
7. Flushed and then filled cooling water system.
8. Attempted to start engine multiple times. Investigation revealed fuel rack was seized. Disassembled all fuel rack linkages to locate and found Cylinder5 injector to be stuck. Freed up injector and reassembled fuel racks. Rack moves smoothly.
9. Reattempted to start. No success. Adjusted fuel pressure relief valve at pump to get 40# on gauge. No success at starting. Disassembled outlet tubing from fuel return rail relief valve with fuel pump running. No fuel was found to be coming from relief valve. Removed relief valve. Primed system through valve. Took a fair bit of time to prime through engine. Disassembled, cleaned, and remounted relief valve. Large air pocket in fuel rails is thought to be to blame. Because this engine has no return flow sight glass, its impossible to determine if fuel is circulating through engine and back to tank, and whether any air is still in the system.
10. Started engine. Engine fires, and idles very rough. Does not want to stay running. Had to throttle up to keep it running. Ran for ~30 minutes while diagnostics were performed. Lube oil pressure was obtained, piston cooling pressure was made. At least 2 cylinders are not firing or misfiring. One or two cylinders have a pronounced knock. One cylinder accounts for 95% of the smoking upon cutout of injector. Successfully got locomotive to move ahead and back a few inches. Shutdown engine, drained cooling water. Leak on union from oil cooler pressure relief valve noted to be leaking steadily; will require tightening. Various coolant leaks at old rubber hoses noted. Governor seemed to operate sluggishly.

Seeing as fuel problems were the major issue of these past few days in getting the engine to run, I would reckon they are what are hindering the locomotive from running smoothly. My course of remedy would be to change the fuel filters again, have the injectors rebuilt, timed, and their racks set, and flush the governor with diesel, flush with oil, and then fill with oil. After this is performed, the locomotive should be ran for a few weeks, and then the oil drained, the sump mucked, the oil filter changed, and new clean oil filled. I would also change the oil in the air compressor and governor at this time. Operating crews should keep a close eye on lube oil pressures, especially since there is currently no low LO pressure safety shutdown switch installed.

The next thing to do is pull the injectors and sent them off to a shop for a rebuild. I've drained the coolant through the engine valve, the water pump casing, and the compressor heads, but take a second look before deep winter arrives to make sure.