Locomotive Check List

As of January 9, 2019

Pre-Start

Move the engine, tender and utility car from the storage container to an open steaming bay. The engine, tender and utility car should be coupled together as one unit including safety chains and brake lines.

Check the log book kept in the utility car for any problems last run day. Log the time and date into the book of this run on the next log page.

Lubricate the engine, drive wheel journals, valve motion and drive rods.

Check the cylinder lubricator, left side forward of engine, by removing the brass cap, fill to top with steam oil.

Lubricate the brake cylinder by removing the screwed brass plug from the brake steam line and putting in a few drops of steam oil. Replace the plug.

Attach the foot rests to the tender.

Reinstall the safety valves on top of the boiler. Use thread compound on the male threads.

Close blow-down valves by pushing in the reach rods on left and right side of cab.

Reconnect the injector lines at the injectors.

Tighten the caps on top of the boiler check valves right and left side of boiler forward.

Filling the Boiler and Tender with Water

Make sure the Firing Valve (right side of tender) is closed.

Open the valves on the propane tanks in the utility car, beginning with the rear most tank.

Bleed the propane line to the firing valve.

Open both injectors and open the blower valve.

Reinstall the filter bowls on the right and left side front of tender under the deck.

Attach the hose to the water spigot on the steaming bay. Open its valve and flush out the hose.

Attach the hose to the coupling under the left side of the cab and open the valve.

Open the water valve and fill the boiler until the sight glass shows about 2/3 of a glass. Disconnect the hose from the boiler fill valve under the cab.

Make sure the water feed lines to the injectors in the tender and the tender drain valve are closed.

Fill the tender full of water.

Lighting off

Make sure the throttle, injector valves and blower valve are closed. (Throttle is under the right side of the cab roof and is closed when it is fully forward.) Make sure the Johnson bar or cutoff lever is in mid phase, straight up and down.

Install the exhaust fan on top of the stack but do not plug it in at this time.

Open the firing valve on the tender and make sure that propane is getting to the burners in the firebox. Close the firing valve when you smell propane.

Light the fire by using the BBQ lighter (find it in the utility car). First light the BBQ lighter and hold it in the fire box then turn on the propane at the firing valve. Hold the lighter near the burner. If the fire does not light turn off the firing valve, let the propane dissipate and try again.

Plug in the exhaust fan when you have fire on all of the burners.

Bring up the fire as far as you can without blowing out the bottom of the fire box.

> As the boiler gets hot and the steam pressure builds keep an eye on the water glass. The water level in the glass should remain constant. If the water level is falling check for leaks, most likely the blow downs or other boiler fittings. If you think you are getting a false reading in the glass try opening and closing the water glass drain valve. This should result in a sudden drop in water level followed by a quick rebound and settling at an accurate water level reading.

Steam-up

When the boiler pressure gets to 40 PSI open the blower valve a little and remove the exhaust fan. The exhaust fan will be hot, use gloves.

Open the blower enough to ensure the flame is properly exhausting through the boiler tubes. As the boiler pressure increases the blower will create a heavier draft. Adjust the blower valve down to compensate for the increased boiler pressure.

The safeties will pop at 125 PSI and 130 PSI. Allow the safeties to pop off then operate the injectors, one at a time. Try the right side, Ohlenkamp, first. Allow it to bring the boiler pressure down below pop off. Then do the same with the left, injector, also an Ohlenkamp type.

Injector operation

To start an injector first turn on the water. The water valve is located in the tender well on the same side as the injector you are using. Water should run out the overflow pipe on bottom of the injector. Then open the steam valve. The overflow should stop. Water will be running through the injector through the boiler check valve and into the boiler. Sometimes you can hear a vibration or rattle as the injector operates. If the overflow does not stop or gets more violent throttle back the water. If still it doesn't pickup turn off the steam and start over. If the boiler pressure is below 80 it may not pickup. Rebuild pressure and try again.

To turn off an injector first turn off the steam then the water.

Running the Locomotive

Before leaving the steaming bay check to see that all hosed and wires used for the cold start have been removed from the locomotive.

Check the locomotive brakes and check the train brakes by operating them.

Open the cylinder cocks by pushing forward the lever on the cab floor, left side. This operates the cylinder cock reach rod and if pushed more than half way will go over center and be difficult to close.

Put the Johnson bar in full forward or reverse depending on the direction desired.

Open the throttle slowly. The throttle is opened by gently pulling the leaver back. It takes a moment for steam to reach the cylinders and then to create enough pressure to move the engine/train don't get anxious, give it time.

As the engine runs the cylinders will get warm and you can close the cylinder cocks. Steam entering a cold cylinder will condense to water and cause a hydraulic ram damaging the rod packing and cylinder head gaskets. Run for several minuets while worming the cylinders. When the engine sits for some time, in the station loading passengers or filling the tender with water or when there is a blockage on the railroad you will need to run with the cylinder cocks open to worm the cylinders again.

The operation of a steam engine is dynamic in relation to the profile of the railroad you are running over. In the days of steam an engineer wanted to have a fireman who knew the route and could anticipate the changing needs for steam. As you become familiar with the profile of the

railroad you will be able to anticipate the engines need for power/steam. Going down grade is a good time to run an injector. As you approach an upgrade you will know to build up your fire and turn off the injector. Keep an eye on the water level in the boiler. If you are stopped use the injector if necessary.

It is easier to start a train than stop it. As you approach a down grade slow to a speed that will allow you to control the train downhill and stop if you must. Use the train brakes going down grade, set just enough train line pressure to hold the train speed.

Passengers are unpredictable. Check with your conductor and get your signals straight. As engineer you are responsible for the safe operation of the train and the well being of your passengers. See section 302 in General Operating Rules.

Shut down

Back the engine and utility car into the steaming area. Turn off the fire by turning off the propane tank valves in the utility car start at the back and go to the front tank. When the fire goes out close the firing valve on the tender.

While waiting for the engine to cool for blow-down (see below), inspect the engine, lubricate the rods and valve gear.

Fill the steam oil lubricator disconnect the positive side of the battery in the utility car.

Remove the foot rests.

Drain the tender and its water lines. Remove and clean the filter bowls clean them and reinstall them, front of tender under the floor.

Note: Draining all the lines on the engine and tender is important as water left in them may freeze and burst the tubing.

Blowing down

Allow the boiler to cool down to 40 PSI. Using the injector may help speed the process. The boiler needs to be hot when it is blown-down but with the pressure not more nor less than 40 PSI.

Open the blow-down valves in a clear area where the boiler water will not make a mess and blow onto parked cars and other people.

After blowing down wipe down the engine jacket and running gear and tender.

Open the injector valves and the blower valve

Loosen the caps on the boiler check valves so that these lines can drain.

Disconnect the boiler feed lines from the injectors and allow them to drain.

Fill out your log sheet and replace the book in its box in the utility car.

Put the engine away in the storage container.