

## Overview of planned mechanical work for the off-season Fall/winter 2016 through spring 2017

Depending on a few variables such as the amount of available work ours and varying amount on manpower we should be able to get quite a bit of work done before next season given the experience in work rotation gained this spring. December through to possibly February will likely allow for little work done on the locomotives depending on the weather but there are plenty of things that can be done to prepare for the upcoming shop work.

There are still some specific tools to be made that can now be done in-house thanks to the mostly set up machine shop. There are also the non-rail vehicles that can be worked on to a degree depending again on weather, though the below deals just with the locomotives. I have tried to put together a quick outline of what needs to be done along with a rotation list for what to put over the pit first. keep in mind this is just a quick list of stuff I came up with in a couple of hours and more may be added later with everything being compiled into more proper work and scheduling lists.

I've started this off with a rotation list for the order of locomotives to receive pit work. This will likely dictate the order of rotation/placement of the other locomotives through the shop.

Over the pit:

1. **QRR 1100**: Needs pit time since it has been just about two years at this point. I figure that the pit work should be done first, and then it can be moved over to 1 rail when ever is convenient.

In addition to the standard work, the pit will also be helpful in gaining access to certain areas so we can restring the emergency fuel cutoff line that broke. The wire had rusted out about two or so feet back in the pipe on the left side and a guest yanked it out. I've been thinking on and off about ways to update the locomotive to an electrical kill switch like on the 2873.

2. **WP707 & WP2001 (SN712?)**: These units haven't had pit time for quite some time. I'll have to pace it off or talk to Habeck but they should both be able to fit once the 165 gets moved down to the gift shop. If not then break the consist and move one in at a time, in which case I'd like to get the SN712 over the pit as well to get the motors and axles lubed since it has been getting a lot of rolling time as of late.

Once pit time is done on 707 and 2001 they can be rotated over to 1 rail as needed. I'll try and look into the air compressor issues on the 707 and the probable cause during the lead up to its shop time so we'll have a plan of action when it's shop time arrives.

3. **WP917-D & SP2873**: These units will likely take up the other section on 1 rail west of the 165 like last year and require no specific order to go over the pit at this point.

Basic outline of non-pit work per locomotive:

**WP917-D:** Over all 917 seems to have done pretty good this year but I'd like to prioritize the following on it. There are also some other small fiddly things to do that don't need to be listed here.

- S13 power contactor: Remove and fully rework on the bench:
- Finish radio installation: Get the clean-cab conversion finished. I should be able to make the connectors needed now that I've found an example to get my measurements and data from.

**WP707:** There is a multitude of things for this unit I'd like to get done or at least start to address.

- Air system: Lots of stuff here.
  - Reassess the work done under the front pilot to check how leaky it is. I may have a couple of different solutions for getting those fittings properly resealed though all would require them to be taken apart again.
  - Apparent weak air compressor: As mentioned in the pit rotation section I'll start looking into probable causes now so that when it comes time to try and implement something we won't be wasn't shop time. As of now I after talking to CMO Jackson about it recently I think I'll start looking into issues caused by bad loading/unloading valves and also check for any improperly set relief and regulating valves. I'll also try and get a hold of McClain and try to get him in on this at least in email form since he's dealt with this a couple of times.
  - Attempt to find and address the various leaks in the system in the rear of the engine room.
- Cooling system: not much here, the liquid portion seems to be good.
  - Reinstall the shutter pistons
  - Apply any adjustments that need to be made so the system works with functional shutters. I'll need look into the specifics of this system on the 7-series because I think they make changes in the operation of it for the 9-series of which I'm familiar with. More on this later when I've come up with something cohesive.
- Brake system: Standard inspection and cleaning like we did to the RAL fleet this spring.

**WP2001:** Like 707, 2001 will need some specific work done in addition to the standard inspection as well.

- Air system: Over all it seems to be pretty good now. There is that large separator pot on the one side that needs to be pulled apart and cleaned with a new drain valve installed.
- Brake system: Should only require the same work as that done to the RAL fleet this spring.
- Coolant system: Main issue is the radiators.
  - Inspect and log how many radiators are bad, then list them by level of severity. I'd like to do this for all loco's with radiator issues. I'll list out my thoughts on radiators in another email.

**QRR1100:** Some specific items for this on in addition to standard work also.

- Air system: Various leaks and other stuff.
  - I'd like to fix the leaky solenoid valve that controls the loading/unloading of the compressor. All that I should have to do is pull the unit out so I can remove the valve to reface it. If refacing is not an option I might have some spares to work with in sock. If not then I could probably make a new valve. Otherwise we'd need to order a new magnet valve.
  - Install automatic drain valves (spitters.) We have some in stock and the unit already has an electronic unloading control to splice into for drain valve control. This should help minimize moisture build up.
- Cooling system: Not too much here. The liquid portion seems ok, though I haven't checked it in the recent cold weather to see if there is much or any leakage at the lower liner seals.
  - Shutters need to be addressed. I'm still trying to work out a solution for shutter getting locked but at the moment I think I'll have to pull the grill to get a better look at the problem area. There is also the matter of the automatic control. It shouldn't be too hard to repair, I think I can repair or replace the bad solenoid valve and we may need a thermocouple to control it. I'd also like to keep the manual control in the cab just in case.
- Brake system: Same as before, rinse and repeat.
- Oil leaks into the exhaust system: This is the part that may cause some headache. McClain told me a few things to try that may isolate the issue.
- Electrical: Just a couple things here.
  - Check headlight resistors for the front headlights.
  - Install radio in similar manner to WP917-D.
- Journal boxes: Jack up, inspect, and clean as needed.

**SP2873:** Should be the same as this spring, with the addition of (hopefully) getting the water pumps and their feed pipes sealed. there is also the issue of the leak in the water tank. I'll try and have the issue with the bell fixed before Santa Trains.

**USA1857:** I'll submit a separate report for this locomotive at a later date. I'd like to prioritize the locomotives that are currently in operation so they can maintain that status.