



To: Providence & Worcester Railroad
From: SpillX
Subject: Tank Modification to Limit Fill Level to 1,200 Gallons

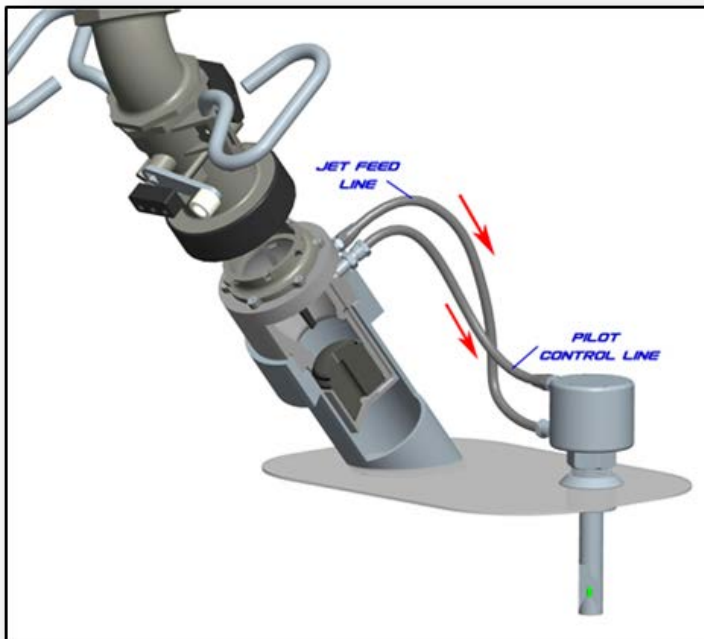
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SpillX Introduction

The SpillX system was developed to improve fueling rates, reliability and safety associated with locomotive fueling. The system also provides the ability to stop flow of fuel into the locomotive once a predetermined level has been reached.

SpillX is comprised of a receiver that fits into the fill tube of the locomotive and is connected to a jet level sensor which determines the fluid level in the tank and then stops the flow of fuel into the locomotive once it has reached its predetermined “full” point. This jet level is installed in the top of the tank and stops the flow of fuel into the tank once 96% capacity has been reached.

The illustration below represents the nozzle hooking up to the SpillX receiver and both the jet feed and pilot control lines attaching to the jet level sensor. The system operates by hydraulics only, once the fluid level reaches a certain point on the body of the jet level, it stops the flow of fuel through the piston on the bottom of the receiver and forces it upward, sealing against the housing and stopping the flow of fuel into the tank, even with the pump on and nozzle engaged.



Proposed Development Effort

In order to quickly respond to the needs of PWRR, SpillX proposed to modify its existing system so that the jet level would be installed inside of the tank at a level that would cause the SpillX receiver to stop the flow into the tank at 1,200 gallons as opposed to 96% capacity of the tank.

In an effort to accomplish this we need to be able to place a bracket inside the tank to support the jet level sensor at the correct height. The picture to the right highlights and access port needed to install the modification.

This access port would allow us the access needed to install and mount the brackets required. Once we have this access, we would need to design and fabricate six (6) brackets (2 for each locomotive – one on each side) to install the modified jet level systems on the locomotives.

Installation

SpillX was able to determine the appropriate depth within the tank where the jet level needed to be placed to ensure the maximum fill level would be limited to 1,200 gallons maximum in order to meet the weight restriction imposed by stakeholders.

The SpillX system was then installed on several locomotives and ensures that each locomotive can only be filled the 1,200 gallon limit which is reflected by the max fill line on the sight glass in the picture below.

