



Franklin Fueling Systems

Fueling Innovative Solutions

November 21, 2006

Murphy Oil USA
c/o Kevin Roussel

Re: Manifolded Lines with FE Petro Submersibles

Kevin,

This is in response to inquiry about the recommended installation of two FE Petro Submersible Turbine Pumps (STP's) manifolded into a single product discharge line. For our reference in this discussion, I have attached five documents that are readily available on our website. In the Technical Document section of our website, www.fepetro.com, you will find ENGSK09, TB013, TB010, and TB004. In the section of our website allocated specifically for Murphy USA docs, www.fepetro.com/murphyusa, you will find the Quick Install Instruction sheet for your typical site (see attached).

First, let's review your typical installation. The Quick Install sheet details that the manifolded STPs are typically on the Regular Unleaded product, controlled by Smart Controllers (STP-SCI) in a Master/Slave-Alternating Circuit (M/S-AC) configuration. In M/S-AC configuration, the STP's are both in a lead-lag scenario as well as being in a scenario where the lead pump is alternated between the STP's. We also know that your typical installation of these manifolded STP's is within a single tank and with mechanical line leak detection installed in both, as shown in ENGSK09 and further detailed in TB013 (see attached).

In the typical Murphy USA manifolded STP installation described above, we know that the normal operating pressure of the line will be about 36 psi from a PMA200 (standard 2 Hp fixed speed unit), as detailed on TB004. Because the normal operating line pressure will be below 40 psi, we would recommend standard check valves (Model STD, default factory model) to be installed in both STP's and no in-line (swing) check valves be used. As detailed on TB010, the standard FE Petro check valve will not relieve the product line back to tank until pressures increase above about 40 psi when the STP is not running.

If a manifolded installation of FE Petro STP's were to vary from the typical Murphy installation described above, especially those where normal operating line pressure were to exceed the FE Petro Model STD 40 psi setting, please consult us to ensure the right pump controller configuration, the proper line leak detection configuration, the right line check valve configuration, and the right tank gauge configuration is achieved to prevent any environmental or safety issues that could arise.

Please contact Franklin Fueling Systems if you have any further questions or concerns.

Regards,
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