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February 4, 2013

ARM-4073

Subject: Master / Satellite Line Leak Detection

AST-4010

AST-4012

CFOSI

FST-200

ISM-4080

ISM-4081

ISM-4080 MC

LD-2000

LD-2000\E

LD-2200

LD-2200\75

LD-3000

LD-3000\E

LD-3000\FL

LDT-890

LDT-890\AF

OFF-2\1

OFF-2\2

OFF-3\1

OFF-3\2

OFF-HHP

OFF-FTK

PLC-5000

SUMP-300

VMI-PMTT

The piping system for a typical truck stop consists of a submersible pump with line leak detector (LLD) and with long lengths of piping going to a master dispenser. The flow of fuel goes through the dispenser meter and is directed back underground to a satellite dispenser. This allows the driver to fill both saddle tanks simultaneously. A truck stop may have several master / satellite combinations. It is just as important to monitor the piping from the master to the satellite as it is to monitor the piping from the submersible to the master dispenser. Each master dispenser has its own solenoid valve, which provides a delay, allowing the LLD enough time to perform a leak search to the master dispenser.

Many modern dispensers permit line pressure communication between the main delivery line and the satellite line, allowing a single LLD installed at the turbine to monitor the entire underground piping system for leaks. If a master / satellite facility is equipped with this type of dispenser, no additional leak detection is required for the satellite line. However, many dispensers do not allow this communication between the master and satellite lines. This creates a dangerous and unlawful situation: unmonitored pressurized underground piping.

In the event that the master dispenser does not allow the LLD to monitor the entire underground piping system, an additional LLD mounted in the master under dispenser containment (UDC) is required. To determine whether an LLD is required in the master UDC:

1. Conduct a 3gph @ 10psi leak test at the impact valve of the satellite dispenser.
 - a. If the LLD passes the test, the full underground piping system is being monitored.
 - b. If the LLD fails the test, conduct the test from the impact valve of the master dispenser.
 - i. If the LLD passes at the master, but fails at the satellite, an additional LLD is required in the master UDC.
 - ii. If the LLD fails at the master, adjust / replace the LLD.
 1. Retest from the master to confirm LLD functionality.
 2. If the LLD passes the test conducted from the master, move back to the satellite and test to determine whether the satellite line is being monitored.

If additional line leak detectors are required in a site's master UDCs, please note the following.

Vaporless Manufacturing, Inc.

8700 E. Long Mesa Drive, Prescott Valley, Arizona 86314

800-367-0185 928-775-5191 Fax: 928-775-5309

Email: vmi@vaporless.com Web Site: www.vaporless.com

Each installed LLD must be tested annually for 3gph @ 10psi compliance (i.e. test from each satellite dispenser). It is not acceptable to conduct a catastrophic leak test at a single satellite dispenser.

As fuel passes through the leak detector that is monitoring the satellite piping, the leak detector must have something to check against. Therefore, a solenoid valve with an adjustable delay should be installed at the satellite dispenser. This solenoid valve should be set to delay at least 5 seconds longer than the solenoid valve in the master dispenser to provide the satellite leak detector enough time to check the piping for a leak. In the absence of a solenoid valve, a ball valve, left in the closed position when not fueling, must be installed.

Having installed the leak detector in the master UDC, a relief chamber must also be installed to vent the leak detector. Since a possibility exists that some fuel will pass through the leak detector to the vent tubing, that fuel must have some place to go without losing it into the sump. The relief chamber will serve as a catch basin for the fuel, and must have the capability of being drained. This should be set up on a preventative maintenance schedule of at least once per month.

The below drawings show the concept of how the piping should be installed. Some dispensers may not have enough room to install the leak detector and relief chamber inside. It is acceptable to run pipe and fittings outside the dispenser.

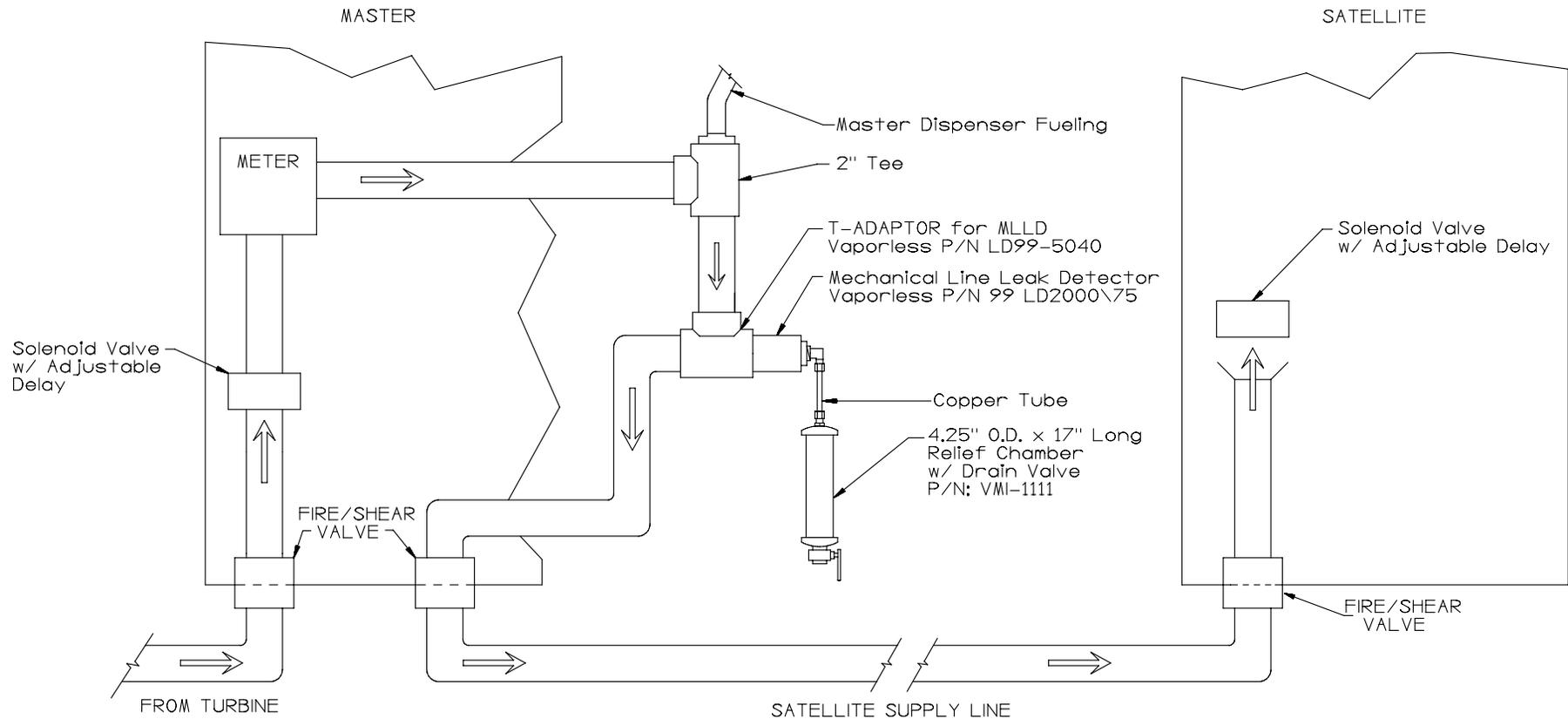
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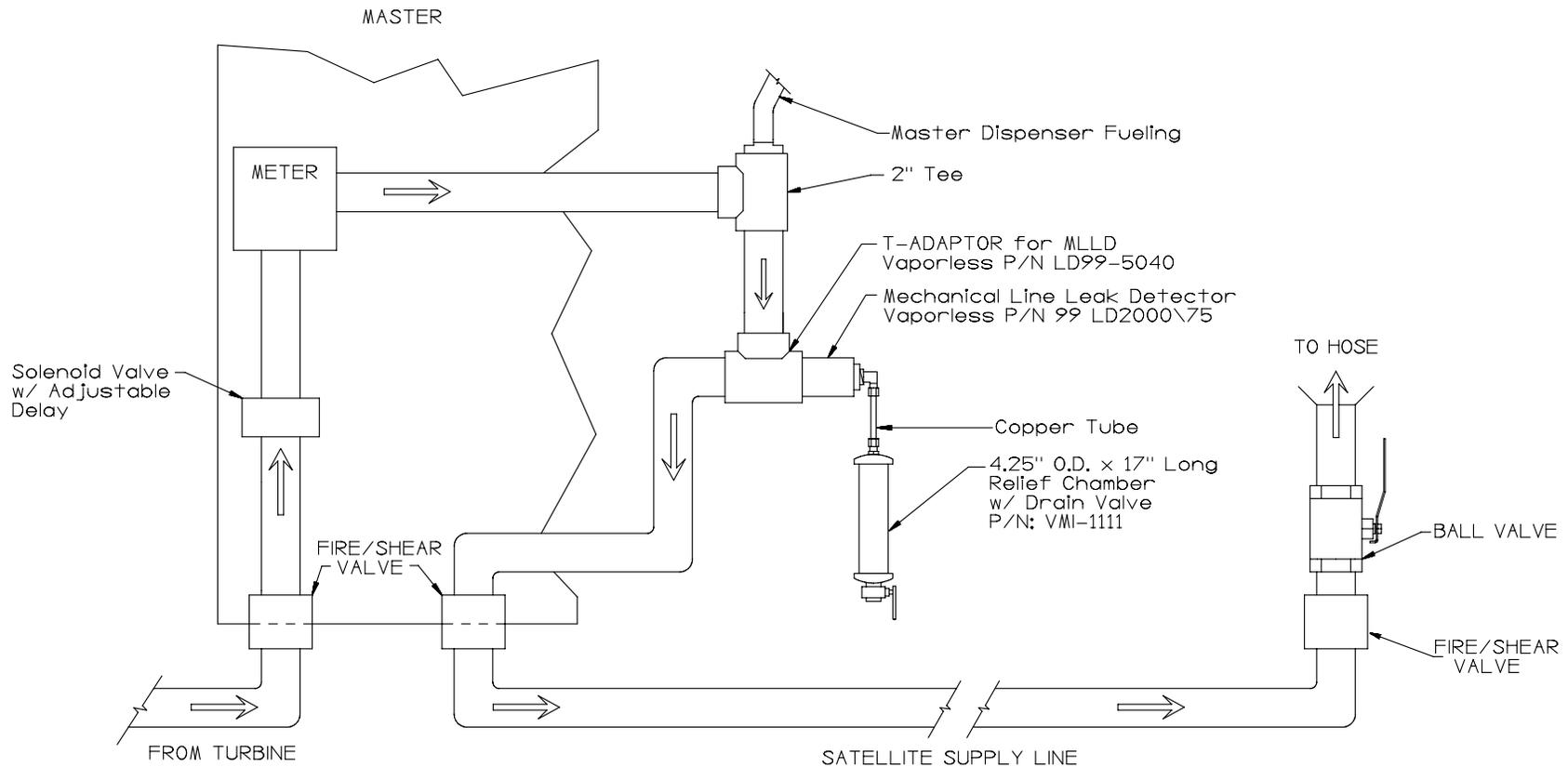
VAPORLESS MFG. INC. SATELLITE SUPPLY LINE MONITORING



Notes:

1. Monthly, drain condensation and seepage from Relief Chamber.
2. If MLLD will not open, drain Relief Chamber into approved container using drain valve. If Relief Chamber has filled with fuel, replace the MLLD and retest line. Under normal operation the Relief Chamber will not fill with fuel.
3. If MLLD will not open and the Relief Chamber contains no significant amount of fuel, then test the line for potential leaks.

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