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**Program Letter**

Bureau of Storage Tank Regulation  
November 10, 1997

## **Conventional Suction Pipe With An AST**

A suction piping system is generally associated with a specific piping configuration between a dispenser and an underground tank. The Department has been asked to evaluate and consider a configuration associated with an *aboveground* storage tank. Bureau technical staff have determined that a specific configuration associated with suction piping from an AST could meet the leak prevention and detection equivalency associated with the conventional-suction piping of an UST system.

The department has historically classified underground pipe associated with an aboveground tank as pressurized. This meant that the pipe had to be tested in accordance with the pressurized pipe requirements. An annual tightness test is performed or an equivalent method of electronic monitoring had to be installed.

To understand the logic supporting the proposed concept, some basic comparisons must be made with the conventional suction pipe configuration on underground tank systems. Underground conventional suction pipe, when installed properly, has a recommended slope of  $\frac{1}{4}$  inch per foot from the dispenser to the check valve at the top of the UST. This slope allows for entrained air to enter the pump and be expelled by the air eliminator. The slope also places head pressure on the tank top check valve to hold a prime in the suction pump. Should a leak develop in the product pipe, air would enter at the breach in the pipe and rise to the high point at the pump. Product in the pipe above the breach would leak out to the elevation of the breach. Under most circumstances when the pump is operated with a breach in the suction supply pipe, the pump will pull air and not be able to overcome the leak, or will pump product on an intermittent basis as the negative pressure from the suction pulls air into the pipe.

There is one major difference in the way that product will react to a leak under this AST suction pipe concept. If the system is not operating when the leak occurs, the product will respond the same as with the UST system and leak out to the point of the breach, with air moving to the suction pump. However, the difference occurs when the suction pump is turned on. As the solenoids open, the head pressure of the tank will force the product out of the breach in the pipe and may overcome the leak with no noticeable change in the dispensing of product, as would be noted with an underground suction system. For this reason the department has implemented safe-guards, and will require that AST suction systems configured as conventional suction meet the following criteria.

**System Configuration:**

- The product pipe must be sloped a minimum of  $\frac{1}{4}$  inch per foot from the pump to the transition sump.
- The product pipe shall be of a double wall configuration, either coaxial or conduit style.
- A weather tight transition sump shall be placed at the low point of the pipe at the tank.
- The sump shall be sized to have a capacity equal to the volume of product in the suction pipe system.

- A solenoid valve shall be located at the point of discharge at the tank and at the transition point of the flex connector and piping in the sump.
- A method of pressure relief in the exposed product pipe is required.
- A sump is required under the dispenser.
- A vacuum actuated shut off valve, with shear section or equivalent components, are required directly under the dispenser.
- An approved flex connector or equivalent component is required in the transition sump and at the dispenser.

**Operational Requirements:**

- A method to monitor the transition sump for leaks in the sump shall be provided. The monitoring device must alarm or not allow the solenoid to open if the monitor detects product in the sump.
- Tank inventory control is required and shall be documented. Tank tightness testing is not required.
- Line tightness testing is required every three years.

**Plan Review Requirements:**

- All components required to determine compliance with this configuration shall be identified on the system layout and included in the materials list.

Installers providing systems of this configuration are responsible to advise operators of the operational requirements to remain in compliance.

It is imperative that operators of AST systems configured as conventional suction remain alert to any erratic system behavior or any indication of product loss from the system and investigate.

## Conventional-Suction from an AST

