

Colder weather in Montana and heating Oil tanks go hand in hand. The Montana Department of Environmental Quality's Underground Storage Tank (UST) Program regulates heating oil tanks and emergency generators tanks in Montana. It is important for owners and operators to know how the underground tank requirements relate to your tank and how to maintain compliance with the department regulations.

Heating oil and emergency generator tanks can cause a lot of confusion because of their complex pumping and piping systems. This can lead to further confusion when implementing Underground Storage Tank (UST) rules. These tank systems pull fuel from the tank intermittently through two lines, the supply and return. Fuel that isn't burned in the generator or boiler is run back to the tank through the return line. Here is a photograph of a typical supply and return line for an emergency generator or heating oil tank system (fig. 1).



Fig. 1: Typical supply and return line for an emergency generator or heating oil tank system

There are three types of piping systems that emergency generator tanks and heating oil tanks use. The department generally refers to these tank/piping systems as U.S. Suction systems. But we must look at the supply line and the return line to see what the department requires for piping leak detection. Below is a diagram of the first type of system (see fig. 2). The figure shows the fuel is dispensed at a higher elevation than the top of the tank. The supply line slopes back to the tank and the return is gravity fed. The supply line is "Safe Suction" if the only check valve is located at the generator. "Safe Suction" means that the product is moved at less than atmospheric pressure, that the system has only one check valve located near the pumping system, and all piping slopes back to the tank. All three of these requirements must be verifiable in order for an inspector to designate a piping system as "Safe Suction". "Safe Suction" supply lines do not require leak detection because if a hole develops in the piping; the pump will lose its prime, and the product in the line will run back to the tank. This kind of piping system acts like a drinking straw. If you get a hole in the straw, the straw will not draw liquid. The return line is gravity fed and if a leak develops in this line, a large amount of product could leak into the environment. The only leak detection requirement on the return line is a 0.1 gph line tightness test mandated to be

conducted at least once every three years. Some facilities choose to conduct monthly interstitial monitoring in lieu of the line tightness test.

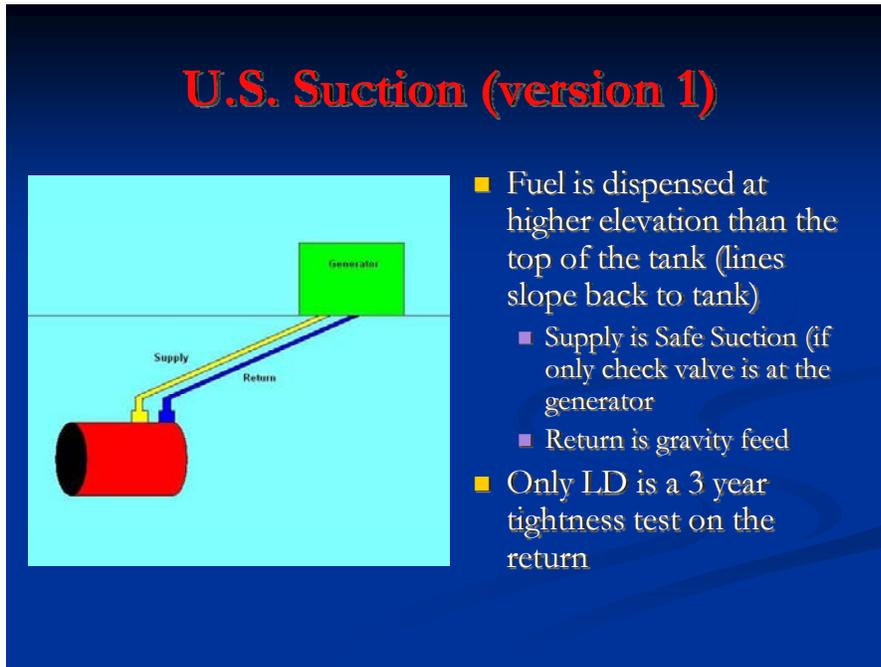
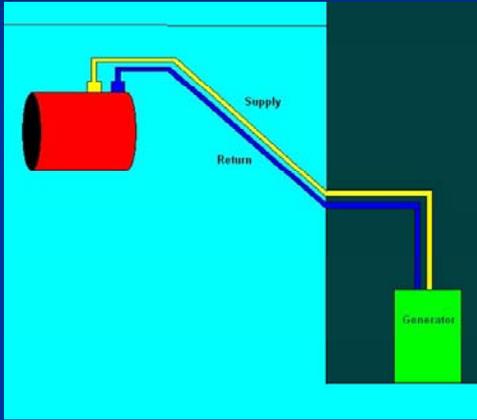


Fig. 2: U.S. Suction (version 1)

The second type (version 2) of U.S. suction system that heating oil or emergency generator tanks use is described in the diagram below (see fig. 3). Fuel is dispensed at a lower elevation than the tank top. None of the underground lines slope back to the tank. The supply line must operate at more than atmospheric pressure and is therefore designated “pressurized”. The pumping system must pump product from the generator or boiler back up to the tank (at more than atmospheric pressure) through the return line. Therefore, the return line is designated as “pressurized”. If either the supply or return develops a hole in the piping system (in this example), a leak to the environment would occur. Therefore, the piping system outlined in version 2 requires a continuous method of piping leak detection. These types of systems have double walled piping and continuous interstitial monitoring sump sensors wired to a tank gauge via a relay that will shutdown the pumping system if a leak is detected. The department approves using an autodialer to meet this shutdown requirement as well. Autodialers communicate with the owner or tank operator when a sensor detects product or goes into alarm. The response team is expected to respond to an alarm situation within one hour to meet department requirements.

U.S. Suction (version 2)

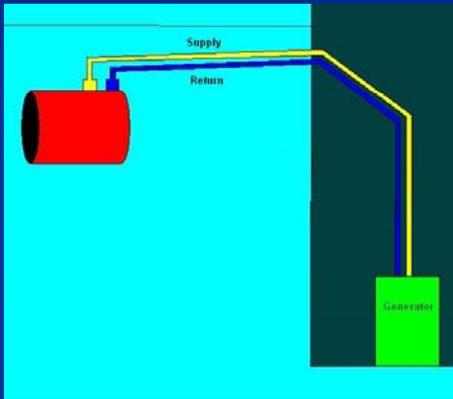


- Fuel is dispensed at a lower elevation than the top of the tank. (underground line does not slope back to tank)
 - Supply is “pressurized”
 - Return is “pressurized”
- Continuous LD and shutdown requirements must be met. (ISM)

Fig. 3: U.S. Suction (version 2)

The last type of U.S. Suction (version 3) is shown in the diagram below (fig. 4). In this case, the underground portion of the supply line slopes back to the tank and is designated as “safe suction”. As the supply line enters the building, it slopes down to the generator and boiler. If the supply line has a leak, product would either run back into the tank or run inside the building. No harm to the environment would occur, if the supply line developed a leak. The return line is designated as a “gravity feed” because the pumping system must push the product from the generator or boiler back up to the tank. Once the fuel enters the portion of the piping that is underground; gravity is the primary force that takes the product back to the tank. If a leak occurred in the return line, the fuel would either pour into the building or it would enter the environment. This type of U.S. suction system is very common in schools across Montana. The only piping leak detection requirement is a 0.1 gph line tightness test conducted on the return line at least once every three years.

U.S. Suction (version 3)



- Underground portion is the same as version 1.
 - Supply is Safe Suction
 - Return is Gravity Feed
- Very common in schools
- Only LD required is 3 year LTT on the return line.

Fig. 5: U.S. Suction (version 3)

It is important to note that all regulated tank(s), including emergency generator and heating oil tanks, require an approved monthly monitoring method as well as the piping leak detection requirements outlined above. Here is a general breakdown of the regulatory requirements that apply to your emergency generator or heating oil tank system:

- A monthly tank leak detection method;
- An approved piping leak detection method (as described above depending on the piping layout);
- Corrosion protection on the tank and piping;
- Trained Class A, Class B, and Class C operators;
- Pay annual tank registration fees; and
- A Compliance Inspection conducted at least once every 3 years.

Heating oil and emergency generator tanks have their place in Montana. They are much appreciated on those cold winter days. The department wants to ensure that owners and operators of these systems have the knowledge and skills to meet the department UST leak detection requirements. If you have any questions regarding the requirements for your heating oil or emergency generator tank(s), please contact the department UST section at (406)-444-5300.