THE GAMGRAM

No. 58 **FEB. 2007**

WE ALL MUST AGREE: A WATER DEFENSE SYSTEM IS ESSENTIAL

We continue to receive purchase orders for filter separators without a water defense system included. This is somewhat like having an automobile with no window to see where you are going.

Customers always want a differential pressure gauge to tell them if the elements are plugged up with dirt but if they have no water defense system, water can collect in the sump without anyone knowing about it.

Oh sure, maybe you have told the operator to check the water sump by looking at a sight glass. Our response: How may of your sight glasses are clean enough to see a water/fuel interface?

Or maybe you have told the operator to check the sump for water by opening the drain valve so he can collect some of the sump contents in a container for inspection. That is a good procedure but how many operators do you have who really do that check especially, if nobody is really supervising to make sure they do it or in cold or rainy weather or at 3 AM? Keep in mind that a slow buildup of water is only a small risk. The big risk is a sudden large amount of water – a slug.

Clearly, the only safe way to operate is to have an automatic signal that detects the water in the sump. The earliest method, which is still used today, is to have a slug valve, meaning a valve that will automatically close to stop fuel flow if a “slug” of water is collected in the sump of the filter separator. The sensor or control device that causes a slug valve to close is a float operated sensor in the filter separator sump. Manufacturers of these float valves balance them so they float on the water/fuel interface. When the level of the interface rises to a dangerous position, a hydraulic (fuel) pressure signal is sent to the slug valve which is on the outlet of the filter separator. The valve stays closed and will not allow fuel flow until someone drains the water from the sump.

These float controls are also manufactured so they can cause an automatic sump drain valve to open if the water level begins to rise. If the water level continues to rise when the automatic drain valve is open, a signal goes to the slug valve to close it. Actually, most existing automatic drains were decommissioned some years ago because there were too many incidents where the drain valve would remain open because of a malfunction, causing a fuel spill.

GAMMON TECHNICAL PRODUCTS INC.
2300 HIGHWAY 34 MANASQUAN, N.J. 08736
PHONE: 732-223-4600 **FAX:**732-223-5778 **WEB:** WWW.GAMMONTECH.COM

Because an in-line control (slug) valve that is rated for system pressure is very expensive, other means came into use over the years. Here is a list of some methods:

1. An electrically operated float (weighted to float on the fuel/water interface) can be used to stop the electric motor driven pump in a fixed facility (such as a terminal or loading rack).

2. On a mobile piece of equipment, an air operated or electrically operated interface float can trigger a switch or valve in the deadman system. In a vehicle with an electrical switch and an air operated deadman, there are conductivity probes available that operate at intrinsically safe power levels to stop electric motors or to deactivate deadman systems.

3. Instead of a float to sense a water/fuel interface, there are conductivity probes available that operate at intrinsically safe power levels to stop electric motors or to deactivate deadman systems.

The point we are making is that you can have a reliable water defense system without the need for an expensive in line slug valve.

Regardless of which water defense system is selected, it is important that one be selected that has a feature allowing you to test it periodically to confirm its operation. Here are some of the techniques:

1. Float operated controls were always available with a testing feature that required the operator to use a mechanical device to raise the float, but that did not prove that the float would actually float. Floats can fail due to corrosion or physical damage and the mechanism can have excessive friction due to debris or wear. So periodically, it was necessary to perform a floatation test on the float. One test was to remove the float to make sure it floated correctly in a bucket of water, another was to fill the vessel sump with water to ensure the mechanism and float operated. Eventually, the manufacturers devised superior ways to test these systems by adding a mechanical linkage to remove a weight from the float arm using an external lever. These are called “ballast” testers.

2. Electrical conductivity testers have had an entirely different problem. The testing procedure applied water to the air side (external) of the electrodes but not to the internal or “fuel” side. Corrosion or deposits could prevent the probe from sensing water even if it passed the test. Two different techniques have been devised to test these probes by subjecting small amounts of water to the fuel-side faces.

Purchasers and operators of filter separators are encouraged to revise their operations so they will have effective, water defense systems that can be tested to confirm their safety. You should not place the responsibility on humans who may lack the incentive, the knowledge, the training or the intelligence to perform repetitive checks for water.