

## US Strategic Petroleum Reserve Chooses Multi-Mag For Critical Flow Measurements

The U.S. Strategic Petroleum Reserve (SPR) is the nation's first line of defense against an interruption in petroleum supplies. It is an emergency supply of crude oil stored in huge underground salt caverns along the coastline of the Gulf of Mexico.

Today, the SPR has the capacity to hold 700 million barrels. It is the largest emergency oil stockpile in the world. Together, the facilities and crude oil represent more than a \$20 billion national investment.

To create and expand the caverns fresh water is pumped into the formation to dissolve salt, creating brine. Oil is pumped into the cavern from the top, causing displacement of the brine at the bottom. Brine flows through pipes to surface, where it is pumped into the Gulf of Mexico.

DynMcDermott Operations Company, Inc., a U.S. Department of Energy (DOE) prime contractor for the Strategic Petroleum Reserve, is responsible for the flow metering required to meet U.S. Environmental protection Agency (EPA) permit requirements for brine disposal pipelines to the Gulf of Mexico. The EPA requires semi-annual integrity tests to be performed on each brine disposal line. The flow rate is measured simultaneously on-shore and at a point miles out into the gulf near the dispersion nozzles. The flows are then compared to determine if the pipeline has developed a leak. The criteria for a successful test, is a difference of 4% or less between the two measurements.



In the past, a pitot tube-type meter was used to profile the pipe and measure the flow at the two points. This required the services of professional divers to perform the measurements. The valuable time required by divers to accomplish flow profiling on the gulf sea floor and less than satisfactory results led to a search for a better flowmeter. Because of its unique design and high accuracy in difficult applications **Marsh-McBirney's Multi-Mag** was chosen for the job.

The Big Hill brine line in Jefferson County, Texas was tested over a required two-hour period on June 26, 1996. Big Hill has a 14-mile long, 48-inch diameter pipe and is one of the DOE's toughest flow metering applications. The recorded flows from the two Marsh-McBirney flowmeters matched to within 0.21% and proved the Multi-Mag was an excellent choice for this demanding task.

Supporting data from this test is available from Marsh-McBirney.

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