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CASE STUDIES FOR FREE SWIMMING ACOUSTIC LEAK DETECTION SYSTEM

David W. Kurtz, P.E.¹

¹ Regional Manager, Pure Technologies, Dallas, TX

ABSTRACT: A free-swimming, un-tethered acoustic leak detection device recently introduced has demonstrated its ability to successfully identify leaks in both water transmission pipelines and petroleum product pipelines.

The device is inserted into a fully operational pipeline and can monitor many miles of pipeline during a single deployment. Because the device travels in the fluid column and passes directly adjacent to the leak, it clearly and distinctly identifies the noise signature created by the leak. The position of the device is continuously tracked and recorded by GPS based surface sensors that identify a high frequency timed pulse transmitted by an acoustic transmitter inside the device. This recorded data allows for correlation of the leak location with the position of the device in the pipeline.

As of November 2007, several commercial applications have been completed for major water utilities and oil and gas companies. The device has identified leaks as small as 0.5 gallons per minute and as large as 60 gallons per minute.

This paper will address several specific case studies of actual field applications utilizing the free-swimming, un-tethered acoustic leak detection device in both water pipelines and petroleum product pipelines. Details of the preparation, procedures and results will be presented for each field application.