

## Third Party Damage Prevention/Detection Systems Magal-Senstar Inc.

**Description:** To develop a pipeline monitoring capability that will warn LDC Operations of impending damage to pipeline facilities.

**Status:** Project initiated; survey data being acquired and tests being planned.

### BENEFITS

Due to industry statistics and the likelihood of impending distribution integrity rules, there is an increasing focus on the need for proactive monitoring and damage prevention. This is a high priority because these needs within the industry require multiple approaches/techniques to solve problems for various types of pipelines and environments. NYSEARCH is proactively seeking technologies for damage prevention of transmission and/or distribution pipelines.

### BACKGROUND

Magal-Senstar Inc. (MSI) is a leading provider of facility security systems in the U.S. They offer a suite of security related technologies that may prove to be beneficial in preventing pipeline damages. MSI plans to supply viable security options and develop a working model that satisfies the requirement for high probability of detection with low false alarm rates. The model must consider the effects of differing soils and population densities, such as urban and rural environments and where third party incidents are likely to occur. Focus will be on creating a real /near real-time notification methodology for the pipeline operators and for third party excavators, who work in sensitive areas.

### TECHNCIAL APPROACH

MSI is offering a multi-task approach using their patented *PipeGuard*, *DreamBox* and *Omni-Trax* security/intrusion detection technologies. MSI and NYSEARCH will evaluate and test selected detection systems on

distribution pipelines to determine their technical and economic feasibility for the application. Then, the systems that are selected will be improved and tailored for gas pipeline applications. The technical study will be start with obtaining gas company data related to third party damages, through surveys and in-person interviews with company operators. Based on the initial data and consensus of the project team, the appropriate security/detection system(s) will be selected. The systems will be installed at two test sites with different environments – one rural and one urban. The host utility will provide the manpower and excavating equipment when needed. MSI and utility operators will work closely together to monitor and document various types of construction equipment and /or threat scenarios that will be tested.

The last task of this evaluation project is to use the test results and the technical and economic feasibility study to define what changes



and improvements need to be made for pipeline monitoring. Deliverables for the proposed project include the economic and technical feasibility study, the equipment during the prototype test periods, test report and final report.

**PipeGuard™**

The PipeGuard™ sensor package consists of sensing units which contain geophones for sensing ground vibrations or seismic events. The sensor package is powered by a 5-year lithium battery and communicates wirelessly or by hard-wire. In the case of wireless, a small exposed antenna is used with the idea that there are multiple sensing units over long distances that will have the capability of communicating with each other. The use of multiple geophones in a particular frequency domain is claimed to provide accurate measure of the signal at each sensor. Signal processing determines location in terms of direction and distance from the sensor and also claims to separate benign from real threats. MSI is targeting a 1% false alarm rate for this application. MSI is expecting that soil and other environmental

conditions typical of LDC installations will result in a need to change detection algorithms.

**DreamBox™**

Advances in camera imaging has occurred more in software and not necessarily in the actual hardware/optics of the camera. Software applications and algorithms are able to detect and analyze objects that represent threats (versus benign situations). DreamBox™ algorithms are designed for outdoor applications and are capable of tracking several targets per camera. Intruders or threats are displayed and tracked by a color path. The technology is moving to a point of detection where type of threats can be assessed in varying levels of light and visibility. The command and control system known as Fortis may also be provided for proper visual graphics and reporting.

**Omni-Trax™**

Omni-Trax™ is a guided radar technology that employs a buried cable approximately 9” below ground to detect nearby intruders up to 9 meters away. This technology originally designed for military/

government sites may have applications within gas industry.

**PROJECT STATUS**

MSI and NYSEARCH are currently acquiring utility data for the Technical Feasibility Analysis portion of the project. Interviews and site selection are being planned.

**Highlights**

- MSI offers a suite of detection technologies that may be suitable for distribution pipelines
- System(s) will be tested at two test sites using typical equipment and excavation scenarios
- PipeGuard™ & DreamBox™ can be applied to monitor small/local conditions and long pipeline runs
- Deliverable will be a technical/ economic feasibility report

**FOR ADDITIONAL INFORMATION**

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