



Great success for this young French start-up, designer of the first detection system using RFID technology, called Eliot, enabling users to detect, locate and communicate with any underground network.

## GAS: THE FRENCH ELIOT SYSTEM SEDUCED THE CALIFORNIAN PACIFIC GAS & ELECTRIC COMPANY

**F**rench high technology exports well. Evidenced by this research and development partnership between Eliot and Pacific Gas and Electric Company (PG&E) based near San Francisco in California. The first step for this major «Utility» of some 22,000 employees, supplier of gas and electricity for half of California, Nevada and Arizona, was to confirm the performance of the system in actual field conditions. This solution available either as individual RFID markers or in the form of pre equipped HDPE pipes, allows the user to geotag in 3 dimensions to a depth of 1.5m (nearly 5 feet) any type of network in all soil conditions.

The first test performed by PG&E included

equipping three sections of gas network, located in various communes in the suburbs of San Francisco, with Eliot markers to detect them once the trench was closed. This operation, organized with the presence and support of the Eliot team, Olivier Séon and Marc Palomares, proved conclusively the ease and precision of the system. «Our system is simple. The operator just has to read the preprogrammed information stored in the marker on the detector screen and does not have to interpret a signal as in the case for ground-penetrating radar», explains Olivier Séon, commercial Director of Eliot Solutions. The location accuracy for the Eliot system is +/-3 cm (just over 1 inch) in longitudinal and +/-10 cm (4 inches) in depth.

PG&E, which leads an ambitious policy on the security of its networks, is looking for

enhanced traceability to better target their preventive maintenance initiatives. The company has found in the Eliot system, a new way to collect information on its gas transportation and distribution networks, offering a definite advantage with the reliability and ease of use associated with RFID technology. Detect, locate, Geo referencing and preemptive renewal program, are all possibilities offered by the Eliot system but without errors caused by human interpretations. The data encoded in the markers is detailed and not only allows accurate network mapping, but can be programmed to provide information on the plastic batch used in the manufacture of the tube, the name of the provider, the year and month of manufacture, the date of installation and job number, the nature of the transported fluid etc.



## California: French Eliot system secures networks affected by earthquake

ELIOT PROVIDES ITS RFID ELIOT DETECTION SOLUTION TO PACIFIC GAS & ELECTRIC ASSISTING INTO RESEARCH ON MOVEMENTS OF ITS GAS TRANSPORTATION NETWORK IN SEISMIC ZONE.

On August 24, an earthquake with a magnitude of 6 struck northern California and especially the city of Napa, located about ten kilometers (6 miles) from the epicenter. Affected by this movement of the Earth, the highest since 1989, a section of a gas pipeline owned by Pacific Gas & Electric was the subject of further investigations. Sudden stresses in the welded joints required the replacement of this section. «In the case of figure, we will

instrument the new pipe with Eliot markers to study and measure at the time any movements in the zone of instability slow and thus better understand certain phenomena which affect the safety of the transport of gas by pipeline,» explains François Rongère, Director R & D of PG & E. The Eliot system will strengthen the topographic surveys conducted by GPS with greater precision in the order of inches and the exact location can be mapped by time. 'On a section

specifies a conduit of transport located in a zone at risk, the data recorded by the system Eliot are valuable and will feed into a database that will be updated at each control planned in time', added the R & D Director. For Pacific Gas & Electric, the Eliot system strengthens its monitoring initiatives on the status of its network as it passes in close proximity to other networks, through to the image measurement of corrosion by robots measuring mass loss.

“In California, the geo referencing of networks is not mandatory. There is a phone number, 811, to declare an intention to work, which will trigger a request with network owners concerned. Tracking campaigns based mainly on electromagnetic tools and techniques are followed by marking on the ground with specific colors for each of the networks. The process is quite long, taking at least 15 days” said François Rongère, Director of R & D at PG&E.

**THE ELIOT SOLUTION SUPPORTS AN ENVIRONMENT WHERE THE NEED FOR PRECISE MAPPING OF BURIED NETWORKS IS GROWING.** “Through these first tests, we can already identify the location of the buried markers faster

and easier, without too many ambiguities on the way to practice, relatively easy to use and little requirement for additional equipment», adds the R & D Director. In addition, Eliot has developed an application on smartphones equipped with NFC (Near Field Communication) technology that allows users to encode markers onsite before installation with specific details. The same device will update a GIS type database with a guarantee on the reliability of the information collected, ensuring accurate traceability on new or renewed networks geolocation data.

PG&E also want to test the HDPE tube equipped with the Eliot RFID tag in the renewal of burst pipelines and in trenchless horizontal directional drilling,

Franck Prades

### Network damage in California

20% of the logged damage occurred on unrecorded networks when the improper use of detection tools caused a problem when digging. According to the body in charge of statistics, California has the highest number of incidents on the network in the United States. 400,000 ‘tickets’ per year are issued under the declarations of intent of work following contact with 811.

### The USA, a rapidly expanding energy market

The United States consists of nearly 400 gas operators with thirty principle companies. Pacific Gas & Electric is one of the main suppliers...