Oman chosen to pilot advanced seismic monitoring technology

By Conrad Prabhu

Agriculture Ministry/Lighthouse joint project billed as precursor to tsunami warning system

MUSCAT — A US research organisation has chosen Oman to pilot new cutting-edge seismic monitoring technology that could potentially form the backbone of a future tsunami warning system in the region.

Houston-based Lighthouse R&D Enterprises has joined hands with Oman's Ministry of Agriculture and Fisheries to showcase the technology in the Sultanate. A prototype of the seismic monitoring system will be installed off Oman's Wusta coast next March in the first ever operational deployment of this technology anywhere in the world.

"This is an exciting development that has the potential to significantly advance the international scientific community's efforts towards developing effective tsunami warning systems," commented Dr Ahmed H al Hosni, Director-General for Research and Extension, Ministry of Agriculture and Fisheries.

"Oman is indeed proud to be able to showcase this technology," he added.

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Seismic monitoring system to be unveiled

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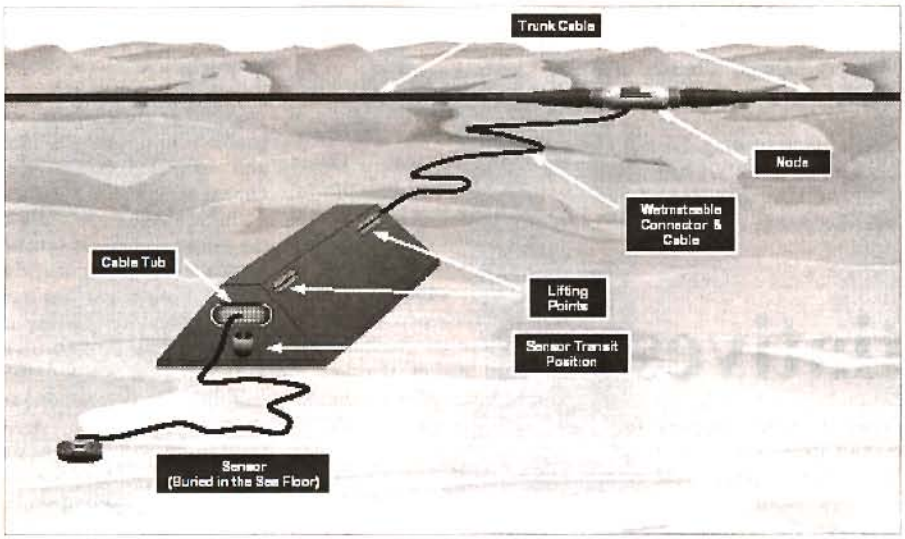
The technology will be formally unveiled at a seminar, jointly organised by the Ministry and Lighthouse R&D, and due to be held at the Grand Hyatt Muscat on January 30. A live demonstration of the seismic monitoring system will be held before a select gathering comprising senior members of tsunami preparedness taskforces of Oman and the Gulf states, as well as Indonesia and other tsunami prone nations.

Following the devastating tsunami of December 2004 that hit a number of Indian Ocean rim countries, including Oman, the Sultanate has been keenly exploring the development of a national tsunami warning system.

The latest initiative marks a significant enhancement in the partnership forged by the Ministry with Lighthouse R&D in the field of oceanography research. In August 2005, the US organisation completed installation of a state-of-the-art oceanographic monitoring system in the Gulf of Oman designed to enable Omani researchers to study deepwater current phenomena off the Sultanate's coast. The project, undertaken on behalf of the Marine Sciences and Fisheries Centre, is also aimed at supporting the ministry in its efforts to develop and manage the Sultanate's fishery resources.

"This one-of-a-kind environmental monitoring system has been operational since August 2005," said Ken du Vall, President and Chief Operating Officer, Lighthouse R&D. "It provides full oceanographic data in real time every hour, such as information on turbidity, oxygen conductivity, temperature density, as well as current speed and direction at eight individual locations throughout the arrays."



SCHEMATIC representation of the seismic monitor.

As part of the project, Lighthouse has installed three deepwater current meter moorings off Ras al Hadd. Each mooring is designed to record current speed and direction, pressure, temperature, salinity, turbidity, and oxygen every 60 minutes for 365 days at the sensors. Additionally, an on-bottom cable system extends 32 nautical miles into the sea from the Shinas coast.

Both Lighthouse and the Ministry of Agriculture and Fisheries have now agreed to expand the scope of the system to incorporate seismic monitoring capabilities into the project.

According to Du Vall, the seismic monitoring system developed by Lighthouse incorporates a seismometer, an extremely sensitive pressure sensor, and an accelerometer. "This will be placed at the closest margin that we can get to the Makran subduction zone, which is a known source of high seismic activity that has the potential to cause tsunamis. We are working with the MSFC to bring this technology to Oman to prove the concept to the scientific community. The system tests have been hugely successful, and we hope prototype will be a stepping stone to a larger system," he explained.

KEN du Vall, President & COO, Lighthouse R&D.

The Lighthouse seismic monitoring system is unique in that it differs other systems on the market that are based either on pressure sensors or seismometers. "Our system integrates not only the pressure sensor and seismometer, but also an accelerometer into one package. This will yield data in real time. Fibre optic cable ensures uninterrupted power, while full duplex capabilities allow for the system's health to be constantly monitored. Besides, the system is designed to 'talk' with other seismic monitoring networks deployed around the world."

DR Ahmed al Hosni, Director-General for Research and Extension, Ministry of Agriculture and Fisheries.

Lighthouse R&D (www.lighthousehouston.com) provides specialist services to the petroleum industry in deepwater field development projects. It is working in partnership with a consortium of oil and gas companies specifically formed to address the issues surrounding deepwater field development. Dubbed the Lighthouse Oceanographic Research Initiative (LORI), it aims to expand regional oceanographic knowledge for the maritime community.