



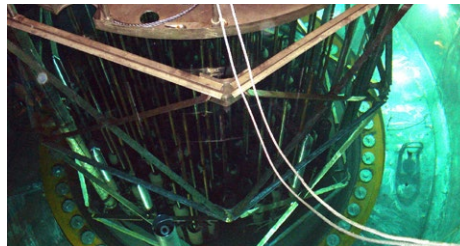
## Reactor Cavity and Spent Fuel Pool Leak Detection

As a leader in providing inspection testing services for the nuclear industry for over 20 years, MISTRAS has developed state-of-the-art instrumentation and successful inspection procedures using Advanced Acoustic Emission (AE) to help maintenance engineers make decisions based on the condition of plant equipment.

### REACTOR CAVITY LEAK DETECTION

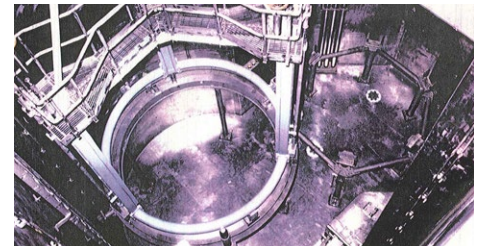
AE Leak Testing (AELT) is an acoustic emission (AE) technique that utilizes a piezoelectric transducer to detect the sound produced by an active leak. This method has been successfully used in operating nuclear plants to detect and isolate leaks in the reactor cavities, transfer canals as well as spent fuel rod storage pools. Leaks make noise primarily as a result of turbulent flow through the leak orifice. This noise is coupled into water very efficiently, where it can be detected by a piezoelectric device.

A special low frequency resonant transducer was developed that can survive (for a limited time) in a high radiation environment. It is also designed so that it can continue to operate



while being submerged at depths up to 80 feet. By checking this response, the equipment operator can decide if there is a leak indication or conclude that previous sound/signals were generated by contact of the sensor/search tube with hard objects.

The sensor is an ultra sensitive device which is required in order to detect the low level signals produced by the leak. During the scanning it is important to be aware of any other potential noise sources in the area that could generate phantom readings. Care should be taken to eliminate any of these potential noise sources or at least perform the inspection when they are not active.



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**WORLDWIDE HEADQUARTERS:**  
195 Clarksville Rd •  
Princeton Jct, NJ 08550 • USA  
T: +1.609.716.4150 • F: +1.609.716.4145  
E-MAIL: sales.services@mistrasgroup.com

**MIDWEST REGION**  
TEL: +1.630.230.3400

**GULF REGION**  
TEL: +1.281.478.1600

**NORTHEAST REGION**  
TEL: +1.610.497.0400

**MOUNTAIN REGION**  
TEL: +1.303.393.9689

**WEST REGION**  
TEL: +1.562.597.3932

**SOUTHEAST REGION**  
TEL: +1.704.291.2360

**MISTRAS-IMPRO**  
TEL: +1.832.632.1042

**MID-ATLANTIC REGION**  
TEL: +1.804.745.5830

**AIMS DIVISION**  
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**PRODUCTS & SYSTEMS**  
TEL: +1.609.716.4000