



SubSurface Leak  
Detection™

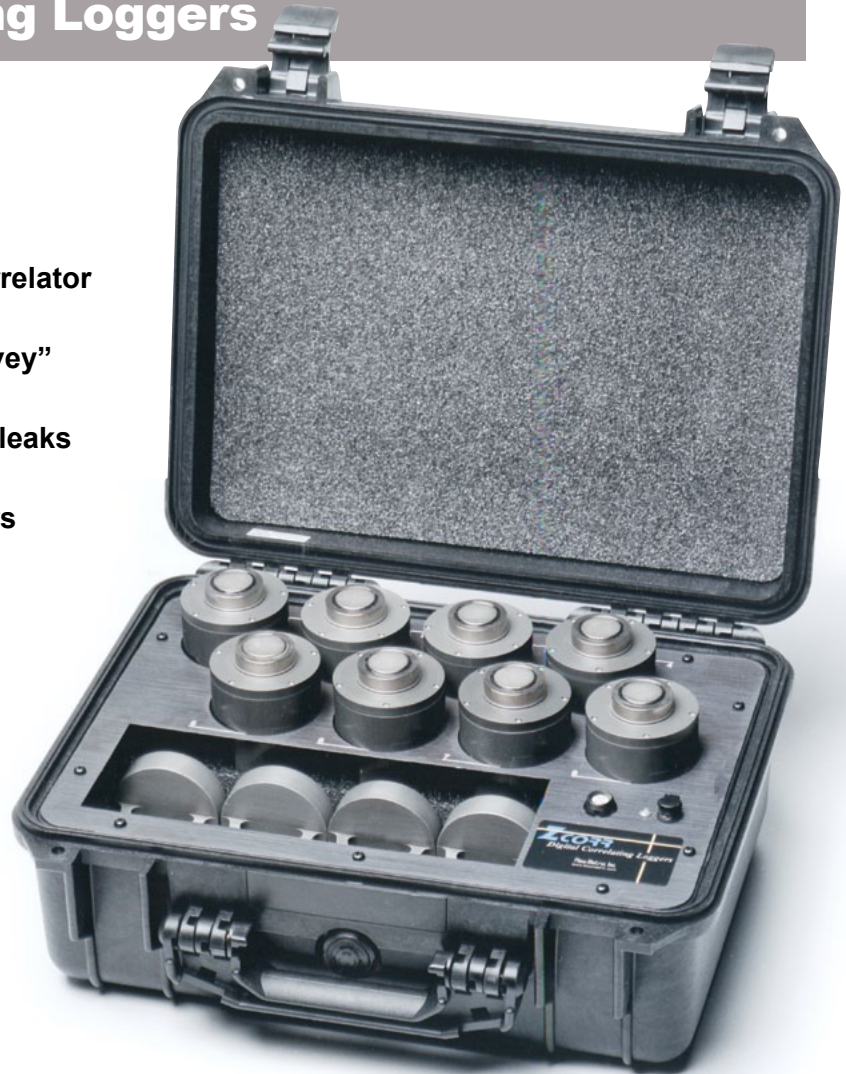
## ZCORR DIGITAL CORRELATING LOGGERS

Placing a ZCorr Logger on a Shallow Hydrant Valve

# ZCorr Digital Correlating Loggers

## Advantages of ZCorr Correlating Loggers

- **Performs correlations exactly like a correlator**
  - Pinpoints exact distance to leak
- **Can operate at night in “Overnight Survey”**
  - Less traffic and usage noise
- **Multiple loggers survey large areas for leaks**
  - 8, 16, or 32 loggers over miles of pipe
- **Can turn “ON” multiple times with hours between recordings**
  - Best chance to get leak sounds without usage noises
- **Can find smaller leaks at night**
  - less traffic and usage noise
- **Even more sensitive than human ear**
- **User can listen to the actual leak sounds for 60 seconds for each recording (unfiltered)**



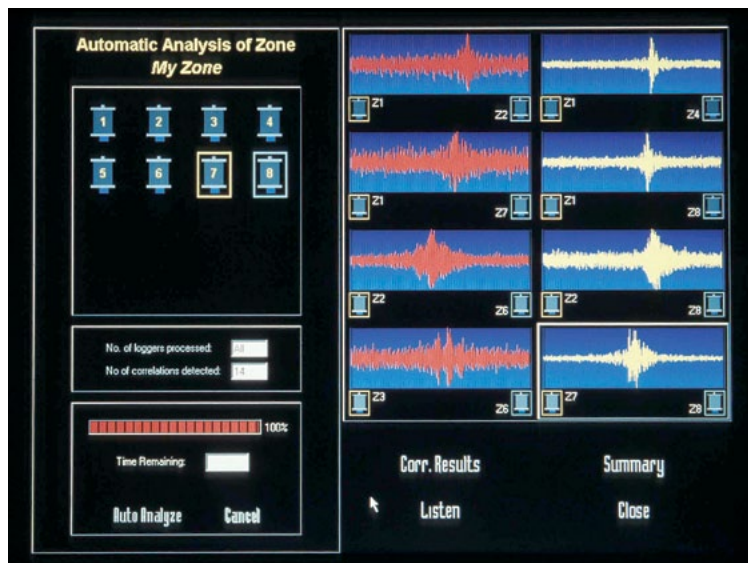
## Advantages of Automatic Leak Frequency Analysis (ALFA)

- Accurate registration and pinpointing of each leak sound occurs automatically with every recording
- Tracks the patterns of the leak sound over time to “tune in” to the true leak sound signal
- Digital signal processing isolates (multiple) leak sounds individually at each logger, statistically optimizing their correlation at each possible value of time delay
- No fixed high or low filters are needed for matching the audio frequencies at two correlating loggers
- Can extract the true leak sounds from each recording even when louder noises are present at the same audio frequencies

# The Solution is in the ZCorr Software

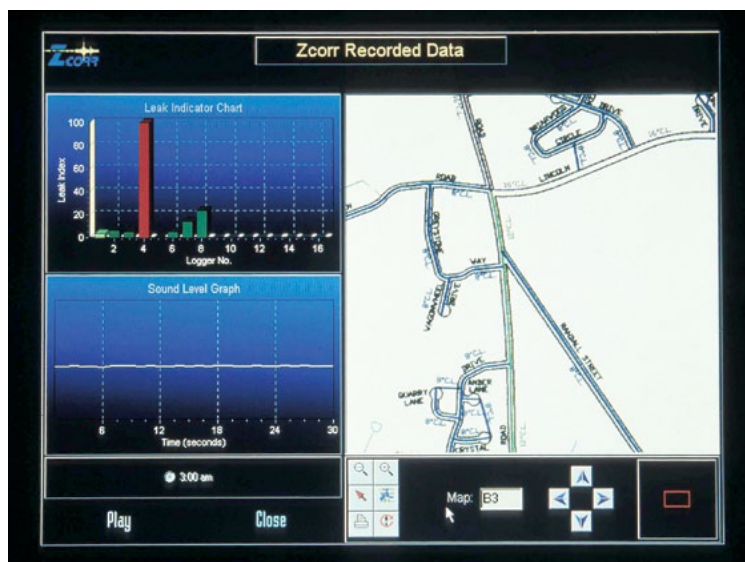
## Analysis of All Correlations Found

Click a Thumbnail, See the 8 Best Correlations.



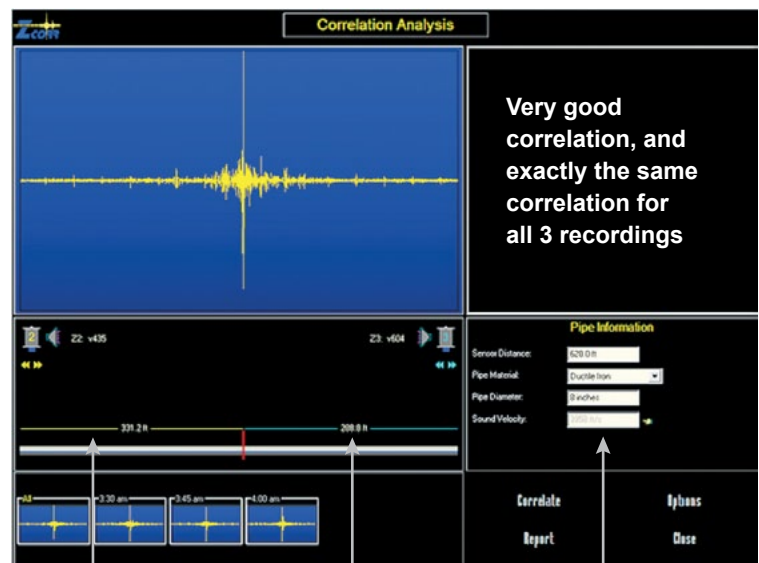
Above: Many correlations at many loggers.  
One leak or many?

Click **Listen**. Logger No. 4 much louder (below).



Click **Play** and listen to the leak for 60 seconds.

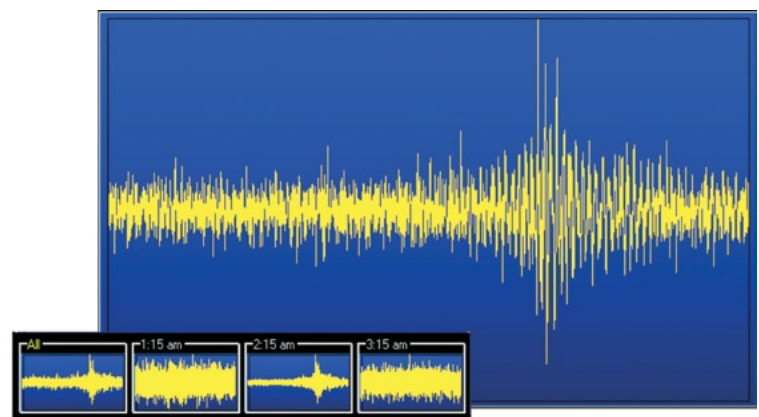
## Correlation for Z2 and Z3



Distance to leak  
from logger Z2

Distance to leak  
from logger Z3

Input Sensor  
Distance,  
Pipe Material,  
and Diameter



Average  
of All 3  
Recordings

This correlation is  
the All at far left

Correlation at 2:15 AM but not at 1:15 AM or 3:15 AM.  
Answer: Usage at service.

# Technical Specifications

## ZCorr Digital Correlating Loggers

### Logger

- Enclosure: Aluminum, cylindrical
- Protection: IP68, fully submersible
- Dimensions: 2.25" diameter x 4.5" (5.7 cm x 11.4 cm)
- Weight: 1 lb (450 g)
- Mounting: Magnet, 40 lbs (18 kg) pull force
- Operating temperature range: -20 to +140°F (-30 to +60°C)
- Power source: Lithium battery, 5-year life, factory-replaceable, non-rechargeable
- Sensor:
  - High-resolution electronic accelerometer
  - Shockproof to 6,000 g
  - Sensitivity: 1 V/g
  - Resolution: 0.25  $\mu\text{g}$  / $\sqrt{\text{Hz}}$
- Data Acquisition:
  - Frequency range: 1-3,000 Hz
  - Signal range: sub 1  $\mu\text{g}$  – 20 mg
  - Digital resolution: 20 bits



### Docking Station

- Enclosure: Rugged ABS carrying case
- Protection: IP68 - closed; IP65 - open
- Weight: 15 lbs (6.8 kg) without DCLs
- Dimensions: 20.5" x 16.75" x 8.5" (52 cm x 42 cm x 22 cm)
- Operating temperature range: +20 to +140°F (-5 to +60°C)
- Capacity: 3 to 8 DCLs
- PC link: USB 2.0

Manufactured by:



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Detection™**

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