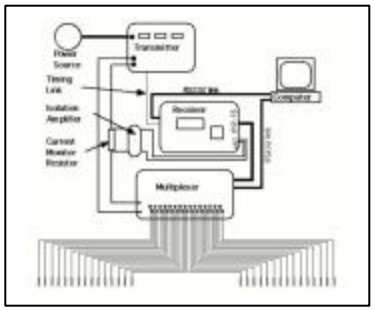
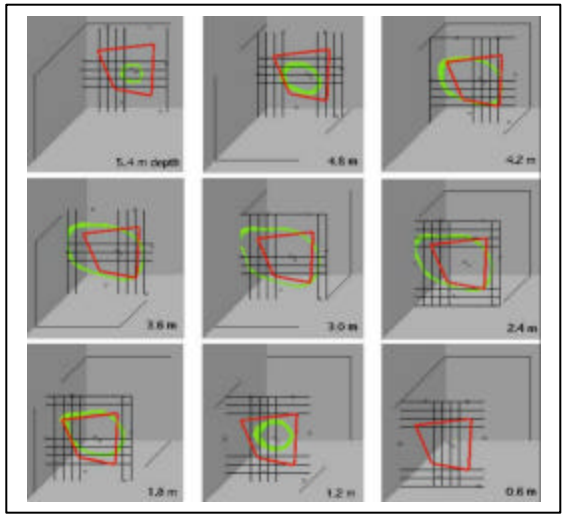
Electrical Resistance Tomography for Subsurface Imaging (TechID 17)

Electrical Resistance Tomography (ERT) for Subsurface Imaging noninvasively images subsurface hydrogeological features in two and three dimensions, and provides good resolution images of confining layers of various types. ERT has been successfully demonstrated for detecting leaks in subsurface contaminant migration barrier and leaks from metal tanks. ERT has also been successfully demonstrated as a real-time monitor of remediation processes, providing data for process control. Remediation processes imaged include: soil heating, pump and treat, steam injection, electrokinetics. ERT has been successfully engineered to allow rapid and inexpensive installation of electrodes with a Cone Penetrometer. ERT is essential for process control of steam injection to destroy all organic contaminants in the subsurface with two other LLNL patented remediation technologies: Dynamic Underground Stripping (TechID 7) and Hydrous Pyrolysis/Oxidation (TechID 1519).





Developers:

- Lawrence Livermore National Laboratory, Livermore, CA
- Applied Research Associates, Inc., South Royalton, VT

Applications:

- 1991 Lawrence Livermore National Laboratory (Main Site) in Livermore, CA
- 1997 Yucca Mountain Nevada Test Site (Site Characterization Project.) in Mercury, NV
- 1997 Lawrence Livermore National Laboratory (Site 300) in Livermore, CA
- 1997 Southern California Edison (Edison Pole Yard) in Visalia, CA
- 1997 INEEL (Box Canyon) in Idaho Falls, ID
- 1997 Florence Site in Florence, AZ
- 1999 Deployment at Portsmouth Gaseous Diffusion Plant, X-701B Plume Site, Portsmouth, OH.

Benefits:

- Cost Benefits Expected
- Expected to significantly Lower Risks
- Accelerate Cleanup Schedules/Milestones

Status:

- Entered Implementation (Gate 6) on 10/1/97
- Commercially available in 1997 through Applied Research Associates (www.vertek.ara.com), Steamtech (www.steamtech.com), and Integrated Water (www.integratedwater.com).
- Innovative Technology Summary Report Available (www.cmst.org)