

Lasagna

(OST/TMS ID: 4/ TMS Application ID: 1482)

Lasagna remediates soils and soil pore water contaminated with soluble organic compounds. Lasagna is especially suited to sites with low permeability soils where electroosmosis can move water faster and more uniformly than hydraulic methods with very low power consumption. The process uses electrokinetics to move contaminants in soil pore water into treatment zones where the contaminants can be captured or decomposed in a vertical configuration in a small field test cell.

DESCRIPTION OF THE DEPLOYMENT

Location: Paducah Gaseous Diffusion Plant, Solid Waste Management Unit 91 (Paducah, KY, United States)

PBS Name: Paducah Waste Management [OR-45302, 0318]

Date of Deployment: September 1999 **Technology User:** Lockheed Martin

Deployment Value/Impact: Costs for the Lasagna process vary from \$100-175/yd of soil treated, while other vendors suggest costs of \$50-100/yd. Advantages of the technology are that both TCE and Tc99 could possibly be removed at the same time.

Vendor Name for this Technology: Same as primary Technology Title

Point of Contact:

User Program POC(s):

Fraser Johnstone (Paducah Gaseous Diffusion Plant) - Paducah, KY. Tel. 502-441-5077
Johnny O. Moore (DOE OR) - Oak Ridge, TN. Tel. 423-576-3536

Technology User POC(s):

Ross Miller (Lockheed Martin) - Kevil, KY. Tel. 502-441-5085

OST Program POC(s):

Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172

Vendor Company POC(s):

Chris Athmeu (Monsanto) - St. Louis, MO. Tel. 314-694-1670

Major Developers:

Monsanto

Vendor Company:

Monsanto

Other Deployments:

This is the first deployment of this technology.

Six-Phase Soil Heating

(OST/TMS ID: 5/ TMS Application ID: 1408)

Six-Phase Soil Heating is a method to increase the removal of volatile and semi-volatile contaminants from soils. To implement the technology, electrodes are placed in the ground and a voltage is applied. Electrical current conducts through the soil, heating the soil resistively. This volatilizes contaminants and water (to produce steam) in the soil effectively steam stripping contaminants in situ. The volatilized contaminants and steam are then removed by soil venting and treated above ground.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Cape Canaveral, Launch Complex 34 (MSE-TA) (Cape Canaveral, FL, United States)
PBS Name:	Not Specified
Date of Deployment:	August 1999
Technology User:	MSE Technology Applications, Inc.
Deployment Value/Impact: This is a WETO metric. The deployment at Launch Complex 34 is a part of a comparative deployment of three innovative DNAPL source remediation technologies. The primary goal of the deployment is to compare the cost and performance of Six Phase Soil Heating to the cost and performance of In Situ Chemical Oxidation Using Potassium Permanganate and Steam Injection (DUS/HPO). However, the six phase deployment alone is designed to completely destroy approximately 11,313 kg of TCE and remediate 6,250 cubic yards of contaminated soils to within regulatory compliance levels.	
Vendor Name for this Technology:	Same as primary Technology Title
Point of Contact:	
User Program POC(s): Jacqueline Quinn (NASA Environmental Program Office) - Cape Canaveral, FL. Tel. 407-867-4265	OST Program POC(s): Skip Chamberlain (EM-53) - Germantown, MD. Tel. 301-903-7248 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
Technology User POC(s): Steve Antonioli (MSE Technology Applications, Inc.) - Butte, MT. Tel. 406-494-7343	Vendor Company POC(s): Bretton Towbridge (Current Environmental Solutions) - FL. Tel. 949-388-5808

Major Developers:

- Current Environmental Solutions (a joint venture of Battelle and Terra-Vac)
- Lucent Technologies
- Pacific Northwest National Laboratory

Vendor Company:

Current Environmental Solutions (CES)

Other Deployments:

- Deployed (type: Non-DOE) in FY 1998 at Chicago (Skokie Manufacturing Facility) in Skokie, IL

Dynamic Underground Stripping

(OST/TMS ID: 7/ TMS Application ID: 1238)

Dynamic Underground Stripping uses steam injection to sweep contaminants from permeable sediments, coupled with resistance (electrical) heating of interlayered clays to drive contaminants into the permeable sediments. Condensed steam and mobilized contaminants are then recovered through pumping extraction wells in the center of the plume.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Portsmouth Gaseous Diffusion Plant, X-701B Plume Site (Portsmouth, OH, United States)		
PBS Name:	Portsmouth Remedial Action [OR-46301, 0319]		
Date of Deployment:	February 1999	Technology User:	Portsmouth WAG 6/DOE ER/Bechtel Jacobs
Deployment Value/Impact: The successful deployment at Portsmouth proved that the combination of Dynamic Underground Stripping and Hydrous Pyrolysis/Oxidation can effectively remediate TCE contamination at a DOE site. DUS mobilizes the contaminants so they can be brought to the surface for collection and disposal. Hydrous Pyrolysis/Oxidation destroys DNAPL in situ by oxidation. The combination of two processes greatly increases the rate of remediation over pump and treat processing. Since the steam injection rate for Portsmouth will be lower than for Visalia, the rate of remediation is expected to be lower than that earlier application. An estimated 825 lbs. of TCE was extruded, leaving 247 lbs. in the treated zone.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Johnny O. Moore (DOE OR) - Oak Ridge, TN. Tel. 423-576-3536		OST Program POC(s): Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172 James A. Wright (SCFA) - Aiken, SC. Tel. 803-725-5608	
Technology User POC(s): Kristi Wiehle (DOE/Wag 6/Portsmouth ER) - Portsmouth, OH. Tel. 740-897-5020		Vendor Company POC(s): Hank Sowers (SteamTech Environmental Services, Inc.) - Bakersfield, CA. Tel. 661-322-6478	

Major Developers:

Lawrence Livermore National Laboratory, Environmental Restoration Division

Vendor Company:

SteamTech Environmental Technologies

Other Deployments:

- Deployed (type: Non-DOE) in FY 1999 at Visalia (Power Pole Treatment Yard) in Visalia, CA
- Deployed (type: Non-DOE) in FY 1997 at Visalia (Edison Power Pole Treatment Yard) in Visalia, CA
- Deployed (type: DOE) in FY 1995 at Lawrence Livermore National Laboratory (Gasoline Spill Site; GSA Livermore) in Livermore, CA

Dynamic Underground Stripping

(OST/TMS ID: 7/ TMS Application ID: 1842)

Dynamic Underground Stripping uses steam injection to sweep contaminants from permeable sediments, coupled with resistance (electrical) heating of interlayered clays to drive contaminants into the permeable sediments. Condensed steam and mobilized contaminants are then recovered through pumping extraction wells in the center of the plume.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Visalia, Power Pole Treatment Yard (Visalia, CA, United States)		
PBS Name:	Not Specified		
Date of Deployment:	November 1998	Technology User:	Bechtel Engineering
Deployment Value/Impact: Quantitative results estimate that 16% of preservatives have been destroyed thus far with the utilization of Dynamic Underground Stripping in conjunction with Hydrous Pyrolysis/Oxidation. This process is ongoing.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Kim V. Abbott (DOE-Oakland) - Oakland, CA. Tel. 510-637-1501 Terry Scierrotta (Southern California Edison) - Visalia, CA. Tel. 626-302-9723		OST Program POC(s): Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172	
Technology User POC(s): Craig Eaker (S. Ca. Edison Env. Affairs Div.) - Visalia, CA. Tel. 626-302-8531		Vendor Company POC(s): Eddie Scott (Southern California Edison) - Visalia, CA. Tel. 925-423-4418	

Major Developers:

Lawrence Livermore National Laboratory, Environmental Restoration Division

Vendor Company:

Southern California Edison

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Portsmouth Gaseous Diffusion Plant (X-701B Plume Site) in Portsmouth, OH
- Deployed (type: Non-DOE) in FY 1997 at Visalia (Edison Power Pole Treatment Yard) in Visalia, CA
- Deployed (type: DOE) in FY 1995 at Lawrence Livermore National Laboratory (Gasoline Spill Site; GSA Livermore) in Livermore, CA

Alternative Landfill Cover

(OST/TMS ID: 10/ TMS Application ID: 606)

The ALCD is testing innovative landfill covers using currently accepted EPA cover designs as baselines. These covers are installed and instrumented in a side-by-side demonstration. Each test plot is 300 ft long; peaked in the middle with 150 ft sloping at 5% toward the west and the other 150 ft half sloping at 5% towards the east. The eastern half of each test plot will be evaluated under ambient conditions and the western side evaluated under 'stressed' conditions controlled by a rain simulation system. The covers will be evaluated and compared based on construction, cost, and performance criteria. Some of the alternative designs will emphasize such things as unsaturated hydraulic conductivity, increased water storage potential to allow for eventual evaporation, and increased transpiration through engineered vegetative covers. The alternative covers were designed to take advantage of local materials to allow for easier construction of the covers at substantial cost savings.

DESCRIPTION OF THE DEPLOYMENT

Location:	Sandia National Laboratories - NM, Mixed Waste Landfill (Albuquerque, NM, United States)		
PBS Name:	Sandia ER Project [AL018, 0135]		
Date of Deployment:	September 1999	Technology User:	Sandia National Laboratory
Deployment Value/Impact:	Data from the demonstration of landfill covers at SNL was used to help convince regulators that the ALCD could be used at Sandia National Laboratory's Mixed Waste Landfill. Use of ALCD is also expected to reduce construction time. SNL estimates a cost reduction of \$3.6 million for implementing this technology rather than the baseline.		
Vendor Name for this Technology:	Same as primary Technology Title		
Point of Contact:			
User Program POC(s):	OST Program POC(s):		
Pam Saxman (DOE-AL) - Albuquerque, NM. Tel. 505-845-6101	Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596		
Technology User POC(s):	Vendor Company POC(s):		
Steve Dwyer, P. I. (Sandia National Laboratories) - Albuquerque, NM. Tel. 505-844-0595	Mark Ankenny (Daniel B. Stephens) - Albuquerque, NM. Tel. 505-822-9400		

Major Developers:

- Environmental Protection Agency
- Sandia National Laboratories

Vendor Company:

D.B. Stephens

Other Deployments:

- Deployed (type: Non-DOE) in FY 1997 at Lee Acres, Bureau of Land Management (Deployed SNL Cover #1) in Albuquerque, NM

Electrical Resistance Tomography for Subsurface Imaging

(OST/TMS ID: 17/ TMS Application ID: 1499)

Electrical Resistance Tomography (ERT) has been developed by LLNL through funding by DOE OST. The technology provides 3-D imaging of the subsurface for geological features as well as changes due to remediation operations. ERT has not only been demonstrated for many types of remediation operations (soil heating, electrokinetics, pump and treat, Dynamic Stripping, Hydrous Pyrolysis, and more) but it has been engineered to be deployed by a cone penetrometer and has been commercialized. In addition, ERT has been deployed in characterizing Yucca Mountain, cleaning LLNL main site, cleaning up a commercial site with hundreds of thousands of gallons of DNAPLs in the subsurface. Other technologies based upon ERT have been demonstrated and await deployment by industry at DOE sites.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Portsmouth Gaseous Diffusion Plant, X-701B Plume Site (Portsmouth, OH, United States)		
PBS Name:	Portsmouth Remedial Action [OR-46301, 0319]		
Date of Deployment:	February 1999	Technology User:	Portsmouth WAG 6/DOE Environmental Restoration
<ul style="list-style-type: none">Deployment Value/Impact: ERT was used to monitor and verify the effectiveness of DUS/HPO remediation of TCE contamination.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Cavanaugh Mims (Oak Ridge Operations) - Oak Ridge, TN. Tel. 423-576-9481		OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532	
Technology User POC(s): Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172 Kristi Wiehle (DOE/Wag 6/Portsmouth ER) - Portsmouth, OH. Tel. 740-897-5020		Vendor Company POC(s): Doug Labrecque (SteamTech Environmental Services) - Sparks, NV. Tel. 775-351-2442	

Major Developers:

Applied Research Associates, Inc.

Vendor Company:

Steam Tech Environmental Services

Other Deployments:

- Deployed (type: DOE) in FY 1998 at INEEL (Box Canyon) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1997 at Yucca Mountain Nevada Test Site (Site Characterization Project.) in Mercury, NV
- Deployed (type: DOE) in FY 1997 at Lawrence Livermore National Laboratory (Site 300) in Livermore, CA
- Deployed (type: Non-DOE) in FY 1997 at Southern California Edison Pole Treatment Yard in Visalia, CA
- Deployed (type: Non-DOE) in FY 1997 at Florence Site in Florence, AZ
- Deployed (type: DOE) in FY 1991 at Lawrence Livermore National Laboratory (Main Site) in Livermore, CA

Out of Tank Evaporator

(OST/TMS ID: 20/ TMS Application ID: 1445)

The Department of Energy's radioactive waste inventory includes a significant amount of dilute liquids that can be evaporated. This evaporable waste occupies valuable storage space needed for liquid removed from leaking storage tanks and for newly generated waste. The mobile (or out-of-tank) evaporator can evaporate waste at many different tanks. This skid-mounted system evaporates off liquid waste, conserving tank space and reducing the volume of grout waste produced during supernate solidification processes.

DESCRIPTION OF THE DEPLOYMENT

Location: Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Melton Valley Storage Tanks: Concentrated LLW (Oak Ridge, TN, United States)

PBS Name: Low Level Waste Management [OR-38112, 0582]

Date of Deployment: May 1999

Technology User: Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company

Deployment Value/Impact: Under an ASTD (Accelerated Site Technology Deployment) Project, the OTE system is operating in series with the Cesium Removal System (TMS ID 21) and Crossflow Filtration (TMS ID 350) to process concentrated LLW from waste stored and/or currently generated at Oak Ridge that is was collected/stored in the Melton Valley Storage Tanks W-29 and W-30 for processing. As of June 1, 1999, the integrated system treated a total of 14,200 gallons of waste, with 755 curies of Cs-137 removed from the waste. The Out of Tank Evaporator has generated over 4,500 gal. of distillate, concentrating the liquid from 4.3 M nitrate to 6.3 M nitrate.

Vendor Name for this Technology: Same as primary Technology Title

Point of Contact:

User Program POC(s):

Jacquie R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184

Technology User POC(s):

Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779

OST Program POC(s):

Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546

Vendor Company POC(s):

Howard White (Delta Thermal Systems, Inc.) - Pensacola, FL. Tel. 850-474-1733

Major Developers:

No Major Developers are listed.

Vendor Company:

Delta Thermal Systems Inc.

Other Deployments:

Deployed (type: DOE) in FY 1996 at Oak Ridge (ORNL Melton Valley Storage Tanks) in Oak Ridge, TN

Cesium Removal Using Crystalline Silicotitanate

(OST/TMS ID: 21/ TMS Application ID: 1446)

The radioactive waste in many of Department of Energy's underground tanks contains cesium. If the cesium is separated from the waste, the bulk of the waste can be disposed of as low-level waste. The Cesium Removal System was created to extract cesium from the tank waste. Cesium removal is needed at the Hanford Site, Oak Ridge Reservation, Idaho National Engineering and Environmental Laboratory, and the Savannah River Site.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Melton Valley Storage Tanks 29 and 30: Concentrated LLW (Oak Ridge, TN, United States)
PBS Name:	Low Level Waste Management [OR-38112, 0582]
Date of Deployment:	May 1999
Technology User:	Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company
Deployment Value/Impact: In the first treatment campaign under an Oak Ridge Accelerated Site Technology Deployment (ASTD) Project to process waste through an integrated system involving Crossflow Filtration (TMS ID 350), Cesium Removal using Crystalline Silicotitanate (TMS ID 21), and the Out of Tank Evaporator (TMS ID 20) the cesium removal system was operated alone. About 1,980 curies of cesium-137 were removed from 19,340 gal. liquid low-level waste. Two flow-through ion-exchange columns, each containing 1.3 cubic feet of crystalline silicotitanate (Ionsiv IE-911 by UOP Molecular Services), were used in series for the treatment. The IE-911 was loaded at approximately 340 curies per 2.7 cubic feet. A total of about 15.5 cubic feet of IE-911 was successfully sluiced from the columns into a shielded container and de-watered for interim storage. This material will eventually be shipped to the Nevada Test Site.	
Vendor Name for this Technology:	IONSIV tm IE 910/911
Point of Contact:	
User Program POC(s):	OST Program POC(s):
Jacque R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184	Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s):	Vendor Company POC(s):
Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779	Dennis Fennelly (UOP, Inc.) - Headquartered in Des Plaines, IL. Tel. 856-727-9400

Major Developers:

- DOE - Oak Ridge
- TTI Engineering

Vendor Company:

UOP, Inc. (<http://www.uop.com/>)

Other Deployments:

- Deployed (type: DOE) in FY 1996 at ORR (MVST) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-27; Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-26; Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-31; Concentrated LLW) in Oak Ridge, TN

Cesium Removal Using Crystalline Silicotitanate

(OST/TMS ID: 21/ TMS Application ID: 1732)

The radioactive waste in many of Department of Energy's underground tanks contains cesium. If the cesium is separated from the waste, the bulk of the waste can be disposed of as low-level waste. The Cesium Removal System was created to extract cesium from the tank waste. Cesium removal is needed at the Hanford Site, Oak Ridge Reservation, Idaho National Engineering and Environmental Laboratory, and the Savannah River Site.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Melton Valley Storage Tanks W-26; Concentrated LLW (Oak Ridge, TN, United States)
PBS Name:	Low Level Waste Management [OR-38112, 0582]
Date of Deployment:	May 1999
Technology User:	Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company
Deployment Value/Impact: The technology was successfully used to remove cesium from Tank W-26.	
Vendor Name for this Technology:	IONSIV tm IE 910/911
Point of Contact:	
User Program POC(s): Jacquie R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184	OST Program POC(s): Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s): Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779	Vendor Company POC(s): Dennis Fennelly (UOP, Inc.) - Headquartered in Des Plaines, IL. Tel. 856-727-9400

Major Developers:

- DOE - Oak Ridge
- TTI Engineering

Vendor Company:

UOP, Inc. (<http://www.uop.com>)

Other Deployments:

- Deployed (type: DOE) in FY 1996 at ORR (MVST) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks 29 and 30: Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-27; Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-31; Concentrated LLW) in Oak Ridge, TN

Cesium Removal Using Crystalline Silicotitanate

(OST/TMS ID: 21/ TMS Application ID: 1738)

The radioactive waste in many of Department of Energy's underground tanks contains cesium. If the cesium is separated from the waste, the bulk of the waste can be disposed of as low-level waste. The Cesium Removal System was created to extract cesium from the tank waste. Cesium removal is needed at the Hanford Site, Oak Ridge Reservation, Idaho National Engineering and Environmental Laboratory, and the Savannah River Site.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Melton Valley Storage Tanks W-27; Concentrated LLW (Oak Ridge, TN, United States)
PBS Name:	Low Level Waste Management [OR-38112, 0582]
Date of Deployment:	May 1999
Technology User:	Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company
Deployment Value/Impact: The technology was successfully used to remove cesium from Tank W-27.	
Vendor Name for this Technology:	IONSIV tm IE 910/911
Point of Contact:	
User Program POC(s): Jacquie R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184	OST Program POC(s): Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s): Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779	Vendor Company POC(s): Dennis Fennelly (UOP, Inc.) - Headquartered in Des Plaines, IL. Tel. 856-727-9400

Major Developers:

- DOE - Oak Ridge
- TTI Engineering

Vendor Company:

UOP, Inc. (<http://www.uop.com>)

Other Deployments:

- Deployed (type: DOE) in FY 1996 at ORR (MVST) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks 29 and 30: Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-26; Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-31; Concentrated LLW) in Oak Ridge, TN

Cesium Removal Using Crystalline Silicotitanate

(OST/TMS ID: 21/ TMS Application ID: 1739)

The radioactive waste in many of Department of Energy's underground tanks contains cesium. If the cesium is separated from the waste, the bulk of the waste can be disposed of as low-level waste. The Cesium Removal System was created to extract cesium from the tank waste. Cesium removal is needed at the Hanford Site, Oak Ridge Reservation, Idaho National Engineering and Environmental Laboratory, and the Savannah River Site.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Melton Valley Storage Tanks W-31; Concentrated LLW (Oak Ridge, TN, United States)
PBS Name:	Low Level Waste Management [OR-38112, 0582]
Date of Deployment:	May 1999
Technology User:	Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company
Deployment Value/Impact: The technology was successfully used to remove cesium from Tank W-31.	
Vendor Name for this Technology:	IONSIV tm IE 910/911
Point of Contact:	
User Program POC(s): Jacquie R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184	OST Program POC(s): Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s): Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779	Vendor Company POC(s): Dennis Fennelly (UOP, Inc.) - Headquartered in Des Plaines, IL. Tel. 856-727-9400

Major Developers:

- DOE - Oak Ridge
- TTI Engineering

Vendor Company:

UOP, Inc. (<http://www.uop.com>)

Other Deployments:

- Deployed (type: DOE) in FY 1996 at ORR (MVST) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks 29 and 30: Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-27; Concentrated LLW) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Melton Valley Storage Tanks W-26; Concentrated LLW) in Oak Ridge, TN

Passive Reactive Barrier

(OST/TMS ID: 46/ TMS Application ID: 1343)

Passive reactive barriers are in situ water permeable barriers that possess properties that either alter or destroy contaminants of concern (COC's) in place (e.g. certain VOCs) or bind the COC (e.g. uranium) to the barrier material. The prime purpose of this technology is to change the remediation strategy from pumping (i.e. advection of ground water) to passive capture under natural gradients. Passive reactive barriers are a less energy-intensive approach to aquifer cleanup, without the hydrologic impacts of continued pumping.

Depending on site conditions, the barrier media may be designed for continued (non-regenerated) use, or may be placed in a manner that permits retrieval for extraction of bound contaminants and regeneration and replacement of the media. Appropriate down-gradient blocks will alert operators when barrier replacement is required.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Rocky Flats Environmental Technology Site, East Trenches Plume (Golden, CO, United States)		
PBS Name:	Buffer Zone Closure Project [RF001, 0202]		
Date of Deployment:	February 1999	Technology User:	RFETS
Deployment Value/Impact: The benefits of this 1200 ft long barrier at this site are the protection of surface water quality in conjunction with reduced operations and maintenance costs compared to traditional baseline technologies, such as 'pump and treat.'			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Gary A. Huffman (DOE-RF) - Golden, CO. Tel. 303-966-7490		OST Program POC(s): Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596 James A. Wright (SCFA) - Aiken, SC. Tel. 803-725-5608	
Technology User POC(s): Norma Castaneda (RFETS) - Golden, CO. Tel. 303-966-4226		Vendor Company POC(s): Lane Butler (Kaiser-Hill) - Golden, CO. Tel. 303-966-5245	

Major Developers:

- MSE-Technology Applications, Inc.
- Rocky Flats Environmental Technology Site
- Sandia National Laboratories - Livermore
- University of Waterloo

Vendor Company:

Kaiser Hill

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Rocky Flats Environmental Technology Site (Solar Ponds Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Pathway 2 (MSE TA) Upgrade) in Oak Ridge, TN
- Deployed (type: Non-DOE) in FY 1999 at Watervliet Arsenal (DOD Facility) in Watervliet, NY
- Deployed (type: Non-DOE) in FY 1999 at Shaw Air Force Base (OU-4) in Sumter, SC
- Deployed (type: DOE) in FY 1998 at Oak Ridge (Y-12, Pathways 1 & 2) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Rocky Flats (RF Env. Tech. Site Mound) in Golden, CO

Passive Reactive Barrier

(OST/TMS ID: 46/ TMS Application ID: 1427)

Passive reactive barriers are in situ water permeable barriers that possess properties that either alter or destroy contaminants of concern (COC's) in place (e.g. certain VOCs) or bind the COC (e.g. uranium) to the barrier material. The prime purpose of this technology is to change the remediation strategy from pumping (i.e. advection of ground water) to passive capture under natural gradients. Passive reactive barriers are a less energy-intensive approach to aquifer cleanup, without the hydrologic impacts of continued pumping.

Depending on site conditions, the barrier media may be designed for continued (non-regenerated) use, or may be placed in a manner that permits retrieval for extraction of bound contaminants and regeneration and replacement of the media. Appropriate down-gradient blocks will alert operators when barrier replacement is required.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Rocky Flats Environmental Technology Site, Solar Ponds Plume (Golden, CO, United States)		
PBS Name:	Pu Metals and Oxides Stabilization [RF008, 0339]		
Date of Deployment:	June 1999	Technology User:	Rocky Flats Environmental Technology Site
Deployment Value/Impact: The benefits of the Passive Reactive Barrier are the protection of surface water quality in conjunction with reduced operations and maintenance costs compared to traditional baseline technologies such as pump and treat methods.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Gary A. Huffman (DOE-RF) – Golden, CO. Tel. 303-966-7490		OST Program POC(s): Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596	
Technology User POC(s): Norma Castaneda (RFETS) – Golden, CO. Tel. 303-966-4226		Vendor Company POC(s): Lane Butler (Kaiser-Hill) - Golden, CO. Tel. 303-966-5245	

Major Developers:

- MSE-Technology Applications, Inc.
- Rocky Flats Environmental Technology Site
- Sandia National Laboratories - Livermore
- University of Waterloo

Vendor Company:

Kaiser Hill

Other Deployments:

- Deployed (type: DOE) in FY 1998 at Oak Ridge (Y-12, Pathways 1 & 2) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Rocky Flats (RF Env. Tech. Site Mound) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats (East Trenches Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Pathway 2 (MSE TA) Upgrade) in Oak Ridge, TN
- Deployed (type: Non-DOE) in FY 1999 at Watervliet Arsenal (DOD Facility) in Watervliet, NY
- Deployed (type: Non-DOE) in FY 1999 at Shaw Air Force Base (OU-4) in Sumter, SC

Passive Reactive Barrier

(OST/TMS ID: 46/ TMS Application ID: 1708)

Passive reactive barriers are in situ water permeable barriers that possess properties that either alter or destroy contaminants of concern (COC's) in place (e.g. certain VOCs) or bind the COC (e.g. uranium) to the barrier material. The prime purpose of this technology is to change the remediation strategy from pumping (i.e. advection of ground water) to passive capture under natural gradients. Passive reactive barriers are a less energy-intensive approach to aquifer cleanup, without the hydrologic impacts of continued pumping.

Depending on site conditions, the barrier media may be designed for continued (non-regenerated) use, or may be placed in a manner that permits retrieval for extraction of bound contaminants and regeneration and replacement of the media. Appropriate down-gradient blocks will alert operators when barrier replacement is required.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Pathway 2 (MSE TA) Upgrade (Oak Ridge, TN, United States)
PBS Name:	Y-12 Bear Creek Remedial Action [OR-42102, 0307]
Date of Deployment:	September 1999
Technology User:	Bechtel Jacobs; DOE, Oak Ridge Operations
Deployment Value/Impact:	MSE-TA/Western Environmental Technology Office deployed this technology at Oak Ridge Reservation, Pathway 2. Passive operation greatly reduces the significant operations and maintenance costs of decades-long pumping and treating.
Vendor Name for this Technology:	Same as primary Technology Title
Point of Contact:	
User Program POC(s): Karen Catlett (ORNL) - Oak Ridge, TN. Tel. 423-241-2224	OST Program POC(s): Skip Chamberlain (EM-53) - Germantown, MD. Tel. 301-903-7248 Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596
Technology User POC(s): Elizabeth Wilder (Bechtel Jacobs) - Oak Ridge, TN. Tel. 423-572-2510	Vendor Company POC(s): Will Goldberg (MSE-TA, Inc.) - Butte, MT. Tel. 406-494-7443

Major Developers:

- MSE-Technology Applications, Inc.
- Rocky Flats Environmental Technology Site
- Sandia National Laboratories - Livermore
- University of Waterloo

Vendor Company:

MSE Technology Applications, Inc.

Other Deployments:

- Deployed (type: DOE) in FY 1998 at Oak Ridge (Y-12, Pathways 1 & 2) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Rocky Flats (RF Env. Tech. Site Mound) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats (East Trenches Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats Environmental Technology Site (Solar Ponds Plume) in Golden, CO
- Deployed (type: Non-DOE) in FY 1999 at Watervliet Arsenal (DOD Facility) in Watervliet, NY
- Deployed (type: Non-DOE) in FY 1999 at Shaw Air Force Base (OU-4) in Sumter, SC

Passive Reactive Barrier

(OST/TMS ID: 46/ TMS Application ID: 1716)

Passive reactive barriers are in situ water permeable barriers that possess properties that either alter or destroy contaminants of concern (COC's) in place (e.g. certain VOCs) or bind the COC (e.g. uranium) to the barrier material. The prime purpose of this technology is to change the remediation strategy from pumping (i.e. advection of ground water) to passive capture under natural gradients. Passive reactive barriers are a less energy-intensive approach to aquifer cleanup, without the hydrologic impacts of continued pumping.

Depending on site conditions, the barrier media may be designed for continued (non-regenerated) use, or may be placed in a manner that permits retrieval for extraction of bound contaminants and regeneration and replacement of the media. Appropriate down-gradient blocks will alert operators when barrier replacement is required.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Watervliet Arsenal, DOD Facility (Watervliet, NY, United States)		
PBS Name:	Not Specified		
Date of Deployment:	November 1998	Technology User:	U.S. Department of Defense
Deployment Value/Impact: Vendor believes this technology will save approximately \$3M in operation and maintenance costs and anticipates 20 years to clean up.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Myra Senick (Watervliet Arsenal) - Watervliet, NY. Tel. 518-266-5731		OST Program POC(s): Skip Chamberlain (EM-53) - Germantown, MD. Tel. 301-903-7248 Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596	
Technology User POC(s): Ken Goldstein (U.S. Dept. of Defense) - Washington, DC. Tel. 201-529-4700		Vendor Company POC(s): Stephanie O'Hannesin (Environmental, Inc.) - Golden, CO. Tel. 519-824-0432	

Major Developers:

- MSE-Technology Applications, Inc.
- Rocky Flats Environmental Technology Site
- Sandia National Laboratories - Livermore
- University of Waterloo

Vendor Company:

Environmental, Inc.

Other Deployments:

- Deployed (type: DOE) in FY 1998 at Oak Ridge (Y-12, Pathways 1 & 2) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Rocky Flats (RF Env. Tech. Site Mound) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats (East Trenches Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats Environmental Technology Site (Solar Ponds Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Pathway 2 (MSE TA) Upgrade) in Oak Ridge, TN
- Deployed (type: Non-DOE) in FY 1999 at Shaw Air Force Base (OU-4) in Sumter, SC

Passive Reactive Barrier

(OST/TMS ID: 46/ TMS Application ID: 1717)

Passive reactive barriers are in situ water permeable barriers that possess properties that either alter or destroy contaminants of concern (COC's) in place (e.g. certain VOCs) or bind the COC (e.g. uranium) to the barrier material. The prime purpose of this technology is to change the remediation strategy from pumping (i.e. advection of ground water) to passive capture under natural gradients. Passive reactive barriers are a less energy-intensive approach to aquifer cleanup, without the hydrologic impacts of continued pumping.

Depending on site conditions, the barrier media may be designed for continued (non-regenerated) use, or may be placed in a manner that permits retrieval for extraction of bound contaminants and regeneration and replacement of the media. Appropriate down-gradient blocks will alert operators when barrier replacement is required.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Shaw Air Force Base, OU-4 (Sumter, SC, United States)
PBS Name:	Not Specified
Date of Deployment:	November 1998
Technology User:	U.S. Air Force, Environmental Restoration Pgm, Shaw AFB
Deployment Value/Impact:	The benefits of this barrier are the protection of surface water quality in conjunction with reduced operations and maintenance costs compared to traditional baseline technologies, such as 'pump-and-treat.'
Vendor Name for this Technology:	Same as primary Technology Title
Point of Contact:	
User Program POC(s): Richard Røller (U. S. Air Force) – Sumter, SC. Tel. 803-895-9991	OST Program POC(s): Skip Chamberlain (EM-53) - Germantown, MD. Tel. 301-903-7248 Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596
Technology User POC(s): Same as End User POC	Vendor Company POC(s): Dan Graveling (IT Corp.) - Sumter, SC. Tel. 303-793-5278

Major Developers:

- MSE-Technology Applications, Inc.
- Rocky Flats Environmental Technology Site
- Sandia National Laboratories - Livermore
- University of Waterloo

Vendor Company:

IT Corp.

Other Deployments:

- Deployed (type: DOE) in FY 1998 at Oak Ridge (Y-12, Pathways 1 & 2) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Rocky Flats (RF Env. Tech. Site Mound) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats (East Trenches Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Rocky Flats Environmental Technology Site (Solar Ponds Plume) in Golden, CO
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (Pathway 2 (MSE TA) Upgrade) in Oak Ridge, TN
- Deployed (type: Non-DOE) in FY 1999 at Watervliet Arsenal (DOD Facility) in Watervliet, NY

SEAMIST

(OST/TMS ID: 53/ TMS Application ID: 1893)

SEAMIST has been demonstrated and deployed as an innovative tool to better access the subsurface for characterization and monitoring of contaminants in both vertical and horizontal boreholes, both above and below the water table. SEAMIST consists of an airtight membrane liner pneumatically and/or hydraulically emplaced inside a borehole, simultaneously maintaining the integrity of the borehole and permitting collection of contaminant samples from the subsurface at discrete depth intervals. Instrumentation can be used in horizontal, vertical, enlarged, constricted, and curved holes.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Los Alamos National Laboratory, OU 1148 (Los Alamos, NM, United States)		
PBS Name:	LANL Environmental Restoration [AL009, 0562]		
Date of Deployment:	March 1999	Technology User:	LANL
Deployment Value/Impact: SEAMIST provided rapid accessibility to subsurface instrumentation for service, maintenance or adjustment. This was particularly important for an experimental facility where there is a need to try different instrument configurations.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Kim V. Abbott (DOE-Oakland) - Oakland, CA. Tel. 510-637-1501		OST Program POC(s): Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172	
Technology User POC(s): Dennis Newell (LANL) - Los Alamos, NM. Tel. 505-665-8347		Vendor Company POC(s): Carl Keller (FLUTE, Ltd.) - Santa Fe, NM. Tel. 505-455-1300	

Major Developers:

Eastman Cherrington Environmental Corp.

Vendor Company:

FLUTE, Inc.

Other Deployments:

- Deployed (type: DOE) in FY 1997 at Savannah River Site (A/M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1997 at Lawrence Livermore National Laboratory - Main Site (Tritiated Water Plume Tracking) in Livermore, CA
- Deployed (type: DOE) in FY 1993 at Savannah River Site (Integrated Demo Site) in Aiken, SC
- Deployed (type: DOE) in FY 1992 at Lawrence Livermore National Laboratory (Tritiated water plume tracking) in Livermore, CA

ResonantSonic Drilling

(OST/TMS ID: 55/ TMS Application ID: 1547)

The ResonantSonic (TM) drilling system uses a combination of mechanically generated vibrations and rotary power to efficiently penetrate the soil. The oscillator or drill head operates at frequencies close to the natural frequency of the steel drill column (up to 150 cycles per second) and consists of two counter-rotating rollers that generate sinusoidal wave forces. The vibration of the drill pipe, coupled with the weight of the drill pipe, and the downward thrust of the drill head, commonly result in rapid penetration. The ResonantSonic SM method uses no circulation media, and thus produces very little secondary waste. The ability to predict failures in the sonic system or drill string promises to reduce downtime and provide additional savings for environmental drilling throughout the DOE complex.

DESCRIPTION OF THE DEPLOYMENT

Location:	Savannah River Site, ORWBG (Aiken, SC, United States)		
PBS Name:	Four Mile Branch Project [SR-ER02, 0052]		
Date of Deployment:	February 1999	Technology User:	WSRC-SRTC
Deployment Value/Impact: Resonant Sonic drilling yields continuous, relatively undisturbed cores. Also no cutting wastes are produced by the drilling process.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s):		OST Program POC(s):	
Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788		Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596	
Lester Germany (DOE-SR) - Aiken, SC.		Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793	
Technology User POC(s):		Vendor Company POC(s):	
Karen Jerome (WSRC-SRTC) - Aiken, SC. Tel. 803-725-5223		Jerry Graham (Alliance Environmental) - Marietta, OH. Tel. 740-373-2190	

Major Developers:
ResonantSonic International

Vendor Company:
Alliance Environmental

Other Deployments:

- Deployed (type: DOE) in FY 1992 at Hanford in Richland, WA

BetaScint Fiber-Optic Sensor for Detecting Strontium-90 and Uranium-238 in Soil

(OST/TMS ID: 70/ TMS Application ID: 1379)

The technology uses multiple layers of fiber-optic detectors and coincidence techniques to be specific for high energy beta particles (the only radiation emitted by Sr-90) and insensitive to gammas and alphas.

DESCRIPTION OF THE DEPLOYMENT			
Location:	University of California at Davis, LEHR (Davis, CA, United States)		
PBS Name:	Not Specified		
Date of Deployment:	April 1999	Technology User:	Weiss Associates
Deployment Value/Impact: The BetaScint sensor was used for screening samples to determine the extent of excavation needed to remove Sr-90 contamination, and for confirmation sampling to verify that all Sr-90 contaminated wastes and adjacent Sr-90 contaminated soil had been removed. The BetaScint and gamma spectrometer onsite tools were instrumental in maintaining labor and heavy equipment efficiency and minimizing waste volumes.			
Vendor Name for this Technology:		Same as primary Technology Title	
Point of Contact:			
User Program POC(s): Susan Fields (DOE LEHR Remediation Project Office) - Oakland, CA. Tel. 510-637-1608		OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532	
Technology User POC(s): Bob Devany (Weiss Associates) – Emeryville, CA. Tel. 510-450-6144		Vendor Company POC(s): Alan J. Schilk (BetaScint, Inc.) - Kennewick, WA. Tel. 509-735-7407	

Major Developers:
BetaScint, Inc.

Vendor Company:
BetaScint, Inc. (email info@BetaScint.com)

Other Deployments:

- Deployed (type: DOE) in FY 1994 at SLAPS (St. Louis Airport) in St. Louis, MO
- Deployed (type: DOE) in FY 1995 at ITRI 1995/6 (Inhalation Toxicology Research Institute at Kirtland AFB) in Albuquerque, NM
- Deployed (type: DOE) in FY 1998 at LEHR (University of California at Davis) in Davis, CA

In Situ Chemical Treatment of Asbestos

(OST/TMS ID: 73/ TMS Application ID: 1722)

Digestion Material for Asbestos (DMATM) is a proprietary new formulation for the chemical digestion of asbestos. It has been designed to permanently destroy chrysotile asbestos contained in porous materials. The DMATM digestion agent is spray-applied as a foam onto the surface and soaks into the porous materials, penetrating throughout to contact and destroy chrysotile asbestos contained within. After treatment is complete, the material can remain in-place and is no longer considered 'asbestos containing'. Additionally, DMATM treatment of fireproofing material (chrysotile asbestos in gypsum-vermiculite) will maintain the fire rating of the original asbestos-containing material (ACM). DMATM digestion agent has received the prestigious R&D 100 Award, recognizing it as one of the '100 most technologically significant new products and process' of 1998.

DESCRIPTION OF THE DEPLOYMENT	
Location:	University of Wisconsin, Dormitory Hallway (Madison, WI, United States)
PBS Name:	Not Specified
Date of Deployment:	December 1998
Technology User:	LVI Environmental Services, Inc.
Deployment Value/Impact: DMA was used to treat 100 sf of textured ceiling. The asbestos was digested in place. Conventional asbestos abatement techniques would have required the ceiling to be removed and replaced.	
Vendor Name for this Technology:	Digestion Material for Asbestos (DMATM)
Point of Contact:	
User Program POC(s): FL. Tel. 954-340-1311	OST Program POC(s): Harold D. Shoemaker (DOE-National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4715
Technology User POC(s): Sterling Crockett, Same as Vendor Contact (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311	Vendor Company POC(s): Sterling Crockett (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311

Major Developers:

W.R. Grace & Company, Grace Construction Products, DMA Development Group, (and Brookhaven National Laboratory)

Vendor Company:

LVI Environmental Services, Inc. (www.lviservices.com)

Other Deployments:

- Deployed (type: Non-DOE) in FY 2000 at Macy's (Stairwell) in New Brunswick, NJ
- Deployed (type: Non-DOE) in FY 1998 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at Farm Credit Building (5th Floor computer Room) in Saint Paul, MN
- Deployed (type: Non-DOE) in FY 1999 at Tower Properties (Elevator Shafts) in Kansas City, MO
- Deployed (type: Non-DOE) in FY 2000 at Great Lake Center (Rail Tunnel) in Minneapolis, MN

In Situ Chemical Treatment of Asbestos

(OST/TMS ID: 73/ TMS Application ID: 1723)

Digestion Material for Asbestos (DMATM) is a proprietary new formulation for the chemical digestion of asbestos. It has been designed to permanently destroy chrysotile asbestos contained in porous materials. The DMATM digestion agent is spray-applied as a foam onto the surface and soaks into the porous materials, penetrating throughout to contact and destroy chrysotile asbestos contained within. After treatment is complete, the material can remain in-place and is no longer considered 'asbestos containing'. Additionally, DMATM treatment of fireproofing material (chrysotile asbestos in gypsum-vermiculite) will maintain the fire rating of the original asbestos-containing material (ACM). DMATM digestion agent has received the prestigious R&D 100 Award, recognizing it as one of the '100 most technologically significant new products and process' of 1998.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Heritage Village, Dwelling Unit (Southbury, CT, United States)		
PBS Name:	Not Specified		
Date of Deployment:	March 1999	Technology User:	LVI Environmental Services, Inc.
Deployment Value/Impact: DMA was used to treat approximately 1,300 sf of textured ceiling. The asbestos was digested in place. Conventional asbestos abatement techniques would have required the ceiling to be removed and replaced.			
Vendor Name for this Technology:		Digestion Material for Asbestos (DMATM)	
Point of Contact:			
User Program POC(s): FL. Tel. 954-340-1311		OST Program POC(s): Harold D. Shoemaker (DOE-National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4715	
Technology User POC(s): Sterling Crockett, Same as Vendor Contact (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311		Vendor Company POC(s): Sterling Crockett (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311	

Major Developers:

W.R. Grace & Company, Grace Construction Products, DMA Development Group, (and Brookhaven National Laboratory)

Vendor Company:

LVI Environmental Services, Inc. (www.lviservices.com)

Other Deployments:

- Deployed (type: Non-DOE) in FY 2000 at Macy's (Stairwell) in New Brunswick, NJ
- Deployed (type: Non-DOE) in FY 1998 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at University of Wisconsin (Dormitory Hallway) in Madison, WI
- Deployed (type: Non-DOE) in FY 1999 at Farm Credit Building (5th Floor computer Room) in Saint Paul, MN
- Deployed (type: Non-DOE) in FY 1999 at Tower Properties (Elevator Shafts) in Kansas City, MO
- Deployed (type: Non-DOE) in FY 2000 at Great Lake Center (Rail Tunnel) in Minneapolis, MN

In Situ Chemical Treatment of Asbestos

(OST/TMS ID: 73/ TMS Application ID: 1724)

Digestion Material for Asbestos (DMATM) is a proprietary new formulation for the chemical digestion of asbestos. It has been designed to permanently destroy chrysotile asbestos contained in porous materials. The DMATM digestion agent is spray-applied as a foam onto the surface and soaks into the porous materials, penetrating throughout to contact and destroy chrysotile asbestos contained within. After treatment is complete, the material can remain in-place and is no longer considered 'asbestos containing'. Additionally, DMATM treatment of fireproofing material (chrysotile asbestos in gypsum-vermiculite) will maintain the fire rating of the original asbestos-containing material (ACM). DMATM digestion agent has received the prestigious R&D 100 Award, recognizing it as one of the '100 most technologically significant new products and process' of 1998.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Farm Credit Building, 5th Floor computer Room (Saint Paul, MN, United States)		
PBS Name:	Not Specified		
Date of Deployment:	August 1999	Technology User:	LVI Environmental Services, Inc.
Deployment Value/Impact: DMA was used to treat asbestos containing fireproofing on structural steel and decking within a 400 sf area. The asbestos in fireproofing was destroyed in place while retaining its fire rating.			
Vendor Name for this Technology:		Digestion Material for Asbestos (DMATM)	
Point of Contact:			
User Program POC(s): FL. Tel. 954-340-1311		OST Program POC(s): Harold D. Shoemaker (DOE-National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4715	
Technology User POC(s): Sterling Crockett, Same as Vendor Contact (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311		Vendor Company POC(s): Sterling Crockett (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311	

Major Developers:

W.R. Grace & Company, Grace Construction Products, DMA Development Group, (and Brookhaven National Laboratory)

Vendor Company:

LVI Environmental Services, Inc. (www.lviservices.com)

Other Deployments:

- Deployed (type: Non-DOE) in FY 2000 at Macy's (Stairwell) in New Brunswick, NJ
- Deployed (type: Non-DOE) in FY 1998 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at University of Wisconsin (Dormitory Hallway) in Madison, WI
- Deployed (type: Non-DOE) in FY 1999 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at Tower Properties (Elevator Shafts) in Kansas City, MO
- Deployed (type: Non-DOE) in FY 2000 at Great Lake Center (Rail Tunnel) in Minneapolis, MN

In Situ Chemical Treatment of Asbestos

(OST/TMS ID: 73/ TMS Application ID: 1725)

Digestion Material for Asbestos (DMATM) is a proprietary new formulation for the chemical digestion of asbestos. It has been designed to permanently destroy chrysotile asbestos contained in porous materials. The DMATM digestion agent is spray-applied as a foam onto the surface and soaks into the porous materials, penetrating throughout to contact and destroy chrysotile asbestos contained within. After treatment is complete, the material can remain in-place and is no longer considered 'asbestos containing'. Additionally, DMATM treatment of fireproofing material (chrysotile asbestos in gypsum-vermiculite) will maintain the fire rating of the original asbestos-containing material (ACM). DMATM digestion agent has received the prestigious R&D 100 Award, recognizing it as one of the '100 most technologically significant new products and process' of 1998.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Tower Properties, Elevator Shafts (Kansas City, MO, United States)		
PBS Name:	Not Specified		
Date of Deployment:	September 1999	Technology User:	LVI Environmental Services, Inc.
Deployment Value/Impact: DMA was used to treat asbestos containing fireproofing on structural steel within five elevator shafts. The asbestos in fireproofing was destroyed in place while retaining its fire rating.			
Vendor Name for this Technology:		Digestion Material for Asbestos (DMATM)	
Point of Contact:			
User Program POC(s): FL. Tel. 954-340-1311		OST Program POC(s): Harold D. Shoemaker (DOE-National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4715	
Technology User POC(s): Sterling Crockett, Same as Vendor Contact (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311		Vendor Company POC(s): Sterling Crockett (LVI Environmental Services, Inc.) - Coral Springs, FL. Tel. 954-340-1311	

Major Developers:

W.R. Grace & Company, Grace Construction Products, DMA Development Group, (and Brookhaven National Laboratory)

Vendor Company:

LVI Environmental Services, Inc. (www.lviservices.com)

Other Deployments:

- Deployed (type: Non-DOE) in FY 2000 at Macy's (Stairwell) in New Brunswick, NJ
- Deployed (type: Non-DOE) in FY 1998 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at University of Wisconsin (Dormitory Hallway) in Madison, WI
- Deployed (type: Non-DOE) in FY 1999 at Heritage Village (Dwelling Unit) in Southbury, CT
- Deployed (type: Non-DOE) in FY 1999 at Farm Credit Building (5th Floor computer Room) in Saint Paul, MN
- Deployed (type: Non-DOE) in FY 2000 at Great Lake Center (Rail Tunnel) in Minneapolis, MN

Pipe Explorer (TM) Surveying System

(OST/TMS ID: 74/ TMS Application ID: 1486)

The Pipe Explorer system is used to characterize radiological contamination inside piping systems before the pipe can be recycled, remediated, or disposed. The Pipe Explorer can be deployed through constrictions in the pipe, around 90° bends, vertically up and down, and in slippery conditions. Because the detector is transported inside the membrane, which is inexpensive and disposable, it is protected from contamination, which eliminates cross-contamination and false readings. Characterization sensors that have been demonstrated with the system thus far include: gamma detectors, beta detectors, video cameras, and pipe locators. Alpha measurement capability has been developed and will be demonstrated soon. The system is capable of deploying in pipes as small as 2-in. diameter and up to 250-ft long.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Columbus Environmental Management Project - King Avenue (Columbus, OH, United States)		
PBS Name:	King Avenue Site Decontamination [OH-CL-01, 0230]		
Date of Deployment:	September 1999	Technology User:	No Technology User has been defined
Deployment Value/Impact: Pipe Explorer is being deployed to survey pipes in Buildings 1, 1A, 2, 4, 7 at the Battelle King Avenue Decontamination and Decommissioning project.			
Vendor Name for this Technology:		Pipe Explorer	
Point of Contact:			
User Program POC(s): Doug Maynor (DOE-OH) - Miamisburg, OH. Tel. 937-865-3986		OST Program POC(s): Robert C. Bedick (National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4505	
Technology User POC(s): Joe Poligiano - Columbus, OH. Tel. 614-424-7776		Vendor Company POC(s): C. David Cremer (Science & Engineering Associates, Inc.) - Albuquerque, NM. Tel. 505-884-2300	

Major Developers:

Science and Engineering Associates, Inc.

Vendor Company:

Science and Engineering Associates, Inc.

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Brookhaven National Laboratory in Brookhaven, NY
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Area Process Sewers) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1998 at Portland Gas and Electric Trojan Nuclear Plant (Portland Gas and Electric Trojan Nuclear Plant) in Portland, OR
- Deployed (type: Non-DOE) in FY 1998 at Crystal River (Crystal River Nuclear Power Plant) in Crystal River, FL
- Deployed (type: DOE) in FY 1997 at Mound (Mound Site) in Miamisburg, OH
- Deployed (type: DOE) in FY 1997 at Argonne National laboratory (CP-5 Reactor) in Chicago, IL
- Deployed (type: DOE) in FY 1996 at Grand Junction Project Office (Grand Junction Site) in Grand Junction, CO
- Deployed (type: DOE) in FY 1996 at Inhalation Toxicology Research Institute (ITRI) in Albuquerque, NM
- Deployed (type: DOE) in FY 1995 at FUSRAP (General Motors Adrian Plant) in Adrian, MI

Pipe Explorer (TM) Surveying System

(OST/TMS ID: 74/ TMS Application ID: 1544)

The Pipe Explorer system is used to characterize radiological contamination inside piping systems before the pipe can be recycled, remediated, or disposed. The Pipe Explorer can be deployed through constrictions in the pipe, around 90° bends, vertically up and down, and in slippery conditions. Because the detector is transported inside the membrane, which is inexpensive and disposable, it is protected from contamination, which eliminates cross-contamination and false readings. Characterization sensors that have been demonstrated with the system thus far include: gamma detectors, beta detectors, video cameras, and pipe locators. Alpha measurement capability has been developed and will be demonstrated soon. The system is capable of deploying in pipes as small as 2-in. diameter and up to 250-ft long.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Brookhaven National Laboratory (Brookhaven, NY, United States)		
PBS Name:	Not Applicable		
Date of Deployment:	August 1999	Technology User:	Brookhaven National Laboratory
Deployment Value/Impact: Pipe Explorer surveyed 927 feet of live sewer pipe for beta and gamma radiation. The survey was completed without requiring any cessation of ongoing operations. A further survey for alpha radiation will be performed when the sewer line is empty.			
Vendor Name for this Technology:		Pipe Explorer	
Point of Contact:			
User Program POC(s): Joseph Eng (DOE-Brookhaven National Laboratory) - Upton, NY. Tel. 631-344-7982		OST Program POC(s): Robert C. Bedick (National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4505	
Technology User POC(s): Greg Flett (Brookhaven National Laboratory) - Upton, NY. Tel. 631-344-3263		Vendor Company POC(s): C. David Cremer (Science & Engineering Associates, Inc.) - Albuquerque, NM. Tel. 505-884-2300 Tom Kendrick (Science and Engineering Associates) - Santa Fe, NM. Tel. 505-346-9863	

Major Developers:

Science and Engineering Associates, Inc.

Vendor Company:

Science and Engineering Associates, Inc. (www.seabase.com)

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Columbus Environmental Management Project - King Avenue in Columbus, OH
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Area Process Sewers) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1998 at Portland Gas and Electric Trojan Nuclear Plant (Portland Gas and Electric Trojan Nuclear Plant) in Portland, OR
- Deployed (type: Non-DOE) in FY 1998 at Crystal River (Crystal River Nuclear Power Plant) in Crystal River, FL
- Deployed (type: DOE) in FY 1997 at Mound (Mound Site) in Miamisburg, OH
- Deployed (type: DOE) in FY 1997 at Argonne National laboratory (CP-5 Reactor) in Chicago, IL
- Deployed (type: DOE) in FY 1996 at Grand Junction Project Office (Grand Junction Site) in Grand Junction, CO
- Deployed (type: DOE) in FY 1996 at Inhalation Toxicology Research Institute (ITRI) in Albuquerque, NM
- Deployed (type: DOE) in FY 1995 at FUSRAP (General Motors Adrian Plant) in Adrian, MI

Pipe Explorer (TM) Surveying System

(OST/TMS ID: 74/ TMS Application ID: 1545)

The Pipe Explorer system is used to characterize radiological contamination inside piping systems before the pipe can be recycled, remediated, or disposed. The Pipe Explorer can be deployed through constrictions in the pipe, around 90° bends, vertically up and down, and in slippery conditions. Because the detector is transported inside the membrane, which is inexpensive and disposable, it is protected from contamination, which eliminates cross-contamination and false readings. Characterization sensors that have been demonstrated with the system thus far include: gamma detectors, beta detectors, video cameras, and pipe locators. Alpha measurement capability has been developed and will be demonstrated soon. The system is capable of deploying in pipes as small as 2-in. diameter and up to 250-ft long.

DESCRIPTION OF THE DEPLOYMENT

Location: Savannah River Site, R-Area Process Sewers (Aiken, SC, United States)

PBS Name: R Reactor Deactivation Project [SR-FA10, 0507]

Date of Deployment: September 1999 **Technology User:** Westinghouse Savannah River Company

Deployment Value/Impact: Pipe Explorer was deployed at the Savannah River Site to radiologically characterize storm lines and process pipes near the plutonium production reactors. It characterized the interiors of pipes, ranging in diameter from 12 inches to 36 inches. A total of 7,000 feet of pipe will eventually be characterized by Pipe Explorer.

Vendor Name for this Technology: Pipe Explorer

Point of Contact:

User Program POC(s):

Les Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033

Technology User POC(s):

Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788

OST Program POC(s):

Robert C. Bedick (National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4505

Vendor Company POC(s):

C. David Cremer (Science & Engineering Associates, Inc.) - Albuquerque, NM. Tel. 505-884-2300

Major Developers:

Science and Engineering Associates, Inc.

Vendor Company:

Science and Engineering Associates, Inc. (www.seabase.com)

Other Deployments:

- Deployed (type: DOE) in FY 1995 at FUSRAP (General Motors Adrian Plant) in Adrian, MI
- Deployed (type: DOE) in FY 1996 at Grand Junction Project Office (Grand Junction Site) in Grand Junction, CO
- Deployed (type: DOE) in FY 1997 at Mound (Mound Site) in Miamisburg, OH
- Deployed (type: Non-DOE) in FY 1998 at Portland Gas and Electric Trojan Nuclear Plant (Portland Gas and Electric Trojan Nuclear Plant) in Portland, OR
- Deployed (type: DOE) in FY 1997 at Argonne National laboratory (CP-5 Reactor) in Chicago, IL
- Deployed (type: Non-DOE) in FY 1998 at Crystal River (Crystal River Nuclear Power Plant) in Crystal River, FL
- Deployed (type: DOE) in FY 1996 at Inhalation Toxicology Research Institute (ITRI) in Albuquerque, NM
- Deployed (type: DOE) in FY 1999 at Columbus Environmental Management Project - King Avenue in Columbus, OH
- Deployed (type: DOE) in FY 1999 at Brookhaven National Laboratory in Brookhaven, NY

Light Duty Utility Arm

(OST/TMS ID: 85/ TMS Application ID: 195)

The Light Duty Utility Arm is the core of a suite of technologies; it provides a mobile, multi-axis positioning system that accesses DOE's radioactive waste tanks through existing openings in the tank dome. This flexible and adaptive system provides a robotic platform capable of deploying in situ surveillance, inspection, waste analysis, and light-duty retrieval tools called end effectors. The system is operated remotely, reducing exposure to operators and provides significant advantages over prior methods that limited deployment of tools to positions directly below tank access risers.

The system has previously demonstrated remote inspection using a high-resolution video system and retrieval of small hardware items using the Gripper End Effector. It has also been used to perform sampling of liquid waste and tank inspection to support tank closure planning. A modified version of the Light Duty Utility Arm was developed to support retrieval activities at the Oak Ridge Reservation.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Idaho National Engineering and Environmental Laboratory, Tank WM-188 (Idaho Falls, ID, United States)
PBS Name:	HLW Treatment and Storage [ID-HLW-103, 0565]
Date of Deployment:	February 1999
Technology User:	INEEL
Deployment Value/Impact: A Light Duty Utility Arm (LDUA) was deployed through a 12-inch riser into Tank WM-188 at the Idaho Nuclear Technology Engineering Center (INTEC) in February 1999. The deployment occurred under winter conditions with the outside air temperature down to 10 degrees F, snow cover, and occasional wind and precipitation. Waste Tank Operations staff devised an enclosed tent to protect the riser area where end effectors are changed out and heel samples are packaged for transport to the laboratory.	
A stereo video camera system (TMS ID 890) was deployed for a preliminary visual inspection inside the tank followed by deployment of the Oceaneering Space Systems (OSS) Tank Sampling and Inspection Tool (TMS ID 2359) end effector for weld defect and corrosion inspection. Representatives of OSS assisted in picking areas of interest for inspection and data interpretation. No corrosion defects were noted on the welds examined.	
On February 15 and 16, 1999, the LDUA was re-deployed to obtain two heel samples about 12 and 2 feet from the tank wall, respectively using the LDUA Heel Sampling End Effector (TMS ID 2386). A third heel sample was taken about 6 feet from the tank wall on February 18, 1999, under continuing severe winter weather conditions. All inspection and sampling operations were done remotely by operators in a control trailer. End effectors were coupled to and decoupled from the LDUA using an INEEL-developed Remote End Effector Tool Plate (TMS ID 2394) and Remote End Effector Exchange System (TMS ID 2393).	
Vendor Name for this Technology:	Same as primary Technology Title
Point of Contact:	
User Program POC(s): Cal Christensen (Lockheed Martin Idaho Technologies Company) - Idaho Falls, ID. Tel. 208-526-6802 Keith A. Lockie (DOE-ID) - Idaho Falls, ID. Tel. 208-526-0118 James H. Valentine (Lockheed Martin Idaho Technologies Company) - Idaho Falls, ID. Tel. 208-526-0118	OST Program POC(s): Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s): No Points of Contact are listed.	Vendor Company POC(s): No Points of Contact are listed.

Major Developers:
SPAR Aerospace Ltd.

Vendor Company:
Spar Aerospace Limited

Other Deployments:

Light Duty Utility Arm

(OST/TMS ID: 85/ TMS Application ID: 195)

- Deployed (type: DOE) in FY 1997 at Oak Ridge (GAAT Tank W-3) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1996 at Hanford (Tank 106-T) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Oak Ridge (GAAT Tank W-6) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Oak Ridge (GAAT, Tank W-4) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (GAAT W-7: Pipe Capping and Waste Retrieval) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (GAAT W-10: Pipe Cutting, Capping, and Waste Retrieval) in Oak Ridge, TN

Light Duty Utility Arm

(OST/TMS ID: 85/ TMS Application ID: 1311)

The Light Duty Utility Arm is the core of a suite of technologies; it provides a mobile, multi-axis positioning system that accesses DOE's radioactive waste tanks through existing openings in the tank dome. This flexible and adaptive system provides a robotic platform capable of deploying in situ surveillance, inspection, waste analysis, and light-duty retrieval tools called end effectors. The system is operated remotely, reducing exposure to operators and provides significant advantages over prior methods that limited deployment of tools to positions directly below tank access risers.

The system has previously demonstrated remote inspection using a high-resolution video system and retrieval of small hardware items using the Gripper End Effector. It has also been used to perform sampling of liquid waste and tank inspection to support tank closure planning. A modified version of the Light Duty Utility Arm was developed to support retrieval activities at the Oak Ridge Reservation.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), GAAT W-7: Pipe Capping and Waste Retrieval (Oak Ridge, TN, United States)
PBS Name:	ORNL Remedial Action - Def [OR-321, 0095] ORNL Remedial Action - Non-Def [OR-322, 0096]
Date of Deployment:	October 1998
Technology User:	Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company
Deployment Value/Impact: PIPE CAPPING FROM 10/1/98 TO 12/31/99: The modified Light Duty Utility Arm enabled in-tank deployment of the Pipe Cutting and Isolation System (See TMS ID 2093). Pipe cutting and capping was necessary to isolate Gunite and Associated Tanks (GAAT) Tank W-7 from the environment (ground water intrusion into the tank).	
WASTE RETRIEVAL FROM 1/28/99 TO 3/18/99: The Gunite Scarifying End Effector (TMS ID 2384) and Confined Sluicing End Effector (TMS ID 812) were deployed by the modified Light Duty Utility Arm to retrieve waste and clean sludge and residues from the walls of GAAT W-7.	
Vendor Name for this Technology:	Modified Light Duty Utility Arm System (MLDUA) Custom LDUA for Retrieval & Closure at Oak Ridge
Point of Contact:	
User Program POC(s): Jacquie R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184	OST Program POC(s): Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s): Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779	Vendor Company POC(s): Frank Teti (MacDonald Dettwiler Space & Advanced Robotics, Ltd. [formerly SPAR Aerospace]) - Brampton, ON. Tel. 800-891-7727 ext. 4523

Major Developers:
SPAR Aerospace Ltd.

Vendor Company:
MacDonald Dettwiler Space & Advanced Robotics, Ltd. (<http://www.mda.ca>)

Other Deployments:

- Deployed (type: DOE) in FY 1997 at Oak Ridge (GAAT Tank W-3) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Idaho National Engineering and Environmental Laboratory (Tank WM-188) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1996 at Hanford (Tank 106-T) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Oak Ridge (GAAT Tank W-6) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Oak Ridge (GAAT, Tank W-4) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (GAAT W-10: Pipe Cutting, Capping, and Waste Retrieval) in Oak Ridge, TN

Light Duty Utility Arm

(OST/TMS ID: 85/ TMS Application ID: 1454)

The Light Duty Utility Arm is the core of a suite of technologies; it provides a mobile, multi-axis positioning system that accesses DOE's radioactive waste tanks through existing openings in the tank dome. This flexible and adaptive system provides a robotic platform capable of deploying in situ surveillance, inspection, waste analysis, and light-duty retrieval tools called end effectors. The system is operated remotely, reducing exposure to operators and provides significant advantages over prior methods that limited deployment of tools to positions directly below tank access risers.

The system has previously demonstrated remote inspection using a high-resolution video system and retrieval of small hardware items using the Gripper End Effector. It has also been used to perform sampling of liquid waste and tank inspection to support tank closure planning. A modified version of the Light Duty Utility Arm was developed to support retrieval activities at the Oak Ridge Reservation.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), GAAT W-10: Pipe Cutting, Capping, and Waste Retrieval (Oak Ridge, TN, United States)
PBS Name:	ORNL Remedial Action - Def [OR-321, 0095] ORNL Remedial Action - Non-Def [OR-322, 0096]
Date of Deployment:	May 1999
Technology User:	Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company
Deployment Value/Impact:	During the week of May 15, 1999, operation of the Modified Light-Duty Utility Arm (MLDUA) using the pipe-cutting tool was initiated in GAAT W-10. Two separate vertical pipe-cutting actions were completed.
Vendor Name for this Technology:	Modified Light Duty Utility Arm System (MLDUA) Custom LDUA for Retrieval & Closure at Oak Ridge
<u>Point of Contact:</u>	
User Program POC(s):	OST Program POC(s):
Jacque R. Noble-Dial (DOE-Oak Ridge) - Oak Ridge, TN. Tel. 423-241-6184	Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546
Technology User POC(s):	Vendor Company POC(s):
No Points of Contact are listed.	Howard Jones (MCDonald Dettwiler Space and Advanced Robotics) - Brampton, ON. Tel. 800-891-7727 ext. 4523

Major Developers:
SPAR Aerospace Ltd.

Vendor Company:
MCDonald Dettwiler Space and Advanced Robotics (<http://www.mda.ca/>)

Other Deployments:

- Deployed (type: DOE) in FY 1997 at Oak Ridge (GAAT Tank W-3) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Idaho National Engineering and Environmental Laboratory (Tank WM-188) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1996 at Hanford (Tank 106-T) in Richland, WA
- Deployed (type: DOE) in FY 1998 at Oak Ridge (GAAT Tank W-6) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1998 at Oak Ridge (GAAT, Tank W-4) in Oak Ridge, TN
- Deployed (type: DOE) in FY 1999 at Oak Ridge Reservation (Y-12, ORR, K-25, ORNL) (GAAT W-7: Pipe Capping and Waste Retrieval) in Oak Ridge, TN

Very Early-Time Electromagnetic System

(OST/TMS ID: 154/ TMS Application ID: 1850)

The Very Early Time Electromagnetic (VETEM) system is a time-domain system designed to image the shallow (0- approx. 5 m) subsurface of the earth for waste pit delineation and characterization and other contamination and buried object applications. Related technologies include ground-penetrating radar (GPR) and time-domain electromagnetic (TDEM) systems. VETEM is intended to fill the gap between GPR and TDEM by providing deeper penetration than GPR in conductive earth, and better resolution than conventional TDEM.

DESCRIPTION OF THE DEPLOYMENT

Location: Idaho National Engineering and Environmental Laboratory, Radioactive Waste Management Complex (RWMC) (Idaho Falls, ID, United States)

PBS Name: Radioactive Waste Management Complex Remediation [ID-ER-106, 0563]

Date of Deployment: November 1998 **Technology User:** U.S. Geological Survey

Deployment Value/Impact: Very Early-Time Electromagnetic (VETEM) System fills the gap between ground-penetrating radar (GPR) and time-domain electromagnetic (TDEM) systems, and can be continuously pulled along, providing a real-time graphical display. Data visualization software is available, and fast three-dimensional forward numerical modeling software has been written. Inverse modeling to provide the vertical component to the images from the field data is under development. The prototype VETEM system was deployed with two different antenna configurations and produced repeatable data that have been mapped to show the locations of buried electrically conductive objects.

Vendor Name for this Technology: Same as primary Technology Title

Point of Contact:

User Program POC(s):
Patrick Trudel (DOE - Idaho) - Idaho Falls, ID. Tel. 208-526-0169

OST Program POC(s):
Scott McMullin (DOE-SR) - Aiken, SC. Tel. 803-725-9596

Technology User POC(s):
David L. Wright (U.S. Geological Survey) - Denver, CO. Tel. 303-236-1381

Vendor Company POC(s):
No Points of Contact are listed.

Major Developers:

- The University of Illinois at Urbana-Champaign, Department of Electrical and Computer Engineering
- U.S. Geological Survey

Vendor Company:

Vendor Not Applicable

Other Deployments:

This is the first deployment of this technology.

Smart Sampling

(OST/TMS ID: 162/ TMS Application ID: 1640)

Smart Sampling is divided into three integrated technical product lines: 1) information management and visualization, 2) advanced geostatistical applications, and 3) economic risk-based decision analysis. This process has two functional lines: technology development and technology deployment. Smart Sampling uses geostatistical simulation to generate maps or 3-dimensional pictures that display the likelihood of exceeding design or performance criteria at a specific site as a function of currently available information, such as the likelihood of exceeding a regulatory action level for a particular contaminant. Emphasis is on integrating the ability to perform Smart Sampling with existing hardware and software systems at individual sites.

DESCRIPTION OF THE DEPLOYMENT

Location:	Rocky Flats Environmental Technology Site, Pad 903 (Golden, CO, United States)		
PBS Name:	Buffer Zone Closure Project [RF001, 0202]		
Date of Deployment:	August 1999	Technology User:	Rocky Flats Environmental Technology Site
Deployment Value/Impact: The Smart Sampling project brings cutting edge technology to DOE's environmental sites. Smart Sampling provides a rational economic framework for evaluating the trade-offs between characterization, treatment, monitoring, and economic risk. At sites where this process has been applied to remedial design, overall reduction in costs have ranged from 30 to 80%. This technology is applicable to all remedial and monitoring design work and analysis across the DOE and federal complex and all equivalent problems faced by industry.			
Vendor Name for this Technology:	Same as primary Technology Title		
Point of Contact:			
User Program POC(s):	OST Program POC(s):		
Gary A. Huffman (DOE-RF) - Golden, CO. Tel. 303-966-7490	Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172		
Technology User POC(s):	Vendor Company POC(s):		
Tom Anderson (RFFO) - Golden, CO. Tel. 303-966-4724	Paul Kaplan (Sandia National Laboratory) - Albuquerque, NM. Tel. 505-284-4786		

Major Developers:

Sandia National Laboratories

Vendor Company:

Sandia National Laboratories (www.sandia.gov)

Other Deployments:

- Deployed (type: DOE) and Demonstrated (type: Full-Scale) in FY 1996 at Mound (approximately 20 thousand cubic yards) in Miamisburg, OH
- Deployed (type: DOE) in FY 1998 at Miamisburg Environmental Management Project (Mound - ASTD (Miami Erie Canal)) in Miamisburg, OH
- Deployed (type: Non-DOE) in FY at Navajo Nation EPA (Superfund Site) in Window Rock, AZ
- Deployed (type: DOE) in FY 1998 at Idaho National Engineering and Environmental Laboratory (RWMA (OU 7 and 8)) in Idaho Falls, ID
- Deployed (type: DOE) in FY 1999 at Brookhaven National Laboratory (Segmented Gate Site) in Brookhaven, NY

Polymer Microencapsulation

(OST/TMS ID: 166/ TMS Application ID: 1480)

The U.S. Department of Energy has supported over the past 12 years the development of polymer encapsulation technologies for treatment of low-level radioactive, hazardous, and mixed wastes. Tests completed to date at Brookhaven National Laboratory, Rocky Flats and Envirocare of Utah, Inc., using both surrogate and actual waste indicate that polymer microencapsulation is a viable treatment option for a variety of mixed waste streams, including evaporator concentrate salts, sludges, incinerator ash, ion exchange resins, blowdown solutions, and molten salt oxidation residuals. Furthermore, polymers have been successfully used to macroencapsulate radioactive lead and debris wastes.

Mixed waste stabilization using polymers is adopted from existing processes widely used in the polymer industry.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Idaho National Engineering and Environmental Laboratory (Idaho Falls, ID, United States)
PBS Name:	Not Specified
Date of Deployment:	June 1999
Technology User:	INEEL and Envirocare of Utah, Inc.
Deployment Value/Impact: The mixed waste fly-ash generated from operation of INEEL's Waste Experimental Reduction Facility incinerator is difficult to stabilize in basic cements or ceramics, since the presence of metal salts and zinc in the fly-ash interfere with the stabilization chemistry. Because polyethylene does not interact with the waste fly-ash, it successfully encapsulates the waste at significant loadings.	
Vendor Name for this Technology:	Same as primary Technology Title
Point of Contact:	
User Program POC(s): George Schneider (U.S. Department of Energy, Idaho) - Idaho Falls, ID. Tel. 208-526-6789	OST Program POC(s): Paul Kalb (BNL - Principal Investigator) - Upton, NY. Tel. 516-344-7644 Vince C. Maio (INEEL-MWFA) - Idaho Falls, ID. Tel. 208-526-3696 Bill Owca (Department of Energy - Idaho) - Idaho Falls, ID. Tel. 208-526-1983
Technology User POC(s): No Points of Contact are listed.	Vendor Company POC(s): Al Rafati (Envirocare of Utah, Inc.) - Salt Lake City, UT. Tel. 801-532-1330

Major Developers:

DOE - Brookhaven

Vendor Company:

Envirocare of Utah, Inc. (www.envirocareutah.com)

Other Deployments:

This is the first deployment of this technology.

In Situ Chemical Oxidation Using Potassium Permanganate

(OST/TMS ID: 167/ TMS Application ID: 567)

Past project activities include a field demonstration in low-permeability soils (a tight clay soil contaminated with TCE and DCE) at the Kansas City Plant in 1996 using soil mixing, and in 1997 in an aquifer at the Portsmouth Gaseous Diffusion Plant using a ground-water recirculation technology. This technology enables oxidant migration to be controlled within the treatment zone.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Portsmouth Gaseous Diffusion Plant, X-701B site (Portsmouth, OH, United States)
PBS Name:	Portsmouth Remedial Action [OR-46301, 0319]
Date of Deployment:	August 1999
Technology User:	DOE-OR
Deployment Value/Impact: The unique advantages of DNAPL remediation using these oxidants are that they break the contaminants down rapidly and that they can be placed effectively in a wide variety of subsurface conditions using methods that have been successfully demonstrated. These technologies may provide useful solutions for contaminants that are resistant to remediation and are in complex geologic media that have been difficult to remediate with conventional methods.	
Vendor Name for this Technology:	Same as primary Technology Title
Point of Contact:	
User Program POC(s): Johnny O. Moore (DOE OR) - Oak Ridge, TN. Tel. 423-576-3536	OST Program POC(s): James A. Wright (SCFA) - Aiken, SC. Tel. 803-725-5608
Technology User POC(s): Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172	Vendor Company POC(s): No Points of Contact are listed.

Major Developers:

- Colorado School of Mines
- Oak Ridge National Laboratory, Chemical Technology Division

Vendor Company:

Vendor Not Applicable

Other Deployments:

This is the first deployment of this technology.

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1367)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, Vadose Zone, A-014 Outfall (Aiken, SC, United States)
PBS Name:	Upper Three Runs Project [SR-ER06, 0056]
Date of Deployment:	February 1999
Technology User:	WSRC-SRTC
Deployment Value/Impact: DNAPLs can be detected with cone penetrometer tools in the field rather than using expensive laboratory analyses and multiple screened intervals in monitoring wells. In this deployment, the Ribbon NAPL Sampler was utilized to delineate depth-discrete presence of NAPL in the subsurface.	
Vendor Name for this Technology:	For specific technology information, see OST/TMS ID 2238
<u>Point of Contact:</u>	
User Program POC(s): Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788 Les Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033	OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172 Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s): Brian D. Riha (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7807	Vendor Company POC(s): Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:

Dakota Technologies, Inc.

Vendor Company:

Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1367)

- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1368)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Savannah River Site, Saturated Zone, A-014 Outfall (Aiken, SC, United States)		
PBS Name:	Upper Three Runs Project [SR-ER06, 0056]		
Date of Deployment:	April 1999	Technology User:	WSRC-SRTC
Deployment Value/Impact: This deployment was conducted at the same time as the Vadose Zone, A-014 Outfall deployment. There was no benefit realized at this site; however, it is believed that subsequent attempts would be successful with additional funding.			
Vendor Name for this Technology:		For specific technology information, see OST/TMS ID #2238	
Point of Contact:			
User Program POC(s):		OST Program POC(s):	
Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788		John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532	
Les Germany (DOE-SR) - Aiken, SC. Tel. (803) 725-8033		Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172	
		Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793	
Technology User POC(s):		Vendor Company POC(s):	
Brian D. Riha (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7807		Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218	

Major Developers:

Dakota Technologies, Inc.

Vendor Company:

Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit (Vadose Zone)) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall (2)) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1369)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Jacksonville, Sages Dry Cleaner (Jacksonville, FL, United States)
PBS Name:	Not Specified
Date of Deployment:	January 1999
Technology User:	Sages Dry Cleaners (End User)/WSRC-SRTC (Tech Supplier)
Deployment Value/Impact: DNAPLs can be detected with cone penetrometer tools (such as in this deployment, the Laser Induced Fluorescence Probe) in the field rather than using expensive laboratory analyses and multiple screened intervals in monitoring wells. Technology was successful at delineating DNAPL in the saturated at depths where DNAPL had not previously been identified.	
Vendor Name for this Technology:	For specific technology information, see OST/TMS ID 2237
<u>Point of Contact:</u>	
User Program POC(s): Kevin Warner (Sages Dry Cleaners) - Jacksonville, FL. Tel. 850-422-2555	OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172 Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s): Joseph Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	Vendor Company POC(s): Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:

Dakota Technologies, Inc.

Vendor Company:

Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1369)

- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1371)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, C-Area Burning Rubble Pit (Vadose Zone) (Aiken, SC, United States)
PBS Name:	Steel Creek Project [SR-ER05, 0055]
Date of Deployment:	May 1999
Technology User:	WSRC-SRTC
Deployment Value/Impact:	The Ribbon NAPL Sampler was deployed in suspect DNAPLs source zone. No DNAPL was found indicating dissolved phase contamination only.
Vendor Name for this Technology:	For specific technology information, see OST/TMS ID 2238
<u>Point of Contact:</u>	
User Program POC(s):	OST Program POC(s):
Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788	John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532
Les Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033	Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
	Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s):	Vendor Company POC(s):
Brian D. Riha (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7807	Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:

Dakota Technologies, Inc.

Vendor Company:

Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1371)

- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1457)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, Vadose Zone, A-014-Outfall (Aiken, SC, United States)
PBS Name:	Upper Three Runs Project [SR-ER06, 0056]
Date of Deployment:	April 1999
Technology User:	Westinghouse Savannah River Company
Deployment Value/Impact:	Technology was successful at depth-discrete delineation of DNAPL in the vadose zone. Data were used to optimize design of remediation system.
Vendor Name for this Technology:	For specific technology information, see OST/TMS ID 2238
<u>Point of Contact:</u>	
User Program POC(s): Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788 Lester Germany (DOE-SR) - Aiken, SC.	OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172 Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s): Brian D. Riha (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7807 Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	Vendor Company POC(s): Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:
Dakota Technologies, Inc.

Vendor Company:
Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit (Vadose Zone)) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall (2)) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Strn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1458)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, Vadose Zone, A-014-Outfall (2) (Aiken, SC, United States)
PBS Name:	Upper Three Runs Project [SR-ER06, 0056]
Date of Deployment:	February 1999
Technology User:	Savannah River Tech Center
Deployment Value/Impact: Technology was successful at depth-discrete delineation of DNAPL in the vadose zone. Data were used to optimize design of remediation system.	
Vendor Name for this Technology: Ribbon NAPL Sampler (new name for HFM)	
Point of Contact:	
User Program POC(s): Chris Bergren (BSRI) - Aiken, SC. Tel. 803-952-6530 Les Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033	OST Program POC(s): Joe Ginanni (DOE-NV) - N. Las Vegas, NV. Tel. 702-295-0209 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
Technology User POC(s): Brian D. Riha (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7807	Vendor Company POC(s): John Corey (WSRC/SRTC) - Aiken, SC. Tel. 803-725-1134

Major Developers:
Dakota Technologies, Inc.

Vendor Company:
Westinghouse Savannah River Company/SRTC

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1463)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Paducah Gaseous Diffusion Plant (Paducah, KY, United States)
PBS Name:	Paducah Remedial Action [OR-45301, 0317] Paducah Remedial Action [OR-523, 0143]
Date of Deployment:	June 1999
Technology User:	Westinghouse Savannah River Company
Deployment Value/Impact: DNAPLs can be detected with cone penetrometer tools in the field rather than using expensive laboratory analyses and multiple screened intervals in monitoring wells. Modifications to the Ribbon NAPL Sampler to extend its versatility were demonstrated. The RNS was used to further delineate the extent of NAPL contamination as part of site characterization and remediation preparation.	
Vendor Name for this Technology:	Ribbon NAPL Sampler (new name for HFM)
Point of Contact:	
User Program POC(s): John D. Sheppard (DOE/PAD) - Paducah, KY. Tel. 270-441-6804	OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
Technology User POC(s): Brian D. Riha (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7807	Vendor Company POC(s): Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:
Dakota Technologies, Inc.

Vendor Company:
Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1463)

- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1809)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	NASA, Kennedy Space Center, Cape Canaveral Air Stn., Launch Complex 34 (Cape Canaveral, FL, United States)
PBS Name:	Not Specified
Date of Deployment:	June 1999
Technology User:	NASA (End User)/WSRC-SRTC (Tech Supplier)
Deployment Value/Impact: GeoVis, a video camera system designed to work with the CPT, was successfully used to delineate depth-discrete DNAPL contamination.	
Vendor Name for this Technology: For specific technology information, see OST/TMS ID 2399	
Point of Contact:	
User Program POC(s): Jacqueline Quinn (NASA Environmental Program Office) - Cape Canaveral, FL. Tel. 407-867-4265	OST Program POC(s): John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532 Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172 Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s): Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	Vendor Company POC(s): Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:
Dakota Technologies, Inc.

Vendor Company:
Vendor Not Applicable

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1809)

- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1814)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, 321-M Area (Aiken, SC, United States)
PBS Name:	Upper Three Runs Project [SR-ER06, 0056]
Date of Deployment:	November 1998
Technology User:	WSRC-SRTC
Deployment Value/Impact: The Field Raman Spectrograph and CPT were successfully deployed at Savannah River, which spectrograph was used to obtain 'chemical fingerprints' of concentrated and dilute hazardous waste contaminants in situ. The spectrograph is capable of in situ measurements of more than 50 meters away via fiber optic probes.	
Vendor Name for this Technology:	For specific technology information, see OST/TMS ID 873
<u>Point of Contact:</u>	
User Program POC(s):	OST Program POC(s):
Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788	Robert C. Bedick (National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4505
Les Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033	Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
	Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s):	Vendor Company POC(s):
Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:

Dakota Technologies, Inc.

Vendor Company:

Westinghouse Savannah River Company

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1814)

- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1816)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, R-Reactor Seepage Basins (Aiken, SC, United States)
PBS Name:	Steel Creek Project [SR-ER05, 0055]
Date of Deployment:	November 1998
Technology User:	WSRC-SRTC
Deployment Value/Impact: GeoVis Video Camera, along with its enabling CPT technology, was successfully deployed, identifying the elevation of a perched water unit.	
Vendor Name for this Technology:	For specific technology information, see OST/TMS ID 2399
<u>Point of Contact:</u>	
User Program POC(s):	OST Program POC(s):
Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788	John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532
Lester Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033	Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
	Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s):	Vendor Company POC(s):
Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:
Dakota Technologies, Inc.

Vendor Company:
Vendor Not Applicable

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1816)

- Deployed (type: DOE) in FY 1999 at Savannah River Site (M-Basin) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1818)

This 'toolbox' is representative of the innovative and cooperative effort of the Subsurface Contaminants Focus Area (SCFA) and Crosscut Program(s) to provide a Step Change Solution to clean-up problems across the DOE complex, collaborating also with other federal agencies and industry.

To successfully remediate a site contaminated by DNAPLs, it is important that the slowly-dissolving, non-aqueous phase source be found and removed. The Cone Penetrometer (CPT) is a direct push or drilling technology which reaches the target depth, enabling the deployment of a characterization technology which then delineates the contaminant. Simultaneous implementation of two or more technologies at a site accelerates cleanup schedules/milestones over that of the baseline technology.

DESCRIPTION OF THE DEPLOYMENT	
Location:	Savannah River Site, M-Basin (Aiken, SC, United States)
PBS Name:	Upper Three Runs Project [SR-ER06, 0056]
Date of Deployment:	February 1999
Technology User:	WSRC-SRTC
Deployment Value/Impact: The Color Recognition Sensor, deployed with the CPT, provides a continuous quantitative record of subsurface color. This deployment provided high resolution delineation of critical sedimentary interfaces.	
Vendor Name for this Technology: For specific technology information, see OST/TMS ID 2949	
<u>Point of Contact:</u>	
User Program POC(s):	OST Program POC(s):
Bob Blundy (WSRC-ER) - Aiken, SC. Tel. 803-952-6788	John B. Jones (DOE-NV) - Las Vegas, NV. Tel. 702-295-0532
Les Germany (DOE-SR) - Aiken, SC. Tel. 803-725-8033	Elizabeth Phillips (DOE-OR) - Oak Ridge, TN. Tel. 423-241-6172
	Sharon Robinson (DOE-SR) - Aiken, SC. Tel. 803-725-5793
Technology User POC(s):	Vendor Company POC(s):
Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218

Major Developers:
Dakota Technologies, Inc.

Vendor Company:
Vendor Not Applicable

Other Deployments:

- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Saturated Zone, A-014 Outfall) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at Jacksonville (Sages Dry Cleaner) in Jacksonville, FL
- Deployed (type: DOE) in FY 1999 at Savannah River Site (C-Area Burning Rubble Pit [Vadose Zone]) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (Vadose Zone, A-014-Outfall [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tanks) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Paducah Gaseous Diffusion Plant in Paducah, KY
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank [2]) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at Savannah River Site (M-Basin) in Aiken, SC
- Deployed (type: Non-DOE) in FY 1999 at NASA, Kennedy Space Center (Cape Canaveral Air Stn., Launch Complex 34) in Cape Canaveral, FL
- Deployed (type: Non-DOE) in FY 1999 at Commercial Dry Cleaning Site in Jacksonville, FL
- Deployed (type: DOE) in FY 1998 at Savannah River Site (321-M Solvent Storage Tank) in Aiken, SC

Innovative DNAPL Characterization Toolbox

(OST/TMS ID: 237/ TMS Application ID: 1818)

- Deployed (type: DOE) in FY 1999 at Savannah River Site (321-M Area) in Aiken, SC
- Deployed (type: DOE) in FY 1999 at Savannah River Site (R-Reactor Seepage Basins) in Aiken, SC

Cone Penetrometer Support: Operation, Maintenance, and R&D Activity Conducted on the OTD Cone Penetrometer Vehicle

(OST/TMS ID: 243/ TMS Application ID: 1586)

The cone penetrometer is a cost-effective and rapid tool for environmental site characterization in unconsolidated and semi-consolidated soil formations. In its standard configuration, the cone penetrometer is recognized as the most efficient tool for delineating lithology and stratigraphy in sedimentary formations. Currently, many CPT sensors and probes are currently under development that will extend the capabilities of CPT trucks. These tools will enable the real-time detection and processing of subsurface contamination data during operations. Although many of these sensors can provide better information in a cost- and time-effective manner, they are often not chosen by environmental line organizations due to the limited availability of independent cost and performance data. [TEXT CONTINUED IN TMS]

DESCRIPTION OF THE DEPLOYMENT	
Location:	Kennedy Space Center, Cape Canaveral Air Station/Hanger K (Cape Canaveral, FL, United States)
PBS Name:	Not Specified
Date of Deployment:	December 1998
Technology User:	Westinghouse Savannah River Company
Deployment Value/Impact: The CPT was used to successfully deploy the Cone Sipper (OST #381) and the Cone Permeameter (OST #307) for characterization of subsurface contamination and permeability.	
Vendor Name for this Technology:	Cone Penetrometer Operations
Point of Contact:	
User Program POC(s):	OST Program POC(s):
Jacqueline Quinn (NASA Environmental Program Office) - Cape Canaveral, FL. Tel. 407-867-4265	Joe Ginanni (DOE-NV) - N. Las Vegas, NV. Tel. 702-295-0209
Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808	
Technology User POC(s):	Vendor Company POC(s):
Carol A. Eddy-Dilek (Westinghouse Savannah River Company) - Aiken, SC. Tel. 513-529-3218	Jim Shinn (Applied Research Associates/Vertek) - South Royalton, VT. Tel. 802-763-8348

Major Developers:

- Savannah River Technology Center
- U.S. Army Corp of Engineers

Vendor Company:

Applied Research Associates, Inc. (www.ara.com)

Other Deployments:

This is the first deployment of this technology.

Robotic Tank Inspection End Effector

(OST/TMS ID: 278/ TMS Application ID: 1327)

To assess the structural integrity of waste storage tanks, it is necessary to detect cracks and corrosion damage in the wall and weld joints. The tank environment precludes human inspectors, so teleoperated robots will be deployed through the tank riser access holes. It is desirable to inspect as much of a tank wall surface as possible in as little time as possible. The minimum defect of interest is a corrosion pit .125' in diameter by .125' deep. The solution is a robotic end effector to perform non-destructive evaluation (NDE) in conjunction with a simultaneous visual examination by the operator. The Robotic Tank Inspection End Effector (RTIEE) system combines an electromagnetic NDE technique, Alternating Current Field Measurement (ACFM), with a compact vision and lighting system to enable the operator to distinguish potential corrosion sites before approaching the tank wall for a detailed NDE.

DESCRIPTION OF THE DEPLOYMENT

Location: Idaho National Engineering and Environmental Laboratory, Tank WM-188 (Idaho Falls, ID, United States)

PBS Name: HLW Treatment and Storage [ID-HLW-103, 0565]

Date of Deployment: February 1999

Technology User: INEEL

Deployment Value/Impact: The Oceaneering Space Systems Robotic End Effector for Inspection and Sampling of Storage Tanks was deployed in HLW Tank WM-188 for weld inspection in February 1999. A Light Duty Utility Arm (LDUA) was deployed through a 12-inch riser into tank WM-188 at the Idaho Nuclear Technology Engineering Center (INTEC). Tank WM-188 is an underground 300,000 gallon stainless steel tank, approximately 50 feet in diameter and 45 feet from riser top to tank bottom, containing a residual heel (about 10 inches deep) of high-level radioactive liquid waste. A stereo video camera system was deployed for a preliminary visual inspection inside the tank followed by deployment of a Robotic End Effector for weld defect and corrosion inspection. No corrosion defects were noted on the three welds examined.

Vendor Name for this Technology:

Same as primary Technology Title

Point of Contact:

User Program POC(s):

Keith A. Lockie (DOE-ID) - Idaho Falls, ID. Tel. 208-526-0118

Technology User POC(s):

No Points of Contact are listed.

OST Program POC(s):

Robert C. Bedick (National Energy Technology Laboratory) - Morgantown, WV. Tel. 304-285-4505

Vendor Company POC(s):

Reg Beer (Oceaneering Space Systems) - Houston, TX. Tel. 281-228-5414

Major Developers:

Oceaneering Space Systems

Vendor Company:

Oceaneering Space Systems, Inc.

Other Deployments:

This is the first deployment of this technology.

In Situ Permeability Measurements with Direct Push Techniques

(OST/TMS ID: 307/ TMS Application ID: 1295)

Science and Engineering Associates (SEA) has developed the Cone Permeameter, a probe for in situ, depth-discrete estimation of permeability in the vadose and saturated zones with high spatial resolution. The probe is deployed using a cone penetrometer truck. The Cone Permeameter field measuring system is based on the pressure response of the subsurface to injection of water or air into the subsurface. The flow rate and resulting pressure profiles are collected and the system calculates the permeability for real-time display.

DESCRIPTION OF THE DEPLOYMENT			
Location:	Kennedy Space Center, Cape Canaveral Air Station (Cape Canaveral, FL, United States)		
PBS Name:	Not Specified		
Date of Deployment:	December 1998	Technology User:	NASA
Deployment Value/Impact: The Cone Permeameter provides high resolution, depth discrete measurements of permeability. This information is critical to the design of subsurface remediation systems especially those where zone of capture analysis or flow pathway delineation is relevant. This includes most systems including pump and treat, vapor stripping, in-well stripping, in-situ heating, etc. The baseline technology for determination of permeability is the collection of cores for laboratory analysis of permeability. The SEA Cone Permeameter is significantly faster, cheaper, and provides more representative values for the permeability distribution.			
Vendor Name for this Technology:		SEA Cone Permeameter	
Point of Contact:			
User Program POC(s): Joe Rossabi (WSRC-SRTC) - Aiken, SC. Tel. 803-557-7808		OST Program POC(s): Joe Ginanni (DOE-NV) - N. Las Vegas, NV. Tel. 702-295-0209	
Technology User POC(s): No Points of Contact are listed.		Vendor Company POC(s): Wesley L. Bratton (Applied Research Associates, Inc.) - Richland, WA. Tel. 509-371-9600, ext. 9036	

Major Developers:

Science and Engineering Associates, Inc.

Vendor Company:

Applied Research Associates, Inc. (www.ara.com)

Other Deployments:

- Deployed (type: DOE) and Demonstrated (type: Full-Scale) in FY 1998 at Savannah River Site (Old Burial Ground) in Aiken, SC
- Deployed (type: DOE) in FY 1998 at SRS (Coal Pile Runoff Basin) in SC
- Deployed (type: DOE) in FY 1998 at SRS (M-Area) in SC

Crossflow Filtration

(OST/TMS ID: 350/ TMS Application ID: 1444)

Solid-liquid separation is needed to separate undissolved solids from supernate; this separation supports downstream processing operations for both liquids and solids and prevents carryover of radionuclides to the low-level radioactive waste stream. Crossflow filtration is a solid-liquid separation technology that has demonstrated higher throughput and greater reliability than other systems. Crossflow filtration is applicable at the Oak Ridge Reservation, Savannah River Site, and Idaho National Engineering and Environmental Laboratory.

DESCRIPTION OF THE DEPLOYMENT

Location: Oak Ridge Reservation (Y-12, ORR, K-25, ORNL), Melton Valley Storage Tanks: Concentrated LLW (Oak Ridge, TN, United States)

PBS Name: Low Level Waste Management [OR-38112, 0582] Transuranic Waste Management [OR-38113, 0583]

Date of Deployment: June 1999

Technology User: Lockheed Martin Energy Research under contract to M&I Bechtel Jacobs Company

Deployment Value/Impact: Oak Ridge is consolidating all concentrated liquid waste from the Melton Valley Storage Tanks (MVSTs) and Bethel Valley Evaporator Service Tanks (BVESTs) into the new Melton Valley Capacity Increase Tanks. Each transfer of waste requires a period of time for settling, which impacts the schedule for meeting feed staging requirements. Improved technology was needed for separating out excess water introduced during retrieval activities.

Oak Ridge began treating waste under an Accelerated Site Technology Deployment (ASTD) Project using the Out of Tank Evaporator (TMS ID 20), Cesium Removal using Crystalline Silicotitanate (TMS ID 21), and Crossflow Filtration (for solid/liquid separation) in FY 1999. On June 7, 1999, the Crossflow Filtration system began filtering Melton Valley Storage Tank waste. The modular system initially operated in total recycle; after about 9 hours of recycle operations, the filtrate was determined to be acceptable for further processing through the Cesium Removal System and the Out of Tank Evaporator.

Vendor Name for this Technology:

Same as primary Technology Title

Point of Contact:

User Program POC(s):

Jacque R. Noble-Dial (DOE-Oak Ridge) – Oak Ridge, TN. Tel. 423-241-6184

Technology User POC(s):

Sharon M. Robinson (Lockheed Martin Energy Research) - Oak Ridge, TN. Tel. 423-574-6779

OST Program POC(s):

Ted P. Pietrok (DOE-RL) - Richland, WA. Tel. 509-372-4546

Vendor Company POC(s):

Harry Lowe (Numet Engineering Limited) - Peterborough, ON. Tel. 705-743-2708

Major Developers:

No Major Developers are listed.

Vendor Company:

Numet Engineering Limited (<http://www.numet.com/contact.html>)

Other Deployments:

This is the first deployment of this technology.