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Task 8 - Management and Reporting

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1.0 INTRODUCTION

The task of restoring nuclear defense complex sites under the U.S. Department of Energy (DOE) Environmental Management (EM) Program presents an unprecedented challenge to the environmental restoration community. Effective and efficient cleanup requires the timely development or modification of novel cleanup technologies applicable to radioactive wastes. Fostering the commercialization of these innovative technologies is the mission of EM-50, the EM Program Office of Science and Technology. DOE's Federal Energy Technology Center (FETC) pursues activities integral to the EM-50 mission through its Cooperative Agreement with the EM Office of Science and Technology.

On the road to commercialization, innovative technologies must overcome significant barriers with respect to technical issues, proof of performance, partnering, capitalization, and regulatory acceptance. The Energy & Environmental Research Center (EERC), a not-for-profit, contract-supported organization focused on research, development, demonstration, and commercialization (RDD&C) of energy and environmental technologies, has entered the third year of a Cooperative Agreement with FETC designed to 1) overcome key barriers through technical support, real-world demonstrations, and partnering; and 2) support the integration and deployment of "winner" technologies at EM sites. These activities, along with program management, make up the program areas of the FETC–EERC EM Cooperative Agreement (EMCA): Technology Commercialization, Technology Integration, and Management and Reporting. These areas are profiled in Table 1.

This report addresses the Management and Reporting program area, Task 8, under EMCA.

2.0 OBJECTIVES

The primary objective of Task 8 is to ensure the effectiveness of the EMCA. This is accomplished through 1) the coordination of internal EMCA activities and coordination with the FETC contractor's representative, 2) the coordination and expansion of the EMCA, and 3) effective technical transfer.

3.0 ACCOMPLISHMENTS

Specific activities under Task 8, Management and Reporting, are summarized below:

TABLE 1

Profile of Year 2 EMCA Program Areas

Program Area	Description	EMCA Tasks
Technology Commercialization	Technical support, performance testing, and brokering	Eight activities involving public–private partnerships (see Table 2)
Technology Integration	Provide support for the appropriate deployment of cleanup technologies at EM sites	Task 10 (subcontract to Waste Policy Institute)
Management and Reporting	- Program management - Liaison with FETC - Program development - Technology transfer	Task 8

- The Year 3 Continuation Application was developed and approved by FETC. Activities commenced in early December 1996. As shown in Appendix A and Table 2, four activities were continued, and four activities were added:

  - Activities were initiated with two FETC industry partners, Science and Engineering Associates and Vortec Corporation, as a result of an intensive marketing effort carried out during the summer of 1996.

  - Two activities were added based on a review of in-house technology partnerships (Baumgartner Environics Incorporated Bubbleless Gas Transfer and Subcritical Water).

  - Two task activities involve technologies already deployed in the DOE complex (Task 9 and Task 16); one was near commercial (Task 2); three tasks involve technologies in advanced stages of development (Tasks 3, 12, and 13); and two tasks deal with technologies in early stages of development (Task 14 and 15). During the course of the reporting period, Suprex Corporation (Task 2) was acquired by ISCO of Lincoln, Nebraska, which did not wish to market the Task 2 SFE technology. As a result, Task 2 was discontinued in January 1997, and efforts were begun to utilize the remaining funds to work on a technology being developed by Weiss Associates.

  - Negotiations continue to acquire industry partners for Task 3 and 15 activities.

  - Systems Engineering (Task 11) was discontinued as a discrete task and was instead made an integral part of all technology task activities.

  - Technology Integration (Task 10) was discontinued with the completion of the WPI subcontract.

TABLE 2
FY97 Technology Commercialization Activities under the FETC–EERC EM Cooperative Agreement

Task	Technology	Commercial Partner	EERC Activity
2	Field SFE and Field SFE/FT-IR for Extraction and Analysis of Organic Pollutants[1]	Suprex Corporation	Field demonstration of SFE; develop and commercialize field-portable SFE/FT-IR instrument
3	Field-Portable Unit for Thermal Decomposition for Organic Mixed Wastes Including Resins	Developed with American Plastics Council and other industry partners	Develop, demonstrate, and commercialize a fluid-bed technology for organic/radionuclide separations and organic waste treatment
9	Centrifugal Membrane Filtration for Aqueous Stream Treatment[2]	SpinTek Membrane Systems Inc.	Optimize SpinTek Membrane Systems Inc. filtration technology for EM applications
12	Automated Laser-Based Unit for Removing Contaminated Paints and Surface Coatings	F2 Associates	Optimize sensors and decontamination characteristics; evaluate economics
13	Fiber-Optic Cone Penetrometer System for Subsurface Metal Detection	Science & Engineering Associates	Sensor calibration and validation
14	Bubbleless Gas-Transfer Technology for In Situ Bioremediation of Chlorinated Hydrocarbons	Baumgartner Environics Incorporated	Laboratory column and batch testing and evaluation
15	Subcritical Water Technology for Treatment of Hydrocarbon-Contaminated Soil	To be determined	Process development and pilot-scale demonstration
16	Waste Vitrification Facility[2]	Vortec Corporation	Sampling plans for feedstock and emissions; sampling plan for QA/QC for RCRA materials of interest and product leachability

[1] Task discontinued.
[2] Currently on EM site.

- As a result of conversations with Mr. Roger Wetzel of Energetics, a Technology Development Data Sheet (TDDS) was completed for the overall EMCA program and forwarded to Mr. Roger Wetzel of Energetics in the fall of 1996 and in March of 1997. The TDDS will continue to be updated on a quarterly basis to match the FETC TDDS publication schedule.

- An evaluation of EERC core expertise with respect to EM technology needs was updated to reflect the revised EM nomenclature and proposed Year 3 activities. Results of this evaluation are shown in Table 3. This evaluation will continue to be used to guide the development of opportunities under the Technology Commercialization area.

TABLE 3

Matrix of EERC Core Expertise and EM Technology Needs

EERC Core Expertise	EM Focus Areas 1	2	3	4	5
Extraction/Analysis	■	■	▨	■	
Cementation	▨	▨	▨	▨	
Vitrification	▨	▨	▨	▨	
Leaching Assessment	▨	■	▨	▨	
Catalysis	▨	▨	▨	▨	
Thermal Conversions (liquefaction, pyrolysis, FBC)	▨	■	▨	▨	
Plasma	▨	▨	▨	▨	
Biotreatment	■	▨	▨	▨	
Carbon Sorbents	▨	▨	▨	▨	
Separations	▨	■	■	▨	
Sensors	■	▨	▨	■	
Systems Analysis	■	■	■	■	

1 Subsurface Contaminants
2 Mixed-Waste Characterization, Treatment, and Disposal
3 Radioactive Tank Waste Remediation
4 Facility Stabilization, Decommissioning, and Final Disposition
5 Plutonium Stabilization and Immobilization

■ Current Activities
▨ Potential Activities

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4.0 WORK PLANNED FOR NEXT 6 MONTHS

Efforts during the period April 1, 1997, through September 30, 1997, will focus on the following: 1) update TDDS quarterly; 2) continue to identify commercial partners, promising technologies, and outreach opportunities; 3) continue efforts to team with EM sites to match needs with technologies and provide demonstration venues; and 4) continue enhancement of Task 8 effectiveness.

APPENDIX A

FETC–EERC ENVIRONMENTAL MANAGEMENT COOPERATIVE AGREEMENT UPDATE

FETC–EERC ENVIRONMENTAL MANAGEMENT COOPERATIVE AGREEMENT

TASK SUMMARY

Task Name	Task Number	Period of Performance	Total Cost ($1000)
Provide Information Required for Compliance with the National Environmental Policy Act (NEPA)	1	Sept. 94 – Sept. 95	5
Extraction and Analysis of Pollutant Organics	2	Sept. 94 – Jan. 97	430
Pyrolysis of Plastic Waste	3	Sept. 94 – Sept. 96	590
Stabilization of Vitrified Waste by Enhanced Crystallization and Development of a Protocol to Predict Long-Term Stability	4	Sept. 94 – Sept. 95	80
Extraction of Hazardous Metals from Mixed Solid Wastes by Chelation and Supercritical Fluid Extraction	5	NA	NA
Subcritical Water Extraction of Organic Pollutants	6	NA	NA
Demonstration of a Low-Temperature Plasma Remediation Technology	7	NA	NA
Management and Reporting	8	Sept. 94 – Dec. 97	235
Centrifugal Membrane Filtration	9	Sept. 94 – Dec. 97	433
Technology Development Integration	10	July 95 – Dec. 97	14,309*
Systems Analysis of Environmental Management Technologies	11	April 96 – Dec. 97	641
Laser Cleaning of Contaminated Painted Surfaces	12	Sept. 95 – Dec. 97	240
Cone Penetrometer for Subsurface Metal Detection	13	Dec. 96 – Dec. 97	230
Bubbleless Gas-Transfer Technology	14	Dec. 96 – Dec. 97	140
Remediation of Organically Contaminated Soil Using Hot/Liquid (Subcritical) Water	15	Dec. 96 – Dec. 97	140
Preparation of Sampling/Analysis and Availability Assurance Plans for the Vortec Vitrification Demonstration Plant	16	Dec. 96 – Dec. 97	41
Total ($1000)			$17,514

* Includes WPI subcontract of $13,644.00.

FETC–EERC ENVIRONMENTAL MANAGEMENT COOPERATIVE AGREEMENT

COMMERCIAL PARTNERS

Task Name	Small Business Partner	
	FETC Industry Partner	EERC Industry Partner
Provide Information Required for Compliance with the National Environmental Policy Act (NEPA)[1, 2]	NA	NA
Extraction and Analysis of Pollutant Organics[3]		Suprex Corporation
Pyrolysis of Plastic Waste	Negotiations in progress	
Stabilization of Vitrified Waste by Enhanced Crystallization and Development of a Protocol to Predict Long-Term Stability[2, 3]	NA	NA
Management and Reporting[1]	NA	NA
Centrifugal Membrane Filtration	SpinTek Membrane Systems, Inc.	
Technology Development Integration[1,2]	NA	NA
Systems Analysis of Environmental Management Technologies[4]	NA	NA
Laser Cleaning of Contaminated Painted Surfaces	F2 Associates, Inc.	
Cone Penetrometer for Subsurface Metal Detection[5]	Science & Engineering Associates	
Bubbleless Gas-Transfer Technology[5]		Baumgartner Environics Inc.
Remediation of Organically Contaminated Soil Using Hot/Liquid (Subcritical)[5]	To be determined	
Preparation of Sampling/Analysis and Availability Assurance Plans for the Vortec Vitrification Demonstration Plant[5]	Vortec Corporation	

[1] Does not require industry partner.
[2] Completed.
[3] Discontinued.
[4] Integrated into technical activities.
[5] New in Year 3.

FETC–EERC ENVIRONMENTAL MANAGEMENT COOPERATIVE AGREEMENT

PRIMARY AND SECONDARY APPLICATIONS FOR EM FOCUS AREAS

Task Name	DOE EM Focus Areas				
	Subsurface Contaminants	Mixed Waste Characterization, Treatment, and Disposal	Radioactive Tank Waste Remediation	Facility Stabilization, Decommissioning, and Final Disposition	Plutonium Stabilization and Immobilization
Extraction and Analysis of Pollutant Organics	P	–	–	–	–
Pyrolysis of Plastic Waste	–	P	–	X	–
Stabilization of Vitrified Waste by Enhanced Crystallization and Development of a Protocol to Predict Long-Term Stability	–	X	X	P	–
Centrifugal Membrane Filtration	P	–	X	–	–
Laser Cleaning of Contaminated Painted Surfaces	–	–	–	P	–
Cone Penetrometer for Subsurface Metal Detection	P	–	–	–	–
Bubbleless Gas-Transfer Technology	P	–	–	–	–
Remediation of Organically Contaminated Soil Using Hot/Liquid (Subcritical) Water	P	–	–	–	–
Preparation of Sampling/Analysis and Availability Assurance Plans for the Vortec Vitrification Demonstration Plant	–	P	–	–	–

P = primary.
X = secondary.

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