SRTC Input to DOE-HQ R&D Database for FY98

by

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FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW2010000	110	D - Development
2			
3			
4			
5			

Deliverables:

- ☐ SI = Scientific Information (reports)
- ☒ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project ID: 9807112001

Project Title:

Investigation-Derived Waste Program (IDWP) Software Application

Project ID:

9807112001

Project Description (5000 characters or less):

IDWP is a software application that was developed to identify the groundwater monitoring wells at SRS that require containerization and treatment for purge water generated during sampling. Created by the Statistical Consulting Section of SRTC, IDWP is a SAS* application that retrieves the necessary data for wells selected by the user from the Site's extensive groundwater database on a remote machine. The program then applies an algorithm, derived by the Environmental Protection Department from the SRS Investigation-Derived Waste (IDW) Management Plan, to the analytical results to determine whether containerization is required for the specified wells. IDWP produces output files that designate the containerization status of each of the selected wells, provide statistics to support the treatment facilities' permits, and assist with controlling and scheduling the handling of the managed purge water. The SRS Aqueous IDW Administrator in the Environmental Restoration Division (ERD) uses IDWP in conjunction with knowledge of new wells to produce quarterly reports that specify which groundwater monitoring wells require purge water containerization for each treatment facility. Special reports supply other groundwater information of interest to ERD, such as analytical concentration plots and groundwater data gathering. Benefits include the timely generation of containerization lists for each treatment facility; the automatic retrieval of, and complex calculations for, extremely large amounts of data, ensuring consistent, accurate, and current containerization lists; and features such as a user-friendly interface, availability through computer networks, access for simultaneous multiple users, and independence from any particular person. The scope of IDWP continually expands to accommodate changes to the IDW Management Plan and to satisfy additional needs as they are identified, including the development of an Intranet interface for FY99.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="GeoSiphon Cell"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="9807112002"/>		
POC Last Name -	<input type="text" value="Sonnenberg"/>	First Name -	<input type="text" value="Joette"/>
Point of Contact Phone:	<input type="text" value="803-725-5190"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☐ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☒ IN = Inventions

Perf Location Zip:	<input type="text" value="29801-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed: 10/1/97

Project Title: GeoSiphon Cell

Project ID: 9807112002

Project Description (5000 characters or less):

The GeoSiphon Cell (trademark pending approval) utilizes granular cast iron to treat Savannah River Site TNX flood plain chlorinated volatile organic compound (CVOC) contaminated groundwater in situ. The GeoSiphon Cell is essentially a large diameter well which contains the granular cast iron and passively induces flow by use of a siphon from the cell to the Savannah River. The flow is induced by the natural hydraulic head difference between the cell and the Savannah River. The passively induced flow draws contaminated groundwater through the treatment cell where the iron fillings reduce the CVOCs to ethane, methane, and chloride ions. The treated water is subsequently discharged to the Savannah River. The GeoSiphon Cell should be less intrusive, less expensive, more efficient, and less susceptible to precipitation pluggage than the use of funnel and gate or continuous permeable wall systems.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW2010000	158	D - Development
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
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☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Save Information

Project Title:

Project ID:

Project Description (5000 characters or less):

The hydrophobic lance is a promising technology for collecting and removing isolated masses of dense non-aqueous phase liquids (DNAPLs) from the subsurface. It relies on direct push technology to drive a small diameter pipe of a hydrophobic material into the soil at depths up to about 150 feet. The technology is based on the fact that DNAPLs are attracted to surfaces that are less polar than water. The lance surface is made of hydrophobic, olephilic materials--like Teflon--which repel water but have an affinity for oil. As the lance is driven into the soil, it attracts DNAPLs preferentially. The DNAPLs wet the surface of the lance and run to the bottom, where they can be collected and removed through screening and pumping systems.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Transportable Vitrification System for Radioactive, Hazardous, and Mixed Waste - Field Demonstration"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803107001"/>		
POC Last Name -	<input type="text" value="Crowley"/>	First Name -	<input type="text" value="Dave"/>
Point of Contact Phone:	<input type="text" value="803-725-4250"/>		

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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
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* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

10/1/98 10:00:00

Project Title:

Transportable Vitrification System for Radioactive, Hazardous, and Mixed Waste - Field Demonstration

Project ID:

P/SRTC-9803107001

Project Description (5000 characters or less):

The primary objective of this task is to demonstrate a stabilization treatment on an actual mixed hazardous and radioactive waste stream. The radioactive demonstration was performed on Oak Ridge dried B&C Pond Sludge and Central Neutralization Facility Sludge.

Activities.

1) Success completion of the demonstration program at Oak Ridge. Processed 7,300 kg of actual mixed waste. Simultaneously treated tow listed low level mixed waste streams. Achieved 60% volume reduction of the radioactive streams. Gathered operational data to support future treatment of this waste stream. Data will include glass composition, glass performance (leachability by Toxicity Characteristic Leaching Procedure and Product Consistency Test), air emissions data, and melter performance information. This work will be accomplished with the assistance of Oak Ridge personnel with additional support from EM-30.

2) Provided technical direction to Clemson University for their support of the Transportable Vitrification System. Clemson is performing pilot-scale melter tests on surrogate and actual Oak Ridge mixed waste, utilizing separate funding. This task will provide glass formulations, test plans, and technical guidance to Clemson.

3) Leveraged existing High Level Waste glass composition models to determine mixed wastes glass composition models in the soda-lime-silica and borosilicate glass systems. This subtask will result in a computer algorithm which will allow the operator to select the proper mix of glass forming chemicals for the waste being treated. The glass composition control system for multiple waste streams was successfully demonstrated on the radioactive Oak Ridge sludges.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Actinide (Am, Cm, Np, Pu) Stabilization by Vitrification"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803104001"/>		
POC Last Name -	<input type="text" value="Marra"/>	First Name -	<input type="text" value="John"/>
Point of Contact Phone:	<input type="text" value="803-725-4250"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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- ☐ IN = Inventions

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* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print Form

Project Title:

Actinide (Am, Cm, Np, Pu) Stabilization by Vitrification

▲

▼

Project ID:

P/SRTC-9803104001

Project Description (5000 characters or less):

SRTC provides the technology for stabilization of Strategic Nuclear Material (SNM) , such as Americium (Am), Curium (Cm), Plutonium (Pu), and Neptunium (Np). Identify the appropriate technology, develop process operating parameters and equipment, and demonstrate process. FY98 testing demonstrated operational difficulties with the “bushing melter” approach so testing with an induction melter was begun. The induction melter will also meet criticality constraints. The AmCm campaign will result in glass-filled canisters for shipment to Oak Ridge National Laboratory for recovery and resale, or for safe storage.

FY98 Activities.

- Evaluation of Cylindrical Induction Melter (CIM) operations, e. g., heating profiles, off-gas characteristics and deposition, pour rates, glass product, and control methods.
- Demonstrate precipitation as part of feed preparation.

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▼

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Plutonium Immobilization Program"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803107002"/>		
POC Last Name -	<input type="text" value="Goetzman"/>	First Name -	<input type="text" value="Rudy"/>
Point of Contact Phone:	<input type="text" value="803-725-3978"/>		

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Deliverables:

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- ☐ CS = Computer Software
- ☒ HW = Hardware
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- ☒ IN = Inventions

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Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="MD"/>		

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Print and E-mail Form

Project Title:

Plutonium Immobilization Program

Project ID:

P/SRTC-9803107002

Project Description (5000 characters or less):

SRTC provides the technology for stabilization of excess plutonium (Pu) to meet non-proliferation objectives. Lawrence Livermore National Laboratory (the DOE lead site for this program) chose a ceramic waste form over glass at the beginning of FY98.

FY98 activities:

- Waste form development. Fabricated baseline and single phase samples (both surrogate and radioactive) for performance testing and characterization. Examine the effects of volatile specie impurities on sample fabrication and performance. Examine the effects of process and compositional extremes on sample fabrication and performance.
- Ion Beam Irradiation Assessment. Examine the effects of heavy ion-beam irradiation (to accelerate long-term irradiation damage) on the performance of the ceramic waste form.
- Form qualification. Develop the waste acceptance documentation for the qualification of the ceramic waste form and the can-in-canister configuration.
- Batching/blending Process and Equipment Development. Develop conceptual design and process for batching/blending th PuO2 feed material. This includes initial equipment testing to define test systems for FY99 prototype fabrication and testing.
- Feed Preparation Process and Equipment Development. Develop equipment and process parameters for preparation of the ceramic batch material. This includes grinding, mixing, and granulation to produce a powder suitable for pressing and sintering.
- Non-Destructive Evaluation (NDE) for Process Control. Develop NDE technologies (including x-ray diffraction an x-ray fluouescence) for product control of the full-scale ceramic waste form.
- Canister Pour Analysis and Testing. Develop plans for can-in-canister assembly melter pour testing.
- Halted construction and installation of processing pilot equipment due to lack of funding.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Defense Waste Processing Facility Technology Support"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803105001"/>		
POC Last Name -	<input type="text" value="Randall"/>	First Name -	<input type="text" value="Chris"/>
Point of Contact Phone:	<input type="text" value="803-557-7639"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

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- ☒ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="MD"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print this page

Project Title:

Defense Waste Processing Facility Technology Support

Project ID:

P/SRTC-9803105001

Project Description (5000 characters or less):

SRTC provides the vitrification technology for high level wastes, waste acceptance technology, and process operational and safety boundaries.

The objectives are to support operation, improved waste loading, and improved processing times of the Defense Waste Processing Facility (DWPF); to demonstrate that the DWPF waste form will meet repository requirements; and to provide performance parameters for DWPF. Direct technical support is provided for chemical and melter cell technical issues, analytical methods development, preparation of radioactive process requirements, and chemical flowsheet and material balance evaluations.

The following major DWPF technical needs were addressed; rheological constraints on sludge-slurry stimulant , melter control system enhancements, glass product quality control, “coupled flowsheet” evaluations for processing parameters, hydrogen generation rates, foaming control strategies, vessel cleaning methods, refinements to the Glass Product Control Program. Future DWPF batches are run on on bench-scale in high level shielded cells to ascertain processing parameters for production of an acceptable waste glass form.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Vitrification of Mining Industry Wastes for Recycle"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803114001"/>		
POC Last Name -	<input type="text" value="Crowley"/>	First Name -	<input type="text" value="David"/>
Point of Contact Phone:	<input type="text" value="803-725-4250"/>		

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Deliverables:

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- ☐ CS = Computer Software
- ☐ HW = Hardware
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- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

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Project Title:

Vitrification of Mining Industry Wastes for Recycle

Project ID:

P/SRTC-9803114001

Project Description (5000 characters or less):

Wastewater treatment sludges from the mining industry are currently exempt from the Environmental Protection Agency Resource Conservation and Recovery Act (RCRA) regulations. Sludges were received at SRTC, characterized, made into borosilicate, soda-lime-silica, and basalt glass. Vitrification renders the sludges non-hazardous under RCRA should the mining industry lose their exemption. A study of the potential recycle market for the waste glass was also evaluated. A draft report was completed in September, 1997 and transmitted to the customer. Review by the mining industry was completed in January, 1998. Revisions and additions were made and the final report issued on August 17, 1998.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="High Level Waste Melter Pour Spout Testing"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803105002"/>		
POC Last Name -	<input type="text" value="Randall"/>	First Name -	<input type="text" value="Chris"/>
Point of Contact Phone:	<input type="text" value="803-725-4250"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

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- ☐ CS = Computer Software
- ☐ HW = Hardware
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Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Save & Print Form

Project Title:

High Level Waste Melter Pour Spout Testing

Project ID:

P/SRTC-9803105002

Project Description (5000 characters or less):

In conjunction with Clemson University, SRTC provided technical guidance and support on demonstration of alternative and improved High Level Waste Melter pour spouts , a critical component of the Defense Waste Processing Facility (DWPF) melter. The objective was to improve pour rates and increase production rates.

(*All data is required*)

IPerf Location Zip:	29808-0001		
Start Date:	11/1/97	Compl. Date:	9/30/98
* Sponsoring Program	EM		

*** (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)**

Project Title: Integrated High Level Waste Crystalline Silicotitanate Flowsheet to reduce operating costs.

Project ID: P/SRTC-9803105003

Project Description (5000 characters or less):

Conceptual, integrated flowsheet evaluation of an ion exchange (IX) process which uses crystalline silicotitanate (CST) to remove cesium from the Savannah River Site's salt solution and to incorporate the cesium into the High Level Waste (HLW) glass is complete. The results of this study have been complementary to and coordinated with the work of the Salt Disposition Team (SDT) which is evaluating alternatives to the ITP process.

Cases were run for three concentrations of CST in glass, two CST slurry concentrations, eight salt solution Cs concentrations, two canister production rates, and two process configurations. A total of 144 cases were performed.

The evaluation of the CST IX process as a replacement for the ITP process indicated that at nominal (average) process conditions it should integrate well with the HLW system and produce operational and investment savings - as well as at widely varying processing conditions. Processing and implementation issues were also identified.

Impacts to the Defense Waste Processing Facility glass composition were also evaluated.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Melter Sensors - Foaming Control in Waste Glass Melters"/>		
Funding Mechanism:	<input type="text" value="LDRD = Lab Directed Research & Development"/>		
Project ID:	<input type="text" value="P/SRTC-9803105004"/>		
POC Last Name -	<input type="text" value="Goetzman"/>	First Name -	<input type="text" value="Rudy"/>
Point of Contact Phone:	<input type="text" value="803-725-3978"/>		

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Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="11/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

11/1/97 11/1/97

Project Title:

Melter Sensors - Foaming Control in Waste Glass Melters

Project ID:

P/SRTC-9803105004

Project Description (5000 characters or less):

Developed operating parameters for waste melter sensor methods and foaming.

Save

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Tank Focus Area"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9803114002"/>		
POC Last Name -	<input type="text" value="Holtzscheiter"/>	First Name -	<input type="text" value="Bill"/>
Point of Contact Phone:	<input type="text" value="803-725-2170"/>		

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Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="11/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print > Save > Back

Project Title:

Tank Focus Area

Project ID:

P/SRTC-9803114002

Project Description (5000 characters or less):

Collaborated with Pacific Northwest National Laboratory (PNNL) to improve the Defense Waste Processing Facility (DWPF) process control system by developing baseline data to improve the liquidus model, which, if successful, will allow increased high level radioactive waste loading of high level waste glass canisters. (One percent improvement results in about \$300 million dollars of life cycle cost savings.)

Also in collaboration with PNNL, developed two glass formulations for Idaho calcined high level wastes that will meet repository and operational requirements for vitrification.

Completed a review of literature for determining testing techniques for evaluating long term performance of low activity waste glasses at Hanford.

Collaborated with Florida International University (leveraged EM50 grant funds) to build a small pilot glass pouring test unit.

Transferred to Clemson University a nine cubic meter stirred melter and completed one thermally hot glass test pour. Initiated fabrication of mockup pour spout to be installed on this large stirred melter.

Collaborated with AEA Technologies to develop a grout formulation for the Idaho sodium bearing waste stream. A drum scale demo was completed.

Completed refinement for glass formulations for the Oak Ridge tanks waste, and completed a cost analysis of glass versus grout for immobilization of Oak Ridge tanks waste. (Collaborated with Oak Ridge National Laboratory).

Completed analysis of results of Clemson Demonstrations of Argentine Ion Exchange resins and developed future demonstration approach.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Parallel Computing Acceleration of the High Level Waste Integrated Flowsheet Model"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9802105001"/>		
POC Last Name -	<input type="text" value="Ebra"/>	First Name -	<input type="text" value="Martha"/>
Point of Contact Phone:	<input type="text" value="803-725-3020"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☒ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EW31"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Title:

Parallel Computing Acceleration of the High Level Waste Integrated Flowsheet Model

Project ID:

P/SRTC-9802105001

Project Description (5000 characters or less):

The High Level Waste Integrated Flowsheet Model (HLWIFM) is a detailed computer model developed by Westinghouse Savannah River Company which simulates the dynamic, fully coupled response of all significant elements of the Savannah River Site (SRS) High Level Waste complex. The Parallel Computing Acceleration task is extending state-of-the-art parallel computing technology to the HLWIFM in order to create a unique tool to guide the optimal, long-term cleanup of high level waste at SRS. We have begun development of innovative software and hardware constructs necessary to allow HLWIFM to take advantage of the large run-time accelerations available in coarsely distributed parallel computing architectures. The effort focuses on modifying the serial structure of the existing process models and developing parallel communications algorithms.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="SRTC Enhanced Surveillance Program Support"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9802103002"/>		
POC Last Name -	<input type="text" value="Lewis"/>	First Name -	<input type="text" value="Ivan"/>
Point of Contact Phone:	<input type="text" value="803-725-3527"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☒ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/96"/>	Compl. Date:	<input type="text" value="9/30/2003"/>
* Sponsoring Program	<input type="text" value="DP04"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print Form Print Report

Project Title:

SRTC Enhanced Surveillance Program Support

Project ID:

P/SRTC-9802103002

Project Description (5000 characters or less):

The Enhanced Surveillance Program (ESP) is a five year program funded by DOE Defense Programs (DP). The goal of the ESP is to identify and develop new, nonintrusive tools and techniques that can be used to verify the viability of the enduring weapons stockpile and is a collaborative effort among the DOE National Labs and production plants. SRTC is providing critical support to many of the ESP tasks as described below.

Ultrasonic Evaluation of Bond Quality: Lawrence Livermore National Lab (LLNL) is leading this task with support from SRTC, Allied Signal/Kansas City, and Y12. The goal of the task is to identify Ultrasonic Testing (UT) techniques and equipment that can determine the quality of a bond without disassembly and destructive testing. During FY98, SRTC assisted this task by supplying UT system components to LLNL; preparing solid state resistance welded samples for investigation; providing UT analysis of samples prepared by LLNL; and providing technical expertise. The task will continue into FY99 and is expected to produce conclusions and recommendations based on round robin testing of a wide range of bonded samples.

High Resolution Computed Tomography: LLNL is leading this task with support from SRTC, Pantex, and Allied Signal/Kansas City. The goal of this task is to develop a High Energy Computed Tomography system that can deliver high resolution and high sensitivity. This system could then be used to examine weapons packages and/or specific components. During FY98 SRTC delivered a custom designed staging system that can precisely manipulate the test object as well as components of the imaging system (e.g. mirrors). SRTC provided technical support to specify, assemble, integrate and test the system. Upon delivery of the system, SRTC personnel also assisted in installation and integration of the system into the larger imaging system. In FY99 SRTC will enhance this staging with additional computer-controlled components and will again assist in installation. SRTC personnel will participate in imaging experiments and provide technical expertise to improve system capability and sensitivity.

High Energy Neutron Radiography: LLNL is leading this task with support from SRTC and Y12. The goal of this task is to demonstrate the feasibility of using high energy neutrons for imaging low-Z material. This capability would compliment the High Resolution CT system described above for imaging weapons packages and/or specific components. During FY98 SRTC specified, assembled, integrated and tested a precision staging system to manipulate the test objects during NRT imaging experiments. The computer-controlled staging would automatically position the test object, acquire and store the data, and would monitor the strength of the neutron beam. If the neutron beam was not acceptable, then the system would put itself into stand-by and wait until the beam was again acceptable. The system would then resume acquisition of data with no lost data or imaging time. SRTC personnel delivered this system to Ohio University to participate in two series of imaging experiments. This task will continue in FY99 with SRTC providing support to additional imaging experiments and enhancements to the staging and data acquisition system.

Sampled Data Spectroscopy: Sandia National Lab (SNL) is leading this task with support from SRTC. The goal of this task is to obtain enhanced fidelity information from joint test assemblies that are flown on stockpile delivery systems. SRTC is developing a sampled data spectroscopy system that operates on very low power, is minaturized, and provides more channels of high fidelity information than has been previously available. The prototype system has been successfully demonstrated in FY98. Development will continue in FY99 with delivery in FY00.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Evaluation of Production Pinchwelds by Digital Radiography"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9802103003"/>		
POC Last Name -	<input type="text" value="Lewis"/>	First Name -	<input type="text" value="Ivan"/>
Point of Contact Phone:	<input type="text" value="803-725-3527"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☐ SI = Scientific Information (reports)
- ☒ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>

* Sponsoring Program	<input type="text" value="DP04"/>
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* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Number 301

Project Title: Evaluation of Production Pinchwelds by Digital Radiography

Project ID: P/SRTC-9802103003

Project Description (5000 characters or less):

SRTC provided technical expertise and resources to conduct a feasibility study during FY96 and FY97 to determine Digital Radiography (DR) possessed capability to adequately evaluate pinchwelds. This study was funded by the Process Development Program and, at the end of FY97, the decision was made to pursue DR as a viable alternative to film radiography for evaluating pinchwelds.

The accepted standard for pinchweld evaluation has been film radiography. This process requires that a radiographic film be placed into a radiological area to make the exposure. The film then has to be removed from the area and developed. Manual evaluations of selected features are then performed in order to determine the acceptability of the weld. During the process, the pinchweld is held in place. This process is very time-consuming and generates radiological waste.

SRTC has developed and demonstrated a Digital Radiography (DR) system that can acquire the image of the pinchweld and then automatically perform all steps of the evaluation. The results are then displayed on the system's monitor and a hardcopy report is also provided. The system provides on-line calibration and digital storage of data. It can also be networked to other work stations or databases through secure links. The system has a small footprint and provides evaluation results in a fraction of the time needed for film radiography. If the image should be unacceptable, then the process can be reinitiated within minutes instead of hours. In addition, there is no waste generated by this process since it is a filmless process. The system is configured to be user-friendly. The operators require not special certification since it is the system that is calibrated and qualified.

It is anticipated that this capability will result in a cost savings of approximately \$500K per year for the SRS Tritium organization. Additional DR stations will be installed during FY99.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Filmless Imaging of Consolidated Edison Universal Storage Packages (CEUSP): Phase I"/>		
Funding Mechanism:	<input type="text" value="CONTRACT = Contract"/>		
Project ID:	<input type="text" value="P/SRTC-9802X03004"/>		
POC Last Name -	<input type="text" value="Lewis"/>	First Name -	<input type="text" value="Ivan"/>
Point of Contact Phone:	<input type="text" value="803-725-3527"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="5/1/98"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="Oak Ridge National Laboratory"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

10/28/98 10:29:00 AM

Project Title: Filmless Imaging of Consolidated Edison Universal Storage Packages (CEUSP): Phase I

Project ID: P/SRTC-9802X03004

Project Description (5000 characters or less):

The DOE Oak Ridge National Lab (ORNL) has a number of Consolidated Edison Universal Storage Packages (CEUSP) stored in their facilities. These packages contain highly radioactive materials that are scheduled to be shipped to SRS for processing. In order to meet the shipping requirements, each storage container will need to be examined for evidence of build-up of internal pressure, for integrity of the seal weld, and to acquire information on the contents of the container. Due to the presence of the radioactive material inside of each container, traditional film radiography is impractical and other Nondestructive Examination (NDE) methods will not provide the information needed. Since this issue has been registered by the Defense Nuclear Facilities Safety Board (DNFSB) as a 95-1 issue, SRTC personnel presented this conceptual work to the DNFSB as a proposed solution. The proposal received an enthusiastic endorsement and funding was subsequently provided to proceed with the work.

SRTC was contacted in order to determine if assistance could be provided. SRTC responded by providing a series of experiments and demonstrations. This work was funded by ORNL as Phase I of the project with a deliverable of a proof-of-principle demonstration and report. The work consisted of:

- a) acquiring digital radiographic (DR) images of the seal weld using a clean, proto-type container. The results demonstrated that the integrity of the seal weld could be determined using DR.
- b) pressurizing the proto-type container and acquiring DR images to detect deflection of the container's lid. This showed that DR could detect evidence of internal pressure at a threshold that is below critical levels.
- c) conducting imaging experiments using industrial radiography sources. An Iridium 192 industrial source was used as the imaging source while a Cobalt 60 source was used to simulate the internal field. First, a series of imaging experiments were conducted using the 192Ir without the 60Co being present. This established the capability of the system to detect small flaws and geometric features of the seal weld. Next, the 60Co source was introduced without the presence of the 192Ir source. This provided a signature background of the 60Co. Finally, both sources were introduced. By subtracting the signature of the 60Co field, the features of the seal weld could still be adequately imaged.

The successful proof-of-principle results were accepted by ORNL and funding to conduct Phase II of the task was put into place. Phase II will be completed in FY99. This will enable SRTC to design, specify, assemble, and deliver a production DR system that can examine the CEUSP containers. Phase III of the project will provide funding to SRTC for technical follow-on support and training.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Bagless Transfer"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9802104005"/>		
POC	Last Name - <input type="text" value="Wong"/>	First Name -	<input type="text" value="James"/>
Point of Contact Phone:	<input type="text" value="803-725-0701"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☒ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EW70"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed on 10/1/98

Project Title:

Bagless Transfer

Project ID:

P/SRTC-9802104005

Project Description (5000 characters or less):

SRTC maintained and implemented process improvements to a first generation system that is being used to package plutonium for long-term storage in accordance with DOE Standard 3013. This system utilizes commercially available components integrated into a system to remove plutonium from a glovebox into an all-welded stainless steel container without external contamination or the use of any organic material in the container. Process improvements were aimed at increasing system durability. Preventive maintenance cycles were established, and for those components/subassemblies exhibiting less-than-acceptable lifetimes, development efforts were undertaken to increase them to acceptable levels.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printable Report

Project Title: Plutonium Immobilization

Project ID: P/SRTC-9802107006

Project Description (5000 characters or less):

SRTC provided equipment development, equipment evaluation, and conceptual designs for several facets of a process to be used for the immobilization of Plutonium. Plutonium is to be processed into ceramic forms, and the resulting forms are to be placed within a Defense Waste Processing Facility (DWPF) canister and surrounded by high activity waste glass for the purposes of nonproliferation. Design and development work was performed in the areas of: movement/material handling of the ceramified form within a series of gloveboxes; loading of the forms within a stainless steel can for removal from the gloveboxes; placement of the resulting can into a transportation "magazine"; and placement of several magazines within a DWPF canister in preparation for high activity waste glass pouring. Deliverables included technical reports and equipment mockups. Technical reports were issued documenting conceptual facility layouts, equipment evaluations, and conceptual equipment designs. Mockups were produced for the purposes of testing design concepts.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☒ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Number: 00000000

Project Title:

Commercial Light Water Reactor - Tritium Extraction Facility

Project ID:

P/SRTC-9802103007

Project Description (5000 characters or less):

SRTC provided equipment development, testing, and evaluation in support of the Commercial Light Water Reactor - Tritium Extraction Facility. This facility will be used to extract tritium from target rods irradiated in a commercial light water reactor. Due to the nature of the process, a remotely operated facility must be utilized for handling of the rods as well as the extraction process. Deliverables included equipment mockups to demonstrate design concepts, technical reports documenting equipment evaluations, and conceptual designs. Specific tasks included: development of remotely handled processing modules; evaluation of seals and remotely operated connectors for high radiation/high temperature service; development of a demonstration extraction pumping system for removal of tritium from irradiated target rods.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Accelerator Production of Tritium"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9802140008"/>		
POC Last Name -	<input type="text" value="Wong"/>	First Name -	<input type="text" value="James"/>
Point of Contact Phone:	<input type="text" value="803-725-0701"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Title:

Accelerator Production of Tritium

Project ID:

P/SRTC-9802140008

Project Description (5000 characters or less):

SRTC designed, fabricated, and demonstrated a remotely operated Helium-3 compatible connector for use in the Accelerator Production of Tritium (APT) Program. Connectors to be utilized in Helium-3 process lines must be connected and disconnected remotely. These lines must have double containment (ie., must be jacketed lines), and no commercially available connectors were found to be able to meet all technical requirements. SRTC took an existing connector and modified it to be remotely actuated. SRTC also produced a study (technical report) of remotely operated cranes. This study will be used as a reference during the development of the specification and during the procurement of a remotely operated crane to be used in the APT facility.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Handling and Segregation System for 55-Gallon Drums (HANDSS-55)"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9802114009"/>		
POC	Last Name - <input type="text" value="Wong"/>	First Name -	<input type="text" value="James"/>
Point of Contact Phone:	<input type="text" value="803-725-0701"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Approved for Release

Project Title:

Handling and Segregation System for 55-Gallon Drums (HANDSS-55)

Project ID:

P/SRTC-9802114009

Project Description (5000 characters or less):

SRTC developed a concept for repackaging transuranic waste from a contained environment (ie., - glovebox) into 55-gallon drums using a bagless transfer technique. With this technique, waste will be placed into a polyethylene drum liner that interfaces with a large glovebox. The inside of the liner will be contaminated, while the outside remains clean. Upon separation from the glovebox, the drum liner will be free of external contamination, while the glovebox confinement remains unbreached. This concept is a variation of an SRTC-patented process with several distinct difference. A technical report was generated describing this concept, and several test-pieces were generated during a process feasibility study.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	<input type="text" value="EW04L0000"/>	<input type="text" value="100"/>	<input type="text" value="B - Basic"/>
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☒ CS = Computer Software
☒ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

200001 0000000000

Project Title:

Non-Contact Full-Field Strain Measurement Using Digital Image Processing

Project ID:

P/SRTC-9802107010

Project Description (5000 characters or less):

SRTC developed a digital imaging system that will be used to determine the strain experienced by an object by measuring the change in the displacement vector between two points on the surface. This is accomplished through the use of a high precision digital camera and PC-based system that utilizes SRTC-generated algorithms for the full-field strain calculation. During the year, the main components of the system were procured and integrated, software was written, and tests/demonstrations were conducted.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW04L0000	150	B - Basic
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☒ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Submitted by: [redacted]

Project Title:

Development of an In-Liquid Acoustic Laser

Project ID:

P/SRTC-9802107011

Project Description (5000 characters or less):

The SRDF task, "Sound Laser for Waste Tank Heel Reduction," was initiated to develop a high power coherent beam of ultrasonic waves for the purpose of breaking up waste tank heel solid residues or "clinkers". This would permit flushing of these wastes and final closure of the waste tanks. The ultrasonic source would obviate the need for the use of slurry pumps and large amounts of water for performing the same task.

The Sound Laser is the sound analog of a free electron laser. The basic premise is that a coherent beam of acoustic waves can be achieved by introducing particles to act as sound scatterers periodically located in the fluid contained in a vibrating tube. Particles which have resonant frequencies above the tube working frequency will be transported by acoustic radiation forces to pressure nodes. Thus a periodic variation in distribution of the particles is effected which leads to a phased distribution of sound sources that amplify the sound waves. A concentrated and coherent beam will then emanate from the end of the tube. The Sound Laser (or Saser) has a significant potential as a source of a narrow coherent beam of sound waves, useful for decontamination, underwater communication, and other applications.

The significant accomplishments in FY98 include completion on numerical analysis which was required to guide the design of a practical device in terms of geometry, particle type and concentration and frequency. Numerical modeling of the buildup of pressure waves in the resonant chamber with dispersed compressible particles and their propagation in an infinite media was performed and completed. Also, a Proof-of-Principle device of the Sound Laser was designed, fabricated, and assembled. This consisted of a lead zirconate-titanate (PZT) ceramic cylinder (2-inch diameter, 6-inch long) piezoelectric transducer. The Saser device could be excited over a wide range of frequencies but had a maximum response at the tube's natural frequency (ring mode) of 20 kHz. The test setup included the transducer, high frequency (0-50 kHz) power amplifier, function generator, pressure instrumentation, and test tank. The objective of this phase of the experimentation was to investigate the conditions under which the interaction of sound waves and various candidate scatterers would lead to amplification of the signal. Results of these tests revealed the need for a new design to achieve sufficient power and sound wave coherence.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	<input type="text" value="EW3140000"/>	<input type="text" value="120"/>	<input type="text" value="D - Development"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Title:

Development & Testing of a Insitu Cleanable HEPA Filter

Project ID:

P/SRTC-9802105012

Project Description (5000 characters or less):

The SRS HLW Tanks are equipped with a ventilation system to maintain the tank contents at negative pressure (-1.0"WC), which prevents the release of radioactive material to the environment. This system is equipped with conventional disposable glass-fiber HEPA filter cartridges. Removal and disposal of these filters is not only costly, but subjects site personnel to radiation exposure and possible contamination.

For the past several years, Savannah River Site personnel have investigated the use of innovative cleanable HEPA filters that could replace the conventional disposable filters. A system could be designed such that the cleaning could be accomplished in the process (i.e. insitu) which would eliminate personnel radiation exposure associated with removal of plugged filters. The high costs of filter disposal would also be eliminated. This year, we designed, built, and operated a unit that tested possible cleanable sintered metal HEPA filters.

Test results for two different filters (one manufactured by Mott, the other by Pall) indicate that the Mott filter is suitable as a HLW tank ventilation filter. This filter was easily cleaned back to new filter performance by an in-situ solution spray numerous times. Also, high humidity or water did not effect the Mott filter performance. On the other hand, the Pall filter completely plugged after being saturated with water, thus is not suitable for our use.

(*All data is required*)

Project Title:	B & R: DP01 Research & Development Program
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Project ID: P/SRTC-9801103001

First Name - James (Jim) R.

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	DP010200000	1,569	A - Applied
2			
3			
4			
5			

☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Start Date: 10/1/97 Compl. Date: 9/30/2007

* Sponsoring Program	DP10
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*** (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)**

Project Title:

B & R: DP01 Research & Development Program

Project ID:

p/srtc-9801103001

Project Description (5000 characters or less):

This Research & Development Program is longer-term research directed toward the understanding of phenomena related to tritium effects on nuclear materials or nuclear components. Savannah River Site (SRS) efforts involve the study of tritium materials and processes for which SRS has unique expertise, facilities and responsibilities.

In FY '98 SRTC supported fundamental research on the effect of hydrogen isotopes on containment materials in order to better understand the role of these species on deformation and fracture processes. This involved measuring the crack growth rates and fracture toughness of various alloys as a function of helium content and investigating the roles of microstructure and strength on tritium and helium embrittlement of alloys, particularly in weldments. Work this year focused on conventional forgings and weldments, both fusion and solid-state.

Research also included examining the effects of tritium and its decay product helium-3 on metal tritides used to store, pump and separate hydrogen in tritium handling processes. This involved determining the useful lifetime of metal hydride materials used in current and future tritium handling applications and examining any problems that arose and how SRTC might deal with these problems before they actually occurred in plant processes.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	DP040100000	3,769	D - Development
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Form 10-1-97

Project Title:

Process Development Program

Project ID:

p/srtc-9801103002

Project Description (5000 characters or less):

The Process Development Program (PDP) is the Stockpile Management (SM) Program responsible for implementing DOE requirements to maintain a viable technology base that is responsive to weapon component production requirements. PDP assures the development of processes expected to be used for future production and ensuring these processes are fully production capable, and the improvement of current weapon production processes for regulatory compliance or efficiency, including feasibility demonstration studies for selected manufacturing processes.

In FY '98 SRTC 1) continued efforts to implement an improved method for fabrication of reservoirs, 2) provided field testing of the automatic fill stem inspection system, 3) continued development of techniques for metallographic examination of reservoirs in an inert atmosphere, 4) supported installation and startup of a real-time gas analysis system in the Savannah River Site (SRS) Tritium Function Test Facility, 5) continued the evaluation of plasma cleaning as a means of decontaminating tritium-exposed reservoirs, 6) continued development of an alternate process that can reproducibly reclaim reservoirs in the SRS Tritium Facility, 7) conducted experiments to develop the cleaning and loading requirements for Acorn units which will enable their deployment into the stockpile, 8) conducted tests to qualify newly manufactured Terrazzo hardware, 9) continued development of improved tritium storage, tritium stripping, isotope separation and tritiated water processing in support of the ongoing tritium recycle mission at SRS and 10) began development on manufacturing processes for hydride materials to be used in process beds in SRS tritium loading facilities.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Surveillance Program"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9801103003"/>		
POC Last Name -	<input type="text" value="Knight"/>	First Name -	<input type="text" value="James (Jim) R."/>
Point of Contact Phone:	<input type="text" value="803-725-1089"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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2	<input type="text"/>	<input type="text"/>	<input type="text"/>
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4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/2007"/>
* Sponsoring Program	<input type="text" value="DP20"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Download Form

Project Title:

Surveillance Program

▲▼

Project ID:

p/srtc-9801103003

Project Description (5000 characters or less):

The Reservoir Surveillance Operations Program entails environmental conditioning, function testing, hydraulic burst testing, destructive and non-destructive examination of tritium reservoirs returned from the stockpile in order to obtain safety and reliability data. In In FY '98 SRTC focused on the startup and operation of environmental conditioning equipment.

The Life Storage Program conducts research to determine the effects of long-term tritium exposure on reservoir designs and materials in order to improve personnel protection and increase the reliability of weapons components. Production and developmental reservoirs are loaded with tritium and stored. Tritium permeation measurements and pressure checks are made periodically on the reservoir's secondary container to determine whether units have leaked. Based on these data and consultation with the Design Agencies, reservoirs are unloaded and either reclaimed, reloaded with tritium and returned to shelf storage or burst tested for metallagraphic examination. In FY '98 SRTC focused on placing new Acorn, Terrazzo, and Kansas City made reservoirs into life storage.

▲▼

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Enhanced Surveillance Program"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9801103004"/>		
POC Last Name -	<input type="text" value="Knight"/>	First Name -	<input type="text" value="James (Jim) R."/>
Point of Contact Phone:	<input type="text" value="803-725-1089"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date:	<input type="text" value="9/30/2002"/>
* Sponsoring Program	<input type="text" value="DP20"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project # 9801103

Project Title:

Enhanced Surveillance Program

Project ID:

p/srtc-9801103004

Project Description (5000 characters or less):

The Enhanced Surveillance Program provides collaboration with the three design agencies, (Los Alamos National Lab (LANL), Sandia National Lab (SNL) and Lawrence Livermore National Lab (LLNL)) on development of new technologies for the increased surveillance of various weapons components.

In FY '98 SRTC 1) provided consultation on high resolution x-ray tomography based upon experience gained through other high resolution radiography programs, 2) provided support for enhanced ultrasonic characterization of bonded assemblies through consultation and loan of appropriate advanced ultrasonic testing hardware and software used in development of the ultrasonic inspection system for weld acceptance of Pu238 heat source encapsulations, 3) continued work with LLNL to define sensor needs and develop sensors for the specific applications identified, 4) continued development of advanced diagnostics for flight test scoring through consultation to LANL on applicable sensor technology capabilities and utilization, 5) continued development of in situ vibrational spectroscopy by deploying sensors in field environments, 6) supported efforts of LANL & LLNL to update and expand the existing engineering material property database(s) used to design and analyze the enduring stockpile, 7) supported development of high energy neutron radiography for component assessment, 8) supported enhanced inspection of reservoir girth welds by developing and applying ultrasonic inspection methods for inspection of reservoirs, 9) evaluated the capability of the laser based interferometry technique to measure residual stresses in reservoir fabrication welds in order to fully explain hydrogen assisted stress cracking, 10) continued development of a SQUID microscope field deployable system, and 12) continued support for gamma resonance absorption (GRA) by conducting a feasibility study which determined the applicability of GRA for imaging the distribution of light elements .

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EB420000000	186	D - Development
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☒ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Submitted by: [redacted]

Project Title:

Hydrogen Research Program

Project ID:

p/srtc-9801107001

Project Description (5000 characters or less):

Hydrogen Bus Demonstration Project (HBDP)

The HBDP was a technology transfer and regional commercialization initiative between DOE and several public/private entities. The project's mission was to demonstrate the technical and economic viability of a municipal public transit vehicle (H2 Fuel Bus) operating on hydrogen fuel stored on board in metal hydride containers. The metal hydride technology is a derivative of the technology developed for Savannah River Site (SRS) tritium applications and was transferred to the private sector as part of the project. The hydrogen vehicle demonstrated superior environmental and energy efficiency characteristics. This project supported the maintenance of core competency in hydrogen technology and positioned the region for new business development in a rapidly growing field. In FY '98 SRTC provided field testing of the bus in regular transit service, the collection and analysis of data related to performance characteristics, reliability, operating/maintenance requirements, lifetime and public acceptance. The Westinghouse Savannah River Company (WSRC) also supported national efforts to develop codes & standards for hydrogen energy technologies and to provide safety analysis and code & standards for the H2 Fuel Bus. At the project's conclusion SRTC supported the transfer of the H2 Fuel Bus from SRS to the DOE-Nevada Operations Office where it will be placed into service.

Hydrogen Separation Membrane Development

The ability to recover and recycle hydrogen gas from process gas streams could provide important economic and environmental benefits to US industries, such as refinery operations. The savings worldwide has been estimated to be \$1 billion/year. As hydrogen becomes an important part of worldwide energy systems, highly efficient separation technology will be required to produce low cost, high purity hydrogen. Membrane separation has been identified as an economical separation technology in the gas industry. Current metal membranes have coking problems when they are exposed to hydrocarbon, and they are also sensitive to poisonous gases. It is essential to develop a membrane which is more efficient and inert to the poisonous gases. This project has three phases of development: (1) Development of the sol-gel process, (2) Development of a composite membrane for hydrogen filtering, and (3) Development of a composite membrane reactor for hydrogen production. Due to funding delays, Phase I activities were carried over into FY '98. These activities included the development and characterization of sol-gel films on suitable filter substrates.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW7040000	1,385	B - Basic
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Report Generated On:

Project Title: Spent Fuels Alternate Technology- Direct Disposal

Project ID: P/SRTC-9808122001

Project Description (5000 characters or less):

Direct/Co-Disposal Technology:

The core technology for direct/co-disposal of aluminum Spent Nuclear Fuel (SNF) was developed. The conformance of the direct/co-disposal SNF form to the repository acceptance criteria was also established. The functional performance criteria for the transfer and storage facility was also developed. Further, all the technology elements were input into the technology decision model leading to a preferred technology recommendation. An assessment of the technology development activities was also completed through the U.S. NRC and the National Academy of Science.

Specific accomplishments included:

- Initiated Validation of Road Ready Storage Criteria:
- Completed the staging of the Instrumented Test Canister in L Dry Caves
- Loaded SNF into Instrumented Test Canister and initiated a long term validation of road ready storage criteria.
- Completed thermal analysis of direct disposal SNF form in a waste package.
- Completed criticality analysis of the road ready package. (Phase II).
- Completed development of corrosion models for road ready storage of Al SNF
- Initiated evaluation of compatibility of poisons with Al SNF.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW7040000	2,450	B - Basic
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print Form

Project Title: Spent Fuels Alternate Technology- Press or Melt & Dilute

Project ID: P/SRTC-9808122002

Project Description (5000 characters or less):

Melt-Dilute Treatment Technology:

The core technology for melt-dilute treatment of aluminum Spent Nuclear Fuel (SNF) was developed. The conformance of the melt-dilute SNF form to the repository acceptance criteria was also established. The functional performance criteria for the transfer and storage facility was also developed. Further, all the technology elements were input into the technology decision model leading to a preferred technology recommendation. An assessment of the technology development activities was also completed through the U.S. NRC and the National Academy of Science. Specific accomplishments included:

- Developed Melt-Dilute process for UAlx, U3Si2, and U3O8 Al SNF.
- Established the off-gas system requirements through bench-scale and small scale experiments.
- Assessed the waste stream generated through Melt-Dilute process and ensured integration with SRS high level waste flow sheets .
- Integrated Process Demonstration:
- Completed the design, fabrication and installation of a small scale melt-dilute furnace with off-gas system.
- Completed fabrication of surrogate Materials Test Reactor (MTR) elements with built-in fission products.
- Completed integrated process demonstration using full scale surrogate MTRs.
- Developed functional requirements for melt-dilute process.
- Completed Phase I criticality analysis of melt-dilute SNF form.
- Completed assessment of melt-dilute form characteristics.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	<input type="text" value="EW7040000"/>	<input type="text" value="950"/>	<input type="text" value="B - Basic"/>
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4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

SR-98-002 - R&D Data

Project Title:

Spent Fuels Alternate Technology- Characterization

Project ID:

P/SRTC-9808122003

Project Description (5000 characters or less):

Test Protocol and Characterization:

The characterization requirements were identified for the disposal of aluminum Spent Nuclear Fuel (SNF) forms in a repository. This was incorporated into a functional performance requirements for a transfer and storage facility. Further, a number of test techniques aimed at developing SNF form dissolution data were developed. Apparatus for the static dissolution and flow through dissolution were installed and experiments initiated. Electrochemical tests on surrogate aluminum SNF forms were also conducted. Preliminary dissolution rates for Al SNF in the repository environments were developed. An American Society Testing Materials (ASTM) standard guide for the aluminum SNF form test protocol was also drafted and submitted to the ASTM C26.13 committee.

(*All data is required*)

(*All data is required*)

Research Organization:	SRTC		
Project Title:	Chemistry and Corrosion Probes		
Funding Mechanism:	M&O = Managing & Operations		
Project ID:	P/SRTC-9808114001		
POC Last Name -	Mickalonis	First Name -	John
Point of Contact Phone:	803-725-3292		

Type of Research

1	EW4030000	295	B - Basic
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:	29808-0001		
Start Date:	10/1/97	Compl. Date:	9/30/98
* Sponsoring Program	EM		

*** (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)**

Project Title:

Chemistry and Corrosion Probes

Project ID:

P/SRTC-9808114001

Project Description (5000 characters or less):

This task was divided into three subtasks: subtask A - Chemistry and Corrosion Probes for In-Tank Monitoring; subtask B - DWPF Liquid Level and Density Monitors; and subtask C - In-Situ Washable Sintered Steel HEPA filters. The initial funding levels for the project were changed during the year due to changes in scope and project status.

The objective for Subtask A was to assess and develop technologies for corrosion and chemical species monitoring in the SRS high-level waste (HLW) tanks. The two scopes were: 1) for corrosion monitoring, perform initial characterization of electrochemical noise measurements (ENM) in simulants of HLW; and 2) for chemical species monitoring, provide technical assistance with a current probe design based on Raman spectroscopy.

For corrosion monitoring, a test program and laboratory facility was established for testing of ENM. Experimental testing included proof of principle tests with brass and characterization tests on steel in simulated waste compositions. The experimental results showed that ENM is sensitive to steel electrode fabrication and design, but is responsive to pitting and stress corrosion cracking environments for HLW tanks. Equipment and operating software were procured during the year.

For chemical species monitoring, the major emphasis was to provide technical support to EIC Labs, the commercial vendor developing a prototype Raman probe. This support was necessary to keep probe development on schedule for waste tank deployment in FY00. A scoping experimental program was also conducted which characterized conductivity changes with hydroxide and other waste oxyanion concentrations.

Subtask B reviewed the technology for liquid level detectors and density measurement for application at the Savannah River Site (SRS) Defense Waste Processing Facility (DWPF). This task was initiated to conduct a feasibility study on commercial and DOE developed liquid level and density monitors. Changes in need for the monitors, however, resulted in a change in scope for the task. Additionally, funding was reduced to match the new scope.

The purpose of subtask C was to demonstrate the feasibility of in-situ washable sintered steel HEPA filters for use on SRS high-level waste tanks. Testing was conducted in a bench scale facility using HLW simulated salts, HLW simulated sludge, and South Carolina road dust. Preliminary results show that the sintered Mott HEPA filter can be cleaned in situ and returned to service with the differential pressure (dP) and air flow across the filter recovering.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Acid Soluable Bags"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9808104001"/>		
POC Last Name -	<input type="text" value="Graham"/>	First Name -	<input type="text" value="Frank"/>
Point of Contact Phone:	<input type="text" value="803-725-3219"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	<input type="text" value="EW7000000"/>	<input type="text" value="150"/>	<input type="text" value="B - Basic"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>	
Start Date:	<input type="text" value="10/1/97"/>	Compl. Date: <input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>	

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

29808-0001

Project Title:

Project ID:

Project Description (5000 characters or less):

The purpose of this task was to develop and test various materials to produce a bag suitable for containing radioactive materials that are soluble in nitric acid. The properties of the new bag had to be at least equivalent to the current polyethylene material. The products from the dissolution of the bag could not cause problems with solvent extraction. A nylon material was selected as the best candidate and the bags were placed in service for packaging residues to be dissolved in the canyons.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	<input type="text" value="820101000"/>	<input type="text" value="397"/>	<input type="text" value="B - Basic"/>
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4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Submitted by: [redacted]

Project Title:

Immobilization of Rocky Flats Graphite Fines Residues

Project ID:

P/SRTC-9808107001

Project Description (5000 characters or less):

The Savannah River Technology Center (SRTC) is developing an immobilization process for graphite fines residues generated during nuclear materials production activities at the Rocky Flats Environmental Technology Site (Rocky Flats). The continued storage of this material has been identified as an item of concern. The residue was generated during the cleaning of graphite casting molds and potentially contains reactive plutonium metal. The average residue composition is 73 wt% graphite, 15 wt% calcium fluoride (CaF_2), and 12 wt% plutonium oxide (PuO_2). Approximately 950 kilograms of this material is currently stored at Rocky Flats.

The strategy of the immobilization process is to microencapsulate the residue by mixing with a sodium borosilicate (NBS) glass frit and heating at nominally 700°C . The resulting waste form would be sent to the Waste Isolation Pilot Plant (WIPP) for disposal. Since the PuO_2 concentration in the residue averages 12 wt%, the immobilization process was required to meet the intent of safeguards termination criteria by limiting plutonium recoverability based on a test developed by Rocky Flats. The test required a plutonium recovery less than 4 g/kg of waste form when a sample was leached using a nitric acid/potassium fluoride (KF) dissolution flowsheet.

Immobilization experiments were performed using cerium oxide (CeO_2) as a surrogate for PuO_2 and with actual graphite fines residues. Small-scale surrogate experiments demonstrated that a 4:1 frit to residue ratio was adequate for waste forms to meet cerium recoverability requirements. Additional experiments investigated the impact of varying concentrations of CaF_2 and the temperature/heating time cycle on the cerium recovery. Optimal processing conditions developed during these experiments were subsequently demonstrated at full-scale with surrogate materials and on a smaller scale using actual graphite fines.

In general, the recovery of cerium from the full-scale waste forms was higher than for smaller scale experiments. The presence of CaF_2 also caused a deterioration in the waste form durability not seen in the small-scale experiments. However, the results from experiments with actual graphite fines were encouraging. A 4:1 frit to residue ratio, a temperature of 700°C , and a 2 hr heating time produced waste forms with plutonium recoveries of 4 ± 1 g/kg. With an increase in the frit to residue ratio, waste forms fabricated at this scale would meet the Rocky Flats product specifications. The scale-up of the waste form fabrication process to nominally 3 kg is expected to require a 5:1 to 6:1 frit to residue ratio and maintaining the waste form centerline temperature at 700°C for 2 hr.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Report Generated

Project Title: High Level Waste Disposition

Project ID: P/SRTC-9806107001

Project Description (5000 characters or less):

Develop glass formulation to incorporate cesium-loaded crystalline silicotitanate (CST) and Savannah River Site (SRS) high-level waste sludge. This is an alternative process to In-Tank Precipitation (ITP) and saltstone.

Potential CST/Defense Waste Processing Facility (DWPF) glass formulations will be combined with existing information on the High Level Waste (HLW) system material balance requirements to evaluate the impact of replacing ITP with crystalline silicotitanate ion exchange process. This will provide the basis for better understanding of the process chemistry, identifying show-stoppers, and evaluating costs.

Develop Parallel Computing Acceleration of HLW Integrated Flowsheet Model (HLWIFM) methods. Currently, HLWIFM run times are so long that it precludes its use as a routine analysis tool. Application of parallel computing technology should significantly reduce HLWIFM run times, thus making the tool more useful.

Significant material and labor cost savings for SRS and DOE tank closure efforts are possible by stabilizing or encapsulating the residual waste. The feasibility of improved fill and grout materials using SRS fly ash and contaminated soil, and other improvements, will be evaluated.

Increasing the waste loading in DWPF HLW glasses will decrease the total number of canisters produced thus dramatically reducing life tank cleanup costs. Improved Liquidus Temperature Modeling can optimize the glass formulation to increase waste loading.

Glass foaming is a major concern in the melting of several types of radioactive waste glasses. Non radioactive glass batch materials representative of DWPF, Americium/Curium, and Transportable Vitrification System systems will be used to evaluate two types of sensors, 1) zirconia oxygen sensors, and 2) an electrochemical method (square wave voltammetry) to control foaming by evaluating glass batch material as it is heated.

Closure of HLW tanks requires removal of remaining residues, comprised of hardened sludge, zeolite, and silica (clinkers). Sound Lasers, using large amplitude directed acoustic waves may be able to break up the clinkers. Develop and demonstrate a small prototype system.

Min

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Rocky Flats Incinerator Ash Disposition"/>		
Funding Mechanism:	<input type="text" value="LDRD = Lab Directed Research & Development"/>		
Project ID:	<input type="text" value="P/SRTC-9806107002"/>		
POC	Last Name - <input type="text" value="Utsch"/>	First Name - <input type="text" value="Frank"/>	
Point of Contact Phone:	<input type="text" value="803-725-0445"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="11/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Database

Project Title:

Rocky Flats Incinerator Ash Disposition

Project ID:

P/SRTC-9806107002

Project Description (5000 characters or less):

Determination of best pathway for Silver II dissolution of Rocky Flats incinerator ash. Electrolysis and use of ozone to be evaluated. This program has been a study of two different pathways for dissolution of Plutonium Oxide (PuO2) from incinerator ash by silver catalysis. One pathway is electrolysis to regenerate silver II for plutonium dissolution. This approach has been developed and utilized by a company in France (Cogema). Cogema's electrolysis process was evaluated for its applicability for an incinerator ash waste form. There is a good probability that the electrolysis technology as developed by Cogema could be used to dissolve Pu from incinerator ash. A demonstration with the ash or a plutonium contained surrogate ash is required.

An alternate approach to electrolysis for silver-catalyzed dissolution has been postulated. The proposed technique is to regenerate silver II by ozone oxidation. We have evaluated ozone as a means for regenerating silver II experimentally. The silver (II) is to be continually renewed to dissolve Pu from ash in this process. Additional tests are required to develop the equilibrium relationship between inlet ozone concentration and silver II production.

Another potential option for the disposition of 20,000 kgs of incinerator ash currently stored at the Rocky Flats Environmental Technology Site (Rocky Flats) is shipment to the Savannah River Site (SRS) for dissolution and plutonium recovery. Rather than use a traditional, but inefficient, nitric acid/fluoride dissolution flowsheet or the installation of new silver catalyzed dissolvers and startup of the New Special Recovery facility, the development of a simple solid state fusion for oxidation of plutonium from the 4+ to the more soluble 6+ valence state would be more effective and economical. Dissolution of the pretreated residue in dilute nitric acid and subsequent plutonium recovery could then be accomplished using existing SRS F-Canyon facilities. Fusion reactions are routinely used to solubilize minerals prior to dissolution and elemental analysis. The feasibility of this approach was demonstrated for pretreatment of small samples of refractory plutonium oxide (PuO2) by fusing with sodium peroxide (Na2O2) and potassium superoxide (KO2) before subsequent dissolution in nitric acid. Plutonium recoveries approaching 90% were obtained. The prospect of using other reagents commonly used for the decomposition of inorganic materials will be determined based on a series of small-scale (1 gram of PuO2) experiments.

(*All data is required*)

POC Last Name - Utsch First Name - Frank

Point of Contact Phone: 803-725-0445

1	EW7000000	148	D - Development
2			
3			
4			
5			

- ☐ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Start Date:	11/1/97
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Compl. Date: 9/30/98

* Sponsoring Program	EM
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*** (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)**

Project Title:

Project ID:

Project Description (5000 characters or less):

The purpose of this program was to assess and evaluate new measurement technologies and techniques that will lead to better, faster, and cheaper ways to characterize the tritium content in concrete. The approach selected to do this was to determine if one or more surface contamination measurement techniques could be correlated to the bulk tritium content in the concrete based on an appropriate permeation model. This would reduce or avoid expensive and time consuming through-section core drilling and subsequent analysis.

A comprehensive literature search of previous work in this field provided much useful information, including: applications of diffusion theory to tritium permeation of concrete, experiments to test diffusion models, concrete sampling techniques, and various procedures for analysis of tritium in such samples. In particular, several Japanese studies demonstrated that the diffusion of tritium in and out of concrete could be explained by suitable assumptions, modifications and modeling of diffusion theory concepts.

Based on the encouraging literature review, an experimental program was designed and mostly completed for the development of a model to estimate bulk tritium content in concrete based on in-situ measurements of the amount of tritium on the surface.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>			
Project Title:	<input type="text" value="Hydrogen Mitigation in Actinide Storage Packages"/>			
Funding Mechanism:	<input type="text" value="LDRD = Lab Directed Research & Development"/>			
Project ID:	<input type="text" value="P/SRTC-9806107004"/>			
POC	Last Name -	<input type="text" value="Utsch"/>	First Name -	<input type="text" value="Frank"/>
Point of Contact Phone:	<input type="text" value="803-725-0445"/>			

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☐ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="11/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print Form

Project Title: Hydrogen Mitigation in Actinide Storage Packages

Project ID: P/SRTC-9806107004

Project Description (5000 characters or less):

Alpha radiolysis of moisture contained in actinide storage and shipping containers may result in a rapid buildup of hydrogen gas. This evolution of gas results in several safety concerns that limit options for transportation and storage of these materials. Other hydrogenous materials including plastics are an additional source of hydrogen from radiolysis; however, this reaction is often much slower if the plastics are not in direct contact with the actinides. The principle factors in determining hydrogen generation rates include material type, material mass, chemical form, isotopic distribution and moisture content. Efforts to minimize the moisture content of actinide materials (e.g. Plutonium Oxide) requires processing the materials at elevated temperature (e.g. 450 C) and handling in dry environments. Because alternatives for shipping and storage are limited by the pressure generated within sealed containers, this project was initiated to develop and test options to reduce the hydrogen pressure of the sealed actinide packages without requiring additional processing steps.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="Microwave Treatment of TRU Wastes"/>		
Funding Mechanism:	<input type="text" value="LDRD = Lab Directed Research & Development"/>		
Project ID:	<input type="text" value="P/SRTC-9806107005"/>		
POC Last Name -	<input type="text" value="Utsch"/>	First Name -	<input type="text" value="Frank"/>
Point of Contact Phone:	<input type="text" value="803-725-0445"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☐ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☒ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="11/1/97"/>	Compl. Date:	<input type="text" value="9/30/98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed on 11/1/98

Project Title:

Microwave Treatment of TRU Wastes

Project ID:

P7SRTC-9806107005

Project Description (5000 characters or less):

Develop a microwave treatment process to effectively treat large volumes of Transuranic (TRU) waste materials. The benefits will be reduced cost, and reduced risk in meeting regulatory issues.

As a result of alpha radiolysis of organics in TRU containers, there exists several potentially significant problems associated with storage and ultimate shipment/ disposal of the TRU waste material. First, due to radiolysis, a potential explosive mixture of hydrogen and oxygen can be generated which, under some circumstances, can cause concerns. Second, the hydrogen gas generated can exceed transportation limits and prevent shipment of TRU waste to a final disposal site. Continued storage of TRU wastes at the Savannah River Site has the potential of increasing risk to workers, public and the environment. The problem is exasperated by the fact that many existing storage drums are at the end of their lifetimes. Microwave technology has the potential of destroying the source of the problem, the organics in TRU and mixed wastes. This can be accomplished by using equipment that can be fit into existing facilities and be especially suited for remote operations.

Microwave energy offers the potential to successfully treat a wide range of waste types, many of which are identical or similar to the TRU wastes currently being stored on site. Microwave processing could not only significantly reduce the volume of TRU wastes, destroy the organic components within, treat off-gases as they evolve, and if necessary, also vitrify the remaining residue into a safe wasteform suitable for storage, transportation or ultimate disposal at the Waste Isolation Pilot Plant.

Menu

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☐ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Save and Exit

Project Title: Nuclear Regulatory Commission Technical Support

Project ID: P/SRTC-9806108001

Project Description (5000 characters or less):

Nuclear power plants (NPPs) must ensure that their emergency core cooling system (ECCS) or safety-related containment spray system (CSS) remains capable of performing its safety function. That function may be impaired by the accumulation of foreign materials, including failed protective coatings in the flow path of the ECCS or CSS. The U.S. Nuclear Regulatory Commission, which is ultimately responsible for the licensing of commercial nuclear reactor operations in the U.S., has concerns related to the degradation and failure of the coatings in NPPs. The protective coatings of concern are the Service Level 1 coatings used on the exposed surfaces within the NPP primary containment. Coatings identified as either "qualified" and "unqualified" are used at Service Level 1. Qualified coatings have demonstrated adhesion to substrates during testing in the environmental conditions surrounding a design-basis loss-of-coolant accident (DB LOCA). Coatings that are termed unqualified are assumed to fail and disbond from their substrates during a DB LOCA. However, failure of qualified coatings has been observed even in normal service in NPPs.

The Savannah River Technology Center at the Savannah River Site is conducting a two-phase program to develop a coatings failure model and to implement an experimental plan to evaluate and validate the model. The program is focused on meeting the following objectives:

1. Propose a coatings degradation and failure model integrating the key elements, namely:
(a) interfacial/reliability models, (b) coatings structural models, and (c) substrate models.
2. Develop an experimental program leading to characterization of coatings debris.
3. Review the industry NPP coatings activities.
4. Implement an experimental program to validate the model and failed coatings characteristics.

The two-phase program will be conducted over a 24-month period. The current, six-month Phase I effort is focused on objectives 1, 2 and 3. Phase I will evaluate the underlying coatings failure mechanisms to guide the development of a failure model. It will also use the model as the basis for a logic diagram leading to the development of an experimental program to validate the model and to define coatings characteristics. Phase I work will include a review of current and past Service Level 1 coating systems and their failures to support the development of the model. It will also include some preliminary environmental testing, the results of which will guide the experimental plan. Phase II, to be conducted over 18 months, will implement the detailed experimental plan to test the assumptions and variables in the model.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☐ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed: 09/22/98 10:01:00

Project Title:

Project ID:

Project Description (5000 characters or less):

Design, fabricate, test, install, and provide training on a controlled-potential high-precision coulometer for non-proliferation verification to the International Atomic Energy Agency (IAEA) and the Mayak Production Facility in Ozersk, Russia. Westinghouse Savannah River Company's Savannah River Technology Center is recognized by the IAEA as the only organization in the world that has the expertise and capability to build high-precision coulometers to the ultra low level detection limits required by non-proliferation requirements. The coulometers are based on development work performed at the Savannah River Site (SRS) for plutonium monitoring purposes at SRS and updated with state-of-the-art electronics.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☐ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☒ HW = Hardware
- ☐ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed: 10/1/97

Project Title:

Project ID:

Project Description (5000 characters or less):

Design, fabricate, test, install, and provide training on a controlled-potential high-precision coulometer for non-proliferation verification to the Power Reactor and Nuclear Fuel Development Corporation of Japan (PNC). Westinghouse Savannah River Company's Savannah River Technology Center is recognized by the IAEA as the only organization in the world that has the expertise and capability to build high-precision coulometers to the ultra low level detection limits required by non-proliferation requirements. The coulometers are based on development work performed at the Savannah River Site (SRS) for plutonium monitoring purposes at SRS and updated with state-of-the-art electronics.

[Main](#)

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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4			
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Number: 9809114002

Project Title: WSRC RETRIEVAL AND CLOSURE

Project ID: P/SRTC-9809114002

Project Description (5000 characters or less):

Salt Removal Systems

Savannah River Site (SRS) will conduct salt removal demonstrations on SRS tanks . These demonstrations will be conducted in three phases and will consist of a series of tests that will be compared from both operations (manpower, materials, time) and capital investment requirements with the current Waste Removal baseline process.

Heel Retrieval for SRS

Retrieval methods from work at other sites that could be applied at SRS for both Type IV and Type I and II Tanks were researched. SRS will determine the functions and requirements for tank waste heel retrieval.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

2025 RELEASE UNDER E.O. 14176

Project Title: WSRC PRETREATMENT

Project ID: P/srtc-9809114003

Project Description (5000 characters or less):

Problem to be Solved: Significant quantities of sodium hydroxide (caustic) will be required to store and retrieve high-level wastes (HLW) and leach sludges at the Hanford and Savannah River sites.

Technical Issues Related to This Task Include: The technical feasibility of a caustic recycle process on actual waste needs to be shown. The ability to produce NaOH that meets operational specifications must be demonstrated.

FY98 Scope: Electrochemical salt splitting is a possible method to recover caustic from HLW solutions.

Problem to be Solved: Sludges at Savannah River Site, Hanford, and Oak Ridge will be washed to remove salts before immobilization. The High Level Waste (HLW) sludge must be washed to remove soluble salts as a pretreatment to vitrification.

Technical Issues Related to This Task Include: Technology to remove the desired components, such as aluminum and selected radionuclides from the sludge, to produce a more concentrated lower volume wash water, and to produce a more consistent treated sludge feed for vitrification are all desired.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Report Generated

Project Title: WSRC IMMOBILIZATION

Project ID: P/SRTC-9809114004

Project Description (5000 characters or less):

Optimization of Waste Loading in Glass:
This task will evaluate composition effects on glass properties that limit waste loading in high-level waste (HLW) glasses to ultimately increase waste loading in these glasses and/or the available compositional processing window. The primary property for this subtask is phase stability in HLW glasses leading to the development of amorphous phase separation. Currently, limits have been instituted in process control models that related composition to properties of interest. The subtask will directly support the development or enhancement of current process control models that should lead to increased waste loadings or increased operational windows

Grout and Glass Waste Forms for ORR:
This task will be performed by the Savannah River Technology Center (SRTC) and is focused on developing glass waste forms for the Oak Ridge tank sludges. In addition, the impacts of processing time, volume of waste and disposal costs will be identified. SRTC will confirm the glass formulation using a surrogate waste similar in composition to the radioactive waste to be tested.

Demonstration of compliance with the Waste Isolation Process Plant (WIPP) Waste Acceptance Criteria (WAC) - The testing of the glass waste forms will be extended to ensure that all specifications of the disposal site (WIPP or Nevada Test Site (NTS)) are met. Additional testing may be required to meet the Oak Ridge temporary site storage requirements prior to shipment to WIPP.

Life cycle cost analysis - A life cycle cost analysis will be performed for the vitrified waste form. This will include the costs of disposal of the waste form at WIPP (or NTS).

DWPF Melter Pouring Improvements:
The melter pour spout accumulates glass and crystalline deposits in three areas. Interim and long term solutions to the plugging problem require basic data and understanding of the glass pour process in order to relate operational parameters to the potential for wicking. Once the major parameters affecting wicking are determined, methodologies and operating principles will be established to minimize wicking

DWPF Process Pour Enhancements:
The glass pouring portion of the DWPF melter has experienced intermittent accumulation of glassy and crystalline deposits. EM-30 funded task teams have evaluated the pouring plugagges and performed full scale fluid flow physical modeling of the pour spout area. Some features of the pour instability in the DWPF melter have been demonstrated in this manner and equipment developed to record and measure the flow. It has been concluded that a full scale, prototypic pour spout is necessary for testing of process controls, optimizing operating procedures, acceptance testing of cleaning processes and devices, and for evaluating modifications of the pour spout and connections to the glass receipt canister.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Prepared by: [redacted]

Project Title:

DEMONSTRATION OF CONTINUOUS EMISSIONS MONITORING

Project ID:

P7SRTC-9809114005

Project Description (5000 characters or less):

This task is a joint program between the Mixed Waste Focus Area (MWFA), Landfill Stabilization Focus Area (LSFA), and the Environmental Protection Agency (EPA) to conduct long-term performance testing of ten continuous emission monitors (CEM). Six of these CEMs are for monitoring of particulate matter (PM) emissions. Four of the monitors measure emissions of mercury. The monitors are being installed in two commercial hazardous waste treatment facilities and will be evaluated over a twelve month period. The monitors will be evaluated against the draft EPA performance standard for each of the class of CEMs. These performances are also referenced in the Technology Development Requirements Document (TDRD).

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Return to SAVANNAH

Project Title:

EX SITU HIGH TEMPERATURE WASTE TREATMENT & PROCESSING SYSTEM

Project ID:

P/SRTC-9809114006

Project Description (5000 characters or less):

This task is divided into three subtasks

The first subtask includes evaluation and development of processes to treat radiologically contaminated vegetation at the Savannah River Site (SRS) in a manner that minimizes handling, processing, and treatment costs.

The technology proposed is unique to the Savannah River Site . The process is a wet-chemical process for completely oxidizing solid organic waste materials and immobilizing the resulting solution.

Support for a process for converting solid waste into high density slurried fuel.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Prepared by: S. J. Kinsley, Jr.

Project Title:

CHARACTERIZATION AND MONITORING OF DNAPLS

▲▼

Project ID:

P/SRTC-9809114007

Project Description (5000 characters or less):

The central themes of the characterization task are direct Dense Non-Aqueous Phase Liquid (DNAPL) detection, minimizing invasiveness by emphasizing small scale tests, and generation of data of specific usefulness in optimizing clean up. Because of these design concepts, the proposed technologies have the additional benefit of being able to target thin-highly discrete DNAPL zones typical of most sites. The DNAPL characterization tools include: spectral gamma logging of natural radionuclides in existing monitoring wells, small scale partitioning tracer tests above the water table, and related methods (e.g., geophysics and high resolution video in existing monitoring wells). These technologies will complement tools currently used/proposed by industry, Environmental Protection Agency and Department Of Defense (e.g., surface geophysics, and large scale differential tracer tests).

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Copyright © 1998

Project Title:

PLUTONIUM CONTAINER UNPACKING SYSTEM

Project ID:

p/srtc-9809114008

Project Description (5000 characters or less):

Plutonium Container Unpacking System

The Savannah River Technology Center is providing automation and remote system technology to plutonium processing and repackaging lines. This system will allow for hands off opening and unpacking of existing plutonium storage containers which require processing and/or repackaging to meet the requirements for long term storage. This system will consist of a material handling robot, and automated complaint container opener, and a material extraction system.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Page 2 of 2

Project Title:

D&D FOCUS AREA LARGE SCALE DEMO SUPPORT

Project ID:

P/SRTC-9809114009

Project Description (5000 characters or less):

Purpose: The objective of this Large Scale Demonstration and Deployment Project (LSDDP) is to demonstrate improved/innovative technologies for deactivation of the 321-M facility at SRS under full-scale conditions in a side-by-side comparison with corresponding baseline technologies and to deploy those technologies shown to be superior to the baseline. The 321-M facility is a Fuel Fabrication Facility contaminated with highly enriched uranium.

Scope: This project will demonstrate and deploy technologies in the following categories:

Characterization Technologies

Decontamination Technologies

Stabilization Technologies

Dismantlement/Removal Technologies

This project will demonstrate 8-10 technologies.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="EXTENSION OF STUDIES WITH 3M EMPORE & SELENTEC MAG&SEP TECH"/> <div>▲</div> <div>▼</div>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9808114010"/>		
POC Last Name -	<input type="text" value="BEALS"/>	First Name -	<input type="text" value="DONNA"/>
Point of Contact Phone:	<input type="text" value="803-725-0845"/>		

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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10-1-97"/>	Compl. Date:	<input type="text" value="9-30-98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print Page

Project Title:

EXTENSION OF STUDIES WITH 3M EMPORE & SELENTEC MAG&SEP TECH

Project ID:

P/SRTC-9808114010

Project Description (5000 characters or less):

Task : Extension of Studies with 3M Empore and Selentec MAG*SEP Tech

This work will move an environmental sampling concept using 3M Empore filters and MAG*SEP particles, incorporating appropriate ion exchange resin, to the field (two streams on the Savannah River Site, three ocean locales) in order to validate sampling techniques for determining Tc-99, Cs-135, -137, and Pu in ocean and river waters.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Number 001

Project Title:

ADVANCED CHEMICAL SEPARATIONS AT SRS

▲
▼

Project ID:

P/SRTC-9809114011

Project Description (5000 characters or less):

Continue to test Extended Sludge Processing (ESP) technologies with Savannah River waste streams, evaluate needs for separations methods at Savannah River, and provide support to ESP. Work will continue on testing ESP-developed materials for application to tank and other wastes with emphasis this year on testing crystalline silicotitanates with SRS tank wastes and Defense Waste Process Facility (DWPF) recycle streams. Testing of other materials with ground water and R Reactor basin water will continue. Tests of ion exchange resins developed at Lawrence Berkeley National Laboratory (LBNL) will be completed using two different ground water samples from SRS. Testing of the 3M web materials for removal and separation of Polychlorinated Biphenyls (PCBs) from radionuclides will be demonstrated at flow rates of 5 gallons per minute. Other materials will be tested as they are developed and can be applied at the site.

Support of ESP management at DOE-HQ will continue. As part of that support, this task will oversee the preparation of a handbook of materials developed by ESP for removal of Cesium from aqueous streams including tank wastes, ground water and other contaminated streams.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:	<input type="text" value="SRTC"/>		
Project Title:	<input type="text" value="SCAPS LOGISTICS"/>		
Funding Mechanism:	<input type="text" value="M&O = Managing & Operations"/>		
Project ID:	<input type="text" value="P/SRTC-9808114012"/>		
POC Last Name -	<input type="text" value="EDDY-DILEK"/>	First Name -	<input type="text" value="CAROL"/>
Point of Contact Phone:	<input type="text" value="803-725-2418"/>		

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:	<input type="text" value="29808-0001"/>		
Start Date:	<input type="text" value="10-1-97"/>	Compl. Date:	<input type="text" value="9-30-98"/>
* Sponsoring Program	<input type="text" value="EM"/>		

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Report Generated

Project Title:

SCAPS LOGISTICS

Project ID:

P/SRTC-9808114012

Project Description (5000 characters or less):

The cone penetrometer is becoming the tool of choice for environmental site characterization in unconsolidated and semi-consolidated formations because it allows access to the subsurface in a rapid and cost effective manner. Many sensors and probes for use with the cone penetrometer are currently under development and demonstration for environmental characterization by the DOE Office of Science and Technology. In conjunction with researchers from Argonne National Laboratory, three field evaluations of new sensors, samplers, or in-situ detectors were conducted at the Savannah River Site. Identification of sensors, coordination of field trials, and technical evaluation of the sensors, samplers, and in-situ detectors will be the responsibility of ANL. The purpose of the first task was to provide logistical support for field demonstration, as well as funding for the operation and maintenance of the Site Characterization and Analysis Penetrometer System cone penetrometer by a commercial penetrometer company at the Savannah River.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

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Project Title: JCCEM CONTAMINANT TRANSPORT STUDIES

Project ID: P/SRTC-9809114013

Project Description (5000 characters or less):

The purpose of this program is to facilitate scientific and technology exchanges between the United States and former Soviet Union (FSU) bloc countries. The following technical objectives were worked in FY98:

- *Developed strategies for improved characterization of contaminant transport in fractured rock system at the Mayak Production Association and other fractured rocksites (e.g., Idaho).
- *Emphasized characterization and management strategies that emphasize low cost direct monitoring.

Current plans for the JCCEM Russian - United States Department of Energy cooperative environmental technology program focus on the detailed characterization of the groundwater and contamination plumes in fractured rock near Lake Karachai. Multiple packer and chemical measurements of wells helped in developing a conceptual model of the groundwater conditions in this important area. Based on previous work, a final suite of detailed hydrologic tests and chemical tests were proposed to provide necessary characterization data to understand the plume behavior and project its path and behavior. Plans for the FY98 program consisted of detailed vertical pressure measurements in wells in the plume path to document, in detail, the areas where the plume pathway is downward and areas where the plume pathway is upward. Scoping beneath the Mishelyak River and support to the Pacific Northwest National Laboratory modeling work were done.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

IPerf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Print Form

Project Title: DC ARC MELTER ENHANCED CAPABILITIES

Project ID: P/SRTC-9809114014

Project Description (5000 characters or less):

TASK : PARTITIONING STUDIES

A DC graphite arc melter had been previously installed in a glove box to perform vitrification experiments with radioactive materials. The primary goal of this task was to perform partitioning studies with the contained DC graphite arc melter comparing the migration of Pu-238, Pu-239, and cerium in various types of simulated job control wastes. Idaho National Engineering and Environmental Laboratory's soil was used to test the melter and off-gas system before starting the job control tests. The test results will be documented at the completion of this work.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
- ☐ CS = Computer Software
- ☐ HW = Hardware
- ☒ OT = Other Technical Deliverables
- ☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

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Top of Form

Project Title: TRANSPORTABLE MELTER VITRIFICATION DEMO ON ACTUAL MIXED WASTE

Project ID: P/SRTC-9808114015

Project Description (5000 characters or less):

The primary objective of this task was to demonstrate a stabilization treatment on an actual mixed hazardous and radioactive waste stream. This objective will be accomplished by a parallel program of radioactive mixed waste treatability studies (at bench and pilot scale) of actual Oak Ridge Reservation (ORR) mixed wastes and a field-scale vitrification demonstration of a waste stream using the Transportable Vitrification System (TVS).

The tasks and milestones include:

- 1) Setup the TVS at ORR, complete safety and readiness reviews, and commence the demonstration program. Process 80,000 kg of actual mixed waste. Gather operational data to support future treatment of this waste stream. Data will include glass composition, glass performance , air emissions data, and melter performance information. This work will be accomplished with the assistance of Oak Ridge personnel with additional support from EM-30.
- 2) Provide technical direction to Clemson University for their support of the TVS. Clemson is performing pilot-scale melter tests on surrogate and actual ORR mixed waste, utilizing separate funding. This task will provide glass formulations, test plans, and technical guidance to Clemson.
- 3) Leverage existing High Level Waste glass composition models to determine mixed wastes glass composition models in the soda-lime-silica and borosilicate glass systems. This subtask will result in a computer algorithm which will allow the operator to select the proper mix of glass forming chemicals for the waste being treated.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW4010000	108	D - Development
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Required - mandatory

Project Title:

SAVANNAH RIVER/COMBUSTIBLE ORGANICS

Project ID:

P/SRTC-9809114016

Project Description (5000 characters or less):

The Acid Digestion technology consists of three distinct parts: sort/decon, organic oxidation, and metal stabilization. Sort/decon is conducted in hot acid which dissolves cellulosic materials, decontaminates noncombustibles, and allows for the separation of plastics from noncombustibles by density. Oxidation is achieved by HNO3 in concentrated phosphoric acid. Metal stabilization occurs when iron oxide is added to phosphoric acid and heated to 1050-1100 degrees C to form an iron phosphate glass.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW40100000	245	D - Development
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed: 10/1/97

Project Title:

APPLIED DNAPL CHARACTERIZATION METHODS

Project ID:

P/SRTC-9809114018

Project Description (5000 characters or less):

Characterization of Dense Non-Aqueous Phase Liquid (DNAPL) using Fluorescence Techniques

The objective of this task is field testing of fluorescence detection probes to determine effectiveness of detecting DNAPL in various subsurface conditions with various contaminant mixtures. The scope of this work covers investigation of strategies for enhanced Cone Penetrometer Technology (CPT) access, probe refinement, field procedures, and analysis refinement. This testing will be conducted at several locations, including the Savannah River Site (SRS) A/M Area and sites where DNAPL is located at shallower depths.

Alcohol Micro Injection/Extraction using CPT

The emphasis of this task is modifications on, and further testing of, the PIX (Precision Injection/eXtraction cone tip and preparing, submitting and receiving approval of an underground injection control permit required for the field test. CMST funding for FY98 covered development of the optimal solubilizing agents for DNAPL at SRS and initial cone tip development and preliminary laboratory and field testing. The work will enable refinement of field deployment procedures and analysis techniques to produce a field ready tool.

Characterization of DNAPL using Hydrophobic Flexible Membranes CPT

The emphasis of this task is on field testing of hydrophobic flexible membranes to provide a direct measurement of DNAPL in the vadose zone and below the water table in both consolidated and unconsolidated systems. FY98 work focused on developing a CPT method for deploying the membrane below the water table; refining the retrieval, storage and analytical methods for the sorbent packs used for sampling DNAPL; and procuring prototype SEAMIST system(s) for deployment below the water table.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Project Title: SUBSURFACE BARRIER VERIFICATION SYS - HYDRAULIC PERFORMANCE TEST

Project ID: P/SRTC-9809114019

Project Description (5000 characters or less):

The integrated barrier verification system uses: hydraulic and soluble tracer techniques to evaluate barrier continuity and integrity ; geophysical techniques to determine the barrier aerial extent ; field and laboratory geotechnical engineering methods to determine barrier hydraulic performance ; and gaseous tracer technology to determine the unsaturated zone barrier continuity and integrity.

This effort is part of an integrated barrier verification system providing real-time barrier aerial extent, continuity, and hydraulic performance data to demonstrate barrier integrity and effectiveness through a combined technology approach.

Hydraulic Performance Testing:

Use of hydraulic performance testing instrumentation and methodology to quantify emplaced subsurface barrier hydraulic performance.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Printed on 09/01/98

Project Title:	D-AREA GEOFLOW/ENVIROWALL TREATMENT SYSTEM
Project ID:	P/SRTC-9809114020

Project Description (5000 characters or less):

Subtask 1: Ex-situ Treatment Media Evaluation

The ex-situ treatment media evaluation is a permeable treatment media treatability study conducted at the Savannah River Site Coal Pile Runoff Basin (CPRB) utilizing the actual contaminated groundwater. Potential treatment media such as dolomite, limestone concrete, rock phosphate (apatite), fly ash, blast furnace slag, sulfur, pyrite, iron, bimetallics (iron/palladium; iron/copper; iron/nickel), iron foam, peat, zeolites, ion exchange resins, Humasorb, etc. will be tested. Permitting, a literature review, test design, and material procurement were initiated in FY97. The actual testing was conducted and completed in FY98. This task provided selection of permeable treatment media or a combination of media for use in Subtask 2.

Subtask 2: D-Area GeoFlow/EnviroWall Treatment System Design, Installation and Testing

The EnviroWall Barrier System utilizes trench and guidebox construction techniques to install high density polyethylene (HDPE) vertical barriers below grade. In its application at the CPRB, the EnviroWall vertical High Density Polyethelene (HDPE) barrier has been installed and combined with a groundwater recovery system in the same trench to produce a partially penetrating interceptor well. The D-Area Interceptor Well (DIW-1) has been installed at the northwest corner of the D-Area CPRB. The Interceptor Well has an innovative design which maximizes the collection of upgradient contaminated groundwater while minimizing the collection of downgradient groundwater. It also provides for a more even distribution of groundwater collection across the entire width of the contaminant plume.

The fact that the existing Interceptor Well (EnviroWall Barrier System) acts as a drain for groundwater flow from the upper to the deeper soils will be utilized in this application to produce a demonstration in situ reactive treatment system (GeoFlow/EnviroWall Treatment System). The conceptual design for the D-Area GeoFlow/EnviroWall Treatment System consists of the following major subsystems:

- Interceptor Trench
- Treatment Cell
- Redistribution System

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	<input type="text" value="EW4010000"/>	<input type="text" value="361"/>	<input type="text" value="D - Development"/>
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
☐ HW = Hardware
☒ OT = Other Technical Deliverables
☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

* (asterisk) indicates that a field may contain multiple values separated by a semicolon (;)

Download Data

Project Title:

EFFECTS OF FENTON'S REAGENT DNAPL TREAT ON AQUIFER BIO-GEOCHEMIST

Project ID:

P/SRTC-9809114021

Project Description (5000 characters or less):

Subtask 1: Mineralogical, Chemical, and Textural Analysis:

The technical objectives of this task are to evaluate the non-biological effects of Fenton's Reagent on aquifer materials. Mineralogical, chemical, and textural analyses will be performed on aquifer materials that were exposed to Fenton's Reagent during the FY97 demonstration and compared to the results of the same analyses on unexposed aquifer materials. Samples were obtained from the pre-test and post-test cores taken during the FY97 demonstration and from an additional 4 cores obtained by Subtask 2. X-ray fluorescence will be used to quantify the mobilization of metals and time of flight - secondary ion mass spectroscopy (TOF-SIMS) will be used on select samples to show changes in the distribution patterns of metals. Power X-ray diffraction and scanning electron microscopy (SEM) will be used to discern changes in mineralogy and evidence of mineral dissolution. Optical microscopy and SEM will be used to examine textural changes and to identify samples for further mineralogical or TOF-SIMS analysis. Total organic carbon (TOC) analyses will be performed to assess the degree of destruction of natural organic matter.

Subtask 2: Post-test Drilling of Additional Cores:

Four continuous cores will be obtained by rota-sonic drilling into the subsurface. The cores will consist of 2 from the reaction zone, 1 from upgradient of the reaction zone, and 1 from downgradient. The location of these cores will be guided by the pre- and post-test characterization of the area during the FY97 demonstration. The additional cores to be obtained will bring the total number of cores for the study of non-biological effects to 8 background cores, 4 reaction cores, and 2 downgradient cores.

Subtask 3: Effect of Fenton's Reagent on the Microbiology and Biodegradation Capacity of a Treated Aquifer:

Fenton's reagent is an oxidizing reagent (H_2O_2) which will lower the pH of the aqueous phase, potentially increase TOC and increase metal ion concentration, but also increase dissolved oxygen (breakdown of $H_2O_2 \rightarrow H_2O + O_2$). Since the aquifer treatment may not completely oxidize the Contaminants Of Concern (e.g., Tri-chloro Ethylene) of concern or may incompletely oxidize the COC, it is important to determine the biodegradation capacity of the aquifer, both in the reaction zone and downgradient. Although microbial activity will probably be severely reduced in the treatment zone, pH, H_2O_2 and O_2 gradients may result in significant microbial activity at the leading edge of the plume.

The biodegradation capacity of the aquifer and how it changes will be assessed using a range of microbial techniques. Physical changes will also be measured within the aquifer and at the edge of the plume (e.g., pH, dissolved oxygen, conductivity and redox potential) and correlated with microbial activity.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
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Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

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Save Form

Project Title:

CONSOLIDATED INCINERATOR FACILITY EFFLUENT STABILIZATION

Project ID:

P/SRTC-9808114022

Project Description (5000 characters or less):

The Consolidated Incineration Facility (CIF) at the Savannah River Site (SRS) burns low level radioactive mixed waste, low level waste, and hazardous waste, which in turn creates secondary blowdown off-gas effluents and ash. This task will evaluate alternative technologies to provide for the development of an effective salt-stabilization technology for the blowdown and/or CIF ash. Methods that SRS are to investigate may include, but are not limited to, those technologies currently being investigated by the Mixed Waste Focus Area (MWFA).

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
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4	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
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☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

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10/1/97 10:00:00 AM

Project Title:

AUTOMATED PLUTONIUM GLOVEBOX SYSTEM

Project ID:

P/SRTC-9809114023

Project Description (5000 characters or less):

The Savannah River Technology Center developed and provided an automated plutonium glovebox system which was used to transport materials between glovebox lines in a plutonium processing facility.

FY98 Savannah River Site R&D Database

(*All data is required*)

Research Organization:

Project Title:

Funding Mechanism:

Project ID:

POC Last Name - First Name -

Point of Contact Phone:

	B&R Codes	FY Costs: (in thousands)	Type of Research
1	EW4030000	54	D - Development
2			
3			
4			
5			

Deliverables:

- ☒ SI = Scientific Information (reports)
☐ CS = Computer Software
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☐ IN = Inventions

Perf Location Zip:

Start Date: Compl. Date:

* Sponsoring Program

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Page 1 of 1

Project Title: MIXED WASTE SORTING SYSTEM

Project ID: P/SRTC-9809114024

Project Description (5000 characters or less):

Savannah River Technology Center (SRTC) investigated a 55 gallon bagless transfer concept for transporting hazardous materials from an enclosure to a container. The concept is similar to a previously developed smaller bagless transfer system, but the containers are larger and use different materials.