



Idaho National Laboratory

2013 Status Report

DOE Research Reactor Infrastructure Program

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www.inl.gov



Program Management

DOE HQ

DOE Idaho Operations Office

Michael Worley

Kenny Osborne

Idaho National Laboratory

Project Manager

Quality Engineer – in Idaho

Quality Engineer – in Virginia

Nuclear Materials Management

Subcontract Administration

Doug Morrell

Dana Cooper

Dave Capp

Michelle Wilkinson

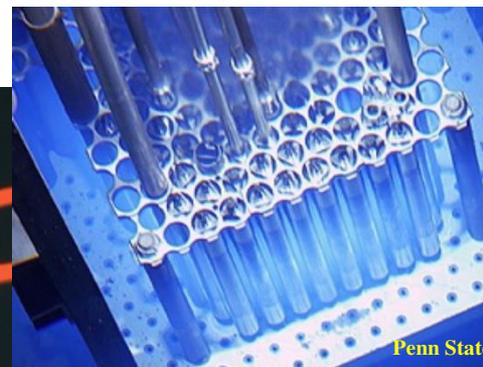
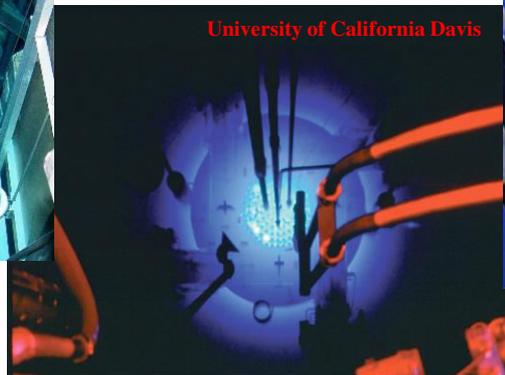
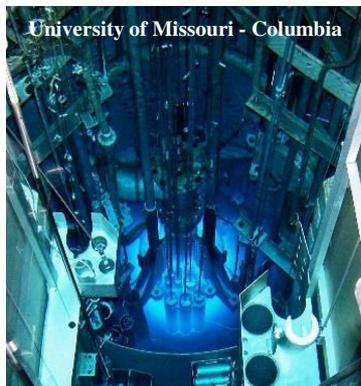
Elise Miller

Points of Contact

<u>Points of Contact</u>	<u>Organization</u>	<u>E-Mail Address</u>	<u>Phone Number</u>
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Purpose of the RRI Program

The purpose of the United State Domestic Research Reactor Infrastructure Program is to provide fresh nuclear reactor fuel to United States universities at no, or low, cost to the university. The title of the fuel remains with the United States government and when universities are finished with the fuel, the fuel is returned to the United States government.

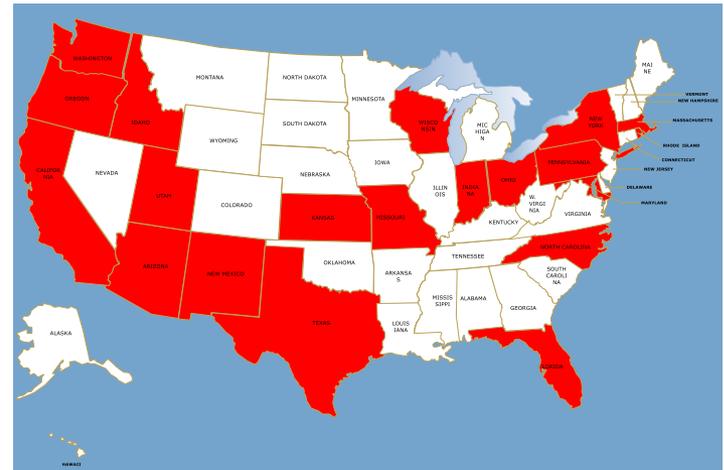


Operating University Reactor Facilities



The Research Reactor Infrastructure Program

- **Funded by the U.S. Department of Energy**
- **Managed by DOE-ID Field Office**
- **Contracted to the INL's Management and Operations Contractor – Battelle Energy Alliance**
- **Program has been at Idaho since 1977**
 - **INL subcontracts with 24 U.S. universities to supply fresh nuclear reactor fuel for operations**
 - **Twelve TRIGA facilities**
 - **Eight plate fuel facilities**
 - **Three AGN facilities**
 - **One Pulsar fuel facility**
 - **One Critical facility**



University TRIGA Reactor Facilities



- Kansas State University
- Oregon State University
- Penn State University
- Reed College
- Texas A&M
- University of California Davis
- University of California at Irvine
- University of Maryland
- University of Texas at Austin
- University of Utah
- University of Wisconsin
- Washington State University



University Plate Fuel Reactor Facilities



- Massachusetts Institute of Technology
- Missouri University of S&T - Rolla
- Ohio State University
- Purdue University
- Rhode Island Nuclear Science Center
- University of Florida
- University of Massachusetts – Lowell
- University of Missouri – Columbia



Other University Reactor Facilities

Idaho State
UNIVERSITY



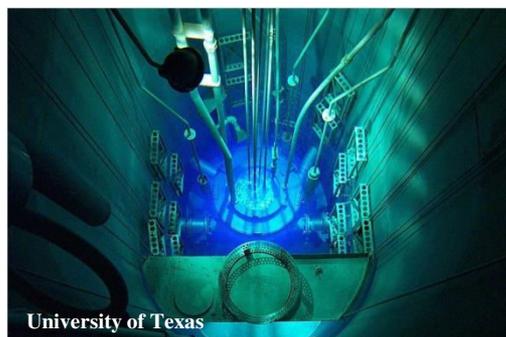
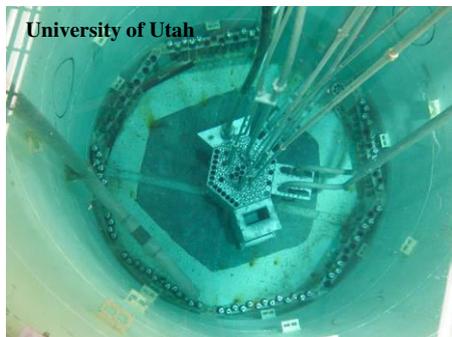
NC STATE UNIVERSITY



- **AGN Reactors**
 - Idaho State University
 - Texas A&M
 - University of New Mexico
- **Pulstar Reactor**
 - North Carolina State University
- **Critical Facility**
 - Rensselaer Polytechnic Institute

Reactor Power Levels

<u>Facility</u>	<u>Power</u>	<u>Facility</u>	<u>Power</u>
University of Missouri – Columbia	10 MW	Ohio State University	500 kW
Massachusetts Institute of Technology	6 MW	Kansas State University	250 kW
University of California – Davis	2 MW	Reed College	250kW
Rhode Island Nuclear Science Center	2 MW	University of California – Irvine	250 kW
Oregon State University	1 MW	University of Maryland	250 kW
University of Texas, Austin	1 MW	Missouri University of S&T	200kW
North Carolina State University	1 MW	University of Florida	100 kW
Pennsylvania State University	1 MW	University of Utah	100 kW
Texas A&M University	1 MW & 5W	Purdue University	1 kW
University of Massachusetts – Lowell	1 MW	Idaho State University	5 W
University of Wisconsin	1 MW	University of New Mexico	5 W
Washington State University	1 MW	Rensselaer Polytechnic Institute	1 W



Fresh Reactor Fuel

- **Fresh fuel needs:**
 - **MURR**
 - **MIT**
 - **Rhode Island**
 - **TRIGA Fuel**



Projected Fresh Fuel Needs

University	Next Five Years	Lifetime of Core
MURR	X	X
MIT	X	X
Rhode Island	X	X
Kansas State University	X	X
Penn State University	X	X
Texas A&M	X	X
University of California at Davis	X	X
University of Texas	X	X
University of Utah	X	X
Washington State University	X	X

Spent Nuclear Fuel

- **Spent Fuel Transfers to DOE Facilities**
 - **Routine Shipments – MURR, MIT**
 - **Other Shipments – Texas, Penn State, UC Davis**



2013 Accomplishments

- **Provided fuel to maintain university reactors with sufficient fuel to operate at current power levels – MURR, MIT**
- **Six shipments of spent nuclear fuel from MURR and MIT to Savannah River Site receipt facility**
- **Fabricated fuel element components for twelve Rhode Island Nuclear Science Center fuel elements**
- **Initiated the fabrication of ten zircaloy fuel boxes for NC State**
- **Initiated planning for shipments of spent nuclear fuel from Penn State and University of Texas**
- **Continued the distribution of the TRTR Newsletter**

2014 Forecast

- **DOE Annual Report**
 - **2012 Operations Input**
- **Provide fuel to maintain university reactors with sufficient fuel to operate at current power levels – MURR, MIT**
- **Complete fabrication of 10 zircaloy fuel boxes for NC State**
- **Ship spent nuclear fuel from MURR, MIT**
- **Potentially ship spent nuclear fuel from Penn State, University of Texas**
- **Fabricate dry transfer system for the BRR cask**
- **Evaluate options for TRIGA fuel**

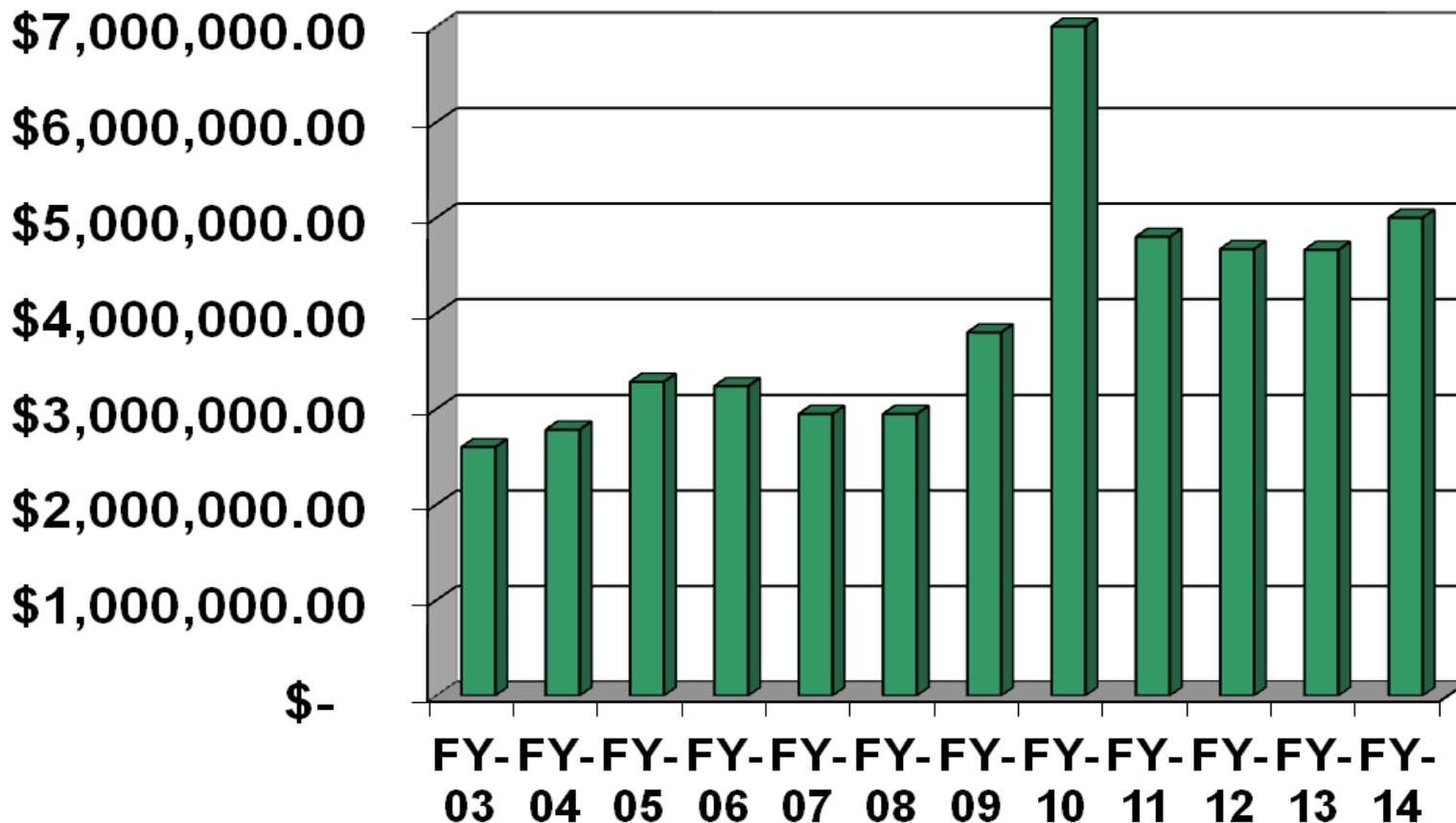
Requests for Assistance

- **Future requests for fresh fuel or spent fuel shipments need to be communicated to program office – Provide documentation to justify request (E-mail or official letter notification preferred)**
- **Other university concerns or assistance requests should be communicated to program for consideration as part of future budget planning activities.**

Future Challenges

- **Adequate Funding**
- **Fabrication and supply of TRIGA fuel elements**
 - **Fabrication of fuel by TRIGA International**
 - **Reallocation of fresh fuel inventory**
 - **Reuse of lightly irradiated fuel elements currently held in the DOE Receipt Facility at the Idaho National Laboratory**
- **Conversion of MURR and MIT from HEU to LEU fuel type**

Funding Profile





TRTR Team Members



Thank You!

Questions?



Idaho National Laboratory