Savannah River National Laboratory Update

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Governor’s Nuclear Advisory Council
Current SRNL R&D Portfolio Elements

National and Homeland Security
- Tritium Technology
- Plutonium Technology
- Homeland Security Support
- Non-Proliferation Technology
- National Law Enforcement
- Intelligence Support

Energy Security
- Hydrogen Storage Technology
- Production of Hydrogen
- Renewable Energy Research
- Nuclear Technologies
- ITER

Environmental Management
- EM Corporate Laboratory
- Materials Stabilization and Disposition
- Cleanup Technologies

All three areas are supported by Science & Technology Directorates (Materials Science, Biotechnology, Computer Science and Analytical Chemistry).
Overall Summary of Highlights Since 9/08

- Retained position as “Safest National Laboratory”
- Number of prestigious awards
- Laboratory Director’s seminar series started
- Laboratory Advisory Board initiated
- Several programmatic initiatives started
- Nuclear Forensics Analysis Center received ISO 17025 accreditation
- Tritium R&D consolidation at SRNL
- Strategic LDRD call – 34 responses
- National Hydrogen Association (NHA) Conference in Columbia
- Increased funding for ITER
- Number of significant publications/presentations
Environmental Program Initiatives

- Support expansion of EM technology funds
- Formalize EM Corporate Laboratory role and responsibilities
  - Technology development/deployment
  - Support to all EM sites/contractors
  - Support EM in assessments/evaluations
  - Maintain technology/process database for use by US contractors

Closing high-level radioactive waste storage tanks
Flowsheet Testing
EM-20
Scientific Studies
Basic
Saltstone Vaults
DWPF Glass Studies
National / Homeland Security Initiatives

- FBI support
  - REEF facility nearing completion
  - ISO17025 accreditation for Nuclear Forensics Center
- Tritium R&D consolidated at SRNL
- DHS testing programs enhanced
  - IPRL
- DoD program development initiated
  - Lockheed Martin support
  - Huntsville Office (with ORNL)
  - SERDP funding for DoD installation
- Intelligence programs expansion
  - SCIF
  - Materials Science
- Growth of Global Security program
Energy Security Initiatives

- Developing balanced energy program portfolio
- Early focus on renewables
  - Administration priorities
- Increased support to ITER
- Continued work on Hydrogen
  - Storage
  - Production
- Support to LLNL’s LIFE projects
  - Tritium system
- Nuclear initiatives
  - NRC support
  - SUNRISE
Savannah River National Laboratory
*Unique, capable and leading the way*

- **Hydrogen**
  - DOE Engineering Center of Excellence for Hydrogen Storage
  - Backup Power System Demonstration
  - Commercial Partners
  - Advanced Education Outreach
  - Hydrogen Production Infrastructure Pilot & Materials Test Facility

- **Nuclear**
  - MOX Fuel Fabrication Under Construction
  - Used Nuclear Fuel Storage
  - Used Fuel Recycling
  - Next Generation Nuclear Plant
  - Life Management
  - ITER Fusion Technology

- **Biofuel**
  - Next Generation Crops for Ethanol
  - Bioenergy User Research Facility
  - Biogasification Facility
  - Biohydrogen Production
  - Algae Facility
  - Biofuels Pilot Plant User Facility

- **Wind & Marine**
  - Offshore Wind Density Profiles
  - Wind Turbine Demonstration
  - Wind to Hydrogen Storage
  - Southeastern Wind Field Potential Demonstration Site
  - Commercial Partners

- **Carbon**
  - Landfill Gas to Commercial Facility
  - Carbon Capture and Sequestration Technologies
  - Forrest Carbon Buffer
  - Tree Canopy Uptake
  - Advanced Direct Carbon Injection Demonstration

- **Batteries**
  - Anode Oxide Nanorods
  - Porous Glass Microspheres
  - Metal Hydride Batteries
  - Portable Power Center
  - Commercial Partners

- **Smart Grid**
  - SRS Grid System Provides An Ideal Test Bed
  - Secure Wireless Sensors
  - Precision Electric Current Measurements
  - Storage Technologies

- **Other**
  - DOE Engineering Center of Excellence for Hydrogen Storage
  - Backup Power System Demonstration
  - Commercial Partners
  - Advanced Education Outreach
  - Hydrogen Production Infrastructure Pilot & Materials Test Facility
Potential SRS Energy Park Initiatives

- Savannah River Research Facilities
- SUNRISE Facilities
- Nuclear-Hydrogen Demonstration Plant
- Smart Grid Demonstration
- Fuel Fabrication Facility
- Fusion Reactor
- ITER Test Facility
- Biomass Steam Generation Facility
- Hydrogen Infrastructure Pilot
- Landfill Gas to Commercial Facility
- Biogasification of Municipal Waste at Three Rivers
- Hydrogen Generation Plant
- Used Nuclear Fuel Recycle Facility
- Cellulosic Ethanol Feedstock / Production
- Carbon Sequestration & Storage
- ITER Test Facility
- Cellulosic Ethanol Feedstock / Production
- Savannah River Research Campus
- Nuclear Power Plants
- Interim Dry Storage Site
- Fuel Fabrication Facility
- Used Nuclear Fuel Recycle Facility
- Cellulosic Ethanol Feedstock / Production
- Carbon Sequestration & Storage
- Savannah River Research Campus
- Nuclear Power Plants
- Interim Dry Storage Site
Other Programs

- **Scientific Computing**
  - Connect to Lambda Rail
  - Integrated performance modeling for EM

- **Biotechnology**
  - Joint activities on transformational science with Universities

- **Materials Science & Technology**
  - Reactor life extension

- **Nuclear Technology**
  - Focus on back-end of fuel cycle through EM
SRNL Infrastructure Actions

- **Master Plan**
  - Retain 773-A for radiological work
  - Remediate SED, install improved HVAC
  - Create new Research Campus in stages

- **Funding Strategies**
  - ARRA stretch funds for source term reduction
  - EM-1 sponsored task force to lay out line items
  - IGPP funds (added to labor rate)
  - Third party financed buildings
Significant Honors/Awards (2009)

- Linda Nichols – Secretary of Energy Honors Achievement Award
- Blythe Ashcraft – ACS Young Chemist Leadership Award
- John Steimke – AIChE Shining Star Award; AIChE Fellow
- Joette Sonnenberg – American Society for Engineering Management Meritorious Service Award 2008
- Patricia Lee – Health Physics Society Board of Directors
- DOE Women of Excellence Award, 2009
  - Dr. Amy Ekechukwu, Dr. Laura Tovo, Dr. Martine Duff, Dr. Carol Jantzen, Dr. Anna Knox, Dr. Christine Langton, Dr. Patricia Lee, Kerry Dunn, Carol Eddy-Dilek, Dr. Linda Nichols, Karen Vangelas
- Natraj Iyer – Lead on the IAEA Expert Panel Review on Research Reactors
- Bruce Wiersma – Member, Hanford Single Shell Tank Integrity Panel
- George Wicks – President of American Ceramic Society
- Sam Bhattacharyya – Distinguished Achievement Award, University of Wisconsin
- Clemson University Materials Science Department Award for role in Adjunct Professors and Interns
- Ragaiy Zidan Paper Citation – Journal of Nano Letters January 2009 – also made DOE Science Eureka Highlights
- Bond Calloway – 1st Herb Epstein Award from American Institute of Chemical Engineers presented by Shell Global Solutions
- George Wicks – Distinguished Life Member Alpha Sigma Mu Intl Honorary Society (Materials Science)
Summary

- **Continued progress in advancing SRNL**
  - Infrastructure Plan
  - Significant initiatives

- **Increasing recognition**
  - Awards
  - Publications
  - Proposals

- **Support of State and Federal political leadership will continue to be important**