Dr. Terry Michalske
Laboratory Director

South Carolina Nuclear Advisory Council
January 12, 2017
Critical National Security Accomplishments

Commendations

• President of the United States
• Secretary of Energy
• NNSA Administrator
Meeting Nuclear Waste Cleanup Obligation

“Without new chemical and manufacturing technologies, it is not clear that the cleanup can be satisfactorily completed at reasonable cost…”

Secretary of Energy Advisory Board Report
Taskforce on Technology Development for Environmental Management
December 2014

Nuclear Waste To-Go Cost and Schedule

$335B + 100 years

• Reduce capital and operating expenses
• Shorten the life cycle
• Enhance intrinsic worker safety
• Reduce environmental risk
• Meet regulatory requirements
Industrial Manufacturing Undergoing Transformation

Applied research, development and deployment of Technologies

- Reduce Risk
- Reduce Cost
- Improve Safety
Improving Waste Form Manufacturing

25 years of pushing the boundaries for

Process Improvements

Impacts
- Reduces processing time 30%
- Reduces sample analysis
- Reduces hydrogen generation
- Improves safety

Defense Waste Processing Facility

Tank Farm

Chemical Processing

Glass Melting

Process Modeling
Smart Manufacturing
Process Intensification
Decommissioning Contaminated Facilities Across the Complex

Visionary technologies for Dose Reduction

Impacts
- Combines radiological and optical imaging
- 3D printed
- Robotic placement
- 25% reduction in exposure hours

Virtual Reality
Robotics
Additive Manufacturing

We put science to work.™
Cyber Secure Supply Chain and Operations

World-wide nuclear material tracking for a Secure World

Rapid Deployable Global Sensing Hazard Alert System

Impacts
- Dual GPS / Iridium
- Highly resistant to jamming
- Virtually impossible to spoof
- Remote worker safety
- Penetrates buildings further

Cyber Security
SRNL Leading the National Manufacturing Institute

Rapid Advancement in Process Intensification Deployment

- 10th Manufacturing USA Institute - $140M
- $10M in South Carolina Matching Funds
- 75 Companies, 34 Universities, 7 National Labs

Impacts
- Transformational for SC and the nation
- Chemical process efficiencies
- Reduced facility capital costs

New technologies for Process & Energy Efficiency

Process Intensification
Smart Manufacturing
Process Modeling

We put science to work.
Advanced Manufacturing Collaborative is Key

Bridging the gap between Technology and Implementation

- MOU’s with 16 companies
- 5 University partners
- Aiken Scholars Academy high school at USCA
- Home for RAPID Manufacturing Institute
Our workers and U.S. taxpayers deserve the best approaches.

- Better
- Faster
- Smarter
- Safer