Weapons to Plow Shares
“MOX Project”

T.A. Coleman
October 17, 2007
Recycle a soda can and your children will thank you.

Recycle Cold War nuclear material and your children’s children will thank you.
Outline

► Project Description
► Phases of the Project
► Lead Test Assemblies (LTAs)
► MOX Fuel Fabrication Facility (MFFF)
► Questions
At the end of the Cold War, U.S. and Russia began to cooperate to prevent the proliferation of weapons of mass destruction.

In 2000, both countries agreed to dispose of 34 metric tons of surplus weapons-grade plutonium each – enough for thousands of nuclear weapons.

Two facilities to be built at Savannah River Site for U.S. plutonium disposition:

- PIT Disassembly and Conversion Facility
- MOX Fuel Fabrication Facility
Project Won by Duke COGEMA Stone & Webster (DCS)

- **Goal** – Conversion of 34 Metric tons of Pu to MOX fuel for use in commercial nuclear power plants
- **Client** – U.S. Department of Energy (DOE) / National Nuclear Security Administration (NNSA)
- **Contract Award** – March 1999
- **Prime Contractor** – DUKE COGEMA STONE & WEBSTER, LLC
Shaw AREVA MOX Services, LLC

The MFFF Contractor Team

Shaw AREVA MOX SERVICES, LLC

Shaw Stone & Webster, Inc.

AREVA NC

AREVA NP

NNS

Duke Energy
Phases of the Project

► Contract Scope
  - Design, license, construct, startup, operate and deactivate a Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF)
  - Design, qualify and fabricate commercial MOX fuel
  - Burn MOX fuel in commercial nuclear plants

► MOX Project Contract Phases
  - Base Contract – Design & Licensing 1999-2010
  - Option 1 – Construction and Cold Start-up 2007-2017
  - Option 2 – Hot Start-up and Operation 2018-2043
  - Option 3 – Deactivation >2043
MOX LTA Fabrication

- LANL PuO$_2$
- Lynchburg LTA components
- Cardarache Pellet rods
- MELOX LTA Fab
- Catawba Unit 1 LTA irradiation
Lead Test Assemblies (LTAs) Made and Delivered
MOX Licensing

- MFFF
- Reactor Modifications
- LTAs
- ASLB Hearings / Contentions

10CFR70
10CFR50
10CFR50
Mark-BW / MOX1 Lead Assemblies

- Pellets & Rods fabricated at COGEMA Codarache
- LTAs fabricated at MELOX with strong Fuel America support
- June 5, 2005
  Started operation at Catawba, Unit 1
- EOC1 November 11, 2006
  Operated as expected 499 EFPD
  LTA burnup 22.5 GWd/t
- October 17, 2007
  Middle of cycle 2
  LTA burnup 36 GWd/t
Safety Celebration – August 1, 2007
Site Layout

MFFF – Mixed Oxide (MOX) Fuel Fabrication Facility

CAC – Construction Administrative Complex

TAC – Training Administration Complex

MAC – MOX Administration Complex
Savannah River Site Plutonium Disposition Facilities

June 2005

April 2007
Tower Crane
Questions
YOU MAY NEVER MEET YOUR GREAT, GREAT GRANDCHILDREN,

BUT THEY’LL HAVE GOOD REASON TO THANK YOU.