



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.

- ▶ **Project Description**
- ▶ **Phases of the Project**
- ▶ **Lead Test Assemblies (LTAs)**
- ▶ **MOX Fuel Fabrication Facility (MFFF)**
- ▶ **Questions**

Agreement of U.S. / Russia to Dispose ~30mtHm Pu

- ▶ **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



Phases of the Project

▶ **Contract Scope**

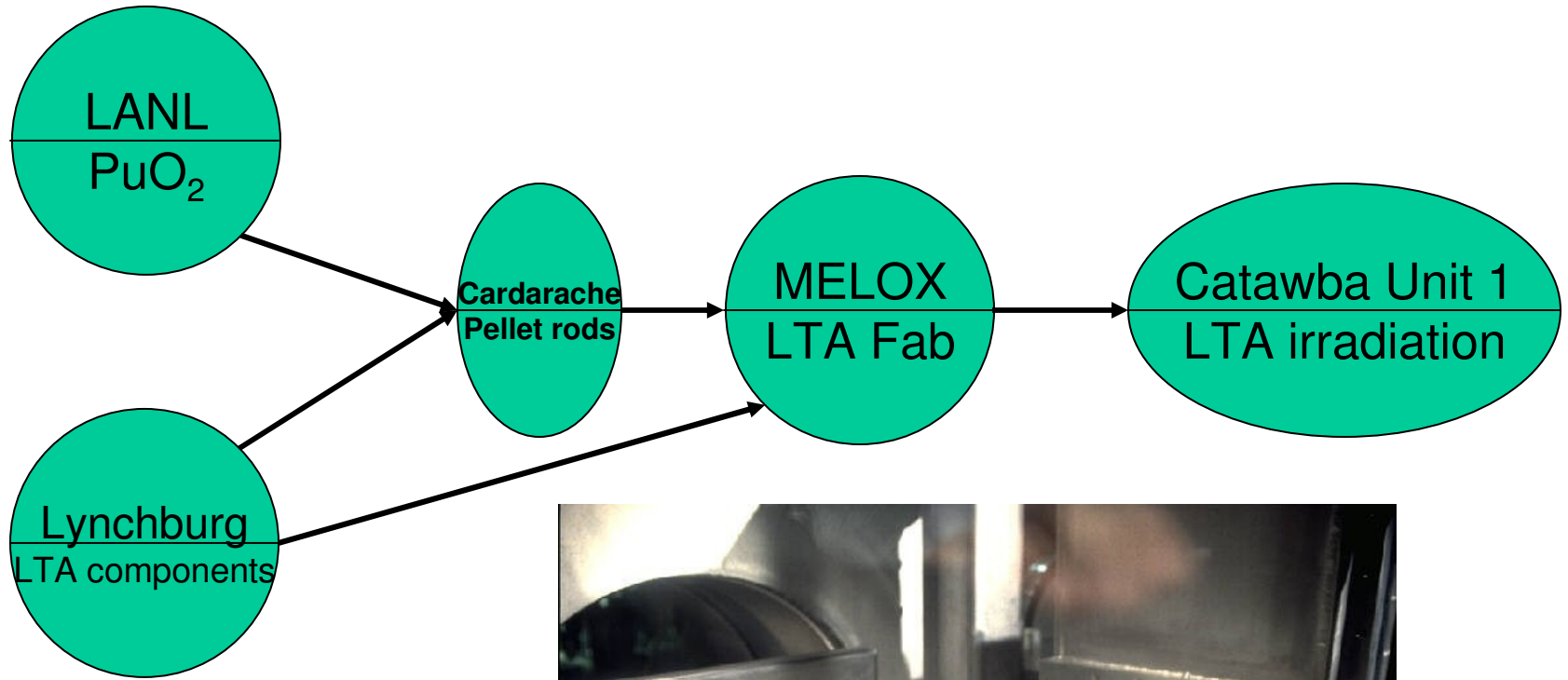
- ◆ **Design, license, construct, startup, operate and deactivate a Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF)**
- ◆ **Design, qualify and fabricate commercial MOX fuel**
- ◆ **Burn MOX fuel in commercial nuclear plants**

▶ **MOX Project Contract Phases**

Timeline

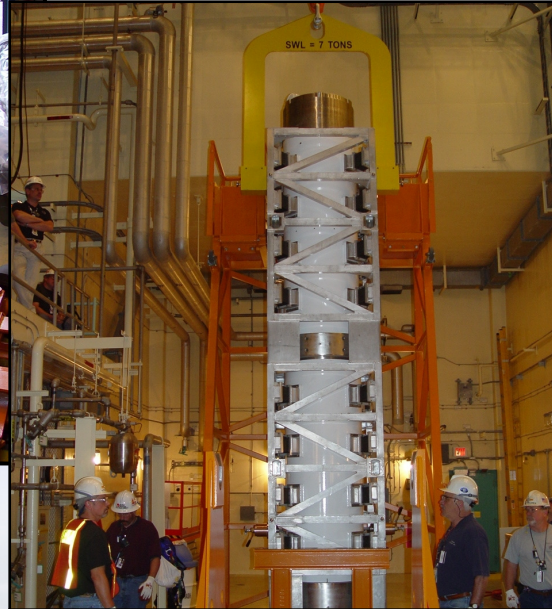
- | | |
|--|------------------|
| ◆ Base Contract – Design & Licensing | 1999-2010 |
| ◆ Option 1 – Construction and Cold Start-up | 2007-2017 |
| ◆ Option 2 – Hot Start-up and Operation | 2018-2043 |
| ◆ Option 3 – Deactivation | >2043 |

MOX LTA Fabrication





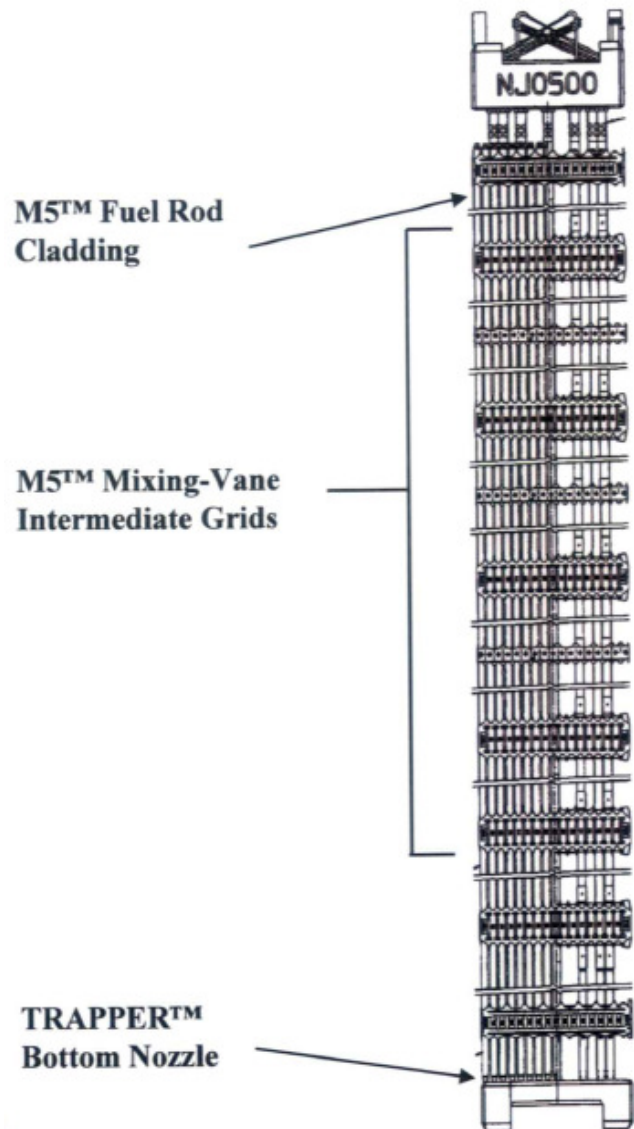
Lead Test Assemblies (LTAs) Made and Delivered



MOX Licensing

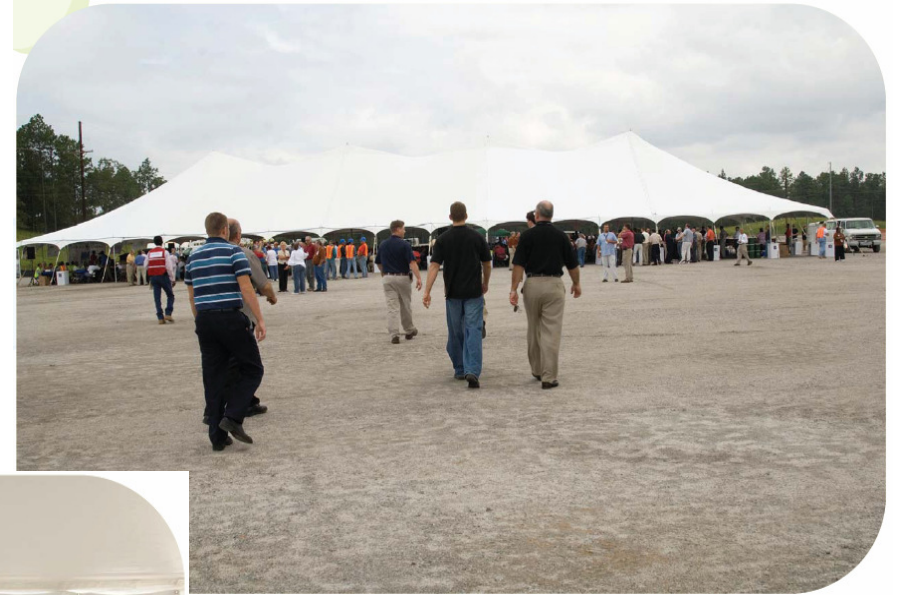
- ▶ **MFFF** **10CFR70**
- ▶ **Reactor Modifications** **10CFR50**
- ▶ **LTAs** **10CFR50**
- ▶ **ASLB Hearings / Contentions**

Mark-BW / MOX1 Lead Assemblies

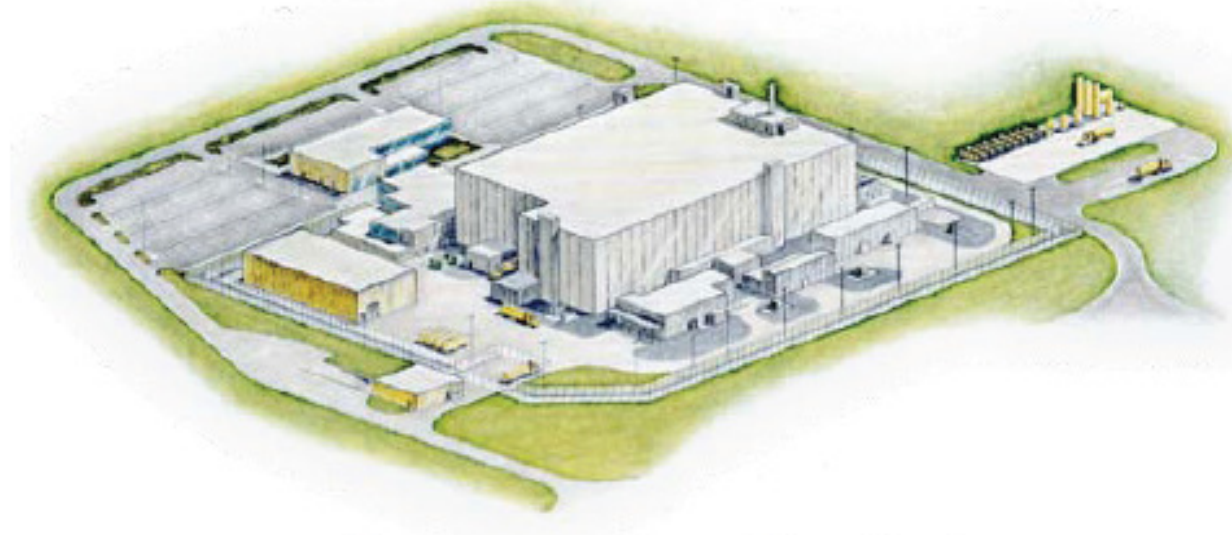


- ▶ Pellets & Rods fabricated at COGEMA Codarache
- ▶ LTAs fabricated at MELOX with strong Fuel America support
- ▶ June 5, 2005
Started operation at Catawba, Unit 1
- ▶ EOC1 November 11, 2006
Operated as expected
499 EFPD
LTA burnup 22.5 GWd/t
- ▶ October 17, 2007
Middle of cycle 2
LTA burnup 36 GWd/t

Safety Celebration – August 1, 2007



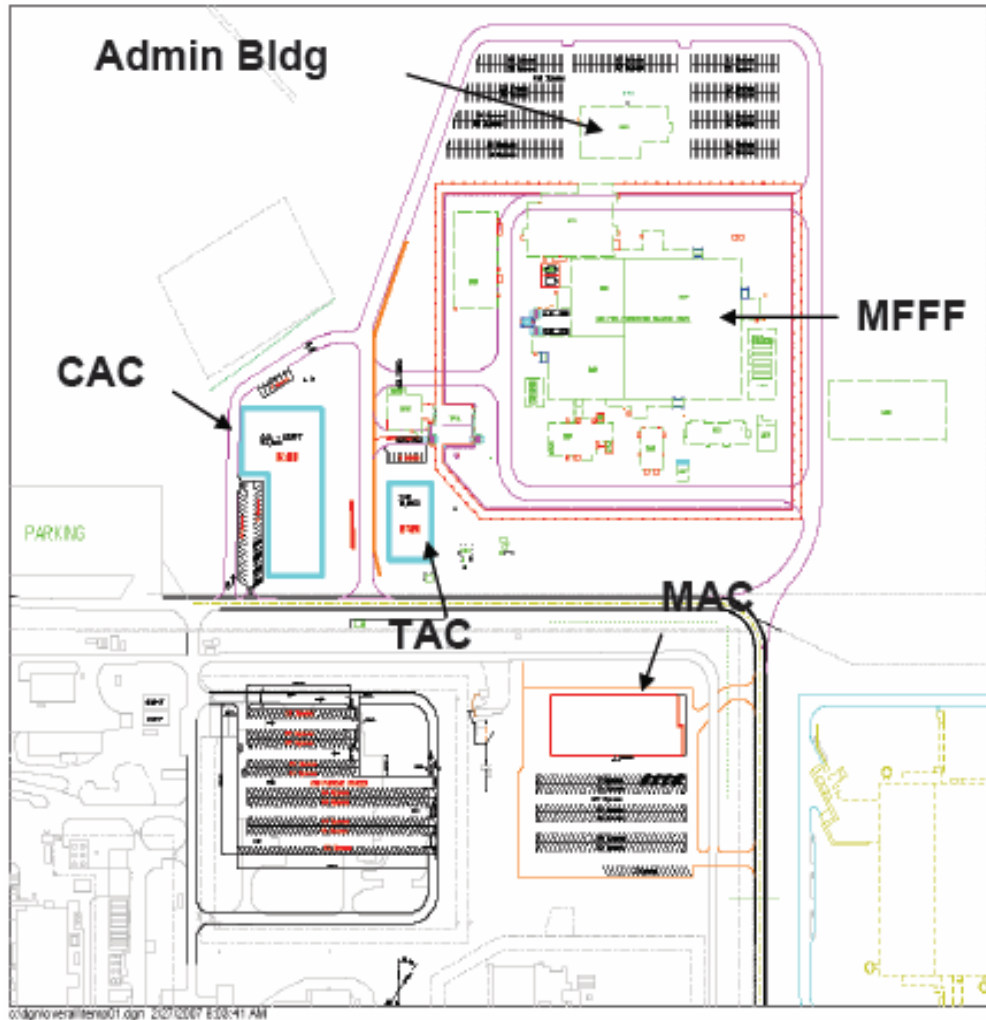
Construction Statistics



Construction Statistics

Buildings:	600,000 square feet		
Concrete:	170,000 cubic yards	Conduit:	500,000 linear feet
Reinforcing steel:	35,000 tons	Cable tray:	47,000 linear feet
Excavation:	980,000 cubic yards	Power/control cable:	3,000,000 linear feet
Engineered fill:	54,000 tons	Process piping:	>80 miles

Site Layout



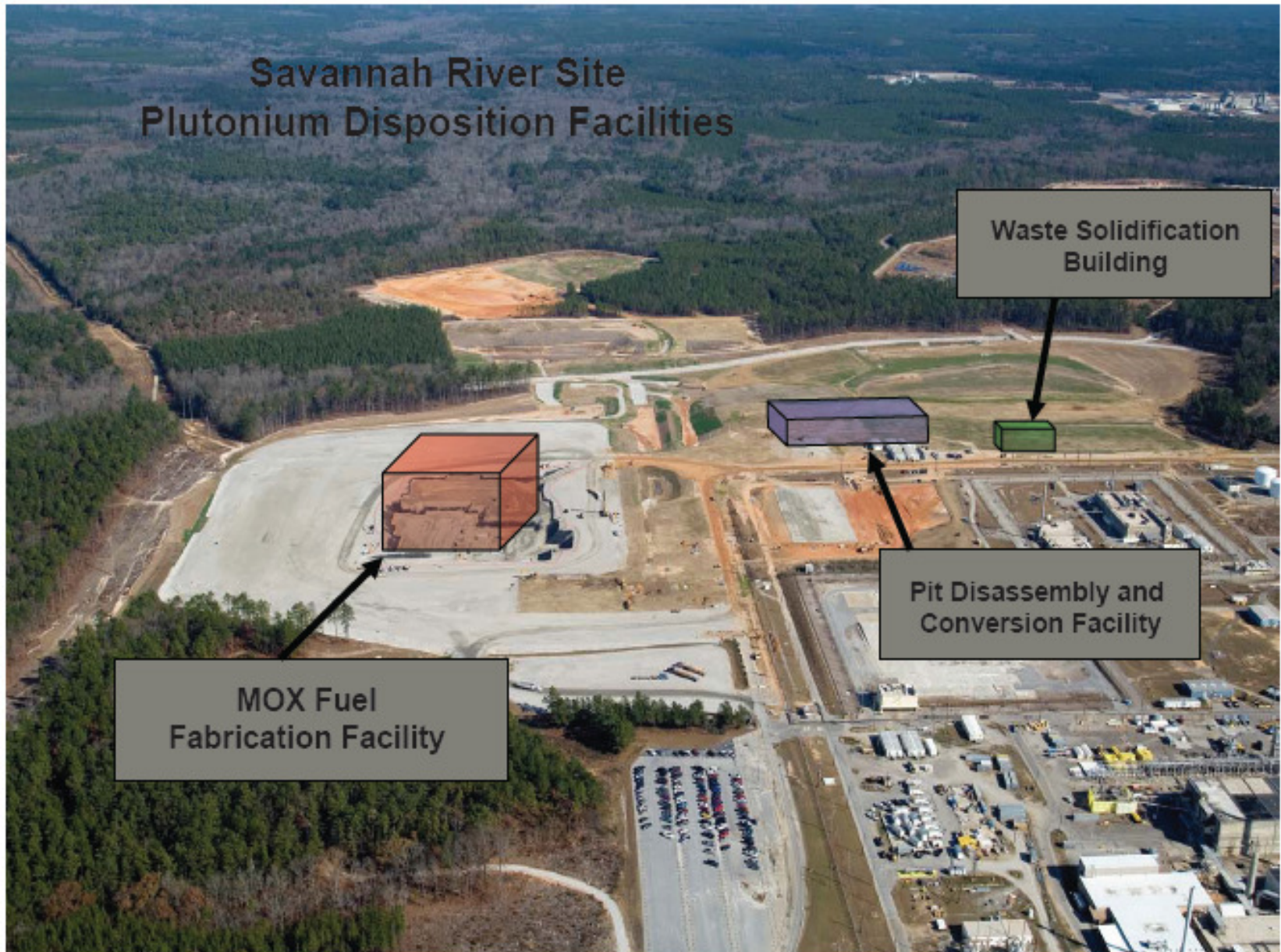
MFFF – Mixed Oxide (MOX)
Fuel Fabrication Facility

CAC – Construction
Administrative Complex

TAC – Training
Administration Complex

MAC – MOX Administration
Complex

Savannah River Site Plutonium Disposition Facilities



Savannah River Site Plutonium Disposition Facilities



Tower Crane































Questions



**YOU MAY NEVER MEET YOUR GREAT,
GREAT GRANDCHILDREN,**

**BUT THEY'LL HAVE GOOD REASON
TO THANK YOU.**