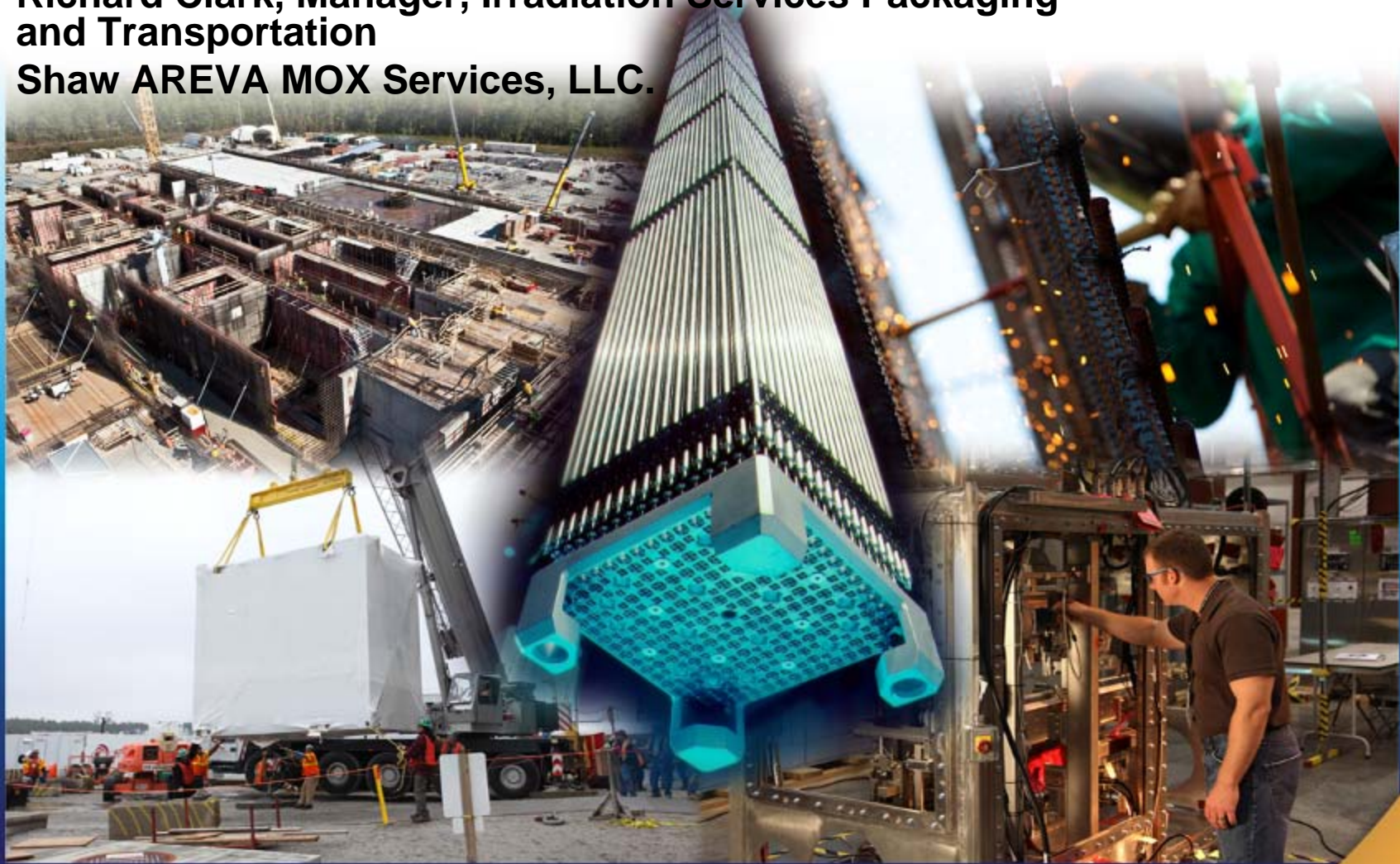


MOX Overview

**Richard Clark, Manager, Irradiation Services Packaging
and Transportation
Shaw AREVA MOX Services, LLC.**



Protecting Future Generations. Powering the Future.

What is the MOX Mission?

- **Convert at least 34 metric tons of U.S. weapon-grade plutonium to mixed oxide (MOX) fuel for use in commercial power reactors**
- **Implements international agreement with Russia where they will also dispose of 34 metric tons of surplus weapons-grade plutonium**

Why License the Shipping Package Now?

- The MOX Fuel Fabrication Facility (MFFF) has credited licensed shipping packages in its safety analysis (eg. drop and fire accidents)
- The shipping packages are deemed to be a Primary Systems Structures and Component (PSSC) and Items Relied on for Safety (IROFS)
- Having Certificates of Compliance for the packages is required by NRC before the MFFF can be licensed

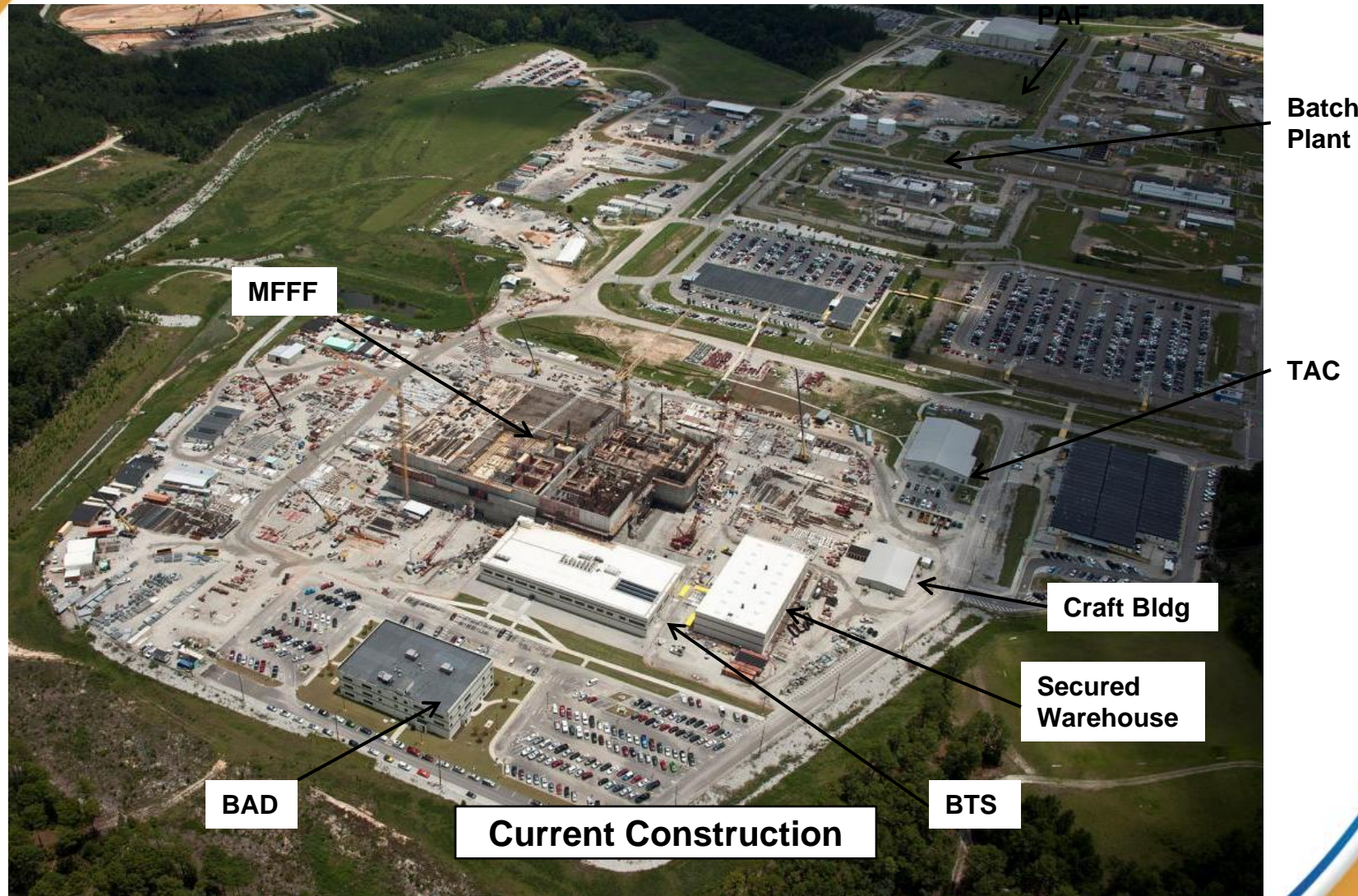
The MFFF



August 2007



July 2012



Key MFFF Milestones

- **Start MFFF Construction** **8/2007**
- **Complete Roof** **6/2013**
- **End of Cold Startup** **10/2016**
- **Begin Hot Startup (Pu in plant)** **10/2016**
- **Complete 8 MOX Fuel Assemblies** **FY2019**

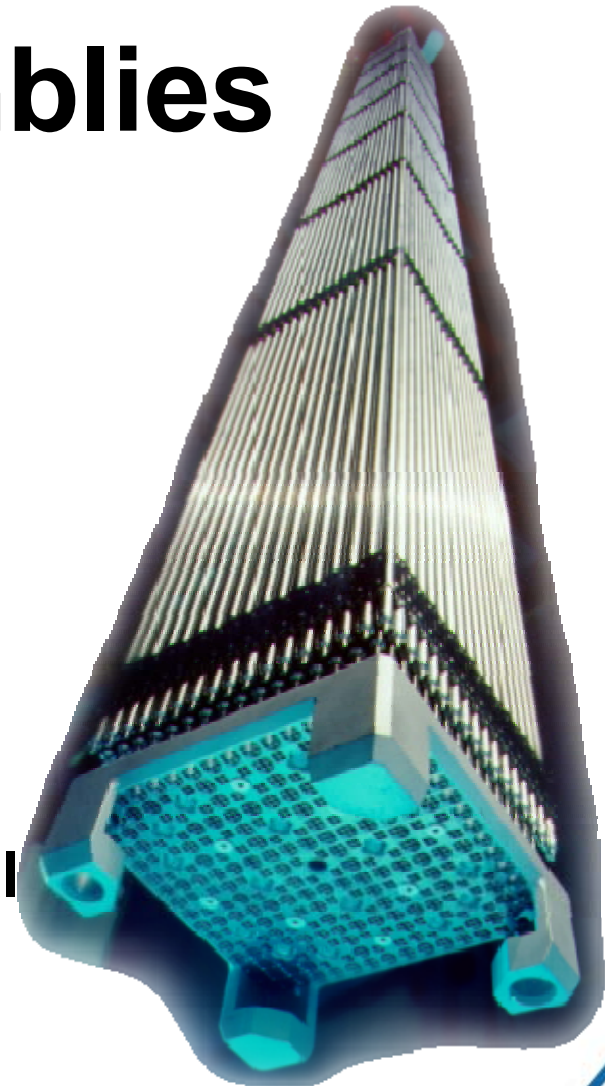
Note: Future dates are subject to change

MFFF Operations

- **Utilize 3.5 metric tons of plutonium per year**
- **Produce 70 metric tons of heavy metal in the form of fuel assemblies per year**
 - 150 PWR 17 x 17 assemblies/year
 - 70,000 pellets/day (87,120 pellets in one PWR assembly)
- **Flexibility to fabricate PWR and BWR fuel**

MOX Fuel Assemblies

- MOX fuel assemblies look identical to uranium fuel assemblies used in commercial nuclear power reactors in the United States.
- Either BWR or PWR fuel assemblies
- Average plutonium loading 4 – 5 weight percent of the heavy metal
- Can contain enriched UO_2 and $\text{Gd}_2\text{O}_3\text{-UO}_2$ rods



MOX Fresh Fuel Package

- **The MOX Fresh Fuel Package was licensed in 2005 and relicensed in 2010.**
- **~15,000 lbs**
- **Fuel assemblies loaded into strongback**
- **Strongback horizontally loaded into MFFP**
- **Licensed for up to 3 Advanced MKBW/MOX1 PWR assemblies**
- **Too short for BWR fuel assemblies**
- **Relied on the package body for containment**

Transport

- **Shipping to the utility will occur via commercial transports with security provided by the Office of Secure Transport**
- **Significantly increases the allowed payload per trailer**

Why new packages?

- Needed a package for BWR fuel
- PWR fuel design has changed
- Reduce the weight of the package
- Reduce the number of shipments for a batch of fuel
- Vertically loading
- Similar to what utilities currently use
- Minimize/simplify equipment needed to load and unload the fuel

Questions?