MOX
FUEL FABRICATION FACILITY

MOX Overview

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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

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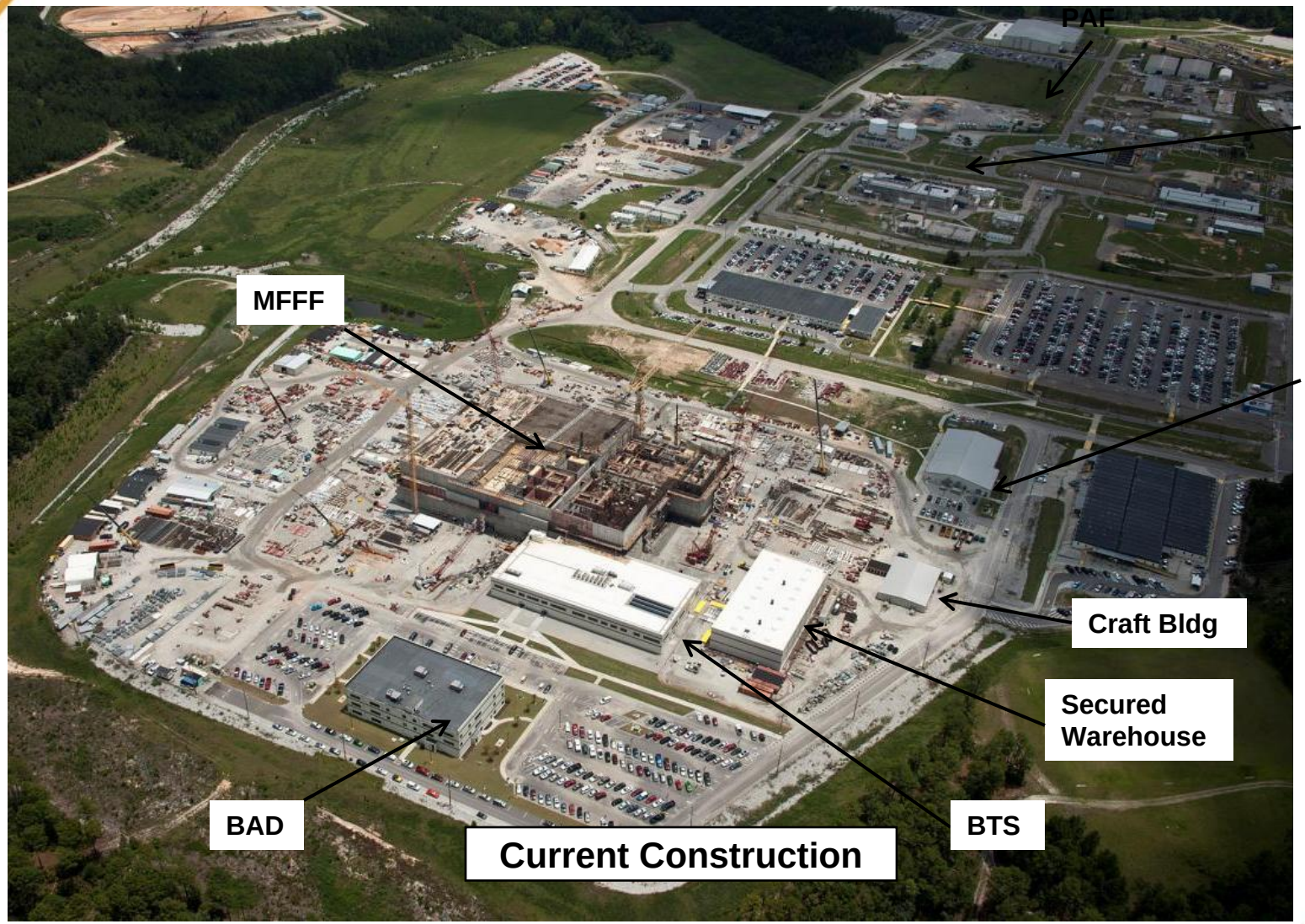
The MFFF

NNSA
National Nuclear Security Administration

August 2007

July 2012


PAF
Batch Plant
MFFF
TAC
Craft Bldg
Secured Warehouse
BAD
BTS
Current Construction

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**

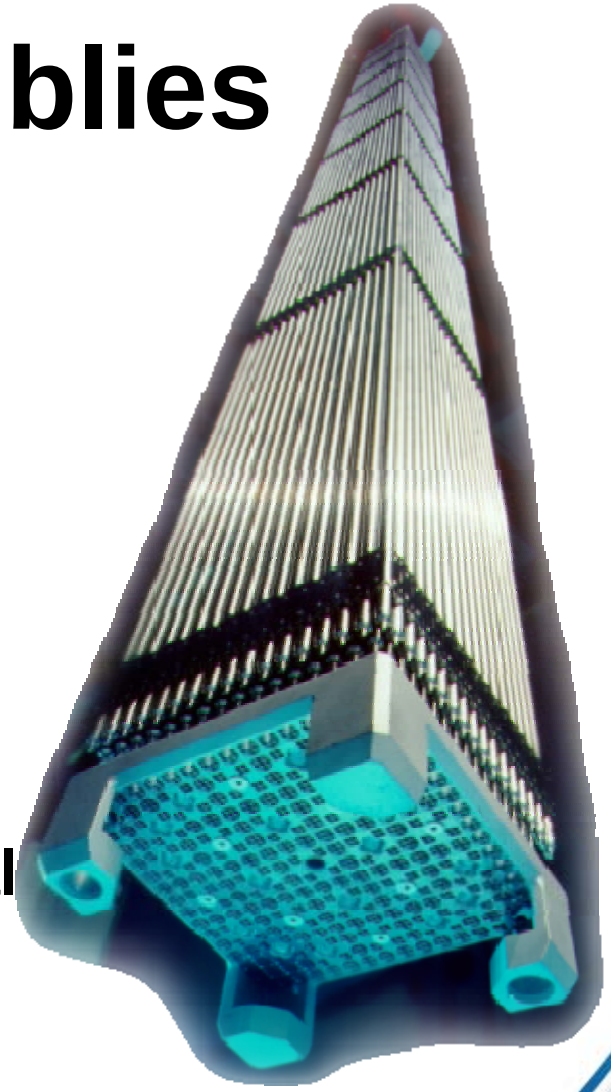
Note: Future dates are subject to change

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 Gd_2O_3-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?