



technical services group

***B&W Medical Isotope
Production System (MIPS)***

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The Babcock & Wilcox Company

Government Operations

B&W Technical Services Group, Inc.



Manages and operates high-consequence facilities, provides technical services and support to government agencies and private customers

B&W Nuclear Operations Group, Inc.



Manufactures nuclear components for U.S. Department of Energy

B&W Power Generation Group, Inc.



Manufactures and services coal, biomass, CNG, concentrated solar power plant equipment, & Nox, Sox, mercury scrubbers

Power Generation Systems

B&W Nuclear Energy, Inc.



Manufactures commercial nuclear components and provides services to commercial nuclear market

B&W mPower



Design, license & qualify B&W mPower™ SMR

High-Consequence Operations & Services
Advanced Engineering and Manufacturing

Covidien Reaches Globally and Locally

20,000+ U.S. employees,
41,000+ worldwide

Diverse healthcare products
used in all clinical settings

Products manufactured in
17 states

Nuclear Medicine:

One of two U.S. suppliers of
technetium 99m (Tc 99m)

Covidien Tc 99m-based
products sold in all 50 states



Image courtesy of Covidien



^{99}Mo Production Using Aqueous Homogeneous Reactor (AHR)

- Market studies in Late 1990s
- 2007 MIPS project re-initiated
- 2009 Agreement with Covidien
- 2009 Cooperative Agreement with NNSA
 - Non-proliferation (LEU)
 - Domestic supply

B&W MIPS Technology

MIPS Facility

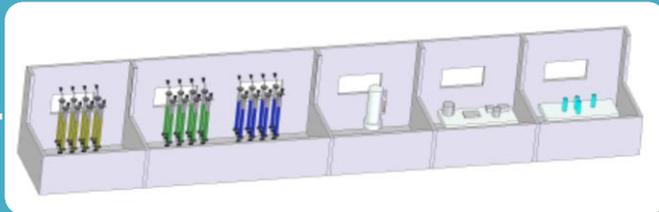
AHR Reactor
240 kilowatts- 5 days



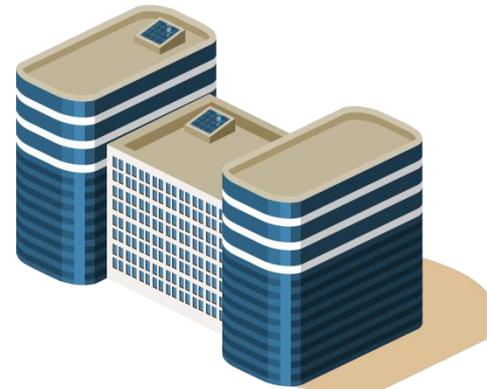
Initial Fuel
Solution Preparation



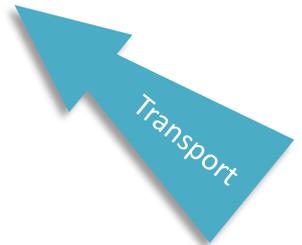
Reactor fuel/target
solution returned
for subsequent
irradiation



⁹⁹Mo Processing Cells



^{99m}Tc User
Medical Facilities



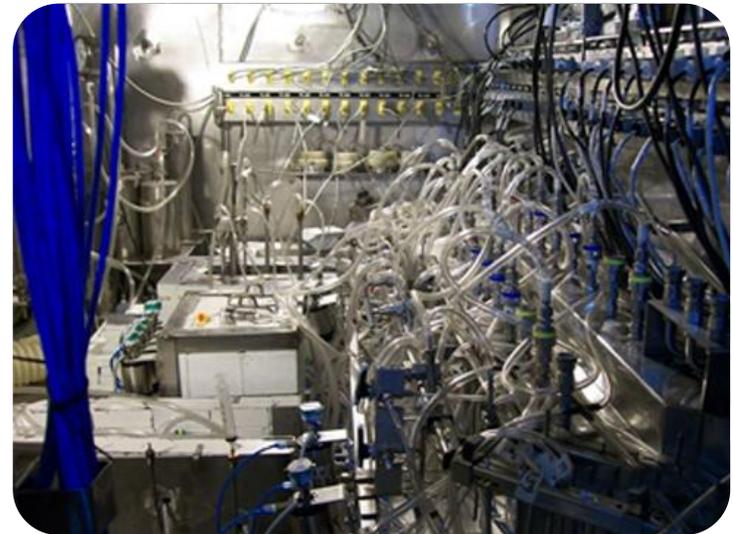
^{99m}Tc Generator Facility



Completed R&D and Conceptual Design Phase of Project

- National Laboratories
 - Argonne
 - Los Alamos
- Armed Forces Radiobiology Research Institute, MD
- Purdue University
- B&W Labs, VA
- INVAP, Argentina

*Extraction and purification
experimental hot cell, INVAP, S.E.*



MIPS Path Forward

- **Licensing Approach (SECY-09-0101 Policy)**
 - Single license under 10CFR50
 - MIPS is both utilization (reactors) and production (processing) facility
 - Reactors are considered non-power reactors
 - Construction permit and operating license required
 - Waste other than Used Liquid Fuel is Low Level Radioactive Waste
- Preliminary design, environmental report and construction application
- Final design and operating application
- Construction, commissioning and FDA approval

B&W MIPS Summary

Production of ^{99}Mo using LEU AHR :

- Increased efficiency
- Reduced waste
- No proliferation concerns
- Safe operation
- Stable domestic supply of ^{99}Mo

