

Boiling Water Reactor Services

Background

Westinghouse, the world's pioneering nuclear power company, supplied the world's first commercial pressurized water reactor (PWR) in 1957 at Shippingport, Pennsylvania (USA). Today, the company is a fully integrated, worldwide supplier of both PWR and boiling water reactor (BWR) services.

Since 1980, Westinghouse has supplied products and services to BWR nuclear plants worldwide, and helped them meet the ever-present challenge of improving safety, availability and capacity.

Description

BWR OUTAGE SERVICES

Some of the many services Westinghouse offers are:

- Outage management services
- BWR-related services
- Weld repair
- Valve refurbishment or replacement
- Training
- Refueling
- Under-vessel (UV) maintenance
- In-vessel visual inspection (IVVI)
- In-vessel ultrasonic inspections

BWR-RELATED SERVICES

In-vessel and Specialty Tooling

Using Westinghouse advanced tools to help reduce personnel exposure is a critical element of a successful outage. The following tools can reduce the time required for refueling tasks and for the outage.

- Multi-lift tool
- Remote manipulators
- Tape-less handling poles
- Training



U.S. BWR Service Center in Chattanooga, Tennessee (USA)



Full-depth interchangeable BWR mockup

Refueling

Westinghouse supplies a complete range of refueling services for BWR plants. The refueling services include:

- New fuel receipt
- Integrated outage management team
- Refuel floor management
- Reactor pressure vessel (RPV) disassembly/re-assembly
- Fuel movement
- In-vessel maintenance activities

Under-vessel

Westinghouse UV services include:

- UV area preparation
- Control rod drive (CRD) exchange tooling
- CRD rebuild services (2011)
- Source range monitor, intermediate range monitor, local power range monitor, traversing incore probe (TIP) system maintenance
- UV instrumentation & control support
- Hydraulic control unit (HCU) services
- Mobile UV training services



Fully adjustable BWR UV carousel

In-vessel Visual Inspection (Vessel Internals Project)

A complete line of in-vessel inspection services is offered to meet code-required plant inspection program and BWR vessel internals project (BWRVIP) required needs. Services include:

- Standard IVVI (two platform services)
- Steam dryer and separator inspections
- Westinghouse Intelligent Streaming Examination (WISE) system (remote review), which is fully integrated with IDDEAL® Software Suite
- Double-up inspection tool (DUI™)
- Radiation-tolerant cameras (black and white and color)
- Complete recording and evaluation using digitized video systems

In-vessel Ultrasonic Inspections

- Automated core shroud ultrasonic testing (UT) inspection
- Core spray piping automated UT (2011)
- Jet pump inside diameter (ID) UT inspection
- Jet pump beam UT inspection (all required zones)
- RPV ID weld seam UT inspection

Training

Westinghouse has been providing training services to BWR customers since 1980. These training programs combine formal classroom instruction with hands-on lab exercises to maximize learning and skills development. The programs include:

- Refueling (technical direction, reactor service tech)
- BWR CRD rebuild and exchange
- BWR systems fundamentals
- BWR component maintenance
- BWR HCU maintenance
- TIP system maintenance

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