

# Reactor Services Training

## Background

Westinghouse has provided refueling training services for pressurized water reactor plants at its Waltz Mill site in Madison, Pennsylvania (USA), for more than 20 years. This training, conducted in the site's D-bay, is intended for refueling senior reactor operators, fuel/insert movement technicians, site refueling coordinators and fuel equipment engineers. All of the training programs combine formal classroom instruction with hands-on lab exercises to maximize student learning and skills development. The refueling training facility at the Waltz Mill site includes a complete and fully operational array of actual refueling equipment identical to that found in a typical reactor containment structure.

## Description

Westinghouse refueling training consists of classroom presentations on actual Westinghouse plant refueling equipment followed by hands-on operation of that equipment under dry, non-contaminated conditions.

The equipment used for the hands-on training and evaluation includes the following:

- Stearns-Rogers™ refueling machine with Westinghouse upgrade
- Fuel transfer system with Westinghouse upgrade
- Control rod drive shaft latch/unlatch tool
- Portable rod cluster control handling tool
- Thimble plug handling tool
- Burnable poison rod assembly handling tool
- Twenty-five-percent core mockup
  - Full weight fuel assembly mockups
  - Lower core plate with pins and flow holes
  - Baffle plates
- Fuel assembly inserts, including wet annular burnable absorber, rod cluster control assembly and thimble plugs



Personnel working on the fuel transfer tube

The level of training can be tailored to the customer's needs or requirements. Westinghouse personnel can conduct in-depth training and performance evaluations to ensure student proficiency. Conversely, Westinghouse personnel can provide familiarization training and allow the customer to conduct performance evaluations under their own cognizance.



Fuel transfer system



Operator participating in manipulator crane training

## Benefits

Well-trained employees can make the difference between success and failure. The Westinghouse Waltz Mill D-bay facility allows training to go beyond the classroom. Students can apply the theoretical knowledge gained in the classroom to operate a fully functional fuel-handling system. Student proficiency can be evaluated to verify that each has gained the requisite skills and knowledge. Additionally, the evaluation can be extended to include safety precautions, radiological precautions and human performance tools.

## Experience

Westinghouse offers the following refueling and outage services (ROS) training:

- ROS 101 Refueling Equipment Course
  - Manipulator crane
  - Fuel transfer system
  - Portable rod cluster control handling tool
  - Burnable poison rod assembly handling tool
  - New and spent fuel handling tool
  - Control rod drive unlatching tool
  - Thimble plug handling tool
  - Irradiated specimen handling tool
- ROS 201 Advanced Refueling Course
  - Control rod drive shaft unlatching tool
  - Portable rod cluster control handling tool
  - Burnable poison rod assembly handling tool
  - Spent fuel handling tool
- ROS 202 Advanced Refueling Equipment Maintenance and Operations
  - Control rod drive shaft unlatching tool
  - Portable rod cluster control handling tool
  - Burnable poison rod assembly handling tool
  - Spent fuel handling tool
  - F-5 Westinghouse handling of new and spent fuel assemblies
  - Manipulator crane (Stearns-Rogers)
  - Fuel transfer system (Westinghouse)
  - Irradiated specimen tool

*Stearns-Foster is a trademark or registered trademark of its respective owner. Other names may be trademarks of their respective owners.*