Background
With the Westinghouse steam-line plug system, you can now plug reactor vessel steam-line nozzles quickly, easily and safely from the refueling bridge. This system allows you to insert two plugs simultaneously, providing quick access to drained steam lines for maintenance while the reactor vessel cavity is flooded for refueling.

The Westinghouse steam-line plug system consists of: main steam-line plugs, an insertion/withdrawal tool and a cart for plug testing and storage.

Description
The Westinghouse steam line plug system is carefully designed as an integrated equipment package for plugging steam lines quickly and efficiently. When dry steam line access is required during outages, it saves time and money, and reduces radiation exposure.

The system consists of three components: the insertion/withdrawal tool, the main steam line plugs and a cart for plug storage and testing.

The insertion/withdrawal tool – The tool permits the balanced, horizontal insertion of two plugs at the same time, thereby saving time. This tool also gives the customer added outage flexibility, because the plugs can be installed or removed individually or in pairs at any time during an outage.

The main steam line plugs – The plugs are designed with a large steam line clearance. The plugs have approximately a 0.50-inch radial clearance with the steam line, facilitating easy installation and making the plugs interchangeable among four lines.
The modular construction of the plugs allows the use of passive and inflatable seals (one passive and two inflatable seals), permitting zero-leakage construction. The connections through the plug to the refuel deck provide a reduced time and greater accuracy in main steam isolation valve local leak-rate testing.

The plug-storage and testing cart – The cart allows access to all parts of the steam line plugs for testing, decontamination or maintenance. An optional test fixture permits complete functional testing of the plug, including lockring and inflatable seals while the plug remains on the cart.

Benefits
All materials in the steam line plug system are made of either anodized aluminum or electropolished stainless steel, except for the replaceable rubber seals. This allows for easy decontamination. The use of anodized aluminum also permits lightweight construction. Flotation chambers can be added to reach the desired buoyancy.

An optional hydraulically expanded ring locks the main steam line plug against steam line back-pressure up to 70 psi. An integral accumulator maintains hydraulic pressure and compensates for minor hydraulic fluid fluctuations.

Other benefits of the Westinghouse steam line plug system include:
Remote steam line venting – Each plug contains a vent valve operated from the bridge by remote tooling. When opened, these valves allow the steam lines to refill. A vent line (the local leak-rate testing line) extending to the control panel decreases the refill time.

Compatibility with Westinghouse rigid pole system – The Westinghouse rigid pole system is ideally suited to handle the positioning and operation of the steam line plug system.

Experience
The Westinghouse steam line plug system has been used at the following plants:
- Pilgrim
- Brunswick 1 & 2
- Oyster Creek