

# BWXT SG Services – Water Lance & SSI

## Secondary Side Services

BWXT Nuclear Energy, Inc. (BWXT) serves the commercial U.S. steam generator (SG) market by providing state-of-the-art water lancing & SSI capabilities. BWXT has a best-in-class teaming approach, delivering predictable outage performance and exceptional quality and value. Our customized engineering solutions are designed and built with a fresh approach to meet some of the most challenging environments in the industry.

## Water Lancing

BWXT has been successful in the environment of tri-pitch closely packaged tubes, and the presence of up to 30" hard sludge piles. Our Systems include high-pressure (10,000 psi) inter tube systems designed in-house which are currently utilized in lanes as narrow as 0.120", along with lower-pressure systems (3,000 psi) designed for typical no-tube lane (NTL) lancing.



The low pressure (3,000 psi) systems have been delivered via two methods; a tubesheet height cart solution or a hand hole rail delivery system. The cart drives along the NTL, locks against the tubes to blast the water directly onto the sludge pile, pushing water and sludge towards the annulus.



The advantage of this system is that the angle of attack on the sludge is very low allowing the resultant force vector to be maximized, and there is a multi-angle direction flushing head which allows the cart to flush in the three-pitch angles (30°, 90°, and 150°). The other systems deployed by

BWXT sit at the handhole elevation. For this method the angle of attack is much higher than the cart resulting in a lower resultant force, however it allows the water to get above any obstructions that sit on the top of the tubesheet (TTS). Both methodologies have been successfully deployed in the US nuclear stations with proven results.

## Key Features & Benefits

- Engineered customized solution
- Predefined lancing strategy
- Quick on vessel equipment setup and removal
- High pressure intertube lancing to remove hard sludge build-up followed by low pressure flush to systematically remove deposits
- Focused nozzles for removing the sludge deposits
- Self-alignment system with visual validation and remote adjustability

## Secondary Side Inspection (SSI)

All sludge lancing campaigns have been accompanied by visual inspection and FOSAR capabilities. This has included more than 70 deployments since 1987.

BWXT has a robust approach to our secondary side inspections. During the preparation phase the team reviews the SSI work scope along with prospective tooling and drawings of the steam generator features. BWXT's approach is to create mock-ups of the features that may be problematic to inspect in the field.

BWXT's state of the art mobile SSI coach allows us to mobilize and set-up at projects where office space is not available. The mobile unit houses two independent data stations allowing for multiple inspections to run concurrently. There is also a remote office on board for independent customer viewing and review activities. The coach also has an area for crew ALARA and pre-job briefs to take place.



*Superior FOSAR capabilities allows extraction of objects throughout the bundle*

## FOSAR

BWXT has designed, manufactured and deployed all of its FOSAR tooling. In conjunction with its in-house developed loose parts tracking software, BWXT has the capabilities to reach and extract parts all throughout the tubesheet bundle. The software provides communication between the customer, engineering, ECT team and the field technicians.

## Differentiating Technologies

- Only U.S vendor to offer high pressure Inner bundle lancing
- SL trailer capable of lancing two SGs in parallel
- Fully automated process controls
- Universal mock-up to test processes with each geometry
- Full range of SSI/FOSAR crawlers
- Ability to design, manufacture and deploy SSI/FOSAR strips "on the fly"

### NUCLEAR ENERGY

### GOVERNMENT SERVICES

### ADVANCED TECHNOLOGIES

Headquartered in Lynchburg, Va., BWX Technologies, Inc. (BWXT) is a leading supplier of nuclear components and fuel to the U.S. government; provides technical, management and site services to support governments in the operation of complex facilities and environmental remediation activities; and supplies precision manufactured components and services for the commercial nuclear power industry. BWXT has more than 5100 employees and significant operations in Lynchburg, Va.; Erwin, Tenn.; Mount Vernon, Ind.; Euclid, Ohio; Barberton, Ohio; and Cambridge, Ontario, as well as more than a dozen U.S. Department of Energy sites around the country. Follow us on Twitter @BWXTech and learn more at [www.bwxt.com](http://www.bwxt.com).

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