Teamwork brings plant freeze seal technology

Brian Price and Tom Street prepare a freeze seal in the training class.

In the fall of 2000, the Maintenance Department was looking for a more user-friendly and efficient way to conduct freeze seals. Maintenance Supervisor Harold Ham decided to go out in the industry to see if there was any new equipment or technology that would simplify the freeze-sealing process. He contacted a maintenance supervisor at Electric Boat in Groton, Conn., who recommended the Accu-Freeze system manufactured by COB Industries.

The Accu-Freeze system utilizes flexible copper tubing that is coiled around the pipe and connected to an electronic controller. A thermocouple at the freeze area provides feedback to the controller to energize a solenoid valve supplying liquid nitrogen through the flexible copper tubing. Once the setpoints for the controller are set, the system automatically controls the application of liquid nitrogen to establish and maintain the freeze.

The Accu-Freeze systems eliminates the need for technicians to handle liquid nitrogen, or to have to constantly hammer a "freeze bag." This allows the technicians an extra margin of personal safety as well as allowing them to focus their attention on the essential parameters of the freeze.

The Training Department recently assisted Ham in introducing the new technology to Seabrook. Bruce Tardiff, a mechanical training instructor, worked with Ham to develop the training necessary to qualify mechanics for the new tooling. During the design phase of the training, a decision was made to look out into the 12-week work schedule to see if the training could be coupled with actual work in the field. In parallel, Tardiff contacted COB Industries to obtain the services of a vendor representative to come to Seabrook and assist in training the technicians.

Dennis Schrempf inspects the piping upstream of FP-V-230.

Ham contacted the Scheduling Department and found out that work on relocating Fire Protection Valve, FP-V-230 would require a freeze seal. The freeze seal training was scheduled to coincide with the work on the fire protection valve, offering the class the unique opportunity to not only be trained and qualified on new equipment, but to be involved in all the procedural and programmatic activities related to the freeze seal process as applied on the job. This also satisfied one of the Mechanical Maintenance Department training goals of combining training with real work, involving instructors in the maintenance activity, and providing the trainees with a realization of what is required to do the work in "real time."

Training Manager Dan Roy (left) presents Spot Awards to Steve Brooks, Jim Dupre, Bruce Tardiff and Harold Ham for their work on the freeze seal training.

The training week consisted of two days in the classroom and laboratory learning how to use the equipment, and fine-tuning the procedure on mock-ups that had been created for the laboratory training. The mock-ups had been fabricated with a sight glass at the end of the pipe that allowed the students to watch the freeze develop and acquire a comfort level with the effectiveness of the equipment and process.

The third day of training consisted of setting up the job site in the Turbine Building and attending the pre-job briefing. On the fourth day, the class went into the plant to perform the freeze. The equipment worked flawlessly, resulting in better temperature control and increased personal safety.

The fifth day was spent restoring the work site in the plant and returning to training for a post job critique on the work and the training. Jim Dupre, Mechanical Maintenance Department Supervisor chaired the critique.