

MSR Dump Drain Valve Project & Emergent Condenser Welding Scopes A Southeast Nuclear Power Station

Project Description

Planned Scope (MSR Dump Drain) The planned scope consisted of the installation of four (4) new MSR high level control valves and related piping. The original system had the valves installed overhead under the structural steel of the next elevation. The plant was incurring much higher than normal costs to maintain the valves due to the difficulty of having to work them in an overhead position. The new valves were installed on the floor of the condenser bay including the installation of approximately 1000 feet of 8 inch piping and associated piping supports (hangers).

Emergent Scope Unit 1 (Condenser)

Unit 1 tripped off line during the planned outage because of a tube leak in the condenser. Upon inspection of the condenser, the customer discovered numerous issues:

- 2/3 of a divider wall (over 50' long and 6' high) had collapsed
- The condenser box had a 6 foot long crack in the wall, causing leaking.
- The condenser floor had buckled, cracked, and heaved
- Cracks had formed around some of the support columns in the floor
- Damaged tubes, were plugged emergently, and not yet properly repaired



Emergent Scope Unit 2 (Condenser)

After the Unit 1 failure and subsequent repair, the customer decided to inspect the Unit 2 condenser which was not on the schedule for inspection, upgrades or repairs during this outage. Inspection revealed damaged and hanging support structures (cross members), and eroded tube sheet supports that required immediate repairs. Ultimately 8 to 10 supports were repaired and all cross members were replaced.

Customer Challenge

The working environment posed numerous challenges due to multiple scopes and contractors working in close proximity in this confined space. All projects were schedule and quality critical. Securing skilled nuclear experienced craft in an emergent basis proved to be challenging and unsuccessful through the local union hall.

BHI Energy Approach

MSR Dump Drain Valve Scope: BHI Energy utilized a manual GTAW process for welding of all SS piping and manual SMAW welding for the hangers. GTAW and, SMAW processes were used for welding of all CS piping and SMAW welding for the hangers. Pre-fabrication of the piping spools and hanger supports were performed at our Lawrenceville Shop. In addition, BHI Energy supplied 4 supervisors, 32 welders, 4 machinists, and 4 iron workers to complete the planned onsite installation scope. The project was completed in 23 days working 12 hour shifts.

Emergent Condenser Welding Scope Unit 1 and Unit 2:

BHI Energy recommended cutting a slot in the condenser to install the new wall sections to save welding time of installing larger wall sections. BHI Energy provided boilermaker resources to complete all the repairs. All craft mobilized had less than 30 days out of a nuclear plant which greatly reduced in-processing time.

Unit 1 condenser repairs:

BHI Energy provided 4 supervisors and 36 welders additionally resources were pulled from the Valve project upfront, to start the work while the rest of our resources were in the process of in-processing. The project schedule required repairs to be completed in less than 8 days, employing, 13 hour shifts, 24 hours per day, including hot turn overs, all work was completed in 7 days.



BHI Energy Value Confirmed

BHI Energy provided significant value for the customer on all projects. Both projects were completed on time or ahead of schedule, within budget and without any human performance or safety issues. In addition, BHI Energy was able to mobilize an additional crew of 40 craft and supervisors within 48 hours and complete the emergent scope two days ahead of the planned schedule. All welds were performed with first time quality.

Customer Comment:

An executive manager at the site commented that, "The BHI team responded to the emergent scope with very high productivity and quality."

This project outcome, supported by positive feedback, clearly represents The Gold Standard of repair services routinely provided by BHI Energy.