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## CASE HISTORY

**Project:** Caisson Inleakage Chemical Inleakage Unit 3  
Humboldt Bay Power Station  
Eureka, California

**Engineer:** Westinghouse

**GC:** Morrison Knudsen Corp.

**Owner:** Pacific Gas & Electric Co.

**Agent:** Marathon Coatings Corp.

**Injection System:** BBZ Duro Rapid, Duro-Soil and Drainseal

**Completed:** September 1997



One of the first nuclear power plants built in the U. S., Humboldt Bay Station, was shutdown in the late 1970's and is undergoing final stage decommissioning. This could not proceed until a large underground water inleakage beneath the reactor caisson suppression chamber was drastically reduced. To solve this problem, mock-ups were conducted to devise a procedure as well as to determine the type of product to be used.

The first mock-ups involved polyurethane foam products, which were rejected due to excessive pressure caused by the expansion of the foam, gassing and the toxicity of the urethane and its cleaners. At this time, agent Marathon Coatings (MC), contacted BBZ USA, who with the assistance of Larry Jean of Jean's Waterproofing, Inc. (JW), introduced the BBZ line of non-toxic, water based acrylic ester products specifically designed to seal various types of water leaks. A team formed from PG & E, Westinghouse, Morrison Knudsen, BBZ USA and JW conducted several more mock-ups using BBZ Duro Rapid, Duro-Soil and Drainseal. Testing proceeded until the perfect combination of products, injection packer placement and spacing concluded with favorable results. After testing was complete, it was time to commence site work in the Suppression Chamber at elevation -66'.

Once all holes were drilled and documented, the injection packers were installed. At this time, BBZ products were now pumped into the injection packers. Since BBZ resins do not foam or expand, there were no pressure problems. Injection was done in sections by forming "dams" using Duro Rapid and Drainseal, followed by the injection of the Duro-Soil. In all, eight sections were injected. After the eighth and last section was complete, the inleakage, which was constantly monitored, had gone from a high of 10,000 gallons per day to 10 gallons per month. The BBZ products performed as expected. The success of the project insured final decommissioning could proceed.

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