

SMUD Rancho Seco RVI Segmentation and Removal

Location:	Client:	Duration:	Scope:
Rancho Seco Nuclear Generating Station Sacramento, California	AREVA (formerly Transnuclear, Inc.)	April 2004 to May 2006	Segmentation and Removal of Reactor Vessel Internals

Key members of REIN staff were responsible for a contract to Transnuclear, Inc., to integrate all decommissioning activities and to remotely segment and remove the Reactor Vessel Internals (RVI) assembly as part of the decommissioning of the Rancho Seco Nuclear Generating Station (Rancho Seco). The 2,772 MWt Babcock and Wilcox pressurized water RVI consisted of the plenum assembly, core support shield, thermal shield, baffle assembly, and lower assembly. The complete RVI assembly had a nominal outer diameter of 14 feet and when fully assembled, stood over 50 feet high. The assembly weighed 170 tons with a total activity of approximately 99,500 curies. The specific scope of work included:

- Development of the project Final Segmentation Plan for segmentation, disassembly, and removal;
- Design, fabrication, and construction of mock-up test assemblies;
- Design, fabrication, and pilot mock-up testing of specialized RVI segmentation and removal tooling;
- Deployment and operation of the specialized tooling during operations;
- Integration of all operational and waste management activities.

Specialized segmentation and removal tooling developed for this project included:

- The Circumferential Hydraulically Operated Rotating Cutting Equipment (C-HORCE) - for segmenting the core barrel and thermal shield with internal circumferential cuts.
- The Reciprocating Machine Tool (RMT) - for vertical cuts of the plenum cylinder, core support shield, thermal column, core barrel, plenum cover, upper grid, and lower internals assembly. This RMT was a modified version of a similar guillotine-type saw successfully used to mechanically segment large cyclotron yoke and pole sections.
- The Bolt Milling Tool (BMT) - for milling the heads from the bolts that fasten the baffle plates to the baffle former plates. The engagement of the bolt heads is achieved using an offset camera and superimposed "cross hair" that allows precise alignment.
- Bolt Shearing Tool (BeaST) - for removing the baffle former plates from the core barrel by shearing the bolt head fasteners using hydraulics.

