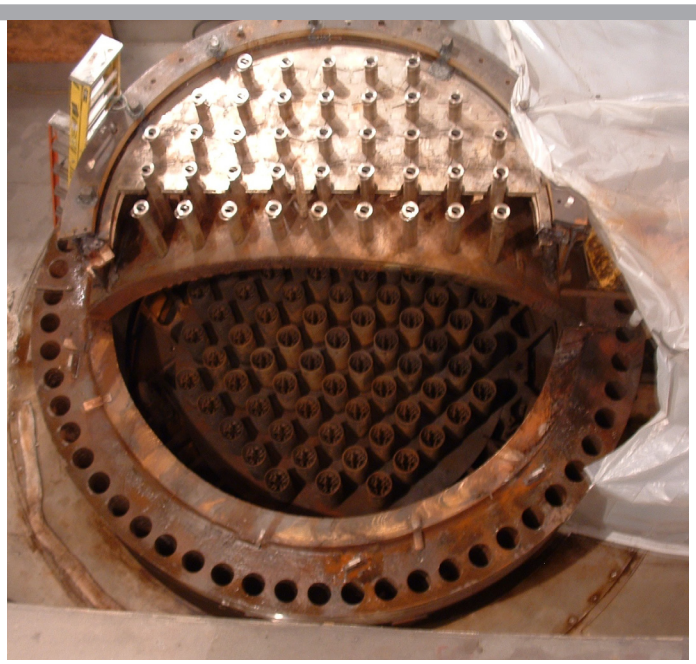
Nuclear Decommissioning: Reactor Head Segmentation

LOCATION
Sacramento, CA

CUSTOMER
Sacramento Municipal Utility District

DESCRIPTION
Diamond wire sawing was the solution for The Utility's need to segment the reactor head to mitigate transport and burial costs.



SUMMARY/SCOPE

Cut the SMUD (Rancho Seco) reactor head into five pieces for shipping and burial. The reactor head was made of eight inch thick steel with the head flange approximately three feet thick steel.

SAFETY ANALYSIS

The reactor head dome was made of eight inch thick carbon steel with stainless steel cladding. The reactor head flange was close to three feet thick. Cutting of these thicknesses requires precise set up and cutting techniques. Additionally significant internal stresses built up in the head due to high temperatures caused the head to move during cutting which had to be compensated for by appropriate set ups, wire tension, and wire speed.

PROCESS

The reactor head was raised and placed on cribbing to access the cuts. Wire access holes were drilled in order to make separation cuts between the flange and dome. A horizontal cut was made to separate the dome from the flange. A vertical cut was then made to segment the dome into two sections. Finally, the head flange was cut into three separate sections. The project was completed on schedule with a savings of nearly one million dollars. Approximately four hundred sixty-six man hours were spent cutting with an entire dose received of two hundred thirty mrem per man. A total of seventy-two hundred square inches of steel were cut. Successful completion of this project marked the first segmentation of a reactor head utilizing a diamond wire saw.

TECHNICAL PARAMETERS

Due to the size of the reactor head, shipping and burial costs were prohibitive. By segmenting the head dome into two sections and the head flange into three sections, The Utility realized nearly one million dollars in savings for shipping and burial.