

SAFETY EVALUATION REPORT  
COMANCHE PEAK STEAM ELECTRIC STATION  
CONTAINMENT POLAR CRANE TESTING

In a letter dated November 21, 1983, the applicant for Comanche Peak provided information to show compliance with the guidance of NUREG-0554, "Single Failure Proof Cranes for Nuclear Power Plants" relative to the preoperational testing of the containment polar crane. For single failure proof cranes, compliance with the testing guidelines of NUREG-0554 also satisfies the testing guidelines of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants." Our evaluation of the Comanche Peak polar crane tests relative to the testing guidelines of NUREG-0554 and NUREG-0612 is provided below. The overall acceptability of the heavy load handling facilities at Comanche Peak as described in applicant submittals dated August 7, 1981, October 8, 1981, March 1, 1982 and June 8, 1983 is being reviewed separately under Multiplant Item C-10, "Control of Heavy Loads." The review of the containment polar crane against the other NUREG-0554 criteria for single failure proof cranes will be performed under Multiplant Item C-15, "Control of Heavy Loads, Phase II."

The applicant's November 21, 1983 letter provides the testing history of the containment polar crane. Originally, the polar crane was rated at 499 tons and during the preconstruction phase

of Comanche Peak underwent static and dynamic tests at 100 percent of rated load. The load was raised and lowered, rotated 360 degrees and moved across the width of the containment.

Prior to preoperational testing, the polar crane was derated to 175 tons consistent with the load requirements for plant operation. The main hoist was disassembled and repaired, and the gear train in the main hoist was modified for the lower rating. Subsequently the polar crane was statically tested at 125 percent of the maximum critical load (MCL) as required by ANSI B30.2-1976 for cranes that have undergone significant modifications. However, in telephone conversations with the staff, the applicant requested an exemption for the full range of dynamic testing required by ANSI B30.2-1976 as referenced in NUREG-0612. Full dynamic testing would involve raising and lowering the test load, rotating the bridge through 360 degrees and moving the trolley across the full length of the bridge while supporting the test load. The applicant expressed the concern that safety-related equipment in containment could be damaged by falling lead ingots that had been strapped together to form the test load. After discussions with the staff, the applicant performed a limited-range dynamic test as described in the November 21, 1983 submittal. The dynamic test consisted of raising and lowering the test load

(125 percent of MCL) with the main hook at various speeds. The bridge was rotated a minimum of 10 feet and the trolley was moved a minimum of five feet at slow speed. The applicant stated that these tests resulted in moving the trolley and bridge gearing through at least one revolution.

Based on the above, we conclude that the polar crane tests meet the intent of the NUREG-0554 and NUREG-0612 testing guidelines and are, therefore, acceptable. The preconstruction testing at 499 tons adequately tested the structural integrity of the bridge and trolley members for crane operation. The later testing at 125 percent of MCL adequately tests the main hoist gearing, as modified for the derated capacity, and adequately tests the bridge and trolley gearing for plant operational use. The acceptability of the containment polar crane relative to the other criteria of NUREG-0554 for single failure proof cranes will be evaluated under Multiplant Item C-15, "Control of Heavy Loads - Phase II."