

Field Fabricated Anchor Bolt
Improper Material Deficiency

Final Report

In eight locations, anchor bolts have been installed on the South Texas Project that are of a lesser material grade than that required by the design drawings. In all other non-conforming conditions, ASTM A193 Gr B7 material was installed in lieu of the ASTM A36 material specified on the design drawings. The substitution of the higher strength A193 B7 material for the A36 material is considered satisfactory in all cases for Type V anchor bolts.

The following is a listing of the eight locations where lesser grade material is installed. Disposition of each item is indicated based upon engineering analyses of the specific cases.

Reactor Containment Building - Unit 1

1. Support brackets for the Reactor Coolant System hot and cold leg piping: The original Westinghouse torque requirement was to generate 54 kips in tension. At the request of Brown & Root, Westinghouse reevaluated the load requirements and determined a torque of 25 kips in tension is acceptable. This loading is within the allowable strength of ASTM A36 material and the installed anchor bolts are therefore acceptable.
2. Residual Heat Removal (RHR) Heat Exchanger anchor bolts: Design calculations have been performed which show that the installed anchor bolts are acceptable for the required design loads.
3. Category 1 pipe support and HVAC platform anchor bolts (E1, 97'0"): Engineering evaluation of the eight A36 material anchor bolts has been initiated. Due to the complexity of the calculations and analysis, this evaluation has not been finalized. Completion of this work is anticipated by February 11, 1980. Should the results be unacceptable, the anchor bolts will be replaced or the design will be modified to meet all required design loads.
4. Structural column anchor bolts (E1, -11'3"): Engineering evaluation of the sixteen anchor bolts for the affected support columns has shown that the combined stresses in the bolts made of A-36 material exceed the allowable by 12%. Proper design modifications will be implemented such that all design load requirements for the anchor bolts will be met.
5. Lateral restraint of the vertical portion of the Reactor Coolant System crossover leg piping: A36 bolts are installed in lieu of the required A193 B7 bolts in the primary shield wall. Analysis has determined that the tensile capacity of the installed configuration is less than the design requirement. The anchor bolts will be replaced or additional design measures will be implemented to acceptably meet design load requirements.

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Mechanical-Electrical Auxiliary Building - Unit 1

Liquid Waste Evaporator Recirculation Pump (El. 10'0"): Four of the twelve bolts anchoring the pump skid were fabricated from A 36 rather than the specified A193 B7 material. Analyses of the installed configuration relative to design load requirements show the installed configuration to be acceptable.

Mechanical-Electrical Auxiliary Building - Unit 2

Degassing Tank: Additional anchor bolts will be installed to supplement the installed A36 bolts in order to meet design load requirements.

Fuel Handling Building - Unit 1

Spent Fuel Pool Heat Exchanger: An evaluation of the installed anchor bolts has determined that design load requirements have been met.