



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

FEB 1 1971

J. P. O'Reilly, Chief, Reactor Testing and Operating Branch
THRU: H. R. Denton, Chief, Technical Support Branch

H. R. Denton

DOCKET NO. 50-250 - COMMENTS ON REPAIR OF TURKEY POINT DOME

In response to your request, this memorandum contains our comments and conclusions on the licensee's repair program for the Turkey Point containment.

Our inspections of the dome, the meridional joint, cores and cored holes along the N-S meridian where expanded metal was used to insure a more effective joint, revealed no evidence of a poor joint, cracks, voids or weak bonding of the concrete to the expanded metal mesh. It is our opinion that the evidence available does not support the failure theory expressed in the licensee's reports of 12-23-70 and 1-25-71.

Other aspects of the repair which, in our opinion, warrant further consideration are as follows:

1. It is proposed by the licensee that anchor bolts be spaced 2 feet on center to tie the new and old concrete layers together. Unless the spacing is well defined and a careful program followed, additional damage could be done to the tendons.
2. The licensee has not furnished us with a complete evaluation of the number of damaged tendon wires. We are still concerned whether all damaged wires will be exposed and recorded by the methods being employed. ASTM-A421-65 ^{1/} sections 9 and 13, requires rejection of wires nicked in excess of 0.002 inches, kinked wires, and pitted wires. For tendons indicating penetration of the jack-hammer point into the wire bundle, we continue to recommend removal of the tendon to assure detection of all damaged wires. ^{2/}
3. The licensee's proposal to use splice bars where reinforcing is damaged or broken is a questionable practice. The top

^{1/} Uncoated Stress - Relieved Wire for Prestressed Concrete ASTM-A421-65

^{2/} Assist inspection report dated 1-21-71

bars are in tension and the original bars will have to yield and the concrete crack before the splice bars will become effective. Six damaged bars have been tested and 3 failed to meet the criteria of ASTM-A615. Because of the above, we are not convinced that the spliced bars can perform their intended function of temperature compensation without concrete cracking at the nicked bar location. Unless such cracking in the dome is acceptable to DRL, we recommend that affected reinforcing steel be removed and replaced.

4. The licensee is committed by the FSAR to make observations for and measurement of cracks, if any, during the over pressure test. Their report of 1-25-71 indicates that an elastomeric compound will be applied to the concrete surface after curing is completed. This will cover any cracks and prevent surveillance.

If the above concerns are resolved, and if the delaminated concrete is removed, the surface properly cleaned and prepared as outlined in their report of 1-25-71, we conclude that a satisfactory concrete cap can be placed. Since the basic cause of the cracking has not been identified, we recommend that the technical specifications require additional periodic surveillance of the dome and ring girder for evidence of grease leakage, concrete cracking and tendon wire failure. Further, such specifications appear appropriate for all similar Bechtel containments, including Palisades, Calvert Cliffs and Oconee.

L. L. Beratan

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February 12, 1971

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Att 2/12
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V. A. Dome

Edson G. Case, Director
Division of Reactor Standards

TURKEY POINT CONTAINMENT DOME REPAIR PROGRAM

This is to confirm our recommendation that a requirement for removal of six tendons for examination be included in Alternate Position No. 2 of your proposal dated February 9. Our recommendation is described in detail in the enclosure.

We have obtained from a major tendon supplier an estimate of the additional time required to remove and replace more than one tendon. The estimate is eight to 12 hours per additional tendon; therefore, we conclude that the extra time required is not significant in comparison to the increased assurance provided by additional tendon inspection.

A. ...
Lawrence D. Low, Director
Division of Compliance

Enclosure:
Recommendation

cc w/encl:
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50-250/251, Incident

Dupe
~~*8305190143*~~

BASIS FOR TENDON REMOVAL AND INSPECTION

- A. The type and extent of damage inflicted on the tendon system and the limited insitu accessibility of the wires require a "proof" inspection to produce a high level of confidence. In-service inspection can supplement an effective QA program, but not replace it.
- B. It is Compliance's position that a minimum of six tendons be removed.
1. Four selected tendons be removed before the concrete surface is hydro cleaned for the following reasons:
 - (a) To compare the actual number of damaged wires with the number reported by the insitu inspection.
 - (b) To determine the quantity of debris which got into the tendon sheaths.
 - (c) To determine how deeply the debris penetrated into the wire bundle.
 - (d) To qualitatively determine the quantity of water which may be present in the sheathing because of drill water or rain water infiltration.
 - (e) To see whether rusting or pitting of the wires has taken place.
 2. Two tendons be removed after the dome surface has been hydro cleaned by a 5000 psi spray.

- (a) To determine if a significant quantity of water has been trapped in the sheathing.
- (b) To determine if a significant quantity of grease has been washed off the wires.
- (c) To determine if partial grease blockage has occurred in the sheaths.
- (d) To determine if the hydro spray has washed the fine chips of concrete into the wire bundles.