



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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FEB 20 1981

Docket Nos.: 50-329/330 OM, OL

APPLICANT: Consumers Power Company  
FACILITY: Midland Plant, Units 1 & 2  
SUBJECT: SUMMARY OF JANUARY 27, 1981 VISIT TO OBSERVE CRACKS IN CONCRETE RING FOUNDATION OF BORATED WATER STORAGE TANKS

On January 27, 1981 Messrs. Joseph Kane of the NRC and John P. Matra, Jr. of the Naval Surface Weapons Center (NRC consultant) visited the Midland site to observe cracks which have occurred in the concrete ring foundation for the Borated Water Storage Tank. The tanks have been constructed and filled as a full scale test intended to justify that the underlying soils are suitable for support of the tanks (see response to NRC question 6, Revision 3 to Amendment 72, September 13, 1979). These cracks do not include those observed in the foundation prior to tank construction (question 14, same amendment).

The cracks in the ring foundation for Unit 1 borated water tank were visible because an inspection pit had been excavated to the top of the ring wall footing along the southern periphery. A plastic sheeting for protection against the cold winds had been erected adjacent to Unit 2 borated water tank but the excavation to inspect for cracks in the ring foundation below plant grade had not yet started.

Mr. Kane was accompanied by Messrs. R. Wheeler and D. Miller of Consumers Power Co. on his visit. Following the field inspection brief discussions were held between Messrs. Cooke, Wheeler and Kane which included a telephone call contact with Mr. Thiruvengadam of Consumers Power Company concerning information to be included in the anticipated report in response to 10 CFR 50.55(e) action.

Enclosure 1 is the trip report of Mr. Matra.

Darl S. Hood, Project Manager  
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Enclosure:  
Matra Trip Rep

cc w/encl: next page.

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2 February 1981

MEMORANDUM

From: John P. Matra, Jr. (G402)  
To: Frank Rinaldi (SEB)  
Via: G402

Subj: Trip Report - Site investigation of cracks observed in the foundation of the borated water tanks at Midland Plants Units 1 and 2

Ref: (a) Docket Nos. 50-329/330 OM, OL

1. On January 27, 1981, the undersigned met with Mr. Tom C. Cooke of Consumer Power Company to discuss and observe the cracks in the concrete ring foundation of the borated water tanks. At this meeting, Mr. Cooke related the following to me:

a. The long term settlement predication for the borated water tank structure was calculated by Bechtel.

b. In this analysis, the soil properties under the borated water tank foundation were represented by simplified springs.

c. The tanks were loaded and the settlements were recorded. These recorded settlement values vastly differed from those originally predicted by Bechtel.

d. Bechtel did a new analysis in which 3-D elastic brick elements were used to represent the soil. A combined live, dead and water load was used in the analysis. A stress of 1.50 times the ultimate capacity of the concrete ring foundation was found. The analysis also predicted the structure settlements which agreed closely with the test results. A high moment was also noted at the ring foundation near the valve pit.

e. Mr. T. Thiruvengadam also told Cooke that the old calculation was in error because it did not incorporate the stiffness variation and differential settlement between the valve pit and ring foundation.

2. In a visual inspection of the borated water storage tank structures, the following was noted:

a. Cracks (Max  $\approx$  .060 inches) in the concrete ring foundation on both sides of the valve pit. (See Figure 1-A&B).

b. Gaps approximately 1/4 inch wide were observed between bottom face of nut and top of base plate of brackets. The location of these bolts were found in the areas of the valve pit and 180° from it. The bolts at 90° and 270° from the valve pit seemed to be tight.

c. A large pit was dug out along the tank foundation and the pit was full of water. Cooke indicated that the pit elevation is below the water line in the reservoir and the water in the pit was being pumped out.

JOHN P. MATRA, JR.

Copy to:  
F. Schauer (SEB/NRR)  
D. Hood (DOL)

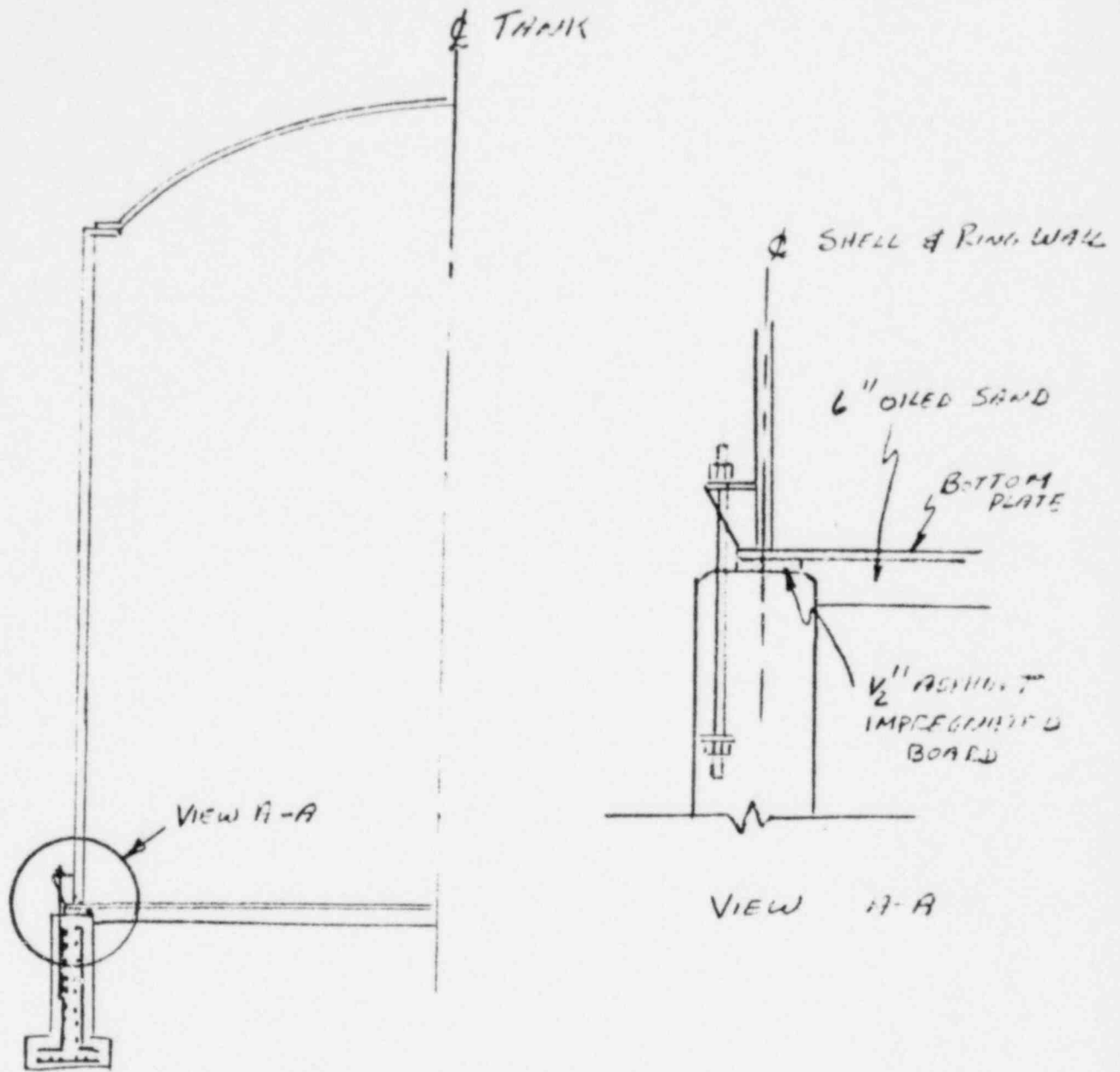


FIG 1-A BORED WATER STORAGE TANK

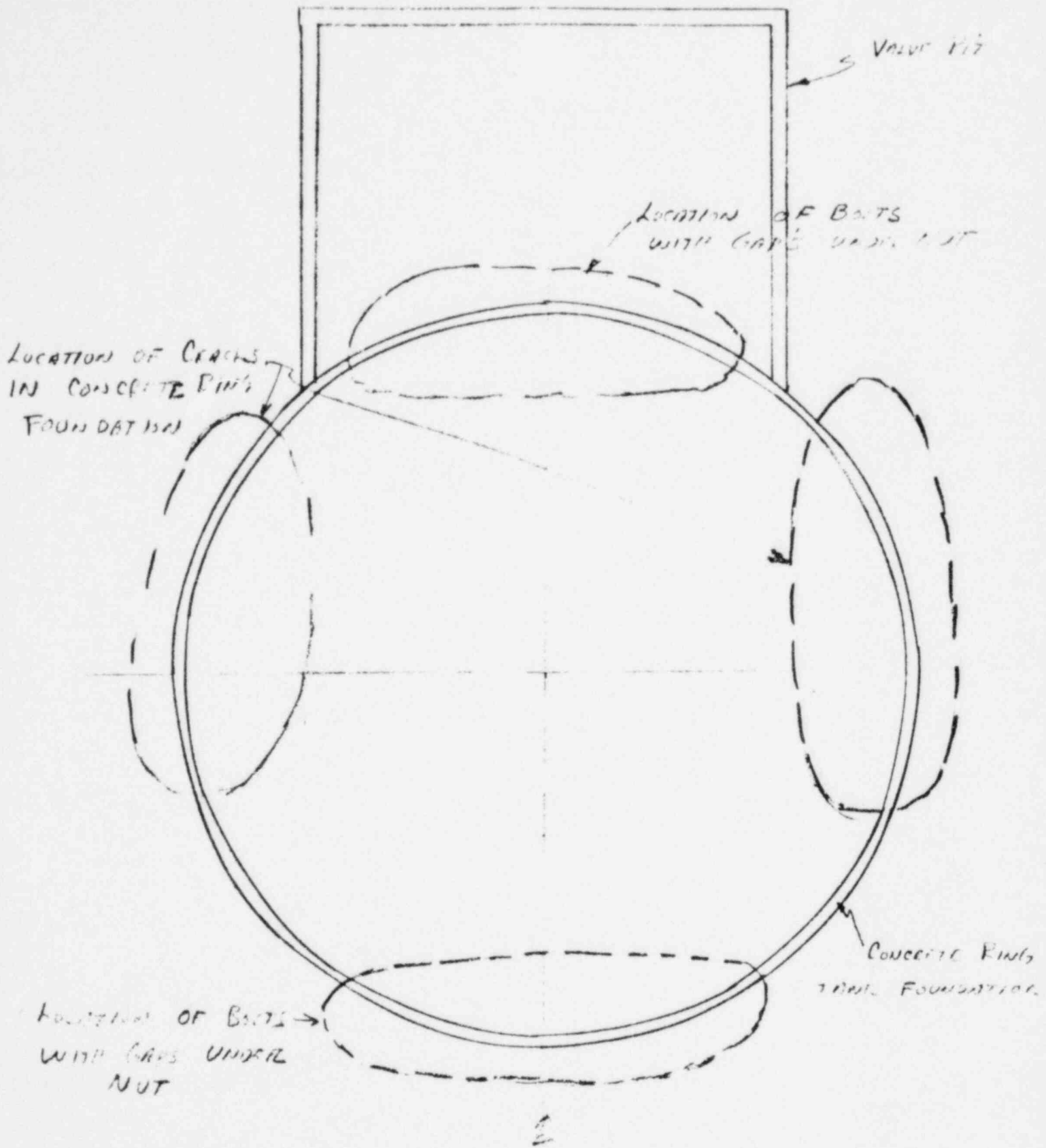


FIG 1-B VIEW Looking Down - BORATED WATER STORAGE TANK

MEETING SUMMARY DISTRIBUTION

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