

Docket Nos: 50-329 OM, OL
and 50-330 OM, OL

SEP 11 1981

APPLICANT: Consumers Power Company

FACILITY: Midland Plant, Units 1 and 2

SUBJECT: SUMMARY OF AUGUST 5, 1981 MEETING ON SURCHARGING OF VALVE
PITS OF THE BORATED WATER STORAGE TANK FOUNDATIONS

On August 5, 1981 the NRC staff and its consultant, U.S. Army Corps of Engineers met in Midland, Michigan with Consumers Power Company (the Applicant), Bechtel, and the Graver Company to discuss plans for surcharging the valve pits adjacent to the ring foundations of the Borated Water Storage Tanks of Midland Plant, Units 1 and 2. Meeting attendees are listed by Enclosure 1.

A summary of this meeting, and summaries of followup telephone conversations, are provided by Enclosures 2 and 3. As noted within Enclosures 2 and 3, staff review of the surcharge plans is ongoing and certain documentation is needed for staff concurrence.

B
Darl Hood, Project Manager
Licensing Branch No. 4
Division of Licensing

Enclosures:
As stated

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PDR ADOCK 05000329
A PDR

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|---------|-----------|-------------|----------|--------|----------|--|--|
| OFFICE | DL:LB.#4 | DL:LB.#4/LA | SEB | HGEB | DL:LB.#4 | | |
| SURNAME | DHood/hmc | MDuncan | FRinaldi | Kane | EAdensam | | |
| DATE | 8/2/81 | 8/.../81 | 8/3/81 | 8/2/81 | 8/.../81 | | |

MIDLAND

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ENCLOSURE 1

Attendees
August 5, 1981

Name

Darl Hood
Rich Jamrozy
G. M. Ault
H. N. Singh
S. Lo
K. Razdan
D. Budzik
Al Boos
S. Rao
Neal Swanberg
J. D. Kane

Organization

NRR, B #4
Graver Engineering
Graver Project MGMT
NCD Corps of Engineers
Bechtel Power Corp.
Consumers Power Company
Consumers Power Company
Bechtel Power Corp.
Bechtel Power Corp.
Bechtel Power Corp.
NRC, NRR, DE, HGEB

RECORD OF TELEPHONE CONVERSATION

Date: July 30, 1981Project: MidlandRecorded by: Joseph D. Kane

| <u>Talked With:</u> | <u>CPCo</u> | <u>Bechtel</u> | <u>NRC</u> | <u>COE</u> |
|---------------------|------------------|----------------|------------------|------------|
| | T. Thiruvengadam | A. Boos | D. Hood | H. Singh |
| | D. Budzik | S. Lo | F. Rinaldi | |
| | R. Ramanujam | | R. Hernan | |
| | | | R. Landsman, I&E | |
| | | | J. Kane | |

Route To: FOR INFORMATION

G. Lear
 L. Heller
 D. Hood
 W. Paton
 F. Rinaldi
 R. Landsman, I&E
 H. Singh
 J. Kane
 R. Cook, I&E

Main Subject of Call: SURCHARGING OF BORATED WATER STORAGE TANK VALVE PITS
 (REFER TO J. W. COOK'S LETTER OF JULY 21, 1981 TO
 J. G. KEPPLER)

Items Discussed

1. Since Consumers' reference benchmark, PBM No. 1, had been established in the plant fill, the Applicant was requested to provide past survey records on this bench mark to demonstrate that PBM No. 1 is stable and unaffected by settlement of the plant fill. (This issue is now resolved with the submittal of the survey records to R. Landsman, I&E that show PBM No. 1 is stable).
2. Consumers was asked to address the present structural condition of the stainless steel Borated Water Storage Tanks with respect to existing stresses and strains induced by past settlements of the tanks and ring beam foundations. Consumers was asked to explain the basis for the statement in MCAR 48, Interim Report 3 dated May 29, 1981 which indicates the proposed surcharging of the valve pits will reduce tank shell deformations. (This issue was again discussed at a meeting held at the Ramada Central Inn, Midland, Michigan on the evening of August 5, 1981. Participants at that meeting included representatives from Consumers Power Co., Bechtel Corp., Graver Co. (Constructors of the BWST), U.S. Army Corps of Engineers and the NRC). The telephone conference call of July 30, 1981 and the August 5, 1981 meeting established the following:

- a. No analysis of the stresses and strains which presently exist in the BWST has been made. The Graver Co. has visually inspected both Units 1 and 2 borated water storage tanks in the field and have indicated there are no visible signs of structural distress. Graver Co. representatives indicated that based on their experiences, tanks with similar designs to Midland have safely withstood significantly larger settlements than the values recorded at Midland.
- b. An analysis of stresses and strains in the tank structure will ultimately be provided by Bechtel in conjunction with the design of the proposed remedial measure which requires a new reinforced ring wall to be constructed along the outer periphery of the original wall which has experienced cracking.
- c. The original design report by Graver Co. on the borated water storage tanks is filed in Consumers Q/A document files under No. F7220-C-18-126. (J. Kane has requested R. Cook, I&E to obtain a copy for NRR use).
- d. Certain measures would be taken prior to and during surcharging (e.g., removal of nut on anchor bolt, measurement of lateral movement of anchor bolts, etc) to support the position that surcharging the valve pits will not cause stresses to be induced into the tank membrane.

Based on verbal information and discussions presented by Consumers and its consultants, the Staff and its Consultant's concern for the surcharge inducing additional stresses has been satisfactorily resolved. The Staff will require proper, written documentation of the commitments and the information which were presented including the anticipated settlement behavior of the ring beam foundation under the surcharge load as discussed by S. Lo.

3. Since surcharging the valve pits is Seismic Category I work, Consumers was reminded of the need to have an established Q/A surcharge program that is acceptable to the NRC prior to proceeding with this work.
4. There are practical limitations on accessibility to the disconnected Category I pipes (which penetrate the valve pits) during the surcharging operation. An agreement was reached that requires the involved pipes to be profiled for movement before the surcharge load is placed and then after removal. If the measured settlement of the pipes after removal exceeds one-half inch, an analysis of the stresses induced in the pipes will be made using the actual measured settlements along with a reasonable estimate of rebounding that would have occurred upon load removal.

5. The indication by Consumers in their July 21, 1981 letter to use a crack width in excess of 20 mils as the basis for stopping the surcharge program is unacceptable to the NRC Staff. Unless documentation acceptable to the Staff is presented that justifies the proposed change from 10 mils to 20 mils, the Staff will require the 10 mil criteria.
6. Consumers has agreed to provide design calculations which locate the neutral axis in the valve pit structures. This information will be used to develop criteria on the longitudinal extent of cracking during surcharging in order to prevent cracks from extending into the compression zones.

NRC has requested that the documentation identified in items 2, 3, 4 and 6 above be submitted to I&E and NRR. The Staff would not be in a position to concur with Consumers proceeding with the surcharging of the valve pits until this information is received and favorably reviewed. Resolution of item 5 is still required.

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|---|-------------------------|---|
| MEMORANDUM FOR: D. Hood, DL/LB #3 | DATE: 3/18/81 | PAGE <u>1</u> OF <u>1</u> |
| FROM: F. Rinaldi, DE/SEB | PHONE: X29467 | CONTACT: F. Rinaldi |
| THRU: P. Kue, DE/SEB | | SUBJECT: MIDLAND PROJECT - SURCHARGE OF THE BORATED WATER STORAGE TANK FOUNDATION |

Following the discussions between the staff and the applicant and their Architect/Engineer on the allowable crack openings that could result from the proposed surcharging operation, the applicant has provided telex info and has discussed this subject matter with F. Rinaldi during the week of August 10, 1981. Some verbal agreement was reached on August 14, 1981. Documentation of this verbal agreement was to be provided to staff prior to our final approval of the surcharging operation.

By its letter of July 21, 1981, the applicant requested approval of 20 mils cracks. This was contrary to a previous verbal agreement which would accept only a 10 mil crack openings. The draft telex (two pages) was an attempt to justify the 20 mils. The staff did not accept the applicant's justification because they found the equation proposed by the applicant not appropriate for this evaluation and that the applicant interchanged the use of ultimate capacity of the structure with the working stress method.

During the related phone conversations the applicant and their Architect/Engineer agreed not to issue the draft telex, and agreed to provide a new proposal that would consider: Reporting and evaluating cracks over 10 mils occurring during the surcharge operation and that the cracks will be monitored during the surcharge operation so to not exceed their current size.

- cc: J. Knight
- F. Schauer
- P. Kue
- J. Matra
- F. Rinaldi

| | |
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| CC: | FILE NO. |
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MEETING SUMMARY DISTRIBUTION

Docket File 50-329 0302
NRC/PDR 330
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LB #4 r/f
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D. Eisenhut
R. Purple
B. J. Youngblood
A. Schwencer
F. Miraglia
J. Miller
G. Lainas
R. Vollmer
J. P. Knight
R. Bosnak
F. Schauer
R. E. Jackson
Attorney, OELD
OELD
OIE (3)
ACRS (10)
R. Tedesco
N. Hughes

NRC Participants:

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J. Kane
R. Jamrozy
G. M. Ault
H. N. Singh
S. Lo
K. Razdan
D. Budzik
A. Boos
bcc: Applicant & Service List

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S. Pawlicki
V. Benaroya
Z. Rosztoczy
W. Haass
D. Muller
R. Ballard
W. Regan
R. Mattson
P. Check
O. Parr
F. Rosa
W. Butler
W. Kreger
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T. Murphy
L. Rubenstein
T. Speis
W. Johnston
S. Hanauer
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T. Murley
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SEP 11 1981

