

CP Hearing  
MIDLAND - CONTENTIONS

J. Kane

P-214

January 27, 1982

Note to: D. Hood  
J. Kane  
F. Rinaldi  
T. Cappucci

From: M. Blume MB

Subj: Schedule For Testimony To Answer Midland Contentions; Text Of Contentions

We must address Warren Contentions 1-3, Stamiris Contention 4, Sinclair Contention #24 and Marshall Contention #2 in the February and March Midland hearings. Try to include brief rebuttals to these contentions (if rebuttals are appropriate), with explicit references to those contentions.<sup>1/</sup>

Here is a suggested schedule for addressing those contentions:

February 16-19

<u>Contention</u>	<u>Subject</u>	<u>Witness</u>
Warren #1	Soil quality, BWST	H. Singh
Warren #1	Liquefaction of soils for BWST, diesel fuel tanks, aux. bldg.	J.Kane/H.Singh
Warren #3	Piping under DGB	T.Cappucci/P.Chen
Stamiris #4A(4)	Piping under DGB; effects of surcharge on turbine bldg., FIVP	Cappucci/Chen, Rinaldi
Stamiris 4C(a),(c), (d),(f)	Seismic effects on Aux./EPA, BWST, Diesel fuel tanks, Piping	F.Rinaldi, T.Cappucci/ P.Chen

<sup>1/</sup> In most cases, it would be sufficient to quote the contention and conclude that your specific testimony answers the contention. It might be necessary in at least some instances to explain how the testimony answers the contention.

Sinclair #24 &  
Marshall #2

Soils consolidation and  
quality (Aux., BWST)

J.Kane

March 29-April 6

Contention

Subject

Witness

Warren #1

DGB soils quality

J.Kane

Warren #2A

Dewatering

R.Gonzales

Warren #2B

Liquefaction of DGB soils

J.Kane

Warren #3

DGB surcharge

J.Kane, F.Rinaldi

Stamiris #4A(1),(2),  
(3),(5)

DGB soils

J.Kane

Stamiris #4B

Dike Overtopping

R.Gonzales

Stamiris 4C(b),(e)

Seismic effects on SWPS,  
DGB  
Dewatering effects

F.Rinaldi

R.Gonzales

Stamiris 4D(1)

Dewatering (PSAR criteria)

J.Kane

Stamiris 4D(2)

Dewatering (Settlement)

J.Kane

Stamiris 4D(3)

Dewatering (shutdown time)

D.Hood, R.Gonzales

Sinclair #24 &  
Marshall #2

Soils consolidation and  
quality (DCB, SWPS)

J.Kane

Michael B. Blume  
Attorney, OELD

Attachment: Remaining Contentions

cc: J. Rutberg  
M. Wilcove  
F. Schauer  
R. Bosnak  
E. Adensam  
L. Heller  
R. Gonzales

W. Paton  
J. Knight  
P.T. Kuo  
F. Cherny  
G. Lear  
M. Hartzman

May 1982 >ER 5.4.4 - Decay Heat Removal System - Discusses time for plant shutdown

Attachment

The remaining contentions, some of which raise similar if not identical concerns, read as follows:

Stamiris Contentions

4. Consumers Power Company performed and proposed remedial actions regarding soils settlement that are inadequate as presented because:

- Oct. 1982 SSER A. Preloading of the diesel generator building Completed
  - J. Kane 1) does not change the composition of the improper soils to meet the original PSAR specifications; depends on final structural analysis
  - Oct. 1982 SSER Page 2-31, 2-32 J. Kane 2) does not preclude an unacceptable degree of further differential settlement of the diesel generator building; have been estimated - agreement on numerical value reached
  - Oct. 1982 SSER J. Kane 3) does not allow proper evaluation of compaction procedures because of unknown locations of cohesionless soil pockets;
  - Oct. 1982 SSER Paul Chen 4) may adversely affect underlying piping, conduits or nearby structures; and Nov 82 session
  - Oct. 1982 SSER J. Kane 5) yields effects not scientifically isolated from the effects of a rise in cooling water and therefore not measured properly;

May 1982 SER Page 2-50, Par. 2.5.6.7 B. Slope stability of cooling pond dikes is not assured because they were built with the same improper soils and procedures (NCR QF172); SER Section 2.5.6.6 and 2.5.6.7

Response by J. Kane R. Gonzales F. Rinaldi Nov '82 session for 4.C.b

- C. Remedial soil settlement actions are not based on adequate evaluation of dynamic responses regarding dewatering effects, differential soil settlement, and seismic effects for these structures:
  - 2.5.4.5.2 (pg. 2-23) gives summary conclusions
  - 2.5.4.4.1 (pg. 2-17) the following pages
  - a. Aux. Bldg. Electrical Penetration Areas & Feedwater Isolation Valve Pits
  - 2.5.4.5.2 (pg. 2-40)
  - b. Service Water Intake Building & its Retaining Walls Not a settlement problem issue no indication of loose or soft material
  - 2.5.4.4.3 (pg. 2-34) top of 2-35
  - c. Borated Water Storage Tanks
  - d. Diesel Fuel Oil Storage Tanks Initial session on underground piping contain staff testimony that indicates the settlement concern of the staff has been resolved - 2/5/82 - see attached
  - e. DGB 2.5.4.5.2 (pg. 2-33) Par. (2)

See Testimony of J. Kane for Feb. 17, 1982 Hearing

2.5.4.4.5 (pg 2-36)

f. Related Underlying Piping & Conduit

\* D. Permanent dewatering

Response by  
J. Kane  
R. Gonzales  
Nov '82 session

\* 1) would change the water table, soil and seismic characteristics of the dewatered site from their originally approved PSAR characteristics - characteristics on which the safety and integrity of the plant were based, thereby necessitating a reevaluation of these characteristics for affected Category I structures;

\* 2) may cause an unacceptable degree of further settlement in safety related structures due to the anticipated drawdown effect;

Response by  
D. Hood  
Nov '82 session

3) to the extent subject to failure or degradation, would allow inadequate time in which to initiate shutdown, thereby necessitating reassessment of these times.

Warren Contentions

Response by  
J. Kane for  
anticipated  
Dec '82 session

1. The composition of the fill soil used to prepare the site of the Midland Plant - Units 1 and 2 is not of sufficient quality to assure that pre-loading techniques have permanently corrected soil settlement problems. The NRC has indicated that random fill dirt was used for backfill. The components of random fill can include loose rock, broken concrete, sand, silt, ashes, etc. all of which cannot be compacted through pre-loading procedures.

*No loose rock or broken concrete or tubes cohesive soils (silt & clay) were consolidated under preloading procedures the sand are addressed by estimating settlements & permanent dewatering*

Response by  
R. Gonzales  
Nov '82 session

2A. Because of the known seepage of water from the cooling pond into the fill soils in the power block area, permanent dewatering procedures being proposed by Consumers Power Company are inadequate, particularly in the event of increased water seepage, flooding, failure of pumping systems and power outages. Under these conditions, Consumers cannot provide reasonable assurance that stated maximum levels can be maintained.

Response by  
J. Kane  
R. Gonzales  
F. Arnold  
Nov '82 Session

2B. Given the facts alleged in Contention 2.A, and considering also that the Saginaw Valley is built upon centuries of silt deposits, these highly permeable soils which underlie, in part, the diesel generator building and other class I structures may be adversely affected by increased water levels producing liquefaction of these soils. The following will also be affected: SSER Section 2.5.4.5.5

- 1) borated water tanks
- 2) diesel fuel oil tanks.

Response 3  
 By ~~W. K. King~~ for anticipated Dec '82 session  
 Pre-loading procedures undertaken by Consumers Power have induced stresses on the diesel generating building structure and have reduced the ability of this structure to perform its essential functions under that stress. Those remedial actions that have been taken have produced uneven settlement and caused inordinate stress on the structure and circulating water lines, fuel oil lines, and electrical conduit. <sup>to cover Nov '82 session</sup>

Sinclair (OL) Contention #24

To be handled by OSLD  
 Response by W. K. King for anticipated Dec '82 session  
 No response

24. The present site for the Midland facility is not only inappropriate for the reasons set forth in Contention 9, but also affirmatively unsafe. Serious questions have been raised concerning the ground stability of portions of the site. At least one of the essential buildings of the reactor complex is reported sinking, and construction has been halted on that building. As a result of the serious and unresolved questions concerning ground stability, the findings required by 10 C.F.R. §§ 50.57(a)(3) and 50.57(a)(6) cannot be made. 1/

Address as one

Marshall (OL) Contention #2

2. Present geological conditions, according to newspaper accounts, is causing the settling of the generator building at the Nuclear Power Plant site.

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1/ This contention should be read to raise an issue not of site suitability, but of the quality of soils used at the site. Disregard the reference to Contention 9. The soils quality issue is raised by other contentions, such as Warren #1 and Stamiris 4A and 4B, for example.

Chart is very suspect - to be discussed  
 with Joe Kane - 1/26/82

Contention

Subject

Witness

BWST Hearing Session (Feb)

WARREN 1

Quality of Soil w/ldg

Joe Kane

Address in March session (Perm. Devel.)

WARREN 2A

De-watering w/ldg

Ray Gonzales

Address in March session

" 2B

Liquefaction from increased water levels <sup>40, Ave, 1st DG Tank</sup>

~~Ray~~ + Joe K. ?

Address in Feb. (piping) and March (structures)

" 3

DGB preloading job, piping

Frank R. ~~Ray~~  
 Tony C.

Address in March session

STAMIRIS 4A

1, 2, 3 + 5 Preloading DG, etc

Joe K

Address in Feb. (piping) & March (structures)

" 4A

4 Preload DGB - pipes structures

~~Ray~~, Tony C. + Frank

Done ->

" 4B

Slope stability - check for "over-topping" OL

~~Ray~~ Ray G. ??

" 4C

abide <sup>Feb. session</sup> address diff. settlement for BWST & Diesel Fuel Oil Tanks & Underground

Frank R., J. Kane  
 Tony C., ~~Ray~~

" 4D

Perm. De-watering <sup>4D. 1) J. Kane</sup> <sub>4D. 2) Ray G.</sub>

Ray G. + Joe K.

Address in March DG coils consolidation materials

(F.D. 3 - Ray Gonzales & Dittus)

melan #24 (OL)

J. Kane

marshall #2 (OL)

≅ #24 Address in March

J. Kane

7/2/83  
141  
-J. Kane

Subject: Geotechnical Engineering Publications That Address The  
Effects on Soil Settlements on Structural Behavior

"Soil Mechanics" by T. William Lambe & Robert V. Whitman  
John Wiley & Sons, Page 199 to 202 (Very good treatment)

"Foundation Engineering" by R. Peck, W. Hanson, T. Thornburn  
John Wiley & Sons, 2nd Edition 1974, Pages 263 to 266  
(Covered in general details)

"Introductory Soil Mechanics and Foundations" by G. B. Sowers & G. F. Sowers  
MacMillan Co, Third Edition 1970, Pages 410 to 414 (Good treatment)

The above references are ones readily known by J. Kane. It is felt  
certain that a good search of the literature would provide  
many additional references where geotechnical engineers are  
involved in an evaluation of the effects of settlement on  
structural behavior.