3d/B6 8/18/81
1 of 1
J. Kane

Subject: Midland Plant - Status of ASLB ~~Hearings~~

First Session Completed - July 7-17, 1981

Items covered - Stamiris Contention No. 1, Q-A Breakdown, NRC-CPCo Stipulation on Q-A, Managerial Attitude, FSAR False Statement.

Second Session Completed - Aug. 4-13, 1981

Items covered - Stamiris Contention No. 2 which included extensive discussions on surcharging of Diesel Generator Building Area, Continuation of Q-A Breakdown discussions, Cooling Pond Dike Stability (all issues essentially resolved except for stability under seismic loading and design under Probable Maximum Flood conditions)

See attached for future scheduling of ASLB Hearings

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J. Kane

Subject: Midland Plant - Future Scheduling of ASLB Hearings

REVIEW ITEM	CPCo Submittal Date	NRR Review Completion Date	NRR to CELD Testimony Submittal Date	Date for Submittal of Testimony to ASLB
1. Site Specific Response Spectra	In-house	Sept. 15, 1981	Sept. 22, 1981	Tuesday Sept. 29, 1981 (10/13)
2. Diesel Generator Building (Resolution of settlement issues & cracking analysis & Stamiris Contention No. 4)	Rec'd. Settlement info Aug. 19, 1981	Oct. 6, 1981	Oct. 13, 1981	Monday Oct. 26, 1981 (11/2)
3. Service Water Structure	Anticipate submittal on Aug. 26, 1981	Oct. 19, 1981	Oct. 26, 1981	Monday Nov. 2, 1981 (11/16)
4. Auxiliary Building	Anticipate Submittal on Aug. 24, 1981 (Seismic Modeling) on Sept. 15, 1981 (Conceptual design etc) on Oct. 20, 1981 (Loads & Stresses)	Nov 2, 1981	Nov 9, 1981	Nov. 16 and Nov. 30, 1981 (11/30 or 12/14)
and Redesign of Borated Water Storage Tank	Anticipate submittal on Sept. 2, 1981		"	"
5 Permanent Dewatering	In-house except for information identified in review of Amend. 85	Oct. 30, 1981	Not yet established	Possibly address Dec. 14, 1981 Session
6 Underground Utilities	Not yet established	—	Not yet established	Possibly address Dec. 14, 1981 Session

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Monday Oct 26 or Nov 2

File testimony @least 2wks in advance of hearing date

Midland - Future Scheduling

Possibility of covering DGB - ~~Oct 26 26 31~~ Nov 2 + Monday

Testimony to be submitted the ~~beginning~~ ~~Sept~~ of Oct

CPCo position on crack analysis - (tension field)
CPCo position to be given on Sept. 1, 1981 to NRC
ADINA - Inelastic Finite Element Model Computer Program
Having difficulties w/ program in making tension field analysis

Nov. 4 Starts 9:30 Evidentiary

Service Water Pump Structure
Submit to NRC on Aug. 26, 1981

Equiv. to PSAR
Conceptual Drwg
Detailed Description
Accept. Criteria - will cover fabr. design
Construction Sequence

Submit Testimony Oct. 19, 1981
Hearing Date - Nov 16, 1981

Nov. 19 Use only to discuss rem

Sept. 21, 1981 Submit Seismic Model

~~Want to meet Staff after Aug 26, 1981 submittal~~

Session covering seismic (site specific response spectra)
Testimony Oct. 1 (possibly Sept 28)
Hearing Oct. 13

BWST Foundation Ring Beam ~~Dynamic Model~~ Fdn Ring & Tank
~~Aug 26, 1981~~ Sept 2, 1981 Dynamic Model for Ring & Tank
+ Accept. Criteria
+ Surcharge (Info or referenced)

Submit Testimony by
Hearing Date - Nov ~~23~~ 30, 1981 - Conflict w/ Thanksgiving

Auxiliary Building

Complete by 8/19/81 Seismic & F.E. Models
Submit to NRC 8/24/81

PSAR level submittal
by 9/15 conceptual drwgs, description, acceptance criteria
sequence of installation - will ask for NRC concurrence & early installation of shaft to Auxiliary Bldg (shaft near Γ

by ~~10/10~~ 10/20± nos. for loads & stresses
~~Conflict w/ the testimony~~
will include BWST

Hearing Nov 30 (Testimony 2 weeks prior
or
Hearing Dec ~~3~~14 (Testimony
Finish Auxil. Bldg and/or BWST

Leaves
Permanent Dewatering & Underground Piping
Ask for Staff Meeting the first week of

Dec. 14 ~~[illegible]~~ Possibly address ↑, depending
Dec. 17 - Use only to 4:00 p.m
18 - " " " 2:00 p.m.

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Discussed w/ R. Gonzales on 8/14/81
& G Lear

Does he recognize that riprap protection on the plant's cooling pond dike goes up to El. 614 & seeding is above this level?

What statement does ITES wish to make to ASLB about further review of establishing top of dike to withstand PMF & need for evaluating riprap to withstand

Preloading

What was performed @ Midland is not preloading in the normal understanding of preloading in the engineering profession

The problems which are introduced by loading a nearly completed RCC structure
- the differential settlement leading to undesirable structural stresses
- penalty pile - causing structure cracking

these problems are the very ones preloading is intended to avoid by being completed BEFORE the structure is completed

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Considerations to be addressed in large scale field test of surcharging

(3) Time element – Was the loading held long enough to reach secondary consolidation

(1.) Partially or fully saturated – softening upon wetting introducing compressibility
- effect in rate of consolidation behavior
- correctness in reading piezometers readings that were recorded were not as anticipated

(2.) Correct final load applied during surcharging (DL + LL)
You could have secondary consolidation for a given load that would be less than the final load and therefore further primary consolidation could be expected under the final design load

(4.) Effects of in-place conditions – irregular layering of soils with highly ~~variable~~ differing compressibility characteristics (loose to dense sands, soft to hard clays)
- little effect of surcharging in improving condition of loose sands
- ~~the Staff concern~~ the effects of the installed conduits, pipes in allowing the surcharge load to reach the more compressible foundation soils

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Mar 1979 NRC issues 50.54(f) questions 1 thru 22

Nov. 1979 NRC issues 50.54(f) questions 24 thru 35 which continues to indicate NRC staff concern for the DGB & whether the preloaded fdn. soils have adequate engineering properties (Q35) & questioned the dewatering system adequacy to eliminate liquefaction potential (Q. 24) & effect of changed soil conditions on proper seismic design (Q. 25) DGB settlement (Q 27)

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Q 27 questions settlement estimates provided to NRC & whether they address settlement under seismic loading & relate how settlement predictions will be used in ~~your~~ CP&L revised structural analysis

Also Q 28 indicates inadequacy of relating structure cracking & actual settlement that has occurred & the significance of these cracks on future structure performance

Stamiris Exhibit 27 32/136

BORING LOG

Project: MIDLAND NUCLEAR PLANT	Job No. 7220	Sheet No. 1 of 1	Hole No. E
Site: EVAPORATOR AND AUX. BOILER	Coordinates: AT FOOTING 6-CA	Angle from horiz.: 90°	Bearing: —
Drill make and model: CME-550	Hole size: 5"	Overburden: —	Rock: —	Total depth: 36.5'
Begun: 5/29/77	Completed: 5/29/77	Driller: SINGLETON (ASBEL DR'L)	Depth/El. ground water: (SEE NOTES COL.)	Depth/El. top of rock: —
Core recovery (ft/%): —	Core boxes: —	Samples: 14	El. top of casing: —	Ground El.: 633
Casing left in hole: dia./length: NONE	Logged by: JERRY B. GIVENS		
Sample hammer weight/fall: 140#/18"			

Sampler type and diameter	Sampler advance / Length core run	Sampler recovery / Core recovery	Sample blows per ft	1st 6"	2nd 6"	3rd 6"
2"SS	1.5'	0.7'	30	15	19	11
2"SS	1.5'	1.1'	23	12	11	12
2"SS	1.5'	1.5'	33	10	15	18
2"SS	1.5'	1.5'	30	10	15	15
2"SS	1.5'	1.5'	58	10	21	37
2"SS	1.5'	1.5'	56	13	24	32
2"SS	1.5'	1.0'	32	10	15	17
[illegible]	[illegible]	[illegible]	10+	[illegible]		
2"SS	1.5'	1.0'	29	11	14	15
2"SS	1.5'	1.0'	43	10	21	22
2"SS	1.5'	1.0'	59	15	24	35
2"SS	1.5'	1.5'	58	12	13	45
3"SS	.5'	1.0'	55+	62	65	—
2"SS	1.0'	1.0'	81+	22	61	—

Elevations: 633, 629.5, 628.5, 623.5, 621, 617.5, 615, 614, 612.5, 608.5, 607, 605, 601.5, 600, 596.5

Description and classification

0'-3.5' SILTY SAND, TAN (BACKFILL) (SP/SM)
3.5'-4.5' CONCRETE MUDMAT
4.5'-9.5' CLAYEY SAND TO SANDY CLAY, GREY, VERY STIFF, SLIGHT TO LOW PLASTICITY, SLIGHT MOISTURE (SC/CL)
9.5'-12' CLAYEY SILT, BROWN, PEBBLES TO 1/2", RUST STAIN, L. MOIST., L. PLAST. (ML)
12'-15.5' SILTY CLAY, BROWN W. TRACE GREY, LOW PLASTICITY, LOW MOISTURE, PEBBLES TO 1/8", HARD (CL)
15.5'-18' SAND, GREY, MEDIUM GRAINED, MOIST TR. SILT, VERY DENSE (SP)
18-19' BRN. SANDY CLAY W SEAMS SAND (CL)
19-20.5' GREY SAND, DENSE (SP)
20.5-24.5' SILTY CLAY, BROWN W REDDISH TINT VERY STIFF (CL)
22' - BROWN (REDDISH TINT GONE)
24.5-26' SANDY CLAY TO CLAYEY SAND W SEAMS OF SAND, STONES TO 1"
26'-28' SILTY SAND, DARK GREY, DENSE, TR. TO LITTLE ORGANICS (SM)
28'-31.5' SILTY CLAY, BROWN, HARD (CL)
29.5' SAND SEAM
31.5'-33' SANDY CLAY, BROWN, HARD (CL), SAND SEAM AT 32'
33'-36.5' FINE TO MED. SAND, BROWN VERY DENSE, TRACE CLAY, LOW MOIST. (SP)

TOTAL DEPTH = 36.5'
EL. BOTTOM = 596.5

Notes on water levels, water return, character of drilling, etc.

5" AUGER TO 8.5'; DRILLING W 4" TRI-CONE AND RE-CIRCULATING WATER
#1 Qp = 4.5+ TSF
#2 Qp = 4.5+ TSF
#3 Qp = 4.5+ TSF
#4 Qp = 4.5+ TSF
#5 Qp = (NONE-SAND)
#6 Qp = 4.5+ TSF
#7 Qp = 4.5+ TSF
#8 Qp = 4 TSF
#9 Qp = 4.5+ TSF
#9 HAD PROBLEMS WITH "DONUT" RUBBING ON ROD WHEN POUNDING. TOLD DRILLER TO STOP AND REPAIR
— AFTER #8-PE DROVE CASING TO 21' BECAUSE WATER WAS RUNNING UPSIDE AND OUT HOLE
#10 Qp (SAND)
#11 Qp = 4.5+ TSF
#12 Qp = (SAND)
#13 Qp = (SAND)
#14 Qp = (SAND)
WATER AT 8.4' WHILE DRILLING
WATER LEVEL AT 5.1' AFTER DRILLING

Pursue w/ CPCo
— What caused the artesian pressure
— request Administration Bldg. settlement investigation report
Check w/ log D (Stamiris Exhibit 19)

Hole No. E

Site: EVAPORATOR AND AUX. BOILER BLDG.

Were the piezometers which were being read in the DGB area reflecting both the influence of seepage from the pond and pore pressures from the surcharge load? 32/136

(1) Did you review the piezometer records before you, recommended removal of ~~removed~~ the surcharge? [yes]

(2) Can you tell us, with specifics, how the piezometer data recorded was evaluated with regards to what portion of the piezometric level was caused by the rising seepage level from the pond and what portion was caused by excess pore pressures caused by the surcharge loading? [poor was small probably indicated seepage

(3) To avoid the harmful effects caused by differential settlement of reinforced concrete structures, (usually consolidated clay) isn't it normal engineering practice, when preloading has been selected, to preload the foundation soils BEFORE constructing the structure.

If, the poor foundation soils beneath the DGB were removed and replaced with properly compacted fill - would there still be a need for the permanent dewatering system ~~to the DGB liquefaction problem~~? to address the potential for liquefaction of soils beneath the DGB?

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Questions of Dr. Hendron's Testimony
Corrections

With the cooling pond @ El. 627 and the Tittabawassee River @ normal elevation 603 - would you expect seepage from the pond to the river

(4) Are you aware of the extent of cracking that the DGB has experienced to date? Can you describe your knowledge on what cracking has occurred? (5)

(6) Do you know whether the pipes & conduits installed beneath the DGB were overstressed during surcharging? (7) Can you describe your knowledge on what analysis have been performed evaluating overstressing of the pipes & conduits?

conduits and

(8) In your opinion, would the structural integrity of the DGB be better today if the poorly compacted fill were removed entirely

You stated DGB rotated as a rigid body during surcharge

(8) What evidences do you have to indicate that under the surcharge load the D.G building rotated as a rigid body, rather than created additional curvature in the foundation footings due to surcharging?

Do the settlements which have been recorded for the DGB indicate a rigid body movement?

Zamarin's Redirect

Grout gaps

Mudmat - already broken up?

B.A No. 62 - indicates secondary consolidation - concern w/ drop after surcharge removal