

August 2, 1973

Distribution  
OGC  
Massar  
Shapar  
Engelhardt  
Pink  
Green  
REG Central  
PDR  
LPDR  
S. MacKay  
F. Miraglia  
H. Thornburg

Myron M. Cherry, Esq.  
Jenner and Block  
One IBM Plaza  
Chicago, Illinois 60603

In the Matter of Consumers Power Company  
(Midland Plant, Units 1 and 2)  
Docket Nos. 50-329 and 50-330

Dear Mr. Cherry:

Pursuant to your letter of July 3, 1973, I am enclosing copies of the (1) inspection plan, (2) field notes and (3) draft of the report relating to the inspection of June 26 - 28, 1973.

This will also confirm my telephone advice to you late yesterday afternoon, that further consideration is being given to those items of your request which are not answered by the enclosures, and that, within the next few days, you will receive what further response we believe we may appropriately make to your unanswered requests.

Sincerely,

THIS DOCUMENT CONTAINS  
POOR QUALITY PAGES

William Massar  
Assist. Chief Hearing Counsel  
for AEC Regulatory Staff

Enclosure:  
As stated above

cc w/enclosure:

Mr. Alan S. Rosenthal  
Dr. John H. Buck  
William C. Parler, Esq.  
Howard J. Vogel, Esq.  
Arthur W. Murphy, Esq.  
Dr. David B. Hall  
Dr. Clark Goodman  
Harold Reis, Esq.  
Irving Like, Esq.  
Harold P. Graves, Esq.  
Milton R. Wessel, Esq.

Ms. Mary Sinclair  
Honorable William H. Ward  
William J. Ginster, Esq.  
James A. Kendall, Esq.  
David Comey, Esq.  
Honorable Vern Miller  
Richard G. Smith, Esq.  
Atomic Safety and Licensing  
Board Panel  
Atomic Safety and Licensing  
Appeal Board

Mr. James N. O'Connor

Mr. Frank W. Karas

OFFICE ▶

OGC

SURNAME ▶

8006110433

Massar: djt

8/2/73

LB

Call Hills 1405 9th

(517) 788-1744

Call (W...)  
re construction  
(...)

AK

FORM CD-1 (1-12-73)

U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Construction Inspection Plan (WORK COPY)

✓  
12/14/73  
✓  
12/14/73  
✓  
12/14/73  
✓  
12/14/73

Licensee: Consumers Power Company  
50-379/73-05  
50-330/73-05

License No. 2000-81 & 82  
Category: 1

Facility Name: Midland Plant - Units 1 & 2

Location: Midland, Michigan

PSAK  
2:45:30  
OK OK OK OK

Type of Licensee: PUR (B & W) - (662 Mwe (each unit))

Type of Inspection: Special Inspection  
(Restart of Construction)

Date(s) of Inspection: June 25-28, 1973

Date(s) of Previous Inspection: April 17, 1973

Principal Inspector: P. A. Pahrbacher

6-21-73  
(Date)

Accompanying Inspector(s): M. Erb

(Date)

Other Accompanying Personnel: None

(Date)

Reviewed By: D.W. Hayes SPI 213

6/22/73  
(Date)

1:6:50  
2:5:18

3  
13007  
2  
NET  
555 H 2  
516 H 1  
1301

Efficiency   
Violations coding

SUMMARY OF FINDINGS

Enforcement Action

A. Violations

None found during inspection - RAR

See Sam Miller  
report on page  
reference to findings

B. Safety Matters

None of signif. found during insp. - RAR

See Sam Miller  
report on page

Licensee Action on Previously Identified Enforcement Matters

*NA - none held over*

INSPECTOR *KCK*

SUMMARY OF PROBLEM

SUMMARY OF INSPECTION RESULTS

INSPECTOR \_\_\_\_\_

SUMMARY OF PROBLEM

SUMMARY OF INSPECTION RESULTS

550 - 650

Design Changes

None

Unusual Occurrences



RPV  
SG  
BWR

See RO: III  
Vendor Insp. Reports

Other Significant Findings

Earthquake → Case  
finds → No

A. Current Findings

Eng. % 30-35%

Estimate of % construction completed (at date of const.)

Overall: ——— 1-2%

Concrete: ———

Estimate of construction needed now or soon

Status of restoration of batch plant

Status of SAR:

Principal Valve Locations:

- 5 -

Principal Pipe Locations:

Rechtel installation (S. west - to contain temp.)  
Champion temp.

Kellogg ←

Batch Plant - Restoration in progress - almost done (99%)

" " - Lab - to be rebuilt (Pittsburgh - temp.)

B. Unresolved Matters

1.

*Review later*

SUMMARY

2.

*Review later*

SUMMARY

3.

SUMMARY

C. Status of Previously Reported Unresolved Matters

1. Bechtel Organization Chart for Midland Project

INSPECTOR RAR

SUMMARY OF PROBLEM Organization chart for Midland project not clear relative to lines of reporting responsibility & lines of command. Question status on completion of 1. Disc outlined

SUMMARY OF INSPECTION RESULTS

2.

INSPECTOR \_\_\_\_\_

SUMMARY OF PROBLEM

SUMMARY OF INSPECTION RESULTS









N 3. NE to 1/2 ...

Results of Inspection (continued)

2. Reactor Bldg No. 1

Straw  
removal  
in progress

Base slab - 6 forms - strain control

Tendon gallery - using 2 1/2" - good

Structural steel / shear steel (50%)

Rt Floor Rebar (15%) - 1/2" diameter plus OK

Backfill

- 2" diameter supports (I beams) - cast - OK

Carbide  
removal OK

3. Reactor Bldg No. 2

Sand plastic  
removed  
satisfactory

Work slab - for base slab - exposed OK - good

Tendon gallery floor slab - good solidly - very good

Tendon gallery wall rebar (20%) (hard for some code  
OK + 1/2" dia - some  
in place (solidly with 1/2" dia - some  
some places)

Backfill - one spec

Interlocks - flexible connections - good

Being cleaned  
Hydrolaser

4. Site Excavation & Backfill

Water pump  
working  
status? work  
in progress

Structures excavation

> Backfill north of plant structures 25,000 CY - (Cl.)

> Excavation for water pond

No evidence of soil erosion problem re. embankment  
working site - removal of debris / debris at  
Some debris other way - soil must have 1 structure  
onto slab - into unbackfilled area etc  
Must on part of any bldg from slab

Some mud and water adjacent to Unit 1 tendon gallery outer wall  
(in future back-filled area)

RAK  
Recheck info re 50 5500  
re old flying cables & steel data  
RPA volume

check latest  
10 CFR 50 on this

Results of Inspection (continued)

(B) Condition of stored material components structures

1. Liner plate - consists of - 80x10' section (in section)

rusting - fairly heavy - 2' high bars -

scattered in various places

some debris, bolts, etc. - distributed

some of the legs (at bottom) are rusted

OLD WIRE ... STILL IN PLACE ...

2. Anc' or bolts

3. Post tensioned truss rods - with the ...

4. Misc. steel -

a. Reinforcing plates

b. S. G. plates

c. Reinforcing steel

LINER

PLATE PILES

liner plate  
some talk about  
out floor  
in place

Concrete Const. -  
Some prop in side now

Results of Inspection (continued)

(4. Misc. Steel - continued)

d. Sump liners

e. Penetrations

f. Cadwell splices

g. SS pipe stored in barn - clean cover at top and also  
4" (17) - 1-80A -  
2"   
marked on condition - should  
be as good condition

some moderate pipe size (24")

h. CS pipe - to be checked

4" }  
304 }  
SCH.10 }

at top & bottom }  
in much better }  
condition

Results of Inspection (continued)

(C) Review of Inspection Procedures to be Used Prior to Restart of Construction

check force in CP response to ALAB-106

- 1. Existing concrete including embedded items ✓
- 2. Line plate (stored) ✓ (two locations)
- 3. Liner plate coating ✓
- 4. Reinforcing steel (embedded & stored) ✓
- 5. Post tensioning materials (in place & stored) ✓

CP will conduct soil analysis at ALAB-106

(D) Summary of results (get reports) of work done by Bechtel, and others, to measure the environmental impact due to equipment and activities during const. delay.

see also...

- (1) Soil analysis to determine deposition of corrosives from chemical plant (Dow Chemical)
- (2) Atmospheric test coupons - CP...

(E) Action taken re ALAB-106

See separate entry

Report...

MID 192

Insp. Items - fr 6/26 - /73 insp:

① Condition of existing structure -

Alum Blk - placed concrete, masonry, formwork?  
(condition, working, etc.)

R. Blk # 1 - base slab, tank walls

R. Blk # 2 - wall slab, tank walls

Ex. tank - base slab (CI), penstock, etc.  
soil erosion?

② Condition of steel work

Lower plate (if location)

Other steel, supports, connections, etc.

CS & SS joints - how SS part? inside?

③ Insulation for original & replacement

④ Status of AB-Is

⑤ % complete - each

⑥ Budget of project - RA - QC, etc.

⑦ Steel for ...

Thurs. Apr

RRR  
MID 15

LUNCH  
11 AM

See Tom C & Bob. We re attendees for spilt out  
& Hill, Dodson - sufficient for me.  
Kessler Ed. Hutton - B, Kerner (B)

MTG start  
12:12

MTG items

- ✓(1) Route attendance list - as usual initial
- ✓(2) Agree, coord. & straighten out information - intent to do some. (1) (2) - other entries for comment.
- ✓(3) Plant rating? we have been using 662. Plus (each) 650 & 818  
Whichever PSAR - or CP office rating? due in ~ 2 mo
- ✓(4) Status of major components? no time on for BAW - main contract part  

swap (D.B.?)	RPV: -	SG: -	Presser: -
NO	no time on for BAW -	no time on for BAW -	no time on for BAW -
	~ end of 74	~ end of 74	~ end of 74
	reported to	reported to	reported to
	arrive on site	arrive on site	arrive on site

CRP's
- ✓(5) CP estimate of overall construction completion? 1 to 2% 1 to 2%  
 other details of completion: - 70 days 32-35% of concrete  
checking con. conditions, etc.
- ✓(6) Tags for nonconforming small & comp. - line plates, pin hangers, crane supports  
 tag, rope off, some how segregate - tags line plate stock, for use in  
 10 CFR 50, App B, you QA/QC part - re nonconform. small. - OK  
 disc. briefly with Paul & Whitaker - Can you occur as of action - plans des  
 can we consider this an open / in progress item? - to make it a small job.  
 CP comment: Yes - no work started
- ✓(7) Wire ties on rebar - <sup>inspect &</sup> verify that they are strong enough to hold from rebar  
 until concrete placement is completed.  
 When walking & climbing on rebar, placement form, vibrator action, etc.  
 CP comment: will check with Bechtel - OK - review opt. when work compl.
- ✓(8) Cameras around "rings" - Dow stream - but + review - CME  
 check this out - continue?  
 CP comment: ok
- ✓(9) Backfill south of plant structure - what has been done to inspect NAD  
 guid. ch. to main - temp. of the structure Planned
- ✓(10) Status of some service water pond? inspected - mostly Planned  
 inside cooling pond - a depressurized (no lines)  
 most of impurities out - no lines out not hit road by debris due to test.
- ✓(11) Would like to get copies of reports (Bechtel & others) regarding results  
 of work done to measure effect of environment on small, components  
 & structure during construction delay. Reviewed 2 yesterday

disc. items

Bill Kessler

me - 6  
discussed  
so ok

me - 7

me - 8

me - 10

ok



12

Yesterday I did soil analysis, ground water, well

Compress - specimen, etc. w/ Byron Peck - (Chloride monthly)  
Informal program by CP - halted during const delay

raw data only avail. - Spring 1970 & Summer 1971

I understand <sup>from Peck</sup> that more sampling is to be done -

Tom - is this your understanding also?

Kessler said  
prop to be re-init  
& eval. made of  
data - OK

Can these data (from earlier tests) be ~~evaluated~~ evaluated for  
significance, i.e., how does x PPD CL - affect stud. items, etc.

Seems to me that this would be desirable

CP comment:

(13) Bechtel org for MID Project

QA - no problem - appears OK except for report on lines

QC - under const. org - only ceremonial for some  
cost & scheduling activities - ch. purchases -  
could be O.K. see all. c

May be marginally acceptable - & - maybe not

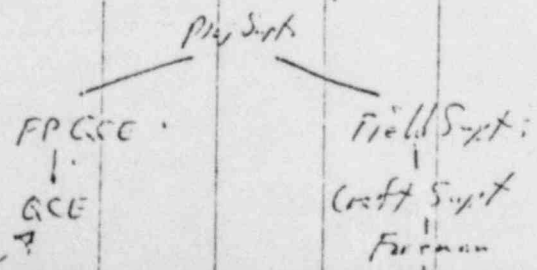
of course to Wall Vetter - but opportunity - still exists

Why Primary concern now - how does QC fare?

details + info re org. level - seems a bit possible

[Cv. I, 10 CFR 50, App. B]

QAC



"layers" + QA  
audit - good  
Disc of W-EV & g.l  
part with CP/B

⑥

Plans

under disc.  
project - look on way  
will improve on way  
sampled - etc.

all to be requalified  
(imp. first)

QC. bull pt.  
{ something of kind  
on panel N 511's  
on 5000

CP - T. Cooke:

• QC paper for each line plate, printed, etc. - ITBC.

• considered \$ as newly rec'd - it requires imp. (recapit imp.)  
due to long term storage at site.

{ Territory Subd.  
for paper etc.  
req -

late July for line plate

MIDLAND PROJECT  
CONSUMERS POWER  
EXIT MTG,  
Attendance list

<u>Name (w/middle initial)</u>	<u>Title</u>	<u>Organization</u>
R. A. Rohrbacher	Reactor Inspector	AEC - RO
T.C. Coche	Project Supt	CPCO
W.E. Kessler	" Mgr.	"
R.E. Whitaker	Field OAE	"
C. Q. Hillis	QAA	CPCO
C. M. Galt	Reactor Inspector	AEC - RO
C. E. Felton *	PROJECT SUPT.	BECHTEL
C.E. → Buck Kinney *	Project Field O.C.	Bechtel
S.I. → John Peterson *	PROJECT QUALITY ASSURANCE ENG.	Bechtel

\* Part time

Handwritten notes and scribbles in the top left corner.

411 D  
ALAP-106

- Action being undertaken

Inventory  
inspection  
level of ground conditions.

Q. listed contents (Proc. 2.3 - p 1)

p. 2 Anchor bolts  
embedded - one bldg.  
stored - barn

Pool tower Thrusts  
in place - RR #1

Sheathing  
- one - stored in yard (cut.)

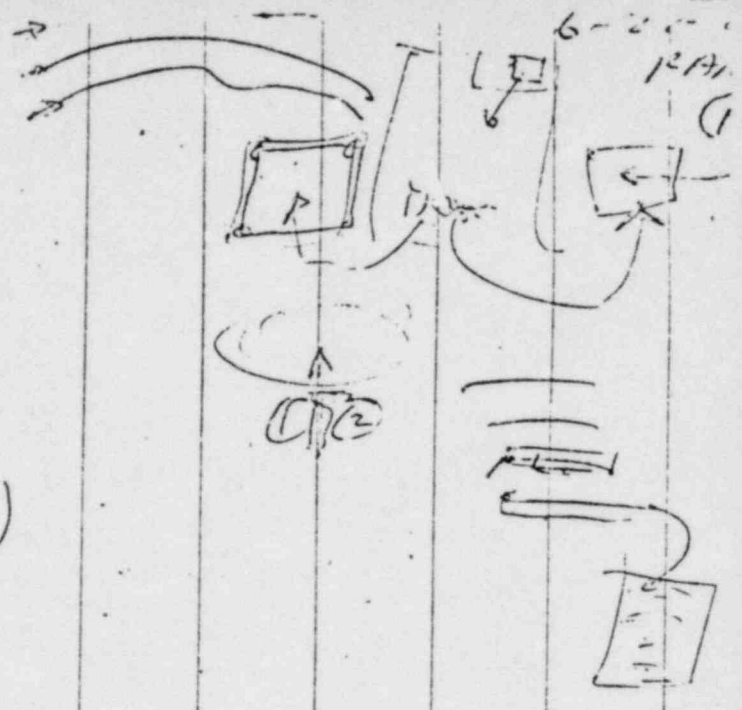
Bearing plates  
in place

(4) One, Bldg. Pipe Tunnel  
stored - in yard

(5) Three Embed.  
sole plates - Down RR 5 by.

Conduit Splice  
part of thk. line plate - stored in yard

Coatings  
on-line plate (grey) } on surface  
pipe tunnel (orange)





Concrete (cont.)

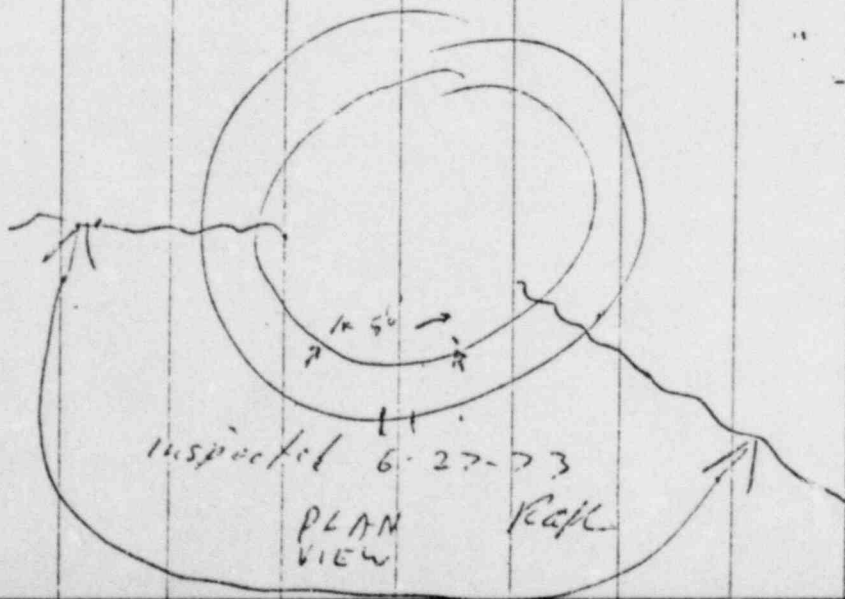
→ Below repl. sent in ALAB-106 repl. attached to response to section, etc. (Saggin future)  
 - Affidavit of F. W. Joyce <sup>Booklet</sup> <sup>dated</sup> (6-15-73) covering June 14th inspection of <sup>Unit</sup> of R. Gate & F. Kaplan (both B) Tendon Access Gallery - Unit 1

① station 2+59  
 (2, abut 3+45

" cracks shown <sup>on</sup> inside outside walls - all crack-verticall & predominantly Class 1 only 2 cracks, Class 4, ~ 86' apart (inner wall length gallery core - ~ 700 linear feet.

" cracks were normal drying shrinkage cracks - not unusual, exam. w/ 10X optical no evidence of other type motions - will not impair structural integrity

" Saggin future photo - appears to be same crack. (3+45) Joyce -



Make ITBC for next insp. - inspect rest of T.A.G. & other exposed concrete not visible

Earthquake

Soil borings - <sup>done</sup> ~~work~~ of 6-11-73

no results back yet

by Soil Materials & Engin

(SME)

with sup. of Bechtel

two  
ground  
areas

So. of aubley. - plant area

Dike area along T. River (SE from R. aubley)

(June) Plate Examination

Coatings - only done to date - (not plate small.)

covered in future report on the final Exam of

Final Plate Coatings

May 1 + 2, 1973

covered in  
H. L. B. 1973  
no report  
(completed)

Limited to thin plate accessible to unobstructing (10% sample  
32 of 294)

visual, film thick (5 or more random locations)  
using eleometer and mikrotester

future exp. & at least partial results will be done

H. L. Hondorp, Engin.

RD - note for [unclear] [unclear] [unclear]

Soil Analysis - important CP study (if <sup>data</sup> <sup>gathered</sup>)

rain stations x 4 well compare

ground water - soil

done April + May 1970

rain data only - Cl<sup>-</sup> as ppb

soil, water, soil, water

rain data only - Cl<sup>-</sup> + sulfates, F

done July, 1971

no evidence of det. effect of atom iten

→ more sampling to be done - chertom C also

Renie says y-



Budget People - stp, etc. suspension (Cont'd 1 - Alvin)

report + schedule - Budget - McDonald & ?  
under pres. covered areas

High  
H.L. Hendorp  
(SFHO)

Mail work:

John Binkley  
- Elsie Hunt  
- Chuck Hunt

Chief Mail  
- Chief cost

CP:  
in AAAP-06  
rebut, conc, etc.

documentation

July 9 - Antenna  
Tid Tid - (PT) work  
conc upl. - test strings

Jan 30, May 1-2 - Budget/Plan -  
Lipstick, etc.

May 8 - Conc - ant

June 11 - Soil borings

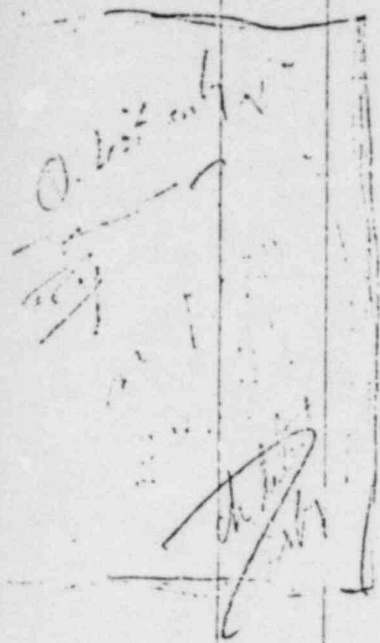
Jan 14 - visit com - Tambora

April 27 - CP - mail stp.

Jan 18-20 - Budget/Plan check-out - mobile operations

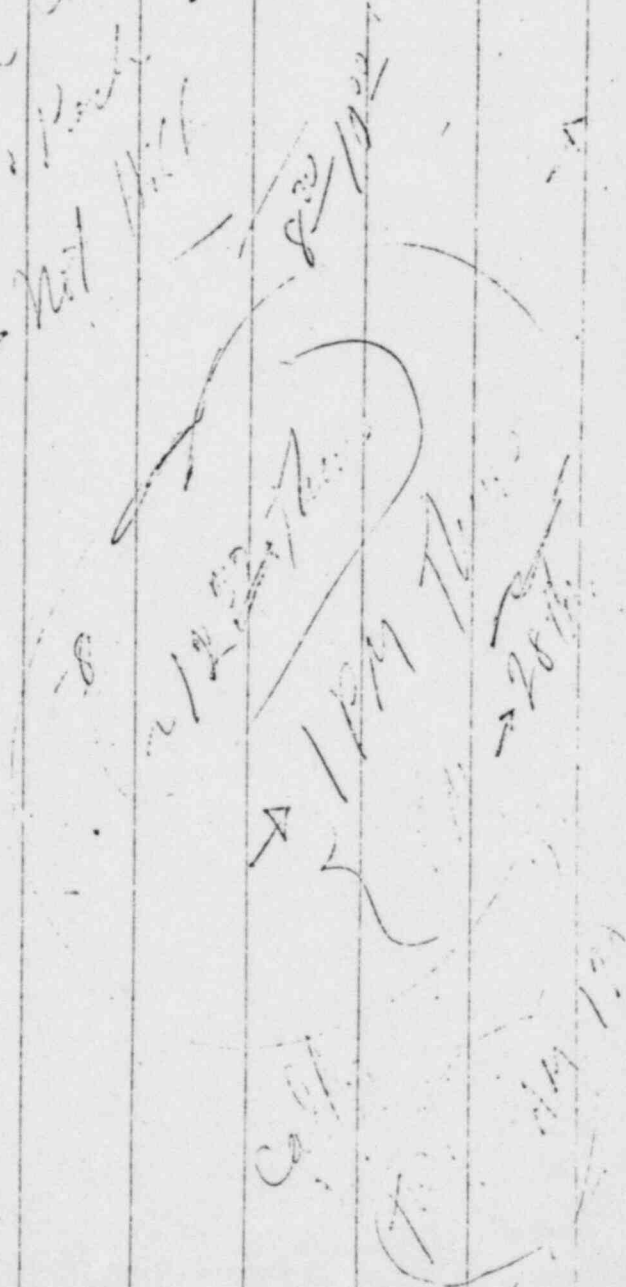
Jan 27 - Scale calib. etc. batch print

North  
←



Red Station  
and ...  
- Gate ...  
The ...  
Mit ...

→  
Council



LEI

F75 57-372-1000  
H 57-700-1000

11 'Island' 142

Carl E. Finney QC  
John Peterson - D.S.

T.C. Cooke  
Bruce Beck

35 MW.E. 1/10/72  
Dress 855 MW.E.  
Horn 526 MW.E.

Commercial operations

Batch plant 99% ready to go

Champion installed and finished  
operator plant not yet

FTL. masonry Lab will have beds  
on concrete. Beds are at

#1 combustion 1/5000

#2 steam only 20000 turbine

- Bechtel installation

Bechtel - A.E. & construction

Canonie - Earthwork done 1/10

Line construction Bechtel now active

CP have say on bit work

NER - Bechtel also from CP

SW.W. may finish piping

Kellogg - small order at 95,000

G.E. high turbine

Have to

7/10 A.E.C. say want

look for today 1972

50 days from received, A  
subside

AEC has heard & offered  
-S.B. some work and

5/18 Appeals to be taken  
60 days from receipt

Can appeal to Fed Court

Contracted to C.A. program of 1/1/68  
Construction materials etc

2. Tell what to do next 3 months

3. Maria promised not to...  
not... Dual...

4. NCR report on into a DRO  
must submit

Rec'd

Corrosion  
Inplace matls  
Francis Joyce

Atch. 4/11/68  
R. M. Donald  
Log...  
2...  
no...  
when...

Carbo Zini-11 <sup>Coating</sup> Carboline 20

Equip. hatch -

Condenser air 11/2 pipes <sup>Unit 2</sup> Unit 1 on  
Spray coating with <sup>unit 1 on</sup> and resprayed certain areas  
Paper glued covered top matl.

Street pos. -

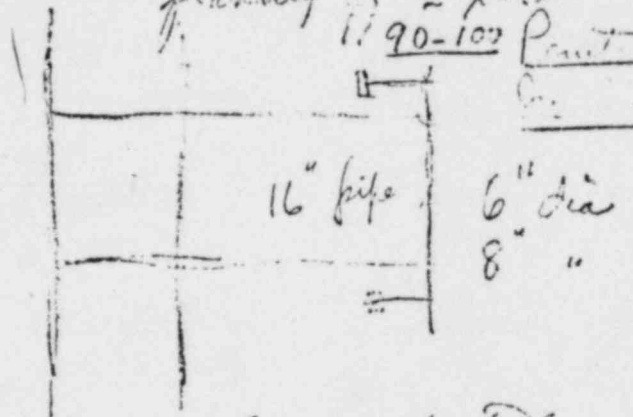
Reaction building <sup>water</sup> Penetration - <sup>Chloracumet</sup> <sup>roofing</sup> <sup>and</sup> <sup>proct.</sup>

22791 SAK

.9A 82452 P1 2577

Very heavy rusting in pipe

flaking <sup>at</sup> 2 ft <sup>11</sup> 90-100 Penetration



Crane rail support slab

Whitaker  
Crane rail suff. 70-80  
drilled in concrete  
Structural Crane span between  
horizontal supports  
gray coating - inside contains  
Pneumatics covers control panel  
enclosure

2 Equip. hatches on site  
down for containment base

3/4 by 1/2

At top for

with interior to be used as a trolley

Shims? use where they are

Flange plates with Peter Caldwell  
Personnel plate  
Carboline coating v.g

Life on way down over some of the things

Paint inside coat 8' dia (10/1)

about coat inside

orange epoxy paint 20.  
1/2" ...

AM 2480

2 24 pins welded in body

4 per 2 long p.s.

Champion

Paul E. ...  
D. ...  
Paul E. ...

Calibrating scales

" H<sub>2</sub>O measuring

test concrete mixes ...

Checking <sup>grip</sup> vanes in tractor

2 standby boards 8' ...

make up pipes and joints

comps and check 28 d ...

checks before production

5/6/2 from [unclear] [unclear]  
Circ water

5/5 Concrete inspection

6/11 Soil borings

6/14 visual concrete condition

4/27 CP walls storage [unclear]

4/18, 19, 20 match plan & check

was fine & successful

Test Rebar 7/9 Interior PTH

J. Beitel } Civil inspection concrete

C. Hunter } Rebar & cover

DR0 - report of

Rebar & Cast-in-place

Ship & [unclear] dates don't agree

1974 Nov & Dec PTH [unclear]

ship & [unclear] in investigation



U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Inspection Report No. 50-329/73-05

50-330/73-05

Licensee: Consumers Power Company

212 W. Michigan Avenue

Jackson, Michigan 49201

License No. CPPR-81

CPPR-82

Category: A

Facility Name: Midland Plant, Units 1 and 2

Location: Midland, Michigan

415  
462  
22-11  
? — Type of Licensee: PWR (B&W) Unit 1: 650 Mwe  
Unit 2: 818 Mwe e

Type of Inspection: Special, Announced  
(Restart of construction)

Dates of Inspection: June 26-28, 1973

→ Dates of Previous Inspection:

Principal Inspector: R. A. Rohrbacher

\_\_\_\_\_  
(Date)

Accompanying Inspector: C. M. Erb:

\_\_\_\_\_  
(Date)

Other Accompanying Personnel: None

Reviewed By:

SUMMARY OF FINDINGS

Enforcement Action:

A. Violations

No violations of AEC requirements were identified.

B. Safety Matters

No significant safety items were identified.

Licensee Action on Previously Identified Enforcement Matter :

No previously identified enforcement matter remained unresolved at the time of this inspection.

Design Changes:

No design changes were identified.

Unusual Occurrences:

No unusual occurrences were identified.

Other Significant Findings:

A. Current Findings

1. Facility Status

<u>Activity</u>	<u>% Completion</u>
Engineering	30-35%
Site construction	1-2%

2. Present Activities

Although new construction had not begun during the current inspection, about 50 people are at the site doing preconstruction and restoration work in preparation for the restart of construction. The work in progress included the removal of protective enclosures and materials from existing concrete slabs and structures, site clean-up, preliminary earthwork in the cooling pond area, renovation and testing activities at the concrete batch plant, inspection of construction work completed prior to construction shutdown, and the inspection of materials and components stored on or near the construction site during the shut-down period.

Both Consumers Power Company (CP) and the Bechtel Corporation (Bechtel) have established construction offices at the site.

B. Unresolved Matters

1. Requalification and Restoration of Site Stored Components

Carbon steel components stored <sup>outside</sup> at the site have rusted to varying degrees. Work and quality control procedures are being planned by CP to verify that all components used will meet applicable requirements. This matter remains open pending review of completed procedures. (Paragraph 1.)

2. Evaluation of Rebar Tie Wires

Due to the deterioration of some tie wires holding exposed reinforcing steel in place, the adequacy of these wires during concrete placement is not known. Inspection and evaluation of this matter are planned by the licensee. This matter will be reviewed during a subsequent inspection.

(Paragraph 2.)

C. Status of Previously Reported Unresolved Matters

Bechtel Corporation Organization For The Middle<sup>and</sup> Project  
(RO Inspection Reports No. 050-329/73-02 and 050-330/73-02)

In response to a request from RO:III during the referenced inspection, CP provided RO:III with a modified Bechtel organization chart. After a review of this chart (which was received by RO:III on May 7, 1973), and discussions with CP and Bechtel personnel during the current inspection, it was not clear to RO:III that all requirements of 10 CFR 50, Appendix B, Criterion I, were met. This matter remains open pending further clarification and/or changes.

← Management Interview

A. The following persons attended the management interview at the conclusion of the inspection:

Consumers Power Company

W. E. Kessler, Project Manager

C. Q. Hills, Quality Assurance Administrator

T. C. Cooke, Project Superintendent

R. E. Whitaker, Field Quality Assurance Engineer

Bechtel Corporation\*

E. E. Felton, Project Superintendent

J. I. Dotson, Project <sup>Quality Assurance</sup> QA Engineer

C. E. Kinney, Project Field <sup>Quality Control</sup> QC Engineer

\*Part time

B. Matters discussed and comments, on the part of management personnel, were as follows:

1. The present condition of the concrete structures poured prior to cessation of construction was discussed. The inspector stated that a visual inspection of the concrete in place and exposed for the Auxiliary Building and Reactor Buildings No. 1 and No. 2 was made and that this inspection verified the results and conclusions of reports by Mr. Joyce of Bechtel on this subject. The inspector further stated that the concrete observed appeared to be in good condition and that additional existing concrete would be inspected when form removal and cleanup is completed. CP stated that specialists from Bechtel will be used on a continuing basis to examine and evaluate the concrete and rebar.

In response to a question concerning the adequacy of the wire ties on rebar due to rusting, a representative of CP said that these tie wires would be inspected and that their holding power at various locations would be checked.

2. Procedures to requalify carbon steel components that had rusted during storage at the site were discussed. CP stated that plans are being made to requalify containment liner plates. The plates would be transported to a jig where cleaning and dimensional checks would be made. The plan would include a hold point for QC inspection prior to installation. At this point, if all applicable requirements were met, the plates would be considered acceptable for use; otherwise, the plates would be considered nonconforming.
3. The CP program of soil analysis and stored material wipe sampling was discussed. CP stated that this program was started in 1970 but halted during the construction shutdown. CP further stated that this program would be reinitiated, and an evaluation of the results would be made.
4. In response to a request, CP indicated that copies of reports would be sent to RO:III concerning results of work done to measure the affect of the environment on materials, components and structures during the construction delay.

5. The Bechtel organization for the Midland project was discussed with CP and Bechtel representatives. After a discussion on this subject, the inspection stated that he more fully understood the Bechtel organization chart but that it was not yet clear to him whether all requirements of 10 CFR 50, Appendix B, Criterion I, were met. Additional discussions on this matter are planned.
  
6. In response to a question regarding concrete batch plant status, CP stated that Champion, Inc. personnel were reactivating and requalifying the plant, and <sup>that</sup> calibration of measuring equipment and evaluation of <sup>previously stored</sup> materials (such as fly ash) for suitability were in progress.



REPORT DETAILS

Persons Contacted

The following persons, in addition to individuals listed under the Management Interview Section of this report, were contacted during the inspection.

Consumers Power Company

B. H. Peck, Field Supervisor (Mechanical)

Champion, Inc.

P. E. Schmansky, General Superintendent

L. P. M. C. Connell, Electrical & Safety Engineer

Bechtel Corporation

H. L. Hondorp, Engineer (Metallurgist)

R. L. McDonald, Engineer

Results of Inspection

1. Restoration and Requalification of Site Stored Components

Carbon steel construction materials and components stored outside at the site have <sup>RUSTED</sup> rusted (corroded) to varying degrees. Rusting appeared to have progressed more rapidly on surfaces where water had collected. The rust appears to be fairly uniform on the surface

RUSTED

with no evidence of severe pitting. The licensee has arranged for specialists from Bechtel to inspect these components and evaluate whether the components can be restored to meet applicable requirements.

The following Class I (Q-listed) components were visually examined during the inspection of yard storage areas.

- a. Curved wall plates (containment liner) with <sup>welded</sup> ~~walled~~ on reinforcing bars.
- b. Containment penetration components.
- c. Steel bars with Cadwell<sup>d</sup> ends (thimbles).
- d. Polar crane trolley.
- e. Polar crane wall supports and connecting track beams.

CADWELD

Surfaces of the above components, which will be within containment, were coated with a protective coating (Carbozine<sup>c</sup> 11 or similar coating) prior to shipment to the site. This coating either prevented rusting or greatly inhibited its formation on these coated surfaces.

A A couple dozen stainless steel pipe sections, 2", 4", and 24" in diameter, were visually inspected in a warehouse. The pipe sections were free of surface dirt, end caps were in place, identification marks visible and <sup>the pipe was</sup> covered with plastic sheets.

All materials and components that have been stored at the construction site will be inspected, restored or rejected, and requalified prior to use or installation. Plans to develop procedures to do the above work are in progress.

2. Evaluation of Rebar Tie Wires

The inspector noted that the tie wires used to hold the reinforcing steel bars in place had varying amounts of rust on their surfaces. Rather severe rusting on some of these wires indicated possible weakness due to loss of material. A representative of the licensee stated that this condition would be evaluated to assure that the tie wires would hold adequately during construction activities including concrete placement.

3. Soil Analysis and Wipe Sampling Program

CP initiated the subject program early in 1970. Data were collected in the Spring of 1970 and in the Summer of 1971. The intent of this program was to determine the location and amount of chlorides and

*at the size*

other undesirable constituents which may adversely affect stored components. CP indicated that this program would be reinitiated.

4. Condition of Existing Structures and Stored Components

The status of the implementation of the CP program to determine the quality of the subject items is given in Appendix A of this report.



No 99 ->

It was determined from a visual inspection that this listing appears to represent the actual construction completed prior to construction cessation in late 1970.

Materials and components (Q-listed) stored at the site since cessation of construction has been categorized by the licensee. During the inspection of these stored Q-listed items, the inspectors determined that the listings appeared to be correct and that components not readily identified or obviously marked were subsequently identified upon return to the site office. Stainless steel piping was observed to be stored under plastic in a warehouse (barn) *at the site.*  
~~near the construction area.~~

2. Evaluation of Present Condition

a. Concrete Work

A report was reviewed entitled "Interim Report on the Initial Examination of In-Place Materials, May 8 and 10, 1973" dated May 21, 1973 by F. W. Joyce, Supervising Civil Specialist, Bechtel (San Francisco). This report included the results of a visual inspection of the exposed structural concrete of the Auxiliary Building. The drawing which mapped visually significant <sup>a</sup> cracks was examined also. A visual examination of the concrete

CRACKS

structures and water stops <sup>included in</sup> ~~covered by~~ the above report, ~~during~~  
~~the current inspection~~ indicated that the report results  
were comparab<sup>l</sup>e to the actual conditions observed by the  
RO inspector.

The affidavit of F. W. Joyce dated June 15, 1973, regarding  
the June 14, 1973 inspection of concrete in the Unit 1 Tendon  
Access Gallery, by Joyce, R. Grote and F. Kapla (all employees  
of Bechtel) was reviewed. The results and conclusions in this  
affidavit were in agreement with conditions observed and  
conclusions reached by the RO inspectors during the current  
inspection.

b. Concrete Batch Plant

The RO Inspector observed that the concrete batch plant and  
concrete delivery trucks were in the process of renovation,  
testing and requalification. Scales and other measuring devices  
were being checked and recalibrated. This work was being done  
by Champion, Inc. personnel. The licensee stated that test  
mixes are scheduled for early July, 1973. *Pittsburgh Testing  
Laboratory personnel will be at the site at this time  
to sample and test these mixes.*

c. Reinforcing Steel

The licensee stated that two specialists from the Bechtel San Francisco office were presently onsite to examine reinforcing steel (exposed embedded and stored) to determine the extent of corrosion and material loss.

The RO inspectors visually examined the rebar in place for the Unit 2 Tendon Gallery walls. Except for surface rusting, the rebar appeared to be sound, free of severe pitting, and adequate for use. The licensee stated that inspection and testing of this (and other) rebar, as well as rebar tie wires, would be tested to verify that all applicable requirements are met prior to concrete placement in this area.

The licensee stated that their chief metallurgist and their chief civil engineer would be at the site during the week of July 2, 1973, to examine rebar, concrete and <sup>other</sup> related materials.

d. Earth Work

The licensee stated that some soil borings were made during the week of June 11, 1973, by Soils Materials and Engineering, with representatives of Bechtel present, but the results were not available yet. Some preliminary earth work has been started.



e. Containment Liner Plate Coating

A report was reviewed entitled "Interim Report on the Initial Examination of Liner Plate Coatings, May 1 and 2, 1973," dated May 18, 1973, by H. L. Hondorp, Engineer (Metallurgist), Bechtel (Ann Arbor). This report includes the results of the inspection of Newcomb, Grote and Hondorp (all of Bechtel) and Hinson (Coating Specialist, Carboline Company). A visual examination of about 25 liner plates (which may not be the same as those examined in <sup>the</sup> <sup>report</sup> above) during the current inspection indicated similar conclusions.

f. Containment Liner Plate

The licensee indicated that only a preliminary examination of these plates had been made recently but representative samples will be examined in the future. He further indicated that all liner plates would be reinspected, restored or rejected, and then, during a special QC inspection, requalified if all applicable requirements are met at that time. Plans to establish the above procedures are in progress.

g. Other Embedded and Stored Materials and Components

Items such as anchor bolts, polar crane supports, post-tensioning materials, cadweld material, according to the licensee, will be inspected, examined and measured, as appropriate, prior to use on installation.

During the inspection of the storage areas, it was observed that some material in storage had been restacked, relocated and/or recovered (during the last year or so) to provide satisfactory protection. It was further observed that new metal identification tags had replaced some hard-to-read *plastic over paper in plastic* tags.

U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Insp. Report: 50-329/73-05  
50-330/73-05

Licensee: Consumers Power Company License No. CPPR-81  
212 W. Michigan Ave License No. CPPR-82

Jackson, Mich. 49201 Category: A-2

Plant, Units

Facility Name: Midland 1 and 2

Location: Midland Mich.

with license  
492-8181

→ Type of Licensee: PWR (B&W) 800 MWE vol.  
500 MWE 20% plus steam

Type of Inspection: Special Inspection  
(Re-start of construction)

Date(s) of Inspection: June 26-28, 1973

→ Date(s) of Previous Inspection: None

Principal Inspector: R. A. Rohrbaker

\_\_\_\_\_  
(Date)

Accompanying Inspector(s): C. W. Eason

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Date)

Other Accompanying Personnel: None

\_\_\_\_\_  
(Date)

Reviewed By: \_\_\_\_\_

\_\_\_\_\_  
(Date)

# Summary of Findings

## Enforcement Action

### A. Violations

of AEC requirements.  
No violations were identified.

### B. Safety Matters

significant  
No safety items were identified.

## License Action on Previously Identified Enforcement Matters

No previously identified enforcement matter remained unresolved at the time of this inspection.

## Design Changes

No design changes were identified.

## Humanal Occurrences

No humanal occurrences were identified.

# Other Significant Findings

## A. Current Findings

### 1. Facility Status

<u>Activity</u>	<u>% Completion</u>
Engineering	30-35%
Site construction	1-2%

### 2. Present Activities

Although no construction had not begun since the

current inspection, about 50 people  
pre-activities and activities were  
at the site doing

pre-activities for the  
re-start of construction. The work in progress  
included the removal of protective enclosures  
from existing equipment and structures,  
and also site clean-up, and pre-activities.

activities at the time of the inspection.

Inspection of equipment in a completed phase of  
construction activities, and the inspection of

construction site during the shutdown period.

### 13. Unrecorded Matters

#### 1. Storage of the Construction Materials for the Reactor (Containment) Buildings

All Carbon steel materials, especially painted surfaces have rusted. (Para 1)

#### 2. Condition of Tie Plates Holding Reinforcing Steel Bars These wires were quite rusty, and their ability to hold under concrete pour conditions must be evaluated. (para 2)

(Bec. 701) more extensive investigation of the site.

to verify that all components used will meet applicable requirements.

## B. Unconcern Factors

### 1. Regulation and Restoration of Site Stored Components

Due to the fact that components stored at the site have varied <sup>to varying degrees</sup> work and quality control procedures are being planned. This matter remains open pending review of completed procedures. (Paragraph 1)

### 2. Evaluation of Rebar Ties

Due to the deterioration of some ties which have been exposed to the weather, the ties are being replaced. The ties are being replaced during construction. The ties are being replaced by the contractor. This matter will be reviewed during a subsequent inspection.

C. Status of Previously Reported Unresolved Matters

Bechtel Corporation Organization for the Middle East  
 (RO Inspection Reports No. 050-379/12-02 and 050-330, 78-  
 In response to a request from RO:III during the  
 referenced inspection, CP provided RO:III with a  
 certified Bechtel organizational chart for a period  
 of 180 days which was reviewed by RO:III  
 (May 7, 1973) and discussions with CP and RO:III  
 personnel during the same inspection. It was  
 not clear to RO:III that all requirements of  
 10 CFR 50, Appendix B, Category I, were met. The  
 matter remains open pending further information  
 and/or changes. (Para 5)



C. Status of Previously Reported Unresolved Matters

Management Interviews

The following persons attended the management interviews at the conclusion of the inspection.

Consumers Power Company

W. E. Kessler

Project manager

C. D. Hill

Quality Assurance Administrator

T. C. Cooke

Project Superintendent

R. E. Whitaker

Field Quality Assurance Engineer

Bechtel Corporation

E. C. Felton

Project Superintendent

J. I. Dutton

Project S.A. Engineer

C. E. Kinney

Project Field Q.C. Engineer

\* Not time

B. Matters discussed and comments, on the part of management personnel, were as follows:

1. The inspector stated that a visual inspection of the framed concrete for both plants had been made. A report on Concrete Condition <sup>made by</sup> Mr. Frank Engel, a Registered Concrete Specialist from San Francisco had been examined and his conclusions verified by visual observation. The two worst cracks in a vertical wall of the plant Hot Air Gas gallery were found to be as described in the report, as were some cracks in the auxiliary building floor. The framed concrete appears to be in excellent condition, although this matter will remain open until clean up is complete. Mr. Hinkle from CP stated that specialists from West will be used as a continuing basis to evaluate the concrete and reinforcing bars. The inspector pointed out that the wire ties <sup>were</sup> were <sup>not</sup> <sup>used</sup> <sup>in</sup> <sup>the</sup> <sup>concrete</sup> due to corrosion and a CP representative said

Do not  
forget

their holding power at various locations would be checked.

2. The inspector noted that <sup>some of</sup> the containment liner plates had been <sup>recently</sup> identified with metal tags. The Cooke of CP stated all plates would be transported to a jig where cleaning and dimensional checks would be made. All discrepancies <sup>at this hold joints</sup> require that a non-conformance report be issued. The Cooke described their procedure as a 100% requalification of the blimp tapes. All original markings would be retained to assure traceability of heat, and also sequencing of reactions. The inspector stated these materials will be followed on subsequent inspections.

3. The inspector discussed the QA/QC organization with CP and Bechtel representatives.

4. The status of the concrete batch plant was requested by the inspectors. Mr Cook of CP stated that Champion Inc. were reactivating and recalibrating <sup>the plant</sup> the measuring equipment was undergoing and left over materials such as fly ash were being evaluated for suitability. The transport trucks were having the vanes, and other agitation equipment reworked. They plan to produce concrete test mixes the first week in July and 28 day test results will be available prior to the pouring of production concrete.



2. Corrosion of Tie Wires

The tie wires for the reinforcing steel rods had varying amounts of rust. [This is to be expected, since some were underwater, some above water (and some with an alternating wet and dry condition).] The Bechtel Q.C. representative stated that a careful evaluation would be made to assure that the tie wires would hold through all construction activities including concrete pouring.

B. Matters discussed and comments, on the part of management personnel, were as follows:

1. The present condition of the concrete structure poured prior to installation of reinforcement was discussed. The inspection indicated a general inspection of the concrete in place and approval for the Amplifying Beams, of the Reinforcement and No. 2. was made and that this inspection verified the results and conclusions of report by Mr. Joyce of Bechtel on the subject. The inspection further stated that the concrete

observed

appeared to be in good condition and that existing conditions would be inspected to determine removal and cleanup of reinforcement.

CP etc. The specimens from Bechtel and

Ac. used on a continuous basis to examine

the concrete and steel. A

question concerning the design of the

wire ties on rebar due to rusting, a representative of CP said that these tie wires would be inspected and that their holding power in concrete would be checked.

- 2. Procedures to requalify carbon steel components that had rusted during storage in the site were discussed. CP stated that plans are being made to <sup>requalify</sup> containment time periods. The plates would be transported to a shop where cleaning and dimensional checks would be made. The plan would include a ~~site~~ held point of

QC inspection prior to installation. At this point, if all applicable requirements were met, the plates would be installed. Following placement, the plates would be inspected for proper curing.



3. The CP program of soil analysis and other material wise sampling was discussed. CP stated that this program was started in 1970 but halted during the construction activities. CP further stated that the program would be reinstated, and ~~appropriate~~ evaluation of the results would be made.

4. In response to a request ~~made~~ <sup>it</sup> would be sent to individuals that copies of reports ~~from~~ <sup>of</sup> records of work done to measure the ~~state~~ <sup>state</sup> of the environment in materials, composition and structures during the construction activity.

3. The possible organization for the material program was discussed with CP and BAA. After a discussion on this subject, the ~~group~~ <sup>group</sup> stated that a more fully constituted BAA ~~organization~~ <sup>organization</sup> ~~was~~ <sup>was</sup> ~~needed~~ <sup>needed</sup>.

was yet clear to him whether all requirements of OCFR 50, 23000.03, Criterion I, were met. Additional discussion on this matter on 1/10/68.

- 6. In response to a question regarding concrete total plant status, it was stated that Champion <sup>personnel</sup> were reactivating and requalifying the plant, & calibration of measuring equipment and calibration of analytical functions. The work for suitability was in progress.

101

## Report Details

### Persons Contacted

The following persons, in addition to individuals listed under the Management Interview section of this report, were contacted during the inspections.

#### Consumers Power Company

B. H. Peck, Field Supervisor (Mechanic)

#### Champion, Inc.

P. E. Schmansky, General Superintendent  
L. P. Mc Connell, Electrical & Safety Engineer

#### Bechtel Corporation

H. L. Hondorp, Engineer (Metallurgist)  
R. L. McDonald, Engineer, Sr. Consultant

Results of Inspection

1. Restoration and Requalification of Site Fixed Components

~~inspected~~ Carbon steel (including materials  
 and composite storage <sup>outside</sup> tanks have rusted  
 (corroded) to varying degrees. Pitting  
 appears to have progressed more rapidly on  
 surfaces where water had collected. The  
 rust appears to be fairly uniform on the  
 surface with no evidence of severe pitting.  
 The licensee has arranged for inspection  
 from Bechtel to inspect these components  
 and evaluate whether the components are  
 suitable for continued operation.

A The following items (A-1000) components  
 were visually examined during the inspection  
 of yard storage areas.

(a) ~~Inspected~~ Inspected ~~the~~ the ~~components~~ components ~~at~~ at

working in reinforcing beams

(b) continuous penetration components

(c) ~~Steel pipe with Cadwell ends (thimble)~~

(d) ~~Steel pipe with~~

(e) Polar cross wall supports and connecting back beams

Surfaces of the above components, which will be under containment, were originally coated with a protective coating (Corrosion or similar coating) prior to shipment to the site. This coating with periodic wetting or periodic inhibition into junctions on these components.

or similar coating)

coupling pin 5"

11. A ~~number~~ of standard steel pipe sections, 2", 4" and 8 1/2" in diameter, were used in a work area. The pipe sections were free of surface rust, and caps were in place, identification number visible and

check  
re 5000  
5/12



licensee stated that the conditions would be evaluated to assure that the tie wires would hold adequately during construction activities including concrete placement.

### 3. Soil Analysis and Wipe Sampling Program

CP initiated the subject program early in 1970. Data were collected in the spring of 1972 and in the summer of 1971. <sup>The intent of the program was to determine</sup> the location and amount of chlorides and other undesirable constituents which may adversely affect a structure. CP indicates that this program will be reinitiated.

### 4. Condition of Existing Structures and Their Impairment

The status of the impairment of the CP program to determine the quality of the subject structure is given in Appendix A of this report.

APPENDIX A

Prepared by \_\_\_\_\_  
Printed by \_\_\_\_\_

The following persons in addition to individuals listed on the  
the Management of the \_\_\_\_\_  
\_\_\_\_\_

B. H. Park, Field Supervisor (\_\_\_\_\_)

\_\_\_\_\_ Corporation

M. J. Hunter, Engineer (\_\_\_\_\_)

R. L. McDonald - Sr. Comm. \_\_\_\_\_



Results of Inspection

State of Implementation of Condition 1 of NACB-1966

1. Listing - related to nuclear safety (Q-list)  
Previously completed construction work has been  
by CP,  
and the listing has been grouped  
under the following headings: Auxiliary  
Building, Radio Building, Fuel, Heat  
and Fuel Examination and Book etc.

11 A -> It was determined from a visual inspection that  
the listing appears to represent <sup>the</sup> ~~previous~~ <sup>completed</sup> ~~work~~ <sup>work</sup>  
completed prior to ~~the~~ <sup>the</sup> ~~inspection~~ <sup>inspection</sup> in 1971  
(Q-listed)

A -> Materials and components of ~~the~~ <sup>the</sup> ~~listing~~ <sup>listing</sup>  
and ~~the~~ <sup>the</sup> ~~listing~~ <sup>listing</sup> of construction have been categorised  
by the licensee. During the ~~the~~ <sup>the</sup> ~~inspection~~ <sup>inspection</sup>  
of these ~~the~~ <sup>the</sup> ~~Q-listed~~ <sup>Q-listed</sup> items,

A -> the inspector determined that the listings appeared  
to be correct and that components not readily  
identifiable or obviously marked were subsequently

identified upon return to the site office.

→. Evidence still being was  
observed to be strong under pressure in a  
variety of places near the construction area.

2. Evaluation of Present Conditions

a. Concrete Work

A report titled "Interim Report on the  
Examination of the Main Wall of the  
Tank No. 10, 1973" by F. W. Geyer,  
Surrey Engineering and Inspection Co. (So  
framed, this report includes the  
of a visual inspection of the  
concrete of the main building. The  
which appear visually significant cracks were  
examined and a visual inspection

dated May 21, 1973.  
of a visual inspection of the  
concrete of the main building. The  
which appear visually significant cracks were  
examined and a visual inspection

and under steps  
the concrete structure covered by the above  
report during the current inspection  
indicated that the report results were  
comparable to the actual conditions observed  
by the RD inspectors.

77. <sup>RD</sup> ~~Report~~ of F.W. Joyce ~~of the~~ dated  
June 15, 1973, regarding the June 11, 1973  
inspection of concrete in the Unit 1 Tunnel  
Access Gallery, by Joyce, R. Grote and  
F. Kapla (all employees of GE) are reviewed.  
The results and conclusions in this report  
were in agreement with conditions observed  
and reported by the RD inspectors during its current inspection.

78. The RD inspectors observed conditions in the  
in place in the Unit 1 Tunnel Access Gallery, with  
except for surface cracking, the rebar appeared

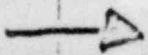
to be sound, free of severe pitting, and  
adequate for use. The licensee stated that  
inspections and testing of this (and other) rebar,  
as well as rebar tie wires,  
would be tested to verify that all applicable  
requirements are met prior to concrete  
placement in this area.

b. Concrete Batch Plant

The PD Inspector observed that the concrete  
batch plant and concrete delivery trucks  
both prior to the process of batching,  
and testing and regularization. Scales and  
other measuring devices were being checked  
and re-calibrated. This work was being done by  
Champion, Inc. personnel. The inspector noted  
that test mixes are scheduled for calibration.

c. Reinforcing Steel

The licensee stated that this  
specimens for the batch plant. The specimens  
were on site to examine the  
(specimens) to determine  
and measure



7 The licensee stated that their chief metallurgist and their chief civil engineer would be at the site from the date of July 7, 1978, to examine records, drawings and other materials.

d. Earthwork

The licensee stated that some soil borings were made during the week of June 11, 1978, by Soils, Materials and Engineering, with the following personnel. The borings were not examined yet.

~~\_\_\_\_\_~~

Some preliminary soil samples were taken from the site. (not a list of borings)

Containment  
e. Lead Plate Coating

A report was received July 11, 1978, from the licensee dated June 18, 1978, of Lead Plate Coating. The report was dated May 18, 1978, by H. L. Honder, Engineer (Metallurgical Engineering) (New York). This report includes the results of the inspection of the site and the results of the soil borings. The report also includes a photograph of a lead plate coating of about 20 feet (which was not for the site) and a photograph of a lead plate coating of about 20 feet (which was not for the site).

f. Containment Area Plate

The license indicated that only a preliminary examination of these plates had been made, but representative samples will be examined in the laboratory. No further indication that the plates would be re-inspected, restored or rejected, and then, during an official inspection, regardless of any other requirements are met at that time. Plans for the above procedures are in progress.

Embedded and

g. Other Items

Items such as work tools, pole, work supports, post-tensioning cables, and material according to the license and inspection requirements.

7. During the inspection of the storage area, it was determined that some materials were not re-stocked, or were not available to provide satisfactory service.

No 9

It was further observed that some articles  
identified to date had not been seen  
hard to read paper in some of the papers.