



Consumers
Power
Company

James W Cook
Vice President - Projects, Engineering
and Construction

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October 12, 1982

Harold R Denton, Director
Office of Nuclear Reactor Regulation
Division of Licensing
US Nuclear Regulatory Commission
Washington, DC 20555

MIDLAND NUCLEAR COGENERATION PLANT
MIDLAND DOCKET NOS 50-329, 50-330
SAFETY EVALUATION REPORT INFORMATION
FILE: 0505.16 SERIAL: 19370

Reference: J W Cook to H R Denton, CP Co Serial 17917, Dated 07-01-82

Enclosure: Midland FSAR Change Notice 3602, Revised Natural Circulation
Test Abstract

Natural circulation testing is Confirmatory Issue 7 in Section 1.8 of the
Midland Plant SER (NUREG-0793). The enclosure provides the information
necessary to close this issue.

At variance with the referenced letter, Consumers Power Company would elect to
perform natural circulation training with the Midland training simulator.
Simulator response will be validated against data from the loss of offsite
power transient at Crystal River Unit 3 on June 16, 1981. This transient is
notable since the plant was maintained in natural circulation for an extended
period of time. The response of Crystal River Unit 3 is considered prototypi-
cal of Midland or other lowered loop 177 FA B&W nuclear steam supply.

Questions regarding this subject can be directed to James Webb at
(517) 788-0053.

James W. Cook

JWC/JRW/fms

CC RJCook, Midland Resident Inspector
RHernan, US NRC
DBMiller, Midland Construction (3)
RWHuston, Washington

oc1082-1344a131

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PDR ADOCK 05000329
E PDR

Boo!

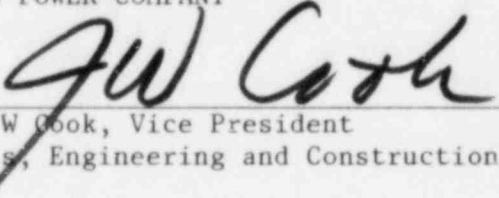
CONSUMERS POWER COMPANY
Midland Units 1 and 2
Docket No 50-329, 50-330

Letter Serial 19370 Dated October 12, 1982

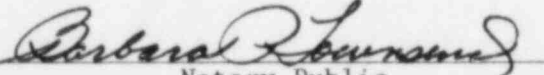
At the request of the Commission and pursuant to the Atomic Energy Act of 1954, and the Energy Reorganization Act of 1974, as amended and the Commission's Rules and Regulations thereunder, Consumers Power Company submits SCN 3602, Natural Circulation Test Abstract.

CONSUMERS POWER COMPANY

By


J W Cook, Vice President
Projects, Engineering and Construction

Sworn and subscribed before me this 25 day of October, 1982


Notary Public
Jackson County, Michigan

My Commission Expires September 8, 1984



**QUALITY ASSURANCE PROGRAM
SAR CHANGE NOTICE**

JOB NO. 7220

2. DISCIPLINE/COMPANY CP Co

1. #SAR
FSAR
3. No. 3602

4. ORIGINATOR R M Rice

5. DATE August 26, 1982

6. REFERENCED SECTIONS OF SAR

14A.4.22

7. DESCRIPTION OF CHANGE

Revise description of natural circulation testing in test abstracts.

8. REFERENCED SPECIFICATIONS OR DRAWINGS

N/A

9. JUSTIFICATION

Resolves SER Confirmatory Issue #7.

Resolves LCP Item 65-800.

10. BECHTEL DISCIPLINE INTERFACE REVIEW:

- | | |
|--|--|
| <input type="checkbox"/> ARCH _____ | <input type="checkbox"/> PLANT DSN _____ |
| <input type="checkbox"/> CIVIL _____ | <input type="checkbox"/> PQAE _____ |
| <input type="checkbox"/> CONTROL SYS _____ | <input type="checkbox"/> STRESS _____ |
| <input type="checkbox"/> ELEC _____ | <input type="checkbox"/> OTHER _____ |
| <input checked="" type="checkbox"/> MECH/NUCLEAR _____ | |

INTERFACING STAFF REVIEW:

- | | |
|---|---|
| <input type="checkbox"/> ARCH _____ | <input type="checkbox"/> MECH _____ |
| <input type="checkbox"/> CIVIL _____ | <input checked="" type="checkbox"/> NUCLEAR _____ |
| <input type="checkbox"/> CONTROL SYSTEM _____ | <input type="checkbox"/> PLANT DSN _____ |
| <input type="checkbox"/> ELEC _____ | <input type="checkbox"/> RELIABILITY _____ |
| <input type="checkbox"/> GEOTECH _____ | <input type="checkbox"/> STRESS _____ |
| <input type="checkbox"/> M & QS _____ | <input type="checkbox"/> OTHER _____ |

NA		M J Wylie	8/30/82	J R Wahl	10/12/82
11. REVIEWED BY (Group Supervisor)	DATE	12. REVIEWED BY (SAR COORDINATOR)	DATE	13. REVIEWED BY (NUCLEAR ENGINEER)	DATE
D F Lewis	10/18/82	G E Clyde	10/13/82	By Letter	10/18/82
14. CONCURRENCE BY (PROJECT ENGINEER)	DATE	15. APPROVED BY (CPCo)	DATE	16. CONCURRENCE BY (NSSS SUPPLIER)	DATE

14A.4.22 NATURAL CIRCULATION TESTING (UNIT 2 ONLY)

1. Purpose
To verify natural circulation as a means of removing reactor coolant system decay heat.
2. Prerequisites
 - 2.1 Reactor is critical at a predetermined power level.
 - 2.2 Instrumentation is set up to record required data.
3. Test Method
Test will be performed in accordance with B&W direction provided at a later date via B&W test specification.
4. Acceptance Criteria
Natural circulation will remove core heat in accordance with the acceptance criteria provided in B&W test specification.

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REPLACE WITH INSERT 1

INSERT 1

1. Purpose

- 1.1 Demonstrate the initiation, maintenance, and recovery from the natural circulation mode.
- 1.2 Demonstrate the performance of the auxiliary feedwater level rate control system.
- 1.3 Demonstrate the RCS can be uniformly borated while in natural circulation.
- 1.4 Demonstrate the capability to cooldown the RCS via natural circulation using the OTSGs. Determine acceptable cooldown rate in natural circulation.
- 1.5 Demonstrate the performance of the subcooling monitor.

2. Prerequisites

- 2.1 The startup test program has progressed to the point where a minimum of 1% rated full power from decay heat is available.
- 2.2 Reactor is shutdown and subcritical by at least 1% $\Delta K/K$.
- 2.3 Four RCPs running.
- 2.4 OTSG level at low level limit.
- 2.5 Normal RCS temperature and pressure.

3. Test Method

- 3.1 As quickly as possible, trip pressurizer heater banks (1-4), reactor coolant pumps, main steam isolation valves, and main feedwater pump. Isolate letdown. Verify AFW actuates and is raising OTSG levels to natural circulation setpoint. Control RCS pressure with PORV and OTSG pressure with the POAV. Stabilize plant in natural circulation.
- 3.2 Restore equipment to operation with the exception of the reactor coolant pumps and main feedwater pumps.
- 3.3 With the plant in natural circulation (actual decay heat available) a batch addition of boron to increase RCS boron concentration by approximately 200 ppm will be initiated.
- 3.4 Sampling will continue to verify RCS concentration increase of > 100 ppm and trend is as expected.

3.5 An RCS cooldown will be initiated using the turbine bypass valves to demonstrate a cooldown in T_{avg} of at least 100F.

4. Acceptance Criteria

4.1 Natural circulation has been established. Indications of natural circulation are:

- a. A stable loop ΔT with T_C near T_{sat} of the OTSGs.
- b. A small or negligible difference between incore thermocouple readings and hot leg temperature readings.
- c. RCS pressure and pressurizer level stable prior to cooldown.

4.2 Boron has mixed in the RCS to increase the concentration by at least 100 ppm. The RCS concentration is trending as expected toward the calculated equilibrium value.

4.3 RCS T_{avg} has been reduced approximately 100F by natural circulation cooldown with no void formation in the RCS.

4.4 AFW level rate control prevents overcooling ($T_{avg} < 525F$) as predicted.