NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-315/316

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TO: Mr. B.C. Rusche

FROM: Indiana & Mich Power Co
New York, N.Y. 10004
J. Tillinghast

DATE OF DOCUMENT 3-16-77

DATE RECEIVED 3-21-77

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DESCRIPTION Ltr notarized 3-17-77 request for a temporary change to tech specs to allow a one-time chemical cleaning operation of the unit 2 condensate & feedwater systems & trans the following: 5P

ENCLOSURE Attachment A is a revised pages 2.2-4 dealing with tech spec change... 1P & trans
Attachment B, C & D.....4P

TOTAL: 5P

(1 cy ea encl rc'd)

ACKNOWLEDGED

PLANT NAME: Cook Units 1 & 2

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FOR ACTION/INFORMATION ENVIRO

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770820356 Encl GD

NRC FORM 195 (2-76)

INDIANA & MICHIGAN POWER COMPANY
P. O. BOX 18
BOWLING GREEN STATION
NEW YORK, N. Y. 10004

March 16, 1977

Donald C. Cook Nuclear Plant
Docket Nos. 50-315 and 50-316
DPR No. 58 and CPPR No. 61

Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Rusche:

This letter is a request for a temporary change to Environmental Technical Specification 2.2.3.2 to allow a one-time chemical cleaning operation of the Unit No. 2 Condensate and Feedwater Systems as described hereafter. Attachment A is a revised page 2.2-4 to indicate the change we propose.

As part of the startup operations for Unit No. 2 of the Donald C. Cook Nuclear Plant, it will be necessary to perform a hot detergent cleaning of the Unit No. 2 Condensate and Feedwater systems. The cleaning operation is a one-time preoperational hot water flush with a mild alkaline solution to remove small amounts of materials left in the piping internals during construction and is expected to take place during the second quarter of 1977. A similar operation was performed on Unit No. 1, from July 16 through 20, 1973, prior to its startup.

The specific objectives of the preoperational cleaning are:

1. To loosen and remove debris not removed by prior water flushing.

2. To remove from the system piping internals any coatings or preservatives applied prior to or during construction.

3. To formaa protective oxide coating on the carbon steel portions of the system prior to initial startup.

The "cleaning" will be done by circulating approximately 300,000 gallons of a 180° - 190°F. solution of tri- and di-sodium phosphate throughout the system for approximately 12-24 hours and then flushing to the on-site absorption field with approximately 600,000 gallons of clean water.

The composition of the cleaning solution will be as follows:

a. 3,500 ppm Tri-sodium phosphate (Na_3PO_4).

b. 1,500 ppm Di-sodium phosphate (Na_2HPO_4).

c. 300 ppm Surfactant (mixture of nonionic and anionic surfactants - Dow Industrial Service proprietary chemical No. FO-57.)

d. 200 ppm Anti-foaming Agent (silicone base anti-foam emulsion - Dow Industrial Service priprietary chemical No. MO-45).

The cleaning solution and rinse waters will be drained from the Condensate and Feedwater Systems to the turbine room sump and pumped to the on-site absorption field.

Section 2.2.3.2 of the Donald C. Cook Nuclear Plant Environmental Technical Specifications places the following limitations on the conduct of the cleaning operation:

1. "Chemicals used in the plant shall be diluted and neutralized as required to give a pH in the range of 5.5 to 9 prior to discharge to the onsite absorption field."

2. "No oil or petroleum products shall be discharged to the lake or onsite absorption field."

3. "On those occasions when spent chemical cleaning solutions are to be discharged to the absorption field, samples of the sump waste water shall be collected and analyzed for all chemical species (including heavy metals and hydrocarbons) that potentially could result from the cleaning operation."

We request that we be temporarily allowed to exceed these limitations for the following reasons:

1. Although the cleaning solution will be alkaline (expected pH of about 11.5) the large volumes of rinse water and lower pH water already in the absorption field is expected to reduce the pH of the mixture to less than 9.0 at the time of discharge into the ground. Thus, we believe it would be unwise to add approximately 10,000 pounds of neutralizing chemicals -- sulfuric or hydrochloric acid -- to reduce the pH of the cleaning mixture to 9.0 prior to pumpout at the turbine room sump as this would unnecessarily increase the overall amounts of chemicals discharged to the environs without a corresponding benefit thereto.

2. The cleaning solution will remove any coatings or preservatives on the internals of the system piping and/or heat transfer surfaces. This is required in preparing the secondary cycle for initial operation. We expect that any hydrocarbons removed by the operation would be of the order of a few gallons in an emulsified form and essentially undetectable.

3. Since the cleaning operation is essentially a hot detergent flush using a solution containing no heavy metal inhibitors or other compounds in a system fabricated almost entirely of iron and copper, we believe that analyzing for heavy metals (other than iron and copper) is not required.

A similar request to the Michigan Water Resources Commission was made by letter dated December 7, 1976 for approval to discharge the cleaning solution and rinse waters to the ground, through the absorption field, without holdup for neutralization as planned. The Michigan Department of Natural Resources, Water Quality Division, by letter of January 13, 1977 did grant approval of this request. Copies of these two letters are attached for your information as Attachment B and C, respectively.

A supplement to Table 2.2-1 is provided as Attachment D for your information and inclusion in the Environmental Technical Specifications.

We propose that the change would expire at the time of Unit 2 initial criticality and would not change the intent of the specification, which will still ensure that the discharges to the absorption field are not adversely affecting the quality of the groundwater outside of the immediate vicinity of the field.

Our schedule presently calls for this cleaning operation to begin in the last week in April 1977 and we therefore request your prompt review and approval of this proposed change.

Very truly yours,

John Tillinghast
Vice President

JT:mam
Attachment

cc: Sworn and subscribed to before me
this 17th day of March 1977 in
New York County, New York

David G. Hume
Notary Public

DAVID G. HUME
NOTARY PUBLIC, State of New York
No. 31-4608113
Qualified in New York County
Commission Expires March 30, 1979

cc: see next page

cc: G. Charnoff
R. C. Callen
P. W. Steketee
R. Walsh
R. J. Vollen
R. W. Jurgensen - Bridgman
R. S. Hunter

The maximum annual discharges of phosphate and morpholine permitted in the Specification correspond to normal operation 95% of the time of operation and operation at the maximum phosphate content and blowdown rate for 5% of the time. The morpholine concentration is expected to be maintained at 20 ppm in the blowdown at all times. Hydrazine will be added to the steam system as an oxygen-scavenging corrosion inhibitor. At the elevated operating temperature any of this chemical that has not reacted with oxygen will decompose to nitrogen and ammonia. The maximum annual discharge permitted in the specification is that corresponding to normal operation (0.02 ppm hydrazine) for 99% of the time of operation and the maximum concentration (96 ppm) for a maximum of 1% of the operating time for times just before and after shutdown. It is assumed the plant will operate 80% of the time in calculating maximum permitted releases.

Maximum discharge concentrations are calculated on the basis of a circulating water discharge rate that is the mean of those for Unit 1 and Unit 2.

No other plant corrosion or deposit inhibitors will be discharged to the plant environs.

2.2.3 OTHER CHEMICAL DISCHARGES

2.2.3.1 Objective

The purpose of this specification is to control or limit the release of chemicals, other than corrosion and deposit inhibitors, to the lake or the onsite absorption field to preclude or minimize potentially adverse impacts on aquatic or terrestrial biota due to plant operation.

2.2.3.2 Specification

The maximum quantities and discharge concentrations of other chemicals used in the plant which will be discharged to the lake and to the onsite absorption field shall be limited to the values specified in Table 2.2.1. Chemicals used in the plant shall be diluted and neutralized as required to give a pH in the range of 5.5 to 9 prior to discharge to the onsite absorption field. Excepting chlorine, no toxic chemical, e.g., chromates, mercury compounds, etc., shall be discharged to the lake or onsite absorption field. No oil or petroleum products shall be discharged to the lake or to the onsite absorption field. The composition and quantity of detergents (Table 2.2-1) used and discharged to the lake shall be reported in the annual Operating Reports.

On those occasions when spent chemical cleaning solutions are to be discharged to the absorption field, samples of the sump waste water shall be collected and analyzed for all chemical species (including heavy metals

Note: For the one time chemical cleaning of the Unit 2 Condensate and Feedwater Systems, to be completed by the time of Unit 2 initial criticality, the following exceptions to Specification 2.2.3.2 apply: Neutralization of cleaning solution prior to discharge to the absorption field is not required, small quantities of hydrocarbon coatings or preservatives may be discharged with the cleaning solution flush, of the order of a few gallons, and sampling for heavy metals, other than iron and copper, are not required.

Attachment B

December 7, 1976

Robert Courchaine, Chief Engineer
Michigan Water Resources Commission
Stevens T. Mason Building
Lansing, Michigan 48926

SUBJECT: Donald C. Cook Nuclear Plant
Bridgman, Michigan
Preoperational Cleaning of Unit 2
Condensate and Feedwater System

Dear Mr. Courchaine:

On July 10, 1974 the Michigan Water Resources Commission issued a permit to the Indiana & Michigan Power Company to dispose of various liquid effluents to the ground at the site of the Company's Donald C. Cook Nuclear Plant in Bridgman, Michigan (Permit M00064). This permit requires, among other things, that the Company "...obtain prior approval of the Chief Engineer of the Commission before discharging spent cleaning solvents or other chemical wastes, other than spent regenerants, to the ground" (permit "Special Condition" I, page 3).

As part of the startup operations for Unit 2 of the Donald C. Cook Nuclear Plant it will be necessary to perform a hot detergent cleaning of the Unit 2 condensate and feedwater systems. The cleaning is a one-time preoperational hot water flush with a mild alkaline solution to remove material left in the piping internals during construction and is expected to take place during the first quarter of 1977. A similar operation was performed on Unit 1 from July 16 through 20, 1973 prior to its startup.

The specific objectives of the preoperational cleaning are:

1. To loosen and remove debris not removed by prior water flushing.

2. To remove from the system piping any oily materials and any rust preventatives applied during construction.

3. To form a protective oxide coating on the carbon steel portions of the system.

The cleaning will be done by circulating approximately 300,000 gallons of a 180-190°F. solution of tri- and di-sodium phosphate throughout the system for approximately 12-24 hours and then flushing to the absorption pond with approximately 600,000 gallons of clean water.

The composition of the cleaning solution will be as follows:

a. 3500 ppm Tri-Sodium Phosphate (Na_3PO_4), Approx. 8750 pounds;

b. 1500 ppm Di-Sodium Phosphate (Na_2HPO_4), Approx. 3750 pounds;

c. 300 ppm Surfactant, Approx 750 pounds; and

d. 200 ppm Anti-foaming agent, Approx. 500 pounds.

The cleaning solution and the rinse water will be drained from the condensate and feedwater systems to the turbine room sump and then will be pumped to the absorption pond. Although the cleaning solution will be highly alkaline (expected pH about 11.5), the large volumes of rinse water and lower pH water already in the absorption pond is expected to reduce the pH of the mixture to less than 9.0 prior to discharge into the ground. Thus, we believe it would be unwise to add the approximately 10,000 pounds of neutralizing chemicals -- sulfuric or hydrochloric acid -- necessary to reduce the pH of the cleaning mixture to 9.0 prior to pumpout at the turbine room sump since this would unnecessarily increase the overall amounts of chemicals discharged to the environment.

In accordance with Paragraph I of Water Resources Commission Permit M00064, we request your approval to discharge the cleaning solution and rinse waters to the ground, through the absorption pond, without holdup for neutralization, as planned.

Very truly yours,

G. E. LeMasters
Executive Assistant

GEL/sdb

bcc: R. W. Jurgensen
T. F. Plunkett
T. A. Kreisel
E. E. Smarella
J. A. Druckemiller
R. W. Reeves
T. A. Miskimen
F. J. Batchelder
J. E. Sherwood
S. H. Steinhart
G. W. Pennecke
L. Storch

Attachment C

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926

HOWARD A. TANNER, Director

January 13, 1977

Mr. G. E. LeMasters
Executive Assistant
Indiana and Michigan Electric Company
2101 Spy Run Avenue
P. O. Box 60
Fort Wayne, Indiana 46801

SUBJECT: Donald C. Cook Nuclear Plant

Dear Mr. LeMasters:

This is in reply to your December 7, 1976, letter regarding preoperational cleaning of Unit 2 Condensate and Feedwater System.

We agree with your assessment that the addition of neutralizing chemicals are not necessary and are hereby granting approval of your request with the following condition:

Residual free oils must be removed from the turbine room sump prior to the flushing operation.

Feel free to call us if you have questions regarding this matter. We ask that you notify us as to the exact date and times that the cleaning operation will take place, as soon as this has been determined.

Very truly yours,

WATER QUALITY DIVISION

Robert J. Courchaine

Robert J. Courchaine
Division Chief

RJC/hb
cc: W. Denniston
C. Harvey

MICHIGAN
THE GREAT LAKE STATE

R1026 1/75

Attachment D

TABLE - 2.2-1 (cont'd)

OTHER CHEMICAL DISCHARGES TO THE ENVIRONS

Chemical	Estimated Maximum Annual Discharge (per year)	Estimated Maximum Discharge Concentration (ppm)	Use & Estimated Discharge Frequency	Discharge To
Tri- and Di-Sodium Phosphate	12,500 lbs.	5,000	Used for Pre-operational chemical cleaning of the Unit No. 2 Condensate and Feedwater Systems	On site Absorption Pond