NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-315

FILE NUMBER

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TO:

Mr. Benard Rusche

FROM:
Indiana & Michigan Power Company
New York, N. Y.
John Tillinghast

DATE OF DOCUMENT 4/22/77

DATE RECEIVED 4/26/77

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DESCRIPTION

Ltr. notorized 4/22/77....trans the following:

(4-P)

PLANT NAME:

Cook

RJL

ENCLOSURE

Consists of requested information regarding the chemical cleaning of the Unit No. 2 Feedwater ans Condensate Systems....

ACKNOWLEDGED

(4-P)

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NRC FORM 196 (2-76)

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

April 22, 1977

Donald C. Cook Nuclear Plant Unit No. 1
Docket No. 50-315
DPR No. 58

Regulatory File Cy.

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

Dear Mr. Rusche:

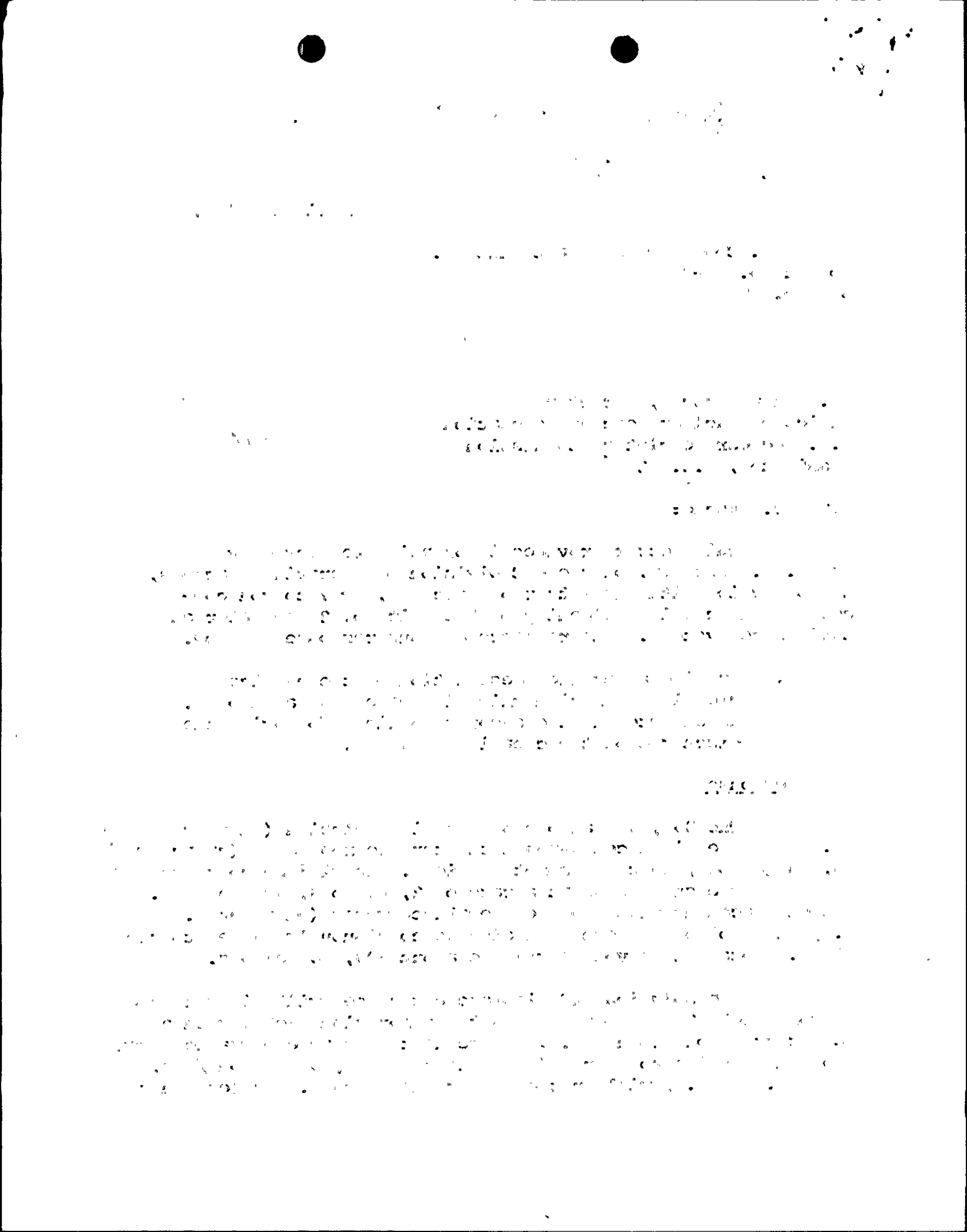
This letter provides information requested by Mr. M. H. Fletcher, of the NRC Division of Operating Reactors, in connection with our letter of March 16, 1977 to you concerning the chemical cleaning of the Unit No. 2 Feedwater and Condensate Systems. His requests and our responses follow.

1. Provide a detailed description of the chemical cleaning operation which indicates how a ph of 9.0 is expected in the absorption field following the discharge of the cleaning solution.

Response

The 300,000 gallons of flushing solution (pH approximately 11.4) will be displaced through the turbine room sump (capacity 90,000 gallons) to the absorption field. It will be continuously pumped by the sump pumps at a rate of 2,000 to 3,000 plus gpm. The displacement rinses of demineralized water (pH about 6.5 to 7.5) will follow. These will also be continuously pumped to the field. Total rinse volume will be about 600,000 gallons.

The solution and displacement rinses will mix with the approximately 2 x 10^6 gallons in the absorption field, with a resultant pH of around 10.5. Subsequent discharge of waste water from the turbine room sump (approximately 300,000 gallons/day, pH about 6.5 to 7.5) will further lower the pH to 9.0 or less in two



to four weeks. The sediment on the bottom of the pond will assist in lowering the pH.

The ability of the waste water to reduce the pH to 9.0 has been confirmed by a rough titration of a sample of the flush/rinse solution with a sample of waste water now in the absorption field. This showed that about 7 to 8 x 10^6 gallons of "normal" waste water would reduce the pH from about 11.4 to 9.0.

Based on the above operations and characteristics of the rinse water, "normal" waste water, and the absorption field sediment, it is our considered engineering judgement that the resultant water which eventually percolates into the ground will have a pH of 9.0 or less and would therefore meet the intent of the technical specifications with respect to pH limitations.

2. The letter of March 16, 1977 requested that the licensee not be required to monitor the discharge to the absorption pond for heavy metals other than iron and copper since the systems being chemically cleaned are made up almost entirely of iron and copper. Since Appendix B Section 2.2.3.2, which requires the monitoring of heavy metals, is intended specifically for the type chemical cleaning operation proposed, provide justification for the request.

Response

The Feedwater and Condensate Systems in Unit 2 of the Donald C. Cook Nuclear Plant are made only of carbon steel, stainless steel and copper. The carbon steel has some rust deposits which would be removed by the cleaning operation resulting in small quantities of iron being discharged with the cleaning solution. Copper exhibits a very slow corrosion rate in a basic solution such as that which will be used in the subject chemical cleaning operation. Even the very large surface area represented by the copper tubing in the condensers should, when cleaned, result in just barely measurable quantities of copper being discharged with the cleaning solution.

Stainless steel is particularly resistant to corrosion such that no rust exists on the stainless steel surfaces and no corrosion will result from contact with the cleaning solution.

Appendix B Specification 2.2.3.2 requires monitoring for heavy metals when spent chemical cleaning solutions are to be discharged to the absorption field. We will comply with this by monitoring for those potential candidates which could be removed by the cleaning operation - iron and copper.

3. Provide an appraisal of the environmental impact resulting from the discharge of the chemical cleaning solution and flush waters to the absorption field. Include any supportive information which is available.

Response

The Technical Specifications require that all chemical discharges to the absorption field be neutralized to give a pH in the range of 5.5 to 9 prior to discharge. For purposes of this one-time chemical cleaning operation our request amounts to neutralization of the discharge in the pond water after discharge, rather than neutralization in the plant prior to discharge.

A similar chemical cleaning operation for Unit 1 was performed in July 1973. Preoperational terrestrial and aquatic studies were in effect at that time and, although no separate observations were made specifically for this event, no damage to the flora and fauna around the absorption field or to the aquatic life was detected. (See Appendix D, "Terrestrial Studies" in the Environmental Operating Report (EOR) covering October through December 1974, and Benton Harbor Power Plant Limnological Studies, Special Report No. 44 of the Great Lakes Research Division of the University of Michigan. In addition, the postoperational studies now in effect have detected no changes of a long term nature which are attributable to the first cleaning. (See EOR's covering all of 1975 and 1976).

Groundwater monitoring at the site, as required by Appendix B Technical Specification 4.1.1.5, was started in late 1974, slightly over one year following the first cleaning operation. Two wells were drilled from which groundwater moving from the absorption pond to the lake can be monitored. Sampling from these has shown that even when high discharge quantities are sent to the absorption, pond, (averaging 300,000 gallons/day with pH varying between 5.5 and 9.0 since restart of construction activities in Unit 2 in 1975), the pH of the groundwater does not vary to any significant degree (7.0 to 7.8 in the last two years).

The discharge of the chemical cleaning solution and flush waters to the absorption field resulting from the cleaning of the Unit 2 Feedwater and Condensate Systems at the Donald C. Cook Nuclear Plant will have a negligible environmental impact in and around the vicinity of the absorption field.

Very truly yours,

John Tillinghast
Vice President

JT:mam

Sworn and subscribed to before me
this 22nd day of April, 1977 in
New York County, New York

Kathleen Barry
Notary Public

KATHLEEN BARRY
NOTARY PUBLIC, State of New York
No. 41-4606792
Qualified in Queens County
Certificate filed in New York County
Commission expires March 30, 1979

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

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

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Very truly yours,

John Tillinghast
Vice President

JT:mam

Sworn and subscribed to before me
this 22nd day of April, 1977 in
New York County, New York

Kathleen Barry
Notary Public

KATHLEEN BARRY
NOTARY PUBLIC, State of New York
No. 41-4606792
Qualified in Queens County
Certificate filed in New York County
Commission expires March 30, 1979

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