U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-315/90012(DRSS); 50-316/90012(DRSS)

Docket Nos. 50-315; 50-316 License Nos. DPR-58; DPR-74

Licensee: Indiana Michigan Power Company
1 Riverside Plaza
Columbus, OH 43216

Facility Name: D. C. Cook Nuclear Plant, Units 1 and 2

Inspection At: D. C. Cook Site, Bridgman, Michigan

Inspection Conducted: June 5-8, 1990 (On-site)
June 14-21, 1990 (Telephone discussions)

Inspectors: R. B. Holtzman — 6/27/90 Date

J. E. House — 6/27/90 Date

Approved By: M. C. Schumacher, Chief
Radiological Controls and
Chemistry Section — 6/27/90 Date

Inspection Summary

Inspection on June 5-8 and 14-21, 1990, Report Nos. (50-315/90012(DRSS); 50-316/90012(DRSS))
Areas Inspected: Routine announced inspection of: (1) the chemistry program, including procedures, organization, and training (IP 84750; 79701); (2) primary and secondary systems water quality control programs (IP 84750; 79701); (3) quality assurance/quality control program in the laboratory (IP 79701); (4) nonradiolgical confirmatory measurements (IP 79701); (5) the radiological environmental monitoring program (REMP) (IP 84750); and (6) the radiological confirmatory measurements program (IP 84750).
Results: The licensee's water quality control program was generally good. While the plant primary and secondary water standards generally conform to the EPRI Guidelines the concentrations in the secondary systems were somewhat elevated to 5 and 7 ppb for chloride and sulfate, respectively. The trend chart formats have been greatly improved to better demonstrate system parameter trends. The laboratory QA/QC programs were also improved and the nonradiological confirmatory measurements were generally good. The REMP was operating satisfactorily. The inspectors noted the following strengths and weaknesses:

Strengths:

- Boric acid addition to Unit 1 secondary system.
- Testing of environmental contractor laboratory with blind duplicate samples.

Weaknesses:

- High Chemical Technician turnover.
- Elevated levels of chloride and sulfate in secondary water.

No violations or deviations were identified.

DETAILS

1. Persons Contacted

[1]A. A. Blind, Plant Manager, D.C. Cook (DCC)
[1]L. S. Gibson, Mgrl/Assistant Plant Manager, DCC
[1]J. Wojcik, Technical Physical Science (TPS)/Superintendent, DCC
[1] [2]K. Haglund, TPS/General Chemical Supervisor, DCC
[1]D. Loope, TPS/Plant Radiation Protection Supervisor, DCC
S. McLea, TPS/Chemical Supervisor, DCC
[1] [2]D. Fitzgerald, TPS/Environmental Coordinator, DCC
[1] [2]J. Oetken, TPS/Environmental Technician, DCC
[1]D. Noble, TPS/Health Physicist, DCC
[1]B. A. Jepkema, Site QA, AEPSC
[1]K. Vogel, Acting Chemical Supervisor, DCC
[2]D. Foster, Radiation Material Control Specialist, TPS, DCC
[2]L. Umphrey, Administrative Compliance Coordinator, TPS, DCC

[1]B. L. Jorgensen, Senior Resident Inspector, NRC

The inspectors also interviewed other licensee personnel in various departments in the course of the inspection.

[1] Present at the Exit Meeting on June 8, 1990.
[2] Telephone discussions held during period of June 14-21, 1990

2. Licensee Action on Previous Inspection Findings (IP 92701)

a. (Closed) Open Item (50-315/88010-04; 50-316/88010-04): Licensee to consider improvements in the laboratory QA/QC program: calculate limits more frequently, better control chart assessment and use of QC data sheets for each analysis. The licensee has further developed the laboratory QA/QC program with the implementation of QC data sheets, independent standards, multipoint calibration curves, and regular maintenance of the charts and other parts of the program. This program will be followed in subsequent routine chemistry inspections (Section 7).

b. (Closed) Open Item (50-315/89003-01; 50-316/89003-01): Analyze spiked sample supplied by the NRC for Sr-89, Sr-90 and Fe-55 and report the results to Region III. Since the licensee did not receive the sample and a new split liquid radwaste sample was taken during this inspection, this Item is considerd closed. (Section 6)

c. (Closed) Open Item (50-315/89019-01;50-316/89019-01): The licensee considered improvements in the chemistry parameter trend charts and submitted a letter to Region III. In the letter of July 31, 1989, the licensee noted that the presently-used Chemistry Monitoring Computer Program (CMCP) will be modified to produce long-term trend charts, while a new system is being planned. The expanded time spans of the trend charts reviewed during this inspection were substantially improved over previous ones.

d. (Closed) Open Item (50-315/89019-02; 50-316/89019-02): The licensee spiked reactor water with anions, split the samples with Brookhaven National Laboratory (BNL), analyzed them and sent the results to Region III. The comparison in Table 1 shows two agreements in three analyses. The comparison criteria are given in Attachment 1. All three analyses showed positive biases with respect to the BNL values, possibly due to calibration or contamination problems. However, while we are not presently able to resolve the differences, a review of selected licensee records and the present interlaboratory data indicate that the licensee's analytical data were generally reliable (Sections 6 and 7).

e. (Closed) Open Item (50-315/89019-03;50-316/89019-03): The licensee was to establish parameters for the interlaboratory comparison program. Licensee procedure 12 THP 6020 LAB.044 Revision 13, May 24, 1990 establishes the parameters for this program (Section 7).

f. (Closed) Open Item (50-315/89019-04; 50-316/89019-04): The licensee to consider the testing the entire train of the REMP air filter samplers for air inleakage. The licensee revised the procedure 12 THP 6010 ENV.051, "Collection of Environmental Air Samples," Revision 2, September 4, 1989 to include testing of the filter train for air inleakage by blocking the filter face during operation.

3. Management Controls, Organization, and Training (IP 84750)

The management structure of the Chemical Section is essentially unchanged since the previous inspection in this area (Region III Inspection Report Nos. (50-315/89019; 50-316/89019)). The Section has four Chemistry Supervisors, a Chemical Training Specialist, Physical Science Specialist and a Sr. Performance Engineer reporting to the General Chemistry Supervisor. The laboratory has 25 plant (I&M) Chemical Technicians (CTs) and seven contract technicians. Licensee representatives stated that there has been a high turnover of contractor technicians. In order to reduce this, they have been authorized to and are replacing contract technicians with plant CTs. Technicians in training are not allowed to work alone on a shift.

The inspectors observed the training laboratory and found it to be very well equipped and organized. This facility is used to provide basic, continuing and advanced training for the CTs. The CT testing program (Section 7) is performed in this laboratory.

Licensee representatives stated that the CT training program is scheduled for presentation to the INPO board for reaccreditation in October 1990.

No violations or deviations were identified.

4. Water Chemistry Control Program (IP 84750)

The inspectors reviewed the water chemistry control program which is based on 12 THP 6020.LAB.041, "Data Sheet Instructions," Revision 14, May 5, 1990, with the specifications for the various reactor systems contained in Appendix B, "Chemical Constituent Specifications." These specifications conform to the Technical Specifications (T/S) requirements and to EPRI Steam Generator (S/G) Owners Guidelines for secondary system chemistry. Primary system chemistry parameters are consistent with the EPRI Primary System Guidelines.

Secondary system water parameters measured by in-line monitoring systems include conductivity, pH, dissolved oxygen, hydrazine and sodium. In-line automated gas phase monitors for measuring hydrogen and oxygen levels in the gas holdup tanks are being installed. The monitoring systems are being updated with new sensors, data recorders and digital readouts; the outputs are also available in the control room. A QA/QC program has been implemented, and is being further developed for the in-line monitors for checking or standardizing them periodically against laboratory grab samples or other appropriate standardization methods. Each monitor is entered into the system as its qualification procedure is completed.

The inspectors reviewed water quality trend charts for most chemistry and other parameters from both Units 1 and 2. These were improved over those from the previous inspection (Region III Inspection Report Nos. (50-315/89019; 50-316/89019)), mainly in covering longer time spans and in better readability. The values were generally within the plant specifications. The plant is in the process of installing a new chemistry data management system which has improved capabilities for trending.

The plant uses boric acid chemistry in the Unit 1 steam generator (S/G) to reduce tube degradation. The licensee is evaluating its effect and the necessity of replacing these generators. Boric acid is not used in the new S/Gs on Unit 2.

The inspectors noted their concerns about S/G water quality; while the levels of chloride and sulfate are greatly reduced from the 10-15 ppb levels of several years ago, they are still running about 5 ppb for chloride and 7 ppb for sulfate. This appears to be several times those in similar plants, i.e., those lacking or not regularly using condensate and blowdown polishers. One likely source appears to be makeup water which contains up to 3 ppb of these species; ingress through plant systems appears to have been eliminated, as a result of considerable

licensee efforts to check and reduce possible sources. Licensee representatives noted these concerns.

No violations or deviations were identified.

5. Implementation of the Chemistry Program (IP 79701)

The inspectors reviewed the chemistry programs, including physical facilities and laboratory operations. The hot laboratory has been refurbished and the general requirement for protective clothing has been eliminated. Houskeeping was good and the benches appeared to be less crowded. The cold laboratory is being refurbished and, on completion, will become part of the hot laboratory. The laboratory appeared to be well equipped.

The inspectors observed several CTs analyze the confirmatory measurements samples on the ion chromatograph and the atomic absorption spectrophotometer. They appeared to be generally knowledgeable about the work and followed the procedures. The laboratory appeared to be operating well.

No violations or deviations were identified.

6. Confirmatory Measurements (IP 79701, 84750)

a. Radiological

The licensee split a liquid radwaste sample which will be analyzed for gross beta, gross alpha, Fe-55, Sr-89, Sr-90, and H-3 by the licensee and by the NRC Reference Laboratory, the Radiological Environmental Sciences Laboratory. Results will be submitted to the Region III office for comparison. This will be followed under Open Item Nos. (50-315/90012-01; 50-316/90012-01).

b. Nonradiological

The inspectors submitted chemistry samples to the licensee for analyses as part of a program to evaluate the laboratory's capabilities to monitor nonradiological chemistry parameters in various plant systems with respect to various Technical Specification and other regulatory and administrative requirements. These samples had been prepared, standardized, and periodically reanalyzed (to check for stability) for the NRC by the Safety and Environmental Protection Division of Brookhaven National Laboratory (BNL). The samples were analyzed by the licensee using routine methods and equipment.

The samples were diluted by licensee personnel as necessary to bring the concentrations within the ranges normally analyzed by the laboratory, and run in triplicate in a manner similar to that of routine samples. The results are presented in Table 2 with the criteria for agreement presented at the end of the table. These criteria are derived from the BNL results of the present samples and the relative standard deviations (RSD) derived from

the results of the 1986 interlaboratory comparisons from the various plant laboratories in the study (Table 2.1, NUREG/CR-5422). The acceptance criteria were that the licensee's value should be within ± 2 SD of the BNL value for agreement and between 2 and 3 SD for qualified agreement. The latter is considered an agreement, but indicates a considerable uncertainty in the assay.

The licensee determined 11 analytes at three concentrations each. Of the initial 33 analyses, 27 were agreements, of which 5 were qualified agreements.

Qualified agreements included the middle chloride, low copper, middle sodium and low silica concentrations. The six disagreements were the high chloride, middle iron, high copper, low and high sodium and the low hydrazine. The sodium disagreements can be discounted possibly due to an apparent interference between lithium and sodium in the sample matrix. In addition, the licensee does not analyze either of these species in the presence of the other.

The licensee prepared fresh calibration standards, recalibrated the instruments and repeated most of the analyses that were disagreements or had significant biases (see reruns, Table 2). The four qualified agreements became agreements and the disagreements in the analyses for the chloride, iron, copper, sodium, and hydrazine became agreements. With recalibration, the licensee achieved 31 agreements in 33 analyses (94%). The inspectors discussed souces of error with licensee representatives including instrument calibration and quality assurance. The results of the analyses were generally good.

No violations or deviations were identified.

7. Implementation of the QA/QC Program in the Laboratory (IP 84750)

The inspectors reviewed the chemistry laboratory quality assurance program as specified by procedures 12 THP 6020 LAB.044, "Laboratory Quality Assurance", Revision 13, May 24, 1990 and 12 THP 6020 LAB.088, "Quality Control of Counting Equipment", Revision 10, May 10, 1990.

The inspectors noted that completed control charts were still removed from the instrument logbook making it more difficult for technicians to review the history of the analysis. Control chart limits were set at ± 3 standard deviations (SD) with warning limits at ± 2 SD. In this system, the laboratory personnel consider an assay to be out of control only when the control value is beyond ± 3 SD. By monitoring the control charts between ± 2 SD, biases can be detected and corrective action taken before this occurs. Chart data included mean values and standard deviations, however, mean value lines were not on the charts. Non-random behavior is more easily seen from these charts when the mean value line is present. Licensee representatives agreed to leave at least one previous chart (or copy) in the logbook and to consider addition of the mean value line to the charts.

The inspectors reviewed selected control charts which were manually plotted. Control charts for the ion chromatograph (IC) had standard deviations that were larger than would normally be expected. The ± 3 SD control limit represented approximately ± 30% of the mean value. Licensee representatives stated that the IC is recalibrated only when the control value is beyond ± 3 SD. Other instruments must be calibrated or zeroed against a blank when used. Infrequent calibration of the IC allows excessive instrument drift resulting in larger SDs than would occur with more frequent calibration. Another problem with the IC that the inspectors noted, involved single point calibration. Duplicate blank and 25 parts per billion (ppb) calibration standards are used to establish the calibration curve. Alternative calibration methods discussed with licensee representatives included the use of multiple standards and the establishment of calibration linearity on a periodic basis; a single point calibration could be used on a routine basis.

The inspectors also discussed increasing the calibration frequency, collection of 20-30 new control data points and recalculation of the mean and SD values. Licensee representatives agreed to consider this in order to decrease the SD and improve quality control of the IC.

The licensee's vendor-supplied interlaboratory comparison program is required by the laboratory QA program to be performed twice per year. Data from the last two quarters of 1989 and the first quarter of 1990 indicated that approximately 68% of the analyses were within ± 10% and 22% of the analyses were beyond ± 15% of the reference value. These biases indicate possible assay problems. Licensee representatives stated that vendor quality assurance data was unavailable and that a different vendor program was being considered in which data from a group of participants would be provided. In the absence of vendor quality assurance data, licensee performance cannot be objectively evaluated. Performance in this area will continue to be followed in subsequent inspections.

The Intralaboratory Comparison Program (technician performance tests) described in the Laboratory Quality Assurance Procedure appeared to be well managed. A review of selected data indicated that technicians are undergoing adequate testing. Progress in this area will be followed in subsequent inspections.

No violations or deviations were identified.

8. Radiological Environmental Monitoring Program (REMP)(IP 84750)

The inspectors reviewed the REMP, including the 1989 Annual Environmental Report, the maintenance records, and the air sampling stations.

The Annual Environmental Report appeared to comply with the REMP requirements. All of the required samples were collected and analyzed,

except as noted in the report, and a perusal of the results showed them to be reasonable. Licensee representatives appeared to closely monitor the vendor laboratory during sample collection and processing. The licensee changed vendor laboratories in November 1989 from CEP to Teledyne, New Jersey. With the new vendor, the licensee improved the environmental practices by using the results of the naturally-occurring K-40 and Be-7 nuclides, which are at fairly constant concentrations in some types of samples, such as fish, milk and vegetation. These provide internal standards to improve the credibility of the analyses in which all the other nuclides are less than the LLDs. They have also been used in the duplicate blind sample program.

The licensee has found over the years measurable concentrations of tritium in monitor wells around the plant (within 1000 meters of the plant). The activities in three of the wells, in which the H-3 was about 2000 pCi/liter (1989), were attributed to plant operations. Licensee representatives stated that prior to being replaced, the Unit 2 S/Gs, had high primary-to-secondary leakage rates, which resulted in high concentrations of H-3. The water from leakage and S/G blowdown drained into the turbine room sump (TRS) which was monitored for radioactivity daily from that collected by a compositer; the radioactivity consisted mainly of H-3, and occasionally of low levels of Cs-137. The water was subsequently discharged to the "absorption" pond on a dune southeast of the plant where it percolated through the sandy soil in the direction of the lake. After replacement of the S/Gs in 1988, the radioactivity concentrations dropped substantially in the TRS, while those in the wells dropped only slowly until the first two quarters of 1990 when they showed substantially decreased H-3 concentrations. The limited response of the wells to the decreased H-3 levels appears to be due to the slow movement of water in the aquifer. This aquifer appears to be limited in scope (UFSAR, 1985) and does not recharge any residential wells; it thus appears that the associated groundwater does not provide a direct dose pathway to man. This will be followed in a subsequent inspection under Open Item Nos.(50-315/90012-02; 50-316/90012-02).

The inspectors toured the air sampling stations around the plant and observed a licensee representative demonstrate the testing of the air samplers, i.e. check the systems for operability, and leakage of the sampling train. The sampling stations are the same as in the previous report (Region III Inspection Report Nos. (50-315/89019; 50-316/89019)). The procedure had been revised to include a leakage test for the air filter train (Section 2.f). The six air samplers observed appeared to be operating satisfactorily. The maintenance and calibration records appeared to be complete.

Overall, the REMP appeared to be operating satisfactorily.

No violations or deviations were identified.

9. Audits and Appraisals (IP 84750)

The inspectors reviewed recent Corporate assessments of the REMP and chemistry programs, Quality Assurance Audit Nos.: QA-89-05, March 23, 1989, QA-90-03, March 22, 1990, and QA-90-10. On the REMP they identified that not all the blind duplicate samples required by the procedures were submitted to the vendor and many of those submitted were not of much use because they were below LLD. The Environmental group is to submit modifications to the program by July 1990 to improve its usefulness. The auditors appeared to address in good detail the quality assurance problems of the chemistry and environmental program. Items identified in the audits appeared to have been addressed in a timely manner.

No violations or deviations were identified.

10. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of the NRC or licensee, or both. Open items disclosed during the inspection are discussed in Sections 6 and 8.

11. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the inspection on June 8, 1990. The inspectors discussed the Open Items in Section 2 along with observations on the quality control program, the secondary water chemistry trend charts, the cold chemistry confirmatory measurements, and the REMP.

During the exit interview, the inspectors discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. Licensee representatives did not identify any such documents or processes as proprietary.

Attachments:
1. Table 1, Nonradiological Interlaboratory Split Sample Results, May 1989
2. Attachment 1, Criteria for Comparing Analytical Measurements (Nonradiological)
3. Table 2, Nonradiological Confirmatory Measurements Results, June 5-8, 1990

TABLE 1
Nonradiological Interlaboratory Split Sample Results
D.C. Cook Nuclear Plant, Units 1 and 2
May 1989

Analyte	Analytical Method[a]	NRC[b] Y ± SD	Licensee X ± SD	Ratio Z ± SD	Comparison[c] ±2 SD
			Concentration, ppb		
Reactor Coolant					
Fluoride	SIE	23.6 ± 1.7	28.3 ± 1.5	1.199 ± 0.107	A
Chloride	IC	22.4 ± 1.6	33.3 ± 1.5	1.487 ± 0.126	D
Sulfate	IC	25.3 ± 1.8	27.7 ± 2.1	1.095 ± 0.114	A

a. Analytical method:
IC Ion chromatogphy
SIE Specific ion electrode

c. BNL uncertainties were not determined; they are assumed to be 7% relative standard deviation.

b. Comparison
A Agree
D Disagree

ATTACHMENT 1

Criteria for Comparing Analytical Measurements

This attachment provides criteria for comparing results of the capability tests. The acceptance limits are based on the uncertainty (standard deviation) of the ratio of the licensee's mean value (X) to the NRC mean value (Y), where

(1) $Z = X/Y$ is the ratio, and

(2) S_z is the uncertainty of the ratio determined from the propagation of the uncertainties of licensee's mean value, S_x, and of the NRC's mean value, S_y.[1] Thus,

$$\frac{S_z^2}{Z^2} = \frac{S_x^2}{X^2} + \frac{S_y^2}{Y^2}, \text{ so that}$$

$$S_z = Z \bullet \left(\frac{S_x^2}{X^2} + \frac{S_y^2}{Y^2} \right)^{\frac{1}{2}}$$

The results are considered to be in agreement when the bias in the ratio (absolute value of difference between unity and the ratio) is less than or equal to twice the uncertainty in the ratio, i.e.

$$| 1-Z | \leq 2 \bullet S_z .$$

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1. National Council on Radiation Protection and Measurements, A Handbook of Radioactivity Measurements Procedures, NCRP Report No. 58, Second Edition, 1985, Pages 322-326 (see Page 324).

4/6/87

TABLE 2
Nonradiological Confirmatory Measurements Results
D.C. Cook Nuclear Plant
June 5-8, 1990

Analyte		Method[1]	Concn[2]	Ratio[3]	Acceptance Ranges[4] ± 2RSD	± 3RSD	Result[5]
			ppb				
Fluoride	A	SIE	20	0.983	0.875-1.125	0.813-1.187	A
	B		50	1.058	0.875-1.125	0.813-1.187	A
	C		80	0.997	0.875-1.125	0.813-1.187	A
Chloride	A	IC	5-10	0.960	0.933-1.067	0.900-1.100	A
	B		15	0.884	0.917-1.081	0.879-1.121	A+
	C		25	0.893	0.926-1.074	0.895-1.105	D
(Rerun)	B		60	0.947	0.917-1.081	0.879-1.121	A
(Rerun)	C		50	1.006	0.926-1.074	0.895-1.105	A
Sulfate	A	IC	3-8	1.074	0.895-1.105	0.842-1.158	A
	B		10	1.049	0.895-1.105	0.868-1.132	A
	C		20	1.000	0.900-1.100	0.867-1.133	A
Iron	G	AA/FU	10	0.980	0.904-1.096	0.854-1.146	A
	H		25	1.168	0.903-1.097	0.857-1.143	D
	I		35	1.014	0.903-1.097	0.855-1.145	A
(Rerun)	H		35	0.910	0.903-1.097	0.857-1.143	A
Copper	G	AA/FU	10	0.899	0.904-1.095	0.859-1.141	A+
	H		25	0.953	0.904-1.096	0.857-1.143	A
	I		35	1.193	0.904-1.096	0.857-1.143	D
(Rerun)	G		25	1.090	0.904-1.095	0.859-1.141	A
(Rerun)	I		60	1.035	0.904-1.096	0.857-1.143	A
Sodium	J	AA/FU	10	0.756	0.863-1.137	0.784-1.216	D
	K		15	0.815	0.859-1.141	0.788-1.212	A+
	L		25	0.670	0.862-1.138	0.789-1.211	D
(Rerun)	J	AA/FL	50	0.881	0.863-1.137	0.784-1.216	A
(Rerun)	K	AA/FL	100	0.942	0.859-1.141	0.788-1.212	A
Lithium	J	AA/FL	800	1.051	0.859-1.141	0.788-1.212	A
	K		1200	1.056	0.859-1.141	0.788-1.212	A
	L		1700	1.044	0.868-1.142	0.787-1.213	A
Ammonia	M	Spec	500	0.998	0.902-1.098	0.856-1.147	A
	N		1200	0.990	0.902-1.098	0.856-1.147	A
	O		1800	1.042	0.902-1.098	0.856-1.147	A

Analyte		Method[1]	Concn[2]	Ratio[3]	Acceptance Ranges[4] ± 2RSD	± 3RSD	Result[5]
			ppb				
Hydrazine	P	Spec	5	1.176	0.922-1.078	0.888-1.118	D
	Q		20	1.035	0.922-1.078	0.888-1.118	A
	R		40	1.033	0.922-1.078	0.888-1.118	A
(Rerun)	P		10	1.049	0.922-1.078	0.888-1.118	A
Silica	S	Spec	20	1.114	0.906-1.094	0.859-1.141	A+
	T		50	0.982	0.909-1.091	0.860-1.136	A
	U		90	0.996	0.907-1.093	0.857-1.143	A
(Rerun)	S		50	1.020	0.906-1.094	0.859-1.141	A
Silica	S	Spec	200	1.112	0.906-1.094	0.859-1.141	A+
	T		400	0.984	0.909-1.091	0.860-1.136	A
	U		600	0.997	0.907-1.093	0.857-1.143	A
			ppm				
Boron	D	Titr	1000	1.001	0.979-1.021	0.968-1.032	A
	E		3000	1.002	0.979-1.021	0.968-1.032	A
	F		5000	1.012	0.979-1.021	0.968-1.032	A

1. Methods: Titr - Titration
   IC - Ion Chromatography
   Spec - Spectrophotometry
   AA/FL - Atomic absorption spectrophotometry (flame)
   AA/FU - Atomic absorption spectrophotometry (graphite furnace)
   SIE - Specific ion electrode (mv meter)

2. Conc: Approximate concentration analyzed.

3. Ratio of Licensee mean value to NRC mean value.

4. The SD in the fifth and sixth columns represents the coefficient of variation obtained from averaging licensee data from the preceding cycle (Table 2.1 of NUREG/CR-5244). A result is considered to be in agreement if it falls within the ± 2 SD range; a qualified agreement if it lies outside ± 2 SD, but within ± 3 SD; and in disagreement if it is outside the ± 3 SD range.

5. Result:
   A = Agreement: Licensee value is within ±2 SDs of the NRC mean value.
   A+ = Qualified agreement, licensee is between ± 2 and ±3 SDs of the NRC value.
   D = Disagreement: licensee value is outside ± 3 SDs.

NRC FORM 766

U.S. NUCLEAR REGULATORY COMMISSION

INSPECTOR'S REPORT

Office of Inspection and Enforcement

PRINCIPAL INSPECTOR (Name, last, first, and middle initial): Holtzman, R. B

REVIEWER: Schumacher, M C

INSPECTORS: Holtzman, House

LICENSEE/VENDOR	TRANSACTION TYPE	DOCKET NO. (8 digits) OR LICENSE NO. (BY PRODUCT) (13 digits)	REPORT NO.	SEQ	NEXT INSPEC. DATE MO.	YR.
I. Indiana + Michigan Power, D.C. Cook	X I – INSERT	05000315	90012	A		
	M – MODIFY	05000316	90012	B		
	D – DELETE			C		
	R – REPLACE			D		

PERIOD OF INVESTIGATION/INSPECTION

FROM MO.	DAY	YR.	TO MO.	DAY	YR.
06	05	90	06	08	90

INSPECTION PERFORMED BY

- [X] 1 – REGIONAL OFFICE STAFF
- [ ] 2 – RESIDENT INSPECTOR
- [ ] 3 – PERFORMANCE APPRAISAL TEAM
- [ ] OTHER

ORGANIZATION CODE OF REGION/HQ CONDUCTING ACTIVITY (See IEMC 0530 "Manpower Reporting—Weekly Manpower Reporting," for code)

REGION	DIVISION	BRANCH
3	4	1

REGIONAL ACTION (Check one box only)

- [ ] 1 – NRC FORM 591
- [X] 2 – REGIONAL OFFICE LETTER

TYPE OF ACTIVITY CONDUCTED (Check one box only)

- [X] 02 – SAFETY
- [ ] 03 – INCIDENT
- [ ] 04 – ENFORCEMENT
- [ ] 05 – MGMT. AUDIT
- [ ] 06 – MGMT. VISIT
- [ ] 07 – SPECIAL
- [ ] 08 – VENDOR
- [ ] 09 – MAT. ACCT.
- [ ] 10 – PLANT SEC.
- [ ] 11 – INVENT. VER.
- [ ] 12 – SHIPMENT/EXPORT
- [ ] 13 – IMPORT
- [ ] 14 – INQUIRY
- [ ] 15 – INVESTIGATION

INSPECTION/INVESTIGATION FINDINGS (Check one box only) — A B C D

1 – CLEAR
2 – VIOLATION
3 – DEVIATION
4 – VIOLATION & DEVIATION

TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS

A	B	C	D
0	0	0	0

ENFORCEMENT CONFERENCE HELD — A B C D — 1 – YES

REPORT CONTAIN 2.790 INFORMATION — A B C D — 1 – YES

LETTER OR REPORT TRANSMITTAL DATE

NRC FORM 591 OR REG. LETTER ISSUED MO.	DAY	YR.	REPORT SENT TO HQ. FOR ACTION MO.	DAY	YR.
06	28	90			

MODULE INFORMATION

REC. ORD TYPE	NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	01	5	84	750		A		017						
						B		017						
						C								
						D								
B	02	5	79	701		A		018		C				
						B		017		C				
						C								
						D								
E	03	5	30	703		A		001						
						B		001						
						C								
						D								
E	04	5	92	701		A		002						
						B		002						
						C								
						D								