

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-220/78-15

Docket No. 50-220

License No. DPR-63 Priority -- Category C

Licensee: Niagara Mohawk Power Corporation (NMPC)

300 Erie Boulevard West

Syracuse, New York 13202

Facility Name: Nine Mile Point Nuclear Station, Unit 1 (NMP-1)

Inspection at: Scriba, New York

Inspection conducted: September 25-29, 1978

Inspectors: M. M. Shanbaky
M. M. Shanbaky, Radiation Specialist

11/7/1978
date signed

date signed

date signed

Approved by: J. P. Stohr
J. P. Stohr, Chief, Environmental and
Special Projects Section, FF&MS Branch

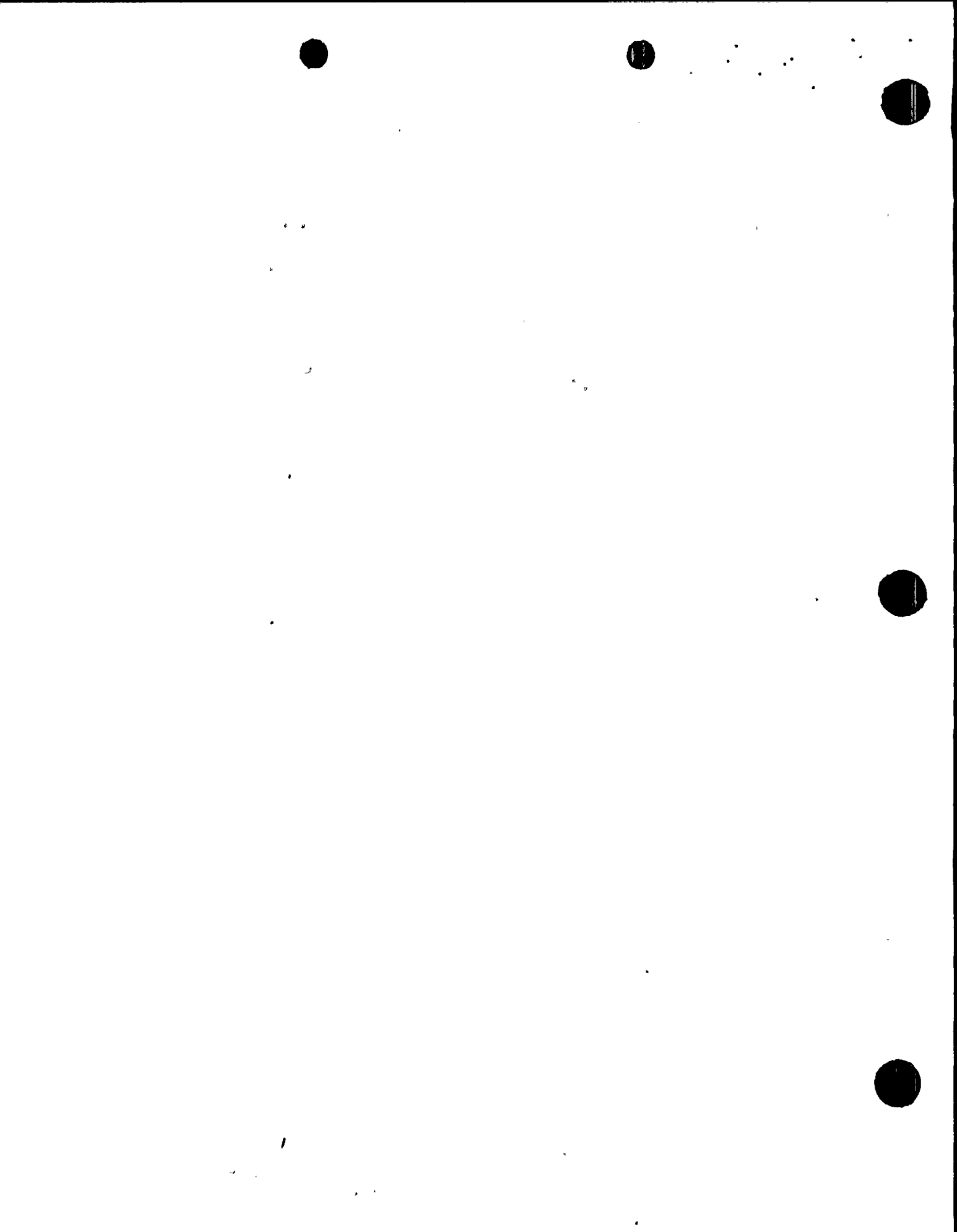
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Inspection Summary:

Inspection on September 25-29, 1978 (Report No. 50-220/78-15)

Areas Inspected: Routine, unannounced inspection of environmental monitoring programs for operations, including: the management controls for these programs; the licensee program for quality control of analytical measurements; implementation of the environmental monitoring programs - radiological; implementation of the environmental monitoring programs - biological/ecological; nonradioactive effluent release rates and limits; and a followup on the licensee's actions on previous environmental inspection findings. The inspection involved 33 inspector-hours on site by one NRC regional based inspector.

Results: Of the five areas inspected, no items of noncompliance were found in three areas. Six apparent items of noncompliance were identified in two areas: Infraction - inadequate radiological analyses of lake water samples, Details and; Infraction - exceeding the thermal discharge limit and failure to follow



plant operating procedures during flow reversal, Details 7.a; Deficiency - failure to calibrate environmental gamma radiation monitor, Details 5.b; Deficiency - exceeding the plant thermal discharge limit during normal plant operation, Details 7.a; Deficiency - failure to report to the NRC exceeding the thermal discharge limit, Details 7.a; and Deficiency - exceeding the annual discharge limit for phosphorus, Details 7.b).



DETAILS

1. Persons Contacted

- *T. J. Perkins, Plant Superintendent, NMP-1
- *E. W. Leach, Supervisor, Radiochemistry and Radiation Protection, NMP-1
- B. Taylor, I&C Supervisor, NMP-1
- *M. C. Hedrick, Assistant Supervisor - Site Environmental Protection, NMP-1
- J. N. Duell, Assistant Radiation Protection Supervisor, NMP-1
- *T. S. Farrell, Construction Engineer, SWEC, NMP-2
- *H. J. Mustin, Construction Engineer, NMPC
- C. Blum, Associate Environmental Analyst, NMPC
- P. R. Welsch, Oswego Site Manager, TI
- *D. R. Palmer, QC Operations Supervisor, NMP-1
- *M. A. Silliman, Results Supervisor, NMP-1
- *G. R. Leskin, Assistant QC Operations Supervisor, NMP-1
- *D. K. MacVittie, Technical Assistant to Plant Superintendent, NMP-1

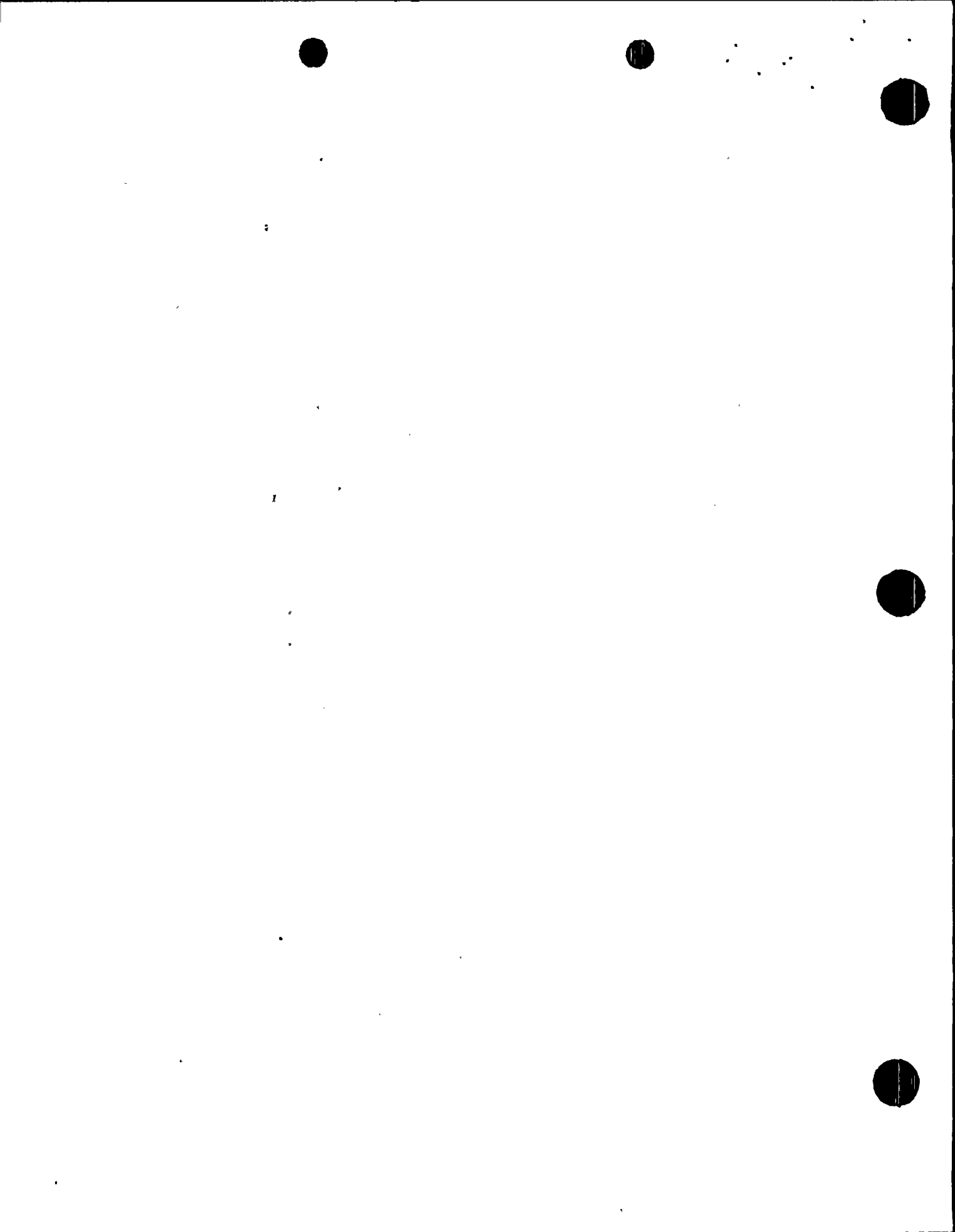
* denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved (77-16-01): Upgrading plant thermal discharge monitoring system. The inspector noted that the plant thermal discharge monitoring system was upgraded, and new RTDs which meet the ETS accuracy requirements are now used. (Details, Paragraph 7.a)

(Open) Unresolved (77-16-02): Environmental analytical laboratory and procedures. The inspector noted that the licensee has initiated action in this area, however, completion of the environmental laboratory is now pending approval of needed funds for laboratory equipment. This item remains unresolved. (Details, Paragraph 5.f)

(Closed) Noncompliance (77-16-03): Failure to follow procedures. The licensee records showed that corrective actions in this area were completed as described in the licensee letter to the NRC dated October 20, 1977. (Details, Paragraphs 5.c and 5.e)



(Closed) Noncompliance (77-16-04): Failure to composite air particulates as required. The inspector reviewed the environmental air particulates sampling and analytical records and noted that the onsite samples and the offsite samples were composited separately as required. The licensee's corrective action in this area was implemented immediately after the previous NRC environmental inspection which was conducted on July 26-28 and August 2-5, 1977. (Details, Paragraph 5.c)

(Closed) Noncompliance (77-16-05): Failure to perform adequate analyses of I-131 in air samples. The inspector noted that the licensee procedures were changed to provide for timely counting of the air samples and adequate counting time. Acceptable minimum detectable limits (MDLs) for I-131 were achieved after implementing the new procedures. (Details, Paragraph 5.c)

(Closed) Unresolved (77-16-06): Completion of corrective action for Sr-90 and gamma analyses of milk samples. The inspector determined through discussions with the licensee and review of the milk sampling and analytical procedures, that the licensee corrective action was completed and all the environmental milk samples were collected and analyzed as required during the period from August 1977, to August 1978. (Details, Paragraph 5.e)

(Closed) Unresolved (77-16-07): Modification of chemical release system. The inspector examined the chemical release system and noted a throttling valve was installed on the system tank as an additional control on chemical releases. (Details, Paragraph 7.b)

3. Management Controls

a. Assignment of Responsibility

The inspector reviewed the organization and administration of the environmental monitoring programs with respect to changes made since last inspection of this area. The inspector determined that these areas remained essentially as described in NRC:IE Report No. 50-220/77-16. One change was noted, in that the radiological analyses of all the required environmental media, with the exception of air and water, are now performed by the Radiation Management Corporation (RMC). This area was previously contracted to Eberline. The required environmental media sampling including milk is now performed by the Texas Instrument Inc. (TI), Oswego laboratory.



b. Program Review and Audits

The inspector reviewed the program audits and noted that documented audits were performed by NMPC staff during 1978. The inspector noted that several laboratory and analytical problems were identified in an audit of the previous radiological contractor. The inspector noted that the licensee's management was appraised of these audit results and corrective action was completed to prevent recurrence of inadequacies identified during this audit. The licensee stated that it was decided that the analytical responsibility be changed. The licensee stated that a documented audit of the new laboratory will be performed prior to the end of 1978.

The biological contractor audit was performed on June 12, August 9, and August 16, 1978. This audit included both the field laboratory in Oswego, New York, and the analytical laboratory in Dallas, Texas. The results of this audit showed that, other than minor program inadequacies, the contractor had completed all the required sampling, analyses, and data processing and evaluation.

The inspector determined through discussion with the licensee and review of program documentation that noticeable improvements were made in the licensee management controls as related to the environmental monitoring program.

4. Licensee Program for Quality Control of Analytical Measurements

a. Radiological

The inspector reviewed the licensee's program for quality control (QC) of analytical measurements as related to the radiological analyses of environmental media. The inspector noted that as of April 1978, progress was made in this area. The analytical contractor in this area has prepared detailed written procedures for the QC program which were approved and implemented as of April 1978. The licensee stated that environmental samples were also split with the State of New York,



Department of Environmental Conservation. The licensee stated that the contractor QC data was reviewed and evaluated on a routine basis. The inspector determined through discussion with the licensee that plans are in progress to expand the QC program by sending blind, split and spiked samples to RMC for analyses. The licensee stated that this portion of the QC program will be implemented after the completion of the onsite laboratory. The inspector noted that required funds were requested for the completion of environmental laboratory. The inspector had no further questions in this area at this time.

b. Biological

The inspector discussed with the licensee the QC measures taken to assure validity of biological sampling, sample identification, analytical measurements, and data processing and evaluation. The licensee representative (TI) stated that with regard to sample collection, all sampling equipment including thermistors and flow meters are checked and/or calibrated on a routine basis. Standardization was also performed for turbidimeters, pH meters, and DO meters. The licensee representative stated that as part of the current QC program all the field data sheets are reviewed to verify their accuracy prior to mailing them to the TI laboratory in Dallas, Texas. The inspector noted that adequate keys were used for fish identification in addition to a reference collection for different fish species collected from the area. No items of noncompliance were identified in this area.

5. Implementation of the Environmental Monitoring Program - Radiological

a. Routine and Nonroutine Reports

The inspector reviewed the licensee's annual radiological environmental report for the period from January 1 to December 31, 1977. The inspector verified that the report was submitted to the NRC on the required schedule and included the required analytical data. The inspector also reviewed the licensee's nonroutine reports in this area (LERs) including reports No. 77-44 and 77-53. The inspector reviewed the circumstances surrounding these reported events including their cause,



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licensee's evaluation, and the plant effluent and operating condition prior and during these events. The inspector noted that the routine and nonroutine reports in this area were submitted to the NRC as required.

b. Environmental Direct Radiation

Environmental direct radiation is measured with thermoluminescent dosimeters (TLDs) and continuous gamma radiation monitors. The inspector examined the environmental TLDs and the continuous gamma radiation monitors. All the examined continuous radiation monitors appeared in an operable condition at the time of inspection. The inspector noted that the installation of the environmental TLD appeared inconsistent with the NRC Regulatory Guide 4.13 and the ANSI standard (ANSI N-545-1975) recommendations. The inspector noted that some of the TLDs were positioned in a manner which would result in a partial shielding from the station mounting post (\approx 12 inches in diameter - wood). The inspector discussed with the licensee the potential shielding problems and the distortion of the gamma radiation field at the monitoring locations. The licensee stated that the direct plant shine contribution to the gamma radiation field at these locations would be minimal and the TLDs were positioned in this manner for ease of accessibility during the winter season. In a subsequent telephone discussion with the licensee on October 2, 1978, the licensee stated that the environmental TLDs would be repositioned in such a manner to minimize shielding problems. The inspector stated that until this is reviewed during a subsequent inspection, this item is considered unresolved. (78-15-01)

The inspector reviewed the licensee maintenance and calibration records for the environmental continuous gamma radiation monitors. The inspector noted that the required maintenance and calibration were performed for all of the continuous gamma monitors with the exception of monitor No. J. This monitor was not calibrated on a semiannual basis during the period from July 12, 1977, to March 15, 1978. The inspector stated that failure to calibrate the continuous gamma radiation monitor, as required by procedure No. S-RTP-29, was in noncompliance with Section 5.5.1 of the ETS. (78-15-02)



The inspector reviewed the direct gamma radiation monitoring data during the period from September 1977, to June 1978. The quarterly dose equivalent average calculated from the offsite TLD monitoring location during 1977 was 15.5 mrem. The inspector discussed with the licensee the apparent discrepancies between the TLDs and continuous radiation monitor readings. The licensee stated that the continuous radiation monitors are not as sensitive as the TLDs and a proposal to delete them from the ETS requirements is being discussed with NRR.

The inspector discussed with the licensee the apparent difference between the average dose equivalent measured during the last quarter of 1977, and the rest of the year. The licensee stated that the relatively higher levels detected during the last quarter were apparently due to seasonal variation in natural background radiation and the Chinese nuclear weapon testing. The inspector reviewed the plant operation logs and the gaseous radiological effluents from the site and noted that the increase in the direct radiation levels during the last quarter of 1977 appeared to be unrelated to the plant operation. The inspector had no further questions in this area.

c. Air Iodine and Air Particulates Sampling and Analyses

The inspector examined a sample of the onsite and offsite environmental air sampling stations. The inspector noted that the monitoring stations were in an operable condition and located at the required locations at the time of the inspection. The inspector noted that cracks had developed in the sampling system's rubber tubing which could lead to a potential system leakage problem. The licensee stated that system maintenance including system tubing replacement will be performed this fall according to the stations maintenance schedule. The inspector stated that this item will be examined during a subsequent inspection (78-15-10).

The inspector reviewed the air particulate sampling and analytical data for the period from July 77 to July 78. The licensee's sampling and analytical data review procedures were changed to ensure timely review and evaluation of the data and to eliminate redundancy in data logging. The licensee stated that this will ensure timely reporting to the NRC of any measurements which exceed ten times that of the control station. The inspector noted that during the period from September 1977, to August 1978, all nonroutine environmental radiological monitoring reports were submitted to the NRC as required.



The inspector verified, through records and procedures review, that the air particulate compositing procedures (S-CRP-9) were changed to reflect the ETS requirements with regard to the separate compositing of the onsite and offsite air particulate filters. The licensee sampling and analytical records showed the new air particulate compositing procedures were implemented.

The analyses of air particulate and radioiodine samples are still performed at the plant. The licensee stated that, since the last quarter in 1977, the sample preparation was performed at the Environmental Laboratory and the samples were counted for longer counting periods immediately after sample collection (within 1 to 2 days). The inspector noted a general improvement in the MDL for radioiodine, however, since the samples are still being counted at the plant, the problems of sample contamination and high background, still exist. The licensee stated that in the near future these samples will be counted in the Environmental Laboratory at the Energy Center. (Also see Paragraph 5. f)

d. Lake Water

The inspector reviewed the results of the lake water sampling (NMP-1 intake, JAF intake, and Oswego city water intake), and analyses since the first quarter of 1977. The inspector noted that the licensee has reported to the NRC (Annual Environmental Operating Report - 1977), relatively high concentrations (100-850 pCi/l) of Co-60, Co-58, Cs-134, Cs-137, and Zn-65 at these sampling locations including the control station at Oswego city water intake. The results of the lake water analyses performed by the State of New York indicated that the ambient concentration of these radionuclides to be less than 15 pCi/l. The inspector reviewed the plant operations and effluents during 1976-1977 and noted that the detected radionuclide concentrations were not attributable to the plant operation. The inspector also reviewed the environmental changes in the above radionuclide concentrations as a result of natural background variations or man-made sources. The inspector's review showed that the reported concentrations could not be attributed to changes in natural background concentration or other man-made sources including nuclear weapon testing. The inspector reviewed the licensee lake water analytical procedures and noted that the lake water samples were counted in the plant (JAF) in a relatively high background radiation. The



licensee acknowledged that the relatively high background radiation has resulted in inadequate gamma spectroscopic analyses of lake water samples during the period from January to July 1977. The inspector stated that the analyses of lake water samples are considered inadequate to meet the requirements of Section 3.2, Table 3.2 of the ETS and this was an item of noncompliance (78-17-03).

e. Milk

The inspector reviewed the 1977-78 milk sampling and analytical data in the 1977 annual report and in the licensee's data reports. The inspector determined through selective data verification, that the required sensitivity of analysis for I-131 in milk had been satisfied and that the samples were analyzed within the required eight days. The inspector also determined through the review of the licensee's sample collection records that all of the required milk samples had been collected, adequate sample volumes were used, and the milk sampling and the new analytical procedures were followed.

f. Environmental Analytical Laboratory

The inspector examined the Environmental Analytical Laboratory at the Energy Information Center. The inspector noted minor changes with regard to the completion of the laboratory. Environmental samples including air particulates, radioiodine, and lake water samples are still being counted at the plant. The licensee stated that the required funds were proposed in the budget, (1979), and if the needed funds are approved, the laboratory will be completed and operational within the next few months. The licensee added, if the required funds are not approved, environmental samples will no longer be counted at the plant and all the required samples will be sent to the analytical contractor. The inspector stated that this item will remain unresolved pending the completion of this action. (78-15-04)



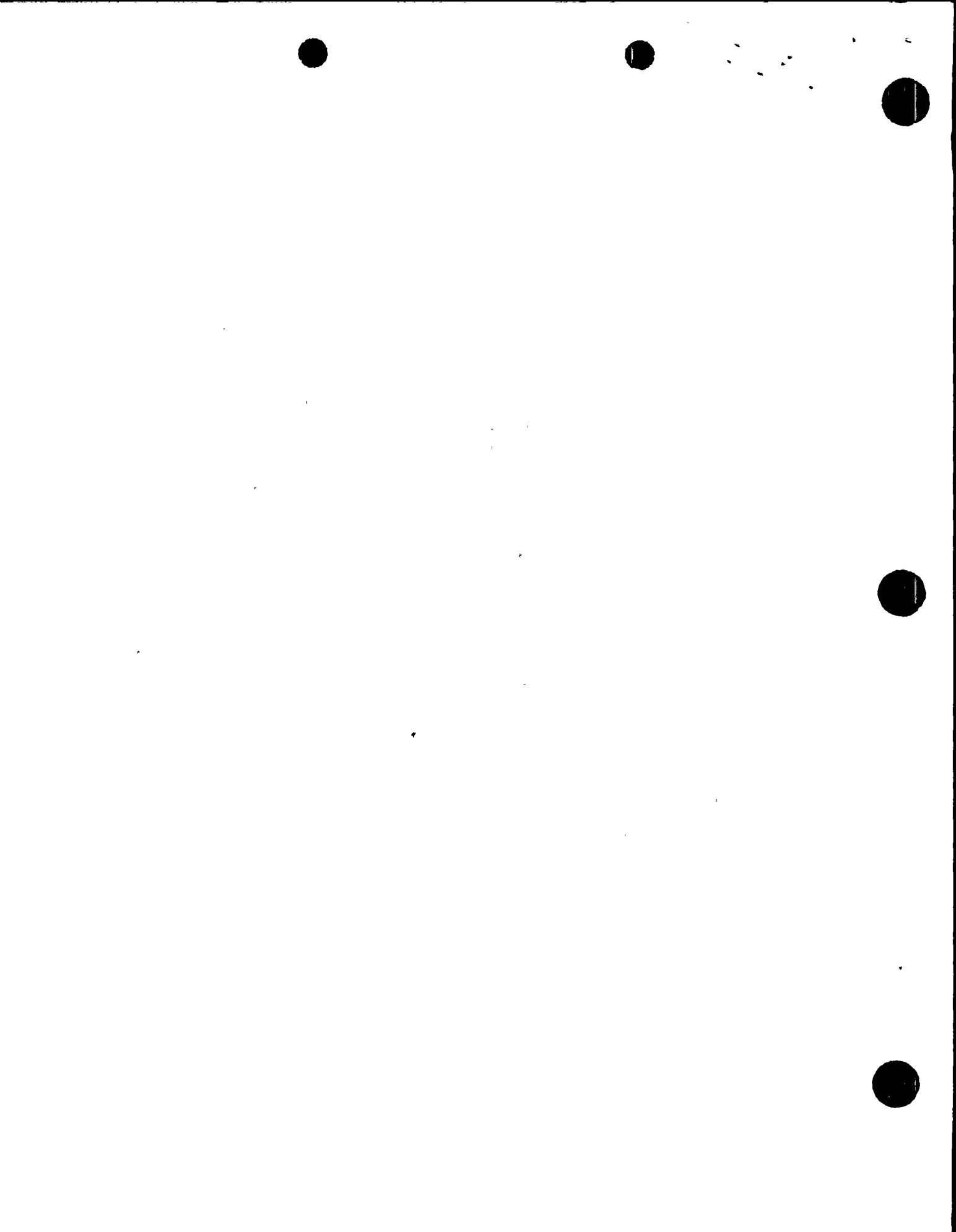
g. Meteorology

The inspector examined the meteorological instrumentation during the inspection and noted that the required instrumentation appeared to be functioning properly at the time of the inspection. The inspector also determined from the examination of the records of the last calibration that the instruments had been calibrated on a routine basis. The inspector examined the Calibration Procedure S-ISP-IC-61.3 and discussed with the licensee the system maintenance. The inspector noted that the meteorology readout systems in the control room were operational at the time of the inspection. No items of noncompliance were found in this area.

6. Implementation of the Environmental Monitoring Program - Biological/Ecological

The inspector reviewed by discussions with the licensee and contractor representatives (Texas Instruments, Inc., TI), selective program procedures and results. The inspector discussed with the licensee the 1977 annual aquatic ecology report. The report was submitted in accordance with the ETS reporting requirements and included the required data. Areas directly observed by the inspector included fish impingement and viability studies. The inspector noted that detailed written procedures were used by a TI biologist during the performance of these studies.

The inspector visited the TI field laboratory in Oswego, New York, and examined the contractor reference collection of fish and discussed with the contractor representatives the environmental data collection and processing. The contractor representative stated that all the raw sampling and analytical data are kept at the TI laboratory in Dallas, Texas. The inspector discussed with the licensee the data availability problem and stated that it is expected that all the required tests, surveillance, and program results be available at the time of the inspection. The licensee stated that this area will be evaluated and the need for the raw sampling and analytical records availability at the site or at the contractor field laboratory in Oswego will be assessed. The inspector stated that until all the required biological sampling and analytical data are available at the time of the inspection this item is considered unresolved. (78-15-05)



7. Nonradioactive Effluent Release Rates and Limits

a. Thermal

The inspector examined the plant discharge thermal monitoring system and noted that the system was upgraded to meet the ETS monitoring and accuracy requirements. New RTDs were installed and the system was calibrated. The new RTD accuracy was reported by the RTD vendor as 0.1% at a 32-130°F temperature range.

The inspector reviewed a sample of the plant thermal discharge records for the period from August 1977, to August 1978. The inspector noted that on January 4, 1978, following a plant flow reversal, the discharge temperature exceeded the ambient lake temperature by more than 50°F for five hours after the second hour following flow reversal. The inspector noted that this event was reported to the NRC (LER-78-01) as required. The inspector reviewed the licensee flow reversal procedures (NI OP-19) which require the reduction of the station load to 75% capacity prior to flow reversal initiation. The inspector noted that these procedures were not followed prior to flow reversal on January 3, 1978, in that the plant load was only reduced to 81% rather than the required 75%. The inspector stated that exceeding the ETS thermal discharge limit during plant flow reversal operations (Section 2.1.5, ETS) and failure to follow the plant operating procedures (NI OP-19) was an item of noncompliance. (78-15-06)

The licensee plant discharge temperature monitoring records showed that on March 5, 1978, the maximum differential temperature (ΔT) across the main condenser during normal station operation exceeded the ETS limit for more than an 8 hour period. The inspector determined through records review and discussion with the licensee that no positive action was taken by the licensee to prevent exceeding the ETS ΔT limit. The inspector stated that exceeding the ETS ΔT Limiting Condition for Operation (LCO) and failure to take positive action to prevent exceeding the ETS limit was an item of noncompliance. (78-15-07)

The inspector reviewed the Licensee Event Reports (LERs) and noted that an LER was not submitted to the NRC as required (Section 5.6.3, ETS) when the ETS plant thermal discharge LCO was exceeded on March 5, 1978. The inspector stated that failure to submit to the NRC the required LER was an item of noncompliance. (78-15-08)



b. Chemical Discharges

The inspector examined the chemical discharge system including the neutralization tank. The inspector noted that the station modifications to provide throttling capability on the neutralization tank discharge was performed. The licensee stated that additional maintenance will be performed including the replacement of potential leaky pipes in the system.

The inspector also reviewed the chemical releases from the plant during 1977, and through August 1978. The inspector noted that the annual discharge limit for phosphorus (10 lb/year) was exceeded by 0.72 lb during 1977. The inspector stated that exceeding the annual discharge limit (Table 2.3.1, ETS) was an item of noncompliance. (78-15-09)

The inspector noted that the above noncompliance was also identified by the licensee and reported to the NRC as required (LER-77-47). The inspector reviewed the licensee action to prevent recurrence of this inadequacy and noted that only phosphate free detergent is being used at the site and no phosphorus discharges were made from the plant during the first three quarters of 1978. The inspector had no further questions in this area at this time.

9. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in Details 5.b, 5.f, and 6.

10. Exit Interview

On September 29, 1978, at the conclusion of the inspection, the inspector met with the licensee representatives denoted in Paragraph 1. The scope and findings of this inspection, including each unresolved item and items of noncompliance, were discussed. The licensee acknowledged the findings.

