

UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I
970 BROAD STREET
NEWARK, NEW JERSEY 07102

201 645-3944

FEB 3 1972

J. G. Keppler, Chief, Reactor Testing & Operations Br.
Division of Compliance, HQ

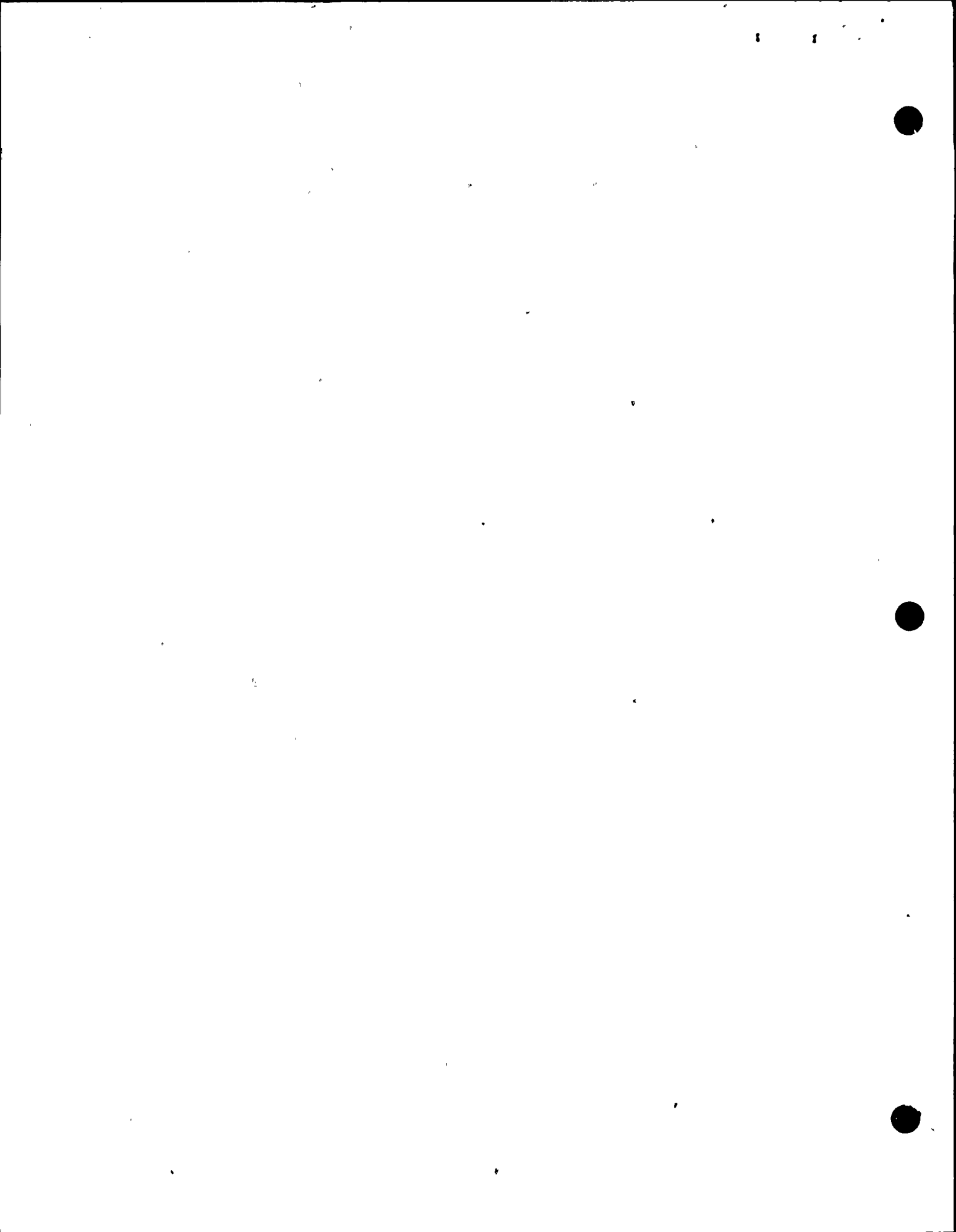
CO INSPECTION REPORT NO. 50-220/71-05
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT

The subject inspection report is forwarded for your information.

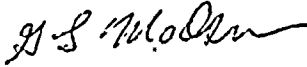
The subject report indicates that a previous enforcement matter, relating to reporting requirements for variations between actual performance and data presented in the FSAR, is being handled by CO:HQ. Subsequent to this inspection, a letter was sent to NMP which acknowledged the receipt of their letter dated September 14, 1971. This item will be given additional attention during our next inspection.

Information relating to previous CO:HQ memo requests, obtained during this inspection is as follows:

7/27/71	Type isolation relays	NMP does not use GE CR 120 relays for the isolation condenser controls and protective circuits.
8/25/71	Type MSIVs	NMP has two electric operated MSIVs inside and two Atwood Morrill air operated MSIVs outside containment.
10/27/71	Emergency service water pumps	ESW pumps are back up pumps for service water pumps - not emergency pumps for emergency equipment. No TS performance requirements.
3/3/71	Double isolation valves, torus and drywell sample lines	NMP has double isolation valves.



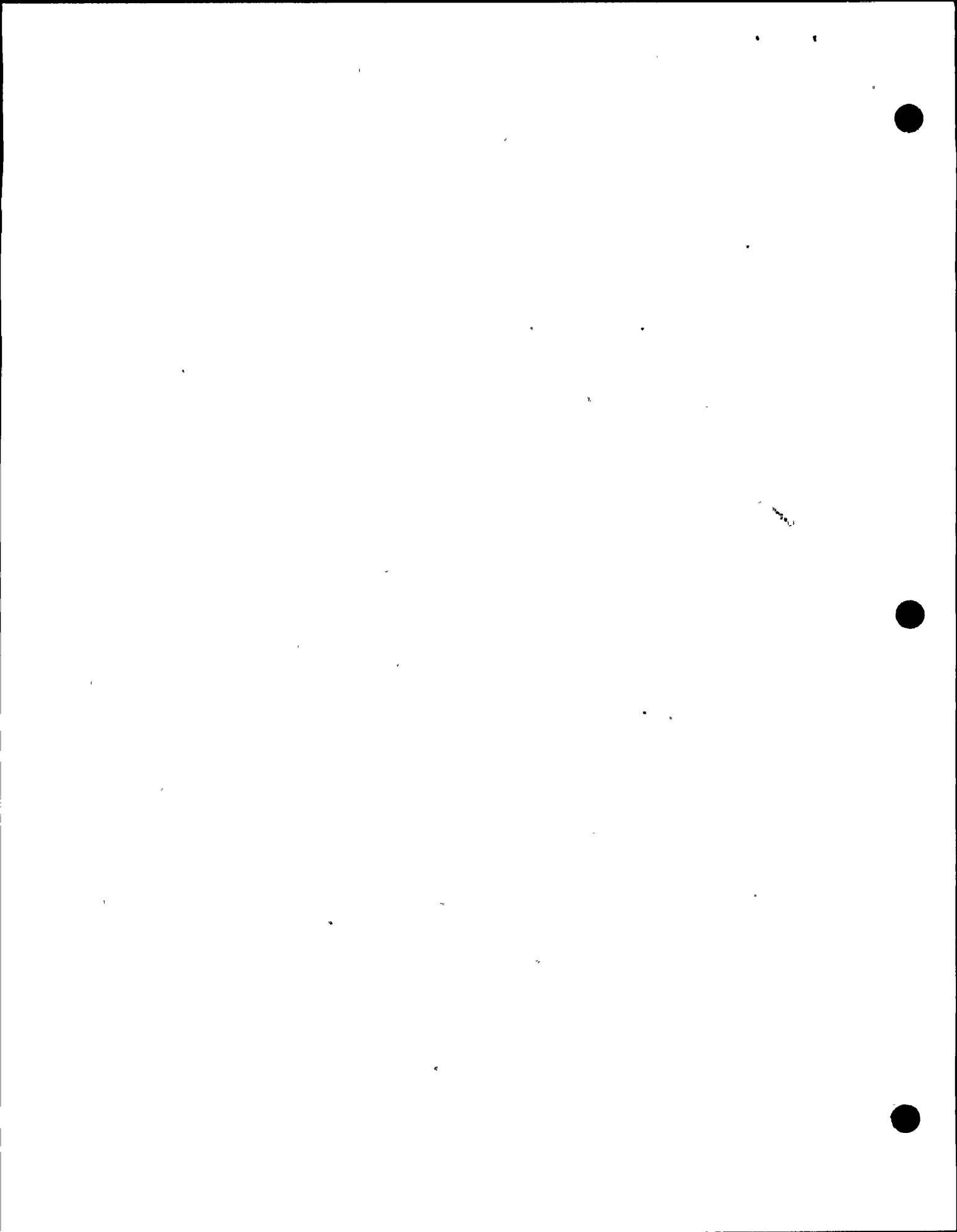
The absence of check valves in the instrument air compressor discharge line was revealed. NMP has agreed to give this matter consideration and we will follow up on this item during our next inspection.



G. L. Madsen
Acting Sr. Reactor Inspector

Enclosure:
Subject Inspection Report

cc: E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DRL (2)
D. J. Skovholt, DRL (3)
H. R. Denton, DRL (2)
L. Kornblith, CO
R. H. Engelken, CO
~~CO Files~~
DR Central Files



U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I

CO Inspection Report No. 50-220/71-05

Subject: Niagara Mohawk Power Corporation

Nine Mile Point

Location: Scriba, New York

License No. DPR-17

Priority

Category C

Type of Licensee: Boiling Water Reactor

Type of Inspection: Routine, Unannounced

Dates of Inspection: December 14 - 16, 1971

July 4 - 6, 1971 Routine

Dates of Previous Inspection: October 5 - 6, 1971 Special

Principal Inspector: *G. L. Madsen*

F. S. Cantrell, Reactor Inspector

1/31/72

Date

Accompanying Inspectors: None

Date

Date

Other Accompanying Personnel: None

Date

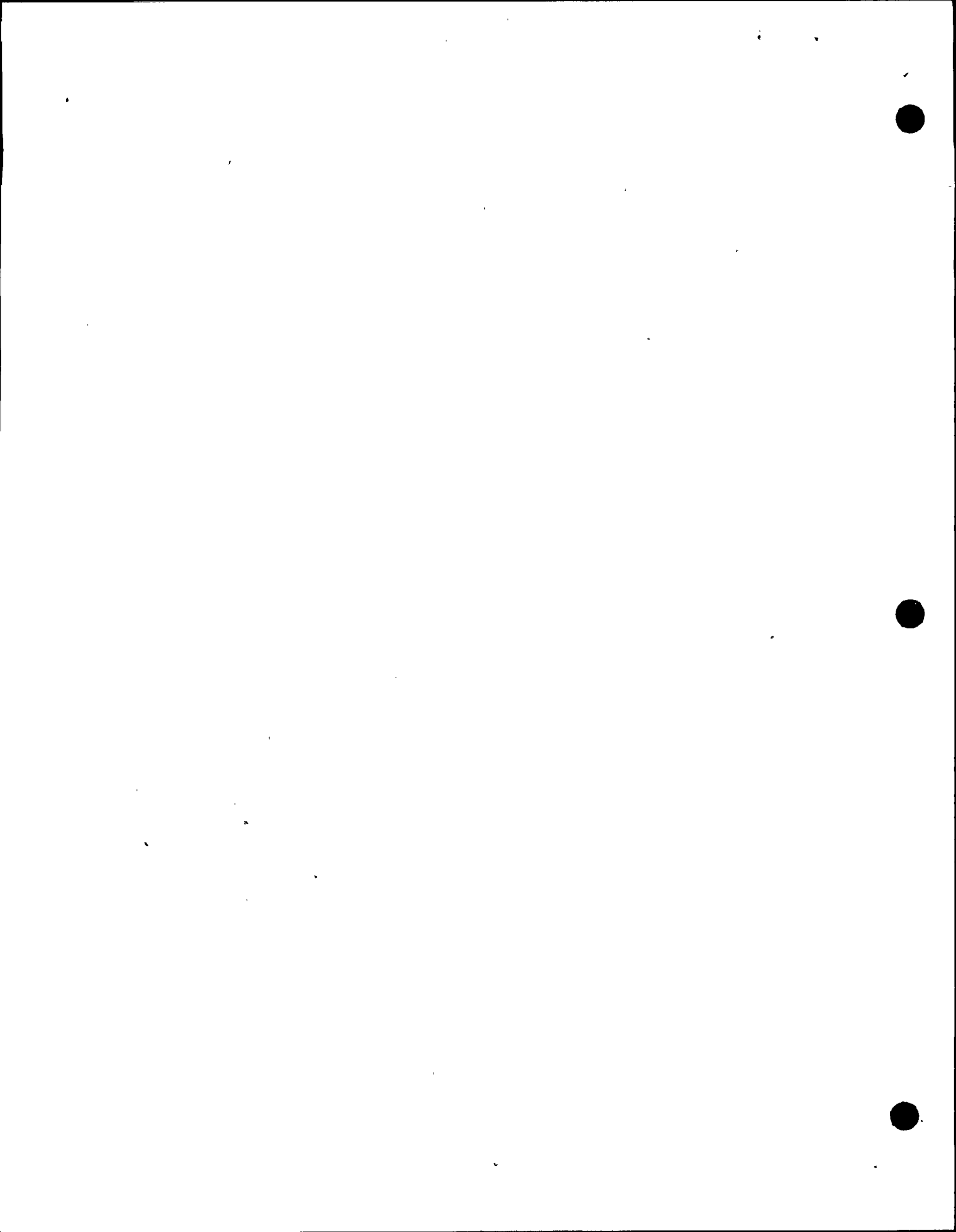
Reviewed By: *G. L. Madsen*

G. L. Madsen, Acting Sr. Reactor Inspector

1/31/72

Date

Proprietary Information: None



Section I

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Matters:

As a follow up to the March 1971 inspection, an enforcement letter was sent by CO Headquarters to NMP on August 26, 1971 identifying three items of noncompliance with Regulatory requirements and one item involving a variance with information provided in the Final Safety Analysis Report.

In a letter dated September 14, 1971, NMP replied to the enforcement action as follows:

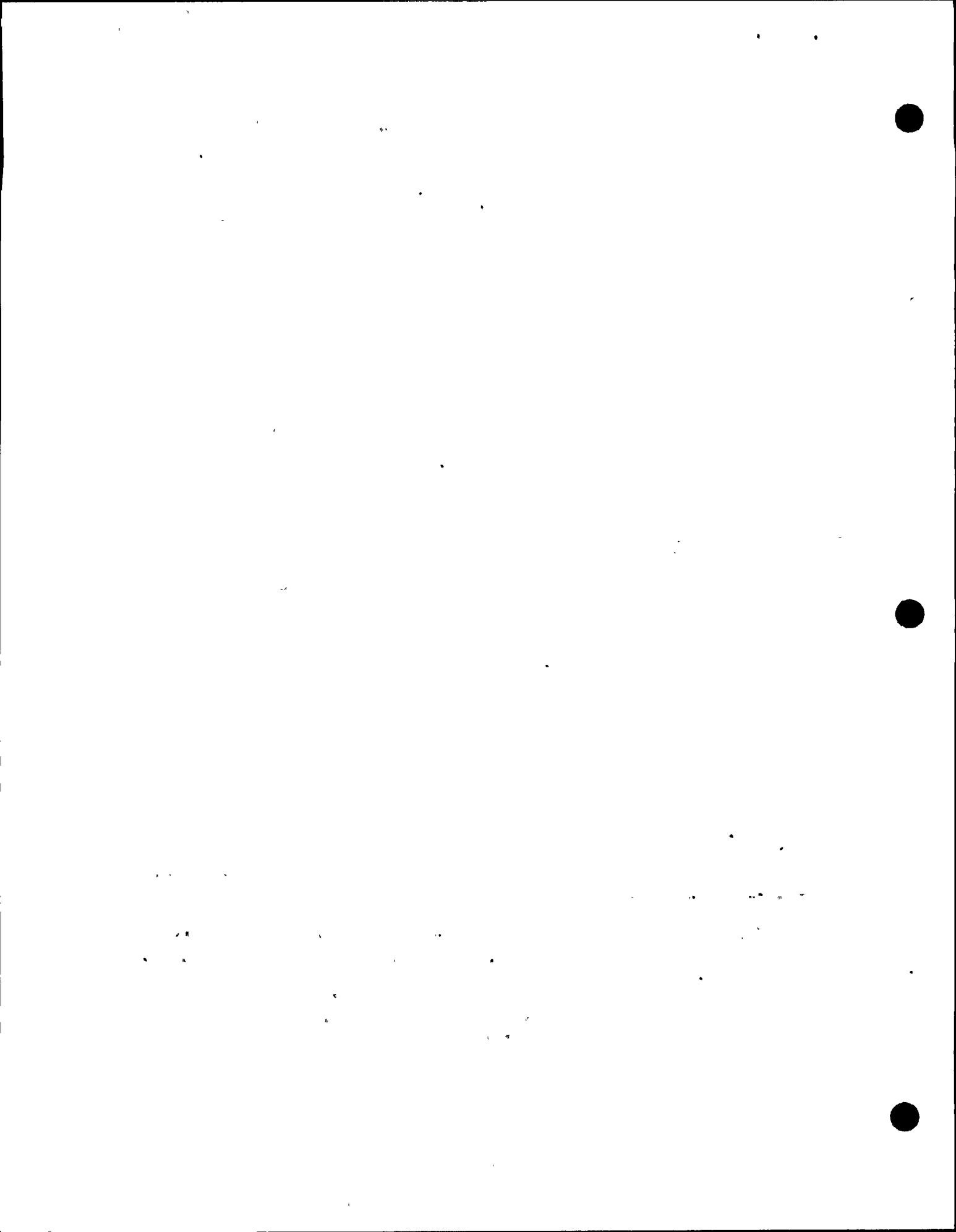
- A. Corrected figures for total activity released were supplied to the Division of Reactor Licensing in a separate letter dated September 14, 1971. This item is considered resolved.
- B. Radiation Protection Technicians were instructed that adequate precautions must be taken to protect personnel against contaminated surfaces being a source of airborne activity. This item is considered resolved.
- C. NMP did not agree with the interpretation of the requirements for reporting substantial variation of performance from data presented in the Final Safety Analysis Report. This matter is being handled by CO:HQ.

Unresolved Items:

Protection against a single line failure causing a complete loss of instrument air. (Paragraph 21)

Status of Previously Reported Unresolved Items:

- A. Dissolved gases in liquid radioactive waste - The analysis of samples of liquid waste from NMP by the AEC's Idaho Health and Safety Laboratory did not indicate xenon-133 and xenon-135 were present. This item is considered resolved. (Paragraph 13)
- B. Testing of 125 volt station batteries - This subject was not reviewed.



- C. Periodic testing of plant instrumentation - NMP has set up a program to periodically calibrate all plant instrumentation. This item is considered resolved. (Paragraph 14)
- D. Debris in feedwater system - The feedwater system was inspected for debris during the September - October 1971 outage. No additional pieces of the failed strainer were found. This item is considered resolved. (Paragraph 15)
- E. Sampling line loss for stack monitor - Samples were taken at the stack probe and at the sampler. Line losses were determined to be satisfactory. (Paragraph 16)

Unusual Occurrences:

Following a reactor startup on August 30, 1971, a low steam flow signal was received from one of the two main steam lines. When the reactor was shutdown, an internal crack was found in the signal tubing which caused the "indicated low flow" signal. (Letter, NMP to DRL, dated December 13, 1971 and Paragraph 22)

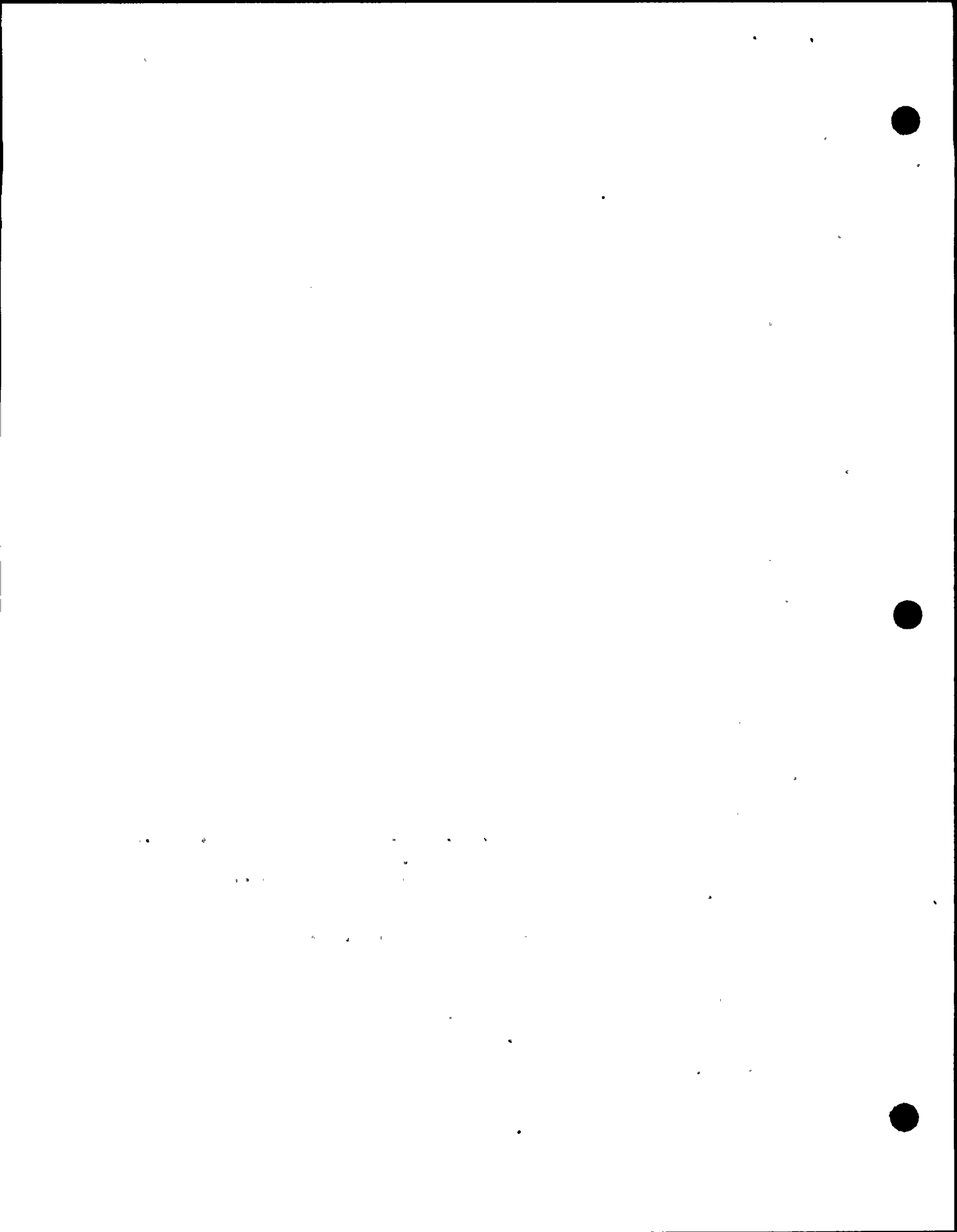
Persons Contacted:

Mr. A. Burt, Station Superintendent
Mr. T. Perkins, Assistant Station Superintendent
Mr. T. Lempges, Operations Supervisor
Mr. M. Silliman, Results Supervisor
Mr. R. Burns, Health Physics & Chemistry Supervisor
Mr. R. Smith, Maintenance Supervisor
Mr. L. Boland, Instrument Supervisor
Mr. R. Pasternack, Physics Analyst Supervisor
Mr. D. Pike, Engineer
Mr. G. Shelling, Supervisor Trainee
Mr. K. D. Anderson, New York State Department of Environmental Conservation

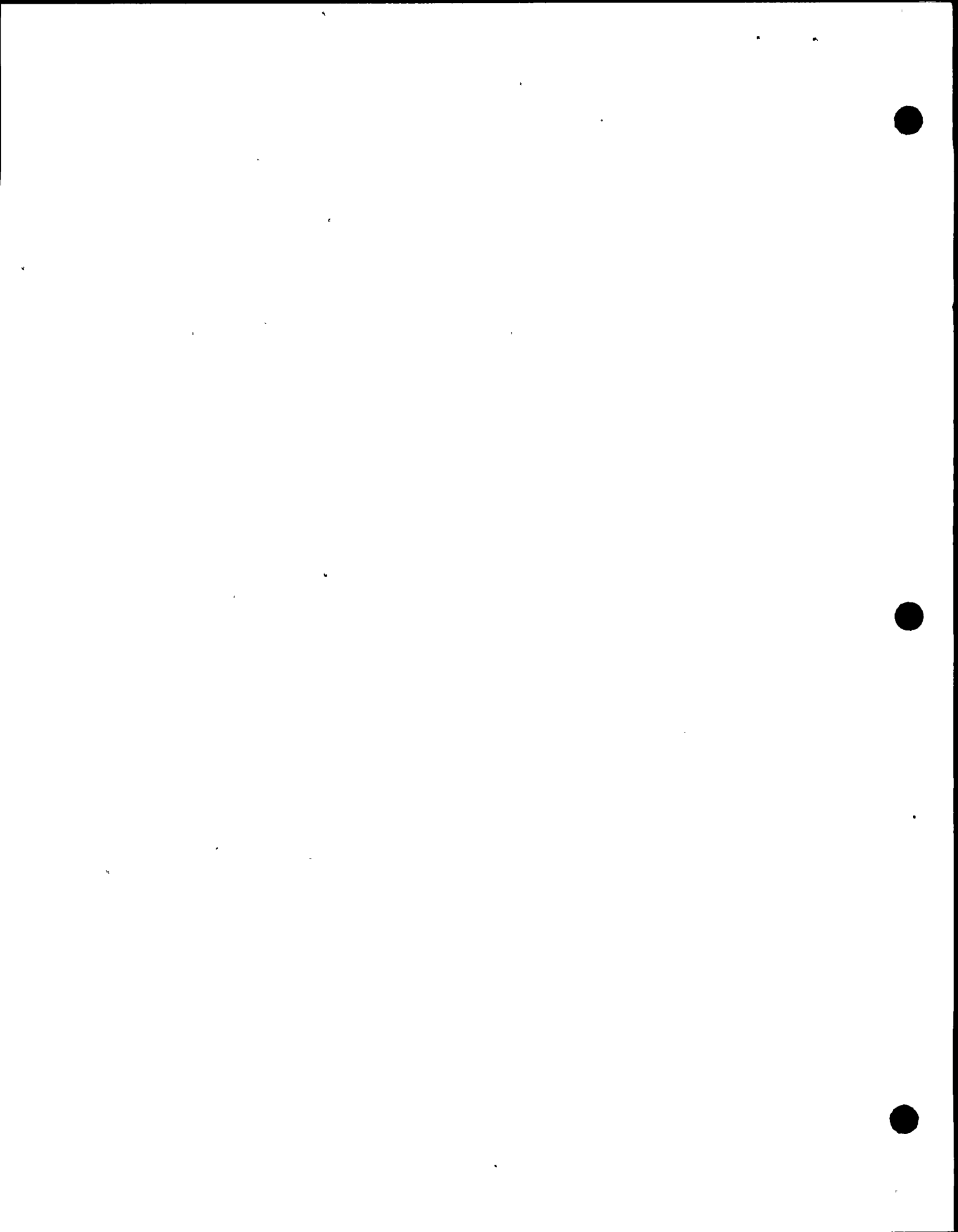
Management Interview:

An exit interview was held with Mr. Burt on December 16, 1971. The following items were discussed:

- A. Program for inspection of pipe hangers and supports for small lines similar to the steam vent between the isolation condensers and the main steam header - Mr. Burt stated that Teledyne Research Corporation is currently studying the problem of pipe supports at Nine Mile Point, and the NMP program will probably follow the recommendations of the Teledyne study. (Paragraph 17)



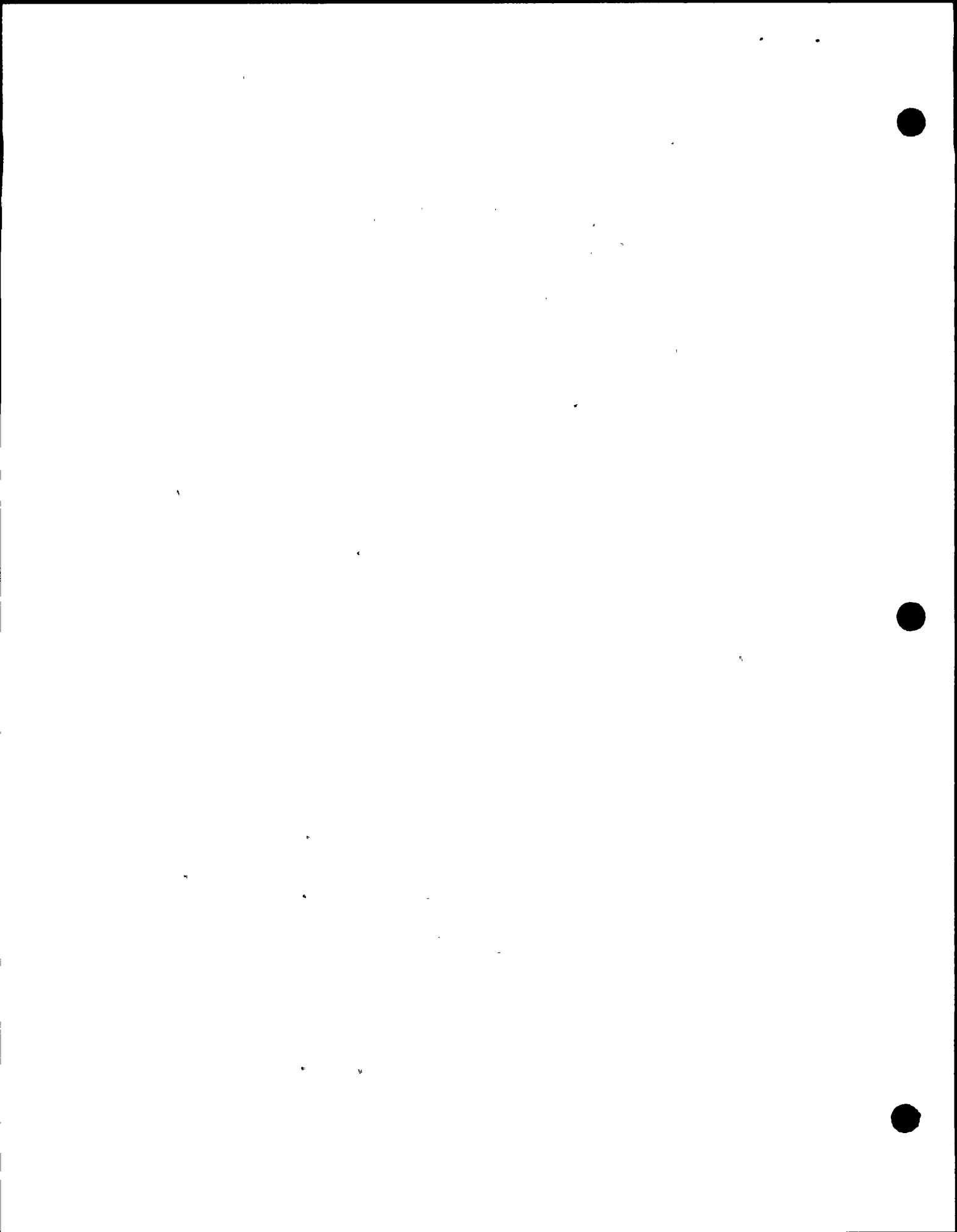
- B. Safety Review and Audit Board (SRAB) - The inspector stated he had reservations about the SRAB's ability to fulfill its requirements for auditing plant operations when only one meeting a year is held at the plant site. Mr. Burt stated that audits are not conducted in conjunction with the SRAB meeting, but specific assignments are made to audit at other times. He stated he would provide the inspector with a copy of the SRAB audit program. (Paragraph 18)
- C. Station Operating Review Committee - The inspector stated that he had not been able to find a record of an SORC meeting in September. Mr. Burt stated that there had not been any items that required the attention of the SORC and as such he had not scheduled a meeting. He stated that normally he held 2 - 3 meetings a week with his staff; however, these staff meetings are not always documented. He pointed out that meeting minutes are in the file for a meeting in late August and early October. The inspector agreed that "monthly" did not necessarily mean a maximum lapse time of 30 days; however, he pointed out that "monthly meetings", as required by the Technical Specifications, should, over the long run, be held at 30 day intervals or less. (Paragraph 19)
- D. Meeting with New York State Department of Environmental Conservation, Niagara Mohawk and Compliance on December 15, 1971 to discuss the cooperative arrangement for environmental radiation monitoring - The inspector stated that Nine Mile Point would receive a letter from Compliance confirming the agreements made in the above meeting. The inspector reiterated that in this program, New York State representatives are acting as agents of the AEC. (Paragraph 20)
- E. Plant air systems - The inspector stated that his review of the plant air systems (instrument and service air) revealed that a single linebreak could cause the loss of all plant compressed air supplied since the system does not have remote operated isolation valves or check valves. Mr. Burt stated that he would present the problem to the SORC for evaluation and recommendations. (Paragraph 21)
- F. Instrument tubing crack in main steam line flow restrictor - The inspector stated that a report to the Commission was overdue on this subject. Mr. Burt stated that an information report had been submitted December 13, 1971 because he considered the failure an unusual occurrence, not an abnormal occurrence. The inspector stated that he would review the report and the reporting requirements before reaching a decision on the timeliness of the December 13, 1971 report. (Paragraph 22)



G. Recirculation pump trip and turbine trip tests at full power - The inspector stated that it was Compliance's position that these tests should be completed as indicated in the notice of the "Proposed Change to Authorize Operation at Power Level Up to 1850 MWt". Mr. Burt stated that NMP had reviewed the subject and concluded that this testing should be deferred until just prior to the next scheduled plant shutdown for the following reasons:

1. The reactor contains some failed fuel as shown by the current stack release rate, approximately 28,000 uCi/sec.
2. It is anticipated that each transient experienced will cause an increase in the stack release rate.
3. NMP is currently operating under a program recommended by GE that significantly increases the time required to reach full power, but "pampers the fuel" and keeps the stack release rate well below the TS limits. This is in line with keeping releases as low as practical.

Mr. Burt stated that NMP had made a written proposal to DRL to defer these two tests. The inspector stated that we would consider this proposal and make our recommendations. (Paragraph 23)



Section II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies or Unresolved Items were Found

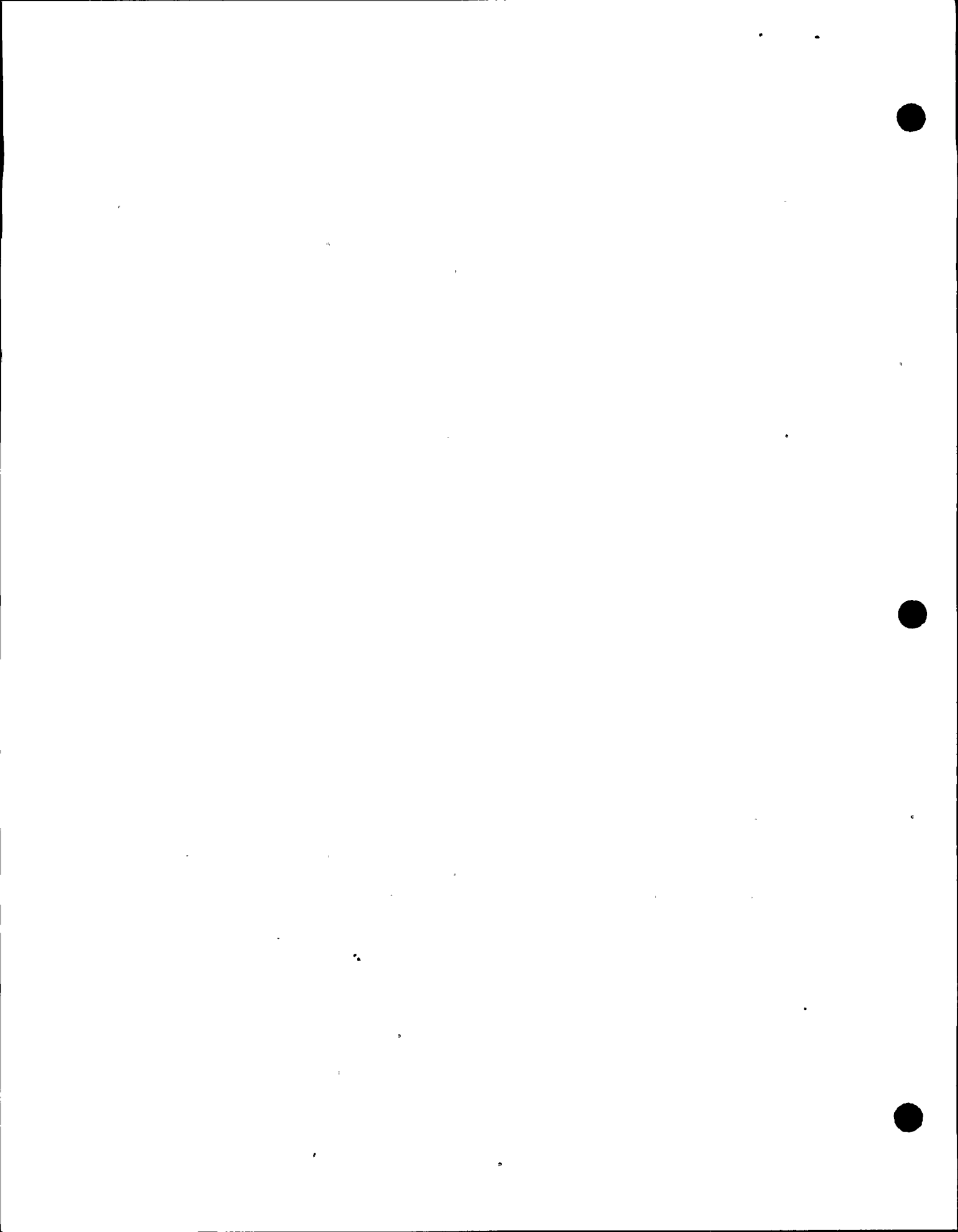
1. General

Plant records indicate that since the July 1971 inspection, three scrams have occurred.

As reported in CO Report No. 50-220/71-03, the reactor was operated at a nominal 1538 MWt in order to minimize stack release rates. At this power level, steady state release rates were in the range of 8 - 10,000 uCi/sec. Beginning on August 17, 1971, a program was begun to increase power to the full licensed limit of 1850 MWt. Power was increased in several steps reaching 1700 MWt September 9, 1971. The steady state stack release rate reached 45,000 uCi/sec with peaks as high as 65,000 uCi/sec. At that time, NMP made a decision to defer any further power increases.

The reactor was shutdown September 17, 1971 to replace the failed fuel in the core. All fuel assemblies were "sipped" to determine the location of the leakers. Twenty-four new fuel assemblies and fourteen reconstituted fuel assemblies were charged to the reactor to replace the identified "leaking fuel" (CO Report No. 50-220/71-04). Forty-eight poison curtains were removed. (The remaining poison curtains are scheduled to be removed during April 1972.)

Following removal of the defective fuel during the outage, the reactor was brought on line October 26, 1971. Power was increased in several steps using a program to "pamper the fuel" recommended by General Electric. A reactor power level of 1700 MWt was reached on November 7, 1971. At that time, the steady state release rate was approximately 23,000 uCi/sec. Power was increased to the authorized 1850 MWt on December 11, 1971 for full power testing. The required pump tests were completed, except for the five recirculation pump trip test, the maximum recirculation pump flow change test, and the turbine trip test. In order to avoid inducing large transients on the fuel that might cause an increase in release rates, these tests were deferred until just prior to the April 1972 outage. During the outage the defective fuel assemblies will be replaced. A reheater drain valve, in a high radiation field (1500 mR/hr), failed on December 13. Power was reduced to approximately 1775 MWt, and the reheater was removed from service.



2. Emergency Procedures

Mr. Burns furnished the inspector a current copy of the NMP Emergency Plan. He stated that NMP was currently working with New York State representatives to update the Emergency Plan. A nuclear incident drill was held on August 19, 1971. As a result of the drill, minor changes were made to the procedure; however, the overall results were satisfactory.

3. Iodine in Primary Coolant

The concentration of iodine-131 in the primary system increases following a shutdown and cooldown.

4. Turbine Bypass Valves

Cracked seats in the area of the stellite insert were found. (Letter, NMP to DRL dated December 13, 1971).

5. Sample Lines

The inspector verified that NMP had double isolation valves in the containment and torus sample lines.

6. Main Steam Isolation Valves

The program to inspect the hydraulic dashpot on the two Atwood-Morrill main steam isolation valves.

7. Type relays used in the isolation condenser protective circuits.

8. Emergency service water pump testing.

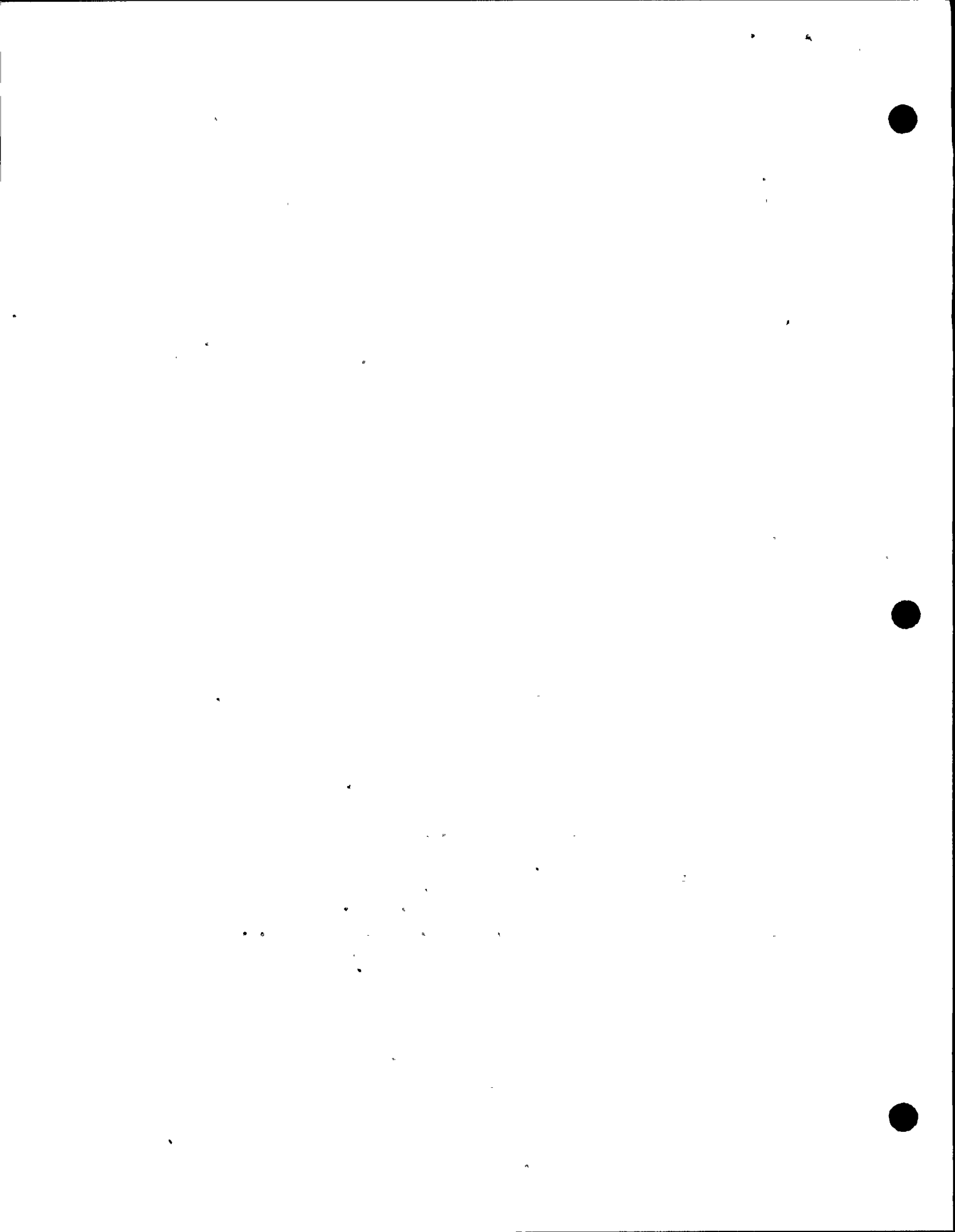
9. Installation of a strong motion seismograph.

10. High Conductivity Water in the Primary System*

An additional conductivity probe and switch has been installed in parallel with the original conductivity monitor in the line to the condensate storage tank.

A conductivity probe and transmitter was also installed to monitor water being sent to the waste collector filter and demineralizer.

*CO Report No. 220/71-03 and Letter, NMP to DRL, dated September 3, 1971.



11. QA Program

Procedures to implement the program are being reviewed prior to approval. Mr. Smith and Mr. Burt agreed to send copies of the implementing procedures to the inspector as soon as they are approved for use.

12. Stack Release Rate Calculation

Minor discrepancies (+ 20%) were noted in records of official releases for a period of two weeks. The discrepancy resulted from interpretation of chart readings by different persons on days in which the stack monitor was calibrated.

Details of Subjects Discussed in Section I

13. Dissolved Gases in Liquid Radioactive Waste

Liquid waste samples obtained by CO:I and analyzed by the AEC's Idaho Health and Safety Laboratory did not indicate the presence of the isotopes xenon-133 or xenon-135 in the samples. Periodic samples will be taken for independent analysis to verify the composition of waste being released from the plant.

14. Instrument Calibration List (CO Report No. 220/71-03)

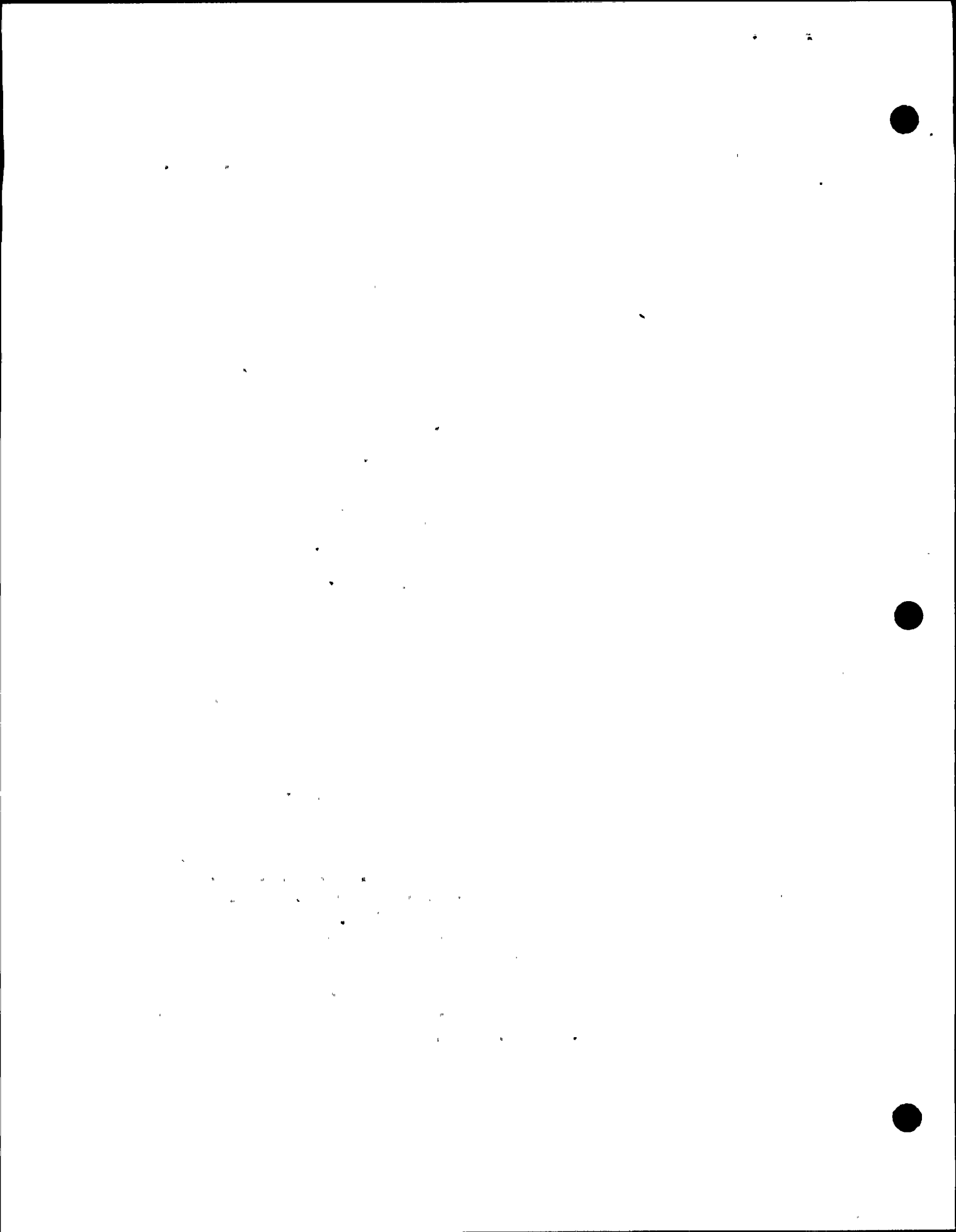
Mr. Bobin showed the inspector his system for keeping track of instrument calibration and checks that are needed but not required by TS. All outage items are to be completed by the end of the April 1972 outage (poison curtain removal). All non outage items are to be completed prior to the April 1972 outage.

15. Debris in Feedwater System (CO Report No. 220/71-03)

Mr. Burt stated that the feedwater system was inspected during the September - October outage and no debris was found.

16. Evaluation of Sample Line Losses

The stack gaseous effluent was sampled simultaneously at the stack probe and the stack monitor on September 7 and 17, 1971 in order to evaluate sample line losses. A sample for iodine analysis and for particulate analysis was obtained each day at both locations.



The analysis of the samples for iodine produced results that agreed within $\pm 9.5\%$. The analysis showed that the particulate sample results averaged approximately 15% lower at the stack monitor.

17. Program to Inspect Pipe Hangers

The inspector reviewed a small steam line break that occurred at another facility as the result of a broken pipe hanger. Mr. Burt stated that he considered pipe supports a serious problem at both nuclear and conventional plants. As a result, Teledyne Research Corporation is currently making a study of the problem at NMP in order to recommend a program for NMP.

18. Safety Review & Audit Board Minutes

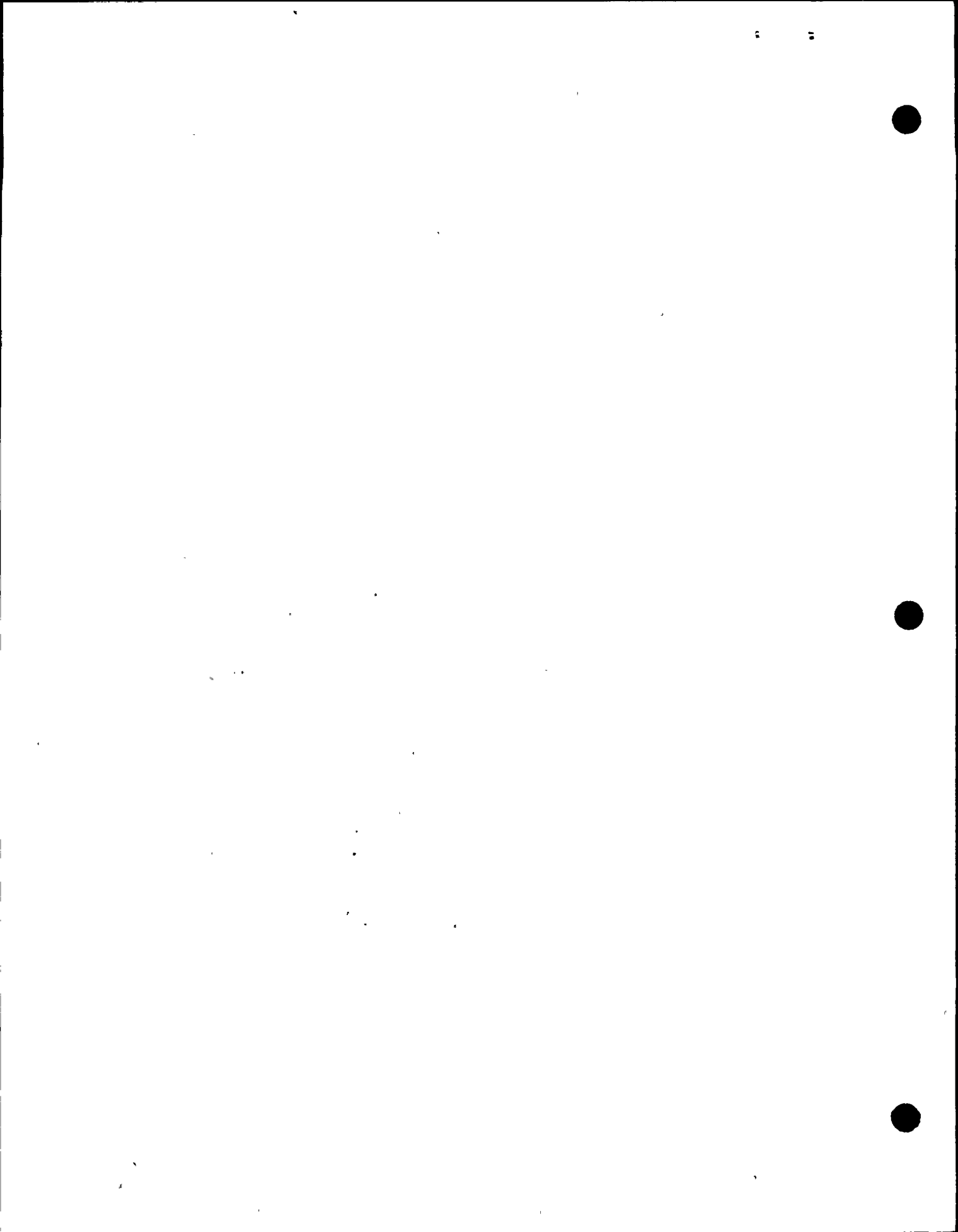
Minutes were reviewed for meetings on June 2, July 28 and October 27, 1971. The July 28 meeting was the only meeting scheduled at the site. All other meetings in 1971 were scheduled in Syracuse, N. Y. An audit of plant operations is not conducted in connection with meetings of the SRAB. Audits in a particular area are assigned to various members of the SRAB. The results are reported to the Chairman of the SRAB by letter and distributed to the other members for review.

19. Station Operations Review Committee (SORC) Minutes

Minutes were reviewed for meetings held July 21, July 23, August 20, October 6 and November 29, 1971. No deficiencies were noted in the minutes of the meetings; however, there was no record of a meeting for September 1971. Technical Specifications require monthly meetings of the SORC.

20. Agreement between AEC & N. Y. State to Setup Cooperative Environmental Radiation Monitoring Program

A meeting was held on December 15, 1971 with Mr. M. A. Silliman, NMP, Mr. K. D. Anderson, N. Y. State, and the inspector to inform NMP of the cooperative agreement between N. Y. State and the AEC. (Mr. Silliman was designated by Mr. Burt to represent NMP.) The "news release" concerning the agreement was used as the agenda for the discussion. The inspector pointed out that N. Y. State would be obtaining samples of liquid and gaseous waste from the plant as the Commission's agent. In addition, N. Y. State would take environmental samples in the vicinity of the plant. The results would be available to both groups, NMP



and the Environmental Protection Agency (EPA).

Mr. Anderson and the inspector then observed the collection of samples from the floor drain sample tank (No. 12) and from the off gas system. Two 500 ml samples from the No. 12 tank and two gas samples from the off gas system were sent to Idaho Health and Safety Laboratory for analysis. N. Y. State collected the same samples. NMP retained samples of the above. Plans are to compare the analysis from the three laboratories. L. Higginbotham, Region I, was designated as the coordinator of the program.

21. Instrument Air System

The system diagram and the field installation showed that a single line break could interrupt all sources of instrument air. There are no check valves or remote operated valves located in the air compressor discharge lines or in the vicinity of the instrument air receiver. When the instrument air pressure drops to 75 psi, plant service air is automatically valved into the instrument air system; however, without properly located check valves, or automatic remote operated valves, this source of air pressure may be lost until manual valves are operated to isolate the break. The Final Safety Analysis Report (FSAR), page X40, states that a check valve prevents feeding service air back into the instrument air receiver; however, "this check valve" is not shown on the diagram of the breathing, instrument and service air system (Figure X8 in the FSAR).

22. Crack in Instrument Tube in Main Steam Flow Restrictor*

The flow restrictor has a tube from the throat of the venturi to the outside. During the return to power following a scram on August 30, 1971, one steam line indicated approximately 2/3 of normal flow. NMP suspected a crack in this tube as being the cause of a low signal. The instruments that received a signal from this sensor were recalibrated and reset based on this signal. When the venturi was examined, a crack in the tube was verified. Examination of the other venturi also showed a crack; however, the crack had not opened up. Metallurgical analysis of the failed tubes indicated stress corrosion cracking

*Inquiry Report 220/71-04 and Letter, NMP to DRL, dated December 13, 1971.

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of heavily sensitized material. Nonsensitized inconel tubing was used to replace the failed tubes.

23. Test Program for 1850 MWt

The charts of the parameters recorded for the full power test program were reviewed and the results were discussed with Mr. Pasternack. The following tests or calibrations were performed at 1850 MWt:

- a. Flux response to rod movement.
- b. Local power range monitor calibration.
- c. Average power range monitor calibration.
- d. Stability tests involving both pressure regulators.
- e. Response to opening bypass valves.
- f. Response to reactor level changes.
- g. Response to recirculation flow changes.
- h. Core performance evaluation
 - (1) Peak heat flux - 94 watts/cm²
 - (2) Total peaking factor - 2.3 (limit 3.08)
 - (3) Minimum critical heat flux ratio - 3.33 (limit 1.9)

The results obtained were as predicted. Mr. Pasternack stated that the tests met test objectives, and demonstrated satisfactory performance of the reactor.

Three tests* that were described in the "Technical Supplement to Petition to Increase Power Level" (April 1970), page II-34, were not performed. These three tests would subject the fuel to a major transient. NMP plans to defer these tests until just prior to the outage scheduled for April 1972. This proposal was made to the Division of Reactor Licensing in a letter dated December 15, 1971.

*Maximum recirculation flow changes
Five recirculation pump trip
Turbine trip

