

UNITED STATES GOVERNMENT

# Memorandum

TO : Edson G. Case, Assistant Director  
Division of Reactor Licensing

DATE: JUN 18 1965

FROM : L. Kornblith, Jr., Assistant Director  
for Reactors  
Division of Compliance *L. Kornblith, Jr.*

SUBJECT: NIAGARA MOHAWK POWER CORPORATION  
DOCKET NO. 50-220

The attached report by our field inspector of a visit to the construction site of the Nine Mile Point Nuclear Station on May 5, 1965, is forwarded for information.

We are of the opinion that the evaluation made of the pedestal problem and the measures taken to correct the problem were adequate and in accord with good engineering practice. A copy of the Dames and Moore report referred to on page 6 of this report was previously forwarded to Mr. Roger Boyd.

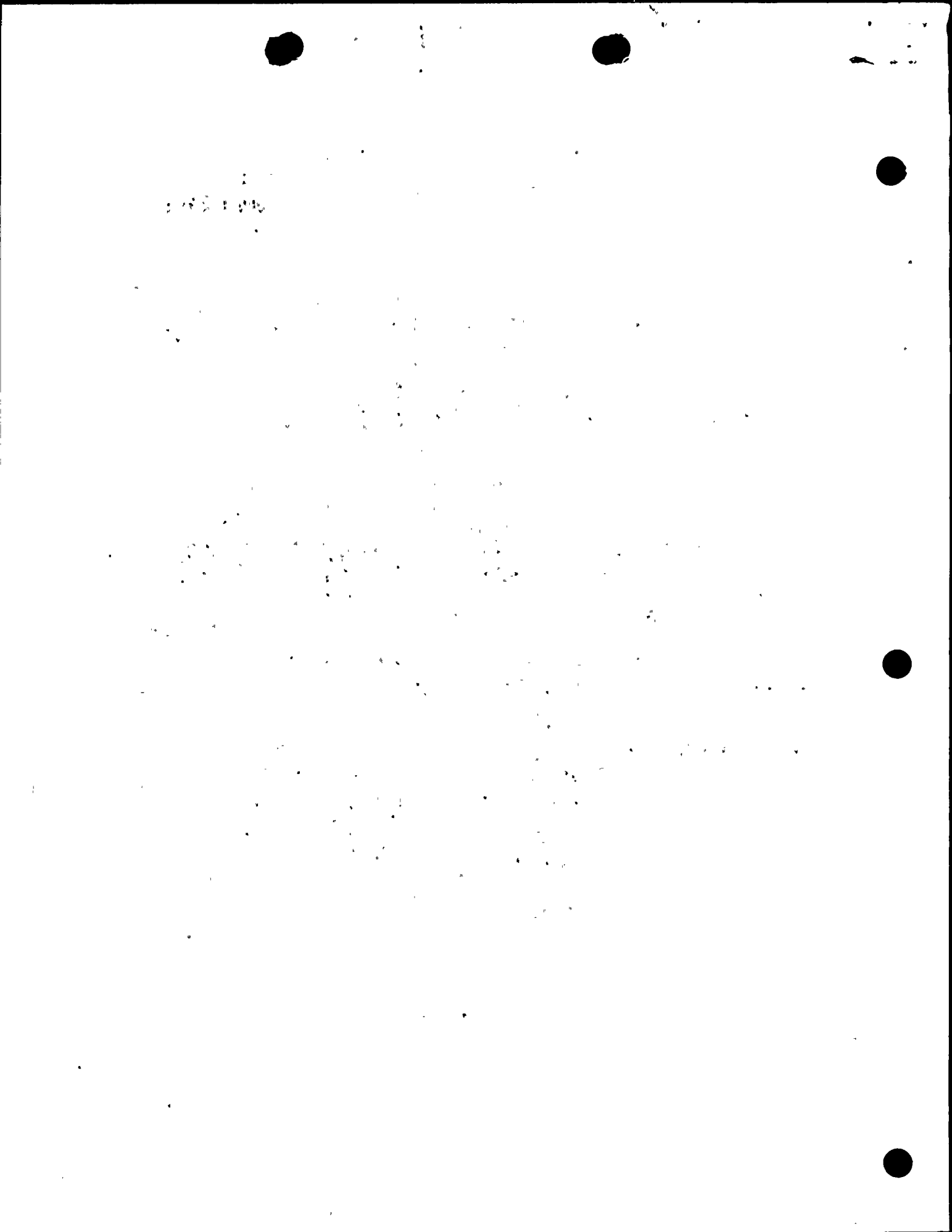
Attachment:

CO Rpt No. 220/65-2  
by R. T. Carlson  
dtd 5/26/65

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

May 26, 1965

CO REPORT NO. 220/65-2

Title: NIAGARA MOHAWK POWER CORPORATION  
LICENSE NO. CPPR-16

Date of Visit: May 5, 1965

By : *R.T. Carlson*  
R. T. Carlson, Reactor Inspector

SUMMARY

The Niagara Mohawk Power Corporation was visited to make initial contact with management personnel and to discuss the reactor inspection program of the Regulatory Branch of the U. S. Atomic Energy Commission.

The facility operating staff has been designated. A training program has been outlined and is currently under way.

Damage to the reactor pedestal was experienced. The problem was evaluated by Dames and Moore and the recommended corrective measures were taken.

A drywell spray system has been incorporated into the facility design as an additional engineered safeguard.

Construction is 2% complete and on schedule.

(continued)



DETAILS

I. Scope of Visit

Mr. J. P. O'Reilly, Reactor Inspector (Supervisory), Region I, Division of Compliance; and Mr. R. T. Carlson, Reactor Inspector, Region I, Division of Compliance, visited the construction site of Niagara Mohawk Power Corporation's (NMPC) Nine Mile Point Nuclear Station (NMPNS) near Oswego, New York, on May 5, 1965. The visit included the following:

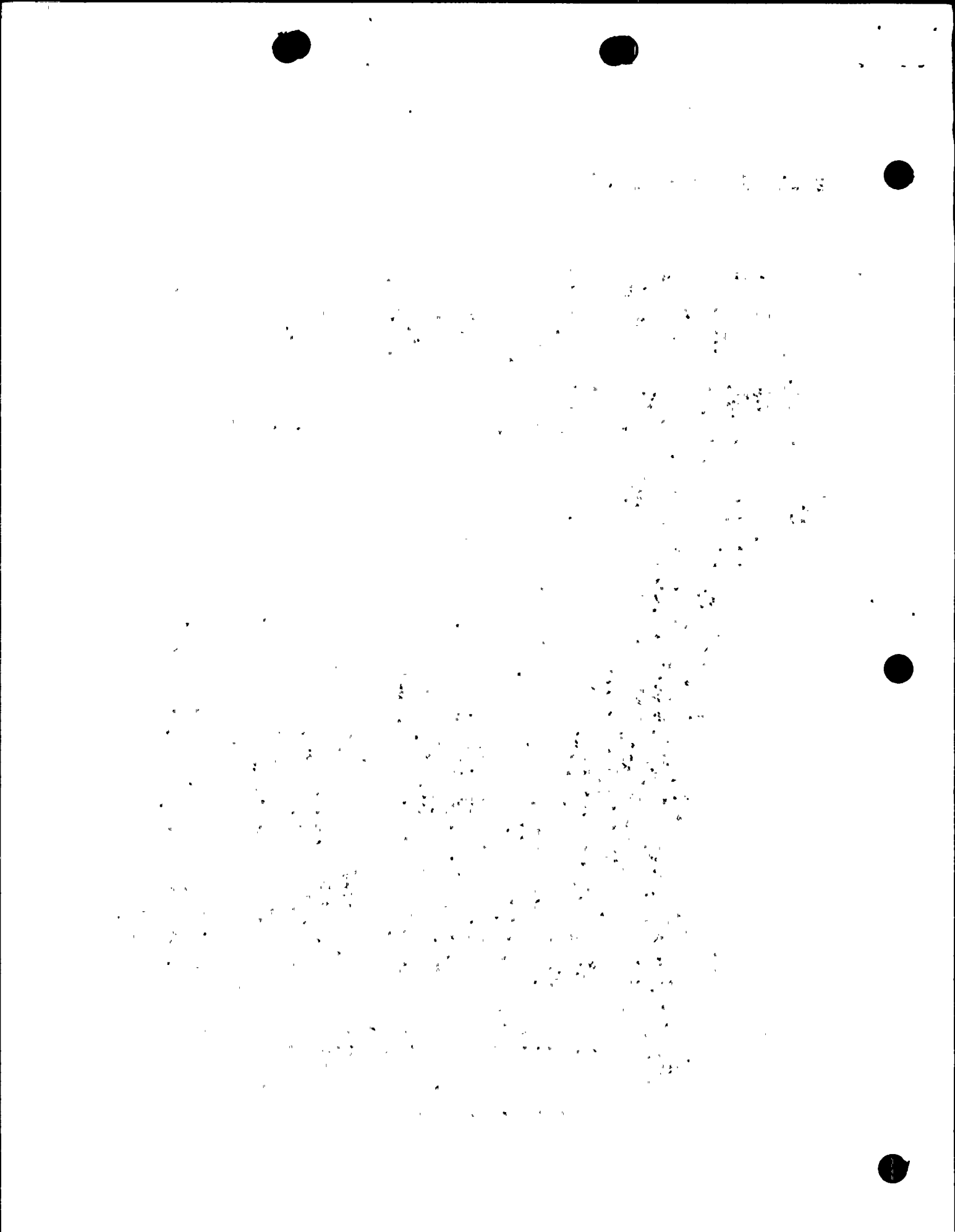
- A. Discussions with NMPC management regarding the regulatory program.
- B. Discussions with NMPC management and construction supervision regarding the construction organization, responsibilities and schedules.
- C. Discussions with NMPC management regarding the organization and training of the operating staff.
- D. Observations at the site and discussions with NMPC management, construction supervision and consultants, regarding a problem with the reactor pedestal.

The persons contacted during the visit include the following:

Niagara Mohawk Power Corporation

Mr. Minot H. Pratt, Vice President and Chief Engineer  
Mr. Ferdinand J. Schneider, Vice President, Operations  
Mr. J. Norton Ewart, Chief System Project Engineer  
Mr. K. Swanson, Chief Structural Engineer  
Mr. P. Allister Burt, Superintendent, NMPNS  
Mr. Merle Morris, Site Representative

(continued)



Results of Visit (continued)

Stone and Webster (S&W)

Mr. Dennis Fellmose, Project Manager  
Mr. Charles Goodman, Construction Superintendent

Dames and Moore (D&M)

Mr. Joseph A. Fischer, Consultant, Earth Sciences

II. Results of Visit

A. Organization

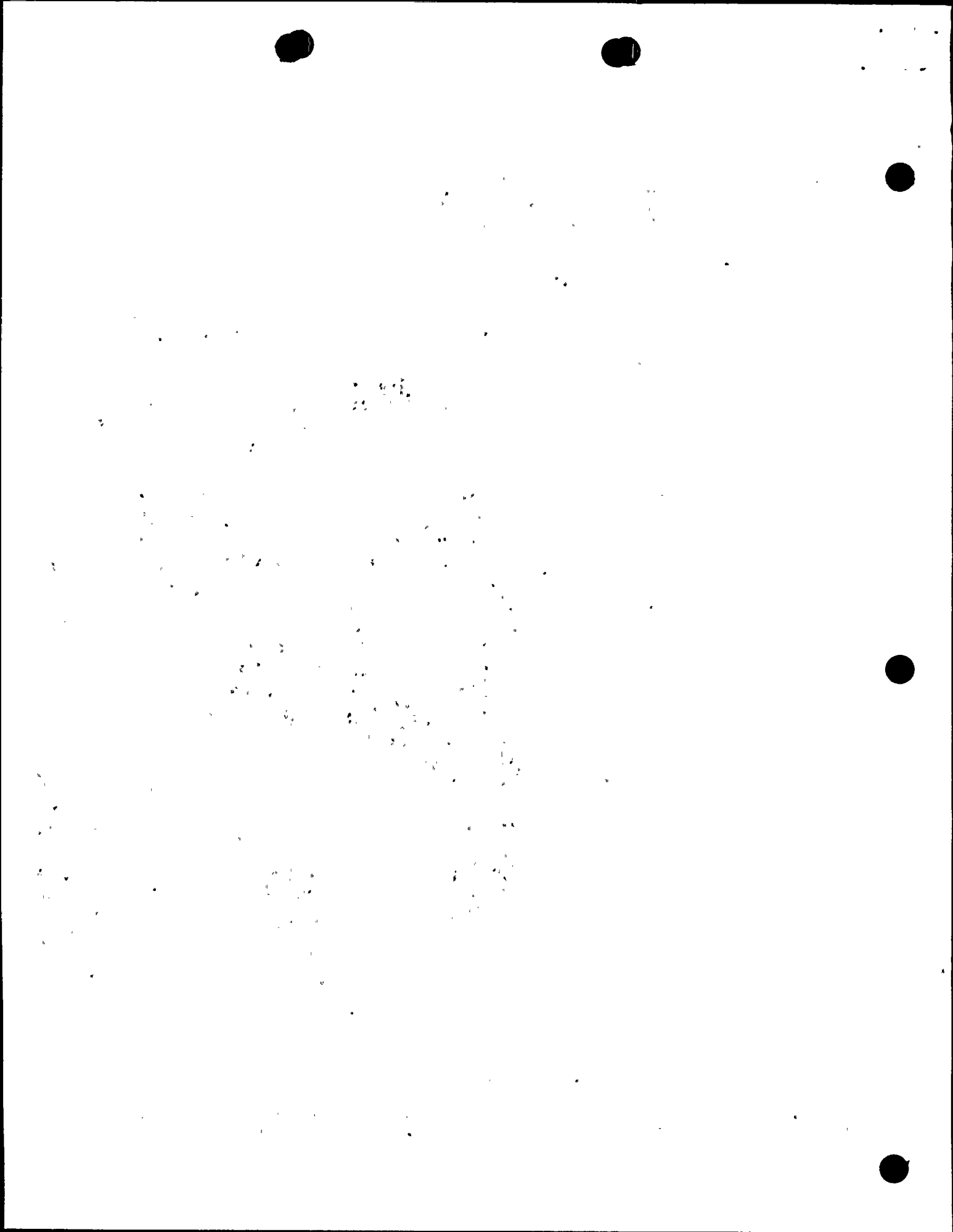
1. Construction

NMPC is acting as its own architect-engineer in the construction of the NMPNS. Mr. Ewart, who reports to Mr. Pratt, has the overall responsibility for the project during the construction phase. His offices are located in Buffalo, New York. Mr. Pratt is located in NMPC's central office in Syracuse, New York. Mr. Morris, the only NMPC representative presently at the site, provides liaison between NMPC and its contractors at the site. He reports to Mr. Ewart.

S&W has been contracted to supervise and coordinate construction activities. Mr. Fellmose is the Project Manager. Mr. Goodman, the Construction Superintendent at the site, reports to Mr. Fellmose.

The General Electric Company does not have a representative at the site at this time.

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Results of Visit (continued)

2. Operating Staff

The operating staff for the NMPNS has been designated. Mr. Burt, the former Superintendent of NMPC's fossil-fueled plant at Dunkirk, New York, will be the Station Superintendent. He reports to Mr. Schneider, who is located in the Syracuse offices of NMPC.

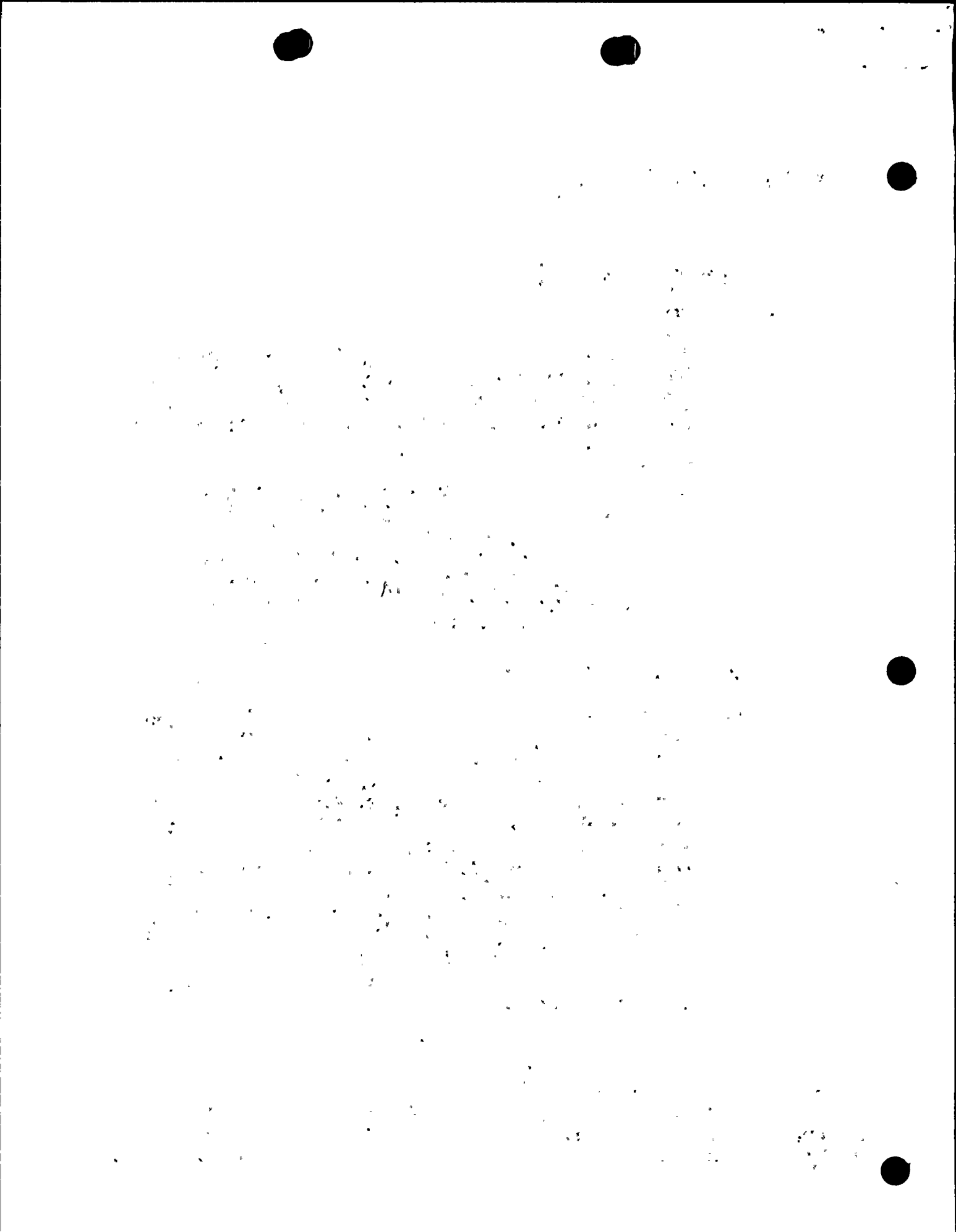
The inspectors discussed the training program planned for the operating staff with Mr. Burt. He and sixteen other supervisory candidates are currently undergoing a three-month training course at Western New York Nuclear Research Center, Inc., Buffalo, New York\*. This course will be followed by a period of training in advanced radiochemistry at the Taft Sanitary Engineering Center, Cincinnati, Ohio, for several of the candidates; whereas, others will go to the Consumers Public Power Company's plant at Big Rock Point for three months of on-the-job training. The shift supervisory candidates are also scheduled to spend three months at General Electric's ESADA Vallecitos Experimental Superheat Reactor facility, Pleasanton, California, where they are to obtain further operating experience.

Mr. Burt stated that he expects to report to the site for duty in September 1966.

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\*Discussed in CO REPORT NO. 57/65-14 paragraph II.G.1.



Results of Visit (continued)

B. Construction Status

1. General

Construction of the facility is 2% complete and on schedule, according to Mr. Ewart. The construction force presently totals 86 men and is being increased as the scope of activities expands.

Construction work thus far has been limited almost entirely to excavation, which is estimated by Mr. Goodman to be 90% complete. The inspectors discussed the construction schedule with Mr. Pratt who was adamant in expressing his intention to keep the construction work on schedule.

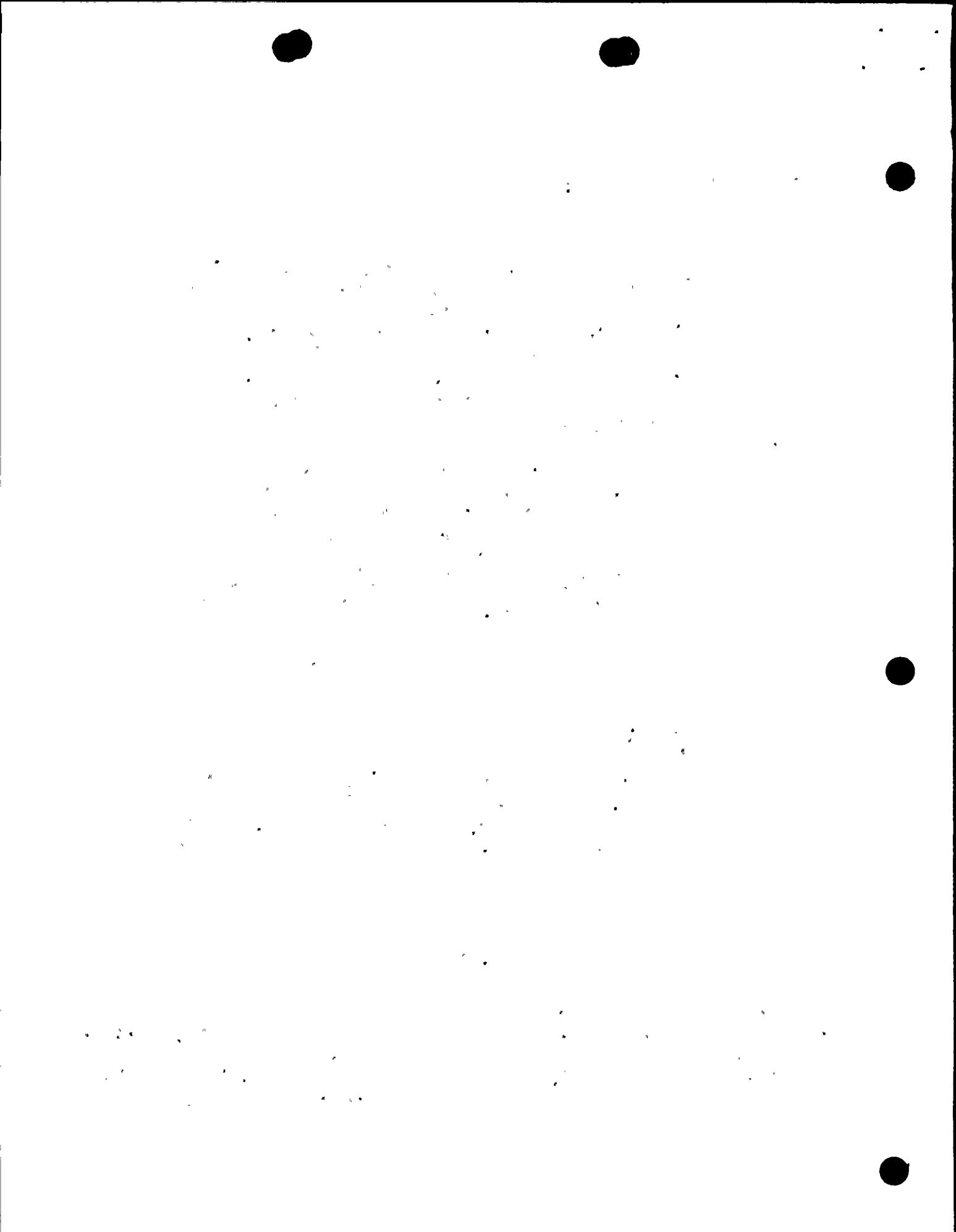
2. Reactor Pedestal\*

Damage to the reactor pedestal was experienced during blasting and excavation of the rock formation in the torus area. The writer was first informed of this problem during a verbal communication with Mr. Ewart on April 12, 1965. Further information regarding the extent and evaluation of the damage, and the status of repairs, was obtained in phone conversations with Mr. Ewart on April 15 and 28, 1965. The inspection visit was scheduled at this time to permit visual examination of the pedestal by the inspectors prior to its being covered by concrete pours that were scheduled to be made shortly after the visit.

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\*Non-excavated portion of the natural rock formation, Oswego sandstone, located on the axis of the torus, and upon which will be mounted the reactor and reactor containment vessel.



Results of Visit (continued)

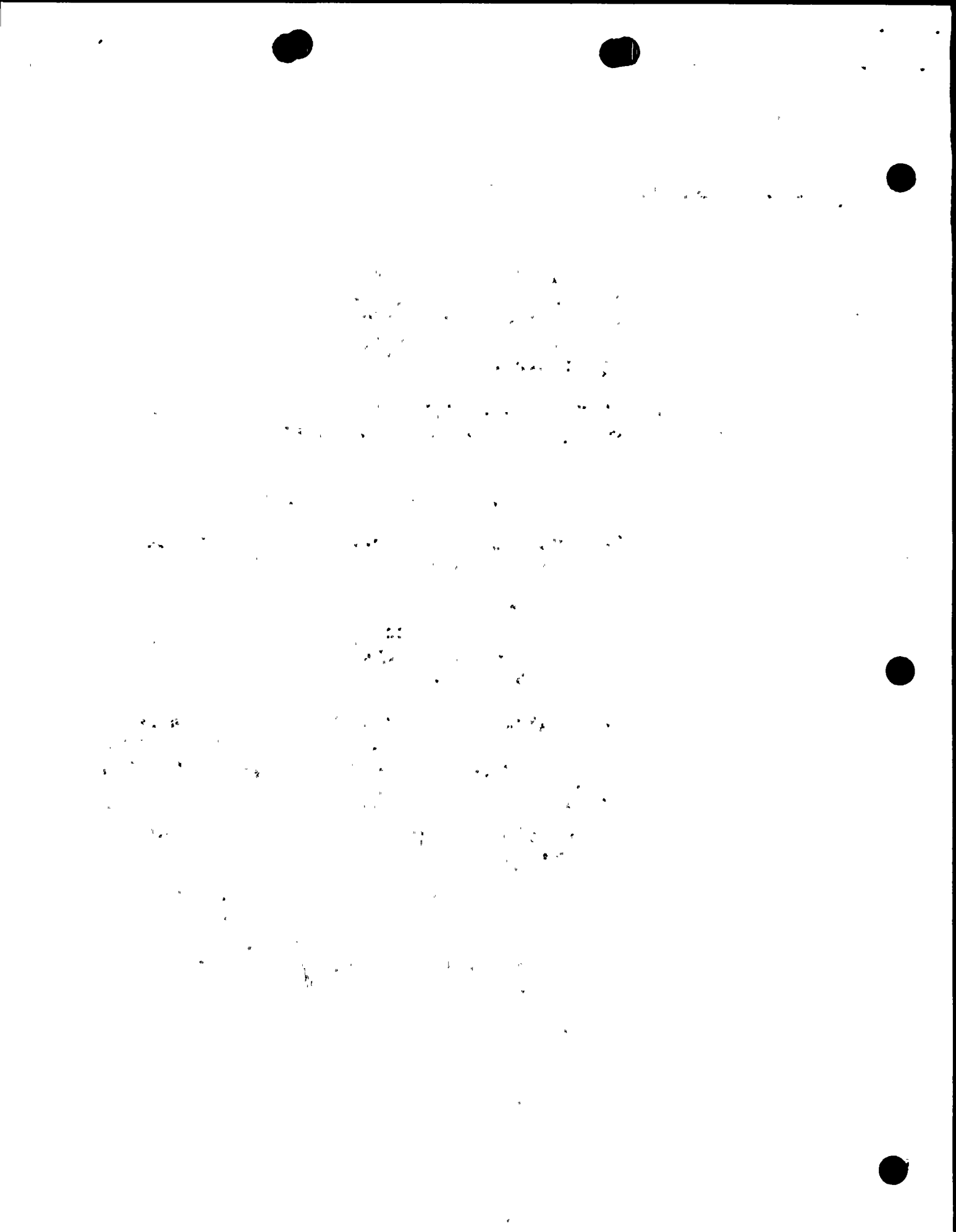
The following information was obtained by the inspectors through a review of a report on the subject problem\*, an examination of prints and other records at the site, a visual examination of the pedestal, and discussions at the site with NMPC, S&W and D&M representatives listed in Section I of this report:

- a. The pedestal is approximately 100' in diameter and 15' high. The damage amounted to a movement of the rock mass of the pedestal along three shaly, horizontal, strata. The displacement totaled 8", mostly at an elevation of 197'. A slight rotational movement was also experienced. The horizontal and rotational displacements of the pedestal are shown in Figures 1 and 2.
- b. The movement is attributed to a combination of: horizontal and vertical rebounding following removal of overburden and rock around the pedestal; and blasting operations, some shots of which exceeded the maximum charge recommended by D&M.

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\*"Report, Excavation and Restoration, Reactor Pedestal, Proposed Nine Mile Point Nuclear Power Plant, Oswego, New York, Niagara Mohawk Power Corporation", from D&M to NMPC, dated May 3, 1965. A copy of this report was forwarded to CO:HQ for information.



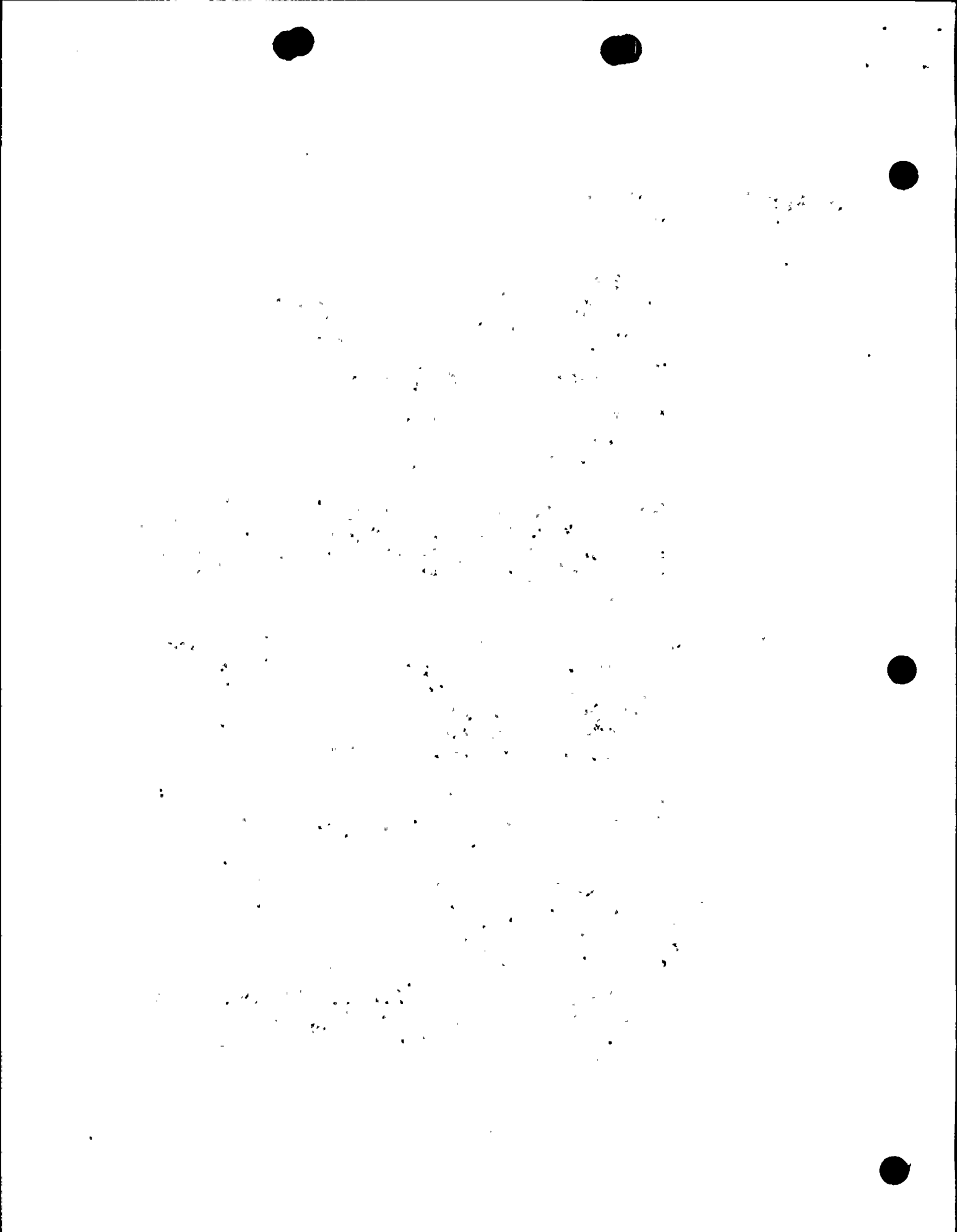
Results of Visit (continued)

- c. Representatives of D&M were present throughout the blasting in the torus excavation. The blasts were monitored by them using seismographic instrumentation.
- d. Three alternative courses of action were considered following the damage. They were as follows:
  - (1) Use of the pedestal "as-was".
  - (2) Replacement of the entire pedestal with concrete.
  - (3) Restoration of the original structural integrity of the pedestal by the use of tensioned rock bolts and grout treatment.

Alternative (1) was considered to be adequate by D&M; however, alternative (3) was chosen in the interest of the added safety offered, according to Mr. Pratt.

- e. Restoration of the pedestal included the following:
  - (1) The installation of a total of 24 rock bolt anchors, in three concentric circles, to a depth of approximately 5' below the torus excavation.

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Results of Visit (continued)

- (2) The placing of the bolts in post-tension to restore the effective weight of the overburden removed.
- (3) The grouting of the bolts.
- (3) The pressure grouting of the pedestal, in general, via holes drilled for this purpose.

Figure 3 is a view of the top of the pedestal showing anchor locations. Also shown is the form used for a concrete pour made to replace rock removed in excess of that originally intended.

- f. The inspectors asked if any faults, or other abnormalities, were found during the excavation work. Mr. Fischer said that no faults or abnormalities were noted and that D&M had a representative assigned to the site throughout this work.
- g. The inspectors asked if the seismic design criteria had been re-examined in light of the pedestal problem. Mr. Ewart stated that this had been done. It is his position, and that of Mr. Fischer, that the structural integrity of the restored pedestal was as good as, or better than, that of the original pedestal.
- h. A vertical core boring sample was obtained from the center of the pedestal, subsequent to the damage. Unconfined pressure tests

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Results of Visit (continued)

were made on sections of this sample. The lowest strength values obtained were approximately 720 tons per square foot, whereas design loads of 8 tons per square foot are anticipated, according to Mr. Ewart.

3. Drywell Spray System

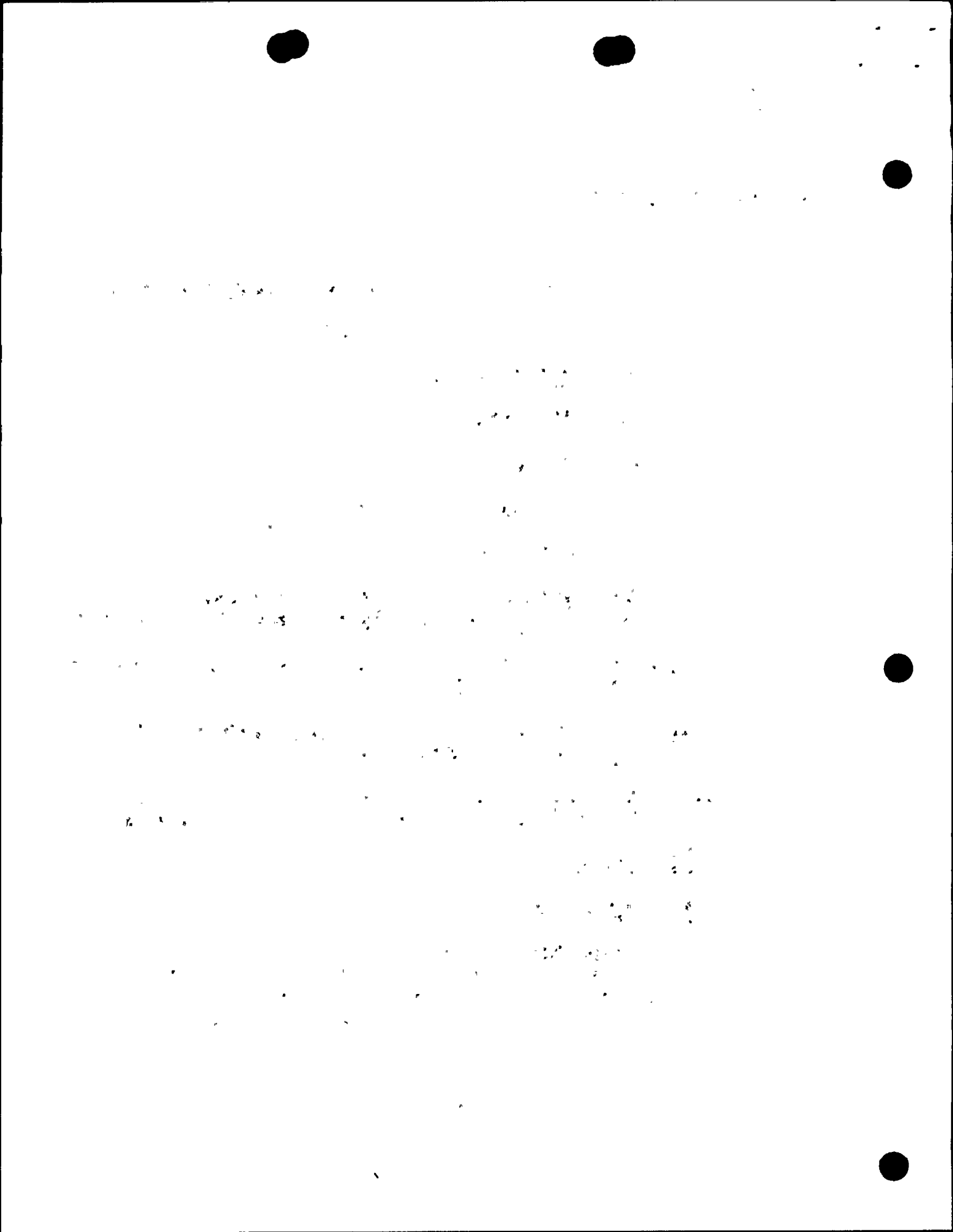
A drywell spray system has been incorporated into the facility design, according to Mr. Ewart. The system will be composed of two parallel, but independent, systems, each of which will contain a vertical pump that takes suction from the torus. Further information on this subject will be obtained by the inspector during the next visit to the site.

C. Regulatory Program

The inspectors discussed the regulatory program with Messrs. Pratt, Schneider, Ewart, and Burt. Particular emphasis was placed on the construction phase of the Division of Compliance's inspection program. Topics discussed included the following:

1. The functions, including responsibility and authority, of the inspector, the Region I office, and the Division of Compliance.
2. The Compliance inspection program, including:
  - a. The scope of the program.
  - b. The scope, objectives and frequency of visits during the construction phase.

(continued)



Results of Visit (continued)

- c. Types of visits, announced and unannounced.
  - d. Visits to vendor's facilities.
  - e. Methods of inspection.
  - f. Exit interviews.
  - g. Inspection reports.
  - h. Enforcement methods available.
  - i. Backup inspectors.
- 3. The relationship between the Division of Compliance and the Division of Reactor Licensing.
  - 4. The backgrounds and experiences of the inspector and line supervision.
  - 5. The need for good relationships and proper channels of communication.
  - 6. The availability of the Division of Compliance for assistance in certain regulatory matters.

D. Miscellaneous

1. Radioactive Wastes

Representatives of the State of New York have indicated an interest in releases of radioactive wastes to Lake Ontario, especially with regard to the effects the wastes may have on marine

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Results of Visit (continued)

life, including reconcentration factors. This subject is scheduled to be discussed at a meeting to be held between appropriate State authorities and representatives of NMPC, according to Mr. Ewart.

2. Technical Specifications

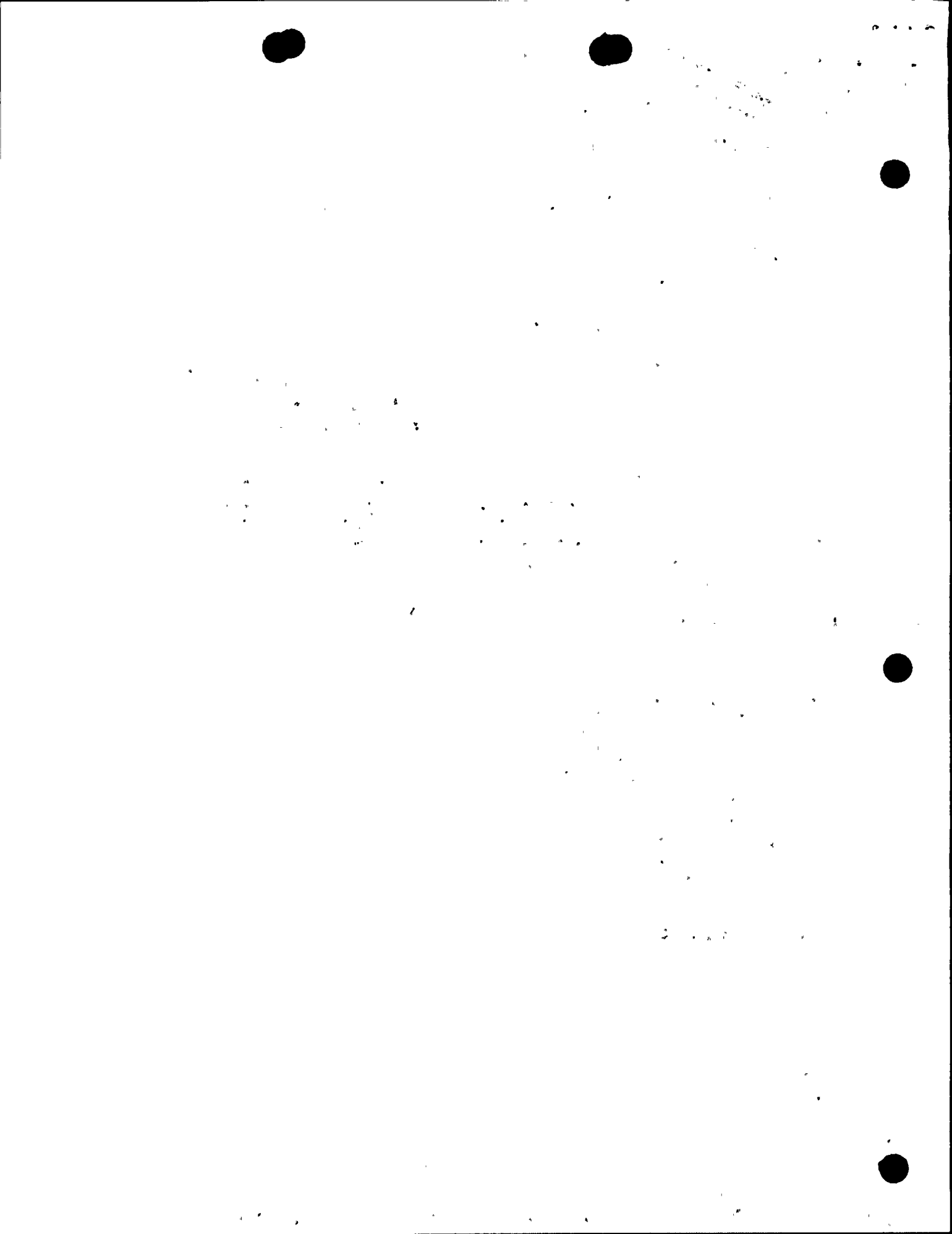
The inspectors held a discussion on the subject of technical specifications with Messrs. Pratt, Schneider, Ewart, and Burt. Included was a brief discussion on the desirability of directing attention to the form and content of the technical specifications as early in the program as possible. The inspectors stated that this general subject is currently being reviewed by the Director of Regulation. Messrs. Pratt and Schneider indicated a real interest in this subject and stated that the matter would be discussed with representatives of General Electric.

E. Exit Interview

A formal exit interview was not held because of the nature of the visit.

Attachments:

Figures 1, 2 and 3





NIAGARA-MOHAWK POWER CORPORATION

Figure 1

Picture of Reactor Pedestal Showing Horizontal Movement at the 197' Elevation



NIAGARA-MOHAWK POWER CORPORATION

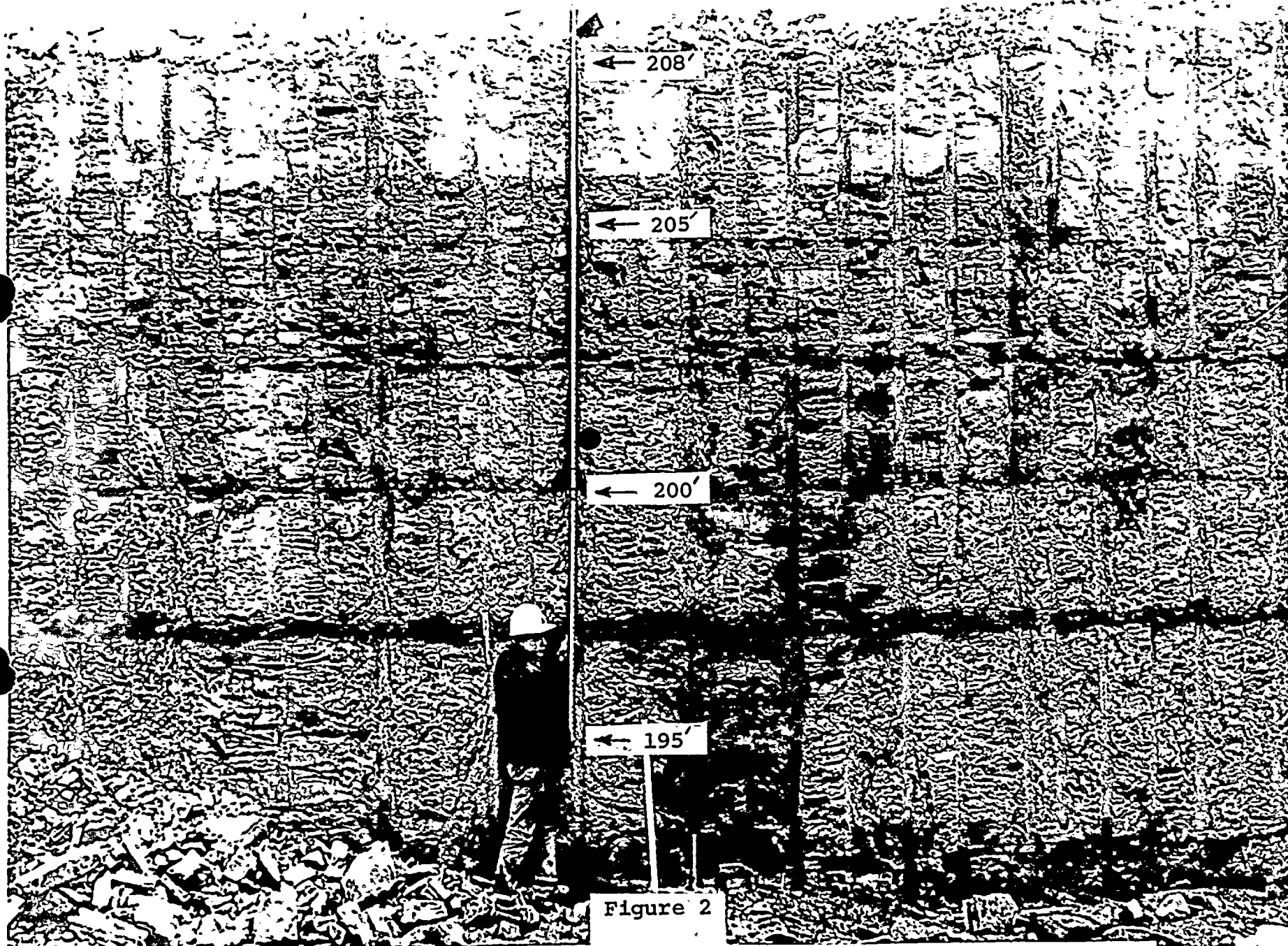


Figure 2

Picture of Reactor Pedestal Showing Rotational Movement  
(Misalignment of Vertical Drilling Grooves at Elevation of Man's Head, 197')



NIAGARA-MOHAWK POWER CORPORATION

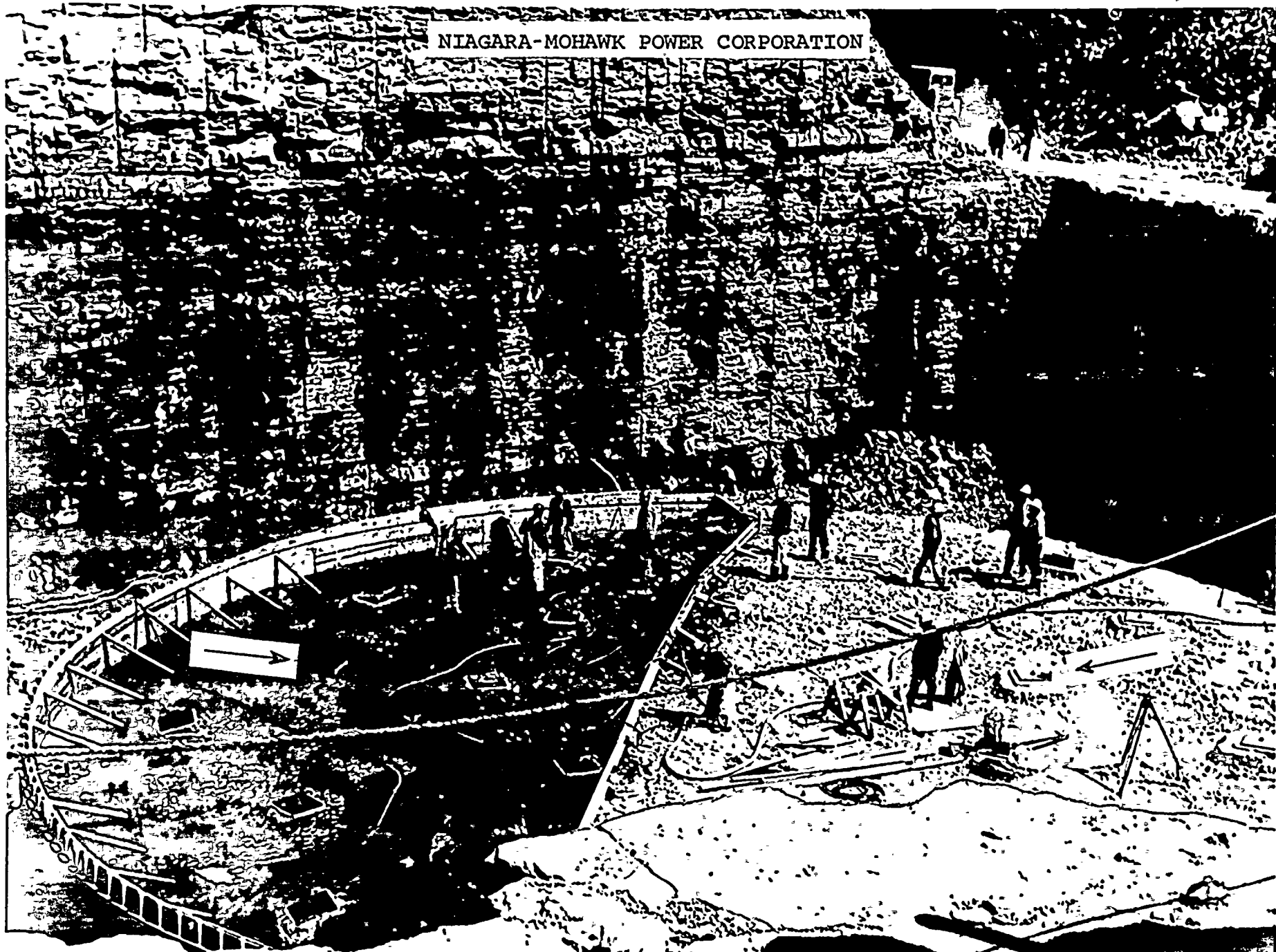


Figure 3

Picture of Reactor Pedestal Showing Anchor Locations

