

February 26, 1986

Docket No. 50-410

APPLICANT: Niagara Mohawk Power Corporation (NMPC)
FACILITY: Nine Mile Point Nuclear Station, Unit 2 (NMP-2)
SUBJECT: SUMMARY OF MEETING HELD WEDNESDAY, JANUARY 29, 1986,
WITH NMPC TO DISCUSS FIRE PROTECTION FOR NMP-2

On January 29, 1985, the NRC staff met with representatives of NMPC and their consultants from Stone and Webster Engineering Corporation (SWEC) and Compis Services (CS) to discuss fire protection for NMP-2. This meeting was a follow-up to the Appendix R site audit of NMP-2 performed the week of October 21, 1985, and documented in Inspection Report No. 50-410/85-34.

Enclosure 1 to this meeting summary is a handout provided by NMPC discussing proposed responses to Appendix R Audit Unresolved Items. Below is a summary of the discussion at the January 29, 1986, meeting relating to each of these items.

(1) Hatch Area and 20 ft. Fire Break Zones

Enclosure 1 indicates this activity will be "ready to support the fuel load." NMPC was informed that this action would need to be completed a period of time before fuel load in order to allow the NRC staff to be able to inspect the completed action. NMPC indicated this activity is expected to be complete by February 24, 1986.

(2) Fire Proofing of Structural Steel

NMPC is attempting to show that fire proofing of structural steel is not needed on the basis that the effects of fire on structural members (i.e. deformation) are acceptable.

NMPC stated that the building temperature would not follow a time-temperature curve because heat would "bleed-off" to the rest of the building.

The NRC staff stated that NMPC would be taking a risk that the fuel load schedule could be effected by trying to establish a new method this close to licensing. The NRC staff requested NMPC consider issuing an already accepted method for fire protection of structural steel if the analysis to be provided does not provide sufficient justification for not protecting structural steel.

The use of ASTM fire curves as a basis for determining damage to structural members in a fire would be acceptable to the NRC. NMPC will use ASTM fire curves wherever possible.

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PDR ADDCK 05000410
F PDR

MEMORANDUM FOR THE DIRECTOR

DATE: 10/15/54

FROM: SAC, NEW YORK (100-100000)

SUBJECT: [Illegible]

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[Illegible]

[Illegible]

The NRC staff stated that a structural review of the proposed analysis may be required and as no structural reviewers were present the staff did not know what, if any, questions might be asked in the structural area.

(3) Fire Seals

NMPC needs to provide a letter of commitment that fire seals will be replaced with rated seals.

(4) Fire Detectors

NMPC needs to provide a letter of commitment on fire detectors.

(5) Fire Dampers

NMPC needs to amend the FSAR to include commitments on fire proofing of the HVAC duct penetrating the diesel generator fuel oil day tank enclosure.

(6) NFPA Deviations (see enclosure 3)

(a) NFPA 20 7.111, 7.6 - Kubicki will talk to John Stang (former NRC reviewer) about the fire pump.

(b) NFPA 20 7.3.5 - (fuses)

NMPC needs to include the following in their justification:

- (i) Why is this not a problem if there is no fire?
- (ii) Why is this not a problem if there is a fire in the pump room?
- (iii) Why is it not a problem if there is a fire in any other area of the plant?

(c) NFPA 72D 2.2.2 (non-UL listed controls)

NMPC needs to add the explanation non-UL listed controls are in UL listed cabinets etc.

(d) NFPA 90A (fire dampers)

More information needs to be provided.

Enclosure 2 to this meeting summary is a handout provided by NMPC discussing proposed responses to issues raised during the Appendix R audit but not included in the inspection report. A summary of the discussion at the January 29, 1986, meeting relating to each of these items is included below:

- (1) NMPC will be submitting a letter to the NRC to discuss changes to the FSAR to justify removing fire protection technical specifications.

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are given in full. The list is as follows:

Mr. J. H. ...
Mr. ...
Mr. ...

Mr. ...
Mr. ...
Mr. ...

Mr. ...
Mr. ...
Mr. ...

Mr. ...
Mr. ...
Mr. ...

Mr. ...
Mr. ...
Mr. ...

Mr. ...
Mr. ...
Mr. ...

Mr. ...
Mr. ...
Mr. ...

- (2) Bus duct penetrations are only located in exterior walls. "Unapproved" penetrations and seals designates those not yet completed. NMPC does not need to submit anything additional on this issue.
- (3) Fire dampers - In-plant tests on fire dampers still need to be completed. Tests are expected to be completed by 2/24/86.
- (4) Stratification
NMPC needs to provide a letter commitment on the 3 areas discussed (RB Refueling Floor, RB and Service Water Pump Bay) NMPC also needs to discuss why other areas are acceptable.
- (5) Halon and CO₂ Suppression Systems-NMPC to provide a list of concerns.
- (6) Appendix R boundaries
NMPC needs to review which walls need to be under surveillance.
- (7) Sealing criteria around vertical cable trays is addressed in Amendment 23.
- (8) Flood troughs - additional sprinkler heads are to be provided. Commitment needs to be added to the FSAR.

In addition to the items discussed above the following items were discussed.

- (1) Pull-stretch tests on fire hose
NMPC needs to state the hydraulic calculations have also been completed.
- (2) Cable tray suppression
NMPC needs to provide a discussion of what is in the plant (plant criteria), what does not meet plant criteria, and why it is okay to load fuel with the exceptions to plant criteria.
- (3) Plant status - NRC needs to know ASAP what will not be completed before fuel load.

A copy of the meeting attendees is included as enclosure 4.

MFH
Mary F. Haughey, Project Manager
BWR Project Directorate No. 3
Division of BWR Licensing

cc: See next page

M Haughey
BWD-3:DBL
MHaughey/hmc
2/19/86

EA
D-BWD-3:DBL
EAdensam
2/10/86



1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for ensuring that all parties involved are held accountable for their actions.

2. The second part of the document outlines the specific procedures that must be followed when conducting financial transactions. These procedures are designed to minimize the risk of errors and to ensure that all transactions are processed in a timely and efficient manner.

3. The third part of the document discusses the role of the auditor in ensuring the accuracy and reliability of the financial records. It highlights the importance of the auditor's independence and objectivity in performing their duties.

4. The fourth part of the document addresses the issue of fraud and the steps that should be taken to prevent and detect it. It stresses the need for a strong internal control system and for the implementation of effective fraud prevention measures.

5. The fifth part of the document discusses the importance of transparency and accountability in financial reporting. It calls for the provision of clear and concise information to all stakeholders and for the implementation of measures to ensure that this information is reliable and accurate.

6. Finally, the document concludes by emphasizing the need for ongoing monitoring and evaluation of the financial system. It suggests that regular audits and reviews should be conducted to identify areas for improvement and to ensure that the system remains effective and efficient.

Mr. B. G. Hooten
Niagara Mohawk Power Corporation

Nine Mile Point Nuclear Station
Unit 2

cc:

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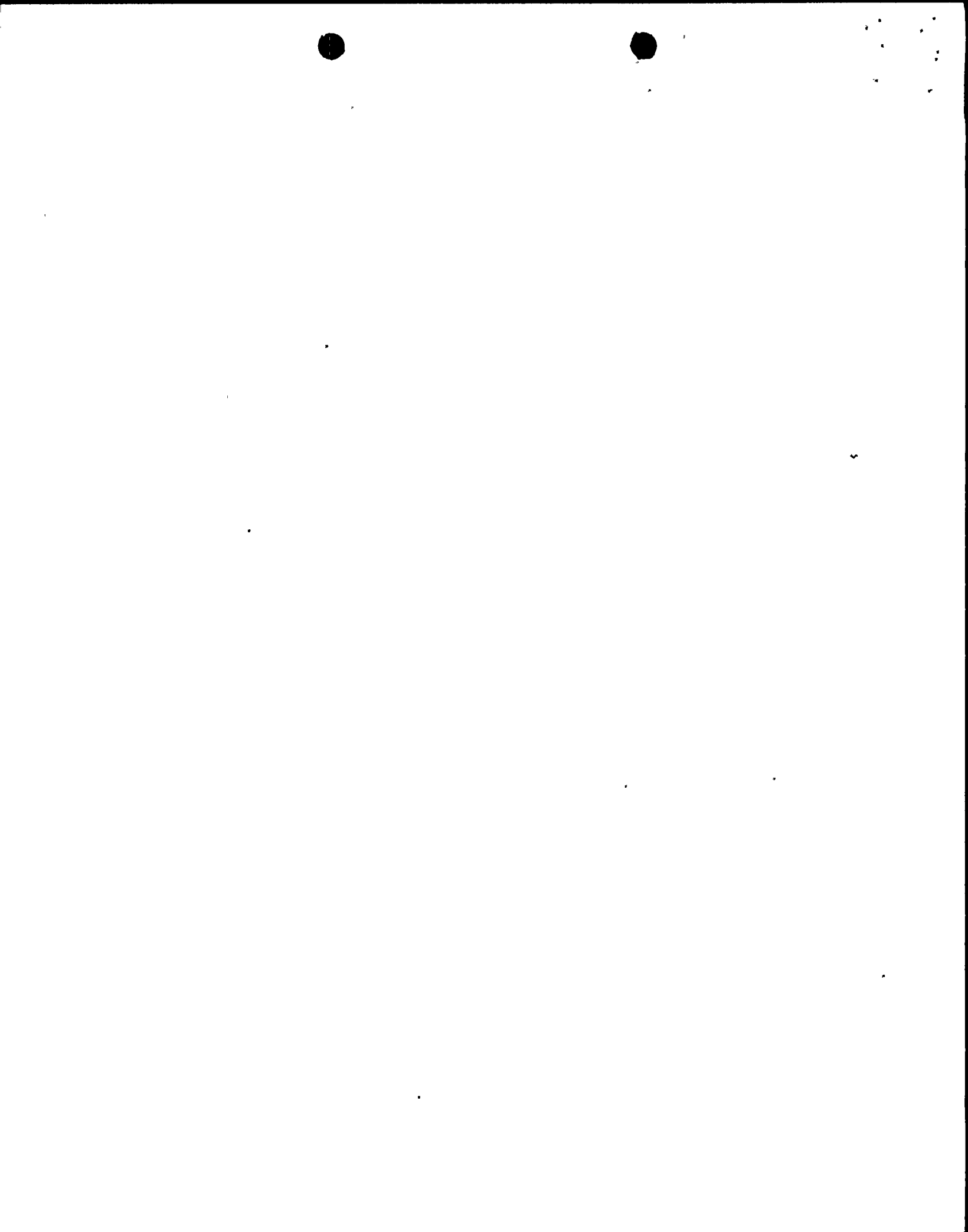
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ENCLOSURE I
APPENDIX R AUDIT UNRESOLVED ITEMS

ITEM	LICENSEE'S DISPOSITION
HATCH AREA AND 20 FT. FIRE BREAK ZONES (20'FBZ) (MK-2)	<p>Area suppression coverage and open hatch protection is being added in the 20 Ft fire break zone areas of the reactor building. The proposed design calls for the physical expansion of the two existing north and south systems, requiring no electrical changes to implement it.</p> <p>The capacity of each system will be sized for the increased demand of the Reactor Building 20 Ft. Fire Break Zone as well as 300 G.P.M. for future storage areas.</p> <p>It is expected that this ongoing activity will be ready to support the fuel load. See Attachment 1. (E&DCR No. 71422). (Unresolved Item No.50-410/85-34-01).</p>
FIRE PROOFING OF STRUCTURAL STEEL (RAS-2)	<p>Based upon NRC discussions on January 10, 1986, it was indicated that a four phase approach to fire proofing structural steel was necessary. As a result, we have completed a review of the Reactor Building steel and its associated fire loading. By addressing structural failure under fire conditions, the following conclusions have been reached as a result of the review of the applicable areas.</p> <ol style="list-style-type: none">1. Equipment required to provide Safe Shutdown capability is adequately located on each half of the Reactor Building separated by a 20 Ft. Fire Break Zone.2. Early warning detection is provided throughout all areas containing safety related equipment or cable trays in the Reactor Building.3. Credit taken for protection of fire hazards by automatic suppression systems has substantially reduced fire loadings in the Reactor Building in a majority of cases to less than ten (10) minutes duration. <p>Refer to Summary Fire Loading Tables P2R and P3R.</p>



4. The Reactor Building steel is primarily comprised of heavy unprotected framed steel members (W27,W36). Potential impacts on a steel member, given the loading will produce, at best, localized deformation in the immediate fire area. Failure of members impacting redundant equipment across a fire barrier or fire break zone is not considered a credible scenario.

Some assumptions made in performing the PLC structural steel evaluation are not applicable to the layout of structures at Nine Mile Point Unit 2. Therefore, the results of the analysis may not provide practical outputs in view of the existing conditions. Some examples include:

1. Fire walls separate all redundant equipment.
2. A distinct localized volume exists for each analyzed area.
3. Any protected or unprotected cable tray located within three (3) feet of steel causes steel member failure.

In view of the existing conditions and current protection provided, the structural failure of steel members in the Reactor Building is not expected to impact redundant Safe Shutdown equipment based on the information identified.

(Unresolved Item No. 50-410/85-34-02).

**FIRE SEALS IN
CONSTRUCTION
JOINTS (MK-4B)**

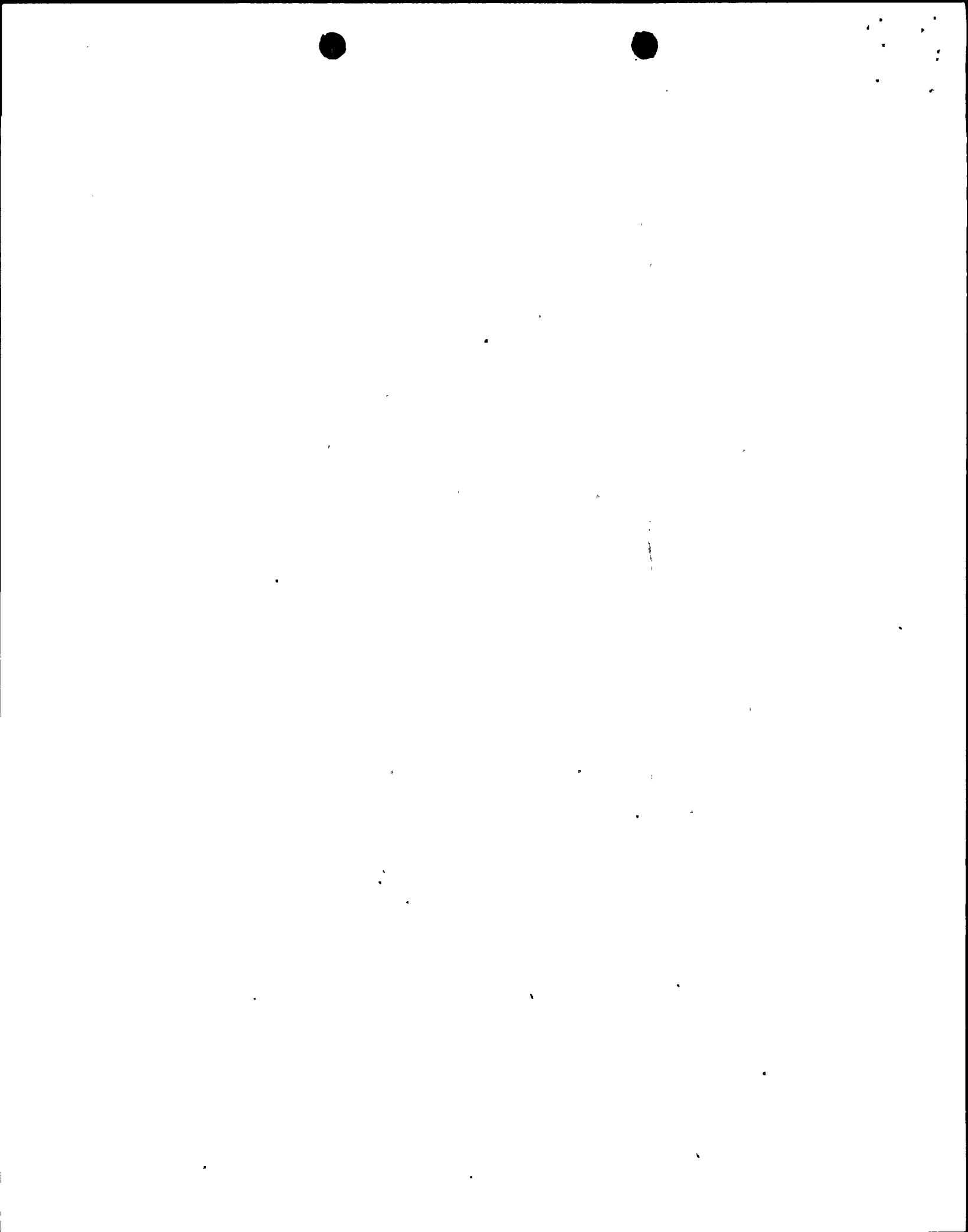
The requirement to revise design of non-rated construction joints to allow installation in rated walls is proceeding per the attached schedule. See Attachment 2. (E&DCR No. Z-71443A).

(Unresolved Item No. 50-410/85-34-03).

**FIRE DETECTORS IN
SAFETY RELATED
AREAS (MK-32)**

All safety related areas which contain safety related equipment have been or will be provided with fire detectors as required. Areas, or small rooms, without safety related equipment, will not be provided with fire detectors.

(Unresolved Item No. 50-410/85-34-04).



FIRE DAMPERS
DG FUEL OIL DAY
TANK ROOM

A HVAC duct which penetrates the fire rated enclosure around the diesel generator (DG) fuel oil day tank will be enclosed with a 3-HR. fire wrap. This rated barrier is being provided in place of a fire damper. See Attachements 3A and 3B. (E&DCR's No. Z-711422B and 71423).
(Unresolved Item No. 50-410/85-34-05)

NFPA DEVIATIONS
(EY-1)

NFPA deviations, clarifications and justifications have been identified and will be included in table 9.5-3 of the FSAR. (See attachment 4 for deviations, clarifications and justifications).
(Unresolved Item No. 50-410/85-34-06).

EMERGENCY
BATTERY
PACK LIGHTING

Emergency battery pack lighting is scheduled to be installed to support the fuel load for those areas needed for the safe operation of the shutdown equipment, as well as, the access and egress routes thereto, including the areas required to support the control room evacuation procedure for remote shutdown. See Attachment 5. (E&DCR No. 39602B).
(Unresolved Item No. 50-410/85-34-07).



ENCLOSURE 2
NON-AUDIT FIRE PROTECTION ITEMS

ITEMS

LICENSEE'S DISPOSITION

REMOVAL FIRE
PROTECTION
PROGRAM FROM
TECH. SPECS. TO
THE FSAR

We are removing all fire related items from the Technical Specifications. They will be described in detail in the FSAR subject to NRC approval. This amendment will be submitted later.

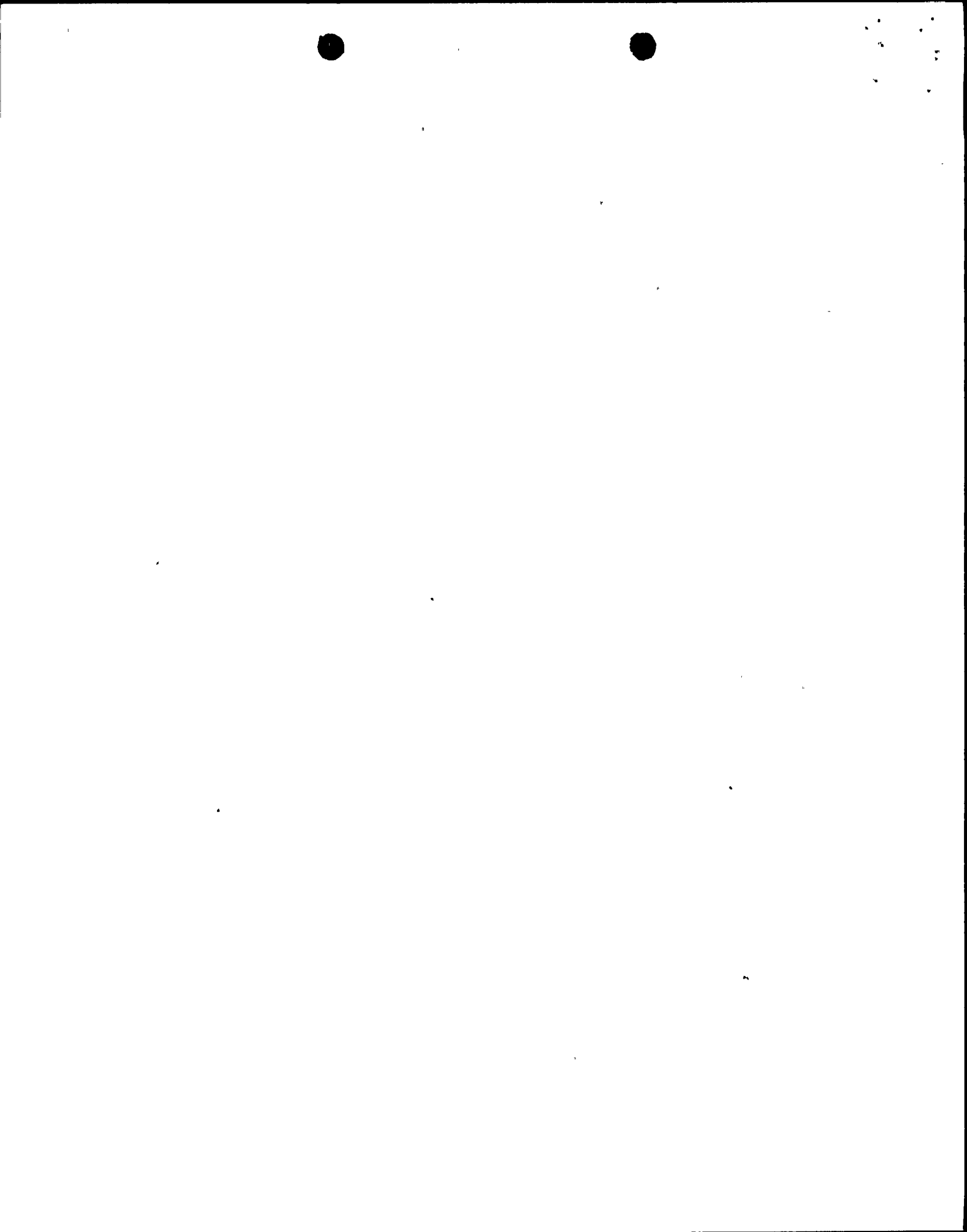
PENETRATIONS
AND SEALS
(MK-4A)

There is a program scheduled to complete all of the safety related penetrations and seals by fuel load. Non-safety related penetrations and seals will be completed after fuel load. Eleven (11) tests reports covering approximately twenty eight (28) unapproved configurations will be provided. See Attachment 6 for test report. (E&DCR No. 71443A)

FIRE DAMPERS
(MK-1)

At Nine Mile Point Unit 2, most of the fire dampers were tested at the factory under full flow conditions prior to shipment. Twenty three (23) dampers manufactured by Pacific Air Products Company (PAPCO) remain to be tested that potentially would not close under full air flow conditions. It was noted, however, that these dampers would partially close restricting air flow within the system.

As a result of the restricted air flow, low-flow switches associated with these fans for the HVAC systems can be calibrated to trip out the fan on low flow. With the fan tripped, air flow would cease and the dampers will close. System low-flow interlocks will be operational during testing and credit will be taken for them to activate, allowing the dampers to close. All of the dampers at NMP Unit 2 will be mechanically cycled to verify mechanical closure. The results of this mechanical cycling will be documented by Start-Up, and the results of the PAPCO air flow test, will be available for NRC review.



STRATIFICATION
(MK-20)

Three plant areas exhibit the potential for stratification and are resolved as follows:

1. The Reactor Building Refueling Floor. elev. 353'-0"
The Safe Shutdown capability in this area will not be affected by a fire. The HVAC System is designed such that normal floor-to-ceiling movement of air will assist smoke to reach ceiling mounted detectors with sufficient time to alert the control room operator and fire brigade.

(DSK-13)

2. Reactor Building. Elevation 196'-0" is steel grating:
At elev. 195'-0" additional smoke and heat collectors are to be installed above safety related equipment specifically to address the potential problem of stratification and does not represent an installation designed to meet requirements of NFPA 72E. Since these areas have two levels of detection, including the elevation 215'-0" which is installed to meet the requirements of NFPA 72E, they will promptly alert the control room operator and fire brigade.
See Attachment 7.(E&DCR No. 71403D).

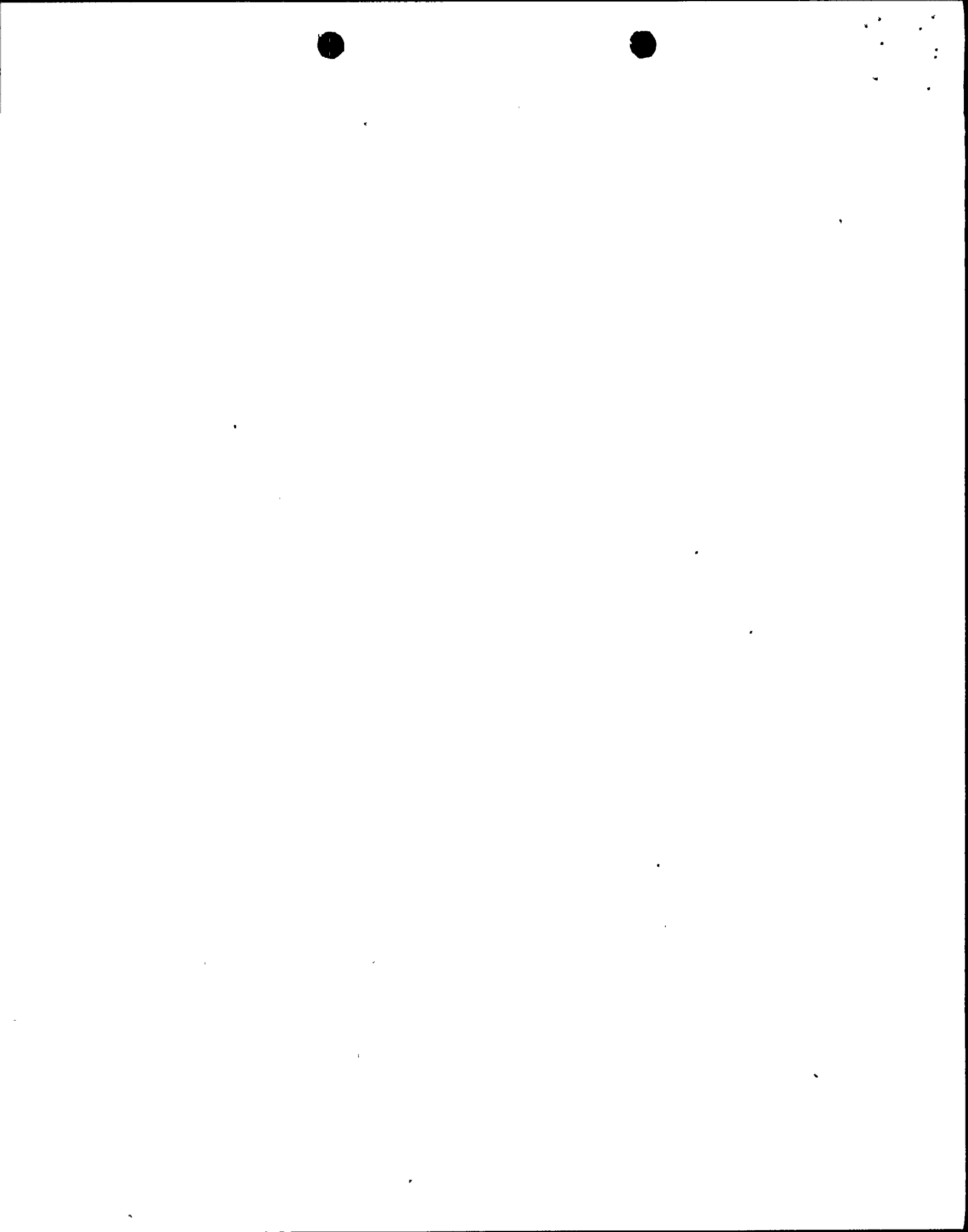
3. Service Water Pump Bay. Elev. 224'-0"
Two levels of detection will be provided: one at the ceiling. elev. 276'-0" and the other above the safety related equipment at elev. 232'/239'-0". It is not intended that this installation meet the requirements of NFPA 72E. The two levels of detection are being added solely to resolve the potential problem of stratification as well as to provide detectors in areas with safety related equipment. This arrangement will provide prompt notification to the control room operators and fire brigade personnel. See Attachment 8.(E&DCRs No, 71401 & 71403E).

HALON AND
CO2 SUPPRESSION SYSTEMS

The concentration tests for these systems will be completed prior to fuel load and the results will be supplied for review as requested.

APPENDIX R
BOUNDARIES
REQUIRED
FOR SAFE
SHUTDOWN

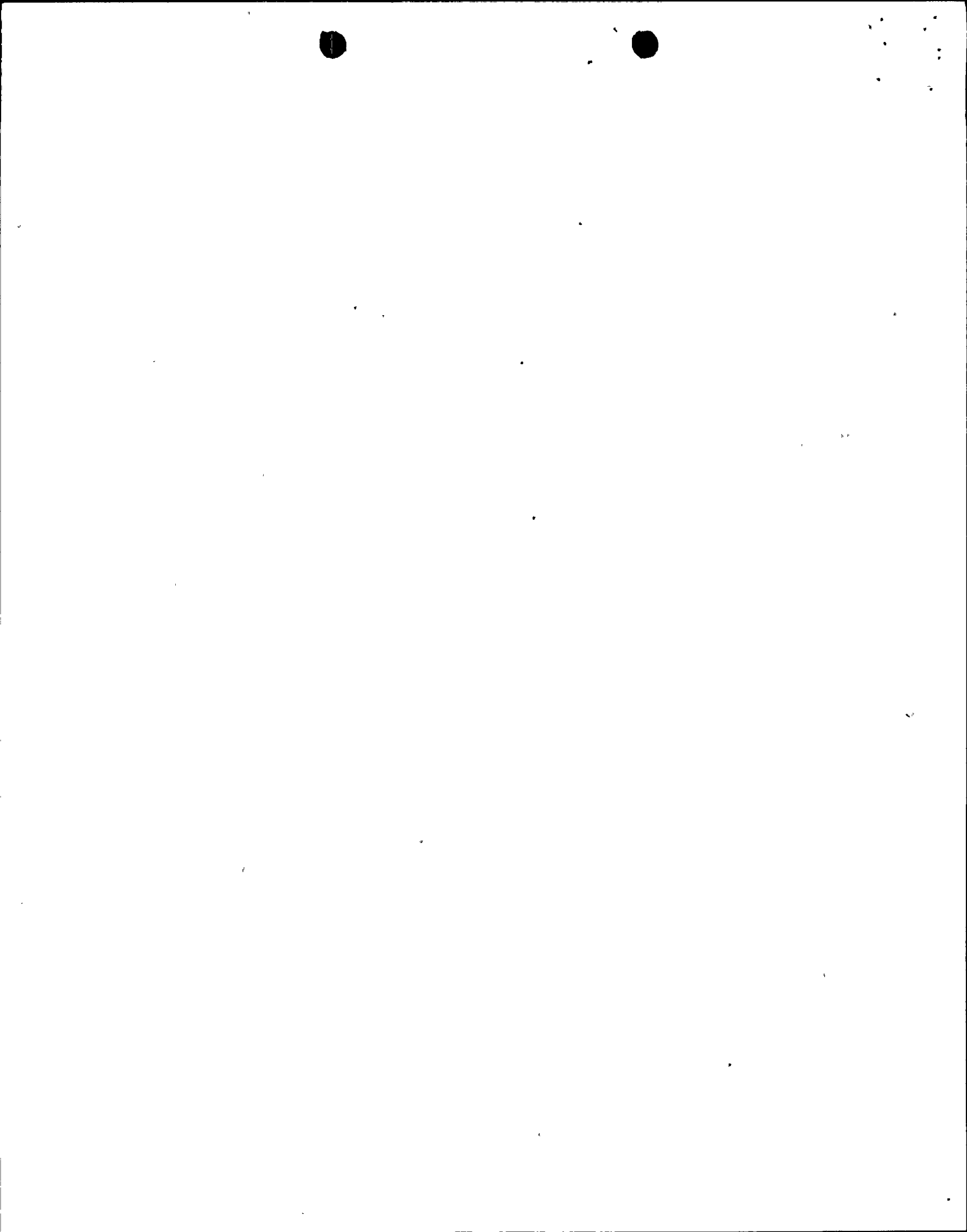
The minimum Appendix R boundaries have been identified and the FSAR drawings will be changed to reflect these required boundaries.



SEALING
CRITERIA
AROUND
VERTICAL
CABLE TRAYS
IN THE REACT-
OR BLDG.
(MK-22)

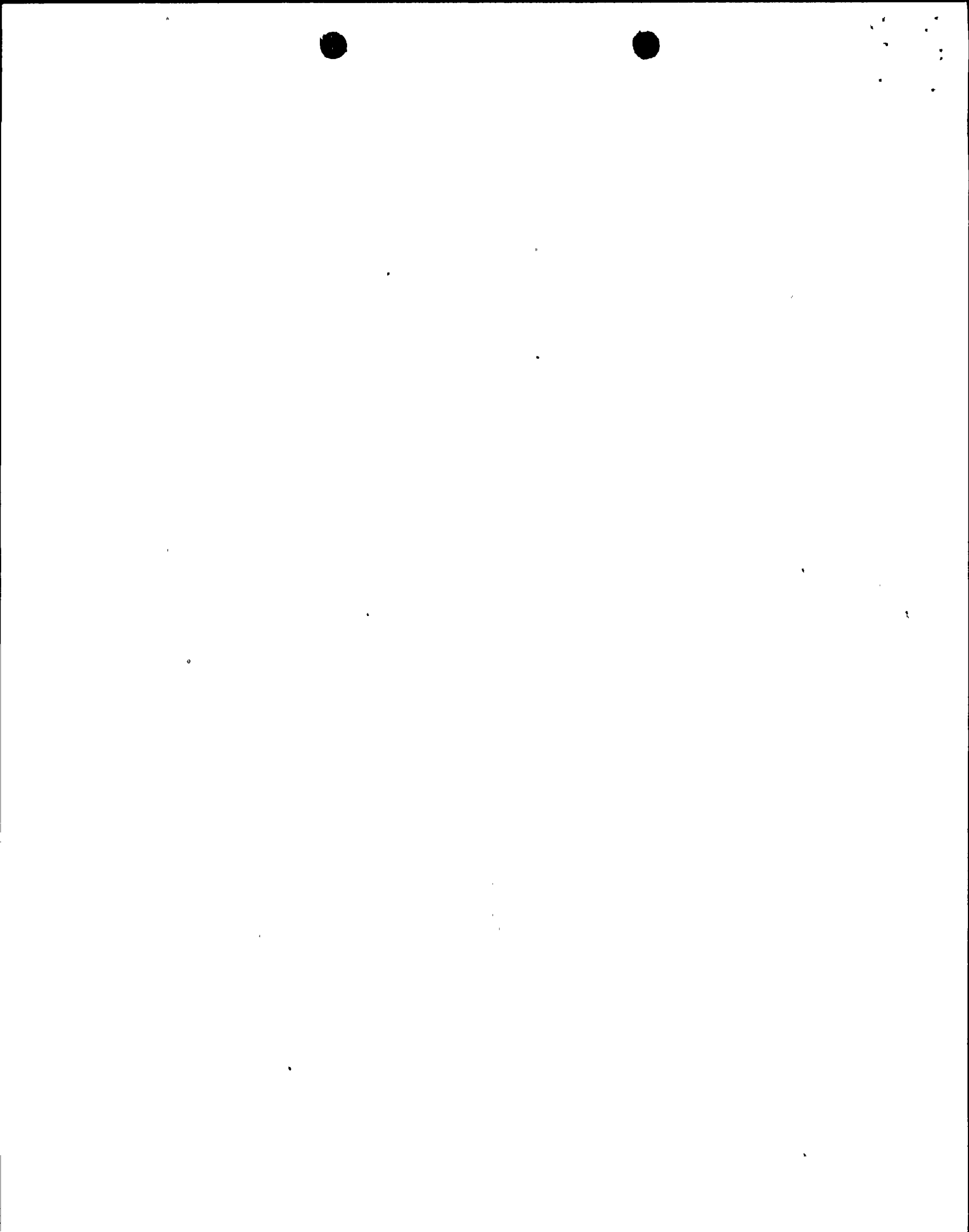
This criteria is being changed as shown in amendment 23 of the FSAR, Subsection 9A.3.1.2.5.10, to reflect its intent of providing additional good practices.

FLOOD TROUGH To resolve this case of competing criterias of flood control
REACTOR BLDG. vs. penetration sealing. additional sprinkler heads will
ELEV. 175'-0" be added at these openings to provide protection.



Nine Mile Point Unit 2 - FSAR
Table 9.5-3 Deviations from NFPA Standards .

<u>NFPA Standard</u>	<u>Section</u>	<u>Deviation/Justification</u>
NFPA 10	3.1.2.1	<p>Deviation: Complete protection of buildings with Class A extinguishers not provided.</p> <p>Justification: Class A units are provided where Class A materials are present; balance of stations covered by B.-C. units. Entire station is covered by hose stations.</p>
NFPA 13 (also applies to NFPA 14, 15, 16 and 24)	2.7.1	<p>Deviation: Fire department connections are not provided at Nine Mile 2.</p> <p>Justification: Backup for site pumps is provided by interconnection with Nine Mile 1. City supply provides limited capability. 150 psi pump pressures are sufficient.</p>
NFPA 13	3.14.2.1	<p>Deviation: Non-listed steel bodied valves are used on the interior fire main loop.</p> <p>Justification: The interior fire main loop is of welded steel construction for reliability. Steel valves are consistent with this design.</p>
NFPA 13 (also applies to NFPA 15 and 16)	3.17.6	<p>Deviation: The normal solenoid valve used on the listed Viking deluge valves have been replaced with dual motor operated valves.</p> <p>Justification: There was concern for accidental system operation or premature shutdown in the event of loss of power to the valves. Dual MOVs powered by separated circuitry were therefore employed.</p>



NFPA 13

4.3.4.1

Deviation: Sprinklers in parts of the Reactor Building 20 ft. zone and the Condensate Storage Tank Building are located up to 22" below the floor slab.

Justification: Some floor supports employ 20" steel beams closely spaced. A 22" slab clearance permits proper floor coverage without employing an excessive number of sprinklers.

NFPA 13

7.1.1.2

Deviation: On some cable tray nozzle drops, short 1/2" nipples no more than 6" long or close 1/2" nipples were used.

Justification: To correct misinstalled cable tray sprinklers located in excess of 8" from trays, short nipples or 1/2" nipples increased to 1" pipe (per section 3.8.4) were used. The increase in friction loss is negligible.

NFPA 13

3.16.5.2

Deviation: 1/4" orifice fused nozzles are used for cable tray sprinkler systems.

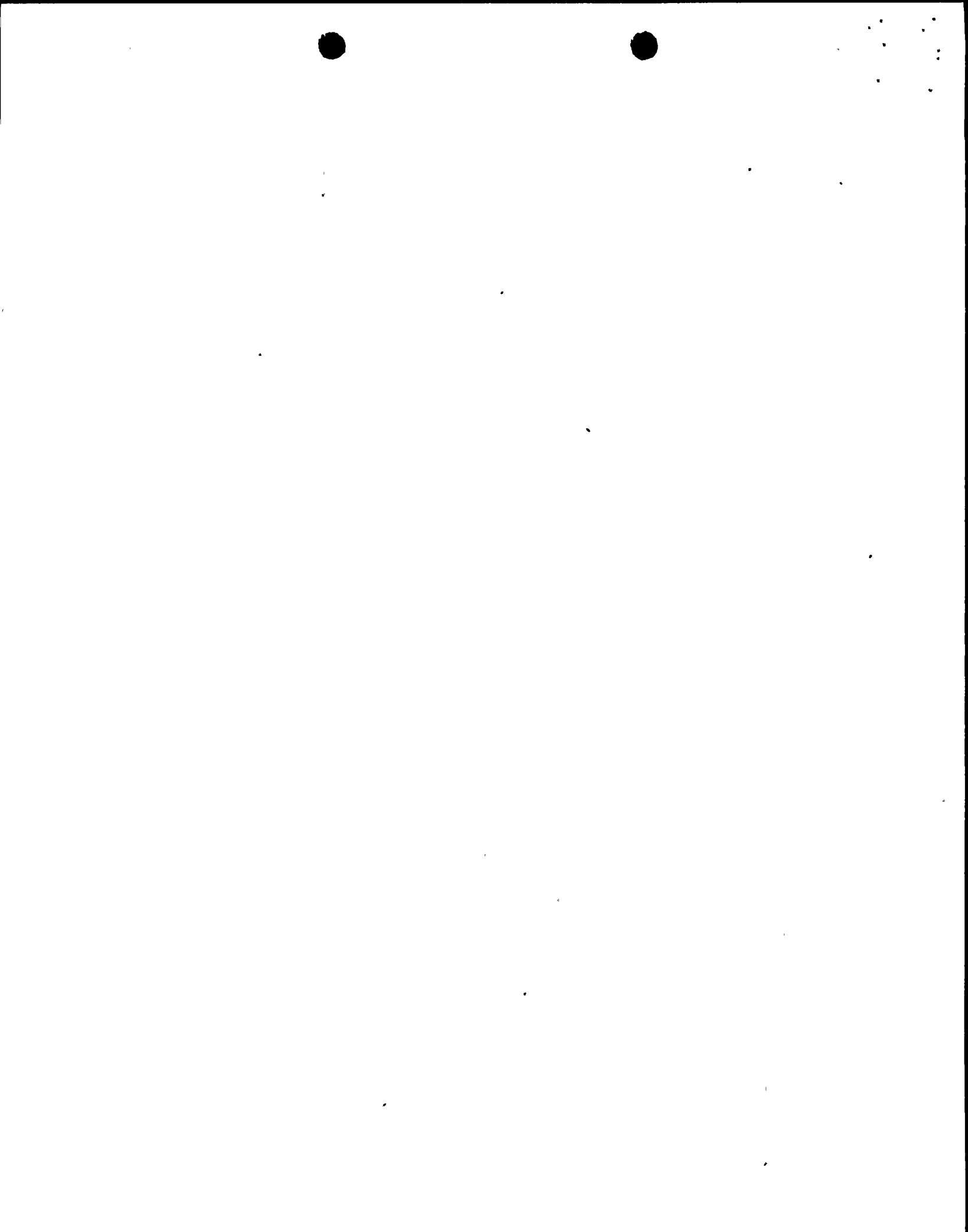
Justification: Small orifice nozzles were required to meet the application criteria of NFPA 15 with reasonable water rates. Scale buildup is minimized since drops supplying nozzles are normally water filled. All such systems are provided with individual system strainers.

NFPA 14

3.2.1

Deviation: Portions of some buildings are not within 30' of a nozzle attached to 100' of 1 1/2" hose.

Justification: It is proposed to temporarily correct the condition by mounting



additional hose where required at the existing hose stations. A permanent solution will involve installation of six additional hose stations plus requesting a permanent variance for 150' of hose at 13 of the plant hose stations. See attached prints for clarification.

NFPA 14

7.7.1

Deviation: Installed pressure gauges are not provided at the top of each standpipe with the exception of the four standpipes in the Reactor Building.

Justification: Pressure readings on all standpipe risers can be taken with a portable gauge. This arrangement has been accepted by Mr. Krasopoulos of Region 1 (12/11/85).

NFPA 15
(also applies
to NFPA 13)

4.4.1.4

Deviation: The cable tray sprinkler system employs design elements of NFPA 13 and 15.

Justification: NFPA 15 specifies coverage requirements for cable trays using open nozzles. NFPA 13 deals with area protection using fused sprinklers or nozzles. Elements of both standards were employed for design as they applied. Fused nozzles were chosen to limit potential water damage to equipment.

NFPA 16

1.4.1

Deviation: The foam-water sprinkler systems protecting the turbo-generator area are designed for automatic actuation of water and manual injection of foam.

Justification: Accidental foam operation can present a problem in the radwaste system. Automatic operation



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of water employs a 0.2 gpm/ft² density (0.16 required). The fire department or the Control Room can actuate the foam pumps if required. This is in general accord with Section 1.4.1.

NFPA 20

7.111
7.6

Deviation: The electric fire pump is powered by a 4KV motor which is controlled by an unlisted circuit breaker.

Justification: NFPA 20 permits use of high voltage motor starters, none of which are U.L. listed. The starter used was evaluated by a U.L. engineer to assure compliance with the requirements of NFPA 20. This procedure was acceptable to Mr. John Stang of NRR.

NFPA 20

9.5.2.7

Deviation: The diesel driven fire pump is not equipped with a weekly program timer.

Justification: Station procedure requires a 30-minute operating test of the pump weekly.

NFPA 20

7.5.2.4
9.5.2.4

Deviation: Timing devices to prevent simultaneous start are not provided on the electric and diesel pump controllers.

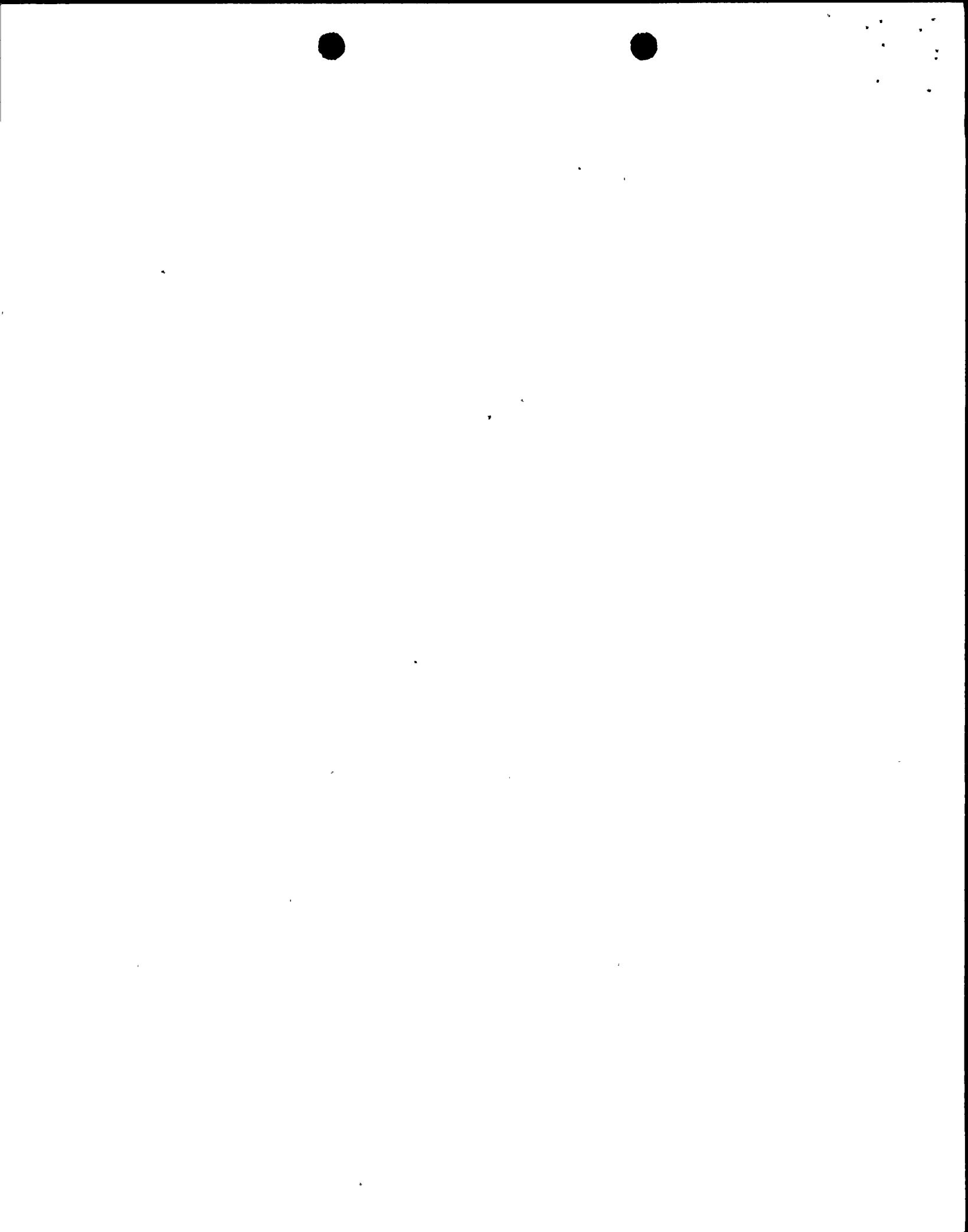
Justification: Cranking time of a diesel engine will produce a 5-10 second delay in coming up to speed when compared with an electric motor driven pump. Hence, timer devices merely complicate the control circuitry.

NFPA 20

7.3.5

Deviation: Control circuits in the motor starter are fused.

Justification: This is a deviation from Standard 20 and is so listed in the U.L.



report. Fuse failure will cause a trouble alarm to be transmitted to the Control Room. Justification for the presence of fuses will be supplied.

NFPA 24

8.1.1

Deviation: In a few cases, the depth of cover of the underground fire mains is less than 1 foot in excess of the frost line.

Justification: In all cases, the cover exceeds the worst-case frost line for the area.

NFPA 24

8.6.2.8

Deviation: Restraining devices and fasteners for portions of the underground piping were not coated with a corrosion retarding material.

Justification: An engineering analysis was conducted to establish that possible degradation of piping hardware would not adversely affect the fire system for the expected life of the plant.

NFPA 30

2.4.2

Deviation: The day tanks for the emergency diesel generators are provided with emergency vents to the day tank rooms.

Justification: The day tanks are provided with adequate outside vents for normal operation. The emergency vents are equipped with oil filled loop seals. These vents would function only if the normal vents were damaged by tornado action. The operability of the generators is thereby assured.

NFPA 72D

2.2.2

Deviation: The Control Room and local fire panels are not U.L. listed.



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Justification: The panels were constructed to meet the specific needs of the station; the components employed are properly listed; and they meet the intent of U.L. Standard 864 "Control Units for Fire Protective Signalling Systems."

NFPA 72D

3.3.1

Deviation: Manual pull fire alarm boxes are not used in station.

Justification: The Nine Mile 2 Gaitronics two-way public address system is designed and installed to provide fire reporting capability in accordance with the intent of NFPA 72D.

NFPA 72D

2.2.2

Deviation: Position switches used on steel body fire line valves are not listed for fire system use.

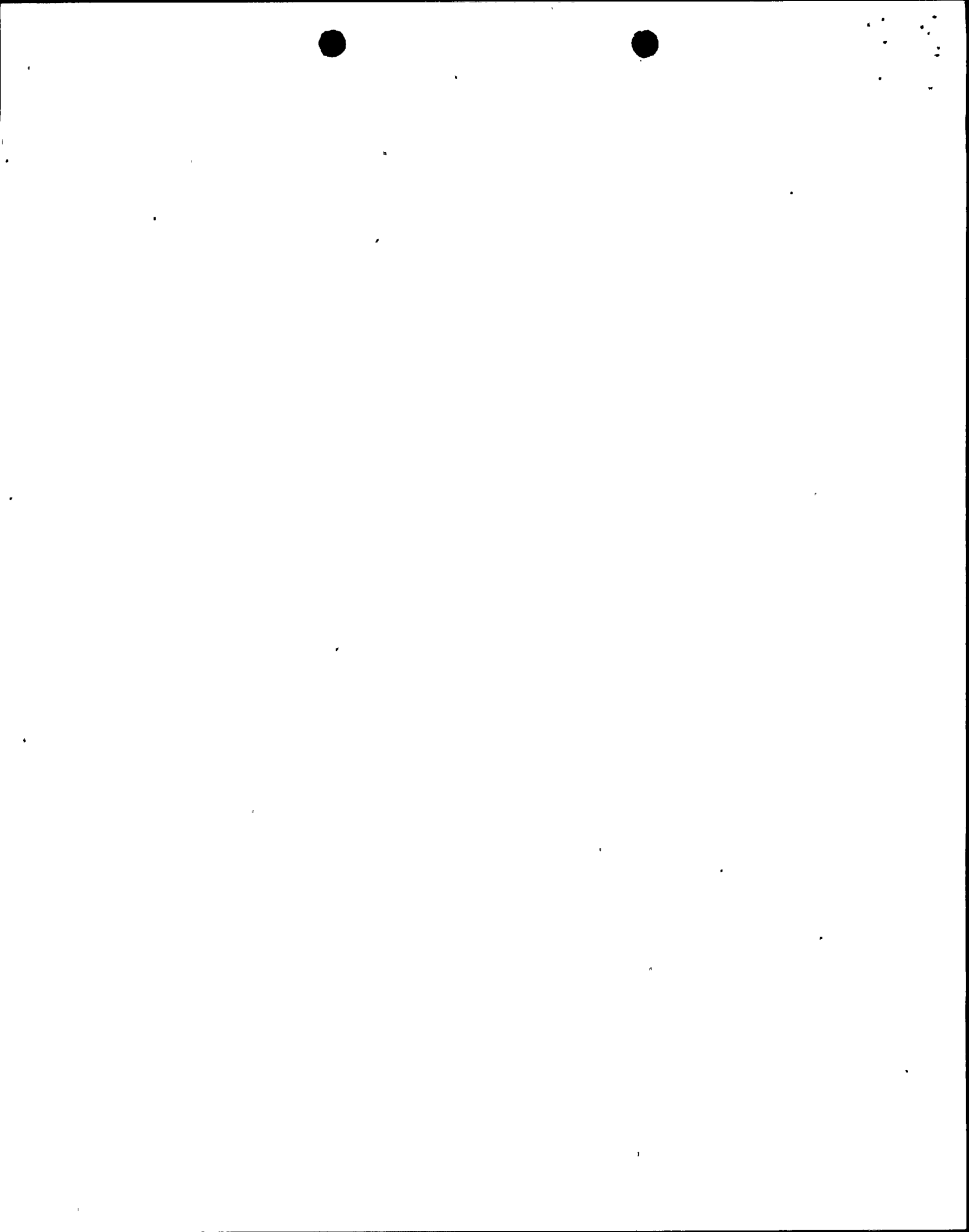
Justification: Because of the difference in body size and shape of steel valves compared with U.L. listed iron body valves, listed position switches cannot be satisfactorily mounted. High grade commercial limit switches were therefore used on steel valves.

NFPA 72E

4.3.7

Deviation: For structural conditions involving beams in excess of 18" deep and spaced less than 8' apart, smoke detectors are mounted on the bottom flange of alternate beams.

Justification: NFPA 72E is silent on the acceptable coverage under the structural configuration noted. The chosen arrangement was reviewed with the 72E Chapter 4 Subcommittee Chairman, justification submitted in



answer to DSER 96, and was found acceptable by Mr. John Stang on 8/1/84.

NFPA 80

1.6.1

Deviation: Non-listed fire doors are used at Nine Mile 2.

Justification: For doors with multiple requirements including missile protected, pressure-tight, and radiation shielding, non-listed doors are employed and analyses are provided to demonstrate their capability of performing satisfactorily as fire doors at the locations where installed.

NFPA 90A

2.1.4.1

Deviation: Service openings not provided adjacent to duct installed smoke detectors.

Justification: Duct-type smoke detectors used can be serviced from the outside of the duct.

NFPA 90A

2.1.4.3

Deviation: Service openings are not provided at 20' intervals along the duct and at the base of vertical risers.

Justification: Service openings are provided where required for system maintenance.

NFPA 90A

3.3.7.2.2

Deviation: Fire dampers are installed in a manner similar to but not exactly in accord with manufacturers' recommendations.

Justification: In some instances, fire damper installations are modified to facilitate HYAC system construction. Requested modifications received prior review and approval of the engineers' fire protection specialist. These approvals



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are documented and maintained on file.

Deviation: HVAC system fans are not arranged to shut down automatically on fire detector operation.

Justification: The Nine Mile 2 systems are incorporate low flow shutoffs. For a fire in most areas, fire damper operation would cause the low flow shutoff to function. This arrangement also is employed to guarantee total damper closure and is so tested.



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LIST OF ATTENDEES FOR
MEETING HELD JANUARY 29, 1986

NAME

ORGANIZATION

Mary Haughey	NRC - Licensing Project Manager
Dennis Kubicki	NRC - Fire Protection Engineer
Don Sutton	SWEC - Fire Protection Coordinator
Richard Schulman	NMPC - Associate Project Engineer
Robert W. Hammelmann	NMPC - Lead Project Engineer - Mechanical
Elden E. York	Compis Services - Licensing Consultant
John L. Ford	Compis Services - Licensing Consultant
John R. Corcoran	NMPC - Supervisor - Fire Protection
Norm Rademacher	NMPC - Licensing



February 26, 1986

MEETING SUMMARY DISTRIBUTION

✓ Docket No(s): 50-410
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Local PDR
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