Docket No. 50-410

JUN 15 1973

Mr. Harold G. Mangelsdorf
Chairman, Advisory Committee
on Reactor Safeguards
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Mangelsdorf:

Sixteen copies of our Safety Evaluation of Niagara Mohawk Power Corporation application for a permit to construct the Nine Mile Point Nuclear Station Unit 2 are enclosed for review by the Committee at its July meeting. Copies of this evaluation are being sent to the applicant and are being placed in the AEC and Local Public Document Rooms.

We consider this phase of our radiological safety review of the Nine Mile Point-2 facility to be complete. In completing this review, we have elected to defer final conclusions on a number of matters that are generic in nature and need current resolution for General Electric boiling water reactors. In certain areas we have not agreed with the applicant's submittal, and in these cases, we have directed the applicant to make the improvements in his design that are necessary to meet our safety requirements. Each of the generic matters will be addressed in a supplement to this Safety Evaluation prior to our final determination on the issuance of a construction permit. The generic items and the areas that required improvements in design are outlined below. References are provided to indicate the section and page number where the subject is discussed in the Safety Evaluation Report. In addition, for the generic matters a brief statement of status is given.

Generic Items

1. Fuel Densification (4.2.1, Page 4-6)

   The staff review of fuel densification effects in BWR's is in progress. Completion of this review is scheduled for July 15, 1973.

2. Rod Sequence Control System (4.2.3, Page 4.11; 7.8, Page 7-6; and 15.3.4 Page 15-11)

   The staff and its consultant are reviewing the approach proposed for mitigating the consequences of the rod drop accident. For Nine Mile Point-2, we will require and the applicant has agreed to implement the finally approved generic resolution of this concern.

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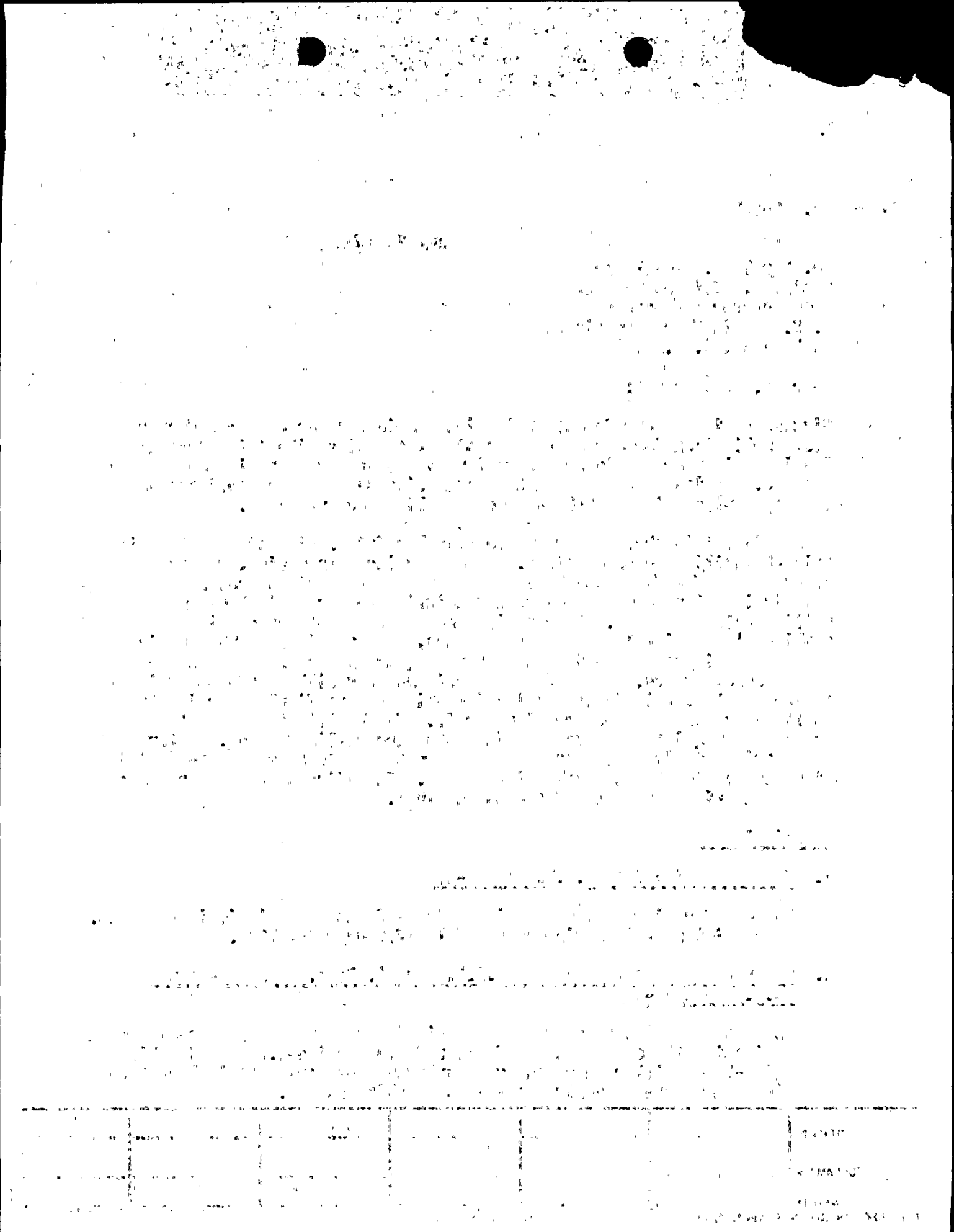
Form AEC-318 (Rev. 9-53) AECM 0240 GPO 843—16—81465-1 445-678



3. Power Distribution Within the Core (4.3, Page 4-14)

The staff has some concerns relative to ensuring that the operating limits for linear power density and critical heat flux rates are not exceeded. General Electric has committed to provide for our review a topical report discussing the power distribution in BWR's in the fall of 1973.

4. Pressure Relief Valves (5.2.2, Page 5-4)

Operating problems with pressure relief valves have been experienced in BWR's. These problems are being reviewed by the staff and its consultants to determine the causes and to recommend means of preventing recurrence.

5. Recirculation Pump Overspeed (5.4.1, Page 5-16)

The applicant described a decoupler design in the PSAR as a means of protecting recirculating pump motors against overspeed. The staff is presently reviewing the problem of the pump overspeed and missile generation, and will shortly complete their review and evaluation of the GE topical report NEDO-10677, "Analysis of Recirculation Pump Overspeed . . .".

6. Anticipated Transients Without Scram (7.9, Page 7-6)

The staff is reviewing a topical report, NEDO-10349, "Analysis of Anticipated Transients Without Scram," March 1971, submitted by General Electric. If the probability of any of the events considered is determined to be sufficiently high, design modifications may be necessary.

7. MSIV Leakage (9.2.4, Page 9-12)

The applicant proposes a seal water system in the PSAR. At our request the applicant has committed to perform a detailed thermal stress and deformation analysis. The results of this investigation will be presented at the operating license stage. In the event that these studies are not conclusive, the applicant will be required to conduct appropriate tests to supplement the analysis.

Non-Generic Items

1. Flood Protection

a. Probable Maximum Surge (2.4.5, Page 2-17)

The applicant proposed to protect against flooding from a calculated probable maximum surge of 251 feet LSD. Our analysis

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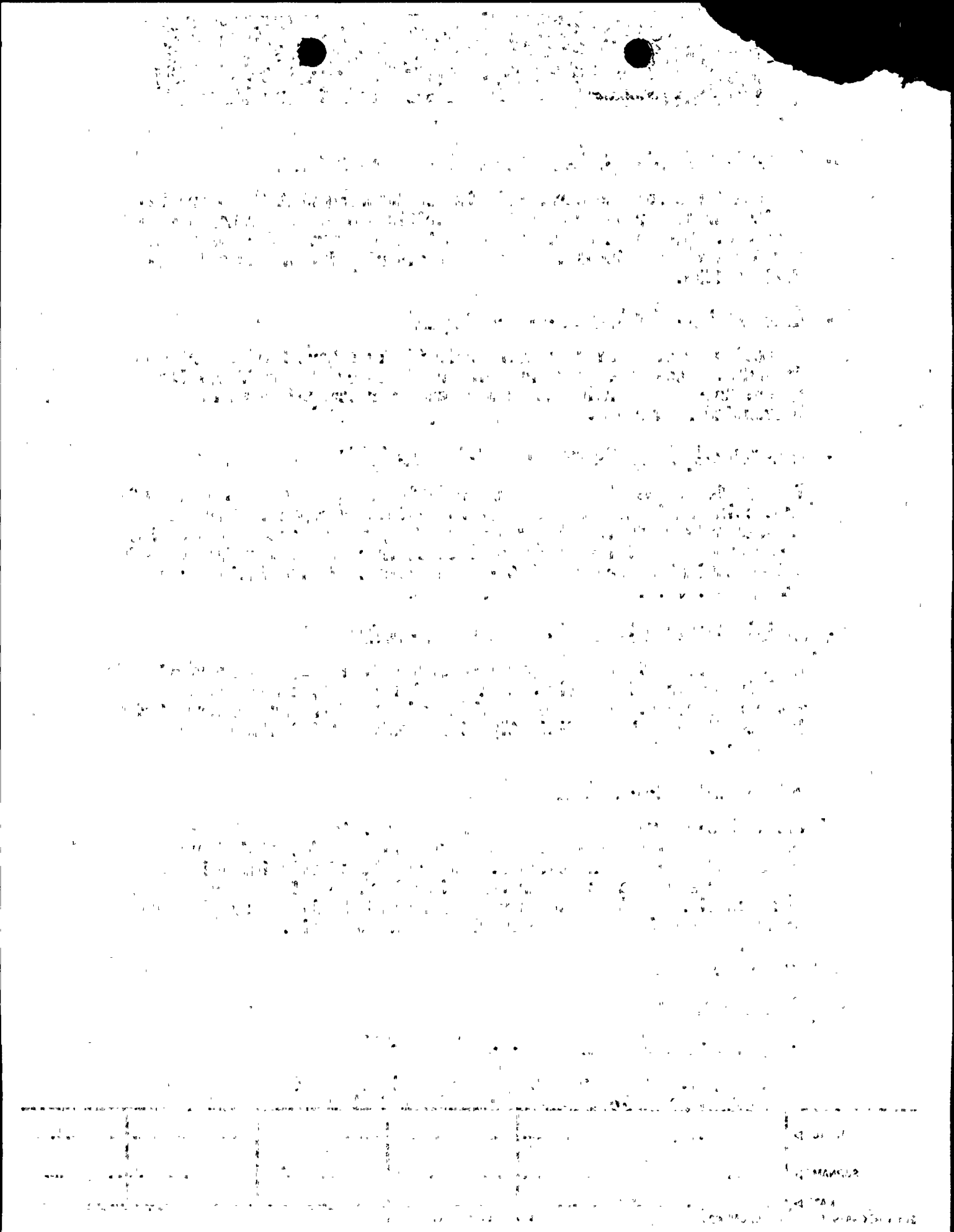

yields a probable maximum surge of 254 feet LSD and we have informed the applicant that this level should be used in the design for NMP-2. The applicant is continuing his study using a 2-dimensional model. Results from this study will be reviewed prior to construction of the dike and drainage system.

b. Interceptor Ditch (2.4.5, Page 2-19)

The applicant described an interceptor ditch behind the dike with the capacity of 200,000 cubic feet. We do not agree with the applicant's interceptor ditch capacity and will require substantiation to show that the design capacity will avert any flooding that could adversely affect safety-related structures or systems prior to construction of the dike and drainage system.

2. Seismic Design of Plant (2.5.2, Page 2-31)

The initial SSE proposed by the Applicant was a horizontal acceleration of 10% g based on recent field investigation of the geology in the region of the plant. We and our consultants, however, concluded that there was insufficient information on which to base this conclusion. The applicant agreed to use the 15% g SSE values employed in the design of the FitzPatrick plant.

3. Pipe Breaks in the Recirculation System (3.6, Page 3-9)

The applicant has adopted criteria relative to the postulated breaks in the recirculation system different from ours. The design of this system is in the initial phase. At the completion of the design of the pipe system, we will require the applicant to make comparison of the pipe break location and orientation criteria with those of the Regulatory position. Those differences not compatible with our position will have to be changed.

4. Seismic System Analysis (3.7.2, Page 3-11)

We will require the applicant to use two horizontal components and one vertical component for seismic system analysis and to combine the governing response parameters by statistical methods. We will also require the applicant to use a factor of 1.5 to the peak spectrum values to obtain equivalent static loads.

5. Active Valves (319.7, Page 3-21)

At the request of the staff, the applicant will identify all active valves and conduct component test programs, supplemented by analytical predicative methods, to assure that these valves will perform their safety function under both normal and accident conditions.

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6. Overpressure Protection (5.2.2, Page 5-3)

To determine the ability of the pressure relief systems to prevent overpressurization, we will require the applicant to submit analyses during the operating license stage to demonstrate that the pressure following the worst transient and assuming failure of one safety/relief valve is at least 25 psi less than the ASME code allowable pressure.

7. ECCS Pumps (6.3.5, Page 6-19)

The ECCS systems in the Nine Mile Point-2 plant are separated by a six inch curbing that permits leakage from any one system to be identified by observing the operation of a sump pump located in each of these separated areas. Flood protection is provided by locating pump motors and controls several feet above the floor level. In most BWR's each set of pumps is contained in a separate, small water-tight room which protects these systems from flooding and limits the volume of water lost from the suppression pool so that ECCS pumps suction lines will not be uncovered. We will require the applicant to provide an equivalent capability to protect against loss of function in systems important to safety due to flooding or to the loss of water supply to the suction of pumps.

8. Reactor Trip System (7.2, Page 7-1)

The reactor trip system design described in the PSAR did not provide redundant manual reactor trip capability. The applicant agreed to modify the design to incorporate four manual trip push buttons with one-out-of-two-twice logic that is similar to the automatic trip system.

9. Automatic Depressurization Syssem Interlock (7.3, Page 7-2)

For the ADS, the applicant will modify the design to be in full conformance with IEEE Std 279-1971 with the exception of the permissive interlocks provided to prevent manual initiation of ADS unless an RHR pump or LPCS pump is operating. We will require that this permissive interlock be eliminated.

10. High Energy Pipe Failure Outside the Containment (7.11, Page 7-7 and 10.5, Page 10-7

We provided design guidance to the applicant relative to this problem. In response to this guidance, the applicant submitted high energy line design criteria that are in accordance with the Regulatory guidelines.

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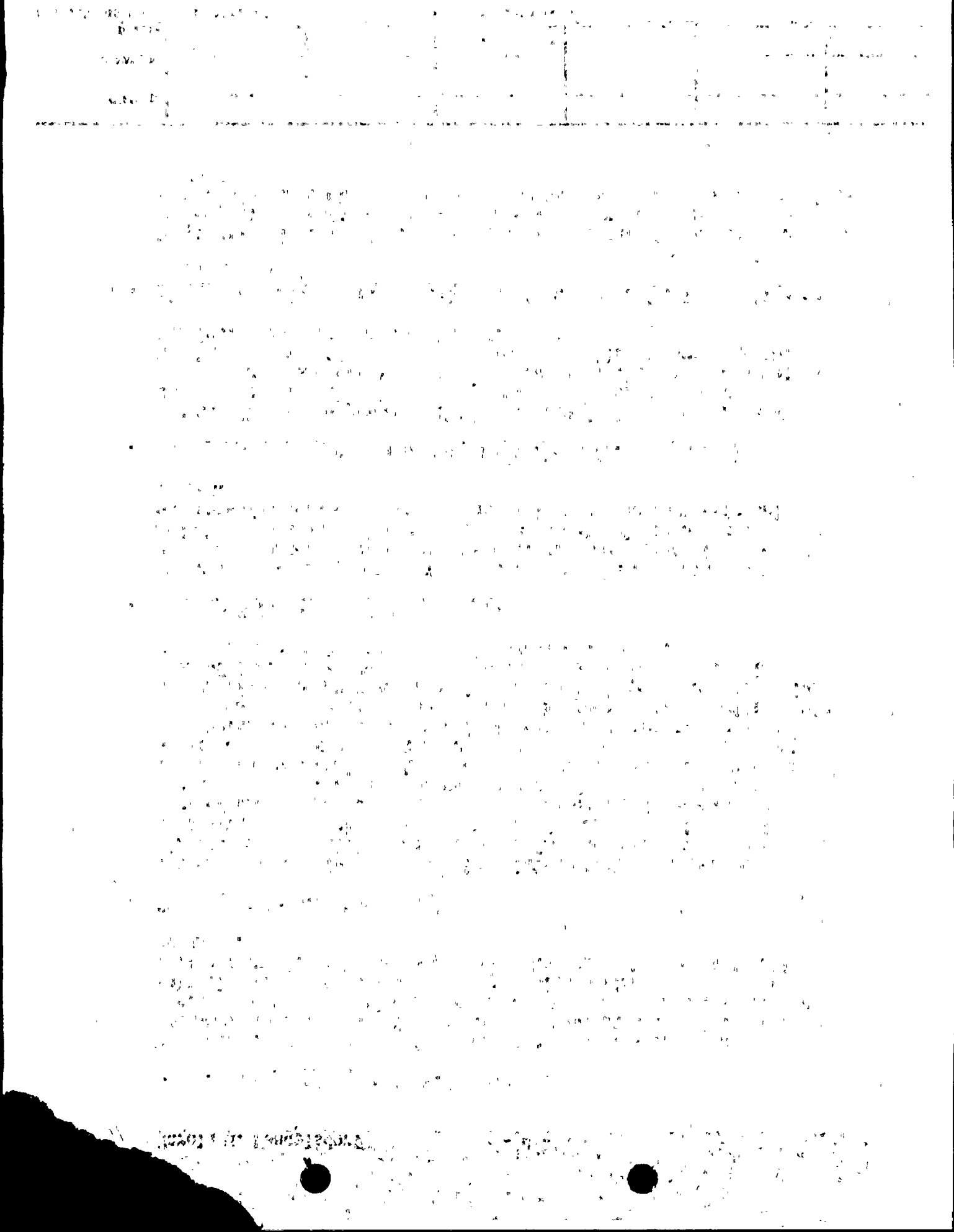

11. Onsite Electric System (8.3.1, Page 8-3)

The diesel generator provided for the HPCS bus will not meet the 25% voltage drop limit recommended by Regulatory Guide 1.09. The applicant is committed to demonstrate that this diesel generator has the capability for starting its loss-of-coolant accident loads with acceptable voltage recovery characteristics.

12. Testability of the Onsite Emergency Power Sources (8.3.1, Page 8-4)

In order to meet GDC 18, testability at power of the diesel generator is required including the starting logic and load sequencing which is required to operate during emergency conditions. The applicant is committed to provide the required testability.

13. Spent Fuel Storage (9.1.2, Page 9-6)

During handling over the spent fuel storage area, the potential exists that the cask could strike the edge of the pit, fall on the opposite wall of the shipping cask storage area, and roll or tumble into the pool. We will require the applicant to provide a design to preclude this possibility for our review prior to construction.

Sincerely,

Original signed by
Voss A. Moore

Voss A. Moore, Assistant Director
for Boiling Water Reactors
Directorate of Licensing

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