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(2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-220

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TO: Mr. Edson G. Case

FROM: LeBoeuf, Lamb, Leiby & MacRae
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Eugene B. Thomas, Jr.

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ENCLOSURE

License No. DPR-63..Appl for Amend: tech specs proposed change concerning Load Line Limit Analysis....notorized 7/11/77.......

NEDO-24012, "Nine Mile Point Unit 1 Load Line Limit Analysis License Amendment Submittal.
see Rpts

(1/4")

40 cys

PLANT NAME:
Nine Mile Point Unit No. 1
RJL 7/19/77

FOR ACTION/INFORMATION

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July 18, 1977

Mr. Edson G. Case
Acting Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Regulatory File Cy.

Re: Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station,
Unit No. 1
Docket No. 50-220

Dear Mr. Case:

As counsel for Niagara Mohawk, I enclose the following:

(1) Three (3) originals and nineteen (19) copies of an application for amendment to operating license; and

(2) Forty (40) copies each of two (2) documents entitled Attachments A and B which set forth the requested change in the Technical Specifications along with its technical basis.

Very truly yours,

LeBOEUF, LAMB, LEIBY & MacRAE

By Eugene B. Thomas, Jr.
Eugene B. Thomas, Jr.

Enclosures

772000245

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of NIAGARA MOHAWK POWER CORPORATION (Nine Mile Point Nuclear Station Unit No. 1)	))))))	Docket No. 50-220

APPLICATION FOR AMENDMENT

TO

OPERATING LICENSE

Pursuant to Section 50.90 of the regulations of the Nuclear Regulatory Commission, Niagara Mohawk Power Corporation, holder of Facility Operating License No. DPR-63, hereby requests that Sections 2.1.1, 2.1.2, 3.1.7 and 4.1.7 of the Technical Specifications and Bases set forth in Appendix A to that License be amended. These proposed changes have been concurred with by the Site Operations Review Committee and the Safety Review and Audit Board.

The proposed Technical Specification changes are set forth in Attachment A to this application. Supporting Information, which demonstrates that the proposed changes do not involve a significant hazards consideration, is set forth in Attachment B. The proposed changes would not authorize any change in the types or any increase in the amounts of effluents or any change in the authorized power level of the facility.

WHEREFORE, Applicant respectfully requests that Appendix A to Facility Operating License No. DPR-63 be amended in the form attached hereto as Attachment A.

NIAGARA MOHAWK POWER CORPORATION

By [signature]
Gerald K. Rhode
Vice President - Engineering

Subscribed and sworn to before me this 11th day of July, 1977.

Phyllis D. Voytko
NOTARY PUBLIC

PHYLLIS D. VOYTKO
Notary Public in the State of New York
Qualified in Onon. Co. No. 34-9485535
My Commission Expires March 30, 1978

ATTACHMENT A

Niagara Mohawk Power Corporation

License No. DPR-63

Docket No. 50-220

Proposed Changes To The Technical Specifications (Appendix A)

Replace Pages 8, 20, 64a, 64b, 64c, 70a, 70b, and 70c with the attached revised pages. Remove Pages 64d, 64e and 64f.

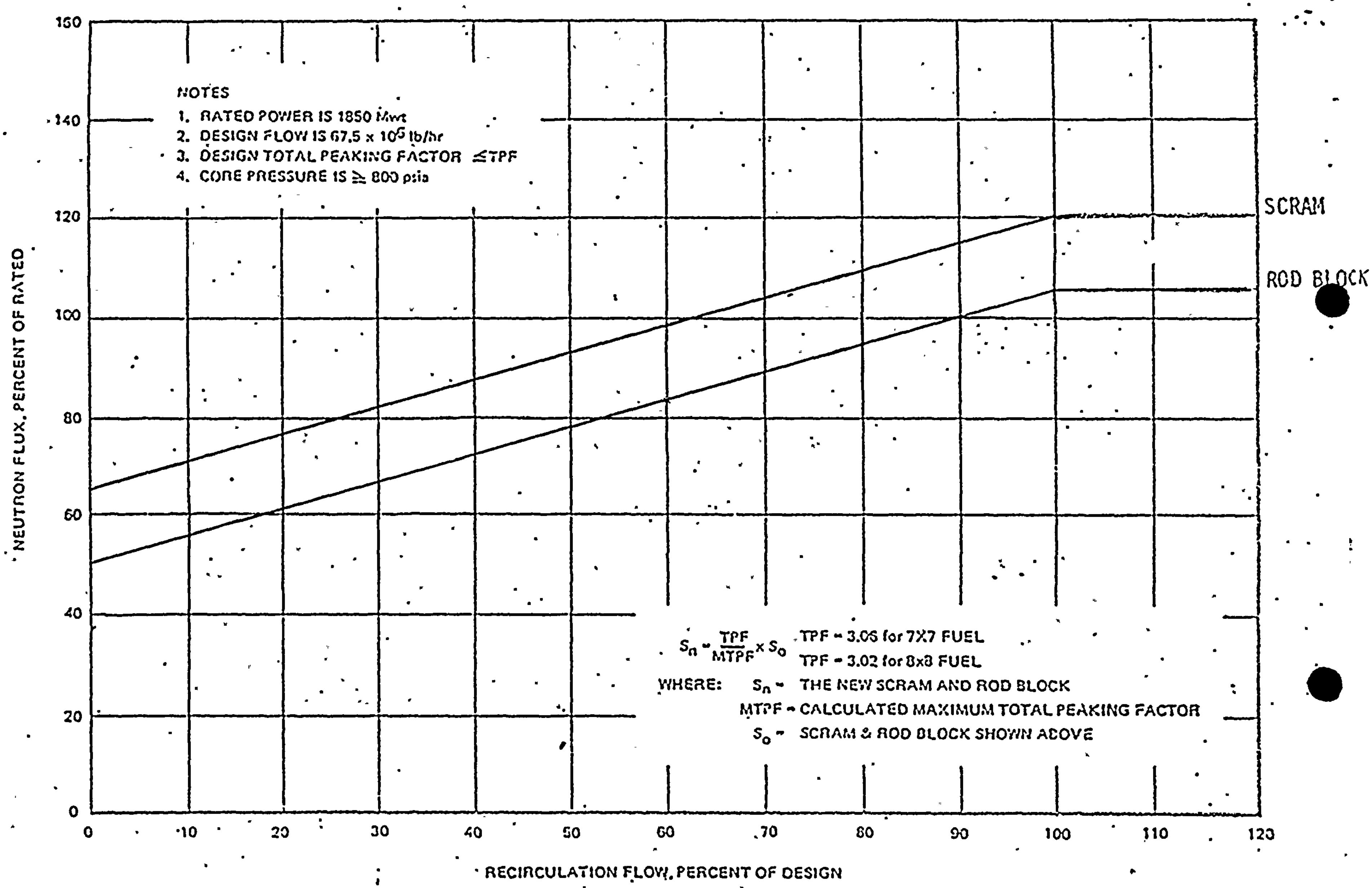


Figure 2.1.1. Flow Biased Scram and APRM Rod Block

REFERENCES FOR BASES 2.1.1 AND 2.1.2 FUEL CLADDING

(1) General Electric BWR Thermal Analysis Basis (GETAB) Data, Correlation and Design Application, NEDO-10958 and NEDE-10958.

(2) Linford, R. B., "Analytical Methods of Plant Transient Evaluations for the General Electric Boiling Water Reactor," NEDO-10801, February 1973.

(3) FSAR, Volume II, Appendix E.

(4) FSAR, Second Supplement.

(5) FSAR, Volume II, Appendix E.

(6) FSAR, Second Supplement.

(7) Letters, Peter A. Morris, Director of Reactor Licensing, USAEC, to John E. Logan, Vice-President, Jersey Central Power and Light Company, dated November 22, 1967 and January 9, 1968.

(8) Technical Supplement to Petition to Increase Power Level, dated April 1970.

(9) Letter, T. J. Brosnan, Niagara Mohawk Power Corporation, to Peter A. Morris, Division of Reactor Licensing, USAEC, dated February 28, 1972.

(10) Letter, Philip D. Raymond, Niagara Mohawk Power Corporation, to A. Giambusso, USAEC, dated October 15, 1973.

(11) Nine Mile Point Nuclear Power Station Unit 1 Load Line Limit Analysis, NEDO 24012, May, 1977.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENT

c. Minimum Critical Power Ratio (MCPR)

During power operation MCPR shall be ≥ 1.37 for 7x7 fuel and ≥ 1.38 for 8x8 fuel at rated power and flow. If at any time during power operation it is determined by normal surveillance that these limits are no longer met, action shall be initiated within 15 minutes to restore operation to within the prescribed limits. If the operating MCPRs are not returned to within the prescribed limits within two (2) hours, the reactor shall be brought to the Cold Shutdown condition within 36 hours. Surveillance and corresponding action shall continue until reactor operation is within the prescribed limits.

For core flows other than rated the MCPR limits shall be the limits identified above times K_f where K_f is as shown in Figure 3.1.7-1.

d. Power Flow Relationship During Power Operation

The power/flow relationship shall not exceed the limiting values shown in Figure 3.1.7.f.

c. Minimum Critical Power Ratio (MCPR)

MCPR shall be determined daily during reactor power operation at > 25% rated thermal power.

d. Power Flow Relationship

Compliance with the power flow relationship in section 3.1.7.d shall be determined daily during reactor operation.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS

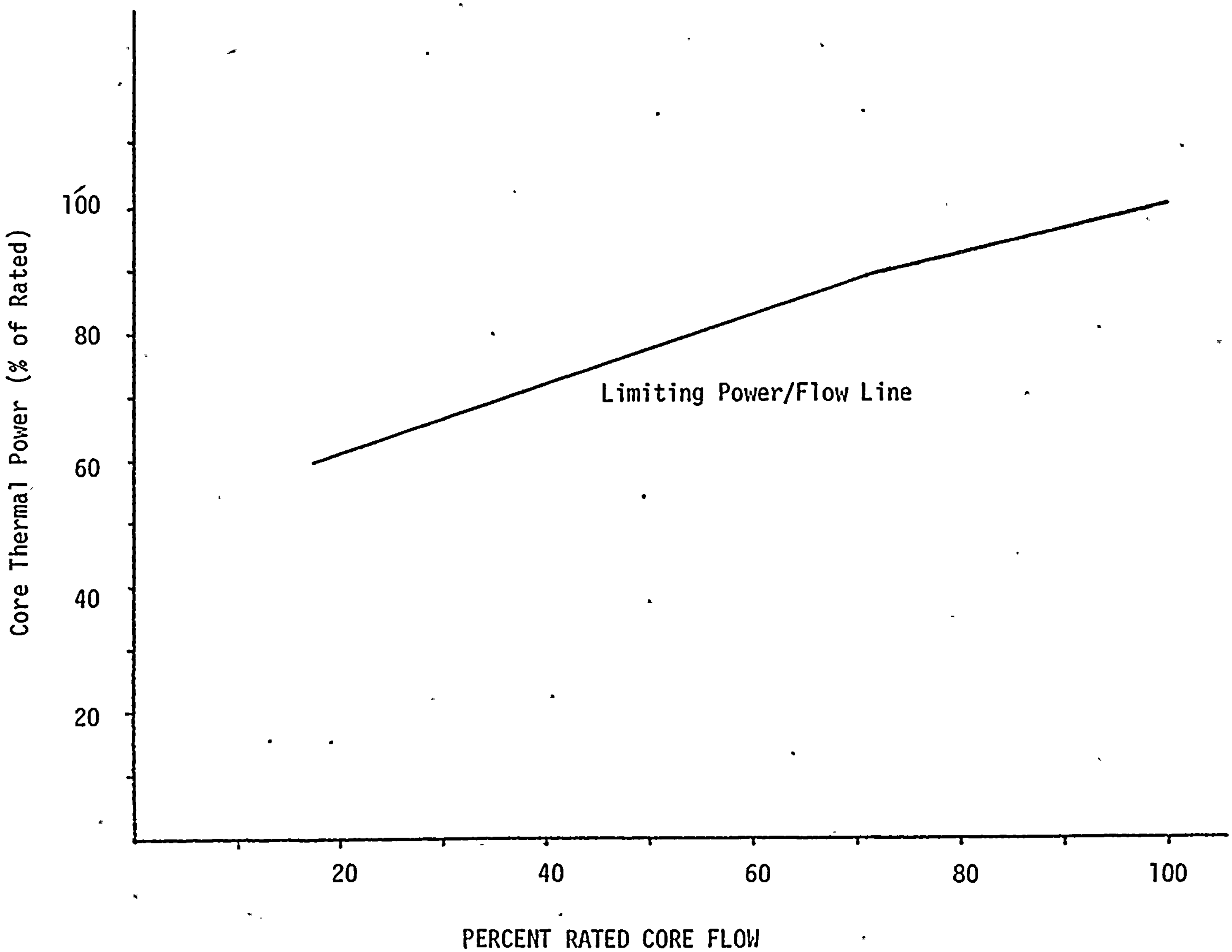
If at any time during power operation it is determined by normal surveillance that the limiting value for the power/flow relationship is being exceeded action shall be initiated within 15 minutes to restore operation to within the prescribed limits. If the power/flow relationship is not returned to within the prescribed limits within two (2) hours, the reactor shall be brought to the Cold Shutdown condition within 36 hours. Surveillance and corresponding action shall continue until reactor operation is within the prescribed limits.

e. Reporting Requirements

If any of the limiting values identified in Specification 3.1.7.a, b, c and d are exceeded, a Reportable Occurrence report shall be submitted. If the corrective action is taken, as described, a thirty-day written report will meet the requirements of this specification.

Figure 3.1.7.f
NINE MILE POINT UNIT 1

LIMITING POWER FLOW LINE



of the plant, a MCPR evaluation will be made at the 25% thermal power level with minimum recirculation pump speed. The MCPR margin will thus be demonstrated such that future MCPR evaluations below this power level will be shown to be unnecessary. The daily requirement for calculating MCPR about 25% rated thermal power is sufficient since power distribution shifts are very slow when there have not been significant power or control rod changes. The requirement for calculating MCPR when a limiting control rod pattern is approached ensures that MCPR will be known following a change in power or power shape (regardless of magnitude) that could place operation at a thermal limit.

Figure 3.1.7-1 is used for calculating MCPR during operation at other than rated conditions. For the case of automatic flow control the K_f factor is determined such that any automatic increase in power (due to flow control) will always result in arriving at the nominal required MCPR at 100% power. For manual flow control, the K_f is determined such that an inadvertent increase in core flow (i.e., operator error or recirculation pump speed controller failure) would result in arriving at the 99.9% limit MCPR when core flow reaches the maximum possible core flow corresponding to a particular setting of the recirculation pump MG set scoop tube maximum speed control limiting set screws. These screws are to be calibrated and set to a particular value and whenever the plant is operating in manual flow control the K_f defined by that setting of the screws is to be used in the determination of required MCPR. This will assure that the reduction in MCPR associated with an inadvertent flow increase always satisfies the 99.9% requirement. Irrespective of the scoop tube section, the required MCPR is never allowed to be less than the nominal MCPR (i.e., K_f is never less than unity).

Power/Flow Relationship

The power/flow curve is the locus of critical power as a function of flow from which the occurrence of abnormal operating transients will yield results within defined plant safety limits. Each transient and postulated accident applicable to operation of the plant was analyzed along the power/flow line. The analysis[7] justifies the operating envelope bounded by the power/flow curve as long as other operating limits are satisfied. Operation under the power/flow line is designed to enable the direct ascension to full power within the design basis for the plant.

Reporting Requirements

The LCO's associated with monitoring the fuel rod operating conditions are required to be met at all times, i.e., there is no allowable time in which the plant can knowingly exceed the limiting values of MAPLHGR, LHGR, and MCPR Power/Flow Ratio. It is a requirement, as stated in Specifications 3.1.7.a, b, c & d that if at any time during power operation, it is determined that the limiting values for MAPLHGR, LGHR or MCPR Power/Flow Ratio are exceeded, action is then initiated to restore operation to within the prescribed limits. This action is initiated as soon as normal surveillance indicates that an operating limit has been reached. Each event involving operation beyond a specified limit shall be reported as a Reportable Occurrence. If the specified corrective action described in the LCO's was taken, a thirty-day written report is acceptable.

REFERENCES FOR BASES 3.1.7 AND 4.1.7 FUEL RODS

(1) "Fuel Densification Effects on General Electric Boiling Water Reactor Fuel," Supplements 6, 7 and 8, NEDM-10735, August 1973.

(2) Supplement 1 to Technical Report on Densifications of General Electric Reactor Fuels, December 14, 1974 (USA Regulatory Staff).

(3) Communication: V. A. Moore to I. S. Mitchell, "Modified GE Model for Fuel Densification," Docket 50-321, March 27, 1974.

(4) "General Electric Boiling Water Reactor Generic Reload Application for 8 x 8 Fuel," NEDO-20350, Supplement 1 to Revision 1, December 1974.

(5) "General Electric Company Analytical Model for Loss of Coolant Analysis in Accordance with 10CFR50 Appendix K," NEDO-20566.

(6) General Electric Refill Reflood Calculation (Supplement to SAFE Code Description) transmitted to the USAEC by letter, G. L. Gyorey to Victor Stello Jr., dated December 20, 1974.

(7) "Nine Mile Point Nuclear Power Station Unit 1, Load Line Limit Analysis," NEDO-24012.

ATTACHMENT B

Niagara Mohawk Power Corporation

License No. DPR-63

Docket No. 50-220

Supporting Information

Attachment A describes proposed changes to the Nine Mile Point Unit 1 Technical Specifications. These changes are required to provide for more flexible operation. The bases for the proposed Technical Specification changes are provided in the enclosed report "Nine Mile Point Nuclear Power Station Unit 1 Load Line Limit Analysis License Amendment Submittal, NEDO 24012."

Each transient and accident was analyzed along the new power/flow line. The results show that the 100/100 percent power/flow point is the most limiting for all accidents and transients except for the Rod Withdrawal Error. Results of the Rod Withdrawal Error analysis show a slightly higher (+0.01) ΔCPR at the 91/75 percent power/flow point for 7 x 7 fuel. The analysis also indicates that the new power/flow envelope maintains previously established safety limits.

To take advantage of as much of the analyzed envelope as possible, a change is required in the APRM flow biased rod block line and the 120 percent flow biased flux scram line. The current APRM rod block and flux scram lines are overly conservative at low power/low flow conditions. The new rod block and scram lines maintain previously established safety limits.

Currently, power void limits (B-Factors) are utilized at Nine Mile Point Unit 1 to assure compliance with assembly void fraction assumptions used in the Loss of Coolant Accident analysis. Inclusion of these limits in the Technical Specifications are unnecessary since MCPR operating limits and the proposed power/flow limit line provide adequate assurance that operating conditions will be more conservative than the initial conditions assumed in the Loss of Coolant Accident analysis for Nine Mile Point Unit 1.

The initial MCPR value used in the Loss of Coolant Accident analysis was 1.19. In determining the analysis basis, the bundle axial power shape was varied in both position and peaking factor in order to determine a conservative void fraction consistent with this MCPR. The Technical Specifications on MCPR operating limits at rated conditions are in excess of 1.3. These higher MCPR values would result in void fraction lower than those calculated from a 1.19 MCPR. Furthermore, the fact that the operating MCPR at reduced power and flow must increase in accordance with the K_f factor in the Technical Specifications also contributes to a lower void fraction. Since the time to dryout is directly proportional to the volume of water initially in the fuel bundle, a lower void fraction would result in a longer dryout time. Hence, the current analysis basis is conservative.

The Loss of Coolant Accident analysis performed at the 100/100 percent power/flow point has been found to be limiting in relation to other points along the proposed power/flow curve. By specifying that operation of Nine Mile Point Unit 1 will be within the envelope bounded by the proposed power/flow curve, additional assurance is provided that the current Loss of Coolant Accident analysis basis is conservative with respect to all operating conditions.