NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

DOCKET NUMBER: 50-220

FILE NUMBER:

TO: Mr. George Lear

FROM: Niagara Mohawk Power Corp.
Syracuse, New York
Mr. Gerald K. Rhode

DATE OF DOCUMENT: 12/29/76

DATE RECEIVED: 1/3/77

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PROP

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DESCRIPTION

Ltr. w/attached....re our 11/24/76 ltr. ....concerning fission gas releases.

(3-P)

ENCLOSURE

ACKNOWLEDGED

DO NOT REMOVE

PLANT NAME:
Nine Mile Point Unit No. 1

FOR ACTION/INFORMATION ENVIRO 1/6/77 RJL

SAFETY		ENVIRO
☒ ASSIGNED AD:	Goller	ASSIGNED AD:
☒ BRANCH CHIEF:	Lear	BRANCH CHIEF:
☒ PROJECT MANAGER:	Nowicki	PROJECT MANAGER:
☒ LIC. ASST.:	Parrish	LIC. ASST.:

INTERNAL DISTRIBUTION

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☒ NRC PDR		HEINEMAN		TEDESCO	ENVIRO ANALYSIS
☒ I & E (2)		SCHROEDER		BENAROYA	DENTON & MULLER
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CASE		KNIGHT			BALLARD
HANAUER		SIHWEIL		OPERATING REACTORS	SPANGLER
HARLESS		PAWLICKI		STELLO	
					SITE TECH.
PROJECT MANAGEMENT		REACTOR SAFETY		OPERATING TECH.	GAMMILL
BOYD	☒	ROSS	☒	EISENHUT (Ltr.)	STEPP
P. COLLINS		NOVAK	☒	SHAO	HULMAN
HOUSTON		ROSZTOCZY	☒	BAER	
PETERSON	☒	CHECK	☒	BUTLER	SITE ANALYSIS
MELTZ	☒	R. Meyer	☒	GRIMES	VOLLMER
HELTEMES		AT & I	☒	F. Coffman	BUNCH
SKOVHOLT		SALTZMAN	☒	J. Gilbert	☒ J. COLLINS
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☒ TIC:	REG V.IE	ULRIKSON (ORNL)
☒ NSIC:	LA PDR	
ASLB:	CONSULTANTS:	
☒ ACRS 16 CYS ~~HOLDING~~/SENT: Cat. B. (1/6/77)		

NRC FORM 195 (2-76)

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

300 ERIE BOULEVARD WEST
SYRACUSE, N.Y. 13202

Regulatory Docket File

December 29, 1976

Director of Nuclear Reactor Regulation
Attn: Mr. George Lear, Chief
Operating Reactors Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Lear:

Your letter of November 24, 1976 requested information regarding fission gas release rates from fuel pellets with high burnup. The attached information is in response to your request.

For Nine Mile Point Unit 1, the effects of the Nuclear Regulatory Commission fission gas release correction technique are bounded by results presented in a December 22, 1976 letter from G. E. Sherwood (General Electric) to D. F. Ross (NRC). For fuel exposures less than 20,000 megawatt-days per short ton, peak clad temperature changes are insignificant. For higher exposures, peak clad temperature increases are less than 85 F.

Sincerely,

NIAGARA MOHAWK POWER CORPORATION

GERALD K. RHODE
Vice President - Engineering

75

WRD/sz

Attachment

Responses to November 24, 1976
Nuclear Regulatory Commission Questions

Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

1. Question

Provide the estimated date on which any fuel rod in your facility will reach a local exposure (burnup) of 20,000 Megawatt-days per metric ton of Uranium (MWD/tU).

Response

The core at Nine Mile Point Unit 1 currently contains fuel with peak exposures in excess of 20,000 Megawatt-days per metric ton of Uranium.

2. Question

Using the correction technique described in the attached enclosure, modify the fission gas release model in the thermal performance code for the fuel in your facility and calculate the fission gas release, fuel rod pressure, fuel temperature, etc. for burnups to and including the target peak-rod burnup. Provide a comparison of the results of your calculations with those obtained using the uncorrected fission gas release model.

Response

Generic bounding analysis has been provided by General Electric in response b of Reference 1. Information corresponding to both 7x7 and 8x8 fuel shown for a. BWR/2 is applicable to Nine Mile Point Unit 1. The NRC correction technique increases calculated fission gas release, fuel rod internal pressure and fuel temperatures for exposures greater than 20,000 MWD/tU.

3. Question

Describe the impact (if any) of larger fission gas releases on the LOCA analysis and other safety analyses for your facility.

Response

Impact of larger fission gas releases on Nine Mile Point Unit 1 safety analysis is provided in response c of Reference 1.

The LOCA analysis for fuel exposures below 20,000 MWD/Short Ton are uneffected. At fuel bundle exposures of 30,000 MWD/Short Ton, a conservative upper bound limit of 85 F peak clad temperature increase has been calculated. The temperature increases associated with Nine Mile Point Unit 1 are expected to be significantly lower.

Other safety analyses are relatively insensitive to increased fission gas release.

4. Question

If internal fuel rod pressures, as calculated using the above-mentioned fission gas release correction, are predicted to exceed the nominal system pressure for your facility, provide the date that this is anticipated to occur and discuss the implications of operating under both normal and accident conditions with fuel cladding tensile stresses.

Response

As stated in response d of Reference 1, the internal fuel rod pressures, as calculated using the NRC fission gas release correction, do not exceed the nominal Nine Mile Point Unit 1 system pressures.

REFERENCE

1. Letter dated December 22, 1976 from Mr. G. G. Sherwood (General Electric) to Mr. Denwood F. Ross (Nuclear Regulatory Commission).