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 FACIL: 50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Power 05000220
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 RECIP. NAME: RECIPIENT AFFILIATION
 VASSALLO, D.B. Operating Reactors Branch 2

SUBJECT: Forwards offsite dose calculation manual, per proposed radiological effluent Tech Spec dtd 840201. Response to Franklin Research Ctr comments re 830301 offsite dose calculation manual also encl.

DISTRIBUTION CODE: A009S COPIES RECEIVED: LTR 3 ENCL 40 SIZE: 6+83
 TITLE: OR/Licensing Submittal: Appendix I

NOTES:

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	NRR/DSI/AEB		1	0	NRR/DSI/METB 08		1	1
	NRR/DSI/RAB 10		1	1	<u>REG FILE</u> 04		1	1
	RGN1		1	1				
EXTERNAL:	ACRS	11	6	6	LPDR 03		1	1
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CONFIDENTIAL - SECURITY INFORMATION

DATE	TIME	LOCATION	ACTIVITY	STATUS	REMARKS
10/10/70	1400	Room 3030	Training	Completed	Successful
10/10/70	1500	Room 3030	Training	In Progress	Minor issues
10/10/70	1600	Room 3030	Training	Completed	Excellent
10/10/70	1700	Room 3030	Training	Completed	Good
10/10/70	1800	Room 3030	Training	Completed	Very Good

March 7, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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

Dear Mr. Vassallo:

Niagara Mohawk Power Corporation hereby transmits three (3) originals and forty (40) copies of Niagara Mohawk's Nine Mile Point Unit 1's Offsite Dose Calculation Manual.

The Nine Mile Point Unit 1 Offsite Dose Calculation Manual contained herein pertains to our proposed Radiological Effluent Technical Specification dated February 1, 1984.

Previous discussion with your staff on a draft Offsite Dose Calculation Manual indicated a need for additional information on selected items contained therein. The additional information is in response to Franklin Research Center (FRC) comments regarding Niagara Mohawk's March 1, 1983 Offsite Dose Calculation Manual submittal. Franklin Research Center comments are contained in correspondence to your staff dated April 28, 1983. The additional information is provided in an attachment to this letter.

Sincerely,

NIAGARA MOHAWK POWER CORPORATION



T. E. Lempges
Vice President
Nuclear Generation

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CVM/AMS:djm
Attachment

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THE UNIVERSITY OF CHICAGO
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Franklin Research Center's comments and Niagara Mohawk Power Corporation's response to the draft Offsite Dose Calculation Manual for Nine Mile Point Unit 1 dated March 1, 1984.

1. Franklin Research Center Comment: A 30 day liquid effluent dose projection for the use of the liquid radwaste treatment should be included.

Response:

Prior to any liquid effluent release from the Nine Mile Point Unit 1 Radioactive Waste Treatment System, a determination is made for a dose estimate associated with the liquid effluent release. Since these liquid effluent releases are in batches (see table below) rather than continuous, and since the liquid radwaste system is always in use, a 30 day liquid effluent dose projection for determining the use of the system is not necessary. Therefore, the dose projections will be performed prior to a liquid effluent release.

Batch Liquid Effluent Releases

<u>Time Interval</u>	<u># of Batch Releases</u>
1981 (1st half)	4
1981 (2nd half)	1
1982 (1st half)	0
1982 (2nd half)	2
1983 (1st half)	7
1983 (2nd half)	0

2. Franklin Research Center Comment: Maps indicating environmental monitoring sample locations should be provided.

Response:

Maps indicating environmental monitoring sample locations are included in the Offsite Dose Calculation Manual as Figures 5.1-1 and 5.1-2.

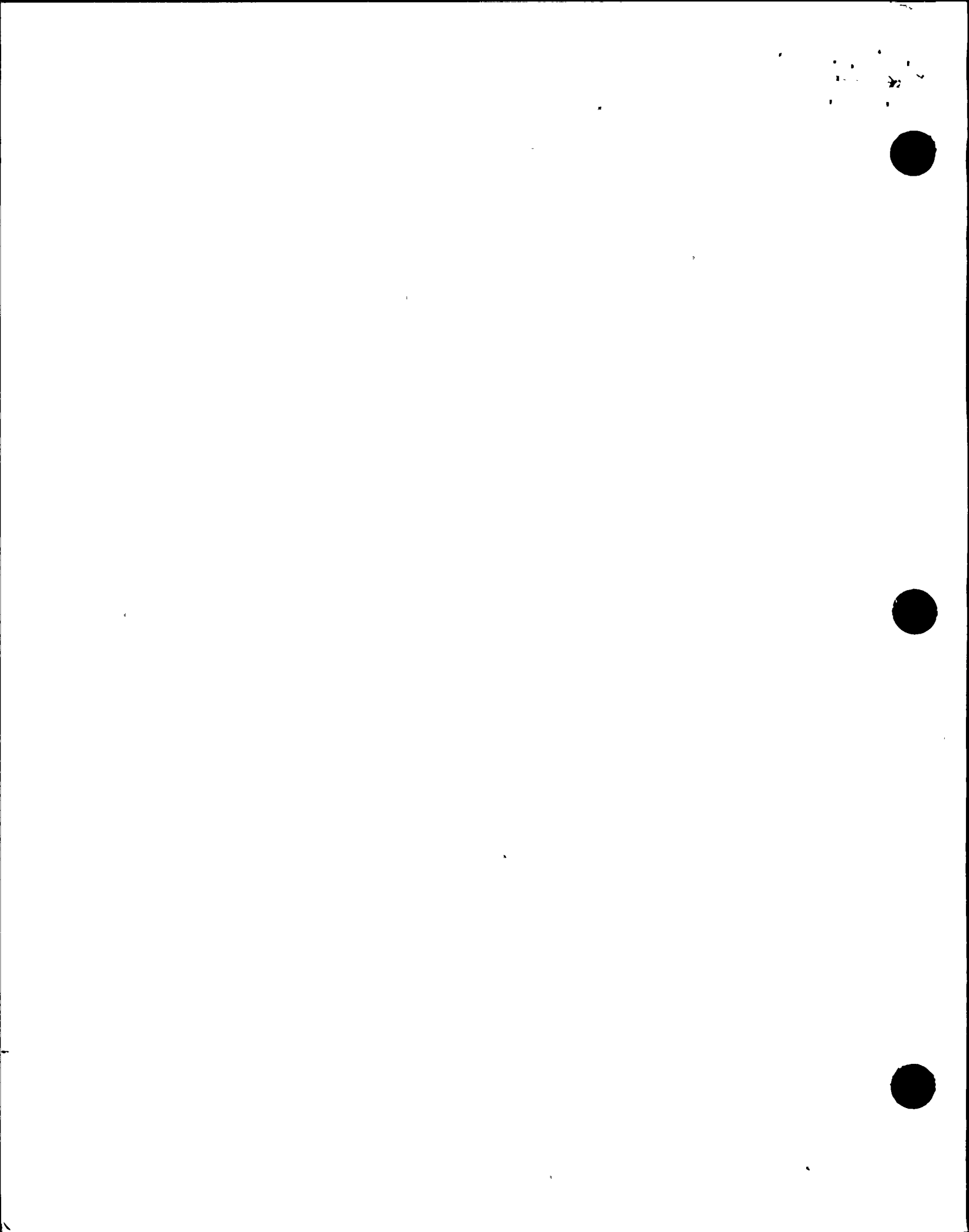
3. Franklin Research Center Comment: Diagrams showing drawings of the liquid and gaseous radwaste treatment systems should be included.

Response:

Several diagrams relating to the Nine Mile Point Unit 1 liquid and gaseous Radioactive Waste Treatment Systems are contained in the Offsite Dose Calculation Manual. These diagrams are contained in Appendix B.

4. Franklin Research Center Comment: The licensee should provide the values of the on site specific parameters used on Page 7 or reference tables in Regulatory Guide 1.109 from which the standard parameters are taken.

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Response:

The parameters used for the liquid effluent dose pathway are identified in Table 2-2 of the manual. This table shows site specific values and reference to Regulatory Guide 1.109 where appropriate.

5. Franklin Research Center Comment: The decay expression should be corrected for a (-) sign.

Response:

The appropriate decay expression in the liquid effluent pathway dose contribution formula has been provided.

6. Franklin Research Center Comment: The licensee should state the bases of the derivation of the projected dose formulas.

Response:

The bases for the derivation calculations used to project doses to an adult whole body and a teen liver are provided in Section 2.2.1 of the manual. As indicated in this section, it has been determined by historical data that greater than 95 percent of the dose to target organs comes from the ingestion of fish. A term of 1.05 is used in the equation as a conservative factor to increase the projected dose from 95 percent to 100 percent.

7. Franklin Research Center Comment: The annual dose objectives used by the licensee are higher than specified by NUREG 0473.

Response:

The annual dose objectives from liquid effluents are consistent with the proposed Radiological Effluent Technical Specifications for Nine Mile Point Unit 1 dated February 1, 1984. These dose objectives are equal to or less than 3.0 mrem and 10 mrem for total body and any organ, respectively.

8. Franklin Research Center Comment: The licensee should show the derivation of the equation for release rate limit for noble gases and demonstrate consistency with Regulatory Guide 1.109.

Response:

The derivation of the equation for the release rate limit for noble gases is provided in the Bases for Gaseous Waste Specifications found in the Nine Mile Point Unit 1 Technical Specification, Appendix B. In an internal U. S. Atomic Energy Commission memorandum dated October 11, 1984, Mr. Victor Benaroya, Chief of the Effluent Treatment System Branch, Directorate of Licensing, presented this derivation to Daniel Muller, Assistant Director for Environmental Projects. Nine Mile Point has used



Response: (cont'd)

this equation since this time. A method for establishing the setpoints for the Nine Mile Point Unit 1 stack monitor is contained in the station procedures

9. Franklin Research Center Comment: The licensee should be specific about radioiodine isotopes, i.e I-131 and I-133. Also, tritium should be included for dose calculations.

Response:

Section 3.2.1.2 of the revised manual indicates that Iodine-131, Iodine-133, tritium and particulates with half lives greater than eight days will be used to determine the appropriate dose rate.

10. Franklin Research Center Comment: The licensee should show the derivation for the average annual release rate of radioiodines and particulates with half lives greater than eight days. Also demonstrate consistency with Regulatory Guide 1.109.

Response:

The derivation of the equation used to determine the average annual release rate of radionuclides, tritium and particulates in Section 3.2.1.2 can be found in the Nine Mile Point Unit 1 Technical Specifications, Appendix B. The Bases for Gaseous Waste Specification in Appendix B states that the dose calculations have been made for the critical sectors and critical pathways for all radionuclides and radioactive material in particulate for with half lives greater than eight days. The calculations take into consideration site meteorology for these releases.

This information is also presented in an internal U.S. Atomic Energy Commission memorandum dated October 11, 1974 by Mr. Victor Benaroya, Chief of the Effluent Treatment Systems Branch, Directorate of Licensing to Mr. Daniel Muller, Assistant Director for Environmental Projects. Nine Mile Point Unit 1 has used this equation for determining the average annual release rate of radioiodines and particulates since that time.

11. Franklin Research Center Comment: Since the licensee has an elevated release from the stack, direct contribution from the elevated plume should be considered.

Response:

The dose determination methods discussed in Section 3.2.2 of the manual use critical receptor doses. In all cases for Nine Mile Point Unit 1, the plume is considered to be on the ground since this would provide the maximum dose to critical receptors. Direct dose contribution from an elevated plume is not considered in the manual since it would not be as conservative as considering the plume to be on the ground. Considering critical receptor submersion in the plume, as is done at Nine Mile Point Unit 1, is in all cases more conservative than simply considering direct dose from an elevate plume.



12. Franklin Research Center Comment: The annual dose objectives from noble gases used by licensee are higher than specified by NUREG 0473.

Response:

Annual dose objectives from noble gases, radioiodines, tritium and particulates effluents are consistent with those values indicated in the proposed Radiological Effluent Technical Specifications for Nine Mile Point Unit 1 dated February 1, 1984 and those specified by NUREG 0473.

13. Franklin Research Center Comment: The licensee should also consider contribution from the elevated plume for air dose at the critical receptor due to noble gas for gamma radiation.

Response:

As indicated in Item No. 8, consideration of gamma dose contribution from an elevated release point is not appropriate since it is not as conservative as the presented methodology used at Nine Mile Point Unit 1 for determining doses due to gaseous effluent releases.

14. Franklin Research Center Comment: The licensee should include Iodine-131 and Iodine-133 in the monthly gaseous dose determinations.

Response:

Section 3.2.2.2 was revised to indicate that dose determinations will include Iodine-131, Iodine-133, tritium and particulates with half lives greater than eight days.

15. Franklin Research Center Comment: The licensee should provide the derivation of the dose factors and the site specific parameters used for the dose factors.

Response:

Appendix A to the revised manual provides information on the dose parameters and derivation of the dose factor for each isotope considering the exposure pathway, age group and target organ in the formula. This formula is to determine dose from radioiodines, tritium and particulates (Section 3.2.2.2 of the manual). The parameters found in Appendix A are taken from NUREG-0133 and Regulatory Guide 1.109, Revision 1.

16. Franklin Research Center Comment: The licensee should show a method to assess direct dose components for evaluating 40CFR190.

Response:

Direct dose components as a result of the reactor, turbine and radwaste buildings and outside radioactive storage tanks may be evaluated by engineering calculations or by evaluating environmental TLD results at critical receptor locations, site boundary or other special interest locations. More information concerning an evaluation of 40CFR190 dose limits appear in the revised Section 4.0 of the manual.

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17. Franklin Research Center Comment: NUREG 0473 specifies 20 percent higher not five times for D/Q values with respect to evaluating new milk sampling locations.

Response:

Section 5.1 of the manual indicates that if a D/Q value at a new milk sampling location is 50 percent greater than the D/Q value at an existing milk sampling location, this new milk sampling location will be added to the environmental sampling location. The 50 percent greater level was agreed to between Niagara Mohawk and NRC staff during a telecon of November 10, 1983 and is reflected in the proposed Radiological Effluent Technical Specifications to Nine Mile Point Unit 1 dated February 1, 1984.

18. Franklin Research Center Comment: X/Q values in Table 3-2 appear to be lower than values used by the Nuclear Regulatory Commission in November 1977.

Response:

The X/Q values indicated in Table 3-2 of the manual have been revised and are based on five years of historical meteorological data. These values are specific to Nine Mile Point Unit 1.

19. Franklin Research Center Comment: Provide appropriate figures to manual.

Response:

Figure 5.1-1 of the proposed Radiological Effluent Technical Specifications provides information on the Nine Mile Point site. Figures 5.1-1 and 5.1-2 of the Manual provide onsite and offsite environmental monitoring locations.

