

Attachment 1

Radioactive Effluent Releases and Supplemental Information

McGUIRE NUCLEAR STATION

EFFLUENT RELEASE DATA

(January 1, 2006 through December 31, 2006)

This attachment includes a summary of the quantities of radioactive liquid and gaseous effluents as outlined in Regulatory Guide 1.21, Appendix B.

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

A. Fission and Activation Gases						
1. Total Release	Ci	7.18E-01	6.67E-01	6.90E-01	4.39E-01	2.51E+00
2. Avg. Release Rate	μCi/sec	9.24E-02	8.48E-02	8.68E-02	5.53E-02	7.97E-02
B. Iodine-131						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Avg. Release Rate	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. Particulates Half Life >= 8 days						
1. Total Release	Ci	2.79E-07	0.00E+00	2.28E-05	2.61E-05	4.92E-05
2. Avg. Release Rate	μCi/sec	3.59E-08	0.00E+00	2.86E-06	3.29E-06	1.56E-06
D. Tritium						
1. Total Release	Ci	6.13E+01	6.23E+01	1.04E+02	1.05E+02	3.33E+02
2. Avg. Release Rate	μCi/sec	7.88E+00	7.92E+00	1.31E+01	1.32E+01	1.06E+01
E. Gross Alpha Radioactivity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Avg. Release Rate	μCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
 PERIOD 1/1/06 TO 1/1/07
 GASEOUS EFFLUENTS - ELEVATED RELEASES - CONTINUOUS MODE

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
** No Nuclide Activities **						
2. Iodines						
** No Nuclide Activities **						
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **						
4. Tritium						
** No Nuclide Activities **						
5. Gross Alpha Radioactivity						
** No Nuclide Activities **						

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS EFFLUENTS - ELEVATED RELEASES - BATCH MODE

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
** No Nuclide Activities **						
2. Iodines						
** No Nuclide Activities **						
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **						
4. Tritium						
** No Nuclide Activities **						
5. Gross Alpha Radioactivity						
** No Nuclide Activities **						

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
 PERIOD 1/1/06 TO 1/1/07
 GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

1. Fission and Activation Gases						
XE-133	Ci	2.74E-02	0.00E+00	0.00E+00	0.00E+00	2.74E-02
XE-133M	Ci	1.03E-03	0.00E+00	0.00E+00	0.00E+00	1.03E-03
XE-135	Ci	4.34E-02	0.00E+00	0.00E+00	0.00E+00	4.34E-02
		-----	-----	-----	-----	-----
Totals for Period...	Ci	7.19E-02	0.00E+00	0.00E+00	0.00E+00	7.19E-02
2. Iodines						
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	3.80E-06	3.80E-06
		-----	-----	-----	-----	-----
Totals for Period...	Ci	0.00E+00	0.00E+00	0.00E+00	3.80E-06	3.80E-06
3. Particulates Half Life >= 8 days						
BE-7	Ci	0.00E+00	0.00E+00	0.00E+00	1.39E-05	1.39E-05
CO-58	Ci	2.79E-07	0.00E+00	2.28E-05	1.14E-05	3.44E-05
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	8.60E-07	8.60E-07
		-----	-----	-----	-----	-----
Totals for Period...	Ci	2.79E-07	0.00E+00	2.28E-05	2.61E-05	4.92E-05
4. Tritium						
H-3	Ci	6.08E+01	6.20E+01	1.03E+02	1.01E+02	3.27E+02
		-----	-----	-----	-----	-----
Totals for Period...	Ci	6.08E+01	6.20E+01	1.03E+02	1.01E+02	3.27E+02
5. Gross Alpha Radioactivity						
** No Nuclide Activities **						

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

1. Fission and Activation Gases						
AR-41	Ci	4.94E-01	5.32E-01	5.37E-01	4.31E-01	1.99E+00
KR-85	Ci	9.22E-02	5.99E-02	8.96E-02	0.00E+00	2.42E-01
XE-133	Ci	5.82E-02	7.25E-02	6.04E-02	7.86E-03	1.99E-01
XE-135	Ci	2.06E-03	1.81E-03	3.16E-03	0.00E+00	7.03E-03
		-----	-----	-----	-----	-----
Totals for Period...	Ci	6.46E-01	6.67E-01	6.90E-01	4.39E-01	2.44E+00
2. Iodines						
** No Nuclide Activities **						
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **						
4. Tritium						
H-3	Ci	4.93E-01	3.42E-01	9.36E-01	4.40E+00	6.17E+00
		-----	-----	-----	-----	-----
Totals for Period...	Ci	4.93E-01	3.42E-01	9.36E-01	4.40E+00	6.17E+00
5. Gross Alpha Radioactivity						
** No Nuclide Activities **						

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

A. Fission and Activation Products						
1. Total Release	Ci	1.12E-02	8.92E-03	1.84E-02	2.22E-02	6.08E-02
2. Average Diluted Concentration						
a. Continuous Releases	μCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Batch Releases	μCi/ml	1.32E-11	8.99E-12	1.95E-11	2.59E-11	1.67E-11
B. Tritium						
1. Total Release	Ci	3.29E+02	5.51E+02	9.61E+02	5.31E+02	2.37E+03
2. Average Diluted Concentration						
a. Continuous Releases	μCi/ml	7.37E-09	2.64E-08	1.10E-07	6.34E-08	4.57E-08
b. Batch Releases	μCi/ml	3.86E-07	5.54E-07	1.02E-06	6.15E-07	6.49E-07
C. Dissolved and Entrained Gases						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Diluted Concentration						
a. Continuous Releases	μCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Batch Releases	μCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Gross Alpha Radioactivity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Diluted Concentration						
a. Continuous Releases	μCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Batch Releases	μCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. Volume of Liquid Waste						
1. Continuous Releases	liters	5.55E+07	4.76E+07	1.80E+08	1.78E+08	4.61E+08
2. Batch Releases	liters	6.66E+05	7.94E+05	1.53E+06	1.59E+06	4.58E+06
F. Volume of Dilution Water						
1. Continuous Releases	liters	5.58E+10	1.88E+10	2.69E+10	4.29E+10	1.44E+11
2. Batch Releases	liters	8.51E+11	9.93E+11	9.43E+11	8.58E+11	3.65E+12

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07

LIQUID EFFLUENTS - CONTINUOUS MODE

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
** No Nuclide Activities **						
2. Tritium						
H-3	Ci	4.12E-01	4.97E-01	2.98E+00	2.73E+00	6.62E+00
Totals for Period...	Ci	4.12E-01	4.97E-01	2.98E+00	2.73E+00	6.62E+00
3. Dissolved and Entrained Gases						
** No Nuclide Activities **						
4. Gross Alpha Radioactivity						
** No Nuclide Activities **						

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID EFFLUENTS - BATCH MODE

McGuire Nuclear Station Units 1 & 2

REPORT FOR 2006	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

1. Fission and Activation Products						
AG-108M	Ci	1.06E-04	2.30E-05	6.62E-05	9.73E-06	2.05E-04
AG-110M	Ci	1.53E-04	2.49E-06	4.64E-05	0.00E+00	2.01E-04
BE-7	Ci	0.00E+00	0.00E+00	1.03E-03	0.00E+00	1.03E-03
CE-144	Ci	0.00E+00	1.34E-05	0.00E+00	0.00E+00	1.34E-05
CO-57	Ci	7.05E-06	3.29E-06	2.99E-06	2.74E-06	1.61E-05
CO-58	Ci	1.44E-03	3.74E-04	1.20E-03	6.61E-03	9.63E-03
CO-60	Ci	6.33E-03	3.09E-03	3.54E-03	6.82E-04	1.37E-02
CR-51	Ci	1.97E-04	1.21E-05	1.51E-04	2.03E-04	5.63E-04
CS-134	Ci	2.24E-04	4.20E-04	6.71E-04	2.07E-03	3.38E-03
CS-137	Ci	6.36E-04	1.10E-03	1.88E-03	5.22E-03	8.83E-03
FE-59	Ci	2.40E-05	1.36E-05	4.41E-05	1.41E-05	9.57E-05
I-131	Ci	0.00E+00	0.00E+00	5.64E-05	0.00E+00	5.64E-05
I-133	Ci	0.00E+00	0.00E+00	4.71E-08	0.00E+00	4.71E-08
MN-54	Ci	5.24E-04	2.27E-04	3.52E-04	2.84E-05	1.13E-03
MN-56	Ci	0.00E+00	5.86E-06	0.00E+00	0.00E+00	5.86E-06
NB-95	Ci	1.09E-04	0.00E+00	1.14E-05	2.26E-06	1.22E-04
NB-97	Ci	4.42E-06	0.00E+00	1.52E-05	0.00E+00	1.96E-05
RU-106	Ci	0.00E+00	0.00E+00	1.94E-05	0.00E+00	1.94E-05
SB-122	Ci	0.00E+00	6.97E-06	9.61E-06	1.93E-05	3.59E-05
SB-124	Ci	0.00E+00	0.00E+00	1.65E-07	4.48E-06	4.65E-06
SB-125	Ci	1.45E-03	3.63E-03	9.33E-03	7.36E-03	2.18E-02
SN-113	Ci	0.00E+00	0.00E+00	5.96E-06	0.00E+00	5.96E-06
SR-92	Ci	2.03E-06	0.00E+00	0.00E+00	0.00E+00	2.03E-06
ZR-95	Ci	2.87E-05	0.00E+00	0.00E+00	0.00E+00	2.87E-05

Totals for Period...	Ci	1.12E-02	8.92E-03	1.84E-02	2.22E-02	6.08E-02
2. Tritium						
H-3	Ci	3.29E+02	5.50E+02	9.58E+02	5.28E+02	2.36E+03

Totals for Period...	Ci	3.29E+02	5.50E+02	9.58E+02	5.28E+02	2.36E+03
3. Dissolved and Entrained Gases						
** No Nuclide Activities **						
4. Gross Alpha Radioactivity						
** No Nuclide Activities **						

McGUIRE NUCLEAR STATION
SUPPLEMENTAL INFORMATION

McGUIRE NUCLEAR STATION

2006 EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION

I. REGULATORY LIMITS - PER UNIT

A. NOBLE GASES - AIR DOSE

1. CALENDAR QUARTER - GAMMA DOSE = 5 MRAD
2. CALENDAR QUARTER - BETA DOSE = 10 MRAD
3. CALENDAR YEAR - GAMMA DOSE = 10 MRAD
4. CALENDAR YEAR - BETA DOSE = 20 MRAD

B. LIQUID EFFLUENTS - DOSE

1. CALENDAR QUARTER - TOTAL BODY DOSE = 1.5 MREM
2. CALENDAR QUARTER - ORGAN DOSE = 5 MREM
3. CALENDAR YEAR - TOTAL BODY DOSE = 3 MREM
4. CALENDAR YEAR - ORGAN DOSE = 10 MREM

C. GASEOUS EFFLUENTS - IODINE - 131 AND 133, TRITIUM, PARTICULATES W/T 1/2 > 8 DAYS - ORGAN DOSE

1. CALENDAR QUARTER = 7.5 MREM
2. CALENDAR YEAR = 15 MREM

II. MAXIMUM PERMISSIBLE EFFLUENT CONCENTRATIONS

A. GASEOUS EFFLUENTS - INFORMATION FOUND IN OFFSITE DOSE CALCULATION MANUAL

B. LIQUID EFFLUENTS - INFORMATION FOUND IN 10CFR20, APPENDIX B, TABLE 2, COLUMN 2

III. AVERAGE ENERGY - NOT APPLICABLE

IV. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

ANALYSES OF SPECIFIC RADIONUCLIDES IN SELECTED OR COMPOSITED SAMPLES AS DESCRIBED IN THE SELECTED LICENSEE COMMITMENTS ARE USED TO DETERMINE THE RADIONUCLIDE COMPOSITION OF THE EFFLUENT. SUPPLEMENTAL REPORT, PAGE 2, PROVIDES A SUMMARY DESCRIPTION OF THE METHOD USED FOR ESTIMATING OVERALL ERRORS ASSOCIATED WITH RADIOACTIVITY MEASUREMENTS.

V. BATCH RELEASES

A. LIQUID EFFLUENT

1. $2.44\text{E}+02$ = TOTAL NUMBER OF BATCH RELEASES
2. $1.84\text{E}+04$ = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. $2.11\text{E}+02$ = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. $7.56\text{E}+01$ = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. $6.00\text{E}+00$ = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.
6. $1.83\text{E}+06$ = AVERAGE DILUTION WATER FLOW DURING RELEASES (GPM).

B. GASEOUS EFFLUENT

1. $3.70\text{E}+01$ = TOTAL NUMBER OF BATCH RELEASES.
2. $9.54\text{E}+05$ = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. $4.49\text{E}+04$ = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. $2.58\text{E}+04$ = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. $2.38\text{E}+02$ = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.

VI. ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES = 0
2. TOTAL ACTIVITY RELEASED (CURIES) = 0

B. GASEOUS

1. NUMBER OF RELEASES = 1
2. TOTAL ACTIVITY RELEASED (CURIES) = $7.19\text{E}-2$ (see attachment for additional information)

SUPPLEMENTAL REPORT PAGE 2

McGUIRE NUCLEAR STATION

The estimated percentage of error for both Liquid and Gaseous effluent release data at McGuire Nuclear Station has been determined to be $\pm 25.2\%$. This value was derived by taking the square root of the sum of the squares of the following discrete individual estimates of error:

- (1) Flow rate determining devices = $\pm 20\%$
- (2) Counting error = $\pm 15\%$
- (3) Sample preparation error = $\pm 3\%$

McGUIRE NUCLEAR STATION

Assessment of Radiation Dose from Radioactive Effluents and all Uranium Fuel Cycle Sources to Members of the Public

(January 1, 2006 through December 31, 2006)

This attachment includes an assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of this report, as well as the total dose for the calendar year. This attachment also includes an assessment of radiation doses to the maximum exposed member of the public from all uranium fuel cycle sources within 10 miles of McGuire for the calendar year of this report to show conformance with 40 CFR 190. Methods for calculating the dose contribution from liquid and gaseous effluents are given in the ODCM.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

1st Quarter 2006

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS===== Quarter 1 2006 ===

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	TEEN	LUNG	7.28E-02	1.50E+01	4.85E-01

Maximum Organ Dose Receptor Location: 0.5 Mile ENE
Critical Pathway: Inhalation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS===== Quarter 1 2006 ===

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q1 - Maximum Gamma Air Dose	1.14E-02	1.00E+01	1.14E-01

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.75E+01

Q1 - Maximum Beta Air Dose	4.83E-03	2.00E+01	2.42E-02
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Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	8.09E+01
KR-85	8.98E+00
XE-135	5.59E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

2nd Quarter 2006

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS===== Quarter 2 2006 ===

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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Q2 - Maximum Organ Dose	TEEN	LIVER	7.40E-02	1.50E+01	4.93E-01
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Maximum Organ Dose Receptor Location: 0.5 Mile ENE
Critical Pathway: Inhalation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS===== Quarter 2 2006 ===

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
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Q2 - Maximum Gamma Air Dose	1.20E-02	1.00E+01	1.20E-01
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Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.94E+01

Q2 - Maximum Beta Air Dose	4.69E-03	2.00E+01	2.34E-02
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Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	8.98E+01
KR-85	6.02E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

3rd Quarter 2006

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS===== Quarter 3 2006 ===

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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Q3 - Maximum Organ Dose	TEEN	LUNG	1.24E-01	1.50E+01	8.25E-01
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Maximum Organ Dose Receptor Location: 0.5 Mile ENE
Critical Pathway: Inhalation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS===== Quarter 3 2006 ===

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q3 - Maximum Gamma Air Dose	1.21E-02	1.00E+01	1.21E-01

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.94E+01

Q3 - Maximum Beta Air Dose		4.84E-03	2.00E+01	2.42E-02
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Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	8.77E+01
KR-85	8.71E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

4th Quarter 2006

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS===== Quarter 4 2006 ====

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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Q4 - Maximum Organ Dose	TEEN	LUNG	1.25E-01	1.50E+01	8.32E-01
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Maximum Organ Dose Receptor Location: 0.5 Mile ENE
Critical Pathway: Inhalation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS===== Quarter 4 2006 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
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Q4 - Maximum Gamma Air Dose	9.69E-03	1.00E+01	9.69E-02
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Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.99E+01

Q4 - Maximum Beta Air Dose	3.43E-03	2.00E+01	1.72E-02
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Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.94E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
GASEOUS ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

ANNUAL 2006

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS===== Annual 2006 =====

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	TEEN	LUNG	3.95E-01	3.00E+01	1.32E+00

Maximum Organ Dose Receptor Location: 0.5 Mile ENE
Critical Pathway: Inhalation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
---------	------------

H-3	1.00E+02
-----	----------

=== NOBLE GAS DOSE LIMIT ANALYSIS===== Annual 2006 =====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Yr - Maximum Gamma Air Dose	4.52E-02	2.00E+01	2.26E-01

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
---------	------------

AR-41	9.90E+01
-------	----------

Yr - Maximum Beta Air Dose	1.78E-02	4.00E+01	4.45E-02
----------------------------	----------	----------	----------

Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
---------	------------

AR-41	8.87E+01
-------	----------

KR-85	6.39E+00
-------	----------

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

1st Quarter 2006

=== BATCH LIQUID RELEASES ===				Quarter 1 2006 =====	
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
-----	-----	-----	-----	-----	-----
Q1 - Maximum Organ Dose	CHILD	LIVER	4.47E-02	1.00E+01	4.47E-01
Q1 - Total Body Dose	CHILD		4.08E-02	3.00E+00	1.36E+00

Maximum Organ

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----

H-3	8.91E+01
-----	----------

CS-137	7.37E+00
--------	----------

Total Body

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----

H-3	9.76E+01
-----	----------

=== CONTINUOUS LIQUID RELEASES (WC) ===				Quarter 1 2006 =====	
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
-----	-----	-----	-----	-----	-----
Q1 - Maximum Organ Dose	CHILD	LIVER	7.61E-04	1.00E+01	7.61E-03
Q1 - Total Body Dose	CHILD		7.61E-04	3.00E+00	2.54E-02

Maximum Organ

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----

H-3	1.00E+02
-----	----------

Total Body

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----

H-3	1.00E+02
-----	----------

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

2nd Quarter 2006

=== BATCH LIQUID RELEASES ===				Quarter 2 2006 =====	
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	LIVER	6.51E-02	1.00E+01	6.51E-01
Q2 - Total Body Dose	CHILD		5.91E-02	3.00E+00	1.97E+00

Maximum Organ
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	8.88E+01
CS-137	7.60E+00

Total Body
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	9.78E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===				Quarter 2 2006 =====	
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	LIVER	2.75E-03	1.00E+01	2.75E-02
Q2 - Total Body Dose	CHILD		2.75E-03	3.00E+00	9.17E-02

Maximum Organ
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

Total Body
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

3rd Quarter 2006

=== BATCH LIQUID RELEASES ===				Quarter 3 2006 =====	
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
-----	-----	-----	-----	-----	-----
Q3 - Maximum Organ Dose	CHILD	LIVER	1.20E-01	1.00E+01	1.20E+00
Q3 - Total Body Dose	CHILD		1.09E-01	3.00E+00	3.65E+00

Maximum Organ
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	8.92E+01
CS-137	7.47E+00

Total Body
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	9.79E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===				Quarter 3 2006 =====	
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
-----	-----	-----	-----	-----	-----
Q3 - Maximum Organ Dose	CHILD	LIVER	1.16E-02	1.00E+01	1.16E-01
Q3 - Total Body Dose	CHILD		1.16E-02	3.00E+00	3.87E-01

Maximum Organ
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	1.00E+02

Total Body
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	1.00E+02

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

4th Quarter 2006

=== BATCH LIQUID RELEASES ===			Quarter 4 2006 =====		
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
-----	-----	-----	-----	-----	-----
Q4 - Maximum Organ Dose	CHILD	LIVER	1.06E-01	1.00E+01	1.06E+00
Q4 - Total Body Dose	ADULT		8.00E-02	3.00E+00	2.67E+00

Maximum Organ

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	6.14E+01
CS-137	2.59E+01
CS-134	1.26E+01

Total Body

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	6.09E+01
CS-137	2.34E+01
CS-134	1.57E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===			Quarter 4 2006 =====		
Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
-----	-----	-----	-----	-----	-----
Q4 - Maximum Organ Dose	CHILD	LIVER	6.69E-03	1.00E+01	6.69E-02
Q4 - Total Body Dose	CHILD		6.69E-03	3.00E+00	2.23E-01

Maximum Organ

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	1.00E+02

Total Body

Critical Pathway: Potable Water

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
-----	-----
H-3	1.00E+02

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/06 TO 1/1/07
LIQUID ANNUAL DOSE SUMMARY REPORT

McGuire Nuclear Station Units 1 & 2

ANNUAL 2006

```

=== BATCH LIQUID RELEASES === Annual 2006 =====
Period-Limit      Critical  Critical  Dose      Limit      Max % of
                   Age       Organ    (mrem)    (mrem)     Limit
-----
Yr - Maximum Organ Dose  CHILD    LIVER    3.36E-01  2.00E+01  1.68E+00
Yr - Total Body Dose    CHILD                    2.83E-01  6.00E+00  4.71E+00
  
```

Maximum Organ
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	8.09E+01
CS-137	1.29E+01
CS-134	6.08E+00

Total Body
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	9.60E+01

```

=== CONTINUOUS LIQUID RELEASES (WC) === Annual 2006 =====
Period-Limit      Critical  Critical  Dose      Limit      Max % of
                   Age       Organ    (mrem)    (mrem)     Limit
-----
Yr - Maximum Organ Dose  CHILD    LIVER    1.91E-02  2.00E+01  9.57E-02
Yr - Total Body Dose    CHILD                    1.91E-02  6.00E+00  3.19E-01
  
```

Maximum Organ
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

Total Body
Critical Pathway: Potable Water
Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

Attachment 2

Solid Waste Disposal Report

**MCGUIRE NUCLEAR SITE
SUMMARY OF MAJOR RADIONUCLIDE COMPOSITION
2006**

Type of waste	Nuclide	% Abundance
---------------	---------	-------------

1. Waste from liquid systems:

A. Dewatered Powdex Resin (brokered) No shipments in 2006

B. Dewatered Powdex Resin No shipments in 2006

C. Dewatered Bead Resin (brokered) No shipments in 2006

D. Dewatered Bead Resin No shipments in 2006

E. Dewatered Radwaste System Resin (brokered)

2006-32

<u>Nuclide</u>	<u>%Abundance</u>
Co-60	2.19
Cs-137	19.30
Fe-55	5.15
Ni-63	73.26
Sb-125	0.01
Mn-54	0.08
Co-57	0.01

F. Dewatered Primary Bead Resin (brokered)

2006-01

<u>Nuclide</u>	<u>%Abundance</u>
Mn-54	0.41
Co-57	0.04
Co-60	17.80
Cs-137	6.93
Cs-134	0.09
Ni-63	56.34
Fe-55	18.02
Sb-125	0.22
H-3	0.06
Sr-90	0.09

2006-05

<u>Nuclide</u>	<u>%Abundance</u>
Mn-54	1.69
Co-57	0.27
Co-58	0.39
Co-60	17.41
Cs-137	6.19
Cs-134	1.16
Ni-63	55.12
Fe-55	17.54
Zn-65	0.08
H-3	0.05
Sr-90	0.08

G. Dewatered Mechanical Filter Media

No shipments in 2006

H. Dewatered Mechanical Filter Media
(brokered)

No shipments in 2006

I. Solidified Waste

No shipments in 2006

2. Dry Solid Waste

A. Dry Active Waste (compacted)

Compaction no longer performed on-site.

Dry Active Waste (non-compacted)

2006-14 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.15
Co-58	6.85
Co-60	24.04
Cs-137	1.28
Fe-55	44.47
Ni-63	17.37
C-14	2.28
Zr-95	0.43
Sb-95	0.77
Sr-90	0.18
Nb-95	1.12

Dry Active Waste (brokered/compacted)

No shipments in 2006

Dry Active Waste (brokered/non-compacted)

2006-02 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Cr-51	3.16
Mn-54	0.58
Co-58	16.57
Co-60	3.07
Cs-137	0.63
Fe-55	12.68
Ni-63	6.09
H-3	55.73
Zr-95	0.63
Nb-95	0.85

2006-06 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.14
Co-58	6.28
Co-60	24.30
Cs-137	1.29
Fe-55	44.75
Ni-63	17.58
C-14	2.32
Zr-95	0.39
Sb-125	0.77
Sr-90	0.18
Nb-95	0.93

2006-07 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.16
Co-58	7.33
Co-60	23.79
Cs-137	1.27
Fe-55	44.29
Ni-63	17.15
C-14	2.26
Zr-95	0.46
Sb-125	0.76
Sr-90	0.18
Nb-95	1.29

2006-09 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.15
Co-58	7.15
Co-60	23.88
Cs-137	1.27
Ni-63	17.29
Fe-55	44.30
Zr-95	0.45
C-14	2.27
Sb-125	0.76
Sr-90	0.18
Nb-95	1.23

2006-11 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.16
Co-58	7.21
Co-60	23.92
Cs-137	1.27
Fe-55	44.30
Ni-63	17.18
C-14	2.26
Zr-95	0.45
Sb-125	0.76
Sr-90	0.18
Nb-95	1.25

2006-16 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.16
Co-58	7.33
Co-60	23.88
Cs-137	1.27
Fe-55	44.23
Ni-63	17.12
C-14	2.26
Zr-95	0.46
Sb-125	0.76
Sr-90	0.18
Nb-95	1.29

2006-17 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.15
Co-58	6.84
Co-60	24.07
Cs-137	1.27
Fe-55	44.48
Ni-63	17.34
C-14	2.29
Zr-95	0.43
Sb-125	0.76
Sr-90	0.18
Nb-95	1.12

2006-20 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.15
Co-58	6.79
Co-60	24.05
Cs-137	1.28
Fe-55	44.51
Ni-63	17.38
C-14	2.30
Zr-95	0.42
Sb-125	0.77
Sr-90	0.18
Nb-95	1.10

2006-23 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.16
Co-58	7.26
Co-60	23.85
Cs-137	1.27
Fe-55	44.27
Ni-63	17.19
C-14	2.26
Zr-95	0.46
Sb-125	0.76
Sr-90	0.18
Nb-95	1.27

2006-27 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.15
Co-58	7.07
Co-60	23.96
Cs-137	1.27
Fe-55	44.33
Ni-63	17.29
C-14	2.28
Zr-95	0.44
Sb-125	0.76
Sr-90	0.18
Nb-95	1.20

2006-31 DAW

<u>Nuclide</u>	<u>%Abundance</u>
Co-57	0.06
Mn-54	1.14
Co-58	6.12
Co-60	23.37
Cs-137	1.30
Fe-55	44.81
Ni-63	17.67
C-14	2.32
Zr-95	0.38
Sb-125	0.77
Sr-90	0.18
Nb-95	0.88

B. Sealed Sources

No shipments in 2006

C. Sealed Sources/Smoke Detectors

No shipments in 2006

D. Irradiated Components

No shipments in 2006

REPORT PERIOD
JANUARY - DECEMBER 2006

McGUIRE NUCLEAR STATION
SOLID RADIOACTIVE WASTE SHIPPED TO DISPOSAL FACILITIES

Attachment 1

TYPES OF WASTES SHIPPED Waste from Liquid Systems	Number of Shipments	Number of Containers	Container Type	Disposal ft ³	Volume m ³	Waste Class	Total Curies
(A) dewatered powdex resin (brokered)	none						
(B) dewatered powdex resin	none						
(C) dewatered bead resin (brokered)	none						
(D) dewatered bead resin	none						
(E) dewatered radwaste system resin	1	1	HIC	195	5.52	B	1.24E+01
(F) dewatered primary bead resin	2	2	HIC	240.6	6.86	B	1.71E+02
(G) dewatered mechanical filter media	none						
(H) dewatered mechanical filter media (brokered)	none						
(I) solidified waste	none						
Dry Solid Waste							
(A) dry active waste (compacted)	none						
dry active waste (non-compacted)	1	1	DBP	1350	38.23	A/U	5.00E-03
dry active waste (brokered/compacted)							
dry active waste (brokered/non-compacted)	11	50	DBP	4596.35	130.17	A/U	1.286E+00
(B) sealed sources/smoke detectors	none						
(C) sealed sources	none						
(D) irradiated components	none						
Totals	15	54		6381.95	180.78		1.847E+02

3/19/2007

Attachment 3

Unplanned Offsite Releases

McGUIRE NUCLEAR STATION

UNPLANNED RELEASES

(January 1, 2006 through December 31, 2006)

There was one unplanned gaseous radioactive release to the environment in 2006. There were no unplanned liquid radioactive effluent releases to the environment in 2006.

February 3, 2006

Memorandum To: Annual Radioactive Effluent Release Report

CC: Steve Mooneyhan, H. J. Sloan, Joyce Correll, C.D. Ingram, Jim Kammer, Kay Crane

From: William C. Spencer
RP Staff
Radiation Protection
McGuire Nuclear Station

Re: Unplanned release to the Unit 2 Vent Reference PIP M-06-0404

Event Summary: See referenced PIP for details.

On January 28, 2006 12:20 to 14:30 hours, $7.19\text{E-}2$ curies of fission and activation gas (noble gas) was released to the unit 2 vent. The source of the noble gas was associated with an unplanned release of ~250 gallons of primary system water. The water was contained in the floor drain system and collected in the floor drain tank (FDT). No normally clean areas were contaminated because of this spill.

The leak was believed to have emanated from a component associated with the normal operation of aligning the 2A NV mixed bed demineralizer for B10 saturation. A portion of normal letdown is diverted to the recycle holdup tank (RHT). This NV letdown divert to the (RHT) involves valves and components of the Boron Recycle (NB) system.

Sequence of events:

On 1/28/06 11:36 hrs. 2A mixed bed demin was aligned for boron saturation.

12:20 Counts per minute (cpm) above background were seen in the unit vent.

12:40 Trip 2 on 1EMF 41 (auxiliary building ventilation monitor) point 11 (NB components area).

Highest cpm seen (25 cpm above bkg) on unit vent gas monitor (2EMF 36L).

Auxiliary building ventilation automatically placed in filtered mode.

12:46 Mixed bed 2 A removed from service.

13:15 1EMF 41 trip 2 cleared.

13:40 1EMF 41 trip 1 cleared.

14:30 2EMF36L (unit vent gas monitor) returned to normal bkg.

Monitoring 1EMF 41 (auxiliary building ventilation monitor) and 2EMF 36L (Unit Vent gas monitor) indicated elevated counts of 270 cpm above bkg on 1EMF41 and counts ranging up to 25 cpm above background on 2EMF 36L for approximately 130 minutes. No personnel were exposed to the undiluted release.

SRPMP 8-2 "Investigation of Unusual Radiological Occurrences" was completed to document the Unplanned Release. See attached completed procedure.

The total Noble gas activity released was reported on (GWR) Gaseous Waste Release # 2006007.

The unplanned activity was evaluated against off site dose limits using current ODCM methodology on the attached spreadsheet.

Safety Significance:

The health and safety of the public were not compromised by this event. The total activity released was insignificant. Calculated dose and dose rate to the Total Body, Skin, Gamma Air, and Beta Air were all less than two tenths of one percent ($<0.2\%$) of the limits specified by Selected Licensee Commitments and Code of Federal Regulations.

W C Spencer

W.C. Spencer
RP Staff Support
Radiation Protection
McGuire Nuclear Station

Joyce C. Correll

Joyce Correll
General Supervisor
Radiation Protection
McGuire Nuclear Station

Attachment 4

Fuel Cycle Calculation

**McGuire Nuclear Station
2006 Radioactive Effluent Releases
40CFR190 Uranium Fuel Cycle Dose Calculation Results**

In accordance with the requirements of 40CFR190, the annual dose commitment to any member of the general public shall be calculated to assure that doses are limited to 25 millirems to the total body or any organ with the exception of the thyroid which is limited to 75 millirems. The fuel cycle dose assessment for McGuire Nuclear Station only includes liquid and gaseous effluent dose contributions from McGuire and direct and air-scatter dose from McGuire's onsite Independent Spent Fuel Storage Installation (ISFSI) since no other uranium fuel cycle facility contributes significantly to McGuire's maximum exposed individual. The combined dose to a maximum exposed individual from McGuire's effluent releases and direct and air-scatter dose from McGuire's ISFSI is well below 40CFR190 limits as shown by the following summary:

I. 2006 McGuire 40CFR190 Effluent Dose Summary

The 40CFR190 effluent dose analysis to the maximum exposed individual from liquid and gas releases includes the dose from noble gases (i.e., total body and skin).

Maximum Total Body Dose = 6.61E-01 mrem

Maximum Location: 0.5 Mile, East-Northeast Sector
Critical Age: Adult
Gas non-NG Contribution: 59%
Gas NG Contribution: 3%
Liquid Contribution: 38%

Maximum Organ (other than TB) Dose = 6.84E-01 mrem

Maximum Location: 0.5 Mile, East-Northeast Sector
Critical Age: Child
Critical Organ: Liver
Gas Contribution: 51%
Liquid Contribution: 49%

II. 2006 McGuire 40CFR190 ISFSI Dose Summary

Direct and air-scatter radiation dose contributions from the onsite Independent Spent Fuel Storage Installation (ISFSI) at McGuire have been calculated and documented in the "McGuire Nuclear Site 10CFR72.212 Written Evaluations" report. The maximum dose rate to the nearest resident from the McGuire ISFSI is conservatively calculated to be 9.92 mrem/year.

The attached excerpt from the "McGuire Nuclear Site 10CFR72.212 Written Evaluations" report is provided to document the method used to calculate the McGuire ISFSI 9.92 mrem/year dose estimate.

C. 10CFR72.212(b)(2)(iii)- Requirements of 72.104

Criterion

"...the requirements of 72.104 have been met."

Evaluation

Historical TLD Monitoring

The following table documents the actual radiological dose in rems at the owner controlled fence on top of the berm overlooking the ISFSI (Lotus Notes from Mary J. Foreman to Norman T. Simms, dated June 15, 2004). Actual dose to the public from the ISFSI is only available at this owner controlled fence. Therefore, a normalization factor is derived by comparing the actual dose to the calculated dose. The normalization factor is applied to the calculated values for the intake waterway and the exclusion area boundary to approximate the actual dose values from the ISFSI in those areas around the plant.

Location#	3Q '02	4Q '02	1Q '03	2Q '03	3Q '03	4Q '03	1Q '04
76	0.032	0.036	0.042	0.055	0.056	0.043	0.058
77	0.020	0.028	0.028	0.039	0.036	0.035	0.043
# of Days	91	92	91	92	98	83	98

Location # 76 indicates the greatest dose of 0.058 rems during a 98 day period in the first quarter of 2004. This is equivalent to 0.0247 mrem per hour for a total population of ten TN-32 casks. The calculated dose for this same location using conservative computer models is 0.744 mrem per hour. A normalization value is derived by dividing the actual dose by the calculated dose, which is $0.0247/0.744 = 0.0332$. (A recent Lotus Notes from Mary J. Foreman to N.T. Simms, dated April 24, 2006 indicates that the dose at Location # 76 is 0.044 rems for a period of 89 days during the 1Q '06. Ten TN-32 casks and nine NAC UMS casks were on the ISFSI pad, but for simplicity and conservatism the 1Q '04 value will continue to be used. Please note that the normalization factor will only be used for the TN-32 casks).

ISFSI Controlled Area Boundary (ISFSI and Site Operations)

It is stipulated in 10CFR72.104(a) that the annual dose equivalent to any real individual who is located beyond the controlled area of the ISFSI (as defined in 10CFR 72.3) must not exceed 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any critical organ during normal operations and anticipated occurrences.³ This dose equivalent must include contributions from

³ For McGuire, compliance with this regulation will also assure compliance with 40 CFR Part 190.

planned releases to the environment, direct radiation from ISFSI operations, and any other radiation from uranium fuel cycle operations within the region.

The combined and skyshine dose rates at various distances for one cask stored with 7 year cooled fuel (inner) and 10 year cooled fuel (outer) were analyzed by Transnuclear.⁴ The best-fit empirical equation for skyshine dose rate as a function of distance is $y = 0.0156e^{-0.0112x}$ for gammas and $y = 0.0274e^{-0.0129x}$ for neutrons, where y is dose rate (mrem/hr) and x is distance (meters), applicable from 20 to 1000 meters. Likewise, the best-fit empirical equation for total dose rate (direct and skyshine) as a function of distance is $y = 492.69x^{-2.1688}$ for gammas and $y = 166.95x^{-2.0696}$ for neutrons, where y is dose rate (mrem/hr) and x is distance (meters), applicable from 20 to 80 meters. Based upon conservative engineering judgement, the McGuire power generation contribution at the Exclusion Area Boundary (EAB) is determined to be 3 mrem per year. The 3 mrem per year is independent of the ISFSI.

The combined and skyshine dose rates at various distances for a 2x6 cask array with 5 year cooled fuel were analyzed by NAC.⁵ Skyshine dose rates are located in Table 6-4 on page 12 and combined dose rates are located in Table 6-6 on page 14. Both tables account for the effects of both gammas and neutrons.

The controlled area of the MNS ISFSI is defined to be coextensive with the McGuire Nuclear Site EAB. The annual dose for a maximally exposed individual at this boundary must be below 25 mrem in accordance with 10CFR72.104 (cited above). For a conservative estimate, the individual is assumed to have a 100% occupancy time (8750 hours per year) at the boundary. The individual is also considered to be occupying the point on the EAB closest to the ISFSI, which would be just south of the Cowans Ford Dam close to the river. This point on the EAB is determined to be 425 meters from the ISFSI and the calculated dose only considers skyshine radiation. Direct radiation from the casks is shielded by the ground due to the significant drop in elevation from the ISFSI to the river. The combination of calculated and actual dose to an individual due to the ISFSI is determined to be 9.9 mrem and the dose due to McGuire power generation is 3 mrem per year for a total dose of 12.9 mrem per year. Therefore, the ISFSI controlled area boundary radiation limits are met for the McGuire ISFSI.

The selection of an individual on the EAB south of the dam is totally arbitrary in order to choose the closest point on the EAB to the ISFSI. This location is owned by Duke Energy and no member of the public would be permitted to occupy this location continuously. The regulations speak of the "real individual" when

⁴ TN Calc 1083-20, "TN-32 Cask for Duke Power, TN-32 MCMP Models for Determining Off-Site Doses," Rev. 0, dated 4/06/2000.

⁵ NAC Calc 12418-5001, "Skyshine Evaluation of McGuire ISFSI," Rev.0, dated 11/26/03.

addressing radiation exposure. Factually, this "real individual" is located beyond the EAB on the eastern side of the plant.

General Environment from Total Nuclear Fuel Cycle (ISFSI and Site Operations)

40CFR190 applies to radiation doses received by members of the public in the general environment and to radioactive materials introduced to the general environment as the result of all operations which are part of the Nuclear Fuel Cycle. The McGuire ISFSI is located in the immediate proximity of McGuire Nuclear Station and as such compliance with 40CFR190 must be demonstrated.

The McGuire UFSAR (Section 2.1.2.2, "Boundaries for Establishing Effluent Release Limits") and Selected Licensee Commitments Manual (Section 16.11, "Radiological Effluents Control") defines "unrestricted areas" to be coextensive with the EAB and beyond. Likewise, "general environment" is defined to be coextensive with the EAB and beyond.

It is stipulated in 40CFR190.10(a) that the annual dose equivalent shall not exceed 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ of any member of the public as a result of exposures to planned discharges of radioactive materials, radon and its daughters excepted, to the general environment from uranium fuel cycle operations and to radiation from these operations. As illustrated previously in showing compliance with 10CFR 72.104(a), the calculated dose at the EAB is 12.9 mrem per year, within the 25 mrem allowable limit. The summation of the doses from the ISFSI and McGuire power generation to the General Environment are well within the allowable limits.

Dose Inside ISFSI Controlled Area (ISFSI Operations)

Regulations permit the controlled area to be traversed by public roads and waterways as cited in 10CFR72.106(c). Since the public is permitted access into the controlled area at McGuire, the dose rate must be below 2 mrem per hour and the annual dose must be below 100 mrem within the controlled area.⁶

A member of the public is postulated to be located between the owner controlled fence and the EAB at a point close to the security buoys near the intake structure of the nuclear station, the closest approach for such an individual to the ISFSI. This area is accessible as shoreline covered with large stones for erosion control and is not a location where individual members of the public would typically be found. Regulatory Guide 1.109, "Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," provides a recommended value of 67 hours per year of "shoreline recreation" for the maximum exposed individual in the vicinity of a nuclear station. Although the shoreline area near McGuire is not recreational in nature, use of this value as an occupancy factor would be conservative. For

⁶ 10CFR20.1301(b). See also 10CFR20.1301(a)(2).

additional conservatism the residence time was more than doubled to 150 hours and utilized in the dose calculations for an individual in the vicinity of the McGuire intake structure close to the ISFSI.

The maximum dose rate at the owner controlled fence closest to the ISFSI was determined to be 0.28 mrem per hour (direct radiation and skyshine), within the 2 mrem per hour allowable limit. Finally, the annual dose resulting from ISFSI to the public inside the McGuire EAB in the vicinity of the intake structure, using a residence time of 150 hours, is determined to be 5.79 mrem (skyshine only - earthen berm acts as a shield), within the 100 mrem allowable limit.

These calculations show that the McGuire ISFSI containing ten TN-32A casks and 24 NAC UMS casks meets the radiological requirements of 10CFR72.104, 10CFR20.1301 and 40CFR190.

Tabulations

Normalization Factor (NF)

TN-32A Casks

Actual radiological dose at the owner controlled fence divided by the calculated dose.

Actual dose =

$$(0.058 \text{ rem} \times 1000 \text{ mrem/rem}) / (98 \text{ days} \times 24 \text{ hrs/day}) = 0.0247 \text{ mrem/hr}$$

Calculated dose = 0.744 mrem/hr

(see "top of berm at owner controlled fence" below)

$$NF = 0.0247 / 0.744 = 0.0332$$

Due to the amount of conservatisms utilized in the computer models, the actual measured dose at the owner controlled fence is only 3% of the calculated values. Since historical TLD measurements are not available for the waterway and exclusion area boundary, the NF and calculated values are used to approximate the actual dose from the TN-32 casks for those two areas.

Top of berm at owner controlled fence - 70 meters from ISFSI

TN-32A casks

Using the previous equations for total dose and a distance of 70 meters the total dose rate (gammas and neutrons) for one cask is $7.443 \text{ E}^{-02} \text{ mrem/hr}$.

$$(10) \text{ Casks} \times 7.443 \text{ E}^{-02} \text{ mrem/hr} = 0.744 \text{ mrem per hour}$$

Actual measured dose rate for the first ten casks stored in the ISFSI = 0.0247 mrem per hour

NAC - UMS Casks

Using the calculated value from the NAC evaluation located in Table 6-6, "2x6 Cask Array Combined Dose Rates", the total dose rate (gammas and neutrons) at a distance of 70 meters is 1125.6 mrem/yr. This equates to :

$$(1125.6 \text{ mrem/yr}) / (8760 \text{ hours per yr}) = 0.128 \text{ mrem per hour}$$

Total Expected Dose Rate at Owner Controlled Fence at Top of Berm

Ten TN-32A Casks (actual) plus (2X) 2X6 Array NAC UMS Casks (calculated)

$$0.0247 \text{ mrem per hr} + 2(0.128) \text{ mrem per hr} = 0.2807 \text{ mrem per hr}$$

Waterway beyond security buoys on other side of berm from ISFSI - 135 meters from ISFSI

TN-32A Casks

Using the previous equations for skyshine and a distance of 135 meters the skyshine dose (gammas and neutrons) for one cask is $8.24 \text{ E}^{-03} \text{ mrem/hr}$.

$$(10) \text{ Casks} \times 8.24 \text{ E}^{-03} \text{ mrem/hr} \times 150 \text{ hrs (residence time/yr)} = 12.36 \text{ mrem per year}$$

$$\text{Normalized actual dose} = 0.0332 \times 12.36 \text{ mrem/yr} = 0.410 \text{ mrem per year}$$

Total expected dose for ten TN-32A casks (actual)
0.410 mrem per year

NAC-UMS Casks

Using the calculated value from the NAC evaluation located in Table 6-4, "2x6 Cask Array Scattered Dose Rates", the total dose rate (gammas and neutrons) at a distance of 135 meters is 157.3 mrem/yr. For a residence time of 150 hours this equates to :

$$(157.3 \text{ mrem/yr}) / (8760 \text{ hrs/yr}) \times 150 \text{ hrs (residence time/yr)} = 2.69 \text{ mrems / yr}$$

Total Expected Dose at Waterway on Other Side of Berm

Ten TN-32A Casks (actual) plus (2X) 2X6 Array NAC UMS Casks (calculated)

$$0.410 \text{ mrem per year} + 2(2.69) \text{ mrem per year} = 5.79 \text{ mrem per year}$$

Individual Sited on Exclusion Area Boundary Below Dam - 425 meters from ISFSI

TN-32A Casks

Using the previous equations for skyshine and a distance of 425 meters the skyshine dose (gammas and neutrons) for one cask is $2.48 \text{ E}^{-04} \text{ mrem/hr}$.

$$(10) \text{ Casks} \times 2.48 \text{ E}^{-04} \text{ mrem/hr} \times 8760 \text{ hours per year} = 21.7 \text{ mrem / yr}$$

$$\text{Normalized actual dose} = 0.0332 \times 21.7 \text{ mrem/yr} = 0.720 \text{ mrem / yr}$$

Total expected dose for ten TN-32A casks (actual)
0.720 mrem / yr

NAC-UMS Casks

Using the calculated value from the NAC evaluation located in Table 6-4, "2x6 Cask Array Scattered Dose Rates", the total dose rate (gammas and neutrons) at a distance of 425 meters is 4.6 mrem/yr.

Total Expected Dose at Exclusion Area Boundary

Ten TN-32A Casks (actual) plus (2X) 2X6 Array NAC UMS Casks (calculated)

$$0.720 \text{ mrem per year} + 2(4.6) \text{ mrem per year} = 9.92 \text{ mrem per year}$$

IX. 10CFR72.212(b)(3)- Evaluation of Reactor Site Parameters

Criterion

"Review the Safety Analysis Report (SAR) referenced in the Certificate of Compliance and the related NRC Safety Evaluation Report, prior to use of the general license, to determine whether or not the reactor site parameters, including analyses of earthquake intensity and tornado missiles, are enveloped by

McGUIRE NUCLEAR STATION
2006 METEOROLOGICAL JOINT FREQUENCY DISTRIBUTIONS
OF WIND SPEED, WIND DIRECTION, AND ATMOSPHERIC
STABILITY
USING WINDS AT THE 10 METER LEVEL
(Hours of Occurrence)

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY A

	WIND SPEED CLASS										TOTAL
	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	>9.99	
	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR											
-N-	.	.	1	1	.	.	1	.	5	5	13
-NNE-	.	.	2	1	.	1	.	1	3	1	9
-NE-	.	2	1	.	.	.	.	.	.	.	3
-E-	.	.	1	.	.	.	.	.	.	.	1
-SSW-	.	.	.	1	1	1	1	.	.	.	4
-SW-	.	.	1	2	.	5	2	2	.	.	12
-WSW-	.	.	.	.	.	.	1	.	.	.	1
-W-	1	.	.	.	.	.	.	.	.	.	1
-NNW-	.	.	.	.	.	.	.	.	.	2	2
TOTAL	1	2	6	5	1	7	5	3	8	8	46

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY B

	WIND SPEED CLASS										TOTAL
	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	>9.99	
	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR											
-N-	.	.	1	1	.	.	1	5	4	.	12
-NNE-	.	.	5	3	2	2	1	7	3	1	24
-NE-	.	2	4	5	5	3	1	.	1	.	21
-ENE-	.	.	.	10	6	1	.	.	.	.	17
-E-	.	1	.	7	3	1	.	.	.	.	12
-ESE-	.	.	2	3	3	.	.	.	.	.	8
-SE-	.	.	2	2	1	.	.	.	.	.	5
-SSE-	.	.	.	1	1	.	.	.	.	.	2
-S-	.	.	1	6	1	.	.	.	.	.	8
-SSW-	.	.	3	4	6	5	1	.	.	.	19
-SW-	.	.	.	2	10	22	6	6	.	.	46
-WSW-	.	.	2	6	11	19	8	4	1	.	51
-W-	.	.	2	4	1	.	.	.	.	.	7
-WNW-	.	.	2	4	.	.	1	.	.	.	7
-NW-	1	.	.	2	2	.	.	3	.	.	8
-NNW-	1	.	.	3	1	.	.	1	.	.	6
TOTAL	2	3	24	63	53	53	19	26	9	1	253

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY C

	WIND SPEED CLASS											TOTAL
	0.75-	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	>9.99	
	0.99	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR												
-N-	.	1	4	12	15	.	4	4	17	8	.	65
-NNE-	.	1	2	24	21	21	11	13	31	16	.	140
-NE-	.	.	3	13	21	23	6	5	1	3	.	75
-ENE-	.	.	1	7	15	11	3	.	.	.	.	37
-E-	.	.	1	1	9	7	.	.	.	.	.	18
-ESE-	.	.	1	2	8	4	.	.	.	.	.	15
-SE-	.	.	.	2	4	7	.	1	.	.	.	14
-SSE-	.	1	.	2	4	3	.	.	.	.	.	10
-S-	.	1	1	5	7	4	.	.	.	.	.	18
-SSW-	.	.	1	2	13	13	5	2	1	.	.	37
-SW-	.	.	.	5	31	41	28	13	11	2	.	131
-WSW-	.	.	2	4	14	42	21	11	10	.	.	104
-W-	.	2	.	5	17	8	6	3	2	2	.	45
-WNW-	1	1	2	4	6	6	5	2	2	1	.	30
-NW-	1	.	1	4	8	7	1	2	3	5	.	32
-NNW-	1	1	1	9	3	2	1	5	13	8	1	45
TOTAL	3	8	20	101	196	199	91	61	91	45	1	816

McGuire NUCLEAR STN.. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY D

SECTOR	WIND SPEED CLASS												TOTAL
	0.45-	0.75-	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	>9.99	
	0.74	0.99	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	.	2	12	20	30	93	52	67	55	48	7	.	386
-NNE-	.	.	5	18	59	107	91	75	49	51	15	5	475
-NE-	.	.	2	8	38	155	194	135	62	49	14	1	658
-ENE-	.	1	4	9	36	112	99	47	9	1	.	.	318
-E-	.	2	2	10	23	59	77	18	2	.	.	.	193
-ESE-	.	1	3	5	27	63	36	5	1	.	.	.	141
-SE-	.	.	2	9	22	74	31	9	.	.	.	.	147
-SSE-	.	.	1	9	25	46	18	8	4	1	.	.	112
-S-	.	2	2	10	31	53	18	15	3	7	2	.	143
-SSW-	.	.	4	7	25	97	104	32	17	5	1	.	292
-SW-	.	.	3	6	27	142	200	123	62	37	4	.	604
-WSW-	.	.	7	9	37	107	81	54	34	25	11	1	366
-W-	.	4	6	12	24	52	39	33	19	12	2	1	204
-WNW-	1	4	6	9	22	31	36	32	24	19	5	.	189
-NW-	.	1	8	4	19	34	48	32	23	34	18	6	227
-NNW-	.	2	7	5	20	37	40	46	39	44	21	4	265
TOTAL	1	19	74	150	465	1262	1164	731	403	333	100	18	4720

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY E

	WIND SPEED CLASS											TOTAL
	0.45-	0.75-	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	
	0.74	0.99	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR												
-N-	.	2	1	5	6	17	2	2	1	.	.	36
-NNE-	.	1	2	4	13	14	5	3	.	.	.	42
-NE-	1	.	2	4	8	8	1	.	.	.	.	24
-ENE-	.	2	4	1	15	8	1	.	.	.	.	31
-E-	1	3	3	6	10	7	3	.	.	.	.	33
-ESE-	1	1	4	1	9	16	2	.	.	.	.	34
-SE-	.	2	6	9	29	56	6	.	.	.	.	108
-SSE-	1	5	7	17	28	33	5	.	.	.	.	96
-S-	3	4	10	14	41	87	5	.	.	.	.	164
-SSW-	4	6	11	14	42	183	34	9	1	.	.	304
-SW-	.	5	8	15	40	145	69	19	2	.	.	303
-WSW-	.	7	12	28	54	76	23	5	6	.	.	211
-W-	1	4	11	12	25	22	12	6	2	.	.	95
-WNW-	.	5	2	9	26	25	19	6	2	2	.	96
-NW-	1	1	.	3	9	19	16	12	8	.	1	70
-NNW-	1	2	1	6	10	16	5	2	2	1	.	46
TOTAL	14	50	84	148	365	732	208	64	24	3	1	1693

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY E

	WIND SPEED CLASS											TOTAL
	0.45-	0.75-	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	
	0.74	0.99	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR												
-N-	.	2	1	5	6	17	2	2	1	.	.	36
-NNE-	.	1	2	4	13	14	5	3	.	.	.	42
-NE-	1	.	2	4	8	8	1	.	.	.	.	24
-ENE-	.	2	4	1	15	8	1	.	.	.	.	31
-E-	1	3	3	6	10	7	3	.	.	.	.	33
-ESE-	1	1	4	1	9	16	2	.	.	.	.	34
-SE-	.	2	6	9	29	56	6	.	.	.	.	108
-SSE-	1	5	7	17	28	33	5	.	.	.	.	96
-S-	3	4	10	14	41	87	5	.	.	.	.	164
-SSW-	4	6	11	14	42	183	34	9	1	.	.	304
-SW-	.	5	8	15	40	145	69	19	2	.	.	303
-WSW-	.	7	12	28	54	76	23	5	6	.	.	211
-W-	1	4	11	12	25	22	12	6	2	.	.	95
-WNW-	.	5	2	9	26	25	19	6	2	2	.	96
-NW-	1	1	.	3	9	19	16	12	8	.	1	70
-NNW-	1	2	1	6	10	16	5	2	2	1	.	46
TOTAL	14	50	84	148	365	732	208	64	24	3	1	1693

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY F

	WIND SPEED CLASS								TOTAL
	0.45- 0.74	0.75- 0.99	1.00- 1.24	1.25- 1.49	1.50- 1.99	2.00- 2.99	3.00- 3.99	4.00- 4.99	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR									
-N-	2	2	4	3	.	.	2	.	13
-NNE-	.	.	3	.	3	.	1	.	7
-NE-	1	2	.	.	1	.	.	.	4
-ENE-	.	1	1	.	.	.	.	.	2
-E-	.	1	2	.	2	.	.	.	5
-ESE-	2	.	3	.	.	.	.	.	5
-SE-	3	3	7	3	.	3	1	.	20
-SSE-	3	6	6	6	9	8	.	.	38
-S-	3	16	14	7	44	35	1	.	120
-SSW-	3	19	23	28	52	35	3	.	163
-SW-	5	12	14	18	36	47	5	.	137
-WSW-	3	12	6	22	31	23	4	2	103
-W-	1	8	6	5	10	6	2	.	38
-WNW-	4	1	8	3	3	6	3	1	29
-NW-	1	1	1	.	2	2	1	1	9
-NNW-	2	1	2	1	1	1	.	2	10
-CALM-	6	.	.	.	.	.	.	.	6
TOTAL	39	85	100	96	194	166	23	6	709

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

PASQUILL STABILITY G

	WIND SPEED CLASS							TOTAL
	0.45- 0.74	0.75- 0.99	1.00- 1.24	1.25- 1.49	1.50- 1.99	2.00- 2.99	3.00- 3.99	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR								
-N-	2	.	.	.	.	.	.	2
-NNE-	5	1	2	1	.	.	.	9
-ESE-	.	.	1	.	.	.	.	1
-SSE-	1	3	.	.	.	.	.	4
-S-	3	9	3	6	10	8	.	39
-SSW-	6	28	30	23	19	1	.	107
-SW-	18	43	15	16	6	6	.	104
-WSW-	12	20	14	9	2	6	.	63
-W-	7	5	4	2	4	2	2	26
-WNW-	5	3	1	.	1	1	1	12
-NW-	3	2	2	.	.	.	.	7
-NNW-	3	.	1	.	1	.	.	5
-CALM-	5	.	.	.	.	.	.	5
TOTAL	70	114	73	57	43	24	3	384

McGuire NUCLEAR STN. METEOROLOGY (2006) PROG=XOQFREQ
 10M WIND SPEED/DIRECTION/DELTA-T STABILITY
 STABILITY CLASSES BASED ON DELTA-T BETWEEN UPPER-LOWER LEVELS

ALL STABILITY CLASSES

	WIND SPEED CLASS												TOTAL
	0.45-	0.75-	1.00-	1.25-	1.50-	2.00-	3.00-	4.00-	5.00-	6.00-	8.00-	>9.99	
	0.74	0.99	1.24	1.49	1.99	2.99	3.99	4.99	5.99	7.99	9.99	M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
SECTOR													
-N-	4	6	18	32	50	127	56	73	62	70	24	5	527
-NNE-	5	2	13	25	106	146	120	92	63	90	37	7	706
-NE-	2	2	4	19	65	189	223	144	68	50	18	1	785
-ENE-	.	4	9	11	58	145	117	51	9	1	.	.	405
-E-	1	6	7	18	37	82	90	19	2	.	.	.	262
-ESE-	3	2	11	7	40	90	45	5	1	.	.	.	204
-SE-	3	5	15	21	55	139	46	9	1	.	.	.	294
-SSE-	5	14	15	32	64	92	27	8	4	1	.	.	262
-S-	9	31	30	38	132	196	29	15	3	7	2	.	492
-SSW-	13	53	68	73	143	334	161	52	22	6	1	.	926
-SW-	23	60	40	55	115	375	325	197	85	56	6	.	1337
-WSW-	15	39	39	70	130	232	161	101	60	39	12	1	899
-W-	9	21	30	31	70	103	64	45	24	14	4	1	416
-WNW-	10	14	18	23	58	73	65	44	29	23	6	.	363
-NW-	5	6	12	8	34	65	74	46	33	40	24	6	353
-NNW-	6	6	13	13	41	60	48	51	46	59	29	7	379
-CALM-	11	.	.	.	.	.	.	.	.	.	.	.	11
TOTAL	124	271	342	476	1198	2448	1651	952	512	456	163	28	8621

Attachment 5

Inoperable Monitoring Equipment

McGuire Nuclear Station

Inoperable Monitoring Equipment

(January 1, 2006 through December 31, 2006)

No SLC related effluent monitoring instruments were out of service greater than the SLC limits for operability.

Attachment 6

Groundwater Protection Initiative

McGUIRE NUCLEAR STATION

INFORMATION TO SUPPORT THE NUCLEAR ENERGY INSTITUTE (NEI)

GROUNDWATER PROTECTION INITIATIVE

Duke Energy is implementing a voluntary groundwater investigation project to determine optimal locations for groundwater monitoring wells. These wells are expected to be installed during 2007. Results from monitoring wells that are within the McGuire owner controlled area will be reported in the Annual Radiological Effluent Release Report. This information will meet the criteria specified by Nuclear Energy Institute (NEI) Groundwater Protection Initiative (June 2006).

The following existing monitoring wells were sampled during 2006. These locations may or may not be included in the final set of wells determined as part of the groundwater investigation project and the name designations may be changed as part of the project.

<u>Well Name</u>	<u>Well Location</u>	<u>Sampling Frequency</u>	<u>Annual Average Tritium Concentration in pCi/l</u>
#26	N of Access Road	Quarterly	<MDA
#31	E of Access Road	Quarterly	<MDA
#35	Admin. Parking Lot	Quarterly	<MDA
RPMW-101	S of WC Pond	Quarterly	301
RPMW-102	SW of WC Pond	Quarterly	6,180
MW-2	W of Plant	Quarterly	1,110
MW-4	SW of Plant	Quarterly	244
2WZLS 5060 ALT	Near U-2 Rx. Bldg.	Quarterly	695
U-1 Fuel Pool Ramp	Near U-1 Rx. Bldg.	Quarterly	224

pCi/l - pico curies per liter

20,000 pCi/l - the Environmental Protection Agency drinking water standard for tritium. This standard applies only to water that is used for drinking.

1,000,000 pCi/l - the 10CFR20, Appendix B, Table 2, Column 2, Effluent Concentration limit for tritium.