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Nuclear Production Dept.  
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Vice President  
Nuclear Operations  
(704)373-3851



**DUKE POWER**

August 29, 1991

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Re: McGuire Nuclear Station  
Docket Nos. 50-369 and 50-370  
Semi-Annual Radioactive Effluent Release Report

Gentlemen:

Pursuant to Commitment SLC 16.11-16 of the McGuire Nuclear Station Selected Licensee Commitments Manual, attached is the subject report covering the first half of 1991.

The contents of the report are as follows:

Attachment I	Radioactive Effluent Releases and Supplementary Information.
Attachment II	Solid Waste Disposal Report
Attachment III	Unplanned Offsite Releases
Attachment IV	Inoperable Monitoring Equipment

Revisions made during this reporting period to the ODCM are being forwarded to you on this date under separate cover. Revisions to the Process Control Manual were transmitted by my letter of March 25, 1991.

Should there be any questions concerning this report please contact Laura T. Burba at 704-373-2365.

Very truly yours,

M. S. Tuckman

Attachments

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Nuclear Regulatory Commission

August 29, 1991

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XC: S. D. Ebnetter  
Regional Administrator, RII

D. Brown, Chief,  
Radiation Protection Branch  
State of N. C.

T. A. Reed, ONRR

P. K. VanDoorn, Sr. Resident Inspector,  
McGuire

ATTACHMENT I

UNIT 1

SET TO NEW PAGE AND PRESS RETURN

MCGUIRE NUCLEAR STATION  
UNIT 1  
RADIOACTIVE EFFLUENT RELEASES  
DATE : 08/21/91

1. LIQUID RELEASES

	UNITS	1ST QTR	2ND QTR	YEAR : 1991 SUBTOTAL
1. GROSS RADIOACTIVITY				
A. TOTAL RELEASE	CURIES	4.17E-01	1.34E-01	5.51E-01
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	5.24E-10	1.42E-10	3.17E-10
C. MAXIMUM CONCENTRATION RELEASED	UCI/ML	8.87E-09	2.46E-09	8.87E-09
2. TRITIUM				
A. TOTAL RELEASE	CURIES	9.98E+01	1.05E+02	1.98E+02
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	1.18E-07	1.11E-07	1.14E-07
3. DISSOLVED NOBLE GASES				
A. TOTAL RELEASE	CURIES	1.85E-02	7.06E-02	8.91E-02
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	2.32E-11	7.49E-11	5.12E-11
4. GROSS ALPHA ACTIVITY				
A. TOTAL RELEASE	CURIES	0.00E+00	0.00E+00	0.00E+00
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	0.00E+00	0.00E+00	0.00E+00
5. VOLUME OF LIQUID WASTE TO DISCHARGE CANAL	LITERS	7.71E+05	1.17E+06	1.94E+06
6. VOLUME OF DILUTION WATER	LITERS	7.97E+11	9.42E+11	1.74E+12
7. RADIONUCLIDES RELEASED	CURIES			

F-18	3.76E-06	0.00E+00	3.76E-06
NA-24	1.45E-05	5.51E-06	2.00E-05
K-40	0.00E+00	2.13E-06	2.13E-06
CR-51	1.16E-02	1.26E-02	2.42E-02
MN-54	2.15E-02	3.49E-03	2.50E-02
FE-55	5.26E-02	1.79E-02	7.04E-02
FE-59	8.91E-04	3.02E-04	1.19E-03
CO-57	9.18E-04	1.35E-04	1.05E-03
CO-58	8.91E-02	2.40E-02	1.13E-01
CO-60	1.60E-01	3.09E-02	1.91E-01
ZN-65	5.50E-04	0.00E+00	5.50E-04
BR-82	2.91E-05	2.43E-05	5.34E-05
RB-88	2.22E-04	0.00E+00	2.22E-04
SR-89	2.78E-05	1.83E-05	4.61E-05
SR-92	7.76E-05	4.59E-05	1.24E-04
Y-91M	0.00E+00	2.68E-06	2.68E-06
Y-93	0.00E+00	3.52E-05	3.52E-05
ZR-95	3.60E-03	8.82E-04	4.48E-03
ZR-97	1.95E-05	0.00E+00	1.95E-05
NB-95	7.92E-03	1.52E-03	9.44E-03
NB-97	1.01E-04	6.54E-05	1.67E-04
TC-99M	1.24E-04	2.04E-05	1.44E-04
RU-103	0.00E+00	1.37E-04	1.37E-04
RU-106	1.82E-03	3.39E-04	2.16E-03
AG-110M	3.68E-03	7.39E-04	4.42E-03
I-131	1.24E-02	4.66E-03	1.71E-02
I-132	2.52E-03	3.07E-04	2.83E-03
I-133	1.01E-02	6.40E-03	1.65E-02
I-134	1.36E-04	0.00E+00	1.36E-04
I-135	3.23E-03	2.37E-03	5.60E-03
SB-122	4.22E-05	3.90E-05	8.12E-05
SB-124	3.64E-04	9.45E-04	1.31E-03
SB-125	1.97E-02	1.77E-02	3.75E-02
SN-113	1.39E-03	4.12E-04	1.80E-03
TE-132	0.00E+00	7.95E-05	7.95E-05
CS-134	5.39E-03	3.63E-03	9.02E-03
CS-136	1.15E-05	7.97E-06	1.95E-05
CS-137	6.56E-03	3.92E-03	1.05E-02
CS-138	7.03E-05	0.00E+00	7.03E-05
BA-140	0.00E+00	2.37E-05	2.37E-05
LA-140	2.76E-04	1.30E-05	2.89E-04
CE-141	4.31E-06	4.98E-06	9.30E-06
CE-144	2.53E-04	2.17E-05	2.75E-04
KR-85	0.00E+00	6.47E-04	6.47E-04
XE-133	1.65E-02	6.70E-02	8.34E-02
XE-133M	0.00E+00	6.09E-04	6.09E-04
XE-135	1.61E-03	2.03E-03	3.63E-03
XE-135M	4.64E-04	3.21E-04	7.85E-04

SKIN	MAXIMUM DOSE-	5.47D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CO 60	93.97 %				
BONE	MAXIMUM DOSE-	3.76D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	35.08 %				
	CS 137	60.40 %				
LIVER	MAXIMUM DOSE-	5.89D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	6.56 %				
	CO 60	8.15 %				
	CS 134	42.90 %				
	CS 137	40.06 %				
T. BODY	MAXIMUM DOSE-	4.29D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	12.73 %				
	CS 134	47.44 %				
	CS 137	34.51 %				
THYROID	MAXIMUM DOSE-	2.37D-02 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	29.86 %				
	I 131	68.57 %				
KIDNEY	MAXIMUM DOSE-	2.49D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	15.50 %				
	CO 60	17.51 %				
	CS 134	32.33 %				
	CS 137	32.42 %				
LUNG	MAXIMUM DOSE-	1.48D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	26.04 %				
	CO 60	29.41 %				
	CS 134	20.93 %				
	CS 137	21.52 %				
WILLI	MAXIMUM DOSE-	7.68D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	7.12 %				
	CO 60	12.01 %				
	NO 95	73.84 %				

SKIN	MAXIMUM DOSE-	1.00D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CO 60	84.64 %				
	SB 125	5.05 %				
	CS 137	5.13 %				
BONE	MAXIMUM DOSE-	1.97D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	38.77 %				
	CS 137	59.22 %				
LIVER	MAXIMUM DOSE-	3.16D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	16.48 %				
	CS 134	45.56 %				
	CS 137	36.69 %				
T. BODY	MAXIMUM DOSE-	2.49D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	20.36 %				
	CS 134	47.15 %				
	CS 137	30.43 %				
THYROID	MAXIMUM DOSE-	1.26D-02 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	53.19 %				
	I 131	44.96 %				
KIDNEY	MAXIMUM DOSE-	1.47D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	H 3	47.29 %				
	CS 134	26.45 %				
	CS 137	24.81 %				
LUNG	MAXIMUM DOSE-	9.88D-03 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	DRINKING
	H 3	70.18 %				
	CS 134	14.12 %				
	CS 137	13.30 %				
GI-LLI	MAXIMUM DOSE-	1.79D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	29.14 %				
	CO 60	8.54 %				
	NB 95	54.07 %				

SKIN	MAXIMUM DOSE-	6.12D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CO 60	92.32 %				
BONE	MAXIMUM DOSE-	5.58D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	36.33 %				
	CS 137	60.10 %				
LIVER	MAXIMUM DOSE-	8.80D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	8.54 %				
	CO 60	6.00 %				
	CS 134	44.13 %				
	CS 137	39.58 %				
T. BODY	MAXIMUM DOSE-	6.64D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	16.03 %				
	CS 134	47.18 %				
	CS 137	32.98 %				
THYROID	MAXIMUM DOSE-	3.59D-02 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	38.29 %				
	I 131	60.03 %				
KIDNEY	MAXIMUM DOSE-	3.73D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	20.17 %				
	CO 60	12.88 %				
	CS 134	33.23 %				
	CS 137	32.02 %				
LUNG	MAXIMUM DOSE-	2.30D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	DRINKING
	H 3	61.67 %				
	CS 134	16.16 %				
	CS 137	16.49 %				
GI-LLI	MAXIMUM DOSE-	9.11D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	11.68 %				
	CO 60	11.13 %				
	NB 95	69.97 %				



MCQUIRE NUCLEAR STATION  
UNIT 1  
RADIOACTIVE EFFLUENT RELEASES  
DATE 08/21/91

II AIRBORNE RELEASES	UNITS	1ST QTR	2ND QTR	YEAR SUBTOTAL	1991
1. TOTAL NOBLE GASES	CURIES	2.04E+01	9.36E+01	1.14E+02	
2. TOTAL HALOGENS	CURIES	5.63E-04	2.28E-04	7.91E-04	
3. TOTAL PARTICULATE GROSS BETA-GAMMA	CURIES	2.91E-05	1.30E-05	4.21E-05	
4. TOTAL TRITIUM	CURIES	1.20E+01	5.26E+00	1.72E+01	
5. TOTAL PARTICULATE GROSS ALPHA ACTIVITY	CURIES	0.00E+00	0.00E+00	0.00E+00	
6. MAXIMUM NOBLE GAS RELEASE RATE	UCI/SEC	1.60E+03	1.60E+03	1.60E+03	
7. RADIONUCLIDES RELEASED	CURIES				
PARTICULATES					
CL-38		3.56E-08	0.00E+00	3.56E-08	
K-40		1.26E-06	1.24E-08	1.27E-06	
CR-51		5.25E-06	0.00E+00	5.25E-06	
CO-60		1.25E-05	7.11E-06	1.97E-05	
BR-82		5.52E-08	1.29E-08	6.81E-08	
RB-88		5.49E-06	5.70E-06	1.12E-05	
RU-106		0.00E+00	5.11E-09	5.11E-09	
CS-134		0.00E+00	2.68E-10	2.68E-10	
CS-137		4.08E-06	2.60E-10	4.08E-06	
CS-138		4.17E-07	1.12E-07	5.29E-07	
BA-139		0.00E+00	3.41E-09	3.41E-09	
PB-214		0.00E+00	1.45E-09	1.45E-09	
HALOGENS					
I-130		0.00E+00	9.58E-08	9.58E-08	
I-131		1.84E-04	1.24E-04	3.09E-04	
I-132		4.72E-06	1.40E-06	6.12E-06	
I-133		3.54E-04	9.65E-05	4.51E-04	
I-134		3.32E-06	7.74E-07	4.10E-06	
I-135		1.63E-05	4.70E-06	2.10E-05	
GASES					
AR-41		3.80E-01	5.58E-01	9.38E-01	
KR-85		7.58E-01	1.06E+00	1.81E+00	
KR-85M		1.27E-01	2.70E-01	3.97E-01	
KR-87		3.84E-02	6.06E-02	9.90E-02	
KR-88		1.58E-01	2.96E-01	4.54E-01	
XE-131M		3.35E-02	2.98E-01	3.32E-01	
XE-133		1.65E+01	8.57E+01	1.02E+02	
XE-133M		3.02E-01	1.19E+00	1.49E+00	
XE-135		2.08E+00	0.09E+00	6.17E+00	
XE-135M		1.68E-02	1.22E-02	2.90E-02	
XE-138		2.89E-03	0.00E+00	2.89E-03	

MCQUIRE UNIT 1 GAS DOSE 001-090 91 RELEASE WEIGHTED NET REPORT SUMMARY 08/21/91  
SPECIAL LOCATION  
AT 0.50 MILES NNE

NOBLE GAS EXPOSURE:

BETA AIR DOSE =  $3.32\text{E-}02$  MILLIRADS  
GAMMA AIR DOSE =  $2.05\text{E-}02$  MILLIRADS

TOTAL BODY DOSE =  $1.30\text{E-}02$  MILLIREM

KR 86	15.90%
XE133	31.85%
XE135	25.41%
AR 41	23.07%

TOTAL SKIN DOSE =  $3.12\text{E-}02$  MILLIREM

KR 86	9.17%
XE133	37.55%
XE135	28.08%
AR 41	15.48%

MCGUIRE UNIT 1 GAS DOSE 001-090 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION

04/21/91

AT 0.50 MILES E

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

MAXIMUM ORGAN - THYROID  
CRITICAL AGE - CHILD  
CRITICAL PATHWAY - VEGET @ 75.46%

MAXIMUM ORGAN DOSE = 4.31E-02 MILLIREM

H 3 80.16%  
I 131 16.65%

MC GUIRE UNIT 1 GAS DOSE 091-181 \*1 RELEASE WEIGHTED NET REPORT SUMMARY 08/21/91  
SPECIAL LOCATION  
AT 0.50 MILES NE

NOBLE GAS EXPOSURE:

BETA AIR DOSE =  $1.87\text{E}-01$  MILLIRADS  
GAMMA AIR DOSE =  $8.23\text{E}-02$  MILLIRADS

TOTAL BODY DOSE =  $5.02\text{E}-02$  MILLIREM

KR 88	9.28%
XE133	61.31%
XE135	15.72%
AR 41	11.34%

TOTAL SKIN DOSE =  $1.32\text{E}-01$  MILLIREM

KR 88	4.87%
XE133	65.78%
XE135	15.80%
AR 41	6.88%

MCQUIRE UNIT 1 GAS DOSE 091-181 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES E

08/21/91

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

MAXIMUM ORGAN - THYROID  
CRITICAL AGE - CHILD  
CRITICAL PATHWAY - VEGET @ 74.35%

MAXIMUM ORGAN DOSE = 2.49E-02 MILLIREM  
H 3 82.75%  
I 131 15.66%

MCGUIRE UNIT 1 GAS DOSE 001-181 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES NNE

08/21/91

NOBLE GAS EXPOSURE:

BETA AIR DOSE = 2.14E-01 MILLIRADS  
GAMMA AIR DOSE = 1.04E-01 MILLIRADS

TOTAL BODY DOSE = 6.43E-02 MILLIREM

KR 88	11.43%
XE133	51.96%
XE135	18.90%
AR 41	14.93%

TOTAL SKIN DOSE = 1.63E-01 MILLIREM

KR 88	6.22%
XE133	57.63%
XE135	19.71%
AR 41	9.41%

MC GUIRE UNIT 1 GAS DOSE 001-181 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES E

08/21/91

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

MAXIMUM ORGAN - THYROID  
CRITICAL AGE - CHILD  
CRITICAL PATHWAY - VEGET @ 75.11%

MAXIMUM ORGAN DOSE = 7.72E-02 MILLIREM  
H 3 82.80%  
I 131 14.81%

UNIT 2



SET TO NEW PAGE AND PRESS RETURN

MCQUIRE NUCLEAR STATION  
UNIT 2  
RADIOACTIVE EFFLUENT RELEASES  
DATE : 08/21/91

I. LIQUID RELEASES				YEAR : 1991
	UNITS	1ST QTR	2ND QTR	SUBTOTAL
1. GROSS RADIOACTIVITY				
A. TOTAL RELEASE	CURIES	4.17E-01	1.34E-01	5.51E-01
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	5.24E-10	1.42E-10	3.17E-10
C. MAXIMUM CONCENTRATION RELEASED	UCI/ML	8.87E-09	2.46E-09	6.87E-09
2. TRITIUM				
A. TOTAL RELEASE	CURIES	9.38E+01	1.05E+02	1.98E+02
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	1.18E-07	1.11E-07	1.14E-07
3. DISSOLVED NOBLE GASES				
A. TOTAL RELEASE	CURIES	1.85E-02	7.06E-02	8.91E-02
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	2.32E-11	7.49E-11	5.12E-11
4. GROSS ALPHA ACTIVITY				
A. TOTAL RELEASE	CURIES	0.00E+00	0.00E+00	0.00E+00
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	0.00E+00	0.00E+00	0.00E+00
5. VOLUME OF LIQUID WASTE TO DISCHARGE CANAL	LITERS	7.71E+05	1.17E+06	1.94E+06
6. VOLUME OF DILUTION WATER	LITERS	7.97E+11	9.42E+11	1.74E+12
7. RADIONUCLIDES RELEASED	CURIES			
F-18		3.76E-06	0.00E+00	3.76E-06
NA-24		1.45E-05	5.51E-06	2.00E-05
K-40		0.00E+00	2.13E-06	2.13E-06
CR-51		1.16E-02	1.26E-02	2.42E-02
MN-54		2.15E-02	3.49E-03	2.50E-02
FE-55		5.26E-02	1.79E-02	7.04E-02
FE-59		8.91E-04	3.02E-04	1.19E-03
CO-57		9.18E-04	1.35E-04	1.05E-03
CO-58		8.91E-02	2.40E-02	1.13E-01
CO-60		1.60E-01	3.09E-02	1.91E-01
ZN-65		5.50E-04	0.00E+00	5.50E-04
BR-82		2.91E-05	2.43E-05	5.34E-05
RB-88		2.22E-04	0.00E+00	2.22E-04
SR-85		2.78E-05	1.83E-05	4.61E-05
SR-92		7.76E-05	4.59E-05	1.24E-04
Y-91M		0.00E+00	2.68E-06	2.68E-06
Y-93		0.00E+00	3.52E-05	3.52E-05
ZR-95		3.60E-03	8.82E-04	4.48E-03
ZR-97		1.95E-05	0.00E+00	1.95E-05
NB-95		7.92E-03	1.52E-03	9.44E-03
NB-97		1.01E-04	6.54E-05	1.67E-04
TC-99M		1.24E-04	2.04E-05	1.44E-04
RU-103		0.00E+00	1.37E-04	1.37E-04
RU-106		1.82E-03	3.39E-04	2.16E-03
AG-110M		3.68E-03	7.39E-04	4.42E-03
I-131		1.24E-02	4.66E-03	1.71E-02
I-132		2.52E-03	3.07E-04	2.83E-03
I-133		1.01E-02	6.40E-03	1.65E-02
I-134		1.36E-04	0.00E+00	1.36E-04
I-135		3.23E-03	2.37E-03	5.60E-03
SB-122		4.22E-05	3.90E-05	8.12E-05
SB-124		3.64E-04	9.45E-04	1.31E-03
SB-125		1.97E-02	1.77E-02	3.75E-02
SN-113		1.39E-03	4.12E-04	1.80E-03
TE-132		0.00E+00	7.95E-05	7.95E-05
CS-134		5.39E-03	3.63E-03	9.02E-03
CS-136		1.15E-05	7.97E-06	1.95E-05
CS-137		6.56E-03	3.92E-03	1.05E-02
CS-138		7.03E-05	0.00E+00	7.03E-05
BA-140		0.00E+00	2.37E-05	2.37E-05
LA-140		2.76E-04	1.30E-05	2.89E-04
CE-141		4.31E-06	4.98E-06	9.30E-06
CE-144		2.53E-04	2.17E-05	2.75E-04
KR-85		0.00E+00	6.47E-04	6.47E-04
XE-133		1.65E-02	6.70E-02	8.34E-02
XE-133M		0.00E+00	6.09E-04	6.09E-04
XE-135		1.61E-05	2.03E-03	3.63E-03
XE-135M		4.64E-04	3.21E-04	7.85E-04

08/21/91

SKIN	MAXIMUM DOSE-	5.47D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CO	60 93.97 %				
BONE	MAXIMUM DOSE-	3.76D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	35.08 %				
	CS 137	60.40 %				
LIVER	MAXIMUM DOSE-	5.89D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	6.56 %				
	CO 60	8.15 %				
	CS 134	42.90 %				
	CS 137	40.06 %				
T. BODY	MAXIMUM DOSE-	4.29D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	12.73 %				
	CS 134	47.44 %				
	CS 137	34.51 %				
THYROID	MAXIMUM DOSE-	2.37D-02 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	29.86 %				
	I 131	68.57 %				
KIDNEY	MAXIMUM DOSE-	2.49D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	15.50 %				
	CO 60	17.51 %				
	CS 134	32.33 %				
	CS 137	32.42 %				
LUNG	MAXIMUM DOSE-	1.48D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	26.04 %				
	CO 60	29.41 %				
	CS 134	20.93 %				
	CS 137	21.52 %				
GI-LLI	MAXIMUM DOSE-	7.68D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	7.12 %				
	CO 60	12.01 %				
	NB 95	73.84 %				

SKIN	MAXIMUM DOSE-	1.00D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CG 60	84.64 %				
	SB 125	5.05 %				
	CS 137	5.13 %				
BONE	MAXIMUM DOSE-	1.97D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	38.77 %				
	CS 137	59.22 %				
LIVER	MAXIMUM DOSE-	3.16D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	16.48 %				
	CS 134	45.56 %				
	CS 137	36.69 %				
T. BODY	MAXIMUM DOSE-	2.49D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	20.86 %				
	CS 134	47.15 %				
	CS 137	30.43 %				
THYROID	MAXIMUM DOSE-	1.26D-02 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	53.19 %				
	I 131	44.96 %				
KIDNEY	MAXIMUM DOSE-	1.47D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	H 3	47.29 %				
	CS 134	26.45 %				
	CS 137	24.81 %				
LUNG	MAXIMUM DOSE-	9.88D-03 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	DRINKING
	H 3	70.18 %				
	CS 134	14.12 %				
	CS 137	13.30 %				
GI-LLI	MAXIMUM DOSE-	1.79D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	29.14 %				
	CG 60	8.54 %				
	NB 95	54.07 %				

SKIN	MAXIMUM DOSE-	6.12D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CO 60	92.32 %				
BONE	MAXIMUM DOSE-	5.58D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	36.33 %				
	CS 137	60.10 %				
LIVER	MAXIMUM DOSE-	8.80D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	8.54 %				
	CO 60	6.00 %				
	CS 134	44.13 %				
	CS 137	39.58 %				
T. BODY	MAXIMUM DOSE-	6.64D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	16.03 %				
	CS 134	47.18 %				
	CS 137	32.98 %				
THYROID	MAXIMUM DOSE-	3.59D-02 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	38.29 %				
	I 131	60.03 %				
KIDNEY	MAXIMUM DOSE-	3.73D-02 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	H 3	20.17 %				
	CO 60	12.88 %				
	CS 134	33.23 %				
	CS 137	32.02 %				
LUNG	MAXIMUM DOSE-	2.30D-02 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	DRINKING
	H 3	61.67 %				
	CS 134	16.16 %				
	CS 137	16.49 %				
GI-LLI	MAXIMUM DOSE-	9.11D-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	11.68 %				
	CO 60	11.13 %				
	NO 95	69.97 %				

MCQUIRE NUCLEAR STATION  
UNIT 2  
RADIOACTIVE EFFLUENT RELEASES  
DATE 08/21/91

II. AIRBORNE RELEASES

	UNITS	1ST QTR	2ND QTR	YEAR SUBTOTAL	1991
1. TOTAL NOBLE GASES	CURIES	2.04E+01	9.36E+01	1.14E+02	
2. TOTAL HALOGENS	CURIES	5.63E-04	2.28E-04	7.91E-04	
3. TOTAL PARTICULATE GROSS BETA-GAMMA	CURIES	2.91E-05	1.30E-05	4.21E-05	
4. TOTAL TRITIUM	CURIES	1.20E+01	5.26E+00	1.72E+01	
5. TOTAL PARTICULATE GROSS ALPHA ACTIVITY	CURIES	0.00E+00	0.00E+00	0.00E+00	
6. MAXIMUM NOBLE GAS RELEASE RATE	UCI/SEC	1.60E+03	1.60E+03	1.60E+03	
7. RADIONUCLIDES RELEASED	CURIES				

PARTICULATES

CL-38	3.56E-08	0.00E+00	3.56E-08
K-40	1.26E-06	1.24E-08	1.27E-06
CR-51	5.25E-06	0.00E+00	5.25E-06
CO-60	1.25E-05	7.11E-06	1.97E-05
BR-82	5.52E-05	1.29E-08	6.81E-05
RB-88	5.49E-06	5.70E-06	1.12E-05
RU-106	0.00E+00	5.11E-09	5.11E-09
CS-134	0.00E+00	2.68E-10	2.68E-10
CS-137	4.08E-06	2.60E-10	4.08E-06
CS-138	4.17E-07	1.12E-07	5.29E-07
BA-139	0.00E+00	3.41E-09	3.41E-09
PB-214	0.00E+00	1.45E-09	1.45E-09

HALOGENS

I-130	0.00E+00	9.58E-08	9.58E-08
I-131	1.84E-04	1.24E-04	3.09E-04
I-132	4.72E-06	1.40E-06	6.12E-06
I-133	3.54E-04	9.65E-05	4.51E-04
I-134	3.32E-06	7.74E-07	4.10E-06
I-135	1.63E-05	4.70E-06	2.10E-05

GASES

AR-41	3.80E-01	5.58E-01	9.38E-01
KR-85	7.58E-01	1.06E+00	1.81E+00
KR-85M	1.27E-01	2.70E-01	3.97E-01
KR-87	3.84E-02	6.06E-02	9.90E-02
KR-88	1.58E-01	2.96E-01	4.54E-01
XE-131M	3.35E-02	2.98E-01	3.32E-01
XE-133	1.65E+01	8.57E+01	1.02E+02
XE-133M	3.02E-01	1.19E+00	1.49E+00
XE-135	2.08E+00	4.09E+00	6.17E+00
XE-135M	1.68E-02	1.22E-02	2.90E-02
XE-138	2.89E-03	0.00E+00	2.89E-03

MC GUIRE UNIT 2 GAS DOSE 001-090 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES NNE

08/21/91

NOBLE GAS EXPOSURE:

BETA AIR DOSE =  $3.32\text{E}-02$  MILLIRADS  
GAMMA AIR DOSE =  $2.05\text{E}-02$  MILLIRADS

TOTAL BODY DOSE =  $1.30\text{E}-02$  MILLIREM

KR 88	15.90%
XE133	31.85%
XE135	25.41%
AR 41	23.07%

TOTAL SKIN DOSE =  $3.12\text{E}-02$  MILLIREM

KR 88	9.17%
XE133	37.55%
XE135	28.08%
AR 41	15.48%

MCGUIRE UNIT 2 GAS DOSE 001-090 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES E

08/21/91

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

MAXIMUM ORGAN - THYROID  
CRITICAL AGE - CHILD  
CRITICAL PATHWAY - VEGET @ 75.46%

MAXIMUM ORGAN DOSE =  $4.31\text{E}-02$  MILLIREM  
H 3 80.16%  
I 131 16.65%

MCGUIRE UNIT 2 GAS DOSE 091-181 91 RELEASE WEIGHTED MET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES NE

08/21/91

NOBLE GAS EXPOSURE:

BETA AIR DOSE =  $1.87\text{E-}01$  MILLIRADS  
GAMMA AIR DOSE =  $8.23\text{E-}02$  MILLIRADS

TOTAL BODY DOSE =  $5.02\text{E-}02$  MILLIREM  
KR 88 9.28%  
XE133 61.31%  
XE135 15.72%  
AR 41 11.34%

TOTAL SKIN DOSE =  $1.32\text{E-}01$  MILLIREM  
KR 88 4.87%  
XE133 65.78%  
XE135 15.80%  
AR 41 6.88%



MCQUIRE UNIT 2 GAS DOSE 091-181 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES E

08/21/91

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

MAXIMUM ORGAN - THYROID  
CRITICAL AGE - CHILD  
CRITICAL PATHWAY - VEGET @ 74.35%

MAXIMUM ORGAN DOSE = 2.49E-02 MILLIREM  
H 3 82.75%  
I 131 15.66%

MCQUIRE UNIT 2 GAS DOSE 001-181 91 RELEASE WEIGHTED MET REPORT SUMMARY 08/21/91  
SPECIAL LOCATION  
AT 0.50 MILES NNE

NOBLE GAS EXPOSURE:

BETA AIR DOSE = 2.14E-01 MILLIRADS  
GAMMA AIR DOSE = 1.04E-01 MILLIRADS

TOTAL BODY DOSE = 6.43E-02 MILLIREM  
KR 88 11.43%  
XE133 51.96%  
XE135 18.90%  
AR 41 14.93%

TOTAL SKIN DOSE = 1.63E-01 MILLIREM  
KR 88 6.22%  
XE133 57.63%  
XE135 19.71%  
AR 41 9.41%

HCGUIRE UNIT 2 GAS DOSE 001-181 91 RELEASE WEIGHTED NET REPORT SUMMARY  
SPECIAL LOCATION  
AT 0.50 MILES E

08/21/91

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

MAXIMUM ORGAN - THYROID  
CRITICAL AGE - CHILD  
CRITICAL PATHWAY - VEGET 3 75.11%

MAXIMUM ORGAN DOSE = 7.72E-02 MILLIREM  
H 3 82.80%  
I 131 14.81%

SUPPLEMENTAL INFORMATION

Do You Wish To Run Another Program?(Y/N): n

MCGUIRE NUCLEAR STATION

EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION

REPORT DATE: 08/22/91

PERIOD COVERED: START DAY = 001 STOP DAY = 181

I. REGULATORY LIMITS

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. IODINE - 131 AND 133, TRITIUM, PARTICULATES W/IT 1/2 > 8 DAYS - ORGAN DOSE

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

II. MAXIMUM PERMISSIBLE CONCENTRATIONS

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

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

III. AVERAGE ENERGY - NOT APPLICABLE

IV. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY  
INFORMATION FOUND IN OFFSITE DOSE CALCULATION MANUAL

V. BATCH RELEASES

A. LIQUID EFFLUENT

1.  $1.75E+02$  = TOTAL NUMBER OF BATCH RELEASES
2.  $1.47E+05$  = TOTAL TIME(MIN.) FOR BATCH RELEASES.
3.  $9.73E+03$  = MAXIMUM TIME(MIN.) FOR A BATCH RELEASE.
4.  $8.42E+02$  = AVERAGE TIME(MIN.) FOR A BATCH RELEASE.
5.  $2.00E+00$  = MINIMUM TIME(MIN.) FOR A BATCH RELEASE.
6.  $1.78E+06$  = AVERAGE DILUTION WATER FLOW DURING RELEASES(GPM).

B. GASEOUS EFFLUENT

1.  $9.70E+01$  = TOTAL NUMBER OF BATCH RELEASES.
2.  $5.17E+05$  = TOTAL TIME(MIN.) FOR BATCH RELEASES.
3.  $3.26E+04$  = MAXIMUM TIME(MIN.) FOR A BATCH RELEASE.
4.  $5.33E+03$  = AVERAGE TIME(MIN.) FOR A BATCH RELEASE.
5.  $4.40E+01$  = 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) 2.5

SUPPLEMENTAL REPORT PAGE 2

MCGUIRE NUCLEAR STATION

Values represented by "0.00E+00" within the body of the semi-annual and/or annual report are below the minimum detectable limits of the McGuire counting systems. Typical MDA's for the McGuire counting system's are listed below:

ISOTOPE	ENERGY (Kev)	AVERAGE MDA
<u>Liquid</u>		
XE-133	80	6.0E-8
CE-144	133	1.2E-7
KR-88	196	1.7E-7
XE-135	249	2.3E-8
KR-87	402	2.5E-7
CS-137	661	2.6E-7
MO-99	778	4.3E-7
MN-54	834	2.2E-8
ZN-65	1115	4.0E-8
CO-60	1332	4.4E-8
<u>Gas</u>		
XE-133	80	2.5E-8
Kr-85m	151	1.0E-8
Xe-131M	163	3.3E-7
Kr-88	196	4.7E-8
Xe-133m	233	7.9E-8
Xe-135	250	9.5E-9
Xe-138	253	6.3E-6
Kr-87	402	4.7E-8
Kr-85	514	2.5E-6
Xe-135M	526	1.9E-6
Ar-41	1293	3.6E-8

SUPPLEMENTAL REF      E 3  
MCGUIRE NUCLE.      STATION

The estimated percentage of error for both Liquid and Gaseous effluent release data at McGuire Nuclear Station has been determined to be  $\pm 31\%$ . This number was derived by summing the following individual estimates of errors:

- 1) Flow rate determining devices =  $\pm 13\%$
- 2) Counting error =  $\pm 15\%$
- 3) Sample preparation error =  $\pm 3\%$

MCQUIRE NUCLEAR STATION  
 RADIOACTIVE EFFLUENT RELEASES  
 08/26/91  
 PERIOD COVERED: START DAY = 001  
 STOP DAY = 181

YEAR 1991

TYPE COVERED: MNSCCW

1. LIQUID RELEASES

	UNITS	PERIOD COVERED	YEAR TO STOP
1. GROSS RADIOACTIVITY			
A. TOTAL RELEASE	CURIES	2.17E-03	2.17E-03
2. TRITIUM			
A. TOTAL RELEASE	CURIES	1.02E+00	1.02E+00
3. DISSOLVED NOBLE GASES			
A. TOTAL RELEASE	CURIES	0.00E+00	0.00E+00
4. ALPHA ACTIVITY			
A. TOTAL RELEASE	CURIES	0.00E+00	0.00E+00

DO YOU WANT THE ISOTOPE LIST(Y/N)?

Y

5. RADIONUCLIDES

CO-60	7.53E-04	7.53E-04
CS-134	3.46E-04	3.46E-04
CS-137	1.07E-03	1.07E-03

TOTAL VOLUME DISCHARGED (GALS.)	5.19E+07	5.19E+07
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SUMMARY COMPLETE  
 THANK YOU

MCQUIRE CCM DOSE- 1 ST SEMIANNUAL 1991 RELEASES- 8/26/91 001/181 00000010

SKIN	MAXIMUM DOSE-	1.72D-05 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
BONE	MAXIMUM DOSE-	1.80D-03 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
LIVER	MAXIMUM DOSE-	2.19D-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
T. BODY	MAXIMUM DOSE-	1.50D-03 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
THYROID	MAXIMUM DOSE-	3.43D-05 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	DRINKING
KIDNEY	MAXIMUM DOSE-	7.52D-04 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
LUNG	MAXIMUM DOSE-	3.10D-04 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
GI-ILLI	MAXIMUM DOSE-	8.08D-05 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH



ATTACHMENT II

McGUIRE NUCLEAR STATION  
SOLID RADIOACTIVE WASTE SHIPPED TO A DISPOSAL FACILITY  
REPORT PERIOD 01/01/91 THROUGH 06/30/91

TYPES OF WASTE SHIPPED	Number of Shipments	Number Containers	Waste Class	Cont. Type	Burial Volume		Total Ci
					(ft <sup>3</sup> )	(m <sup>3</sup> )	
WASTE FROM LIQUID SYSTEMS							
(A) Dewatered Secondary Resins (brokered)	1*	3*	AU	STC	0	0	0
(B) Dewatered Bead Resins	2	2	2B	HIC	166.8	4.723	377.9
(C) Evaporator Concentrates	0	0	N/A	N/A	0	0	0
(D) Dewatered Mechanical Filter	0	0	N/A	N/A	0	0	0
(E) Dewatered Demineralizers	0	0	N/A	N/A	0	0	0
(F) Solidified (Cement) Oils, Acids, Sludges	0	0	N/A	N/A	0	0	0
(G) Dewatered Secondary Bead	0	0	N/A	N/A	0	0	0
DRY SOLID WASTE							
(A) Dry Active Waste (compacted)	0	0	N/A	N/A	0	0	0
Dry Active Waste (non-compt)	0	0	N/A	N/A	0	0	0
Dry Active Waste (brokered)	3*	3*	AU	STC	500.15	14.163	1.395
Dry Active Waste (brokered and non-compt)	1*	11*	AU	STC	0	0	0
(B) Irradiated Components	0	0	N/A	N/A	0	0	0
TOTALS	7	19	---	---	666.95	18.886	379.295

\* McGuire shipments for processing.

# SUMMARY OF MAJOR RADIONUCLIDE COMPOSITION

## Type of Wastes

1. Wastes from Liquid Systems	Radionuclide	% Abundance*
(A) Dewatered Secondary Resins (Powdex)	(None Buried This Period)	
(B) Dewatered Bead Resins (Primary)	Co-60	15.50
	Co-58	2.75
	Co-57	6.0E-2
	Mn-54	1.58
	Cs-134	9.78
	Cs-137	17.00
	H-3	2.89E-4
	Sb-125	5.2E-1
	C-14	7.6E-3
	Fe-55	45.88
	Ni-63	6.86
	Sr-90	5.2E-2
	Cm-242	4.88E-5
	Pu-241	1.2E-2
	ETRU	1.2E-3
	Te-125m	2.0E-2
(C) Evaporator Concentrates	(None Buried This Period)	
(D) Dewatered Mechanical Filters	(None Buried This Period)	
(E) Dewatered Demineralizers (Vendor)	(None Buried This Period)	
(F) Solidified (Cement) Acids, Oils,	(None Buried This Period)	
(G) Dewatered Secondary Bead Resins	(None Buried This Period)	
2. Dry Solid Waste		
(A) Dry Active Waste	ETRU	6.7E-4
	Sr-90	3.2E-2
	Mn-54	4.21
	Co-58	2.27
	Co-60	19.62
	Cm-242	1.6E-3
	Cs-137	0.10
	C-14	5.2E-2
	Ni-63	2.06
	Fe-55	71.62
	Pu-241	3.6E-2
(B) Irradiated Components	(None Buried This Period)	

ATTACHMENT III

Subject: McGuire Nuclear Station  
Waste Gas System Leak  
On 05/22/91

On May 22, 1991, WGD T 'E' experienced a 4 psig loss of gas during work on the waste gas system (see attached memo on the incident). The count rate on 1EMF36' ) went from a background reading of approximately 50 cpm to approximately 400 cpm during the release. This increase in gaseous activity did not exceed any Tech. Spec. limits.

The activity released during this event was accounted for at the first of June when the procedure, HP/O/B/1003/01, Unit Vent Calculations, was performed.

ATTACHMENT IV

During the time frame from January 1, 1991, to June 30, 1991, there were no Tech. Spec. related effluent monitoring instruments out of service greater than the Tech. Spec. limits for inoperability.