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 50-287 Oconee Nuclear Station, Unit 3, Duke Power Co.

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AUTH. NAME AUTHOR AFFILIATION
 TUCKER, H. B. Duke Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: "Semiannual Radioactive Effluent Release & Solid Waste Disposal Repts." W/870302 ltr.

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 TITLE: 50.36a(a)(2) Semiannual Effluent Release Reports

NOTES: AEOD/Ornstein: 1cy. 05000269
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Duke Power Company
Oconee Nuclear Station

Attachment 1

Radioactive Effluent Release and
Solid Waste Disposal Reports

50-269
50-270
50-287

B703100147 861231
PDR ADOCK 05000269
R PDR

IEU8
LL

OCONEE FUEL CYCLE DOSE

1986

TOTAL BODY	1.5 mrem
MAXIMUM ORGAN (TEEN-LIVER)	2.9 mrem

OCONEE NUCLEAR STATION
EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION
REPORT DATE: 02/25/97
PERIOD COVERED: START DAY = 001 STOP DAY = 365

I. REGULATORY LIMITS - STATION

A. NOBLE GASES - AIR DOSE

1. CALENDAR QUARTER - GAMMA DOSE = 15 MRAD
2. CALENDAR QUARTER - BETA DOSE = 30 MRAD
3. CALENDAR YEAR - GAMMA DOSE = 30 MRAD
4. CALENDAR YEAR - BETA DOSE = 60 MRAD

B. LIQUID EFFLUENTS - DOSE

1. CALENDAR QUARTER - TOTAL BODY DOSE = 4.5 MREM
2. CALENDAR QUARTER - ORGAN DOSE = 15 MREM
3. CALENDAR YEAR - TOTAL BODY DOSE = 9 MREM
4. CALENDAR YEAR - ORGAN DOSE = 30 MREM

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

1. CALENDAR QUARTER = 22.5 MREM
2. CALENDAR YEAR = 45 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. $7.28E+02$ = TOTAL NUMBER OF BATCH RELEASES
2. $1.39E+05$ = TOTAL TIME(MIN.) FOR BATCH RELEASES.
3. $4.46E+04$ = MAXIMUM TIME(MIN.) FOR A BATCH RELEASE.
4. $1.91E+02$ = AVERAGE TIME(MIN.) FOR A BATCH RELEASE.
5. $3.00E+00$ = MINIMUM TIME(MIN.) FOR A BATCH RELEASE.
6. $2.08E+08$ = AVERAGE DILUTION WATER FLOW DURING RELEASES(GPM).

B. GASEOUS EFFLUENT

1. $3.08E+02$ = TOTAL NUMBER OF BATCH RELEASES.
2. $8.13E+05$ = TOTAL TIME(MIN.) FOR BATCH RELEASES.
3. $4.46E+04$ = MAXIMUM TIME(MIN.) FOR A BATCH RELEASE.
4. $2.64E+03$ = AVERAGE TIME(MIN.) FOR A BATCH RELEASE.
5. $5.00E+01$ = 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) $3.79E-6$

OCONEE NUCLEAR STATION
 RADIOACTIVE EFFLUENT RELEASES
 DATE : 02/25/87

I. LIQUID RELEASES

	UNITS	YEAR : 1986				TOTAL
		1ST QTR	2ND QTR	3RD QTR	4TH QTR	
1. GROSS RADIOACTIVITY						
A. TOTAL RELEASE	CURIES	5.57E-01	3.37E-01	8.43E-01	4.11E+00	5.85E+00
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	1.08E-08	1.76E-09	4.18E-09	3.13E-08	1.01E-08
C. MAXIMUM CONCENTRATION RELEASED	UCI/ML	1.84E-07	5.74E-08	6.96E-08	9.15E-07	9.15E-07
2. TRITIUM						
A. TOTAL RELEASE	CURIES	3.51E+02	3.54E+02	3.99E+02	2.36E+02	1.34E+03
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	6.84E-06	1.84E-06	1.98E-06	1.80E-06	2.33E-06
3. DISSOLVED NOBLE GASES						
A. TOTAL RELEASE	CURIES	1.91E+00	1.32E+00	3.80E+00	4.55E-01	7.48E+00
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	3.73E-08	6.86E-09	1.88E-08	3.47E-09	1.30E-08
4. GROSS ALPHA ACTIVITY						
A. TOTAL RELEASE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
B. AVERAGE CONCENTRATION RELEASED	UCI/ML	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5. VOLUME OF LIQUID WASTE TO DISCHARGE CANAL	LITERS	1.01E+07	1.06E+07	3.35E+07	3.93E+08	4.47E+08
6. VOLUME OF DILUTION WATER	LITERS	5.14E+10	1.92E+11	2.02E+11	1.31E+11	5.76E+11
7. RADIONUCLIDES RELEASED	CURIES					
F-18		0.00E+00	0.00E+00	3.64E-04	0.00E+00	3.64E-04
NA-24		2.32E-05	1.56E-05	8.45E-04	3.95E-04	1.28E-03
CR-51		1.68E-02	8.89E-03	9.98E-03	1.38E-01	1.74E-01
MN-54		3.41E-03	1.40E-03	2.64E-03	7.80E-03	1.52E-02
FE-55		5.24E-02	7.16E-03	1.82E-02	2.83E+00	2.91E+00
FE-59		1.32E-03	0.00E+00	3.41E-04	3.41E-03	5.08E-03
CO-57		2.61E-04	6.61E-05	3.34E-04	8.06E-04	1.47E-03
CO-58		1.18E-01	3.12E-02	2.95E-01	4.74E-01	9.19E-01
CO-60		3.32E-02	1.29E-02	2.22E-02	4.19E-02	1.10E-01
RB-88		0.00E+00	0.00E+00	2.30E-04	0.00E+00	2.30E-04
SR-90		0.00E+00	1.26E-05	0.00E+00	0.00E+00	1.26E-05
SR-91		0.00E+00	0.00E+00	1.06E-04	0.00E+00	1.06E-04
SR-92		6.94E-05	1.02E-04	2.28E-03	1.53E-04	2.60E-03
ZR-95		7.61E-04	0.00E+00	1.01E-04	1.39E-02	1.47E-02
NB-95		2.15E-03	1.72E-03	1.41E-03	3.24E-02	3.77E-02
NB-97		2.29E-02	1.45E-04	4.03E-02	3.67E-04	6.36E-02
TC-99M		0.00E+00	1.70E-04	6.91E-04	2.68E-05	8.88E-04
RU-103		0.00E+00	0.00E+00	4.21E-05	4.64E-04	5.06E-04
AG-110M		1.09E-01	2.22E-02	2.81E-02	1.11E-01	2.70E-01
I-131		1.38E-02	6.44E-03	3.31E-02	2.21E-02	7.54E-02
I-132		9.71E-04	1.21E-03	3.56E-03	3.16E-02	3.73E-02
I-133		3.40E-05	8.01E-05	1.56E-03	8.37E-05	1.81E-03
I-134		2.25E-05	0.00E+00	5.38E-03	0.00E+00	5.40E-03
I-135		0.00E+00	0.00E+00	1.34E-04	0.00E+00	1.34E-04
SB-122		5.77E-04	7.77E-04	5.01E-03	1.36E-03	7.72E-03
SB-124		4.82E-03	6.89E-03	5.15E-02	2.40E-02	8.71E-02
SB-125		1.35E-01	2.21E-01	2.04E-01	3.05E-01	8.65E-01
TE-132		0.00E+00	0.00E+00	1.93E-04	0.00E+00	1.93E-04
CS-134		4.67E-03	3.27E-03	3.05E-02	1.76E-02	5.60E-02
CS-136		0.00E+00	5.50E-05	0.00E+00	0.00E+00	5.50E-05
CS-137		1.24E-02	7.98E-03	7.89E-02	3.31E-02	1.32E-01
CS-138		5.66E-03	1.76E-03	0.00E+00	3.78E-04	7.80E-03
BA-139		1.58E-02	0.00E+00	0.00E+00	1.34E-02	2.93E-02
LA-140		3.21E-03	1.99E-03	5.62E-03	5.74E-03	1.66E-02
W-187		6.26E-05	1.44E-04	0.00E+00	3.59E-04	5.66E-04
AR-41		2.39E-04	0.00E+00	0.00E+00	0.00E+00	2.39E-04
KR-88		0.00E+00	3.35E-04	0.00E+00	0.00E+00	3.35E-04
XE-131M		1.29E-02	1.54E-03	4.36E-02	3.57E-04	5.83E-02
XE-133		1.86E+00	1.27E+00	3.66E+00	4.51E-01	7.24E+00
XE-133M		1.42E-02	1.41E-02	4.11E-02	1.50E-03	7.09E-02
XE-135		2.80E-02	2.64E-02	5.41E-02	2.40E-03	1.11E-01

SUPPLEMENTAL REPORT PAGE 2
OCONEE 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 OCONEE COUNTING SYSTEMS. TYPICAL MDA'S FOR THE OCONEE COUNTING SYSTEM'S ARE LISTED BELOW:

ISOTOPE	ENERGY(Kev)	AVERAGE MDA
XE-133	80	1.32E-06
CE-144	133	1.42E-06
KR-88	196	1.82E-06
XE-135	249	5.04E-07
KR-87	402	9.99E-07
CS-137	661	3.17E-07
MO-99	778	1.22E-06
MN-54	834	2.18E-07
ZN-65	1115	4.27E-07
CO-60	1332	2.24E-07

OCONEE NUCLEAR STATION

The estimated percentage of error for both Liquid and Gaseous effluent release data at Oconee Nuclear Station has been determined to be +23%. This number was derived by summing the following individual estimates of errors:

- 1) Flow rate determining devices = $\pm 5\%$
- 2) Counting error = $\pm 15\%$
- 3) Sample preparation error = $\pm 3\%$

SKIN	MAXIMUM DOSE-	5.540-03 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	SHORE
	CD 58	5.09 %				
	CD 60	21.78 %				
	SR 125	20.90 %				
	CS 134	9.44 %				
	CS 137	36.81 %				
BONE	MAXIMUM DOSE-	5.910-01 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	CS 134	21.56 %				
	CS 137	78.00 %				
LIVER	MAXIMUM DOSE-	7.540-01 MREM	CRITICAL AGE-	TEEN	CRITICAL PATHWAY-	FISH
	CS 134	32.36 %				
	CS 137	67.48 %				
T. BODY	MAXIMUM DOSE-	5.380-01 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	7.27 %				
	CS 134	36.52 %				
	CS 137	55.82 %				
THYROID	MAXIMUM DOSE-	2.330-01 MREM	CRITICAL AGE-	INFANT	CRITICAL PATHWAY-	DRINKING
	H 3	21.67 %				
	I 131	77.71 %				
KIDNEY	MAXIMUM DOSE-	2.740-01 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	FISH
	H 3	14.29 %				
	CS 134	28.44 %				
	CS 137	56.92 %				
LUNG	MAXIMUM DOSE-	1.290-01 MREM	CRITICAL AGE-	CHILD	CRITICAL PATHWAY-	FISH
	H 3	40.46 %				
	CS 134	18.09 %				
	CS 137	40.38 %				
GI-LLI	MAXIMUM DOSE-	9.830-02 MREM	CRITICAL AGE-	ADULT	CRITICAL PATHWAY-	DRINKING
	H 3	39.80 %				
	CD 58	10.02 %				
	WF 95	23.23 %				
	CS 137	9.34 %				

SKIN MAXIMUM DOSE- 1.03D-02 MREM CRITICAL AGE- TEEN CRITICAL PATHWAY- SHORE

CO 58 6.80 %
 CD 60 34.16 %
 AG 110M 14.41 %
 SE 125 25.97 %
 CS 137 12.83 %

BONE MAXIMUM DOSE- 4.91D-01 MREM CRITICAL AGE- CHILD CRITICAL PATHWAY- FISH

FE 55 15.28 %
 CS 134 23.06 %
 CS 137 30.67 %

LIVER MAXIMUM DOSE- 5.92D-01 MREM CRITICAL AGE- TEEN CRITICAL PATHWAY- FISH

FE 55 5.19 %
 CS 134 38.63 %
 CS 137 52.24 %

T. BODY MAXIMUM DOSE- 4.17D-01 MREM CRITICAL AGE- ADULT CRITICAL PATHWAY- FISH

H 3 8.55 %
 CS 134 41.93 %
 CS 137 46.60 %

THYROID MAXIMUM DOSE- 2.33D-01 MREM CRITICAL AGE- INFANT CRITICAL PATHWAY- DRINKING

H 3 19.79 %
 I 131 80.12 %

KIDNEY MAXIMUM DOSE- 2.09D-01 MREM CRITICAL AGE- TEEN CRITICAL PATHWAY- FISH

H 3 12.09 %
 CS 134 33.18 %
 CS 137 50.84 %

LUNG MAXIMUM DOSE- 1.27D-01 MREM CRITICAL AGE- CHILD CRITICAL PATHWAY- FISH

H 3 37.32 %
 FE 55 17.67 %
 CS 134 14.28 %
 CS 137 24.42 %

GI-LLI MAXIMUM DOSE- 9.29D-01 MREM CRITICAL AGE- ADULT CRITICAL PATHWAY- FISH

NB 95 87.05 %

SKIN MAXIMUM DOSE- 2.60D-02 MREM CRITICAL AGE- TEEN CRITICAL PATHWAY- SHORE
 CO 60 31.99 %
 AG 110M 12.50 %
 SB 125 26.27 %
 CS 134 5.14 %
 CS 137 18.24 %

BONE MAXIMUM DOSE- 1.48D+00 MREM CRITICAL AGE- CHILD CRITICAL PATHWAY- FISH
 CS 134 21.99 %
 CS 137 72.50 %

LIVER MAXIMUM DOSE- 1.92D+00 MREM CRITICAL AGE- TEEN CRITICAL PATHWAY- FISH
 H 3 6.74 %
 CS 134 32.50 %
 CS 137 59.10 %

T. BODY MAXIMUM DOSE- 1.40D+00 MREM CRITICAL AGE- ADULT CRITICAL PATHWAY- FISH
 H 3 13.04 %
 CS 134 35.82 %
 CS 137 49.90 %

THYROID MAXIMUM DOSE- 8.13D-01 MREM CRITICAL AGE- INFANT CRITICAL PATHWAY- DRINKING
 H 3 29.05 %
 I 131 70.66 %

KIDNEY MAXIMUM DOSE- 7.51D-01 MREM CRITICAL AGE- CHILD CRITICAL PATHWAY- FISH
 H 3 32.45 %
 CS 134 22.05 %
 CS 137 44.54 %

LUNG MAXIMUM DOSE- 4.52D-01 MREM CRITICAL AGE- CHILD CRITICAL PATHWAY- DRINKING
 H 3 53.85 %
 CS 134 13.16 %
 CS 137 26.77 %

GI-LLI MAXIMUM DOSE- 1.20D+00 MREM CRITICAL AGE- ADULT CRITICAL PATHWAY- FISH
 H 3 15.21 %
 NB 95 70.69 %

OCONEE NUCLEAR STATION
 RADIOACTIVE EFFLUENT RELEASES
 DATE : 02/24/87

YEAR : 1986

II. AIRBORNE RELEASES

	UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1. TOTAL NOBLE GASES	CURIES	7.09E+03	4.02E+03	7.52E+03	5.63E+03	2.43E+04
2. TOTAL HALOGENS	CURIES	2.98E-03	5.75E-03	1.15E-02	1.37E-02	3.39E-02
3. TOTAL PARTICULATE GROSS BETA-GAMMA	CURIES	1.65E-04	8.52E-03	6.69E-03	4.84E-03	2.02E-02
4. TOTAL TRITIUM	CURIES	1.25E+01	8.87E+00	1.29E+01	8.90E+00	4.31E+01
5. TOTAL PARTICULATE GROSS ALPHA ACTIVITY	CURIES	0.00E+00	0.00E+00	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	1.60E+03	1.60E+03
7. RADIONUCLIDES RELEASED	CURIES					
PARTICULATES						
NA-24		1.55E-09	1.26E-08	2.98E-09	1.08E-08	2.79E-08
MN-54		5.41E-07	0.00E+00	3.15E-05	8.50E-07	3.29E-05
CO-57		0.00E+00	0.00E+00	0.00E+00	2.35E-07	2.35E-07
CO-58		2.61E-05	2.04E-05	1.35E-04	1.01E-04	2.83E-04
CO-60		7.60E-06	2.55E-06	1.96E-04	3.34E-05	2.40E-04
RB-88		2.70E-05	8.36E-03	3.53E-03	4.40E-03	1.63E-02
SR-90		0.00E+00	1.04E-07	0.00E+00	0.00E+00	1.04E-07
SR-92		7.17E-09	2.96E-08	3.44E-10	9.03E-07	9.40E-07
ZR-95		0.00E+00	0.00E+00	7.91E-10	9.56E-07	9.57E-07
NB-95		0.00E+00	0.00E+00	0.00E+00	1.46E-06	1.46E-06
NB-97		0.00E+00	2.20E-12	1.72E-06	9.02E-05	9.19E-05
TC-99M		0.00E+00	0.00E+00	9.45E-10	0.00E+00	9.45E-10
RU-103		0.00E+00	0.00E+00	2.74E-07	4.39E-07	7.13E-07
AG-110M		0.00E+00	0.00E+00	3.53E-05	8.20E-06	4.35E-05
SB-122		0.00E+00	0.00E+00	6.45E-05	6.78E-10	6.45E-05
SB-125		0.00E+00	0.00E+00	0.00E+00	1.29E-06	1.29E-06
CS-134		2.87E-06	2.30E-06	5.11E-04	5.41E-06	5.22E-04
CS-137		1.00E+04	1.33E+04	2.06E-03	8.84E-05	2.38E-03
CS-138		7.19E-07	2.00E-06	4.37E-05	1.05E-04	1.57E-04
LA-140		7.90E-09	0.00E+00	6.37E-09	0.00E+00	1.43E-08
CE-143		0.00E+00	1.50E-09	4.46E-07	9.74E-06	1.02E-05
CE-144		0.00E+00	0.00E+00	7.66E-05	0.00E+00	7.66E-05
HALOGENS						
I-131		1.44E-03	2.99E-03	9.41E-03	9.32E-03	2.32E-02
I-132		2.39E-05	4.33E-05	5.29E-04	3.26E-04	9.22E-04
I-133		1.50E-03	2.66E-03	1.55E-03	3.69E-03	9.40E-03
I-134		0.00E+00	5.70E-06	3.84E-07	3.80E-08	6.12E-06
I-135		1.02E-05	5.28E-05	3.50E-05	3.35E-04	4.33E-04
GASES						
AR-41		1.16E+01	1.99E+01	3.96E+00	5.09E+01	8.64E+01
KR-85		8.81E+01	2.22E+02	3.56E+02	1.98E+02	8.64E+02
KR-85M		2.59E+00	5.95E+00	5.81E+00	8.95E+00	2.33E+01
KR-87		2.64E-01	2.94E+00	4.04E-01	0.00E+00	3.61E+00
KR-88		4.00E+00	5.26E+00	1.01E+00	1.31E+01	2.34E+01
XE-131M		3.40E+01	7.52E+01	6.99E+01	8.70E+01	2.66E+02
XE-133		6.42E+03	3.57E+03	6.60E+03	5.12E+03	2.17E+04
XE-133M		5.14E+01	3.74E+01	3.86E+01	4.89E+01	1.76E+02
XE-135		4.67E+02	5.76E+01	4.45E+02	9.66E+01	1.07E+03
XE-135M		0.00E+00	2.39E+00	0.00E+00	1.22E+00	3.61E+00
XE-137		0.00E+00	2.10E+01	0.00E+00	0.00E+00	2.10E+01

OCCONEE GAS DOSE- 3-RD QUARTER 1986 NRC REPORT - 02/24/87 182/273 00000010
SPECIAL LOCATION # 1 WDRST GAS LOC
AT 3.50 MILESS

NOBLE GAS EXPOSURE SUMMARY:

DISPERSION FACTOR = $4.10E-07$ SEC/CM-M

BETA AIR DOSE = $1.15E-01$ MILLIRADS
GAMMA AIR DOSE = $4.26E-02$ MILLIRADS

TOTAL BODY DOSE = $2.57D-02$ MILLIREM

KR 85 0.20%
XE133 68.65%
XE135 28.49%

SKIN DOSE = $7.75D-02$ MILLIREM

KR 85 8.07%
XE133 64.19%
XE135 25.00%

OCCONEE GAS DOSE- 3-RD QUARTER 1986 NRC REPORT - 02/24/87 102/273 00000010
SPECIAL LOCATION # 2 WORST ORG LOC
AT 1.00 MILESNE

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

DISPERSION FACTOR - $7.50E-08$ SEC/CM-H DEPOSITION FACTOR - $2.70E-09$ H(-2)

MAXIMUM ORGAN - THYROID
CRITICAL AGE - INFANT
CRITICAL PATHWAY - COW MILK @ 99.27%

MAXIMUM ORGAN DOSE = $3.93D-01$ MILLIREM
I 131 99.19%

OCDONEE GAS DOSE - 4-TH QUARTER 1986 NRC REPORT - 02/24/87 274/365 00000010
SPECIAL LOCATION # 1 WORST GAS LOC
AT 3.50 MILESS

NOBLE GAS EXPOSURE SUMMARY:

DISPERSION FACTOR = $4.10E-07$ SEC/CM-H

BETA AIR DOSE = $8.31E-02$ MILLIRADS
GAMMA AIR DOSE = $3.53E-02$ MILLIRADS

TOTAL BODY DOSE = $2.15D-02$ MILLIREM

AR 41	19.06%
KR 85	0.14%
KR 88	0.16%
XE133	63.77%
XE135	7.41%

SKIN DOSE = $5.71D-02$ MILLIREM

AR 41	11.49%
KR 85	6.10%
KR 88	4.23%
XE133	67.65%
XE135	7.37%

OCONEE GAS DOSE - 4-TH QUARTER 1986 NRC REPORT - 02/24/87 274/365 00000010
SPECIAL LOCATION # 2 WORST ORG LOC
AT 1.00 MILEENE

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

DISPERSION FACTOR - $7.50E-08$ SEC/CM-M DEPOSITION FACTOR - $2.70E-09$ M(-2)

MAXIMUM ORGAN - THYROID
CRITICAL AGE - INFANT
CRITICAL PATHWAY - COW MILK @ 99.86%

MAXIMUM ORGAN DOSE = $3.84D-01$ MILLIREM
I 131 99.57%

OCDNEE GAS DOSE- 1986 ANNUAL NRC REPORT - 02/24/87 1/365
SPECIAL LOCATION # 1 WORST GAS LOC
AT 3.50 MILESS

00000010

NOBLE GAS EXPOSURE SUMMARY:

DISPERSION FACTOR = $4.10E-07$ SEC/CM-M

BETA AIR DOSE = $3.69E-01$ MILLIRADS
GAMMA AIR DOSE = $1.44E-01$ MILLIRADS

TOTAL BODY DOSE = $8.73D-02$ MILLIREM

AR 41	7.96%
KR 85	0.14%
XE133	66.48%
XE135	20.18%

SKIN DOSE = $2.51D-01$ MILLIREM

AR 41	4.44%
KR 85	6.05%
XE133	65.19%
XE135	18.57%

OCONEE GAS DOSE- 1986 ANNUAL NRC REPORT - 02/24/87 1/365
SPECIAL LOCATION # 2 WORST ORG LOC
AT 1.00 MILES NE

00000010

IODINE, PARTICULATE, AND TRITIUM EXPOSURE SUMMARY:

DISPERSION FACTOR - $7.50E-08$ SEC/CU-M DEPOSITION FACTOR - $2.70E-09$ M(-2)

MAXIMUM ORGAN - THYROID
CRITICAL AGE - INFANT
CRITICAL PATHWAY - COW MILK @ 99.60%

MAXIMUM ORGAN DOSE = $9.67D-01$ MILLIREM
I 131 99.29%

OCONEE NUCLEAR STATION
 SOLID RADIOACTIVE WASTE SHIPPED TO A DISPOSAL FACILITY
 REPORT PERIOD 07-01-86 THROUGH 12-31-86

	TYPES OF WASTE SHIPPED	NUMBER OF SHIPMENTS	NUMBER OF CONTAINERS	WASTE CLASS	CONT. TYPE	BURIAL VOLUME		TOTAL ACT. Ci	EST. TOTAL ERROR %
						(ft ³)	(m ³)		
1	WASTE FROM LIQUID SYSTEMS								
	(A) Dewatered Powdex Resins	3	9	9A	STC	1854.0	52.50	0.27	10
	(B) Dewatered Bead Resins	1	1	1B	B	119.0	3.37	53.01	10
	(C) Evaporator Concentrates	0	0	N/A	N/A	0	0	0	N/A
	(D) Dewatered Mechanical Filters	5	5	5A	STC	368.0	10.42	0.22	15
	(E) Dewatered Demineralizers	5	15	15B	STC	570.0	16.14	162.00	10
	(F) Solidified (Cement) Oils Acids, Sludges	0	0	N/A	N/A	0	0	0	N/A
2	DRY SOLID WASTE								
	(A) Dry Active Waste (compacted)	14	96	96A	STC	8832.0	250.12	6.93	15
	(B) Dry Active Waste (non-compacted)	13	38	36A, 2B	STC	2493.2	70.61	15.85	15
	(C) Irradiated Components	0	0	N/A	N/A	0	0	0	N/A
TOTALS		41	164	146A, 18B	---	14,236.2	403.16	238.28	---

Summary of Major Radionuclide Composition

Type of Wastes

<u>Type of Wastes</u>	<u>Radionuclide</u>	<u>% Abundance*</u>
1. Wastes from Liquid Systems		
(A) Dewatered Powdex Resins	Ni 63	.1
	Co 58	.1
	Co 60	.5
	Sr 90	2.9
	Cs 134	15.1
	Cs 137	79.3
	Ni 63	.7
	Fe 55	.3
	I 131	.8
	(B) Dewatered Bead Resins	Mn 54	1.8
Co 57		1.0
Co 58		4.5
Co 60		6.5
Ag 110M		.8
Sb 125		1.0
Cs 134		26.0
Cs 137		45.0
Ni 63		9.0
Fe 55		3.7
C 14		.5
(C) Evaporator Concentrates	None for this period.	
(D) Dewatered Mechanical Filters	Mn 54	.3
	Co 58	1.0
	Co 60	22.6
	Cs 137	25.3
	Ni 63	32.8
	Fe 55	13.1
	Sr 90	.9
	Cs 134	4.0
(E) Dewatered Demineralizers	Cr 51	.5
	Mn 54	.6
	Co 58	39.0
	Cs 134	14.5
	Co 60	1.6
	Nb 95	.6
	Cs 136	.1
	Ag 110M	1.3
	Sb 125	.5
	I 131	.5
	Cs 137	19.5
	Ni 63	18.9
	Fe 55	2.3
(F) Solidified Acids, Oils, Sludges	None for this period.	

Summary of Major Radionuclide Composition (Continued)

Type of Wastes

	<u>Radionuclide</u>	<u>% Abundance*</u>
2. Dry Solid Waste		
(A) Dry Active Waste (Compacted) & (Non-Compacted)	Co 60	23.4
	Cs 134	6.2
	Mn 54	5.1
	Ag 110M	.9
	Cs 137	10.0
	Co 58	8.6
	H 3	.3
	Ni 63	4.6
	Fe 55	40.9
(B) Irradiated Components	None for this period.	

Duke Power Company
Oconee Nuclear Station

Attachment 2

Summary of Unplanned Radioactive
Releases to Unrestricted Areas

Date: August 25, 1986

Description and
Equipment:

Unit 2 was shutdown for a refueling and maintenance outage. Personnel were sandblasting a secondary side component in a sandblast enclosure equipped with a ventilation system to remove scale and rust, which is standard procedure.

Cause:

The cause of the release was a mis-connected ventilation duct.

Corrective Action to
Prevent Recurrence:

This was the first time this particular system was used. Personnel utilizing the system immediately corrected the situation upon the discovery of the release, which was identified by air sampling equipment at the ventilation system discharge.

Consequences:

A conservative value of 20,000 cubic feet of air was estimated to have been released. The total activity estimated to have been released was $3.79\text{E-}6$ Ci of particulate activity comprised of Cs-134 and Cs-137. The total dose to the public was estimated to have been $2.34\text{E-}8$ mrem.

Duke Power Company
Oconee Nuclear Station

Attachment 3

Meteorological Data

PASQUILL STABILITY A

SECTOR	WIND SPEED CLASS									
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	7.50- 8.49	8.50- 9.49	TOTAL
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.
-N-	1	5	6	.	.	.	.	.	.	12
-NNE-	.	10	7	2	.	.	.	.	.	19
-NE-	3	13	17	6	3	.	1	.	.	43
-ENE-	1	3	15	10	15	9	4	2	.	59
-E-	.	4	9	11	7	2	.	.	.	33
-ESE-	.	6	4	1	3	.	.	.	.	14
-SE-	1	10	15	.	2	.	.	.	.	28
-SSE-	.	18	12	3	.	1	.	.	1	35
-S-	3	11	16	7	.	.	.	.	.	37
-SSW-	2	12	21	20	3	.	.	.	.	58
-SW-	2	13	23	11	6	4	.	.	.	59
-WSW-	2	15	8	12	4	1	.	.	.	42
-W-	1	13	6	4	4	6	1	1	.	36
-WNW-	1	9	.	.	1	2	3	.	.	16
-NW-	1	5	2	2	1	.	.	1	.	12
-NNW-	.	9	1	1	.	.	.	.	.	11
TOTAL	18	156	162	90	49	25	9	4	1	514

PASQUILL STABILITY C

SECTOR	WIND SPEED CLASS										TOTAL
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	7.50- 8.49	8.50- 9.49	>9.50 M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	2	5	1	.	.	1	.	.	.	.	9
-NNE-	5	13	2	.	.	.	.	.	.	.	20
-NE-	1	4	9	4	5	2	1	1	.	.	27
-ENE-	.	.	14	7	4	4	.	1	1	1	32
-E-	.	1	6	.	5	.	.	.	.	.	12
-ESE-	.	3	1	.	.	.	.	.	.	.	4
-SE-	1	6	2	.	.	.	.	.	.	.	9
-SSE-	3	12	8	.	.	.	.	.	.	.	23
-S-	6	10	10	3	.	.	.	.	.	.	29
-SSW-	6	16	5	5	2	.	.	.	.	.	34
-SW-	2	18	10	7	2	.	.	.	.	.	39
-WSW-	5	8	6	.	4	1	.	.	.	.	24
-W-	3	11	2	3	.	.	1	.	.	.	20
-WNW-	5	9	2	1	1	.	.	.	.	.	18
-NW-	7	4	1	1	1	.	2	1	.	.	17
-NNW-	2	3	.	.	.	.	.	.	1	.	6
TOTAL	48	123	79	31	24	8	4	3	2	1	323

PASQUILL STABILITY D

SECTOR	WIND SPEED CLASS										TOTAL
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	7.50- 8.49	8.50- 9.49	>9.50 M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	12	17	4	4	1	.	.	.	.	.	38
-NNE-	5	16	10	4	.	.	1	.	.	.	36
-NE-	5	15	28	37	30	15	2	6	4	.	142
-ENE-	3	22	41	49	32	23	11	7	10	3	201
-E-	6	13	13	6	7	1	.	.	.	.	46
-ESE-	4	8	8	3	1	1	.	.	.	.	25
-SE-	7	13	7	2	.	.	.	.	.	.	29
-SSE-	20	32	15	.	.	.	.	.	.	.	67
-S-	13	18	15	3	.	.	.	.	.	.	49
-SSW-	12	23	16	13	2	.	.	.	.	.	66
-SW-	7	14	22	20	5	1	.	.	.	.	69
-WSW-	15	16	15	10	11	2	.	.	.	.	69
-W-	9	12	1	4	4	1	.	.	.	.	31
-WNW-	7	10	1	2	2	5	1	1	.	.	29
-NW-	9	7	1	.	1	.	1	.	.	.	19
-NNW-	11	9	1	4	.	.	1	.	.	.	26
-CALM-	2	.	.	.	.	.	.	.	.	.	2
TOTAL	147	245	198	161	96	49	17	14	14	3	944

PASQUILL STABILITY E

SECTOR	WIND SPEED CLASS									TOTAL
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	7.50- 8.49	8.50- 9.49	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	17	50	46	11	2	.	.	.	.	126
-NNE-	8	74	29	4	.	.	.	1	.	116
-NE-	8	40	60	43	30	8	3	2	1	195
-ENE-	8	30	60	39	35	10	8	3	.	193
-E-	8	26	19	9	6	1	.	.	.	69
-ESE-	8	12	12	3	2	.	.	.	.	37
-SE-	15	23	7	.	1	.	.	.	.	46
-SSE-	20	33	16	1	.	.	.	.	.	70
-S-	16	21	15	6	1	.	.	.	.	59
-SSW-	15	13	20	9	3	.	.	.	.	60
-SW-	7	30	33	13	4	.	.	.	.	87
-WSW-	22	35	22	16	3	2	.	.	.	100
-W-	25	22	15	11	5	3	.	.	.	81
-WNW-	31	19	11	14	10	4	3	2	1	95
-NW-	22	29	9	5	5	4	1	.	.	75
-NNW-	22	46	30	5	3	1	1	.	.	108
TOTAL	252	503	404	189	110	33	16	8	2	1517

PASQUILL STABILITY F

SECTOR	WIND SPEED CLASS								TOTAL
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	7.50- 8.49	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	37	57	46	.	2	.	.	.	142
-NNE-	25	42	11	1	.	.	1	.	80
-NE-	13	21	3	3	.	.	.	.	40
-ENE-	11	9	2	4	1	.	.	.	27
-E-	6	8	6	2	.	.	.	.	22
-ESE-	6	3	1	.	1	.	.	.	11
-SE-	4	8	4	.	.	.	.	.	16
-SSE-	6	5	4	1	.	.	.	.	16
-S-	6	7	3	.	.	.	.	.	16
-SSW-	9	4	2	.	.	2	.	.	17
-SW-	9	11	4	.	.	.	.	.	24
-WSW-	18	13	5	.	.	.	.	.	36
-W-	20	16	1	.	.	.	.	.	37
-WNN-	19	19	3	4	.	.	.	1	46
-NW-	31	28	5	.	.	.	.	.	64
-NNW-	25	41	18	.	.	1	.	.	85
-CALM-	2	.	.	.	.	.	.	.	2
TOTAL	247	292	118	15	4	3	1	1	681

PASQUILL STABILITY G

SECTOR	WIND SPEED CLASS								TOTAL
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	8.50- 9.49	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	15	16	8	2	1	.	.	.	42
-NNE-	1	8	8	1	.	.	.	.	18
-NE-	3	9	2	3	6	2	.	.	25
-ENE-	3	8	17	6	15	10	1	.	60
-E-	3	10	2	2	6	.	.	.	23
-ESE-	5	9	3	1	.	.	.	.	18
-SE-	3	10	10	.	.	.	.	.	23
-SSE-	5	13	2	1	.	.	.	.	21
-S-	8	8	1	.	1	.	.	.	18
-SSW-	5	6	4	4	2	.	.	.	21
-SW-	3	3	3	11	9	2	.	.	31
-WSW-	6	8	9	4	2	1	1	.	31
-W-	5	5	2	3	1	4	.	.	20
-WNW-	5	5	.	4	4	2	.	1	21
-NW-	5	6	3	1	.	.	.	.	15
-NNW-	6	10	7	5	2	.	.	.	30
TOTAL	81	134	81	48	49	21	2	1	417

ALL STABILITY CLASSES

SECTOR	WIND SPEED CLASS										TOTAL
	0.45- 1.49	1.50- 2.49	2.50- 3.49	3.50- 4.49	4.50- 5.49	5.50- 6.49	6.50- 7.49	7.50- 8.49	8.50- 9.49	>9.50 M/S	
	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	
-N-	84	150	111	17	6	1	.	.	.	.	369
-NNE-	44	163	67	12	.	.	2	1	.	.	289
-NE-	33	102	119	96	74	27	7	9	5	.	472
-ENE-	26	72	149	115	102	56	24	13	11	4	572
-E-	23	62	55	30	31	4	.	.	.	.	205
-ESE-	23	41	29	8	7	1	.	.	.	.	109
-SE-	31	70	45	2	3	.	.	.	.	.	151
-SSE-	54	113	57	6	.	1	.	.	1	.	232
-S-	52	75	60	19	2	.	.	.	.	.	208
-SSW-	49	74	68	51	12	2	.	.	.	.	256
-SW-	30	89	95	62	26	7	.	.	.	.	309
-WSW-	68	95	65	42	24	7	1	.	.	.	302
-W-	63	79	27	25	14	14	2	1	.	.	225
-WNW-	68	71	17	25	18	13	7	4	2	.	225
-NW-	75	79	21	9	8	4	4	2	.	.	202
-NNW-	66	118	57	15	5	2	2	.	1	.	266
-CALM-	4	.	.	.	.	.	.	.	.	.	4
TOTAL	793	1453	1042	534	332	139	49	30	20	4	4396

Duke Power Company
Oconee Nuclear Station

Attachment 4

Radioactive Gas and Liquid Monitors
Inoperable for Greater Than 30 Days

Radioactive Gas and Liquid Monitors
Inoperable Greater Than 30 Days

1,2,3 RIA-35

RIA-35 for each unit has been inoperable during the entire reporting period, July 1, 1986 to December 31, 1986. These RIAs which monitor Low Pressure Service Water (LPSW) have been out of service for an extended period due to system design inadequacies. As presently configured, these monitors do not receive a sufficiently representative composite sample for all portions of the LPSW system. These monitors will be returned to service following implementation of a Nuclear Station Modification which is to resolve LPSW design difficulties.

CTP #3 Composite Sampler

CTP #3 Composite Sampler was taken out of service on 6/18/86 due to the level indicator fluctuating outside of the tolerance range. After consulting the manufacturer, the problem with the sampler was determined to be an electrical interference from overhead transmission lines causing the sensor probe to malfunction. An auxiliary ground was attached to the probe in the water. The sampler was declared operable on 8/10/86 and has worked properly since its return to service.

DUKE POWER COMPANY
P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

March 2, 1987

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Semi-Annual Radioactive Effluent Release Report

Dear Sir:

Pursuant to Oconee Nuclear Station Technical Specification 6.6.1.4 and 10 CFR 50.36a (a)(2), please find attached the 1986 Semi-Annual Radioactive Effluent Release Report for July 1 - December 31, 1986.

Attachment 1 contains the Semi-Annual Radioactive Effluent Release and Solid Waste Disposal Reports. Attachment 2 provides details of unplanned (or abnormal) offsite releases. The meteorological data, concurrent with the release of gaseous effluents, is included as Attachment 3. Pursuant to Technical Specification 3.5.5, please find attached a description of all Radioactive Gas and Liquid Monitors that were inoperable for greater than 30 days (Attachment 4). Please note that Revisions 11 and 12 of the Offsite Dose Calculation Manual (dated September 12, 1986) were transmitted in an October 2, 1986 letter to H. R. Denton, NRC/ONRR.

Very truly yours,

H. B. Tucker / BT

Hal B. Tucker

WHM/13/sbn

Attachments

xc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Ms. Helen Pastis
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. J. C. Bryant
NRC Resident Inspector
Oconee Nuclear Station

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