DUKE ENERGY®

Scott L. Batson
Vice President
Oconee Nuclear Station

Duke Energy
ON01VP | 7800 Rochester Hwy
Seneca, SC 29672

o: 864.873.3274
f: 864.873. 4208
Scott.Batson@duke-energy.com

ONS-2014-044

April 30, 2014

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

Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station,
Docket Nos. 50-269, 50-270 and 50-287
2013 Annual Radioactive Effluent Release Report (ARERR)

Pursuant to Oconee Nuclear Station Technical Specification (TS) 5.6.3 and Selected Licensee Commitment 16.11-9, please find attached the Annual Radioactive Effluent Release Report for the period of January 1, 2013 through December 31, 2013. In accordance with TS 5.5.1, the Offsite Dose Calculation Manual (ODCM) is included in this submittal.

Attachment 1	Summary of Gaseous and Liquid Effluents Report
Attachment 2	Supplemental Information
Attachment 3	Solid Radioactive Waste Disposal Report
Attachment 4	Meteorological Data
Attachment 5	Unplanned Offsite Releases
Attachment 6	Assessment of Radiation Dose from Radioactive Effluents to Members of the Public (includes fuel cycle dose calculation results)
Attachment 7	Revisions to UFSAR Section 16.11 Radiological Effluent Controls
Attachment 8	Revisions to the Radioactive Waste Process Control Program Manual
Attachment 9	Information to Support the NEI Groundwater Protection Initiative
Attachment 10	Inoperable Equipment
Attachment 11	Radioactive Waste Systems Changes
Attachment 12	Errata to Previous Reports

A009
IE48
NRR

Enclosure 2013 Offsite Dose Calculation Manual (Compact Disc)

Any questions concerning this report should be directed to Judy Smith at 864-873-4309.

Sincerely,

Scott Batson
Vice President
Oconee Nuclear Station

Attachments 1 through 12
Enclosures Offsite Dose Calculation Manual [ODCM] Compact Disc [CD]

xc (with attachments and enclosure):

Mr. Victor McCree
Administrator, Region II
U.S. Nuclear Regulatory Commission
Marquis One Tower
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, GA 30303-1257

Mr. Eddy Crowe
NRC Senior Resident Inspector
Oconee Nuclear Station

xc (with attachments only):

Mr. James R. Hall
NRC Project Manager
(File via E-mail)
U.S. Nuclear Regulatory Commission
One White Flint North, M/S O-8B1
11555 Rockville Pike
Rockville, MD 20852-2746

Ms. Susan E Jenkins
Radioactive and Infectious Waste Management
2600 Bull Street
Columbia, SC 29201

Mr. Joseph T. Sears, Chemistry Manager
INPO
700 Galleria Place, Suite 100
Atlanta, GA 30339-5943

Mr. Gary Stewart
State Voluntary Cleanup Section
S.C. Dept. of Health & Environmental Control
2600 Bull Street
Columbia, SC 29201

Ms. Sandra Threatt
Nuclear Response and Emergency Environmental Surveillance
S.C. Dept. of Health & Environmental Control
2600 Bull Street
Columbia, SC 29201

ATTACHMENT 1

Summary of Gaseous and Liquid Effluents Report

This attachment includes a summary of the quantities of radioactive liquid and gaseous effluents as outlined in Regulatory Guide 1.21, Revision 1, Appendix B.

(Pages 1 - 9)

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
A. Fission and Activation Gases						
1. Total Release	Ci	1.01E+01	2.34E-01	5.14E+00	3.42E-01	1.58E+01
2. Avg. Release Rate	uCi/sec	1.30E+00	2.98E-02	6.47E-01	4.30E-02	5.02E-01
B. Iodine-131						
1. Total Release	Ci	0.00E+00	7.04E-10	0.00E+00	9.00E-09	9.70E-09
2. Avg. Release Rate	uCi/sec	0.00E+00	8.96E-11	0.00E+00	1.13E-09	3.08E-10
C. Particulates Half Life >= 8 days						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	3.35E-11	3.35E-11
2. Avg. Release Rate	uCi/sec	0.00E+00	0.00E+00	0.00E+00	4.22E-12	1.06E-12
D. Tritium						
1. Total Release	Ci	2.31E+01	2.69E+01	3.28E+01	6.32E+01	1.46E+02
2. Avg. Release Rate	uCi/sec	2.97E+00	3.42E+00	4.13E+00	7.96E+00	4.63E+00
E. Carbon-14						
1. Total Release	Ci	6.06E+00	6.11E+00	6.06E+00	4.34E+00	2.26E+01
2. Avg. Release Rate	uCi/sec	7.79E-01	7.77E-01	7.63E-01	5.46E-01	7.16E-01
F. 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	uCi/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 1/1/13 TO 1/1/14
GASEOUS EFFLUENTS - ELEVATED RELEASES - CONTINUOUS MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
AR-41	Ci	0.00E+00	0.00E+00	9.98E-03	0.00E+00	9.98E-03
XE-133	Ci	1.01E+01	2.15E-01	5.09E+00	2.84E-01	1.57E+01
Totals for Period...	Ci	1.01E+01	2.15E-01	5.10E+00	2.84E-01	1.57E+01
2. Iodines						
** No Nuclide Activities **		.....	.....	.....	.....	.....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		.....	.....	.....	.....	.....
4. Tritium						
H-3	Ci	2.13E+01	2.24E+01	2.93E+01	5.50E+01	1.28E+02
5. Carbon-14						
C-14	Ci	1.82E+00	1.83E+00	1.82E+00	1.30E+00	6.78E+00
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS EFFLUENTS - ELEVATED RELEASES - BATCH MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
AR-41	Ci	0.00E+00	6.19E-03	2.94E-02	1.72E-04	3.58E-02
KR-85	Ci	5.59E-04	3.87E-04	0.00E+00	8.10E-03	9.05E-03
XE-131M	Ci	0.00E+00	1.91E-04	1.14E-04	5.02E-04	8.07E-04
XE-133	Ci	4.61E-04	1.20E-02	1.56E-02	4.82E-02	7.62E-02
XE-133M	Ci	0.00E+00	3.82E-05	6.03E-05	2.11E-04	3.10E-04
XE-135	Ci	0.00E+00	5.61E-06	2.05E-04	4.93E-05	2.60E-04
Totals for Period...	Ci	1.02E-03	1.88E-02	4.54E-02	5.72E-02	1.22E-01
2. Iodines						
I-131	Ci	0.00E+00	7.04E-10	0.00E+00	9.00E-09	9.70E-09
I-133	Ci	0.00E+00	3.05E-10	0.00E+00	0.00E+00	3.05E-10
Totals for Period...	Ci	0.00E+00	1.01E-09	0.00E+00	9.00E-09	1.00E-08
3. Particulates Half Life >= 8 days						
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	3.35E-11	3.35E-11
4. Tritium						
H-3	Ci	4.56E-05	1.85E-02	3.56E-02	6.54E-02	1.20E-01
5. Carbon-14						
C-14	Ci	4.24E+00	4.28E+00	4.24E+00	3.04E+00	1.58E+01
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Units	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						
H-3	Ci	1.76E+00	4.50E+00	3.44E+00	7.39E+00	1.71E+01
5. Carbon-14						
** No Nuclide Activities **	.....	.....	.....	.....	.....	.....
6. Gross Alpha Radioactivity						
** No Nuclide Activities **	.....	.....	.....	.....	.....	.....

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Units	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						
H-3	Ci	0.00E+00	0.00E+00	0.00E+00	7.51E-01	7.51E-01
5. Carbon-14						
** No Nuclide Activities **		.....	.....	.....	.....	.....
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
A. Fission and Activation Products						
1. Total Release	Ci	7.14E-04	2.33E-04	8.54E-04	1.39E-02	1.57E-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	8.54E-11	2.76E-11	9.98E-11	1.62E-09	4.63E-10
B. Tritium						
1. Total Release	Ci	2.73E+02	1.48E+02	1.68E+02	4.80E+02	1.07E+03
2. Average Diluted Concentration						
a. Continuous Releases	µCi/ml	3.69E-08	2.81E-08	4.44E-08	1.88E-08	3.21E-08
b. Batch Releases	µCi/ml	3.25E-05	1.75E-05	1.96E-05	5.60E-05	3.15E-05
C. Dissolved and Entrained Gases						
1. Total Release	Ci	0.00E+00	0.00E+00	2.11E-06	3.65E-03	3.65E-03
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	2.46E-13	4.26E-10	1.08E-10
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	6.64E+08	6.31E+08	8.87E+08	5.09E+08	2.69E+09
2. Batch Releases	liters	1.02E+06	7.16E+05	1.54E+06	3.88E+06	7.16E+06
F. Volume of Dilution Water						
1. Continuous Releases	liters	8.37E+09	8.44E+09	8.55E+09	8.55E+09	3.39E+10
2. Batch Releases	liters	8.37E+09	8.44E+09	8.55E+09	8.55E+09	3.39E+10

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
LIQUID EFFLUENTS - CONTINUOUS MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
** No Nuclide Activities **	.....	.....	.....	.....	.....	.....
2. Tritium						
H-3	Ci	3.33E-01	2.55E-01	4.19E-01	1.70E-01	1.18E+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 1/1/13 TO 1/1/14
LIQUID EFFLUENTS - BATCH MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2013	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
AG-108M	Ci	0.00E+00	0.00E+00	0.00E+00	1.51E-05	1.51E-05
AG-110M	Ci	2.35E-05	3.42E-06	4.15E-05	2.69E-04	3.38E-04
CO-57	Ci	0.00E+00	1.15E-06	0.00E+00	1.34E-05	1.46E-05
CO-58	Ci	4.75E-04	1.01E-04	3.00E-04	1.01E-02	1.10E-02
CO-60	Ci	9.04E-05	1.73E-05	1.97E-04	1.29E-03	1.59E-03
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	1.46E-04	1.46E-04
CS-137	Ci	0.00E+00	0.00E+00	2.56E-05	8.66E-05	1.12E-04
FE-55	Ci	6.97E-05	1.06E-04	1.59E-04	5.74E-04	9.08E-04
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	7.47E-05	7.47E-05
I-131	Ci	0.00E+00	0.00E+00	1.41E-06	0.00E+00	1.41E-06
MN-54	Ci	0.00E+00	0.00E+00	2.39E-05	2.56E-04	2.80E-04
NB-95	Ci	2.54E-05	0.00E+00	1.92E-05	3.42E-04	3.86E-04
NB-97	Ci	1.40E-05	0.00E+00	1.07E-05	0.00E+00	2.48E-05
SB-124	Ci	2.44E-06	0.00E+00	0.00E+00	8.34E-05	8.58E-05
SB-125	Ci	0.00E+00	4.31E-06	3.24E-05	5.24E-04	5.61E-04
ZN-65	Ci	0.00E+00	0.00E+00	1.77E-05	4.86E-05	6.62E-05
ZR-95	Ci	0.00E+00	0.00E+00	1.49E-05	1.03E-04	1.18E-04
ZR-97	Ci	1.40E-05	0.00E+00	1.07E-05	0.00E+00	2.48E-05
Totals for Period...	Ci	7.14E-04	2.33E-04	8.54E-04	1.39E-02	1.57E-02
2. Tritium						
H-3	Ci	2.72E+02	1.48E+02	1.67E+02	4.80E+02	1.07E+03
3. Dissolved and Entrained Gases						
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	3.65E-03	3.65E-03
XE-135	Ci	0.00E+00	0.00E+00	2.11E-06	0.00E+00	2.11E-06
Totals for Period...	Ci	0.00E+00	0.00E+00	2.11E-06	3.65E-03	3.65E-03
4. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

Attachment 2

Supplemental Information

to the

Gaseous and Liquid Effluents Report

(Pages 10 - 13)

Oconee 2013 ARERR - Carbon-14 Supplemental Information

Carbon-14 (C-14), with a half-life of 5730 years, is a naturally occurring isotope of carbon produced by cosmic ray interactions in the atmosphere. Nuclear weapons testing in the 1950s and 1960s significantly increased the amount of C-14 in the atmosphere. C-14 is also produced in commercial nuclear reactors, but the amounts produced are much less than those produced naturally or from weapons testing.

In Regulatory Guide 1.21, Revision 2, "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste", the NRC recommends U.S. nuclear power plants evaluate whether C-14 is a "principal radionuclide", and if so, report the amount of C-14 released. At Oconee, improvements over the years in effluent management practices and fuel performance have resulted in a decrease in gaseous radionuclide (non-C-14) concentrations, and a change in the distribution of gaseous radionuclides released to the environment. As a result, C-14 has become a "principal radionuclide" for the gaseous effluent pathway at Oconee, as defined in Regulatory Guide 1.21, Rev. 2. Oconee's 2013 Annual Radioactive Effluent Release Report (ARERR) contains estimates of C-14 radioactivity released in 2013, and estimates of public dose resulting from the C-14 effluent.

Because the dose contribution of C-14 from liquid radioactive waste is much less than that contributed by gaseous radioactive waste, evaluation of C-14 in liquid radioactive waste at Oconee is not required (Ref. Reg. Guide 1.21, Rev. 2). The quantity of gaseous C-14 released to the environment can be estimated by use of a C-14 source term scaling factor based on power generation (Ref. Reg. Guide 1.21, Rev. 2). Many documents provide information related to the magnitude of C-14 in typical effluents from commercial nuclear power plants. Those documents suggest that nominal annual releases of C-14 in gaseous effluents are approximately 5 to 7.3 curies from PWRs (Ref. Reg. Guide 1.21, Rev. 2). A more recent study recommends a higher C-14 gaseous source term scaling factor of approximately 9.0 to 9.8 Ci/GWe-yr for a Westinghouse PWR and 10.4 to 11.3 for a CE PWR (Ref. EPRI 1021106). The EPRI report did not provide a source term scaling factor for a B&W PWR, but for the 2013 Oconee ARERR a source term scaling factor of 9.4 Ci/GWe-yr is assumed in order to be consistent with the scaling factor used for the Catawba and McGuire ARERRs. Using a source term scaling factor of 9.4 Ci/GWe-yr and actual electric generation (MWe-hrs) from Oconee in 2013 results in a site total C-14 gaseous release estimate to the environment of ~22 Curies. 70% of the C-14 gaseous effluent is assumed to be from batch releases (e.g. WGDTs), and 30% of C-14 gaseous effluent is assumed to be from continuous releases through the unit vents (ref. IAEA Technical Reports Series no. 421, "Management of Waste Containing Tritium and Carbon-14", 2004).

C-14 releases in PWRs occur primarily as a mix of organic carbon and carbon dioxide released from the waste gas system. Since the PWR operates with a reducing chemistry, most, if not all, of the C-14 species initially produced are organic (e.g., methane). As a general rule, C-14 in the primary coolant is essentially all organic with a large fraction as a gaseous species. Any time the RCS liquid or gas is exposed to an oxidizing environment (e.g. during shutdown or refueling), a slow transformation from an organic to an inorganic chemical form can occur. Various studies documenting measured C-14 releases from PWRs suggest a range of 70% to 95% organic with an average of 80% organic with the remainder being CO_2 (Ref. EPRI TR-105715). For the Oconee 2013 ARERR a value of 80% organic C-14 is assumed.

Public dose estimates from airborne C-14 are performed using dose models in NUREG-0133 and Regulatory Guide 1.109. The dose models and assumptions used are documented in the Oconee ODCM. The estimated C-14 dose impact on the maximum organ dose from airborne effluents released from Oconee in 2013 is well below the 10CFR50, Appendix I, ALARA design objective (i.e., 15 mrem/yr per unit).

OCONEE NUCLEAR STATION

2013 EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION

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 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. A SUMMARY DESCRIPTION OF THE METHOD USED FOR ESTIMATING OVERALL ERRORS ASSOCIATED WITH RADIOACTIVITY MEASUREMENTS IS PROVIDED AS PART OF THE "SUPPLEMENTAL INFORMATION" ATTACHMENT.

V. BATCH RELEASES

A. LIQUID EFFLUENT
1. 8.20E+01 = TOTAL NUMBER OF BATCH RELEASES
2. 1.73E+04 = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. 2.49E+02 = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. 2.11E+02 = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. 1.47E+02 = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.
6. 1.70E+04 = AVERAGE DILUTION WATER FLOW DURING RELEASES (GPM).

B. GASEOUS EFFLUENT
1. 5.10E+01 = TOTAL NUMBER OF BATCH RELEASES.
2. 1.17E+05 = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. 2.89E+04 = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. 2.29E+03 = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. 4.40E+01 = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.

VI. ABNORMAL RELEASES

(SEE "UNPLANNED OFFSITE RELEASES" ATTACHMENT)

OCONEE NUCLEAR STATION

Overall Estimate of Error for Effluent Radioactivity Release Reported

The estimated percentage of overall error for both Liquid and Gaseous effluent release data at Oconee Nuclear Station has been determined to be ± 30.3%. 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 = ± 20%

(2) Counting Statistical Error = ± 20%

(3) Calibration Error = ± 10%

(4) Calibration Source Error = ± 2.5%

(5) Sample Preparation Error = ± 3%

Attachment 3

Solid Radioactive Waste Disposal Report

(Pages 14 - 26)

DUKE ENERGY
Oconee Nuclear Station
SOLID RADIOACTIVE WASTE SHIPPED TO A DISPOSAL FACILITY

Report Period: January - December 2013

Waste Type	NUMBER OF SHIPMENTS	NUMBER OF CONTAINERS	WASTE CLASS A-U	A-S	B	C	CONTAINER TYPE	BURIAL VOLUME CU. FT.	CU. M.	TOTAL ACTIVITY CURIES
1) WASTE FROM LIQUID SYSTEM										
(A) Dewatered Powdex Resin	0	0	0	0	0	0	General Design	0	0.00	0.00
(B) Dewatered Primary Resin	3	3	0	1	2	0	TYPE A	360.9	10.22	222.42
(C) Dewatered Mechanical Filters										
1. Primary Filter Media	3	3	0	0	0	3	TYPE A	360.9	10.22	95.53
2. Secondary Filter Media	1	1	1	0	0	0	General Design	73	2.54	0.0005
(D) Solidified oil, liquid, sludge	0	0	0	0	0	0	General Design	0	0.00	0.00
2) DRY SOLID WASTE										
(A) Dry Active Waste - Processor to Burial	49	49	49	0	0	0	General Design	6394.6	181.08	0.85
Metal - Processor to Burial	8	8	0	0	0	0	General Design	533.96	15.12	0.03
(B) Dry Active Waste to Burial	3	3	0	3	0	0	TYPE A	360.9	10.22	6.83
(C) Dry Active Waste Brokered	0	0	0	0	0	0		0	0.00	0.00
(D) Irradiated Components	0	0	0	0	0	0	TYPE B	0	0.00	0.00
TOTAL	67	67	50	4	2	3		8084.24	229.40	325.66

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: Dewatered Powdex Resin

ISOTOPE:	% ABUNDANCE							# OF LINERS SHIPPED TO ENVIROCARE						# OF SHIPMENTS TO ENVIROCARE									TOTAL	AVE.
CR-51	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
MN-54	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CO-57	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CO-58	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CO-60	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
NB-95	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
ZR-95	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CS-134	0.0000	0.0000	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	#VALUE!
RU-103	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
AG-110m	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
SB-125	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
I-131	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CS-137	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
H-3	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
NI-63	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
FE-55	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
SR-90	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
TE-125m	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CS-136	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
XE-133	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
C-14	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
PU-241	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
ZN-65	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
FE-59	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
SB-124	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
RU-106	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
CE-144	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
TE-132	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
AM-241	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#VALUE!
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.30	#VALUE!
CLASS C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CURIES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. FT.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RSR#																								

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: Primary Resin

 # OF LINERS SHIPPED TO CNSI 3

ISOTOPE:	% ABUNDANCE/LINER									**# OF SHIPMENTS TO CNSI 3**												TOTAL	AVE.
AG-110m	0.1728	0.1327	0.0816	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3872	0.1291
AM-241	0.0015	0.0002	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0007
Be-7	0.0000	3.3462	0.4491	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.7953	1.2651
C-14	1.9470	0.1971	0.2134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.3575	0.7858
CE-144	0.0864	0.0803	0.0244	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1711	0.0570
CM-242	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0003
CM-243/44	0.0017	0.0002	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0022	0.0007
CO-57	0.4081	0.6192	0.3420	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.3693	0.4564
CO-58	22.5857	43.9423	9.6429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	76.1709	25.3903
CO-60	5.5919	3.8077	3.3036	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	12.7032	4.2344
CR-51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CS-134	5.6542	3.4712	3.4018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	12.5272	4.1757
CS-136	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CS-137	13.8785	8.1635	9.1071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	31.1491	10.3830
FE-55	16.6667	8.5288	16.1607	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	41.3562	13.7854
FE-59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H-3	0.4221	0.0104	0.0222	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4547	0.1516
I-129	0.0000	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0002
I-131	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MN-54	1.2850	1.5865	1.1339	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.0054	1.3351
NB-95	0.2227	0.0990	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3247	0.1082
NI-59	0.2165	0.1308	0.3583	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7036	0.2345
NI-63	29.9065	25.3846	55.1786	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	110.4697	36.8232
PU-238	0.0014	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0018	0.0006
PU-239/40	0.0000	0.0001	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0001
PU-241	0.0000	0.0222	0.0072	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0294	0.0098
RU-106	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SB-124	0.0960	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0960	0.0320
SB-125	0.3816	0.0000	0.0795	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4611	0.1537
SN-113	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SR-89	0.0000	0.0082	0.0041	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0123	0.0041
SR-90	0.0833	0.0210	0.0384	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1427	0.0476
TC-99	0.0000	0.0042	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0068	0.0023
TE-125m	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
XE-133	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ZN-65	0.1822	0.1625	0.1071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4518	0.1506
ZR-95	0.1364	0.0658	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2022	0.0674
TOTAL	99.91	99.78	99.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	298.70	99.57
CLASS C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS B	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
CLASS AS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
CLASS AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

17

CURIES	6.42	104	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	222.42
CU. FT.	120.3	120.3	120.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	360.9
CU. M	3.41	3.41	3.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.22
RSR#	13-2009	13-2012	13-2027																		

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT Nuclear Station Annual Report
Report Period: January - December 2013
Waste Type: Primary filters

OF DRUMS/LINERS TO CNSI 3

OF SHIPMENTS TO CNSI 3

ISOTOPE:																					TOTAL	AVE.
AG-110m	0.00050	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.026
AM-241	0.00280	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001
BA-140	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
C-14	1.96910	3.52	1.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.38	2.459
CD-109	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
CE-141	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
CE-144	0.00000	0.39	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.151
CM-242	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
CM-243/44	0.00290	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001
CO-57	0.31300	0.42	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.253
CO-58	4.86420	10.35	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.24	5.081
CO-60	6.97530	13.73	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.6451	7.88170
CR-51	0.00070	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.017
CS-134	34.75309	10.11	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.01	15.004
CS-136	0.00000	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	0.310
CS-137	40.08170	13.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.04	18.012
FE-55	1.38270	12.64	67.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.81	27.270
FE-59	0.00110	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.002
H-3	0.21480	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.142
HG-203	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
I-129	0.00000	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.053
MN-54	0.90740	1.21	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	0.747
NB-94	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
NB-95	0.00560	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.078
NI-59	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
NI-63	7.28400	31.59	25.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.75	21.585
PU-238	0.00390	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001
PU-239	0.00200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001
PU-241	0.10190	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.034
RU-103	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
RU-106	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
SB-124	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
SB-125	0.03540	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.013
SN-113	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
SR-89	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000	0.0000000
SR-90	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004	0.001
TC-99	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0036	0.00120
TE-125m	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.00000
XE-133	0.00000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.00000
ZN-65	0.41910	0.16	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.6240	0.20800
ZR-95	0.19380	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4089	0.46963
TOTAL	99.49	99.98	99.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	297.38	99.13

CLASS C	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
CLASS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLASS AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLASS AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CURIES	16.2	8.23	71.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95.53
CU. FT.	120.3	120.3	120.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	360.9
CU. M	3.406581	3.406581	3.406581	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.21974
RSR#	13-2001	13-2011	13-2025																		

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: Secondary Filters

OF CONTAINERS SHIPPED TO DURATEK 1 # OF CONTAINERS SHIPPED TO CNSI / ENVIROCARE 0

OF SHIPMENTS TO DURATEK 1 # OF SHIPMENTS TO CNSI / ENVIROCARE 0

ISOTOPE:																				TOTAL	AVE.
AG-108m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AG-110m	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.65
AM-241	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-14	4.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.09	4.09
CE-144	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
CM-242	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CM-243	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO-57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO-58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO-60	2.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.58	2.58
CR-51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CS-134	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
CS-136	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CS-137	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.65
FE-55	6.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.49	6.49
FE-59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H-3	78.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.57	78.57
I-131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MN-54	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28
NB-95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NI-63	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27	3.27
PU-238	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PU-239	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PU-241	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RU-103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RU-106	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.38
SB-124	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SB-125	2.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SR-89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SR-90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TE-125m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
XE-133	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ZN-65	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08
TOTAL	99.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.21	97.21
CLASS C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AU	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
CURIES	5.04E-04	0.00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000504	
FT3 Shipped	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	146
CU. M Shipped	2.0672	0.0000	0.0000	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.067169	4.1343
FT3 Buried	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. M Buried	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	
RSR#	13-2016																				

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: Solidified Oil, Liquid, Sludge

OF CONTAINERS SHIPPED 0

OF SHIPMENTS 0

ISOTOPE:	% ABUNDANCE/LINER																								TOTAL AVE.
CR-51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
MN-54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CO-57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CO-58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CO-60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
NB-95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
ZR-95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CS-134	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
RU-103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
AG-110m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
SB-125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
I-131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CS-137	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
H-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
NI-63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
FE-55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
SR-90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
TE-125m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CS-136	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
XE-133	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
C-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
PU-241	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
TRU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
FE-59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
SB-124	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
RU-106	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CE-144	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CM-242	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CLASS C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CURIES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. FT.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RSR#																									

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: DAW to Processor

# OF SHIPMENTS FROM ONS TO ENERGY SOLUTIONS	28	# OF CONTAINERS FROM ONS TO ENERGY SOLUTIONS	53
# OF SHIPMENTS FROM PROCESSOR TO CLIVE	49	# OF CONTAINERS FROM PROCESSOR TO CLIVE	49
# OF SHIPMENTS FROM PROCESSOR TO BARNWELL	0	# OF CONTAINERS FROM PROCESSOR TO BARNWELL	0

RSR #	CU. FT. SHIPPED	CURIES SHIPPED	CU. FT. DISPOSAL FACILITY	CI TO DISPOSAL FACILITY	Closed
12-2015	0	0	0.92857	6.40E-06	
12-2017	0	0	46.92857	1.25E-03	4/20/2013
12-2026	0	0	119.3571	1.50E-02	
12-2031	0	0	64.28571	1.43E-03	
12-2036	0	0	0.08021	7.50E-06	3/28/2013
12-2037	0	0	0.68	3.60E-06	
12-2048	0	0	0.4	1.05E-04	8/13/2013
12-2050	0	0	16	0.205144	
12-2053	0	0	138.8572	0.007225	5/1/2013
13-2003	1868.8	0.0792	259.663	7.90E-02	3/22/2013
13-2004	1868.8	0.0916	250.6437	9.17E-02	5/12/2013
13-2005	1868.8	0.0074	162.5143	6.32E-03	4/14/2013
13-2013	1868.8	0.00676	260.8571	6.75E-03	6/4/2013
13-2014	1868.8	0.0101	295.2143	9.36E-03	11/25/2013
13-2015	1868.8	0.00464	372.1239	4.61E-03	8/22/2013
13-2016	1795.8	0.008076	311.1429	8.58E-03	8/22/2013
13-2017	1868.8	0.00701	234.5714	7.01E-03	8/20/2013
13-2021	1868.8	0.0055	211.4286	5.49E-03	9/3/2013
13-2022	934.4	0.00427	268	1.29E-02	9/4/2013
13-2023	1784	0.00531	314.9143	4.58E-03	10/23/2013
13-2024	1505	0.0137	660.2471	9.95E-03	
13-2028	1669.4	0.0935	88.71428	4.24E-04	
13-2029	1032	5.23	48.05714	8.58E-04	
13-2031	1868.8	0.00595	242.2857	5.95E-03	11/14/2013
13-2032	1868.8	0.0124	0	0.00E+00	
13-2033	1868.8	0.0161	177.7143	1.67E-02	11/25/2013
13-2034	1868.8	0.0232	209.7857	2.19E-02	
13-2035	1868.8	0.032	299.8286	3.17E-02	
13-2036	1868.8	0.0392	249.7143	3.92E-02	12/5/2013
13-2038	1868.8	0.0477	202.5714	4.77E-02	11/25/2013
13-2039	1868.8	0.106	364.3	1.02E-01	12/17/2013
13-2040	1868.8	0.0482	285.3	4.37E-02	12/17/2013
13-2041	1868.8	0.0409	235.0571	2.36E-02	
13-2047	1868.8	0.0571	234	5.71E-02	12/18/2013
13-2048	1868.8	0.1	0	0.00E+00	
13-2049	934.4	0.0282	0	0.00E+00	
13-2050	934.4	0.00475	0	0.00E+00	
TOTAL	47965.4	6.129	6394.59	0.84982	
TOTAL CURIES BURIED	0.850				

TOTAL CUBIC FEET BURIED 6394.59
TOTAL CUBIC METERS 181.08

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: DAW to Burial

OF SHIPMENTS FROM ONS TO CNSI 3
OF CONTAINERS FROM ONS TO CNSI 3

RSR NUMBER	CUBIC FEET	CURIES	A-U	A-S	B	C
13-2006	120.3	2.66	0	1	0	0
13-2010	120.3	1.63	0	1	0	0
13-2020	120.3	2.54		1		
TOTAL	360.9	6.83	0	3	0	0

TOTAL CUBIC METERS 10.22

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: Metal

# OF SHIPMENTS TO PROCESSOR	1	# OF SHIPMENTS TO CLIVE	8
# OF CONTAINERS TO PROCESSOR	1	# OF CONTAINERS TO CLIVE:	8

RSR #	CU. FT. TO PROCESSOR	CURIES TO PROCESSOR	CU. FT. TO DISPOSAL FACILITY	CURIES TO DISPOSAL FACILITY
12-2047	0	0	34.21429	9.75E-04
12-2048	0	0	17.35714	7.87E-04
12-2050	0	0	35.41429	7.93E-03
13-2005	0	0	25.77143	1.08E-03
13-2014	0	0	25.64286	6.9574-4
13-2022	570	0.00866	268	1.29E-02
13-2023	0	0	43.94286	7.23E-04
13-2029	0	0	57.65714	1.03E-03
13-2034	0	0	5.92857	9.20E-05
13-2035	0	0	20.02857	3.42E-04
TOTAL	570	0.00866	533.96	0.02589

TOTAL CUBIC METERS 15.12027

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
Report Period: January - December 2013
Waste Type: Irradiated Components

OF CONTAINERS SHIPPED TO CNSI/DURATEK 0

ISOTOPE:	% ABUNDANCE/LINER											# OF SHIPMENTS TO CNSI/DURATEK 0											TOTAL	AVE.
AG-110m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
C-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CE-144	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CM-242	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CM-243	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CO-57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CO-58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CO-60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CR-51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CS-134	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CS-136	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CS-137	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
FE-55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
FE-59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
H-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
I-131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
MN-54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
NB-95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
NI-59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
NI-63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
PU-238	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
PU-241	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	#DIV/0!
RU-103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
RU-106	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
SB-124	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
SB-125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
TA-182	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
TE-125m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
TRU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	#DIV/0!
XE-133	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	#DIV/0!
ZR-95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	#DIV/0!
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!
CLASS C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CLASS AU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CURIES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. FT.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
CU. M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RSR#																								

Attachment 4

Meteorological Data

(Pages 27 - 36)

ONS 2013 Lower JFD

		SECTOR															
		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
		No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
A	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.76-1.00	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
	1.01-1.25	3	0	1	1	1	3	0	2	0	2	3	2	0	1	0	0
	1.26-1.50	2	1	2	0	5	0	1	2	4	8	16	7	4	2	1	2
	1.51-2.00	1	4	9	1	7	5	7	5	16	22	66	36	10	9	5	4
	2.01-3.00	4	6	14	35	14	5	4	12	24	64	140	60	12	5	3	3
	3.01-4.00	2	0	12	29	20	5	0	3	3	18	35	11	5	8	4	2
	4.01-5.00	0	2	6	5	1	0	0	0	0	4	11	2	4	7	4	5
	5.01-6.00	0	0	2	0	0	0	0	0	0	0	2	4	0	6	5	2
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	0	8	16	0	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.76-1.00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0
	1.01-1.25	0	1	0	1	1	1	2	0	1	0	4	1	0	0	0	1
	1.26-1.50	3	3	1	4	0	0	2	1	2	7	7	4	4	3	5	2
	1.51-2.00	3	6	10	9	5	5	11	5	17	13	34	23	7	8	2	3
	2.01-3.00	1	2	5	25	13	5	6	7	8	23	45	15	3	3	2	0
	3.01-4.00	0	0	10	13	5	0	0	1	6	10	9	3	5	2	4	1

	4.01-5.00	0	0	1	4	0	0	0	0	0	1	7	0	1	2	2	1
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	0	4	1	0	2	1
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	4	4	6	4	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0.46-0.75	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	0.76-1.00	1	0	1	2	1	0	1	0	1	0	2	1	1	1	1	1
	1.01-1.25	5	5	2	3	1	1	3	1	1	3	5	5	4	9	5	1
	1.26-1.50	5	3	9	1	3	7	1	2	10	11	11	4	10	1	8	3
	1.51-2.00	7	10	11	9	8	2	12	10	15	19	21	11	10	3	6	1
	2.01-3.00	3	5	14	23	19	4	9	8	6	27	14	8	5	5	1	1
	3.01-4.00	0	0	6	21	6	0	0	2	1	12	14	5	1	1	3	1
	4.01-5.00	0	0	0	2	1	0	0	0	0	2	13	3	1	3	4	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	2	1	2	7	7	1
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	5	1	4	5	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0.46-0.75	10	8	5	7	4	3	8	3	3	4	7	6	4	5	15	16
	0.76-1.00	45	15	15	12	12	11	20	17	12	15	37	21	31	18	23	39
	1.01-1.25	42	16	18	21	25	13	15	27	25	20	21	27	24	17	18	44
	1.26-1.50	29	23	32	33	31	18	23	41	31	29	33	35	29	12	15	19
	1.51-2.00	17	41	72	105	83	40	47	46	41	57	55	38	25	14	13	22
	2.01-3.00	12	22	96	247	93	25	16	19	34	96	119	63	25	27	31	22

	3.01-4.00	7	3	20	56	14	0	0	3	8	47	57	42	22	29	29	12
	4.01-5.00	3	2	4	9	7	0	0	0	2	3	34	32	23	38	20	6
	5.01-6.00	0	0	0	0	0	0	0	0	0	1	14	20	17	14	15	3
	6.01-8.00	1	0	0	0	0	0	0	0	0	0	7	14	16	7	3	2
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0.46-0.75	30	22	16	17	11	11	8	8	10	10	5	14	25	31	20	19
	0.76-1.00	87	47	44	21	27	35	20	17	29	33	36	32	42	45	91	59
	1.01-1.25	40	37	32	29	30	19	33	23	16	29	33	18	17	39	55	54
	1.26-1.50	15	22	27	32	46	29	41	34	22	24	27	12	11	17	36	33
	1.51-2.00	9	18	34	47	49	26	46	51	38	20	25	18	17	13	12	12
	2.01-3.00	7	3	10	22	13	9	12	5	10	27	33	17	8	8	6	8
	3.01-4.00	0	0	0	0	0	0	0	0	0	1	9	7	7	2	1	0
	4.01-5.00	0	0	0	0	1	0	1	0	0	0	3	2	2	1	1	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0.46-0.75	1	2	1	1	0	1	1	0	1	0	3	2	5	11	3	0
	0.76-1.00	3	2	1	3	2	1	0	1	2	2	4	7	8	23	24	6
	1.01-1.25	0	0	2	1	2	4	2	1	0	4	2	3	1	10	19	4
	1.26-1.50	0	2	4	0	2	4	0	1	1	0	1	2	2	6	22	3
	1.51-2.00	0	0	0	0	4	4	9	0	1	0	0	1	0	0	4	2

	2.01-3.00	0	0	0	0	2	2	1	0	0	0	1	0	0	0	0	1
	3.01-4.00	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0
	4.01-5.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
	0.76-1.00	0	0	0	0	0	1	0	0	0	0	1	0	1	6	1	1
	1.01-1.25	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	0
	1.26-1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1
	1.51-2.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	2.01-3.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3.01-4.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4.01-5.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ONS 2013 Upper JFD

		SECTOR															
		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
		No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
A	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.76-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.01-1.25	0	0	0	1	2	0	0	0	0	1	1	1	1	1	0	0
	1.26-1.50	1	0	1	0	0	3	0	1	0	2	7	2	1	0	0	1
	1.51-2.00	1	2	1	3	1	0	4	0	5	13	20	8	7	5	2	2
	2.01-3.00	2	3	7	8	4	5	9	3	24	60	77	36	3	3	2	1
	3.01-4.00	1	2	9	12	7	0	1	5	11	67	47	4	0	0	2	2
	4.01-5.00	3	3	10	20	13	4	0	0	5	40	17	1	1	2	0	1
	5.01-6.00	3	3	12	19	5	0	0	0	2	22	15	3	3	5	1	2
	6.01-8.00	0	5	7	15	4	0	0	1	3	10	13	7	5	15	11	1
	8.01-10.00	0	1	0	0	0	0	0	0	0	1	8	3	4	13	4	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	1	6	4	4	0	0
B	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.76-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.01-1.25	0	1	0	0	1	0	0	0	0	1	3	0	1	0	0	0

	1.26-1.50	0	0	1	1	0	1	0	1	0	1	6	2	2	3	4	1
	1.51-2.00	5	4	2	0	2	3	0	1	5	7	16	5	4	2	0	5
	2.01-3.00	0	5	11	14	6	7	3	4	9	25	24	6	0	2	1	1
	3.01-4.00	0	1	5	7	11	2	2	0	10	24	14	0	4	0	0	0
	4.01-5.00	0	1	2	9	1	1	0	0	5	16	10	1	4	1	0	0
	5.01-6.00	0	2	6	8	4	0	0	0	3	5	4	3	2	2	2	0
	6.01-8.00	0	2	3	10	0	0	0	1	0	5	3	2	1	2	5	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	1	3	6	3	10	1	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0
C	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.76-1.00	0	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0
	1.01-1.25	0	1	1	1	0	0	1	0	0	3	2	1	5	2	3	1
	1.26-1.50	2	7	3	3	1	2	0	1	1	2	6	5	4	7	1	2
	1.51-2.00	3	10	6	4	4	6	6	3	2	11	8	7	7	7	2	3
	2.01-3.00	1	7	9	6	12	6	10	9	11	18	17	5	3	1	2	2
	3.01-4.00	1	3	8	9	10	0	3	0	5	17	6	1	2	1	1	1
	4.01-5.00	0	2	4	6	7	1	0	0	3	11	3	2	2	1	1	0
	5.01-6.00	0	0	10	11	3	0	0	0	2	7	7	1	1	4	2	0
	6.01-8.00	0	0	3	12	1	0	0	1	0	5	16	2	2	10	3	0

	8.01-10.00	0	0	0	0	0	0	0	0	0	1	5	6	2	11	3	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0
D	0.46-0.75	0	1	0	0	1	1	1	0	0	0	1	0	1	0	0	0
	0.76-1.00	5	4	5	0	4	1	1	6	4	6	8	6	4	8	6	8
	1.01-1.25	9	15	7	3	6	4	5	1	8	4	11	9	9	6	19	10
	1.26-1.50	19	8	6	3	2	5	8	8	8	10	14	18	18	6	19	21
	1.51-2.00	62	25	15	17	18	11	12	21	18	28	26	26	25	19	32	49
	2.01-3.00	62	53	91	58	46	20	21	37	51	55	54	33	33	11	25	49
	3.01-4.00	15	28	96	95	53	16	13	12	34	42	68	20	12	21	26	13
	4.01-5.00	5	8	84	92	25	9	4	7	26	45	47	25	13	22	23	3
	5.01-6.00	1	5	37	51	10	0	1	6	5	22	50	28	18	28	19	6
	6.01-8.00	4	4	13	28	2	0	0	2	8	24	75	50	17	52	20	6
	8.01-10.00	0	0	0	1	0	0	0	0	0	6	33	28	8	18	9	0
	10.01-Max	1	0	0	0	0	0	0	0	0	0	10	10	0	2	1	0
E	0.46-0.75	1	1	0	3	0	1	0	1	1	2	1	1	1	3	4	4
	0.76-1.00	10	10	3	3	0	4	4	6	5	1	4	4	9	10	14	12
	1.01-1.25	15	13	4	1	3	2	3	1	6	4	12	11	14	21	21	24
	1.26-1.50	46	24	11	10	3	8	4	2	4	10	3	13	17	26	31	29
	1.51-2.00	111	46	32	12	11	15	5	11	10	15	21	24	27	37	50	75

	2.01-3.00	138	97	63	33	24	23	18	12	34	41	45	40	26	22	26	71
	3.01-4.00	11	12	34	33	20	12	9	16	30	23	34	8	3	8	9	12
	4.01-5.00	5	0	12	13	14	2	0	11	13	17	18	6	5	8	10	3
	5.01-6.00	1	0	1	4	2	0	0	1	2	7	16	7	8	3	2	2
	6.01-8.00	0	0	0	0	3	0	0	0	0	2	19	4	3	3	1	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
F	0.46-0.75	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0
	0.76-1.00	0	0	1	0	0	1	2	3	2	1	0	0	1	1	0	0
	1.01-1.25	2	0	1	2	0	1	0	1	2	1	2	0	1	2	3	2
	1.26-1.50	6	3	1	3	2	0	2	2	1	0	1	0	1	1	3	2
	1.51-2.00	15	14	5	1	0	1	0	3	3	2	3	2	2	0	5	7
	2.01-3.00	24	21	6	5	3	8	1	1	6	1	7	4	3	0	1	8
	3.01-4.00	2	2	2	2	4	2	2	2	7	0	1	1	0	1	0	1
	4.01-5.00	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	2
	5.01-6.00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

G	0.46-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.76-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.01-1.25	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
	1.26-1.50	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1
	1.51-2.00	1	0	0	0	2	1	0	0	0	0	0	0	0	1	1	1
	2.01-3.00	0	0	0	0	0	1	0	4	5	1	0	0	0	0	0	0
	3.01-4.00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
	4.01-5.00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10.01-Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Attachment 5

Unplanned Offsite Releases

Unplanned release of 1B Gaseous Waste Decay Tank (GWDT)

Event Summary:

On 8/2/13 Operations identified a pressure decrease in Unit 1 GWDT-B of 3.6 psig during the period of 7/16/13 through 8/2/13. Noble gas monitors 1 RIA 37 (GWD Effluent Monitor) and 1 RIA 45 (Unit Vent) showed no increase above normal background during the period A leak investigation was initiated by Operations and Engineering and was unable to determine the source of the slow leak.

Unit 1 GWDT-B was sampled on 8/3/13 to account for the noble gas activity released to the Unit 1 Vent. The sample of Unit 1WGDT-B in-service tank was used to evaluate radioactive gas released to the Unit 1 Vent. The total Noble gas activity of the unplanned release (7.24E-05 Curies) was included in Gaseous Waste Release (GWR) # 2013049. GWR 2013049 accounts for the both the unplanned and normal release of Unit 1 WGDT-B by using the isolated pressure on 7/16/13 to determine the volume released.

Safety Significance:

The health and safety of the public were not compromised by this event. The total activity released was 7.24E-05 Curies. Calculated dose and dose rates to the Total Body, Skin, Gamma Air, and Beta Air were all well below the limits specified by Selected Licensee Commitments

(Page 37)

Attachment 6

Assessment of Radiation Dose from Radioactive Effluents to Members of the Public (includes fuel cycle dose calculation results)

(Pages 38 - 50)

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

1st Quarter 2013

==== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS======== Quarter 1 2013 ====

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	BONE	9.02E-02	2.25E+01	4.01E-01

Maximum Organ Dose Receptor Location: 1.0 Mile SW
Critical Pathway: Vegetation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
C-14	1.00E+02

==== NOBLE GAS DOSE LIMIT ANALYSIS========== Quarter 1 2013 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q1 - Maximum Gamma Air Dose	1.89E-04	1.50E+01	1.26E-03

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	1.00E+02

Q1 - Maximum Beta Air Dose	5.62E-04	3.00E+01	1.87E-03

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	1.00E+02

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

2nd Quarter 2013

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 2 2013 ====

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	BONE	9.09E-02	2.25E+01	4.04E-01

Maximum Organ Dose Receptor Location: 1.0 Mile SW
Critical Pathway: Vegetation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
C-14	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS========== Quarter 2 2013 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q2 - Maximum Gamma Air Dose	7.31E-06	1.50E+01	4.87E-05

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	4.18E+01
XE-133	5.82E+01

Q2 - Maximum Beta Air Dose	1.38E-05	3.00E+01	4.59E-05

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	7.81E+00
XE-133	9.18E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

3rd Quarter 2013

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS========== Quarter 3 2013 ====

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	CHILD	BONE	9.03E-02	2.25E+01	4.01E-01

Maximum Organ Dose Receptor Location: 1.0 Mile SW
Critical Pathway: Vegetation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
C-14	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS========== Quarter 3 2013 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q3 - Maximum Gamma Air Dose	1.15E-04	1.50E+01	7.66E-04

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	1.69E+01
XE-133	8.31E+01

Q3 - Maximum Beta Air Dose	2.91E-04	3.00E+01	9.70E-04

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.76E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

4th Quarter 2013

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS=== Quarter 4 2013 ===

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	CHILD	BONE	6.46E-02	2.25E+01	2.87E-01

Maximum Organ Dose Receptor Location: 1.0 Mile SW
Critical Pathway: Vegetation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
C-14	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS=== Quarter 4 2013 ===

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q4 - Maximum Gamma Air Dose	6.33E-06	1.50E+01	4.22E-05

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.83E+01

Q4 - Maximum Beta Air Dose	1.94E-05	3.00E+01	6.48E-05

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.53E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

ANNUAL 2013

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS=== Annual 2013 ===

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	BONE	3.36E-01	4.50E+01	7.47E-01

Maximum Organ Dose Receptor Location: 1.0 Mile SW
Critical Pathway: Vegetation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
C-14	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS=== Annual 2013 ===

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Yr - Maximum Gamma Air Dose	3.17E-04	3.00E+01	1.06E-03

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	7.10E+00
XE-133	9.29E+01

Yr - Maximum Beta Air Dose	8.86E-04	6.00E+01	1.48E-03

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.90E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/13 TO 1/1/14
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

1st Quarter 2013

=== BATCH LIQUID RELEASES ========== Quarter 1 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	ADULT	GI-LLI	4.64E-02	1.50E+01	3.09E-01
Q1 - Total Body Dose	CHILD		3.78E-02	4.50E+00	8.41E-01

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

Nuclide	Percentage
H-3	7.83E+01
NB-95	2.09E+01

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

Nuclide	Percentage
H-3	9.98E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 1 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	LIVER	4.28E-05	1.50E+01	2.86E-04
Q1 - Total Body Dose	CHILD		4.28E-05	4.50E+00	9.52E-04

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 1/1/13 TO 1/1/14
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

2nd Quarter 2013

=== BATCH LIQUID RELEASES ========== Quarter 2 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	GI-LLI	2.06E-02	1.50E+01	1.37E-01
Q2 - Total Body Dose	CHILD		2.06E-02	4.50E+00	1.37E-01

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

Nuclide	Percentage
H-3	9.99E+01

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

Nuclide	Percentage
H-3	9.99E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 2 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	LIVER	3.29E-05	1.50E+01	2.20E-04
Q2 - Total Body Dose	CHILD		3.29E-05	4.50E+00	7.32E-04

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 1/1/13 TO 1/1/14
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

3rd Quarter 2013

=== BATCH LIQUID RELEASES ========== Quarter 3 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	ADULT	GI-LLI	3.05E-02	1.50E+01	2.03E-01
Q3 - Total Body Dose	ADULT		2.49E-02	4.50E+00	5.52E-01

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

Nuclide	Percentage
H-3	7.32E+01
NB-95	2.41E+01

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

Nuclide	Percentage
H-3	8.99E+01
CS-137	9.09E+00

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 3 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	CHILD	LIVER	5.26E-05	1.50E+01	3.51E-04
Q3 - Total Body Dose	CHILD		5.26E-05	4.50E+00	1.17E-03

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 1/1/13 TO 1/1/14
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

4th Quarter 2013

=== BATCH LIQUID RELEASES ========== Quarter 4 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	ADULT	GI-LLI	2.03E-01	1.50E+01	1.35E+00
Q4 - Total Body Dose	ADULT		7.32E-02	4.50E+00	1.63E+00

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

Nuclide	Percentage
H-3	3.15E+01
NB-95	6.42E+01

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

Nuclide	Percentage
H-3	8.74E+01
CS-137	1.05E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 4 2013 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	CHILD	LIVER	2.23E-05	1.50E+01	1.48E-04
Q4 - Total Body Dose	CHILD		2.23E-05	4.50E+00	4.95E-04

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 1/1/13 TO 1/1/14
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

ANNUAL 2013

=== BATCH LIQUID RELEASES ========== Annual 2013 ==========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	ADULT	GI-LLI	3.00E-01	3.00E+01	1.00E+00
Yr - Total Body Dose	ADULT		1.54E-01	9.00E+00	1.72E+00

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

Nuclide	Percentage
H-3	4.75E+01
NB-95	4.92E+01

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

Nuclide	Percentage
H-3	9.24E+01
CS-137	6.43E+00

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Annual 2013 ==========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	LIVER	1.51E-04	3.00E+01	5.04E-04
Yr - Total Body Dose	CHILD		1.51E-04	9.00E+00	1.68E-03

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

Oconee Nuclear Station
2013 Radioactive Effluent and ISFSI
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 Oconee Nuclear Station only includes liquid and gaseous effluent dose contributions from Oconee and direct and air-scatter dose from Oconee's onsite Independent Spent Fuel Storage Installation (ISFSI) since no other uranium fuel cycle facility contributes significantly to Oconee's maximum exposed individual. Included in the gaseous effluent dose calculations is an estimate of the dose contributed by Carbon-14 (Ref. *"Carbon-14 Supplemental Information"*, contained in the ARERR for further information). The combined dose to a maximum exposed individual from Oconee's effluent releases and direct and air-scatter dose from Oconee's ISFSI is below 40CFR190 limits as shown by the following summary:

I. 2013 Oconee 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 = 2.66E-01 mrem

Maximum Location: 1.0 Mile, Southwest Sector
Critical Age: Child
Gas non-NG Contribution: 42.67%
Gas NG Contribution: 0.10%
Liquid Contribution: 57.23%

Maximum Organ (other than TB) Dose = 3.52E-01 mrem

Maximum Location: 1.0 Mile, Southwest Sector
Critical Age: Child
Critical Organ: Bone
Gas Contribution: 95.45%
Liquid Contribution: 4.55%

II. 2013 Oconee 40CFR190 ISFSI Dose Summary

Direct and air-scatter radiation dose contributions from the onsite Independent Spent Fuel Storage Installation (ISFSI) at Oconee have been calculated and documented in the "Oconee Nuclear Site 10CFR72.212 Written Evaluations" report. As discussed in the report, the dose rate at 500 meters is 6.84 mrem per year. The nearest resident from the Oconee ISFSI is ~ 1600 meters so the dose rate at the nearest resident location would be much less than 6.84 mrem per year.

The following excerpt, "C. 10CFR72.212(b)(2)(i)(C)- Requirements of 72.104", from the "Oconee Nuclear Site 10CFR72.212 Written Evaluations" report is provided to document the method used to estimate the Oconee ISFSI dose to the nearest "real individual".

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

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

10 CFR 72.104, as clarified by ISG-13, stipulates that the licensee perform dose evaluations which establish that any real individual beyond the controlled area boundary not sustain a dose equivalent in excess of 0.25 mSv (25 mrem) due to direct radiation from the Independent Spent Fuel Storage Installation and other fuel cycle operations in the area. This same dose limit is stipulated by the EPA for the fuel cycle in 40 CFR 190.10(a). Also operational restrictions for ALARA and limits for effluents must be established.

In accordance with these requirements, Duke Energy Corporation has performed dose calculations that model the characteristics (initial enrichment, burnup and
cooling time) of existing fuel in Phases I - V of the Oconee ISFSI, together with the characteristics of assumed "design basis" fuel in Phase VI of the Oconee ISFSI. Calculation OSC-8675 develops the radiation source terms used in subsequent shielding and skyshine calculations using the SCALE Code System.

More specifically, the SAS2 Module of the SCALE Code System was used to create a problem-dependent pin-cell model for the purpose of building cell- weighted, multigroup cross section sets for use in subsequent depletion calculations. The ORIGEN-S Module of the SCALE Code System was used to perform the fuel depletion and characterization calculations using the cross section sets created by SAS2. These characterization calculations yielded the photon and neutron source terms to be used as input to subsequent shielding calculations. As mentioned above, problem-dependent cross section sets were developed for these analyses since ORIGEN-S was used within the SAS2 sequence. Duke Energy Corporation Radiological Engineering is experienced in the use of the SCALE Code System, and the SCALE Code System is installed and maintained under the purview of the pertinent software and data quality assurance program.

The results of the radiation source term calculation were used as input to Calculation OSC-8706 to evaluate the shielding characteristics of a single Horizontal Storage Module. The MCNP Monte Carlo particle transport computer code was used to perform the transport calculations and to write a surface flux file for use in subsequent skyshine calculations.

Appropriate software quality controls have been implemented for the computer codes and data used in these analyses (specifically, Calculation DPC-1201.30-00-0010 contains the verification and validation for MCNP5, while SDQA-30269-NG0 documents the quality control measures in place for MCNP5).

Calculation OSC-8716 uses the surface flux files developed in OSC-8706 in a repeating array representing all of the Horizontal Storage Modules in the ISFSI, including Phase VI fully loaded with spent fuel. The source description in the MCNP input is constructed with source probabilities for each Horizontal Storage Module to represent the appropriate decay time associated with each HSM. Finally, a skyshine calculation is performed to obtain near- and far-field dose results from Phases I -VI of the Oconee ISFSI.

Calculation OSC-8716 Table 23.1-1, summarizes dose rate versus distance,
showing a dose rate of 6.84 mRem per year at 500 meters, which is the longest distance at which results converge. The closest residence to the ISFSI is in the SW-SSW direction approximately 1 mile (-1600 meters) from the ISFSI, or 1.36 miles from the centerline of the site. This is conservatively farther than the distance used for computation of dose rates. The 2009 40CFR190 Uranium Fuel Cycle Dose Calculation Results for the ONS site show a maximum total body dose of 0.0754 mrem per year. The total dose rate from all operations to the nearest real individual is therefore less than 7 mRem per year.

These calculations need not consider any effluent from Phase VI. The Phase VI HSMs use the NUHOMS-24PHB DSCs, which are designed as "leak-tight". Per Appendix N, Section N.II.2.8 of the NUHOMS FSAR3 accidental releases are not credible.

Attachment 7

Revisions to UFSAR Section 16.11 Radiological Effluent Controls

SLC Change 2013-02 revised the Lower Limits of Detection (LLD) equation in SLC 16.11.4, Operational Safety Review, and SLC16.11.6, Radiological Environmental Monitoring. The LLD equation currently in SLCs is a simplification of the technically correct full equation. The simplified equation errs in the non-conservative direction when background count rates are low.

(Pages 51 - 81)

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
LOEP 1	04/21/14
LOEP 2	02/10/14
LOEP 3	04/21/14
LOEP 4	04/08/14
LOEP 5	12/31/12
LOEP 6	02/10/14
LOEP 7	11/08/13
LOEP 8	11/08/13
LOEP 9	11/14/13
LOEP 10	11/14/13
LOEP 11	11/08/13
LOEP 12	11/08/13
LOEP 13	11/08/13
16.0-1	02/10/14
16.0-2	02/10/14
16.0-3	02/10/14
16.0-4	02/10/14
16.0-5	02/10/14
16.0-6	02/10/14
16.1-1	10/15/07
16.2-1	3/27/99
16.2-2	3/27/99
16.2-3	3/27/99
16.3-1	3/27/99
16.5.1-1	11/26/12
16.5.1-2	11/26/12
16.5.1-3	11/26/12
16.5.2-1	11/15/12
16.5.2-2	11/15/12
16.5.2-3	11/15/12
16.5.2-4	Delete 5/11/99
16.5.2-5	Delete 5/11/99
16.5.3-1	02/21/07
16.5.3-2	02/21/07
16.5.3-3	02/21/07
16.5.4-1	11/15/12
16.5.4-2	11/15/12
16.5.5-1	Delete 5/16/09
16.5.5-2	Delete 5/16/09
16.5.5-3	Delete 5/16/09
16.5.5-4	Delete 5/16/09

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.5.5-5	Delete 5/16/09
16.5.6-1	Delete 02/10/14
16.5.6-2	Delete 02/10/14
16.5.7-1	12/13/06
16.5.7-2	12/13/06
16.5.7-3	12/13/06
16.5.7-4	12/13/06
16.5.7-5	12/13/06
16.5.7-6	12/13/06
16.5.8-1	01/31/07
16.5.8-2	01/31/07
16.5.8-3	01/31/07
16.5.8-4	01/31/07
16.5.8-5	01/31/07
16.5.8a-1	5/19/05
16.5.8a-2	5/19/05 (Delete)
16.5.8a-3	5/19/05 (Delete)
16.5.9-1	11/15/12
16.5.9-2	11/15/12
16.5.10-1	10/8/03
16.5.10-2	10/8/03
16.5.11-1	1/31/00
16.5.12-1	3/27/99
16.5.13-1	3/27/99
16.5.13-2	12/01/99
16.5.13-3	12/01/99
16.6.1-1	07/23/12
16.6.1-2	07/23/12
16.6.1-3	07/23/12
16.6.1-4	07/23/12
16.6.1-5	Delete
16.6.2-1	01/31/07
16.6.2-2	01/31/07
16.6.2-3	01/31/07
16.6.2-4	01/31/07
16.6.2-5	01/31/07
16.6.2-6	01/31/07
16.6.2-7	01/31/07
16.6.2-8	Delete
16.6.2-9	Delete
16.6.2-10	Delete

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.6.2-11	Delete
16.6.2-12	Delete
16.6.3-1	11/15/12
16.6.4-1	11/15/12
16.6.4-2	11/15/12
16.6.4-3	11/15/12
16.6.4-4	11/15/12
16.6.4-5	11/15/12
16.6.4-6	11/15/12
16.6.5-1	12/14/00
16.6.6-1	11/15/12
16.6.7-1	3/27/99
16.6.8-1	3/27/99
16.6.9-1	11/15/12
16.6.9-2	11/15/12
16.6.10-1	11/15/12
16.6.10-2	11/15/12
16.6.10-3	11/15/12
16.6.11-1	11/15/12
16.6.11-2	11/15/12
16.6.12-1	11/15/12
16.6.12-2	11/15/12
16.6.12-3	11/15/12
16.6.12-4	5/17/05 (Delete)
16.6.12-5	Delete
16.6.12-6	Delete
16.6.12-7	Delete
16.6.13-1	03/31/08
16.6.13-2	03/31/08
16.6.13-3	03/31/08
16.6.14-1	04/21/14
16.6.14-2	04/21/14
16.6.14-3	04/21/14
16.6.14-4	04/21/14
16.6.15-1	11/15/12
16.6.15-2	11/15/12
16.7.1-1	11/15/12
16.7.1-2	11/15/12
16.7.2-1	11/15/12
16.7.2-2	11/15/12
16.7.2-3	11/15/12

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.7.3-1	11/15/12
16.7.3-2	11/15/12
16.7.4-1	7/14/05
16.7.4-2	7/14/05
16.7.4-3	7/14/05
16.7.5-1	11/15/12
16.7.5-2	11/15/12
16.7.5-3	11/15/12
16.7.5-4	11/15/12
16.7.6-1	04/08/14
16.7.6-2	04/08/14
16.7.6-3	04/08/14
16.7.6-4	04/08/14
16.7.7-1	11/15/12
16.7.7-2	11/15/12
16.7.8-1	3/27/99
16.7.8-2	3/27/99
16.7.9-1	10/23/03
16.7.10-1	11/15/12
16.7.10-2	11/15/12
16.7.11-1	11/15/12
16.7.11-2	11/15/12
16.7.11-3	11/15/12
16.7.12-1	6/30/04
16.7.12-2	6/30/04
16.7.13-1	12/05/12
16.7.13-2	12/05/12
16.7.13-3	12/05/12
16.7.14-1	11/15/12
16.7.14-2	11/15/12
16.7.14-3	11/15/12
16.7.14-4	11/15/12
16.7.15-1	04/08/14
16.7.15-2	04/08/14
16.7.15-3	04/08/14
16.8.1-1	8/09/01
16.8.1-2	8/09/01
16.8.2-1	2/10/05
16.8.2-2	2/10/05

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.8.3-1	10/20/09
16.8.3-2	10/20/09
16.8.3-3	10/20/09
16.8.3-4	10/20/09
16.8.3-5	10/20/09
16.8.3-6	10/20/09
16.8.3-7	10/20/09
16.8.4-1	2/10/05
16.8.4-2	2/10/05
16.8.4-3	2/10/05
16.8.4-4	2/10/05
16.8.4-5	Delete 2/10/05
16.8.4-6	Delete 2/10/05
16.8.4-7	Delete 2/10/05
16.8.4-8	Delete 2/10/05
16.8.4-9	Delete 9/25/04
16.8.5-1	07/23/12
16.8.5-2	07/23/12
16.8.5-3	07/23/12
16.8.5-4	Delete 12/21/04
16.8.5-5	Delete 12/21/04
16.8.6-1	01/04/07
16.8.6-2	01/04/07
16.8.6-3	01/04/07
16.8.7-1	1/31/00
16.8.8-1	1/31/00
16.8.9-1	6/21/05
16.8.9-2	6/21/05
16.8.9-3	6/21/05
16.8.9-4	6/21/05
16.9.1-1	12/05/12
16.9.1-2	12/05/12
16.9.1-3	12/05/12
16.9.1-4	12/05/12
16.9.1-5	12/05/12
16.9.1-6	12/05/12
16.9.2-1	12/31/12
16.9.2-2	12/31/12
16.9.2-3	12/31/12
16.9.2-4	12/31/12
16.9.2-5	12/31/12

LOEP 5

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.9.2-6	12/31/12
16.9.3-1	12/31/12
16.9.3-2	12/31/12
16.9.4-1	11/11/13
16.9.4-2	11/11/13
16.9.4-3	11/11/13
16.9.4-4	11/11/13
16.9.4-5	11/11/13
16.9.4-6	11/11/13
16.9.4-7	11/11/13
16.9.4-8	11/11/13
16.9.4-9	11/11/13
16.9.5-1	12/31/12
16.9.5-2	12/31/12
16.9.5-3	12/31/12
16.9.5-4	12/31/12
16.9.5-5	12/31/12
16.9.6-1	02/10/14
16.9.6-2	02/10/14
16.9.6-3	02/10/14
16.9.6-4	02/10/14
16.9.6-5	02/10/14
16.9.6-6	02/10/14
16.9.6-7	02/10/14
16.9.6-8	02/10/14
16.9.6-9	02/10/14
16.9.6-10	02/10/14
16.9.6-11	02/10/14
16.9.7-1	07/23/12
16.9.7-2	07/23/12
16.9.7-3	07/23/12
16.9.7-4	07/23/12
16.9.7-5	07/23/12
16.9.7-6	07/23/12
16.9.7-7	07/23/12
16.9.7-8	07/23/12
16.9.7-9	Delete
16.9.8-1	2/15/06
16.9.8-2	2/15/06
16.9.8-3	Delete 2/15/06
16.9.8-4	Delete

LOEP 6

List of Effective Pages

Page	Revision Date
16.9.8-5	Delete
16.9.8-6	Delete
16.9.8-7	Delete
16.9.8a-1	2/7/05
16.9.8a-2	2/7/05
16.9.8a-3	2/7/05
16.9.9-1	11/15/12
16.9.9-2	11/15/12
16.9.9-3	11/15/12
16.9.9-4	11/15/12
16.9.10-1	1/12/04
16.9.10-2	1/12/04
16.9.11-1	11/15/12
16.9.11-2	11/15/12
16.9.11-3	11/15/12
16.9.11-4	11/15/12
16.9.11-5	11/15/12
16.9.11-6	11/15/12
16.9.11-7	11/15/12
16.9.11-8	11/15/12
16.9.11a-1	11/15/12
16.9.11a-2	11/15/12
16.9.11a-3	11/15/12
16.9.11a-4	11/15/12
16.9.11a-5	11/15/12
16.9.11a-6	11/15/12
16.9.11a-7	11/15/12
16.9.11a-8	11/15/12
16.9.11a-9	11/15/12
16.9.11a-10	11/15/12
16.9.11a-11	11/15/12
16.9.11a-12	11/15/12
16.9.11a-13	11/15/12
16.9.11a-14	11/15/12
16.9.11a-15	11/15/12
16.9.11a-16	Deleted 3/10/08
16.9.12-1	12/01/13
16.9.12-2	12/01/13
16.9.12-3	12/01/13
16.9.12-4	12/01/13
16.9.12-5	12/01/13

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.9.12-6	12/01/13
16.9.12-7	12/01/13
16.9.12-8	12/01/13
16.9.12-9	12/01/13
16.9.12-10	12/01/13
16.9.12-11	12/01/13
16.9.12-12	12/01/13
16.9.12-13	12/01/13
16.9.12-14	12/01/13
16.9.12-15	12/01/13
16.9.12-16	12/01/13
16.9.12-17	12/01/13
16.9.12-18	12/01/13
16.9.12-19	Deleted 12/01/13
16.9.12-20	Deleted 12/01/13
16.9.12-21	Deleted 12/01/13
16.9.12-22	Deleted 12/01/13
16.9.13-1	01/31/07
16.9.13-2	01/31/07
16.9.13-3	01/31/07
16.9.13-4	01/31/07
16.9.14-1	10/28/04
16.9.14-2	10/28/04
16.9.15-1	3/27/99
16.9.15-2	3/27/99
16.9.15-3	3/27/99
16.9.16-1	4/01/08
16.9.16-2	4/01/08
16.9.16-3	4/01/08
16.9.17-1	5/23/01
16.9.17-2	3/27/99
16.9.18-1	11/15/12
16.9.18-2	11/15/12
16.9.18-3	11/15/12
16.9.18-4	11/15/12
16.9.18-5	11/15/12
16.9.18-6	11/15/12
16.9.18-7	11/15/12
16.9.18-8	11/15/12
16.9.18-9	11/15/12
16.9.18-10	11/15/12

LOEP 8

List of Effective Pages

Page	Revision Date
16.9.18-11	11/15/12
16.9.18-12	11/15/12
16.9.18-13	11/15/12
16.9.18-14	11/15/12
16.9.18-15	11/15/12
16.9.18-16	11/16/12
16.9.19-1	3/31/05
16.9.19-2	3/31/05
16.9.20-1	12/21/09
16.9.20-2	12/21/09
16.9.20-3	12/21/09
16.9.20-4	12/21/09
16.9.20-5	12/21/09
16.9.21-1	07/09/09
16.9.21-2	07/09/09
16.9.21-3	07/09/09
16.9.21-4	07/09/09
16.9.22-1	11/14/13
16.9.22-2	11/14/13
16.9.22-3	11/14/13
16.9.22-4	11/14/13
16.10.1-1	11/15/12
16.10.1-2	11/15/12
16.10.1-3	Deleted 9/18/03
16.10.2-1	12/2/03
16.10.2-2	12/2/03
16.10.3-1	3/27/99
16.10.3-2	3/27/99
16.10.4-1	11/15/12
16.10.5-1	Deleted 8/24/04
16.10.6-1	3/27/99
16.10.7-1	4/29/99
16.10.7-2	4/29/99
16.10.7-3	1/31/00
16.10.7-4	4/29/99
16.10.7-5	4/29/99
16.10.7-6	4/29/99
16.10.7-7	4/29/99
16.10.7-8	4/29/99
16.10.7-9	4/29/99
16.10.8-1	11/27/06

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.10.8-2	11/27/06
16.10.8-3	11/27/06
16.10.8-4	11/27/06
16.10.8-5	11/27/06
16.10.9-1	11/25/09
16.10.9-2	11/25/09
16.10.9-3	11/25/09
16.10.9-4	11/25/09
16.10.9-5	11/25/09
16.11.1-1	3/15/11
16.11.1-2	3/15/11
16.11.1-3	3/15/11
16.11.1-4	3/15/11
16.11.1-5	3/15/11
16.11.1-6	3/15/11
16.11.1-7	3/15/11
16.11.2-1	1/31/00
16.11.2-2	3/27/99
16.11.2-3	1/31/00
16.11.2-4	3/27/99
16.11.2-5	1/31/00
16.11.2-6	1/31/00
16.11.3-1	11/20/08
16.11.3-2	11/20/08
16.11.3-3	11/20/08
16.11.3-4	11/20/08
16.11.3-5	11/20/08
16.11.3-6	11/20/08
16.11.3-7	11/20/08
16.11.3-8	11/20/08
16.11.3-9	11/20/08
16.11.3-10	11/20/08
16.11.3-11	11/20/08
16.11.3-12	11/20/08
16.11.3-13	11/20/08
16.11.3-14	11/20/08
16.11.3-15	11/20/08
16.11.3-16	11/20/08
16.11.3-17	11/20/08
16.11.3-18	11/20/08
16.11.3-19	11/10/04 (Deleted)

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.11.4-1	11/08/13
16.11.4-2	11/08/13
16.11.4-3	11/08/13
16.11.4-4	11/08/13
16.11.4-5	11/08/13
16.11.4-6	11/08/13
16.11.4-7	11/08/13
16.11.4-8	11/10/04 (Delete)
16.11.5-1	10/30/02
16.11.5-2	10/30/02
16.11.5-3	10/30/02
16.11.5-4	10/30/02
16.11.6-1	11/08/13
16.11.6-2	11/08/13
16.11.6-3	11/08/13
16.11.6-4	11/08/13
16.11.6-5	11/08/13
16.11.6-6	11/08/13
16.11.6-7	11/08/13
16.11.6-8	11/08/13
16.11.6-9	11/08/13
16.11.6-10	11/08/13
16.11.7-1	1/31/00
16.11.7-2	1/31/00
16.11.7-3	3/27/99
16.11.7-4	1/31/00
16.11.8-1	12/21/09
16.11.8-2	12/21/09
16.11.9-1	03/22/10
16.11.9-2	03/22/10
16.11.9-3	03/22/10
16.11.10-1	2/25/03
16.11.10-2	2/25/03
16.11.11-1	3/27/99
16.11.12-1	4/10/03
16.11.12-2	4/10/03
16.11.13-1	3/27/99
16.11.13-2	3/27/99
16.11.14-1	3/27/99
16.11.14-2	3/27/99

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.12.1-1	3/27/99
16.12.2-1	5/3/07
16.12.2-2	5/3/07
16.12.3-1	5/1/03
16.12.3-2	5/1/03
16.12.4-1	3/27/99
16.12.5-1	3/27/99
16.12.6-1	11/08/07
16.13.1-1	5/13/04
16.13.1-2	5/13/04
16.13.1-3	5/13/04
16.13.1-4	5/13/04
16.13.1-5	5/13/04
16.13.1-6	5/13/04
16.13.1-7	5/13/04
16.13.1-8	5/13/04
16.13.1-9	5/13/04
16.13.2-1	12/15/04
16.13.2-2	Delete 12/15/04
16.13.2-3	Delete 12/15/04
16.13.2-4	Delete 12/15/04
16.13.3-1	12/15/04
16.13.3-2	Delete 12/15/04
16.13.4-1	3/27/99
16.13.5-1	Delete
16.13.5-2	Delete
16.13.6-1	3/27/99
16.13.7-1	12/15/04
16.13.7-2	12/15/04
16.13.8-1	3/27/99
16.13.9-1	3/27/99
16.13.9-2	3/27/99
16.13.10-1	3/27/99
16.13.11-1	3/27/99
16.14.1-1	11/15/12
16.14.2-1	07/23/12
16.14.2-2	07/23/12
16.14.3-1	3/27/99
16.14.4-1	Deleted 3/15/11
16.14.4.a-1	3/15/11
16.15.1-1	4/12/06

Oconee Nuclear Station
Selected Licensee Commitments Revised 04/21/14

List of Effective Pages

Page	Revision Date
16.15.1-2	Deleted 4/12/06
16.15.1-3	Deleted 4/12/06
16.15.1-4	Deleted 4/12/06
16.15.1-5	Deleted 4/12/06
16.15.2-1	11/15/12
16.15.2-2	11/15/12
16.15.2-3	11/15/12
16.15.2-4	11/15/12
16.15.2-5	11/15/12
16.15.3-1	11/15/12
16.15.3-2	11/15/12
16.15.3-3	11/15/12
16.15.3-4	11/15/12
16.15.3-5	11/15/12

16.11 RADIOLOGICAL EFFLUENTS CONTROL

16.11.4 Operational Safety Review

COMMITMENT Required sampling should be performed as detailed in Table 16.11.4-1.

APPLICABILITY: At all times

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. NA	A.1 NA	NA

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 16.11.4.1 N/A	N/A

Table 16.11.4-1
Minimum Sampling Frequency and Analysis Program

Item		Check		Frequency	Lower Limit of Detection (b) of Lab Analysis for Waste
1.	Decant Monitor Tank, Turbine Building Sump Monitor Tanks, Waste and Recycle Monitor Tanks	a.	Principal Gamma Emitters(c) including Dissolved Noble Gases	Composite Grab Sample prior to release of each batch(h)	<5E-06 µCi/ml (Ce-144) <5E-07 µCi/ml (Other Gamma Nuclides) <1E-05 µCi/ml (Dissolved Gases) <1E-06 µCi/ml (I-131)
		b.	Radiochemical Analysis Sr-89 and Sr-90	Quarterly from all composited batches(f)	<5E-08 µCi/ml
		c.	Tritium	Monthly Composite	<1E-05 µCi/ml
		d.	Gross Alpha Activity	Monthly Composite	<1E-07 µCi/ml
2.	Unit Vent Sampling (Includes Waste Gas Decay Tanks, Reactor Building Purges, Auxiliary Building Ventilation, Spent Fuel Pool Ventilation, Air Ejectors)	a.	Iodine Spectrum (a)	Continuous monitor, weekly sample(e)	<1E-10 µCi/cc (I-133)(j) <1E-12 µCi/cc (I-131)(j)
		b.	Particulates (a)		
		i.	Ce-144 & Mo-99	Weekly Composite(e)	<5E-10 µCi/cc(j)
		ii.	Other Principle Gamma Emitters (d)	Weekly Composite(e)	<1E-11 µCi/cc(j)
		iii.	Gross Alpha Activity	Monthly, using composite samples of one week	<1E-11 µCi/cc
		iv.	Radiochemical Analysis Sr-89, Sr-90	Quarterly Composite	<1E-11 µCi/cc
		c.	Gases by Principle Gamma Emitters(d)	Weekly Grab Sample	<1E-04 µCi/cc
		d.	Tritium	Weekly Grab Sample	<1E-06 µCi/cc
3.	Waste Gas Decay Tank	a.	Principle Gamma Emitters(d)	Grab Sample prior to release of each batch	<1E-04 µCi/cc (gases) <1E-10 µCi/cc (particulates and iodines) <5E-09 µCi/cc (Ce-144 and Mo-99)
		b.	Tritium	Grab Sample prior to release of each batch	<1E-06 µCi/cc
4.	Reactor Building	a.	Principle Gamma Emitters(d)	Grab sample each purge	<1E-04 µCi/cc (gases) <1E-10 µCi/cc (particulates and iodines) <5E-09 µCi/cc (Ce-144 and Mo-99)
		b.	Tritium	Grab sample each purge	<1E-06 µCi/cc

Table 16.11.4-1
Minimum Sampling Frequency and Analysis Program

Item		Check		Frequency	Lower Limit of Detection (b) of Lab Analysis for Waste
5.	Not Used				
6.	#3 Chemical Treatment Pond Effluent[(i)]	a.	Principle Gamma Emitters(c)	Weekly Continuous Composite(g)	<5E-07 µCi/ml
		b.	I-131	Weekly Continuous Composite(g)	<1E-06 µCi/ml
		c.	Tritium	Monthly Continuous Composite(g)	<1E-05 µCi/ml
		d.	Gross Alpha Activity	Monthly Continuous Composite(g)	<1E-07 µCi/ml
		e.	Sr-89 & Sr-90	Quarterly Continuous Composite(g)	<5E-08 µCi/ml
		f.	Dissolved and Entrained gases (Gamma Emitters)	Monthly Grab	<1E-05 µCi/ml
7.	Radwaste Facility Ventilation	a.	Iodine Spectrum(a)	Continuous monitor, weekly sample(e)	(I-133) <1E-09 µCi/cc (I-131) <1E-11 µCi/cc
		b.	Particulate(a)		
		i.	Ce-144 and Mo-99	Weekly Composite(e)	<5E-10 µCi/cc(j)
		ii.	Other Principle Gamma Emitters(d)	Weekly Composite(e)	<1E-11 µCi/cc(j)
		iii.	Gross Alpha Activity	Monthly, using composite samples of one week	<1E-11 µCi/cc
		iv.	Radiochemical Analysis Sr-89, Sr-90	Quarterly Composite	<1E-11 µCi/cc
		c.	Gases by Principle Gamma(d) Emitters	Weekly Grab Sample	<1E-04 µCi/cc
		d.	Tritium	Weekly Grab Sample	<1E-06 µCi/cc

Table 16.11.4-1
Minimum Sampling Frequency and Analysis Program

Item		Check		Frequency	Lower Limit of Detection (b) of Lab Analysis for Waste
8.	Hot Machine Shop Ventilation	a.	Iodine Spectrum	Weekly Sample[e]	(I-133) <1E-10 µCi/cc(j) (I-131) <1E-12 µCi/cc(j)
		b.	Particulate		
		i.	Ce-144 and Mo-99	Weekly Composite[e]	<5E-10 µCi/cc(j)
		ii.	Other Principle Gamma Emitters [d]	Weekly Composite[e]	<1E-11 µCi/cc(j)
		iii.	Gross Alpha Activity	Monthly, using composite samples of one week	<1E-11 µCi/cc
		iv.	Radiochemical Analysis Sr-89, Sr-90	Quarterly Composite	<1E-11 µCi/cc
		c.	Gases by Principle Gamma Emitters	NA	NA
		d.	Tritium	NA	NA
9.	Interim Radwaste Building Ventilation	a.	Iodine Spectrum	Weekly sample(e)	(I-133) <1E-10 µCi/cc(j) (I-131) <1E-12 µCi/cc(j)
		b.	Particulate		
		i.	Ce-144 and Mo-99	Weekly Composite(e)	<5E-10 µCi/cc(j)
		ii.	Other Principle Gamma Emitters(d)	Weekly Composite(e)	<1E-11 µCi/cc(j)
		iii.	Gross Alpha Activity	Monthly, using composite samples of one week	<1E-11 µCi/cc
		iv.	Radiochemical Analysis Sr-89, Sr-90	Quarterly Composite	<1E-11 µCi/cc
		c.	Gases by Principle Gamma(d) Emitters	Weekly Grab Sample	<1E-04 µCi/cc
		d.	Tritium	Weekly Grab Sample	<1E-06 µCi/cc

(a) Samples shall be changed at least once every 24 hours and analysis shall be completed within 48 hours after changing (on or after removal from sampler).

(b) The LLD is defined for purposes of these commitments as the smallest concentration of radioactive material in a sample that would be detected with 95% probability with 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation) :

$$LLD = \frac{(2.71 / T) + 4.65\, s_b}{E \times V \times 2.22E06 \times Y \times \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above (as micro Curies per unit mass or volume),

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),

E is the counting efficiency (as counts per disintegration),

V is the sample size (in units of mass or volume),

2.22E06 is the number of disintegrations per minute per micro Curie,

Y is the fractional radiochemical yield (when applicable),

λ is the radioactive decay constant for the particular nuclide

Δ t is the elapsed time between midpoint of sample collection and time of counting (for plant effluents, not environmental samples). NOTE: This assumes decay correction is applied (at the time of analysis) for the duration of sample collection, for the time between collection and analysis, and for the duration of the counting. Additionally, it does not apply to isolated systems such as Waste Gas Decay Tanks and Waste Monitor Tanks.

T is the sample counting time in minutes

Typical values of E, V, Y and Δ t should be used in the calculation.

It should be recognized that the LLD is an a priori (before the fact) limit representing the capability of a measurement system and not an a posteriori (after the fact) limit for a particular measurement.

(c) The principal gamma emitters for which the LLD control applies include the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, and Ce-141. Ce-144 shall also be measured, but with a LLD of 5E-06 µCi/ml. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with the above nuclides shall also be analyzed and reported in the Annual Radioactive Effluent Release Report.

(d) The principal gamma emitters for which the LLD commitment applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, and Ce-144 for particulates. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides shall also be identified and reported.

(e) The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with SLC 16.11.2.a, SLC 16.11.2.b.1, and SLC 16.11.2.b.2.

(f) A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.

(g) To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously in proportion to the rate of flow of the effluent stream. Prior to analysis, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

(h) A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analysis, each batch shall be isolated, and then thoroughly mixed, to assure representative sampling.

(i) A continuous release is the discharge of liquid wastes of a non-discrete volume, e.g., from a volume of a system that has an input flow during the continuous release.

(j) When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10.

BASES

N/A

REFERENCES:

N/A

16.11 RADIOLOGICAL EFFLUENTS CONTROL

16.11.6 Radiological Environmental Monitoring

COMMITMENT

a. The radiological environmental monitoring samples shall be collected in accordance with Table 16.11.6-1 and shall be analyzed pursuant to the requirements of Tables 16.11.6-1 and 16.11.6-2.

b. A land use census shall be conducted and shall identify the location of the nearest milk animal and the nearest residence in each of the 16 meteorological sectors within a distance of eight kilometers (five miles). Broad leaf vegetation sampling shall be performed at the site boundary in the direction sector with the highest D/Q in lieu of the garden census.

c. Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program. A summary of the results obtained as part of the Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report. The Interlaboratory Comparison Program shall be described in the Annual Radiological Environmental Operating Report.

d. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report.

----------NOTE----------
If samples required by Commitment part a, become permanently unavailable from any of the required sample locations, the locations from which samples were unavailable may then be deleted from the program provided replacement samples were obtained and added to the environmental monitoring program, if available. These new locations will be identified in the Annual Radioactive Effluent Release Report.

APPLICABILITY: At all times

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Radiological environmental monitoring program is not conducted as required.	A.1	Submit a description of the reason for not conducting the program as required and plans to prevent a recurrence shall be included in the Annual Radiological Environmental Operating Report.	May 15 of following calendar year
B. Land use census identifies a Location which yields a calculated dose or dose commitment (via the same exposure pathway) 20% greater than a location from which samples are currently being obtained.	B.1	----------NOTE---------- The sampling location having the lowest calculated dose or dose commitment (via the same exposure pathway) may be deleted from this monitoring program after October 31 of the year in which this land use census was conducted. ---------- Add new location to the radiological environmental monitoring program.	30 days
	AND		
	B.2	Identify new locations in the next Annual Radioactive Effluent Release Report.	April 30 of following calendar year

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Interlaboratory Comparison Program analyses not performed as required.	C.1 Report corrective actions in the Annual Radiological Environmental Operating Report.	May 15 of following calendar year
D. Radioactivity level resulting from plant effluents in environmental sampling medium at a specified location in excess of reporting limits of Table 16.11.6-3 when averaged over a calendar quarter.	D.1 Prepare and submit a Special report that identifies the cause for exceeding the limits and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of SLC 16.11.1 or 16.11.2.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 16.11.6.1	Conduct land use census during growing season using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities.	12 months

Table 16.11.6-1
Radiological Environmental Monitoring Program

Exposure Pathway and/or Sample	Number of Sample Locations (b)	Sampling and Collection Frequency (d)	Time and Frequency of Analysis
1. AIRBORNE			
Radioiodine and Particulates	5	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading.	Radioiodine canister: I-131 analysis weekly. Particulate sampler: Gross beta radioactivity analysis following filter change; and gamma isotopic analysis of composite (by location) quarterly. (c)
2. DIRECT RADIATION	40	Quarterly.	Gamma dose quarterly.
3. WATERBORNE			
a. Surface	2	Composite (a) sample over a 1-month period.	Gamma isotopic analysis monthly. Composite for tritium analysis quarterly.
b. Drinking	3	Composite (a) sample over a 1-month period.	Composite for gross beta and gamma isotopic analyses monthly. Composite for tritium analysis quarterly.
c. Sediment from Shoreline	2	Semiannually.	Gamma isotopic analysis semiannually.

Table 16.11.6-1
Radiological Environmental Monitoring Program

Exposure Pathway and/or Sample	Number of Sample Locations (b)	Sampling and Collection Frequency (d)	Time and Frequency of Analysis
4. INGESTION			
a. Milk	4(e)	Semimonthly when animals are on pasture; monthly at other times.	Gamma isotopic and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
b. Fish	2	Semiannually. One sample each commercially and recreationally important species.	Gamma isotopic analysis semiannually on edible portion.
c. Broad-leaf Vegetation	2	Monthly.	Gamma isotopic analysis monthly.

(a) Composite samples shall be collected by collecting an aliquot at intervals not exceeding 2 hours.

(b) Sample locations are identified in the ODCM.

(c) Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than 10 times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

(d) Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, or to malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period.

(e) Samples from milking animals in three locations within 5 km distance having the highest dose potential. If there are none, then one sample from milking animals in each of three areas between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per year. One sample from milking animals at a control location, as for example 15 to 30 km distant and in the least prevalent wind direction.

Table 16.11.6-2
Maximum Values for the Lower Limits of Detection (LLD) (a) (c)

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Broad-leaf Vegetation (pCi/kg, wet)	Sediment (pCi/kg, dry)
Gross Beta	4	1E-02				
H_3	2,000					
Mn-54	15		130			
Fe-59	30		260			
Co-58	15		130			
Co-60	15		130			
Zn-65	30		260			
Zr-95	15					
Nb-95	15					
I-131	15(b)	7E-02		1	60	
Cs-134	15	5E-02	130	15	60	150
Cs-137	18	6E-02	150	18	80	180
Ba-140	15			60		
La-140	15			15		

(a) The LLD is defined, for purposes of these commitments, as the smallest concentration of radioactive material in a sample with 95% probability of detection and with 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{(2.71 / T) + 4.65\, s_b}{E \times V \times 2.22 \times Y \times \exp(-\lambda \Delta t)}$$

Where:

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume)

Sb is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute)

Table 16.11.6-2
Maximum Values for the Lower Limits of Detection (LLD) (a) (c)

E is the counting efficiency (as counts per disintegration)

V is the sample size (in units of mass or volume)

2.22 is the number of disintegrations per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δ t is the elapsed time between sample collection (or end of the sample collection period) and time of counting

T is the sample counting time in minutes

Typical values of E, V, Y and Δ t should be used in the calculation.

The LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as a posteriori (after the fact) limit for a particular measurement.

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances, may render these LLDs unachievable. In such cases, the contributing factors will be identified and described in the Annual Radiological Environmental Operating Report.

(b) LLD for gamma isotopic analysis for I-131 in drinking water samples. Low level I-131 analysis on drinking water will not be routinely performed because the calculated dose from I-131 in drinking water at all locations is less than 1 mrem per year. Low level I-131 analyses will be performed if abnormal releases occur which could reasonably result in > 1 pCi/liter of I-131 in drinking water. For low level analyses of I-131 an LLD of 1 pCi/liter will be achieved.

(c) Other peaks which are measurable and identifiable, together with the radionuclides in Table 16.11.6-2, shall be identified and reported.

Table 16.11.6-3
Reporting Levels for Radioactivity Concentrations in Environmental Samples (c) (d)

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Broad-leaf Vegetation (pCi/kg, wet)
H-3	2E04(a)				
Mn-54	1E03		3E04		
Fe-59	4E02		1E04		
Co-58	1E03		3E04		
Co-60	3E02		1E04		
Zn-65	3E02		2E04		
Zr-Nb-95	4E02				
I-131	2(b)	0.9		3	1E02
Cs-134	30	10	1E03	60	1E03
Cs-137	50	20	2E03	70	2E03
Ba-La-140	2E02			3E02	

(a) For drinking water samples. This is 40 CFR Part 141 value.

(b) If low level I-131 analyses are performed.

(c) Report shall be submitted when any single radionuclide exceeds the reporting level in Table 16.11.6-3 or when more than one of the radionuclides in Table 16.11.6-3 are detected in sampling medium and

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \ldots \geq 1.0$$

(d) Report shall be submitted when radionuclides other than those in table 16.11.6-3 are detected and are the result of plant effluents if the potential annual dose to a MEMBER OF THE PUBLIC from all radionuclides is equal to or greater than the calendar year limits of SLC 16.11.1 or 16.11.2.

BASES

The environmental monitoring program required by this commitment provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures of individuals resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of exposure pathways. The initially specified monitoring program will be effective for at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

The detection capabilities required by Table 16.11.6-2 are considered optimum for routine environmental measurements in industrial laboratories. The specified lower limits of detection correspond to less than the 10 CFR 50. Appendix I, design objective dose-equivalent of 45 mrem/year for atmospheric releases to the most sensitive organ and individual. The land use census commitment is provided to assure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are provided if required by the results of this census.

The requirements for participation in an Interlaboratory Comparison Program is provided to assure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of a quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid.

With the level of radioactivity in an environmental sampling medium at a specified location exceeding the reporting levels of Table 16.11.6-3 when averaged over any calendar quarter, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days a Special Report that defines the corrective action to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of SLC 16.11.1 or SLC 16.11.2. When more than one of the radionuclides in Table 16.11.6-3 are detected in the sampling medium, this report shall be submitted if

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \ldots \geq 1.0$$

When radionuclides other than those in Table 16.11.6-3 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to a MEMBER OF THE PUBLIC from all radionuclides is equal to or greater than the calendar year limits of SLC 16.11.1 or SLC 16.11.2. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report required by Technical Specification 5.6.2. The methodology and parameters used to estimate the potential annual dose to a MEMBER OF THE PUBLIC shall be indicated in the 30-day Special Report.

The following requirement(s) were relocated from the CTS 6.4.4.f during the conversion to ITS.

The station shall have a program to monitor the radiation and radionuclides in the environs of the plant. The program shall provide (1) representative measurements of radioactivity in the highest potential exposure pathways, and (2) verification of the accuracy of the effluent monitoring program and modeling of environmental exposure pathways. The program shall (1) be contained in UFSAR Chapter 16, (2) conform to the guidance of Appendix I to 10 CFR Part 50, and (3) include the following:

1. Monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the ODCM;

2. A Land Use Census to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the monitoring program are made if required by the results of this census; and,

3. Participation in an Interlaboratory Comparison Program to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring.

REFERENCES:

1. 10 CFR Part 50, Appendix I.
2. Offsite Dose Calculation Manual.

Attachment 8

Revisions to the Radioactive Waste Process Control Program Manual

There have been no revisions to the Radioactive Waste Process Control Program Manual since the 2012 ARERR transmittal in 2013.

(Page 82)

Attachment 9

Information to Support the Nuclear Energy Institute (NEI) Groundwater Protection Initiative

(Pages 83 - 86)

2013 Annual Radiological Effluent Release Report
Groundwater Well Data

Duke Energy implemented a Groundwater Protection program in 2007. This program was developed to ensure timely and effect management of situations involving inadvertent releases of licensed material to groundwater. As part of this program, Oconee monitored sixty-six groundwater wells during 2013. Tritium activity in wells GM-7R and GM-7DR was reported per NEI 07-07 in February, 2010. The probable source of this activity was determined to be discharges of the turbine building sumps to Chemical Treatment Pond #3 through the east yard drain. Discharges of the turbine building sump through this pathway were discontinued in 2008. Installation of a recovery well in 2011 has resulted in decreased tritium concentrations in well GM-7DR.

Monitoring wells are sampled quarterly, semi-annually or annually. The recovery well discharge composite was collected weekly in 2013. Groundwater samples are regularly analyzed for tritium and gamma emitters with selected wells being analyzed for difficult to detect radionuclides. No gamma or difficult to detect radionuclides (other than naturally occurring radionuclides) were identified in well samples during 2013.

Results from sampling during 2013 are shown in the table below.

Well Name	Location / Description	Tritium Concentration (pCi/l)				# of Samples
		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
A-1	ONS GWPI / A-1 / CTP 1/2	<MDA	<MDA	<MDA	<MDA	4
A-10	ONS GWPI / A-10 / CTP 3	5.38E+02	4.34E+02	4.85E+02	4.31E+02	4
A-11	ONS GWPI / A-11 / CTP 3	<MDA	<MDA	<MDA	<MDA	4
A-12	ONS GWPI / A-12 / CTP 3	<MDA	<MDA	<MDA	<MDA	4
A-13	ONS GWPI / A-13 / CTP 1/2	4.96E+02	5.35E+02	6.02E+02	5.45E+02	4
A-14	ONS GWPI / A-14 / CTP 1/2	3.67E+02	2.09E+02	2.80E+02	3.15E+02	4
A-17	ONS GWPI / A-17 / CTP 1/2	2.48E+02	1.93E+02	1.86E+02	3.07E+02	4
A-18	ONS GWPI / A-18 / CTP 1/2	<MDA	<MDA	2.17E+02	1.98E+02	4
A-2	ONS GWPI / A-2 / CTP 1/2	<MDA	<MDA	<MDA	<MDA	4
A-8	ONS GWPI / A-8 / CTP 1/2	NS	NS	NS	NS	0
A-9	ONS GWPI / A-9 / CTP 1/2	1.90E+02	<MDA	NS	<MDA	3
BG-4	ONS GWPI / BG-4 / Ball Field	<MDA	<MDA	<MDA	<MDA	4
GM-10	ONS GWPI / GM-10 / 525 kv Sw. Yard	<MDA	<MDA	<MDA	<MDA	4
GM-10R	ONS GWPI / GM-10R / 525 kv Sw. Yard	<MDA	<MDA	<MDA	<MDA	4
GM-11	ONS GWPI / GM-11 / ONS Garage	<MDA	<MDA	<MDA	<MDA	4
GM-11R	ONS GWPI / GM-11R / ONS Garage	<MDA	<MDA	<MDA	<MDA	4
GM-12	ONS GWPI / GM-12 / E of Access Rd.	<MDA	<MDA	<MDA	<MDA	4
GM-12R	ONS GWPI / GM-12R / E of Access Rd.	<MDA	<MDA	<MDA	<MDA	4
GM-13	ONS GWPI / GM-13 / 525 kv Sw. Yard	<MDA	<MDA	<MDA	<MDA	4
GM-13R	ONS GWPI / GM-13R / 525 kv Sw. Yard	<MDA	<MDA	<MDA	<MDA	4

Well Name	Location / Description	Tritium Concentration (pCi/l)				# of Samples
		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
GM-14	ONS GWPI / GM-14 / Mnt. Trg. Facility	<MDA	<MDA	<MDA	<MDA	4
GM-14R	ONS GWPI / GM-14R / Mnt. Trg. Facility	<MDA	<MDA	<MDA	<MDA	4
GM-15	ONS GWPI / GM-15 / 525 kv Sw. Yard	<MDA	1.75E+02	2.25E+02	<MDA	4
GM-15R	ONS GWPI / GM-15R / 525 kv Sw. Yard	2.07E+02	1.64E+02	<MDA	<MDA	4
GM-16DDR	ONS GWPI / GM-16DDR / TBSMT	4.19E+02	3.89E+02	3.77E+02	<MDA	4
GM-16DR	ONS GWPI / GM-16DR / TBSMT	9.66E+03	8.73E+03	8.54E+03	8.81E+03	4
GM-16R	ONS GWPI / GM-16R / TBSMT	1.75E+03	1.83E+03	1.65E+03	1.61E+03	4
GM-17DR	ONS GWPI / GM-17DR /Oil Drum Storage	3.35E+03	3.03E+03	3.04E+03	3.10E+03	4
GM-17R	ONS GWPI / GM-17R / Oil Drum Storage	1.49E+03	1.51E+03	1.40E+03	1.37E+03	4
GM-18R	ONS GWPI / GM-18R / RCP Refurb.Bldg	9.21E+03	8.02E+03	7.96E+03	8.40E+03	4
GM-19	ONS GWPI / GM-19 / 525 kv Sw. Yard	5.52E+02	5.47E+02	3.73E+02	6.99E+02	4
GM-19R	ONS GWPI / GM-19R /525 kv Sw. Yard	4.01E+02	4.55E+02	4.61E+02	4.46E+02	4
GM-1R	ONS GWPI / GM-1R / CTP 1/2	<MDA	<MDA	<MDA	<MDA	4
GM-20	ONS GWPI / GM-20 / SG Retire. Facility	<MDA	<MDA	<MDA	<MDA	4
GM-20R	ONS GWPI / GM-20R / SG Retire. Facility	<MDA	<MDA	<MDA	<MDA	4
GM-21	ONS GWPI / GM-21 / Sec. Trg. Facility	<MDA	<MDA	<MDA	<MDA	4
GM-22	ONS GWPI / GM-22 / Sec. Trg. Facility	<MDA	<MDA	<MDA	<MDA	4
GM-23	ONS GWPI / GM-23 / 525 kv Sw. Yard	4.35E+02	3.58E+02	4.22E+02	2.01E+02	4
GM-24R	ONS GWPI / GM-24R / 3T Transformer	1.71E+03	1.47E+03	1.47E+03	1.19E+03	4
GM-25R	ONS GWPI / GM-25R / CT3 Transformer	3.43E+02	4.56E+02	4.03E+02	3.89E+02	4
GM-2DR	ONS GWPI / GM-2DR / U-1/2 SFP	3.06E+02	1.91E+02	2.62E+02	2.08E+02	4
GM-2R	ONS GWPI / GM-2R / U-1/2 SFP	8.28E+02	6.55E+02	5.79E+02	3.77E+02	4
GM-3DR	ONS GWPI / GM-3DR / U-3 SFP	2.37E+02	<MDA	2.03E+02	3.29E+02	4
GM-3R	ONS GWPI / GM-3R / U-3 SFP	3.04E+02	2.13E+02	2.18E+02	2.16E+02	4
GM-4	ONS GWPI / GM-4 / Rad. Mat. WH	3.16E+02	2.74E+02	3.85E+02	4.21E+02	4
GM-5	ONS GWPI / GM-5 / Rdwst. Bldg.	1.96E+02	<MDA	<MDA	<MDA	4
GM-5R	ONS GWPI / GM-5R / Rdwst. Bldg.	<MDA	<MDA	<MDA	<MDA	4
GM-6	ONS GWPI / GM-6 / Outflow to CTP-3	<MDA	<MDA	<MDA	<MDA	4
GM-6R	ONS GWPI / GM-6R / Outflow to CTP-3	<MDA	<MDA	<MDA	<MDA	4
GM-7	ONS GWPI / GM-7 / 525 kv Sw. Yard	9.54E+02	6.47E+02	4.99E+02	3.80E+02	4
GM-7DR	ONS GWPI / GM-7DR / 525 kv Sw. Yard	<MDA	<MDA	<MDA	<MDA	4
GM-7R	ONS GWPI / GM-7R / 525 kv Sw. Yard	2.90E+03	2.98E+03	4.00E+03	4.32E+03	4
GM-8	ONS GWPI / GM-8 / E of U-3 TB	3.01E+02	2.75E+02	3.39E+02	2.08E+02	4
GM-8R	ONS GWPI / GM-8R / E of U-3 TB	3.46E+02	2.00E+02	1.75E+02	2.27E+02	4
GM-9	ONS GWPI / GM-9 / E of U-2 TB	<MDA	2.36E+02	2.90E+02	2.06E+02	4
GM-9R	ONS GWPI / GM-9R / E of U-2 TB	<MDA	<MDA	<MDA	<MDA	4
MW-11	ONS GWPI / MW-11 / Landfill	<MDA	NS	<MDA	NS	2
MW-11D	ONS GWPI / MW-11D / Landfill	<MDA	NS	<MDA	NS	2

Well Name	Location / Description	Tritium Concentration (pCi/l)				# of Samples
		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
MW-13	ONS GWPI / MW-13 / Landfill	<MDA	NS	<MDA	NS	2
MW-16	ONS GWPI / MW-16 / Landfill	<MDA	NS	<MDA	NS	2
MW-3	ONS GWPI / MW-3 / Landfill	<MDA	NS	<MDA	NS	2
MW-RP01	ONS GWPI / MW-RP01 / Landfarm/Burial	NS	<MDA	NS	NS	1
MW-RP02	ONS GWPI / MW-RP02 / Landfarm/Burial	NS	<MDA	NS	NS	1
MW-RP03	ONS GWPI / MW-RP03 / Landfarm/Burial	NS	<MDA	NS	NS	1

Well Name	Location / Description	Tritium Concentration (pCi/l)				# of Samples
		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
*011	ONS / 011 / Ball Field	<MDA	<MDA	<MDA	<MDA	4
*013	ONS / 013 / WH 5	<MDA	<MDA	<MDA	<MDA	4
*015	ONS / 015 / Brown's Bottom	<MDA	<MDA	<MDA	<MDA	4

Well Name	Location / Description	Tritium Concentration (pCi/l)				# of Samples
		Minimum	Average	Maximum		
**RW-1	525 kv Sw. Yard	1770	2086	2460		52

NS - Not sampled due to insufficient volume in well or well inaccessible due to construction in area.

*These are irrigation wells and may not meet current requirements for groundwater monitoring well construction.

**This is a recovery well not intended for long term monitoring.

pCi/l - pico curies per liter

< - less than minimum detectable activity, typically 250 pCi/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.

Attachment 10

Inoperable Equipment

1 RIA-40 and 2 RIA-40, Condenser Steam Air Ejector Off Gas Monitors, were declared out-of-service on August 5, 2010, due to moisture (water) carryover into the detector chamber. Selected Licensee Commitment (SLC) 16.11.3. Condition C, required action to return 1 RIA-40 and 2 RIA-40 to service within 30 days was not successful. This condition continued into 2013 with grab samples being taken to detect any primary to secondary leakage on Units 1 and 2.
Modifications to add moisture separators and drains were completed on 1 RIA-40 and 2 RIA-40 in 2013. Unit 1 RIA-40 was declared operable on November 6, 2013. Unit 2 RIA-40 was declared operable on August 5, 2013. The inoperability of 1 RIA-40 and 2 RIA-40 could not be corrected in a timely manner (less than 30 days) due to the need for a station modification to effectively resolve the moisture carryover issue.

The Rad Waste Facility (RWF) ventilation exhaust particulate and Iodine samplers AM7, AM8 and AM9 were determined to be out of service on 11/18/2012 and were returned to service on 06/20/2013. The samplers were not returned to service within 30 days as specified in Selected Licensee Commitment (SLC) 16.11.3, Condition C Required Action. The work order to investigate and repair the low AM7, AM8 and AM9 sampler flows was initially not given adequate priority to return the samplers to service within 30 days. On 11/18/2012, auxiliary sampling initiated to satisfy SLC 16.11.3 sampling requirements was determined to be adequate to satisfy the requirement of SLC and no SLC entry was made. On 05/03/13, it was recognized that SLC 16.11.3 Condition C and Condition L should have been entered due to AM7, AM8 and AM9 samplers being out of service. Once the SLC entry was made, the Work Order was given a high priority. Investigation was performed and the cause of the low flow was due to imbalanced RIA skid flow that resulted in low flow in the sample lines. RIA skid flows were rebalanced and samplers AM7, AM8 and AM9 were returned to service on 06/20/2013.

(Page 87)

Attachment 11

Radioactive Waste Systems Changes

This attachment documents the changes made to the radioactive waste systems at the Oconee Nuclear Station during the period January 1, 2013 to December 31, 2013.

There were no changes made to the radioactive waste systems during 2013 at the Oconee Nuclear Station.

(Page 88)

Attachment 12

Errata to Previous Reports

The previous report, 2012 ARERR, Attachment 10, should have included the following information:

The Rad Waste Facility (RWF) ventilation exhaust particulate and Iodine samplers AM7, AM8 and AM9 were determined to be out of service on 11/18/2012 and were returned to service on 06/20/2013. The samplers were not returned to service within 30 days as specified in Selected Licensee Commitment (SLC) 16.11.3, Condition C Required Action.

The work order to investigate and repair the low AM7, AM8 and AM9 sampler flows was initially not given adequate priority to return the samplers to service within 30 days. On 11/18/2012, auxiliary sampling initiated to satisfy SLC 16.11.3 sampling requirements was determined to be adequate to satisfy the requirement of SLC and no SLC entry was made. On 05/03/13, it was recognized that SLC 16.11.3 Condition C and Condition L should have been entered due to AM7, AM8 and AM9 samplers being out of service. Once the SLC entry was made, the Work Order was given a high priority. Investigation was performed and the cause of the low flow was due to imbalanced RIA skid flow that resulted in low flow in the sample lines. RIA skid flows were rebalanced and samplers AM7, AM8 and AM9 were returned to service on 06/20/2013.

(Page 89)

Enclosure

2013 Offsite Dose Calculation Manual
Compact Disc

(Page 90)