Duke Energy

T. PRESTON GILLESPIE, JR.
Vice President
Oconee Nuclear Station

Duke Energy
ON01VP / 7800 Rochester Hwy.
Seneca, SC 29672

864-873-4478
864-873-4208 fax
T.Gillespie@duke-energy.com

April 27, 2012

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

Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station (ONS), Units 1, 2 and 3
Renewed Facility Operating License Numbers DPR-38, -47, -55
Docket Nos. 50-269, 50-270 and 50-287
2011 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 (ARERR) for the period of January 1, 2011 through December 31, 2011. The ARERR consists in 11 attachments to this letter. In addition, in accordance with TS 5.5.1, the Offsite Dose Calculation Manual (ODCM) is included as an enclosure to the letter. The attachments and the enclosure are as follows:

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 the Updated Final Safety Analysis Report Radiological Effluent Controls Section 16.11
Attachment 8	Revisions to the Radioactive Waste Process Control Program Manual
Attachment 9	Information to Support the Nuclear Energy Institute (NEI) Groundwater Protection Initiative
Attachment 10	Inoperable Equipment
Attachment 11	Radioactive Waste Systems Changes
Enclosure	2011 Offsite Dose Calculation Manual Compact Disc

IE48
NRR

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

Sincerely,

TP Gillespie

T. Preston Gillespie, Jr.
Vice President
Oconee Nuclear Station

Attachments and Enclosures

xc (with attachments and enclosure):

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

Mr. John P. Boska, Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
11555 Rockville Pike
Rockville, MD 20852

Mr. Andrew T. Sabisch
NRC Senior Resident Inspector
Oconee Nuclear Station

xc (with attachments only):

Ms. Susan E. Jenkins, Manager
Radioactive & Infectious Waste Management
Division of Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull St.
Columbia, SC 29201

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

Mr. Russell Keown, Supervisor
Environmental Quality Control
Analytical & Radiological Environmental Services Division
2600 Bull Street
Columbia, SC 29201

Ms. Sandra Flemming, Assistant Bureau Chief
Analytical & Radiological Environmental Services Division
8231 Parklane Road
Columbia, SC 29223

xc (with attachments only):--continued

Mr. Chris Staten, Director
Environmental Quality Control
Bureau of Waste Assessment & Emergency Response
2600 Bull Street
Columbia, SC 29201

Ms. Crystal Rippy, Manager
Environmental Quality Control
Bureau of Water, Industrial Waste Water Permitting
2600 Bull Street
Columbia, SC 29201

bxc:

RGC Contact	XN01RC
Site RP Contact	XN02RP
GO RP Contact	EC07F
INPO	
ANI	
ELL	EC05O
RGC	Data File
Master File	

(with attachments only)

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, Appendix B.

OCONEE NUCLEAR STATION

EFFLUENT RELEASE DATA

(January 1, 2011 through December 31, 2011)

This attachment includes a summary of the quantities of radioactive liquid and gaseous effluents as outlined in Regulatory Guide 1.21, Rev. 1, Appendix B. Radioactive liquid and gaseous wastes are sampled and analyzed per the requirements in Selected Licensee Commitment (SLC) Table 16.11.4-1, "Minimum Sampling Frequency and Analysis Program". Included in the gaseous effluent releases is an estimate of Carbon-14 radioactivity released in 2011 (Ref. *"Carbon-14 Supplemental Information"*, contained in the "Supplemental Information" attachment of the ARERR for further information).

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
A. Fission and Activation Gases						
1. Total Release	Ci	6.36E+00	1.76E+01	3.50E-01	5.49E+00	2.98E+01
2. Avg. Release Rate	µCi/sec	8.18E-01	2.24E+00	4.41E-02	6.91E-01	9.46E-01
B. Iodine-131						
1. Total Release	Ci	5.68E-06	2.31E-05	0.00E+00	0.00E+00	2.88E-05
2. Avg. Release Rate	µCi/sec	7.30E-07	2.94E-06	0.00E+00	0.00E+00	9.14E-07
C. Particulates Half Life >= 8 days						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Avg. Release Rate	µCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Tritium						
1. Total Release	Ci	5.67E+01	1.68E+01	3.11E+01	4.35E+01	1.48E+02
2. Avg. Release Rate	µCi/sec	7.29E+00	2.14E+00	3.91E+00	5.47E+00	4.70E+00
E. Carbon-14						
1. Total Release	Ci	5.85E+00	4.46E+00	6.08E+00	5.48E+00	2.19E+01
2. Avg. Release Rate	µCi/sec	7.52E-01	5.68E-01	7.65E-01	6.89E-01	6.93E-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	µCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS EFFLUENTS - ELEVATED RELEASES - CONTINUOUS MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
XE-133	Ci	5.71E+00	1.33E+01	0.00E+00	5.36E+00	2.44E+01
Totals for Period...	Ci	5.71E+00	1.33E+01	0.00E+00	5.36E+00	2.44E+01
2. Iodines						
I-131	Ci	5.68E-06	2.31E-05	0.00E+00	0.00E+00	2.88E-05
Totals for Period...	Ci	5.68E-06	2.31E-05	0.00E+00	0.00E+00	2.88E-05
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		.....	.....	.....	.....	.....
4. Tritium						
H-3	Ci	4.30E+01	1.55E+01	2.98E+01	4.05E+01	1.29E+02
5. Carbon-14						
C-14	Ci	1.76E+00	1.34E+00	1.82E+00	1.64E+00	6.56E+00
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS EFFLUENTS - ELEVATED RELEASES - BATCH MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
AR-41	Ci	0.00E+00	2.54E-02	4.36E-02	8.04E-03	7.71E-02
KR-85	Ci	5.83E-01	3.61E+00	1.42E-02	1.16E-01	4.33E+00
XE-131M	Ci	9.10E-04	0.00E+00	0.00E+00	0.00E+00	9.10E-04
XE-133	Ci	6.43E-02	6.71E-01	4.85E-03	9.39E-03	7.49E-01
XE-133M	Ci	4.71E-04	0.00E+00	0.00E+00	0.00E+00	4.71E-04
XE-135	Ci	3.23E-06	2.65E-03	7.88E-05	2.13E-04	2.95E-03
Totals for Period...	Ci	6.49E-01	4.31E+00	6.28E-02	1.34E-01	5.16E+00
2. Iodines						
I-131	Ci	1.49E-09	6.38E-08	0.00E+00	0.00E+00	6.53E-08
Totals for Period...	Ci	1.49E-09	6.38E-08	0.00E+00	0.00E+00	6.53E-08
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		.....	.....	.....	.....	.....
4. Tritium						
H-3	Ci	5.72E-05	8.45E-02	2.57E-02	2.59E-02	1.36E-01
5. Carbon-14						
C-14	Ci	4.10E+00	3.12E+00	4.26E+00	3.84E+00	1.53E+01
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
XE-133	Ci	0.00E+00	0.00E+00	2.88E-01	0.00E+00	2.88E-01
Totals for Period...	Ci	0.00E+00	0.00E+00	2.88E-01	0.00E+00	2.88E-01
2. Iodines						
** No Nuclide Activities **		.....	.....	.....	.....	.....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		.....	.....	.....	.....	.....
4. Tritium						
H-3	Ci	1.37E+01	1.23E+00	1.29E+00	2.99E+00	1.92E+01
Totals for Period...	Ci	1.37E+01	1.23E+00	1.29E+00	2.99E+00	1.92E+01
5. Carbon-14						
** No Nuclide Activities **		.....	.....	.....	.....	.....
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
** No Nuclide Activities **		.....	.....	.....	.....	.....
2. Iodines						
** No Nuclide Activities **		.....	.....	.....	.....	.....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		.....	.....	.....	.....	.....
4. Tritium						
H-3	Ci	0.00E+00	1.13E-09	0.00E+00	1.69E-07	1.70E-07
Totals for Period...	Ci	0.00E+00	1.13E-09	0.00E+00	1.69E-07	1.70E-07
5. Carbon-14						
** No Nuclide Activities **		.....	.....	.....	.....	.....
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
A. Fission and Activation Products						
1. Total Release	Ci	1.02E-02	1.26E-02	1.13E-02	1.18E-02	4.60E-02
2. Average Diluted Concentration						
a. Continuous Releases	µCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Batch Releases	µCi/ml	1.22E-09	1.49E-09	1.33E-09	1.38E-09	1.35E-09
B. Tritium						
1. Total Release	Ci	2.52E+02	1.45E+02	2.11E+02	2.18E+02	8.26E+02
2. Average Diluted Concentration						
a. Continuous Releases	µCi/ml	4.00E-08	2.26E-08	3.07E-08	3.43E-08	3.19E-08
b. Batch Releases	µCi/ml	3.00E-05	1.71E-05	2.46E-05	2.55E-05	2.43E-05
C. Dissolved and Entrained Gases						
1. Total Release	Ci	0.00E+00	6.05E-05	0.00E+00	0.00E+00	6.05E-05
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	7.15E-12	0.00E+00	0.00E+00	1.78E-12
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	6.60E+08	5.44E+08	4.69E+08	6.50E+08	2.32E+09
2. Batch Releases	liters	2.31E+06	2.99E+06	1.48E+06	3.27E+06	1.00E+07
F. Volume of Dilution Water						
1. Continuous Releases	liters	8.37E+09	8.46E+09	8.55E+09	8.55E+09	3.39E+10
2. Batch Releases	liters	8.37E+09	8.46E+09	8.55E+09	8.55E+09	3.39E+10

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
LIQUID EFFLUENTS - CONTINUOUS MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
** No Nuclide Activities **		.....	.....	.....	.....	.....
2. Tritium						
H-3	Ci	3.61E-01	2.04E-01	2.77E-01	3.16E-01	1.16E+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 1/1/11 TO 1/1/12
LIQUID EFFLUENTS - BATCH MODE

Oconee Nuclear Station Units 1, 2, & 3

REPORT FOR 2011	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
AG-110M	Ci	0.00E+00	7.01E-04	6.77E-05	1.37E-04	9.06E-04
CO-57	Ci	4.91E-05	0.00E+00	1.72E-05	0.00E+00	6.63E-05
CO-58	Ci	9.12E-03	8.35E-03	7.22E-03	1.02E-02	3.48E-02
CO-60	Ci	1.23E-04	2.43E-04	2.71E-04	1.14E-04	7.52E-04
CR-51	Ci	0.00E+00	0.00E+00	8.15E-04	0.00E+00	8.15E-04
CS-134	Ci	0.00E+00	8.61E-04	5.33E-05	6.61E-05	9.80E-04
CS-137	Ci	1.58E-05	7.89E-04	1.15E-04	2.04E-04	1.12E-03
I-131	Ci	0.00E+00	0.00E+00	1.05E-07	0.00E+00	1.05E-07
MN-54	Ci	0.00E+00	0.00E+00	9.42E-05	0.00E+00	9.42E-05
NB-95	Ci	1.89E-04	4.91E-04	2.49E-04	1.88E-04	1.12E-03
SB-124	Ci	0.00E+00	0.00E+00	1.38E-04	0.00E+00	1.38E-04
SB-125	Ci	7.15E-04	8.87E-04	2.08E-03	9.09E-04	4.59E-03
ZN-65	Ci	0.00E+00	0.00E+00	5.82E-05	0.00E+00	5.82E-05
ZR-95	Ci	0.00E+00	2.54E-04	1.65E-04	6.03E-05	4.80E-04
Totals for Period...	Ci	1.02E-02	1.26E-02	1.13E-02	1.18E-02	4.60E-02
2. Tritium						
H-3	Ci	2.52E+02	1.45E+02	2.11E+02	2.18E+02	8.25E+02
3. Dissolved and Entrained Gases						
XE-133	Ci	0.00E+00	6.05E-05	0.00E+00	0.00E+00	6.05E-05
Totals for Period...	Ci	0.00E+00	6.05E-05	0.00E+00	0.00E+00	6.05E-05
4. Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

ATTACHMENT 2

Supplemental Information

to the

Gaseous and Liquid Effluents Report

OCONEE NUCLEAR STATION

SUPPLEMENTAL INFORMATION

(January 1, 2011 through December 31, 2011)

This attachment includes:

(1) Carbon-14 Supplemental Information
(2) Regulatory Guide 1.21, Revision 1, Supplemental Information
(3) Overall Error Estimate for Liquid and Gaseous Effluent Release Data

Oconee 2011 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 2011 Annual Radioactive Effluent Release Report (ARERR) contains estimates of C-14 radioactivity released in 2011, 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 2011 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 2011 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 2011 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 2011 is well below the 10CFR50, Appendix I, ALARA design objective (i.e., 15 mrem/yr per unit).

OCONEE NUCLEAR STATION

2011 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. 1.17E+02 = TOTAL NUMBER OF BATCH RELEASES
2. 2.53E+04 = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. 2.54E+02 = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. 2.16E+02 = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. 7.30E+01 = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.
6. 1.70E+04 = AVERAGE DILUTION WATER FLOW DURING RELEASES (GPM).

B. GASEOUS EFFLUENT
1. 3.90E+01 = TOTAL NUMBER OF BATCH RELEASES.
2. 1.26E+05 = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. 3.52E+04 = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. 3.24E+03 = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. 1.65E+02 = 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

DUKE ENERGY
OCONEE NUCLEAR STATION
SOLID RADIOACTIVE WASTE SHIPPED TO A DISPOSAL FACILITY

REPORT PERIOD: JANUARY - DECEMBER YEAR: 2011

TYPES OF WASTE SHIPPED		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		4	12	12	0	0	0	General Design	2488.8	70.48	3.91
(B) PRIMARY RESIN		5	5	0	0	5	0	Type A/B	601.5	17.03	668.30
(C) DEWATERED MECHANICAL FILTERS											
1. PRIMARY FILTER MEDIA		1	1	0	0	0	1	Type A	120.3	3.41	10.90
2. SECONDARY FILTER MEDIA		2	2	2	0	0	0	General Design	168.7	4.78	0.0175
(D) SOLIDIFIED (CEMENT) OIL, ACIDS,SLUDGES		0	0	0	0	0	0	General Design	0	0.00	0.00
2) DRY SOLID WASTE											
(A) DRY ACTIVE WASTE (COMPACTED)	(1)	110	110	110	0	0	0	General Design	9641.6	273.03	5.33
	(2)	19	19	19	0	0	0	General Design	2622.17	74.25	0.08
(B) DRY ACTIVE WASTE (NON-COMPACTED)	(3)	1	1	0	1	0	0	Type A	120.3	3.41	1.32
(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		142	150	143	1	5	1		15763.4	446.38	689.86

NOTE: (1) Shipments from Energy Solutions to Envirocare of Utah (DAW)
(2) Shipments from Energy Solutions to Envirocare of Utah (METAL)
(3) Shipments to CNSI @ Barnwell from ONS

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: POWDEX RESIN

ISOTOPE:	% ABUNDANCE				# OF LINERS SHIPPED TO ENVIROCARE								12	# OF SHIPMENTS TO ENVIROCARE						4			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	0.00
MN-54	0.0163	0.1643	0.30	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.30
CO-57	0.0053	0.0533	0.11	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.15
CO-58	0.0000	0.0056	0.08	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.48	0.87
CO-60	0.7399	2.7373	5.07	8.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.65	4.16
NB-95	0.0000	0.0000	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
ZR-95	0.0000	0.0001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.0000	0.0000	0.30	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.21
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	0.00
AG-110m	0.3711	0.1350	1.16	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49	0.62
SB-125	0.0000	0.1151	12.34	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.70	3.43
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	0.00
CS-137	0.8136	0.7454	2.45	2.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.12	1.53
H-3	93.9880	80.8917	49.85	36.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	261.71	65.43
NI-63	1.1864	4.0908	7.30	11.35	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	23.92	5.98
FE-55	1.4709	5.8742	11.22	18.59	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	37.16	9.29
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	0.00
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	0.00
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	0.00
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	0.00
C-14	1.4990	5.1576	9.19	14.28	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	30.13	7.53
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	0.00
ZN-65	0.0000	0.0000	0.00	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	0.00	0.13	0.03
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	0.00
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	0.00
RU-106	0.1371	0.1858	0.73	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.51
CE-144	0.0128	0.0195	0.08	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	0.00	0.24	0.06
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	0.00
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	0.00
TOTAL	100	100	100	99.846	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400.45	100.11
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	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
CURIES	0.499	0.628	0.989	1.79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.906	
CU. FT.	622.2	622.2	622.2	622.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2488.8	
CU. M	17.61907	17.61907	17.61907	17.619	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70.4763	
RSR#	11-2042	11-2043	11-2044	11-2052																				

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: PRIMARY RESIN

OF LINERS SHIPPED TO CNSI 5

OF SHIPMENTS TO CNSI 5

ISOTOPE:	% ABUNDANCE/LINER																					TOTAL	AVE.
	11-2001	11-2008	11-2011	11-2037	11-2046																		
AG-110m	0.0892	0.1716	0.0671	0.1434	0.1364	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6077	0.1215
AM-241	0.0001	0.0001	0.0000	0.0000	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	0.0005	0.0001
Be-7	0.0000	0.0000	0.0000	1.6276	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.6276	0.3255
C-14	0.1785	0.1131	1.0621	0.2240	0.3446	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.9223	0.3845
CE-144	0.0162	0.0902	0.0258	0.0673	0.0307	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2300	0.0460
CM-242	0.0000	0.0001	0.0000	0.0000	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	0.0003	0.0001
CM-243/44	0.0001	0.0001	0.0000	0.0001	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	0.0006	0.0001
CO-57	0.5699	0.7705	0.3012	0.9894	0.5485	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.1595	0.6319
CO-58	15.3763	32.8415	37.2671	27.3980	7.7356	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	120.6185	24.1237
CO-60	3.7473	3.5683	1.5466	4.2347	3.2489	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	16.3458	3.2692
CR-51	0.0000	0.0000	0.1307	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1307	0.0261
CS-134	14.0323	16.9945	7.7019	13.0612	10.5345	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	62.3243	12.4649
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	17.4194	19.8361	7.9503	16.5308	13.9522	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	75.6886	15.1377
FE-55	8.6559	6.5027	8.5714	7.3980	5.1336	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	36.2616	7.2523
FE-59	0.0000	0.0063	0.0073	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0136	0.0027
H-3	0.0326	0.0000	0.0000	0.0000	0.0078	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0404	0.0081
I-129	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	1.5108	1.7814	0.5497	1.3214	0.5752	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.7385	1.1477
NB-95	0.0000	0.0000	0.2910	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2910	0.0582
NI-59	0.1581	0.0000	0.0000	0.1383	20.8158	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	21.1122	4.2224
NI-63	38.0645	17.2131	34.4720	26.6837	36.7089	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	153.1422	30.6284
PU-238	0.0000	0.0002	0.0000	0.0001	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0002
PU-239/40	0.0001	0.0001	0.0000	0.0000	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	0.0004	0.0001
PU-241	0.0049	0.0037	0.0139	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0392	0.0078
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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-125	0.0000	0.0000	0.1075	0.2372	0.1617	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5064	0.1013
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	0.0121	0.0104	0.0000	0.0104	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0348	0.0070
SR-90	0.0882	0.0471	0.0385	0.0193	0.0322	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2253	0.0451
TC-99	0.0078	0.0027	0.0060	0.0051	0.0115	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0331	0.0066
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	0.0903	0.0798	0.0652	0.0704	0.0309	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3366	0.0673
ZR-95	0.0000	0.0000	0.1845	0.0000	0.0398	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2243	0.0449
TOTAL	100.05	100.03	100.07	100.07	100.07	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	500.10	100.02
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	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
CLASS AS	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	
CURIES	186	183	32.2	196	71.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	668.3	

CU. FT.	120.3	120.3	120.3	120.3	120.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	601.5
CU. M	3.41	3.41	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	17.03
RSR#	11-2001	11-2008	11-2011	11-2037	11-2046																

OCONEE NUCLEAR STATION
SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: PRIMARY FILTERS

Oconee Nuclear Station Annual Report

OF DRUMS/LINERS TO CNSI 1

OF SHIPMENTS TO CNSI 1

ISOTOPE:																					TOTAL	AVE.
AG-110m	0.12840	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.128
AM-241	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
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	2.82570	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83	2.826
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	0.27980	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.280
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	0.00000	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
CO-57	0.28810	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.288
CO-58	8.63300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.63	8.633
CO-60	4.06420	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.0642	4.06420
CR-51	0.00370	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004
CS-134	2.33028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	2.330
CS-136	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
CS-137	3.00920	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.01	3.009
FE-55	55.50460	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.50	55.505
FE-59	0.00180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.002
H-3	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
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
MN-54	0.60460	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.605
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	0.02490	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.025
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	21.65140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.65	21.651
PU-238	0.00060	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00000	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
PU-241	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-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	0.00000	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
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	0.000	0.000
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	0.0000	0.00000
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	0.18440	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1844	0.18440
ZR-95	0.33670	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.3367	0.33670
TOTAL	99.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.35	99.35

CLASS C	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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	10.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.9
CU. FT.	120.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120.3
CU. M	3.406581	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.406581
RSR#	11-2051																				

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: SECONDARY FILTERS

OF CONTAINERS SHIPPED TO ENERGY SOL 2 # OF CONTAINERS SHIPPED TO ENVIROCARE 0

OF SHIPMENTS TO ENERGY SOLUTIONS 2 # OF SHIPMENTS TO 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	0.82	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43	0.71
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	3.96	4.10	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	8.06	4.03
CE-144	0.06	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	0.11	0.06
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	0.12	0.09	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	0.22	0.11
CO-58	0.00	0.51	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	0.51	0.25
CO-60	2.58	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.14	2.57
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	0.02	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	0.12	0.06
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	0.63	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	1.29	0.64
FE-55	6.71	6.41	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	13.13	6.56
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	77.30	78.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	156.06	78.03
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	0.34	0.27	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	0.61	0.30
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	3.17	3.28	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	6.45	3.23
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	0.44	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.40
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	2.22	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	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	0.08	0.04
TOTAL	98.39	99.97	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	194.01	97.00
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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
CURIES	1.26E-02	4.85E-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01745	
FT3 Shipped	78.7	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168.7	
CU. M Shipped	2.2286	2.5486	0.0000	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.77714	
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#	11-2018	11-2047																			

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: SOLIDIFIED (CEMENT) OIL, ACIDS, SLUDGES

OF CONTAINERS SHIPPED 0

ISOTOPE:	% ABUNDANCE/LINER							# OF SHIPMENTS				0													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 2011
WASTE TYPE: COMPACTED DAW (ENERGY SOLUTIONS)

# OF SHIPMENTS FROM ONS TO BEAR CREEK	38	# OF CONTAINERS FROM ONS TO BEAR CRE	64
# OF SHIPMENTS FROM PROCESSOR TO CLIVE	110	# OF CONTAINERS FROM PROCESSOR TO CLIVE	110
# 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
10-2042	0	0	1.85476	1.72E-05
10-2048	0	0	2.09881	1.09E-05
10-2059	0	0	26.68	2.64E-04
10-2062	0	0	64.78572	6.96E-04
10-2063	0	0	9.31429	7.57E-05
10-2067	0	0	67.71428	0.001388
10-2074	0	0	138.1429	0.383488
10-2075	0	0	28.55351	0.005344
10-2076	0	0	176.8571	0.033419
11-2002	1868.8	0.0060	269.360	0.00538
11-2004	486.5	0.0063	486.500	0.00630
11-2005	1868.8	0.0732	46.550	0.01384
11-2006	934.4	0.0267	305.500	0.02806
11-2007	1868.8	0.0152	118.471	0.01160
11-2009	486.5	0.0104	486.500	0.01040
11-2010	486.5	0.0071	486.500	0.00707
11-2012	934.4	0.0175	311.986	0.01774
11-2014	486.5	0.0073	486.500	0.00728
11-2015	1868.8	0.0371	209.714	0.03709
11-2017	1868.8	0.0300	372.857	0.03008
11-2018	1790	0.0061	198.571	0.01870
11-2019	0	0.0000	90.372	0.00872
11-2020	630.28	4.2900	630.280	4.29000
11-2021	1868.8	0.0041	150.286	0.00411
11-2022	1868.8	0.0029	117.262	0.00192
11-2025	1868.8	0.0259	260.286	0.02589
11-2026	1868.8	0.0229	229.714	0.02292
11-2029	1868.8	0.1090	187.443	0.10826
11-2030	934.4	0.0016	89.428	0.00521
11-2032	1868.8	0.0172	208.858	0.01719
11-2033	1868.8	0.0647	149.428	0.06461
11-2034	1868.8	0.0020	170.857	0.00197
11-2036	1868.8	0.0099	292.000	0.00197
11-2038	1868.8	0.0057	337.429	0.00574
11-2039	1868.8	0.0320	233.429	0.03196
11-2040	0	0.0000	40.429	0.00102
11-2041	1136.25	0.4960	99.714	0.00267
11-2045	1868.8	0.0170	212.586	0.01260
11-2047	1778.8	0.0050	484.223	0.00928
11-2048	1868.8	0.0064	192.000	0.00638
11-2049	1868.8	0.0108	238.214	0.01058

11-2053	1868.8	0.0018	286.286	0.00184
11-2054	1868.8	0.0091	157.886	0.00267
11-2055	934.4	0.0008	65.529	0.00059
11-2057	934.4	0.0101	0.000	0.00000
11-2062	1868.8	0.0105	216.543	0.01055
11-2063	1868.8	0.0762	236.771	0.06854
11-2064	934.4	0.0488	0.000	0.00000
11-2065	934.4	0.0133	0.000	0.00000
TOTAL	56804.53	5.536	9641.63	5.33312

TOTAL CURIES BURIED 5.333
TOTAL CUBIC FEET BURIED 9641.63
TOTAL CUBIC METERS 273.03

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: UNCOMPACTED DAW

OF SHIPMENTS FROM ONS TO CNSI 1
OF CONTAINERS FROM ONS TO CNSI 1

RSR NUMBER	CUBIC FEET	CURIES	A-U	A-S	B	C
11-2050	120.3	1.32	0	1	0	0
TOTAL	120.3	1.32	0	1	0	0

TOTAL CUBIC METERS 3.41

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
WASTE TYPE: METAL (ENERGY SOLUTIONS)

# OF SHIPMENTS TO DECON FACILITY	7	# OF SHIPMENTS TO CLIVE:	19
# OF CONTAINERS TO DECON FACILITY	9	# OF CONTAINERS TO CLIVE:	19

RSR #	DECON/DISP. FACILITY	CU. FT.. TO PROCESSOR	CURIES TO PROCESSOR	CU. FT. TO DISPOSAL FACILITY	CURIES TO DISPOSAL FACILITY
10-2056		0	0	0.42857	0.00002802
10-2062		0	0	325.2361	8.02E-04
10-2066		0	0	355.3239	5.05E-04
10-2067		0	0	267.8571	0.0084989
10-2068		0	0	677.8987	0.0539428
11-2002		0	0	8.92857	1.56E-04
11-2006		934.4	0.002	198.42	0.00055
11-2012		934.4	0.000	0.00	0.00000
11-2017		0	0.000	300.53	0.00000
11-2019		1463	0.014	184.49	0.00752
11-2029		0	0.000	4.56	0.00125
11-2030		202.98	3.050	0.00	0.00000
11-2036		0	0.000	69.71	0.00054
11-2040		1265.63	0.007	248.79	0.00646
11-2055		756	0.001	0.00	0.00000
11-2057		334.9	0.189	0.00	0.00000
TOTAL		5891.31	3.26374	2622.17	0.08025

TOTAL CUBIC METERS 74.25292

OCONEE NUCLEAR STATION SOLID RADWASTE REPORT
REPORT PERIOD: JANUARY - DECEMBER 2011
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

Meteorological Joint Frequency Distributions of Wind Speed, Wind Direction and Atmospheric Stability using winds at the 10 M Level (Hours of Occurrence)

OCONEE NUCLEAR STATION

2011 METEOROLOGICAL JOINT FREQUENCY DISTRIBUTION TABLE OF WIND SPEED, WIND DIRECTION, AND ATMOSPHERIC STABILITY USING WINDS AT THE 10m LEVEL

(HOURS OF OCCURRENCE)

The SAS System ONS 2011

		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.
STAB	WSCLS (m/s)																
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	1	0
	1.01-1.25	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
	1.26-1.50	0	1	1	0	0	0	1	0	1	1	1	0	1	0	0	0
	1.51-2.00	4	3	2	3	6	0	0	0	0	8	26	12	6	7	2	6
	2.01-3.00	5	10	17	17	7	1	0	1	0	31	97	37	11	3	4	0
	3.01-4.00	2	2	8	9	6	0	0	0	1	8	16	7	2	10	1	0
	4.01-5.00	0	1	4	0	0	0	0	0	0	2	3	2	0	2	1	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	4	2	1	1	1	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	1	4	0	1	0	0
	8.01-10.00	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.01-1.25	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0
	1.26-1.50	4	0	0	1	0	0	1	0	0	2	5	2	1	1	3	0
	1.51-2.00	5	12	7	7	6	0	0	0	0	11	35	20	13	9	5	2
	2.01-3.00	3	2	9	22	8	6	2	1	6	24	51	38	6	1	5	1
	3.01-4.00	0	0	3	12	4	1	1	0	0	19	30	4	2	1	4	0
	4.01-5.00	0	0	2	1	0	0	0	0	1	2	10	2	3	4	2	0
	5.01-																

	6.00	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	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	0	0	1	0	0	0	0	0	1	0
	1.01-1.25	0	0	1	0	1	1	2	1	1	0	0	0	0	1	0	0
	1.26-1.50	1	1	1	1	3	0	1	1	0	0	6	5	0	3	4	3
	1.51-2.00	5	13	5	2	7	3	4	4	8	15	36	17	19	6	5	3
	2.01-3.00	2	8	15	26	19	10	4	4	9	30	53	30	5	2	3	1
	3.01-4.00	0	0	8	9	0	0	0	0	2	17	23	4	2	4	3	2
	4.01-5.00	2	1	0	1	0	0	0	0	0	3	11	5	7	2	1	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	4	1	3	7	3	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	3	5	7	7	4	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	4	1	1	0	0
D	0.46-0.75	7	3	3	4	3	3	4	2	6	2	5	0	7	3	2	3
	0.76-1.00	26	11	11	14	11	6	6	8	10	10	12	21	12	20	19	32
	1.01-1.25	33	19	15	14	14	8	12	10	13	18	19	27	23	24	20	28
	1.26-1.50	30	38	32	39	31	22	22	15	24	25	44	34	37	20	18	31
	1.51-2.00	22	26	66	80	55	36	43	45	39	73	95	51	24	29	11	13
	2.01-3.00	22	19	124	192	90	21	19	26	32	81	172	85	33	21	17	16
	3.01-4.00	5	6	62	59	8	5	4	2	3	52	106	62	30	22	19	14
	4.01-5.00	1	6	11	9	0	0	1	0	0	6	62	57	36	35	12	3
	5.01-6.00	0	0	0	0	0	0	0	0	0	2	28	25	19	10	7	2
	6.01-8.00	0	0	0	0	0	0	0	0	0	1	9	31	18	10	6	0

	8.01-10.00	0	0	0	0	0	0	0	0	0	0	1	4	0	0	1	0
E	0.46-0.75	34	13	15	5	7	5	2	6	5	11	12	12	13	18	33	48
	0.76-1.00	93	60	43	39	32	22	18	17	21	29	37	33	59	79	111	115
	1.01-1.25	41	41	33	30	35	26	19	22	12	18	33	27	33	48	67	78
	1.26-1.50	30	31	31	27	35	37	39	27	26	23	30	25	20	40	50	43
	1.51-2.00	16	9	40	38	35	27	38	54	29	31	57	33	14	14	17	16
	2.01-3.00	5	5	13	32	17	6	15	10	7	32	52	31	23	12	6	6
	3.01-4.00	1	1	1	2	1	0	0	0	0	2	32	27	12	3	2	2
	4.01-5.00	1	0	0	0	0	1	0	0	0	1	4	10	2	2	0	0
	5.01-6.00	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	2	0	1	0	1	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0.46-0.75	3	5	1	3	1	0	1	1	1	0	2	5	2	9	12	6
	0.76-1.00	5	7	3	2	0	3	4	1	2	2	4	6	13	26	14	5
	1.01-1.25	3	0	0	0	1	0	0	1	3	2	5	3	4	29	37	6
	1.26-1.50	1	0	1	0	0	1	3	1	1	1	5	2	0	14	22	1
	1.51-2.00	1	1	0	0	4	3	3	0	2	2	7	0	3	3	9	0
	2.01-3.00	0	0	0	0	0	0	2	0	0	0	11	5	2	1	1	0
	3.01-4.00	0	0	0	0	0	0	0	0	0	0	9	4	0	0	0	0
	4.01-5.00	0	0	0	0	0	0	0	0	0	0	1	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
G	0.46-																

0.75	0	0	0	1	0	0	0	0	0	0	0	0	1	3	3	0
0.76-1.00	1	1	0	0	0	0	0	0	0	0	1	2	5	14	10	1
1.01-1.25	0	0	0	0	1	0	0	0	1	0	0	0	3	8	6	0
1.26-1.50	0	0	1	0	0	0	0	0	0	0	1	2	0	4	2	0
1.51-2.00	1	0	0	0	1	0	0	0	0	0	3	0	0	1	1	1
2.01-3.00	0	0	0	0	0	0	0	0	0	0	1	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

ATTACHMENT 5

Unplanned Offsite Releases

The ONS SLC 16.11.9, Radioactive Effluent Release Report, states:

"The Annual Radioactive Effluent Release Report shall include the following information for all unplanned releases to unrestricted areas of radioactive materials in gaseous and liquid effluents:

a. A description of the event and equipment involved;
b. Cause(s) for the unplanned release;
c. Actions taken to prevent recurrence; and,
d. Consequences of the unplanned release."

There were no unplanned releases of radioactivity material (liquid or airborne) from the Oconee Nuclear Station in 2011.

ATTACHMENT 6

Assessment of Radiation Dose from Radioactive Effluents to Members of the Public

(Includes fuel cycle dose calculation results)

This attachment includes an assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter for the calendar year of the report as well as the total dose for the calendar year.

This attachment also includes an assessment of radiation doses to the maximum exposed member of the public from all uranium fuel cycle sources within ten miles of the Oconee Nuclear Station for the calendar year of this report to show conformance with 40 CFR 190.

Methods for calculating the dose contribution from liquid and gaseous effluents are given in the Offsite Dose Calculation Manual (ODCM).

OCONEE NUCLEAR STATION

ASSESSMENT OF RADIATION DOSE FROM RADIOACTIVE EFFLUENTS AND ALL URANIUM FUEL CYCLE SOURCES TO MEMBERS OF THE PUBLIC

(January 1, 2011 through December 31, 2011)

This attachment includes an assessment of radiation doses to the maximum exposed member of the public due to radioactive liquid and gaseous effluents released from the site for each calendar quarter and for the calendar year of this report. The effluent dose calculations consider radionuclides identified as part of the liquid and gaseous wastes sample and analysis program. Radioactive liquid and gaseous wastes are sampled and analyzed per the requirements in Selected Licensee Commitment (SLC) Table 16.11.4-1, "Minimum Sampling Frequency and Analysis Program". 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 "40CFR190 Uranium Fuel Cycle Dose Calculation Results" attachment also includes an assessment of radiation doses to the maximum exposed member of the public from all uranium fuel cycle sources within 8 km of Oconee for the calendar year of this report to show conformance with 40CFR190. Methods for calculating the dose contribution from liquid and gaseous effluents are given in the ODCM.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

1st Quarter 2011

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS=== Quarter 1 2011 ===

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	BONE	8.71E-02	2.25E+01	3.87E-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 1 2011 ===

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q1 - Maximum Gamma Air Dose	1.09E-04	1.50E+01	7.24E-04

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.95E+01

Q1 - Maximum Beta Air Dose	3.82E-04	3.00E+01	1.27E-03

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	8.42E+01
KR-85	1.58E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

2nd Quarter 2011

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 2 2011 ====

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	BONE	6.64E-02	2.25E+01	2.95E-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 2011 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q2 - Maximum Gamma Air Dose	2.78E-04	1.50E+01	1.85E-03

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.42E+01

Q2 - Maximum Beta Air Dose	1.16E-03	3.00E+01	3.86E-03

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	6.73E+01
KR-85	3.23E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

3rd Quarter 2011

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 3 2011 ====

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	CHILD	BONE	9.05E-02	2.25E+01	4.02E-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 2011 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q3 - Maximum Gamma Air Dose	3.96E-05	1.50E+01	2.64E-04

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SSE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	5.39E+01
AR-41	4.61E+01

Q3 - Maximum Beta Air Dose	7.41E-05	3.00E+01	2.47E-04

Maximum Beta Air Dose Receptor Location: 1.0 Mile SE

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.45E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

4th Quarter 2011

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 4 2011 ====

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	CHILD	BONE	8.15E-02	2.25E+01	3.62E-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 2011 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q4 - Maximum Gamma Air Dose	1.05E-04	1.50E+01	6.97E-04

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.61E+01

Q4 - Maximum Beta Air Dose	3.12E-04	3.00E+01	1.04E-03

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.57E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
GASEOUS ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

ANNUAL 2011

=== IODINE, H3, and PARTICULATE DOSE LIMIT ANALYSIS======= Annual 2011 ========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	BONE	3.26E-01	4.50E+01	7.23E-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 2011 =======

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Yr - Maximum Gamma Air Dose	5.26E-04	3.00E+01	1.75E-03

Maximum Gamma Air Dose Receptor Location: 1.0 Mile SW

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	9.20E+01
AR-41	7.22E+00

Yr - Maximum Beta Air Dose	1.90E-03	6.00E+01	3.17E-03

Maximum Beta Air Dose Receptor Location: 1.0 Mile SW

Major Contributors (5% or greater to total)

Nuclide	Percentage
XE-133	7.57E+01
KR-85	2.35E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/11 TO 1/1/12
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

1st Quarter 2011

=== BATCH LIQUID RELEASES ========== Quarter 1 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	ADULT	GI-LLI	1.10E-01	1.50E+01	7.35E-01
Q1 - Total Body Dose	CHILD		3.58E-02	4.50E+00	7.96E-01

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

Nuclide	Percentage
NB-95	6.54E+01
H-3	3.05E+01

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

Nuclide	Percentage
H-3	9.74E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 1 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	LIVER	4.65E-05	1.50E+01	3.10E-04
Q1 - Total Body Dose	CHILD		4.65E-05	4.50E+00	1.03E-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 1/1/11 TO 1/1/12
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

2nd Quarter 2011

=== BATCH LIQUID RELEASES ========== Quarter 2 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	TEEN	LIVER	2.86E-01	1.50E+01	1.91E+00
Q2 - Total Body Dose	ADULT		2.18E-01	4.50E+00	4.86E+00

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

Nuclide	Percentage
CS-134	5.59E+01
CS-137	3.89E+01

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

Nuclide	Percentage
CS-134	5.89E+01
CS-137	3.19E+01
H-3	8.85E+00

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 2 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	LIVER	2.65E-05	1.50E+01	1.77E-04
Q2 - Total Body Dose	CHILD		2.65E-05	4.50E+00	5.90E-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 1/1/11 TO 1/1/12
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

3rd Quarter 2011

=== BATCH LIQUID RELEASES ========== Quarter 3 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	ADULT	GI-LLI	1.29E-01	1.50E+01	8.57E-01
Q3 - Total Body Dose	ADULT		4.73E-02	4.50E+00	1.05E+00

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

Nuclide	Percentage
NB-95	7.39E+01
H-3	2.19E+01

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

Nuclide	Percentage
H-3	5.94E+01
CS-137	2.15E+01
CS-134	1.69E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 3 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	CHILD	LIVER	3.64E-05	1.50E+01	2.43E-04
Q3 - Total Body Dose	CHILD		3.64E-05	4.50E+00	8.09E-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 1/1/11 TO 1/1/12
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

4th Quarter 2011

=== BATCH LIQUID RELEASES ========== Quarter 4 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	ADULT	GI-LLI	1.07E-01	1.50E+01	7.12E-01
Q4 - Total Body Dose	ADULT		5.77E-02	4.50E+00	1.28E+00

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

Nuclide	Percentage
NB-95	6.73E+01
H-3	2.73E+01

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

Nuclide	Percentage
H-3	5.05E+01
CS-137	3.13E+01
CS-134	1.72E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Quarter 4 2011 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	CHILD	LIVER	4.07E-05	1.50E+01	2.71E-04
Q4 - Total Body Dose	CHILD		4.07E-05	4.50E+00	9.04E-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 1/1/11 TO 1/1/12
LIQUID ANNUAL DOSE SUMMARY REPORT

Oconee Nuclear Station Units 1, 2, & 3

ANNUAL 2011

=== BATCH LIQUID RELEASES ========== Annual 2011 ========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	ADULT	GI-LLI	5.62E-01	3.00E+01	1.87E+00
Yr - Total Body Dose	ADULT		3.59E-01	9.00E+00	3.99E+00

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

Nuclide	Percentage
NB-95	7.59E+01
H-3	1.96E+01

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

Nuclide	Percentage
CS-134	4.09E+01
H-3	3.07E+01
CS-137	2.77E+01

=== CONTINUOUS LIQUID RELEASES (CTP 3) ========== Annual 2011 ========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	LIVER	1.50E-04	3.00E+01	5.01E-04
Yr - Total Body Dose	CHILD		1.50E-04	9.00E+00	1.67E-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
2011 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. 2011 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 = 4.11E-01 mrem

Maximum Location: 1.0 Mile, Southwest Sector
Critical Age: Adult
Gas non-NG Contribution: 13%
Gas NG Contribution: <1%
Liquid Contribution: 87%

Maximum Organ (other than TB) Dose = 6.14E-01 mrem

Maximum Location: 1.0 Mile, Southwest Sector
Critical Age: Adult
Critical Organ: GI-LLI
Gas Contribution: 8%
Liquid Contribution: 92%

II. 2011 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".

The following three pages are excerpted from the Oconee Nuclear Site, "Independent Spent Fuel Storage Installation", 10CFR72.212 Evaluation for Phase VI report (Rev. 0, 6/7/2010).

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[36], 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[37]. Calculation OSC-8675[38] 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[39] 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[40] 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[41] to evaluate the shielding characteristics of a single Horizontal Storage Module. The MCNP Monte Carlo particle transport computer code[42] 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[43] contains the verification and validation for MCNP5, while SDQA-30269-NGO[69] documents the quality control measures in place for MCNP5).

Calculation OSC-8716[44] uses the surface flux files developed in OSC-8706[41] 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[44], 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.[45] 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.[49] 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.11.2.8 of the NUHOMS FSAR[3], accidental releases are not credible.

ATTACHMENT 7

Revisions to the Updated Final Safety Analysis Report

Radiological Effluent Controls Section 16.11

16.11 RADIOLOGICAL EFFLUENTS CONTROL

16.11.1 Radioactive Liquid Effluents

COMMITMENT Establish conditions for the controlled release of radioactive liquid effluents. Implement the requirements of 10 CFR 20, 10 CFR 50.36a, Appendix A to 10 CFR 50, Appendix I to 10 CFR 50, 40 CFR 141 and 40 CFR 190.

a. Concentration

The concentration of radioactive material released at anytime from the site boundary for liquid effluents to Unrestricted Areas [denoted in Figure 2-5 of the Oconee Nuclear Station Updated Final Safety Analysis Report] shall be limited to 10 times the effluent concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases the concentration shall be limited to 2×10^{-4} µCi/ml total activity.

b. Dose

The dose or dose commitment to a Member Of The Public from radioactive materials in liquid effluents to Unrestricted Areas shall be limited to:

1. during any calendar quarter:

   ≤ 4.5 mrem to the total body

   ≤ 15 mrem to any organ; and

2. during any calendar year:

   ≤ 9 mrem to the total body

   ≤ 30 mrem to any organ.

c. Liquid Waste Treatment

The appropriate subsystems of the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid waste prior to their discharge, if the projected dose due to liquid effluent releases to unrestricted areas, when averaged over 31 days would exceed 0.18 mrem to the total body or 0.6 mrem to any organ.

---NOTE---
Appendix I dose limits for radioactive liquid effluent releases are applicable only during normal operating conditions which include expected operational occurrences, and are not applicable during unusual operating conditions that result in activation of the Oconee Emergency Plan.

APPLICABILITY: At all times

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Concentration of radioactive material released in liquid effluents to Unrestricted Areas exceeds the limits specified in Commitment a.	A.1 Restore concentration to within the limit.	Immediately

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Calculated dose from the release of radioactive materials in liquid effluents exceeds any of the limits in Commitment b.	B.1 ----------NOTE---------- Not required during unusual operating conditions that result in activation of the Oconee Emergency Plan. ----------	
	Submit report to the regional NRC Office which includes the following: a. Cause(s) for exceeding the limit(s). b. A description of the program of corrective action initiated to: reduce the releases of radioactive materials in liquid effluents, and to keep these levels of radioactive materials in liquid effluents in compliance with the above limits, or as low as reasonably achievable. c. Results of radiological analyses of the drinking water source and the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR 141.	30 days from the end of the quarter during which the release occurred

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Radioactive liquid waste is discharged without treatment and in excess of the specified limit.	C.1 Submit report to the regional NRC Office which includes the following: a. Cause of equipment or subsystem inoperability. b. Corrective action to restore equipment and prevent recurrence.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 16.11.1.1 N/A	N/A

BASES

The concentration commitment is provided to ensure that the concentration of radioactive materials released in liquid waste effluents from the site to unrestricted areas will be less than 10 times the effluent concentration levels specified in 10 CFR Part 20, Appendix B, Table 2, Column 2. The concentration limit for noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its EC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2.

The basic requirements for Selected Licensee Commitments concerning effluent from nuclear power reactors are stated in 10 CFR 50.36a. Compliance with effluent Selected Licensee Commitments will ensure that average annual releases of radioactive material in effluents will be small percentages of the limits specified in the old 10 CFR 20.106 (new 10 CFR 20.1302). The requirements contained in 10 CFR 50.36a further indicate that operational flexibility is allowed, compatible with considerations of health and safety, which may temporarily result in releases higher than such small percentages, but still within the limits specified in the old 10 CFR 20.106 which references Appendix B, Table II concentrations (MPCs). These referenced concentrations are specific values which relate to an annual dose of 500 mrem. It is further indicated in 10 CFR 50.36a that when using operational flexibility, best efforts shall be exerted to keep levels of radioactive materials in effluents as low as reasonably achievable (ALARA) as set forth in 10 CFR 50 Appendix I. Also, for fresh water sites with drinking water supplies which can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR 141. Therefore, to accommodate operational flexibility needed for effluent releases, the limits associated with this SLC are based on ten times the instantaneous dose rate value of 50 mrem/year to apply at all times. Compliance with the limits of the new 10 CFR 20.1001 will be demonstrated by operating within the limits of 10 CFR 50, Appendix I, 40 CFR 141 and 4O CFR 190.

Section I of Appendix I of 10 CFR 50 states that this appendix provides specific numerical guides for design objectives and limiting conditions for operation, to assist holders of licenses for light water cooled nuclear power reactors in meeting the requirements to keep releases of radioactive material to unrestricted areas as low as practical and reasonably achievable, during normal reactor operations, including expected operational occurrences. Using the flexibility granted during unusual operating conditions, and the stated applicability of the design objectives for the Oconee Nuclear Station, Appendix I dose limits for radioactive liquid effluent releases are concluded to be not applicable during unusual operating conditions that result in the activation of the Oconee Emergency Plan.

For units with shared radwaste treatment systems, the liquid effluents from the shared system are proportioned among the units sharing that system.

The requirements that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable." This SLC implements the requirements of 10 CFR Part 50.36a. General Design Criterion 60 of Appendix A to 10 CFR Part 50 and design objective Section II.D of Appendix A to 10 CFR Part 50.

REFERENCES:

1. 10 CFR Part 20, Appendix B.
2. 40 CFR Part 141.
3. 10 CFR Part 50, Appendices A and I.
4. 40 CFR Part 190.
5. Offsite Dose Calculation Manual.
6. Regulatory Guide 1.109.
7. NUREG-1301

ATTACHMENT 8

Revisions to the Radioactive Waste Process Control Program Manual

The following letter dated April 7, 2012, from David L. Vaught, Senior Engineer, Nuclear Chemistry, summarizes how the Process Control Program (PCP) manual has been revised. The updated version of the manual contains all the changes implemented during 2011 and is designated as the "2011 Report Year" on the enclosed Compact Disc.

ATTACHMENT
Duke Energy Radioactive Waste Process Control Program Manual
Summary of 2011 Changes

A brief summary of the 2011 changes to the Duke Energy Radioactive Waste PCP Manual is found below. These are described in more detail in APPENDIX H "Revision Summary - Licensee Initiated Changes"

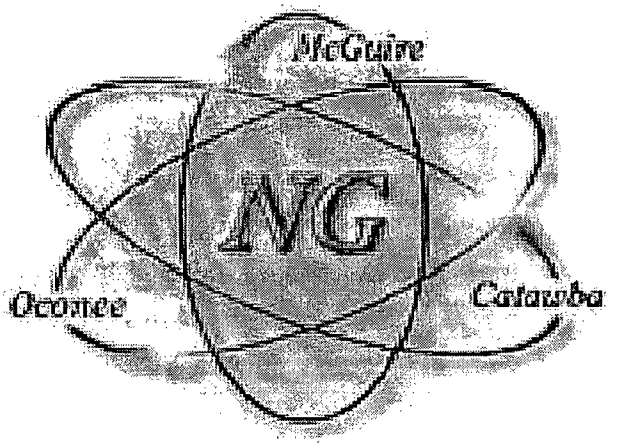
Appendix B "MNS PCP" Rev 18 (Issued 1/30/08) Minor Change (6/15/11)
Minor Change: Added procedure OP/0/B/6200/083 "WM Process Skid Demineralizers Sluice, Load, and Maintenance" as a PCP implementing procedure. This is a minor change per the definition in Appendix F: ADMINISTRATION OF THE PCP AND SUPPORT DOCUMENTS Section 5.1.2.2 for the following reasons:

- The change does not alter the scope, results, requirements, or methods by which the dewatering or solidification process as described in the Corporate PCP is performed.
- The change does not alter the responsibilities of site personnel in meeting the PCP requirements.
- The change does not alter a PCP QA approved provider dewatering or solidification process, responsibilities for fulfilling PCP requirements or the vendor interface with the station personnel or work processes.
- The procedure OP/0/B/6200/083 is not a new procedure, its scope and use in the PCP dewatering process has not changed.

CHANGE BASIS: MNS PIP M-10-06651 INOS Audit 10-15(INOS)(REC)(MNS) 2010 Radiological Effluent Control Program Audit

- The procedure OP/0/B/6200/083 is used in combination with Procedure OP/0/B/6200/064 "Transfer and Dewatering of Media" to perform PCP related activities. Procedure OP/0/B/6200/064 contains the final dewatering for disposal activities; however, Procedure OP/0/B/6200/083 is identified as a PCP implementing procedure in the purpose statement of the procedure because it includes instructions (noted below) that are important to the dewatering process.
    - the requirement for using the two bottom laterals (L&P # 2.26 "Dewatering Legs #1 and #2 shall be used to dewater mixed media.")
    - the requirement for the strainer in the dewatering pump discharge: (L&P # 2.29 "Y-strainer or similar device shall be installed in discharge path of dewatering pump to catch media in case internal filter fails.")

RADIOACTIVE WASTE PROCESS CONTROL PROGRAM MANUAL



APPENDIX H Rev 8

Revision Summary - Licensee Initiated Changes

Duke Energy.

APPENDIX H Rev 8
Revision Summary - Licensee Initiated Changes

Appendix H Revision # (Issued Month)	PCP MANUAL SECTIONS CHANGED *Note: Minor Changes retain the same Rev # and Issue Date*	New Revision # or Minor Change (Issued)
8 (Jun 2011)	Appendix B "MNS PCP" Rev 18 (Issued 1/30/08)	Minor Change (6/15/11)
7 (Sep 2010)	Appendix A "ONS PCP"	Rev 15 (9/16/10)
6 (Sep 2009)	Appendix A "ONS PCP"	Rev 14 (6/19/09)
	Appendix B "MNS PCP" Rev 18 (Issued 1/30/08)	Minor Change (4/23/09)
	Appendix F "Administration of the PCP Manual and Associated Documents"	Rev 2 (2/26/09)
	Appendix E "PCP Manual Review and Approval Requirements"	Rev 1 (2/18/09)
5 (May 2007)	Corporate PCP	Rev15
	Appendix A "ONS PCP"	Rev13
	Appendix B "MNS PCP"	Rev18
	Appendix C "CNS PCP"	Rev 12
	Appendix D "Approved Suppliers of PCP Services"	Rev 2
	Appendix F "Administration of the PCP Manual and Associated Documents"	Rev 1
4 (Aug 2005)	Appendix G "Waste Processor Checklist"	Rev 1
3 (Nov 2004)	Appendix B "MNS PCP"	Rev 17
	Appendix C "CNS PCP"	Rev11
2 (Mar 2004)	Appendix D: "Approved Suppliers of PCP Services"	Rev 1
1 (Nov 2003)	"Corporate PCP"	Rev 14
0 (Mar 2003)	Corporate Process Control Program	Rev 13
	Appendix A "Oconee Nuclear Station PCP"	Rev 12
	Appendix B "McGuire Nuclear Station PCP"	Rev 16
	Appendix C "Catawba Nuclear Station PCP"	Rev 10
	Appendix D "Approved Suppliers of PCP Services"	Rev 0
	Appendix E "PCP Manual Review and Approval Requirements"	Rev 0

Duke Energy

APPENDIX H Rev 8
Revision Summary - Licensee Initiated Changes

Appendix H Revision # (Issued Month)	PCP MANUAL SECTIONS CHANGED *Note: Minor Changes retain the same Rev # and Issue Date*	New Revision # or Minor Change (Issued)
	Appendix F "Administration of the PCP And Support Documents"	Rev 0
	Appendix G "Waste Processor Checklist"	Rev 0

Duke Energy

APPENDIX H Rev 8
Revision Summary - Licensee Initiated Changes

START OF CURRENT APPENDIX H REVISION 8 SUMMARY

SUMMARY OF PCP MANUAL CHANGES JUNE 2011

PCP MANUAL SECTIONS CHANGED

APPENDIX B: "MNS PCP" Rev 18 Minor Change

DESCRIPTION OF CHANGES BY SECTION

Minor Change: Added procedure OP/0/B/6200/083 "WM Process Skid Demineralizers Sluice, Load, and Maintenance" as a PCP implementing procedure.

This is a minor change per the definition in Appendix F: ADMINISTRATION OF THE PCP AND SUPPORT DOCUMENTS Section 5.1.2.2 for the following reasons:

- The change does not alter the scope, results, requirements, or methods by which the dewatering or solidification process as described in the Corporate PCP is performed.
- The change does not alter the responsibilities of site personnel in meeting the PCP requirements.
- The change does not alter a PCP QA approved provider dewatering or solidification process, responsibilities for fulfilling PCP requirements or the vendor interface with the station personnel or work processes.
- The procedure OP/0/B/6200/083 is not a new procedure, its scope and use in the PCP dewatering process has not changed.

BASIS: MNS PIP M-10-06651 INOS Audit 10-15(INOS)(REC)(MNS) 2010 Radiological Effluent Control Program Audit

The procedure OP/0/B/6200/083 is used in combination with Procedure OP/0/B/6200/064 "Transfer and Dewatering of Media" to perform PCP related activities. Procedure OP/0/B/6200/064 contains the final dewatering for disposal activities; however, Procedure OP/0/B/6200/083 is identified as a PCP implementing procedure in the Purpose statement of the procedure because it includes instructions (noted below) that important to the dewatering process.

- the requirement for using the two bottom laterals (L&P # 2.26 "Dewatering Legs #1 and #2 shall be used to dewater mixed media.")
- the requirement for the strainer in the dewatering pump discharge: (L&P # 2.29 "Y-strainer or similar device shall be installed in discharge path of dewatering pump to catch media in case internal filter fails. ")

END OF CURRENT REVISION 8 SUMMARY

Duke Energy

APPENDIX H Rev 8
Revision Summary - Licensee Initiated Changes

START OF PREVIOUS APPENDIX H REVISION 7 SUMMARY

SUMMARY OF PCP MANUAL CHANGES 2010

PCP MANUAL SECTIONS CHANGED

APPENDIX A: "ONS PCP" Rev 14 to Rev 15

DESCRIPTION OF CHANGES BY SECTION

G-9-00901: Document the changes, review and approval of a revision to the PCP Manual Appendix A "ONS PCP" due to changes in the PCP implementing procedures at ONS.

1. Change the list of implementing procedures to reflect that CP/0/B/5400/001 "RADWASTE HIC DEWATERING & OPERATING GUIDELINES" has been changed to an "A" procedure: CP/0/A/5400/001.
2. Add the new procedure CP/0/A/5400/013 "RADWASTE POWDEX LINER DEWATERING & OPERATING GUIDELINES" to the list of implementing procedures.

BASIS:

Incorporation of new procedures for Energy Solutions Self-Engaging Dewatering System (S.E.D.S)

- CS-OP-PR-009 Rev1 - Ecodex Precoat-Powdex-Solka-Floc-DE-Zeolite-Dewatering ES 14-215 or Smaller Liners Utilizing SEDS
- CS-OP-PR-010 Rev1 - Bead Resin or Activated Carbon Dewatering ES 14-215 Or Smaller Liners, Utilizing ES SEDS
- CS-OP-PR-008 Rev1 - Setup And Operation Of EnergySolutions Self-Engaging Dewatering System Fillhead

END OF PREVIOUS REVISION 7 SUMMARY

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

START OF PREVIOUS APPENDIX H REVISION 6 SUMMARY

SUMMARY OF PCP MANUAL CHANGES 2009

PCP MANUAL SECTIONS CHANGED

- **APPENDIX A: "ONS PCP" Rev 13 to Rev 14**
- **APPENDIX B: "MNS PCP" Rev 18 Minor Change**
- **APPENDIX E: "PCP Manual Review and Approval Requirements" Rev 0 to Rev 1**
- **APPENDIX F: "Administration of the PCP and Support Documents" Rev 1 to Rev 2**

DESCRIPTION OF CHANGES BY SECTION

APPENDIX A: "ONS PCP" REV 13 to Rev 14

G-08-01066: 2008 ONS Radiological Effluent Controls Audit 08-21(INOS)(REC)(ONS)

Added two documents to APPENDIX A: "ONS PCP", one that is used in support of the process control program and one that documents the dewatering process used on filters and the filter HICs:

A. LM/0/E005, Rev 003, "ONS Paint Filter Liquids Test". ONS Radwaste Chemistry personnel use the paint filter liquids test for FSL (i.e., free standing liquid) verification of media shipments to the Clive Bulk Low Level Waste Disposal Facility in Utah.

B. ONS HP/0/B/1006/012, Rev 006, "Handling Procedure for CNS High Integrity Containers". ONS RP RMC personnel use this procedure to document the filter dewatering and to remove incidental water from Energy Solutions FEXM High Integrity Containers (HICs) containing dewatered filters. This procedure is maintained as an operating procedure per guidance in NSD 703 and NSD 228.

LM/0/E005 is not an operating procedure but is used in support of the PCP. Some Duke dewatering procedures listed as PCP implementing procedures reference the paint filter lab method as a PCP test verification method for bulk resin/media disposal at Clive Lab Method procedures do not have to comply with the same administrative requirements for PCP implementing procedures because Lab Methods are not maintained per NSD 703 and are not subject to NSD 228 Applicability reviews. APPENDIX F of the Process Control Program Manual was revised to allow for the inclusion of procedures or documents that describe processes which support PCP implementing procedures but are subject to less rigorous program requirements than PCP implementing procedures which detail operating processes. The ONS HIC handling procedure is a verification of no FSL in the filter HIC after meeting the PCP requirements for filters independent of the HIC dewatering. This procedure is under revision to clarify the documentation of the dewatering process for the filters and the verification for HIC.

APPENDIX B: "MNS PCP" Rev 18 MINOR CHANGE

M-08-07570 Documents the Recommendations for Performance Improvement identified during the 2008 MNS Radiological Effluent Controls Audit 08-22(INOS)(REC)(MNS).

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION SUMMARY APPENDIX H Rev 6

An editorial change was made to Appendix B of the McGuire PCP. The title of Procedure OP/0/B/6200/064 Rev 024 should be revised to reflect the correct title of "Transfer and Dewatering of Media." The title is currently shown as "Transfer and Dewatering of Bead Resin."

APPENDIX E: "PCP Manual Review and Approval Requirements" Rev 0 to Rev 1

A table for "minor change" approvals was added that lists technical review requirements and reduces the number of management approvals required for minor changes as defined in Appendix F Section 5.1 "PCP Manual Revision and Review". This second table is in addition to the existing approval table for changes that are substantive enough to be revisions as described in Appendix F. This change was requested by the Chemistry Managers to streamline the PCP administrative process based upon the significance of the change.

APPENDIX F: "Administration of the PCP and Support Documents" Rev 2

1. Added a minor change process to the administration guidance for the PCP Manual to more appropriately utilize management involvement. This new process is in addition to the existing revision process described in Appendix F. The criteria for minor changes are explained in section 5.1 "PCP Manual Revision and Review" of Appendix F. The required reviews and approvals for minor changes and revisions are tabulated in Rev 1 of Appendix E "PCP Manual Review and Approval Requirements" as described below.

2. Removed references to Record Retention Rule # 004928.

3. Revised Appendix F section 5.4 "Administration of Nuclear Generation Procedures for Implementing PCP Activities" to include the listing of PCP support documents that are not technical procedures but may be listed in the site PCP sections, Appendices A, B & C at the site's discretion.

4. Edited the publication processes in the Appendix F Enclosures to clarify and update to better utilize PIP and electronic administrative processes available.

5. Some editorial word changes for clarity and readability.

BASES FOR APPENDIX F CHANGES

C-08-05953 CA # 7 - 2008 CNS Radiological Effluent Controls Audit 08-20(INOS)(REC)(CNS):

Remove the references to Record Retention Rule #004928 from the PCP Manual Appendix F. Applicable documentation in Chemistry PCP procedures, which is forwarded to RMC for inclusion with the shipping and disposal paperwork, should be stored under Record Retention Rule #00278. Note: Documentation is currently stored in both places, this enhancement will eliminate the need for it to be stored at the unintended location.

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION SUMMARY APPENDIX H Rev 6

O-08-06705 - 2008 ONS Radiological Effluent Controls Audit 08-21(INOS)(REC)(ONS): The following enhancements should be made during the next revision of the PCP Manual, Appendix F:

Remove the references to Record Retention Rule #004928 from the PCP Manual Appendix F. Applicable documentation in ONS Chemistry Procedure CP/0/B/5400/001, Rev 029, Radwaste Dewatering & Operating Guidelines, is forwarded to RMC for inclusion with the shipping and disposal paperwork. The requirement to provide a copy of the completed dewatering procedure to RMC for inclusion in the shipping record is adequate. The proper retention record number is identified in SH/0/B/2004/002.

END OF PREVIOUS REVISION 6 SUMMARY

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

START PREVIOUS REVISION SUMMARY APPENDIX H Rev 5
REVISED SECTIONS

- Rev15 Corporate PCP
- Rev13 APPENDIX A "Oconee Nuclear Station Process Control Program"
- Rev18 APPENDIX B "McGuire Nuclear Station Process Control Program"
- Rev 12 APPENDIX C "Catawba Nuclear Station Process Control Program"
- Rev 2 APPENDIX D " Approved Suppliers of PCP Services"
- Rev 1 APPENDIX F "Administration of the PCP Manual and Associated Documents"

The Duke Energy Radioactive Waste PCP Manual was revised to address the issues described below:

- PIP G06-00560: Summarized findings and Areas For Improvement (AFI) from the 2006 Annual Chemistry Functional Area Evaluation. The Duke Energy Process Control Program Manual and associated documents were audited during this assessment and the administrative changes were implemented as described in this section.

- PIP G-7-00244: Revised ADDENDIX D to reflect the vendor name change from Duratek to Energy Solutions per PIP G-07-00244 that documents the Vendor Technical Impact evaluation of Energy Solutions procedure FO-OP-023 rev 23.

- Non-technical editorial changes were also made to each revised section as appropriate to improve wording clarity, grammatical and punctuation errors. Some administrative process flow changes were made in APPENDIX F to reflect updated Duke administrative processes

- PIP G-07-0841: Deleted section 11.3.3.6 that required initial liner unwatering upon completion of final waste transfer to liner (e.g., dewater to loss of vacuum in bottom dewatering laterals to establish capillary dewatering conditions). The changes are summarized below by section.

Corporate PCP Section:
Ref: PIPs G06-00560 & PIP G-07-0841

In Section 1.2 "Radioactive Waste Process Control Program Description", instructions for archival film copies of PCP Manual are referred to APPENDIX F "Administration of the PCP and Support Documents" eliminating the specific reference to the record retention numbers that are in a state of transition due to corporate program changes. This eliminates the need for a Corporate PCP section revision whenever the retention numbers are changed.

Section 4.2, Duke Energy Programmatic References: 4.2.3, 4.2.6 and 4.2.8. refer to SLC 16.13-2 "Technical Review and Control" which has been deleted from the Selected Licensee Commitments Manual at each site. Removed all references to the SLC 16.13-2 "Technical Review and Control".

Section 6.2 "Nuclear Safety Review Board": Removed requirement in subsection 6.2.2 that copies of the Radioactive Waste PCP manual are reviewed by the NSRB per SLC 16.13.2. This SLC has been deleted.

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION SUMMARY APPENDIX H Rev 5
DESCRIPTION OF PCP MANUAL CHANGES

Section 6.3.6: Deleted reference to SLC 16.13.2 requirement that the Manager, Safety Assurance assures the performance of a review by a knowledgeable individual/organization of changes to the PCP. This SLC has been deleted.

Section 9.1 and 9.2.2: Reworded approval from 'NRC' to "appropriate regulatory" since the NRC no longer approves Topical Reports for conformance to the "Waste Form" BTP. Disposal technology and processes are approved by the agreement states hosting the LLW disposal sites.

Section 10.9 "Solidification Document Retention" states that records shall be maintained on each vessel of solidified waste as described in Section 7.5 of the Corporate PCP and Section 5.5 of APPENDIX F. This was revised to reference section 7.4 instead of 7.5.

Section 11.2.1: Reworded step to replace the word "sludge" with the word "solids".

Section 11.3: Changed "DPCo" to Duke Energy.

Section 11.3.3.5: Changed "establishes"' to "establish".

Section 11.3.3.6 was deleted to address the conclusions in PIP G-07-0841 as summarized below. This requirement was added during a 2003 problem investigation at Oconee Nuclear Station and incorporated in revision 14 of the Corporate PCP as described in Revision 1 to this Appendix H as a requirement. Vendor guidance now indicates that this should be a discretionary decision balanced with ALARA and other priorities. The vendor program and current industry practices do not place a time constraint on the initiation of dewatering after filling the HIC as a critical variable in the dewatering process. The vendor PCP and procedures for the dewatering of the particular HICs in use do not have a time constraint for initiating unwatering and no test history indicates the need for the requirement as written. This requirement as written is non conservative relative to the ALARA performance of the task and was removed be from the Duke Energy Corporation PCP and procedures.

Section 11.7 states that records shall be maintained as described in Section 7.5 of the Corporate PCP. This was revised to correctly reference section 7.4 instead of 7.5.

APPENDIX A: ONS PCP
Ref: PIP G06-00560

Section 3 "Implementing Procedures"

Removed reference for procedure TC/0/B/5400/001 since this procedure has been deleted.

Added the following procedures to the implementing procedures list because they require the user to enter the process control program by referral to the dewatering procedures used to prepare a shipment for disposal:

- CP/0/B/5200/054A, "LW Demineralizers Sluice and Reload and BFST Transfer"

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION SUMMARY APPENDIX H Rev 5
DESCRIPTION OF PCP MANUAL CHANGES

- CP/0/B/5200/073, "Resin Batch Sluice Procedure"
- CP/0/B/5200/054, "Radwaste Liquid Waste Processing.

APPENDIX B: MNS PCP
Ref: PIP G06-00560

The title of a procedure in Section 3 did not agree with the procedure title in the controlled document. Revised the title for HP/0/B/1004/012 "Utilization of Polyethylene High Integrity Overpacks" to correctly read HP/0/B/1004/012 "Utilization of Polyethylene High Integrity Containers".

The following procedures were removed from the list of Implementing Procedures under CA 8 since they no longer contain PCP dewatering guidance.

- 1 OP/1/B/6200/102 "Unit 1 CM Backwash Tank Operation"
- 2 OP/2/B/6200/102 "Unit 2 CM Backwash Tank Operation"
- 3 OP/1/B/6700/016 "Operating Unit 1 Steam Generator Blowdown Demineralizers"
- 4 OP/2/B/6700/016 "Operating Unit 2 Steam Generator Blowdown Demineralizers"

The Plant Interface Drawing Index was revised to update the numbering protocol to current nomenclature. MNS flow diagrams are now designated with "MCFD" instead of "MC" and the numbering system includes a two digit nomenclature requiring additional zeroes to accurately represent the correct drawing numbers. The drawing reference in item 4.7 MC-1604-1.1 was deleted because it does not contain any PCP related plant interfaces and the drawing reference MCFD-2590-01.03 was added to reflect the Unit 2 version of the interface reflected in the Unit 1 drawing MCFD-2590-01.03.

APPENDIX C: "CNS PCP"
Ref: PIP G06-00560

Section 3 "Implementing Procedures"

Item 3.1: Deleted OP/1/B/6250/016 "Condensate Polishing Demineralizer Backwash Tank Subsystem - Unit 1" because PCP dewatering activities have been removed.

Item 3.2: Deleted OP/2/B/6250/016 "Condensate Polishing Demineralizer Backwash Tank Subsystem - Unit 2" Because PCP dewatering activities have been removed.

Item 3.3: The procedure title for OP/0/B/6500/111 was revised to agree with the procedure title in the controlled document "Nuclear Solid Waste (WS) Disposal System".

Duke Energy

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION SUMMARY APPENDIX H Rev 5
DESCRIPTION OF PCP MANUAL CHANGES

Item 3.4: The procedure title for OP/0/B/6500/046 was revised to agree with the procedure title in the controlled document "Transferring and Dewatering Bead Resin in WSF".

Item 3.5: The procedure title for OP/0/B/6500/069 was revised to agree with the procedure title in the controlled document "Monitor Tank Building (MTB) Ion Exchange and Filtration Media Operations".

APPENDIX D: Approved Suppliers of PCP Services
Ref: PIP G07-00244

- Changed the vendor name from Duratek to Energy Solutions
- Updated the section 2. "SERVICE CONTRACT REQUIREMENTS" to reflect recent changes to the Quality Requirements for radwaste vendor contracts.

APPENDIX F: "Administration of the PCP and Support Documents"
Ref: PIP G06-00560

Section 5.1.3: Deleted requirement that revisions to the PCP and a description of the revisions be sent to the NSRB based on SLC 16.3.2. This SLC has been deleted.

Deleted wording in 5.4.2 that was redundant with 5.4.5 pertaining to review requirements for implementing procedures.

Changes were made to reflect current Duke processes for publishing documents using email and electronic document transmittals associated with Duke software NEDL Portal and Scribe. This revision also revised some of the processes for manual changes and vendor documents to adopt recent changes to the PIP process to take advantage of the new integrated data base.

END OF PREVIOUS REVISION 5 SUMMARY

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

START PREVIOUS REVISION SUMMARY APPENDIX H REV 4
DESCRIPTION OF PCP MANUAL CHANGES AUGUST 2005

APPENDIX G "Waste Processor Checklist" was revised to incorporate guidance defined in PIP C-04-06442 written to address revised security search requirements for materials entering new Security Barriers. The audits of waste processors are performed under the Corporate Process Control Program, Section 8.0, "Approval Process for QA approved Suppliers", and Appendix G, "Waste Processor Checklist". The following section was added to Appendix G:

Security

1) Discuss Duke Security requirements with Vendor

2) Discuss the Duke package search requirements with the Vendor

3) If possible, make arrangements for the use of Duke approved package seals on the vendor packages

4) If practical, make arrangements for Duke security personnel to observe and seal packages at the vendor site

END OF PREVIOUS REVISION 4 SUMMARY

REF: August 2005 Revision APPENDIX G: Rev 1 "Waste Processor Checklist"

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION SUMMARY APPENDIX H REV 3
DESCRIPTION OF PCP MANUAL CHANGES NOVEMBER 2004

APPENDIX B: McGuire Nuclear Station Process Control Program Rev 17

The procedures described below were removed from the MNS PCP Implementing Procedure list due to the following changes:

CP/0/B/8300/022 "Handling of Laboratory Quantities of Spent Resin" was deleted because there are RP processes and controls that address this type of radioactive material.

OP/0/B/6200/068 "Process Control Program for CNSI Cement Solidification Units" was deleted because the procedure is not used or needed.

OP/0/B/6200/084 "Solidification of Grit Waste" was deleted because the procedure is not used or needed.

OP/1/B/6200/104 "Unit 1 Operating, Dewatering, and Shipping Liners Filled with Powdered Media and/or Bead Resin" was deleted. A new procedure was written that addresses the steps for "unwatering" for shipment to a vendor for reprocessing so by definition the PCP does not apply to the new procedure, OP/1/B/6200124 "Unit 1 Secondary Solid Waste Container Processing"

OP/2/B/6200/104 "Unit 2 Operating, Dewatering, and Shipping Liners Filled with Powdered Media and/or Bead Resin" was deleted. A new procedure was written that addresses the steps for "unwatering" for shipment to a vendor for reprocessing so by definition the PCP does not apply to the new procedure, OP/2/B/6200/124 "Unit 2 Secondary Solid Waste Container Processing".

OP/0/B/6200/094 "Transfer and Dewatering Radwaste Media - Radlok High Integrity Containers" was deleted because it is no longer used. The vendor for this process is no longer in business.

APPENDIX C: Catawba Nuclear Station Process Control Program Rev11

The CNS PCP Implementing Procedures list was revised to reflect the following procedure changes:

OP/1/B/6500/053 and OP/2/B/6500/053 "Transfer and Dewatering of Contaminated Secondary Resins" (Unit 1 & 2) are being removed from the CNS PCP Implementing Procedure list because they were revised to remove the PCP dewatering activities. The revised procedures OP/1 and 2/B/6500/053 "Transfer and Unwatering of Secondary Resin" will now be used only for "unwatering" Secondary resin that is not being prepared for direct disposal at a 10CFR61 disposal site, so by definition the PCP does not apply to the new procedures.

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

OP/0/B/6500/082 "Dewatering Secondary Contaminated Resin" is being added to the CNS PCP Implementing Procedure list. This new procedure was written to address the PCP dewatering of contaminated Secondary side resin removed from OP/1&2/ B/6500/053 to be performed by the Radwaste Chemistry group.

OP/0/B/6500/013 "Operating Procedure for the Nuclear Solid Waste (WS) Disposal System" which is listed in the CNS PCP Implementing Procedure list has been renumbered and is now OP/0/B/6500/111. The content is the same, only the number has changed due to PIP C-04-2308. This PIP required procedures that have the same number as other groups' procedures to be changed to eliminate a human error trap.

END OF PREVIOUS REVISION 3 SUMMARY

REF: Nov 2004 Revision APPENDIX B McGuire Nuclear Station Process Control Program Rev 17
REF: Nov 2004 Revision APPENDIX C Catawba Nuclear Station Process Control Program Rev11

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 2
SUMMARY OF MARCH 2004 REVISION 1 OF
APPENDIX D: "APPROVED SUPPLIERS OF PCP SERVICES"

Appendix D of the Radioactive Waste PCP Manual was revised to remove the ATG from the approved suppliers' list and to add Studsvik to the list.

The bases for the changes made are described below:

ATG declared bankruptcy in 2002 and various other companies purchased portions of their assets and programs.

The vendor Studsvik was evaluated and approved for the VR services described in the revision 1 of the APPENDIX D section of the Radioactive Waste PCP Manual. The approval was based on the requirements of the Corporate PCP section of the PCP Manual and APPENDIX G: "Waste Processor Checklist" section of the PCP Manual. The approval included a review of Studsvik documents describing the QA program, Process Control Program, and RP programs/ practices. A NUPIC audit report dated February 20, 2002 was reviewed.

The report of the evaluation and approval of Studsvik is summarized in PIP G-04-0113.

END OF PREVIOUS REVISION 2 SUMMARY

REF: March 2004 REVISION 1 of APPENDIX D of the PCP Manual

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 1
SUMMARY OF NOVEMBER 2003 REVISION 14 OF CORPORATE PCP
(CONSERVATIVE GUIDANCE FROM ROOT CAUSE)

Revision 14 to the Corporate PCP section of the Radioactive Waste Process Control Program Manual incorporates additional guidance for dewatering activities to ensure adequate conservatism is provided by the PCP implementing procedures. An event involving the failure of a dewatered HIC to meet the free standing liquid (FSL) limits at Barnwell and the subsequent root cause investigation identified changes that would provide greater confidence in meeting the FSL requirements. Also some editorial changes not related to the root cause evaluation were made. The changes are summarized below.

Added the PIP references associated with the Root Cause in O-03-0624, and the applicability evaluation PIPs at MNS and CNS, M-03-2515 and C-03-3385 to section 4, "DUKE ENERGY PROGRAMMATIC REFERENCES".

Added two additional Regulatory Guidance references to Section 3, "Regulatory References"

3.2.10 NRC "TECHNICAL POSITION ON WASTE FORM" Revision 1 (January 1991)

3.2.11 ANSI/ANS-40.37-1993 "mobile radioactive waste processing systems"

Added item 5.17 in section 5, "DEFINITIONS" to describe the Topical Report, its significance in the development of the PCP and how its applicability to actual conditions can impact the degree of conservatism needed.

Added section 7.5, entitled "Periodic cross-checks & comparisons" that addresses a requirement from the Root Cause evaluation for benchmarking the ONS dewatering processes.

Added section 11.3 entitled "Additional Conservatism in Slurry Dewatering Procedures to Address Variation from the Topical Report (PIP O-03-0624, M-03-2515, C-03-3385)" to incorporate the specific additional guidance needed in dewatering procedures at all 3 sites. The Root Cause identified corrective actions required to prevent recurrence (CAPR) and other enhancements that were evaluated for consideration on a site by site basis. Only the corrective actions that were applicable to all three sites have been incorporated into the Corporate PCP. Those corrective actions that were more site-specific have been incorporated in the site implementing procedures as needed.

Added section 11.3.1 that describes the need to include procedural flexibility/ guidance for Chemistry to add conservatism to any PCP dewatering process if waste content and/ or process conditions are atypical in a non conservative manner and provides examples of such actions.

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 1
SUMMARY OF NOVEMBER 2003 REVISION 14 OF CORPORATE PCP
(CONSERVATIVE GUIDANCE FROM ROOT CAUSE)

Added section 11.3.2 that provides guidance for procedures used to dewater liners using a PCP for direct disposal at Barnwell based on the PIP O-03-0624 CAPRs summarized below:

- requires liner functional testing prior to filling liner with waste to ensure there are no leaks in the liner dewatering system
- requires that ambient temperature guidance for dewatering will preclude localized freezing conditions during the dewatering sequence
- requires that the final water collection sample point must be representative (e.g., as close as possible to the pump discharge)

Added section 11.3.3 to address PCP dewatering procedures for Mixed Media with significant non-media solids:

- requires use of Ecodex filter system in all liners that contain mixed media with significant non-media solids
- requires that procedures clearly specify media loading sequence if media is not homogeneously mixed to minimize potential blinding of the lowest level of filters
- requires additional dewatering Cycles for mixed media liners after the acceptance criteria in the vendor procedure have been met
- requires longer settling periods during the additional dewatering cycles
- requires dewatering through bottom 2 laterals during liner filling based on the Topical Report requirement to establishes proper media compaction and capillary conditions
- requires initial liner unwatering upon completion of final waste transfer to liner

In Sections 11.5.2.1, 11.5.3.1, 11.5.4.2 D added wording to clarify that FSL verification can be accomplished using either an onsite PCP process or an approved offsite vendor process.

END OF PREVIOUS REVISION 1 SUMMARY

Ref: November 2003 REVISION 14 of CORPORATE PCP

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

The Duke Energy Radioactive Waste Process Control Program Manual is a rewrite of the original DPCo PCP. The Corporate PCP and Introduction chapters of the DPCo PCP have been revised many times to incorporate critical changes, but have not been rewritten since the original publication. During the ensuing period many new programs and processes have been developed within Duke Energy, disposal site requirements and availability have changed and new process options are now available in the commercial Radwaste industry. This rewrite attempts to incorporate these changes, integrate the PCP Manual with other programs within Duke Energy and create flexibility for future administration.

The reissued manual attempts to address specific issues identified in numerous audits and Problem Investigation Process (PIP) reports. The PIPS listed below identified changes needed or were associated with this revision:

- G-00-0401 (QA Audit of NGO PCP & support documents. This PIP incorporated corrective actions from C-01-02522, O-01-01067, G-99-00349, C-99-05094)
- G-02-0272 (QA Audit of PCP Support Documentation)
- C-01-02522 (NRC CNS Audit - Offsite Vendors)
- O-01-01067 (ONS Filter HIC Dewatering Clarification)
- O-00-4680 (ONS Filter dewatering procedure use)
- G-99-00349 (NGO Radwaste Support PCP Evaluation)
- C-99-05094 (SLC Change Issues)

DETAILED DISCUSSION OF CHANGES

1. MANUAL ORGANIZATION AND FORMAT CHANGES

The reorganization of the PCP segregates technical requirements from administrative information to reduce the necessity for performing revisions with their associated management approvals every time administrative and non-technical changes occur. (i.e., the Corporate PCP defines the program requirements, the administrative appendices provide details of how the program and associated documents are managed) The regulatory and SLC requirements are contained in the Corporate PCP section of the manual. Where guidance is addressed in more

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

detail by other Duke Energy programs, a reference to that program replaced the redundant information in the earlier version of PCP. (e.g., EWP 2.8 "Waste Oil" and 2.9 "Mixed Waste")

The details of the manual reorganization are discussed below.

1.1 Old PCP Manual Organization

The superseded DPCo Process Control Program was organized as follows:

I. Introduction

II. Corporate PCP Rev 12

III. ONS PCP Rev 11

IV. MNS PCP Rev 16

V. CNS PCP Rev 10

VI-IX. Contained FOR INFO ONLY regulatory and historical reference information that was not considered part of the controlled document.

1.2 New PCP Manual Organization

The new PCP Manual is organized as follows:

CORPORATE PROCESS CONTROL PROGRAM Rev 13

The Corporate Process Control Program (PCP) contains the technical requirements previously contained in Chapters I and II in the DPCo PCP. The details of this revision are summarized in section 2 below, "Corporate PCP Changes".

APPENDIX A "OCONEE NUCLEAR STATION PCP" Rev 12

This revision of the Oconee PCP incorporates the new manual formatting and the removes the exception to the Corporate PCP pertaining to vendor approvals. Previously each site PCP contained an exception to the Corporate PCP requirement that the Station Manager or his designee had to approve solidification or dewatering services. This exception was incorporated into the Corporate PCP such that only corporate review and approval of vendor solidification and dewatering services are now indicated.(Ref: PIP G-00-0401)

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

The Chemistry procedure CP/3/B/5200/08A "Unit 3 High Activity Spent Resin Storage Tank (HASRST) Resin Transfer to Disposable Liner" was removed from the implementing procedures list because the PCP activities associated with this procedure have been eliminated.

APPENDIX B "McGUIRE NUCLEAR STATION PCP" Rev 16

This revision of the McGuire PCP incorporates the new manual formatting and the removal of the exception related to vendor approvals. Previously each site PCP contained an exception to the Corporate PCP requirement that the Station Manager or his designee had to approve solidification or dewatering services. This exception was incorporated into the Corporate PCP such that only corporate review and approval of vendor solidification and dewatering services are now indicated.(Ref: PIP G-00-0401)

The procedure OP/0/B/6200/065, "Transfer of Powdex to a Disposable Liner" has been removed from the McGuire PCP implementing procedure list. The PCP activities in this procedure have been incorporated into two other procedures already on the list, OP/1/B/6200/102, "Unit 1 CM Backwash Tank Operation" and OP/2/B/6200/102, "Unit 2 CM Backwash Tank Operation".

The procedure HP/0/B/1004/032, "Procedure for Packaging Radioactive Filters", used for filter dewatering and packaging was added to the implementing procedure list.

APPENDIX C "CATAWBA NUCLEAR STATION PCP" Rev 10

This revision of the Catawba PCP incorporates the new manual formatting and the removal of the exception related to vendor approvals. Previously each site PCP contained an exception to the Corporate PCP requirement that the Station Manager or his designee had to approve solidification or dewatering services. This exception was incorporated into the Corporate PCP such that only corporate review and approval of vendor solidification and dewatering services are now indicated.(Ref: PIP G-00-0401)

The CNS PCP procedure list was revised as follows:

- Corrected the entry for Chemistry procedure OP/1(2)/A/6250/016 "Operating Procedure for the, Condensate Polishing Demineralizer Backwash Tank Subsystem" to reflect that it is a "B" procedure and is unit specific. The entries are now OP/1/B/6250/016 "Condensate Polishing Demineralizer Backwash Tank Subsystem

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

- Unit 1" and OP/2/B/6250/016 "Condensate Polishing Demineralizer Backwash Tank Subsystem - Unit 2".
- Revised entry for OP/1(2)/B/6500/053 to reflect current Unit specific titles OP/1/B/6500/053 "Transfer and Dewatering of Contaminated Secondary Resin Unit 1" and OP/2/B/6500/053 "Transfer and Dewatering of Contaminated Secondary Resin Unit 2".
- Removed Chemistry procedure OP/0/B/6500/072 "Operating Procedure for Filter HIC Operations" because it was deleted and is no longer needed.

APPENDIX D "APPROVED SUPPLIERS OF PCP SERVICES" Rev 0

This appendix lists the approved vendors and their services and provides additional detail of requirements contained in other documents. (e.g., vendor contract, purchase order, etc.) Removal of this detail from the Corporate PCP minimizes the number of revisions to the technical portion of the manual due to the unpredictable nature of vendor ownership and commercial changes. The Corporate PCP still describes the approval process and requires PCP service vendors to be incorporated into the QA supplier program. This program utilizes industry QA audits to monitor and verify vendor performance against customer program requirements. A note has been added to the computerized "Approved Supplier List" to ensure PCP vendors are maintained in the program unless NGO Chemistry requests or approves their removal.

APPENDIX E "PCP MANUAL REVIEW AND APPROVAL REQUIREMENTS"

This section summarizes in a tabular format the required reviews and approvals for revisions to the PCP Manual. This was previously discussed in the body of the Corporate PCP. The approval process is described in APPENDIX F. Additional approval requirements were added for the new appendices based on their significance to the regulated portion of the manual. Additional reviews by RP will be documented for those parts of the manual affecting their programs. The previous PCP included only Chemistry and station manager reviews and approvals. The formal RP review is intended to broaden awareness of and input to PCP requirements and improve integration of the PCP with other related programs and activities.

APPENDIX F "ADMINISTRATION OF THE PCP AND SUPPORT DOCUMENTS"

This appendix describes the administrative processes used to manage and publish the PCP Manual and the supporting documents required to maintain it. This information

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H Rev 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

was not contained in any detail in the prior versions of the PCP manual and has been added to address many of the document control issues identified in historical audits and recent PIPs. The process used to publish the manual electronically is described in detail to address SDQA requirements.

APPENDIX G "WASTE PROCESSOR CHECKLIST"

This document is a template used by NGO RP and Duke Energy Environmental Health Services to evaluate waste services. The document was revised and added to the PCP to ensure that vendors who provide PCP services are evaluated against the Duke Energy PCP and approved by the NGO Chemistry organization.

APPENDIX H "REVISION SUMMARY - LICENSEE INITIATED CHANGES"

This appendix incorporates revision summary information that in the past was contained in a transmittal letter. Incorporation of the revision discussion is consistent with the ODCM and other program documents where it is desirable to maintain a retrievable revision history.

1.3 Publication Changes

The manual reorganization facilitates the use of current administrative processes and electronic publication. Electronic publication is more user-friendly and addresses the PCP's problematic history related to the obscurity of the hard copy PCP manual. It also enhances administrative controls needed to ensure the most current revisions are used. (Ref: PIPs G-99-00349, G-00-0401)

The new PCP Manual is being published in the NEDL Portal under Electronic Licensing Library (ELL). Electronic publication enhances reference capability as described in NSD 228 APPENDIX B. In order to enhance the quality of NSD 228 applicability reviews, NSD 228 recommends that documents considered part of the licensing basis elements should be published electronically for easy and consistent utilization. The PCP and ODCM are licensing basis elements and historically have been grouped together in many Tech Spec and regulatory references. This revision aligns the PCP with the ODCM in its publication format, online accessibility, user interface, and administrative processes.

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H Rev 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

1.4 Formatting Changes

The new PCP has been reformatted using Nuclear Generation document font and formatting standards as described in the Procedure Writers' Guide and NSD 100. The Word template used is "procopta.dot", modified to resemble the headings and hierarchy in the ODCM.

2. CORPORATE PCP CHANGES

2.1 Clarification of Programmatic linkage between Tech Specs, SLC and the PCP
(Ref: PIPs C-99-05094, G-00-0401)

The references below contain specific PCP requirements. A list of these and other Duke Energy program documents that impact the PCP Manual was added to the Corporate PCP to ensure that future PCP Manual revisions and revisions to implementing procedures would include these documents in the review process.

2.1.1 The requirement to include revisions to the PCP in the Annual Radiological Effluents Report to the NRC is found in the following:

- Oconee Technical Specification 5.6.2 "Annual Radiological Environmental Operating Report"
- Catawba SLC 16.11-16 "Annual Radiological Environmental Operating Report and Radioactive Effluent Release Report"
- McGuire SLC 16.11.17 "Radioactive Effluent Release Report"

2.1.2 The Commitment to have a Process Control Program, description of its applicability, specific Remedial Actions and Surveillance Requirement are in the following SLCs:

- Catawba SLC 16.11-11 "Solid Radioactive Waste"
- McGuire SLC 16.11.11 "Solid Radioactive Waste"
- Oconee SLC 16.11.5 "Solid Radioactive Waste"

The "Solid Radioactive Waste" SLCs listed above were submitted for revision during 2001-2002 to address inte-rsite program consistency issues, inaccurate references to the Process Control Program (PCP) applicability and content. The wording in this PCP Manual rewrite incorporates the language in the SLC revision.

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H Rev 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

The SLC requirements were added to the Corporate PCP introduction to clarify SLC compliance. Those PCP requirements that specifically address SLC Remedial Actions and Surveillance Requirements in sections 10 and 11 are identified.

2.1.3 The following SLCs contain the commitment to have a Technical Review and Control Program covering the preparation, review, and approval of documents important to station operation, including review of PCP revisions by the NSRB:

- Catawba SLC 16.13.2 "Technical Review and Control"
- McGuire SLC 16.13.2 "Technical Review and Control"
- Oconee SLC 16.13.2 "Technical Review and Control"

2.2 New Sections in the Corporate PCP

The following new sections were added to the Corporate PCP to consolidate and emphasize requirements under major headings that more closely align with the organization of other Duke Energy program guidance documents:

- Applicability
- Duke Energy Programmatic References
- Definitions

This section lists definitions needed to interpret the PCP and consolidates them into one section.

- Responsibilities

  Specific responsibilities were clarified and the need for all site programs that impact the generation and management of liquid & wet radioactive wastes to support compliance with the PCP was emphasized.

- Administration of the PCP and Support Documents

  Consolidates all of the administrative requirements into one section and refers to the details contained in APPENDIX F.

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H Rev 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

- Approval Process for QA Approved Suppliers

  This section describes and clarifies the linkage between existing Supply Chain processes and PCP compliance involving vendors. The incorporation of vendor PCP PREVIOUS REVISION APPENDIX H Rev 0

  services into the QA Approved Suppliers List and its associated NUPIC QA Audit process is a critical component of maintaining required oversight of PCP compliance.

- PCP Requirements for Vendor Processes and Services

  This section consolidates vendor program and process requirements into one section.

2.3 PCP Retention Requirements Changes

The record retention requirements were revised in the Duke Energy Information Retention Policy to align with other records that have long term litigation significance. The PCP rewrite incorporates these changes in APPENDIX F. Archive requirements were expanded to include vendor documents used to implement the PCP requirements.

2.4 Vendor Names and Service Information Update
(Ref: PIPs G-99-00349, C-01-02522)

The original version of the Corporate PCP was written when the only vendor services available were onsite mobile units that were interfaced with plant equipment and the final waste form was accomplished prior to shipping the waste offsite. Most current vendor services are offsite processes performed at the vendor location. To accommodate this, the discussion of Radwaste vendors was expanded to include offsite processing. Details of the vendor approval process and documentation requirements were enhanced and the interface with Supply Chain processes emphasized.

2.5 Changes in the Solidification Section
The guidance for solidification was rewritten to be more of a guideline of the minimum content required for implementing procedures.

The technical requirements for solidification of liquid or wet wastes to meet regulatory requirements have not changed. This section was reorganized to provide an outline of the major process steps that must be included in solidification procedures to adequately address the PCP requirements for a solidification process. Redundant presentation of information due to the organization of the prior version was removed. (e.g., the

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

"Introduction" chapter contained solidification discussion that was repeated in the "Solidification" section of the Corporate PCP chapter) Notation identifying requirements derived from SLC was added for clarity in developing or reviewing implementing procedures. Guidance was updated to incorporate vendor support.

2.6 Expanded Guidance for Dewatering
(Ref: PIPs O-01-01067, G-00-0401)

The dewatering section, 11, in the new Corporate PCP) contains all of the requirements from the previous version, but was revised to clarify the distinctive requirements for dewatering of mechanical filters and media. The discussion of mechanical filter dewatering was expanded to clarify the distinction between dewatering filters to meet PCP requirements and removal of FSL from the filter disposal container. Requirements derived from SLC are identified for clarity in developing or reviewing implementing procedures. Guidance was updated to incorporate vendor support and lessons learned.

3. ADMINISTRATIVE PROCESS CHANGES

Most of the processes used to administer the PCP changed during the rewrite of the PCP Manual. This level of detail was not documented in the DPCo PCP. It was added to address the many administrative issues described in the PIPs listed above. APPENDIX F describes the requirements for administering the Process Control Program and the documents required to implement the program. It details the administrative processes used to implement several of the requirements contained in the Corporate PCP. The following list summarizes the major processes that are detailed in APPENDIX F.

Enclosure 6.1 "PCP Manual Revision Publication Process"

This enclosure describes in detail the revision process in the electronic environment. Significant changes from the old process are:

- Electronic routing of the manual for review and approval
- Electronic approval using email responses to communicate approval. The email will be printed out and included in the archive of the revision as documentation of required approvals.
- Publication process using Scribe for user viewing in the NEDL Portal
- Process for transmittal of the PCP revisions to the NRC only once per year in the Annual Radioactive Effluents Report. Historically the PCP sections were transmitted to the NRC at the time they were revised to allow for page by page insertions in the hard copy manuals maintained by the NRC. The new process is similar to the process used for the ODCM.

APPENDIX H (Past Revision History)
Revision Summary - Licensee Initiated Changes

PREVIOUS REVISION APPENDIX H REV 0
SUMMARY OF MARCH 2003 MANUAL REWRITE OVERVIEW

Enclosure 6.2 "Chemistry Distribution of Radwaste Vendor Documents"

A detailed administrative process for electronic publication, archival and incorporation of documents from approved suppliers comprises this enclosure. Although portions of this process have been used for the past two years, it is now documented in the manual and adds the archival requirements and process.

Enclosure 6.3 "NSD 319 VTI Impact Assessment Process for PCP Related Vendor Documents Used In Chemistry"

This enclosure describes the process for evaluating vendor documents for technical impact to the PCP and implementing procedures. The basis for this process is NSD 319 "Vendor Technical Information Program". It requires technical review by NGO and station Chemistry using a list of criteria from NSD 319 to determine if the changes in the document require any PCP related document revisions and documentation of the conclusions of the review in PIP.

END OF PREVIOUS REVISION 0 SUMMARY
REF: MARCH 2003 PCP MANUAL REWRITE

ATTACHMENT 9

Information to Support the Nuclear Energy Institute (NEI)

Groundwater Protection Initiative

2011 Annual Radiological Effluent Release Report
Ground Water Well Data

Duke Energy implemented a Ground Water Protection program in 2007. This program was developed to ensure timely and effective management of situations involving inadvertent releases of licensed material to ground water. As part of this program, Oconee monitored sixty-six ground water wells during 2011. Tritium activity in wells GM-7R and GM-7DR was reported per NEI 07-07 in February, 2010. The source of this activity is still under investigation, however; it is suspected 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.

Wells are sampled quarterly, semi-annually or annually. Ground water 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 2011.

Results from sampling during 2011 are shown in the table below.

Well Name	Well Location	Avg. Tritium Conc.(pCi/l)	Conc. Range	# of Samples
BG-4	Ball Field	<	<	4
MW-3	Landfill	<	<	2
MW-11	Landfill	<	<	2
MW-11D	Landfill	<	<	2
MW-13	Landfill	<	<	2
MW-16	Landfill	<	<	2
MW-RP01	Landfarm/Burial	<	<	2
MW-RP02	Landfarm/Burial	<	<	2
MW-RP03	Landfarm/Burial	<	<	2
MW A-1	CTP-1/2	275	< - 291	4
MW A-2	CTP-1/2	<	<	4
MW A-8	CTP-1/2	252	< - 256	3
MW A-9	CTP-1/2	304	< - 304	4
MW A-10	CTP-3	363	258 - 462	4
MW A-11	CTP-3	<	<	4
MW A-12	CTP-3	<	<	4
MW A-13	CTP-1/2	929	823 - 1,050	4
MW A-14	CTP-1/2	303	< - 352	3
MW A-17	CTP-1/2	190	< - 190	4
MW A-18	CTP-1/2	172	< - 173	4
GM-1R	CTP-1/2	<	<	4
GM-2R	U-1/2 SFP	837	380 - 1,770	4
GM-2DR	U-1/2 SFP	644	471 - 866	4
GM-3R	U-3 SFP	272	< - 301	4
GM-3DR	U-3 SFP	246	183 - 314	4

2011 Annual Radiological Effluent Release Report
Ground Water Well Data

GM-4	WH-10	393	279 - 550	4
GM-5	Rdwst. Bldg.	290	< - 605	7
GM-5R	Rdwst. Bldg.	<	<	4
GM-6	Outflow to CTP-3	<	<	4
GM-6R	Outflow to CTP-3	358	< - 358	4
GM-7	525 kv Sw. Yard	405	225 - 539	4
GM-7R	525 kv Sw. Yard	26,500	10,600 - 45,000	5
GM-7DR	525 kv Sw. Yard	223	< - 266	4
GM-8	E of U-3 TB	377	< - 402	4
GM-8R	E of U-3 TB	462	< - 494	4
GM-9	E of U-2 TB	272	186 - 315	4
GM-9R	E of U-2 TB	<	<	4
GM-10	525 kv Sw. Yard	<	<	4
GM-10R	525 kv Sw. Yard	<	<	4
GM-11	525 kv Sw. Yard	<	<	4
GM-11R	525 kv Sw. Yard	<	<	4
GM-12	E of Access Rd.	238	< - 238	4
GM-12R	E of Access Rd.	328	< - 328	4
GM-13	525 kv Sw. Yard	<	<	4
GM-13R	525 kv Sw. Yard	<	<	4
GM-14	Mnt. Trg. Facility	157	< - 157	4
GM-14R	Mnt. Trg. Facility	160	< - 160	4
GM-15	525 kv Sw. Yard	2,247	304 - 6,570	5
GM-15R	525 kv Sw. Yard	307	< - 337	4
GM-16R	TBSMT	2,587	2,190 - 3,410	3
GM-16DR	TBSMT	10,536	9,750 - 11,000	7
GM-16DDR	TBSMT	336	215 - 460	4
GM-17R	Oil Drum Storage	2,869	2,080 - 4,030	7
GM-17DR	Oil Drum Storage	3,451	3,250 - 3,650	7
GM-18R	RCP Refurb. Bldg	11,186	10,200 - 12,100	7
GM-19	525 kv Sw. Yard	348	311 - 393	4
GM-19R	525 kv Sw. Yard	382	349 - 431	4
GM-20	SG Retire. Facility	<	<	4
GM-20R	SG Retire. Facility	<	<	4
GM-21	Sec.Trg. Facility	<	<	4
GM-22	Sec.Trg. Facility	<	<	4
GM-23	525 kv Sw. Yard	375	274 - 475	4
GM-24R	3T Transformer	2,684	1,980 - 3,960	7
GM-25R	CT3 Transformer	374	254 - 449	4
*011 (IW-1)	Ball Field	<	<	4
*013 (IW-2)	WH-5	<	<	4
*015	Brown's Bottom	<	<	4

*These are irrigation wells and may not meet current requirements for ground water well construction.

ATTACHMENT 10

Inoperable Equipment

1RIA-40 and 2RIA-40, Condenser Steam Air Ejector Off Gas Monitors, were declared out-of-service on August 5, 2010, at 1745 due to water carryover in the detector. The Selected Licensee Commitment (SLC) 16.11.3, Condition C, required action to return 1RIA-40 and 2RIA-40 to service within 30 days was not successful.

Due to water droplets continuing to be visible in the rotameters for 1RIA-40 and 2RIA-40, it is plausible that water droplets condensing on the face of the detector for 1RIA-40 and 2RIA-40 can effectively shield some of the beta energy from the expected sources (Xe-133). This shielding effect would adversely impact the sensitivity of 1RIA-40 and 2RIA-40 to detect and alarm for increased activity resulting from a primary to secondary leak. The amount of water within the sample chambers for 1RIA-40 and 2RIA-40 is unknown. Since the amount of water and its relative effect on sensitivity cannot be quantified, as a conservative measure 1RIA-40 and 2RIA-40 were declared inoperable. However, the effluent pathway is still being monitored by 1RIA-45 and 2RIA-45 Unit Vent Monitors.

This scenario continued through 2011 with grab samples being taken to detect any primary to secondary leakage on Units 1 and 2. Discussions during early 2011 determined a modification would be necessary to install in-line detectors to resolve the problem. During preliminary development of these design changes it was determined that an alternate design change would be developed and installed to remove the moisture from the sample lines utilizing moisture separators and drains with the existing detector arrangement being maintained. These two methods of resolution were to progress in parallel but were not completed and installed during 2011. The modifications to install inline detectors will be implemented for 1RIA-40, 2RIA-40 and 3RIA-40 when developed. The modifications to add moisture separators and drains will be installed on 1RIA-40 and 2RIA-40. Until 1RIA-40 and 2RIA-40 are returned to service, SLC.16.11.3, Condition C, will remain in effect for Units 1 and 2.

3RIA-40, Condenser Steam Air Ejector Off Gas Monitor, has been calibrated and there is no indication of condensation on the rotameters. Therefore, 3RIA-40 is functional and capable of meeting its design requirements for Unit 3.

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, 2011 to December 31, 2011.

There were no changes made to the radioactive waste systems during 2011 at the Oconee Nuclear Station.