Kelvin Henderson
Vice President
Catawba Nuclear Station
803-701-4251

Duke Energy
CNO1VP | 4800 Concord Rd.
York, SC 29745

April 30, 2013

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

Subject: Duke Energy Carolinas, LLC
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
2012 Annual Radioactive Effluent Release Report

Pursuant to Catawba Nuclear Station Technical Specification (TS) 5.6.3 and Selected Licensee Commitment 16.11-16, please find attached the Annual Radioactive Effluent Release Report for the period of January 1, 2012, through December 31, 2012. In accordance with Catawba TS 5.5.1, the Offsite Dose Calculation Manual (ODCM) is included in this submittal.

Attachment 1	Summary of Gaseous and Liquid Effluents Report
Attachment 2	Supplemental Information
Attachment 3	Solid Waste Disposal Report
Attachment 4	Meteorological Data
Attachment 5	Unplanned Offsite Releases
Attachment 6	Assessment of Radiation Dose from Radioactive Effluents to Members of the Public (includes fuel cycle dose calculation results)
Attachment 7	Revisions to UFSAR Section 16.11, Radiological Effluent Controls
Attachment 8	Revisions to the Radioactive Waste Process Control Program Manual (Compact Disc)* *if changes to program*
Attachment 9	Information to Support the NEI Groundwater Protection Initiative
Attachment 10	Inoperable Equipment
Attachment 11	Radioactive Waste Systems Changes
Enclosure	2012 Offsite Dose Calculation Manual (Compact Disc)

A009
IE48

Any questions concerning this report should be directed to Randy Hart at (803) 701-3622.

Sincerely,

Kelvin Henderson

Attachments and Enclosures (Process Control Program [PCP] Revision Compact Disc [CD]* *if changes to program* and Offsite Dose Calculation Manual [ODCM] Compact Disc [CD]* *if revised from previous submittal*)

xc (with attachments and enclosures):

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

J. S. Kim
NRC Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop 8 C2
11555 Rockville Pike
Rockville, MD 20852-2738

xc (with PCP CD only)

G. A. Hutto, III
NRC Senior Resident Inspector

ATTACHMENT 1

Summary of Gaseous and Liquid Effluents Report

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

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
A. Fission and Activation Gases						
1. Total Release	Ci	8.19E-01	6.58E-01	9.48E-01	8.10E-01	3.23E+00
2. Avg. Release Rate	µCi/sec	1.04E-01	8.37E-02	1.19E-01	1.02E-01	1.02E-01
B. Iodine-131						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Avg. Release Rate	µCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C. Particulates Half Life >= 8 days						
1. Total Release	Ci	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	5.53E+01	5.60E+01	5.11E+01	5.67E+01	2.19E+02
2. Avg. Release Rate	µCi/sec	7.03E+00	7.12E+00	6.43E+00	7.13E+00	6.93E+00
E. Carbon-14						
1. Total Release	Ci	4.79E+00	4.47E+00	5.44E+00	4.43E+00	1.91E+01
2. Avg. Release Rate	µCi/sec	6.10E-01	5.69E-01	6.84E-01	5.57E-01	6.05E-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 1/1/12 TO 1/1/13
GASEOUS EFFLUENTS - ELEVATED RELEASES - CONTINUOUS MODE

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
** No Nuclide Activities **		....	....	....	....	....
2. Iodines						
** No Nuclide Activities **		....	....	....	....	....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		....	....	....	....	....
4. Tritium						
** No Nuclide Activities **		....	....	....	....	....
5. Carbon-14						
** No Nuclide Activities **		....	....	....	....	....
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		....	....	....	....	....

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS EFFLUENTS - ELEVATED RELEASES - BATCH MODE

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
** No Nuclide Activities **		....	....	....	....	....
2. Iodines						
** No Nuclide Activities **		....	....	....	....	....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		....	....	....	....	....
4. Tritium						
** No Nuclide Activities **		....	....	....	....	....
5. Carbon-14						
** No Nuclide Activities **		....	....	....	....	....
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		....	....	....	....	....

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
AR-41	Ci	0.00E+00	0.00E+00	0.00E+00	4.76E-05	4.76E-05
XE-133	Ci	0.00E+00	0.00E+00	0.00E+00	9.48E-05	9.48E-05
XE-135	Ci	0.00E+00	0.00E+00	0.00E+00	9.62E-06	9.62E-06
Totals for Period...	Ci	0.00E+00	0.00E+00	0.00E+00	1.52E-04	1.52E-04
2. Iodines						
** No Nuclide Activities **		....	....	....	....	....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		....	....	....	....	....
4. Tritium						
H-3	Ci	5.51E+01	5.59E+01	5.10E+01	5.65E+01	2.18E+02
5. Carbon-14						
C-14	Ci	1.44E+00	1.34E+00	1.63E+00	1.33E+00	5.74E+00
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		....	....	....	....	....

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Gases						
AR-41	Ci	7.06E-01	5.07E-01	7.07E-01	6.17E-01	2.54E+00
KR-85	Ci	9.38E-04	0.00E+00	0.00E+00	0.00E+00	9.38E-04
XE-133	Ci	1.06E-01	1.42E-01	2.30E-01	1.79E-01	6.57E-01
XE-135	Ci	5.26E-03	8.54E-03	1.13E-02	1.41E-02	3.92E-02
Totals for Period...	Ci	8.19E-01	6.58E-01	9.48E-01	8.10E-01	3.23E+00
2. Iodines						
** No Nuclide Activities **		....	....	....	....	....
3. Particulates Half Life >= 8 days						
** No Nuclide Activities **		....	....	....	....	....
4. Tritium						
H-3	Ci	1.22E-01	9.44E-02	1.57E-01	2.08E-01	5.81E-01
5. Carbon-14						
C-14	Ci	3.36E+00	3.13E+00	3.81E+00	3.10E+00	1.34E+01
6. Gross Alpha Radioactivity						
** No Nuclide Activities **		....	....	....	....	....

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
A. Fission and Activation Products						
1. Total Release	Ci	1.32E-02	3.86E-03	5.17E-03	5.63E-03	2.79E-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	4.75E-10	1.30E-10	1.41E-10	1.97E-10	2.27E-10
B. Tritium						
1. Total Release	Ci	2.88E+02	1.27E+02	1.46E+02	2.00E+02	7.62E+02
2. Average Diluted Concentration						
a. Continuous Releases	µCi/ml	1.24E-07	0.00E+00	0.00E+00	0.00E+00	2.85E-08
b. Batch Releases	µCi/ml	1.04E-05	4.27E-06	4.00E-06	7.00E-06	6.21E-06
C. Dissolved and Entrained Gases						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Diluted Concentration						
a. Continuous Releases	µCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Batch Releases	µCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D. Gross Alpha Radioactivity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Average Diluted Concentration						
a. Continuous Releases	µCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
b. Batch Releases	µCi/ml	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
E. Volume of Liquid Waste						
1. Continuous Releases	liters	5.83E+07	0.00E+00	0.00E+00	0.00E+00	5.83E+07
2. Batch Releases	liters	1.03E+06	7.16E+05	1.08E+06	9.84E+05	3.81E+06
F. Volume of Dilution Water						
1. Continuous Releases	liters	2.78E+09	2.97E+09	3.66E+09	2.86E+09	1.23E+10
2. Batch Releases	liters	2.78E+10	2.97E+10	3.66E+10	2.86E+10	1.23E+11

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID EFFLUENTS - CONTINUOUS MODE

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
** No Nuclide Activities **		....	....	....	....	....
2. Tritium						
H-3	Ci	3.51E-01	0.00E+00	0.00E+00	0.00E+00	3.51E-01
3. Dissolved and Entrained Gases						
** No Nuclide Activities **		....	....	....	....	....
4. Gross Alpha Radioactivity						
** No Nuclide Activities **		....	....	....	....	....

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID EFFLUENTS - BATCH MODE

Catawba Nuclear Station Units 1 & 2

REPORT FOR 2012	Unit	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
1. Fission and Activation Products						
AG-110M	Ci	5.86E-06	0.00E+00	7.09E-06	1.86E-04	1.98E-04
BE-7	Ci	4.39E-04	0.00E+00	0.00E+00	0.00E+00	4.39E-04
BI-214	Ci	1.69E-06	0.00E+00	4.56E-06	5.57E-06	1.18E-05
CO-57	Ci	8.63E-06	0.00E+00	3.08E-06	0.00E+00	1.17E-05
CO-58	Ci	2.17E-03	2.33E-03	2.65E-03	4.41E-04	7.59E-03
CO-60	Ci	8.53E-03	1.08E-03	2.18E-03	2.00E-03	1.38E-02
CR-51	Ci	4.99E-04	1.47E-04	2.92E-05	8.63E-04	1.54E-03
CS-136	Ci	3.96E-06	0.00E+00	0.00E+00	0.00E+00	3.96E-06
CS-137	Ci	4.47E-05	0.00E+00	1.13E-06	1.91E-05	6.49E-05
FE-59	Ci	1.14E-04	1.28E-05	0.00E+00	0.00E+00	1.27E-04
K-40	Ci	0.00E+00	0.00E+00	0.00E+00	3.26E-06	3.26E-06
MN-54	Ci	3.03E-04	2.00E-05	4.04E-05	3.22E-05	3.96E-04
NB-95	Ci	0.00E+00	0.00E+00	2.13E-05	2.80E-07	2.16E-05
NB-97	Ci	3.03E-05	0.00E+00	0.00E+00	0.00E+00	3.03E-05
PB-214	Ci	1.31E-05	1.28E-06	3.79E-06	1.16E-05	2.97E-05
SB-124	Ci	1.21E-05	9.57E-06	0.00E+00	2.33E-04	2.54E-04
SB-125	Ci	8.76E-04	2.39E-04	2.08E-04	1.84E-03	3.16E-03
SB-126	Ci	0.00E+00	0.00E+00	0.00E+00	2.55E-06	2.55E-06
SE-75	Ci	7.84E-06	0.00E+00	0.00E+00	0.00E+00	7.84E-06
ZN-65	Ci	1.38E-04	3.04E-05	4.89E-06	6.89E-07	1.74E-04
ZR-95	Ci	0.00E+00	0.00E+00	1.00E-05	0.00E+00	1.00E-05
Totals for Period...	Ci	1.32E-02	3.86E-03	5.17E-03	5.63E-03	2.79E-02
2. Tritium						
H-3	Ci	2.88E+02	1.27E+02	1.46E+02	2.00E+02	7.61E+02
3. Dissolved and Entrained Gases						
** No Nuclide Activities **		....	....	....	....	....
4. Gross Alpha Radioactivity						
** No Nuclide Activities **		....	....	....	....	....

ATTACHMENT 2

Supplemental Information

to the

Gaseous and Liquid Effluents Report

Catawba 2012 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 Catawba, 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 Catawba, as defined in Regulatory Guide 1.21, Rev. 2. Catawba's 2012 Annual Radioactive Effluent Release Report (ARERR) contains estimates of C-14 radioactivity released in 2012, 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 Catawba 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 PWR (Westinghouse) (Ref. EPRI 1021106). For the 2012 Catawba ARERR a source term scaling factor of 9.4 Ci/GWe-yr is assumed. Using a source term scaling factor of 9.4 Ci/GWe-yr and actual electric generation (MWe-hrs) from Catawba in 2012 results in a site total C-14 gaseous release estimate to the environment of ~20 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 Catawba 2012 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 Catawba ODCM. The estimated C-14 dose impact on the maximum organ dose from airborne effluents released from Catawba in 2012 is well below the 10CFR50, Appendix I, ALARA design objective (i.e., 15 mrem/yr per unit).

CATAWBA NUCLEAR STATION

2012 EFFLUENT AND WASTE DISPOSAL SUPPLEMENTAL INFORMATION

I. REGULATORY LIMITS - PER UNIT

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

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

C. GASEOUS EFFLUENTS - IODINE - 131 AND 133, TRITIUM, PARTICULATES WITH HALF-LIVES > 8 DAYS - ORGAN DOSE
1. CALENDAR QUARTER = 7.5 MREM
2. CALENDAR YEAR = 15 MREM

II. MAXIMUM PERMISSIBLE EFFLUENT CONCENTRATIONS

A. GASEOUS EFFLUENTS - INFORMATION FOUND IN OFFSITE DOSE CALCULATION MANUAL
B. LIQUID EFFLUENTS - INFORMATION FOUND IN 10CFR20, APPENDIX B, TABLE 2, COLUMN 2

III. AVERAGE ENERGY - NOT APPLICABLE

IV. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

ANALYSES OF SPECIFIC RADIONUCLIDES IN SELECTED OR COMPOSITED SAMPLES AS DESCRIBED IN THE SELECTED LICENSEE COMMITMENTS ARE USED TO DETERMINE THE RADIONUCLIDE COMPOSITION OF THE EFFLUENT. 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. 9.20E+01 = TOTAL NUMBER OF BATCH RELEASES
2. 5.51E+03 = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. 1.22E+02 = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. 5.99E+01 = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. 2.00E+00 = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.
6. 6.17E+04 = AVERAGE DILUTION WATER FLOW DURING RELEASES (GPM).

B. GASEOUS EFFLUENT
1. 6.60E+01 = TOTAL NUMBER OF BATCH RELEASES.
2. 1.02E+06 = TOTAL TIME (MIN.) FOR BATCH RELEASES.
3. 5.00E+04 = MAXIMUM TIME (MIN.) FOR A BATCH RELEASE.
4. 1.54E+04 = AVERAGE TIME (MIN.) FOR A BATCH RELEASE.
5. 1.03E+02 = MINIMUM TIME (MIN.) FOR A BATCH RELEASE.

VI. ABNORMAL RELEASES

(SEE "UNPLANNED OFFSITE RELEASES" ATTACHMENT)

CATAWBA 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 Catawba 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

CATAWBA NUCLEAR STATION - SOLID RADIOACTIVE WASTE SHIPPED TO A DISPOSAL FACILITY

REPORT PERIOD 1/1/2012 TO 12/31/2012

Type of Waste Shipped	Number of Shipments *	Number of Containers *	Waste Class *	Container Type *	Burial Volume (ft^3)	Burial Volume (m^3)	Total Activity (Curies)
1. Waste from Liquid Systems							
(A) Dewatered Secondary Resins	2	11	2 A U	11 B-25	1512.9	42.85	2.780E-05
(B) Dewatered Primary Resins	4	4	1 A S 3 B	4 HIC	566.7	16.05	291.404
(C) Evaporator Concentrates	0	0	NA	NA	0.0	0.00	0.000
(D) Dewatered Mechanical Filters	0	0	NA	NA	0.0	0.00	0.000
(E) Dewatered Demineralizers	0	0	NA	NA	0.0	0.00	0.000
(F) Solidified (Cement) Acids, Oils, Sludges	0	0	NA	NA	0.0	0.00	0.000
2. Dry Solid Waste							
(A) Dry Active Waste (compacted)	0	0	NA	NA	0.0	0.00	0.000
(B) Dry Active Waste (non-compacted)	0	0	NA	NA	0.0	0.00	0.000
(C) Dry Active Waste (brokered)	NA	NA	NA	NA	12,878.9	364.73	1.294
(D) Irradiated Components	0	0	NA	NA	0.0	0.00	0.000
3. All Solid Waste	6 *	15 *	NA *	NA *	14,958.6	423.63	292.698

* Does not included brokered Dry Active Waste totals.

CATAWBA NUCLEAR STATION - SOLID RADIOACTIVE WASTE

SUMMARY OF PRINCIPAL RADIONUCLIDE COMPOSITION

REPORT PERIOD 1/1/2012 TO 12/31/2012

Type of Waste Shipped	Radionuclide	% Abundance *
1. Waste from Liquid Systems		
(A) Dewatered Secondary Resins	H-3	72.70%
	Cr-51	0.00%
	Mn-54	0.00%
	Co-57	0.00%
	Co-58	0.00%
	Fe-59	0.00%
	Co-60	0.00%
	Zn-65	0.00%
	Nb-94	0.00%
	Nb-95	0.00%
	Zr-95	0.00%
	Ag-108m	0.00%
	Ag-110m	0.00%
	Sn-113	0.00%
	Sb-122	0.00%
	Sb-124	0.00%
	Sb-125	0.00%
	Te-125m	0.00%
	I-131	0.00%
	Ba-133	0.00%
	Cs-134	0.00%
	Cs-137	0.01%
	W-187	0.00%
	Ba/La-140	0.00%
	Ce-141	0.00%
	Ce-144	0.00%
	Pu-238	0.00%
	Pu-239	0.00%
	C-14	6.32%
	Fe-55	0.00%
	Ni-59	0.00%
	Ni-63	0.00%
	Sr-89	0.00%
	Sr-90	0.00%
	Tc-99	20.00%
	I-129	0.96%
	Am-241	0.00%
	Pu-241	0.00%
	Cm-242	0.00%
	Cm-243	0.00%
(B) Dewatered Primary Resins	H-3	0.0%
	Cr-51	0.0%
	Mn-54	0.4%
	Co-57	0.1%
	Co-58	0.4%
	Fe-59	0.0%
	Co-60	6.2%
	Zn-65	0.1%

* Average percent abundance for all shipments during period.

Type of Waste Shipped	Radionuclide	% Abundance *
	Nb-94	0.0%
	Nb-95	0.0%
	Zr-95	0.0%
	Ag-108m	0.0%
	Ag-110m	0.0%
	Sn-113	0.0%
	Sb-122	0.0%
	Sb-124	0.0%
	Sb-125	0.3%
	Te-125m	0.0%
	I-131	0.0%
	Ba-133	0.0%
	Cs-134	0.0%
	Cs-137	0.2%
	W-187	0.0%
	Ba/La-140	0.0%
	Ce-141	0.0%
	Ce-144	0.0%
	Pu-238	0.0%
	Pu-239	0.0%
	C-14	0.1%
	Fe-55	12.3%
	Ni-59	0.5%
	Ni-63	79.2%
	Sr-89	0.0%
	Sr-90	0.0%
	Tc-99	0.0%
	I-129	0.0%
	Am-241	0.0%
	Pu-241	0.0%
	Cm-242	0.0%
	Cm-243	0.0%
(C) Evaporator Concentrates	(None shipped to a 10CFR61 facility this period)	
(D) Dewatered Mechanical Filters	(None shipped to a 10CFR61 facility this period)	
(E) Dewatered Demineralizers	(None shipped to a 10CFR61 facility this period)	
(F) Solidified (Cement) Acids, Oils, Sludges	(None shipped to a 10CFR61 facility this period)	
2. Dry Solid Waste		
(A) Dry Active Waste (compacted)	(None shipped to a 10CFR61 facility this period)	
(B) Dry Active Waste (non-compacted)	(None shipped to a 10CFR61 facility this period)	
(C) Dry Active Waste (brokered)	H-3	2.4%
	Cr-51	0.0%
	Mn-54	0.8%
	Co-57	0.1%

* Average percent abundance for all shipments during period.

CATAWBA NUCLEAR STATION - SOLID RADIOACTIVE WASTE

SUMMARY OF PRINCIPAL RADIONUCLIDE COMPOSITION

REPORT PERIOD 1/1/2012 TO 12/31/2012

Type of Waste Shipped	Radionuclide	% Abundance *
	Co-58	7.9%
	Fe-59	0.0%
	Co-60	24.1%
	Zn-65	0.0%
	Nb-94	0.0%
	Nb-95	0.0%
	Zr-95	0.0%
	Ag-108m	0.0%
	Ag-110m	0.0%
	Sn-113	0.0%
	Sb-122	0.0%
	Sb-124	0.0%
	Sb-125	2.1%
	Te-125m	0.0%
	I-131	0.0%
	Ba-133	0.0%
	Cs-134	0.0%
	Cs-137	1.1%
	W-187	0.0%
	Ba/La-140	0.0%
	Ce-141	0.0%
	Ce-144	0.5%
	Pu-238	0.0%
	Pu-239	0.0%
	C-14	0.9%
	Fe-55	37.3%
	Ni-59	0.0%
	Ni-63	22.8%
	Sr-89	0.0%
	Sr-90	0.0%
	Tc-99	0.0%
	I-129	0.0%
	Am-241	0.0%
	Pu-241	0.0%
	Cm-242	0.0%
	Cm-243	0.0%
(D) Irradiated Components	(None shipped to a 10CFR61 facility this period)	
3. All Solid Waste	H-3	0.0%
	Cr-51	0.0%
	Mn-54	0.4%
	Co-57	0.1%
	Co-58	0.4%
	Fe-59	0.0%
	Co-60	6.3%
	Zn-65	0.1%
	Nb-94	0.0%
	Nb-95	0.0%
	Zr-95	0.0%
	Ag-108m	0.0%

* Average percent abundance for all shipments during period.

CATAWBA NUCLEAR STATION - SOLID RADIOACTIVE WASTE

SUMMARY OF PRINCIPAL RADIONUCLIDE COMPOSITION

REPORT PERIOD 1/1/2012 TO 12/31/2012

Type of Waste Shipped	Radionuclide	% Abundance *
	Ag-110m	0.0%
	Sn-113	0.0%
	Sb-122	0.0%
	Sb-124	0.0%
	Sb-125	0.3%
	Te-125m	0.0%
	I-131	0.0%
	Ba-133	0.0%
	Cs-134	0.0%
	Cs-137	0.2%
	W-187	0.0%
	Ba/La-140	0.0%
	Ce-141	0.0%
	Ce-144	0.0%
	Pu-238	0.0%
	Pu-239	0.0%
	C-14	0.1%
	Fe-55	12.4%
	Ni-59	0.5%
	Ni-63	79.0%
	Sr-89	0.0%
	Sr-90	0.0%
	Tc-99	0.0%
	I-129	0.0%
	Am-241	0.0%
	Pu-241	0.0%
	Cm-242	0.0%
	Cm-243	0.0%

* Average percent abundance for all shipments during period.

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)

JFD CNS 2012		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	0	0
	1.01-1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.26-1.50	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
	1.51-2.00	0	1	0	1	0	3	2	7	3	7	7	4	4	1	2	1
	2.01-3.00	3	4	2	1	3	1	5	33	24	78	112	57	29	10	2	4
	3.01-4.00	8	10	5	2	1	0	0	7	12	57	47	18	11	9	8	8
	4.01-5.00	33	33	7	2	1	0	0	1	1	9	4	2	2	15	7	7
	5.01-6.00	5	16	2	0	0	0	0	0	0	2	0	1	0	4	3	4
	6.01-8.00	0	1	0	0	0	0	0	0	0	0	0	0	0	4	6	1
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	1.26-1.50	0	0	0	0	0	0	1	0	1	0	2	2	2	2	0	0
	1.51-2.00	0	0	0	1	0	4	8	4	9	14	7	13	4	0	1	1
	2.01-3.00	2	6	2	2	1	2	7	39	27	68	46	13	16	9	0	3
	3.01-4.00	28	13	2	0	1	0	1	2	5	15	9	0	3	3	9	11
	4.01-5.00	12	9	5	2	1	0	0	0	0	1	2	1	1	2	6	4
	5.01-6.00	7	8	3	0	0	0	0	0	0	0	0	0	0	1	5	2
	6.01-8.00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0.46-0.75	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	0.76-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	1.01-1.25	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0
	1.26-1.50	0	0	0	1	0	1	3	3	1	2	8	2	1	1	0	1
	1.51-2.00	8	1	1	2	1	4	6	13	17	25	15	15	13	5	1	1
	2.01-3.00	30	8	5	1	3	3	6	19	24	40	40	7	10	3	4	9
	3.01-4.00	48	33	10	3	1	0	1	3	5	7	6	3	3	4	4	7
	4.01-5.00	21	38	11	1	0	0	0	0	0	1	1	0	0	5	5	5
	5.01-6.00	10	8	1	0	0	0	0	0	0	2	0	0	0	1	1	0
	6.01-8.00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
D	**0.46-0.75**	0	1	0	0	0	0	0	2	3	0	1	1	1	2	0	1
	0.76-1.00	3	0	1	1	1	2	9	8	13	6	14	6	15	5	1	1
	1.01-1.25	4	2	0	0	3	1	7	10	23	28	27	24	9	21	12	10
	1.26-1.50	4	6	3	5	0	9	14	30	54	48	53	29	28	10	11	11
	1.51-2.00	35	15	5	7	9	8	31	59	102	137	70	27	21	21	27	47
	2.01-3.00	146	66	36	18	5	3	21	73	126	118	70	17	16	24	21	69
	3.01-4.00	155	133	69	7	5	0	8	28	32	31	24	8	6	29	22	27
	4.01-5.00	55	98	52	11	1	1	1	1	7	18	5	5	1	7	8	15
	5.01-6.00	47	29	8	3	0	2	1	0	3	5	2	1	0	3	12	9
	6.01-8.00	4	4	0	0	0	0	0	0	0	0	0	0	0	1	7	3
	8.01-10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	**0.46-0.75**	0	0	0	0	1	0	0	4	3	1	5	4	1	5	2	1
	0.76-1.00	1	1	0	0	1	3	5	10	23	34	33	25	21	10	4	3
	1.01-1.25	4	0	0	0	0	2	7	15	46	70	65	23	40	15	22	4
	1.26-1.50	2	1	0	0	0	2	8	23	74	114	58	33	22	15	19	12
	1.51-2.00	6	3	1	2	2	2	11	54	110	112	47	24	37	39	39	48
	2.01-3.00	74	9	1	4	2	6	16	58	76	49	20	2	12	29	49	115
	3.01-4.00	42	6	7	1	2	5	11	9	14	9	8	2	0	4	15	32

	4.01-5.00	2	5	8	1	0	0	1	0	2	8	2	0	0	2	3	5
	5.01-6.00	1	0	5	1	1	2	0	0	0	0	0	0	0	0	0	1
	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
F	**0.46-0.75**	0	0	0	0	0	0	0	0	5	0	5	2	5	2	3	0
	0.76-1.00	2	0	0	0	0	0	0	2	12	19	27	16	11	9	10	2
	1.01-1.25	0	0	0	1	0	0	0	6	38	36	26	17	17	8	8	5
	1.26-1.50	0	0	0	0	0	1	1	9	36	36	31	10	10	11	11	18
	1.51-2.00	9	0	0	0	0	0	3	13	22	7	12	8	18	12	15	21
	2.01-3.00	27	1	1	1	0	1	3	4	2	2	0	0	8	18	9	54
	3.01-4.00	7	0	0	0	0	0	2	1	0	0	0	0	0	0	0	4
	4.01-5.00	0	1	0	0	0	0	0	1	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
G	**0.46-0.75**	0	0	0	0	0	1	0	1	11	23	18	8	10	8	8	0
	0.76-1.00	0	2	0	0	0	0	0	4	17	34	37	19	18	20	15	13
	1.01-1.25	0	0	0	0	0	0	0	7	37	24	28	26	9	16	16	11
	1.26-1.50	1	0	0	0	0	0	0	6	27	23	23	15	13	7	10	23
	1.51-2.00	5	0	0	0	0	0	0	5	16	13	11	8	6	5	4	21
	2.01-3.00	14	0	0	0	0	0	1	1	0	0	0	1	2	11	3	10
	3.01-4.00	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
	4.01-5.00	1	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

Unplanned Offsite Releases for 2012

Based on review of the following data sources; there were no known, unplanned releases of radioactivity (material, liquid, or airborne) from Catawba Nuclear Station in 2012.

- Completed Investigation of Unusual Radiological Occurrences (SRPMP 8-2) for 2012.
- CNS Problem Investigation Process - PIPs from 1/1/12 to 3/21/13 with the following filters.
  - PIP SITE = 'C'
  - ENTERED DATE = From: 1/1/2012 To: 3/21/2013
  - EVENT CODE =
    - E1 - Leak/Spill/Releases or
    - E1h - Sewage or
    - E1i - Other or
    - M12c - Shipment Involved in Shipment Involved in Accident or
    - M5 - Radioactive Material/Waste or
    - M5b - Radioactive material in clean area or
    - M5c - Liquid spill Liquid spill or
    - M5f - Unexpected Radiation Alarm or
    - M5g - Rad Material Outside Protected Area or
    - M5h - Rad Material Outside Owner Controlled or
    - M5i - Rad Material Outside the RCA (>SAM) or
    - Y4 - Radiation Protection
- CNS Problem Investigation Process - PIPs from 1/1/12 to 3/21/13 with the following filters.
  - PIP SITE = 'C'
  - ENTERED DATE = From: 1/1/2012 To: 3/21/13
  - EVENT DESCRIPTION = 'Release' and 'Unplanned'.

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 8 km of the site 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).

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

1st Quarter 2012

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 1 2012 ====

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	BONE	1.13E+00	1.50E+01	7.50E+00

Maximum Organ Dose Receptor Location: 0.5 Mile NE
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 2012 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q1 - Maximum Gamma Air Dose	7.36E-03	1.00E+01	7.36E-02

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.93E+01

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q1 - Maximum Beta Air Dose	2.72E-03	2.00E+01	1.36E-02

Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.48E+01

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

2nd Quarter 2012

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 2 2012 ====

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	BONE	1.05E+00	1.50E+01	6.99E+00

Maximum Organ Dose Receptor Location: 0.5 Mile NE
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 2012 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q2 - Maximum Gamma Air Dose	5.32E-03	1.00E+01	5.32E-02

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.86E+01

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q2 - Maximum Beta Air Dose	2.04E-03	2.00E+01	1.02E-02

Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.07E+01
XE-133	8.16E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

3rd Quarter 2012

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 3 2012 ====

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	CHILD	BONE	1.28E+00	1.50E+01	8.51E+00

Maximum Organ Dose Receptor Location: 0.5 Mile NE
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 2012 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q3 - Maximum Gamma Air Dose	7.43E-03	1.00E+01	7.43E-02

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.85E+01

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q3 - Maximum Beta Air Dose	2.88E-03	2.00E+01	1.44E-02

Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	8.96E+01
XE-133	9.32E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

4th Quarter 2012

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS======= Quarter 4 2012 ====

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	CHILD	BONE	1.04E+00	1.50E+01	6.93E+00

Maximum Organ Dose Receptor Location: 0.5 Mile NE
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 2012 ====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q4 - Maximum Gamma Air Dose	6.49E-03	1.00E+01	6.49E-02

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.85E+01

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q4 - Maximum Beta Air Dose	2.50E-03	2.00E+01	1.25E-02

Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.01E+01
XE-133	8.36E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
GASEOUS ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

ANNUAL 2012

=== IODINE, H3, AND PARTICULATE DOSE LIMIT ANALYSIS======= Annual 2012 ========

Period-Limit	Critical Group	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	BONE	4.49E+00	3.00E+01	1.50E+01

Maximum Organ Dose Receptor Location: 0.5 Mile NE
Critical Pathway: Vegetation

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
C-14	1.00E+02

=== NOBLE GAS DOSE LIMIT ANALYSIS======================== Annual 2012 ========

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Yr - Maximum Gamma Air Dose	2.66E-02	2.00E+01	1.33E-01

Maximum Gamma Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.87E+01

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Yr - Maximum Beta Air Dose	1.01E-02	4.00E+01	2.53E-02

Maximum Beta Air Dose Receptor Location: 0.5 Mile NNE

Major Isotopic Contributors (5% or greater to total)

Nuclide	Percentage
AR-41	9.13E+01
XE-133	7.58E+00

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

1st Quarter 2012

=== BATCH LIQUID RELEASES ============================== Quarter 1 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	LIVER	3.35E-02	1.00E+01	3.35E-01
Q1 - Total Body Dose	CHILD		3.21E-02	3.00E+00	1.07E+00

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

Nuclide	Percentage
H-3	8.93E+01
CS-137	5.18E+00

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

Nuclide	Percentage
H-3	9.34E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===================== Quarter 1 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - Maximum Organ Dose	CHILD	LIVER	3.58E-04	1.00E+01	3.58E-03
Q1 - Total Body Dose	CHILD		3.58E-04	3.00E+00	1.19E-02

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

Nuclide	Percentage
H-3	1.00E+02

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

Nuclide	Percentage
H-3	1.00E+02

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

2nd Quarter 2012

=== BATCH LIQUID RELEASES ============================== Quarter 2 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	CHILD	GI-LLI	1.27E-02	1.00E+01	1.27E-01
Q2 - Total Body Dose	CHILD		1.26E-02	3.00E+00	4.21E-01

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

Nuclide	Percentage
H-3	9.74E+01

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

Nuclide	Percentage
H-3	9.77E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===================== Quarter 2 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q2 - Maximum Organ Dose	NA	NA	0.00E+00	1.00E+01	0.00E+00
Q2 - Total Body Dose	NA		0.00E+00	3.00E+00	0.00E+00

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

Nuclide	Percentage
NA	NA

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

Nuclide	Percentage
NA	NA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

3rd Quarter 2012

=== BATCH LIQUID RELEASES ============================== Quarter 3 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	ADULT	GI-LLI	1.28E-02	1.00E+01	1.28E-01
Q3 - Total Body Dose	CHILD		1.20E-02	3.00E+00	4.01E-01

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

Nuclide	Percentage
H-3	7.59E+01
NB-95	1.49E+01
CO-60	6.47E+00

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

Nuclide	Percentage
H-3	9.72E+01

=== CONTINUOUS LIQUID RELEASES (WC) ==================== Quarter 3 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q3 - Maximum Organ Dose	NA	NA	0.00E+00	1.00E+01	0.00E+00
Q3 - Total Body Dose	NA		0.00E+00	3.00E+00	0.00E+00

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

Nuclide	Percentage
NA	NA

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

Nuclide	Percentage
NA	NA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

4th Quarter 2012

=== BATCH LIQUID RELEASES ================================ Quarter 4 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	CHILD	LIVER	2.14E-02	1.00E+01	2.14E-01
Q4 - Total Body Dose	CHILD		2.09E-02	3.00E+00	6.96E-01

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

Nuclide	Percentage
H-3	9.54E+01

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

Nuclide	Percentage
H-3	9.79E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===================== Quarter 4 2012 ======

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q4 - Maximum Organ Dose	NA	NA	0.00E+00	1.00E+01	0.00E+00
Q4 - Total Body Dose	NA		0.00E+00	3.00E+00	0.00E+00

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

Nuclide	Percentage
NA	NA

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

Nuclide	Percentage
NA	NA

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
PERIOD 1/1/12 TO 1/1/13
LIQUID ANNUAL DOSE SUMMARY REPORT

Catawba Nuclear Station Units 1 & 2

ANNUAL 2012

=== BATCH LIQUID RELEASES ============================== Annual 2012 ========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	LIVER	7.70E-02	2.00E+01	3.85E-01
Yr - Total Body Dose	CHILD		7.52E-02	6.00E+00	1.25E+00

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

Nuclide	Percentage
H-3	9.38E+01

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

Nuclide	Percentage
H-3	9.60E+01

=== CONTINUOUS LIQUID RELEASES (WC) ===================== Annual 2012 ========

Period-Limit	Critical Age	Critical Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Yr - Maximum Organ Dose	CHILD	LIVER	3.31E-04	2.00E+01	1.66E-03
Yr - Total Body Dose	CHILD		3.31E-04	6.00E+00	5.52E-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

Catawba Nuclear Station
2012 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 Catawba Nuclear Station only includes liquid and gaseous effluent dose contributions from Catawba and direct and air-scatter dose from Catawba's onsite Independent Spent Fuel Storage Installation (ISFSI) since no other uranium fuel cycle facility contributes significantly to Catawba'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 Catawba's effluent releases and direct and air-scatter dose from Catawba's ISFSI is below 40CFR190 limits as shown by the following summary:

I. 2012 Catawba 40CFR190 Effluent Dose Summary

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

Maximum Total Body Dose = 2.03E+00 mrem

Maximum Location: 0.5 Mile, Northeast Sector
Critical Age: Child
Gas non-NG Contribution: 95.3%
Gas NG Contribution: 1.0%
Liquid Contribution: 3.7%

Maximum Organ (other than TB) Dose = 4.49E+00 mrem

Maximum Location: 0.5 Mile, Northeast Sector
Critical Age: Child
Critical Organ: Bone
Gas Contribution: 99.9%
Liquid Contribution: 0.1%

II. 2012 Catawba 40CFR190 ISFSI Dose Summary

Direct and air-scatter radiation dose contributions from the onsite Independent Spent Fuel Storage Installation (ISFSI) at Catawba have been calculated and documented in the "Catawba Nuclear Station, ISFSI, 10CFR72.212 Evaluation" report. **The maximum dose rate to the nearest resident from the Catawba ISFSI is conservatively calculated to be 16.6 mrem/year.**

The attached excerpt from the "Catawba Nuclear Station, ISFSI, 10CFR72.212 Evaluation" report is provided to document the method used to calculate the Catawba ISFSI 16.6 mrem/year dose estimate.

The following three pages are excerpted from the "Catawba Nuclear Station, Independent Spent Fuel Storage Installation, 10CFR72.212 Evaluation, NAC-UMS Universal Storage System" report.

7.3 10CFR72.212(b)(2)(i)(C) - Requirements of §72.104

"(C) the requirements of §72.104 have been met. A copy of this record must be retained until spent fuel is no longer stored under the general license issued under §72.210."

The requirements of §72.104 are as follows:

(a) During normal operations and anticipated occurrences, the annual dose equivalent to any real individual who is located beyond the controlled area must not exceed 0.25 mSv (25 mrem) to the whole body, 0.75 mSv (75 mrem) to the thyroid and 0.25 mSv (25 mrem) to any other critical organ as a result of exposure to:

(1) Planned discharges of radioactive materials, radon and its decay products excepted, to the general environment,

(2) Direct radiation from ISFSI or MRS operations, and

(3) Any other radiation from uranium fuel cycle operations within the region.

Doses from 24 loaded storage casks located at the ISFSI have been calculated. This represents the placement of a loaded canister at all available locations on the current ISFSI storage pad, completing the projected loading for Phase I.

The methodology and results of the dose calculations are discussed in detail in References 7.3-3 and 7.3-4. A summary of the methodology and results is presented below.

There are two calculations used to estimate the impact of the ISFSI direct radiation doses. The first calculation (Reference 7.3-3) determines a fuel assembly source term to be used in the subsequent shielding model. In order to bound fuel assemblies loaded into canisters in the past and projected to be loaded in the future, the same, bounding fuel assembly is modeled for all 24 spaces in each of the 24 casks. The source term was developed to bound all types of LEU fuel at Catawba (Westinghouse OFA, RFA, and Mk-BW). Axial flux profiles, fuel hardware activation, component activation, and the potential impacts from burnable poisons were modeled. Both gamma and neutron source spectrums were produced. In order to ensure that the gamma flux was conservative, the model includes the impact from activation of components, fuel hardware, and light elements. Thus, each spent fuel location models a bounding fuel assembly with a bounding activated component (thimble plug).

The source term was modeled using the SAS2H coupled shielding and depletion analysis module of the SCALE code suite. This module utilizes the ORIGEN-S point depletion code to compute the source spectra. An appropriate 44 group library was employed. Use of this code is a standard industry application for source term depletion and decay calculations. It is utilized in a manner consistent with its development.

The results from the source term calculation (Reference 7.3-3) are used as the source term spectra input to the shielding model (Reference 7.3-4). MCNP, a Monte-Carlo code for neutron and photon transport, was utilized for the shielding computations. This code is an industry standard and is typically applied to problems of this type. The fuel related source term was normalized to the 20 kW administrative decay heat limit and the component source term was normalized to an eight-year decay duration. The MCNP models were set up using the source terms developed for the four source regions in Reference 7.3-3: fuel (neutron and gamma), fuel hardware, upper plenum, and upper nozzle. These source regions include contributions from both the fuel assembly and the component, as physically appropriate.

The same mesh tally scheme was applied to each source case so the results for each source term could then be summed to produce the final result. A detailed cask model was developed (the work was performed by the cask vendor) and replicated in a 2 by 12 array mimicking the planned arrangement of the loaded canisters on the Catawba ISFSI pad. This represents a full pad of loaded canisters.

Detector locations were laid out on a grid in three dimensions and plots for both near and far field doses were obtained. However, because the coordinate axes align with the cask array orientation, the highest doses are seen along the axes. Thus, for a given distance the highest dose will be found along the x axis, as the long part of the array defines the y axis. The results are as expected for the near and far field doses. Conservatively, the coordinate system was eschewed in the evaluation of the results for 72.104 purposes in favor or the straight line distance to the limiting receptor location (nearest real individual). The nearest real individual is over 450 meters from the ISFSI, but a conservative evaluation distance of 405 meters is adopted. This distance from the ISFSI is within the site boundary. No real individual can live within the (site controlled) boundary, so this distance (location) bounds any real individual (living off-site). As shown in Table 6.7-5 of Reference 7.3-4, the annual dose to the nearest real individual from a full 2 by 12 array of loaded canisters with limiting 20 kW fuel sources and inserts decayed for eight years is 16.6 mrem/yr. The maximum dose at this distance is found, as expected, along the x axis. This is a conservative application of the shielding analysis results.

The shielding analysis contains many receptor locations, and the results from these cases could be used with a plot of the location of the nearest individual on the shielding model XY coordinates system. This would produce a more precise and lower result.

The computed direct shine dose from the ISFSI to the nearest individual will be added to the plant generated dose to show compliance with 72.104. General Office Radiation Protection has responsibility for this function. This information is submitted to the NRC as part of the Annual Radioactive Effluent Release Report for Catawba.

(b) Operational restrictions must be established to meet as low as is reasonably achievable objectives for radioactive materials in effluents and direct radiation levels associated with ISFSI or MRS operations.

(c) Operational limits must be established for radioactive materials in effluents and direct radiation levels associated with ISFSI or MRS operations to meet the limits given in paragraph (a) of this section.

The requirements are met through implementation of the CNS Radiation Protection Program (References 7.3-1 and 7.3-2).

ATTACHMENT 7

Revisions to the Updated Final Safety Analysis Report

Radiological Effluent Controls Section 16.11

There were no revisions to the Catawba Nuclear Station Updated Final Safety Analysis Report, Section 16.11, Radiological Controls, in 2012.

ATTACHMENT 9

Information to Support the Nuclear Energy Institute (NEI)

Groundwater Protection Initiative

2012 Catawba ARERR Groundwater Well Data Section

Duke Energy implemented a Ground Water Protection program in 2007. This initiative was developed to ensure timely and effective management of situations involving inadvertent releases of licensed material to ground water. As part of this program, Catawba Nuclear Station monitored forty-six wells in 2012.

Wells are typically sampled quarterly or semi-annually. Ground water samples are regularly analyzed for tritium and gamma emitters, select 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 2012. Results from sampling during 2012 confirmed existing knowledge of tritium concentrations in site ground water.

Results from sampling during 2012 are shown in the table below.

Well Name	Location	Tritium Concentration (pCi/l) 3/20/12	6/26//12	9/25/12	12/11/12	# of Samples
C100R	U-1 SFP	NS	NS	NS	NS	0
C100DR	U-1 SFP	<MDA	<MDA	<MDA	NS	3
C101R	U-1 SFP	877	757	842	705	4
C101DR	U-1 SFP	552	428	484	535	4
C102	E of U1 SFP O/S protected area	687	676	657	545	4
C103	E of U1 SFP @ Cooling Towers	698	550	669	682	4
C104	U-1 RMWST	647	428	498	468	4
C105	Engr. Bldg.	232	<MDA	<MDA	NS	3
C105R	Engr. Bldg.	781	638	686	684	4
C106	W Parking Lot	<MDA	<MDA	<MDA	<MDA	4
C106R	W Parking Lot	<MDA	<MDA	<MDA	<MDA	4
C107	MET Tower Hill	498	549	599	619	4
C200R	U-2 SFP	NS	823	802	790	3
C200DR	U-2 SFP	NS	541	447	492	3
C201R	U-2 SFP	1,730	2,820	4,350	3,420	4
C201DR	U-2 SFP	512	530	458	606	4
C202	S of RMC Tent	570	668	621	615	4
C203	East of RMC tent @ Cooling Towers	363	592	490	459	4
C204	S of RMC Tent	<MDA	<MDA	<MDA	<MDA	4
C205	Adm. Parking	<MDA	<MDA	<MDA	<MDA	4
C205R	Adm Parking	<MDA	<MDA	<MDA	<MDA	4
C206	W Parking Lot	<MDA	<MDA	<MDA	<MDA	4
C207	Mon. Tank B	593	659	782	508	4
C207R	Mon. Tank B	350	206	253	195	4
C208	N of MTB	240	270	375	198	4

2012 Catawba ARERR Groundwater Well Data Section

Well Name	Location	Tritium Concentration (pCi/l) 3/20/12	6/26//12	9/25/12	12/11/12	# of Samples
C209	MTUville S of light pole 23A	<MDA	<MDA	229	<MDA	4
C210	N of U2 Mech Equip Bldg	<MDA	263	279	<MDA	4
C211	West of RL intake O/S protected area	774	764	1270	630	4
C212	Behind Aquatic Center	<MDA	<MDA	<MDA	<MDA	4
C213R	Mon. Tank B	<MDA	<MDA	184	169	4
C214	Mon. Tank B	723	682	619	887	4
C215	N of U2 TB	662	629	680	821	4
C217	N of U2 TB	828	800	962	917	4
C218	N of U2 TB	2,910	4,440	1,090	1,350	4
C220	N of U2 TB	5,680	5,880	7,360	10,500	4
C221	N of U2 TB	336	357	491	492	4
WCMW-2	N of U2 TB	2,680	2,320	2,930	3,170	4
WCMW-3	WC Ponds	935	634	1,030	1,220	4
WCMW-4	WC Ponds	450	221	508	428	4
WCMW-5	WC Ponds	258	<MDA	246	176	4

Well Name	Location	Tritium Concentration (pCi/l) 4/25/12	10/29//12	# of Samples
LMW 2A	Landfill	<MDA	<MDA	2
LMW 3A	Landfill	<MDA	<MDA	2
LMW 4	Landfill	<MDA	<MDA	2
LMW 5S	Landfill	<MDA	<MDA	2
LMW 5D	Landfill	<MDA	<MDA	2

Well Name	Location	Tritium Concentration (pCi/l) 3/20/12	8/28//12	9/18/12	10/16/12	11/13/12	12/11/12	# of Samples
C213	Mon. Tank B	11,300	9,120	6,040	6,150	5,740	5,440	6

NS - Not sampled due to insufficient volume in well or well inaccessible during outage.

pCi/l - pico curies per liter

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

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

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

ATTACHMENT 8

Revisions to the Radioactive Waste Process Control Program Manual

The following letter dated March 27, 2013, 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 2012 and is designated as the "2012 Report Year" on the enclosed Compact Disc.

March 27, 2013

RD Hart
Regulatory Affairs
Catawba Nuclear Safety Assurance

ATTENTION: TK Pasour

SUBJECT: Catawba Nuclear Station
2012 Annual Radioactive Effluent Release Report
Process Control Program Changes
File: GS-764.25, CN-215.06

Enclosed are CD copies of the PDF file of the Radioactive Waste Process Control Program Manual to be included in the NRC distribution of the Annual Radioactive Effluent Release Report for Catawba Nuclear Station for the period of January 1, 2012 through December 31, 2012. This version of the Manual contains all the changes implemented during 2012 and is designated on the CD cover as the "2012 Report Year".

The PCP Manual is revised using the review and approval process in APPENDIX F of the PCP Manual, "Administration of the PCP and Support Documents" prior to publication on the NEDL Portal.

The attachment summarizes the scope of the changes during 2012.A more detailed summary of changes and basis are in the Appendix H of the PCP Manual.

The PDF file "DukeEnergy-2013-PCP-Manual.pdf" on the CDs was reviewed and verified against the control copies of the PCP Manual published on the NEDL Portal.
Two CD copies are for internal distribution and one for DHEC and four CDs are for the NRC as follows:

DUKE

1. ELL
2. Master File

SC STATE

3. DHEC primary contact Russell Keown

NRC

4. NRC Document Control Desk
5. Catawba NRC Project Manager
6. Catawba Senior Resident Inspector
7. NRC Regional Administrator

If you have any questions, please call David Vaught @ 980-373-5302.

Larry A Wilson
Supervising Scientist
Nuclear Chemistry

David L Vaught

by: David L Vaught
Senior Engineer
Nuclear Chemistry - Radwaste

ATTACHMENT

Appendix L - ARERR ATTACHMENT 8
Revisions to the Radioactive Waste Process Control Program Manual

A brief summary of the 2012 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"

PCP MANUAL SECTIONS CHANGED
APPENDIX A: "ONS PCP" Rev 15 Minor Change
APPENDIX D: "Approved Suppliers of PCP Services" Rev 3
APPENDIX E: "PCP Manual Review and Approval Requirements" Rev 2

DESCRIPTION OF CHANGES BY SECTION

APPENDIX A: "ONS PCP" Rev 15 Minor Change

A Minor Change was published to address a NOS Audit Deficiency identified during the 2012 ONS Radiological Effluent Controls Audit.

1. Two procedures listed in the manual have been revised from "B" to "A" procedures.
2. The procedure CP/0/B/5200/054, "Radwaste Liquid Waste Processing" was removed from the implementing procedure list after it was determined that it does not implement or impact any part of the PCP.
3. Two editorial changes were included to correct procedure title wording

APPENDIX D: "Approved Suppliers of PCP Services" Rev 3

CHANGES:

1. Added Waste Management Group (WMG) to the Approved Suppliers of PCP Services table.
2. Edited details of the DOCUMENTATION section to clarify applicability.
3. Added the PIP reference G-04-00113 that documents the review and approval of the Studsvik Processing Facility, LLC previously added to the table.
4. Deleted section 2.2 due to changes in internal Duke administrative processes outside the PCP Manual purview.

APPENDIX E: "PCP Manual Review and Approval Requirements" Rev 2

CHANGES:

1. Changed titles to reflect post merger.
2. Changed the approval protocol for the PCP Manual sections to simplify the approval process by lowering the management approval level required based on significance of the section being changed and whether it is a revision or a minor change.

ATTACHMENT 10

Inoperable Equipment

Inoperable Monitoring Equipment Report from 1/01/2012 to 12/31/2012 per SLC 16.11-2 and 16.11-7

SLC # from Table 16.11-2-1	Title	Completion Time	Determination and Data Reviewed
1.a	EMF 49	14 Days	For 0EMF49, out of service time was 14.95 days (TSAIL C0-12-03408).

0EMF49 was entered into TSAIL on 12/04/12 and was restored on 12/19/2012. On 12/04/12, Work Request 1075545 was written to investigate why 0EMF49 did not correlate within the procedural acceptance range for the release. It was found that 0EMF49 was out of tolerance low. 0EMF49 was recalibrated and restored to service on 12/19/12.

- Work Order 01075545

SLC # from Table 16.11-7-1	Title	Completion Time	Determination and Data Reviewed
1.a	EMF 50 (L)	14 Days	0EMF50(L), out of service time for year 2012 is 137.59 days (1/01/12 to 5/17/12 TSAIL C0-11-01041).

For year 2012, 0EMF50 was non-functional from 1/01/2012 to 5/17/12 due to issues associated with correlation of 0EMF50 actual reading to expected reading based on sample activity. The start date of the non-functional period extends back to the previous year on 4/07/2011. This was due to C-14 interference in the monitors count rate. This monitor was restored to functional status after implementation of the new calibration methodologies provided by the vendor General Atomics via a new primary calibration.

- PIP C-12-02678
- PIP C-12-00507
- WO 02002300 - 0EMF50: TEST EMF50 FOR DIFFERENT HV AND DISC VALUES

ATTACHMENT 11

Radioactive Waste Systems Changes

ATTACHMENT 11

Radioactive Waste Systems Changes

There were no significant modifications to the Liquid Waste system performed during the calendar year 2012. The only modifications performed were associated with parts obsolescence issues.

The Gaseous Waste System had no significant modifications performed during the calendar year 2012. The only modifications performed were associated with parts obsolescence issues.

There were no modifications to the Solid Waste Disposal system performed during the calendar year 2012.

All Open Mods by window for 2012 were reviewed. From that list, the following modifications were reviewed for impact based on the description of change:

EC0000107896 RRT REPLACE OBSOLETE MTB TRUCK BAY SUMP PUMP 0WLPUTB (ERRT)
EC0000100576 DELETION OF 0WGCR5100 (WG DECAY TANKS PRESSURE)
EC0000090468 CD500785 - RRT SPENT RESIN STORAGE TANK B
EC0000106637 REVISE IMPELLER SIZE FOR 'A' AND 'B' NB CONCENTRATE PUMPS
EC0000105868 REPLACE SSF D/G JACKET WATER OUTLET TEMPERATURE GAUGE AND SENDER