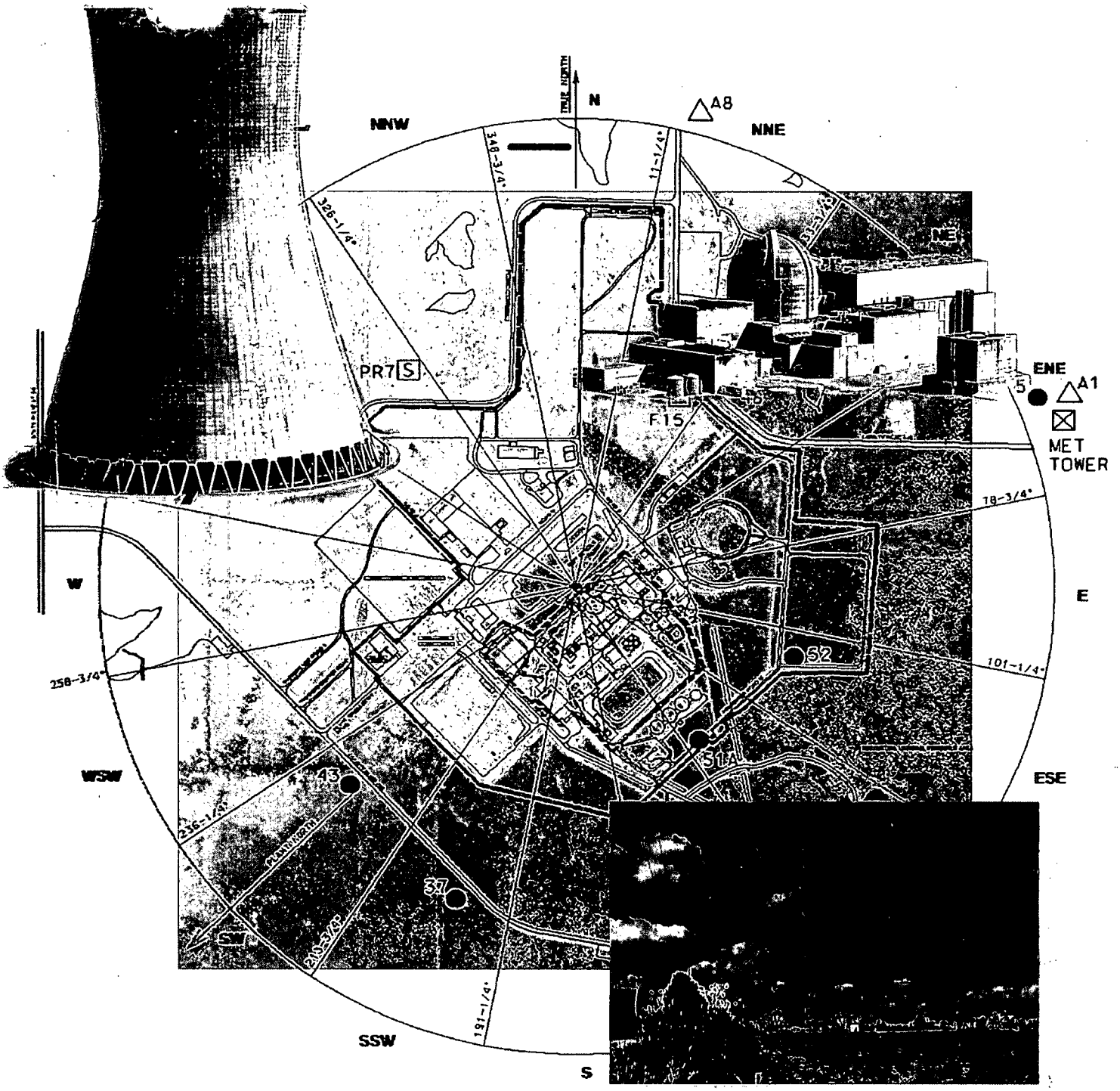
Attachment 1

Annual Radioactive Effluent Release Report

2007 Callaway Plant

Radioactive Effluent Release Report



Docket no. 50-483

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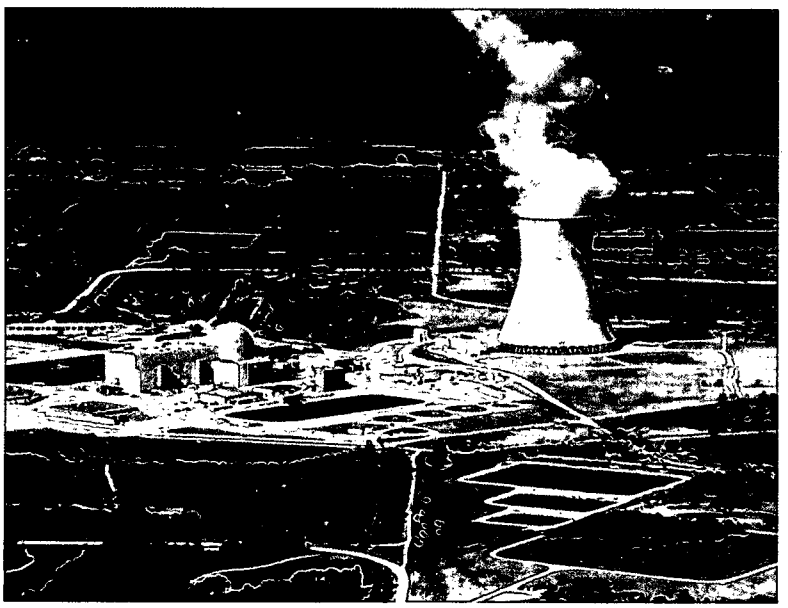
1.0 Introduction

This report describes the AmerenUE (Union Electric Co.) Callaway Plant radioactive effluent releases for 2007. It is submitted in accordance with Section 5.6.3 of the Callaway Plant Technical Specifications.

A summary of radioactivity released in liquid and gaseous effluents and solid waste shipped from the Callaway Plant during the period from January 1, 2007 to December 31, 2007 is presented.

All liquid and gaseous effluents discharged during this reporting period complied with federal regulations and the limits in the Offsite Dose Calculation Manual (ODCM). Any exceptions are noted in this report.



2.0 Supplemental Information

2.1 Regulatory Limits

The Radioactive Effluent Control (REC) limits applicable to the release of radioactive material in liquid and gaseous effluents are provided below.

Fission and Activation Gases (Noble Gases)

The dose rate due to radioactive noble gases released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin.

The air dose due to noble gases released in gaseous effluents, from each unit, to areas at and beyond the site boundary shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation and,

b. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

Radioiodine, Tritium, And Particulates

The dose rate due to Iodine-131 and 133, tritium and all radionuclides in particulate form with half-lives greater than eight (8) days released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to less than or equal to 1500 mrem/yr to any organ.

The dose to a Member of the Public from Iodine-131 and 133, tritium, and all radionuclides in particulate form with half-lives greater than eight (8) days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

a. During any calendar quarter: Less than or equal to 7.5 mrem to any organ and,

b. During any calendar year: Less than or equal to 15 mrem to any organ.

Liquid Effluent

The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to ten times the concentrations specified in Appendix B, Table 2, Column 2 of 10CFR20 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcuries/ml total activity.

The dose or dose commitment to an Individual from radioactive materials in liquid effluents released to unrestricted areas shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrem to the total body and less than or equal to 5 mrem to any organ, and

b. During any calendar year to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

Uranium Fuel Cycle Sources

The annual (calendar year) dose or dose commitment to any Member of the Public due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

2.2 Average Energy

This requirement is not applicable to the Callaway Plant radiological effluent monitoring program since the release rate limits for fission and activation gases in gaseous effluent are not based on the average energy of the radionuclide mixture.

2.3 Measurements and Approximations of Total Radioactivity

Radionuclide concentrations in liquid and gaseous effluents were obtained by effluent sampling and radiological analysis in accordance with the requirements of Final Safety Analysis Report Table 16.11-1 and Table 16.11-4.

Gamma spectroscopy was the primary analysis technique used to determine the radionuclide composition and concentration of liquid and gaseous effluents. Liquid composite samples were analyzed for Sr-89, Sr-90, Fe-55, Ni-63, and transuranic nuclides by Environmental Inc. - Midwest Laboratory (EIML). Gaseous composite samples were analyzed for Sr-89, Sr-90, and Fe-55 by EIML. Tritium and gross alpha were measured for both liquid and gaseous effluents using liquid scintillation counting and gas flow proportional counting techniques, respectively.

The total radioactivity in effluent releases was determined from the measured concentrations of each radionuclide present and the total volume of effluents discharged.

2.4 Batch Releases

Summary information relating to batch releases of gaseous and liquid effluents to the environment from the Callaway Plant during this year 2007 is presented below.

LIQUID

	UNITS	JAN-JUN	JUL-DEC
Number of batch releases:	——	69	23
Total time period for batch releases:	Minutes	29,882	9721
Maximum time period for batch releases:	Minutes	837	482
Average time period for batch releases:	Minutes	433	423
Minimum time period for batch releases:	Minutes	338	298
Average Missouri River flow during periods of effluent release to the river[1] :	ft^3/sec	101,569	65,656

GASEOUS

	UNITS	JAN - JUN	JUL - DEC
Number of batch releases:	——	30	33
Total time period for batch releases:	Minutes	16,035	1,733
Maximum time period for batch releases:	Minutes	6349	89
Average time period for batch releases:	Minutes	535	53
Minimum time period for batch releases:	Minutes	10	23

[1] E-mail, S. Ternes, United States Department of the Interior - Geological Survey - Water Resources Division, dated January 2008

2.5 Abnormal Releases

LIQUID

Number of releases: 0

Total Activity released: 0 Curies

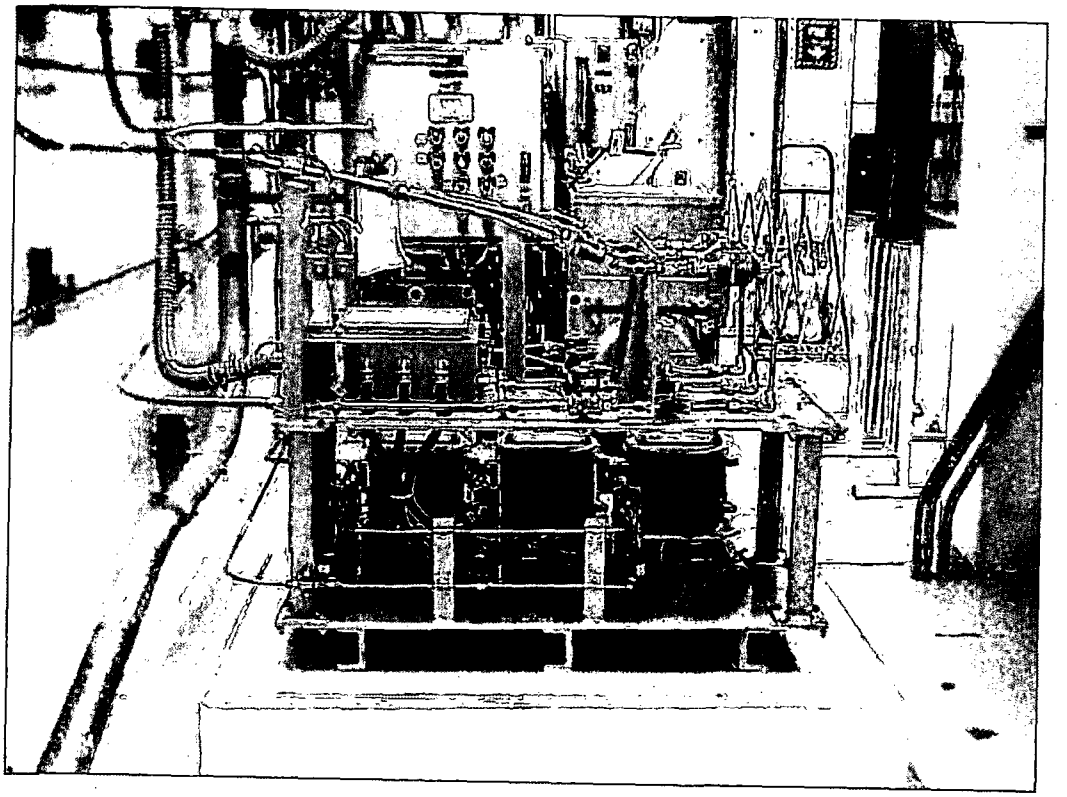
GASEOUS

Number of releases: 0

Total Activity released: 0 Curies

3.0 Summary of Gaseous Radioactive Effluents

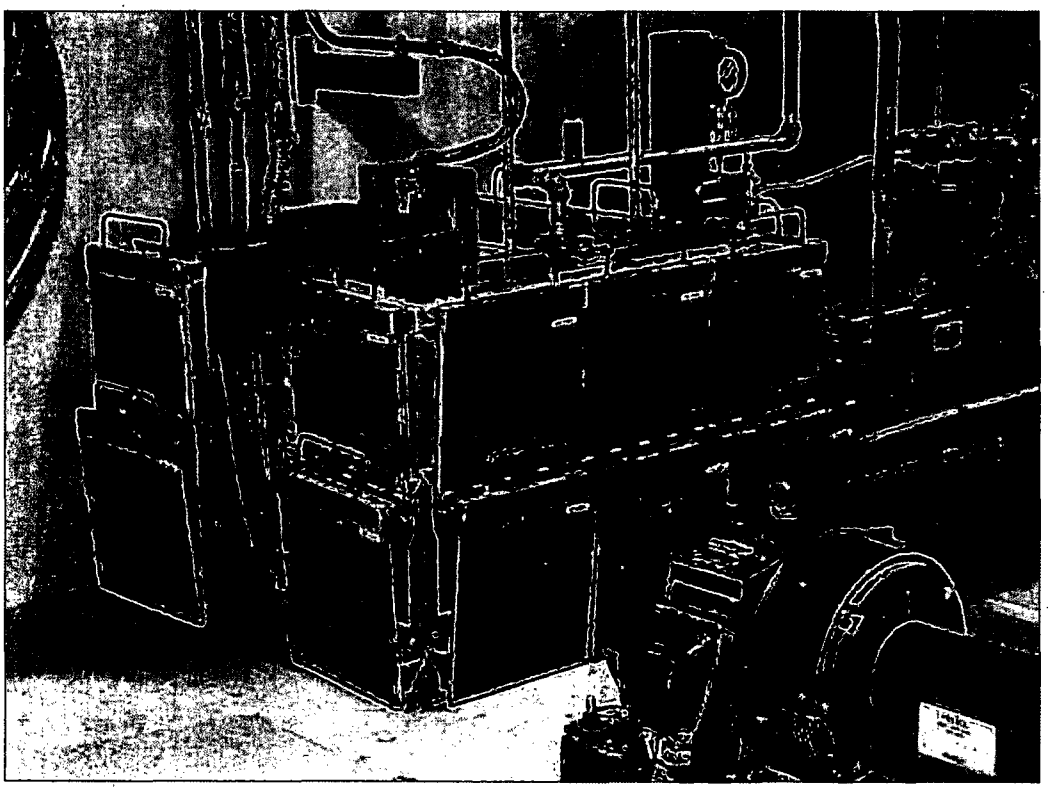
The quantity of radioactive material released in gaseous effluents during the year is summarized in Tables 1A and 1B. During 2007, all gaseous effluents were considered as ground level releases.



Gaseous effluents from the plant are continuously monitored. Shown is instrumentation to provide on-line and grab sampling for iodine, particulates and noble gas.

4.0 Summary of Liquid Radioactive Effluents

The quantity of radioactive material released in liquid effluents during the year is summarized in Tables 2A and 2B. During 2007, there was no continuous release of liquid effluent from the plant.



Liquid effluent releases from the plant are continuously monitored. Shown is a liquid radiation monitor shielded by lead to increase its sensitivity for sampling discharged water.

5.0 Solid Wastes

The quantities of radioactive material released in shipments of solid waste for burial and irradiated fuel transported from the site during the year are summarized in Table 3. The total quantity and radioactivity reported in Table 3 for each waste type was for waste buried and includes wastes buried by waste reprocessors after volume reduction. The activity and fractional abundance of each nuclide was determined for each waste type based upon radiochemical analysis by an independent laboratory. The curie concentration of each nuclide listed in Table 3 was determined as the product of the fractional abundance and the total curies shipped. Those nuclides which comprise at least 1% of the total activity for a particular waste type are presented in Table 3.

6.0 Related Information

6.1 Unplanned Releases

Unplanned releases are:

1) Inadvertent or accidental releases of radioactive material.
2) Releases of radioactive material via normal pathways without a release permit, proper authorization, or proper sampling and analysis.
3) Releases which are conducted in such a manner as to result in significant deviation from the requirements of the release permit.

There were no unplanned releases from Callaway Plant during 2007. Thus, there were no notifications of any unplanned liquid or gaseous radioactive releases from the site to be reported in accordance with plant technical specifications 5.6.3 pursuant to the reporting requirements of 10CFR50.36a, 10 CFR50.72 or 10 CFR 20.2203.

Reporting on groundwater protection program initiatives is outside the scope of this report. Refer to the 2007 Callaway Radiological Environmental Report for details in this regard.

6.2 Changes to the Offsite Dose Calculation Manual

Changes were made to the Callaway Offsite Dose Calculation Manual (ODCM - Callaway plant procedure APA-ZZ-01003) in 2007. A complete copy of the revised manual and record of revisions number 17 and 18 are submitted as part of this report.

The ODCM includes changes that were made to Final Safety Analysis Report - Standard Plant (FSAR - SP) Chapter 16.11, Offsite Dose Calculation Manual - Radioactive Effluent Controls (ODCM-RECs) in 2007.

FSAR-SP Change Notice 05-002 revised the applicable FSAR sections for the upgrade/ replacement of the site meteorological towers. In October 2007, the permanent 90 meter tower was destacked to become a 60 meter meteorological tower. Also, the secondary meteorological equipment located at the Emergency Operations Facility (EOF) was removed. Section 7.0 provides additional information on these changes.

6.3 Major Changes to Radwaste Systems

The major change to Radwaste systems in 2007 was the reinstallation of bladders to the Recycle Holdup Tanks (RHUT). Tank bladders improve the ability to capture gases in the RHUT and divert them to the Gas Decay Tanks.

Recycle Hold Up Tank bladders were replaced for both trains A and B as per plant modification MP06-0102 to meet the original design. This reduces the overall amount of fission gas released into the Radwaste building vent.

The modification also included installation of a nitrogen cover gas system to prevent the diaphragm from sticking to the sides of the tank. Nitrogen injection just before draining the tank allows the diaphragm to fall as the water level drops and extends the service life of the bladder.

The modification also includes installation of a LEXAN cover at the upper manway to allow viewing and camera inspection of the tank diaphragm. Preventative maintenance can be conducted without having to open the cover which supports minimization of personnel radiation exposure.

6.4 Land Use Census Changes

No changes were identified in 2007 that required a change to the location of the nearest resident yielding the highest calculated dose commitment.

6.5 Inoperability of Effluent Monitoring Instrumentation

During 2007 all effluent monitoring instrumentation was OPERABLE within the limits specified in Radioactive Effluent Controls FSAR Chapter 16 sections 16.11.1.3 and 16.11.2.4.

Containment Unit Vent radiation monitor instrumentation channels are INOPERABLE for short periods for scheduled planned Channel Operational Tests to satisfy FSAR Surveillance Requirements.

All periods of planned and unplanned inoperability are recorded in the Callaway Equipment Out of Service Log (EOSL) Record.

On 07/19/07 at 0400 the Unit Vent monitor GT-RE-0021B failed a weekly source check for the low range gas channel. A photomultiplier tube was replaced and GTRE0021B was operable at 1903 on 07/20/07.

On 08/3/07 GTRE-0021B was placed out of service at 0138 for failed check source test of the low range gas channel. A scintillation crystal detector was replaced and GTRE0021B was operable on 08/25/07 at 1422.

On 9/20/07 the Radwaste Unit Vent radiation monitor gas detector GHRE0010A was out of service at 404 to support the repair and replacement of the mid-high range timer. Timer repair was completed restoring operability on 09/20/07 at 1400.

6.6 Instances of Liquid Holdup Tanks or Waste Gas Decay Tanks Exceeding Technical Specification Limits

All liquid tanks and waste gas decay tanks were within limits specified in Radioactive Effluent Controls 16.11.1 and 16.11.2 during 2007.

7.0 Meteorological Data

System Configuration

The Callaway on-site meteorological monitoring program began 2007 using the standard measurement configuration. Namely, a permanent primary meteorological tower with measurements at 90 meter, 60m and 10m and a secondary 10m tower measuring temperature and winds located approximately 1.5 miles away.

To overcome the challenges and costs faced with running and maintaining aged or obsolete equipment and sensors, a complete system upgrade was performed in the Fall of 2007.

Consequently, Callaway completed 2007 meterological measurements with a reconfigured system consisting of a single 60m tower. This tower (at the same location of the previous primary tower) now provides redundant measurements at 60m and 10m in addition to ground measurements. A solar radiation sensor was also added to the system to aid in the data validation. Additional details of the system changes are provided below.

Upgrade of the Primary Meteorological Tower and Retirement of Secondary Meteorological Tower

In Fall 2007, the primary 90m meterological tower was reduced in height to become a 60 meter tower. Also, the secondary 10m meteorological tower and equipment were retired and removed.

The upgrade was implemented in two stages. First, the tower height was reduced below 200 feet to eliminate the aviation beacon, and instrument elevators were installed so the instruments can be lowered to the ground for repairs and calibrations.

The second stage installed a new Met One meterological system consisting of redundant 10 and 60 meter instruments mounted on the two elevators. The 90 meter instrumentation was eliminated. Inside the tower shelter a digital data logger and computer replaces the analog electronics and obsolete chart recorders. The meteorological data is now transmitted via wireless LAN connection. Backup power is provided by both an uninterruptible power supply and the existing propane generator.

The new system continues to ensure that meteorological data are available for estimating potential radiation doses to the public. This system is consistent with the latest revison of Regulatory Guide 1.23, "Meteorological Monitoring Programs For Nuclear Power Plants", March 2007. The new system technology provides for Callaway's future meteorological needs providing greater reliability, reduced maintenance and enhanced quality data.

Data Review and Validation

The on-site meteorological data for 2007 are presented in Table 4. The data are presented as Cumulative Joint Frequency Distributions of wind speed and wind direction by atmospheric stability class for the 10 and 60 meter tower elevations.

Valid 10m data recovery rates for 2007exceeded 90% for all parameters despite the downtime for the system reconfiguration and upgrade and several ice storms. The 60m wind data recovery rates were reduced to about 88% primarily due to more extended periods of icing at upper tower levels.

Data operations from the historical 90m tower were terminated at 0830 on September 24th to begin dismantling the upper tower sections. Acceptable new system data began on some channels on October 24th after verification of calibration results. Secondary meteorological tower data were used during this interim period.

The meteorological sensors and data outputs are checked remotely each day by a contract meteorologist.

After reconfiguration of the meteorological system in the Fall, all routines for data validation were revised and updated to accomodate the new data configuration. In addition, special analyses were performed to determine any detrimental effects on the wind flow data from the physical structures (primary tower lattice and elevator hardware). The tower shadow zone was determined for each wind sensor point when the direction of sampling for that channel was within the tower shadow for that sensor. The removal of tower affected wind data was completed.

Instrument Failures

When physical instrument failures occur they are typically quickly addressed and repaired and returned to service. However, exceptions existed due to some obsolete instrument issues along with the impending removal of the upper portion of the 90m tower. Notable exceptions were as follows.

90m - 10m delta-T Failure

The 90m - 10m delta T measurements failed on April 13th. With the impending modification to drop the 90m tower height down to 60m, the instruments were not repaired. The data remained invalid through the remainder of the year and the 90m comparison is no longer used.

Rain Gauge Failure

Precipitation data were not available for almost 25% of the year. The instrument failed early in the year so no data were recorded from mid-January through early April when a new precipation gauge was installed. In addition, data were not available during the tower upgrade transition period.

Precipitation Interference

Moisture related interference in temperature and delta-temperature measurements were sometimes observed during periods of either precipitation or near saturated conditions (e.g. fog). Data were edited whenever these effects were observable.

New System Tower Effects

Tower shadow effects on wind speed data have been addressed. Presently, the analysis program assures that only unaffected data are incorporated into the hourly data base for modeling use. This is done by identifying 15 minute periods with reduced wind speeds and analyzing data between the four new wind speed sensors.

Severe Winter Storms

The meterological system was significantly affected by three ice storms during 2007. After final QC review and assessment of the data, the following wind periods were invalidated:

Ice Event #1 - January 2007

Freezing rain caused the Primary Met Tower and Secondary Met Tower 10m, 60m and 90m wind speeds to be invalid for the period starting on January 13th 0630 through January 19th 1330.

Ice Event #2 - February 2007

Icing caused the Primary Met Tower 10m, 60m, 90m wind speed data to be invalid from February 13th 0030 through February 15 1300.

Ice Event #3 - December 2007

Ice caused redundant Met One 10m wind data to be invalid from December 9th through December 14 0945 and the 60m wind data was invalid from December 9th 0315 through December 17th1530 CST.

8.0 Assessment of Doses

Assessment of doses to the maximum exposed individual from gaseous and liquid effluents released was performed in accordance with the ODCM as described in the following sections. For all liquid and airborne effluents released from the Callaway Plant during 2007, the annual dose to the maximum exposed individual was less than 1% of the Radioactive Effluent Control limits presented in Section 2.1 of this report.

8.1 Dose at the Site Boundary from Gaseous Effluents

The dose at the Site Boundary was due to plume exposure from noble gases, ground plane exposure, and inhalation. It was conservatively assumed that a hypothetical maximum exposed individual was present at the Site Boundary location with the most limiting atmospheric dispersion (based on actual meteorological conditions for the year). Dose was conservatively calculated using a child as the critical age group.

The dose from gaseous effluents at the Site Boundary for 2007 is presented in Table 5.

8.2 Dose to the Member of the Public

The Member of the Public is considered to be a real individual, not occupationally associated with the plant, who uses portions of the plant site for recreational or other purposes not associated with plant operation. This individual's utilization of areas both inside and outside the Site Boundvary was characterized for this calculation and is described in the ODCM.

To evaluate total dose from the Uranium Fuel Cycle to any Member of the Public, the critical Member of the Public within the Site Boundary, and the Nearest Resident were each evaluated.

Dose At The Nearest Resident From Gaseous Effluent

The dose to the Nearest Resident was due to plume exposure from noble gases, ground plane exposure, and inhalation and ingestion. Dose was calculated at the nearest actual residence with the most limiting atmospheric dispersion (based on actual meteorological conditions for the year). It was conservatively assumed that each ingestion pathway (meat, milk, and vegetation) existed at this location. Dose was conservatively calculated assuming the child as the critical age group. Dose from activities within the Site Boundary was negligible and not included in this calculation.

The doses to the Nearest Resident for 2007 are presented in Table 5.

Dose To The Member Of The Public From Activities Within The Site Boundary

Based on the land use within the Site Boundary, the Member of the Public with the highest dose was a farmer. Dose from farming activities within the Site Boundary was due to direct radiation exposure, plume exposure from noble gases, ground plane exposure, and inhalation. The current tenant farmer estimates spending 1100 hours per year working within the Site Boundary area. Dose was calculated using the adult as the critical age group.

Dose to the Member of the Public for 2007 from activities within the Site Boundary is presented in Table 6.

8.3 Total Dose Due to the Uranium Fuel Cycle

Since there are no other Uranium Fuel Cycle facilities within 8 kilometers of the Callaway Plant, the total dose to the most likely exposed Member of the Public resulted from direct radiation exposure and radioactive effluents from the Callaway Plant itself.

The total dose to the Member of the Public (Table 7) was the sum of the dose due to activities within the Site Boundary (Table 6) and the dose due to gaseous effluents at his residence. It was conservatively assumed that each food ingestion pathway exists at his residence and that the adult is the critical age group.

The total dose from the Uranium Fuel Cycle is presented in Table 7.

8.4 Dose Due to Liquid Effluents

Dose due to liquid effluents includes contributions from the maximum exposed individual's consumption of fish and recreational activities. An adult was considered the maximum exposed individual in this assessment.

It is conservatively assumed that the hypothetical maximum exposed individual obtained his entire annual fish intake from near the plant discharge. The total dose to members of the public due to liquid effluents is presented in Table 8.

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES
ALL AIRBORNE EFFLUENTS
QUARTERS 1 AND 2, 2007

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CURIES	9.73E-01	6.20E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.25E-01	7.88E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	0.00E+00	4.34E-06	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	5.52E-07	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
C. PARTICULATES				
1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	2.40E-07	2.47E-05	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	3.09E-08	3.14E-06	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	2.79E-07	2.21E-07	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	9.92E+00	1.47E+01	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.28E+00	1.88E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1A

SEMIANNUAL SUMMATION OF GASEOUS RELEASES
ALL AIRBORNE EFFLUENTS
QUARTERS 3 AND 4, 2007

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
A. FISSION AND ACTIVATION GASES				
1. TOTAL RELEASE	CURIES	5.09E+00	7.57E+00	20
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	6.41E-01	9.53E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
B. RADIOIODINES				
1. TOTAL IODINE-131	CURIES	0.00E+00	0.00E+00	23
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	0.00E+00	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
C. PARTICULATES				
1. PARTICULATE (HALF-LIVES > 8 DAYS)	CURIES	1.79E-07	0.00E+00	30
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	2.25E-08	0.00E+00	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	
4. GROSS ALPHA RADIOACTIVITY	CURIES	2.54E-07	1.88E-07	
D. TRITIUM				
1. TOTAL RELEASE	CURIES	9.34E+00	7.23E+00	14
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/SEC	1.18E+00	9.09E-01	
3. PERCENT OF TECH SPEC LIMIT	%	N/A	N/A	

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES
GROUND LEVEL RELEASES
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 1 AND 2, 2007

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNITS	FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1 FISSION GASES					
AR-41	CURIES	0.00E+00	0.00E+00	7.31E-02	2.00E-01
XE-133	CURIES	6.77E-01	5.54E+00	2.55E-04	1.67E-02
XE-135	CURIES	2.23E-01	3.13E-01	0.00E+00	4.81E-04
XE-133M	CURIES	0.00E+00	1.32E-01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	9.00E-01	5.98E+00	7.33E-02	2.17E-01
2 IODINES					
I-132	CURIES	0.00E+00	1.64E-05	0.00E+00	4.99E-05
I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	4.34E-06
TOTAL FOR PERIOD	CURIES	0.00E+00	1.64E-05	0.00E+00	5.42E-05
3 PARTICULATES					
SB-125	CURIES	2.37E-07	0.00E+00	0.00E+00	0.00E+00
CD-109	CURIES	0.00E+00	0.00E+00	3.56E-09	0.00E+00
CE-141	CURIES	0.00E+00	0.00E+00	0.00E+00	4.70E-08
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	4.62E-06
CO-60	CURIES	0.00E+00	0.00E+00	0.00E+00	1.36E-05
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	4.96E-06
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	9.78E-07
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	2.68E-07
TC-101	CURIES	0.00E+00	0.00E+00	0.00E+00	1.90E-07
SR-89	CURIES	0.00E+00	4.74E-09	0.00E+00	0.00E+00
ALPHA	CURIES	2.79E-07	2.21E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.16E-07	2.25E-07	3.56E-09	2.47E-05
4 TRITIUM					
H-3	CURIES	7.87E+00	1.18E+01	2.05E+00	2.92E+00

TABLE 1B

SEMIANNUAL AIRBORNE CONTINUOUS AND BATCH RELEASES
GROUND LEVEL RELEASES
FISSION GASES, IODINES, AND PARTICULATES

QUARTERS 3 AND 4, 2007

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNITS	THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1 FISSION GASES					
AR-41	CURIES	0.00E+00	0.00E+00	3.65E-02	5.15E-02
XE-133	CURIES	4.91E+00	5.74E+00	4.71E-02	5.46E-02
XE-135	CURIES	5.29E-02	2.81E-01	4.41E-04	6.43E-04
XE-133M	CURIES	4.12E-02	0.00E+00	0.00E+00	0.00E+00
KR-85	CURIES	0.00E+00	1.44E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.01E+00	7.46E+00	8.41E-02	1.07E-01
2 IODINES					
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3 PARTICULATES					
SB-125	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CD-109	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TC-101	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	CURIES	1.79E-07	0.00E+00	0.00E+00	0.00E+00
ALPHA	CURIES	2.54E-07	1.88E-07	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.33E-07	1.88E-07	0.00E+00	0.00E+00
4 TRITIUM					
H-3	CURIES	8.82E+00	6.03E+00	5.24E-01	1.19E+00

TABLE 2A

SEMIANNUAL SUMMATION OF LIQUID RELEASES
ALL LIQUID EFFLUENTS
QUARTERS 1 AND 2, 2007

TYPE OF EFFLUENT	UNITS	FIRST QUARTER	SECOND QUARTER	EST TOTAL ERROR % (a)
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE [NOT INCLUDING TRITIUM, GASES, ALPHA]	CURIES	1.36E-02	2.14E-02	20
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	3.88E-08	6.10E-08	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	6.59E+02	4.99E+01	14
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.88E-03	1.43E-04	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	6.79E-03	2.20E-03	27
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.94E-08	6.29E-09	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	8.38E-05	3.48E-04	29
E. WASTE VOLUME RELEASED (PRE-DILUTION)	GAL	3.24E+06	3.06E+06	10
F. VOLUME OF DILUTION WATER USED	GAL	8.92E+07	8.95E+07	10

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 2A

SEMIANNUAL SUMMATION OF LIQUID RELEASES
ALL LIQUID EFFLUENTS

QUARTERS 3 AND 4, 2007

TYPE OF EFFLUENT	UNITS	THIRD QUARTER	FOURTH QUARTER	EST TOTAL ERROR % (a)
A. FISSION AND ACTIVATION PRODUCTS				
1. TOTAL RELEASE [NOT INCLUDING TRITIUM, GASES, ALPHA]	CURIES	3.90E-03	2.34E-03	20
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	3.11E-08	2.25E-08	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
B. TRITIUM				
1. TOTAL RELEASE	CURIES	1.19E+01	5.03E+01	14
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	9.49E-05	4.85E-04	
3. PERCENT OF APPLICABLE LIMIT	%	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES				
1. TOTAL RELEASE	CURIES	1.88E-05	2.85E-04	27
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ML	1.50E-10	2.74E-09	
D. GROSS ALPHA RADIOACTIVITY				
1. TOTAL RELEASE	CURIES	8.08-7E-05	1.62E-04	29
E. WASTE VOLUME RELEASED (PRE-DILUTION)	GAL	1.11E+06	9.80E+05	10
F. VOLUME OF DILUTION WATER USED	GAL	3.20E+07	2.65E+07	10

(a) Safety Analysis Calculation 87-063-00, January 6, 1988

TABLE 2B

SEMIANNUAL LIQUID CONTINUOUS AND BATCH RELEASES
TOTALS FOR EACH NUCLIDE RELEASED

QUARTERS 1 AND 2, 2007

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNITS	FIRST QUARTER	SECOND QUARTER	FIRST QUARTER	SECOND QUARTER
1. ALL NUCLIDES					
CO-60	CURIES	0.00E+00	0.00E+00	1.10E-03	3.66E-04
H-3	CURIES	0.00E+00	0.00E+00	6.59E+02	4.99E+01
NI-63	CURIES	0.00E+00	0.00E+00	8.40E-03	1.39E-02
ALPHA	CURIES	0.00E+00	0.00E+00	8.38E-05	3.48E-04
CO-57	CURIES	0.00E+00	0.00E+00	1.76E-05	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	5.78E-04	3.19E-03
CS-134	CURIES	0.00E+00	0.00E+00	1.04E-03	5.28E-04
CS-137	CURIES	0.00E+00	0.00E+00	1.92E-03	9.94E-04
MN-54	CURIES	0.00E+00	0.00E+00	5.51E-06	3.88E-06
SB-125	CURIES	0.00E+00	0.00E+00	4.74E-04	2.04E-03
XE-133	CURIES	0.00E+00	0.00E+00	6.77E-03	2.20E-03
SB-122	CURIES	0.00E+00	0.00E+00	1.38E-05	2.69E-06
CR-51	CURIES	0.00E+00	0.00E+00	3.42E-05	2.85E-04
XE-133M	CURIES	0.00E+00	0.00E+00	1.70E-05	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	8.45E-06	0.00E+00
RU-103	CURIES	0.00E+00	0.00E+00	1.87E-06	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	1.26E-05
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	2.58E-05
SB-124	CURIES	0.00E+00	0.00E+00	0.00E+00	2.60E-05
TOTALS FOR PERIOD	CURIES	0.00E+00	0.00E+00	6.59E+02	5.00E+01

TABLE 2B

SEMIANNUAL LIQUID CONTINUOUS AND BATCH RELEASES
TOTALS FOR EACH NUCLIDE RELEASED

QUARTERS 3 AND 4, 2007

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNITS	THIRD QUARTER	FOURTH QUARTER	THIRD QUARTER	FOURTH QUARTER
1. ALL NUCLIDES					
CO-60	CURIES	0.00E+00	0.00E+00	5.88E-05	1.11E-04
H-3	CURIES	0.00E+00	0.00E+00	1.19E+01	5.03E+01
NI-63	CURIES	0.00E+00	0.00E+00	3.12E-03	2.97E-04
ALPHA	CURIES	0.00E+00	0.00E+00	8.07E-05	1.62E-04
CO-57	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	1.90E-04	1.23E-04
CS-134	CURIES	0.00E+00	0.00E+00	1.55E-04	3.07E-04
CS-137	CURIES	0.00E+00	0.00E+00	3.42E-04	7.13E-04
MN-54	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SB-125	CURIES	0.00E+00	0.00E+00	0.00E+00	7.87E-04
XE-133	CURIES	0.00E+00	0.00E+00	1.88E-05	2.85E-04
SB-122	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	2.25E-05	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SB-124	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	CURIES	0.00E+00	0.00E+00	8.28E-06	0.00E+00
SN-113	CURIES	0.00E+00	0.00E+00	3.04E-06	0.00E+00
TOTALS FOR PERIOD	CURIES	0.00E+00	0.00E+00	1.19E+01	5.03E+01

Table 3 Solid Waste & Irradiated Fuel Shipments 2007

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (DOES NOT INCLUDE IRRADIATED FUEL)

1. TYPE OF WASTE		UNITS	PERIOD JAN - JUN	PERIOD JUL - DEC	EST. TOTAL ERROR (%)
a.	Spent resins, filter sludges, evaporator bottoms, etc.	m^3	5.04	0	
		Ci	13.5	0	±25%
b.	Dry compressible waste, contaminated equipment, etc.	m^3	407	266	
		Ci	3.75E-1	2.61E-1	±25%
c.	Irradiated components, control rods, etc.	m^3	0	0	
		Ci	0	0	±25%
d.	Other	m^3	0	0	
		Ci	0	0	±25%

2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION (by Type of Waste)

Nuclide	% Abundance	PERIOD JAN - JUN Curies	% Abundance	PERIOD JUL - DEC Curies
a. Fe-55	9.02	1.01	38.3	45.9
Co-58	0.37	0.41	18.5	22.2
Ni-63	16.2	1.81	10.8	12.9
Co-60	7.5	0.84	15.1	18.1
Cs-137	20.6	2.31	1.13	1.36
Cs-134	10.9	1.23	N/A	N/A
Mn-54	0.20	0.21	1.5	1.80
b. Fe-55	42.3	1.58E-1	34.1	8.90E-2
Co-58	8.6	3.20E-2	3.5	9.18E-3
Cs-137	7.5	2.80E-2	10.8	2.80E-2
Ni-63	18.8	7.00E-2	25.5	6.60E-2
Co-60	10.9	4.10E-2	14.7	3.84E-2
Nb-95	4.1	1.54E-2	2.8	7.24E-3
Mn-54	1.6	6.00E-3	1.3	3.36E-3
Cs-134	2.5	9.50E-3	3.7	9.58E-3
Zr-95	2.4	9.00E-3	1.8	4.62E-3
c. Fe-55	N/A	N/A	N/A	N/A
Co-60	N/A	N/A	N/A	N/A
Ni-63	N/A	N/A	N/A	N/A
d. Mn-54	N/A	N/A	N/A	N/A
Fe-55	N/A	N/A	N/A	N/A
Co-58	N/A	N/A	N/A	N/A
Co-60	N/A	N/A	N/A	N/A
Ni-63	N/A	N/A	N/A	N/A
Zr-95	N/A	N/A	N/A	N/A
Nb-95	N/A	N/A	N/A	N/A
Cs-134	N/A	N/A	N/A	N/A
Cs-137	N/A	N/A	N/A	N/A

Table 3 Solid Waste & Irradiated Fuel Shipments 2007

3. SOLID WASTE DISPOSITION:

Number of Shipments	Mode of Transport	Destination	Class of Solid Waste Shipped	Type of Container
24*	Truck	Energy Solutions	A	Drum/Boxes
2*	Cask	Studsvik	A	Poly Liner
1*	Cask	Studsvik	B	Drums
1*	Truck	Studsvik	A	Drum/Boxes

* Sent to waste processors for volume reduction before burial.

4. SOLIDIFICATION AGENT:

None used.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

Number of Shipments	Mode of Transportation	Destination
0		

TABLE 4

Meteorological Data
Averages Using Hourly Averaged Data

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

		UNITS	VALUES	% GOOD DATA
Stability Class		A - G	E	92%
Total Precipitation		CM.	5.70E+01	77%
10 Meter Level:	Wind Speed	Meter/Sec	3.00E+00	97%
	Wind Direction	Degrees	1.99E+02	97%
	Wind Direction Variability	Degrees	1.44E+01	97%
	Reference Temperature	Degrees C	1.35E+01	100%
	Dewpoint	Degrees C	6.52E+00	92%
60 Meter Level:	Wind Speed	Meter/Sec	5.17E+00	88%
	Wind Direction	Degrees	2.12E+02	88%
	Wind Direction Variability	Degrees	9.04E+00	88%
	Dewpoint	Degrees C	NONE	0%
	Temperature Difference 60 - 10	Degrees C	6.39E-02	92%

TABLE 4

Meteorological Data

Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: A

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	1	2	0	0	0	4
NNE	2	3	7	0	0	0	12
NE	2	1	0	0	0	0	3
ENE	5	3	4	0	0	0	12
E	0	2	0	0	0	0	2
ESE	3	4	3	3	0	0	13
SE	0	10	24	0	0	0	34
SSE	0	12	13	3	2	0	30
S	0	31	35	5	0	0	71
SSW	1	29	44	5	0	0	79
SW	0	13	20	2	0	0	35
WSW	3	8	7	8	1	0	27
W	1	13	36	2	1	0	53
WNW	2	14	34	4	0	0	54
NW	3	6	18	7	0	0	34
NNW	2	3	7	0	0	0	12
TOT	25	153	254	39	4	0	475

Hours of Calm Data: 1 Hours of Invalid Data: 4

TABLE 4

Meteorological Data

Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: B

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	2	5	13	2	0	0	22
NNE	2	3	10	1	0	0	16
NE	0	6	1	0	0	0	7
ENE	0	10	4	0	0	0	14
E	0	3	2	0	0	0	5
ESE	0	4	13	4	0	0	21
SE	2	20	18	1	0	0	41
SSE	1	21	12	4	0	0	38
S	2	30	27	4	0	0	63
SSW	0	35	36	4	0	0	75
SW	1	17	12	3	0	0	33
WSW	1	16	8	4	0	0	29
W	1	11	11	5	0	0	28
WNW	1	15	22	0	0	0	38
NW	0	7	22	2	0	0	31
NNW	0	8	14	2	0	0	24
TOT	13	211	225	36	0	0	485

Hours of Calm Data: 1 Hours of Invalid Data: 10

TABLE 4

Meteorological Data

Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: C

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	1	10	9	2	0	0	22
NNE	0	10	10	2	0	0	22
NE	0	11	1	2	0	0	14
ENE	1	23	3	0	0	0	27
E	1	13	0	0	0	0	14
ESE	2	13	11	6	0	0	32
SE	1	34	28	2	0	0	65
SSE	1	27	18	1	0	0	47
S	5	32	25	9	0	0	71
SSW	6	29	38	6	0	0	79
SW	6	26	18	1	0	0	51
WSW	3	10	6	2	1	0	22
W	1	21	17	5	0	0	44
WNW	3	15	16	0	0	0	34
NW	1	6	16	5	0	0	28
NNW	1	15	14	2	0	0	32
TOT	33	295	230	45	1	0	604

Hours of Calm Data: 0 Hours of Invalid Data: 7

TABLE 4
Meteorological Data
Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: D

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	19	103	84	10	0	0	216
NNE	22	96	32	4	0	0	154
NE	23	98	34	2	0	0	157
ENE	28	81	19	0	0	0	128
E	22	85	40	1	0	0	148
ESE	15	90	74	10	0	0	189
SE	33	136	56	4	0	0	229
SSE	20	146	70	12	2	0	250
S	23	100	65	35	0	0	223
SSW	18	91	75	24	0	0	208
SW	31	80	55	10	1	0	177
WSW	15	69	57	24	2	0	167
W	25	58	55	33	1	0	172
WNW	18	79	94	16	0	0	207
NW	17	95	96	25	0	0	233
NNW	12	76	87	14	0	0	189
TOT	341	1483	993	224	6	0	3047

Hours of Calm Data: 6 Hours of Invalid Data: 201

TABLE 4

Meteorological Data

Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: E

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	18	54	19	2	0	0	93
NNE	28	37	1	0	0	0	66
NE	29	37	1	0	0	0	67
ENE	23	42	1	0	0	0	66
E	27	50	13	0	0	0	90
ESE	38	71	22	0	0	0	131
SE	23	171	46	1	0	0	241
SSE	30	158	73	17	0	0	278
S	27	139	100	25	0	0	291
SSW	21	95	39	6	0	0	161
SW	30	84	20	2	0	0	136
WSW	30	44	24	2	0	0	100
W	44	100	13	0	0	0	157
WNW	36	68	11	1	0	0	116
NW	23	60	16	1	0	0	100
NNW	23	69	16	2	0	0	110
TOT	450	1279	415	59	0	0	2203

Hours of Calm Data: 10 Hours of Invalid Data: 45

TABLE 4

Meteorological Data

Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: F

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	22	26	0	0	0	0	48
NNE	26	13	0	0	0	0	39
NE	36	6	0	0	0	0	42
ENE	21	8	0	0	0	0	29
E	22	4	0	0	0	0	26
ESE	42	12	0	0	0	0	54
SE	45	94	8	0	0	0	147
SSE	34	130	15	0	0	0	179
S	36	71	3	0	0	0	110
SSW	35	64	2	0	0	0	101
SW	23	61	0	0	0	0	84
WSW	15	25	0	0	0	0	40
W	21	18	0	0	0	0	39
WNW	41	10	0	0	0	0	51
NW	32	18	1	0	0	0	51
NNW	19	31	1	0	0	0	51
TOT	470	591	30	0	0	0	1091

Hours of Calm Data: 32 Hours of Invalid Data: 14

TABLE 4

Meteorological Data

Totals of Hours at Each Wind Speed & Direction

1-JAN-2007 00:00:00.00 to 31-DEC-2007 23:59:59.00

Stability Class: G

	Wind Speed at 10.00 Meter Level (MPH)						
	1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	32	3	0	0	0	0	35
NNE	34	2	0	0	0	0	36
NE	19	1	0	0	0	0	20
ENE	13	1	0	0	0	0	14
E	12	0	0	0	0	0	12
ESE	7	2	0	0	0	0	9
SE	18	14	1	0	0	0	33
SSE	38	72	5	0	0	0	115
S	25	17	0	0	0	0	42
SSW	26	6	0	0	0	0	32
SW	11	17	0	0	0	0	28
WSW	6	1	0	0	0	0	7
W	6	0	0	0	0	0	6
WNW	12	2	0	0	0	0	14
NW	11	4	0	0	0	0	15
NNW	30	13	0	0	0	0	43
TOT	300	155	6	0	0	0	461

Hours of Calm Data: 56 Hours of Invalid Data: 0 Hours of Good Data: 8472 = 96.7% of Total Hours

TABLE 5

DOSE AT THE SITE BOUNDARY AND TO THE NEAREST RESIDENT FROM GASEOUS EFFLUENTS

		SITE BOUNDARY		NEAREST RESIDENT	
		LOCATION: 2.20 km NNW		LOCATION: 2.90 km NNW	
		AGE GROUP: CHILD		AGE GROUP: CHILD	
ORGAN	UNITS	DOSE	% LIMIT(a)	DOSE	% LIMIT(b)
1. GAMMA AIR DOSE *	MRAD	3.49E-04	0.00	2.31E-04	N/A
2. BETA AIR DOSE *	MRAD	7.62E-04	0.00	5.04E-04	N/A
3. WHOLE BODY ***	MREM	3.49E-04	N/A	2.30E-04	N/A
4. SKIN ***	MREM	7.35E-04	N/A	4.85E-04	N/A
5. BONE **	MREM	3.95E-05	N/A	2.73E-05	0.00
6. LIVER **	MREM	1.28E-03	N/A	7.27E-03	0.05
7. TOTAL BODY **	MREM	1.28E-03	N/A	7.27E-03	0.05
8. THYROID **	MREM	1.28E-03	N/A	7.65E-03	0.05
9. KIDNEY **	MREM	1.28E-03	N/A	7.27E-03	0.05
10. LUNG **	MREM	1.28E-03	N/A	7.27E-03	0.05
11. GI-LLI **	MREM	1.28E-03	N/A	7.28E-03	0.05

* Dose from Noble Gases only

** Dose from Tritium, Radioiodines, and Particulates only

*** Dose from Noble Gases plus Ground Plane dose

(a) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003) of 10 mrad gamma air dose and 20 mrad beta air dose.

(b) Annual dose limits of Offsite Dose Calculation Manual (APA-ZZ-01003) of 15 mrem to any organ from I-131, I-133, H-3 and particulate radionuclides with halflives greater than 8 days.

TABLE 6

DOSE TO THE MEMBER OF THE PUBLIC FROM ACTIVITIES WITHIN THE SITE BOUNDARY

ORGAN	UNITS	EFFLUENT DOSE WITHIN THE SITE BOUNDARY	DIRECT RADIATION FROM THE UNIT	DIRECT RADIATION FROM OUTSIDE TANKS	RADIATION FROM RAM STORAGE	TOTAL DOSE FOR THE YEAR
1. SKIN	MREM	1.82E-04	N/A	N/A	N/A	1.82E-04
2. BONE	MREM	1.22E-05	8.79E-03	2.32E-03	5.99E-03	1.71E-02
3. LIVER	MREM	4.08E-04	8.79E-03	2.32E-03	5.99E-03	1.75E-02
4. TOTAL BODY	MREM	4.89E-04	8.79E-03	2.32E-03	5.99E-03	1.76E-02
5. THYROID	MREM	4.08E-04	8.79E-03	2.32E-03	5.99E-03	1.75E-02
6. KIDNEY	MREM	4.08E-04	8.79E-03	2.32E-03	5.99E-03	1.75E-02
7. LUNG	MREM	4.08E-04	8.79E-03	2.32E-03	5.99E-03	1.75E-02
8. GI-LLI	MREM	4.08E-04	8.79E-03	2.32E-03	5.99E-03	1.75E-02

TABLE 7

TOTAL DOSE DUE TO THE URANIUM FUEL CYCLE (MEMBER OF THE PUBLIC)

ORGAN	UNITS	DOSE AT THE RESIDENCE LOCATION	DOSE FROM ACTIVITIES WITHIN SITE BOUNDARY	TOTAL DOSE TO THE MEMBER OF THE PUBLIC	% LIMITS *
1. SKIN	MREM	5.39E-04	1.82E-04	7.21E-04	0.00
2. BONE	MREM	2.90E-05	1.71E-02	1.72E-02	0.07
3. LIVER	MREM	5.20E-03	1.75E-02	2.27E-02	0.09
4. TOTAL BODY	MREM	5.44E-03	1.76E-02	2.30E-02	0.09
5. THYROID	MREM	5.34E-03	1.75E-02	2.28E-02	0.02
6. KIDNEY	MREM	5.20E-03	1.75E-02	2.27E-02	0.09
7. LUNG	MREM	5.20E-03	1.75E-02	2.27E-02	0.09
8. GI-LLI	MREM	5.21E-03	1.75E-02	2.27E-02	0.09

- Annual dose limits from 40CFR190.10(a) of 25 mrem whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.

TABLE 8

DOSE DUE TO LIQUID EFFLUENTS
(MEMBER OF THE PUBLIC)

2007

ORGAN	UNITS	DOSE	LIMIT *	% LIMIT
1. BONE	MREM	2.31E-02	10.00	2.31E-01
2. LIVER	MREM	2.96E-02	10.00	2.96E-01
3. TOTAL BODY	MREM	2.16E-02	3.00	7.21E-01
4. THYROID	MREM	1.38E-03	10.00	1.38E-02
5. KIDNEY	MREM	1.06E-02	10.00	1.06E-01
6. LUNG	MREM	4.45E-03	10.00	4.45E-02
7. GI-LLI	MREM	2.42E-03	10.00	2.42E-02

* Annual dose limits of APA-ZZ-01003, Section 9.4.1.1.