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MONTICELLO NUCLEAR GENERATING PLANT

Offsite Radiation Dose Assessment for January 1, - December 31, 2004

An assessment of radiation dose due to releases from the Monticello Nuclear Generating Plant during 2004 was performed in accordance with the Offsite Dose Calculation Manual (ODCM). Computed doses were well below the 40 CFR 190 Standards and 10 CFR Part 50, Appendix I Guidelines.

Offsite dose calculation formulas and meteorological data from the Offsite Dose Calculation Manual were used in making this assessment. Source terms were obtained from the Radioactive Effluent Release Report for 2004.

Offsite Dose from Gaseous Releases (ODCM –08.01 section 2.1.3)

Computed dose due to gaseous releases are reported in Table 1. Critical receptor location and pathways for organ dose are reported in Table 2. Whole body and organ dose due to gaseous releases are a small percentage of Appendix I Guidelines.

Offsite Dose From Liquid Releases (ODCM –08.01 section 2.1.3)

Dose from liquid releases are listed in Table 1. Dose is based on release of Turbine Building Normal Drain Sump water released in the fourth quarter with H-3 activity present. Whole body and organ dose due to liquid releases are a small percentage of Appendix I Guidelines.

Dose to Individuals Due to Their Activities Inside the Site Boundary (ODCM –08.01 section 2.1.3)

Computed dose to the whole body, skin and organ (thyroid), are reported in Table 1. There are several groups of concern, Security Officers training at the rifle range at the old EPA station, Security Officers at the Interim Barrier Fence Gate House and XCEL Energy Company transmission and distribution crews working in the substation. Use of a very conservative assumption of 40 hours/week spent inside the site boundary by these groups would conservatively represent the most exposed individual. The annual whole body, skin and organ dose was computed using plant stack and reactor building vent X/Q and D/Q values for the Security Officers Training trailer located near the old EPA station (a bounding location due to predominant wind direction and nearness to the release points) as input to the GASPAR code. This computed dose was reduced by the factor of 40/168 to account for limited occupancy.

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Dose to the Likely Most Exposed Member of the General Public from Reactor Releases and Other Nearby Uranium Fuel Cycle Sources (ODCM –08.01 section 2.1.4)

There are no other uranium fuel facilities in the vicinity of the Monticello site. The only artificial source of exposure to the general public in addition to the plant effluent releases is from direct radiation of the reactor and the steam turbines.

Environmental TLDs were used to provide data on direct and skyshine radiation dose and the GASPAR code was used to provide data on dose from airborne pathways.

TLD results from the area of the site boundary and the 5 mile ring show no significant differences between these TLD's and the control TLD's.

Therefore, the likely most exposed member of the general public will not receive an annual radiation dose from reactor effluent releases and all other fuel cycle activities in excess of 40 CFR 190 standards of 25 millirem to the whole body, 75 millirem to the thyroid, and 25 millirem to any other organ.

Changes in Land Use and Non Obtainable Milk or Vegetable Samples
(ODCM –08.01 sections 2.1.8 and 2.1.9)

There were no changes in land use resulting in significant increases in calculated doses. The Critical Receptor location changed from the Trefethen residence to the Wise residence due to Mr. Wise planting a garden this year. Milk samples were unavailable at sample location M-28 (Hoglund Farm) from 6/30/04 to 10/20/04 due to the farm being temporarily out of business. Land use census results show that there were no other indicator sample locations to replace this farm. Milk production and sampling has resumed at the Hoglund farm starting 10/18/04. There were no vegetable samples that could not be obtained during this reporting period.

Table 1

Offsite Radiation Dose Assessment - Monticello

PERIOD: January 1, through December 31, 2004

GASEOUS RELEASES	DOSE	10 CFR 50 Appendix I Guidelines
Maximum Site Boundary Gamma Air Dose (mrad/year)	0.013	10
Maximum Site Boundary Beta Air Dose (mrad/year)	0.01	20
Maximum Off-Site Dose to Any Organ (mrem/year)	0.037	15
Maximum Dose to the Likely Most Exposed Member of the General Public (mrem/year)		
Whole Body	0.022	5
Skin	0.037	15
Max Organ (Skin)	0.037	15
LIQUID RELEASES		
Maximum Off-Site Dose (mrem)		
Whole Body	1.94E-10	3
Max Organ (All except bone)	1.94E-10	10
GASEOUS RELEASES	**DOSE**	**40 CFR 190 LIMITS**
Maximum Dose to Individuals due to their Activities Inside the Site Boundary (mrem)		
Whole Body	0.009	25
Skin	0.011	75
Max Other Organ (Thyroid)	0.009	25

Table 2

Offsite Radiation Dose Assessment - Monticello
Supplemental Information

PERIOD: January 1, through December 31, 2004

GASEOUS RELEASES		
Maximum Site Boundary Dose Location (from Reactor Building Vents)		
Sector	SSE	
Distance (miles)	0.40	
Security Training Trailer		
Sector	ESE	
Distance from Plant Stack (miles)	0.3	
Distance from Reactor Building Vents	0.4	
Critical Receptor Location		
Sector	SSW	
Distance from Reactor Building Vents (miles)	0.64	
Pathways	Plume, Ground, Inhalation, Vegetable	
Age Group	CHILD	
Organ	SKIN	
LIQUID RELEASES		
St. Paul Drinking Water Intake Location		
Pathways	Drinking Water	Drinking Water, Fish
Age Group	Infant	Adult
Organ	Whole Body	GI Tract
Dilution Factor (drinking water)	7:1	7:1

Bases for Radiation Dose Statements

Thermoluminescent dosimeters (TLD) are stationed around MNGP to measure the ambient gamma radiation field. Monitoring stations are placed near the site boundary and approximately five (5) miles from the reactor, in locations representing sixteen (16) compass sectors. Other locations are chosen to measure the radiation field at places of special interest such as nearby residences, meeting places and population centers. Control sites are located further than ten (10) miles from the site, in areas that should not be affected by plant operations. The results from the TLD's are reported in the Annual Radiological Environmental Monitoring Report (REMP). The results from this effort indicated no excess dose to offsite areas.

Additionally, NUREG-0543, METHODS FOR DEMONSTRATING LWR COMPLIANCE WITH THE EPA URANIUM FUEL CYCLE STANDARD (40 CFR PART 190) states in section IV, "As long as a nuclear plant site operates at a level below the Appendix I reporting requirements, no extra analysis is required to demonstrate compliance with 40 CFR Part 190". The organ and whole body doses reported in Table 1 are determined using 10 CFR 50 Appendix I methodology. The doses reported are well below the limits of Appendix I.