EMR

NORTHERN STATES POWER COMPANY

MONTICELLO MUCLEAR GENERATING PLANT

OFFSITE RADIATION DOSE ASSESSMENT FOR
January 1 - December 31, 1983

An assessment of radiation dose due to releases from the Monticello Nuclear Generating Plant during 1983 was performed in accordance with the Technical Specifications. Computed doses were well below the 40 CFR Part 190 and 10 CFR Part 50, Appendix I standards and guidelines.

Offsite dose calculational formulas and meteorological data were used from the Offsite Dose Calculation Manual in making this assessment. Source terms were obtained from the two Effluent and Waste Disposal Semi-annual reports prepared for NRC review during the year.

Offsite Doses from Gaseous Releases

Computed doses due to gaseous releases are reported in Table 1. Critical receptor location and pathways for organ dose are reported in Table 2. Doses, both whole body and organ, are a small percentage of Appendix I guidelines.

Offsite Doses from Liquid Releases

There were no liquid releases made from the Monticello Plant during the 1983 calendar year.

Doses to Individuals Due to Activities Inside the Site Boundary

Occasional sportsmen will enter the Monticello site for recreational activities. In addition, an Environmental Protection Agency Field Station is located at the Monticello site (see Figure 3.8.1 or Figure 3.8.2 in the Monticello Technical Specifications). Workers at this field station, spending an average of 40 hours/week, are the most exposed individuals. Whole body doses to these individuals have been computed using stack and vent X/Q values at the field station location. Annual computed doses were reduced by the factor 40/168 to account for the limited occupancy for workers at this location. Organ doses to workers at the EPA field station due to gaseous releases have been computed for the inhalation pathway (no other pathways exists). Doses to workers at the EPA field station due to liquid releases are not expected to be higher than those computed for individuals beyond the site boundary. Doses at the EPA field station are reported in Table 1.

Doses to Most Exposed Member of the General Public from Reactor Releases and Other Nearby Uranium Fuel Cycle Sources

There are no uranium fuel cycle facilities in the vicinity of the Monticello site.

The only other source of exposure to the general public in addition to the plant gaseous and liquid effluents is from direct radiation. Calculations performed

in the past have shown this source to be negligible. An array of TLD monitoring locations at the site boundary has consistently indicated that plant operation in recent years has had no effect on ambient gamma radiation.

Therefore, the most exposed member of the general public will not receive a radiation dose from reactor releases and all other fuel cycle activities in excess of the sum of the liquid and gaseous whole body and organ doses reported in Table 1 for the site boundary and critical receptor, respectively. These doses are well within the 40 CFR Part 190 standards of 25 mrem to the whole body or any organ (except the thyroid) and 75 mrem to the thyroid every 12 months.

TABLE 1

OFFSITE RADIATION DOSE ASSESSMENT - MONTICELLO

PERIOD: JANUARY 1 THROUGH DECEMBER 31, 1983

Gaseous Releases		10 CFR Part 50 Appendix I Guidelines Per Unit Per Year
Maximum Site Boundary Gamma Air Dose (mrad)	0.79	10
Maximum Site Boundary Beta Air Dose (mrad)	0.96	20
Maximum Offsite Dose to Any Organ (mrem)*		
Total	0.507	15
EPA Field Station Dose (mrem)		
Whole Body	0.039	5
Organ	0.006	15
Liquid Releases (None Released in 1983)		
Maximum Offsite Whole Body Dose (mrem)		
Total	0	3
Maximum Offsite Organ Dose (mrem)*		
Total	0	10

*Long lived particulates, I-131 & tritium.

TABLE 2

OFFSITE RADIATION DOSE ASSESSMENT SUPPLEMENTAL INFORMATION - MONTICELLO

PERIOD: JANUARY 1 THROUGH DECEMBER 31, 1983

Gaseous Effluents

Maximum Site Boundary Dose Location (from building vents)	
Sector	SSE
Distance (mi.)	0.43
EPA Field Station	
Sector	ESE
Distance	0.31
Maximum Offsite Dose Location	
Sector	SSW
Distance (mi.)	0.4
Pathways	Ground, inhalation vegetables
Age Group	Child
Organ	Thyroid

Liquid Releases

Maximum Offsite Dose Location Downstream		
Pathways	Drinking Water	Drinking Water, fish
Age Group	Infant	Adult
Organ	Whole Body	GI-LLI
Dilution Factor (drinking water)	7:1	7:1