

Attachment B

Off-Site Radiation Dose Assessment for
January 1, - December 31, 1995

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**NORTHERN STATES POWER COMPANY
MONTICELLO NUCLEAR GENERATING PLANT**

**Off-Site Radiation Dose Assessment
for January 1, - December 31, 1995**

An assessment of radiation dose due to releases from the Monticello Nuclear Generating Plant during 1995 was performed in accordance with the Technical Specifications. Computed doses were well below the 40 CFR 190 Standards and 10 CFR Part 50, Appendix I Guidelines.

Off-site dose calculation formulas and meteorological data from the Off-site Dose Calculation Manual were used in making this assessment. Source terms were obtained from the two Semi-Annual Effluent Release Reports for 1995.

Off-Site Doses from Gaseous Releases

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

Off-Site Doses From Liquid Releases

There were no liquid releases in 1995 as listed in Table 1.

Doses to Individuals Due to Activities Inside the Site Boundary

Occasionally sportsmen 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 and 3.8.2 of 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 for the Field Station location. Annual computed doses were reduced by the factor of 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. Doses at this location are reported in Table 1.

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

There are no other uranium fuel facilities in the vicinity of the Monticello site. The only other 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. MNGP started a hydrogen water chemistry (HWC) program in February 1989. Prior to the installation of HWC, a study was conducted to determine the direct and skyshine radiation contribution. This study determined the maximum exposed member of the public from direct and sky shine radiation to be a residence located 0.6 miles from the reactor at the SW sector.

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

Using conservative assumptions, calculations indicated a maximum annual dose of 4 mrem to this residence prior to HWC. Additionally, a review of TLD results from 1987 through 1995 revealed no noticeable increase in direct and skyshine radiation after the HWC program was initiated.

A calculation of the total annual dose to this residence from all existing pathways of radioactive effluents was performed by running GASPAR computer codes. Adding 4 mrem/year to this calculation results in a maximum whole body dose of 4.03 mrem in 1995.

Therefore, the 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 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ.

Radiological Environmental Monitoring Program Sampling Deviations

There were no significant changes to the REMP sampling program and no milk or vegetable sampling deviations during this reporting period.

Table 1**Off-Site Radiation Dose Assessment - Monticello****PERIOD: January 1, through December 31, 1995**

GASEOUS RELEASES	DOSE	10CFR50 App. I Guidelines per year.
Max. Site Boundary Gamma Air Dose (mrad)	0.18	10
Max. Site Boundary Beta Air Dose (mrad)	0.33	20
Max. Off-site Dose to Any Organ (mrem)	0.026	15
EPA Field Station (mrem, 40 hours/week)		
Whole Body (External)	0.002	5
Organ (skin)	0.003	15
Liquid Releases		
Max. Off-Site Dose Whole Body (mrem)	0.00	3
Max. Off-Site Dose Organ, Total (mrem)	0.00	10

Table 2
Off-Site Radiation Dose Assessment - Monticello
Supplemental Information

PERIOD: January 1, through December 31, 1995

Gaseous Releases	
Max. Site Boundary Dose Location (from building vents)	
Sector	SSE
Distance (miles)	0.43
EPA Field Station	
Sector	SE
Distance (miles)	0.26 (Stack) 0.36 (Vent)
Maximum Off-site Dose Location	
Sector	SSW
Distance	0.70
Pathways	Ground, Inhalation, Vegetable
Age Group	Child
Organ	Thyroid
Liquid Releases	
Max. Off-Site Dose Location Downstream	
Pathways	Drinking Water Drinking Water Fish
Age Group	Infant Adult
Organ	W.Body GI-LLI
Dilution Factor (drinking water)	7.1 7.1