NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

OFFSITE RADIATION DOSE ASSESSMENT for JANUARY 1 - DECEMBER 31, 1983

An assessment of radiation dose due to releases from the Prairie Island 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 calculation formulas and meteorological data were used from the Offsite Dose Caluclation 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 Release

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

Computed doses due to liquid releases are reported in Table 1. Receptor information is reported in Table 2. Doses, both whole body and organ, are a small percentage of Appendix I guidelines.

Doses to Individuals Due to Activities Inside the Site Boundary

Occasional sportsmen will enter the Prairie Island site for recreational activities. These individuals are not expected to spend more than a few hours per year within the site boudary. Commercial and recreational river traffic exists through this area.

For purposes of estimating dose due to recreational and river transportation activities within the site boundary, it is assumed that the limiting dose within the site boundary would be received by an individual who spends a total of seven days per year on the river just off shore from the main plant buildings (ESE at 0.2 miles). Whole body and inhalation organ doses were calculated for this location and occupancy time. These doses 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 Prairie Island site.

The only other source of exposure to the general public in addition to the plant gaseous and liquid effluents is from direct radiation. Pressurized water reactor direct radiation has been shown 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 - PRAIRIE ISLAND

PERIOD: JANUARY 1 THROUGH DECEMBER 31, 1983

		10 CFR Part 50 Appendix I Guideline Per Year
Gaseous Releases		
Maximum Site Boundary Gamma Air Dose (mrad)	0.14	20
Maximum Site Boundary Beta Air Dose (mrad)*	0.44	40
Maximum Offsite Dose to Any Organ (mrem)*		
Total	1.11	30
Offshore Location (mrem, 7 days/year)		
Whole Body	0.00006	10
Organ	0.00004	30
Liquid Releases		
Maximum Offsite Whole Body Dose (mrem)		
Total	0.003	6
Maximum Offsite Organ Dose (mrem)*		
Total	0.005	20

*Long lived particulates, I-131, and tritium.

TABLE 2

OFFSITE RADIATION DOSE ASSESSMENT
SUPPLEMENTAL INFORMATION - PRAIRIE ISLAND

PERIOD: JANUARY 1 THROUGH DECEMBER 31, 1983

Gaseous Effluents

Maximum Site Boundary Dose Location (from building vents)	
Sector	WNW
Distance (mi)	0.36
Offshore Location Within Site Boundary	
Sector	ESE
Distance (mi)	0.2
Maximum Offsite Dose Location	
Sector	WNW
Distance (mi)	0.7
Pathways	Ground, inhalation, vegetables
Age Group	Child
Organ	Thyroid

Liquid Effluents

Maximum Offsite Dose Location Downstream	
Pathways	Fish
Age Group	Adult
Organ	Thyroid