ATTACHMENT 2
BIG ROCK POINT INDEPENDENT SPENT FUEL STORAGE INSTALLATION
2020 RADIOACTIVE EFFLUENT RELEASE REPORT

This report provides information relating to radioactive effluent releases and solid radioactive waste disposal at Big Rock Point (BRP) for the year 2020. The report format is detailed in the BRP Offsite Dose Calculation Manual (ODCM). Effluent releases from BRP are controlled by the Defueled Technical Specifications and the ODCM requirements.

2020 Operating History

On January 8, 2007, the Nuclear Regulatory Commission (NRC) approved release of the former BRP Nuclear Plant property for unrestricted use in accordance with the BRP License Termination Plan[1]. On April 11, 2007, the license for BRP, DPR-06, was transferred to Entergy Nuclear Operations, Inc.

During 2020, normal independent spent fuel storage installation (ISFSI) operations continued. There were no operational activities that generated any solid radioactive waste.

Liquid and gaseous effluent monitoring is no longer conducted as the former BRP nuclear plant property has been released from the license. Short-lived radionuclides, including iodines and noble gas, are neither expected nor reported.

1. Supplemental Information

   A. Batch Releases

      There were no batch releases of gaseous or liquid effluents during 2020. All batch releases of radioactive liquids as described in the ODCM ceased in 2004. Reference Table 1.

   B. Abnormal Releases

      There were no abnormal releases from BRP during 2020.

   C. Radioactive Effluent Monitoring Instrumentation

      BRP ODCM currently specifies required actions when less than the minimum numbers of radioactive effluent monitoring instrument channels are operable. The ODCM also specifies these actions be taken when installed effluent monitoring systems are removed from service for decommissioning.

      All plant-installed liquid and gaseous radioactive effluent monitoring instrument channels have been permanently removed and dismantled.

[1] Letter from the USNRC dated January 8, 2007, "Release of Land from Part 50 License for Unrestricted Use"

2. Gaseous Effluents

Although there were no gaseous effluents released during 2020, Table 2 provides a summary of all gaseous radioactive effluent monitoring conducted during the reporting period as required by the ODCM.

3. Liquid Effluents

There were no liquid effluent batch releases during 2020. Table 3 lists and summarizes liquid effluent releases in accordance with the ODCM.

4. Solid Waste

There was no solid radioactive waste generated or shipped during 2020.

5. Summary of Radiological Impact on Man

The ODCM specifies that the annual effluent release report provide potential dose calculatiReportons based on measured effluent to liquid and gaseous pathways, if estimates of dose exceed one millirem to an organ or total body of any individual or more than one person-rem to the population within 50 miles. During 2020, there were no releases. Therefore, no calculations were required.

6. Offsite Dose Calculation Manual

The ODCM describes the radiological release requirements for the BRP site. There were no revisions to the ODCM in 2020.

7. Process Control Program (PCP)

The Process Control Program (PCP) describes solid waste processing and disposal methods utilized at the BRP site. Changes to the fleet procedure governing the PCP have no effect on the BRP site in 2020.

TABLE 1
Big Rock Point
Batch Releases
January 1, 2020 to December 31, 2020

A. GASEOUS	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Number of Releases		N/A	N/A	N/A	N/A
Total Release Time	Minutes	N/A	N/A	N/A	N/A
Maximum Release Time	Minutes	N/A	N/A	N/A	N/A
Average Release Time	Minutes	N/A	N/A	N/A	N/A
Minimum Release Time	Minutes	N/A	N/A	N/A	N/A

B. LIQUID	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Number of Releases		N/A	N/A	N/A	N/A
Total Release Time	Minutes	N/A	N/A	N/A	N/A
Maximum Release Time	Minutes	N/A	N/A	N/A	N/A
Average Release Time	Minutes	N/A	N/A	N/A	N/A
Minimum Release Time	Minutes	N/A	N/A	N/A	N/A

TABLE 2
Big Rock Point
Gaseous Effluent Releases
January 1, 2020 to December 31, 2020

A. FISSION AND ACTIVATION GASES	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR	Est Total Error %
1. Total release	Ci	N/A	N/A	N/A	N/A	
2. Average release rate for period	µCi/sec	N/A	N/A	N/A	N/A	N/A
3. Percent of annual avg EC	%	N/A	N/A	N/A	N/A	

B. IODINES						
1. Total iodine	Ci	N/A	N/A	N/A	N/A	
2. Average release rate for period	µCi/sec	N/A	N/A	N/A	N/A	N/A
3. Percent of annual avg EC	%	N/A	N/A	N/A	N/A	

C. PARTICULATES						
1. Particulates with half-life >8 day	Ci	N/A	N/A	N/A	N/A	
2. Average release rate for period	µCi/sec	N/A	N/A	N/A	N/A	N/A
3. Percent of annual avg EC	%	N/A	N/A	N/A	N/A	
4. Gross alpha radioactivity	Ci	N/A	N/A	N/A	N/A	

D. TRITIUM					
1. Total Release	Ci	N/A	N/A	N/A	N/A
2. Average release rate for period	µCi/sec	N/A	N/A	N/A	N/A
3. Percent of annual avg EC	%	N/A	N/A	N/A	N/A

E. WHOLE BODY DOSE					
1. Beta Air dose at Site Boundary due to Noble Gases (ODCM Section 1, 1.3.2 a (1) (2))	mrads	N/A	N/A	N/A	N/A
2. Percent limit	%	N/A	N/A	N/A	N/A
3. Gamma Air dose at Site Boundary due to Noble Gas (ODCM Section 1, 1.3.2 a (1) (2))	mrads	N/A	N/A	N/A	N/A
4. Percent limit	%	N/A	N/A	N/A	N/A

F. ORGAN DOSE (ODCM Section 1, 1.3.2b (1) (2))					
1. Maximum organ dose to public based on Critical Receptors (child bone)	mrem	N/A	N/A	N/A	N/A
2. Percent of limit (7.5 mrem/quarter)	%	N/A	N/A	N/A	N/A

TABLE 2
Big Rock Point
Gaseous Effluent Releases
January 1, 2020 to December 31, 2020

1. FISSION GASES	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Krypton-85m	Ci	N/A	N/A	N/A	N/A
Krypton-87	Ci	N/A	N/A	N/A	N/A
Krypton-88	Ci	N/A	N/A	N/A	N/A
Xenon-133	Ci	N/A	N/A	N/A	N/A
Xenon-133m	Ci	N/A	N/A	N/A	N/A
Xenon-135	Ci	N/A	N/A	N/A	N/A
Xenon-135m	Ci	N/A	N/A	N/A	N/A
Xenon-138	Ci	N/A	N/A	N/A	N/A
Total for Period	Ci	N/A	N/A	N/A	N/A

2. IODINES					
Iodine-131	Ci	N/A	N/A	N/A	N/A
Iodine-132	Ci	N/A	N/A	N/A	N/A
Iodine-133	Ci	N/A	N/A	N/A	N/A
Iodine-134	Ci	N/A	N/A	N/A	N/A
Iodine-135	Ci	N/A	N/A	N/A	N/A
Total for Period	Ci	N/A	N/A	N/A	N/A

TABLE 2
Big Rock Point
Gaseous Effluent Releases
January 1, 2020 to December 31, 2020

3. PARTICULATES*	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Chromium-51	Ci	N/A	N/A	N/A	N/A
Manganese-54	Ci	N/A	N/A	N/A	N/A
Cobalt-58	Ci	N/A	N/A	N/A	N/A
Iron-59	Ci	N/A	N/A	N/A	N/A
Cobalt-60	Ci	N/A	N/A	N/A	N/A
Zinc-65	Ci	N/A	N/A	N/A	N/A
Silver-110m	Ci	N/A	N/A	N/A	N/A
Cesium-134	Ci	N/A	N/A	N/A	N/A
Cesium-137	Ci	N/A	N/A	N/A	N/A
Barium-140	Ci	N/A	N/A	N/A	N/A
Europium-152	Ci	N/A	N/A	N/A	N/A
Strontium-89	Ci	N/A	N/A	N/A	N/A
Strontium-90	Ci	N/A	N/A	N/A	N/A
Net unidentified beta	Ci	N/A	N/A	N/A	N/A
Total	Ci	N/A	N/A	N/A	N/A

* Particulates with half-life >8 days

TABLE 3
Big Rock Point
Liquid Effluent Releases
January 1, 2020 to December 31, 2020

A. FISSION AND ACTIVATION PRODUCTS	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR	Est Total Error %
1. Total release (not including tritium, gases, alpha)	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during period	µCi/ml	N/A	N/A	N/A	N/A	
3. Percent of EC	%	N/A	N/A	N/A	N/A	
B. TRITIUM						
1. Total release	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during period	µCi/ml	N/A	N/A	N/A	N/A	
3. Percent of EC	%	N/A	N/A	N/A	N/A	
C. DISSOLVED AND ENTRAINED GASES						
1. Total release	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during period	µCi/ml	N/A	N/A	N/A	N/A	
3. Percent of EC	%	N/A	N/A	N/A	N/A	
D. GROSS ALPHA RADIOACTIVITY	Ci	N/A	N/A	N/A	N/A	
E. VOLUME OF WASTE RELEASED (Prior to dilution)	Liters	N/A	N/A	N/A	N/A	
F. VOLUME OF DILUTION WATER USED DURING PERIOD	Liters	N/A	N/A	N/A	N/A	
G. MAXIMUM DOSE COMMITMENT WHOLEBODY	mrem	N/A	N/A	N/A	N/A	
Percent of ODCM Section 1, 2.3.2 a (1.5 mrem)	%	N/A	N/A	N/A	N/A	
H. MAXIMUM DOSE COMMITMENT – ORGAN	Mrem	N/A	N/A	N/A	N/A	
Percent of ODCM Section 1, 2.3.2 b (3.0 mrem)	%	N/A	N/A	N/A	N/A	

TABLE 3
Big Rock Point
Liquid Effluent Releases
January 1, 2020 to December 31, 2020

1. **NUCLIDES RELEASED**	Units	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Chromium-51	Ci	--	--	--	--
Manganese 54	Ci	--	--	--	--
Cobalt-58	Ci	--	--	--	--
Iron-59	Ci	--	--	--	--
Cobalt-60	Ci	--	--	--	--
Zinc-65	Ci	--	--	--	--
Strontium-89	Ci	--	--	--	--
Strontium-90	Ci	--	--	--	--
Molybdenum-99	Ci	--	--	--	--
Silver-110m	Ci	--	--	--	--
Iodine-131	Ci	--	--	--	--
Cesium-134	Ci	--	--	--	--
Cesium-137	Ci	--	--	--	--
Antimony-125	Ci	--	--	--	--
Tin-113	Ci	--	--	--	--
Net Unidentified Beta	Ci	--	--	--	--
Fission & Activation Product Total	Ci	--	--	--	--
Xenon-133	Ci	--	--	--	--
Tritium	Ci	--	--	--	--
Grand Total	Ci	--	--	--	--