2018 Annual Radiological Environmental Monitoring Program (REMP) Report for the FSV ISFSI

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ABSTRACT

This report presents the results of the 2018 calendar year Radiological Environmental Monitoring Program (REMP) conducted in accordance with 10 CFR 72.44, License Conditions, for the Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI). A description of the facility and the monitoring program is provided. The results of monitoring the predominant radiation exposure pathway, direct radiation exposure, indicate the facility operation has not contributed to any increase in the estimated maximum potential dose commitment to the general public.

SUMMARY

The purpose of this report is to present the results of the REMP conducted during the 2018 calendar year for the FSV ISFSI. The results of the dosimetry network did not indicate an increase in radiation levels above post-loading ambient background attributed to the facility operation. The monitoring program results support the conclusion reached in the FSV Safety Analysis Report (SAR) that operation of the facility will not result in a significant dose commitment greater than 0.15 mrem/y to the nearest resident.

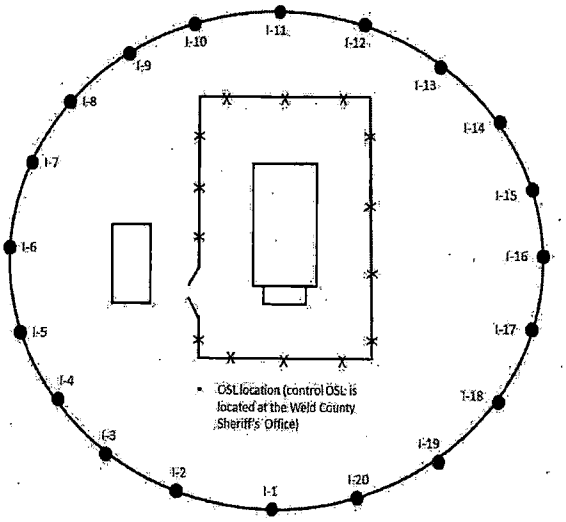
1.0 Introduction

The FSV ISFSI is a spent fuel dry storage facility located near Platteville, Colorado. The FSV ISFSI is operated by Spectra Tech. Inc. – Nuclear Regulatory Commission Licensed Facilities (STI-NLF) for the U.S. Department of Energy (DOE). The FSV ISFSI is licensed (SNM-2504) by the NRC pursuant to 10 CFR 72 for authorization to store spent nuclear fuel from the FSV Nuclear Generating Station.[1,2] Spent fuel from the FSV reactor was transferred to the FSV ISFSI between December 26, 1991 and June 10, 1992. The FSV ISFSI license was transferred from Public Service Company of Colorado to the DOE Idaho Operations Office on June 4, 1999. A REMP has been implemented for the FSV ISFSI in accordance with 10 CFR 72.44.[3] This report presents the REMP results for the 2018 calendar year.

2.0 Program Description

The REMP is designed to monitor the predominant radiation exposure pathway inherent with the facility design: direct radiation. The direct radiation exposure pathway is monitored using Optically Stimulated Luminescent dosimetry located along the Controlled Area Boundary (perimeter) fence of the FSV ISFSI. Monitoring locations are identified in Figure 1. A control station is located at the Weld County Sheriff's Office in Greeley, Colorado, approximately 18 miles North Northeast from the FSV ISFSI. Twenty dosimeters are located around the perimeter fence to monitor direct radiation from the FSV ISFSI. One third of the dosimeters are changed out and processed each month. The control station dosimeter is changed out and processed each month.

Figure 1. FSV ISFSI Radiological Environmental Monitoring Locations



3.0 Results

Dosimetry results for the FSV ISFSI are presented in Table 1 in units of mR/d. The mean exposure rate of 0.33 +/- 0.03 mR/d measured at the ISFSI perimeter fence is comparable to the pre-operational background exposure rate of 0.34 +/- 0.03 mR/d. Additionally, the control station exposure rate (0.28 +/- 0.04 mR/d) is consistent with historical values

associated with the control station. Therefore, both the perimeter fence and control dosimeter responses are consistent with historical values.

Table 1. FSV ISFSI Exposure Rates (mR/d)

Location	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Mean
I-1	0.35			0.34			0.31			0.33			0.33
I-2		0.28			0.30			0.33			0.34		0.31
I-3			0.26			0.32			0.30			0.37	0.31
I-4	0.30			0.37			0.35			0.30			0.33
I-5		0.29			0.30			0.35			0.37		0.33
I-6			0.31			0.33			0.28			0.33	0.31
I-7	0.34			0.33			0.31			0.30			0.32
I-8		0.30			0.31			0.31			0.34		0.32
I-9			0.36			0.42			0.38			0.37	0.38
I-10	0.35			0.39			0.40			0.33			0.37
I-11		0.33			0.32			0.33			0.38		0.34
I-12			0.33			0.43			0.32			0.38	0.37
I-13	0.32			0.33			0.33			0.30			0.32
I-14		0.29			0.30			0.30			0.33		0.31
I-15			0.33			0.33			0.31			0.32	0.32
I-16	0.29			0.37			0.32			0.30			0.32
I-17		0.31			0.35			0.30			0.36		0.33
I-18			0.29			0.37			0.31			0.30	0.32
I-19	0.38			0.39			0.32			0.28			0.34
I-20		0.36			0.35			0.26			0.34		0.33
Mean	0.33	0.31	0.31	0.36	0.32	0.37	0.33	0.31	0.32	0.31	0.35	0.35	**0.33**
Control	0.21	0.26	0.28	0.33	0.31	0.31	0.27	0.29	0.26	0.24	0.34	0.27	**0.28**

4.0 Discussion

The FSV ISFSI REMP was successfully implemented during the 2018 calendar year. Results at all locations were consistent with historical values. There were no deviations from the established sampling schedule. The radiation dosimetry results indicate there has been no measurable increase in ambient background radiation levels at or beyond the FSV ISFSI perimeter fence attributed to storage of the FSV fuel. There were no radioactive liquid effluents released from the facility, hence no radionuclides to report. There are no sources of radioactive material that may become airborne during normal operations, hence no radionuclides to report.

5.0 Conclusion

Direct radiation exposure from the facility during the 2018 calendar year did not contribute to any increase in the maximum potential dose commitment (0.15 mrem/y) to the nearest resident (located 797 meters from the ISFSI) projected in the FSV ISFSI SAR.[4]

6.0 References

1. 10 CFR 72, Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste and Reactor-Related Greater than Class C Waste.

2. Materials License SNM-2504, Fort St. Vrain, Independent Spent Fuel Storage Installation.

3. 10 CFR 72.44, License Conditions.

4. Fort St. Vrain Independent Spent Fuel Storage Installation Safety Analysis Report, Section 7.5, Estimated Offsite Collective Dose Assessment.