Department of Energy
Idaho Operations Office
1955 Fremont Avenue
Idaho Falls, ID 83415

February 27, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Submittal of the Annual Radiological Environmental Monitoring Report per 10 CFR 72.44(d)(3), for the Fort St. Vrain Independent Spent Fuel Storage Installation, Docket 72-09 (EM-FMDP-15-010)

Dear Sir or Madam:

The Department of Energy, Idaho Operations Office hereby submits the Annual Radiological Environmental Monitoring Report per 10 CFR 72.44(d) (3) for the Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) (Docket 72-09). This report covers operations at the ISFSI for calendar year 2014.

If you have any questions please call me at (208) 526-8888.

Sincerely,

Steven R. Ahrendts
NRC Licensed Facilities Director

Enclosure

cc: U.S. NRC Region IV w/attach
Steve Tarlton, Colorado Dept. of Public Health w/attach
EPA - Region 8, Denver CO w/attach
G. Hall, CWI

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DOE/ID-10742 (2014)

Annual Radiological Environmental Monitoring Program Report for the Fort St. Vrain Independent Spent Fuel Storage Installation

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ABSTRACT

This report presents the results of the 2014 Radiological Environmental Monitoring Program conducted in accordance with 10 CFR 72.44 for the Fort St. Vrain Independent Spent Fuel Storage Installation. 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 Radiological Environmental Monitoring Program (REMP) conducted during 2014 for the Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI). The results of the thermoluminescent 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 Safety Analysis Report that operation of the facility will not result in a significant dose commitment greater than 0.15 mrem/y to the nearest resident.

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Annual Radiological Environmental Monitoring Program Report for the Fort St. Vrain Independent Spent Fuel Storage Installation

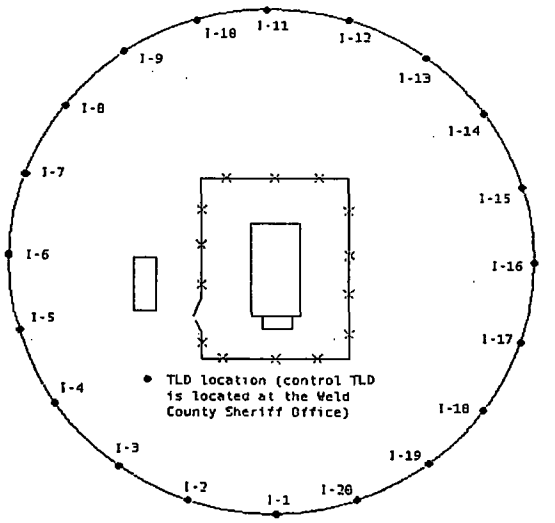
INTRODUCTION

The Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) is a spent fuel dry storage facility located near Platteville, Colorado. The FSV ISFSI is operated by CH2M - WG Idaho, LLC (CWI) for the Department of Energy (DOE). The FSV ISFSI is licensed (SNM-2504) by the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 72 for authorization to store spent nuclear fuel from the Fort St. Vrain Nuclear Generating Station.[1] 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 (PSCo) to the U.S. Department of Energy, Idaho Operations Office (DOE-ID) on June 4, 1999. A Radiological Environmental Monitoring Program (REMP) has been implemented for the FSV ISFSI in accordance with 10 CFR 72.44. This report presents the REMP results for 2014.

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 thermoluminescent dosimetry (TLD) located along the 100 meter perimeter fence of the FSV ISFSI. Monitoring locations are identified in Figure 1. A control station is located at the Weld County Sheriff Office in Greeley, Colorado, approximately 17 miles NNE from the FSV ISFSI. Twenty TLDs are located around the 100 meter perimeter fence to monitor direct radiation from the FSV ISFSI. One third of the perimeter fence TLDs are changed out and processed each month. The control station TLD is changed out and processed each month. TLD processing services are provided by the Idaho National Laboratory (INL).

Figure 1. FSV ISFSI Radiological Environmental Monitoring Locations



RESULTS

TLD results for the FSV ISFSI are presented in Table 1 in units of mR/d. The mean exposure rate of 0.39 +/- 0.02 mR/d measured at the ISFSI perimeter fence is comparable to the pre-operational background exposure rate of 0.34 +/- 0.03 mR/d and is consistent with the five-year historical operation mean exposure rate of 0.39 +/- 0.05 mR/d last reported by Colorado State University (CSU).[2, 3] Additionally, the control station TLD responses (0.36 +/- 0.02 mR/d) are consistent with historical values associated with the control station location. Therefore, both the perimeter fence and control TLD 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	0.40			0.42			0.38			0.41			0.40
I-2		0.38			0.39			0.38			0.39		0.39
I-3			0.41			0.40			0.40			0.39	0.40
I-4	0.41			0.43			0.38			0.42			0.41
I-5		0.38			0.40			0.39			0.39		0.39
I-6			0.40			0.38			0.36			0.39	0.38
I-7	0.39			0.40			0.36			0.37			0.38
I-8		0.38			0.41			0.39			0.40		0.40
I-9			0.40			0.39			0.40			0.40	0.40
I-10	0.41			0.42			0.37			0.40			0.40
I-11		0.38			0.43			0.40			0.39		0.40
I-12			0.39			0.38			0.38			0.39	0.39
I-13	0.39			0.40			0.36			0.39			0.39
I-14		0.37			0.40			0.38			0.39		0.39
I-15			0.39			0.39			0.39			0.37	0.39
I-16	0.41			0.41			0.36			0.40			0.40
I-17		0.37			0.41			0.37			0.38		0.38
I-18			0.39			0.38			0.38			0.38	0.38
I-19	0.39			0.41			0.35			0.39			0.39
I-20		0.37			0.40			0.38			0.38		0.38
Mean	0.40	0.38	0.40	0.41	0.41	0.39	0.37	0.38	0.39	0.40	0.39	0.39	0.39
Control	0.38	0.37	0.38	0.38	0.37	0.41	0.33	0.34	0.34	0.36	0.35	0.35	0.36

DISCUSSION

The FSV ISFSI REMP was successfully implemented during 2014. There was no loss of sample data. There were no sampling location changes. 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 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.

The use of ground versus air shipping of dosimeters continues to be effective in preventing in-transit exposure. Since implementing this shipping method, no instances of in-transit exposure have occurred.

CONCLUSION

Direct radiation exposure from the facility during 2014 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 Safety Analysis Report.[4]

REFERENCES

1. 10 CFR 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste," *Code of Federal Regulations*, Office of the Federal Register, August 1988.

2. Results of ISFSI Site Background Radiation Study, Department of Radiology and Radiation Biology, Colorado State University, November 2, 1990.

3. Fort St. Vrain Independent Spent Fuel Storage Installation (ISFSI) Radiological Environmental Monitoring Program (IREMP), Summary Report for the Period January 1 to December 31, 1997, Department of Radiological Health Sciences, Colorado State University, February 26, 1998.

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