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San Onofre Nuclear Generating Station Independent Spent Nuclear Fuel Storage Installation

Report period: June 2020

This report provides radiation data at the San Onofre Nuclear Generating Station (SONGS) Independent Spent Fuel Storage Installation (ISFSI). The information was gathered according to an agreement between SONGS and the California Department of Public Health Radiologic Health Branch (RHB).

Dry Storage at SONGS

The first used fuel assemblies were transferred from wet (pool) storage to the dry cask storage units in the TN-NUHOMS system in October 2003. In total, 1,187 fuel assemblies are stored in the NUHOMS system in 50 canisters. The Holtec Hi-STORM UMAX dry storage system was constructed between April 2016 and the end of 2017, with the first assemblies transferred in January 2018. Loading of the UMAX system is ongoing with an expected completion date of mid-2020. The Holtec system will house 73 canisters of spent nuclear fuel.

Radiation Monitoring

Radiation level measurements around the ISFSI were initiated before fuel was placed in the NUHOMS system to determine background levels. Radiation measurements using sensitive Thermoluminescent Dosimeters (TLDs) have been made at locations around the ISFSI since then and reported to the Nuclear Regulatory Commission in SONGS Annual Radiological Environmental Operating Reports. These reports (through 2015) are available at [U.S. NRC Radioactive Effluent and Environmental Reports](#), or in the NRC public Document System (ADAMS). Reports beginning in 2016 are available at [SONGS Environmental Monitoring](#).

Additional TLDs were placed around the Holtec ISFSI in 2016 as it was constructed and before operation and have been in place since the first fuel canister was placed in 2018. Gamma-sensitive radiation monitors were added in 2019 at three locations in the ISFSI area and one additional monitor in a control location. The data are summarized in tables with daily averages, maxima, and minima. Those data tables are attached, one for each of the four locations.

More information on radiation monitoring is available at [SONGS Dry Fuel Storage Radiation Monitoring](#).

Locations

There are three radiation monitors in the ISFSI at locations depicted on the image below:



A fourth radiation monitor, at a control location, is located at the edge of the parking lot north of the ISFSI such that it measures background radiation in an unaffected reference area similar to the ISFSI.



It is important to note that while fuel transfer operations at SONGS are in progress, elevated radiation level readings will be seen as canisters of spent fuel pass by the continuous radiation monitors. The radiation monitor at Location #3, for instance, is adjacent to the path of the vertical cask transporter as it enters the storage pad for canister downloading. Higher readings will be seen on days in which fuel movement is occurring. Other ISFSI monitors may show these elevated readings as well until the canister is safely placed into its storage module. These temporarily elevated readings are normal and expected.

Fuel Transfer to the ISFSI

Fuel transfer / download during June 2020 occurred on the following dates:

- 6/6/2020 – 6/7/2020
- 6/10/2020 – 6/11/2020
- 6/18/2020 – 6/19/2020

Waste Shipments Offsite

There were no waste shipments offsite that impacted radiation measurements by the ISFSI Radiation Monitoring system during June 2020.

Other

On June 17, 2020 at 6:00 P.M. the ISFSI Radiation Monitoring System was taken out of service to repair an issue with the data collection server. The ISFSI Radiation Monitoring System was restored on June 18, 2020 at 3:50 P.M.

SONGS' Decommissioning General Contractor (DGC) utilizes the same type of radiation monitoring system software as is employed by SCE's ISFSI Radiation Monitoring System (IRMS). Both the DGC and SCE systems use the same communication protocol and therefore have the ability to store the radiation monitor data transmitted by either system. The DGC has provided SCE with the data log folders for 6/17/2020 and 6/18/2020. These folders were then copied to SCE's IRMS server, thus eliminating any loss of radiation dose rate data during this reporting period.

Table 1: Daily Results for June 2020 (in millirem per hour) for Location #1

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jun	0.024	0.031	0.018
2-Jun	0.024	0.031	0.017
3-Jun	0.024	0.031	0.018
4-Jun	0.024	0.031	0.018
5-Jun	0.024	0.031	0.019
6-Jun	0.067	1.706	0.019
7-Jun	0.028	0.065	0.018
8-Jun	0.024	0.031	0.018
9-Jun	0.024	0.031	0.019
10-Jun	0.029	0.199	0.018
11-Jun	0.024	0.050	0.018
12-Jun	0.024	0.031	0.017
13-Jun	0.024	0.032	0.019
14-Jun	0.024	0.032	0.018
15-Jun	0.024	0.031	0.018
16-Jun	0.023	0.032	0.018
17-Jun	0.024	0.031	0.017
18-Jun	0.029	0.231	0.018
19-Jun	0.024	0.049	0.019
20-Jun	0.024	0.032	0.018
21-Jun	0.024	0.030	0.019
22-Jun	0.024	0.030	0.018
23-Jun	0.024	0.031	0.018
24-Jun	0.024	0.031	0.018
25-Jun	0.024	0.032	0.017
26-Jun	0.024	0.032	0.018
27-Jun	0.024	0.033	0.019
28-Jun	0.024	0.031	0.018
29-Jun	0.023	0.031	0.018
30-Jun	0.023	0.030	0.018

Table 2: Daily Results for June 2020 (in millirem per hour) for Location #2

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jun	0.012	0.017	0.008
2-Jun	0.012	0.016	0.009
3-Jun	0.011	0.015	0.008
4-Jun	0.011	0.016	0.008
5-Jun	0.011	0.015	0.008
6-Jun	0.013	0.186	0.009
7-Jun	0.012	0.017	0.008
8-Jun	0.011	0.016	0.008
9-Jun	0.012	0.016	0.009
10-Jun	0.015	0.198	0.004
11-Jun	0.012	0.019	0.009
12-Jun	0.011	0.017	0.008
13-Jun	0.011	0.016	0.008
14-Jun	0.012	0.016	0.008
15-Jun	0.011	0.016	0.008
16-Jun	0.012	0.016	0.009
17-Jun	0.011	0.017	0.008
18-Jun	0.013	0.170	0.009
19-Jun	0.011	0.016	0.008
20-Jun	0.011	0.015	0.008
21-Jun	0.011	0.015	0.007
22-Jun	0.011	0.015	0.009
23-Jun	0.011	0.015	0.008
24-Jun	0.012	0.017	0.009
25-Jun	0.011	0.015	0.008
26-Jun	0.011	0.016	0.008
27-Jun	0.011	0.016	0.008
28-Jun	0.012	0.016	0.008
29-Jun	0.011	0.015	0.008
30-Jun	0.011	0.016	0.008

Table 3: Daily Results for June 2020 (in millirem per hour) for Location #3

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jun	0.015	0.019	0.011
2-Jun	0.014	0.020	0.011
3-Jun	0.015	0.019	0.011
4-Jun	0.014	0.020	0.010
5-Jun	0.014	0.021	0.011
6-Jun	0.028	0.677	0.011
7-Jun	0.017	0.036	0.010
8-Jun	0.014	0.020	0.011
9-Jun	0.014	0.019	0.010
10-Jun	0.033	1.037	0.011
11-Jun	0.017	0.079	0.011
12-Jun	0.014	0.020	0.010
13-Jun	0.014	0.020	0.011
14-Jun	0.014	0.019	0.011
15-Jun	0.014	0.017	0.011
16-Jun	0.014	0.018	0.011
17-Jun	0.014	0.019	0.010
18-Jun	0.025	1.621	0.010
19-Jun	0.015	0.046	0.010
20-Jun	0.014	0.019	0.010
21-Jun	0.014	0.020	0.011
22-Jun	0.014	0.019	0.009
23-Jun	0.014	0.019	0.011
24-Jun	0.014	0.019	0.011
25-Jun	0.014	0.020	0.010
26-Jun	0.015	0.019	0.011
27-Jun	0.014	0.019	0.010
28-Jun	0.015	0.019	0.010
29-Jun	0.014	0.018	0.011
30-Jun	0.014	0.019	0.011

Table 4: Daily Results for June 2020 (in millirem per hour) for Location #4 (Control)

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jun	0.008	0.011	0.006
2-Jun	0.008	0.012	0.006
3-Jun	0.009	0.012	0.006
4-Jun	0.008	0.012	0.006
5-Jun	0.008	0.013	0.006
6-Jun	0.008	0.012	0.006
7-Jun	0.008	0.011	0.005
8-Jun	0.008	0.012	0.005
9-Jun	0.008	0.012	0.005
10-Jun	0.008	0.011	0.005
11-Jun	0.008	0.012	0.006
12-Jun	0.008	0.011	0.005
13-Jun	0.008	0.011	0.005
14-Jun	0.008	0.012	0.006
15-Jun	0.008	0.012	0.006
16-Jun	0.008	0.012	0.006
17-Jun	0.008	0.011	0.006
18-Jun	0.008	0.012	0.006
19-Jun	0.008	0.013	0.005
20-Jun	0.008	0.012	0.005
21-Jun	0.008	0.011	0.005
22-Jun	0.008	0.011	0.006
23-Jun	0.008	0.012	0.005
24-Jun	0.008	0.011	0.006
25-Jun	0.008	0.011	0.006
26-Jun	0.008	0.012	0.005
27-Jun	0.008	0.012	0.006
28-Jun	0.008	0.012	0.005
29-Jun	0.008	0.011	0.006
30-Jun	0.008	0.012	0.006