San Onofre Nuclear Generating Station
Independent Spent Nuclear Fuel Storage Installation

Report period: July 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

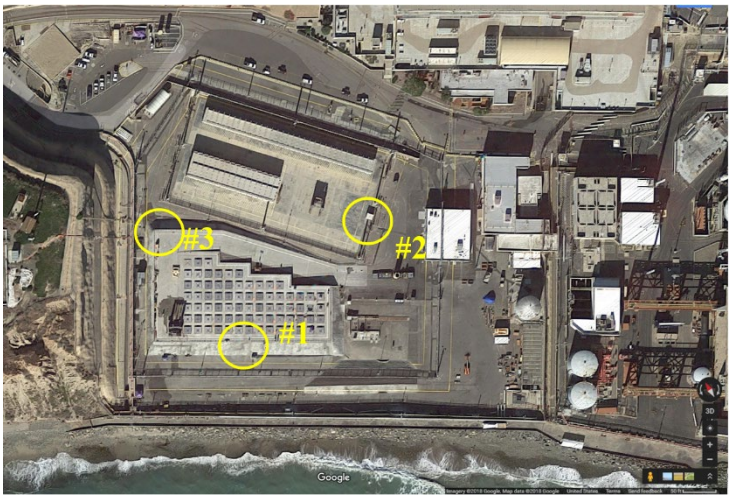
Radiation level measurements around the ISFSI were initiated before fuel was placed in the NUHOMS system to determine background levels. Radiation measurements using sensitive Thermoluminescent Dosimeters (TLDs) have been made at locations around the ISFSI since then and reported to the Nuclear Regulatory 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 July 2020 occurred on the following dates:

- 7/2/2020 – 7/3/2020
- 7/9/2020 – 7/12/2020
- 7/17/2020
- 7/23/2020
- 7/30/2020 – 7/31/2020

Waste Shipments Offsite

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

Other

On July 15, 2020 radiation monitors for Location #2 and Location #4 were replaced for scheduled calibration. There was no data loss during the replacement of the radiation monitors.

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

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jul	0.024	0.030	0.018
2-Jul	0.038	1.758	0.017
3-Jul	0.024	0.035	0.018
4-Jul	0.024	0.031	0.018
5-Jul	0.024	0.031	0.018
6-Jul	0.024	0.031	0.018
7-Jul	0.024	0.031	0.018
8-Jul	0.024	0.032	0.018
9-Jul	0.024	0.033	0.018
10-Jul	0.029	0.039	0.023
11-Jul	0.032	0.091	0.021
12-Jul	0.034	0.199	0.019
13-Jul	0.023	0.030	0.018
14-Jul	0.023	0.031	0.016
15-Jul	0.024	0.030	0.018
16-Jul	0.023	0.033	0.018
17-Jul	0.035	0.195	0.018
18-Jul	0.024	0.031	0.018
19-Jul	0.024	0.033	0.018
20-Jul	0.024	0.029	0.018
21-Jul	0.024	0.033	0.018
22-Jul	0.024	0.031	0.019
23-Jul	0.037	0.274	0.019
24-Jul	0.024	0.031	0.019
25-Jul	0.024	0.030	0.019
26-Jul	0.024	0.031	0.018
27-Jul	0.024	0.030	0.017
28-Jul	0.024	0.031	0.018
29-Jul	0.024	0.031	0.018
30-Jul	0.033	0.164	0.018
31-Jul	0.024	0.051	0.018

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

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jul	0.011	0.015	0.008
2-Jul	0.015	0.241	0.008
3-Jul	0.011	0.015	0.008
4-Jul	0.011	0.016	0.008
5-Jul	0.011	0.017	0.008
6-Jul	0.011	0.015	0.008
7-Jul	0.011	0.016	0.008
8-Jul	0.012	0.015	0.008
9-Jul	0.013	0.271	0.008
10-Jul	0.073	0.104	0.024
11-Jul	0.073	0.103	0.012
12-Jul	0.014	0.094	0.010
13-Jul	0.011	0.016	0.008
14-Jul	0.011	0.014	0.008
15-Jul	0.010	0.016	0.005
16-Jul	0.009	0.012	0.006
17-Jul	0.011	0.199	0.001
18-Jul	0.009	0.013	0.006
19-Jul	0.009	0.012	0.006
20-Jul	0.009	0.012	0.006
21-Jul	0.009	0.013	0.005
22-Jul	0.009	0.013	0.005
23-Jul	0.016	0.223	0.006
24-Jul	0.009	0.012	0.006
25-Jul	0.009	0.012	0.006
26-Jul	0.009	0.012	0.006
27-Jul	0.009	0.012	0.006
28-Jul	0.009	0.013	0.006
29-Jul	0.009	0.013	0.006
30-Jul	0.011	0.144	0.006
31-Jul	0.009	0.015	0.006

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

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jul	0.015	0.021	0.010
2-Jul	0.020	1.100	0.011
3-Jul	0.014	0.019	0.010
4-Jul	0.014	0.019	0.011
5-Jul	0.014	0.021	0.010
6-Jul	0.015	0.020	0.010
7-Jul	0.014	0.019	0.011
8-Jul	0.014	0.021	0.011
9-Jul	0.015	0.021	0.011
10-Jul	0.018	0.024	0.013
11-Jul	0.025	0.401	0.014
12-Jul	0.033	1.348	0.011
13-Jul	0.015	0.021	0.010
14-Jul	0.014	0.020	0.011
15-Jul	0.014	0.021	0.010
16-Jul	0.015	0.020	0.011
17-Jul	0.040	0.939	0.011
18-Jul	0.015	0.022	0.011
19-Jul	0.015	0.020	0.011
20-Jul	0.014	0.020	0.011
21-Jul	0.014	0.019	0.011
22-Jul	0.014	0.020	0.010
23-Jul	0.043	1.136	0.011
24-Jul	0.014	0.020	0.010
25-Jul	0.014	0.019	0.011
26-Jul	0.014	0.019	0.010
27-Jul	0.014	0.020	0.011
28-Jul	0.014	0.019	0.011
29-Jul	0.014	0.020	0.011
30-Jul	0.046	1.202	0.012
31-Jul	0.016	0.054	0.011

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

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Jul	0.008	0.013	0.005
2-Jul	0.008	0.011	0.005
3-Jul	0.008	0.013	0.005
4-Jul	0.008	0.013	0.005
5-Jul	0.008	0.012	0.006
6-Jul	0.008	0.012	0.005
7-Jul	0.008	0.011	0.005
8-Jul	0.008	0.012	0.006
9-Jul	0.008	0.011	0.005
10-Jul	0.008	0.013	0.006
11-Jul	0.008	0.012	0.006
12-Jul	0.008	0.012	0.005
13-Jul	0.008	0.012	0.005
14-Jul	0.008	0.011	0.006
15-Jul	0.007	0.011	0.004
16-Jul	0.006	0.010	0.004
17-Jul	0.006	0.009	0.004
18-Jul	0.006	0.010	0.004
19-Jul	0.007	0.010	0.004
20-Jul	0.006	0.009	0.004
21-Jul	0.006	0.009	0.004
22-Jul	0.006	0.009	0.004
23-Jul	0.006	0.010	0.004
24-Jul	0.006	0.010	0.004
25-Jul	0.006	0.009	0.004
26-Jul	0.006	0.009	0.004
27-Jul	0.006	0.009	0.004
28-Jul	0.006	0.009	0.003
29-Jul	0.006	0.011	0.004
30-Jul	0.006	0.009	0.004
31-Jul	0.006	0.010	0.004