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San Onofre Nuclear Generating Station Independent Spent Nuclear Fuel Storage Installation

Report period: November 2022

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 November 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 transferring of fuel assemblies taking place from January 2018 to August 2020. The Holtec system houses 73 canisters of spent nuclear fuel.

The first greater-than-class-c (GTCC) waste canister was transferred to the TN-NUHOMS dry cask storage system in September 2004. As part of decommissioning and dismantlement of the Units 2 and 3 Fuel Handling Buildings and Containment Buildings, additional GTCC waste will be transferred to the TN-NUHOMS system. Loading of GTCC waste is ongoing. When transfer of GTCC waste is completed from Units 2 and 3, the TN-NUHOMS system will house 13 canisters of GTCC waste (One canister from Unit 1 and 12 from Units 2 and 3).

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 GTCC waste transfer operations at SONGS are in progress, elevated radiation level readings will be seen as canisters of GTCC waste pass by the continuous radiation monitors. The radiation monitor at Location #2, for instance, is adjacent to the path of the transfer trailer as it enters the storage pad for canister insertion. Higher readings will be seen on days in which GTCC waste 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.

GTCC Waste Transfer to the ISFSI

There were no GTCC waste transfers to the ISFSI during November 2022.

Low-Level Waste Shipments Offsite as Part of SONGS Dismantlement

SONGS is in the process of dismantlement with rail shipments of low-level radioactive waste periodically leaving the site for disposal.

There were no low-level waste shipments offsite that impacted radiation measurements by the ISFSI Radiation Monitoring system during November 2022.

Other

On November 30, 2022 radiation monitors for Locations #1 and #3 were replaced for scheduled calibration. There was no data loss during the replacement of the radiation monitors.

Table 1: Daily Results for November 2022 (in millirem per hour) for Location #1

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Nov	0.021	0.028	0.015
2-Nov	0.021	0.029	0.016
3-Nov	0.021	0.028	0.017
4-Nov	0.021	0.029	0.016
5-Nov	0.021	0.028	0.016
6-Nov	0.021	0.031	0.016
7-Nov	0.021	0.028	0.016
8-Nov	0.021	0.029	0.016
9-Nov	0.021	0.027	0.016
10-Nov	0.021	0.029	0.016
11-Nov	0.021	0.027	0.015
12-Nov	0.021	0.028	0.016
13-Nov	0.021	0.028	0.015
14-Nov	0.021	0.029	0.015
15-Nov	0.021	0.027	0.015
16-Nov	0.021	0.028	0.016
17-Nov	0.021	0.028	0.016
18-Nov	0.021	0.028	0.015
19-Nov	0.021	0.029	0.016
20-Nov	0.021	0.029	0.016
21-Nov	0.021	0.028	0.016
22-Nov	0.021	0.028	0.016
23-Nov	0.021	0.031	0.015
24-Nov	0.021	0.030	0.017
25-Nov	0.021	0.028	0.016
26-Nov	0.021	0.029	0.016
27-Nov	0.021	0.029	0.016
28-Nov	0.021	0.028	0.015
29-Nov	0.021	0.028	0.016
30-Nov	0.021	0.027	0.012

Table 2: Daily Results for November 2022 (in millirem per hour) for Location #2

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Nov	0.011	0.016	0.008
2-Nov	0.011	0.016	0.008
3-Nov	0.011	0.016	0.008
4-Nov	0.011	0.015	0.008
5-Nov	0.011	0.015	0.008
6-Nov	0.011	0.015	0.008
7-Nov	0.011	0.015	0.007
8-Nov	0.011	0.017	0.008
9-Nov	0.011	0.016	0.008
10-Nov	0.011	0.015	0.008
11-Nov	0.011	0.015	0.007
12-Nov	0.011	0.015	0.007
13-Nov	0.011	0.015	0.008
14-Nov	0.011	0.016	0.008
15-Nov	0.011	0.015	0.007
16-Nov	0.011	0.015	0.007
17-Nov	0.011	0.016	0.008
18-Nov	0.011	0.015	0.008
19-Nov	0.011	0.017	0.008
20-Nov	0.011	0.015	0.008
21-Nov	0.011	0.016	0.008
22-Nov	0.011	0.017	0.008
23-Nov	0.011	0.015	0.008
24-Nov	0.011	0.016	0.008
25-Nov	0.010	0.015	0.007
26-Nov	0.011	0.015	0.007
27-Nov	0.011	0.015	0.008
28-Nov	0.011	0.016	0.007
29-Nov	0.011	0.015	0.008
30-Nov	0.011	0.014	0.006

Table 3: Daily Results for November 2022 (in millirem per hour) for Location #3

Day	Average Dose Rate	Maximum Dose Rate	Minimum Dose Rate
1-Nov	0.014	0.020	0.010
2-Nov	0.014	0.022	0.010
3-Nov	0.014	0.021	0.010
4-Nov	0.014	0.019	0.010
5-Nov	0.014	0.020	0.010
6-Nov	0.014	0.019	0.010
7-Nov	0.014	0.018	0.010
8-Nov	0.014	0.020	0.010
9-Nov	0.014	0.020	0.009
10-Nov	0.014	0.022	0.010
11-Nov	0.014	0.019	0.010
12-Nov	0.014	0.020	0.010
13-Nov	0.014	0.018	0.010
14-Nov	0.014	0.019	0.010
15-Nov	0.014	0.020	0.011
16-Nov	0.014	0.019	0.010
17-Nov	0.014	0.020	0.010
18-Nov	0.014	0.020	0.010
19-Nov	0.014	0.020	0.010
20-Nov	0.014	0.019	0.010
21-Nov	0.014	0.019	0.010
22-Nov	0.014	0.020	0.010
23-Nov	0.014	0.021	0.010
24-Nov	0.014	0.019	0.010
25-Nov	0.014	0.019	0.010
26-Nov	0.014	0.019	0.010
27-Nov	0.014	0.020	0.010
28-Nov	0.014	0.019	0.010
29-Nov	0.014	0.019	0.010
30-Nov	0.014	0.018	0.009

Table 4: Daily Results for November 2022 (in millirem per hour) for Location #4 (Control)

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