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## **San Onofre Nuclear Generating Station Independent Spent Nuclear Fuel Storage Installation**

**Report period: March 2024**

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 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 March 2024.

### **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 offsite waste shipments that impacted the radiation measurements by the ISFSI Radiation Monitoring System during March 2024.

### **Other**

On March 20 and 21, inspection and maintenance activities occurred on the Holtec ISFSI Pad that lead to slightly elevated dose rates localized to the Holtec ISFSI pad. All measured and recorded dose rates were as-expected.

**Table 1: Daily Results for March 2024 (in millirem per hour) for Location #1**

<b>Day</b>	<b>Average Dose Rate</b>	<b>Maximum Dose Rate</b>	<b>Minimum Dose Rate</b>
<b>1-Mar</b>	0.022	0.031	0.016
<b>2-Mar</b>	0.022	0.030	0.015
<b>3-Mar</b>	0.021	0.030	0.016
<b>4-Mar</b>	0.021	0.028	0.016
<b>5-Mar</b>	0.021	0.028	0.017
<b>6-Mar</b>	0.022	0.029	0.016
<b>7-Mar</b>	0.022	0.030	0.016
<b>8-Mar</b>	0.021	0.028	0.015
<b>9-Mar</b>	0.022	0.030	0.015
<b>10-Mar</b>	0.022	0.028	0.016
<b>11-Mar</b>	0.022	0.030	0.017
<b>12-Mar</b>	0.022	0.029	0.017
<b>13-Mar</b>	0.022	0.032	0.016
<b>14-Mar</b>	0.022	0.028	0.016
<b>15-Mar</b>	0.022	0.030	0.017
<b>16-Mar</b>	0.022	0.031	0.017
<b>17-Mar</b>	0.022	0.028	0.016
<b>18-Mar</b>	0.022	0.031	0.016
<b>19-Mar</b>	0.022	0.030	0.016
<b>20-Mar</b>	0.022	0.031	0.016
<b>21-Mar</b>	0.023	0.037	0.017
<b>22-Mar</b>	0.022	0.029	0.016
<b>23-Mar</b>	0.022	0.029	0.017
<b>24-Mar</b>	0.022	0.029	0.016
<b>25-Mar</b>	0.022	0.029	0.016
<b>26-Mar</b>	0.022	0.030	0.015
<b>27-Mar</b>	0.021	0.028	0.016
<b>28-Mar</b>	0.022	0.029	0.015
<b>29-Mar</b>	0.022	0.028	0.016
<b>30-Mar</b>	0.022	0.029	0.016
<b>31-Mar</b>	0.022	0.028	0.017

**Table 2: Daily Results for March 2024 (in millirem per hour) for Location #2**

<b>Day</b>	<b>Average Dose Rate</b>	<b>Maximum Dose Rate</b>	<b>Minimum Dose Rate</b>
<b>1-Mar</b>	0.010	0.014	0.007
<b>2-Mar</b>	0.010	0.014	0.007
<b>3-Mar</b>	0.010	0.013	0.007
<b>4-Mar</b>	0.010	0.013	0.006
<b>5-Mar</b>	0.010	0.014	0.007
<b>6-Mar</b>	0.010	0.015	0.008
<b>7-Mar</b>	0.010	0.016	0.007
<b>8-Mar</b>	0.010	0.014	0.007
<b>9-Mar</b>	0.010	0.014	0.007
<b>10-Mar</b>	0.010	0.014	0.007
<b>11-Mar</b>	0.010	0.016	0.008
<b>12-Mar</b>	0.011	0.015	0.008
<b>13-Mar</b>	0.011	0.016	0.008
<b>14-Mar</b>	0.011	0.016	0.007
<b>15-Mar</b>	0.012	0.019	0.008
<b>16-Mar</b>	0.011	0.015	0.007
<b>17-Mar</b>	0.011	0.015	0.008
<b>18-Mar</b>	0.011	0.015	0.008
<b>19-Mar</b>	0.011	0.015	0.008
<b>20-Mar</b>	0.011	0.016	0.008
<b>21-Mar</b>	0.011	0.017	0.007
<b>22-Mar</b>	0.011	0.015	0.007
<b>23-Mar</b>	0.011	0.016	0.008
<b>24-Mar</b>	0.011	0.016	0.008
<b>25-Mar</b>	0.011	0.015	0.008
<b>26-Mar</b>	0.011	0.015	0.008
<b>27-Mar</b>	0.011	0.017	0.008
<b>28-Mar</b>	0.012	0.017	0.008
<b>29-Mar</b>	0.012	0.018	0.008
<b>30-Mar</b>	0.013	0.018	0.009
<b>31-Mar</b>	0.013	0.017	0.010

**Table 3: Daily Results for March 2024 (in millirem per hour) for Location #3**

<b>Day</b>	<b>Average Dose Rate</b>	<b>Maximum Dose Rate</b>	<b>Minimum Dose Rate</b>
<b>1-Mar</b>	0.013	0.019	0.009
<b>2-Mar</b>	0.013	0.019	0.010
<b>3-Mar</b>	0.014	0.019	0.010
<b>4-Mar</b>	0.014	0.020	0.009
<b>5-Mar</b>	0.014	0.019	0.010
<b>6-Mar</b>	0.014	0.018	0.010
<b>7-Mar</b>	0.014	0.020	0.010
<b>8-Mar</b>	0.014	0.018	0.010
<b>9-Mar</b>	0.014	0.018	0.009
<b>10-Mar</b>	0.014	0.019	0.010
<b>11-Mar</b>	0.014	0.019	0.010
<b>12-Mar</b>	0.014	0.020	0.009
<b>13-Mar</b>	0.014	0.019	0.010
<b>14-Mar</b>	0.014	0.019	0.010
<b>15-Mar</b>	0.014	0.020	0.010
<b>16-Mar</b>	0.014	0.019	0.010
<b>17-Mar</b>	0.014	0.019	0.010
<b>18-Mar</b>	0.014	0.018	0.009
<b>19-Mar</b>	0.014	0.018	0.010
<b>20-Mar</b>	0.014	0.024	0.010
<b>21-Mar</b>	0.013	0.018	0.010
<b>22-Mar</b>	0.014	0.020	0.010
<b>23-Mar</b>	0.014	0.020	0.010
<b>24-Mar</b>	0.014	0.018	0.009
<b>25-Mar</b>	0.014	0.020	0.010
<b>26-Mar</b>	0.014	0.020	0.010
<b>27-Mar</b>	0.014	0.020	0.010
<b>28-Mar</b>	0.014	0.018	0.010
<b>29-Mar</b>	0.014	0.018	0.010
<b>30-Mar</b>	0.014	0.020	0.010
<b>31-Mar</b>	0.014	0.018	0.010

**Table 4: Daily Results for March 2024 (in millirem per hour) for Location #4 (Control)**

<b>Day</b>	<b>Average Dose Rate</b>	<b>Maximum Dose Rate</b>	<b>Minimum Dose Rate</b>
<b>1-Mar</b>	0.008	0.011	0.005
<b>2-Mar</b>	0.008	0.013	0.006
<b>3-Mar</b>	0.008	0.013	0.005
<b>4-Mar</b>	0.008	0.011	0.006
<b>5-Mar</b>	0.008	0.011	0.006
<b>6-Mar</b>	0.008	0.012	0.006
<b>7-Mar</b>	0.008	0.011	0.006
<b>8-Mar</b>	0.008	0.011	0.006
<b>9-Mar</b>	0.008	0.012	0.006
<b>10-Mar</b>	0.009	0.012	0.006
<b>11-Mar</b>	0.008	0.011	0.006
<b>12-Mar</b>	0.008	0.012	0.006
<b>13-Mar</b>	0.008	0.012	0.005
<b>14-Mar</b>	0.008	0.012	0.006
<b>15-Mar</b>	0.009	0.013	0.006
<b>16-Mar</b>	0.008	0.012	0.006
<b>17-Mar</b>	0.008	0.012	0.005
<b>18-Mar</b>	0.009	0.014	0.006
<b>19-Mar</b>	0.009	0.013	0.005
<b>20-Mar</b>	0.009	0.012	0.006
<b>21-Mar</b>	0.008	0.012	0.004
<b>22-Mar</b>	0.008	0.011	0.005
<b>23-Mar</b>	0.008	0.012	0.006
<b>24-Mar</b>	0.008	0.011	0.005
<b>25-Mar</b>	0.008	0.013	0.005
<b>26-Mar</b>	0.008	0.011	0.006
<b>27-Mar</b>	0.008	0.012	0.006
<b>28-Mar</b>	0.008	0.013	0.005
<b>29-Mar</b>	0.008	0.012	0.005
<b>30-Mar</b>	0.008	0.012	0.006
<b>31-Mar</b>	0.008	0.012	0.005