

August 1, 2006

Mr. Stuart A. Richards, Deputy Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: **Groundwater Protection – Data Collection Questionnaire
Docket Nos. 50-206, 50-361, and 50-362
San Onofre Nuclear Generating Station, Units 1, 2 and 3**

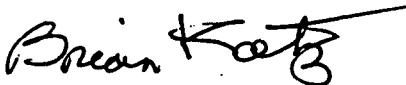
Dear Mr. Richards:

The nuclear industry, in conjunction with the Nuclear Energy Institute, has developed a questionnaire to facilitate the collection of groundwater data at commercial nuclear reactor sites. The objective of the questionnaire is to compile baseline information about the current status of site programs for monitoring and protecting groundwater and to share that information with NRC. The completed questionnaire for San Onofre Nuclear Generating Station (SONGS) is enclosed.

This submittal contains no new regulatory commitments.

Please contact me if you have questions about the enclosed information.

Sincerely,



Brian Katz
Vice President, Nuclear Oversight and Regulatory Affairs

Enclosure

cc: USNRC Document Control Desk
B.S. Mallett, USNRC Regional Administrator – Region IV
J. C. Shepherd, NRC Project Manager, San Onofre Unit 1
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S. Y. Hsu, California Dept. of Health Services, Radiologic Health Branch
Ralph Andersen, Nuclear Energy Institute

Enclosure 1
Industry Groundwater Protection Initiative
Voluntary Data Collection Questionnaire

Plant: San Onofre Nuclear Generating Station (SONGS)

- 1. Briefly describe the program and/or methods used for detection of leakage or spills from plant systems, structures, and components that have a potential for an inadvertent release of radioactivity from plant operations into groundwater.**
 - The spent fuel pools at all three units at SONGS are equipped with stainless steel liners and have leak detection systems. Unit 1 is currently undergoing decommissioning and all of the spent fuel has been transferred to an Independent Spent Fuel Storage Installation (ISFSI). The Unit 1 spent fuel pool liner has been removed with demolition of the spent fuel building scheduled for 2007.
 - Engineers perform periodic walkdowns and/or inspections of the systems for which they are responsible. These rounds include the requirement to identify and report leaks and spills. Leaks and spills are addressed through: immediate clean-up, notifying supervision for assistance, writing a work request or initiating corrective action under an Action Request (AR) assignment.
 - Operations personnel perform routine surveillance rounds each shift. These rounds include the requirement to identify and report leaks and spills. Leaks and spills are addressed through: immediate clean-up, notifying supervision for assistance, writing a work request or initiating corrective action under an Action Request (AR) assignment.

- 2. Briefly describe the program and/or methods for monitoring onsite groundwater for the presence of radioactivity released from plant operations.**
 - SONGS' programs are designed to identify the presence of radioactivity while the contaminated liquid is inside systems and components and to maintain the integrity of those systems. As such, there are no monitoring programs for on-site or off-site groundwater, particularly since SONGS is immediately adjacent to the Pacific Ocean. The groundwater is not potable and is not likely to be used as a drinking water source even after the eventual decommissioning of the site.
 - Even though there is no drinking water pathway at SONGS, samples are taken monthly of off-site drinking water sources in the area as part of the Radiological Environmental Monitoring Program (REMP) program. One of those samples (2 miles away and upgradient) represents local drinking water wells and groundwater. Water samples are analyzed for a variety of isotopes, including tritium, as specified in the Offsite Dose Calculation Manual (ODCM), including the lower limits of detection (LLDs). Sample data have not detected tritium attributable to plant operations in off-site drinking water supplies.

- Typical minimum detectable activities (MDAs) for SCE's contract laboratory analysis of 1 liter of REMP water samples are:

ANALYTE	MDA (pCi/liter)
Gross beta	4
H-3	400
Mn-54	25
Fe-59	30
Co-58, -60	15
Zn-65	30
Zr-95, Nb-95	15
I-131	15
Cs-134	10
Cs-137	10
Ba-140, La-140	15

- 3. If applicable, briefly summarize any occurrences of inadvertent releases of radioactive liquids that had the potential to reach groundwater and have been documented in accordance with 10 CFR 50.75(g).**
- The U1 yard drain sump and reheater pit sump are ODCM-credited release points that have overflowed on several occasions as a result of surface run-off following rainfall. The affected areas were decontaminated after each incident and the overflow(s) reported as abnormal liquid releases in the appropriate Semi- and Annual Radioactive Effluent Release Report.
 - In March 1983 a hose connection on the recirculation line of a Units 2/3 refueling water storage tank leaked onto the roof of the tank farm building. Drain lines from the roof connecting to the storm drain and then the main circulating water outfall resulted in an unplanned release estimated at less than 0.8 microcuries total radioactivity. The spill was cleaned up and the incident described in the 1983 SemiAnnual Radioactive Effluent Release Report.
 - In October 1986 approximately 100 gallons of water from a Unit 3 refueling water storage tank spilled during maintenance work and drained to the storm drain system. The storm drains empty into the main circulating water system, resulting in an abnormal release estimated at less than 700 microcuries total radioactivity. The spill was cleaned up and the incident described in the 1986 SemiAnnual Radioactive Effluent Release Report.
 - In June 1988, one of the drains from the Unit 2 Fuel Handling Building Sump backed up, and water trickled over approximately 4 feet of concrete to a nearby storm drain, resulting in an abnormal release of less than 12 microcuries total. A second drain, this time from the Unit 3 transfer pad, was also observed to be leaking into a nearby storm drain. This abnormal release was conservatively estimated at approximately 2 microcuries total activity. Both of these areas were decontaminated and the incidents were reported in the 1988 SemiAnnual Radioactive Effluent Release Report.
 - In May 1989 it was identified that the sampling trough used to collect relief leak-by from Units 2&3 secondary plant systems sample valves was being drained to an unmonitored sump. As a result, abnormal releases had occurred during periods of primary to secondary leakage since plant startup. The output from the sampling trough was rerouted to a monitored release point. This event was described in the 1989 SemiAnnual Radioactive Effluent Release Report.

4. If applicable, briefly summarize the circumstances associated with any onsite or offsite groundwater monitoring result indicating a concentration in groundwater of radioactivity released from plant operations that exceeds the maximum contaminant level (MCL) established by the USEPA for drinking water.

- The groundwater at SONGS is not potable due to the proximity of the Pacific Ocean. There have been no instances in which any water samples that are used for drinking water or could be used for drinking water in the future have been identified as having a concentration of a radioisotope that exceeds the US EPA's maximum contaminant level (MCL) for drinking water.
- As previously stated, there is no established program for on-site groundwater monitoring. However, SCE is dewatering as needed as part of decommissioning of Unit 1. Preliminary sample results for non-potable water that is being removed from between the Unit 1 containment sphere and the underlying reinforced concrete foundation (and therefore presumed to be groundwater) have fluctuated, with some of the values above the EPA's MCL for tritium. SCE informed the NRC inspector who was conducting a routine inspection of Unit 1 during 7/17-7/21/2006 of the preliminary results. An investigation is underway and is being tracked under Action Request 060700895. Additional information will be provided to the NRC as it is developed.

5. Briefly describe any remediation efforts undertaken or planned to reduce or eliminate levels of radioactivity resulting from plant operations in soil or groundwater onsite or offsite.

- In May 1981 a routine survey of the beach just seaward of Unit 1 identified slightly elevated dose rates. Investigation showed that the cover of an inactive storm drain penetration had been inadvertently removed, and the sand surrounding the penetration was contaminated. The area was remediated but trace levels of radioactivity remain with the NRC's approval. (reference: 1981-1982 NRC-SCE correspondence)
- In 1982 the on-site septic tank and leach field were replaced with a sewage treatment plant in the immediate vicinity of the leach field. Analysis of the sand surrounding the septic tank identified trace levels of gamma emitters. The tank and surrounding soil were removed. (reference: Station Incident Report 82-40; NRC Inspection report 50-206/83-27)
- An artificial retention pond was used for Units 2 and 3 plant startup activities and later operational needs until 1987. Steam generator blowdown from Unit 3 was diverted to the retention pond in late 1984 during a period of primary to secondary leakage. The artificial retention pond was remediated and decommissioned. (reference "Request for Exempted Disposal of Very Low Level Radioactive Waste" from SCE to CA Dept. of Health Services dated 6/24/1987; "Disposal of Wastewater Sludge and Soil" approval letter from CA Dept. of Health Services to SCE dated 7/28/1987)
- In August 1995, outage-related work on a shutdown cooling valve at Unit 3 resulted in contaminated water draining into the storm drain system. The storm drains were cleaned and samples taken to verify that there was no residual contamination. (reference Non Conformance Report 95080161; "Inadvertent Spill during Testing of 3HV9337" memo to file dated 11/3/1995; RCE 95-015)
- In February 1997 during a Unit 2 plant outage, a fitting on a hose transferring radioactive liquids from inside containment to a sump leaked to the asphalt. The area was cleaned up and survey results showed no detectable contamination above background (reference HP surveys 970212-004 and 970215-001)

- Unit 1 is undergoing decommissioning at this time. A Historical Site Assessment was completed for Unit 1 per the guidance of MARSSIM and is being used to inform the surveys and sampling effort. As needed, remediation has been or will be performed to ensure that the site can meet the NRC criteria for unrestricted release prior to license termination. The instances described below are identified in the Historical Site Assessment and identify areas in which the subsurface soil is likely to have become contaminated and has not already been demonstrated to satisfy the derived concentration guidelines (DCGLs) necessary to meet the requirements for unrestricted release of the site under 10 CFR 20 Subpart E:
 - The Unit 1 yard drain sump is an ODCM-credited release point originally designed to collect secondary side equipment area drainage and surface run-off. In 1992, the sump was identified as having a French drain that could allow direct communication between the sump and its contents and the underlying groundwater. The French drain was covered with a metal plate and the NRC was notified of the event.
 - In January 1986, a leak was identified in the upender liner plate of the Unit 1 Spent Fuel Pool. The leak could have migrated through construction joints and potentially reached the underlying soil. It is also possible that the leak detection system could have potentially filled and overflowed the collection or monitoring well. (Problem Review Report SO-201-88, Non-Conformance Report SO1-P-5456, "San Onofre Nuclear Generating Station Unit 1, Spent Fuel Pool Liner Plate Evaluation" dated 3/1/1995)
 - During operation, primary system samples were collected in a chemistry lab in the administrative/control building adjacent to containment. A leak in the reactor coolant system sample line was identified in late 1985. The administrative/control building was demolished in summer 2001 and remediation performed for the area outside containment near the sample lines. The area inside containment potentially affected by the sample line leak will be surveyed during demolition of the containment structure.
 - The sphere penetration room, also known as the doghouse, contained piping penetrations for reactor auxiliary equipment and a sump that was historically a contaminated area during plant operation. During decontamination of the walls and floor in year 2005, radioactivity was detected in the sand near the doghouse/containment foundation expansion joint.
 - The Unit 1 post-accident sampling system lab was installed in 1984 to provide an alternate sampling location during post-accident conditions. The sample pipes and valves were located in a separate room equipped with a self-contained sump. During start-up and testing some of the sample lines leaked, resulting in contamination of the sample room and sump.
 - The "backyard" is a general designation for a bermed area where the refueling water storage tank, sample pumps, monitor tanks, and the component cooling water tank and heat exchangers were located. During operation of Unit 1, minor leaks and spills from the systems or components in the area occurred that resulted in low levels of contamination being detectable in surface run-off after rain.