

September 6, 2012

Joan M. Herskowitz  
Co-Chair, Conservative Committee  
Buena Vista Audubon Society  
PO Box 480  
Oceanside, CA 92049-0480

Dear Ms. Herskowitz:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter to Chairman Gregory B. Jaczko, dated May 18, 2012, in which you conveyed concerns about the safety of the San Onofre Nuclear Generating Station (SONGS). Specifically, your letter expressed concerns about a steam generator tube leak in January of this year, the age of the plant, and operational problems in the past that required the NRC to ensure that appropriate corrective actions were taken. In addition, you expressed concern about your understanding that SONGS' seismic design was only to withstand a 7.0 magnitude earthquake in a region vulnerable to earthquakes that could exceed that level of magnitude.

As you noted in your letter, SONGS Units 2 and 3, are currently shut down due to excessive steam generator (SG) tube wear. On March 15, 2012, the NRC sent an augmented inspection team (AIT) to the site in response to the January 31, 2012, SG tube leak in Unit 3. Subsequently, a significant amount of tube wear was discovered in both of the Unit 2 and Unit 3 SGs. Details of the steam generator tube degradation in both units can be found in the AIT inspection report at <http://pbadupws.nrc.gov/docs/ML1218/ML12188A748.pdf>. For several months, this team of NRC inspectors, with assistance from other NRC experts, has been closely following the licensee's actions to evaluate the causes of the excessive tube wear and to develop corrective actions to prevent further tube degradation. On June 18, 2012, NRC personnel met with representatives of Southern California Edison (SCE, the licensee for SONGS) in San Juan Capistrano, California, to present the NRC's issues and observations resulting from the AIT inspection. As discussed in that meeting, the NRC understands that the SG thermal hydraulic conditions resulted in the tube degradation; that the thermal hydraulic conditions in the SGs were not accurately predicted during design; and that the licensee is evaluating and developing additional actions to fix and prevent any additional tube-to-tube degradation due to excessive vibration.

On March 27, 2012, the NRC issued a Confirmatory Action Letter (CAL) to SCE identifying those specific actions the licensee has committed to take prior to returning the units to power operation. The CAL can be viewed on the NRC Web site, <http://www.nrc.gov>, in the Agencywide Documents Access and Management System (ADAMS), at Accession No. ML12087A323. Under the terms of the CAL, each unit will remain shut down until the licensee provides its written evaluations and responses to the CAL items for that unit, and the NRC reviews that information and concludes that the unit can be operated without undue risk to public health and safety or the environment. The NRC will not grant permission for restart until the agency is confident that the licensee can operate the plant safely. The NRC will transmit its determinations in writing to SCE regarding the restart of SONGS Units 2 and 3. You may find

updates and the latest information on the SONGS' SG repair activities at <http://www.nrc.gov/info-finder/reactor/songs/tube-degradation.html>.

You also expressed concern about SONGS' ability to withstand the magnitude of an earthquake that could be expected in the area. All U.S. nuclear power plants are built to withstand external hazards, including earthquakes. Each nuclear power plant is designed to withstand a ground-shaking level that is appropriate for its location, given the possible earthquake sources that may affect that site. Ground shaking is a function of both the magnitude of the earthquake and the distance from the fault to the specific site. The NRC requires plant safety equipment to be designed to withstand the maximum ground motion resulting from an earthquake near that site, to ensure that the reactor can be safely shut down and maintained in a safe condition following a seismic event. Therefore, the design basis earthquake (DBE) may or may not be the earthquake having the greatest magnitude in the vicinity of the plant; it is the one resulting in the highest ground motion at the plant site.

The SONGS seismic design basis was established from extensive historical records of the geology and seismic activity in the region and is based on a DBE of magnitude 7.0. The DBE for SONGS is postulated to occur near the site (5 miles), and the ground accelerations are postulated to be quite high (0.67g), when compared to other nuclear plant sites in the U.S (0.25g or less is typical for plants in the eastern U.S.).

As part of the lessons learned from the Fukushima Dai-ichi event, the NRC recently issued a formal request for information to all operating reactor licensees to (1) reevaluate seismic and flooding hazards (including tsunami hazards) at their sites using applicable current methods and information, (2) conduct walkdowns of their facilities to ensure protection against the hazards in their current design basis, and (3) reevaluate their emergency communications systems and staffing levels. The NRC will evaluate the responses to the request for information in determining the need for plant modifications or further enhancements to address seismic and flooding hazards as well as emergency communications. You may find these orders and requests for information, as well as other information on the agency's response to the Fukushima event, at <http://www.nrc.gov/reactors/operating/ops-experience/japan-info.html>.

Regarding emergency preparedness, every nuclear power plant operator in the U.S. has an approved Emergency Plan that includes procedures for performing specific actions in response to an emergency, including the necessary interactions with State and Local authorities and responders. These Emergency Plans are exercised on a regular basis (i.e., every 2 years) and include participation of plant personnel, State and Local authorities and responders. The NRC also participates in these exercises in addition to providing oversight and evaluation of the exercises. In addition, the Federal Emergency Management Agency (FEMA) provides oversight of the offsite response during these exercises. In the event of an emergency that would require activation of this plan, plant operators would work together with state and local authorities to direct and guide the actions of off-site responders and together would determine the need for evacuation and/or sheltering to minimize radiation exposure to the public. Decision-making regarding evacuation and/or sheltering would involve information regarding the actual emergency, conditions at the plant, mitigating actions being taken at the plant, meteorological conditions that could affect the direction of travel of any radioactive plume, and potential dispersion of this plume. For Incidents of National Significance, where the critical infrastructure is severely damaged, DHS has a lead role as a coordinating agency to orchestrate Federal, State, and local assets.

Among the additional issues identified by the NRC staff as having a nexus to the Fukushima event was the basis of the emergency planning zone (EPZ) size. The Commission has defined two EPZs around each nuclear plant. The exact size and configuration of these zones may vary from plant to plant due to local emergency response needs and capabilities, demography, topography, land characteristics, access routes, and jurisdictional boundaries. The two EPZs are the plume exposure pathway EPZ and the ingestion exposure pathway EPZ.

A plume exposure pathway EPZ is an area of approximately 10 miles in radius around each nuclear power plant. Site-specific, predetermined emergency plans are in place for this EPZ and include provisions for protective actions designed to avoid or reduce dose from exposure to radioactive materials in the event of a radiological emergency. These actions include evacuation, sheltering, and the use of potassium iodide, where appropriate.

An ingestion exposure pathway EPZ is an area of approximately 50 miles in radius around each nuclear power plant. Site specific emergency plans are in place for this EPZ as well, and include provisions to avoid or reduce dose from the possible ingestion of radioactive materials that could contaminate water and food sources as the result of a radiological emergency.

Over the years, the NRC staff has conducted several studies that provided additional insights regarding the adequacy of the plume exposure pathway EPZ. The results of these studies have been published as NRC documents. They include: (1) NUREG/CR 6953, "Review of NUREG-0654, Supplement 3, 'Criteria for Protective Action Recommendations for Severe Accidents'," which evaluated the efficacy of various protective action strategies within the EPZ; (2) NUREG/CR-6864, "Identification and Analysis of Factors Affecting Emergency Evacuations," which examined large evacuations in the U.S. between 1990 and 2003 to more fully understand the dynamics involved; and (3) Draft NUREG-1935, "State of the Art Reactor Consequence Analysis," which evaluated hypothetical evacuations within EPZs and beyond in response to a series of accident scenarios. These studies support the NRC's basis for concluding that the existing emergency preparedness framework and regulations provide reasonable assurance of adequate protection of public health and safety in the event of a radiological emergency at a U.S. nuclear power plant. Nevertheless, the NRC staff is planning to review the basis for the emergency planning zones as a longer-term activity to determine whether any enhancements to existing strategies are warranted.

Lastly, regarding oversight, the NRC Reactor Oversight Process uses a variety of tools to monitor and evaluate the performance of all operating commercial nuclear power reactors. This rigorous process focuses on the plant activities that are most important to safety. It includes a series of periodic inspection activities and regular reviews of operational performance. In addition to regular inspections conducted by teams from our regional office, we have permanently assigned resident inspectors at all U.S. nuclear power plants, including SONGS to provide ongoing regulatory oversight. You can find the results of our inspections of SONGS, and our most current assessments of its safety performance on the NRC Web site at <http://www.nrc.gov/reactors/operating/oversight.html>.

J. Herskowitz

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Thank you for conveying your concerns about these matters.

Sincerely,

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A. Louise Lund, Deputy Director  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

J. Herskowitz

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Thank you for conveying your concerns about these matters.

Sincerely,

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A. Louise Lund, Deputy Director  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

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