



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

NOV 15 1979

PDR  
50-133 (u)

The Honorable Alan Cranston  
United States Senate  
Washington, D.C. 20510

Dear Senator Cranston:

In response to your note of October 19, 1979, which requests that the Nuclear Regulatory Commission provide information that will answer several questions from Ms. Nancy J. Bonde, in her letter to you of July 1979, we are enclosing two copies of our response. As requested, the copy of her letter is also enclosed.

We have provided answers that relate to NRC responsibilities. Unfortunately, some of Ms. Bonde's questions go beyond our area of responsibility. However, we do know that the State of California is not receiving any significant burden of radioactivity from sources regulated by the NRC.

Sincerely,

ORIGINAL SIGNED BY R. G. SMITH

Lee V. Gossick  
Executive Director for Operations

Enclosures:

1. Two copies of response to questions from Ms. Nancy J. Bonde
2. Ltr. to Senator Cranston fm. Nancy J. Bonde dtd. July 1979

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RESPONSES TO QUESTIONS OF MS. NANCY J. BONDE  
IN THE LETTER OF JULY 1979 TO SENATOR CRANSTON

Question 1 - How many nuclear plants do we have in California?

Response - There are three nuclear power plant units licensed to operate in California, Humboldt Bay, San Onofre Unit 1 and Rancho Seco. Four more units have construction permits granted, Diablo Canyon Units 1 and 2 and San Onofre Units 2 and 3. Humboldt Bay has been shut down since July 1977 and a date for return to operation has not been established.

Question 2 - How much radioactive waste is buried here in California?

Response - There are no NRC licensed radioactive waste burial grounds in California. California is an "agreement state," which means that the state controls such facilities. To our knowledge the state has also not permitted radioactive waste to be buried in California. Ms. Bonde could contact Joseph O. Ward, Chief, Radiologic Health Section, State Department of Health Services, 714 P Street, Sacramento, CA 95814 (telephone 916-322-2073) for further input to this question.

Question 3 - How much (radioactivity) has leaked into the ocean affecting the fish we eat or water we drink?

Response - The staff's dose assessment for San Onofre considered pathways associated with radioactive materials released in liquid effluents to the Pacific Ocean.<sup>1/</sup> The dose evaluation of these pathways was based on the maximum exposed individual. For the total body and organ dose, the staff considered the maximum exposed individual to be an adult whose diet included the consumption of fishes and invertebrates harvested in the immediate vicinity of the discharge from San Onofre, Unit No. 1, into the Pacific Ocean and use of the shoreline for recreational purposes, for boating, and for swimming. Since there are no drinking water sources receiving liquid effluents from San Onofre, this pathway was not considered in the staff's evaluation.

Using this approach the staff calculated the annual dose or dose commitment to the total body or to any organ of an individual in an unrestricted area to be about 0.19 mrem/reactor and 1.5 mrem/reactor, respectively.

<sup>1</sup> Collins, J.T., Memorandum for A.Swencer, "DSE Evaluation of San Onofre Nuclear Generating Station, Unit No. 1, with respect to Appendix I to 10 CFR Part 50," November 14, 1977. Docket File 50-206, U.S. Nuclear Regulatory Commission, Washington, D.C.

The staff's dose assessment for Rancho Seco considered the liquid release pathways for materials released to Clay Creek.<sup>2/</sup> The dose evaluation of the liquid release pathways was based on the maximum exposed individual. The discharges are made to a creek which is dry most of the time; hence no ingestion pathways were assumed. The calculation was made for a teenage individual utilizing the shoreline of Clay Creek for recreation for 67 hr/yr. This resulted in a calculated annual dose or dose commitment to the total body or to any organ of an individual in the unrestricted area to be less than 1 mrem/yr.

For Humboldt Bay Power Plant the licensee assessed the dose pursuant to Appendix I, 10 CFR 50<sup>3/</sup>. The methods used to make these assessments were those described in NRC Regulatory Guide 1.109. The fish, invertebrate, and aquatic plant consumption pathways, and external exposure from sediment and swimming pathways were evaluated. The doses due to the drinking water and irrigation pathways were not calculated as they are non-existent for this site. The sum of the dose from all these pathways was less than 1 mrem/year for both whole body calculations and specific organ calculations.

It should also be noted that the unit is presently shut down indefinitely for seismic reasons.

In summary, the doses that might be received from discharge into the ocean are extremely small and within the Federal Requirements of Appendix I to 10 CFR Part 50.

Question 4 - How much hot slag is used to build houses, buildings in California?  
How much radioactive materials are used in school buildings?

Response - The National Council on Radiation Protection and Measurement (NCRP) has written a report, No. 56, on the subject "Radiation Exposure from Consumer Products and Miscellaneous Sources." Section 3.2.2, Building Materials, provides a summary of information on the concentrations of naturally-occurring radionuclides in basic building materials with uranium, thorium, and potassium being the major radionuclides of importance.

The dose rate to a person within a building is influenced by a variety of factors. These include the nature and specific radionuclide content of the building material, the geometry of exposure, the ventilation rate, the nature and type of inner wall surfaces and many other

<sup>2</sup> Collins, J.T., Memorandum for R.W. Reid, "DSE Evaluation of Rancho Seco Nuclear Generating Station, Unit No. 1, with respect to Appendix I to 10 CFR Part 50," December 7, 1977, Docket No. 50-312, U.S. NRC, Washington, D.C.

<sup>3</sup> Pacific Gas and Electric Co., Letter from P.A. Crane to R.W. Reid, Docket No. 50-133, June 4, 1976, U.S. NRC, Washington, D.C.

factors. On the basis of review of published data, it has been concluded that the dose rates inside masonry buildings were approximately 100 percent of outdoor terrestrial dose rates in the same general area. Using these data, one can estimate that naturally-occurring radionuclides in building materials such as masonry contribute a dose rate to building occupants of the corresponding terrestrial dose rate due to natural background radiation. This would correspond to approximately 13 mrem/year to the whole body in a masonry building. Since the whole body exposure per year due to all natural background sources is over 100 mrem/year, to every person, it can be seen that building materials contribute an insignificant dose to people, including school children. There have been a few recent highly publicized incidents where a higher than normal radioactive material has been used in building material, but it is unlikely that on the average these incidents would create a real problem to any single person or group of persons.

Question 5 - How many Westinghouse built power plants do we have in California?

Response - The San Onofre Unit 1 nuclear steam supply system (NSSS) was built by Westinghouse. The Diablo Canyon Units 1 and 2 also have Westinghouse NSSS's.