

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
SOUTHERN CALIFORNIA EDISON COMPANY,)
SAN DIEGO GAS & ELECTRIC COMPANY,) Docket Nos. 50-206/361/362
THE CITY OF ANAHEIM, CALIFORNIA AND)
THE CITY OF RIVERSIDE, CALIFORNIA)
(San Onofre Nuclear Generating)
Station, Unit Nos. 1, 2, and 3)

EXEMPTION

I.

The Southern California Edison Company and San Diego Gas & Electric Company hold Provisional Operating License No. DPR-13, which authorizes operation of the San Onofre Nuclear Generating Station, Unit No. 1. The Southern California Edison Company, San Diego Gas & Electric Company, The City of Anaheim, California, and the City of Riverside, California hold Facility Operating License Nos. NPF-10 and NPF-15, which authorize operation of the San Onofre Nuclear Generating Station, Unit Nos. 2 and 3. The three units collectively are called the facilities. The licenses provide, among other things, that the facilities are subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect. These facilities are pressurized water reactors located in San Diego County, California.

II.

Appendix A of 10 CFR Part 20 defines protection factors for respirators. Footnote d-2(c) of this Appendix states that "No allowance is to be made for the use of sorbents against radioactive gases or vapors."

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By submittals dated March 20, 1985, July 11, 1985, and July 31, 1985, Southern California Edison Company (SCE, or the licensee) requested an exemption to 10 CFR Part 20, Appendix A, footnote d-2(c). The licensee submitted this request in accordance with 10 CFR Part 20.103(e) and provided further justification for the exemption in response to our requests for additional information.

Test data and canister qualification information have been provided by SCE by reference to Mine Safety Appliances Company (MSA) data submitted in conjunction with a similar exemption request by Alabama Power Company for the Joseph M. Farley Nuclear Plant, Units 1 and 2 (Docket Nos. 50-348 and 50-364). SCE has provided a detailed response to all NRC staff concerns relating to the request for exemption to 10 CFR Part 20, Appendix A, footnote d-2(c). The exemption would allow the use of a radioiodine protection factor of 50 for MSA GMR-I canisters at San Onofre Nuclear Generating Station, Units 1, 2 and 3 (SONGS 1, 2, 3). Criteria and background information used for our evaluation include 10 CFR Part 20.103; 10 CFR Part 19.12; Regulatory Guide 8.15 "Acceptable Programs for Respiratory Protection"; Regulatory Guide 8.20, "Applications of Bioassay for I-125 and I-131"; NUREG/CR-3403, "Criteria and Test Methods for Certifying Air Purifying Respirator Cartridges and Canisters Against Radioiodine", and Regulatory Guide 8.8, "Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable." Our discussion and evaluation of the request for exemption follows.

Since a NIOSH/MSHA testing and certification schedule for sorbents for use for protection against radioiodine gases and vapors has not been developed, NRC

staff has evaluated SCE's request and verified that the licensee has demonstrated by reliable test data and adequate quality assurance measures that the material and performance characteristics of the MSA GMR-I canister can provide the proposed degree of protection (i.e., a protection factor of 50) under the anticipated conditions of use, as required by 10 CFR Part 20.103(e), for 8 hours. We considered canister efficiency and service life, and the effects of temperature, poisons, relative humidity, challenge concentration and breathing rates on canister efficiency and service life. The programmatic evaluation considered quality control/quality assurance, and radiation protection/ALARA considerations, including task preparation and planning, on-the-job and post-task evaluations, use of engineering controls, radiological surveillance, and radiological training.

The licensee has provided reliable test information which verifies that the MSA GMR-I canister will provide a protection factor of 50 over a period of 8 hours of continuous use, provided that the total challenge of radioactive and non-radioactive iodine and other halogenated compounds does not exceed 1 ppm, and temperature does not exceed 110°F, or up to 130°F provided the dewpoint does not exceed 107°. The data provided by MSA showed the breakthrough point to be well beyond 8 hours.

Testing has been conducted under acceptable conditions of cyclic flow, and under worst case conditions for those environmental factors affecting service life: temperature, relative humidity, and challenge concentration of CH₃I

(methyl iodide/methyl radioiodide), which is the most penetrating of the challenge forms. Data provided from MSA indicate that the MSA GMR-I canisters perform adequately under the accepted test conditions. These conditions - the criteria and test methods - are consistent with those derived for the canisters by the staff from NUREG/CR-3403, and are acceptable.

The licensee, through acceptance of MSA QA controls, has provided commitments that the MSA-GMR-I canisters will meet standards for quality assurance and quality control which are recognized by NIOSH, compatible with NRC staff positions, and are therefore acceptable. This includes a commitment by MSA to establish a 1% AQL (Acceptable Quality Limit) in a 5 to 10 ppm challenge concentration of CH_3I , 90% relative humidity, 110°F, 64 LPM cyclic flow, for a service life of 8 hours or more at penetration equal to 1% of the challenge concentration. Testing data referenced by the licensee demonstrated that performance (i.e., service life) of canisters of 100% relative humidity is acceptable.

Coupled with the use of a full facepiece with the capability of providing a protection factor of greater than 100, to be determined by fit test, the protection factor of 50 is conservative under these conditions. Canister efficiency will be retained for the radioiodine gas or vapors of interest (CH_3I , I_2 , HOI) for this time period. To preclude aging, service life will be calculated from unsealing time, including periods of non-use, and the canister will not be used in the presence of organic solvents or in temperatures in excess

of 107°F dewpoint. Canisters will be stored in sealed humidity-barrier packaging in a cool, dry environment, and discarded after the 8-hour use period to prevent reuse. Through usage restrictions and air sampling, the licensee will preclude exposures to organic vapors and chemicals (such as decontamination compounds, lubricants, volatilized paint, alcohols, freon) which could cause aging, poisoning or desorption of the absorbed radioiodines.

Certain limitations and precautions based on NUREG/CR-3403 guidance are necessary for utilization of the sorbent canisters. We agree with the following such limitations and usage restrictions as proposed by the licensee:

1. Protection factor equal to 50 as a maximum value.
2. The maximum permissible continuous use time is eight hours after which the canister will be discarded.
3. Canisters are not to be used in the presence of organic solvent vapors.
4. Canisters are to be stored in sealed, humidity barrier packaging in a cool, dry environment.*
5. The allowable service life for sorbent canisters is to be calculated from the time of unsealing the canister, including periods of non-exposure.
6. Canister is to be used with a full facepiece capable of providing protection factors greater than 100.

*Sorbent canisters will be maintained in licensee "Class A" storage as defined in ANSI N45.2.2 (i.e., 70° ± 10°F; Relative Humidity less than or equal to 40% Design, less than or equal to 70% Maximum) or an equivalent alternative after receipt on site, except for those maintained for ready issue in the respirator issue area.

7. Canisters are not to be used in total challenge concentrations of organic iodines and other halogenated compounds greater than 1 ppm, including nonradioactive compounds.
8. Canisters are not to be used in environments where temperatures are greater than 110°F, or dewpoint exceeds 107°F.

In addition to the limitations and usage restrictions noted above, the following additional controls will be utilized by the licensee:

1. Temperatures will be measured each shift and/or coincidentally with operations which heat the work areas to assure that temperatures do not exceed 110°F or temperatures corresponding to a dewpoint of 107°F during sorbent canister use.
2. In the initial implementation of sorbent canister use, the following program verification measures will be used:
 - a. weekly whole body counts for individuals using the sorbent canister for radioiodine protection;
 - b. for individuals who exceed 30 MPC hours in seven consecutive days, a whole body count will be required prior to their next entry into a radioiodine atmosphere (i.e., effectively a 30 MPC hour stay time);
 - c. if an individual measures 35 nCi or greater iodine uptake to the thyroid during a whole body count, the individual's entry into radioiodine atmospheres will be restricted pending health physics evaluation;
 - d. a whole body count/survey data base will be compiled to evaluate the results of the program.

3. Technical Specification controls which currently exist restrict painting and chemical releases in areas served by safety related ventilation filtration systems and provide additional restrictions which serve for GMR-I use in these areas also. For other areas, painting or the use of organic substances will be prohibited while the GMR-I canister is in use.
4. Specific plant procedures will incorporate the limitations and usage restrictions, listed as 1 through 8 above, prior to GMR-I canister use. Additionally, a specific procedure has been prepared for field use of the GMR-I canisters.
5. Existing respiratory protection program requirements and restrictions (e.g., physicals, fit tests, Part 20 requirements, Appendices A and B) still apply.

The primary bases for the SCE's request for exemption are the potentials for both work effort reduction and dose reduction. The utilization of air purifying respirators in lieu of air-supplied or self-contained apparatus, where possible, can result in person-rem reductions estimated overall at 30% for tasks requiring radioiodine protection, in a range of from 25% to 50% for several major tasks. The light weight, less cumbersome air purifying respirators (i.e., sorbent canisters) can provide increased comfort and mobility in most cases, and result in increased worker efficiency and decreased time on-the-job. The licensee has provided a task analysis which shows that the use of sorbent canisters at San Onofre can result in significant dose savings and should be an effective as low as is reasonably achievable (ALARA) measure.

Other actions taken by SCE to assure that exposures to radioiodine are ALARA are: radioiodine air sampling will be conducted before and during activities involving the use of sorbent canisters for radioiodine protection; engineering controls such as local HEPA ventilation and the containment purge system used to reduce airborne levels to as low as practical levels; purification and degasification of the primary coolant conducted prior to refueling resulting in reduced radioiodine levels; area decontamination used to control contamination levels; maintenance planning allowing for radioiodine decay times, where practical, prior to breaching primary systems. Whole body counts will be conducted routinely (e.g., weekly and at 30 MPC hours) and radioiodine data will be trended to detect problems; an investigation level for radioiodine uptakes has been established (at 35 nCi); training of workers and health physics technicians in the use and restrictions for use of sorbent canisters for radioiodine protection will be conducted prior to their use; and procedures iterating the controls, restrictions, and requirements have been developed and will be implemented. The licensee's efforts to keep exposure ALARA are consistent with the positions in Regulatory Guide 8.8 and are acceptable.

In summary, the NRC staff's review of the licensee's proposal indicates that the actions proposed by SCE can result in significant dose savings over alternative methods while still providing effective protection. This exemption would enable the licensee to use a protection factor for air purifying radioiodine gas and vapor respirators in estimating worker exposures from radioiodine gases and vapors. The licensee has provided usage restrictions and controls which can

assure an effective radioiodine protection program. The proposed criteria and test methods for verifying the effectiveness and quality of GMR-I canisters are consistent with NRC staff criteria. The licensee's proposed exemption, with the controls and limitations, meets the staff positions in the SRP, NUREG/CR-3403 and Regulatory Guide 8.8, and is acceptable. The actions proposed by the licensee are consistent with the requirements of 10 CFR Part 20.103(e), and form an acceptable basis to authorize the granting of an exemption in accordance with the provisions of 10 CFR Part 20.103(e).

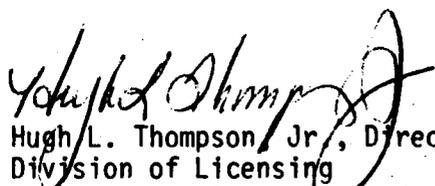
III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 20.501 an exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. The Commission hereby grants an exemption from the requirements of Footnote d-2(c) of Appendix A of 10 CFR Part 20.

It is further determined that the exemption does not authorized a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. In light of this determination and as reflected in the Environmental Assessment and Finding of No Significant Impact prepared pursuant to 10 CFR 51.2 and 51.30 through 51.32, it was concluded that the instant action is insignificant from the standpoint of environmental impact and an environmental impact statement need not be prepared.

For further details with respect to this action, see the licensee's requests dated March 20, July 11, and July 31, 1985 which are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the San Clemente Branch Library, 242 Avenida del Mar, San Clemente, California 92672.

FOR THE NUCLEAR REGULATORY COMMISSION


Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 17th day of September, 1985.