

UNITED STATES NUCLEAR REGULATORY COMMISSIONSOUTHERN CALIFORNIA EDISON COMPANYSAN DIEGO GAS AND ELECTRIC COMPANYDOCKET NO. 50-206SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Provisional Operating License No. DPR-13 issued to Southern California Edison Company, et al., (the licensee), for operation of San Onofre Nuclear Generating Station, Unit No. 1, located in San Diego County, California.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed amendment is a request to allow spent reactor fuel to be transshipped from San Onofre Unit 1 (SONGS 1) to the San Onofre Units 2 and 3 (SONGS 2 and 3) spent fuel storage pools. The staff previously issued an Environmental Assessment (EA) of the proposed actions for the SONGS Unit 2 and 3 (Docket Nos. 50-361 and 50-362) which was published in the FEDERAL REGISTER on June 22, 1988 (53 FR 23468).

The Need for the Proposed Action:

The proposed amendment is required to allow spent fuel to be transshipped from Unit No. 1 to Unit Nos. 2 and 3.

Environmental Impacts of the Proposed Action:

The proposed amendment would not alter the type or amount of fuel that can be received, used and possessed at the site. Limitations on the amount of fuel that may be stored in the Units 2 and 3 spent fuel pools and the manner in

which it may be stored and handled would also not be changed. Only the Unit 1 spent fuel that has aged for at least 120 days will be transferred to Units 2/3 spent fuel pools. A GE-IF-300, 70 ton, 7 element cask, registered with the NRC and for which a Certificate of Compliance has been issued by the NRC, will be used to transfer spent fuel between units, thus ensuring that the cask to be used meets the packaging and transportation requirements of 10 CFR Part 71.

The transfer process will begin with the spent fuel handling machine transferring fuel assemblies underwater from the Unit 1 spent fuel storage racks to the spent fuel shipping cask. The fuel assemblies will be placed in the cask while maintaining a prescribed minimum water level above the assemblies for personnel protection. After the assemblies have been loaded into the cask, the cask will be prepared for transport. A crane will then load the cask onto a transport vehicle for travel to Units 2/3, a distance of approximately one fourth of a mile, all of which will be on the plant site. The offloading and storage of the Unit 1 spent fuel at Units 2/3 will be accomplished in a manner similar to the above, but in reverse order. The process will be repeated for each group of seven spent fuel assemblies transferred. The licensee has conservatively estimated that no more than 216 Unit 1 spent fuel assemblies will be transferred between the units in any year.

As summarized in the following sections, the transshipment will be closely monitored. Controls will be in effect to reduce the possible spread of contamination. Station security will accompany the casks during transporting between units. Health Physics personnel will monitor the operation to maintain occupational doses "as low as is reasonably achievable" (ALARA).

Occupational Radiation Exposure

The cumulative occupational radiation dose for the proposed transfer operation is estimated to be less than 0.1 person-rem per spent fuel assembly. This small radiation dose will not affect the licensee's ability to maintain individual occupational doses within the limits of 10 CFR Part 20 and as low as is reasonably achievable (ALARA).

Based on present and projected operations, the staff estimates that the proposed transfer of Unit 1 spent fuel to Units 2 and 3 should add only a small fraction to the total annual occupational radiation dose at the facility. The collective occupational doses for 1986 and 1987 were approximately 275 and 232 person-rem per year per unit, respectively. The projected total cumulative occupational dose for the movement of seven spent fuel assemblies in one cask would be less than .7 person-rem. The licensee has estimated that no more than 216 spent fuel assemblies in any year would be transferred for which an annual occupational dose of about 22 person-rem would result. This would increase the occupational collective dose for the station (3 Units) by about three percent in one year.

One potential source of radiation is radioactive corrosion products, called "crud". Crud may be released to the spent fuel pool water during fuel movement. This could temporarily increase radiation levels in the vicinity of the spent fuel pools. Radiation levels will be monitored continuously. The licensee's ALARA program should assure that crud on the spent fuel pool walls will not present a significant contribution to personnel exposures. Excess crud will be removed by scrubbing the walls. Further, the spent fuel pool cleanup system will remove deposits in the spent fuel pool water and thereby reduce crud levels.

The licensee has committed to minimize "hot particle" contamination by the use of an extensive operational radiological safety program. The exteriors of the shipping cask will be thoroughly decontaminated by steam cleaning each time it exits a spent fuel pool. Casks will be surveyed and wiped down to ensure proper decontamination, and covered with a nylon bag for transfer between the units. The staff concludes that the licensee has taken adequate measures to minimize hot particle contamination. The licensee will not move a known leaking spent fuel assembly, or any of the plutonium assemblies, in Unit 1.

During the spent fuel assembly transfer, occupational exposure will be limited by the ALARA procedures and guidelines. Therefore, the staff concludes that the radiation protection program is adequate for ensuring that occupational radiation exposure during the spent fuel transfer will be maintained in accordance with staff ALARA guidelines, including Regulatory Guides 8.8 and 8.10, and the requirements of 10 CFR Part 20, and is acceptable.

Public Radiation Exposure

10 CFR Part 71.43 provides that a package (shipping cask) must be designed, constructed, and prepared for shipment so that under specified tests for normal conditions of operation, there will be no loss or dispersal of radioactive contents, no significant increase in external radiation levels, and no substantial reduction in the effectiveness of the packaging. Moreover, 10 CFR Part 71.51 provides for additional requirements for design, construction and preparation to ensure that, under severe hypothetical accident conditions, any release of radioactive materials or increase in external radiation would be within prescribed, acceptable limits.

The licensee has documented a special procedure, S0123-X-9, "Transshipment of Spent Fuel Using the IF-300 Cask," for transporting the spent fuel from Unit 1 to Units 2 and 3. This report describes the helium leak test procedures and acceptance criteria used on the GE-IF-300 cask to verify its compliance with 10 CFR Part 71 requirements.

10 CFR Part 71.47 provides that radiation levels external to the cask must not exceed 10 millirem/hr at any point two meters beyond the outermost sides of the transporting vehicles. For a cask meeting this requirement, the corresponding dose rate is approximately 0.0001 millirem/hr at the nearest site boundary (282 meters). This is less than one-tenth the natural external radiation background dose rate. The licensee states that the time to travel from the Unit 1 cask area to the Unit 2 or Unit 3 cask areas will be about a half hour. The transport speed of the cask will be less than five miles per hour, and the speed of other traffic in the area will be less than ten miles per hour.

Under the above conditions, and assuming a maximum of 216 transfers in any year, the staff estimates that the whole body dose commitment to a maximally exposed individual at the nearest site boundary due to the proposed transfer of spent fuel between the units will be about 0.01 millirem (realistically, this dose will be lower because of the long decay time of most of the fuel to be moved). This estimated total dose commitment is well within the limitations of the plant Technical Specifications, which are based on the annual offsite dose requirements of 10 CFR Parts 20 and 50 (10 millirem), and 40 CFR Part 190 (25 millirem).

Likewise, the staff estimates that the annual population dose to the general public due to the proposed transfer would be a very small fraction of

the three person-rem population dose estimated in the Final Environmental Statements for Units 1, 2, and 3 for transportation of all fuel and waste. Thus, the estimated annual total population dose including the proposed transfer of spent fuel would be very small compared to the annual collective dose of about 61,000 person-rem to this same population from natural background radiation.

Radiological Consequence of Potential Accidental Releases

No onsite fuel handling accidents having significant offsite radiological consequences have ever occurred. Such accidents and their potential environmental consequences must be postulated. Potential environmental consequences of postulated accidents may be bounded realistically by extrapolation of results from conservative estimates. Offsite doses are estimated conservatively in NRC staff safety reviews for plant siting, design and operations evaluations. The combination of assumptions used for the latter dose estimates assure that doses for such design basis accidents are unrealistically high. This helps to assure safe plant siting, design and operations because the doses so calculated would exceed regulatory limits without the adoption of plant safety features and/or operational controls. The principal regulatory dose limits for safety reviews are embodied in the NRC regulations, 10 CFR Part 100. For safety reviews, the limiting dose is 300 rem to the thyroid, principally due to inhalation of I-131 postulated to be accidentally released to the atmosphere.

Several bounding accident analyses for this current assessment have been reported previously, and the potential consequences have been found acceptable by the NRC staff. The only pertinent credible accident that has not been

analyzed for this assessment is the postulated dropping (and damaging) of a SONGS Unit 1 fuel bundle during fuel handling operations in Unit 1 with a release of radioactivity to the atmosphere. A postulated design basis accident has been analyzed previously in the safety review, and a thyroid dose of 99 rem for a person at the site boundary was estimated conservatively.

For purposes here, it is significant that this very conservative estimate was based on postulated damage to fuel which had decayed for only 148 hours (6.17 days). In the present case, however, fuel to be transshipped will have decayed a minimum of 120 days (shipping cask limitation). I-131 has a half-life of about eight days. During the additional 114 days, I-131 would decay by an additional factor of about 18,000. The postulated dose would decrease proportionately.

Thus, regardless of the accident probability, which operating experience has shown to be very low, the offsite thyroid dose due to this bounding postulated accident can be conservatively bounded as $99/18,000 = 0.006$ rem, maximum. This dose would be well below the U. S. Environmental Protection Agency Protective Action Guide of 5 rem (thyroid), for which offsite protective action should be considered. Thus, based on this bounding analysis, the potential environmental consequences of possible accidents are acceptably low, as are the risks.

Based on the foregoing, any radiological releases resulting from an accident would not be significantly greater than previously determined. The proposed amendment does not otherwise affect routine radiological plant effluents. Therefore, the Commission concludes that there are no significant radiological environmental impacts associated with the proposed amendment. The

Commission also concludes that the proposed action will not result in a significant increase in individual or cumulative occupational radiation exposure.

With regard to nonradiological impacts, the proposed amendment does not affect nonradiological plant effluents and has no other environmental impact. Therefore, the Commission concludes that there are no significant nonradiological environmental impacts associated with the proposed amendment.

The Notice of Consideration of Issuance of Amendment and Opportunity for Hearing in connection with this action was published in the Federal Register on June 24, 1988 (53 FR 23820). No request for hearing or petition for leave to intervene was filed following this notice.

Alternatives to the Proposed Action:

Because the Commission has concluded that there are no significant environmental impacts associated with the proposed action, there is no need to examine alternatives to the proposed action.

Alternative Use of Resources:

This action does not involve the use of resources not previously considered in connection with the Final Environmental Statement related to operation of San Onofre Nuclear Generating Station, Unit No. 1, dated October 1973.

Agencies and Persons Consulted:

The NRC staff has reviewed the licensee's request that supports the proposed amendment. The NRC staff did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the proposed amendment.

Based upon the foregoing environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the application for amendment dated April 28, 1988, which is available for public inspection at the Commission's Public Document Room, 2120 L Street NW., Washington, DC 20555, and at the General Library, University of California, P.O. Box 19557, Irvine, California 92713.

Dated at Rockville, Maryland, this 23rd day of November, 1988.

FOR THE NUCLEAR REGULATORY COMMISSION


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