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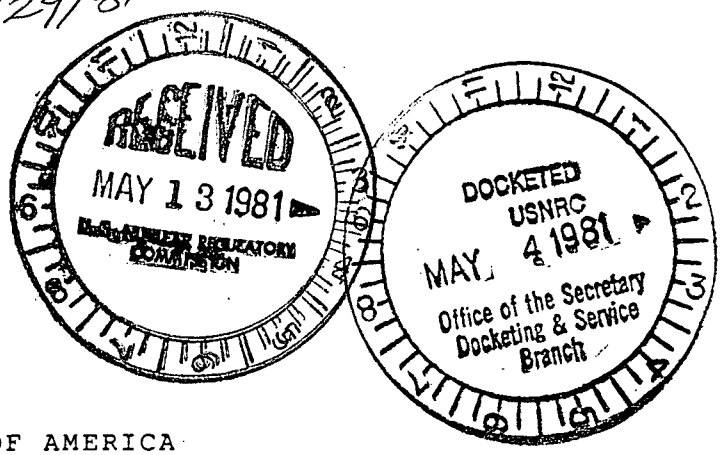

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of SOUTHERN CALIFORNIA EDISON COMPANY, et al. (San Onofre Nuclear Generating Station, Units 2 and 3)	DOCKET Nos. 50-361 OL 50-362 OL JOINT INTERVENORS COMMENTS ON SUPPLEMENT TO DRAFT ENVIRONMENTAL STATEMENT RELATED TO OPERATION OF SAN ONOFRE NUCLEAR GENERATING STATIONS, UNITS 2 and 3 (NUREG-0490)

The Supplement to Draft Environmental Statement (NUREG-0490, December, 1980), hereinafter referred to as NUREG-0490, prepared by the Office of Reactor Regulation (Staff) of the United States Nuclear Regulatory Commission (NRC) related to the operation of San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 and 3) has been reviewed by Intervenors in relation to the requirements imposed by the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321, et seq.), 10 C.F.R. Part 51, and 40 C.F.R. Part 1502. Intervenors comments on the proposed action and on NUREG-0490 are made pursuant to 10 C.F.R. Part 51.25 and 40 C.F.R. Part 1503.

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The purpose of NUREG-0490 was "to identify and evaluate the site-specific environmental impacts attributable to accident sequences that lead to releases of radiation and/or radioactive materials including sequences that can result in inadequate cooling of reactor fuel and to melting of the reactor core." NUREG-0490, p. vi. These accident sequences are commonly referred to as meltdowns or Class 9 accidents.

The NRC's historic first site-specific impact study of a meltdown accident at a California nuclear reaction is inadequate, incomplete and misleading. NUREG-0490 is misleading because it does not provide decision-makers with sufficiently detailed information regarding the potential environmental impacts of a meltdown at SONGS 2 and 3 to aid them in a substantive decision whether or not to proceed with granting an operating license to this federal nuclear project in light of the economic and other consequences of an accident at SONGS 2 and 3. NUREG-0490 does not encourage public participation because it does not make adequate information available to the public in non-technical language about the potential economic and environmental impacts that could affect the lives of twelve million people. NUREG-0490 appears inadequate and incomplete when compared with other independent meltdown impact analyses.

After the Three Mile Island accident, which resulted in mass evacuations and temporary relocation of many people, the California State Legislature passed a law (Senate Bill 1183, now Section 8610.5 of the Government Code), which required the State

Office of Emergency Services (OES) to prepare Emergency Response Plans for potentially severe nuclear accidents involving the release of large amounts of radiation. In order to plan for such accidents, the State required information of the potential scenarios and consequences that could result from meltdowns in California reactors. The State lead agency, OES, contracted with a conservative consulting group, Science Applications, Inc. (SAI), to study the consequences and potential scenarios of meltdowns at California reactors. SAI has conducted research for the NRC, the Department of Energy, nuclear military projects, nuclear utilities, and the nuclear industry. The SAI-OES study was released to the public in Sacramento, California on July 15, 1980. The portion of the SAI-OES study which relates to SONGS 2 and 3 was based on extensive site-specific data whereas NUREG-0490, while it purports to be based on site-specific data, considers mainly excerpted "data, methodology and assumptions" from the WASH-1400 study. The inadequacies of this approach are demonstrated by the following comparison between the SAI-OES study and NUREG-0490 consequence analyses:

The SAI-OES study indicates that the maximum consequences for a nuclear meltdown at SONGS 2 and 3 would be $180 billion in economic cost consequences, NUREG-0490 estimates $35 billion; SAI-OES estimates 16,000 square miles of land contaminated with radiation, NUREG-0490 estimates 3,000 square miles; SAI-OES estimates eight to ten million Southern Californians would be required to relocate and leave their homes and property for up to ten years. Four to five million of them would have to be relocated longer than ten

years, NUREG-0490 gives no estimates for the magnitude of the population affected by relocation. SAI-OES estimates that in 1975 there were 7.7 million people living within 60 miles of the San Onofre site. Within 100 miles there are approximately 12 million people. The SAI-OES study acknowledges that "Latent deaths from San Onofre can occur within 100 miles, which includes half of the population of California." Another report done for the California State Legislature, discussed below, warns that children within 100 miles downwind from the reactor would receive damage to their thyroid glands and would require surgery due to exposure to radioactive iodine gases. The SAI-OES study also estimates that $6.6 billion in cost consequences could occur within 500 miles of San Onofre following a meltdown. Reports to the President's Council on Environmental Quality warn that areas as far away as 1,000 miles or more could be affected, and that up to 125,000 square miles of land could suffer some contamination or crop or milk interdiction. The possibility exists that Southern California could be permanently contaminated after a meltdown at SONGS 2 and 3. This is not surprising when we look at other accident scenarios and compare their estimates.

One NRC analysis of reactor accidents, WASH-740, estimated that an area the size of Pennsylvania could be permanently contaminated by a meltdown at a reactor significantly smaller than either Unit 2 or 3 at San Onofre. Another report, the Rasmussen report, WASH-1400, estimated that 3,000 square miles of land would be contaminated, but assumed that effective

evacuations would take place out to 30 miles downwind from the reactor accident. NUREG-0490, estimates the maximum consequences of a San Onofre meltdown to be $35 billion in costs for mitigating actions (evacuations, relocations, land interdiction, emergency response by local, county, state and federal teams), 1 million people would receive more than 25 rems, there would be 130,000 acute fatalities, and 300,000 latent cancers in the population within 50 miles who would be exposed to 30 to 40 billion person rems released during the accident.

The consequences of nuclear power plant core melt accidents have also been estimated at the request of the California State Legislature and the President's Council on Environmental Quality by Dr. Jan Beyea and Dr. Frank von Hippel, nuclear physicists with the Princeton University's Program on Nuclear Policy Alternatives of the Center for Energy and Environmental Studies. Dr. Beyea noted in his analysis that a meltdown with a release of radioactive gases from a large reactor could involve "health effects and possible land use restrictions have been considered out to distances of 1,000 miles and for periods of decades after the release." He estimates that up to 175,000 square miles of land could be under some form of interdiction or restricted use following the meltdown. He explains this by saying "The number of health effects and the . . . land contamination can range so high because a substantial fraction of the released radioactivity can be carried for hundreds of miles downwind

before being removed from the atmosphere by deposition on the ground. Dr. Beyea told the President's Council on Environmental Quality (CEQ) that "early fatalities could occur up to 30 miles downwind" of a reactor meltdown. Dr. Frank von Hippel testified before the California State Legislature after Three Mile Island that "the thyroid could receive a radiation dose tens to hundreds of times higher than the rest of the body. Exposed children more than a hundred miles downwind would suffer thyroid damage which would require surgery years later." (emphasis added) NUREG-0490 did not reference the SAI-OES study, in spite of the fact that the Atomic Safety and Licensing Board (ASLB) and the NRC Staff were made aware of the report by Intervenors during July and August of 1980, six months before NUREG-0490 was issued.

The SAI-OES study is a conservative report in that it calculates its predictions and models based on site-specific data. NUREG-0490 is not conservative and is inadequate because it is not sufficiently based on site-specific data. The SAI-OES report used extensive site-specific data regarding the nearby population centers and the various weather conditions in Southern California. That report identified several site-specific unique features which should have warranted a different conclusion from the NRC Staff than "there are no special or unique features about the San Onofre site and environs that would warrant special or additional engineered safety features for the San Onofre plants." Joint Intervenors conclude there are special and unique features that exist at the San Onofre site which are listed as follows:

(1) The three reactors at San Onofre are uniquely located near the intersection of two major Fault Zones, the Cristianitos and the Newport-Inglewood. Prior to 1980, the NRC believed there was no structural relationship between the two Fault Zones. However, in 1980, federal and state marine geologists discovered a new zone of faults which they named "Cristianitos Zone of Deformation" which project directly beneath the three reactors. Thus, the possibility of damage to the reactors during earthquakes is higher now because of the possibility of surface rupture directly under the reactors. This was not factored into the Rasmussen Report, WASH-1400, the Lewis Report, SAI-OES or NUREG-0490. NUREG-0490 does not even mention geologic-seismic site-specific events as a significantly possible factor in the probabilistic risk assessment.

(2) The San Onofre site is uniquely located on the Pacific plate, near the Plate Tectonic Boundary Fault, the San Andreas. San Onofre is moving north in relation to the North American Plate. These reactors are uniquely migrating north on a geologic time scale. Plate Tectonics were not understood when the San Onofre site was originally chosen in 1962. It was not until 1969 that the plate tectonics theories were accepted.

(3) The San Onofre site has the unique feature of being sited close to San Onofre Unit 1. If Unit 1 had a meltdown, it would severely affect operations of Units 2 and 3, resulting in various consequences, none of which were considered in NUREG-0490. The older reactor at the site, San Onofre Unit 1,

was identified by the SAI-OES analysis as having the highest probability of a meltdown of any reactor in California for two primary reasons. "The first reason is that the Unit One auxiliary feedwater system depends on operators to align and initiate the system. Potential failures due to human factors make the system less reliable than automated systems. The second reason relates the long term recirculation mode of emergency core coolant, which requires at least one of two pumps located in the containment. In the event of a pump failure, repairs cannot be made because the pump is inside the containment and would be isolated during an accident." NUREG-0490 does not consider the proximity of SONGS 2 and 3 to Unit 1 to be a unique or special feature.

(4) San Onofre Unit 1 has been shutdown for approximately one year due to leaky corroded steam generator tubes. The NRC issued a report in 1976 (NUREG-0900-5, Report to Congress on Abnormal Occurrences) which explained that "The failure of a number of steam generator tubes as a result of the pressure transients during a loss of coolant accident could render the emergency core cooling system ineffective." The Unit 1 was not designed for the magnitude of ground motions that Units 2 and 3 were. An earthquake could conceivably only damage Unit 1, because of its structurally weak steam generator tubes, but that could result in a LOCA (loss of coolant accident) and a meltdown, which would affect the two other reactors and the environment.

(5) The San Onofre reactors are special and unique in that the reactor core of Unit 2 was installed backwards, necessi-

tating total rewiring of the control room and other systems.

(6) The San Onofre site is unique also in that San Onofre Unit 2 was constructed above earthquake faults that were not discovered until 1974 during construction excavations.

(7) SONGS 2 and 3 are underlain by dewatering cavities that developed during construction. Intervenors believe this also is a special of unique feature at SONGS 2 and 3 which must be considered.

(8) The Southern California region, including San Onofre, frequently has weather inversions. During these inversions, air pollutants, including accidentally leaked radioactive gases, can be trapped beneath the inversion layer, where they can only mix and travel horizontally. Thus, a meltdown at SONGS 2 and 3 could affect the nine to ten million people who live in the air basins that share the same East Pacific high pressure zone inversion layers. Although NUREG-0490 admits that "accident consequences are very much dependent on the weather conditions existing at the time . . ." they do not specifically consider the unique Southern California high pressure inversion layers which are a predominant characteristic of the San Onofre site.

(9) The San Onofre reactors are uniquely located on a Southern California beach state park that stretches for many miles, but which is inaccessible and inescapable except by driving past the reactors on the old-highway, now running parallel to Interstate-5. On a typical summer day, 25,000 persons drive close to the reactors on a narrow and curving road. These beach-goers could be trapped during a meltdown, especially if

an earthquake occurred at the same time or caused it.

(10) Another unique or special feature of San Onofre is its proximity to roads used by thousands of uncontrolled travelers per day which presents a unique possibility for sabotage accidents that could lead to releases of radioactivity.

(11) The San Onofre site is special and unique in that one-half of the population of the State of California lives within 100 miles of the site.

(12) It is a unique feature of SONGS 2 and 3 to be the largest reactors ever considered for operating licenses.

(13) The San Onofre site is unique in that it is sited within contamination distance of a major portion of the nation's fresh produce farms, especially in the winter months.

(14) The San Onofre site is also unique in that it could cause international economic and environmental impacts by contamination of a significant part of Baja California's agricultural resources.

After the Kemeney Commission and the Rogovin Report were issued on Three Mile Island, the Council on Environmental Quality wrote a letter to the Nuclear Regulatory Commissioners on March 20, 1980. The letter released the results of the CEQ review and critized the NRC's lack of compliance with NEPA laws in the EIS analyses of potential accidents at reactors. The CEQ stated that the NRC's EIS discussions of "potential accidents and their environmental impacts was found to be largely perfunctory, remarkably standardized, and uninformative to the public." The CEQ also advised the NRC that "site specific treatment of data

should be substituted for "'boilerplate' assessment of accident initiating events and potential impacts, and EIS's should be comprehensible to non-technical members of the public..." Intervenors comment upon the fact that NUREG-0490 contains 29 pages of text with about 8 pages of site-specific information which is selective and slanted. NEPA requires detailed statements of aspects of proposed action significantly affecting the quality of the human environment and Intervenors feel NUREG-0490 is inadequate in that it is"largely perfunctory, remarkably standardized and uninformative to the public."

NUREG-0490 is also inadequate in that it failed to consider earthquake induced core melt accidents. While the Reactor Safety Study(RSS), WASH-1400, concluded that the probability of core melt accidents in nuclear power plants from seismic events was insignificant compared to core melt probabilities from other accidents, recent assessment of the potential for earthquake induced core melt accidents suggests that the probability of such events may be significant when compared to core melt accidents from other causes considered by RSS. Intervenors contend that the seismic design basis for SONGS 2 and 3 is inadequate and, therefore, consider it prudent to evaulate the potential for seismic-induced core melt accidents at SONGS 2 and 3 to establish if they may be significant factors. The purpose of NUREG-0490 was to identify and evaluate site-specific environmental impacts. It does not evaulate the potential for seismic-induced core melt accidents and, therefore its probabilistic assessment of risk at SONGS 2 and 3 is inadequate.

NUREG-0490 is further inadequate and particularly misleading in its assessment of health affects avoidance (Section 7.1.1.4). NUREG-0490 did not mention thyroid blocking in its assessment of health affects avoidance, relying only on restriction of contaminated property and foodstuffs. Dr. Frank von Hipple in his testimony before the California State Legislature states:

> The thyroid can be protected against absorbing radioiodine, however, if before the cloud arrives you take about one thousand times your ordinary daily iodine intake in the form of potassium iodide (the form of iodine present in iodized salt). This will saturate the thyroid with ordinary iodide and reduce its ability to absord the radioactive iodide when it arrives. This strategy was recommended in the American Physical Society's reactor safety study four years ago. The Food and Drug Administration approved potassium iodide for emergency thyroid 'blocking'. . . I would recommend that California do two things with regard to this thyroid protection strategy:
>
> 1) Develop a stockpile of potassium iodide in the appropriate dosage in either sealed foil wrapped pills or liquid solution. This would not be costly. Based on a 1972 study for the Defense Civil Preparedness Study, it appears that enough pills for the entire nation could be produced for a few million dollars.
>
> 2) The more difficult part of the job would be to develop an effective distribution system. If one waited until a cloud of radioiodine had been released before distributing the blocking chemical and informing the public of its use, one might well be too late. (A week after the beginning of the crisis at Three Mile Island, the Pennsylvania state government refused to distribute the chemical to the population within 10 miles of the site - despite the joint recommendation to do so from the Surgeon General, the Food and Drug Commissioner, and the Director of the National Institutes of Health who thought that sufficient warning time might not be available to protect this population

> in case a release occurred. On the other hand, if people were given potassium iodide to keep in their medicine cabinets along with asprin, it is likely that many would lose track of it pretty quickly. Perhaps it should be attached by the local utility to household electricity meters and its presence announced in case of need. The best strategy is obviously a problem well worth a study. California could break some important ground here."

Section 7.1.1.4. is particularly misleading in its statement that "radiation hazards in the environment tend to disappear by the natural process of radioactive decay (but) can continue for a relatively long period of time -- months, years or even decades." (emphasis added) This misleading statement fails to note that some ratioactive wastes from nuclear accidents such as radioactive Strontium and Cesium can enter the food chain and remain a hazard for 1,000 years or more. Other isotopes remain a hazard for 1 million years or more.

NUREG-0490, Section 7.1.3. entitled Mitigation of Accident Consequences is inadequate in that it fails to note that consequences could be reduced by retrofitting SONGS 2 and 3 with filtered venting systems to prevent accidental releases of radioactive gases.

NUREG-0490, Section 10 is misleading, inadequate and incomplete. The Section contains three sentences with regard to its conclusions and Re-Evaluated Benefit-Cost Balance. This section should be expanded because the environmental risks of a Class 9 accident involve the entire region of Southern California, Norther Baja California, Mexico, and parts of Arizona. These regions could be permanently contaminated with radiation following a coremelt at SONGS 2 and 3. The risks involve the

value of all real and personal property, both public and private in those regions. The risks involve fatalities, latent cancer deaths and genetic damage. The risks involve compensation to victims in the event of such accidents. Section 10 of NUREG-0490 concludes that the environmental risks of Class 9 - coremelt accidents - "does not change the results of the cost-benefit balance contained in the Draft Environmental Statement (Section 10)."

CONCLUSION

NUREG-0490 concludes "that there are no special or unique features about the San Onofre site and environs that would warrant special or additional engineered safety features for the San Onofre plants." Intervenors conclude there are unique characteristics at SONGS 2 and 3 that warrant additional engineered safety features especially in light of the unique earthquake hazard which could cause a coremelt accident and common-cause failure of essential safety systems at SONGS 2 and 3. A future earthquake near the San Onofre site could be the common cause for failure of the cooling systems of all three reactors on the San Onofre site and all three of the spent fuel pools simultaneously. This would be the worst case accident that should be analyzed by the NRC and this analysis should be a part of a revised NUREG-0490.

VERIFICATION

RICHARD J. WHARTON, declares

1. That he is Counsel for Intervenors, F.O.E. ET AL. in this proceeding.

2. That he is authorized by Intervenors to execute and verify the foregoing "JOINT INTERVENORS COMMENTS ON SUPPLEMENT TO DRAFT ENVIRONMENTAL STATEMENT RELATED TO OPERATION OF SAN ONOFRE NUCLEAR GENERATING STATIONS, UNITS 2 and 3 (NUREG-0490)".

3. That he is informed and believes and upon such information and belief affirms that the foregoing "JOINT INTERVENORS COMMENTS ON SUPPLEMENT TO DRAFT ENVIRONMENTAL STATEMENT RELATED TO OPERATION OF SAN ONOFRE NUCLEAR GENERATING STATIONS, UNITS 2 and 3 (NUREG-0490)" is true and correct.

I declare under penalty of perjury that the foregoing is true and correct.

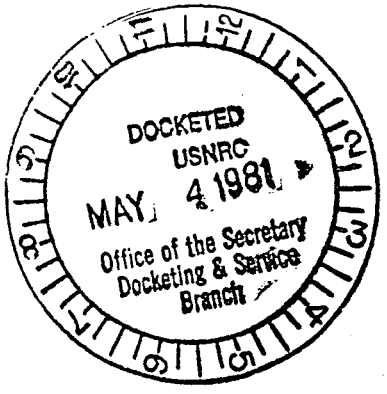
Executed April 29, 1981, in San Diego, California.

Richard J. Wharton

RICHARD J. WHARTON, Attorney
for Intervenors,
F.O.E. ET AL.

CERTIFICATION OF SERVICE

I hereby certify that on the 28th day of April, 1981, a copy of the foregoing JOINT INTERVENORS COMMENTS ON SUPPLEMENT TO DRAFT ENVIRONMENTAL STATEMENT RELATED TO OPERATION OF SAN ONOFRE NUCLEAR GENERATING STATIONS, UNITS 2 and 3 (NUREG-0490), Attorney, RICHARD J. WHARTON was served upon each of the following by depositin in the United States mail, first-class, postage prepaid, addressed as follows:



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