



# United States Department of the Interior

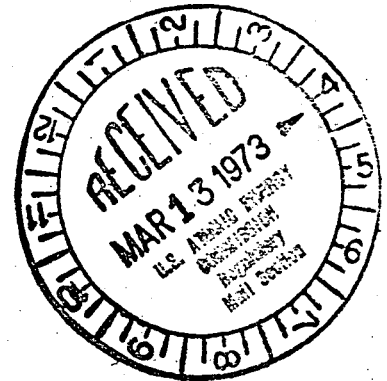
OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

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Dear Mr. Muller:

Regulatory

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This is in response to your letter of November 21, 1972, requesting our comments on the Atomic Energy Commission's draft statement, dated November 1972, on environmental considerations for San Onofre Nuclear Generating Station, Units 2 and 3, San Diego County, California.

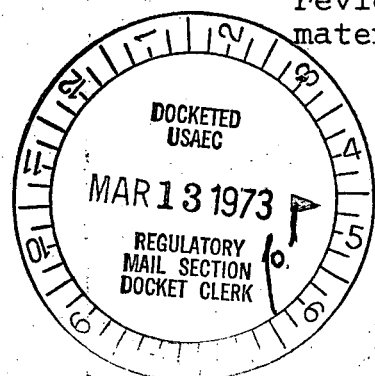
Our comments are presented according to the format of the statement or according to specific subjects.

## Historical Significance

The proposed action will not directly affect any existing or proposed units of the National Park System, or any sites that are eligible or recommended for registration as National Historic, Natural, or Environmental Education Landmarks. However, our concern for cultural resources that may be affected by the proposed action has not been fully recognized. The statement does not provide assurance that an adequate professional determination of the presence or absence of cultural values has been made.

For example, it appears that minimal consideration was given to archeological resources in the construction of Unit 1 and that the construction of San Onofre Units 2 and 3 may result in damage to archeological resources, since the proposed construction activities involve a great deal of land surface alterations. The probable effects on archeological resources, if they exist, are likely to be adverse, cumulative, and irreversible and should be discussed in the relevant sections of the environmental statement.

Archeological research is mentioned on page 2-15 but the scope of the research is not defined enough to allow the reviewer to evaluate the significance of archeological material which the survey team located.



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It is indicated on page 3-64 that the 104.4 mile San Onofre-Santiago transmission line will be installed along existing rights-of-way. The establishment of this new line and associated access roads constitute a potential threat to archeological resources and should be included in the survey and evaluation of these resources in order to obtain data for assessment of alternative routes and to minimize environmental impacts.

Reference is made on page 4-1 that Japanese Mesa is proposed as a site for spoil disposal. Previous reports on San Onofre listed this site as only one of several possible sites which could be used. Therefore, we believe that until all the archeological and other environmental data is available, it is premature to select a particular site.

Since the probable effects upon archeological resources, if they exist, are adverse, cumulative and irreversible every effort should be made to protect these resources. For example, the effects on the land under the control of the U. S. Navy Department should be described in relationship with the requirements of Section 2(b) of Executive Order 11593 of May 13, 1971.

In order to provide a basis for evaluating the effects of the proposed actions and to provide adequate data for assessment of alternative actions, we suggest that an archeological investigation be made to provide the following information.

1. The location of archeological resources in areas to be affected by the proposed actions, including adequate explanations and maps to indicate their relationship to the project.
2. A description of survey methods and the intensity of the survey.
3. The significance of the identified resources and their potential for contributing information about the archeological problems of the project area, including identification of those which may merit listing on the National Register of Historic Places.
4. A cost estimate for the recovery of all data or artifacts from significant archeological resources to be affected by the project.

5. A recommended program of studies to realistically mitigate adverse effects which will result from the project, including research designs and estimates of time and funding needed.

6. Recommendations for any other mitigation measures which may lessen the adverse effects on the project.

The final statement should contain evidence of contact with the State Liaison Officer for Historic Preservation for California concerning the effects of the construction and operation of the project on historical and archeological resources, including sites which may be in the process of nomination to the National Register of Historic Places. The State Liaison Officer is Director, Department of Parks and Recreation, State Resources Agency, P. O. Box 2390, Sacramento, California 95811. His telephone number is (914) 445-2358.

#### Geology

The brief description of the geology and seismology presented in the draft statement is inadequate for an independent assessment of the geologic environment relevant to the proposed construction of the plant. The data presented are inadequate concerning the physical properties of the geologic materials on which the plant and its appurtenant structures will be founded. The seismic-design criteria and the methods of their derivation are not mentioned. We think that these factors should be discussed in the final statement.

The applicant's Preliminary Safety Analysis Report, and its supplements, treats the details of the geologic and seismologic investigations and analyses that have been performed for the San Onofre site. We suggest that, as a minimum, a more comprehensive summary of the geologic and seismologic analysis sections of the Preliminary Safety Analysis Report be included in the final environmental statement with adequate cross references to appropriate parts of the environmental statement.

As a result of procedures previously established with the AEC, the geologic aspects of the site that are included in

the Preliminary Safety Analysis Report have been reviewed by the Geological Survey of this Department. The review was conducted in terms of the AEC "Seismic and Geologic Siting Criteria for Nuclear Power Plants" (10 CFR Part 100, proposed Appendix A). Our completed review was transmitted to the AEC Director of Regulation on July 6, 1972, and was made part of the public record in the AEC licensing procedure.

### Hydrology

We do not think that the discussion of a maximum tsunami given on page 2-19 is adequate. There appears to be some inconsistency in the Supplement to the applicant's Environmental Report concerning the expected maximum rise in sea level due to seismic disturbances based on the 1946-64 period. However, more importantly, we point out that a record of only 18 years is not an adequate basis for determining extreme tsunamis. Further, the applicant's Report, although it quantitatively discusses the probability of a "50-year tsunami," gives no corresponding magnitude. The final statement should contain a more quantitative discussion of the potential danger to the reactor from tsunamis.

### Transmission Lines

Additional information is needed to determine the environmental impact of construction and operation and maintenance of the proposed transmission lines associated with the nuclear plant. The type of transmission line towers to be constructed is not discussed. Also, sufficient environmental impact information on the proposed transmission line routes is lacking. This inadequacy can be largely satisfied by incorporating pertinent information from Section 3, Appendix A, Amendment No. 1 to the Supplement to the Applicant's Environmental Report into the text of the environmental statement and on the map presented on page 3-65. The map should show routing of the lines in relation to existing features.

Figures 3.1 and 3.31 and page 4-11 of the draft environmental statement and page 3-5, Appendix A, Amendment 1 of the applicant's Environmental Report indicate that the proposed 51 mile 230KV transmission circuit from Talega substation

to Pala substation to Escondido substation will be installed on existing towers. However, the label of this line on Figure 3.31 indicates that structures will be installed in 1973. Since the statement is dated November 1972, it appears that there is some inconsistency regarding the existence of this line. The statement should also show the primary power source for the initial Talega-Pala-Escondido transmission lines in order to clearly distinguish its requirement as distinct from the proposed Units 2 and 3 at San Onofre.

#### Impact on Terrestrial Environment

The statement should discuss the measures that can and will be taken to mitigate erosion of top soil. The statement indicates on page 4-7 that a high rate of soil erosion may continue if brush control is maintained but does not indicate if this is the planned mode of transmission line maintenance operation.

#### Entrainment

It is stated in the third paragraph on page 5-8 that about 30 percent mortality can be expected for organisms drawn into the cooling system. The data upon which this judgment is based should be described in the statement.

The rationale for equation (1) on page 5-9 should be included in the statement. Since the equation was developed for the Indian Point Nuclear Generating Plant, located on the Hudson River, we question its applicability to a different tidal situation at San Onofre. This equation was used in calculating the probability of the entrainment shown in Table 5.2 from which many conclusions are drawn. We suggest that the degree of applicability of the formula to this location be established prior to its use to calculate important data.

Additional background for the development of the 28.4 percent mean mortality figure given in paragraph 3, page 5-10 for entrained zooplankton should be provided. It should be revealed that plankton samples were taken at Huntington Beach on November 24, 1970, and at San Onofre Generating Station on December 2, 3, 8, 14 and 17, 1970. Information should be provided concerning the number of samples taken,

duration and time of sampling, plankton net size, exact location of sampling, and other pertinent information. The significance and use of data subject to sampling error, in the development of the mortality figure also should be discussed.

The rationale for the comparison of entrainment losses at the Contra Costa plant on San Francisco Bay with those expected at San Onofre should be given. For example, striped bass are not commonly found in the vicinity of San Onofre.

The last paragraph on page 5-10 compares juvenile striped bass survival with survival of eggs, larvae and juveniles of other species. We will admit that there is a rather rough correlation involved; however, we suggest that this relationship be discussed in the statement before such a comparison is made. We also point out that fish and eggs that do not die in the condenser may die later as a result of their exposure, become easy prey for predators, or suffer a lowered resistance to infection and infestation.

The reference to the applicant's experimenting with a fish-removal system to reduce impingement of fish on the traveling screen is made on page 5-12. It is not clear if this experimenting is being done at San Onofre or at another site. We understand that testing of a fish bypass system at Redondo Beach Generating Station has produced some useful results. The results of this test should be provided in the statement. Although the resulting data may not be fully transferable, the results of this experiment would have value at the San Onofre plant.

Fish losses at Unit 1 are discussed in the last paragraph of page 5-12 and tabulated data are presented in Table 5.3. We do not believe that "pounds of fish" is an appropriate unit to reflect the impacts of fish losses. The percentages of fish killed by species, weight, and length should be provided. Also the relationship between the numbers of juvenile and adult fish killed during normal operations and heat treatments should be given.

The statement on page 5-15 that the California Fish and Game Department has authorized anchovy harvest solely for reduction is misleading. It should be clarified to indicate that anchovy harvest has been regulated in an attempt to manage the fishery and produce a measurable change in the anchovy-sardine system.

The queenfish, walleye surfperch, and the white seaperch should be included in the fourth paragraph on page 5-5 which lists the fishes that are killed or expected to be killed as a result of entrainment.

### Chlorine

The method of injecting sodium hypochlorite into the circulating water should be described including the precision of the system. The results of analyzing the impacts of a single sample as described on page 5-17 does not appear to be a reliable basis to make accurate assessments of the resulting concentrations. Additional sampling should be conducted at the condenser and near the outfall to determine the variation in chlorine concentrations and its effects on aquatic life. We also think that since chlorine is toxic to aquatic life, techniques that could be utilized in lieu of adding chlorine such as mechanical means of cleaning the condenser tubes should be considered in case unacceptable impacts result. Two mechanical cleaning techniques are discussed in the alternative section of the statement.

### Zooplankton

A more detailed description of the background data used to compute the amount of zooplankton expected to be entrained by the three units should be given. We understand that the sampling was done offshore in 1955-1959. It appears that estimates of entrainment should be based on more recent sampling in locations closer to the intake area.

The references on page 5-32 to water temperature approaching 73°F and the mean maximum monthly temperature given in the figure on page 3-29 are misleading. The effects of the maximum temperatures that will be encountered in the plume are more important than mean temperatures and should be discussed in the statement. Data collected by the Scripps Institute of Oceanography showed that maximum surface water temperatures recorded at San Clemente and Oceanside in August 1971 was 76.8°F.

### Fish

Information provided on pages 5-34 through 5-43 is taken primarily from a publication of the Department Fish and

Game, Resources Agency, State of California, entitled, California's Living Marine Resources and Their Utilization, 1971 by H. W. Frey. It should be made clear that the species descriptions are general and were not compiled to be used as the primary reference for evaluating the impact of the project on marine resources.

#### Plant Accidents

This section contains an adequate evaluation of impacts resulting from plant accidents through Class 8 for airborne emissions. However, the environmental effects of releases to water is lacking. Many of the postulated accidents listed in Table 7.1 could result in releases to the Pacific Ocean and should be evaluated.

We also think that Class 9 accidents resulting in both air and water releases should be described and the impacts on human life and the remaining environment discussed as long as there is any possibility of occurrence. The consequences of an accident of this severity could have far reaching effects along the coast of the Pacific Ocean and could persist for centuries.

#### Adverse Effects of Units 2 and 3 Construction and Operation

Based on the information given in this section beginning on page 8-1 it appears that a more appropriate title would be "Unavoidable Adverse Effects of the Proposed Action."

It appears that the 6 minutes referred to in the last paragraph on page 8-2 should be 9-23 minutes according to page 5-10.

#### Irreversible and Irretrievable Commitments of Resources

The irretrievable loss of wildlife as a result of the construction and operation of the project should be quantified to the same extent that equipment and materials are quantified. This section should describe the annual fish and wildlife resources that would be lost as a result of the project.

The variety, importance, and production of marine life in the ocean off Southern California have been documented in several reports. Substantial changes in species composition already have occurred as a result of the various activities of man. Operation of this project may further damage the aquatic resources.

### Plant Design Alternatives

According to the applicant's reports, new standard lattice-type 230KV double-circuit towers are to be used throughout the routing of the 28.4 mile San Onofre-Santiago transmission line except near San Onofre where modern aesthetically designed towers will be constructed. We suggest that the final statement reflect consideration for alternative types of transmission towers especially in those areas where the line would be frequently seen by a large number of people.

Alternative routings for transmission lines should also be discussed.

### Cost-Benefit Analysis

The cost-benefit analysis does not include estimates for impacts on archeological resources.

### Conclusions and Recommendations

We did not have an opportunity to participate adequately in the completed environmental studies and have not been apprised sufficiently of the objectives, planning, and progress of ongoing studies. Since many assessments and conclusions given in the statement are based on questionable data or apparently inappropriate data we continue to be concerned for the adequate protection or enhancement of these affected resources.

It is imperative that this project be constructed and operated in a manner that will assure adequate protection of the fish and wildlife resources. The environmental statement should reflect that this is a reasonable expectation where considerable uncertainty exists as to the actual impacts, monitoring studies should be developed to provide information that would serve as a basis for possible equipment or operating modifications.

Accordingly, we recommend that the construction permit and operating license issued for Units 2 and 3 contain the following stipulations in addition to those given on page iv.

1. Postoperational environmental studies will be developed in consultation with interested Federal and State agencies. These studies shall be conducted continuously for not less than 4 years

following project release of more than 50 percent of the design heated effluent from the 3 units. Annual progress reports shall be prepared by the licensee and submitted to the aforementioned resource agencies for their review and comment. Within six months following this submission, the licensee shall prepare a final report of findings and submit this to the Atomic Energy Commission along with comments and responses to the involved government agencies. This report should indicate the significance of actual impacts on terrestrial and marine resources.

If it is conclusively demonstrated that there are no significant undesirable impacts, the scope and depth of the studies may be reduced at the option of the applicant. However if unacceptable levels of adverse impacts are indicated, the studies will be appropriately modified and continued for three additional years and the applicant will take immediate corrective actions to eliminate unacceptable effects as directed by AEC.

2. No new units shall be added to the presently planned 3 unit plant until it has been demonstrated conclusively that operations of Units 1, 2 and 3 have had no unacceptable adverse effects on marine resources.

3. The applicants or their consultants shall cooperate with all participating agencies to discuss any studies and effect any modifications deemed necessary to the protection of the environmental resources.

We hope these comments will be helpful to you in the preparation of the final environmental statement.

Sincerely yours,

Deputy Assistant

Secretary of the Interior

Mr. Daniel R. Muller  
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