

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Review of the
Southern California Edison
Company and San Diego Gas and
Electric Company Request for an
Exception to the Water Quality
Control Plan for Control of
Temperature in the Coastal Waters
and Enclosed Bays and Estuaries
of California (Thermal Plan) for
San Onofre Units 2 and 3

Order No. 73-5

The California Regional Water Quality Control Board, San Diego Region (hereinafter called Regional Board), proposes to grant to Southern California Edison and San Diego Gas and Electric Companies (hereinafter called companies) an exception to specific water quality objectives of the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (hereinafter called Thermal Plan). The proposed exception relates to a contemplated discharge of thermal waste from San Onofre Nuclear Generating Station, Units 2 and 3. Pursuant to requirements of the Thermal Plan, the Regional Board has requested concurrence from the State Board in the proposed exception.

The Thermal Plan, in relevant part, provides as follows:

"The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F." /Thermal Plan, Specific Water Quality Objectives, Coastal Waters, New Discharges, Paragraph (3)./

"The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at ... the ocean surface beyond 1,000 feet from the discharge system" /Thermal Plan, Specific Water Quality Objectives, Coastal Waters, New Discharges, Paragraph (4).7

"An exception to the specific water quality objectives of this plan may be authorized by a regional board for a specific discharge upon a finding following public hearing that:

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- B. The use of heat on an intermittent basis to control fouling organisms in intake and discharge structures will result in less potential for deleterious effects upon beneficial uses than other alternative methods (heat, in addition to that required for cleaning of intake and discharge structures, shall not be used for cleaning of condenser units)." /Thermal Plan, General Water Quality Provision, Paragraph (4).7

On July 31, 1972, following appropriate notice, the Regional Board conducted a public hearing to receive evidence on the proposed exception for the companies. Based upon the evidence submitted, the Regional Board recommended an exception to the Thermal Plan as follows:

1. The companies may raise the temperature of the cooling water discharge from planned Units 2 and 3 of San Onofre Nuclear Generating Station to not more than 125°F for periods of not more than two hours for each conduit every five weeks for purposes of control of marine organism growth in the cooling water system only; and
2. Thermal treatment shall be done in such manner and under such conditions that loss of fish and other marine life is eliminated or minimized, and effects upon ocean water quality is minimized.

As a part of its review of the request for concurrence, the State Board and its staff reviewed the evidence from the Regional Board hearing and the State Board staff conducted informal meetings with representatives of the companies, Regional Board staff, California Department of Fish and Game, Environmental Protection Agency, National Marine Fisheries Service, and the U. S. Bureau of Sport Fisheries and Wildlife.

Information from the companies indicated that, based on operating experience, cooling water at a temperature of 105°F for two hours in both the intake and discharge conduits every five to six weeks will control marine organisms attached to the inside of the conduits. The water temperature is increased to 105°F by operating a series of gates to recycle some of the cooling water back through the condenser where it is reheated before discharge. As the water is cycled back through the condenser it can gain an extra 20°F and, thereby, be discharged to the environment at 125°F.

At the Regional Board's public hearing and the State Board's staff level meetings, the necessity for using water heated to 105°F at all times of the year was discussed as well as the possibility of using internal gates to cycle the cooling water more efficiently to control the temperature of the heat treatment.

During the review process, certain objections and questions were raised by other state and federal agencies in connection with the exception proposed by the Regional Board. The objections included the following:

1. That the lethal temperature actually required for control of marine organisms has not been determined.
2. That the frequency of heat treatment required had not been determined.
3. That the necessity for heat treating both the intake and discharge conduits had not been demonstrated.
4. That the possibility of mechanical cleaning of shore structures in lieu of heat treatment had not been properly explored.
5. That an estimate of the number and biomass killed during heat treatment should be compared to that number and biomass killed during normal operations.
6. That better methods for further limiting the entrainment of organisms should be explored.

After review of the record of the Regional Board hearing and the information from the informal meetings with the companies, Regional Board staff and state and federal agencies, the State Board staff proposed an exception to the Thermal Plan. The exception provided that specific thermal discharge limits by the companies pursuant to a time schedule prior to operation of Units 2 and 3.

Because of the objections raised and the importance of the issues involved, the State Board determined that it would be appropriate to hold an additional public hearing to receive evidence and comment on the exception proposed by the State Board staff and on alternative proposals. Therefore, on January 26, 1973, following appropriate notice, the State Board conducted a public hearing.

The State Board has reviewed all evidence received relative to the proposed exception of the Regional Board and the exception proposed by the State Board staff, and finds that:

1. Of the methods available for control of fouling organisms at San Onofre Nuclear Generating Station, Units 2 and 3, the use of heat on an intermittent basis will result in the least potential for deleterious effects upon beneficial uses.
2. The evidence submitted by the companies has not fully resolved the objections and questions raised in connection with the proposed exception.
3. The evidence submitted is inconclusive on the following matters:
 - a. The lethal temperature level required for control of growth of marine organisms.
 - b. The frequency of heat treatment required.
 - c. The necessity for heat treatment of the discharge conduit.
 - d. The possibility of mechanical cleaning of shore structures in lieu of heat treatment.
 - e. The possibility of limiting the temperature of the discharge during heat treatment through modification of the operations and facilities at Units 2 and 3.

THEREFORE, IT IS HEREBY ORDERED that:

1. An exception to the Thermal Plan for intermittent heat treatment to control marine fouling organisms in the intake and discharge conduits of San Onofre Nuclear Generating Stations, Units 2 and 3 operated by Southern California Edison Company and San Diego Gas and Electric Company is approved.
2. In order to permit the Regional Board to set precise limits on the frequency, degree and duration of heat treatment, the companies shall complete the following studies according to the accompanying time schedules:
 - a. Determine the optimum operational procedure for achieving maximum protection of marine life and ocean water quality during thermal shock treatment.
 - b. Determine under actual or simulated operating conditions the lethal temperature/time of exposure relationship for the control of fouling organisms in the intake system, and the necessity for raising the temperature for thermal shock as opposed to maintaining an elevated temperature for a longer period of time. This relationship must take into account all of the various operating conditions encountered during a typical 12-month period;
 - c. Determine the frequency required for heat treatment of the intake system during the various seasons of the year, and determine the necessity for heat treatment during winter months;
 - d. Determine whether both the intake and discharge conduits require heat treatment. If the discharge conduit is found to require heat treatment, studies (b) and (c) must be repeated for the discharge conduit;
 - e. Determine the need for heat treatment vs. mechanical cleaning of the various parts of the shore structure; if the shore structure requires heat treatment, repeat studies (b) and (c) for such parts of the shore structure;

- f. Document the number and biomass of marine fauna killed in that part of the heat treatment cycle when the discharge conduits are used as an intake and compare this to the number and biomass of marine fauna killed in the entire cycle; and
- g. Conduct investigations of means to further limit entrainment of marine life during normal operations and heat treatment.

3. The companies shall comply with the following time schedule:

- a. The work plan must be submitted within three months and must be ratified by the State and Regional Boards. If possible, studies should be performed first on a laboratory scale and confirmed by prototype observations using San Onofre Unit No. 1.
- b. The studies must commence within six months.
- c. Progress reports must be submitted every four months commencing four months after commencement of the studies. The progress reports are to contain the following:
 - (1) Data gathered in previous four-month period.
 - (2) Preliminary data analyses and summaries.
 - (3) Evaluation of progress.
 - (4) Problems encountered and proposed solutions to problems.
 - (5) Tentative conclusions, if possible.
- d. The final results and conclusions are to be submitted within three years after commencement of the studies but not later than one year before commencement of operation of the plant.

4. The Regional Board shall, after reviewing the aforementioned studies, set precise limits on the frequency, degree and duration of heat treatment and such other terms and conditions as are deemed necessary, such that beneficial uses shall be protected to the maximum extent practicable. These numerical limits shall be concurred in by the State Board and by the Environmental Protection Agency before they become effective.
5. If, in the judgment of the Regional Board, the companies fail to satisfy the requirements set forth in Nos. 2 and 3 above, the exception to the Thermal Plan herein recited shall have no force and effect.

Adopted as the order of the State Water Resources Control Board at a meeting duly called and held at Sacramento, California.

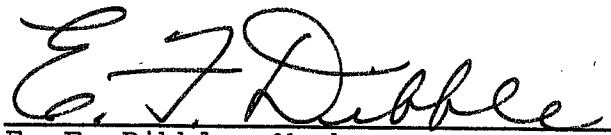
Dated: February 15, 1973

ABSENT

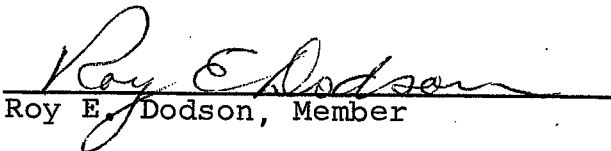
W. W. Adams, Chairman

ABSENT

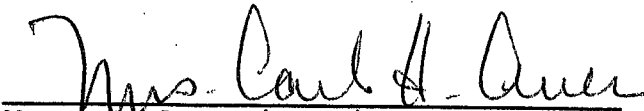
Ronald B. Robie, Vice Chairman



E. F. Dibble, Member



Roy E. Dodson, Member



Mrs. Carl H. (Jean) Auer, Member