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Docket Nos. 50-361 ✓
and 50-362

D. R. Muller, Assistant Director, Environmental Projects, L
THRU: B. J. Youngblood, Chief, Environmental Projects Branch 3, L

MEETING WITH SOUTHERN CALIFORNIA EDISON COMPANY (SCE) TO REVIEW THERMAL
MODEL PLANS - SAN ONOFRE UNITS 2 AND 3

A meeting was held with SCE personnel on June 20, 1974, at the AEC Wall
Lane Offices to discuss SCE's plans and programs for modeling the thermal
discharge from proposed Units 2 and 3 of the San Onofre Nuclear Generating
Station. A summary of the meeting is enclosed.

Original signed by
R. W. Froelich

R. W. Froelich, Project Manager
Environmental Projects Branch 3
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Enclosure:
Summary of June 20,
1974 Meeting

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Southern California Edison Company
San Onofre Nuclear Generating Station, Units 2 and 3
Docket Nos. 50-361 and 50-362

MEETING WITH SCE TO REVIEW
THERMAL MODELING PLANS AND PROGRAMS

Summary

The subject meeting was held at the AEC Wall Lane Offices on June 20, 1974. Meeting attendees were as follows:

SCE

H. B. Ray
K. A. Slagle
R. A. DeLaParra
J. McNey

Calif. Institute
of Technology

J. List

AEC

R. Overstreet
R. Froelich

The purpose of this meeting was to review SCE's current plans for development and presentation of a model to describe the dispersion of heated effluent from the Unit 2 and 3 once-through cooling water systems. The California Institute of Technology (CIT) has recently completed a hydraulic modeling study of the diffuser outfalls, which has resulted in modifying the discharge ports from the design previously analyzed by SCE and the staff.

The position advanced by SCE and CIT at this meeting is that uncertainties in assumptions necessary to a mathematical model are such that a physical model is preferable; and that non-predictable temperature variability in the Pacific Ocean off Southern California is such that no far-field model of any meaningful value can be constructed. Accordingly, SCE proposes that physical model data be used to predict thermal effects, and that no predictions of temperature increases smaller than 2 F° above ambient be considered. The staff is now considering this proposal.

Discussion

1. Background

The staff's analysis of SCE's initial thermal model was presented in the Final Environmental Statement (FES) and was explained at the ASLB hearing. The staff position held that the model was inadequate; but that the staff's

analysis of near field thermal dispersion indicated sufficiently rapid dispersion of the heated effluent to conclude that an adequate environmental assessment could be made without a far field model. It was agreed, however, that SCE and the staff would meet at some time in the future to review a new far field thermal model. This meeting was delayed for about one year -- the principal reason being, it now appears, that the diffuser was being redesigned to improve thermal dispersion characteristics. The initial design consisted of a series of 2 ft dia pipes discharging the heated water vertically, while the new design, still using small discharge ports, discharges the water at alternate angles of $\pm 25^\circ$ with respect to the longitudinal axis of the diffuser and at a 20° angle up from horizontal. The net effect of this redesign is to induce an offshore current along the diffuser axis of the order of 0.1 to 0.2 knot. According to SCE and CIT, this design will minimize or eliminate recirculation of heated water back through the plant water intakes, passage of heated water back through the zone of discharge, heat buildup due to low-current or stagnant water conditions, and intersection of the thermal plume with the shoreline.

2. SCE/CIT Presentation

The CIT report, "Hydraulic Modeling of Thermal Outfall Diffusers for the San Onofre Nuclear Power Plant," Report No. KH-R-30, January 1974, was reviewed with the staff. It describes the physical model, discusses the model tests, and provides results as predicted isotherms. As such, it fulfills the needs of a predictive model. In supporting the utility of this model, reports were cited which emphasize the variability of near-shore ocean temperatures within the Southern California Bight; and which tend to substantiate their suggestion that hour-to-hour variations in "ambient" temperature may vary by 2 to 4 F° . They consider that the model can predict isotherms greater than 2 F° above ambient with good accuracy, and thus will be adequate for the physical conditions that prevail in the area. Since the new diffuser design will induce an offshore current, the staff would agree that the probability of recirculation of heated water and of plume impingement on the shoreline is low.

3. Remaining SCE Effort

On the basis of an initial review of the CIT report, it would appear that SCE now has a valid (but non-mathematical) model which can predict the thermal plume from Units 2 and 3. However, it is not now established that this model can function under all near-shore current systems believed to be in operation at San Onofre, nor that all of these current systems have been identified. Also, there is no assurance at this time that CIT can model all of the important current systems that might be found.

It was agreed that SCE will conduct a survey to determine what new monitoring programs (to get current data) are needed, and what modifications (if any) to the CIT model will be required to incorporate this data. A preliminary report from SCE outlining their anticipated scope of effort is expected early in July 1974.