

CALIFORNIA COASTAL COMMISSION

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Energy and Ocean Resources
Staff: SMH, J JL, JD & SONGS
Mitigation Program Scientific
Team—SF
Staff Report: December 20, 2001
Hearing Date: May 8, 2002

April 19, 2002**To: Commissioners and Interested Parties****From: Susan M. Hansch, Chief Deputy Director****Subject: SONGS MITIGATION PROGRAM: Correction to Fish Behavioral Barriers Report****Commission Action**

No formal Commission action is necessary. If the Commission agrees with the proposed footnote modification in the attached staff report, the staff will make the necessary correction in the September 22, 2000 behavioral barriers staff report.

Staff Discussion

The attached staff report, dated December 20, 2001, recommended a correction to a footnote contained in the September 22, 2000 Fish Behavioral Barriers report¹ for the SONGS mitigation program. The Fish Behavioral Barriers report reviewed the effectiveness of the barriers tested at SONGS.

Some time after the Commission had concurred with the Executive Director's determination in the September 2000 report, the contract scientists and staff realized a mistake had been made in the language of a footnote pertaining to a definition of mortality rate to be used in the reporting of unusual events, such as higher than normal mortality. The modification essentially is to change the measurement unit in the footnote from "abundance" to "biomass".

At the January 2002 Commission meeting, staff inadvertently skipped over this item, and at the February 2002 Commission meeting, Commissioners raised a question concerning the basis of the measurement, stating that from the lay perspective "abundance" is an easier term to understand than "biomass."

¹ See *Executive Director's Determination that Fish Behavioral Barriers Tested at SONGS Are Ineffective*, dated September 22, 2000. The Commission concurred with the Executive Director's determination on October 12, 2000.

SCE does, in fact, collect data on abundance and reports it to the Commission and to the Regional Water Board under its NPDES permit. However, the use of biomass as the unit of measurement is more consistent with the staff's interpretation of the SONGS permit.

Condition B of the permit states, in part:

The permittee shall install and maintain behavioral barriers ... at SONGS Units 2 and 3 to reduce midwater fish impingement losses. ...

In consultation with the permittee, the Commission staff will monitor the effectiveness of the behavioral devices. If the Executive Director determines that the installed devices are not sufficiently effective to warrant continued use, the Executive Director may require removal and installation of alternative behavioral devices.

No specific criteria are included in Condition B for evaluating the effectiveness of the devices. Between 1983 and 1991 the Marine Review Committee found that annual losses of juvenile and adult fish in the cooling water systems of SONGS Units 2 and 3 under normal operations averaged about 20 metric tons. The recommendation of the MRC for the Commission's imposition of Condition B (Section IV-Proposed Findings and Declarations in the 1991 SONGS permit) was that:

... the techniques [behavioral barrier devices] be tested on an experimental basis, and implemented if they reduce impingement by at least 2 metric tons (MT) per year.

Beginning in 1991, prior to the imposition of Condition B, SCE implemented a Fish Chase procedure at SONGS Units 2 and 3 that has reduced in-plant fish losses on average by approximately 4.3 MT per year, well above the 2 MT recommended by the MRC. SCE also conducted a number of laboratory and in-plant experiments but none showed evidence that the barrier devices would reduce fish impingement losses as required by Condition B.

In its letter of September 14, 1994², the Commission staff accepted the idea that the Fish Chase procedure could be considered as a new behavioral device if a good faith effort to implement other devices was shown to be ineffective. Additional testing continued without positive results. In October 2000, the Commission reviewed the results and concluded that no further testing should be required at this time providing that SCE continues to implement and monitor the Fish Chase procedure.

Hence the basis for determining compliance with Condition B is biomass not abundance. It follows that the "unusual (mortality) events" referred to in the footnote should also be with respect to biomass and thereby maintain the longstanding linkage to the MRC's recommendation for implementing behavioral barrier devices and the staff's interpretation of permit Condition B.

² Letter to F. Melone, SCE, from S. Hansch, CCC, dated September 14, 1994, regarding the provisions under which SCE could attain compliance with Condition B.

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**W-11.a**

Energy and Ocean Resources

Staff: SMH, JJJ, JD & SONGS
Mitigation Program Scientific
Team—SF

Staff Report: December 20, 2001

Hearing Date: January 9, 2002

SONGS MITIGATION PROGRAM:**Correction to Fish Behavioral Barriers Report (dated September 22, 2000)****Commission Action**

No formal Commission action is necessary. If the Commission agrees with the proposed footnote modification, the staff will make the necessary correction in the September 22, 2000 behavioral barriers staff report.

Background

One of the mitigation conditions (Condition B) of Southern California Edison Company's (SCE) coastal development permit for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 (permit no. 6-81-330A, formerly 83-73) requires SCE to install and maintain behavioral barrier devices in Units 2 and 3 to reduce fish impingement losses. From 1992 through 1999, SCE conducted a number of laboratory and in-plant experiments to test the behavioral response of fish to lights and sound devices. Results from these experiments showed no evidence that installing lights or sound devices in the cooling water systems of Units 2 and 3 would reduce fish impingement losses. At the same time, SCE continued its modified heat cleaning treatment of the cooling water intake systems at Units 2 and 3 (called the Fish Chase procedure), which does result in a considerable reduction in fish impingement losses.

In October 2000, the Commission reviewed the conclusions on the effectiveness of the behavioral barriers (see staff report entitled *Executive Director's Determination that Fish Behavioral Barriers Tested at SONGS are Ineffective*, dated September 22, 2000) and concurred with the Executive Director's determination that the fish behavioral barriers installed and tested at the plant were ineffective and unlikely to reduce fish impingement losses. Because the Fish Chase procedure results in an average reduction of fish losses of approximately 4.3 metric tons per year, the Executive Director concluded that no further testing of alternative behavioral barriers should be required at this time. The Executive Director determined, and the Commission concurred, that SCE is currently in compliance with Condition B of the SONGS permit.

As part of that permit compliance action, the Executive Director specified continuing monitoring requirements, which included submission of a written report of the Fish Chase procedure used at the plant. In July 2001, SCE submitted its *2000 Annual Marine Environmental Analysis Report*

for the San Onofre Nuclear Generating Station for review. The Commission's contract scientists reviewed the report and provided comments to SCE (see attached letter, dated October 24, 2001).

Correction Needed to Behavioral Barriers Staff Report

In reviewing SCE's report with respect to the monitoring requirements, the contract scientists realized a mistake was made in the language defining mortality rate (footnote 5, p. 12 of the September 22, 2000, staff report), which states in part: "Mortality rate is defined here as the proportion of fish killed during a heat treatment relative to the number of entrained (fish impinged plus fish returned alive via the FRS [Fish Return System])." This footnote was in reference to reporting on unusual events, such as higher than normal mortality. The monitoring provision was meant to refer to biomass, not abundance. Thus, the footnote should be corrected to read:

Mortality rate is defined here as the biomass of fish killed during a heat treatment divided by the biomass of fish entrained (fish impinged plus fish returned alive via the FRS). Higher than normal mortality is defined as (1) a sequence of three or more heat treatments where the mortality rate exceeds 50%, (2) more than 50% of heat treatments in a given year have more than a 50% mortality rate, or (3) mortality rate for the year exceeds 50%.

SCE has indicated to the staff that it has no problem with making this correction to the footnote in the behavioral barriers report.

Commission Action

No formal Commission action is necessary. If the Commission agrees with the proposed footnote modification, the staff will make the necessary correction in the September 22, 2000 behavioral barriers staff report.

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October 24, 2001

Dr. David Kay
Southern California Edison Company
P.O. Box 800
Rosemead, CA 91770

Re: Compliance with Condition B of the SONGS Permit No. 6-81-330-A: SCE's 2000 Annual Marine Environmental Analysis Report

Dear David:

On October 12, 2000, the California Coastal Commission concurred with the Executive Director's determination regarding the fish behavioral barriers required by Condition B of the coastal development permit for the San Onofre Nuclear Generating Station Units 2 and 3 (No. 6-81-330-A, formerly 183-73). (See staff report entitled *Executive Director's Determination that Fish Behavioral Barriers Tested at SONGS are Ineffective*, dated September 22, 2000.) As part of that permit compliance action, the Executive Director specified continuing monitoring requirements, which included submission of a written report of the Fish Chase procedure used at the plant.

As required, on July 31, 2001, SCE submitted the 2000 Annual Marine Environmental Analysis Report for the San Onofre Nuclear Generating Station. Chapter 4 of the report contains an assessment of in-plant fish, which includes data and analysis of the Fish Chase procedure.

The results of Chapter 4 indicate that the operation of the Fish Chase procedure during 2000 was consistent with the requirements enumerated in the Executive Director's determination. Specifically we note the following:

- (1) The impingement for the year was about 28,652 kg, more than the long-term average of about 22,500 kg but within the normal range.
- (2) The Fish Chase procedure resulted in 4,318 kg of fish returned live to the ocean. The long-term mean is 4,300 kg.
- (3) For the year 2000 the Fish Chase effectiveness relative to impingement was 15% (4,318/28,652), a value greater than the 10% mark that is the target.
- (4) There was a clear discussion concerning methods, results and any unusual events (of which there was one that probably resulted in an underestimate of the effectiveness of the Fish Chase procedure).

We also make the following recommendations for subsequent reports:

- (1) Document impingement or return of species of special interest (e.g., Giant Sea Bass, turtles, mammals, etc.) if this is not covered elsewhere in the submission to the Commission.
- (2) Include a figure that shows annual fish return (biomass) from the Fish Chase procedure/ annual impingement (biomass) x 100 vs. year. This would allow evaluation of the temporal success of the procedure. For example, this year it was about 15%; putting data from subsequent years on the figure would allow direct evaluation of trends.


Finally, in reviewing the report with respect to the monitoring requirements contained in the Executive Director's determination, we realized a mistake was made in the language defining mortality rate (footnote 5, p. 12 of the September 22, 2000 staff report, which states in part: "Mortality rate is defined here as the proportion of fish killed during a heat treatment relative to the number of entrained (fish impinged plus fish returned alive via the FRS)." This footnote was in reference to reporting on unusual events, such as higher than normal mortality. The monitoring provision clearly was meant to refer to biomass, not abundance. Thus, the footnote should be corrected to read:

Mortality rate is defined here as the biomass of fish killed during a heat treatment divided by the biomass of fish entrained (fish impinged plus fish returned alive via the FRS). Higher than normal mortality is defined as (1) a sequence of three or more heat treatments where the mortality rate exceeds 50%, (2) more than 50% of heat treatments in a given year have more than a 50% mortality rate, or (3) mortality rate for the year exceeds 50%.

We plan to report this change to the Commission as an action by the Executive Director at the earliest possible time. Please let me know if you have any concerns about modifying the language in the footnote.

I hope our recommendations for future reports on the Fish Chase procedure will be helpful to you. Thank you for your continuing cooperation with the Commission staff in addressing the Commission's behavioral barriers permit condition.

Sincerely,



Susan M. Hansch
Chief Deputy Director

cc: H. W. Newton
K. T. Herbinson
Samir Tanious