April 24, 1981

Central

Docket No. 50-206
LS05-81-04-038

Mr. R. Dietch, Vice President
Nuclear Engineering and Operations
Southern California Edison Company
2244 Walnut Grove Road
Post Office Box 800
Rosemead, California 91170

Dear Mr. Dietch:

RE: SEP TOPIC IV-2, REACTIVITY CONTROL SYSTEMS

Enclosed is a copy of the draft staff evaluation of the lead PWR plant for SEP Topic IV-2. This assessment compares the lead PWR plant (R. E. Ginna) with the criteria currently used by the regulatory staff for licensing new facilities. These criteria were reflected in the questions on this topic that were sent to you earlier this year.

You are requested to evaluate the design of your plant using the questions as an outline and to prepare a safety analysis report. The report should be similar to the format in our evaluation of Ginna, however, it should specifically address the answers to questions asked previously by the staff.

In future correspondence regarding this topic, please refer to the topic number in your cover letter.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
Draft SEP Topic
IV-2 for Ginna

cc w/enclosure:
See next page

8104290427

*See previous yellow for additional concurrences.

OFFICE	SEPB:DL	SEPB:DL	SEPB:DL	ORB#5:DL:PM	ORB#5:DL:C	AD:SA:DL	
SURNAME	RScholl:dk*	RHermann	WRussell	SNowicki	DCrutchfield	GLainas	
DATE	4/9/81	4/20/81	4/20/81	4/21/81	4/22/81	4/23/81	

Docket No. 50-206

Mr. R. Dietch, Vice President
Nuclear Engineering and Operations
Southern California Edison Company
2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91170

Dear Mr. Dietch:

RE: SEP TOPIC IV-2, REACTIVITY CONTROL SYSTEMS - R. E. GINNA NUCLEAR POWER PLANT

Enclosed is a copy of our evaluation of SEP Topic IV-2, Reactivity Control Systems for R. E. Ginna Nuclear Power Plant. This assessment compares the facility, as described in Docket No. 50-244, with the criteria currently used by the regulatory staff for licensing new facilities. These criteria were reflected in the questions on this topic that were sent to you earlier this year.

You are requested to evaluate the design of your plant using the questions as an outline and to prepare a safety analysis report. The report should be similar to the format in our evaluation of Ginna, however, it should specifically address the answers to questions asked previously by the staff.

In future correspondence regarding this topic, please refer to the topic number in your cover letter.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
Draft SEP Topic
IV-2 for Ginna

cc w/enclosure:
See next page

OFFICE	SEPB:DL	SEPB:DL	SEPB:DL	ORB#5:DL:PM	ORB#5:DL:C	AD:SA:DL	
SURNAME	RScholl:dk	RHermann	WRussell	SNowicki	DCrutchfield	GLainas	
DATE	4/9/81	4/ /81	4/ /81	4/ /81	4/ /81	4/ /81	

NRC FORM 318 (10/80) NRCM 0240 **OFFICIAL RECORD COPY** ☆ USGPO: 1980—329-824

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 24, 1981

Docket No. 50-206
LS05-81-04-038

Mr. R. Dietch, Vice President
Nuclear Engineering and Operations
Southern California Edison Company
2244 Walnut Grove Road
Post Office Box 800
Rosemead, California 91170

Dear Mr. Dietch:

RE: SEP TOPIC IV-2, REACTIVITY CONTROL SYSTEMS

Enclosed is a copy of the draft staff evaluation of the lead PWR plant for SEP Topic IV-2. This assessment compares the lead PWR plant (R. E. Ginna) with the criteria currrently used by the regulatory staff for licensing new facilities. These criteria were reflected in the questions on this topic that were sent to you earlier this year.

You are requested to evaluate the design of your plant using the questions as an outline and to prepare a safety analysis report. The report should be similar to the format in our evaluation of Ginna, however, it should specifically address the answers to questions asked previously by the staff.

In future correspondence regarding this topic, please refer to the topic number in your cover letter.

Sincerely,

Dennis M. Crutchfield

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
Draft SEP Topic
IV-2 for Ginna

cc w/enclosure:
See next page

Mr. R. Dietch

cc
Charles R. Kocher, Assistant
General Counsel
Southern California Edison Company
Post Office Box 800
Rosemead, California 91770

David R. Pigott
Samuel B. Casey
Chickering & Gregory
Three Embarcadero Center
Twenty-Third Floor
San Francisco, California 94111

Jack E. Thomas
Harry B. Stoehr
San Diego Gas & Electric Company
P. O. Box 1831
San Diego, California 92112

Resident Inspector/San Onofre NPS
c/o U. S. NRC
P. O. Box 4329
San Clemente, California 92672

Mission Viejo Branch Library
24851 Chrisanta Drive
Mission Viejo, California 92676

Mayor
City of San Clemente
San Clemente, California 92672

Chairman
Board of Supervisors
County of San Diego
San Diego, California 92101

California Department of Health
ATTN: Chief, Environmental
Radiation Control Unit
Radiological Health Section
714 P Street, Room 498
Sacramento, California 95814

Director, Criteria and Standards
Division
Office of Radiation Programs
(ANR-460)
U. S. Environmental Protection
Agency
Washington, D. C. 20460

U. S. Environmental Protection
Agency
Region IX Office
ATTN: EIS COORDINATOR
215 Freemont Street
San Francisco, California 94111

SAFETY EVALUATION REPORT
SEP TOPIC IV-2, REACTIVITY CONTROL SYSTEMS INCLUDING FUNCTIONAL DESIGN AND PROTECTION AGAINST SINGLE FAILURES
R.E. GINNA NUCLEAR POWER PLANT
DOCKET NO.. 50-244

I. INTRODUCTION

The purpose of this evaluation is to insure that the design basis for the Ginna reactivity control systems is consistent with analyses performed to verify that the protection system meets General Design Criterion 25. General Design Criterion 25 requires that the reactor protection system be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal of control rods. Reactivity control systems need not be single failure proof. However, the protection system must be capable of assuring that acceptable fuel design limits are not exceeded in the event of a single failure in the reactivity control systems. The review criterion, covered in this evaluation, is addressed in Section II. Review areas that are not covered, but are related and essential to the completion of this topic,are covered by other SEP topics addressed in Section III. The scope of the SEP topics is defined in the "Report on the Systematic Evaluation of Operating Facilities" dated November 25, 1977.

This report is limited to the identification and evaluation of inadvertent control rod withdrawals and malpositioning of control rods which may occur as a result of single failures in the electrical circuits of the reactivity control systems.

II. REVIEW CRITERION

The review criterion for this topic is based upon Section 7.7, Part II of the NRC Standard Review Plan. In the specific case of the reactivity con-

trol systems a single failure shall not cause plant conditions more severe than those for which the reactor protection system is designed.

III. RELATED SAFETY TOPICS

The following listed review areas are not covered in this report, but are related and essential to the completion of this topic. These review areas are covered by other SEP topics as indicated below.

1. Analyses of the consequences of control rod withdrawals and the malpositioning of control rods which may occur as a result of single failures in the electrical circuits of the reactivity control systems are covered by SEP Topic XV-8, "Control Rod Misoperation (System Malfunction or Operator Error)"

2. Analyses of reactivity insertions occurring as a result of inadvertent boron dilutions are covered in SEP Topic XV-10, "Chemical and Volume Control System Malfunction that Results in a Decrease in Boron Concentration in the Reactor Coolant."

IV. REVIEW GUIDELINES

The purpose of this evaluation is to identify inadvertent control rod withdrawals and malpositioning of control rods which may occur as a result of single failures in the electrical circuits of the reactivity control systems for the R.E. Ginna Nuclear Power Plant.

V. EVALUATION

Information was provided in Rochester Gas and Electric Corporation letter dated January 19, 1981, describing design features which limit control rod withdrawals and malpositioning of control rods caused by failures within the reactivity control systems at the R.E. Ginna Nuclear

Power Plant. Based upon the information provided by the licensee we conclude that the following may occur as a result of single failures:

1) Two control rod banks may be simultaneously withdrawn.

2) Two banks may overlap at other than the design value.

This conclusion is based upon the availability of alarm and interlock circuits associated with the rod control system such that certain consequential effects of single failures within the rod control system are precluded by the operability of these interlocks and alarms. The basis for the assumption that these alarms and interlocks will be operable is that a failure in the alarm and interlock circuits will be identified and corrected during routine maintenance or as a result of system fault investigation. The effects of single failures occurring after an undetected failure has occurred in the alarm and interlock system are not included in the evaluation. This is consistent with the basis used for plants currently under operating license review.

VI. CONCLUSION

Each of the following two reactivity control system malfunctions have been addressed as part of SEP Topic XV-8 to verify that specified acceptable fuel design limits are not exceeded:

1) Simultaneous withdrawal of two control rod banks.

2) Overlap of two banks at other than the design value.

Fuel design limits are not exceeded for either of the above two malfunctions and thus, General Design Criterion 25 is met insofar as electrical failures within reactivity control systems are concerned.