August 21, 1981

Spence W. Perry, Esq.
Acting Assistant General Counsel
Federal Emergency Management Agency
500 C Street, S.W.
Washington, D.C. 20472

In the Matter of
SOUTHERN CALIFORNIA EDISON COMPANY, ET AL.
(San Onofre Nuclear Generating Station, Units 2 and 3)
Docket Nos. 50-361 OL and 50-362 OL

Dear Mr. Perry:

Enclosed for your information is a copy of the "NRC STAFF TESTIMONY ON GUARD CONTENTIONS 1, 2.E, 2.I, 2.J AND 2.K CONCERNING EMERGENCY PREPAREDNESS FOR THE SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3" which was filed on August 21, 1981.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Donald F. Hassell
Counsel for NRC Staff

Enclosure: As stated

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August 21, 1981

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
SOUTHERN CALIFORNIA EDISON COMPANY, ET AL.	)	Docket Nos. 50-361 OL 50-362 OL
	)	
(San Onofre Nuclear Generating Station, Units 2 and 3)	)	

NRC STAFF TESTIMONY ON GUARD CONTENTIONS 1, 2.E, 2.I, 2.J AND 2.K CONCERNING EMERGENCY PREPAREDNESS FOR THE SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

In accordance with 10 C.F.R. § 2.743(b), the Atomic Safety and Licensing Board's Order on the record of July 10, 1981, and the stipulation of the parties, the NRC Staff hereby submits its direct testimony on GUARD's emergency planning contentions 1, 2.E, 2.I, 2.J, and 2.K.

Respectfully submitted

Richard K. Hoefling
Counsel for NRC Staff

Donald F. Hassell
Counsel for NRC Staff

Dated at Bethesda, Maryland,
this 21st day of August, 1981.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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SOUTHERN CALIFORNIA EDISON COMPANY, ET AL.	)	Docket Nos. 50-361 OL 50-363 OL
	)	
(San Onofre Nuclear Generating Station, Units 2 and 3)	)	

TESTIMONY OF JOHN R. SEARS OF THE NRC STAFF ON GUARD CONTENTIONS 1, 2.E, 2.I, 2.J, AND 2.K RELATED TO EMERGENCY PREPAREDNESS FOR THE SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

AUGUST 20, 1981

Q.1 State your name and title?

A. John R. Sears. I am a Senior Reactor Safety Engineer in the Emergency Preparedness Licensing Branch, Division of Emergency Preparedness, Office of Inspection and Enforcement, U. S. Nuclear Regulatory Commission.

Q.2 Do you have a statement of professional qualifications?

A. Yes. A copy of my statement of professional qualifications is attached to this testimony.

Q.3 What is the purpose of this testimony?

A. The purpose of this testimony is to address Contentions 1 and 2.E, 2.I, 2.J, and 2.K raised by Intervenors GUARD in this operating license proceeding each of which is related to the emergency preparedness of the San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 and 3). My testimony will examine the state of the Applicants' emergency preparedness as it affects these GUARD's Contentions.

Q.4 GUARD Contention 1 states:

Whether the state of emergency preparedness for SONGS 2 and 3 provides reasonable assurance that the offsite transient and permanent population within the plume exposure pathway Emergency Planning Zone, 10 C.F.R. § 50.47(c)(2), for SONGS 2 and 3 can be evacuated or otherwise adequately protected in the event of a radiological emergency with offsite consequences occurring at SONGS 2 and 3, as required by 10 C.F.R. § 50.47(a)(1), § 50.47(b)(10), and Part 50, Appendix E.IV.

With respect to Contention 1, why are time estimates for evacuation and for taking other protective actions required to be submitted by the Applicants pursuant to Part 50, Appendix E.IV?

A. Time estimates for evacuation and for taking other protective actions are used by the NRC staff for two principal purposes:

(1) to identify those transportation routes, areas or facilities in the vicinity of a site for which special traffic controls during an emergency or other special plans would be desirable;

(2) to provide to decisionmakers during an emergency, knowledge of the length of time required to effect evacuation under various conditions. This knowledge allows an informal choice of protective actions (e.g., between in-place sheltering and evacuation) during any actual accident situation.

Q.5 With respect to the time estimates which are required to be submitted by the Applicants pursuant to Part 50, Appendix E.IV, what criteria must those time estimates meet?

A.. The time estimates for evacuation and for taking other protective actions are considered acceptable if the criteria of NUREG-0654, FEMA REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," specifically II.J and Appendix 4 of NUREG-0654, are met.

Q.6 Have the Applicants in this proceeding submitted time estimates for SONGS 2 and 3 facility?

A. Yes, the Applicants submitted an analysis of time estimates for evacuation of the 10 mile plume exposure Emergency Planning Zone and beyond to include the communities of San Juan Capistrano, Dana Point and Ortega. This analysis is contained in Appendix E to the Applicants' Emergency Plan. The other protective action that may be taken is shelter and the time necessary to take shelter is principally a function of the time for notification. The Applicants are installing a siren system for early alerting of the public and have an ongoing public educational program both of which have been described in my testimony dated August 6, 1981 responding to GUARD Contentions 2.B and 2.C.

Q.7 Have these time estimates been examined for conformance with the criteria you have identified in your response to Question 5 above?

A. Yes.

Q.8 Who performed that examination and how was it conducted?

A. The examination was performed by a contractor, the Texas Transportation Institute of the Texas A & M University System. The evaluation technique is described in NUREG/CR-1856, An Analysis of Evacuation Time Estimates Around 52 Nuclear Power Plants and NUREG/CR-1745, Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones. The evaluation used a subjective scale requiring professional engineering judgment in determining ratings. The process then indicates areas which the reviewer considers the plan to be strong or weak. The results of the review are then presented in a table (See Table Below).

Table 1: Evacuation Criteria

Item	Excel.	Adeq.	Poor	None
Background				
A. Area Map				
B. Assumptions				
C. Methodology				
Demand Estimation				
A. Permanent Population				
B. Transient Population				
C. Special Population				
D. Time of Day/Week				
Traffic Routing				
A. Map of Network				
B. Capacity by Segment				
Analysis				
A. Components Considered				
B. Adverse Condition Considered				
Overall				

Q.9 Describe the results of that evaluation?

A. The contractor's evaluation stated that the Applicants' report (Appendix E to the Applicants' Emergency Plan) is excellent with one exception in that inadequate consideration was given to adverse weather conditions and its effect on highway capacity. The Applicants' estimates had resulted in very little difference in time between fair weather conditions and adverse weather conditions. The NRC contractor's concept of adverse weather envisions a more severe environment than I conclude is necessary to fulfill the criteria of NUREG-0654.

Q.10 In your opinion, do the Applicants' time estimates meet the criteria which you have identified in your response to Question 5 above?

A. Yes, Appendix 4 of NUREG-0654 includes a complete outline of the material to be covered in the evacuation times assessment study. The NRC contractor's evaluation described in answer to question 8 covers all of the elements in Appendix 4. I have reviewed the Applicants' study and the NRC contractor's evaluation and I have verified that the Applicants' study satisfactorily covers all the elements in Appendix 4.

Q.11 With respect to Contention 1, have you evaluated the capability to initiate evacuation or other protective measures for offsite permanent and transient population within the plume exposure pathway EPZ?

A. Yes, I have examined the capability of the Applicants to evaluate the need for and to make recommendations to offsite response agencies with respect to evacuation or other protective measures. Such capability is required by planning standard 10 C.F.R. § 50.47(b)(10). The criteria of NUREG-0654, specifically II.J., provide guidance in this area.

Q.12 Have the Applicants' emergency plans been examined for conformance with the guidance of NUREG-0654, II.J?

A. Yes, I have examined the Applicants' emergency plans with respect to this guidance and I will now summarize my findings.

The methodology and techniques for assessment of each of the four classes of emergency, Notification of Unusual Event, Alert, Site Area Emergency and General Emergency are described in Section 6 of the Applicants' Emergency Plan. The Applicants' Emergency Implementing Procedure 1.1, Recognition and Classification of Emergencies, specifies measurable and observable indications in the plant instrumentation readings, which are the initiating conditions for declaring a particular emergency. The procedure instructs the Emergency Coordinator, who initially is the plant Watch Engineer, to make notification to offsite authorities in conformance with Emergency Implementation Procedure 1.4, Notification. The Notification procedure states that notification shall be made to all offsite authorities by the on duty shift personnel immediately following the declaration of the emergency. The Notification procedure includes message forms, with the recommended protective action, for each type of emergency. Emergency Implementation Procedure 1.24, Recommendations for Offsite Protective Measures, provides specific guidance to the Emergency Coordinator for the recommending of offsite protective actions to local emergency response authorities. This procedure states that the applicant is

required to make recommendations for protective actions as part of the initial notification process if the nature and magnitude of the actual or potential radioactivity release warrants protective actions for the general public.

Q.13 State whether the Applicants' procedures conform to the guidance contained in NUREG-0654, II.J and provide us with your judgment as to whether or not the Applicants meet planning standard 10 C.F.R. § 50.47(b)(10).

A. The Applicants' Emergency Implementation Procedures demonstrate his capability to evaluate the need for and make recommendations to offsite response agencies with respect to evacuation or other protective measures. The procedures satisfy the criteria of NUREG-0654, II.J which are the implementation criteria for 10 C.F.R. 50.47(b)(10).

Q.14 GUARD Contention 2 states in part:

> Whether there is reasonable assurance that the emergency response planning and capability of implementation for SONGS 2 & 3, affecting the offsite transient and permanent population, will comply with 10 C.F.R. Sections 50.47(a)(1) and (b) or (c)(1) as regards:
>
> * * *
>
> E. necessary transportation and communication equipment, and the operation of the emergency operations centers of the principal response organizations, 10 C.F.R. Sections 50.47(b)(8);
>
> * * *

I. the physical design, communications equipment, and operating procedures for the interim Emergency Operations Facility, 10 C.F.R. Sections 50.47(b)(3) and (b)(8);

J. the methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition within the ingestion pathway EPZ for SONGS 2 and 3, 10 C.F.R. Section 50.47(b)(9); and

K. general plans for recovery and reentry, 10 C.F.R. § 50.47(b)(13).

Q.14 With respect to Contention 2.E, have you examined the Applicants' provisions to provide transportation and communications equipment during an emergency and to establish emergency operations centers?

A. Yes, the Applicants' procedure 1.26 entitled "Communications" describes the communications systems that are available for emergency use, their location and their functions. Section G of the Applicants' Emergency Plan states that, in the event that normal access to SONGS should become restricted, emergency personnel and equipment can be transported to the Station via helicopter. The Applicants maintain a fleet of aircraft which includes five helicoptors, one twin engine, fixed wing aircraft capable of carrying six passengers. The fleet is based at the Chino Airport. Provisions have been made for the dedicated use of two helicopters for the transport of emergency personnel and equipment to SONGS; however, the Applicants state that all of the aircraft could be dedicated to SONGS if necessary. In addition, the Applicants own and operate an extensive fleet of

ground transportation vehicles consisting of heavy-duty trucks, equipment and four-wheel drive vehicles which would be available to SONGS as needed.

Section 7 of the Applicants' Emergency Plan describes the Applicants' emergency facilities, the Station Control Room, the Technical Support Center, and the Operations Support Center. Section 7 also describes the interim arrangements for the Emergency Operations Facility, which will include an onsite Emergency Support Center staffed by Corporate Emergency Support personnel, and a Primary Emergency Operations Center (PEOC). The PEOC is located in the City of San Clemente City Hall and is for the use of Southern California Edison (SCE), Federal, State and local authorities. The Applicants' Emergency Implementation Procedure 1.3 entitled "Activation and Operation of SCE Emergency Centers and Organizations" provides instructions for the activation, operation and organization of the Operations Support Center, Technical Support Center and the Emergency Support Center. The Emergency Operations Centers of local offsite authorities are described in their individual Emergency Response Plans which the Applicants have submitted to the NRC Staff.

Q.15 Do the Applicants' provisions for Emergency Operation Centers and their commitment to transportation and communications equipment described in your response to Question 14 above, meet planning standard 10 C.F.R. § 50.47(b)(8)?

A. Yes, the Applicants' provisions for emergency operation centers and their commitment of transportation and communications equipment satisfy the criteria of NUREG-0654, II.F and H which are the implementation criteria for 10 C.F.R. § 50.47(b)(8).

The implementation of the capability for necessary transportation and communications equipment and the operation of the Applicants' emergency operations centers was demonstrated during the full scale exercise involving the Applicants and offsite organizations on May 13, 1981, to the extent the procedures and systems employed during the Unit 1 exercise were similar to those in place for Units 2 and 3. These procedures and systems proved to be workable and effective.

Q.16 With respect to Contention 2.I, have you examined the physical design, communications equipment and operating procedures for the interim Emergency Operations Facility (EOF)?

A. Yes, I was the NRC observer at the Applicants' onsite Emergency Support Center during the May 13, 1981 exercise and at that time I also visited the Primary Emergency Operations Center at San Clemente.

Q.17 Do the physical design, communications equipment and operating procedures for the interim EOF described in your response to Question 16 above meet planning standards 10 C.F.R. § 50.47(b)(3) and (b)(8)?

A. The criteria for the interim EOF are contained in NRC letters to all Applicants dated September 27, 1979 and November 9, 1979. (These letters are attached to the Applicants' Emergency Plan). The Applicants' provisions for the interim EOF satisfy these criteria and meet the planning standards of 10 C.F.R. § 50.47(b)(3) and (b)(8).

The criteria for the permanent EOF are contained in NUREG-0654,II.H, with specific guidance for implementation in NUREG-0696, Functional Criteria for Emergency Response Facilities. The Applicants have submitted detailed descriptions of their permanent Emergency Operations Facility in the July 1, 1981 letter to the NRC Staff. The permanent Emergency Operations Facility will be located at Japanese Mesa across Highway I-5 and approximately 1 kilometer from the plant. It will conform to the guidance in NUREG-0696 and will be operational by October 1, 1982.

Q.18 With respect to Contention 2.J, have you examined the methods, staffing, systems and equipment available to Applicants for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition within the ingestion pathway EPZ for SONGS 2 and 3?

A. Yes, in addition to the provisions that I have described in my testimony dated August 6, 1981 responding to GUARD Contention 2.H, the Applicants' Emergency Implementation Procedures 1.34, Emergency

Environmental Monitoring, provides instructions for the collection of environmental samples in the event of a release of radioactive material to the environment during an emergency. The instructions include the kinds of samples, the need for clear identification of the samples, and an admonition against cross-contamination. The Technical Support Center has been designated by the Applicants as the place for receipt and analysis of field monitoring data. Federal Agencies will coordinate their Emergency Radiological Monitoring and Assessment activities through the Federal Radiological Monitoring Assessment Plan (FRMAP). The Applicants will have space available in the Emergency Operations Facility for a liaison from FRMAP.

Q.19 Do the methods, staffing, systems and equipment, available to Applicants for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition described in your response to Question 18 above meet planning standard 10 C.F.R. § 50.47(b)(9)?

A. Yes, the provisions for assessing and monitoring for the ingestion pathway EPZ satisfy the criteria of NUREG-0654, II.H and I which are the implementation criteria for 10 C.F.R. § 50.47(b)(9).

Q.20 With respect to Contention 2.K, have you examined the general plans developed by the Applicants for recovery and reentry?

A. Yes, Section 9 of the Applicants' Emergency Plan describes general plans for recovery and reentry. Criteria have been established

for declaring that the emergency is under control and in the recovery phase. The Emergency Coordinator is responsible for notification to all offsite authorities that the emergency has shifted to a recovery phase. Planned radiation exposure limits for urgent re-entry shall be in accordance with National Council on Radiation Protection (NCRP) criteria and, in any lesser situation, the criteria of 10 C.F.R. Part 20 apply. Analyses will be performed to estimate population exposure from all applicable exposure pathways. The general structure of a long-term recovery organization is described in the Emergency Plan.

Q.21 Do the plans for recovery and re-entry described in your response to Question 20 above meet planning standard 10 C.F.R. Section 50.47(b)(13)?

A. Yes, the Applicants' plans for recovery and re-entry satisfy the criteria of NUREG-0654, II.M which are the implementation criteria for 10 C.F.R. § 50.47(b)(13).

Q.22 What is your assessment of the Applicants' capability to implement the procedures and activities which you have described in this testimony?

A. I have reviewed the implementing procedures and, in my judgment, they provide adequate and clear direction to the person called upon to

implement them. The Applicants have an ongoing training program which I have examined and found acceptable. This training program provides assurance that the procedures will be followed. Additional confirmation of the Applicants' ability to implement the emergency preparedness program is provided through the Office of Inspection and Enforcement's Emergency Preparedness Appraisal Program (EPAP) which is an onsite inspection and verification process, and the conduct by the Applicants of an onsite exercise, both of which are scheduled far before the time expected for issuance of the operating license for San Onofre 2 and 3.

JOHN R. SEARS

RESUME'

Prior to 1952, I was employed in field jobs in various aspects of mechanical engineering. In 1952, I joined Brookhaven National Laboratory as a Reactor Shift Supervisor on the Brookhaven Graphite Reactor. While at Brookhaven, I completed a series of courses given by the Nuclear Engineering Department in nuclear engineering. These courses were patterned on the ORSORT programs. In 1956, I was appointed Project Engineer on the Brookhaven Medical Research Reactor. I was a member of the design group, participated in critical design experiments, wrote specifications, coauthored the hazards report, was responsible for field inspection and contractor liaison, trained operators and loaded and started up the reactor. About three months after start-up, in 1959, following the successful completion of proof tests and demonstration of the reactor in its design operating mode for boron capture therapy of brain cancer, I accepted a position as reactor inspector with the Division of Inspection, U. S. Atomic Energy Commission. In 1960, I transferred, as a reactor inpsector, to the newly-formed Division of Compliance. I was responsible for the inspection, for safety and compliance with license requirements, of the licensed reactors and the fuel fabrication and fuel processing plants. which use more than critical amounts of special nuclear material, in the Eastern United States.

In September 1968, I transferred to the Operational Safety Branch, Directorate of Licensing. My responsibility included development of appropriate guides for evaluation of operational aspect of license applications and staff assistance in review of power reactor applicants submittals in the areas of Organization and Management. Personnel Qualifications, Training Programs, Procedures and Administrative Control, Review and Audit, Start-up Testing Programs Industrial Security and Emergency Planning.

The Branch was reorganized as the Industrial Security and Emergency Planning Branch in April 1974 to place increased emphasis and attention upon areas of physical security and emergency planning.

In 1976 I transferred to the Divison of Operating Reactors as the sole reviewer responsible for review of emergency planning for all the operating reactors in the United States.

New York City College, 1950 - Mechanical Engineering

Argonne International School of Reactor Technology, 1961 - Reactor Control Course

GE BWR System Design Course, 1972

Popo-U.S. Army, 1974 - Course in Industrial Defense and Disaster Planning

Instructor at DCPA , 1976, 1977 - Course in Emergency Planning

Director, 1962 - Reactor Program, Atoms for Peace Exhibit, Bangkok, Thailand

Director, 1966 - Atoms for Peace Exhibit, Utrecht, Holland

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NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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	)	
SOUTHERN CALIFORNIA EDISON COMPANY, ET AL.	)	Docket Nos. 50-361 OL 50-362 OL
	)	
(San Onofre Nuclear Generating Station, Units 2 and 3)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF TESTIMONY ON GUARD CONTENTIONS 1, 2.E, 2.I, 2.J AND 2.K CONCERNING EMERGENCY PREPAREDNESS FOR THE SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or as indicated by an asterisk, by deposit in the Nuclear Regulatory Commission internal mail system, this 21st day of August, 1981:

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