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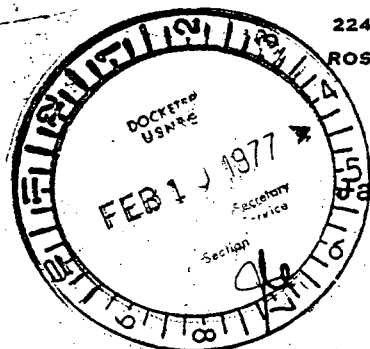
(213) 572-1931

January 26, 1977

Our File No. 6168-1

USAEC
630-BETHESDA

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Atomic Safety and Licensing Board
1150 17th Street, N.W.
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II
McLurren / Chandler
Trelby / FFF

Re: San Onofre Nuclear Generating
Station, Units Nos. 2 and 3:
N.R.C. Docket Nos. 50-361 and 50-362

Dear Mr. Glaser:

Pursuant to the Licensing Board's order of January 6, 1977, applicants have formally submitted data reflecting actual daily counts of persons using the beach within applicants' reduced exclusion area, including the tidal beach.

Applicants have analyzed this data in preparation for oral argument. In order to facilitate the conduct of the oral argument, enclosed is a memorandum entitled, "ANALYSIS OF EXCLUSION AREA BEACH SURVEY DATA" setting forth a basic analysis of the data submitted. A copy of this letter, with enclosures, is being served on Board members Daiber and Kornblith as well as all other parties to the proceeding simultaneous with service of the data submitted pursuant to the Board's order of January 6, 1977.

Hy
Very truly yours,

CHICKERING & GREGORY
SOUTHERN CALIFORNIA EDISON COMPANY

By /s/ David R. Pigott

David R. Pigott, One of Counsel
for Applicants

cc: Franklin C. Daiber (w/encl.)
Lester Kornblith, Jr. (w/encl.)
All Parties (w/encl.)

ANALYSIS OF EXCLUSION AREA BEACH SURVEY DATA

The Applicants have analyzed daily counts of persons within the beach and bluff portions of the reduced exclusion area presented in Attachment 1 to Applicants' "Supplemental Memorandum Concerning Actual Daily Counts of Persons Within the Reduced Exclusion Area," dated January 26, 1977. These analyses have been performed to: (1) provide an overall summary of the data, (2) identify the relative frequency of the number of persons within the beach and bluff portions of the reduced exclusion area, (3) identify the distribution of persons within the beach and bluff portions of the reduced exclusion area, and (4) identify the relative frequency of various activities within the beach and bluff portions of the reduced exclusion area. The result of the analyses are summarized as follows:

1. Overall Summary of Data

Analysis of the daily counts from February 6, 1976 through September 29, 1976 indicates that:

- The peak number of persons in the reduced exclusion area (Areas II-VI) occurred on Sunday, June 13, 1976 at 3:00 p.m. when 108 persons were observed (40% stationary, 19% in transit, 20% swimming, and 21% surfing).

- For approximately 57.6 percent of the complete observations, less than 10 persons were observed in the reduced exclusion area.

- The total observed attendance, including Areas I and VII which are not within the reduced exclusion area, is distributed in the observation areas as follows:

Area I	-	71%
Area II	-	9%
Area III	-	3%
Area IV	-	1%
Area V	-	1%
Area VI	-	7%
Area VII	-	9%

- The breakdown by activity of the total observed attendance within the reduced exclusion area is as follows: 48% stationary, 25% in transit, 7% swimming, and 19% surfing.

2. Relative Frequency of Numbers of Persons

Figures 1 and 2 provide a plot of the relative frequency of the number of persons observed in the reduced exclusion area at 10:00 a.m. and 3:00 p.m., respectively. The mean and median values show that most of the time relatively few people are located in the reduced exclusion area. Figure 3 reflects that there were less than 10 people observed in the reduced exclusion area for about 59% of the observations at 10:00 a.m. and for about 56% of the observations at 3:00 p.m.

3. Distribution of Persons

Over the period of observation, the average distribution of people in the reduced exclusion area and adjacent areas*, is shown in Figure 4 for 10:00 a.m. and 3:00 p.m. The dashed bars on Figure 4 indicate the peak number of people observed in each area, at 10:00 a.m. and 3:00 p.m., over the entire survey period. On the average, only 12% of the total number of people observed in Areas I through VII at 10:00 a.m. were in the reduced exclusion area, and only 15% of the total observed at 3:00 p.m. were in the reduced exclusion area.

4. Activity of Persons

Over the period of observations the activities of persons in the reduced exclusion area have been identified as (1) stationary, (2) in transit, (3) swimming, or (4) surfing. Figure 5 shows two plots, one at 10:00 a.m. and the other at 3:00 p.m., of the average distribution of the observed activities of persons in the reduced exclusion area and the two adjacent areas. Figure 6 illustrates the distribution by area and activity of persons on the beach during the days of peak observed usage in Areas I-VII and Areas II-VI.

*Figure 1 of Applicants' "Supplemental Memorandum Concerning Actual Daily Counts of Persons Within the Reduced Exclusion Area" dated January 26, 1977 delineates the areas for which daily observations were made.

On June 13, 1976 at 3:00 p.m. the number of persons observed in the reduced exclusion area was 108, or about 36% of the total number of persons observed in Areas I through VII. The people in the reduced exclusion area were distributed by activities as follows: 40% stationary, 19% in transit, 20% swimming, and 21% surfing.

On September 18, 1976 at 10:00 a.m., 434 persons were observed in Areas I-VII. Of these, 58 were located within the reduced exclusion area, and were distributed by activities as follows: 52% stationary, 29% in transit, 5% swimming, and 14% surfing.

Relative Frequency (Percent of Total Observations)

FIGURE I. RELATIVE FREQUENCY OF NUMBER OF PEOPLE IN EXCLUSION AREA AT 10:00

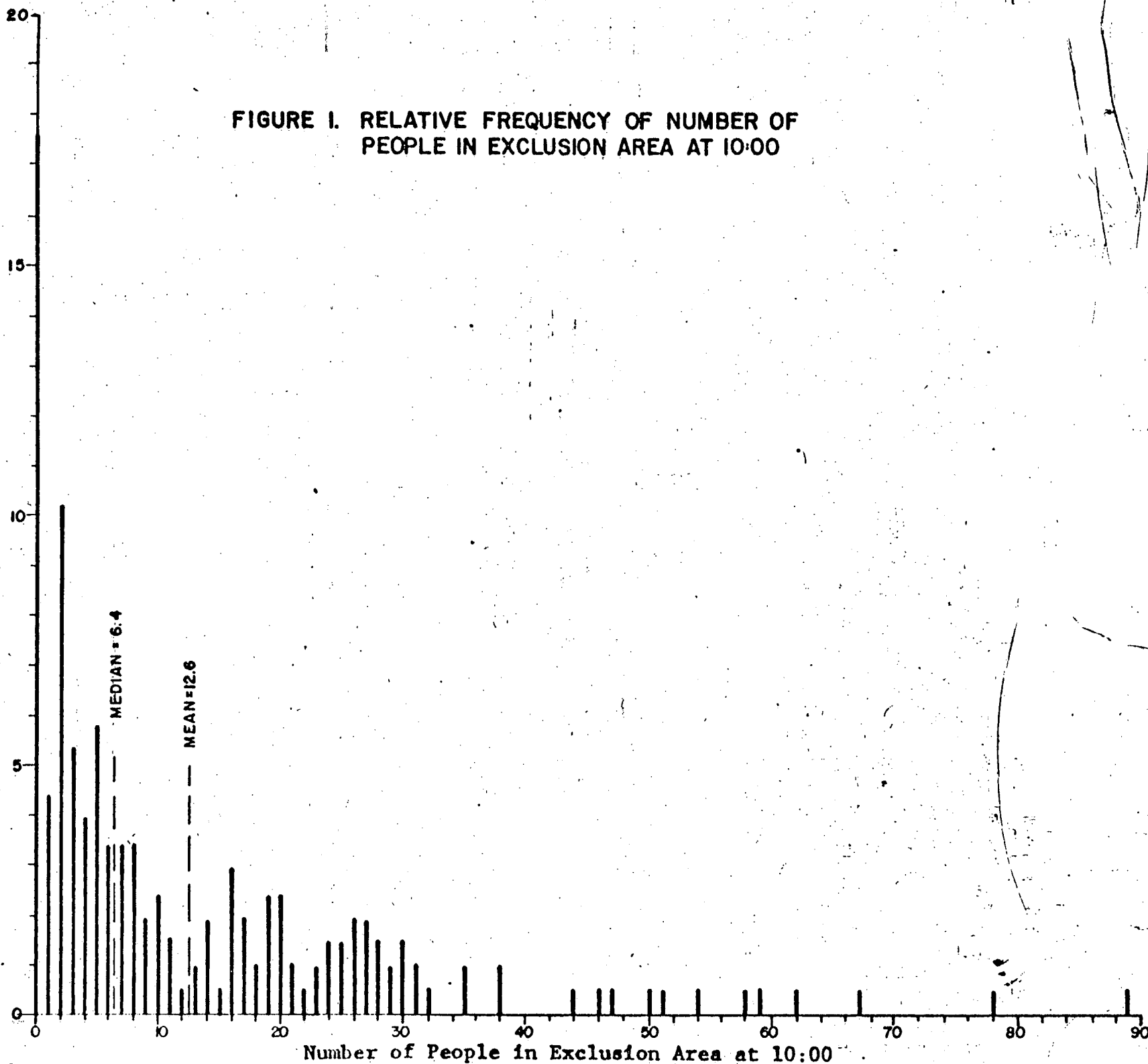


FIGURE 2. RELATIVE FREQUENCY OF NUMBER OF PEOPLE IN EXCLUSION AREA AT 3:00

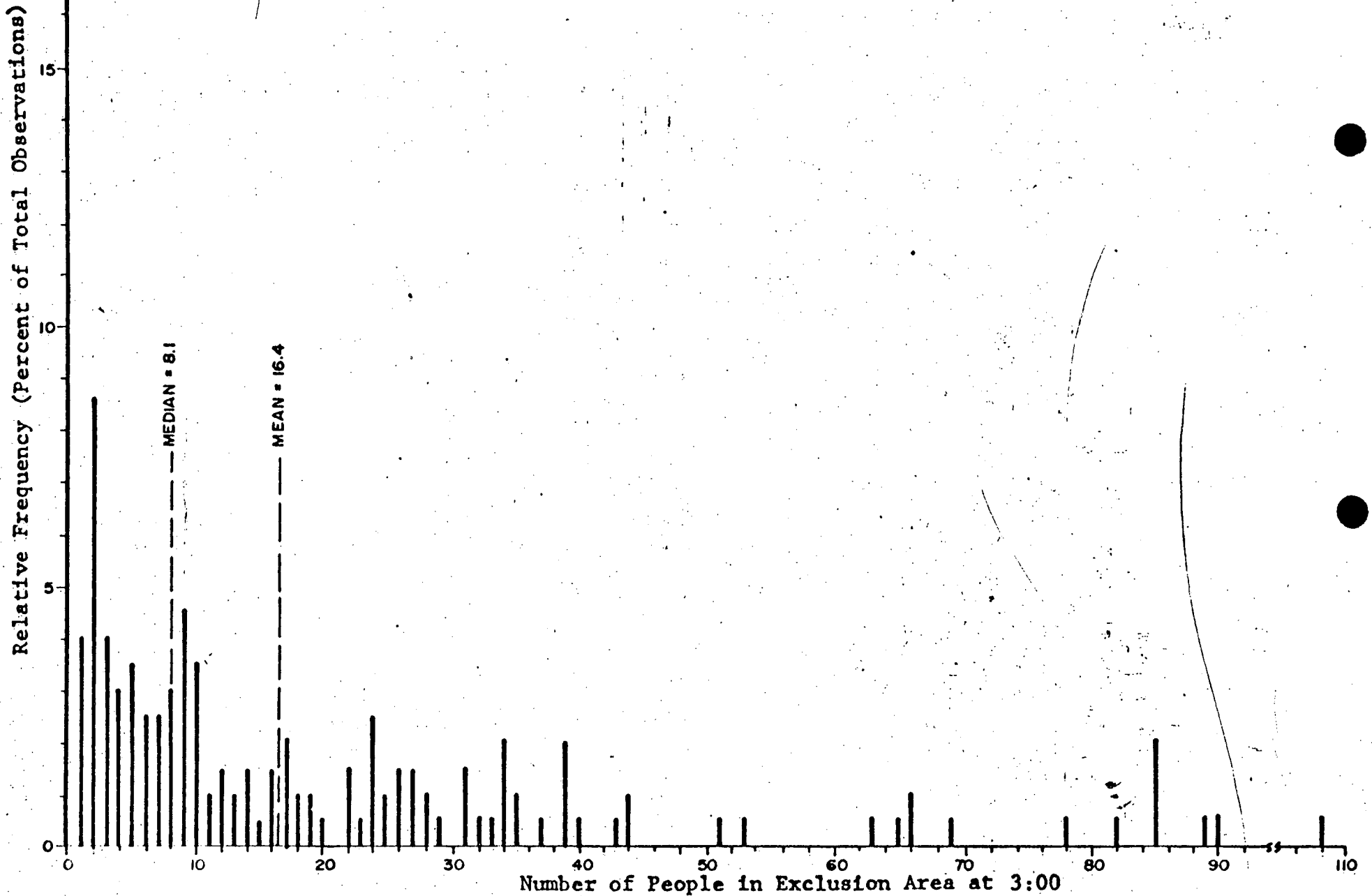
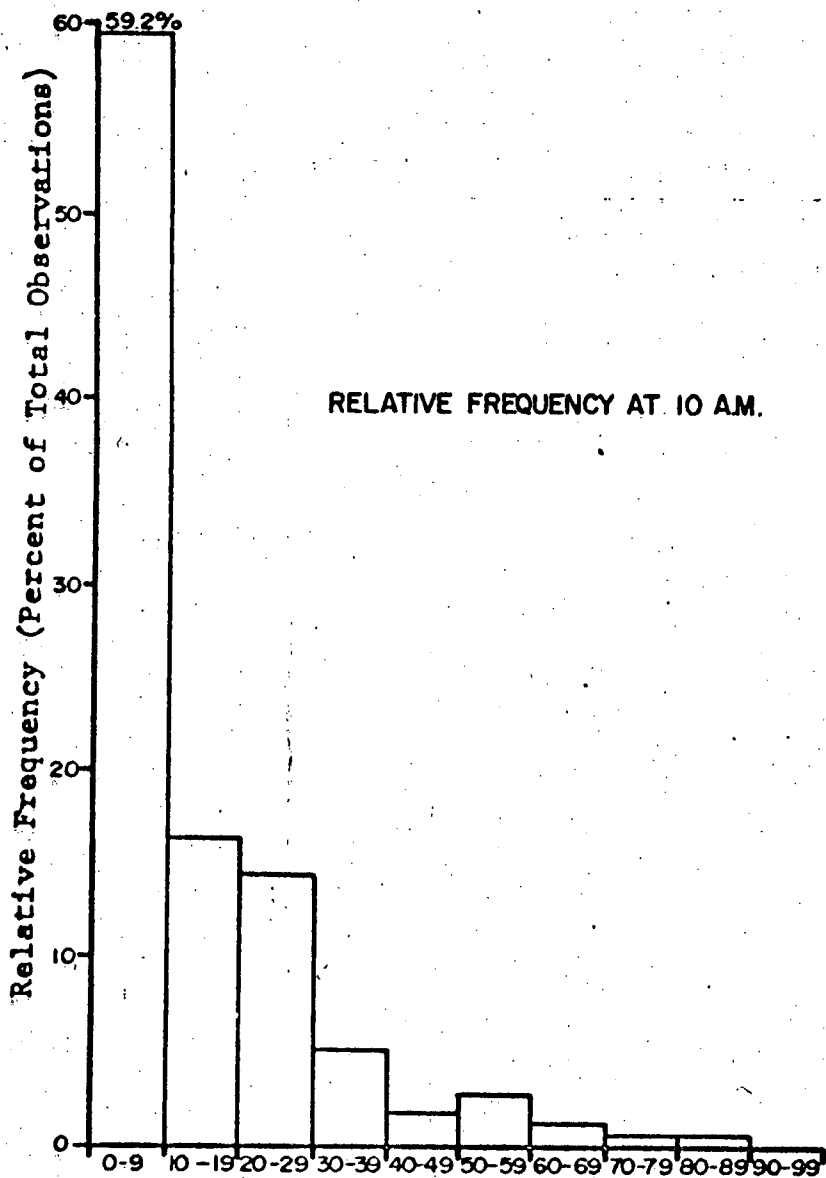
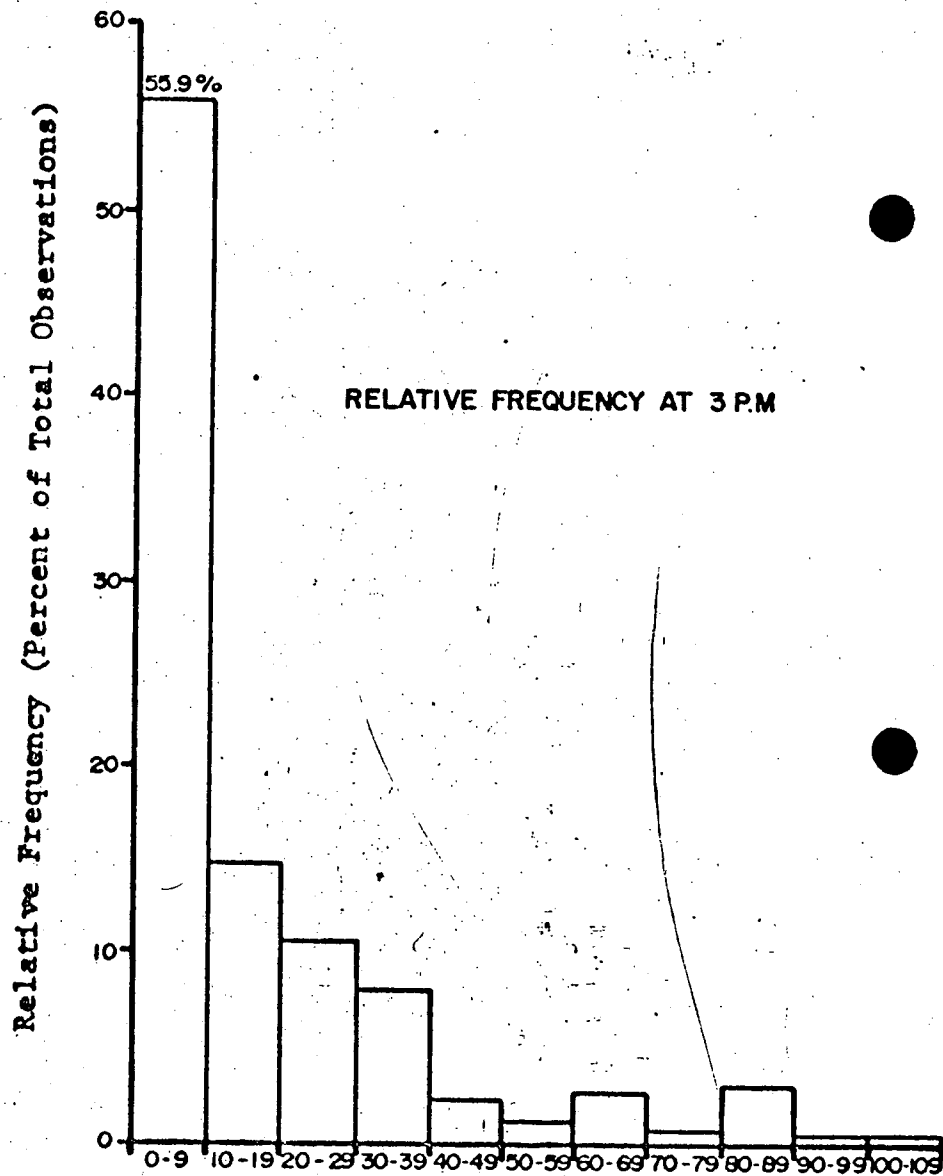


FIGURE 3 RELATIVE FREQUENCY OF PEOPLE IN EXCLUSION AREA



Number of People in Exclusion Area at 10:00 a.m.



Number of People in Exclusion Area at 3:00 p.m.

FIGURE 4. AVERAGE AND AREA-BY-AREA PEAK DISTRIBUTION OF PEOPLE IN THE EXCLUSION AND ADJACENT AREAS

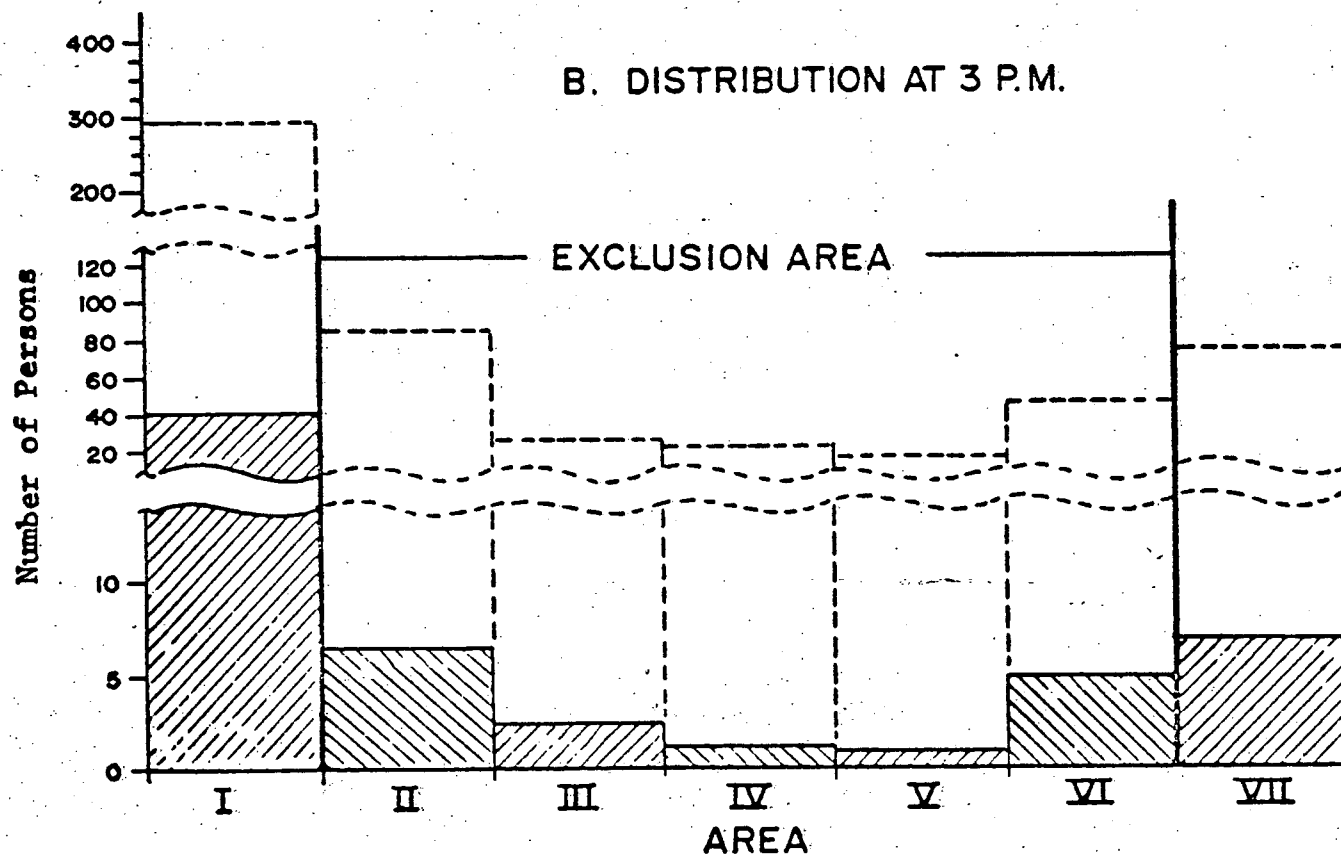
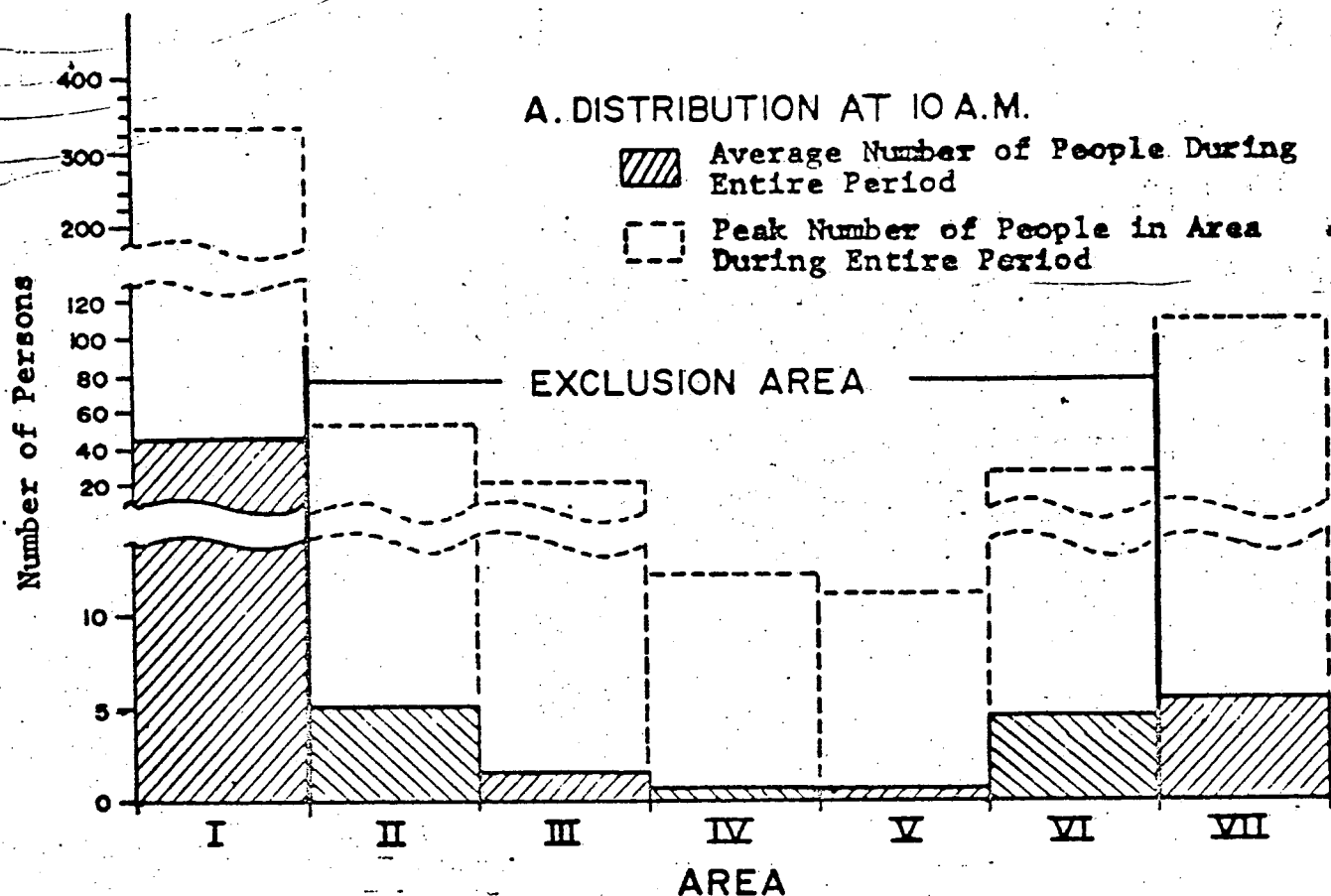


Figure 5. Average Distribution of People by Activities in Exclusion Area and Adjacent Areas

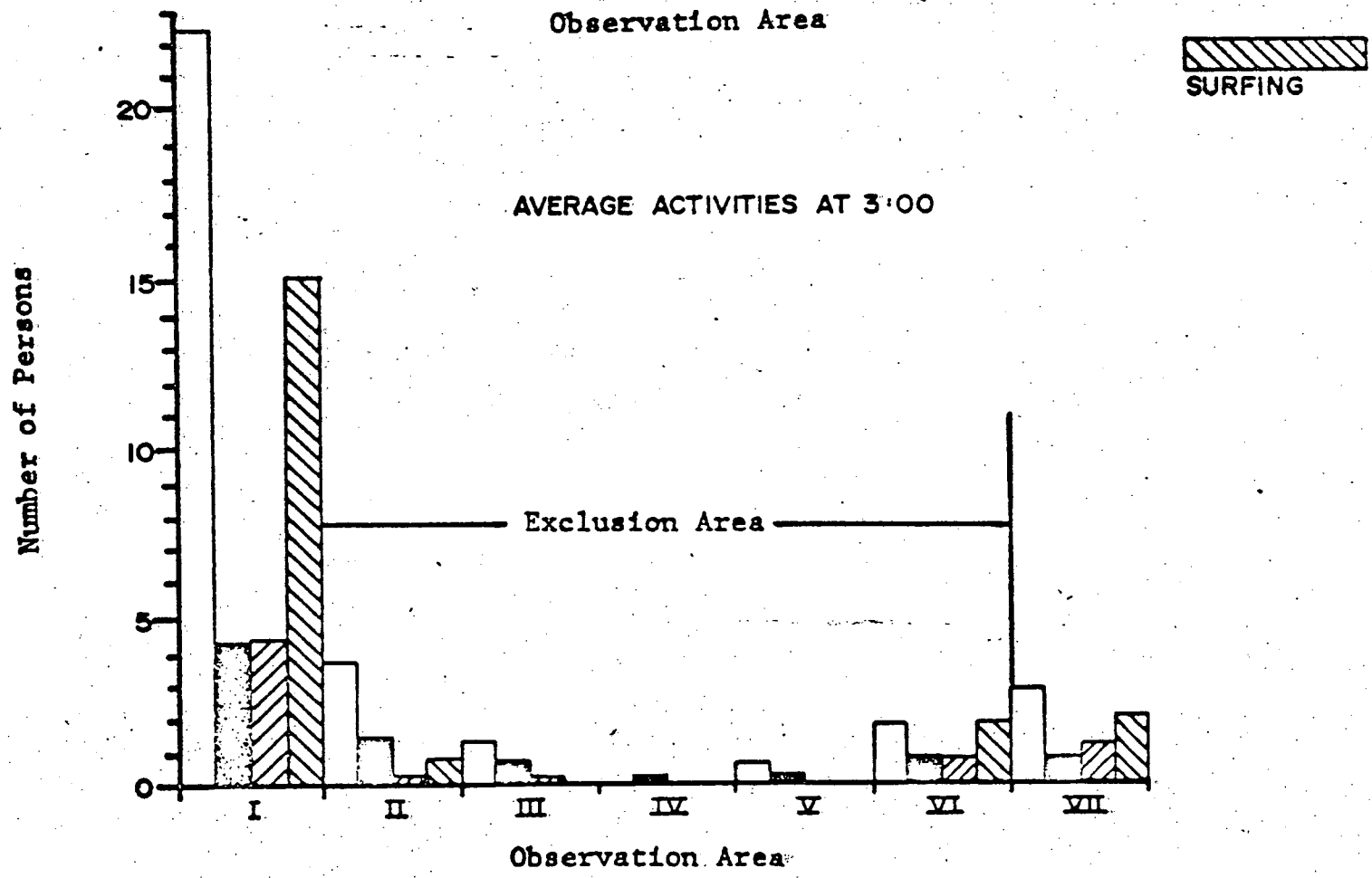
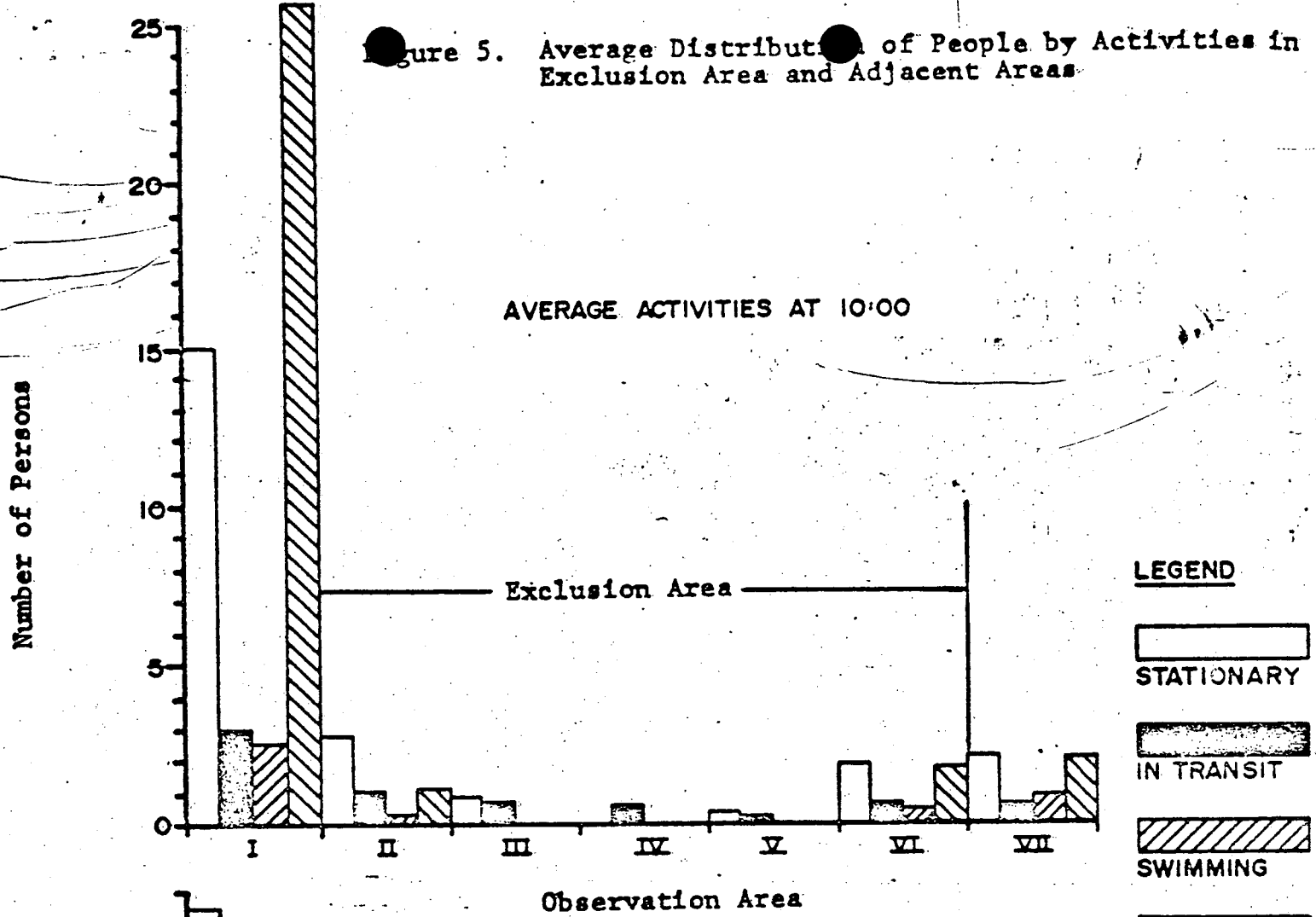
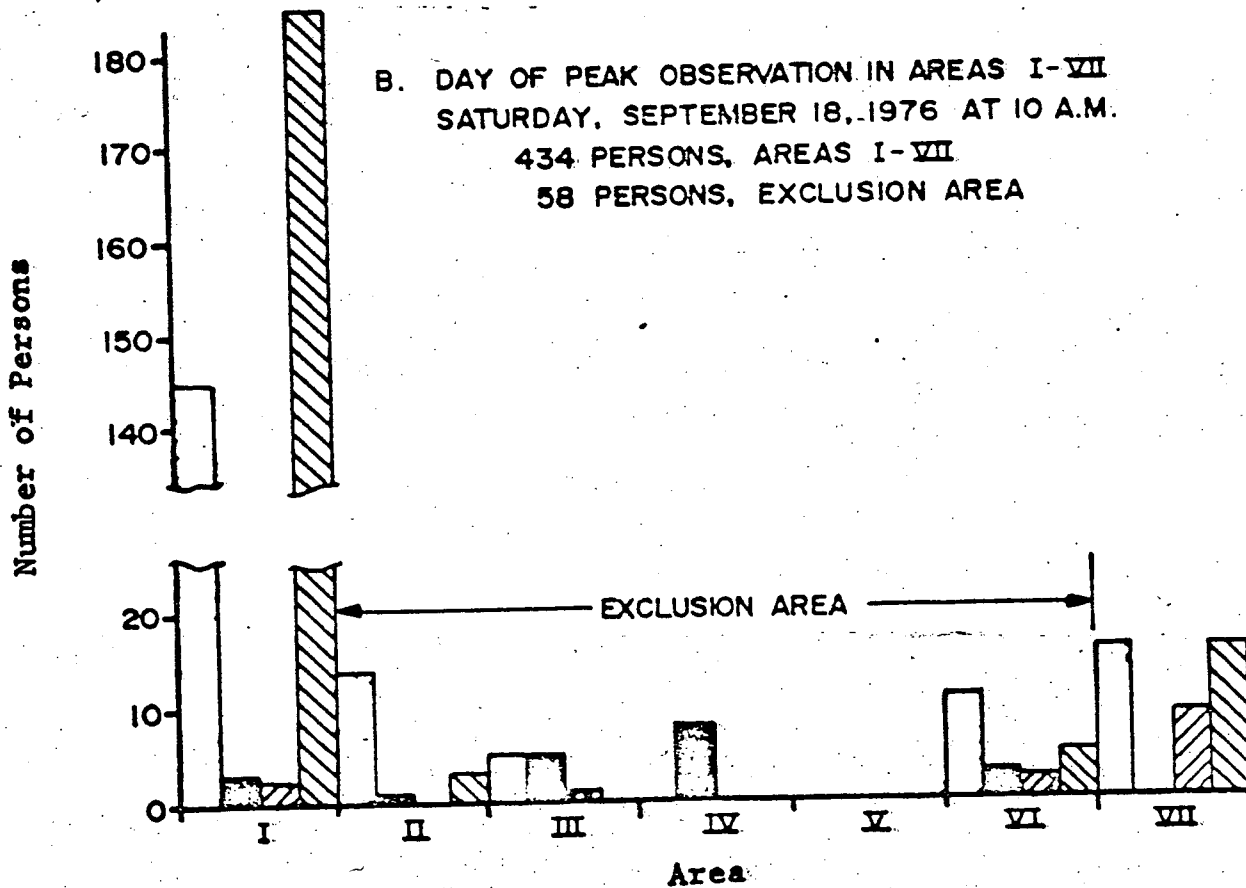
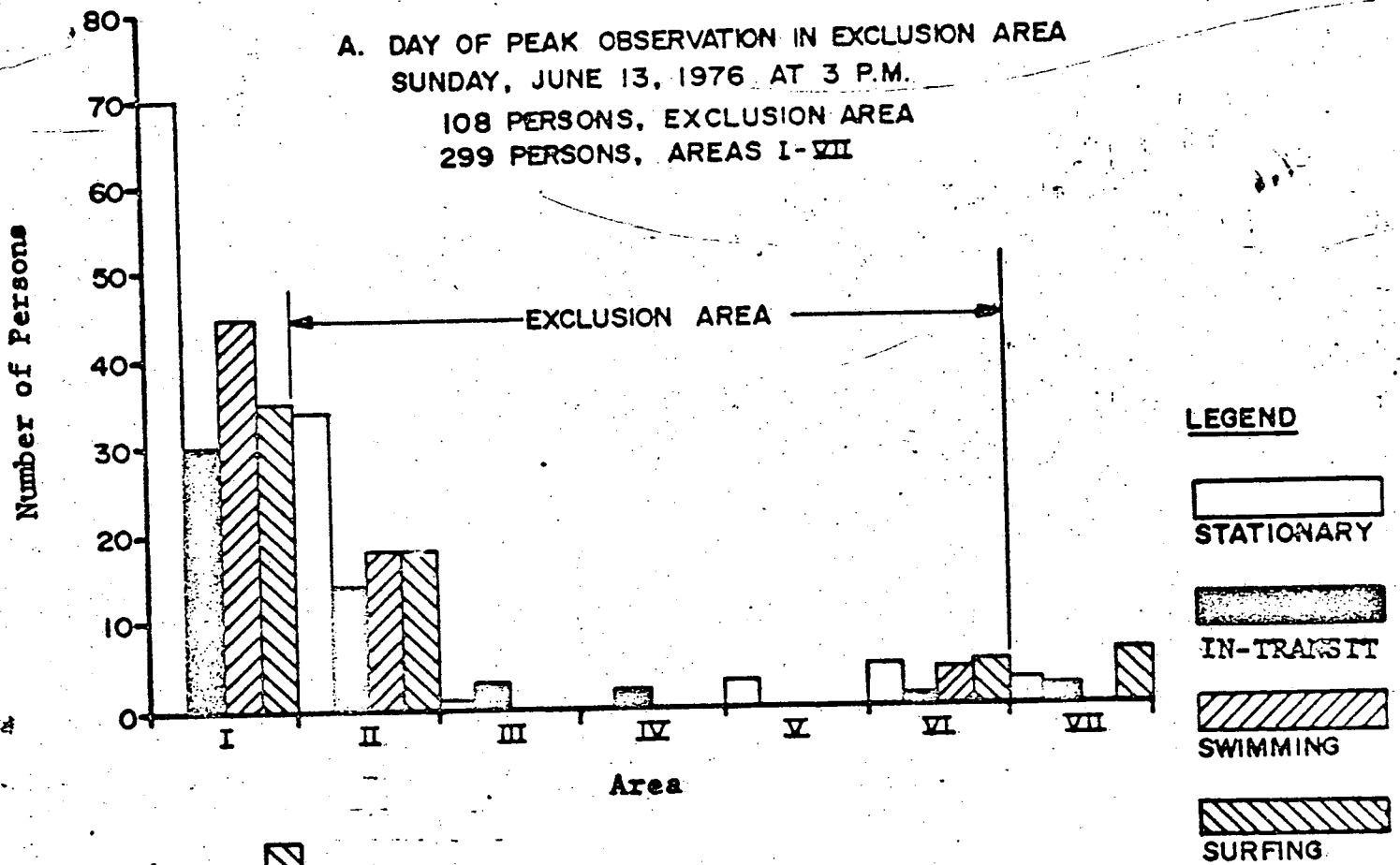


Figure 6. Activity of Persons on Days of Peak Observation in Exclusion Area and in Areas I-VII



reduced exclusion area). The counts identify the number of persons who were stationary on the beach, the number in transit, the number swimming, and the number surfing, in each of the areas at the time of observation. Daily counts were continued until September 29, 1976.

The counts recorded over the entire period are presented in Attachment 1, entitled, "Beach Corridor Utilization Study." Beginning at 3:00 P.M., on Julian Date 76037 (February 6, 1976), Attachment 1 lists the number of persons observed in each of the seven areas during the two daily counts. The number of persons in each area are identified by activity (i.e., stationary/transit/swimmers/surfers). Missing data are identified by asterisks.

At the right hand margin of each observation entry in Attachment 1, the total number of persons in the entire area under observation (Areas I through VII) and the total number of persons in the reduced exclusion area (Areas II through VI) are provided.

DATED: January 26, 1977

Respectfully submitted,

ROLLIN E. WOODBURY
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Attorneys for Applicant
SAN DIEGO GAS & ELECTRIC COMPANY

By /s/ David R. Pigott

CERTIFICATE OF SERVICE

I hereby certify that on the 26th day of January, 1977 copies of the foregoing SUPPLEMENTAL MEMORANDUM CONCERNING ACTUAL DAILY COUNTS OF PERSONS WITHIN THE REDUCED EXCLUSION AREA were served upon each of the following by deposit in the United States mail, postage prepaid, addressed as follows (those marked with an asterisk were personally served):

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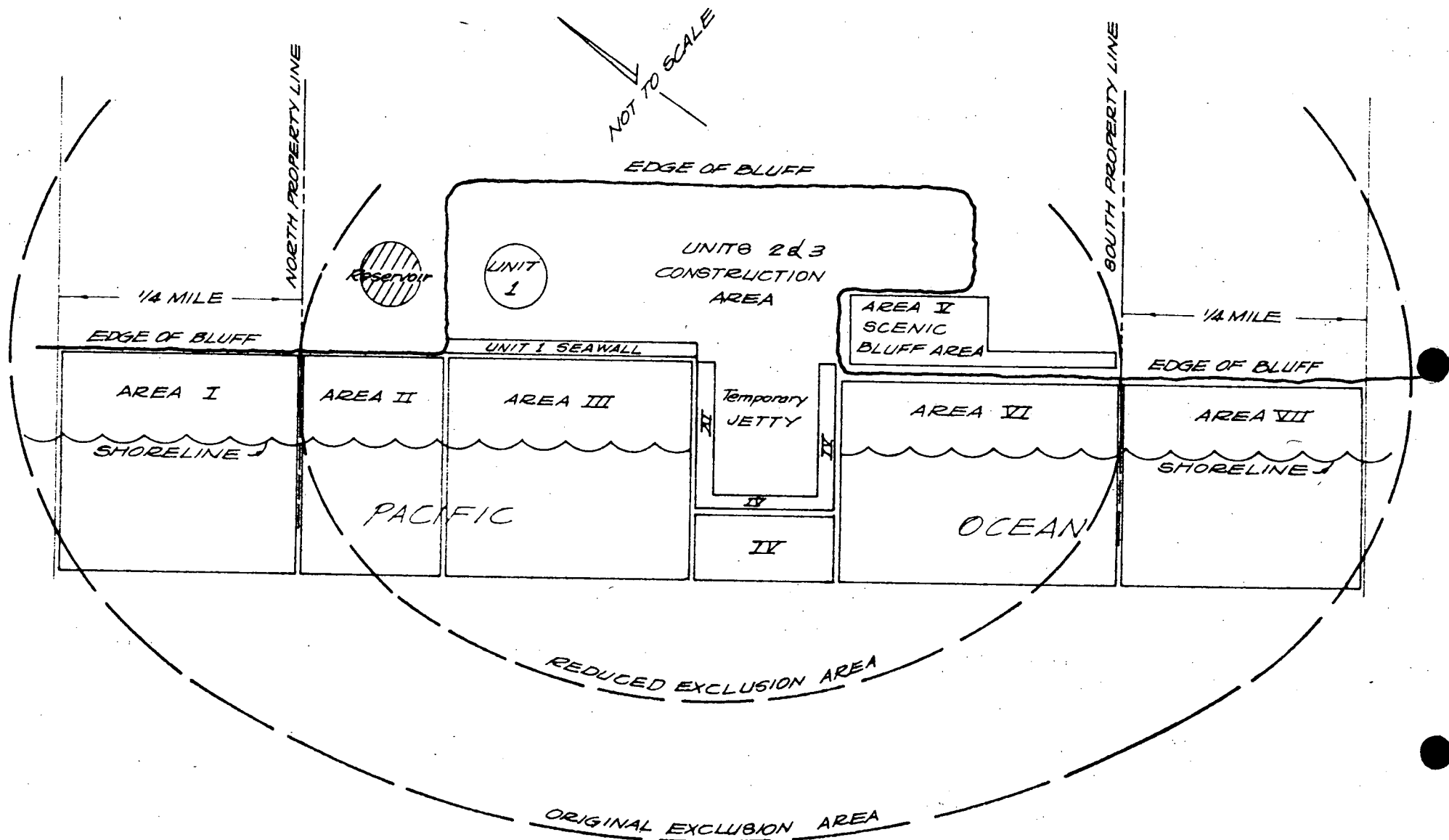
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/s/ David R. Pigott

DAVID R. PIGOTT



AREA ASSIGNMENTS

- I 1/4 mile north of north property line to north property line
- II North property line to north end of Unit 1 sea wall
- III North end of Unit 1 sea wall to north end of Units 2 & 3 temporary jetty
- IV In transit or in water in front of Units 2 & 3 temporary jetty
- V Scenic bluff area
- VI From south end of Unit 2 & 3 temporary jetty to south property line
- VII From south property line to 1/4 mile south of south property line

<p>SAN ONOFRE NUCLEAR GENERATING STATION</p>
<p>BEACH USE</p>
<p>FIGURE 1</p>

Attachment 1
Beach Corridor Utilization Study

SOUTHERN CALIFORNIA EDISON COMPANY
 SAN ONOFRE NUCLEAR GENERATING STATION
 BEACH CORRIDOR UTILIZATION STUDY -- DATA SUMMARY AND ANALYSIS
 REPORT PREPARED 01/24/77 (JULIAN 76024)

DATA FOR THE PERIOD 76032 TO 76274

		A R E A													
DATE/TIME (JULIAN)		I	II	III	IV	V	VI	STATIONARY/TRANSIT/SWIMMERS/SURFERS			VII	TOTALS: I-VII	II-VI		
	76145	1000	2/0/0/0	8	0/0/0/0	0/0/0/0	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	14	6
	76145	1500	2/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	10	6
	76146	1000	0/0/0/0	10	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	10	6
	76146	1500	1/0/0/0	2	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	8	8
	76147	1000	0/0/0/0	9	0/0/0/0	0/0/0/0	1/0/0/0	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	15	8
	76147	1500	4/0/0/0	0	0/0/0/0	0/0/0/0	1/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	8	8
	76148	1000	0/0/0/0	13	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	14	8
	76148	1500	2/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2	6
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	76149	1500	1/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	5	5
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	76150	1500	7/0/0/0	3	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11	6
Sat.	76151	1000	0/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	1	1
Sat.	76151	1500	4/0/0/0	0	0/0/0/0	0/0/0/0	11/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11	7
Memorial Day	76152	1000	4/0/0/0	0	0/0/0/0	0/0/0/0	8/0/0/0	7/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11	5
Memorial Day	76152	1500	7/0/0/0	144	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2	5
Jan. 1	76153	1000	2/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0	5
Jan. 1	76153	1500	2/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0	5
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	76156	1500	0/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0	6
Sat.	76157	1000	13/0/0/0	3	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0	0
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Sun.	76158	1000	11/8/15/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	7	1
Sun.	76158	1500	3/5/15/0	21	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	4	8
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	76160	1000	5/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0	0
	76160	1500	3/3/0/0	13	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2	7
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	76162	1500	2/0/0/0	0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0	0

* INDICATES THAT DATA IS NOT AVAILABLE
 PREPARED BY W. FRICK

SOUTHERN CALIFORNIA EDISON COMPANY
 SAN ONOFRE NUCLEAR GENERATING STATION
 BEACH CORRIDOR UTILIZATION STUDY -- DATA SUMMARY AND ANALYSIS
 REPORT PREPARED 01/24/77 (JULIAN 76024)

DATA FOR THE PERIOD 76032 TO 76274

DATE/TIME (JULIAN)	A R E A							TOTALS: I-VII	II-VI
	I	II	III STATIONARY	IV TRANSIT	V SWIMMERS	VI SURFERS	VII		
76181 1000	1/30/2/41	1/11/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2/0/0/0	***	88
76181 1500	39/3/22/19	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	1/0/0/0	7/0/2/0	14
76182 1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	76
76182 1500	23/7/15/36	3/7/2/0	0/0/0/0	***	***	***	***	***	19
76183 1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	93
76183 1500	6/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	12
76184 1000	18/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	22
76184 1500	23/0/0/0	2/3/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	29
76185 1000	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	59
76185 1500	55/32/30/42	4/3/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	62
76186 1000	40/5/5/20	12/2/2/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	90
76186 1500	55/39/39/55	7/3/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	274
76187 1000	62/15/20/130	4/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	31
76187 1500	68/11/17/42	19/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	229
76188 1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	60
76188 1500	4/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	66
76189 1000	5/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	24
76189 1500	16/3/2/15	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	13
76190 1000	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	59
76190 1500	6/0/0/0	10/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11
76191 1000	9/2/2/43	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	68
76191 1500	22/2/2/21	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	36
76192 1000	49/0/21/75	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	64
76192 1500	60/50/30/90	12/10/4/1	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	63
76193 1000	80/5/3/10	5/5/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	186
76193 1500	80/51/42/117	4/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	97
76194 1000	10/11/2/52	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	114
76194 1500	10/0/0/0	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	266
76195 1000	0/6/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	40
76195 1500	14/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	47
76196 1000	7/0/1/0	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	14
76196 1500	13/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	6
76197 1000	8/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	5
76197 1500	6/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	1
76198 1000	7/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0
76198 1500	2/2/0/0	0/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0

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SAN ONOFRE NUCLEAR GENERATING STATION

BEACH CORRIDOR UTILIZATION STUDY -- DATA SUMMARY AND ANALYSIS

REPORT PREPARED 01/24/77 (JULIAN 76024)

DATA FOR THE PERIOD 76032 TO 76274

		A R E A														VII						
DATE/TIME (JULIAN)		I				II				III				IV		V		VI		TOTALS: I-VII II-VI		
		STATIONARY				TRANSIT				SWIMMERS				SURFERS								
76217	1000	21	3	0	42	9	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	
76217	1500	12	1	2	16	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76218	1000	22	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76218	1500	17	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76219	1000	15	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76219	1500	12	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76220	1000	57	1	3	91	2	0	0	0	11	5	1	0	0	0	0	0	0	0	0	0	
76220	1500	110	2	26	81	15	1	3	0	2	2	1	0	0	0	0	0	0	0	0	0	
76221	1000	45	2	3	77	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76221	1500	53	9	16	77	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	
76222	1000	13	2	0	73	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76222	1500	25	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76223	1000	8	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76223	1500	14	13	2	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76224	1000	11	0	0	18	16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76224	1500	7	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76225	1000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
76225	1500	10	5	7	12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76226	1000	35	0	2	84	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76226	1500	9	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76227	1000	12	3	0	130	32	0	0	0	2	0	4	0	0	0	0	0	0	0	0	0	
76227	1500	110	8	13	86	12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76228	1000	30	4	4	50	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76228	1500	24	10	10	47	3	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0	
76229	1000	13	1	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76229	1500	7	0	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76230	1000	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76230	1500	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76231	1000	9	0	1	61	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	
76231	1500	16	1	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76232	1000	8	2	0	77	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76232	1500	9	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76233	1000	5	4	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76233	1500	1	1	2	33	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	
76234	1000	72	5	8	33	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
76234	1500	130	12	21	54	4	2	0	0	6	2	0	0	0	0	0	0	0	0	0	0	

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BEACH CORRIDOR UTILIZATION STUDY -- DATA SUMMARY AND ANALYSIS

REPORT PREPARED 01/24/77 (JULIAN 76024)

DATA FOR THE PERIOD 76032 TO 76274

DATE/TIME (JULIAN)		A R E A							VII TOTALS: I-VII II-VI		
		I	II	III STATIONARY	IV TRANSIT	V SWIMMERS	VI SURFERS				
Sun	76235	1000	47/11/4/77	16/0/2/16	0/0/0/0	0/6/0/0	0/0/0/0	9/2/4/4	19/0/0/2	219	59
	76235	1500	17/9/6/40	24/3/0/44	10/7/0/0	0/15/0/0	0/0/0/0	16/6/0/0	23/0/0/100	191	85
	76236	1000	27/0/1/64	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11/0/0/1	114	11
	76236	1500	10/1/4/1	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2/0/0/0	16/0/0/2	42	6
	76237	1000	8/2/0/44	6/0/0/4	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	78	18
	76237	1500	21/2/5/28	0/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	3/0/0/0	22/0/0/0	61	4
	76238	1000	7/2/0/24	4/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	41	8
	76238	1500	21/0/3/0	6/0/0/0	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	38	9
	76239	1000	8/2/15	6/0/0/2	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	34	8
	76239	1500	16/0/3/38	0/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	92	34
	76240	1000	24/0/0/24	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	65	10
	76240	1500	9/0/0/44	5/0/0/5	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	35	7
Sat	76241	1000	109/10/8/57	7/7/0/0	5/2/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	22	8
	76241	1500	96/5/0/29	8/0/0/0	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	22	8
Sun	76242	1000	15/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	40	4
	76242	1500	15/5/27	10/4/0/3	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	89	31
	76243	1000	23/5/4/49	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	85	4
	76243	1500	12/0/0/16	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	34	4
	76244	1000	15/0/0/0	7/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	17	7
	76244	1500	12/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	18	6
Sep. 1	76245	1000	9/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	80	30
	76245	1500	24/2/2/26	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	87	24
	76246	1000	14/3/0/36	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	73	14
	76246	1500	19/2/3/5	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	45	3
	76247	1000	21/0/0/9	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	132	4
	76247	1500	10/1/2/12	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	38	5
Sat	76248	1000	78/5/11/117	0/0/0/1	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	289	4
	76248	1500	97/2/4/93	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	288	7
Sun	76249	1000	50/3/2/35	19/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	150	4
	76249	1500	4/6/3/47	2/3/0/4	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	148	6
	76250	1000	42/0/0/77	1/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	156	17
	76250	1500	20/0/3/15	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	101	3
	76251	1000	7/0/0/15	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	34	5
	76251	1500	10/0/2/13	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	39	4
	76252	1000	7/0/0/23	4/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	42	12
	76252	1500	9/0/2/11	4/0/0/0	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	32	10

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REPORT PREPARED 01/24/77 (JULIAN 76024)

DATA FOR THE PERIOD 76032 TO 76274

		A R E A							VII	
DATE/TIME (JULIAN)		I	II	III	IV	V	VI	TOTALS: I-VII II-VI		
		STATIONARY/TRANSIT/SWIMMERS/SURFERS								
	76253	1000	3/0/1/17	0/0/0/0	0/0/0/0	0/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	23
	76253	1500	7/0/0/33	0/0/0/0	0/0/0/0	0/0/0/0	2/0/0/0	0/0/0/0	0/0/0/0	57
	76254	1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2
	76254	1500	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0
Sat.	76255	1000	12/0/0/22	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	41
	76255	1500	13/0/0/22	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	23
Sun.	76256	1000	10/2/0/0	10/0/0/0	0/3/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	40
	76256	1500	24/15/1/50	0/6/0/1	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	120
	76257	1000	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	35
	76257	1500	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	3
	76258	1000	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	24
	76258	1500	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	10
	76259	1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	12
	76259	1500	8/0/0/0	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	10
	76260	1000	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	12
	76260	1500	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	12
	76261	1000	5/2/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	2
	76261	1500	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	46
Sat.	76262	1000	14/5/0/185	14/0/0/3	5/5/1/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11
	76262	1500	15/2/3/3	3/0/0/0	6/3/0/0	0/12/0/0	11/3/2/5	15/0/0/16	0/0/0/0	434
Sun.	76263	1000	10/0/0/57	0/0/0/4	0/0/0/22	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	295
	76263	1500	10/16/0/40	3/7/0/3	1/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	135
	76264	1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	176
	76264	1500	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	13
	76265	1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0
	76265	1500	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	24
	76266	1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	11
	76266	1500	4/1/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	25
	76267	1000	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	7
	76267	1500	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	49
	76268	1000	3/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	16
	76268	1500	6/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	20
Sat.	76269	1000	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	6
	76269	1500	5/0/0/38	2/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	74
Sun.	76270	1000	14/0/0/36	4/6/0/0	0/3/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	116
	76270	1500	14/0/0/5	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	32
	76270	1500	38/4/3/8	6/4/0/7	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	90

* INDICATES THAT DATA IS NOT AVAILABLE
 PREPARED BY W. FRICK

AREA ASSIGNMENTS

- I 1/4 MILE NORTH OF NORTH PROPERTY LINE TO NORTH PROPERTY LINE
- II NORTH PROPERTY LINE TO NORTH END OF UNIT 1 SEA WALL
- III NORTH END OF UNIT 1 SEA WALL TO NORTH END OF UNITS 2 & 3 TEMPORARY JETTY
- IV IN TRANSIT OR IN WATER IN FRONT OF UNITS 2 & 3 TEMPORARY JETTY
- V SCENIC BLUFF AREA
- VI FROM SOUTH END OF UNIT 2 & 3 TEMPORARY JETTY TO SOUTH PROPERTY LINE
- VII FROM SOUTH PROPERTY LINE TO 1/4 MILE SOUTH OF SOUTH PROPERTY LINE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

In The Matter Of)

SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)

(San Onofre Nuclear Generating)
Station, Units Nos. 2 and 3))
_____)

Docket Nos. 50-361
and 50-362

NOTICE OF WITHDRAWAL OF COUNSEL

The undersigned herewith withdraw as attorneys for
SOUTHERN CALIFORNIA EDISON COMPANY in the above proceeding.

The following attorneys will continue to represent
Southern California Edison Company: Rollin E. Woodbury,
David N. Barry III, and James A. Beoletto.

DATED: DEC 15 1976.

ROBERT J. CAHALL

ROBERT J. CAHALL
Attorney at Law

CHARLES R. KOCHER

CHARLES R. KOCHER
Attorney at Law

KINGSLEY B. HINES

KINGSLEY B. HINES
Attorney at Law

50-362
H 4

CERTIFICATE OF SERVICE

I hereby certify that on the 15 day of DEC,
1976 copies of the foregoing NOTICE OF WITHDRAWAL OF COUNSEL
were served upon each of the following by deposit in the
United States mail, postage prepaid, addressed as follows:

Docketing and Service Section
Office of the Secretary
Nuclear Regulatory Commission
Washington, D.C. 20555
(Original + 20 copies)

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Atomic Safety & Licensing
Appeal Board
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Washington, D.C. 20555

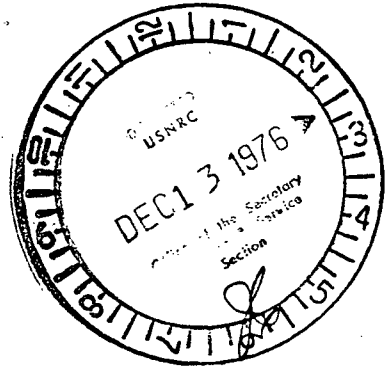
Dr. John H. Buck
Atomic Safety & Licensing
Appeal Board
Nuclear Regulatory Commission
Washington, D.C. 20555

JAMES A. BEOLETTO

JAMES A. BEOLETTO

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD



In The Matter Of)

SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)

Docket Nos. 50-361
and 50-362

(San Onofre Nuclear Generating
Station, Units Nos. 2 and 3))

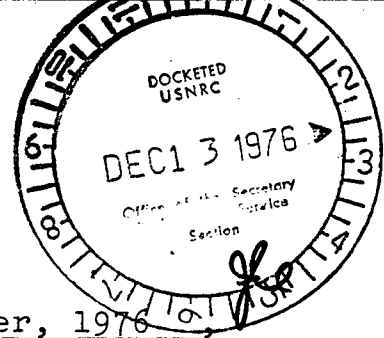
NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney herewith enters an appearance in the above entitled matter on behalf of applicant SOUTHERN CALIFORNIA EDISON COMPANY. Pursuant to 10 C.F.R. § 2.713, the following information is submitted:

1. Name: Rollin E. Woodbury
2. Business Address: 2244 Walnut Grove Avenue
Rosemead, California 91770
3. Business Telephone: (213) 572-2289
4. Basis of Eligibility: Admission in good standing
to practice before the
Supreme Court of California
5. Party Represented: Southern California Edison
Company
6. Address of Party Represented: 2244 Walnut Grove Avenue
Rosemead, California 91770

DATED: December 10, 1976.


ROLLIN E. WOODBURY



CERTIFICATE OF SERVICE

I hereby certify that on the 10th day of December, 1976, 1976 copies of the foregoing NOTICE OF APPEARANCE of Rollin E. Woodbury were served upon each of the following by deposit in the United States mail, postage prepaid, addressed as follows:

Docketing and Service Section
Office of the Secretary
Nuclear Regulatory Commission
Washington, D.C. 20555
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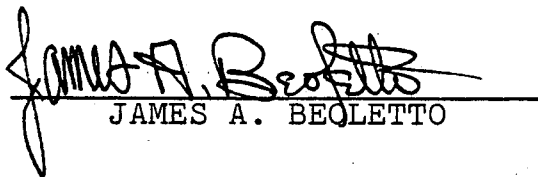
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Dr. John H. Buck
Atomic Safety & Licensing
Appeal Board
Nuclear Regulatory Commission
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JAMES A. BEOLETTO

DEC 3 1976

Docket Nos. 50-361
50-362

Southern California Edison Company
Attn: Mr. Jack B. Moore
Vice President
P. O. Box 800
2244 Walnut Grove Avenue
Rosemead, California 91770

SAN ONOFRE NUCLEAR GENERATING STATION UNITS 2 AND 3

Dear Mr. Moore:

This letter is to acknowledge receipt of the documents described
in NRC Regulatory Guide 9.3 for the above captioned units.

Sincerely,

As/ A. L. Toalston

Argil L. Toalston, Chief
Power Supply Analysis Branch
Antitrust & Indemnity Group
Nuclear Reactor Regulation

Distribution:
AIG R/F
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PDR
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WZelinsky R/F

Murray R

OFFICE	NRR:AIG	NRR:AIG			
SURNAME	WZelinsky	AToalston			
DATE	12/3/76	12/3/76			

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V

Central files

SUITE 202, WALNUT CREEK PLAZA
1990 N. CALIFORNIA BOULEVARD
WALNUT CREEK, CALIFORNIA 94596

JUL 8 1976

50-362

G. W. Roy, Chief, Field Coordination and Enforcement Branch
Office of Inspection and Enforcement, Headquarters

LICENSEE REPLY TO IE BULLETIN 76-05 - WESTINGHOUSE BFD RELAYS

Enclosed for your information is a copy of the reply to the subject
IE Bulletin from the following licensee:

Southern California Edison Company, San Onofre Units 2 and 3,
Docket Nos. 50-361 & 50-362, Ltr. dtd 6/8/76

G. S. Spencer
for G. S. Spencer, Chief
Reactor Construction and
Engineering Support Branch

Enclosure:
As Stated



Southern California Edison Company



P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

JACK B. MOORE
VICE PRESIDENT

TELEPHONE
213-572-2292

June 8, 1976

Mr. R. H. Engelken
U. S. Nuclear Regulatory Commission
Region V
Walnut Creek Plaza, Suite 102
1990 N. California Boulevard
Walnut Creek, California 94596

Dear Mr. Engelken:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

Your letter of April 5, 1976 requested that we provide you with information concerning IE Bulletin 76-05, "Relay Failures - Westinghouse BFD Relays," and the use of such equipment in safety-related applications at San Onofre Units 2 and 3.

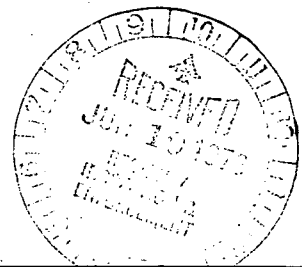
We have verified with both our NSSS supplier and our Engineer - Constructor that the specified relays have not been used and are not planned for use in any safety-related system at San Onofre Units 2 and 3.

Our response to you on this IE Bulletin regarding Docket No. 50-206 was previously submitted by separate correspondence.

If you require further information or have any questions, please contact me.

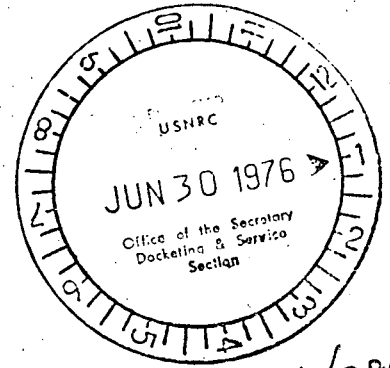
Very truly yours,

cc: Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD



6/28/76

In The Matter Of)
)
SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
)
(San Onofre Nuclear Generating)
Station, Units 2 and 3))
)

DOCKET NOS. 50-361
AND 50-362

APPLICANTS' REPLY TO CONSOLIDATED
INTERVENORS' PROPOSED FINDINGS OF
FACT AND CONCLUSIONS OF LAW

Sherman Chickering
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SAN DIEGO GAS & ELECTRIC COMPANY

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SOUTHERN CALIFORNIA EDISON COMPANY

June 28, 1976

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In The Matter Of)
)
SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
)
(San Onofre Nuclear Generating)
Station, Units 2 and 3))
_____)

DOCKET NOS. 50-361
AND 50-362

Applicants' Reply To Consolidated
Intervenors' Proposed Findings Of
Fact And Conclusions Of Law

Pursuant to 10 C.F.R. §2.754(b)(3) and order of this Board [Rep. Tr. p. 524 (1976)], applicants hereby reply to Consolidated Intervenors' proposed findings of fact and conclusions of law. For convenience of reference paragraph numeration corresponding to that of Consolidated Intervenors has been adopted.

3. Mr. Hawkins' estimates did not take into account wave run-up which he indicated could, in the case of normal wave action, reduce the unwetted portion of the beach by easily one-half [Rep. Tr. p. 175 (1976)]. Mr. Hawkins also indicated his tabulations represented averages across the entire exclusion area, and that he would expect tidal beach widths in front of the seawalls to be somewhat narrower. [Rep. Tr. pp. 166-167 (1976)]. Applicants'

data indicates that a tide of 0.0 mllw, corresponding to an estimated beach width ranging from 63 to 144 feet, is a condition which exists for only about one hour a day. [Applicants' Exhibit KPB-1, p. 1.8-2bzw]. Applicants' data corresponding to more reasonable time durations reflects beach widths on the order of 35 feet. Moreover, such estimates do not take into account reductions in beach width resulting from wave run-up, or that portions of the tidal beach remain wet even during periods of lowest tide when they are not washed by wave run-up. [Applicants' Exhibit KPB-1 p. 1.8-2bzx; Testimony of Lillevang pp. 9-11 following Rep. Tr. p. 85 (1976)].

5. Witness Lillevang's conclusions with respect to tidal beach width were not based solely upon measurements taken at the location of the filming of Applicants' Exhibit OJL-4 on March 15, 1976, but were based, in addition, on extensive evaluation and review of work performed by others as well as himself. [Testimony of Lillevang pp. 3-4 following Rep. Tr. p. 85 (1976)]. Such review and evaluation included examination of profile surveys at various locations along the beach at and adjoining the San Onofre Nuclear Generating Station frontage, and it was Mr. Lillevang's opinion that his conclusions with respect to useable tidal beach widths would be applicable to the beach within applicants' exclusion area following completion of construction and dissipation of the fill. [Testimony of Lillevang pp. 4, 11 following Rep. Tr. p. 85 (1976)].

6. The beach width estimates presented in Applicants' Exhibit KPB-1 and by Messrs. Lillevang and Hawkins were consistent in the opinion of both Mr. Lillevang and Mr. Hawkins. [Rep. Tr. pp. 122-23, 165-67 (1976)].

8. The site of the filming of Applicants' Exhibit OJL-4 was chosen because it most closely resembled the beach at San Onofre as it had existed in a condition of nature. [Rep. Tr. pp. 125-27 (1976)]. Although the temporary seawall has acted as a groin, unprotected fills of sand placed downcoast have offset temporary shortages of sand there which otherwise could have been expected because of the groin effect upcoast. [Testimony of Lillevang p. 7 following Rep. Tr. p. 85 (1976)].

9. Overall beach width will be greater following removal of the temporary seawall until unprotected sand fills are distributed downcoast [Testimony of Lillevang pp. 7-9 following Rep. Tr. p. 85 (1976); Testimony of Hawkins pp. 4-5 following Rep. Tr. p. 155 (1976)]; however, tidal beach widths, being affected primarily by beach slope, will be in the range estimated by Messrs. Lillevang and Hawkins, and in Applicants' Exhibit KPB-1.

10. All of the beach below the contour of mean high tide is actively washed by waves most of the time every day. The extent of tidal beach within applicants' exclusion area

useable as a passageway or for other recreational purposes will range from zero [inundation] to widths ranging from about 25 feet to 100 feet for short periods of time during the lower stages of the tidal cycles. [Testimony of Lillevang pp. 9-11 following Rep. Tr. p. 85 (1976); Testimony of Hawkins pp. 6-7 following Rep. Tr. p. 155 (1976)]. Such beach widths are consistent with a determination that applicants' lack of control of the tidal beach within their exclusion area is de minimus.

13. It was Mr. Sheppard's testimony that the factor of 2.75 by which he had observed that beach attendance on a summer day might exceed beach attendance on a winter day could not be used as a direct multiplier because of variations in weather. He suggested a full year as a basis for a statistical projection. [Rep. Tr. pp. 245-46 (1976)]. It is of some interest to note that Consolidated Intervenors' suggestion of a 2700 person beach occupancy for a 10-week summer period, if distributed evenly, results in a daily attendance of less than 40 persons. Moreover, it was the testimony of Dr. Sinn that the data relied upon by Consolidated Intervenors should be viewed with caution because (1) the data base is small, (2) the beach was not typical of what might be expected following completion of construction of the units, and (3) plant features and administrative controls planned to minimize use and increase control of applicants' exclusion area had not then been implemented. [Testimony of Sinn pp. 12-13 following Rep. Tr. p. 180 (1976)].

14. Development of camping facilities in Parcel 2 of the San Onofre State Beach was considered by Mr. Sheppard in his testimony, and projected population increases in nearby communities is irrelevant inasmuch as his estimates were based upon total utilization of park facilities. [Testimony of Sheppard p. 8 following Rep. Tr. p. 231 (1976); Rep. Tr. pp. 239-40, 255 (1976)].

15. Mr. Sheppard's projections of beach use were independent of the existence or non-existence of physical features such as the temporary construction laydown area on the beach in front of the site. [Rep. Tr. pp. 254-55 (1976)].

16. Neither the factors of increase nor the numbers suggested by Consolidated Intervenors are supported in the record.

18. Dr. Sinn did, however, review the projections of beach use developed by Wilbur Smith and Associates, Inc., and concluded the projections were higher than will actually be observed. [Testimony of Sinn pp. 10-12 following Rep. Tr. p. 180 (1976)].

19. The "No Parking" sign that marks the limit of how close users of Parcel 2 of the San Onofre State Beach can park to applicants' exclusion area is about 100 yards from the exclusion area boundary. [Rep. Tr. pp. 264-65 (1976). But see Rep. Tr. p. 326 (1976)].

22. Consolidated Intervenors' projection of beach use in the range of 300 is unsupported in the record. See also paragraphs 13, 14 and 15 above.

23. Consolidated Intervenors' projection of night use of exclusion area beaches is unsupported in the record. It was the testimony of Dr. Sinn that nighttime beach use would be minimal, and would probably be less than five percent of the Parcel 2 camping population. [Testimony of Sinn pp. 13-14 following Rep. Tr. p. 180 (1976); Rep. Tr. p. 213 (1976)]. Assuming total utilization of the camping facilities planned for Parcel 2 of the San Onofre State Beach, that is to say 525 persons [Rep. Tr. p. 57 (1976)], nighttime use of the beach would be less than 30 persons.

25. Consolidated Intervenors' projections of beach usage are unsupported in the record.

29. Current plans provide for the installation of fencing along the improved pedestrian walkway in front of the plant seawalls, and not along the entire 0.8 mile site frontage. The fencing has not yet been installed and it is not presently contemplated that it will be topped with barbed wire. [Testimony of Baskin pp. 7-8 following Rep. Tr. p. 275 (1976); Testimony of Sears p. 2 following Rep. Tr. p. 289 (1976); Rep. Tr. p. 278-80 (1976); Applicants' Exhibit KPB-1 pp. 1.8-2bzn-o and Figure 1.8-C].

31. - 34. Design details of physical features and detailed operating instructions for administrative controls proposed by applicants to enhance their ability to control and to minimize use of the exclusion area have not been developed at this early stage of project development, but such details will be developed and will be subject to review by the regulatory staff. [Rep. Tr. pp. 279-83 (1976)]. Inasmuch as such physical features and administrative controls will be effected only with respect to the portions of exclusion area landward of the contour of mean high tide, Consolidated Intervenors' Proposed Findings Nos. 31 - 34 are inappropriate. [Applicants' Exhibit KPB-1 pp. 1.8-2bzo-q].

36. The dose estimates of the applicants and the regulatory staff were appropriately conservative, and indicated that evacuation doses would be well below the guide values set forth in 10 C.F.R., Part 100 [Testimony of Goldman pp. 12-12a following Rep. Tr. p. 300 (1976); Testimony of Ferrell p. 5 and Figure 1 following Rep. Tr. p. 419 (1976)]. Less conservative or more realistic estimates of evacuation doses would be even lower. [Rep. Tr. p. 482 (1976)].

38. Dr. Goldman utilized a range of values applicable to the kinds of activities and physiological types one might expect to find on a beach. [Rep. Tr. pp. 455-60 (1976)].

39. Breathing rates applicable to strenuous exercise result in multipliers for adults, ten year olds and five year olds of 1.75, 1.15 and 0.65 times the standard factors. [Rep. Tr. pp. 457-58 (1976)]. Evacuation at rates corresponding to strenuous exercise would result in doses substantially smaller than those set forth in Dr. Goldman's direct testimony. [Rep. Tr. pp. 459-60 (1976)]. The breathing rates suggested by Consolidated Intervenors are inappropriate inasmuch as they correspond to maximal work on a bicycle ergometer for a period of four to six minutes. [Rep. Tr. pp. 364-73, 455-56 (1976); Applicants' Exhibit MIG-3 pp. 82-83].

42. About ninety-nine percent of the time fetal thyroid doses would be less than ten percent of those presented in Dr. Finston's testimony. [Rep. Tr. p. 460 (1976)].

43. It is uncontroverted that a walking speed of about two miles per hour is a reasonably conservative value for purposes of dose calculations. [Testimony of Sears p. 4 following Rep. Tr. p. 289 (1976); Rep. Tr. pp. 233-34, 308, 331, 403 (1976)].

44. Consolidated Intervenors' assertions concerning evacuation rates are unsupported by the data inasmuch as evacuations by foot or for distances less than one-half mile were not included in the data base. [Rep. Tr. pp. 393-403 (1976)].

45. Consolidated Intervenors' proposed finding is speculative inasmuch as it necessarily fails to consider detailed administrative procedures and emergency plans which will be developed and reviewed by the regulatory staff at the operating license stage of the proceeding.

46. No features, either natural or man-made, would constitute a stricture or bottleneck which would prevent people from evacuating the exclusion area beach on foot. [Rep. Tr. pp. 349-52, 475-77 (1976)].

48. - 50. Consolidated Intervenors' proposed findings generally lack support in the record. For example, higher breathing rates would be expected to be more than offset by shorter plume transit times [Rep. Tr. pp. 458-59, 460 (1976)], the limited period of tracer tests does not affect their adequacy for their intended purpose [Rep. Tr. pp. 435-36, 1976)], and the risk of thyroid nodularity, thyroid cancer and hypothyroidism would be less than one additional case per million population per year. [Rep. Tr. pp. 462-65 (1976)].

53. - 55. Even when one considers a range of physiological characteristics, activities and evacuation rates, evacuation doses can reasonably be expected to be well within the guide values of 10 C.F.R., Part 100 [Testimony of Goldman pp. 12-12a following Rep. Tr. p. 300 (1976); Testimony of Ferrell p. 5 and Figure 1 following Rep. Tr. p. 419 (1976); Rep. Tr. pp. 458-60, 490-96, 513-514 (1976)].

58. Considering the entire record on remand, applicants have established that their lack of control of the tidal beach within their exclusion area is de minimus.

DATED: June 28, 1976.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on the 28th day of June, 1976 copies of the foregoing APPLICANTS' REPLY TO CONSOLIDATED INTERVENORS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW were served upon each of the following by deposit in the United States mail, postage prepaid, addressed as follows:

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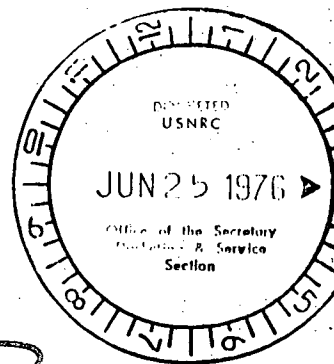
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06/23/76

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of)
)
SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
)
(San Onofre Nuclear Generating Station,)
Units Nos. 2 and 3))

Docket Nos. 50-361

50-362

ANSWER OF NRC STAFF TO
APPLICANTS' MOTION DATED JUNE 10, 1976

1. By motion dated June 10, 1976, with a supporting memorandum attached, Southern California Edison Company and San Diego Gas & Electric Company (Applicants) moved pursuant to 10 CFR § 2.718(i), that this Board certify to the Commission the following question:

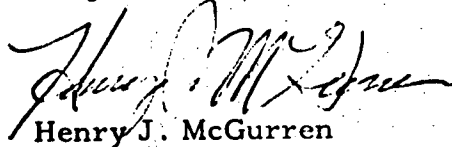
Whether, on the basis of the entire record of this proceeding, this Board may, in addition to ruling that applicants' lack of control over the tidal beach within their exclusion area is de minimus, rule that applicants' lack of control over the tidal beach within their exclusion area is entitled to exemption, pursuant to 10 CFR § 50.12(a), from the requirements of the Commission's Licensing regulations.

For the reasons set forth below, the NRC Staff urges that this motion be denied.

2. The Applicants are, in essence, asking that the Licensing Board be permitted to rule that the Applicants are entitled to an exemption to

a Commission regulation, pursuant to 10 CFR § 50.12(a). However, granting of an exemption under Section 50.12(a) is a function of the Commission which has also been delegated to the Nuclear Regulatory Commission's Director of Nuclear Reactor Regulation^{1/} and is not a matter for any Licensing Board. Therefore, the Applicants' request for certification should be denied. However, the Staff has no objection to the Applicants' submission of an application to the Director of the Office of Nuclear Reactor Regulation for an exemption under Section 50.12(a).

Respectfully submitted,



Henry J. McGurren
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 23rd day of June, 1976

^{1/} Delegation of Authority to Benard C. Rusche, Director of the Office of Nuclear Reactor Regulation from the Chairman of the U.S. Nuclear Regulatory Commission, dated January 20, 1975.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
SOUTHERN CALIFORNIA EDISON) Docket Nos. 50-361
COMPANY SAN DIEGO GAS &) 50-362
ELECTRIC COMPANY)
)
(San Onofre Nuclear Generating)
Station, Units 2 and 3))

CERTIFICATE OF SERVICE

I hereby certify that copies of "ANSWER OF NRC STAFF TO APPLICANTS' MOTION DATED JUNE 10, 1976" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or air mail, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 23rd day of June, 1976:

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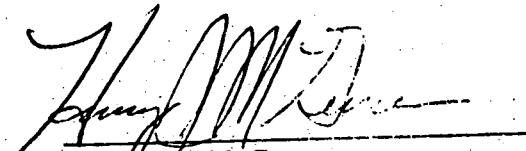
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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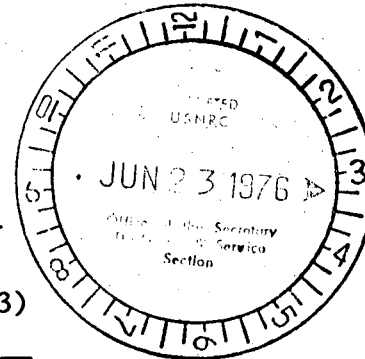
June 21, 1976

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In the Matter of Southern California Edison Company
San Diego Gas & Electric Company
(San Onofre Nuclear Generating Station, Units 2 and 3)
Docket Nos. 50-361 and 50-362



Gentlemen:

Enclosed is a copy of the NRC Staff's Proposed Findings of Fact and Conclusions of Law In the Form of a Proposed Supplemental Decision in the above-captioned proceeding.

Sincerely,


Henry J. McGurren
Counsel for NRC Staff

Enclosure

cc w/enclosure:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

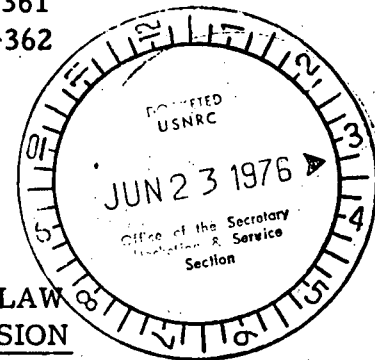
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)

SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)

) Docket Nos. 50-361
) 50-362

(San Onofre Nuclear Generating Station,)
Units 2 and 3))



NUCLEAR REGULATORY COMMISSION STAFF'S
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW
IN THE FORM OF A PROPOSED SUPPLEMENTAL DECISION

1. On October 15, 1973, the Atomic Safety and Licensing Board (Licensing Board or Board) rendered an initial decision^{1/} authorizing the issuance of construction permits to the Southern California Edison Company and San Diego Gas and Electric Company (Applicants) for the San Onofre Nuclear Generating Station, Units 2 and 3 (San Onofre Units 2 and 3). The Atomic Safety and Licensing Appeal Board (Appeal Board) review of the initial decision^{2/} has resulted in an order remanding the case to the Licensing Board for further proceedings to determine the facts bearing

^{1/} LBP 73-36, RAI 73-10, 929.

^{2/} ALAB-308, NRCI-76-1, 20 (1976); cf., ALAB-171, RAI-74-1, 37 (1974); ALAB-180, RAI-74-2, 188 (1974); ALAB-189, RAI-74-4, 410 (1974); ALAB-199, RAI-74-4, 478 (1974); ALAB-212, RAI-74-6, 986 (1974); ALAB-248, RAI-74-12, 957 (1974) and ALAB-268, NRCI-75-4R, 383 (1975).

upon the tidal beach, its characteristics and use, and then whether the Applicants have met their burden of establishing that their lack of control over the tidal beach within the exclusion area is de minimis.

2. A pre-hearing conference was convened by the Licensing Board on March 9, 1976, for the purpose of considering the manner in which the remand would be conducted. It was determined that a further evidentiary hearing would be held. Applicants' counsel set forth on the record the issues to be considered at the evidentiary hearing to which counsel for Consolidated Intervenors and Counsel for the NRC Staff agreed.^{3/}
3. Subsequent to the pre-hearing conference, due to a later disagreement among the parties as to the precise phrasing of the issues to be taken up at the hearing, the Licensing Board issued an Order on April 9, 1976, stating that evidence would be taken on the following issues:
 - "(1) The anticipated size and characteristics from time to time of the tidal beach within the reduced exclusion area delineated by Applicants in Amendment No. 22 to the Preliminary Safety Analysis Report (hereinafter 'Applicants' exclusion area);
 - (2) The anticipated public use from time to time of the tidal beach within Applicants' exclusion area;
 - (3) The physical features and administrative controls proposed by Applicants to minimize public use of the tidal beach within Applicants' exclusion area; and

^{3/} Tr. 5-9.

- (4) The anticipated amount of radiation exposure that might be received by a user of the tidal beach within Applicants' exclusion area during occupancy and subsequent evacuation of the beach in the event of an accident (a postulated fission product release as provided in 10 CFR § 100.11).
4. The hearing was held in Los Angeles, California on May 19, 20 and 21, 1976 during which evidence was taken on an issue by issue basis in the order listed hereinabove.^{4/}
5. The Staff's witness on Issue Number 1 relating to the anticipated characteristics and size of the tidal beach was Edward F. Hawkins, • a hydraulic engineer on the Staff of the Nuclear Regulatory Commission, who conducted the Staff's independent analysis of the characteristics from time to time of the tidal beach and gave expert testimony thereon. The Applicants' witness on Issue Number 1 was Mr. Omar J. Lillevang, a civil engineer. Consolidated Intervenors did not present any witness on Issue Number 1.
6. The record indicates that the beach in front of San Onofre Units 2 and 3 is currently divided into areas north and south of a temporary sheet-piling construction laydown area^{5/} and that the natural configuration of

^{4/} Tr. 52.

^{5/} NRC Staff Testimony of Edward F. Hawkins (hereafter "Hawkins Testimony"), Tr. 155, at 1 and 2. Applicants' Testimony of Omar J. Lillevang (hereafter "Lillevang Testimony") following Tr. 85, at 7.

the beach has been altered in that littoral drift has caused accretion of sand to the north and erosion of sand to the south of the construction laydown area.^{6/} The accretion of sand to the north of the construction laydown area has displaced the Mean High Water Line in that beach area approximately 100 feet seaward of the Mean High Water Line as delineated by the Applicants' January, 1963 survey.^{7/}

7. The tidal portion of the beach consists of the area seaward of the Mean High Water Line to the Mean Lower Low Water Line. The tidal portion of the Applicants' exclusion area is characterized by relatively flat slopes during the summer and fall and by noticeably steeper slopes in the winter and spring. During the winter the tidal portion consists of exposed areas covered by cobbles, especially southward from the construction laydown area, while a relatively thick blanket of sand covers the cobbles during summer and fall.^{8/}
8. It is estimated the beach would return to its pre-construction configuration within one to two years following the removal of the construction laydown area assuming normal sea and wave conditions and that complete removal of the material forming the unnatural accretion of sand

6/

Id.

7/

Hawkins Testimony, at 2.

8/

Id.

north of the construction area would probably take four to five years.^{9/}
The remainder of the beach area will return to its pre-fill configuration
over an additional period of five years.^{10/}

9. Mr. Hawkins estimated tidal beach widths during operation of the San Onofre Nuclear Generating Station, based upon beach profiles which were taken at quarterly intervals for the Applicants by Marine Advisors between 1964 and 1970, and at infrequent intervals thereafter, and concluded that the average width of the tidal beach ranged from 50 to 180 feet (minimum to maximum winter beach) and from 100 to 220 feet (minimum to maximum summer beach).^{11/} Mr. Hawkins testified that his estimates of average tidal beach sizes during operation of the San Onofre Generating Station did not include the effects of wave action.^{12/} In response to questioning by the Board, Mr. Hawkins indicated that if wave action were considered, his estimates of average tidal beach width would be reduced by half.^{13/}

^{9/} Hawkins Testimony, at 5; and Lillevang Testimony, at 8 and 9.

^{10/} Lillevang Testimony, at 8 and 9.

^{11/} Hawkins Testimony, at 5 and 6; and Tr.163.

^{12/} Hawkins Testimony, at 7.

^{13/} Tr.175.

10. Mr. Lillevang estimated the tidal portion of the Applicants' beach based upon observations (by time lapse photography) at one location for one day, March 15, 1976 [Applicants' Exhibit OJL-4]. The predicted width of the tidal portion on that day was 35 feet, however, because waves were running up the beach face, the width not intermittently washed by waves was observed to be 30 feet. The calculated average width of beach below the mean high tide contour that was not being washed by waves was 18.5 feet.^{14/} Mr. Lillevang's estimates were smaller than the Staff's estimates, however, Mr. Lillevang opined that his estimates are consistent with the Staff's estimates.^{15/}

11. Based on the evidence reviewed above, the Board finds that the characteristics of the tidal portion of the beach exclusion area proposed by Applicants for the San Onofre Nuclear Generating Station site are such that the minimum width of the tidal portion will be approximately 50 feet and the maximum width approximately 220 feet but that natural wave action on the beach will reduce these widths by approximately one-half. Inasmuch as the sea and the beaches with which it interacts are dynamic the precise width of the tidal beach from time to time not being washed by waves cannot be predicted and will vary with tide,

^{14/} Lillevang Testimony, at 10.

^{15/} Tr.123.

wave and beach conditions. However, to the extent long term variations can be anticipated it is expected that beaches in general and the beaches in front of the San Onofre seawalls in particular will tend to become narrower. ^{16/}

12. The Staff's witness on Issue 2 relating to the anticipated public use of the tidal beach within Applicants' exclusion area was Mr. John Sears, a reactor engineer on the Staff of the Nuclear Regulatory Commission who has expertise in evaluating use and evacuation of nuclear power reactor exclusions areas. Applicants' witness on Issue 2 was Dr. Donald F. Sinn, who holds a Ph.D. in Education and is an expert in recreation and park planning and management. Applicants called a further witness, Mr. William V. Sheppard, an expert in projecting the number of persons within public areas and a traffic engineer, to testify regarding Issue 2. Consolidated Intervenors did not offer any testimony on this issue.

13. The record indicates that the tidal beach within the Applicants' exclusion area is bounded on the north by a beach area labelled Parcel 2 and is bounded on the south by a beach area labelled Parcel 3. The beach area labelled Parcel 2, bounded on the south by the San Onofre Nuclear Generating Station and on the north by the U.S. Marine Corps Enlisted

^{16/} Hawkins Testimony, at 4; and Tr. 167 and 129.

Men's Club, has been described, in the Environmental Impact Statement of the California Department of Parks & Recreation Plan for San Onofre State Beach, September 1972, as being rocky in character, which causes better than average surfing conditions, and, consequently, this area in the past has been used primarily for surf boarding and will be restricted for use by surfers in the future by the Department of Parks and Recreation. The nearest access path from the beach to the north is approximately 2500 feet north of Unit 2. Parcel 3, located immediately adjacent to the southern boundary of the beach exclusion area, will maintain a camp store and 118 day-use parking spaces located on abandoned Highway 101 south of the reactor site. The nearest access path to the beach from the south is approximately 4100 feet south of Unit 2.^{17/}

14. Since the level of beach activity decreases with the distance from beach access points and parking, the activity within the beach portion of Applicants' proposed exclusion area will be at a low level compared to that in the adjacent San Onofre State Beach areas which are nearer to parking and beach access points.^{18/} Those members of the public who are expected to be users of the tidal beach in front of the San Onofre Nuclear

^{17/} NRC Staff Testimony of John Sears (hereafter "Sears Testimony on Anticipated Public Use of the Tidal Beach") following Tr.263, at 1 and 2.

^{18/} Applicants' Testimony of Dr. Donald F. Sinn (hereafter "Sinn Testimony") following Tr.180, at 7.

Generating Station will consist of occasional beach strollers and surfers who will park their cars south of the exclusion area and will walk along the exclusion area beach to reach good surf north of the exclusion area. ^{19/}

15. Restrictions on access to the dry sand beach within Applicants' exclusion area will result in a lower level of activity in wet sand and water areas there than in other beach areas in the vicinity of the nuclear station. This is because beach users generally select a dry sand berm rather than a wet sand area for the location of a beach stay, and tend to engage in water and wet sand recreational activities in close proximity to the location chosen for their beach stay. ^{20/}

16. Low public usage of the tidal beach within the Applicants' exclusion area is expected because the area does not offer any attraction for recreational activity as compared to the other beaches included in parcels 2 and 3. ^{21/}

17. The Applicants presented a witness, Mr. William V. Sheppard, who testified concerning statistically projections developed regarding the number of persons who might occupy Applicants' exclusion area. The projections took into account the nature, size, location and capacity

^{19/} Sears Testimony, at 2.

^{20/} Sinn Testimony, at 7, 8 and 9.

^{21/} Sinn Testimony, at 7-10.

of facilities planned in the development of San Onofre State Beach. The total number of persons who could be accommodated by all park facilities developed to their planned ultimate capacity were assumed to be present within the park and to occupy the beach at one time. The distribution of such persons was then modeled based upon the Poisson probability distribution function in order to predict the number of persons on the beach within Applicants' exclusion area from capacity use of facilities in the vicinity.^{22/} The Applicants' witness testified that information developed by the Department of Parks and Recreation concerning the current use of the San Onofre State Beach had been evaluated in order to predict maximum and average use of facilities in the vicinity of the reduced exclusion area.^{23/}

18. The Applicants' projections predicted a capacity use within the exclusion area of 35 persons, assuming campsites are not developed within Parcel 2 of the San Onofre State Beach and a capacity use within the exclusion area of 100 persons with the camp sites in place. The maximum and average use predicted without the campsites being developed were

^{22/} Applicants' Testimony of William V. Sheppard (hereafter "Sheppard Testimony") Tr.231, at 3-7.

^{23/} Sheppard Testimony, at 9-10.

31 and 7 persons, respectively, and, with the campsites developed, were 89 and 17 persons, respectively.^{24/}

19. The Licensing Board finds, based on the testimony reviewed above, that the tidal beach within Applicants' exclusion area is of such a character and is so located with respect to trails and other facility of the San Onofre State Beach that only small numbers of persons would be expected to occupy it from time to time. Statistical projections predicted capacity use ranging from 35 to 100 persons and average use ranging from 7 to 17 persons. Moreover, the tidal beach within Applicants' exclusion area is and will continue to be less attractive than adjacent areas of the San Onofre State Beach and, because of its tidal character, can be expected to be used primarily as a passageway.
20. The Staff's witness on Issue 3 was Mr. John Sears, a reactor engineer on the Staff of the Nuclear Regulatory Commission who conducted the Staff's independent evaluation of the physical features and administrative controls proposed by the Applicants to minimize public use of the tidal beach within Applicants' exclusion area. Applicants' witness on Issue 3 was Mr. Kenneth P. Baskin, Manager of Generation Engineering of Southern California Edison Company. Consolidated Intervenors did not offer any witness on Issue 3.

^{24/} Sheppard Testimony, at 7, 8 and 10.

21. The Applicants plan to install an extensive system of physical barriers and administrative controls intended to ensure that "activities other than predominantly passageway transit are minimized and controlled" within the tidal beach portion of the Applicants' exclusion area (Exhibit KPB-1, p.1.8-2aka).

22. The physical controls proposed by Applicants consist of an improved walkway, normally for pedestrian traffic but available to vehicles on an emergency basis, approximately 15 feet wide of concrete construction adjacent to the seawall of Units 2 and 3; an 8-foot high chain link fence which will extend to the mean high tide line; and signs warning that access to the beach area within the exclusion area is restricted to passage between the open beach area north and south of the plant site which signs will be posted along the beach and on the concrete passageway within the exclusion area.^{25/}

23. The administrative controls proposed by Applicants are surveillance of the beach by use of remotely operated TV cameras; periodic patrols of the beach area by Applicants' security personnel; and a public address system capable of communicating instructions to anyone in the beach

^{25/} The NRC Staff's Testimony of John Sears (hereafter "Sears Testimony") following Tr.289, at 2. The Applicants' Testimony of Kenneth P. Baskin (hereafter "Baskin Testimony") following Tr.275, at 6-8.

exclusion area.^{26/} In addition, the Applicants' security personnel and the U.S. Marine Corps personnel could be enlisted to disperse non-transient members of the public from the proposed tidal beach exclusion area.^{27/}

24. The physical features and administrative controls proposed by Applicants will serve to facilitate evacuation of the public in the event of an accident, especially when combined with a siren which will be in use at the plant and will be automatically actuated when the containment pressure becomes high enough to activate the safety injection system. The siren will be heard on the beach area before any release of radio-activity occurs.^{28/}

25. The Licensing Board finds that the physical features and administrative controls proposed by Applicants will further diminish the attractiveness of the tidal beach within Applicants' exclusion area for recreational purposes, will facilitate passageway use of the area, will facilitate evacuation of the area in the event of an emergency, and will enhance the ability of Applicants to control activities within the exclusion area.

^{26/} Sears Testimony at 2, Baskins Testimony at 8-9.

^{27/} Baskins Testimony, at 8-9.

^{28/} Sears Testimony, at 3.

26. Regarding Issue 4 which concerns the amount of radiation exposure that might be received by a user of the tidal beach, the NRC Staff's meteorology witnesses, Earl H. Markee, Jr. and John Thomas Goll, performed an independent evaluation of atmospheric diffusion expected at the beach near the San Onofre site, and transmitted this evaluation to the NRC Accident Analysis Branch for calculation by Charles Ferrell^{29/} of the dose estimates for users of the tidal beach.^{30/}
27. In its evaluation, the Staff used data collected from San Onofre's onsite meteorological tower and data from NUS-1702 (Interim), Report of Tracer Tests Conducted at the San Onofre Nuclear Generating Station, following a review of the report and a determination that the tests were performed in a manner that provided reliable data. The Staff then developed a site specific diffusion model.^{31/}
28. The Staff considered the effects of the coastal bluff in developing the diffusion model for the San Onofre site. To quantify the effects of the coastal bluff and structures at the San Onofre site, the Staff used the

^{29/} See, NRC Staff Testimony Concerning Radiological Doses by Charles M. Ferrell and Delbert F. Bunch (hereafter "Ferrell and Bunch Testimony"), following Tr. 419.

^{30/} NRC Staff Testimony of Earl H. Markee, Jr. and John T. Goll (hereafter "Markee and Goll Testimony"), following Tr. 414 at 1.

^{31/} Id., 1 and 2.

data from the NUS report and estimated an effective wake correction factor, W , of 800 square meters for the beach.^{32/} To provide this estimated wake factor, the Staff used Equation 1 to calculate wake correction factors for the 19 successful tests in the NUS report based on the observed peak values of relative concentration, X/Q . However, because the Staff's frequency (percentile) analysis of X/Q was based on data taken from the 10-meter level of the bluff tower, it used wind speeds as measured on the bluff tower. The Staff chose a value near the median of the calculated W 's, which is more conservative than the average value of W .^{33/}

29. The Staff's standard regulatory model (as noted by Equations 2 and 3 of the Markee and Goll Testimony, Table 2) limits the wake effect to a maximum of $2\pi\sigma_y\sigma_z$. However, the Staff's analysis of the NUS tracer test data for the San Onofre beach indicated that in the offshore directions, this limitation (Equation 3) need not be applied.^{34/} Thus, the Staff developed Equation 4 (Markee and Goll Testimony, Table 2). The Board finds that this equation provides X/Q values at the beach which are representative of site conditions, including the effects of the

^{32/} Tables 1 and 2 of the Markee and Goll Testimony contain all notations and equations used in their testimony.

^{33/} Id., at 3.

^{34/} Id.

coastal bluffs and Unit 1 buildings. The Board further notes that because the physical structures of Units 2 and 3 are larger than those of Unit 1, using Equation 4, with its wake factor based on tracer tests at Unit 1, should provide conservative estimates of X/Q for Units 2 and 3.^{35/}

30. The Staff calculated X_{CL}/Q (effluent concentration at the centerline of the plume) and X_{CWI}/Q (crosswind integrated effluent concentration) values that would not be exceeded on the beach 100 to 200 meters from the source 5, 25, and 50 percent of the time. These values are presented in Figures 1 and 2 of the Markee and Goll Testimony along with the values (based on Regulatory Guide 1.4) calculated in the Staff's evaluation of Amendment 22 of the San Onofre Units 2 and 3 Preliminary Safety Analysis Report ("NRC Staff's Memorandum Evaluating the Applicants' Revised Exclusion Area", dated November 13, 1975). Because the bluff meteorological tower data indicate that winds blow offshore only 42% of the time, the 50th percentile X_{CL}/Q and X_{CWI}/Q values are zero for the beach. Beyond 200 meters from the source, the X_{CL}/Q and X_{CWI}/Q values for the 5th and 25th percentiles will be less than the 200-meter values indicated in Figure 1.^{36/}

^{35/} Id.

^{36/} Id., at 4.

31. The X_{CL}/Q values were calculated by the Staff in a manner consistent with NRC Standard Review Plan 2.3.4 - Short Term Diffusion Estimates, using Equation 4 and the data collected between February 1975 and January 1976 from the 10-meter level of the bluff meteorological tower. The Staff considered the meteorological conditions summed for all off-shore air flow (wind directions: northwest clockwise thru east south-east).^{37/}
32. To determine X_{CWI}/Q , the Staff used Equation 5, taken from Meteorology & Atomic Energy - 1968 (Slade, 1968), but multiplied by a factor of 1.2. This factor of 1.2 was necessitated because, as shown in Table 4.1-3 of the NUS report, the average ratio of measured to estimated values of X_{CWI}/Q is about 1.2. This difference could reflect a non-Gaussian distribution in the horizontal cross-wind direction and/or the under-estimation of the peak value of X/Q as plotted from the test data.^{38/}
33. Σ_y , (total horizontal standard deviation of material in the plume) in Equation 5 (Markee and Goll Testimony, Table 2) was estimated through use of Equation 6 (Markee and Goll Testimony, Table 2). During stable atmospheric conditions for distances within 200 meters of the source, W_y , the horizontal cross-wind component of mechanical turbulence, is

^{37/} Id.

^{38/} Id.

much larger than σ_y , the horizontal cross-wind component of ambient free-stream turbulence. Thus, W_y is nearly equal to Σ_y , and the Staff chose W_y to be equal to 30 meters, the median of measured Σ_y 's in Table 4.1-3 of the NUS report. The Staff then allowed Σ_y to vary with atmospheric stability and distance, although the variation is very small over these distances with stable atmospheric conditions.^{39/}

34. To provide profiles of dose as a function of distance from the plume centerline, the Staff calculated plume isopleths for various fractions of the plume centerline concentrations using Equations 4 and 7 (Markee and Goll Testimony, Table 2). These dose profiles are presented in the Ferrell and Bunch Testimony, Table 2. Due to the predominance of the mechanical turbulence, generated by the bluff and buildings, over the ambient freestream turbulence, the plume widths for all classes of stable and neutral atmospheric stability conditions change very little.^{40/}
35. Since the tracer tests did not provide direct measurements of diffusion and plume positions over periods other than one hour, the Staff was not able to provide precise estimates of the maximum variation in direction of the plume centerline over a reasonable period of time (between one-half and two hours). However, due to the high-frequency turbulence

^{39/} Id., at 5.

^{40/} Id.

generated by the buildings and bluff wake, the Board would not expect large changes in plume size and position for sampling periods between one-half and two hours.^{41/}

36. Using the atmospheric concentrations (X/Q) derived by Earl H. Markee Jr. and John T. Goll, the Staff witnesses from the NRC Accident Analysis Branch, Delbert F. Bunch and Charles M. Ferrell, independently evaluated the radiological doses to the thyroid that might be received by a Regulatory Guide 1.4 "standard man" using the tidal beach lying within the exclusion area during occupancy and subsequent evacuation of the beach in the event of an accident (assuming a postulated fission product release as provided in 10 CFR § 100.11).^{42/}

Specifically the NRC Staff calculated the following thyroid dose rates for 5% meteorology:

1. about 15 rem to a "standard man" walking at a speed of 1 meter/second traversing the plume at the seawall;^{43/}
2. about 15 rem to a "standard man" walking at a speed of 1 meter/second from the seawall closest to the containment to the lower low water line along the centerline of the plume;^{44/}

^{41/} Id., at 6.

^{42/} Ferrell and Bunch Testimony, at 1 and 2. (See, Table 2).

^{43/} Id., at 5.

^{44/} Id., at 6.

3. about 190 rem to a "standard man" remaining stationary on the plume centerline for a two hour period following the accident at a point on the seawall closest to the containment (about 107 meters); ^{45/}
4. and less than 190 rems, as indicated on Figure 5, for individuals ("standard man") who remain stationary at various points along the beach, each of whom was assumed to be in the centerline of the plume for a period of two hours. ^{46/}

Since the thyroid dose is more limiting with respect to Part 100 guidelines, the Staff and Applicants' evaluation of potential beach evacuation doses considered only the potential thyroid doses. ^{47/}

37. Evidence on the anticipated amount of radiation exposure that might be received by a user of the tidal beach within Applicants' exclusion area during occupancy and subsequent evacuation of the beach in the event of an accident was also presented by the Applicants' witness Dr. Martin I. Goldman. ^{48/}

38. With respect to the source terms, the Applicants, like the Staff, followed methods given in Regulatory Guide 1.4. The differences

^{45/} Id.

^{46/} Id.

^{47/} Ferrell and Bunch Testimony, at 2; Applicants' Testimony of Martin I. Goldman (hereafter "Goldman Testimony") following Tr.300, at 12-14.

^{48/} Goldman Testimony, following Tr.300.

in the source terms used by Staff and Applicants are delineated in Applicants' Exhibit MIG-2.

39. Like the Staff, the Applicant used the NUS tracer tests [Applicants' Exhibit MIG-1] in determining atmospheric dilution factors when winds flow toward the ocean. The Applicants, like the Staff, determined from the NUS tracer tests that greater atmospheric dilution occurs than would be calculated using the models of Regulatory Guide 1.4 due primarily to the effects of the bluff and building structures.^{49/}
40. The Applicants used assumptions different from that used by the Staff to calculate probability distributions of meteorological conditions in terms of dilution potential. Staff assumptions combined all offshore directions and all hours of the day and night.^{50/} Applicants treated probability distributions for each direction sector, and analyzed both daytime hours only (when beach use is potentially maximal) and total hours. Applicants also presented analysis based on all directions for daytime and total hours. The dilution factors (X/Q) calculated on these different bases by Applicants and Staff differ by

^{49/} Id., at 3 and 4.

^{50/} Id., at 7 and 8b.

less than a factor of 2, with daytime only values being somewhat less than those based on all hours. [Applicants' Exhibit MIG-2]. The probabilities for individual beach direction sectors are much less than those obtained when all directions are combined.

41. With respect to the duration of exposure, the Applicants, like the Staff, calculated exposures during evacuation across the plume following a potential fission product release. The speed of crossing assumed by the Applicants was two miles per hour, ^{51/} and 2.2 miles per hour by the Staff. ^{52/} The validity of this speed for walking during evacuation was supported by Applicants' witness William V. Sheppard, ^{53/} Staff's witness John Sears ^{54/} and Intervenors' witness Paul Muscratt. ^{55/}
42. Using atmospheric concentrations, set forth in Table 1 of Dr. Goldman's testimony, the Applicant derived evacuation (cross-plume) dose estimates, set forth in Table 2 of Goldman Testimony, for the "standard man" smaller than those calculated by the Staff. The reasons for the different

^{51/} Id., at 12.

^{52/} Ferrell and Bunch Testimony, at 5.

^{53/} Tr. 233-234.

^{54/} Sears Testimony following Tr. 289, at 4.

^{55/} Tr. 331.

dose calculations are set forth in Applicants' Exhibit MIG-2. The evacuation doses calculated by both the Staff and Applicant fall well below the reference dose values of 10 CFR § 100.11. Furthermore, both the Applicants and the Staff agree that the probability that beach users would be exposed in "daylight hours" would be small because the winds from the plant to the beach occur mainly at night.^{56/}

43. The Staff and Applicants each presented evidence treating all of the factors involved with assessing exposure to an individual using the tidal beach within the Applicants' exclusion area, including 1) source term, 2) atmospheric dispersion, 3) duration of exposure, and 4) "standard man" physiological parameters. The Consolidated Intervenor presented evidence addressing only to the last two factors.
44. With respect to duration of exposure, evidence was provided by Consolidated Intervenor's witness, Dr. Ronald Finston, indicating that average evacuation speeds would be less than one-half mile per hour (Applicants and Staff used 2 and 2.2 miles per hour, respectively), based on the average speed of evacuation in major disasters as presented in WASH-1400.^{57/} However, none of the data

^{56/} Goldman Testimony, at 8 and 13; and Tr.422.

^{57/} Testimony of Ronald Finston (hereafter "Finston Testimony"), following Tr.360 at 6 and 7.

upon which that figure is based are derived from instances of evacuation by foot from a small section of beach.^{58/} Further, the Consolidated Intervenors testified that a healthy person engaged in strenuous activity on the beach would be able to walk at a rate of four miles per hour during evacuation of the Applicants' exclusion area.^{59/} The Board finds the walking speeds (and hence exposure duration during evacuation) selected by Applicants and Staff to be reasonably conservative.

45. With regard to the "standard man" physiological parameters of Regulatory Guide 1.4, the Consolidated Intervenors contended: (1) that the Regulatory Guide breathing rate is specifically applicable to adult men at occupational "light activity" and that the recreation setting at the San Onofre tidal beach requires for some recreational activity the use of higher breathing rates. The Consolidated Intervenors estimated breathing rates based on a published set of values of "Maximum Work During Exercise".^{60/} At this exercise activity Consolidated Intervenors indicate an adult male breathes at a rate of 111 l/min ($18.5 \times 10^{-4} \text{ m}^3/\text{sec}$), a child aged 10 breathes at a rate of $11.8 \times 10^{-4} \text{ m}^3/\text{sec}$

^{58/} Tr.394 and 395.

^{59/} Tr.403.

^{60/} Tr.364.

and a 5 year old breathes at a rate of $6.7 \times 10^{-4} \text{ m}^3/\text{sec}$.^{61/} This, the Consolidated Intervenors contended, results in breathing rates for activities on the San Onofre tidal beach which include swimming rafting, running and a variety of strenuous physical games which are 5.3, 3.1, and 1.9 times higher than those calculated using Regulatory Guide 1.4 breathing rate for male adults, 10 and 5 years old, respectively;^{62/} (2) that the Regulatory Guide 1.4 Iodine dose conversion factors are based on adult man and must, therefore, be adjusted by a factor of 2.4 for the 10 year old and 4.6 for the 5 year old child. This, the Consolidated Intervenors argue, results in doses for activities on the San Onofre beach which include swimming, rafting, surfing and a variety of strenuous physical games (using "Maximum Work During Exercise" breathing rates) which are 5.3, 8.2 and 8.8 times higher than those calculated by the Applicants and the Staff using Regulatory Guide 1.4 breathing rates and Iodine dose conversion factors for male adults, 10 and 5 year olds, respectively;^{63/} and (3) that the dose to the fetal thyroid is 5 times greater than that of the maternal thyroid.^{64/} The Applicants testified that the "Maximum Work During

^{61/} Finston Testimony, at 3.

^{62/} Id., at 4.

^{63/} Id., at 4 and 5.

^{64/} Id., at 5.

Exercise" breathing rates used by Consolidated Intervenors are based on a breathing rate associated with exercising an individual in a laboratory, hooked-up to an ergometer on either a bicycle or a treadmill, to the point where he drops, exhausted, in a period of 4 to 6 minutes.^{65/} The Board finds that the "Maximum Work During Exercise" breathing rates used by Consolidated Intervenors to develop the factors, item (1) above, were selected without recognizing their applicability to breathing rates that would be associated with strenuous physical exercise on the tidal beach within the Applicants' exclusion area and are inappropriate for use in that context.^{66/} Using the "strenuous exercising" breathing rate [Applicants' Exhibit MIG-4], which the Board finds to be more appropriate to the level of exercise that might be conducted at the tidal beach within the Applicants' exclusion area, and comparing these rates to the "standard adult" (Regulatory Guide 1.4) breathing rate that was used by the Staff and the Applicants, results in factors for adults, 10 and 5 year olds of 1.75, 1.15 and .65 times the Applicants' and Staff's doses instead of 5.3 and 3.1 and 1.9 as indicated by the Consolidated Intervenors.^{67/} The Applicants and

^{65/} Tr. 456.

^{66/} Tr. 364-372.

^{67/} Tr. 458.

Staff agreed with the Consolidated Intervenor that there would be individual variations in Iodine dose conversion factors, however, the Staff testified that when age dependent variations in Iodine dose factors are combined with breathing rates typical of each age group, variations in doses would not be as great as the values set forth by Consolidated Intervenor. The Staff cited WASH-1400 as indicating that 10, 5 and 1 year olds would be expected to have doses 1.6, 1.9 and 0.9 times, respectively, that of an adult.^{68/} The Staff also testified that fetal thyroid doses would not be expected to be as high as contended by the Consolidated Intervenor because (1) experimental data indicates that the fetal dose is not substantially different than the maternal dose at early stages of pregnancy and (2) at late stages of pregnancy it is unlikely that females would engage in strenuous exercise.^{69/} The Board finds that the variations among individual beach users physiological parameters would not be expected to lead to the extreme variations in doses as contended by the Consolidated Intervenor.

46. The degree of physical exertion assumed at the tidal beach during the period of evacuation would also affect the speed of evacuation (hence

^{68/} Tr. 433.

^{69/} Tr. 493 and 494.

duration of exposure and therefore the dose). The Board finds that it is inappropriate to assume slow evacuation rates with high rates of physical exertion. It is appropriate to assume that as the exertion rate increases the evacuation dose decreases. The Applicants indicated that if a strenuously exercising adult traverses the plume at a rate of 15 miles per hour, the resulting dose would be one fourth the dose previously calculated (Goldman Testimony, Table 2) for the same individual crossing the plume at 2 miles per hour.^{70/} No evidence was presented in support of the Consolidated Intervenors' contention that tidal beach users would continue their exercises in places unabated despite a warning to evacuate.

47. Combining the parameters of reasonable values for "strenuous exercising" breathing rates, age dependent dose factors and WASH-1400 dose conversion factors for radioiodine, the Applicants testified that the following adjustment to the doses set forth in Table 2 of the Goldman Testimony must obtain:^{71/}

- 1) For an adult the dose would be 13 percent of those indicated in Table 2;
- 2) For a 10-year old the dose would be 21 percent of those indicated in Table 2; and

^{70/} Tr.459.

^{71/} Tr.461.

3) For a 5-year old the dose would be 23 percent of those indicated in Table 2.

48. On the bases presented above, the Board finds that the anticipated amount of radiation exposure that might be received by a user, regardless of age or sex, of the tidal beach within Applicants' exclusion area during occupancy and subsequent evacuation of the beach in the event of an accident (a postulated fission product release as provided in 10 CFR § 100.11) is significantly less than the guide limits set forth in 10 CFR § 100.11. Furthermore, based on evidence presented by Ferrell and Bunch for the Staff,^{72/} the Board finds that, with the use of more realistic assumptions, estimates of evacuation doses would be even lower than those presented by the Applicants and Staff in their direct testimony.

49. The Board finds upon review of the entire record developed during this proceeding that Applicants have met their burden of proof in establishing that no significant hazards to the public health and safety will result from public use of the tidal beach within the proposed revised exclusion area of the San Onofre Nuclear Generating Station and, therefore, that the Applicants lack of control over the tidal beach within the proposed revised exclusion area is de minimus.

^{72/} Tr. 491-4, and 513.

CONCLUSIONS OF LAW

1. The Licensing Board's authority in this proceeding is based on the Appeal Board's Memorandum and Order of January 22, 1976, directing that this case be remanded to the Licensing Board for further proceeding (1) to ascertain the facts bearing upon the characteristics and use of the tidal beach within the Applicants' exclusion area and (2) to determine whether the Applicants have met their burden of establishing that their lack of control over the tidal beach within the exclusion area is de minimus.

2. Upon a consideration of the record made herein and the foregoing findings of fact, the Licensing Board concludes, as a matter of law, that the Applicants' lack of control over the tidal beach within the exclusion area is de minimus.

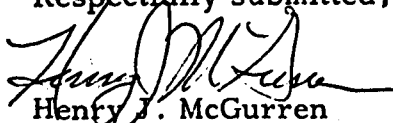
ORDER

Based upon the Licensing Board's Findings and Conclusions in this Supplemental Initial Decision, IT IS ORDERED, in accordance with 10 CFR Sections 2.760, 2.762, 2.764(a), 2.785 and 2.786 of the Commission's Rules of Practice, that this Supplemental Initial Decision shall constitute the final decision of the Commission thirty (30) days after issuance subject to any review thereof pursuant to the above-cited Rules of Practice. Pursuant to Section 2.762, exceptions to this Supplemental Initial Decision may be filed by any party within seven (7) days after service of this Supplemental Initial Decision and a brief in support of the exceptions must be filed within fifteen (15) days thereafter (twenty (20) days in the case of the Staff). Within fifteen (15) days of the filing and service of the brief of the Appellant (twenty (20) days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Respectfully submitted,


Henry J. McGurran
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 21st day of June, 1976

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
SOUTHERN CALIFORNIA EDISON) Docket Nos. 50-361
COMPANY SAN DIEGO GAS &) 50-362
ELECTRIC COMPANY)
)
(San Onofre Nuclear Generating)
Station, Units 2 and 3))

CERTIFICATE OF SERVICE

I hereby certify that copies of "NUCLEAR REGULATORY COMMISSION STAFF'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW IN THE FORM OF A PROPOSED SUPPLEMENTAL DECISION" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or air mail, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 21st day of June, 1976:

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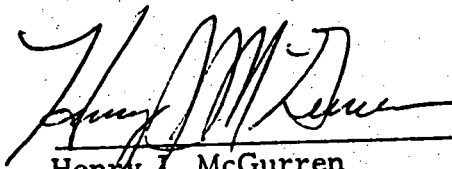
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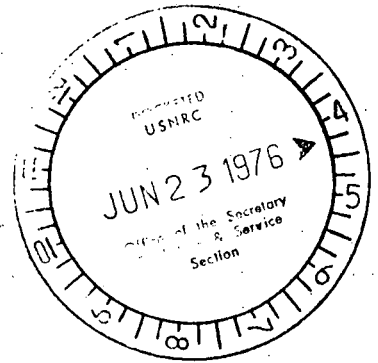


Henry J. McGurran
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UNITED STATES
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WASHINGTON, D. C. 20555

June 18, 1976



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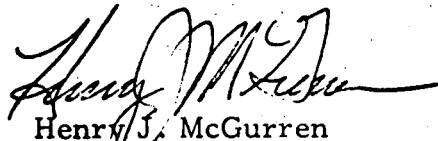
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In the Matter of Southern California Edison Company
San Diego Gas & Electric Company
(San Onofre Nuclear Generating Station, Units 2 and 3)
Docket Nos. 50-361 and 50-362

Gentlemen:

Pursuant to the Licensing Board's request (Tr. 229), I am enclosing a corrected copy of the Supplemental Testimony of the NRC Staff on Characteristics of the Tidal Beach Within the Applicants' Exclusion Area by Edward F. Hawkins.

Sincerely,


Henry J. McGurran
Counsel for NRC Staff

Enclosure: As Stated

cc: See page 2

cc w/enclosure:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
SOUTHERN CALIFORNIA EDISON COMPANY) Docket Nos. 50-361
SAN DIEGO GAS AND ELECTRIC COMPANY) 50-362
)
(San Onofre Nuclear Generating Station,)
Units 2 and 3))

SUPPLEMENTAL TESTIMONY OF THE NRC STAFF ON
CHARACTERISTICS OF THE TIDAL BEACH WITHIN THE
APPLICANTS' EXCLUSION AREA

BY
EDWARD F. HAWKINS

This testimony addresses issue number 1 as set forth in the Board's Order of
April 9, 1976. Issue 1 states:

"The anticipated size and characteristics from time to time of
the tidal beach within the reduced exclusion area delineated
by Applicants in Amendment No. 22 to the Preliminary Safety
Analysis Report."

Construction is presently proceeding on San Onofre Nuclear Generating Station,
Units 2 and 3. As a result of the construction, the beach in front of the site is
currently divided into the areas north and south of the temporary sheet piling
in front of Units 2 and 3. A permanent seawall is in place in front of Unit 1.
The temporary sheet piling was installed on the beach to hold sand from the

construction area and to form a construction laydown area. The laydown area extends along the beach approximately 1,000 feet and is about 325 feet wide. Since littoral sand transport is normally to the south, the installation of the sheet piling has altered the configuration of the beach by causing deposition of sand on the upcoast (north) side and erosion on the downcoast (south) side. This artificial beach on the north resulted in the displacement of the Mean High Water Line approximately 100 feet seaward of the MHWL as delineated by the Applicants' January 1963 survey. It is expected that once the temporary sheet piling is removed, the beach will return to its pre-construction configuration. The tidal portion of the beach consists of the area seaward of the mean high water line to the mean lower low water line. The mean high water line as delineated by the January 12, 1963 survey performed by the Applicants (prior to construction) would be about 10 to 80 feet seaward of the proposed walkways.

The tidal beach portion of Applicants' exclusion area is characterized by relatively flat slopes during the summer and fall and by noticeably steeper slopes in the winter and spring. During the winter there are visible areas covered by cobbles, especially in the downcoast portion. Normally a relatively thick blanket of sand covers these cobbles in the summer and fall.

The size of the beach is directly affected by tidal action. Tides along the southern California coast demonstrate a diurnal inequality; that is, they

have a daily tidal cycle of two highs and two lows. Throughout the year, these highs and lows are not constant, but vary day to day. As an example, the 1976 predictions of elevations of Higher High Water tides at San Clemente vary from 6.5 feet above Mean Lower Low Water datum (MLLW) in January 1976 to 7.0 feet above MLLW in November and December (1). In addition to these daily variations throughout the year, elevation of tides also vary slightly on about a 19-year cycle.

The size and shape of the beach is also affected by waves and surges. Surges caused by storms at sea, storms impacting directly on the coast and tsunamis can affect the beach dramatically and can alter beach configurations drastically in a short period of time. However, since these events are relatively rare in relation to wave action which occurs continually, they are not as major a long term consideration as normal wave action. Waves that occur in the winter (and during storms) are generally higher and have a shorter wave period. A wave period is defined as the time for two successive wave crests to pass a fixed point (8). These waves erode the beach, transporting sand from the beach to form offshore bars. In the summer, the waves are generally lower with a longer period. Sand is transported from offshore bars back to the beach and deposited (due to the lower amount of energy in the waves); thereby rebuilding (accreting) the beach area (2,8). In the winter and spring, wave direction is generally from the west and northwest; thereby transporting sand

downcoast. During the summer and fall, wave direction is generally from the south and southwest. Therefore, sand movement is generally from downcoast to upcoast. On an annual basis, movement is downcoast since more material is carried by winter wave action than by summer wave action.

Published literature relating to southern California beaches (2,4,8) indicate that over the longer term the beaches are slowly becoming narrower. This is attributed primarily to losses in the sources of material caused by man's activities along the coastal tributary streams. Due to dams, flood channels, improved agricultural practices, urbanization, etc., the amount of material carried as sediment in stream runoff to the coast that could be used for beach replenishment is being reduced. Surveys and studies over the past 70 to 80 years indicate, however, that there has been little erosion of the bluffs (2,4). The overall result is that littoral drift is being reduced, and not as much material is available to be deposited on the beaches. Natural processes also tend to carry some material out to deep trenches off the coast. This sand is considered lost and not available for beach replenishment (2).

As indicated above, the development of the construction laydown area has resulted in the accretion of an artificial beach north of the sheet piling. A precise estimate of the amount of time it will take for the beach to return to its pre-construction configuration is not possible since wave action (the

primary mechanism for sand transport) in the future cannot be accurately predicted. However, for Unit 1 approximately 353,000 cubic yards was disposed of on the beach between July and November 1964. It was reported by the applicants that the physical effects of this sand disposal had diminished significantly by the spring of 1965. However, complete erosion of this material was not reported until 1970 (5).

Based on similar experience at Unit 1, a reasonable estimate for the beach in front of Units 2 and 3, assuming normal sea and wave conditions, to return to essentially its former configuration would appear to be on the order of one to two years. Similarly, complete removal of this material from the Applicants' exclusion area would probably take 4 to 5 years. However, severe storms and wave action could carry the material away in a matter of days. Conversely, a long period of relatively calm seas could result in the material remaining on the beach for a significantly longer period of time than 5 years.

To estimate tidal beach configurations, information was taken from profiles done for the Applicants and from information supplied at the Staff's request (7). These profiles were established and measured at regular intervals over the past several years to study the effects of disposing of sand from the construction area on the beach fronting the site. Therefore, the profiles are not entirely suitable for the purpose used herein. They are, however, the most

current information that is available on this area. Since many of the profiles appear to reflect disposal on the beach area, precise measurement of tidal beach sizes are not possible. Accordingly, the values presented in the following table should be considered only as indicators of future tidal beach configurations.

Based on information extracted from the profiles discussed above, typical winter and summer tidal beach configurations were constructed. Tidal beach dimensions were then estimated by measuring the area and widths from Mean Lower Low Water line to the Mean High Tide line. These constitute average "maximum" and "minimum" tidal beach areas. To demonstrate the variability of the tidal beach, "extreme maximum and minimum" tidal beach areas and widths are also shown. These were constructed by measuring the tidal beach from the Mean High Tide line to Lower Low Water and to Higher High Water. The results are summarized in the following table:

ESTIMATED TIDAL BEACH SIZES DURING OPERATION OF
SAN ONOFRE NUCLEAR GENERATING STATION

	Average Area (acres)	Average Width (feet)	"Extreme" Area (acres)	"Extreme" Width (feet)
Maximum Winter Beach	20	180	55	520
Minimum Winter Beach	5	50	-3	-30
Maximum Summer Beach	25	220	65	620
Minimum Summer Beach	10	100	-2	-20

As can be seen from this table the tidal beach is in a constant state of flux. Although the tidal beach areas and widths are presented as being typical, the amount of time the tidal beaches would be in these configurations is quite small. For instance, the duration of time the tidal beach as defined herein would be less than the Average Minimum or more than the Average Maximum would be about an hour a day, respectively. The "extremes" are, for all practical purposes, instantaneous values. It should be noted that the above estimates do not include wave action on top of the tidal action. Typical waves in this area are about 2 feet high with periods averaging from 14 to 16 seconds (3). Runup of these waves would further reduce the tidal beach sizes shown above. For conservatism, however, tidal beach sizes were not reduced for wave runup.

In conclusion, the NRC Staff has evaluated the characteristics of the tidal beach portion of the Applicants' exclusion area, and estimated that the beach should return to essentially its pre-construction configuration in one to two years after the temporary sheet piling in front of Units 2 and 3 is removed. Within 4 to 5 years, all effects of the sand disposal should be out of the Applicants' exclusion zone. These estimates are based on normal sea and wave action. Over the long term, the beach will probably become smaller with time since inland sediment is being reduced, and this sediment is the major source material needed for beach replenishment.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

6/14/76

In The Matter Of)
)
SOUTHERN CALIFORNIA EDISON)
COMPANY)
SAN DIEGO GAS & ELECTRIC)
COMPANY)
)
(San Onofre Nuclear Generating)
Station, Units 2 and 3))
)

DOCKET NOS. 50-361
AND 50-362

CONSOLIDATED INTERVENORS' PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW IN THE FORM OF A
SUPPLEMENTAL INITIAL DECISION

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June 14, 1976

PROPOSED FINDINGS OF FACT AND CONCLUSIONS
OF LAW SUBMITTED BY CONSOLIDATED INTERVENORS
COVERING TIDAL BEACH WIDTH, ADMINISTRATIVE
AND PHYSICAL CONTROLS ON BEACH USE, BEACH
USE, AND POSSIBLE RADIATION DOSE LEVELS
WITHIN THE APPLICANTS' REDUCED EXCLUSION AREA

I. INTRODUCTION

1. On April 12, 1976, the Nuclear Regulatory Commission (NRC) promulgated an Order limiting the issues to be covered at the remaining hearings in the matter of San Onofre Nuclear Generating Station, Units 2 and 3. The issues were confined to the following four: tidal beach size; tidal beach use; physical and administrative controls on that use; and radiation doses to beach users in the event of a specified type of accident.

II. BEACH SIZE

2. With respect to the first issue, the width of the tidal beach within the Applicants' reduced exclusion area, Consolidated Intervenors proposed the following findings of fact and single conclusion of law:

3. The NRC Staff witness, Edward Hawkins, found the average maximum summer tidal beach at the San Onofre site to be 220 feet wide, and the average maximum winter tidal beach to be 180 feet wide. He calculated the average minimum tidal beach widths for summer and winter as, respectively, 100 feet and 50 feet (Hawkins 6). According to the Applicants' own measurements, the tidal beach would be a maximum

of 144 feet wide and a minimum of 63 feet wide when the water level remained 0.0 mllw. In fact, their figures show that the tidal beach remains 35 feet wide, even in areas where its profile is steepest, when the water level is +2.0 mllw. Where its profile is shallowest, the tidal beach is 32 feet wide even when the water level is +3.5 mllw (Amendment No. 22 to the PSAR, Exhibit KPB-1 to Testimony of Baskin, October 10, 1975, p. 1.8-2bzw).

4. The Applicants obtained the measurements of tidal beach width contained in the PSAR from "profiles... typical of those in front of the station, based on evaluation of historical beach profile records" (Amendment No. 22 to PSAR, p. 1.8-2bzw). The NRC Staff witness, Edward F. Hawkins, drew his estimates of tidal beach width from beach profiles which were taken at quarterly intervals for the Applicants by Marine Advisors between 1964 and 1970, and at infrequent intervals thereafter. The beach profile is measured at four different locations, ranging from the northern site boundary to a mile south of that property line (Hawkins 5; Tr. 163-165).

5. The Applicants' witness, Omar J. Lillevang, based his estimates of tidal beach width solely on measurements of tidal beach width taken at one location, at the narrower southern end of the site beach, on one day, March 15, 1976 (Lillevang 9; Tr. 95-96, 120). The maximum width reached by the tidal beach on that day, when the lower low water level dropped to -0.736 mllw., was 35 feet (Lillevang 10; Tr. 119).

6. There are glaring disparities between Mr. Lillevang's measurements of the width of the tidal beach and the measurements obtained by the Applicants themselves and the NRC Staff witness. Even so, Mr. Lillevang admitted on cross-examination that the other two sets of figures were "reasonable" and "consistent" (Tr. 123). This can only be because the beach slope which he used to calculate his measurements was unusually steep, due to the fact that the beach had been severely eroded by winter storms. Indeed, the NRC Staff witness, responding to examination by the Board, characterized a mid-March beach at the site as a "winter beach"--a winter beach which would "very likely" reach its minimum size shortly after the time Mr. Lillevang's measurements were taken (Tr. 165).

7. The tidal beach in the exclusion area is much steeper and narrower during the winter and spring than it is in summer and fall. This is because higher waves, which erode the beach into a steep, concave-upward profile, occur during storms and throughout the winter. In the summer, the lower, more frequent waves deposit sand from offshore bars onto the beach, resulting in a concave-downward profile (Amendment No. 22 to PSAR, p. 1.8-2bzx; Hawkins 3). In fact, Mr. Lillevang admitted that "during the summer period...the tidal zone goes to a very flat slope," but "[t]he winter waves typically tear that slope down and move the stuff out" (Tr. 124). He further admitted that a spring wave climate of higher, larger waves with shorter periods was present when he took his measurements, resulting in a beach slope noticeably

steeper than those characteristic of summer and fall (Tr. 114-116).

8. The southern end of the exclusion area tidal beach, where Mr. Lillevang took his lone set of measurements, is narrower than it is either directly in front of Units 2 and 3, or to their immediate south. The map marked Figure 1.8-C, which accompanies Amendment No. 22 to the PSAR, shows this configuration clearly. Moreover, the temporary seawall which has been placed around Units 2 and 3 is trapping the sand which would normally be deposited at the southern boundary of the site, further narrowing that area of the beach (Hawkins 2; Lillevang 7).

9. In his testimony, Mr. Lillevang describes how the seawall temporarily installed around the Unit 1 construction site caused the beach in front of it and to the north to widen, and to remain wider, for four years after it was dismantled. At that time, the beach at the southern boundary was still "somewhat wider" (Lillevang 6-7). Extrapolating from this data, Mr. Lillevang predicts that a pre-construction beach size will not be "substantially achieved" at the northern end of the site for four to five years, while the beach in front of the site and to its south will not diminish to its natural size for an additional five years (Lillevang 8-9; Tr. 97-98). Edward Hawkins largely agrees with these estimates. He states that although the site beach will revert to its normal shape within two to three years after the seawall is gone, it will take an additional four to five years for it to return to its normal size (Tr. 160-162). Thus, for almost

ten years after the construction of Units 2 and 3, the beach within the Applicants' reduced exclusion area will be wider, and capable of holding more people who will be exposed to the possible danger of radiation, than it was before any construction began.

10. Consolidated Intervenors submit, as a proposed conclusion of law, that the tidal beach within the Applicants' reduced exclusion area is not so small that their inability to obtain full control over it can be disregarded as de minimus. 10 C.F.R. §100(3) allows "[a]ctivities unrelated to operation of the reactor...in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result." The Atomic Safety and Licensing Appeal Board stated in its Order of January 22, 1976, that such a finding can be made "only in the very rare instances in which...the exclusion area either (1) will not be used at all by the public; or (2) will be susceptible...of a limited...use which...will pose no health and safety threat during normal reactor operations or in the event of an accident." The Board went on to say that the Applicants had not met their burden of proving such mitigating circumstances, because their measurements of tidal beach widths contained in the PSAR showed a maximum width of 150 feet (ALAB, Memorandum and Order, January 22, 1976, pp. 16-17). Surely, if a tidal beach width of 150 feet precluded classifying the uncontrolled exclusion area as de minimus, the 180 and 220 foot maximum widths found by Hawkins should make such a finding utterly impossible.

III. BEACH USE

11. Regarding the second issue, use of the tidal beach within the Applicants' reduced exclusion area, Consolidated Intervenor submit the following findings of fact and single conclusion of law:

12. Actual counts of people on the exclusion area beach have been taken twice daily, at 10:00 a.m. and 3:00 p.m. from February 6, 1976 until April 15, 1976. These counts found a total of 990 people on the exclusion area beach for all days counted. Peak attendance for this period occurred on Sunday, March 14, 1976 at 3:00 p.m. when 78 persons were observed on the exclusion area beach (C.I.-4).

13. Beach use is expected to be 275% higher in summer than in winter (Tr. 245). Thus, the number of exclusion area beach users in the summer could be 2.75 times the count of 990, or in excess of 2700, for a comparable period of time (about 10 weeks). Furthermore, peak exclusion area beach use on a summer day could also more than double from the count of 78 taken on March 14, a winter day.

14. When use of San Onofre State Beach parcels 2 and 3 increases, use of the exclusion area beach tends to increase. There are at least two reasons to expect use of the surrounding state beaches and the exclusion area beach to increase significantly between the present time and the beginning of operations of San Onofre Units 2 and 3. First, California Parks Department plans call for development of campsites on the bluffs overlooking the beach immediately north of the exclusion area. These campsites will hold a

capacity of 750 campers (Tr. 243). Second, nearby south Orange County, from which the San Onofre state beaches and the exclusion area beaches draw many of their users, has one of the fastest growing populations of any area in the country (Tr. 250). Both the new campsites and the additional population in south Orange County will significantly raise the number of exclusion area beaches from present levels by the time Units 2 and 3 begin operating.

15. A construction laydown presently occupies 1000 feet of exclusion area beach frontage (Tr. 244). This laydown will be removed before San Onofre Units 2 and 3 begin operation, making more exclusion area beach available for use by members of the public. The significantly increased area available for use at the time operations commence will result in exclusion area beach use at greater than present levels.

16. Taking these factors of higher summer use, new campsites, increased population in south Orange County and removal of the construction laydown together, exclusion area beach use for any given period of time could increase by a factor of 4 to 5. Thus, the number of exclusion area beach users could range between 4000 and 5000 for 10 summer weeks, and close to 400 on a single summer weekend day by the time San Onofre Units 2 and 3 begin operations.

17. Over one half of all exclusion area beach users actually counted between February 6, 1976 and April 16, 1976 were stationary, and more than one fifth were in the water. Only about one quarter of the exclusion area beach users

observed were in transit (CI-4).

18. Applicants' witness Sinn did not offer any actual count of exclusion area beach users into evidence. He could not give any meaning to his estimate of relatively low use by estimating any number of beach users that would or would not fall into the range of relatively low use (Tr. 206, 213). Furthermore, even this vague estimate of relatively low use was not based upon any counts of actual exclusion area beach users personally made by Sinn (Tr. 198-200).

19. Sinn claims that close proximity to parking, restrooms and drinking water increases use of any particular beach area (Sinn 8). If this claim is correct, the north portion of the exclusion area beach should have a large number of users. This is because cars park on the beach within 15 feet of the north boundary of the exclusion area (Tr. 326), and because rest rooms and drinking water are available on the beach within 100 yards of that boundary (Tr. 185).

20. Applicants' witness Sheppard gave probability projections of exclusion area beach users as evidence. He gave no actual counts of beach users as evidence (Sheppard 3-10).

21. Sheppard's projections show a maximum of 35 persons using the exclusion area state beach in its present state of development, without the additional campsites now planned for the bluffs immediately north of the exclusion area beach. With the additional campsites in place, Sheppard projected a maximum exclusion area beach use of 100 persons (Sheppard 7, 8).

22. An actual count of 78 exclusion area beach users has already been made for a recent winter day (CI-4). Beach use is expected to be 2.75 times greater in summer than winter (Tr. 245). Since the rapid population growth that will take place in the exclusion area beach's drawing area (Tr. 250) obviously did not affect the past count of 78, counts should rise in the future. Furthermore, Sheppard did not take this expected population growth into account when making his projections of beach use at the future point in time when operations of San Onofre Units 2 and 3 will commence (Tr. 249-250). Finally, the actual count of 78 persons was taken when a construction laydown that will be removed before plant operations begin occupied a large portion of the exclusion area tidal beach. Taken in the context of an actual count of 78 exclusion area beach users, the winter date of that count, the expected population growth not considered by Sheppard, and the presence of the construction laydown at the time of the count, Sheppard's projections of 35 and 100 for maximum exclusion area beach use several years from now when plant operations begin is substantially and unreasonably low. Instead, projections of maximum exclusion area beach use in the range of 300 are reasonable in light of all the relevant factors.

23. Night use of the exclusion area beach, though minimal now, could increase to almost 50 users engaged primarily in beach strolling when the campsites on the bluff immediately north of the exclusion area beach are developed (Tr. 213).

24. Surfing occurs from the water off the exclusion area beach onto the beach itself, especially on the north portion of the beach (Tr. 317).

25. The number of users of the exclusion area beach could range up to around 300 and often would exceed the actual count of 78 taken on a winter day when Units 2 and 3 begin operations.

26. The Board finds that this number of expected beach users demonstrates that Applicants' lack of control of the exclusion area tidal beach may not be de minimus.

IV. PHYSICAL AND ADMINISTRATIVE CONTROLS PROPOSED BY APPLICANTS TO DISCOURAGE TIDAL BEACH USE

27. Relative to the third issue, physical and administrative controls on the use of the tidal beach within the Applicants' exclusion area, Consolidated Intervenors submit the following proposed findings of fact and conclusions of law:

28. The Applicants plan to install an extensive system of physical barriers and administrative controls at the exclusion area beach. These are intended to ensure that "activities other than predominantly passageway transit are minimized and controlled" (Amendment No. 22 to the PSAR, Exhibit KP-1 to Testimony of Baskin, October 10, 1975, p. 1.8-2aka).

29. The physical barriers will include the presently existing eight-foot high chain link fence, topped with barbed wire, which runs along the entire .8 mile length of the 15-foot wide concrete pedestrian walkway. At the ends

of the walkway, this fence will extend all the way down to the mean high tide line. "A number of signs" indicating that access to the exclusion area is restricted to passing between the beaches to the north and south, will be posted all along the walkway, at its ends, and "throughout the beach area". (Baskin 7-8; Sears 2; Tr. 278-280).

30. As for administrative controls, the Applicants envision constant surveillance of the site beach with remotely controlled television cameras. When these cameras show "excessive numbers of people in the exclusion area...who are not in transit, but who are doing other things...[f]or example...a group of people sitting around starting to make a campfire," an announcement will be made over the recently installed public address system, which has a 460 meter range, "to effect the[ir] dispersal." If beach users have the temerity to remain, plant security guards will ask them to leave. If they still refuse to leave, the Camp Pendleton Marine Corps will be called in, pursuant to written agreements which they have already entered into with the Applicants (Baskin 9; Sears 2-3; Tr. 281-282).

31. When the routine announcements ordering people not to loiter are made over the public address system, tidal beach users will not be exempted (Tr. 291). Indeed, no instructions at all on distinguishing between exclusion area beach users and tidal beach users have been given to the plant security guards or the Marine Corpsmen (Tr. 295).

32. Neither the Applicants nor any of their witnesses have consulted with the State Lands Commission

regarding the legality of their proposed administrative controls. Mr. Baskin merely spoke to Applicants' counsel several times (Tr. 283). Mr. Sears did no more than discuss, with the State Office of Emergency Services, the legality of forcing people to move off of the tidal beach during an emergency. He admitted never having participated in "a similar discussion with anyone regarding such orders in a non-emergency" (Tr. 293).

33. Consolidated Intervenors submit that the myriad of physical barriers and administrative controls contemplated by the Applicants blatantly violate the California Constitution, which states:

"§2. Access to navigable waters

"Sec. 2. No individual, partnership, or corporation, claiming or possessing the frontage or tidal lands of a harbor, bay, inlet, estuary, or other navigable water in this State, shall be permitted to exclude the right of way to such water whenever it is required for any public purpose, nor to destroy or obstruct the free navigation of such water; and the Legislature shall enact such laws as will give the most liberal construction to this provision, so that access to the navigable waters of this State shall be always attainable for the people thereof" (California Constitution, Article XV, §2).

California courts and, impliedly, the U.S. Supreme Court have from the earliest times consistently interpreted this

provision as implying both a public trust and a public easement in the State's tidelands. Members of California's population hold these rights for purposes of commerce, fishing, navigation and recreation (People v. California Fish Company, 138 P. 79, 166 C. 576 (1913); Spalding v. U.S., 17 F.Supp. 957 (D.C. 1973) cert. denied 59 S.Ct. 147, 305 U.S. 644, 83 L.Ed. 415; Dietz v. King, 80 Cal.Rptr. 234, 275 A.C.A. 577 (1969); Marks v. Whitney, 6 Cal.3d 251, 98 Cal.Rptr. 790, 491 P.2d 374 (1971)). The Applicants' fences, signs, loudspeakers, television cameras, and security personnel all drastically impede and therefore violate the free exercise of these rights.

34. The Applicants' proposed physical and administrative controls, particularly those which operate without differentiation between tidal beach users and non-tidal beach users, violate not only the California Constitution, but several California statutes. California Public Resources Code §6301 vests in the State Lands Commission "exclusive jurisdiction over all ungranted tidelands...owned by the State," and mandates that "[t]he commission shall exclusively administer and control all such lands." Moreover, according to Pub.Res. Code §6302, the State Lands Commission "may eject from any tide...lands...any persons...trespassing...through appropriate action in the courts." An even more drastic remedy is required under Pub.Res.Code §7992:

"Intruder upon waste or ungranted lands; report of intrusion; issuance of removal order; aid in execution. If any person, under any pretense of any

claim inconsistent with the sovereignty and jurisdiction of the State, intrudes upon any of the waste or ungranted lands of the State, the district attorney of the county shall immediately report the intrusion to the Governor, who shall thereupon, by a written order, direct the sheriff of the county to remove the intruder. If resistance to the execution of the order is made or threatened, the sheriff may call to his aid the power of the county, as in cases of resistance to the writs of the people."

The Applicants are in violation of Pub.Res.Code §6301 because they are attempting to usurp the exclusive jurisdiction of the State Lands Commission, which alone has the authority to control California's tidelands. They are in violation of Pub.Res.Code §§6302 and 7992 because their administrative controls allow plant security guards and hired Marine Corpsmen to enter both the exclusion area beach and the tidal beach to roust beach users. Those plant guards and Marine Corpsmen who would go onto the tidal beach are unambiguously classified as intruders under §7992, and neither the district attorney, the Governor, nor the sheriff has any discretion in deciding whether or not to remove them. Pub.Res.Code §7992, because it is phrased in terms of "shall," is wholly non-discretionary.

V. RADIATION DOSES

35. In response to the fourth issue, the possible radiation doses which could be received by users of the reduced

exclusion area tidal beach, Consolidated Intervenor submit these proposed findings of fact and conclusions of law:

36. The thyroid doses of tidal beach users calculated by the witnesses for both Applicants and the NRC Staff severely understate the doses many people using the beach may receive. The understatement occurs because Applicants and Staff neglect important factors involving physiological characteristics, evacuation rates and dilution of radioactive materials in the plume. Consideration of these factors in dose calculations produces doses in excess of the 10 C.F.R. §100.11 dose limits.

37. Applicants and Staff witnesses neglected certain physiological characteristics, notably age and breathing rates, that are highly relevant to dose calculations. Instead, the Applicants and Staff choose as a receptor in all their calculations the standard or reference man of ICRP Publication 2 (1959). (Finston 2-3; Tr. 304, 432). This standard man is an adult, 70 kg. male engaged in light industrial activity (Tr. 304-305).

38. Physiological types other than the standard man are likely to be found in the recreational setting of the San Onofre exclusion area tidal beach in the event of a nuclear accident. The range of these types will include people engaged in strenuous exercise such as running or swimming, and children younger than the age of 18 (Finston 3; Tr. 373).

39. Breathing rates for people engaged in strenuous exercise are 5.3, 3.1, and 1.9 times greater than that of the

standard man for male adults, 10 year olds and 5 year olds, respectively. Hence, it follows that for adults who are participating in physical activity at the time of the accident, the thyroid doses will be 5.3 times greater than those calculated by Goldman for Applicants and Ferrell for the Staff (Finston 4).

40. Thyroid doses for children in most age groups at any given breathing rate are significantly higher than doses for the standard man at the same breathing rate. For example, the dose to a 10 year old is 2.4 times, and the dose to a 5 year old, 4.6 times the dose to a standard man (Finston 4).

41. Although children have lower breathing rates than does the reference man for any given level of activity, their propensity for higher doses at any given breathing rate more than offsets this effect. The result is a higher thyroid dose for children at any given level of physical activity. For example, the data for 5 and 10 year olds is:

<u>Age</u>	<u>Breathing Rate</u>	<u>Adjustment Factor For Children</u>	<u>Dose Relative To Standard Man</u>
5-year old	$6.7 \times 10^{-4} / 3.47 \times 10^{-4}$	4.6	8.8
10-year old	$11.8 \times 10^{-4} / 3.47 \times 10^{-4}$	2.4	8.2

The data show that doses expected for exercising children are higher than those calculated by Goldman and Ferrell for the average man by a factor of 8.2 to 8.8 (Finston 5).

42. Fetal thyroid dose is 5 times greater than that of the maternal thyroid (Finston 5).

43. The evacuation rates of 2.0 to 2.2 miles per hour used by Goldman and Ferrell in their dose calculations (Goldman 12; Ferrell 5) could be grossly overstated. The Staff admits that a decrease in evacuation rate will cause an inversely proportional increase in dose (Ferrell 5; Tr. 434-435). Thus, any overstatement of evacuation rate also results in an underestimation of dose for evacuating receptors.

44. Rates for the evacuation of small areas (less than one square mile) in the event of disasters other than nuclear accidents have ranged from 0.12 to 1.0 miles per hour, significantly slower than the 2.0 to 2.2 miles per hour used by Goldman and Ferrell for their calculations (Finston 6-7; Tr. 393, 398-402). In fact, evacuation rates for disasters vary inversely with distance of evacuation (Tr. 393). These slow evacuation rates for evacuation of small areas hold regardless of weather conditions or time of day. Thus, small area evacuations during rainless daylight hours proceed at the same 0.12 to 1.0 miles per hour rate as do short evacuations during rainy nights (Tr. 398-402).

45. Exclusion area tidal beach users are unlikely to receive effective directions and supervision for their evacuation from the tidal beach. Directions from plant personnel to evacuees may not be communicated effectively over a public address system. Such ineffective communication would leave exclusion area tidal beach users uncertain about which direction and route to travel that would minimize exposure to the plume, or indeed about whether to evacuate at all (Tr. 405). California Parks Department personnel

charged with such personal supervision, supervision that would provide clear directions for exclusion area tidal beach users, may not arrive at the exclusion area beach for more than an hour after a nuclear accident occurs. Except in those rare instances when the surrounding State Park is fully staffed, the only communication system available for summoning Parks personnel is calls on commercial telephones to the homes of those personnel. This ineffective means of recall will cause the lengthy delay of an hour or more (Tr. 335-336, 343). Even with full staffing of the nearby parks, immediate supervision of the exclusion area tidal beach will be minimal (Tr. 340). Evacuation rates are highly unpredictable when there is no personal supervision or only minimal personal supervision of exclusion area tidal beach users. Beach users could ignore the loudspeaker warnings, evacuating, therefore, at a rate of zero. Or they could panic, causing disorder and congestion that would slow the evacuation (Tr. 339, 346).

46. Furthermore, exclusion area tidal beach users are likely to encounter congestion and delay along their beach evacuation routes. Tidal beach users will be delayed at the north end of the exclusion area by foot and auto traffic resulting from the evacuation of the cars parked immediately north of the exclusion area to within 15 feet of the exclusion area boundary (Tr. 326, 353). Tidal beach users will be delayed to the south during higher tides by narrow passages between the water and an impassable pile of dirt and sand at one point and between the water and the bluff at another point (Tr. 350-351).

47. The surfers, swimmers and others likely to be in the water off the exclusion area tidal beach will face an additional delay of some minutes before they even reach the tidal beach to begin evacuation from it (Finston 7; Tr. 317).

48. The dilution factors calculated by Goldman and Ferrell could be significantly lower and concentration significantly higher than actual dilution and concentration at times of the year other than January and February. The tracer tests that form the basis for the dilution calculations of both Ferrell and Goldman were conducted in the months of January and February only (Goldman 301; Markee & Goll 2; Tr. 301, 427-428). Dilution and concentration are functions, in part, of windspeed. Dilution decreases and concentration increases as windspeed decreases (Tr. 302, 431). Thus, if windspeeds were lower on the average in the ten months of the year other than January and February than those measured by the tracer tests for those two months, dilution calculations also would be lower, and concentrations higher, for those ten months than the dilution and concentration for January and February. Less dilution and higher concentration in the other ten months would result in higher radiation doses to exclusion area tidal beach users in those months.

49. Variations within the ranges noted above in the physiological characteristics and evacuation rates of tidal beach users and the dilution and concentration factors from those used by Goldman and Ferrell produce thyroid doses which exceed the limits set by 100 C.F.R. §100.11. For example,

if a receptor has a breathing rate double that of the standard man used by Ferrell in his dose calculations, the 190 rem thyroid dose Ferrell finds at p. 6 of his prepared direct testimony becomes a thyroid dose of 380 rems. Similarly, if the dilution factor and evacuation rates are halved and an exercising child is the receptor, Ferrell's 15 rem thyroid dose calculated for evacuees traversing the plume becomes a 510 rem dose ($15 \text{ rems} \times 2 \times 2 \times 8.5$). Such doses clearly exceed the 300 rem limit of 100 C.F.R. §100.11.

50. The nuclear accident postulated in 10 C.F.R. §100.11 presents a substantial health and safety hazard to exclusion area tidal beach users. For example, at the dose rate calculated above for exercising children, 5% of the children are likely to develop thyroid cancer and 8% of the children are likely to develop thyroid nodules (Finston 5, 6; Tr. 391). Incidence of thyroid cancer in adults might be 0.3%, while nodules would appear in 2.5% of those exposed to the plume. Furthermore, because experiments with animals, uncontradicted by data from humans, indicate that the fetal thyroid is 18 times more sensitive to radiation exposure than is the adult thyroid, infants in utero at the time of the mother's exposure to the plume are likely to be hypothyroid at birth or shortly thereafter (Finston 6).

51. The plume decay factor is negligible for calculating comparative radiation doses to exclusion area tidal beach users crossing the plume at different evacuation or walking speeds (Tr. 437).

52. Because the exclusion area tidal beach is in the recreational setting of a state park beach, it is appropriate to consider a range of physiological characteristics, especially as to age and breathing rates, for users of this exclusion area tidal beach.

53. When a reasonable range of physiological characteristics, evacuation rates and dilution factors are considered, some exclusion area tidal beach users can be expected to receive thyroid doses in excess of the guidelines established in 10 C.F.R. §100.11 for the postulated nuclear accident contemplated therein.

54. As is true of all 10 C.F.R. Part 100, §100.3(a) is concerned with the public health and safety in normal reactor operation and in the event of an accident. Thus, the control requirement, as well as other provisions of the section, also is concerned with the public health and safety. (In the Matter of Southern California Edison Co., et al. (San Onofre Nuclear Generating Station Units 2 and 3) Docket Nos. 50-361, 50-362, Memorandum and Order, January 22, 1976 (ALAB-308)).

55. The expected thyroid doses to some users of the exclusion area tidal beach present a significant hazard to public health and safety.

VI. GENERAL CONCLUSIONS OF LAW

56. Applicants have the burden of proof in this proceeding of proving their factual claims for all four issues and on the ultimate question of whether Applicants'

lack of control of the exclusion area beach is so trifling as to be de minimus (10 C.F.R. §2.732).

57. Furthermore, exceptions to the control requirement of 10 C.F.R. §100.3(a) such as this proposed de minimus exception should not be taken lightly. (In the Matter of Southern California Edison Company, et al. (San Onofre Nuclear Generating Station Units 2 and 3) Memorandum and Order of January 22, 1976 (ALAB-308)).

58. Because of the gravity of the de minimus exception to the control requirement, and because of the large size of the exclusion area tidal beach, the large numbers in capacity crowds that can be expected to occupy that beach when Units 2 and 3 begin operation, the illegality of several of Applicants' proposed administrative controls, and the large thyroid doses some exclusion area tidal beach users will receive in the event of the nuclear accident postulated in 10 C.F.R. §100.11, Applicants have not carried their burden of proof on the ultimate question of whether their lack of control of the exclusion area tidal beach is de minimus.

Dated: June 14, 1976

Respectfully submitted,

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John R. Phillips
Carlyle W. Hall, Jr.
James Geocaris
Center for Law in the Public Interest

By: _____

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CERTIFICATE OF SERVICE

I hereby certify that copies of CONSOLIDATED INTERVENORS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW IN THE FORM OF A PROPOSED SUPPLEMENTAL INITIAL DECISION, dated June 14, 1976, in the above-captioned matter, have been served on the following by deposit in the United States mail, first class (an asterisk denotes special overnight mailing), this 14th day of June, 1976:

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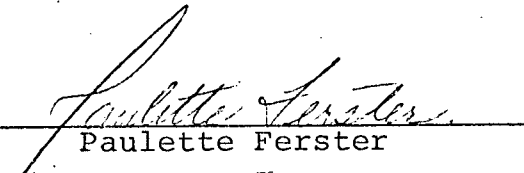
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

6/10/76

In The Matter Of)
SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
(San Onofre Nuclear Generating)
Station, Units Nos. 2 and 3))
_____)

DOCKET NOS. 50-361
AND 50-362

MOTION: MEMORANDUM OF POINTS AND
AUTHORITIES IN SUPPORT THEREOF

MOTION

TO: Atomic Safety and Licensing Board designated in the
above matter.

Applicants SOUTHERN CALIFORNIA EDISON COMPANY and SAN
DIEGO GAS & ELECTRIC COMPANY respectfully move, pursuant to
10 C.F.R. §2.718(i), that this Board exercise its discretion
to certify to the Commission for its determination, the
following question:

"Whether, on the basis of the entire record of this
proceeding, this Board may, in addition to ruling
that applicants' lack of control over the tidal beach
within their exclusion area is de minimus, rule that
applicants' lack of control over the tidal beach
within their exclusion area is entitled to exemption,

pursuant to 10 C.F.R. §50.12(a), from the requirements of the Commission's licensing regulations."

DATED: June 10, 1976.

Respectfully submitted,

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MEMORANDUM OF POINTS AND AUTHORITIES

I

10 C.F.R. § 50.12 Constitutes

A General Exemption Mechanism

10 C.F.R. §50.12 as it was first promulgated pursuant to the Atomic Energy Act of 1954, provided as follows:

"The Commission may, upon application by any interested person, grant such exemptions from the requirements of the regulations of this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest." [21 Fed. Reg. 356 (January 19, 1956)].

The section was amended in 1969 to provide, as follows:

"The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations of the part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest." [34 Fed. Reg. 19546 (December 11, 1969)] [New material emphasized].

In 1972, following the enactment of the National Environmental Policy Act of 1969 and the decision in Calvert Cliffs' Coordinating Comm. v. Atomic Energy Comm'n., 449 F. 2d 1109 (D.C. Cir. 1971), the section was further amended by designating the then current text of the section as subparagraph (a) and by adding subparagraph (b) which deals with pre-construction permit site activities.

Thus, subparagraph (a) of 10 C.F.R. §50.12 represents a general exemption mechanism, akin to those found at 10 C.F.R. §30.11(a), 10 C.F.R. §40.14(a), 70.14(a) and 10 C.F.R. §140.8, none of which are specifically concerned with or limited to pre-construction permit site activities.

II

A Specific Exemption From The Requirements Of
The Commission's Licensing Regulations Is
Appropriate In This Case

In the event the Board is disposed to rule that applicants' lack of control of the tidal beach within the exclusion area is de minimus, the Board will have determined that such lack of control will not be inimical to the common defense and security or to the health and safety of the public. Applicants' need for power [see Initial Decision ¶¶ 126-129, 156-161 RAI-73-10, 929 (October 15, 1973)], when considered in light of available alternatives and the policy of national energy self-sufficiency expressed by the Executive and the Congress [see Energy Reorganization Act of 1974 § 2 (88 Stat. 1233)], warrants a determination that the granting of a specific exemption is in the public interest. Moreover, the broad authority of the Commission to determine the conditions upon which licenses may be granted [Atomic Energy Act of 1954 (68 Stat. 919), as amended, §103(a)] constitutes ample legal authority for the granting of such an exemption.

* * * * *

CERTIFICATE OF SERVICE

I hereby certify that on the 10th day of June, 1976 copies of the foregoing MOTION: MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT THEREOF were served upon each of the following by deposit in the United States mail, postage prepaid, addressed as follows:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

6/10/76

In The Matter Of)
SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
(San Onofre Nuclear Generating)
Station, Units 2 and 3))
_____)

DOCKET NOS. 50-361
AND 50-362

APPLICANTS' PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW IN THE FORM OF A PROPOSED
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June 10, 1976

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

In The Matter Of)
)
SOUTHERN CALIFORNIA EDISON COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
)
(San Onofre Nuclear Generating)
Station, Units Nos. 2 and 3))
)

DOCKET NOS. 50-361
AND 50-362

Applicants' Proposed Findings Of Fact And
Conclusions of Law In The Form Of A Proposed
Supplemental Initial Decision

1. This proceeding involves the application of Southern California Edison Company ["SCE"] and San Diego Gas & Electric Company ["SDG&E"] [collectively "applicants"] for authority to construct two nuclear generating facilities to be designated Units Nos. 2 and 3 of the San Onofre Nuclear Generating Station.
2. Evidentiary hearings on the application were held during the months of January, March and May of 1973, and on October 15, 1973 this Board issued an Initial Decision in the matter authorizing the issuance of construction permits subject to specified conditions. [See LBP-73-36, RAI-73-10, 929 (October 15, 1973)].

3. Review of the Initial Decision by the Atomic Safety and Licensing Appeal Board resulted ultimately in an order remanding the case to this Board for a determination of whether applicants' lack of control over the tidal beach within the exclusion area is de minimus. [See ALAB-171, RAI-74-1, 37 (January 21, 1974); ALAB-180, RAI-74-2, 188 (February 28, 1974); ALAB-189, RAI-74-4, 410 (April 5, 1974); ALAB-199, RAI-74-4, 478 (April 29, 1974); ALAB-212, RAI-74-6, 986 (June 18, 1974); ALAB-248, RAI-74-12, 957 (December 24, 1974); ALAB-268, NRCI-75/4R, 383 (April 25, 1975); and ALAB-308, NRCI-76/1, 20 (January 22, 1976)].
4. A prehearing conference was held on March 9, 1976 to consider the manner in which the remand of the Appeal Board should be effected. Agreement was achieved among the parties as to the manner of proceeding and substantial agreement was achieved among the parties as to the issues to be litigated. [Rep. Tr. pp. 5-9 (1976)].
5. By reason of the inability of the parties to agree upon the precise wording of the issues to be litigated, such issues were established by the Board by Order dated April 9, 1976, as follows:

"1. The anticipated size and characteristics from time to time of the tidal beach within the reduced exclusion area delineated by applicants in Amendment No. 22 to the Preliminary Safety Analysis Report (hereinafter 'applicants' exclusion area').

- "2. The anticipated public use from time to time of the tidal beach within applicants' exclusion area.
 - "3. The physical features and administrative controls proposed by applicants to minimize public use of the tidal beach within applicants' exclusion area.
 - "4. The anticipated amount of radiation exposure that might be received by a user of the tidal beach within applicants' exclusion area during occupancy and subsequent evacuation of the beach in the event of an accident (a postulated fission product release as provided in 10 CFR §100.11)".
6. Hearing on the remand commenced on May 19, 1976.
 7. Applicants' witness, Mr. Omar J. Lillevang, a civil engineer specializing in coastal processes, harbors, cooling water systems, breakwaters, beach preservation, wave phenomena, and the like, presented expert testimony on Issue No. 1 as set forth in paragraph 5 above. Mr. Lillevang testified that it was his expert opinion that within two to three years after removal of the temporary seawall enclosing the sand fill in front of Units Nos. 2 and 3 the alignment of the shoreline at the San Onofre site will be substantially as it was prior to the construction of a temporary seawall and placement of excavated sand on the beach in 1964, that the shoreline will lie somewhat seaward but generally parallel with its pre-1964 location by the end of that period, and that the shoreline will continue to

experience erosive action by the sea thereafter. Within about four to five years, pre-fill beach configurations will substantially be achieved at the northern site boundary and the remainder of the beach area will return to its pre-fill configurations over an additional period of perhaps five years.

[Testimony of Lillevang pp. 8-9 following Rep. Tr. p. 85 (1976)].

8. All of the beach below the contour of mean high tide is actively washed by waves most of the time every day. Data compiled from observations on March 15, 1976 of wave wash on the beach adjoining the southern site boundary indicated that the width of the beach between the contour of mean high tide and the still water level of lower low tide predicted for that date was 35 feet; that because waves were running up the beach face the width of beach below the contour of mean high tide not intermittently washed by waves during the lowest tide stage on that date was reduced to 30 feet; that the average width of beach below the contour of mean high tide during the period that wave run-up did not reach as high as the contour of mean high tide was 18.5 feet; and that when wave run-up did not reach as high as the contour of mean high tide, the beach below the contour of mean high tide nevertheless remained wet. [Testimony of Lillevang pp. 9-10 following Rep. Tr. p. 85 (1976)].

9. If waves of height and period as observed on March 15, 1976 were superimposed on the predicted tide curves for the entire month of March 1976, wave wash stopping short of the contour of mean high tide would occur only an estimated average of 3-1/2 hours per low tide and the average width of beach below the contour of mean high tide that would remain unwashed by waves, but would be mostly wet nevertheless, during such periods would be less than twenty feet. [Testimony of Lillevang pp. 10-11 following Rep. Tr. 85 (1976)].
10. Estimates of unwashed beach widths below the contour of mean high tide were developed from observations by the witness of a time lapse film of the beach at San Onofre [Applicants' Exhibit OJL-4; Rep. Tr. pp. 72-78, 81-84, 87-93, 94 (1976); Testimony of Lillevang pp. 4, 9-11, following Rep. Tr. 85 (1976)]. It was the opinion of the witness that tide and wave run-up are affected primarily by beach slope, that the beach slope depicted in the film, and upon which his judgments were based, is typical of beach slopes which will be found within applicants' exclusion area following completion of construction and dissipation of the fill, and that his conclusions with respect to beach area seaward of the contour of mean high tide from time to time during the tidal cycle would be applicable to the beach within

applicants' exclusion area following completion of construction and dissipation of the fill.

[Testimony of Lillevang pp. 10-11 following Rep. Tr. p. 85 (1976)].

11. On examination by the Board Mr. Lillevang expressed the opinion that beach widths in front of the San Onofre seawalls would be less than those previously tabulated by applicants [Applicants' Exhibit KPB-1] and by the staff witness [Testimony of Hawkins p. 6 following Rep. Tr. p. 155 (1976)] because of the interaction of waves on that abrupt barrier, and opined that following dissipation of the fills and return of the beach to essentially a natural condition the tidal beach would be no wider and more likely narrower than that depicted on the film. [Rep. Tr. pp. 127-129 (1976)].
12. Staff witness, Mr. Edward F. Hawkins, a hydraulic engineer, also presented expert testimony on Issue No. 1. He testified that a period of one to two years following completion of construction would be a reasonable estimate of the time required for the beach in front of Units 2 and 3 to return to essentially its former configuration, assuming normal sea and wave conditions, and that complete removal of the fill

material would probably take four to five years.

[Testimony of Hawkins, p. 5 following Rep. Tr. p. 155 (1976)].

13. Mr. Hawkins tabulated average minimum and maximum beach widths ranging from 50 feet to 220 feet. He stated that the time the tidal beaches would be less than the average minimum or more than the average maximum would be about an hour a day. [Testimony of Hawkins pp. 6-7 following Rep. Tr. p. 155 (1976)].
14. The tabulation did not account for wave run-up, which the witness indicated, in the case of normal wave action, could reduce the unwetted portion of the tidal beach by easily one-half. [Rep. Tr. p. 175 (1976)].
15. Mr. Hawkins indicated that his tabulations represented estimated averages across the entire exclusion area and that he would expect tidal beach widths in front of the San Onofre seawalls to be somewhat narrower than the averages he had expressed. [Rep. Tr. pp. 166-67 (1976)].
16. Consolidated Intervenors did not controvert the expert testimony presented by applicants and staff.
17. Staff estimated usable average tidal beach widths within applicants' exclusion area ranging from on the order of 25 feet (winter minimum) to on the order of 110 feet

(summer maximum) when wave run-up is taken into consideration. The applicants' estimates, although somewhat smaller than those of the staff, are consistent. [Rep. Tr. pp. 122-23 (1976)]. Such beach widths will occur only during the lower stages of the tidal cycle with the tidal beach being inundated during the higher stages of the tidal cycles. [Testimony of Lillevang pp. 10-11 following Rep. Tr. p. 85 (1976); Testimony of Hawkins p. 7 following Rep. Tr. p. 155 (1976)].

18. Applicants' witness, Dr. Donald F. Sinn, an expert in the subject areas of recreation and park planning and management, testified concerning Issue No. 2 as set forth in paragraph 5 above. Dr. Sinn testified that distances from parking and beach access points in areas of the San Onofre State Beach adjacent to applicants' exclusion area are such that there will be a low level of activity on beaches within applicants' exclusion area as compared to other beach areas in the San Onofre State Beach. [Testimony of Sinn pp. 7-8 following Rep. Tr. p. 180 (1976)].
19. Dr. Sinn further opined that restrictions on access to the dry sand beach within applicants' exclusion area will result in a lower level of activity in wet sand

and water areas there than in other beach areas in the vicinity of the nuclear station. This is because beach users generally select a dry sand berm rather than a wet sand area for the location of a beach stay, and tend to engage in water and wet sand recreational activities in close proximity to the location chosen for their beach stay. [Testimony of Sinn, pp. 7, 8-9 following Rep. Tr. p. 180 (1976)].

20. Dr. Sinn testified that the beach areas within the reduced exclusion area did not offer any particular attraction for recreational activity as compared to other beaches in the immediate vicinity. He testified that restrictions on access to the dry sand beach within applicants' exclusion area will limit, if not completely eliminate, general beach use; that conditions conducive to good surfing do not exist within applicants' exclusion area whereas outstanding surfing conditions are found to the north beginning in Parcel 2 of the San Onofre State Beach and extending to San Mateo Point; that there is no indication that fishing is any better in front of the station than elsewhere along the beach; that few, if any, clam beds have historically existed within applicants' exclusion area whereas good clamming areas are found to the north, especially in the vicinity of San Mateo Point; and that beach conditions as they are

projected to exist following completion of construction are not particularly attractive for swimming.

[Testimony of Sinn pp. 7, 9-10 following Rep. Tr. p. 180 (1976)].

21. Dr. Sinn did not project the number of persons who might occupy applicants' exclusion area; however, he reviewed the projections developed by Wilbur Smith and Associates and was of the opinion that the assumptions used would result in high estimates of the number of persons who might occupy the area. The witness was of the opinion that fences and signs would deter beach users, and would lead to fewer persons within applicants' exclusion area than statistically projected by Wilbur Smith and Associates. [Testimony of Sinn, pp. 10-13 following Rep. Tr. p. 180 (1976)].

22. Applicants' witness, Mr. William V. Sheppard, a principal in the firm of Wilbur Smith and Associates, Incorporated, and an expert in traffic planning and analysis, with experience in the projection of the number of persons in a public area such as a park or a beach, also testified with respect to Issue No. 2 as set forth in paragraph 5 above. Mr. Sheppard testified that the number of persons who might be expected to

occupy the beach within applicants' exclusion area had been projected statistically. The projections took into account the nature, size, location and capacity of facilities planned in the development of San Onofre State Beach. The total number of persons who could be accommodated by all park facilities developed to their planned ultimate capacity were assumed to be present within the park and to occupy the beach at one time. The distribution of such persons was then modeled based upon the Poisson probability distribution function in order to predict the number of persons on the beach within applicants' exclusion area from capacity use of facilities in the vicinity. [Testimony of Sheppard, pp. 3-7 following Rep. Tr. p. 231 (1976)]. The applicants' witness testified that information developed by the Department of Parks and Recreation concerning the current use of the San Onofre State Beach had been evaluated in order to predict maximum and average use of facilities in the vicinity of the reduced exclusion area. [Testimony of Sheppard pp. 9-10, following Rep. Tr. p. 231 (1976)].

23. The capacity, maximum and average use predicted within the exclusion area, assuming camping is not developed within Parcel 2 of the San Onofre State Beach, were 35, 31 and 7 persons, respectively. The capacity

maximum and average use predicted within the exclusion area, assuming camping is developed within Parcel 2 of the San Onofre State Beach were 100, 89 and 17 persons, respectively. [Testimony of Sheppard pp. 7-8, 10 following Rep. Tr. p. 231 (1976); Applicants' Exhibit WVS-2]. Had the witness considered revisions to park development plans delineated in the testimony of Mr. Marvin H. Hampton [Rep. Tr. pp. 55-62 (1976)] his estimates would have been smaller. [Rep. Tr. pp. 232-33, 241-42 (1976)].

24. Mr. Sheppard's projections assumed persons occupying the beach would seek a maximum density of 1 person per 400 square feet rather than the density of 1 person per 100 square feet conventionally used by the California Department of Parks and Recreation for beach planning purposes. Had he used a density of 1 person per 100 square feet he would not have statistically projected any persons to occupy the beach within applicants' exclusion area regardless of whether camping facilities were developed within Parcel 2 of the San Onofre State Beach. [Testimony of Sheppard pp. 8-9 following Rep. Tr. p. 231 (1976)].

25. Mr. Sheppard testified that a walkway speed of two miles per hour is a reasonable value for use in evacuation dose calculations. [Rep. Tr. p. 233-34 (1976)].
26. Staff witness, Mr. John Sears, an expert in emergency planning and industrial security, testified on Issue No. 2 as set forth in paragraph 5 above. He testified that use of the tidal beach within applicants' exclusion area would be primarily as a beach passageway between Parcel 2 and Parcel 3 of the San Onofre State Beach. Mr. Sears testified that the area directly in front of the plant was least desirable from an aesthetic point of view as well as for swimming, surfing or sunbathing compared to adjacent beach areas. [Testimony of Sears pp. 2-3 following Rep. Tr. p. 263 (1976)].
27. Applicants' witness, Mr. Kenneth P. Baskin, Manager of Generation Engineering of Southern California Edison Company, testified concerning Issue No. 3 as set forth in paragraph 5 above. This issue was discussed in detail in Amendment No. 22 to the Preliminary Safety Analysis Report which was prepared under Mr. Baskin's general supervision and was received in evidence as Applicants' Exhibit KPB-1.

28. Mr. Baskin testified that an Amendment to Grant of Easement had been entered into by the applicants and the United States which will reduce the size of the exclusion area and more explicitly delineates the authority of the applicants to determine all activities within the area. [Testimony of Baskin pp. 4-5 following Rep. Tr. 275 (1976); see Applicants' Exhibit KPB-1 pp. 1.8-2bzzk-bzzr and Figure 14.5.1-3].
29. Mr. Baskin testified that both physical features and administrative controls are planned which will improve applicants' ability to exercise control over the landward portions of the exclusion area. The planned physical features include a walkway adjacent to the plant seawalls to facilitate transit between open beach areas upcoast and downcoast of applicants' exclusion area; fencing along the seaward side of the improved walkway and along the northern and southern ends of the area between the walkway and the contour of mean high tide; and signs throughout the beach areas of applicants' exclusion area to minimize recreational activities therein. [Testimony of Baskin pp. 6-8 following Rep. Tr. p. 275 (1976); Applicants' Exhibit KPB-1 pp. 1.8-2bzn-bzo and Figure 1.8-C]. The planned administrative controls include provisions for remote surveillance of the beaches within applicants' exclusion area by tele-

vision monitors; observations of such beach areas from the plant during periodic patrols; announcements over a public address system; and dispatching of plant security personnel and/or enlisting the assistance of United States Marine Corps personnel, as necessary, to effect dispersal of persons within the reduced exclusion area should the use of such areas be observed to not be substantially transient in character. [Testimony of Baskin pp. 8-9 following Rep. Tr. p. 275 (1976); Applicants' Exhibit KPB-1 pp. 1.8-2bzp-bzq]. Mr. Baskin testified that in the event of an emergency the public address system would be utilized to provide warnings and evacuation instructions and that, in addition, the units will have an emergency siren which will be automatically sounded coincident with initiation of safety injection. [Testimony of Baskin p. 10 following Rep. Tr. p. 275 (1976)].

30. Staff witness, Mr. John Sears, expressed the belief that the physical features and administrative controls planned by applicants would minimize public use of the tidal beach within applicants' exclusion area for purposes other than as a passageway and would also serve to facilitate evacuation in the event of an emergency. [Testimony of Sears pp. 2-3 following Rep. Tr. p. 289 (1976)].

31. No controverting testimony was presented by Consolidated Intervenor with respect to the third issue.
32. Evidence on the anticipated amount of radiation exposure that might be received by a user of the tidal beach within applicants' exclusion area during occupancy and subsequent evacuation of the beach in the event of an accident was presented by all parties. Applicants and staff were, in addition, responsive to the Board's request for exposures at various meteorological probabilities as a function of location on the beach, the effect of the bluff on potential doses, and variation of dose with distance from the plume center line. None of the parties presented evidence on whole-body dose because of its unimportance relative to the thyroid dose. [Testimony of Goldman pp. 12-14 following Rep. Tr. p. 300 (1976); Testimony of Ferrell p. 2 following Rep. Tr. p. 419 (1976)].
33. Applicants and staff each presented evidence treating all of the factors involved in such exposure assessments, including 1) source term, 2) atmospheric dispersion (including probability distributions), 3) duration of exposure, and 4) physiological parameters. Consolidated Intervenor presented evidence in respect only to the last two factors. Differences in exposures calculated

by the parties were identified in Applicants' Exhibit MIG-2. Except as estimated by the Consolidated Intervenor, these exposures fall well below the reference dose values of 10 C.F.R. 100.11.

34. With respect to the source terms, applicants and staff both followed methods given in Regulatory Guide 1.4 and differences in the source terms used by each of these parties are delineated in Applicants' Exhibit MIG-2. The Consolidated Intervenor did not present unique testimony on source term estimates.

35. A series of tracer tests were performed on behalf of Applicants at the San Onofre site in January and February of this year for the purpose of determining effective atmospheric dilution factors when winds flow toward the ocean. These tests, all of which were conducted under stable atmospheric conditions with main beach tower wind speeds ranging from 2.9 mph (1.3 m/s) to 10.4 mph (4.7 m/s) [Applicants' Exhibit MIG-1] demonstrated significantly greater atmospheric dilution to occur than would be calculated using the models of Regulatory Guide 1.4 [Testimony of Goldman pp. 3-4 following Rep. Tr. p. 300 (1976)] due primarily to large surface roughness effects of the bluff and building structures. The staff has reviewed these results and agreed that the standard regulatory model restrictions need not be

applied in this case. [Testimony of Markee and Goll p. 3 following Rep. Tr. p. 414 (1976)]. Further, the limited period of tracer tests does not affect their adequacy for their intended purpose. [Rep. Tr. pp. 435-36 (1976)].

36. The probability distributions of meteorological conditions in terms of dilution potential were calculated on different assumptions by the staff and applicants, although both used the same base data year [Applicants' Exhibit MIG-2]. Staff assumptions combined all offshore directions and all hours of the day and night [Testimony of Markee and Goll p. 4 following Rep. Tr. p. 414 (1976)]. Applicants, in attempting to respond to the Board's request for information as a function of location along the beach, treated probability distributions for each direction sector, and analyzed both daytime hours only (when beach use is potentially maximal) and total hours [Testimony of Goldman pp. 7-8b following Rep. Tr. p. 300 (1976)]. Applicants also presented analyses based on all directions for daytime and total hours. The dilution factors (X/Q) calculated on these different bases by applicants and staff differ by less than a factor of 2, with daytime only values being somewhat less than those based on all hours. [Applicants' Exhibit MIG-2]. The

probabilities for individual beach direction sectors are much less than those obtained when all directions are combined.

37. With respect to the duration of exposure, both the staff and applicants calculated exposures during evacuation across the plume following a potential fission product release. The speed of crossing assumed by the applicants was two miles per hour [Testimony of Goldman p. 12 following Rep. Tr. p. 300 (1976)], and 2.2 miles per hour by the staff [Testimony of Ferrell p. 5 following Rep. Tr. p. 419 (1976)]. The validity of this speed for walking during evacuation was supported by Sheppard [Rep. Tr. pp. 233-234 (1976)]; Sears [Testimony of Sears p. 4 following Rep. Tr. p. 289 (1976)] and Muspratt [Rep. Tr. p. 331 (1976)].

38. Testimony was provided by Consolidated Intervenors that average evacuation speeds would be less than one-half mile per hour, based on the average speed of evacuation in major disasters as presented in WASH-1400 [Testimony of Finston pp. 6-7 following Rep. Tr. p. 360 (1976)]. However, none of the data upon which that figure is based are derived from evacuation by foot [Rep. Tr. pp. 394-395 (1976)]. Further, for a healthy person able to walk at a rate of four miles per hour, a duration of exposure

of about 1/8 hour might be involved in leaving the tidal beach zone [Rep. Tr. p. 403 (1976)]. The Board finds the walking speeds (and hence exposure duration during evacuation) selected by applicants and staff to be reasonably conservative.

39. The area of greatest disagreement between applicants and staff on the one side and Consolidated Intervenors on the other related to the appropriateness of the "standard man" physiological parameters as used by both applicants and staff for beach occupants. Consolidated Intervenors presented factors, which combined higher breathing rates associated with exercise and thyroid masses for different age groups [Testimony of Finston pp. 3-5 following Rep. Tr. p. 360 (1976)], to be applied to the "standard man" exposures. The breathing rates were selected by the Consolidated Intervenors' witness from ICRP 23 [Applicants' Exhibit MIG-4] without recognizing their inapplicability to a strenuous exercise regime. [Rep. Tr. 367-372 (1976); Applicants' Exhibit MIG-3].

40. Subsequent examination and testimony indicated that the breathing rates appropriate to strenuous exercise would be about one-third of the values selected by Consolidated Intervenors. [Rep. Tr. pp. 368-372, 457-458 (1976)]. The degree of exercise would also be related to the

duration of exposure; more rapid breathing would also likely be accompanied by more rapid evacuation. The Board cannot accept a contention that tidal beach users would continue their exercises in place unabated despite a warning to evacuate.

41. Evacuation doses calculated both by the applicants and by the staff approximated 15 rem to a standard adult: for the applicants this represented a first percentile situation, for the staff, the fifth percentile. Applicants' estimates of exposures during more rapid evacuation for individuals of different ages were all lower than the 15 rem reference dose by factors of between 4-5 [Rep. Tr. pp. 460-461 (1976)]; similar values were presented by staff [Rep. Tr. p. 513 (1976)]. Both applicants and staff calculated doses to individuals remaining on the plume center line despite warnings and announcements following an accident. Both applicant and staff values indicate that doses would be lower than the guide limit of 300 rem set forth in 10 C.F.R. Part 100 for such individuals. [Testimony of Goldman p. 14a following Rep. Tr. p. 300 (1976); Testimony of Ferrell p. 2 following Rep. Tr. p. 419 (1976)].

42. On the bases presented above, the Board finds that there is reasonable assurance that the exposure of members of

the public of any age who may be using the tidal beach area within applicants' reduced exclusion radius at the time of an accident and throughout that subsequent evacuation to the reduced exclusion area boundary would be expected to be significantly less than the guide limits set forth in 10 C.F.R. §100.11. Further, the Board finds that less conservative or more realistic estimates of evacuation doses would be even lower than those presented by both applicant and staff.

43. We further find on the basis of the uncontroverted testimony of the applicants and the regulatory staff, that the extent of the tidal beach within applicants' exclusion area useable as a passageway or for other recreational purposes will vary from being nonexistent to average widths ranging from about 25 feet to about 100 feet for short periods of time during the lower stages of the cycles of the tides. Inasmuch as the sea and the beaches with which it interacts are dynamic the precise width of the tidal beach from time to time not being washed by waves cannot be predicted and will vary with tide, wave and beach conditions. However, to the extent long term variations can be anticipated it is expected that beaches in general and the beaches in front of the San Onofre seawalls in particular will tend to become narrower. [Rep. Tr. pp. 129, 167; Testimony of Hawkins p. 4 following Rep. Tr. 155 (1976)].

44. The tidal beach within applicants' exclusion area is of such a character and is so located with respect to trails and other facilities of the San Onofre State Beach that only small numbers of persons would be expected to occupy it from time to time. Statistical projections based upon assumptions which could be characterized as being unduly conservative predicted capacity use ranging from 35 to 100 persons and average use ranging from 7 to 17 persons. [Testimony of Sheppard pp. 7-8, 10 following Rep. Tr. 231 (1976); Applicants' Exhibit WVS-1]. Moreover, the tidal beach within applicants' exclusion area is and will continue to be less attractive than adjacent areas of the San Onofre State Beach and, because of its tidal character, can be expected to be used primarily as a passageway when being used at all.

45. The physical features and administrative controls proposed by applicants will further diminish the attractiveness of the tidal beach within applicants' exclusion area for recreational purposes, will facilitate passageway use of the area, will facilitate evacuation of the area in the event of an emergency, and will enhance the ability of applicants to control activities within the exclusion area.

46. The anticipated amount of radiation exposure which might be received by persons evacuating the tidal beach within applicants' exclusion area in the event of an accident will be sufficiently low as to not constitute a significant hazard to the public health and safety.

47. Considering the entire record developed upon remand it is our finding and conclusion that the tidal beach within applicants' exclusion area will be susceptible at most of a limited, primarily passageway, use which, because of its character, the relatively small numbers of persons expected to occupy the area, and the small radiation doses which would be received by persons occupying and evacuating the area subsequent to an accident, will pose no significant hazards to the public health and safety. It is our further finding and conclusion that applicants' lack of control of the tidal beach within applicants' exclusion area is de minimus.

48. Nothing developed in the course of the remand has caused us to depart from any of the conclusions expressed in paragraphs 175 through 177 of our Initial Decision in this matter and we hereby reaffirm such conclusions.

CERTIFICATE OF SERVICE

I hereby certify that on the 10th day of June, 1976 copies of the foregoing APPLICANTS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW IN THE FORM OF A PROPOSED SUPPLEMENTAL INITIAL DECISION were served upon each of the following by deposit in the United States mail, postage prepaid, addressed as follows:

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