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June 26, 1986

Director, Office of Nuclear Reactor Regulation
Attention: G. E. Lear, Director
PWR Project Directorate No. 1
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket No. 50-206
Control Room HVAC Design
San Onofre Nuclear Generating Station
Unit 1

During a June 24, 1986 meeting with the NRC staff, additional information regarding the control room HVAC at San Onofre Unit 1 (SONGS-1) was requested. This information was to be supplied in a letter on June 27, 1986. However, in order to better facilitate the staff's return to service review of the subject system, the early transmittal of the following information is provided as an enclosure to this letter:

1. A listing of the repairs to date on the control room HVAC system, the TSC HVAC system and the control room pressure boundary.

2. A listing of the most recent control room/TSC HVAC testing results.

3. A post-accident control room operator thyroid dose assessment, considering a 250 cfm unfiltered in-leakage value and both, with and without, KI pill and respirator credit.

A003
1/1

4. A position regarding the proper source term for use in the dose calculations.

If you have any questions, please let me know.

Very truly yours,

M O Medford

Enclosure

cc: J. B. Martin, NRC Region V, Regional Administrator
R. Dudley, NRC/NRR San Onofre Unit 1 Project Manager
F. R. Huey, NRC Senior Resident Inspector, Units 1, 2 and 3

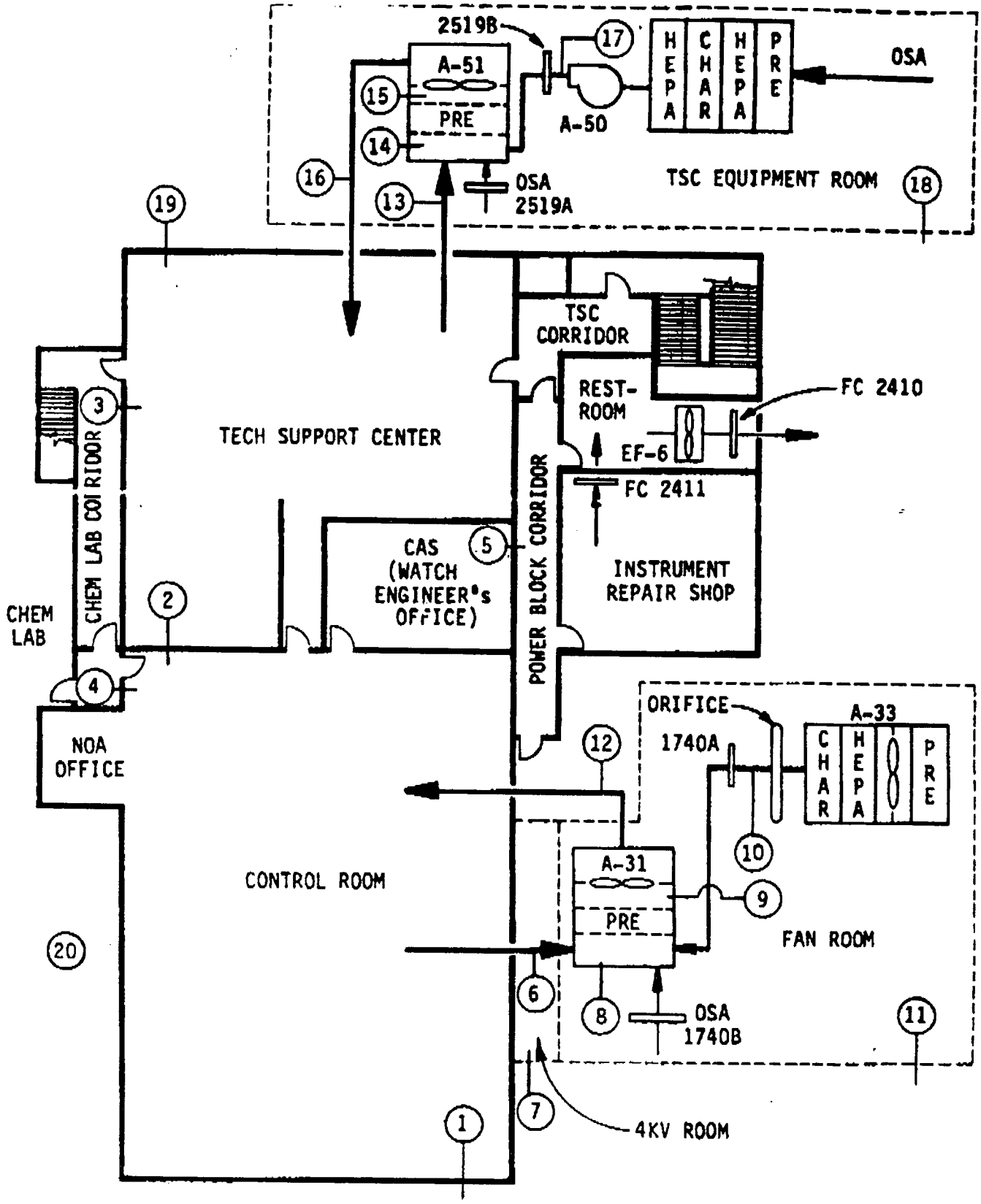
UNIT 1 CONTROL ROOM SEALING AND MODIFICATIONS

1. Blocked off control room air to Inst. Repair Lab (FCN and PFC required).
2. Blocked off the exhaust fan (EF-9) discharge for the kitchen (FCN required).
3. Repaired loose patch in the return duct in the 4KV room.
4. Repaired the hole in the side of A31 where the cooling coil lines penetrate.
5. Cleaned the lower drain pan and coated it in A31 (NCR-S01-P-5821).
6. Replaced upper drain pan in A31 (NCR S01-P-5821).
7. Sealed the gap in the lower fan housing in A31 (1'x 84") (NCR S01-P-5853).
8. Caulked duct seams with "Lock Bond" duct sealer and taped seams with "ARABOL" adhesive #60-89-05 and canvas tape. This was done on supply ducting outside the Control Room and on all return ducting including the A31 fan housing (FCN required).
9. Replaced the flex joint (asbestos) on the A31 return and supply with non-asbestos material (NCR S01-P-5823).
10. Installed access panel in A31 suction plenum to allow flex joint replacement and a suction point for the test fan for the inleakage test (FCN required).
11. Blanked the abandoned TSC return duct where it attaches to the A31 suction plenum (blank was installed on the inside).
12. Sealed all seams in 12"x12" supply duct that penetrates the TSC/CR boundary then returns to NOA's office (Duct sealer and "ARABOL" used).
13. Brush type door seals added to the two control room boundary doors (FCN required).
14. Balanced 4KV Room HVAC flow to produce a positive pressure in the 4KV room of approximately 0.1" water gage with respect to outside atmosphere.
15. Installed gaskets on the doors of the CR to TSC "pass through" device.
16. Verified sealed/sealed all conduit penetrations through the boundary walls.
17. Bisco sealed the two cable trays that penetrate the CR/TSC wall.
18. Installed a loop seal with fill connection on the A31 drain (FCN required).

Unit 1 Control Room Sealing and Modifications
Page two

19. Installed a fill connection on the loop seal drain for A51.
20. Replaced the damper motor on 2519A (A51 OSA) and cleaned and adjusted the damper.
21. Installed a seal around shaft on A50.
22. Installed additional test ports on the A50 inlet duct, A50 supply duct and A31 return duct to support flow measurements.
23. Inspected and internally sealed all wall outlets, switches, ect. that are attached to or flush mounted to a boundary wall.
24. Non-concrete or non-block boundary walls. These walls include NOA's office, TSC/CR wall by viewing windows and north and east walls of shift supervisor's office. These walls are a plaster/wallboard combination sandwiched around 1/2" plate steel. The wallboard/plaster generally only extends slightly above the false ceiling. The following methods were utilized:
    a. Steel plates had the seams and bolts caulked.
    b. Gaps between the wallboard/plaster and plate above the false ceiling were sealed with plaster and then caulked after plaster dried.
    c. Holes in the plaster repaired.
    d. Plaster to floor interface was sealed by removing baseboard, caulking and reinstalling the baseboard.
    e. Wherever physically possible, both sides of the boundary wall were sealed.
25. Added an opening in the TSC wall to vent excess TSC air out of the TSC. Installation includes the required fire damper (FCN's and PFC required).

ATTACHMENT B



PRESSURE DATA POINTS

PRESSURE - INCHES OF WATER

SYSTEM LINE-UP		CONTROL ROOM TO ATMOS	CONTROL ROOM TO TSC	CONTROL ROOM TO CABLE SPREADING ROOM CORRIDOR	CONTROL ROOM TO POWER BLOCK CORRIDOR	4KV ROOM TO ATMOS	CONTROL RM. TO 4KV	TSC TO ATM.	A31 RETURN DUCT TO FAN PM AFTER PREFILTER	A31 RETURN DUCT TO AK ROOM		
ON	OFF											
A-81, A-31 4KV ROOM ADMIN BLDG FAN ROOM	A-80 A-32 EF-8 EF-6	.41	.085	.40	.41	.10	.31	.32	NEG .235	0		
ON	OFF											
A-31, A-32 FAN ROOM 4KV ROOM ADMIN BLDG	A-80 A-81 EF-8 EF-6	.16	.16	.25	.23	.10	.06	NEG .01	NEG .39	NEG .145		
ON	OFF											
A-31, A-32 4KV ROOM ADMIN BLDG	A-81 A-80 EF-8 EF-6 FAN ROOM	.20	.175	.20	.20	.10	.10	.005	NEG .48	NEG .165		
ON	OFF											
A-81 FAN ROOM A-31 A-32 ADMIN BLDG 4KV ROOM	A-80 EF-8 EF-6	.36	.08	.40	.40	.12	.24	.28	NEG .29	.01		
ON	OFF											
A-81 A-31 A-32 ADMIN BLDG 4KV ROOM	A-80 EF-8 EF-6 FAN ROOM	.39	.08	.40	.39	.12	.27	.31	NEG .29	.02		
ON	OFF											
A-81 A-80 A-31 A-32 4KV ROOM ADMIN BLDG FAN ROOM	EF-8 EF-6	.24	.12	.27	.26	.10	.14	.12	NEG .32	NEG .075		
ON	OFF											
A-81 A-80 A-31 A-32 4KV ROOM ADMIN BLDG	EF-8 EF-6 FAN ROOM	.33	.115	.32	.33	.10	.23	.20	NEG .32	NEG .02		
		(1)	(2)	(4)	(5)	(7)		(19)	(9)	(6)		

NOTES:

(1) 4KV ROOM HVAC; A-101
(2) ADMIN. BLDG. VENILATION; A-32
(3) FAN ROOM FANS; EF-8a, EF-8b, EF-8c, EF8d
(4) TSC EXHAUST FAN; EF-9
(5) CONTROL AREA MEN's ROOM EXHAUST; EF-6.

DATA TAKEN 6/25 - 6/26

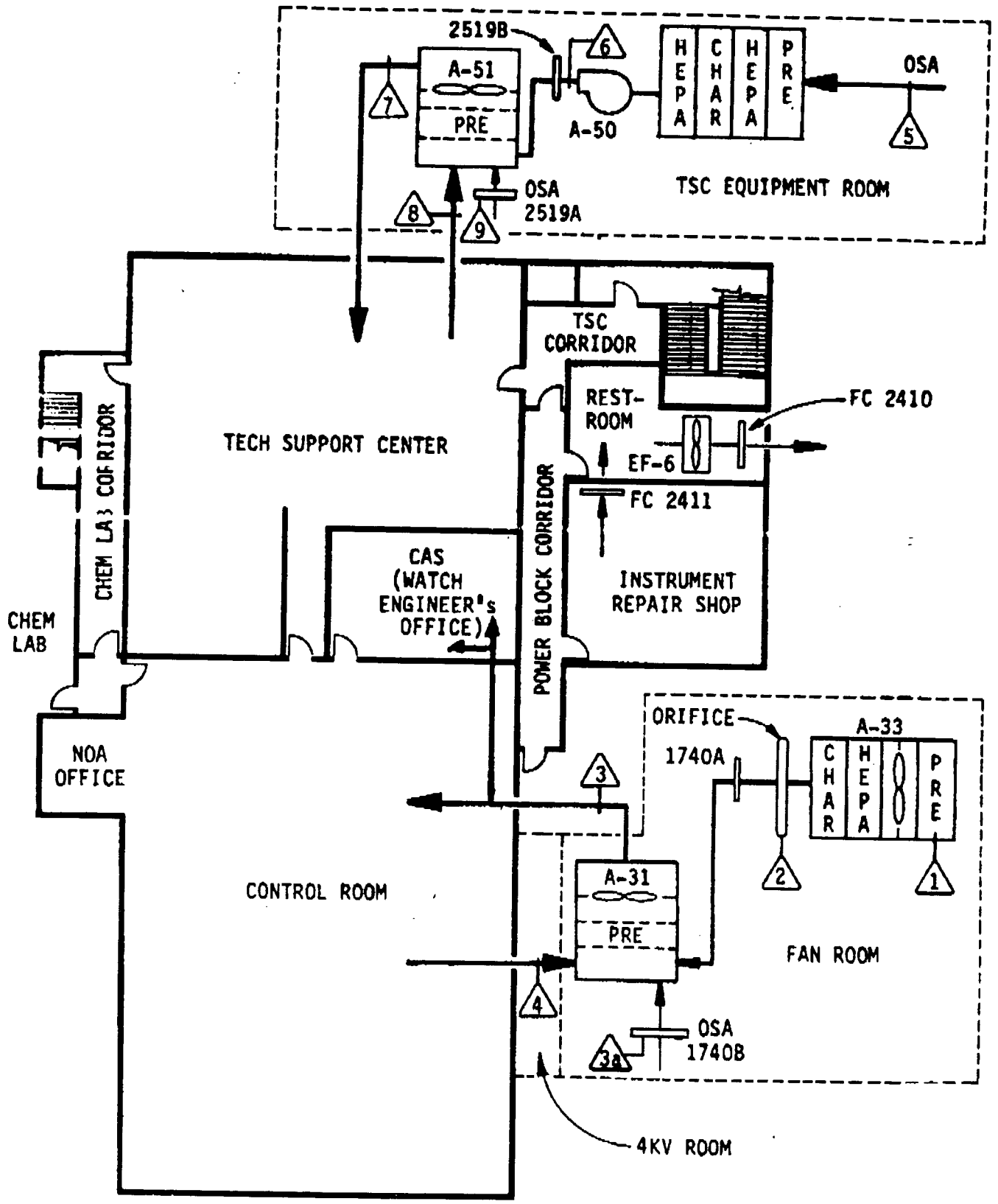
SYSTEM LINE-UP		PRESSURE - INCHES OF WATER											
		CONTROL ROOM TO ATMOS	CONTROL ROOM TO TSC	CONTROL ROOM TO CABLE SPREAD ROOM CORRIDOR	CONTROL ROOM TO POWER BLOCK CORRIDOR	4KV ROOM TO ATMOS	CONTROL RM. TO 4KV	TSC TO ATM.	A31 RETURN DUCT TO FAN RM AFTER PREFILTER		A31 RETURN DUCT TO 4KV ROOM		
ON	OFF												
A-31, A-32 4KV ROOM ADMIN BLDG FAN ROOM	A-30 A-33 EF-8 EF-6												
ON	OFF												
A-31, A-32 FAN ROOM 4KV ROOM ADMIN BLDG	A-30 A-33 EF-8 EF-6	.20	.21	.32	.32	.085	.115	—	NEG .39		NEG .12		
ON	OFF												
A-31, A-33 4KV ROOM ADMIN BLDG	A-32 A-30 EF-8 EF-6 FAN ROOM A												
ON	OFF												
A-31 FAN ROOM A-32 A-33 ADMIN BLDG 4KV ROOM	A-30 EF-8 EF-6	.34	.10	.32	.32	.08	.26	—	NEG .34		.01		
ON	OFF												
A-31 A-32 A-33 ADMIN BLDG 4KV ROOM	A-30 EF-8 EF-6 FAN ROOM												
ON	OFF												
A-31 A-30 A-32 A-33 4KV ROOM ADMIN BLDG FAN ROOM	EF-8 EF-6	.27	.15	.39	.38	.085	.185	—	NEG .28		NEG .05		
ON	OFF												
A-31 A-30 A-32 A-33 4KV ROOM ADMIN BLDG	EF-8 EF-6 FAN ROOM												
		(1)	(2)	(4)	(5)	(7)		(19)	(9)		(6)		

NOTES:

(1) 4KV ROOM HVAC; A-101
(2) ADMIN. BLDG. VENILATION: A-32
(3) FAN ROOM FANS; EF-8a, EF-8b, EF-8c, EF8d
(4) TSC EXHAUST FAN; EF-9
(5) CONTROL AREA MEN's ROOM EXHAUST; EF-6.

DATA TAKEN 6/23/86

ATTACHMENT C



FLOW DATA POINTS

SYSTEM LINE-UP		FLOW RATES - CFM												
		A-33 OSA (1)	A-33 SUPPLY (2)	A-31 SUPPLY (3)	A-31 OSA (3a)	A-31 RETURN (4)	A-50 OSA (5)	A-50 SUPPLY (6)	A-31 SUPPLY (7)	A-31 RETURN (8)	A-51 OSA (9)	A33 SUPPLY TRAVERSE (1)		A31 SUPPLY (2)	
ON	OFF														
A-51, A-31 4KV ROOM ADMIN BLDG FAN ROOM	A-50 A-33 EF-8 EF-6														
ON	OFF														
A-31, A-33 FAN ROOM 4KV ROOM ADMIN BLDG	A-50 A-51 EF-8 EF-6	750	975	9831	10	7890	0	—	140	429	325	1845		8944	
ON	OFF														
A-31, A-33 4KV ROOM ADMIN BLDG	A-51 A-50 EF-8 EF-6 FAN ROOM														
ON	OFF														
A-51 FAN ROOM A-31 A-33 ADMIN BLDG 4KV ROOM	A-50 EF-8 EF-6	720	950	9701	10	7770	< 10	—	5164	2108	2600	1752		9320	
ON	OFF														
A-51 A-31 A-33 ADMIN BLDG 4KV ROOM	A-50 EF-8 EF-6 FAN ROOM														
ON	OFF														
A-51 A-50 A-31 A-33 4KV ROOM ADMIN BLDG FAN ROOM	EF-8 EF-6	815	960		30	8532	1508	—	*3904	*4248		1656		9555	
ON	OFF														
A-51 A-50 A-31 A-33 4KV ROOM ADMIN BLDG FAN ROOM	EF-8 EF-6 FAN ROOM														

DATA TAKEN 6/25 - 6/26

* UNDER REVIEW

NOTES:

(1) 4KV ROOM HVAC; A-101
(2) ADMIN. BLDG. VENILATION: A-32
(3) FAN ROOM FANS; EF-8a, EF-8b, EF-8c, EF8d
(4) TSC EXHAUST FAN; EF-9
(5) CONTROL AREA MEN's ROOM EXHAUST; EF-6.

(1) Traverse taken downstream orifice plate.

(2) Supply Flow calculated by adding flows of traverse inside CR and the two watc engineer register flows.

Table I provides the results of additional dose calculations requested by the NRC. Allowances were made in these calculations for reduced organic iodine efficiency in accordance with NRC meeting agreements. In addition, an alternate operator shift arrangement of 12 hours was used. Dose values were calculated with the use of iodine blocking pills and respirators, and assumed two values of unfiltered in-leakage.

TABLE I

Control Room Operator Thyroid Dose

Using 65% Organic Efficiency Iodine

Dose Calculation Variables	Case I	Case II
Filter Flow rate	1100 cfm	1100 cfm
Unfiltered in-leakage	***300 cfm	900 cfm
Filter Efficiencies	95%/65/99	95/65/99
Shift Durations	12-hour shifts	12-hour shifts
Other Provisions	* With KI pills & Respirators	* With KI pills & Respirators

OPERATOR THYROID DOSE (REM)

Crew No.	Shift Assignments		
1	1, 4 Only	= 18	= 29
2	2, 5, 8 Only	= 19	= 29
3	3, 6, 9 Only	= 12	= 18
4	** 7	= 13	= 20
5	** 11.....	= 9	= 15
6	** 22.....	= 6	= 10

* Operator dose would increase by a factor of 21 without the use of KI pills and respirators.

** Regular shift schedule - 7 days on, 2 days off for accident 30-day duration.

*** This was originally stated to be 250 cfm. 300 cfm was used for leak rate test margin.

SOURCE TERM

The source term currently used by the NRC staff to calculate the post-accident operator doses is based upon a 14.5 to 30 day purge for hydrogen control. This was based upon analysis done in 1977 to support the issuance of Amendment No. 25 to Provisional Operating License No. DPR-13. Since that time, in response to NUREG-0578 requirements, during the refueling/steam generator repair outage that ended on June 17, 1981, SCE installed hydrogen recombiners in the SONGS-1 containment for post-accident hydrogen control. Therefore, the containment purge assumption is no longer appropriate. The following iodine concentrations should be used in any dose calculations:

ISOTOPE	0-8 HR	8-24 HR	24-96 HR	96-720 HR
I-131	3.55E-11	2.04E-11	1.10E-11	1.15E-12
I-132	2.10E-11	5.28E-13	3.90E-16	-0-
I-133	5.95E-11	2.39E-11	4.36E-12	1.53E-14
I-134	1.73E-11	6.36E-15	-0-	-0-
I-135	4.58E-11	8.17E-12	2.64E-13	-0-