

*Southern California Edison Company*

**SCE**

SAN ONOFRE NUCLEAR GENERATING STATION

P.O. BOX 128

SAN CLEMENTE, CALIFORNIA 92672

**IE HQ FILE COPY**

October 19, 1983

U. S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region V  
1450 Maria Lane, Suite 210  
Walnut Creek, California 94596-5368

Attention: Mr. J. B. Martin, Regional Administrator

Dear Sir:

Subject: Docket No. 50-362  
Radiation Monitor Recording System  
San Onofre Nuclear Generating Station, Unit 3

On September 30, 1983, Mr. G. P. Yuhas of your staff, during his exit interview, expressed concern regarding the operability of the San Onofre Unit 3 radiation monitor recorders during the September 29 Unusual Event. As discussed with Mr. Yuhas on October 11, 1983, we have examined this situation and have concluded that sufficient recorders were operable to assure appropriate historical data was available to accurately assess the magnitude of a release of radioactivity had one occurred.

Our conclusions are based upon a review of the data transcripts and operational records for the event. Specifically, we have reviewed the potential release paths and have confirmed that either primary or backup monitors and recorders were operable or that a method existed for manually observing monitor response. In our analysis, we reviewed the four release pathways for a potential release: the plant vent stack; the condenser air ejector; the main steam line; and the purge stack. The summary of our evaluation is as follows:

- The plant vent stack is monitored by Monitors 2/3-RE-7808, 2-RE-7865 and 3-RE-7865. During the event these monitors and their associated recorders were operable.

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- The condenser air ejector is monitored by Monitor 3-RE-7870. During this event, the monitor was operable. The recorders for this monitor were partially operable, in that the high and low range recorders, which completely overlap the inoperable mid-range recorder, were operable and could provide continuous recording from  $1E-7$  to  $1E+5$  microcuries per cc of Xe-133.
- The main steam lines were monitored by Monitors 3-RE-7874A, 3-RE-7874B, 3-RE-7875A, and 3-RE-7875B. During the event, these monitors and their associated recorders were operable.
- The containment purge stack is monitored by Monitor 3-RE-7804. The containment atmosphere is monitored by radiation monitors 3-RE-7804 and 3-RE-7807. Monitors 3-RE-7804 and 3-RE-7807 were continuously operable during the event. However, the recorder for Monitor 3-RE-7804 was inoperable from 1330 until 1740 on September 29. Since a containment purge was not in progress and the purge stack is isolated by a containment isolation signal, the purge stack represents a release path only if a containment purge was initiated during or following the Unusual Event. Had such purging been determined to be necessary or desirable, provisions for manually recording of 3-RE-7804 indication could have been established.

While these monitors and recorders provide sufficient release information, we are, nonetheless, concerned about the inoperability of these recorders and the two recorders for the containment area direct radiation monitors 3-RE-7820, 3-RE-7845, 3-RE-7848, 3-RE-7856-1, and 3-RE-7857-2 which were also inoperable. As corrective action, we have assigned to the Instrumentation and Control (I&C) Department, the responsibility for assuring proper maintenance of the recorder inking mechanisms. In addition, the Onsite Review Committee (OSRC) is monitoring the operation, availability and maintenance of the radiation monitoring system, as an ongoing monthly agenda item. We believe these actions underscore our commitment to improve reliability and operation of these systems.

Enclosed is our analysis addressing Mr. Yuhas' specific concerns. If you require any additional information, please so advise.

Sincerely,



J. G. HAYNES  
STATION MANAGER

Enclosure

cc: A. E. Chaffee (USNRC Resident Inspector, Units 1, 2 and 3)  
J. P. Stewart (USNRC Resident Inspector, Units 2 and 3)

## ENCLOSURE

### Radiation Monitoring Historical Data Records Availability for the Unusual Event on September 29-30, 1983, at the San Onofre Nuclear Generating Station, Unit 3

At 0930 on September 29, 1983, an Unusual Event was declared at San Onofre Unit 3 due to a primary coolant system leak in excess of 1 gallon per minute. The event was terminated at 0820 on September 30, 1983. Shortly after declaration of the event, NRC Inspector Greg Yuhas visited the Units 2 and 3 Control Room to observe the response of various process and area radiation monitors. Mr. Yuhas was concerned that insufficient historical data was available to accurately assess the magnitude of a release of radioactive material into the environment had one occurred.

The following is an itemization of and response to Mr. Yuhas' observations:

#### 1. OBSERVATION

Recorder 3-RJR-7833-1, associated with the containment airborne Monitor 3-RE-7804-1, appeared to be advancing and inking improperly.

#### RESPONSE

Analysis of the chart recording confirms that from 0930 to 1330 on September 29, the recorder was not inking properly, but all data was still available from observation of the numerical imprints left in the chart paper. From 1330 to 1740 on September 29, some data was lost due to poor inking and improper paper advancement. At 1740, the inepad was replaced and the recorder was restored to proper operating condition. Good data was obtained for the remainder of the event.

#### 2. OBSERVATION

The blue pen (mid-range activity) of recorder 3-RR-7873-1 was recording erratically. This recorder is a three pen recorder associated with the low, mid and high range activity channels of 3-RE-7870-1, the condenser air ejector wide range gas monitor.

### RESPONSE

The blue pen of recorder 3-RR-7873-1 was operating improperly, but was not tagged out of service. A Work Order has been initiated to investigate and repair this recorder. The low and high range activity pens were operating properly, as was recorder 3-RR-7872-1, which is associated with the effluent channel of 3-RE-7870-1. All four monitor channels of 3-RE-7870-1 (low, mid, high and effluent) were operating properly. Due to the overlap of the low and high range channels, the mid range recorder is not required to obtain continuous coverage over the operating range of the monitor.

### 3. OBSERVATION

Recorder 3-RR-7820-1, associated with the in-containment high range monitor 3-RE-7820-1, was out of service.

### RESPONSE

This recorder was tagged out of service on September 28, 1983. A Work Order was initiated and in planning at the time of the event.

### 4. OBSERVATION

Recorder 2/3-RJR-7832, associated with the area radiation monitoring system, was operating improperly with only two points being recorded.

### RESPONSE

This recorder was tagged out of service on September 27, 1983. A Work Order was initiated and in planning at the time of the event.

### 5. OBSERVATION

Condenser air ejector gas monitor 3RE-7818, Channels A (low range) and B (high range) were both out of service.

### RESPONSE

3-RE-7818 was out of service, since July 15, 1983, for repairs and recalibration. Backup monitor 3-RE-7870-1 was operable during the event.

### 6. OBSERVATION

The Unit 2 plant vent stack wide range gas monitor 2-RE-7865-1 low range activity channel and the Unit 3 plant vent stack wide range gas monitor 3-RE-7865-1 low range activity channel did not correlate well; at one time, a factor of 4 difference between the two channels was observed.

## RESPONSE

The microprocessor-based wide range gas monitors maintain their own history files for each channel (low, mid and high range activity and effluent). The time spans covered for the two monitors overlapped between 1250 on September 29 and 1530 on September 29. A graphical representation of the data for the low range channels indicates that they do indeed correlate well. This data is presented in Attachments 1 and 2. The greatest discrepancy between the two channels, for the overlapping time period, occurred at 1450 on September 29. 2-RE-7865-1 recorded an activity of  $6.97 \text{ E-7}$  microcuries/cc, versus  $9.81 \text{ E-7}$  microcuries/cc for 3-RE-7865-1. The ratio of these two activities is 1.4.

During the event, it is believed that differences noted in the instantaneous meter readings of these monitors was due to "noise" or "spikes" in the data. This is supported by the time average recordings, discussed above, which correlate well. It should be noted that the manufacturer, GA Technologies, has issued Field Change Order FCO-040 to install noise suppression networks on the wide range gas monitors. Installation of FCO-040 will reduce noise emission from check-source and flow control valve relay actuation. DCP's 1074N and 3-1074N have been issued to install these networks. Installation is scheduled in concurrence with the 18-month calibrations on these monitors.

## 7. OBSERVATION

Recorder 2-RR-7867-1, associated with the effluent channel on 2-RE-7865-1, did not appear to be responding to changes in low range activity as shown on recorder 2-RR-7868-1.

## RESPONSE

Investigation of 2-RR-7867-1 revealed that the chart paper was advancing at 12CM/SEC, which was six times faster than the desired speed of 2CM/SEC. Analysis of the chart recording revealed that the recorder was actually functioning properly but, due to the rapid advance rate, small changes in effluent were not readily apparent to an observer because they were "stretched out." The recorder has been restored to the proper speed of 2CM/SEC.

Additionally, historical data for the 24-hour period ending at 1500 on September 29 was obtained from the internal history files. Data for both the low range activity channel and the effluent channel was obtained. This data for hourly averages, as well as the data for 10-minute averages, in graphical form shows a direct correlation between activity and effluent release. This data is presented in Attachment 3.

## 8. OBSERVATION

Data concerning the radiation monitors of interest during the event could not be obtained from either the Health Physics Computer System (HPCS) or the Unit 3 Critical Functions Monitoring System (CFMS).

### RESPONSE

Data from the Unit 3 radiation monitors was not automatically input to the HPCS during the event. The Computer Group was aware of the problem prior to the event and were in the process of troubleshooting to identify the problem. However, data was available for the Unit 2 and common radiation monitors which have automatic inputs to the HPCS.

The HPCS does function in the manual mode whereby data from the monitors can be manually entered into the system. Early in the event grab samples of both the steam generator secondary side water, and containment atmosphere confirmed that no RCS leakage was effecting these areas. Therefore, no HPCS use was necessary.

The Unit 3 CFMS had gone down on the graveyard shift on the morning of September 29. It was returned to service at approximately 1320 on September 29, 1983, and functioned properly for the remainder of the event.

## 9. GENERAL

Upon termination of the Unusual Event at 0820 on September 30, 1983, all chart recordings and historical data files were retrieved for inspection. Table 1 identifies those monitors which would provide the most useful data for release assessment. All available historical records were retrieved for those monitors listed in Table 1. Figures 1 through 3 provide schematic representation of several monitors and illustrate their relationship to one another. These figures are provided for clarification purposes.

Table 2 provides a listing of the historical data retrieval capabilities and operability status for each of the monitors listed in Table 1. Additionally, the availability of the historical records for the duration of the event for each monitor is coded on Table 2, as explained in the footnotes.

Chart recordings covering the duration of the event for each monitor identified in Table 2 were retrieved and inspected to assess the validity of the data contained therein. Historical data was retrieved from each of the computers (HPCS, CFMS, and the Plant Computer), as applicable according to Table 2, for each of the monitors listed. For each computer, historical data was retrieved at one hour intervals for the duration of the event. Dependent upon the computer, different averaging intervals are maintained in the historical files. For example, the HPCS can provide historical data based upon 1-minute, 15-minute or 1-hour averages of the input data. The objective of the historical data retrieval was not to obtain all possible data for analysis purposes, but to verify the data retrieval capabilities for each of the monitors listed. Therefore, only hourly averages were retrieved. This data will be retained in Station Engineering files. Chart recordings will be retained in CDM as historical records.

TABLE 1 - MONITORS OF INTEREST DURING THE UNUSUAL EVENT

2/3RE-7808A - Plant Vent Stack Airborne - Iodine  
2/3RE-7808B - Plant Vent Stack Airborne - Particulate  
2/3RE-7808C - Plant Vent Stack Airborne - Gaseous  
2RE-7865-1 - Plant Vent Stack/Purge Stack Wide Range Gas Monitor  
3RE-7804A - Containment Airborne - Iodine  
3RE-7804B - Containment Airborne - Particulate  
3RE-7804C - Containment Airborne - Gaseous  
3RE-7807A - Containment Airborne - Iodine  
3RE-7807B - Containment Airborne - Particulate  
3RE-7807C - Containment Airborne - Gaseous  
3RE-7818A - Condenser Air Ejector Gas - Low Range  
3RE-7818B - Condenser Air Ejector Gas - High Range  
3RE-7820-1 - In-Containment High Range Monitor  
3RE-7820-2 - In-Containment High Range Monitor  
3RE-7845 - Containment Access Hatch Area Monitor  
3RE-7848 - Containment Area Monitor  
3RE-7856-1 - Containment Area Monitor, Safety-Related  
3RE-7857-2 - Containment Area Monitor, Safety-Related  
3RE-7865-1 - Plant Vent Stack/Purge Stack Wide Range Gas Monitor  
3RE-7870-1 - Condenser Air Ejector Wide Range Gas Monitor  
3RE-7874A - Main Steam Line Monitor - Low Range  
3RE-7874B - Main Steam Line Monitor - Low Range  
3RE-7875A - Main Steam Line Monitor - High Range  
3RE-7875B - Main Steam Line Monitor - High Range



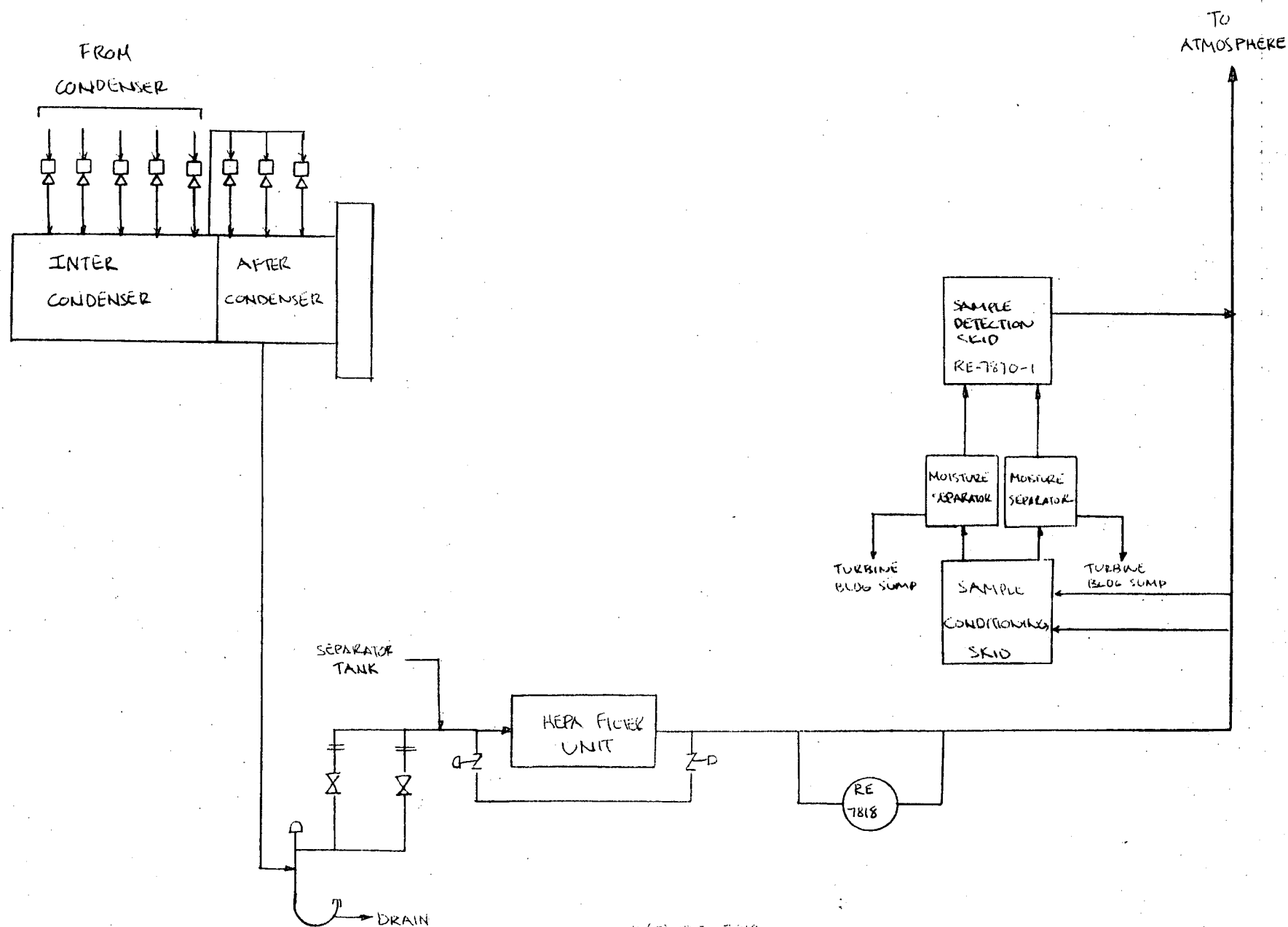
MONITOR	STATUS	RECORDER		HEALTH PHYSICS COMPUTER (1)				UNIT 3 CRITICAL FUNCTIONS MONITOR (2)				PLANT COMPUTER (3)			
		NUMBER	STATUS	REALTIME	STATUS	HISTORICAL	STATUS	REALTIME	STATUS	HISTORICAL	STATUS	REALTIME	STATUS	HOURLY LOG	STATUS
2/3-7808A	OP	2/3RJR-7830	OP	NO	--	NO	--	YES	(4)	YES	(4)	YES	OP	YES	OP
B	OP	"	OP	NO	--	NO	--	NO	---	NO	---	YES	OP	YES	OP
C	OP	"	OP	YES	OP	YES	OP	NO	---	NO	---	YES	OP	YES	OP
2-7865 LOW	OP	2RR-7868-1	OP	NO	--	NO	--	NO (6)	---	NO (6)	---	NO	--	NO	--
MID	OP	"	OP	YES	OP	YES	OP	NO (6)	---	NO (6)	---	NO	--	NO	--
HIGH	OP	"	OP	YES	OP	YES	OP	NO (6)	---	NO (6)	---	NO	--	NO	--
EFFL	OP	2RR-7867-1	OP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7804A	OP	3RJR-7833-1	(5)	NO	--	NO	--	NO	---	NO	---	YES	OP	YES	OP
B	OP	"	(5)	NO	--	NO	--	NO	---	NO	---	YES	OP	YES	OP
C	OP	"	(5)	YES	INOP	YES	INOP	YES	(4)	YES	(4)	YES	OP	YES	OP
3-7807A	OP	NONE	---	NO	--	NO	--	NO	---	NO	---	YES	OP	NO	--
B	OP	NONE	---	NO	--	NO	--	NO	---	NO	---	YES	OP	NO	--
C	OP	NONE	---	NO	--	NO	--	NO	---	NO	---	YES	OP	NO	--
3-7818A	INOP	3RJR-7831	INOP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
B	INOP	"	INOP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7820-1	OP	3RR-7820-1	INOP	YES	INOP	YES	INOP	YES	(4)	NO	---	NO	--	NO	--
-2	OP	NONE	---	YES	INOP	YES	INOP	YES	(4)	NO	---	NO	--	NO	--
3-7845	OP	2/3RJR-7832	INOP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7848	OP	2/3RJR-7832	INOP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7856-1	OP	2/3RJR-7832	INOP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7857-2	OP	2/3RJR-7832	INOP	NO	--	NO	--	YES	(4)	YES	(4)	NO	--	NO	--
3-7865 LOW	OP	3RR-7868-1	OP	NO	--	NO	--	YES	(4)	NO	---	NO	--	NO	--
MID	OP	"	OP	YES	INOP	YES	INOP	YES	(4)	NO	---	NO	--	NO	--
HIGH	OP	"	OP	YES	INOP	YES	INOP	YES	(4)	NO	---	NO	--	NO	--
EFFL	OP	3RR-7867-1	OP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7870 LOW	OP	3RR-7873-1	OP	NO	--	NO	--	YES	(4)	NO	---	NO	--	NO	--
MID	OP	"	INOP	YES	INOP	YES	INOP	YES	(4)	NO	---	NO	--	NO	--
HIGH	OP	"	OP	YES	INOP	YES	INOP	YES	(4)	NO	---	NO	--	NO	--
EFFL	OP	3RR-7872-1	OP	NO	--	NO	--	NO	---	NO	---	NO	--	NO	--
3-7874A	OP	3RR-7874-1	OP	YES	INOP	YES	INOP	NO	---	NO	---	NO	--	NO	--
B	OP	"	OP	YES	INOP	YES	INOP	NO	---	NO	---	NO	--	NO	--
3-7875A	OP	3RR-7875-1	OP	YES	INOP	YES	INOP	NO	---	NO	---	NO	--	NO	--
B	OP	"	OP	YES	INOP	YES	INOP	NO	---	NO	---	NO	--	NO	--

- NOTES: (1) 15 minute average and 1 hour average history available.  
(2) Historical files with user-specified interval available.  
(3) No history files, but hard-copy hourly logs are retained.  
(4) Data available from 1320 September 29 to termination of event.  
(5) Data not available from 1330 to 1740 on September 29.  
(6) Data available on Unit 2 CFMS.

# LEGEND

"OP" : OPERABLE  
"INOP" : INOPERABLE OR NOT AVAILABLE  
"--" : NOT APPLICABLE

TABLE 2



2(3) RE-7818  
2(3) RE-7870-1

FIGURE 1



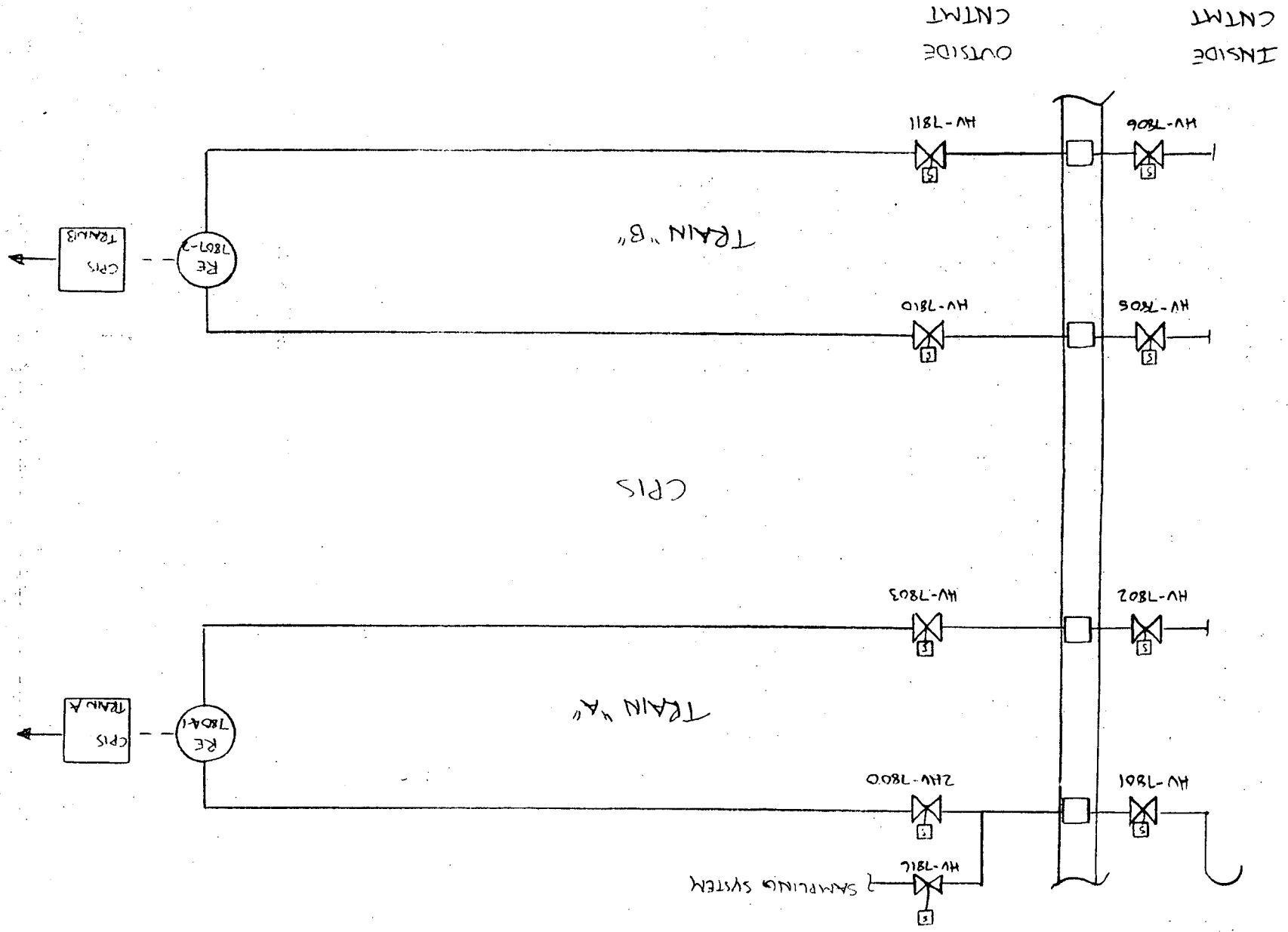


FIGURE 3

2(3)RE - 7804-1  
2(3)RE - 7807-2

## ATTACHMENT 1

TIME	2RI-7867-1		3RI-7867-1	
1140	5.55 E-7	2.10 E1	-	-
1150	5.81 E-7	2.20 E1	-	-
1200	6.43 E-7	2.40 E1	-	-
1210	6.15 E-7	2.36 E1	-	-
1220	6.15 E-7	2.01 E1	-	-
1230	5.30 E-7	1.74 E1	-	-
1240	4.53 E-7	1.55 E1	-	-
1250	4.13 E-7	1.59 E1	5.43 E-7	2.33 E1
1300	4.26 E-7	1.93 E1	5.29 E-7	2.27 E1
1310	5.21 E-7	2.37 E1	5.59 E-7	2.40 E1
1320	6.42 E-7	2.61 E1	5.88 E-7	2.51 E1
1330	6.98 E-7	2.46 E1	5.99 E-7	2.56 E1
1340	6.54 E-7	2.30 E1	6.25 E-7	2.68 E1
1350	6.08 E-7	1.91 E1	5.51 E-7	2.35 E1
1400	5.01 E-7	1.58 E1	4.49 E-7	1.91 E1
1410	4.23 E-7	1.67 E1	3.89 E-7	1.67 E1
1420	4.48 E-7	1.97 E1	4.09 E-7	1.74 E1
1430	5.37 E-7	2.06 E1	4.71 E-7	2.01 E1
1440	5.57 E-7	2.62 E1	6.64 E-7	2.83 E1
1450	6.97 E-7	2.18 E1	9.81 E-7	4.23 E1
1500	5.80 E-7	2.02 E1	6.92 E-7	2.98 E1
1510	5.35 E-7	1.80 E1	5.70 E-7	2.46 E1
1520	4.81 E-7	1.68 E1	5.16 E-7	2.23 E1
1530	4.48 E-7	1.73 E1	4.70 E-7	2.05 E1
1540	-	-	4.38 E-7	1.91 E1
1550	-	-	4.59 E-7	2.02 E1
1600	-	-	4.20 E-7	1.84 E1
1610	-	-	6.05 E-7	2.66 E1
1620	-	-	7.01 E-7	3.07 E1
1630	-	-	5.72 E-7	2.50 E1
1640	-	-	5.47 E-7	2.38 E1
HHMM	μCi/cc	μCi/sec	μCi/cc	μCi/sec

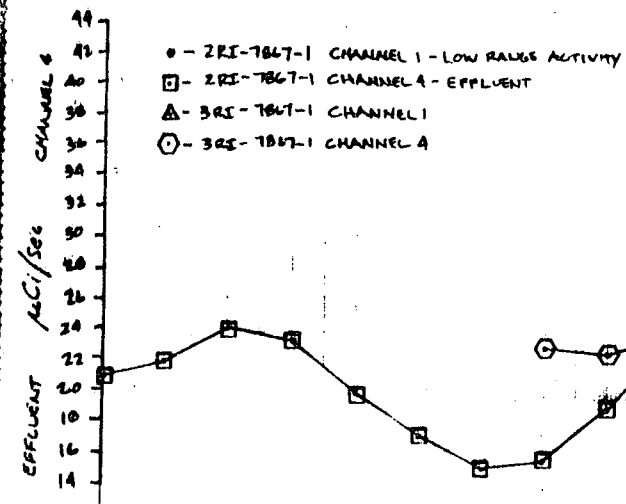
CHAN. 1

CHAN. 4

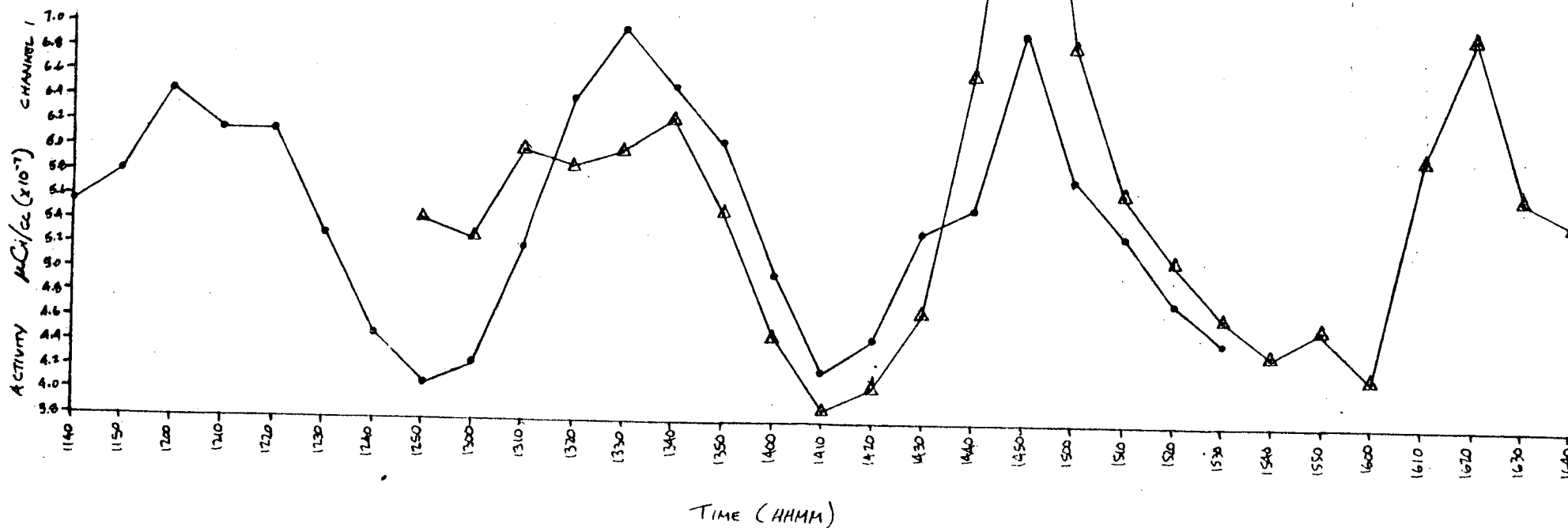
CHAN. 1

CHAN. 4

SAN GONFRE UNITS 2 & 3  
 PLANT VENT STACK/PURGE STACK  
 WIDE RANGE GAS MONITOR  
 HISTORY FILES - 10 MIN AVERAGES  
 SEPT. 29, 1983  
 LOW RANGE CHANNEL (CHAN. 1)  
 EFFLUENT CHANNEL (CHAN. 4)

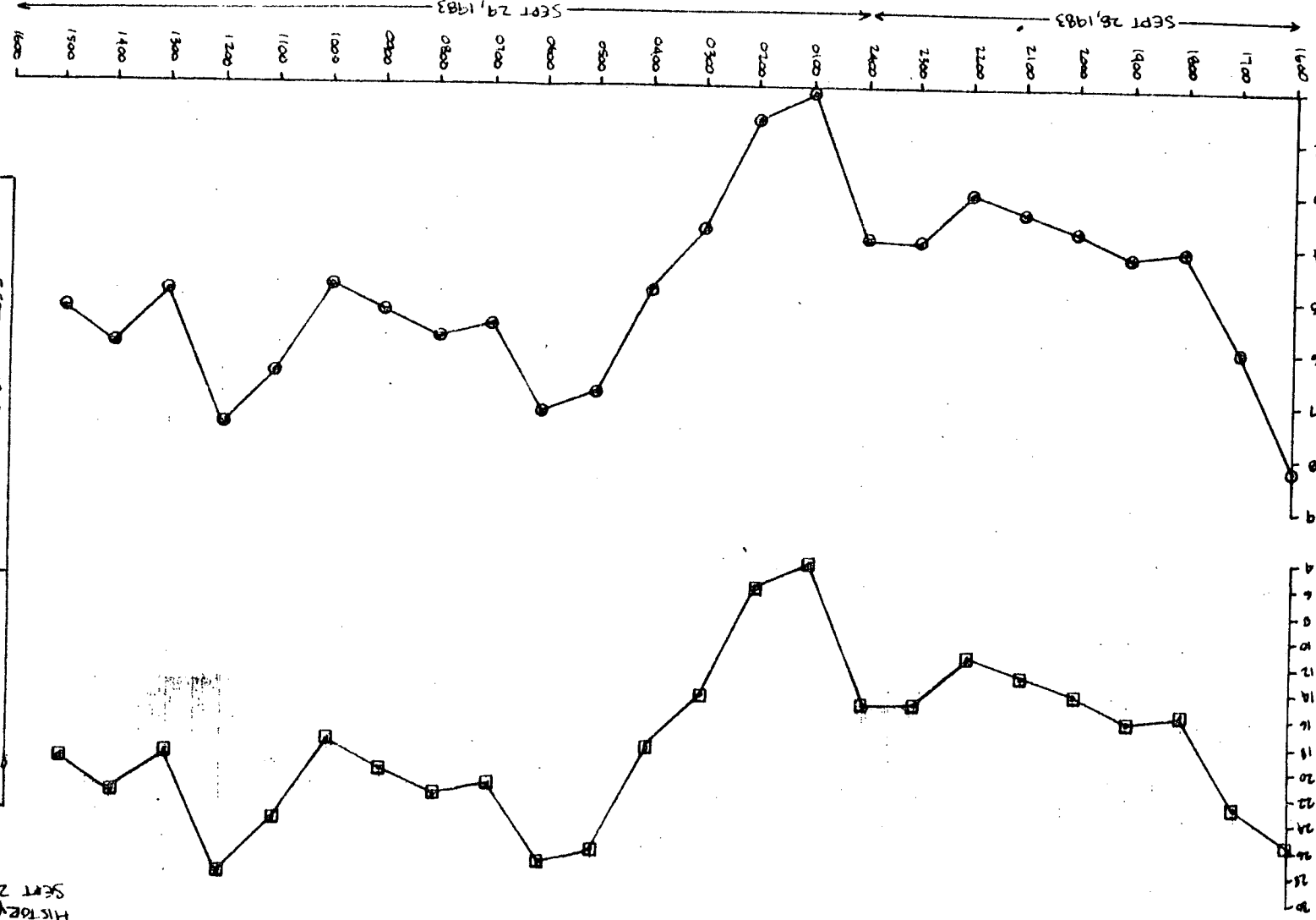


ATTACHMENT 2  
 SONGS 203 PLANT VENT STACK/PURGE STACK  
 WIDE RANGE GAS MONITOR HISTORY FILES  
 SEPT 29, 1983 - 10 MINUTE AVERAGES



ACTIVITY  $\mu\text{Ci}/\text{cc}$  ( $\times 10^{-3}$ ) CHANNEL 1

EFFLUENT  $\mu\text{Ci}/\text{sec}$  CHANNEL 4



0-2 RT-1867-1 CHANNEL 1 - LOW RANGE ACTIVITY  
1-2 RT-1867-1 CHANNEL 4 - EFFLUENT

SEPT 29, 1983		SEPT 28, 1983	
1500	5.40 E7	1500	8.23 E7
1400	6.04 E7	1400	5.48 E7
1300	5.15 E7	1300	4.08 E7
1200	7.56 E7	1200	3.77 E7
1100	6.53 E7	1100	3.44 E7
1000	4.65 E7	1000	3.05 E7
900	5.94 E7	900	2.99 E7
800	5.98 E7	800	2.99 E7
700	5.63 E7	700	2.99 E7
600	2.05 E7	600	2.99 E7
500	7.33 E7	500	2.99 E7
400	6.42 E7	400	2.99 E7
300	4.42 E7	300	2.99 E7
200	3.81 E7	200	2.99 E7
100	1.63 E7	100	2.99 E7
0	2.05 E7	0	2.99 E7

ATTACHMENT 3  
SOLIDS 2 PLANT WASTE STACK/PURGE  
STACK WASTE RAFFINATE GAS MONITOR  
HISTORY FILE - 1 HOUR AVERAGES  
SEPT 28-29, 1983

*Southern California Edison Company*

P. O. BOX 800  
2244 WALNUT GROVE AVENUE  
ROSEMEAD, CALIFORNIA 91770

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October 19, 1983

Mr. Ladin Delaney, Executive Officer  
California Regional Water Quality Control Board,  
San Diego Region  
6154 Mission Gorge Road, Suite 205  
San Diego, CA 92120

Dear Mr. Delaney:

Subject: SONGS Units 2 & 3 Construction Monitoring  
and Reporting Program (Order No. 71-6)

Reference is made to the letter dated April 25, 1980, which discussed the submittal of future monitoring reports under Order No. 71-6. There was no discharge during the period July through September 1983. Therefore, no monitoring was conducted. This letter is to serve as a "negative report" for this reporting period.

If you have any further questions regarding this matter, please contact Mr. Bernard Rapan at (213) 572-3896.

Sincerely,



R. V. D. Reid  
Supervisor of Environmental  
and Regulatory Affairs

cc: Environmental Protection Agency, Region IX  
NRC Administrator, Region V  
NRC Director, Office of Nuclear Reactor Regulation