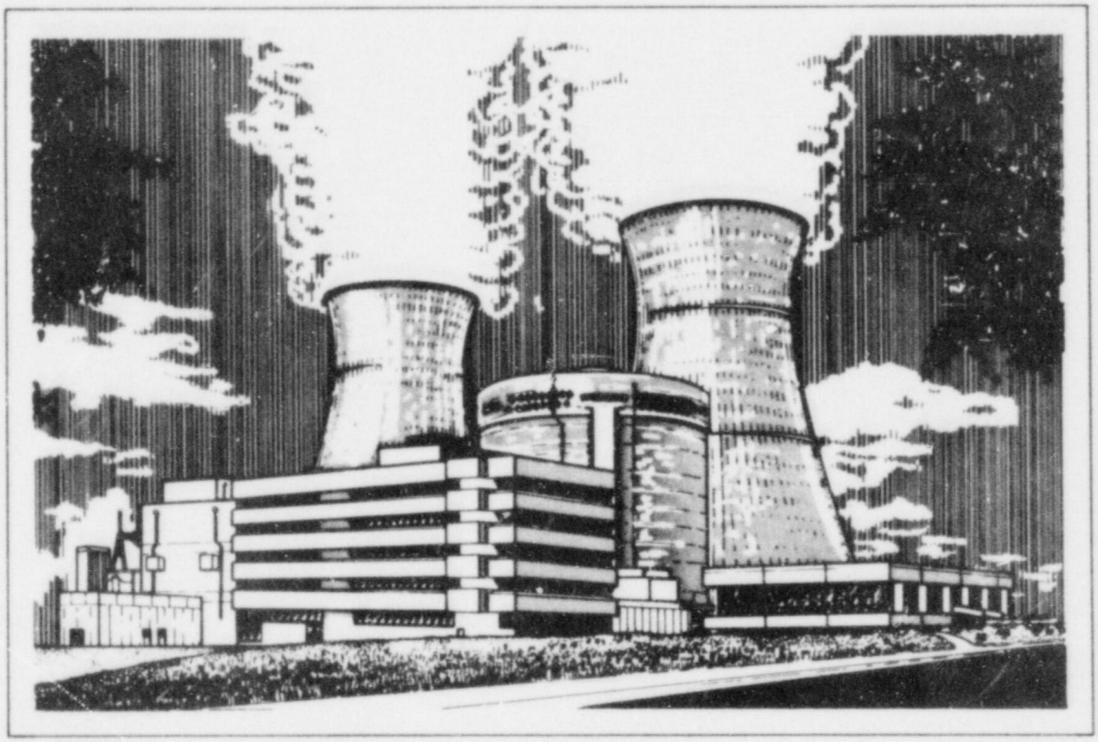
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY - JUNE 1986



Rancho Seco Nuclear Generating Station Unit #1
Clay Station, California License Number DPR-54

SMUD

SACRAMENTO MUNICIPAL UTILITY DISTRICT

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

Prepared by: Edward W. Bradley
Edward W. Bradley
Supervising Health Physicist

Reviewed by: R. G. Oesterling
R. G. Oesterling CHP

Robert L. Gardner
R. L. Gardner CHP

Victor E. Anderson
Victor E. Anderson CHP

Approved by: B. G. Croley
Bob G. Croley
Nuclear Technical Manager

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

EXECUTIVE SUMMARY

The Rancho Seco Nuclear Generating Station Unit No. 1 is located approximately 26 miles north-northeast from Stockton and 25 miles southeast from Sacramento in Sacramento County, California. Rancho Seco Unit No. 1 began commercial operation on April 17, 1975. The single unit on the Rancho Seco site is a pressurized water reactor supplied by Babcock & Wilcox. The rated capacity is 2,772 megawatts thermal and 963 gross megawatts electrical.

This report has been prepared by the Sacramento Municipal Utility District to meet the reporting requirements of Technical Specification 6.9.2.3, Operating License No. DPR-54. It is transmitted to the U. S. Nuclear Regulatory Commission Region V Office of Inspection and Enforcement. Copies are provided to the California Energy Commission, California Department of Public Health, California State University at Sacramento, Central Valley Regional Water Quality Control Board, local libraries, and District offices as a public document.

This document reports the quantities of radioactive materials released as liquid and gaseous effluents, and solid radwaste shipments. Estimates of the radiological impact to man associated with the gaseous and liquid effluent releases are presented. The report period is January 1, 1986 through June 30, 1986.

The format of this report follows U. S. NRC Regulatory Guide 1.21 as required by Technical Specification 6.9.2.3. There are six major sections: (1) Gaseous Effluents; (2) Liquid Effluents; (3) Solid and Radwaste shipments; (4) Radiological Impact on Man; (5) Meteorological data; and (6) Supplemental Information. Each section contains, where appropriate, narrative or descriptive material to clarify the tables.

In accordance with Technical Specifications, the District maintains an Offsite Dose Calculation Manual. It contains the detailed methods and procedures to perform the radiological impact calculations supporting this report.

Technical Specification 6.9.2.3 requires this report to include changes to the Offsite Dose Calculation Manual (ODCM) and the solid radwaste Process Control Program (PCP), assessments of radiation doses associated with radioactive effluents to unrestricted areas, and reports of abnormal releases. There were no substantive changes to the ODCM or PCP and no abnormal releases to report in this report period.

The Rancho Seco Technical Specifications now implement the numerical guidelines for design objectives of 10 CFR 50, Appendix I. If the discharge of radioactive effluents results in a calculated radiological dose to a composite hypothetical maximum individual less than the numerical guidelines, then the facility has demonstrated that it is being operated ALARA. The ALARA concept is to keep the radiological exposure to individuals or the general public As Low As Reasonably Achievable.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

The numerical guidelines for gaseous effluents are:

(1) 10 mrad gamma air dose per calendar year
(2) 20 mrad beta air dose per calendar year
(3) 5 mrem to the total body per calendar year
(4) 15 mrem to any organ per calendar year

The numerical guidelines for liquid effluents are:

(1) 3 mrem to the total body per calendar year
(2) 10 mrem to any organ per calendar year

These numerical guidelines are not to be interpreted as radiation protection standards and the calculated dose, although presented in units of mrem, is not considered a real radiological dose to a real individual. The calculational methodology used by the license to convert effluent (curies) into radiation dose (mrem) is required by Technical Specifications to be documented in the Licensees' Offsite Dose Calculation Manual (ODCM). The ODCM follows NRC guidance documents and NRC calculational models.

The 10 CFR 50, Appendix I effluent dose calculations provide management with a forecast of potential future environmental conditions given that the existing facility equipment and procedures continue to allow the current effluent levels. The Radiological Environmental Monitoring Program (REMP) is designed to monitor the actual radiological environmental conditions surrounding the facility. Results of the REMP are reported in the Annual Radiological Environmental Operating Report.

The ODCM, REMP, and the Annual Land Use Census are matrixed in a very dynamic process to provide District management, the NRC, and the general public reasonable assurance that the Rancho Seco radioactive effluents are ALARA. A revision to the ODCM is scheduled to occur later in 1986.

Exceeding one-half of a numerical guideline in any calendar quarter requires the licensee to (1) make an investigation to identify the causes for the effluent releases, (2) define and initiate a program of corrective actions, and (3) submit a report to the NRC regional office within 30 days from the end of the quarter during which the release occurred.

Exceeding a numerical guideline in any calendar quarter requires the licensee to do all of the above plus an evaluation of compliance with the EPA standards.

The Environmental Protection Agency (EPA) has implemented Environmental Radiation Protection Standards for Nuclear Power Operations (40 CFR 190) which the NRC enforces through 10 CFR 20.106. These standards are 25 mrem to the whole body and any organ except for the thyroid which has a limit of 75 mrem. These standards relate to a real radiological exposure to a real individual, combine the exposures due to liquid, gaseous, and direct pathways, and cover a twelve month interval rather than a calendar year.

If the standards of 40 CFR 190 are exceeded, the licensee must prepare and submit a report within 30 days to the NRC that includes (1) the extent of exposure of individuals to radiation or to radioactive material, (2) levels of radiation and concentrations of radioactive material involved, (3) the cause of the exposure, levels, or concentrations, and (4) corrective steps taken or planned to assure against recurrence, including a schedule for achieving conformance with 40 CFR 190 and with associated license conditions. The NRC can grant the licensee a variance to 40 CFR 190 under certain conditions.

The NRC radiation protection standard for members of the general public is 500 mrem per calendar year. Concentrations of radioactive effluents are limited to the values in 10 CFR 20, Appendix B, Table II which are values which can be equated to a 500 mrem per year dose. The NRC can limit the radioactive effluent concentrations to one-third these values if the need arises.

Rancho Seco was originally designed to meet the criteria of 10 CFR 20. The ALARA concept for radioactive effluents was not established in 10 CFR 50 until after Rancho Seco began commercial operation. The numerical guidelines of 10 CFR 50, Appendix I were incorporated into the Rancho Seco Technical Specifications July, 1984.

Early in 1984, district staff discovered that the liquid effluent dose calculations were not being performed in accordance with the NRC calculational methodology and the Rancho Seco Offsite Dose Calculation Manual (ODCM). After correcting the calculations, the District reported a calculated dose via liquid effluents to a maximum hypothetical individual of 186 mrem to an adult total body and 305 mrem to a child liver for calendar year 1984.

The District initiated a liquid effluent control program in October 1984 which has significantly reduced the quantity of radioactivity in liquid effluent. As an example, the District has reported discharging 0.3 curies of cesium-137 in 1984, 0.004 curies of cesium-137 in 1985, and only 0.0007 curies of cesium-137 in the first six months of 1986.

Once the calculational errors were discovered, the District initiated an extensive environmental monitoring program using the Lawrence Livermore National Laboratory, conducted an extensive liquid effluent pathway land use census, monitored individuals in the general public for radiation, and submitted numerous reports to the NRC as required by both 10 CFR 50, Appendix I and 40 CFR 190.

In June 1986, the NRC concluded that "since it has not been reasonably established that a real member of the public received a dose in excess of the 40 CFR 190 standard, no violation of 10 CFR 20.106(g) has been identified."

A NRC inspection in April, 1986 caused the District to reevaluate the 1985 radioactive liquid effluent discharge. A special report (Special Report No. 86-08 June 5, 1986) was submitted to the NRC with the results of this reevaluation. As required by Technical Specification 6.9.2.3, this report includes the revisions to the two 1985 Semiannual Radioactive Effluent Release

Reports resulting from the above reevaluation. The District is now reporting a calculated dose resulting from radioactive liquid effluents to a maximum hypothetical individual of 4.8 mrem to an adult total body and 16.2 mrem to a child liver for calendar year 1985.

Because of the April, 1986 NRC inspection and the reevaluation of the 1985 liquid effluents, the District is significantly expanding the radioactive liquid effluent control program.

The radioactive effluent discharged from Rancho Seco during the first and second quarters of 1986 equates to a calculated dose of:

	First Quarter	Second Quarter
Liquid effluent		
total body (mrem)	0.99	0.018
organ (mrem)	1.85	0.054
Gaseous effluent		
organ (mrem)	0.13	0.018
gamma air (mrad)	0.029	0.000001
beta air (mrad)	0.087	0.00013

All of the above values are below the numerical guidelines of 10 CFR 50, Appendix I, and no 40 CFR 190 evaluation is required.

Conclusion: The radioactive effluents discharged from Rancho Seco from January 1, 1986, through June 30, 1986, are ALARA.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

I. SUPPLEMENTAL INFORMATION

Supplemental information as outlined in Regulatory Guide 1.21 is presented in this section of the report.

A. GASEOUS EFFLUENTS

Gaseous effluents are assumed to be ground level release and are summarized in Table II-A,"Gaseous Effluents - Summation of All Releases," and Table II-B, "Gaseous Effluents - Ground Level Releases." Elevated releases are not evaluated or reported at Rancho Seco because the gaseous effluent stack height is less than the height of its adjacent structure.

There were 8 Waste Gas Decay Tank releases and 11 Reactor Building purges during the period January 1 through June 30, 1986. There were no abnormal release of radioactive gases in this report period.

B. LIQUID EFFLUENTS

There were 93 batch releases from Regenerant Holdup Tanks (RHUT) with the material ultimately released by 41 Retention Basin discharges. Liquid releases are summarized in Table III-A and the isotopic contents are detailed in Table III-B. There were no abnormal releases of radioactive liquid in this report period.

The estimate of the quantity of radioactivity in liquid effluent was determined in the following manner. Samples are routinely collected from each of the RHUT discharges and composited for analysis on a monthly basis. These monthly composites are then sent to the District's environmental monitoring contractor for strontium and alpha analysis. The District requests that these samples also be analysed for gamma emitting radionuclides to better estimate the radioactive liquid effluent release. Beginning in November 1985, the RHUT samples were separated into radiological and nonradiological samples and composited separately on a monthly basis. If the RHUT sample analysis resulted in observable tritium or gross beta, the sample was added to the radiological composite and its discharge volume added to the radiological liquid effluent volume. If no tritium, gross beta, or gamma emitting nuclides were observed, the sample was added to the nonradiological composite and its volume added to the nonradiological liquid effluent volume. If the monthly composite sample analysis results in a higher estimate of radioactive liquid effluent than the individual RHUT sample analysis performed onsite, the higher values are recorded and reported.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

I. SUPPLEMENTAL INFORMATION

The quantities of radioactive liquid effluent in Table III-A and Table III-B are the results of both onsite sample analysis and analysis of the monthly RHUT composites by the District's environmental monitoring contractor. The District's environmental monitoring contractor's LLDs are much lower than the values reported in Table III-C which are typical of the District's on site LLD capabilities.

C. SOLID WASTE

There were 12 shipments of radioactive wastes to the Hanford Burial Site between January 1 and June 30, 1986. These consisted of 200 ft^3 containers of solidified liquid waste, primary and low activity secondary resins, and cartridge type filters incorporated into concrete under an approved Process Control Program and shipped in approved LSA containers. In addition, dry compressible waste and contaminated equipment was shipped in approved LSA containers.

D. MAXIMUM PERMISSIBLE CONCENTRATIONS

The maximum permissible concentrations (MPC) used to calculate the percent of Technical Specification Limits in Tables II-A and III-A were obtained from 10 CFR 20, Appendix B, Table II.

E. OFFSITE DOSE CALCULATION MANUAL (ODCM) CHANGES

The September 23, 1985 revision to the ODCM was submitted to the NRC with the January-June 1985 Semiannual Radioactive Effluent Release Report on September 26, 1985 with the intent of providing the NRC with the revisions in an expeditious manner. The District went beyond the requirements of Technical Specification 6.9.2.3 by submitting this revision prior to the required date, which would have been with the transmittal of the July-December 1985 Semiannual Radioactive Effluent Release Report.

The calculational methodology of an ODCM is modeled after the US NRC Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents For the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," October 1977. This regulatory guide describes basic features of the calculational models and suggests parameters for the estimation of radiation doses to man from effluent releases. The licensee is encouraged to use site-specific values but the assumptions and methods used to obtain these parameters should be fully described and documented.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

I. SUPPLEMENTAL INFORMATION

The current Rancho Seco ODCM uses the calculational methodology described in Regulatory Guide 1.109 and implements it for the liquid effluent pathway by using the LADTAPII computer code described in NUREG/CR-1276, "User's Manual for LADTAPII, A Computer Program for Calculating Radiation Exposure to Man From Routine Releases of Nuclear Reactor Liquid Effluents," May 1980.

Specific site related parameters which are used in the Rancho Seco ODCM, other than those suggested in Regulatory Guide 1.109, are documented in the following reports:

1. Final Environmental Statement related to the operation of Rancho Seco Nuclear Generating Station Unit 1, March 1973, US AEC.

2. Appendix I Evaluation Report Rancho Seco Nuclear Generating Station, June 1, 1976 Tera Corporation.

3. Usage Survey Report, March 15, 1985, District correspondence to NRC Region V.

4. Environmental Radiological Studies Downstream from Rancho Seco Nuclear Power Generating Station, March 22, 1985, UCID-20367, Lawrence Livermore National Laboratory.

5. User's Manual for LADTAPII, A Computer Program for Calculating Radiation Exposure to Man From Routine Release of Nuclear Reactor Liquid Effluents, May 1980, NUREG/CR-1276.

The drinking water pathway is not included in the liquid effluent pathway due to the information in the Final Environmental Statement and confirmed by the Usage Survey Report. Boating and irrigated leafy vegetables are not included due to information in the Usage Survey Report. The parameters YIELD and GROW were added to the LADTAPII code as input parameters to accommodate information provided in the Appendix I Evaluation Report. An irrigation rate of 263 liters/meter^2/month is used in the irrigated foods pathway which also comes from the Appendix I Evaluation Report. Reduced freshwater invertebrate consumption values and increased freshwater fish consumption values are used due to the Usage Survey Report. The bioaccumulation factor for cesium in freshwater fish was reduced from 2000 to 1400 due to information in UCID-20367. It is important to realize that it is the product of the consumption value and the bioaccumulation factor that enter into the resultant dose and that the current Rancho Seco ODCM would calculate a higher dose tnan if the suggested values of Regulatory Guide 1.109 were used. Some additional minor changes to the LADTAPII code were made in the FOOD and WATER subroutines as a result of personal communications between Mike Wangler, NRC Washington, and E. W. Bradley of the District. Dairy cattle are also assumed not to be drinking water directly from the effluent stream.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

I. SUPPLEMENTAL INFORMATION

F. ADDENDUM - CORRECTIONS TO PREVIOUS REPORTS

An NRC inspection in April, 1986 (NRC Region V Inspection Report 50-312/86-15) caused the District to reevaluate the 1985 radioactive liquid effluent discharge. The District submitted Special Report No. 86-08 June 5, 1986 to NRC Region V with the results of this reevaluation.

As required by Technical Specification 6.9.2.3, the District is submitting corrections to both of the Semiannual Radioactive Effluent Release Reports for 1985. The corrected pages are included in Addendum A and Addendum B of this report and contain only those pages with corrections.

The addendum contains corrections resulting from the District's Special Report No. 86-08, NRC Region V Inspection Report 50-312/86-15 observations, and additional District staff observations during the preparations of this report.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE I-A

SUPPLEMENTAL INFORMATION - REGULATORY LIMITS

A. Noble Gases		
Dose Rate - Site Boundary (limits based upon 10 CFR 20, Appendix B, Table II, Column 1)	500	mrem/year to whole body
	3000	mrem/year to skin
Air Dose - Site Boundary (design objectives of 10 CFR 50 Appendix I)	5	mrad/quarter - Gamma
	10	mrad/quarter - Beta
	10	mrad/year - Gamma
	20	mrad/year - Beta
B. Iodine 131, Tritium and Particulates with Half Lives greater than 8 days		
Dose Rate - Site boundary (limits based upon 10 CFR 20, Appendix B, Table II, Column 1)	1500	mrem/year to any organ
Dose to member of the public (design objectives of 10 CFR 50 Appendix I)	7.5	mrem/quarter to any organ
	15	mrem/year to any organ
C. Liquid Effluents		
Releases must meet 10 CFR 20, Appendix B, Table II, Column 2.		
Dissolved and entrained noble gases less than 2.0E-04 μCi/ml.		
Dose to member of the public (design objectives of 10 CFR 50 Appendix I)	1.5	mrem/quarter to the total body
	5	mrem/quarter to any organ
	3	mrem/year to the total body
	10	mrem/year to any organ

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE I-B

SUPPLEMENTAL INFORMATION - AVERAGE ENERGY

The following list of average gamma and beta energies per disintegration have been replaced by the conversion factors in Regulatory Guide 1.109 to calculate isotopic release rate limits for fission and activation gases.

AVERAGE ENERGY PER DISINTEGRATION

Isotope	$\bar{E}_\gamma$, mev/dis	$\bar{E}_\beta$, mev/dis
Kr-83m	0.00248	0.0371
Kr-85	0.0022	0.250
Kr-85m	0.159	0.253
Kr-87	0.793	1.32
Kr-88	1.95	0.377
Kr-89	2.22	1.37
Kr-90	2.10	1.01
Xe-131m	0.0201	0.143
Xe-133	0.0454	0.135
Xe-133m	0.042	0.19
Xe-135	0.247	0.317
Xe-135m	0.432	0.095
Xe-137	0.194	1.64
Xe-138	1.18	0.511

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE I-C

SUPPLEMENTAL INFORMATION - MEASUREMENTS

Measurements And Approximation of Total Radioactivity

A. Fission and Activation Gases

Gamma Spectrometry (GeLi)
Liquid Scintillation (for H-3)

B. Iodines

Gamma Spectrometry (GeLi)

C. Particulates

Gamma Spectrometry (GeLi)
Beta Proportional (for Sr-89, Sr-90)
Alpha Proportional (for gross alpha)

D. Liquid Effluents

Gamma Spectrometry (GeLi)
Liquid Scintillation (for H-3)
Beta Proportional (for Sr-89, Sr-90, gross beta)
Alpha Proportional (for gross alpha)

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE I-D

SUPPLEMENTAL INFORMATION - BATCH RELEASES

A. Liquid

1.	Number of batch releases	41	
2.	Total time period for batch releases	305.5	hours
3.	Maximum time period for a batch release	24.5	hours
4.	Average time period for a batch release	7.45	hours
5.	Minimum time period for a batch release	3.75	hours
6.	Average stream flow during period of release of effluent into a flowing stream	0	gpm(1)

(1) There is negligible flow on an annual average basis in Clay Creek upstream from the plant liquid effluent discharge point. However, Rancho Seco now discharges a minimum of 5000 gpm into Clay Creek on a continuous basis into which the radioactive liquid effluent is discharged.

B. Gaseous

1.	Number of batch releases	19	
2.	Total time period for batch releases	3653	hours
3.	Maximum time period for a batch release	840	hours
4.	Average time period for a batch release	192.3	hours
5.	Minimum time period for a batch release	21	hours

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE I-E

SUPPLEMENTAL INFORMATION - ABNORMAL RELEASES

		UNITS	1ST QUARTER	2ND QUARTER
A.	Liquid			
	1. Number of releases		None	None
	2. Total activity released offsite	Ci	0.0	0.0
B.	Gaseous			
	1. Number of releases		None	None
	2. Total activity released offsite	Ci	0.0	0.0

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

I. SUPPLEMENTAL INFORMATION

ABNORMAL RELEASE REPORTS

A. LIQUID

There were no unplanned or uncontrolled releases of radioactive liquid from the site boundary during this report period.

B. GASEOUS

There were no unplanned or uncontrolled releases of radioactive gas from the site boundary during this report period.

II. GASEOUS EFFLUENTS

Table II-A, "Gaseous Effluents-Summation of All Releases," provides a detailed listing of gaseous effluents released by quarter in four categories:

- Fission and Activation Gases
- Iodine-131
- Particulates with half-lives greater than eight days
- Tritium

Listed for each of the four categories are:

- The total curies released
- The average release rate
- The percent of Technical Specification Limit
- The estimated total error.

In addition, the particulate category lists the gross alpha radioactivity released for each quarter.

The methodology used to calculate the percent of applicable limit is presented at the end of this section.

The methodology used to calculate the estimated total error in Table II-A is presented in Section V of this report.

A table for "Gaseous Effluents - Elevated Release," is not applicable, since Rancho Seco Nuclear Generating Station Unit No. 1 does not conduct elevated releases.

Table II-B, "Gaseous Effluents - Ground Level Releases," provides a systematic listing by radionuclide for the quantity of gaseous radioactivity released in four categories:

- Fission Gases
- Iodines
- Particulates
- Tritium

The total radioactivity for each radionuclide is listed for each quarterly period by:

- Continuous Release Mode
- Batch Release Mode

Containment purges and waste gas decay tank releases are considered to be "batch" releases. Auxiliary Building stack releases are considered to be "continuous" releases.

II. GASEOUS EFFLUENTS

Table II-C, "Gaseous Effluents - Lower Limits of Detection," provides a listing of radionuclide lower limit of detection concentrations.

Table II-D, "Gaseous Effluents - Radiation Dose Estimates at the Site and Exclusion Area Boundaries," provides a quarterly summary of the estimated doses at the site boundary and exclusion area boundary for this report period.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE II-A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	1ST QUARTER	2ND QUARTER	EST. TOTAL ERROR %
A. Fission and Activation Gases				
1. Total release	Ci	9.28 E+01	1.04 E-01	±8.00 E+00
2. Average release rate for period	µCi/sec	1.19 E+01	1.32 E-02	
3. Percent of Tech. Spec. limit	%	5.94 E-02	4.92 E-05	
B. Iodines				
1. Total iodine-131	Ci	1.48 E-03	*	±7.00 E+00
2. Average release rate for period	µCi/sec	1.90 E-04	*	
3. Percent of Tech. Spec. limit	%	2.63 E-3	*	
C. Particulates				
1. Particulates with half-lives greater than 8 days	Ci	1.06 E-05	*	±8.00 E+00
2. Average release rate for period	µCi/sec	1.36 E-06	*	
3. Percent of Tech. Spec. limit	%	3.77 E-06	*	
4. Gross alpha radio-activity	Ci	2.66 E-06	4.86 E-07	±3.00 E+01
D. Tritium				
1. Total release	Ci	6.68 E+00	7.99 E+00	±7.00 E+00
2. Average release rate for period	µCi/sec	8.59 E-01	1.02 E+00	
3. Percent of Tech. Spec. limit	%	6.43 E-03	5.70 E-03	

*Less than the lower limits of detection, see Table II-C

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE II-B

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE 1ST QUARTER	CONTINUOUS MODE 2ND QUARTER	BATCH MODE 1ST QUARTER	BATCH MODE 2ND QUARTER
1. Fission Gases					
Argon-41	Ci	*	*	*	*
Krypton-85	Ci	*	*	9.09 E-01	1.03 E-01
Krypton-85m	Ci	*	*	*	*
Krypton-87	Ci	*	*	*	*
Krypton-88	Ci	*	*	*	*
Xenon-131m	Ci	*	*	9.46 E-01	6.91 E-04
Xenon-133	Ci	4.73 E+00	*	8.59 E+01	*
Xenon-133m	Ci	*	*	2.89 E-01	*
Xenon-135	Ci	*	*	*	*
Xenon-135m	Ci	*	*	*	*
Xenon-138	Ci	*	*	*	*
TOTAL FOR PERIOD	Ci	4.73 E+00	*	8.80 E+01	1.04 E-01
2. Iodines					
Iodine-131	Ci	6.40 E-05	*	1.42 E-03	*
Iodine-133	Ci	*	*	*	*
TOTAL FOR PERIOD	Ci	6.40 E-05	*	1.42 E-03	*
3. Particulates					
Cobalt 58	Ci	*	*	*	*
Cobalt-60	Ci	*	*	*	*
Cesium-134	Ci	*	*	*	*
Cesium-137	Ci	*	*	1.06 E-05	*
TOTAL FOR PERIOD	Ci	*	*	1.06 E-01	*
4. Tritium	Ci	5.31 E+00	4.46 E+00	1.37 E+00	3.53 E+00
5. TOTAL VOLUME RELEASED	cc	1.56 E+14	1.57 E+14	2.16 E+14	2.52 E+14

* Less than the lower limits of detection, see Table II-C

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE II-C

GASEOUS EFFLUENTS - LOWER LIMITS OF DETECTION

RADIONUCLIDES	CONTINUOUS AND BATCH MODE* LLD (μCi/cc)
1. Fission Gases	
Argon-41	9.60 E-08
Krypton-85	1.43 E-05
Krypton-85m	5.20 E-08
Krypton-87	1.30 E-07
Krypton-88	1.62 E-07
Xenon-131m	2.07 E-06
Xenon-133	1.22 E-07
Xenon-133m	3.94 E-07
Xenon-135	4.56 E-08
Xenon-135m	1.28 E-07
Xenon-138	2.13 E-07
2. Iodines	
Iodine-131	1.74 E-13
Iodine-133	3.29 E-13
Iodine-135	2.72 E-11
3. Particulates	
Barium-140	6.50 E-13
Cerium-141	1.74 E-13
Cesium-134	2.24 E-13
Cesium-137	2.99 E-13
Lanthanum-140	5.10 E-13
Niobium-95	2.30 E-13
Strontium-89	5.00 E-15
Strontium-90	2.00 E-15
Tritium (H-3)	6.22 E-10
Zirconium-95	4.39 E-13

* Gas decay tank "Batch Mode" releases are through a "continuous mode" release path.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE II-D

GASEOUS EFFLUENTS - RADIATION DOSE ESTIMATES AT THE SITE AND EXCLUSION AREA BOUNDARIES

A. Maximum Offsite Ground-Level Location	UNIT	SITE BOUNDARY MAXIMUM SECTOR 1ST QUARTER (a)	SITE BOUNDARY MAXIMUM SECTOR 2ND QUARTER (b)	EXCLUSION AREA MAXIMUM SECTOR 1ST QUARTER (c)	EXCLUSION AREA MAXIMUM SECTOR 2ND QUARTER (d)
1. a. Gamma Air	mrad	2.68 E-02	1.07 E-06	2.86 E-02	1.19 E-06
b. % Tech. Spec. Limit	%	5.36 E-01	2.14 E-05	5.72 E-01	2.38 E-05
2. a. Beta Air	mrad	8.17 E-02	1.14 E-04	8.74 E-02	1.28 E-04
b. % Tech. Spec. Limit	%	8.17 E-01	1.14 E-03	8.74 E-01	1.28 E-03
3. a. Total Body	mrem	1.66 E-02	6.83 E-07	1.78 E-02	7.65 E-07
b. % Tech. Spec. Limit	%	N/A	N/A	N/A	N/A
4. a. Skin	mrem	4.67 E-02	7.93 E-05	4.98 E-02	8.88 E-05
b. % Tech. Spec. Limit	%	6.23 E-01	1.06 E-03	6.64 E-01	1.18 E-03

		MAXIMUM RECEPTOR (e)	MAXIMUM RECEPTOR (f)
B. Tritium, Iodine, Particulate Unrestricted Areas All Pathways:			
1. a. Organ Dose	mrem	1.25 E-01	1.78 E-02
b. % Tech. Spec Limit	%	1.67 E+00	2.37 E-01
C. Direct Radiation			
1. a. Dose *	mrem	8.36 E-01	4.30 E-01
b. % Tech. Spec Limit	%	N/A	N/A

NOTE: The above calculations were performed in accordance with the ODCM.

(a) NNW 670 meters
(b) NNW 670 meters
(c) NNW 640 meters
(d) ENE 640 meters
(e) Teenager thyroid
(f) Child GI, Liver, Kidney, Thyroid, Lung, Skin
* assumed 4 hours per week exposure

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

II. GASEOUS EFFLUENTS

Percent of Technical Specification Limits Calculation Methodology

The percent of Technical Specification Limit tabulated in Table II-A was determined by calculation of the following parameters:

$$\% \text{ Technical Specification Limit} = \frac{\text{Average Release Rate} \times \frac{X}{Q} \times 100}{MPC_{eff}}$$

$$\text{The Average Release Rate} = \frac{\text{Total Curies released in each category per quarter}}{\text{Seconds per quarter}}$$

$\frac{X}{Q}$ = The real time weithed average quarterly atmospheric dispersion for the appropriate quarter (sec/m^3). (Weighted average of the 16 sector values at the exclusion area boundary. Weighting based upon wind direction frequency.)

Weighted Average X/Q (sec/m^3)

	Tritium	Noble Gas	Iodine & Particulate
1986 Quarter 1	1.496 E-05	1.493 E-05	1.384 E-05
1986 Quarter 2	1.121 E-05	1.120 E-05	N/A

The The MPC_{eff} is defined as:

$$\frac{1}{\sum_{i=1}^{n} \frac{F_i}{MPC_i}}$$

Where: F_i = fractional abundance of the ith radionuclide obtained by dividing the activity in curies for each radionuclide, C_i, by the sum of all such activities, C_T.

n = total number of radionuclides identified

MPC_i = MPC of the ith radionuclide (10 CFR 20, Appendix B, Table II, Column 1)

The percent of Technical Specification Limits tabulated in Table II-D is the percent of the applicable dose limits of Table I-A.

III. LIQUID EFFLUENTS

Table III-A "Liquid Effluents - Summation of All Releases," provides a detailed listing of liquid effluents released by quarter in three categories:

- Fission and Activation Products
- Tritium
- Dissolved and Entrained Gases

Listed for each of three categories are:

- Total Curies Released
- Average Diluted Concentration
- Percent of Technical Specification Limit
- Estimated Total Error.

In addition, Table III-A lists:

- Gross alpha radioactivity released.
- Volume of waste released prior to dilution.
- Volume of dilution water added before release.

The methodology used to calculate the percent of Technical Specification Limit is presented at the end of this section.

The methodology used to calculate the estimated total error in Table III-A is presented in Section V of this report.

Table III-B, "Liquid Effluents," provides the systematic listing by radionuclide for the quantity of radioactivity released.

The total radioactivity of each radionuclide released in liquid effluent is listed for each quarterly period by batch mode release only. No known radioactive liquid effluent releases are made on a continuous basis from Rancho Seco.

Table III-C, "Liquid Effluents - Lower Limits of Detection," provides a listing of typical lower limit of detection concentrations as defined in Section 5.0 of the Offsite Dose Calculation Manual (page 197).

Table III-D, "Liquid Effluents" - Radiation Dose Estimates to the Maximum Hypothetical Individual" provides a quarterly summary of doses beyond the site boundary.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE III-A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	1ST QUARTER	2ND QUARTER	EST. TOTAL ERROR %
A. Fission and Activation Products				
1. Total release (not including tritium, gases, alpha)	Ci	6.29 E-04	4.67 E-05	±7.00 E+00
2. Average diluted concentration during period	µCi/ml	2.8i E-10	1.37 E-11	
3. Percent of Tech. Spec. Limit	%	1.40 E-03	6.86 E-05	
B. Tritium				
1. Total release	Ci	5.27 E+01	7.12 E-03	±8.00 E+00
2. Average diluted concentration during period	µCi/ml	2.35 E-05	2.09 E-09	
3. Percent of Tech. Spec. Limit	%	7.84 E-01	6.97 E-05	
C. Dissolved and entrained gases				
1. Total release	Ci	*	*	N/A
2. Average diluted concentration during period	µCi/ml	*	*	
3. Percent of Tech. Spec. Limit	%	*	*	
D. Gross alpha radioactivity				
1. Total release	Ci	3.77 E-05	8.14 E-06	±6.00 E+00
E. Volume of waste released (prior to dilution)	liters	2.43 E+07	1.29 E+07	±5.20 E+00
F. Volume of dilution water used during period	liters	2.24 E+09	3.40 E+09	±1.30 E+00

* Less than the Lower Limits of Detection

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE III-B

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT 1	BATCH MODE 1ST QUARTER	BATCH MODE 2ND QUARTER
Cesium-134	Ci	*	*
Cesium-137	Ci	6.29 E-04	4.67 E-05
Tritium	Ci	5.27 E+01	7.12 E-03
TOTAL FOR PERIOD	Ci	5.27 E+01	7.17 E-03

*Less than the Lower Limits of Detection

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE III-C

LIQUID EFFLUENTS - LOWER LIMITS OF DETECTION

RADIONUCLIDES	BATCH MODE (μCi/ml)
1. PARTICULATES	
Sodium-24	2.88 E-08
Chromium-51	2.27 E-07
Manganese-54	2.60 E-08
Iron-59	6.85 E-08
Cobalt-57	1.67 E-08
-58	3.09 E-08
-60	4.06 E-08
Zinc-65	7.59 E-08
Strontium-89	5.00 E-08
-90	5.00 E-08
Niobium-95	2.91 E-08
Zirconium-95	5.62 E-08
-97	3.29 E-08
Molybdenum-99	1.60 E-08
Technetium-99m	1.60 E-08
Ruthenium-103	1.72 E-08
Silver-110m	3.64 E-08
Antimony-124	2.79 E-08
-125	6.41 E-08
Iodine-131	2.70 E-08
-133	2.46 E-08
Cesium-134	2.80 E-08
-136	3.10 E-08
-137	3.90 E-08
Barium-140	9.70 E-08
Lanthanum-140	4.96 E-08
Cerium-141	2.50 E-08
-144	1.45 E-07
2. DISSOLVED AND ENTRAINED GASES	
Krypton-85	8.16 E-06
Krypton-85m	4.92 E-08
Krypton-88	1.40 E-07
Xenon-131m	1.83 E-06
Xenon-133	1.27 E-07
Xenon-133m	3.39 E-07
Xenon-135	3.65 E-08

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE III-D

LIQUID EFFLUENTS - RADIATION DOSE ESTIMATES TO THE MAXIMUM HYPOTHETICAL INDIVIDUAL

	UNIT	1ST QUARTER	2ND QUARTER
1. a. Whole body dose (adult)	mrem	9.92 E-01	1.76 E-02
b. Percent Tech. Spec. Limit	%	6.61 E+01	1.17 E+00
2. a. Organ dose (child)	mrem	1.85 E+00 (a)	5.36 E-02 (b)
b. Percent Tech. Spec. Limit	%	3.70 E+01	1.07 E+00

(a) child liver
(b) child bone

III. LIQUID EFFLUENTS

Percent of Technical Specification Limit Calculation Methodology

The percent of Technical Specification Limit tabulated in Table III-A was determined by calculation of the following parameters:

$$\% \text{ Technical Specification Limit} = \frac{\text{Average diluted concentration}}{MPC_{eff}} \times 100$$

$$\text{The average diluted concentration} = \frac{\text{Total curies released in each category per quarter converted to } \mu Ci.}{\text{Total volume released (Part F in Table III-A) converted to ml.}}$$

The The MPC_{eff} is defined as:

$$\frac{1}{\sum_{i=1}^{n} \frac{F_i}{MPC_i}}$$

Where: F_i = fractional abundance of the ith radionuclide obtained by dividing the activity in curies for each radionuclide, C_i, by the sum of all such activities, C_T.

n = total number of radionuclides identified

MPC_i = MPC of the ith radionuclide (10 CFR 20, Appendix B, Table II, Column 1)

The percent of Technical Specification Limits tabulated in Table III-D is the percent of the applicable dose limits of Table I-A.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

IV. SOLID WASTE

A. SOLID WASTE SHIPPED OFFISTE FOR BURIAL OR DISPOSAL (not irradiated fuel)

1. Type of waste	UNITS	6 MONTH PERIOD	ESTIMATED TOTAL ERROR %
a. Spent resins, filter sludges, evaporator bottoms, etc.(1)	m^3	7.02 E+01	3.00 E+01
	Ci	9.48 E+02	3.00 E+01
b. Dry Compressible waste, contaminated equipment, etc.(2)	m^3	2.40 E+01	3.00 E+01
	Ci	4.13 E+01	3.00 E+01
c. Irradiated components, control rods, etc.	m^3	4.70 E-01	3.00 E+01
	Ci	1.01 E+01	3.00 E+01
d. Other	m^3	0.0	0.0
	Ci	0.0	0.0

(1) Material solidified in concrete and/or shipped in type B containers.

(2) Material shipped in LSA containers.

2. Estimate of major radionuclide composition (by type of waste)

a. Spent resins, filter sludges, evaporator bottoms, etc.

Radionuclide	Percent
H-3	7.00 E-01
Cr-51	5.80 E+00
Mn-54	8.00 E-01
Fe-55	2.27 E+01
Co-58	2.08 E+01
Co-60	1.23 E+01
Ni-63	2.61 E+01
Nb-95	1.70 E+00
Ag-110m	7.60 E+00
TOTAL % ACCOUNTED	9.85 E+01

b. Dry compressible waste, contaminated equipment, etc.

Radionuclide	Percent
H-3	4.00 E-01
Mn-54	2.70 E+00
Fe-55	3.89 E+01
Co-58	2.30 E+00
Co-60	1.57 E+01
Ni-63	2.57 E+01
Ag-110m	1.70 E+00
Cs-134	3.50 E+00
Cs-137	8.20 E+00
TOTAL % ACCOUNTED	9.91 E+01

c. Irradiated components, control rods, etc.

Radionuclide	Percent
H-3	2.90 E-03
Mn-54	1.12 E+00
Fe-55	1.05 E+01
Co-57	8.90 E-02
Co-58	1.96 E+00
Co-60	8.63 E+01
Ni-63	2.08 E-01
Zn-65	1.98 E-03
Sb-125	1.28 E-02
TOTAL % ACCOUNTED	1.00 E+02

d. Other

Radionuclide	Percent
None	None

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
12	"sole use" vehicle	Richland, Washington Hanford disposal site

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
None	N/A	N/A

V. ESTIMATION OF ERROR

The estimate of error is based on combination of the following error estimates:

A. Airborne

1. counting error
2. calibration error of exhaust fans
3. sample train flow rate meter error
4. process monitor flow rate setpoint error
5. charcoal cartridge efficiency
6. tritium bubbler collection efficiency
7. loss due to handling (for particulates)
8. Waste Gas Decay Tank (WGDT) pressure gauge and flow rate meter errors

B. Liquid

1. counting error
2. Regenerant Hold Up Tank (RHUT) release volume error
3. retention basin dilution error
4. retention basin outlet flow error
5. flow rate error of discharge canal

The following error estimates were considered, found to be negligible, and therefore were not considered in the error analysis:

1. Marinelli flask volume
2. sample mixing
3. particulate filter loss
4. loss due to handling for iodine
5. composite aliquots for liquids

Error estimates for anisokinetic sampling and airborne particulate plateout in monitor sample lines were not included because no plant data exist on the subject. However, this does not necessarily mean the errors are negligible.

The methods for establishing error estimates included communication with District health physics/chemistry personnel, review of applicable station procedures, inspection of sampling equipment, review of previous District error analysis data, engineering estimates, statistical applications, literature reviews, and use of calibration set points data.

In determining the overall error in a release, error at one standard deviation and a bias were calculated. The error consists of random or indeterminate errors. Bias is influenced primarily by determinate errors which introduce a constant error into the data.

V. ESTIMATION OF ERROR

The error analysis was applied to the following release pathways.

1. Auxiliary Building Vent (see note)

   a. fission and activation gases
   b. iodines
   c. particulates
   d. tritium

2. Waste Gas Decay Tank (WGDT)

   a. fission and activation gases
   b. tritium

3. Reactor Building Vent

   a. fission and activation gases
   b. iodines
   c. particulates
   d. tritium

4. Liquid Releases

   Includes the total error analysis for the RHUT to retention basin to discharge canal flow path.

It should be noted that the error analysis for iodines and particulates that are released through the reactor building vent includes exhaust fan calibration error, not containment volume error. This is because iodines and particulates are vented on a continuous basis by the exhaust fan via a pre-filter, HEPA filter and charcoal cartridge. Also, error analysis for fission and activation gases and tritium that are released through the reactor building vent includes containment volume error, not exhaust fan calibration error. This is because fission and activation gases and tritium are released is a function of containment volume.

Note: includes releases from the condenser air ejector, gland seal exhaust, and iodines and particulates from the WGDT.

The Radwaste Service Area Vent was not included as a release pathway due to its inoperability.

The error for both airborne and liquid releases was determined at one standard deviation from the mean.

V. ESTIMATION OF ERROR

A. ERROR ANALYSIS FOR AIRBORNE RELEASES

1. AUXILIARY BUILDING STACK

a. Fission and Activation Gases Error $\pm (\sigma^2 + 7.7^2)^{1/2}$

$\pm$ 3.3% calibration error of exhaust fans

$\pm$ 6.9% process monitor flow rate setpoint error margin

$(3.3^2 + 6.9^2)^{1/2} = 7.7$

σ counting error = (gross counts)$^{-1/2}$ x 100

b. Iodine Error $\pm (\sigma^2 + 3.8^2)^{1/2}$

$\pm$ 3.3% calibration error of exhaust fans

$\pm$ 1.9% process monitor flow rate setpoint error margin

$(3.3^2 + 1.9^2)^{1/2} = 3.8$

σ counting error = (gross counts)$^{-1/2}$ x 100

Bias: -5% not collected by charcoal cartridge

c. Particulates Error $\pm (\sigma^2 + 3.8^2)^{1/2}$

Error is same as Iodine (auxiliary stack)

Bias: -5% handling loss

d. Tritium Error $\pm (\sigma^2 + 2^2)^{1/2}$

$\pm$ 2% sample flow rate meter reading error

σ counting error = (gross counts)$^{-1/2}$ x 100

Bias: +5% collection efficiency*

*Available literature indicates the collection loss is approximately 5% for fritted bubblers of the type used at Rancho Seco. Rancho Seco uses a collection efficiency of 90%. Therefore, the actual bias is +5%.

V. ESTIMATION OF ERROR

2. WASTE GAS DECAY TANK

a. Fission and Activation Gases Error $\pm (\sigma^2 + 2.8^2)^{1/2}$

$\pm$ 2% calibration and reading error of WGDT pressure gauge

$\pm$ 2% calibration and reading error of WGDT flow rate meter

$(2^2 + 2^2)^{1/2} = 2.8$

σ counting error = (gross counts)$^{-1/2}$ x 100

b. Tritium Error $\pm (\sigma^2 + 2.8^2)^{1/2}$

$\pm$ 2% reading error of sample flow rate meter

$\pm$ 2% reading and calibration error of WGDT flow rate meter

$(2^2 + 2^2)^{1/2} = 2.8$

σ counting error = (gross counts)$^{-1/2}$ x 100

Bias: +5% collection efficiency error (see auxiliary building vent tritium analysis)

3. REACTOR BUILDING VENT

a. Fission and Activation Gases Error $\pm (\sigma^2 + 6.5^2)^{1/2}$

$\pm$ 5% containment volume error

$\pm$ 4.2% process monitor flow rate setpoint error margin

$(5^2 + 4.2^2)^{1/2} = 6.5$

σ counting error = (gross counts)$^{-1/2}$ x 100

Bias: -5% incomplete purge

A Purge is a batch removal of Reactor Building air by the Reactor Building purge exhaust fan which discharges to the vent. The -5% bias was chosen as a reasonable value for representing an estimate of incomplete purge.

V. ESTIMATION OF ERROR

b. Iodines Error $\pm (\sigma^2 + 3.6^2)^{1/2}$

$\pm$ 3.3% calibration error of exhaust fans

$\pm$ 1.4% process monitor flow rate setpoint error margin

$(3.3^2 + 1.4^2)^{1/2} = 3.6$

σ counting error = (gross counts)$^{-1/2}$ x 100

Bias: -5% not collected by charcoal

c. Particulates Error $\pm (\sigma^2 + 3.6^2)^{1/2}$

Error is same as for Iodines (Reactor Building)

Bias: -5% handling loss

d. Tritium Error $\pm (\sigma^2 + 5.4^2)^{1/2}$

$\pm$ 5% containment volume error

$\pm$ 2% flow rate meter error

$(5^2 + 2^2)^{1/2} = 5.4$

σ counting error = (gross counts)$^{-1/2}$ x 100

Bias: +5% collection efficiency (see auxiliary building vent tritium analysis)

-5% incomplete purge

B. ERROR ANALYSIS FOR LIQUID RELEASES

1. Liquid Effluent Release Error $\pm (\sigma^2 + 5.4^2)^{1/2}$

a. RHUT

$\pm$ 5% RHUT Volume

σ counting error = (gross counts)$^{-1/2}$ x 100

b. Retention Basin

$\pm$ 1% inlet dilution volume error

$\pm$ 1% outlet flow error

V. ESTIMATION OF ERROR

c. Dilution Flow

± 1.3% discharge canal flow rate error

Total Error

$(5^2 + 1^2 + 1^2 + 1.3^2)^{1/2} = 5.4$

(this page left intentionally blank)

(this page left intentionally blank)

(this page left intentionally blank)

VI. RADIOLOGICAL IMPACT ON MAN

This section contains tables to describe the radiological impact to both actual and hypothetical individuals. Tables include:

VI-A Compliance with 10 CFR 50, Appendix I

VI-B Percent of 10 CFR 50 Appendix I for Table VI-A

VI-C Dose Assessment for Unmonitored Individuals Due to Activities Within the Site Boundaries

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VI-A

COMPLIANCE WITH 10 CFR 50 APPENDIX I

SOURCE	Dose (millirems) 1ST QUARTER	2ND QUARTER
A. Liquid Effluents		
1. whole body	9.92 E-01	1.76 E-02
2. organ	1.85 E+00	5.36 E-02
B. Gaseous Effluents		
1. tritium, iodines, and particulates	1.25 E-01	1.78 E-02
2. Noble Gases		
a. gamma (mrad)	2.86 E-02	1.19 E-06
b. beta (mrad)	8.74 E-02	1.28 E-04
C. Direct Radiation	8.36 E-01	4.30 E-01

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VI-B

PERCENT OF 10 CFR 50 APPENDIX I FOR TABLE VI-A

SOURCE	PERCENT (%) 1ST QUARTER	2ND QUARTER
A. Liquid Effluents		
1. whole body	6.61 E+01	1.17 E+00
2. organ	3.70 E+01	1.07 E+00
B. Gaseous Effluents		
1. tritium, iodines, and particulates	1.67 E+00	2.37 E-01
2. Noble Gases		
a. gamma	5.72 E-01	2.38 E-05
b. beta	8.74 E-01	1.28 E-03
C. Direct Radiation	N/A	N/A

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VI-C

DOSE ASSESSMENT FOR UNMONITORED INDIVIDUALS
DUE TO ACTIVITIES WITHIN THE SITE BOUNDARY

	LOCATION	1ST QUARTER	2ND QUARTER
A.	Engineering Complex (East 250 meters)	7.37 E-03	8.33 E-03
B.	Warehouse (East 225 meters)	8.92 E-03	1.01 E-02
C.	Park Kiosk (East 525 meters)	(a)	2.13 E-03
D.	Visitor Center (East 225 meters)	8.05 E-03	4.04 E-03

The above doses represent the Total Body mrem Dose and includes contributions from the plume, ground, and inhalation. The dose recorded is the highest between adult, teenager, child, or infant.

(a) Kiosk is not manned during 1st quarter.

VII. METEOROLOGICAL DATA

Meteorology

The meteorology of the Rancho Seco Nuclear Generating Station for the first and second quarter, 1986 is described in this section. Meteorological measurements have been made according to the guidance set forth in U.S. NRC Regulatory Guide 1.23, "Onsite Meteorological Programs." A summary report of the meteorological measurements taken during each calendar quarter are presented in Tables VII-B through VII-E as a joint frequency distribution of wind direction (from), wind speed, and atmospheric stability class.

Hourly meteorological data for continuous and batch releases have been recorded. This data is available but has not been included in this report because of the bulk of data records.

The meteorological data acquisition system for Rancho Seco consists of a permanent meteorological tower installed at the site, instrumentation and on-line computer. The main purpose of the system is to measure and compile the meteorological data necessary to define the atmospheric diffusion and dispersion at the site. The system is designed to continue in operation indefinitely so that a broad statistical base for meteorological conditions at the site can be assembled.

The 200-foot meteorological tower is located on a hill approximately 3,000 feet east of the Reactor Building. The location is unobstructed by trees. buildings or topographical features. A Rohn SSV tower, of open lattice construction, is used to support the instrumentation. The tower has sufficient rigidity so that measurement errors are not introduced by tower vibrations. Also, the open lattice design of the tower does not significantly obstruct the air flow near the tower.

The tower was reinstrumented in late 1981 and now consists of:

Wind speed measurements - 4 Weather Measure W203 anemometers with SS cups and HF tachometer generator (2 sensors at the 60 meter level and 2 sensors at the 10 meter level).

Starting threshold	<1 mph
Range	0 to 100 mph
Accuracy	Δ1 percent or .15 mph whichever is greater

Wind direction measurements - 4 Weather Measure W204 light-weight vanes. (2 sensors at the 60 meter level and 2 sensors at the 10 meter level).

Threshold	<1 mph
Damping ratio	.4
Distance constant	1.9 ft
Range	0 to 540°
Accuracy	0.5 percent or Δ1.8°

Temperature measurements - 4 Weather Measure matched platinum probe Model IS6 motor aspirated shield (temperatures at 60 meter and 10 meter levels.

Range	-40 to 120 F°
Accuracy	Δ0.1°F

Dew point - 2 Mfgr Standard YSI-9400 with aspirator shield at the 10 meter level.

Range	-40 to 120°F
Accuracy	Δ2.0°F

During the first quarter 1986. the meteorological data acquisition system recovered 99.1% of the data. During the second quarter, 98.4% of the data was recovered.

The TP-100 Platinum temperature probes were replaced June 27, 1986 with the matched platinum temperature probes and placed in service.

TABLE VII-A

CLASSIFICATION OF ATMOSPHERIC STABILITY

STABILITY CLASSIFICATION	PASQUILL CATEGORIES	$\sigma\theta$(a) (DEGREES)	TEMPERATURE CHANGE WITH HEIGHT (°C/100m)
Extremely unstable	A	25.0	<-1.9
Moderately unstable	B	20.0	-1.9 to -1.7
Slightly unstable	C	15.0	-1.7 to -1.5
Neutral	D	10.0	-1.5 to -0.5
Slightly stable	E	5.0	-0.5 to 1.5
Moderately stable	F	2.5	1.5 to 4.0
Extremely stable	G	1.7	>4.0

(a) Standard deviation of horizontal wind direction fluctuation over a period of 15 minutes to 1 hour. The values shown are average for each stability classification.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: A
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	2	1	1	1	0	5
NW	0	0	1	0	0	0	1
WNW	0	3	0	0	0	0	3
W	0	4	0	0	0	0	4
WSW	0	3	2	1	0	0	6
SW	0	1	1	1	1	0	4
SSW	1	1	1	0	0	0	3
S	0	1	1	0	0	0	2
SSE	1	0	0	3	1	1	6
SE	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	3	16	7	6	3	1	36
CALMS	1						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: B
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	2	3	1	0	0	0	6
NNW	1	5	5	2	1	0	14
NW	0	8	2	0	0	0	10
WNW	2	7	0	0	0	0	9
W	0	10	2	0	0	0	12
WSW	0	6	3	0	0	0	9
SW	0	2	0	2	1	0	5
SSW	0	2	4	0	0	0	6
S	0	4	7	0	0	0	11
SSE	0	4	0	1	2	0	7
SE	0	2	1	0	0	0	3
ESE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
NE	2	0	0	0	0	0	2
NNE	1	0	0	0	0	0	1
TOTAL	9	54	25	5	4	0	97
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: C
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	2	1	1	0	1	0	5
NNW	1	2	9	4	0	0	16
NW	2	3	4	0	0	0	9
WNW	2	3	0	0	0	0	5
W	0	7	1	0	0	0	8
WSW	0	2	2	0	0	0	4
SW	0	2	3	1	0	0	6
SSW	0	7	3	1	1	0	12
S	1	5	7	0	0	0	13
SSE	1	1	5	4	1	0	12
SE	0	2	1	3	0	0	6
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	3	0	0	0	0	3
NE	2	1	0	0	0	0	3
NNE	3	1	0	0	0	0	4
TOTAL	14	40	36	13	3	0	106
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: D
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	6	7	3	0	2	0	18
NNW	12	16	11	7	3	0	49
NW	10	17	10	0	0	0	37
WNW	6	21	1	0	0	0	28
W	2	30	2	0	0	0	34
WSW	3	20	6	0	0	0	29
SW	7	15	4	3	3	1	33
SSW	9	32	7	6	2	1	57
S	9	33	30	22	10	8	112
SSE	15	29	27	50	30	30	181
SE	6	15	8	6	1	1	37
ESE	2	5	2	0	0	0	9
E	3	4	0	0	0	0	7
ENE	4	2	0	0	0	0	6
NE	10	4	0	0	0	0	14
NNE	6	3	0	0	0	0	9
TOTAL	110	253	111	94	51	41	660
CALMS	1						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: E
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	5	6	2	0	0	0	13
NNW	8	15	7	2	0	0	32
NW	5	11	7	0	0	0	23
WNW	3	7	2	0	0	0	12
W	5	12	0	0	0	0	17
WSW	8	9	0	0	0	0	17
SW	5	14	4	0	0	0	23
SSW	7	16	13	1	1	0	38
S	7	22	21	11	2	0	63
SSE	5	30	38	60	37	59	229
SE	4	34	42	27	4	5	116
ESE	2	20	7	1	0	0	30
E	3	8	0	0	0	0	11
ENE	5	10	0	0	0	0	15
NE	4	6	0	0	0	0	10
NNE	4	11	1	0	0	0	16
TOTAL	80	231	144	102	44	64	665
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: F
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	9	16	0	0	0	0	25
NNW	10	11	2	0	0	0	23
NW	1	11	2	0	0	0	14
WNW	3	4	1	0	0	0	8
W	4	6	2	0	0	0	12
WSW	1	7	0	0	0	0	8
SW	1	5	0	0	0	0	6
SSW	1	2	3	0	0	0	6
S	4	11	7	0	0	0	22
SSE	6	13	7	0	0	0	26
SE	4	28	31	0	0	0	63
ESE	8	23	20	0	0	0	51
E	9	18	4	0	0	0	31
ENE	9	12	0	0	0	0	21
NE	9	10	0	0	0	0	19
NNE	5	14	1	0	0	0	20
TOTAL	84	191	80	0	0	0	355
CALMS	1						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-B

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: G
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	3	5	1	0	0	0	9
NNW	1	3	3	0	0	0	7
NW	1	0	0	0	0	0	1
WNW	1	0	0	0	0	0	1
W	1	1	0	0	0	0	2
WSW	2	1	0	0	0	0	3
SW	1	2	0	0	0	0	3
SSW	2	4	0	0	0	0	6
S	3	4	1	0	0	0	8
SSE	2	8	1	0	0	0	11
SE	0	13	11	1	0	0	25
ESE	4	15	23	0	0	0	42
E	7	17	2	0	0	0	26
ENE	14	16	0	0	0	0	30
NE	12	18	0	0	0	0	30
NNE	5	10	0	0	0	0	15
TOTAL	59	117	42	1	0	0	219
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: A
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	2	1	1	1	0	5
NW	0	0	1	0	0	0	1
WNW	0	3	0	0	0	0	3
W	0	4	0	0	0	0	4
WSW	0	3	2	1	0	0	6
SW	0	1	1	1	1	0	4
SSW	1	1	1	0	0	0	3
S	0	1	1	0	0	0	2
SSE	1	0	0	3	1	1	6
SE	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	3	16	7	6	3	1	36
CALMS	1						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: B
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	2	2	1	0	0	0	5
NNW	1	4	5	2	1	0	13
NW	0	8	2	0	0	0	10
WNW	2	6	0	0	0	0	8
W	0	10	2	0	0	0	12
WSW	0	6	2	0	0	0	8
SW	0	1	0	2	1	0	4
SSW	0	2	4	0	0	0	6
S	0	3	7	0	0	0	10
SSE	0	3	0	1	2	0	6
SE	0	2	1	0	0	0	3
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
NE	1	0	0	0	0	0	1
NNE	1	0	0	0	0	0	1
TOTAL	8	47	24	5	4	0	88
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: C
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	2	1	1	0	1	0	5
NNW	1	2	8	3	0	0	14
NW	1	1	3	0	0	0	5
WNW	0	2	0	0	0	0	2
W	0	3	1	0	0	0	4
WSW	0	0	1	0	0	0	1
SW	0	1	2	1	0	0	4
SSW	0	6	2	1	1	0	10
S	1	4	7	0	0	0	12
SSE	1	1	5	4	1	0	12
SE	0	2	0	3	0	0	5
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	3	0	0	0	0	3
NE	1	1	0	0	0	0	2
NNE	2	1	0	0	0	0	3
TOTAL	9	28	30	12	3	0	82
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: D
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	5	6	3	0	2	0	16
NNW	9	12	9	5	3	0	38
NW	8	11	7	0	0	0	26
WNW	3	12	1	0	0	0	16
W	1	23	1	0	0	0	25
WSW	3	13	1	0	0	0	17
SW	7	12	2	3	3	1	28
SSW	8	22	6	6	2	1	45
S	5	23	22	22	10	8	90
SSE	13	23	21	48	30	30	165
SE	6	11	6	5	1	1	30
ESE	2	3	2	0	0	0	7
E	2	3	0	0	0	0	5
ENE	3	1	0	0	0	0	4
NE	9	3	0	0	0	0	12
NNE	5	3	0	0	0	0	8
TOTAL	89	181	81	89	51	41	532
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: E
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	4	5	1	0	0	0	10
NNW	6	14	5	2	0	0	27
NW	5	7	3	0	0	0	15
WNW	3	4	2	0	0	0	9
W	5	9	0	0	0	0	14
WSW	7	5	0	0	0	0	12
SW	5	9	3	0	0	0	17
SSW	7	11	11	1	1	0	31
S	6	14	18	11	2	0	51
SSE	5	26	29	48	37	59	204
SE	4	34	30	10	4	5	87
ESE	2	17	6	1	0	0	26
E	3	6	0	0	0	0	9
ENE	4	10	0	0	0	0	14
NE	4	5	0	0	0	0	9
NNE	4	9	1	0	0	0	14
TOTAL	74	185	109	73	44	64	549
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: F
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	5	9	0	0	0	0	14
NNW	6	7	2	0	0	0	15
NW	1	8	1	0	0	0	10
WNW	3	3	1	0	0	0	7
W	2	3	2	0	0	0	7
WSW	0	4	0	0	0	0	4
SW	0	5	0	0	0	0	5
SSW	1	2	3	0	0	0	6
S	2	10	7	0	0	0	19
SSE	4	10	7	0	0	0	21
SE	3	20	25	0	0	0	48
ESE	7	21	11	0	0	0	39
E	8	18	4	0	0	0	30
ENE	8	12	0	0	0	0	20
NE	8	7	0	0	0	0	15
NNE	4	11	0	0	0	0	15
TOTAL	62	150	63	0	0	0	275
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-C

JOINT FREQUENCY DISTRIBUTIONS - FIRST QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 1
STABILITY CLASS: G
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	2	4	1	0	0	0	7
NNW	1	1	3	0	0	0	5
NW	1	0	0	0	0	0	1
WNW	1	0	0	0	0	0	1
W	1	1	0	0	0	0	2
WSW	1	1	0	0	0	0	2
SW	1	1	0	0	0	0	2
SSW	2	4	0	0	0	0	6
S	1	3	0	0	0	0	4
SSE	1	6	1	0	0	0	8
SE	0	9	9	1	0	0	19
ESE	3	13	19	0	0	0	35
E	5	15	2	0	0	0	22
ENE	9	15	0	0	0	0	24
NE	8	16	0	0	0	0	24
NNE	4	7	0	0	0	0	11
TOTAL	41	96	35	1	0	0	173
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: A
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	1	1	0	0	0	2
NNW	0	6	1	0	4	0	11
NW	0	6	12	12	3	0	33
WNW	0	9	8	2	0	0	19
W	1	29	34	7	0	0	71
WSW	0	18	20	11	1	0	50
SW	0	7	30	3	0	0	40
SSW	0	0	2	0	0	0	2
S	0	0	2	0	0	0	2
SSE	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	1	78	110	35	8	0	232
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: B
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	0	0	0	0	0	1
NNW	1	4	3	2	2	0	12
NW	1	2	4	4	0	0	11
WNW	1	5	5	1	0	0	12
W	0	7	11	1	0	0	19
WSW	1	12	21	4	0	0	38
SW	0	18	17	2	0	0	37
SSW	0	6	3	0	0	0	9
S	1	1	3	0	0	0	5
SSE	0	2	1	0	0	0	3
SE	0	1	1	0	0	0	2
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
TOTAL	6	59	69	14	2	0	150
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: C
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	1	0	0	0	0	2
NNW	0	3	0	1	1	0	5
NW	2	14	4	1	0	0	21
WNW	0	11	5	0	0	0	16
W	2	16	9	0	0	0	27
WSW	1	24	18	5	0	0	48
SW	0	8	9	1	1	0	19
SSW	1	12	4	0	0	0	17
S	0	6	1	0	0	0	7
SSE	0	1	0	0	0	0	1
SE	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
E	1	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
TOTAL	8	98	50	8	2	0	166
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: D
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	5	5	1	0	0	0	11
NNW	5	7	4	1	1	0	18
NW	4	5	9	6	0	0	24
WNW	4	18	11	1	0	0	34
W	4	36	31	4	1	0	76
WSW	2	58	67	14	0	0	141
SW	8	30	26	9	0	0	73
SSW	8	24	7	0	0	0	39
S	14	21	11	1	0	0	47
SSE	5	23	11	0	0	0	39
SE	4	11	17	1	0	0	33
ESE	0	5	5	0	0	0	10
E	2	0	0	0	0	0	2
ENE	5	1	0	0	0	0	6
NE	1	3	0	0	0	0	4
NNE	0	7	0	0	0	0	7
TOTAL	71	254	200	37	2	0	564
CALMS	1						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: E
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	9	5	0	1	0	0	15
NNW	5	5	0	0	0	0	10
NW	3	12	3	2	0	0	20
WNW	3	10	2	0	0	0	15
W	3	21	7	1	0	0	32
WSW	6	40	41	6	0	0	93
SW	12	36	28	1	0	0	77
SSW	13	58	9	2	0	0	82
S	11	41	9	0	0	0	61
SSE	6	53	19	0	0	0	78
SE	4	39	27	0	0	0	70
ESE	9	13	10	0	0	0	32
E	8	6	0	0	0	0	14
ENE	3	7	0	0	0	0	10
NE	11	7	0	0	0	0	18
NNE	8	5	0	0	0	0	13
TOTAL	114	358	155	13	0	0	640
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: F
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	5	10	1	1	0	0	17
NNW	7	16	0	0	0	0	23
NW	4	13	6	0	0	0	23
WNW	3	9	2	0	0	0	14
W	3	3	0	0	0	0	6
WSW	2	16	10	0	0	0	28
SW	5	8	4	0	0	0	17
SSW	5	14	1	0	0	0	20
S	3	16	2	0	0	0	21
SSE	6	17	8	0	0	0	31
SE	1	15	3	0	0	0	19
ESE	3	14	1	0	0	0	18
E	3	4	0	0	0	0	7
ENE	4	5	0	0	0	0	9
NE	8	6	0	0	0	0	14
NNE	7	5	0	0	0	0	12
TOTAL	69	171	38	1	0	0	279
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-D

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

CONTINUOUS RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: G
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	4	0	0	0	0	5
NNW	3	6	0	0	0	0	9
NW	0	4	2	0	0	0	6
WNW	1	2	0	0	0	0	3
W	0	3	0	0	0	0	3
WSW	0	1	3	0	0	0	4
SW	1	1	0	0	0	0	2
SSW	1	4	0	0	0	0	5
S	0	2	0	0	0	0	2
SSE	3	1	0	0	0	0	4
SE	4	1	1	0	0	0	6
ESE	2	7	4	0	0	0	13
E	0	7	1	0	0	0	8
ENE	3	10	0	0	0	0	13
NE	4	12	0	0	0	0	16
NNE	5	11	1	0	0	0	17
TOTAL	28	76	12	0	0	0	116
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: A
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	1	0	0	0	1
NNW	0	1	0	0	4	0	5
NW	0	10	17	15	3	0	45
WNW	0	4	11	5	0	0	20
W	0	29	24	4	0	0	57
WSW	0	26	58	9	1	0	94
SW	1	15	55	6	0	0	77
SSW	0	9	11	0	0	0	20
S	0	1	2	0	0	0	3
SSE	0	1	0	0	0	0	1
SE	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	1	98	179	39	8	0	325
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: B
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	0	0	0	0	0	1
NNW	1	7	2	2	2	0	14
NW	1	2	3	4	0	0	10
WNW	0	9	6	1	0	0	16
W	0	8	7	2	0	0	17
WSW	0	18	13	2	1	0	34
SW	0	16	12	3	0	0	31
SSW	0	9	6	0	0	0	15
S	0	5	6	0	0	0	11
SSE	0	4	0	0	0	0	4
SE	0	1	2	0	0	0	3
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
TOTAL	3	80	57	14	3	0	157
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: C
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	1	0	0	0	0	2
NNW	0	2	0	1	1	0	4
NW	1	11	3	1	0	0	16
WNW	0	7	1	0	0	0	8
W	1	10	6	2	0	0	19
WSW	1	24	10	3	0	0	38
SW	0	9	4	1	1	0	15
SSW	1	11	3	0	0	0	15
S	1	6	1	0	0	0	8
SSE	0	2	1	0	0	0	3
SE	0	4	1	0	0	0	5
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
TOTAL	6	88	30	8	2	0	134
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: D
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	3	7	0	0	0	0	10
NNW	6	5	3	1	1	0	16
NW	4	2	1	3	0	0	10
WNW	1	20	5	0	0	0	26
W	3	17	28	5	1	0	54
WSW	1	43	33	7	0	0	84
SW	9	25	25	8	0	0	67
SSW	10	18	8	0	0	0	36
S	13	24	8	0	0	0	45
SSE	7	25	12	0	0	0	44
SE	4	13	14	1	0	0	32
ESE	0	3	6	0	0	0	9
E	3	3	0	0	0	0	6
ENE	2	1	0	0	0	0	3
NE	0	2	0	0	0	0	2
NNE	0	7	0	0	0	0	7
TOTAL	66	215	143	25	2	0	451
CALMS	1						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: E
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	9	6	0	1	0	0	16
NNW	4	7	0	0	0	0	11
NW	4	12	3	1	0	0	20
WNW	2	12	2	0	0	0	16
W	1	13	4	2	0	0	20
WSW	5	25	20	0	0	0	50
SW	8	20	14	1	0	0	43
SSW	7	41	5	1	0	0	54
S	11	34	7	0	0	0	52
SSE	3	50	21	0	0	0	74
SE	5	47	25	0	0	0	77
ESE	10	19	9	0	0	0	38
E	6	6	1	0	0	0	13
ENE	6	8	1	0	0	0	15
NE	10	6	0	0	0	0	16
NNE	5	5	0	0	0	0	10
TOTAL	96	311	112	6	0	0	525
CALMS	5						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: F
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	4	9	1	1	0	0	15
NNW	5	12	0	0	0	0	17
NW	5	12	6	0	0	0	23
WNW	1	5	2	0	0	0	8
W	1	4	0	0	0	0	5
WSW	5	8	8	0	0	0	21
SW	2	2	2	0	0	0	6
SSW	2	7	1	0	0	0	10
S	7	7	2	0	0	0	16
SSE	5	14	4	0	0	0	23
SE	1	12	3	0	0	0	16
ESE	2	13	1	0	0	0	16
E	2	3	0	0	0	0	5
ENE	4	5	0	0	0	0	9
NE	7	5	0	0	0	0	12
NNE	7	4	0	0	0	0	11
TOTAL	60	122	30	1	0	0	213
CALMS	0						

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

TABLE VII-E

JOINT FREQUENCY DISTRIBUTIONS - SECOND QUARTER

PURGE RELEASE METEOROLOGY
HOURS AT EACH WIND SPEED AND DIRECTION

PERIOD OF RECORD: 1986 QUARTER 2
STABILITY CLASS: G
ELEVATION: GROUND LEVEL RELEASE

WIND SPEED (MPH) AT 10 METER LEVEL

WIND DIRECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	3	2	0	0	0	0	5
NNW	4	5	0	0	0	0	9
NW	0	4	1	0	0	0	5
WNW	1	2	0	0	0	0	3
W	0	3	0	0	0	0	3
WSW	0	3	1	0	0	0	4
SW	0	0	1	0	0	0	1
SSW	2	1	0	0	0	0	3
S	0	2	0	0	0	0	2
SSE	3	2	0	0	0	0	5
SE	3	1	1	0	0	0	5
ESE	3	5	4	0	0	0	12
E	0	9	2	0	0	0	11
ENE	3	9	0	0	0	0	12
NE	2	12	0	0	0	0	14
NNE	4	8	1	0	0	0	13
TOTAL	28	68	11	0	0	0	107
CALMS	0						

VIII. CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL AND TO THE PROCESS CONTROL RPOGRAM

A. Offsite Dose Calculation Manual.

No changes other than editorial or clarification changes were made to the ODCM during this period.

B. Process Control Program

No changes other than editorial were made to the PCP during this period.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

GENERAL PUBLIC DOSE SUMMARY (MANREM)

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.20E-02	1.28E-02	4.25E-02
GROUND	1.38E-04	1.38E-04	1.38E-04	1.38E-04	1.38E-04	1.38E-04	1.38E-04	1.61E-04
INHAL	7.81E-03	7.80E-03	3.52E-05	7.83E-03	7.86E-03	2.14E-02	7.79E-03	7.79E-03
VEGET	8.24E-03	8.08E-03	3.38E-04	8.44E-03	8.53E-03	9.64E-02	8.04E-03	8.03E-03
COW MILK	3.02E-03	2.83E-03	4.09E-04	3.25E-03	3.42E-03	1.20E-01	2.78E-03	2.77E-03
MEAT	1.83E-03	1.81E-03	3.19E-05	1.85E-03	1.85E-03	8.76E-03	1.81E-03	1.81E-03
TOTAL	3.30E-02	3.26E-02	1.29E-02	3.35E-02	3.38E-02	2.59E-01	3.34E-02	6.30E-02

AVERAGE INDIVIDUAL (MREM)

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
TOTAL	1.63E-05	1.61E-05	6.35E-06	1.65E-05	1.66E-05	1.28E-04	1.64E-05	3.10E-05

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

SITE BOUNDARY

SECTOR	DISTANCE (METERS)	BETA AIR DOSE (MRAD)	GAMMA AIR DOSE (MRAD)	TOTAL BODY (MREM)	SKIN (MREM)
N	658	5.04E-02	1.65E-02	1.01E-02	2.86E-02
NNE	670	3.82E-02	1.25E-02	7.53E-03	2.15E-02
NE	792	1.82E-02	5.96E-03	3.58E-03	1.02E-02
ENE	1185	8.29E-03	2.72E-03	1.63E-03	4.66E-03
E	3605	8.23E-04	2.70E-04	1.61E-04	4.63E-04
ESE	1697	3.41E-03	1.12E-03	6.68E-04	1.92E-03
SE	1152	1.16E-02	3.82E-03	2.29E-03	6.56E-03
SSE	1170	1.77E-02	5.79E-03	3.48E-03	9.96E-03
S	1759	5.03E-03	1.65E-03	9.79E-04	2.82E-03
SSW	1103	1.59E-02	5.20E-03	3.08E-03	8.88E-03
SW	1146	2.20E-02	7.21E-03	4.26E-03	1.23E-02
WSW	987	2.83E-02	9.28E-03	5.48E-03	1.59E-02
W	969	2.58E-02	8.47E-03	5.01E-03	1.45E-02
WNW	987	2.98E-02	9.78E-03	5.82E-03	1.68E-02
NW	795	4.95E-02	1.62E-02	9.79E-03	2.79E-02
NNW	670	8.17E-02	2.68E-02	1.66E-02	4.67E-02

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

EXCLUSION AREA BOUNDARY

SECTOR	DISTANCE (METERS)	BETA AIR DOSE (MRAD)	GAMMA AIR DOSE (MRAD)	TOTAL BODY (MREM)	SKIN (MREM)
N	640	5.26E-02	1.72E-02	1.05E-02	2.99E-02
NNE	640	4.10E-02	1.34E-02	8.08E-03	2.31E-02
NE	640	2.50E-02	8.20E-03	4.93E-03	1.41E-02
ENE	640	2.13E-02	6.98E-03	4.19E-03	1.20E-02
E	640	2.63E-02	8.60E-03	5.18E-03	1.48E-02
ESE	640	2.09E-02	6.85E-03	4.11E-03	1.17E-02
SE	640	2.88E-02	9.45E-03	5.67E-03	1.62E-02
SSE	640	4.52E-02	1.48E-02	8.92E-03	2.55E-02
S	640	3.42E-02	1.12E-02	6.66E-03	1.92E-02
SSW	640	3.89E-02	1.28E-02	7.56E-03	2.18E-02
SW	640	5.89E-02	1.93E-02	1.14E-02	3.30E-02
WSW	640	5.97E-02	1.95E-02	1.16E-02	3.34E-02
W	640	5.28E-02	1.73E-02	1.03E-02	2.96E-02
WNW	640	6.22E-02	2.04E-02	1.22E-02	3.49E-02
NW	640	6.96E-02	2.28E-02	1.38E-02	3.93E-02
NNW	640	8.74E-02	2.86E-02	1.78E-02	4.98E-02

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST RESIDENCES DOSE SUMMARIES (MREM)

NEAREST HOUSE NE 1432 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.28E-03	3.53E-03
GROUND	3.69E-05	3.69E-05	3.69E-05	3.69E-05	3.69E-05	3.69E-05	3.69E-05	4.33E-05
INHAL								
ADULT	5.52E-04	5.50E-04	2.56E-06	5.53E-04	5.55E-04	1.62E-03	5.50E-04	5.50E-04
TEEN	5.56E-04	5.54E-04	3.60E-06	5.58E-04	5.61E-04	1.87E-03	5.53E-04	5.53E-04
CHILD	4.92E-04	4.89E-04	4.88E-06	4.94E-04	4.96E-04	1.95E-03	4.89E-04	4.89E-04
INFANT	2.83E-04	2.81E-04	3.75E-06	2.86E-04	2.86E-04	1.62E-03	2.81E-04	2.81E-04
TOTAL								
ADULT	1.80E-03	1.80E-03	1.25E-03	1.80E-03	1.80E-03	2.87E-03	1.87E-03	4.12E-03
TEEN	1.80E-03	1.80E-03	1.25E-03	1.80E-03	1.81E-03	3.12E-03	1.87E-03	4.12E-03
CHILD	1.74E-03	1.74E-03	1.25E-03	1.74E-03	1.74E-03	3.20E-03	1.87E-03	4.12E-03
INFANT	1.53E-03	1.53E-03	1.25E-03	1.53E-03	1.53E-03	2.87E-03	1.87E-03	4.12E-03

NEAREST HOUSE ENE 1128 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.70E-03	1.70E-03	1.70E-03	1.70E-03	1.70E-03	1.70E-03	1.79E-03	4.97E-03
GROUND	5.03E-05	5.03E-05	5.03E-05	5.03E-05	5.03E-05	5.03E-05	5.03E-05	5.89E-05
INHAL								
ADULT	9.00E-04	8.98E-04	3.62E-06	9.02E-04	9.05E-04	2.42E-03	8.97E-04	8.97E-04
TEEN	9.07E-04	9.04E-04	5.09E-06	9.10E-04	9.14E-04	2.77E-03	9.03E-04	9.03E-04
CHILD	8.02E-04	7.99E-04	6.90E-06	8.05E-04	8.09E-04	2.87E-03	7.99E-04	7.98E-04
INFANT	4.62E-04	4.59E-04	5.30E-06	4.65E-04	4.66E-04	2.35E-03	4.59E-04	4.59E-04
TOTAL								
ADULT	2.65E-03	2.65E-03	1.75E-03	2.65E-03	2.65E-03	4.17E-03	2.74E-03	5.92E-03
TEEN	2.66E-03	2.65E-03	1.76E-03	2.66E-03	2.66E-03	4.52E-03	2.74E-03	5.93E-03
CHILD	2.55E-03	2.55E-03	1.76E-03	2.55E-03	2.66E-03	4.62E-03	2.64E-03	5.83E-03
INFANT	2.21E-03	2.21E-03	1.76E-03	2.21E-03	2.22E-03	4.10E-03	2.30E-03	5.49E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE SE 2560 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.61E-04	3.61E-04	3.61E-04	3.61E-04	3.61E-04	3.61E-04	3.80E-04	1.05E-03
GROUND	9.02E-06	9.02E-06	9.02E-06	9.02E-06	9.02E-06	9.02E-06	9.02E-06	1.06E-05
INHAL								
ADULT	1.73E-04	1.72E-04	7.45E-07	1.73E-04	1.74E-04	4.86E-04	1.72E-04	1.72E-04
TEEN	1.74E-04	1.74E-04	1.05E-06	1.75E-04	1.76E-04	5.59E-04	1.73E-04	1.73E-04
CHILD	1.54E-04	1.53E-04	1.42E-06	1.55E-04	1.55E-04	5.81E-04	1.53E-04	1.53E-04
INFANT	8.87E-05	8.82E-05	1.09E-06	8.94E-05	8.96E-05	4.79E-04	8.82E-05	8.82E-05
TOTAL								
ADULT	5.43E-04	5.42E-04	3.71E-04	5.43E-04	5.44E-04	8.56E-05	5.61E-04	1.23E-03
TEEN	5.44E-04	5.44E-04	3.71E-04	5.45E-04	5.46E-04	9.29E-04	5.62E-04	1.23E-03
CHILD	5.24E-04	5.23E-04	3.71E-04	5.25E-04	5.25E-04	9.51E-04	5.42E-04	1.21E-03
INFANT	4.59E-04	4.58E-04	3.71E-04	4.59E-04	4.60E-04	8.49E-04	4.77E-04	1.15E-03

NEAREST HOUSE SSE 7803 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	6.23E-05	6.23E-05	6.23E-05	6.23E-05	6.23E-05	6.23E-05	6.56E-05	1.82E-04
GROUND	1.17E-06	1.17E-06	1.17E-06	1.17E-06	1.17E-06	1.17E-06	1.17E-06	1.38E-06
INHAL								
ADULT	3.14E-05	3.13E-05	1.21E-07	3.14E-05	3.15E-05	8.27E-05	3.13E-05	3.13E-05
TEEN	3.16E-05	3.15E-05	1.71E-07	3.17E-05	3.18E-05	9.46E-05	3.15E-05	3.15E-05
CHILD	2.79E-05	2.78E-05	2.31E-07	2.80E-05	2.82E-05	9.79E-05	2.78E-05	2.78E-05
INFANT	1.61E-05	1.60E-05	1.78E-07	1.62E-05	1.62E-05	8.00E-05	1.60E-05	1.60E-05
TOTAL								
ADULT	9.49E-05	9.48E-05	6.36E-05	9.49E-05	9.50E-05	1.46E-04	9.81E-05	2.15E-04
TEEN	9.51E-05	9.50E-05	6.36E-05	9.52E-05	9.53E-05	1.58E-04	9.83E-05	2.15E-04
CHILD	9.14E-05	9.13E-05	6.37E-05	9.15E-05	9.17E-05	1.61E-04	9.46E-05	2.11E-04
INFANT	4.59E-04	4.58E-04	3.71E-04	4.59E-04	4.60E-04	8.49E-04	4.77E-04	1.15E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE S 6492 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	6.77E-05	6.77E-05	6.77E-05	6.77E-05	6.77E-05	6.77E-05	7.13E-05	1.97E-04
GROUND	8.57E-07	8.57E-07	8.57E-07	8.57E-07	8.57E-07	8.57E-07	8.57E-07	1.00E-06
INHAL								
ADULT	3.57E-05	3.56E-05	1.33E-07	3.58E-05	3.59E-05	9.20E-05	3.56E-05	3.56E-05
TEEN	3.59E-05	3.58E-05	1.87E-07	3.60E-05	3.62E-05	1.05E-04	3.58E-05	3.58E-05
CHILD	3.18E-05	3.17E-05	2.54E-07	3.19E-05	3.20E-05	1.09E-04	3.17E-05	3.16E-05
INFANT	1.83E-05	1.82E-05	1.96E-07	1.84E-05	1.84E-05	8.84E-05	1.82E-05	1.82E-05
TOTAL								
ADULT	1.04E-04	1.04E-04	6.87E-05	1.04E-04	1.04E-04	1.61E-04	1.41E-04	2.34E-04
TEEN	1.05E-04	1.04E-04	6.87E-05	1.05E-04	1.05E-04	1.74E-04	1.08E-04	2.34E-04
CHILD	1.00E-04	1.00E-04	6.88E-05	1.00E-04	1.01E-04	1.77E-04	1.04E-04	2.30E-04
INFANT	8.68E-04	8.68E-05	6.87E-05	8.70E-04	8.70E-05	1.57E-04	9.04E-05	2.16E-04

NEAREST HOUSE SSW 3718 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.25E-04	2.25E-04	2.25E-04	2.25E-04	2.25E-04	2.25E-04	2.37E-04	6.56E-04
GROUND	2.80E-06	2.80E-06	2.80E-06	2.80E-06	2.80E-06	2.80E-06	2.80E-06	3.29E-06
INHAL								
ADULT	1.04E-04	1.04E-04	4.57E-07	1.04E-04	1.04E-04	2.96E-04	1.03E-04	1.03E-04
TEEN	1.05E-04	1.04E-04	6.43E-07	1.05E-04	1.06E-04	3.41E-04	1.04E-04	1.04E-04
CHILD	9.25E-05	9.21E-05	8.72E-07	9.29E-05	9.34E-05	3.55E-04	9.21E-05	9.21E-05
INFANT	5.33E-05	5.30E-05	6.71E-07	5.37E-05	5.38E-05	2.93E-04	5.30E-05	5.29E-05
TOTAL								
ADULT	3.32E-04	3.32E-04	2.28E-04	3.32E-04	3.32E-04	5.24E-04	3.43E-04	7.62E-04
TEEN	3.33E-04	3.32E-04	2.28E-04	3.33E-04	3.34E-04	5.69E-04	3.44E-04	7.63E-04
CHILD	3.20E-04	3.20E-04	2.29E-04	3.21E-04	3.21E-04	5.83E-04	3.32E-04	7.51E-04
INFANT	2.81E-04	2.81E-04	2.28E-04	2.82E-04	2.82E-04	5.21E-04	2.93E-04	7.12E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE SW 1219 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.81E-03	3.81E-03	3.81E-03	3.81E-03	3.81E-03	3.81E-03	4.00E-03	1.11E-02
GROUND	5.55E-05	5.55E-05	5.55E-05	5.55E-05	5.55E-05	5.55E-05	5.55E-05	6.50E-05
INHAL								
ADULT	1.75E-03	1.75E-03	8.08E-06	1.76E-03	1.76E-03	5.14E-03	1.75E-03	1.75E-03
TEEN	1.77E-03	1.76E-03	1.14E-05	1.77E-03	1.78E-03	5.92E-03	1.76E-03	1.76E-03
CHILD	1.56E-03	1.56E-03	1.54E-05	1.57E-03	1.58E-03	6.17E-03	1.55E-03	1.55E-03
INFANT	8.99E-04	8.94E-04	1.18E-05	9.08E-04	9.09E-04	5.11E-03	8.94E-04	8.94E-04
TOTAL								
ADULT	5.61E-03	5.62E-03	3.87E-03	5.62E-03	5.62E-03	9.00E-03	5.80E-03	1.29E-02
TEEN	5.63E-03	5.62E-03	3.88E-03	5.63E-03	5.64E-03	9.78E-03	5.81E-03	1.29E-02
CHILD	5.42E-03	5.42E-03	3.88E-03	5.43E-03	5.44E-03	1.00E-02	5.60E-03	1.27E-02
INFANT	4.76E-03	4.76E-03	3.88E-03	4.77E-03	4.77E-03	8.98E-03	4.95E-03	1.21E-02

NEAREST HOUSE WSW 2103 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.07E-03	1.07E-03	1.07E-03	1.07E-03	1.07E-03	1.07E-03	1.13E-03	3.13E-03
GROUND	1.45E-05	1.45E-05	1.45E-05	1.45E-05	1.45E-05	1.45E-05	1.45E-05	1.70E-05
INHAL								
ADULT	4.89E-04	4.88E-04	2.24E-06	4.90E-04	4.92E-04	1.43E-03	4.87E-04	4.87E-04
TEEN	4.92E-04	4.91E-04	3.15E-06	4.95E-04	4.97E-04	1.65E-03	4.90E-04	4.90E-04
CHILD	4.36E-04	4.34E-04	4.27E-06	4.38E-04	4.40E-04	1.72E-03	4.34E-04	4.33E-04
INFANT	2.51E-04	2.49E-04	3.28E-06	2.53E-04	2.53E-04	1.42E-03	2.49E-04	2.49E-04
TOTAL								
ADULT	1.57E-03	1.57E-03	1.08E-03	1.57E-03	1.58E-03	2.51E-03	1.63E-03	3.63E-03
TEEN	1.58E-03	1.57E-03	1.09E-03	1.58E-03	1.58E-03	2.73E-03	1.63E-03	3.64E-03
ADILD	1.52E-03	1.52E-03	1.09E-03	1.52E-03	1.52E-03	2.80E-03	1.58E-03	3.58E-03
INFANT	1.33E-03	1.33E-03	1.09E-03	1.34E-03	1.34E-03	2.50E-03	1.39E-03	3.40E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE W 3414 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.67E-04	3.67E-04	3.67E-04	3.67E-04	3.67E-04	3.67E-04	3.87E-04	1.07E-03
GROUND	4.35E-06	4.35E-06	4.35E-06	4.35E-06	4.35E-06	4.35E-06	4.35E-06	5.10E-06
INHAL								
ADULT	1.61E-04	1.60E-04	7.51E-07	1.61E-04	1.62E-04	4.76E-04	1.60E-04	1.60E-04
TEEN	1.62E-04	1.61E-04	1.06E-06	1.63E-04	1.63E-04	5.50E-04	1.61E-04	1.61E-04
CHILD	1.43E-04	1.43E-04	1.43E-06	1.44E-04	1.45E-04	5.73E-04	1.43E-04	1.43E-04
INFANT	8.25E-05	8.20E-05	1.10E-06	8.32E-05	8.33E-05	4.76E-04	8.20E-05	8.19E-05
TOTAL								
ADULT	5.32E-04	5.31E-04	3.72E-04	5.32E-04	5.33E-04	8.47E-04	5.51E-04	1.23E-03
TEEN	5.33E-04	5.32E-04	3.72E-04	5.34E-04	5.34E-04	9.21E-04	5.52E-04	1.24E-03
CHILD	5.14E-04	5.14E-04	3.73E-04	5.15E-04	5.16E-04	9.44E-04	5.34E-04	1.22E-03
INFANT	4.54E-04	4.53E-04	3.72E-04	4.54E-04	4.55E-04	8.47E-04	4.73E-04	1.16E-03

NEAREST HOUSE WNW 4389 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.85E-04	7.89E-04
GROUND	3.91E-06	3.91E-06	3.91E-06	3.91E-06	3.91E-06	3.91E-06	3.91E-06	4.58E-06
INHAL								
ADULT	1.21E-04	1.21E-04	5.45E-07	1.21E-04	1.22E-04	3.51E-04	1.21E-04	1.21E-04
TEEN	1.22E-04	1.22E-04	7.66E-07	1.22E-04	1.23E-04	4.04E-04	1.21E-04	1.21E-04
CHILD	1.08E-04	1.07E-04	1.04E-06	1.08E-04	1.09E-04	4.21E-04	1.07E-04	1.07E-04
INFANT	6.21E-05	6.17E-05	8.00E-07	6.27E-05	6.27E-05	3.48E-04	6.17E-05	6.17E-05
TOTAL								
ADULT	3.95E-04	3.95E-04	2.74E-04	3.95E-04	3.96E-04	6.25E-04	4.10E-04	9.15E-04
TEEN	3.96E-04	3.96E-04	2.75E-04	3.96E-04	3.97E-04	6.78E-04	4.10E-04	9.15E-04
CHILD	3.82E-04	3.81E-04	2.75E-04	3.82E-04	3.83E-04	6.95E-04	3.96E-04	9.01E-04
INFANT	3.36E-04	3.36E-04	2.75E-04	3.37E-04	3.37E-04	6.22E-04	3.51E-04	8.55E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE NW 5334 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.10E-04	2.10E-04	2.10E-04	2.10E-04	2.10E-04	2.10E-04	2.21E-04	6.12E-04
GROUND	4.50E-06	4.50E-06	4.50E-06	4.50E-06	4.50E-06	4.50E-06	4.50E-06	5.28E-06
INHAL								
ADULT	9.73E-05	9.70E-05	4.18E-07	9.75E-05	9.78E-05	2.74E-04	9.69E-05	9.69E-05
TEEN	9.79E-05	9.76E-05	5.88E-07	9.83E-05	9.88E-05	3.14E-04	9.75E-05	9.75E-05
CHILD	8.67E-05	8.63E-05	7.97E-07	8.70E-05	8.74E-05	3.27E-04	8.63E-05	8.62E-05
INFANT	4.99E-05	4.96E-05	6.13E-07	5.03E-05	5.04E-05	2.69E-04	4.96E-05	4.96E-05
TOTAL								
ADULT	3.12E-04	3.11E-04	2.15E-04	3.12E-04	3.12E-04	4.88E-04	3.22E-04	7.14E-04
TEEN	3.12E-04	3.12E-04	2.15E-04	3.13E-04	3.13E-04	5.28E-04	3.23E-04	7.15E-03
CHILD	3.01E-04	3.01E-04	2.15E-04	3.01E-04	3.02E-04	5.41E-04	3.12E-04	7.03E-04
INFANT	2.64E-04	2.64E-04	2.15E-04	2.65E-04	2.65E-04	4.83E-04	2.75E-04	6.67E-04

NEAREST HOUSE NNW 7254 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.40E-04	1.40E-04	1.40E-04	1.40E-04	1.40E-04	1.40E-04	1.47E-04	4.08E-04
GROUND	4.96E-06	4.96E-06	4.96E-06	4.96E-06	4.96E-06	4.96E-06	4.96E-06	5.81E-06
INHAL								
ADULT	6.29E-05	6.28E-05	2.74E-07	6.31E-05	6.33E-05	1.79E-04	6.27E-05	6.27E-05
TEEN	6.34E-05	6.31E-05	3.85E-07	6.36E-05	6.39E-05	2.05E-04	6.31E-05	6.31E-05
CHILD	5.61E-05	5.58E-05	5.22E-07	5.63E-05	5.66E-05	2.14E-04	5.58E-05	5.58E-05
INFANT	3.23E-05	3.21E-05	4.02E-07	3.25E-05	3.26E-05	1.76E-04	3.21E-05	3.21E-05
TOTAL								
ADULT	2.08E-04	2.08E-04	1.45E-04	2.08E-04	2.08E-04	3.24E-04	2.15E-04	4.77E-04
TEEN	2.08E-04	2.08E-04	1.45E-04	2.09E-04	2.09E-04	3.50E-04	2.15E-04	4.77E-04
CHILD	2.01E-04	2.01E-04	1.45E-04	2.01E-04	2.02E-04	3.59E-04	2.08E-04	4.70E-04
INFANT	1.77E-04	1.77E-04	1.45E-04	1.77E-04	1.78E-04	3.21E-04	1.84E-04	4.46E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

MILK COW ENE 1128 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.37E-04	5.79E-04	1.08E-04	7.00E-04	7.63E-04	3.98E-02	5.60E-04	5.47E-04
TEEN	8.47E-04	7.55E-04	1.96E-04	9.84E-04	1.10E-03	6.28E-02	7.20E-04	7.12E-04
CHILD	1.35E-03	1.16E-03	4.75E-04	1.60E-03	1.77E-03	1.24E-01	1.14E-03	1.13E-03
INFANT	2.12E-03	1.74E-03	9.39E-04	2.81E-03	2.82E-03	3.00E-01	1.73E-03	1.71E-03

MILK COW SW 3187 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.35E-04	1.30E-04	1.05E-05	1.41E-04	1.48E-04	3.92E-03	1.27E-04	1.27E-04
TEEN	1.78E-04	1.69E-04	1.90E-05	1.91E-04	2.02E-04	6.16E-03	1.66E-04	1.65E-04
CHILD	2.82E-04	2.64E-04	4.60E-05	3.06E-04	3.23E-04	1.21E-02	2.62E-04	2.61E-04
INFANT	4.35E-04	3.99E-04	9.09E-05	5.02E-04	5.03E-04	2.92E-02	3.98E-04	3.96E-04

MILK COW WSW 3621 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.07E-04	1.03E-04	8.23E-06	1.12E-04	1.17E-04	3.08E-03	1.01E-04	1.00E-04
TEEN	1.41E-04	1.34E-04	1.49E-05	1.51E-04	1.60E-04	4.84E-03	1.31E-04	1.31E-04
CHILD	2.24E-04	2.09E-04	3.61E-05	2.42E-04	2.55E-04	9.50E-03	2.07E-04	2.06E-04
INFANT	3.45E-04	3.16E-04	7.14E-05	3.97E-04	3.98E-04	2.29E-02	3.15E-04	3.13E-04

MILK COW W 7741 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.36E-05	2.28E-05	1.43E-06	2.44E-05	2.52E-05	5.40E-04	2.24E-05	2.24E-05
TEEN	3.09E-05	2.97E-05	2.60E-06	3.27E-05	3.42E-05	8.48E-04	2.92E-05	2.91E-05
CHILD	4.90E-05	4.65E-05	6.29E-06	5.23E-05	5.45E-05	1.66E-03	4.62E-05	4.60E-05
INFANT	7.53E-05	7.03E-05	1.24E-05	8.44E-05	8.45E-05	4.00E-03	7.01E-05	6.98E-05

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL N 433 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.50E-03	2.43E-03	1.02E-04	2.55E-03	2.56E-03	2.68E-02	2.42E-03	2.41E-03
TEEN	1.49E-03	1.45E-03	8.45E-05	1.55E-03	1.56E-03	1.91E-02	1.44E-03	1.44E-03
CHILD	1.79E-03	1.74E-03	1.56E-04	1.89E-03	1.89E-03	2.84E-02	1.74E-03	1.74E-03

MEAT ANIMAL NNE 430 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.69E-03	1.65E-03	5.86E-05	1.72E-03	1.73E-03	1.57E-02	1.64E-03	1.64E-03
TEEN	1.01E-03	9.85E-04	4.87E-05	1.04E-03	1.05E-03	1.11E-02	9.82E-04	9.78E-04
CHILD	1.21E-03	1.19E-03	9.00E-05	1.27E-03	1.27E-03	1.65E-02	1.19E-03	1.18E-03

MEAT ANIMAL NE 430 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.08E-03	1.06E-03	3.50E-05	1.10E-03	1.10E-03	9.44E-03	1.05E-03	1.05E-03
TEEN	6.44E-04	6.30E-04	2.91E-05	6.66E-04	6.68E-04	6.70E-03	6.29E-04	6.26E-04
CHILD	7.76E-04	7.59E-04	5.37E-05	8.09E-04	8.10E-04	9.93E-03	7.59E-04	7.56E-04

MEAT ANIMAL ENE 448 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.01E-03	9.95E-04	2.58E-05	1.03E-03	1.03E-03	7.20E-03	9.91E-04	9.89E-04
TEEN	6.03E-04	5.93E-04	2.14E-05	6.19E-04	6.21E-04	5.09E-03	5.92E-04	5.90E-04
CHILD	7.27E-04	7.15E-04	3.96E-05	7.52E-04	7.53E-04	7.51E-03	7.15E-04	7.13E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL E 472 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.06E-03	1.04E-03	3.23E-05	1.08E-03	1.08E-03	8.78E-03	1.03E-03	1.03E-03
TEEN	6.31E-04	6.19E-04	2.68E-05	6.52E-04	6.54E-04	6.22E-03	6.17E-04	6.15E-04
CHILD	7.61E-04	7.45E-04	4.96E-05	7.92E-04	7.93E-04	9.21E-03	7.46E-04	7.43E-04

MEAT ANIMAL ESE 667 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	4.93E-04	4.84E-04	1.28E-05	5.00E-04	5.01E-04	3.55E-03	4.83E-04	4.82E-04
TEEN	2.94E-04	2.89E-04	1.06E-05	3.02E-04	3.03E-04	2.51E-03	2.88E-04	2.87E-04
CHILD	3.54E-04	3.48E-04	1.96E-05	3.66E-04	3.67E-04	3.70E-03	3.48E-04	3.47E-04

MEAT ANIMAL SE 235 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	3.68E-03	3.63E-03	9.08E-05	3.73E-03	3.74E-03	2.54E-02	3.61E-03	3.61E-03
TEEN	2.20E-03	2.16E-03	7.54E-05	2.25E-03	2.26E-03	1.79E-02	2.16E-03	2.15E-03
CHILD	2.65E-03	2.61E-03	1.39E-04	2.74E-03	2.74E-03	2.64E-02	2.61E-03	2.60E-03

MEAT ANIMAL SSE 198 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	8.34E-03	8.21E-03	1.98E-04	8.45E-03	8.47E-03	5.57E-02	8.19E-03	8.17E-03
TEEN	4.98E-03	4.90E-03	1.65E-04	5.10E-03	5.12E-03	3.93E-02	4.89E-03	4.88E-03
CHILD	6.00E-03	5.90E-03	3.04E-04	6.19E-03	6.19E-03	5.79E-02	5.91E-03	5.89E-03

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL S 195 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.92E-03	6.86E-03	9.89E-05	6.98E-03	6.98E-03	3.06E-02	6.84E-03	6.84E-03
TEEN	4.13E-03	4.09E-03	8.21E-05	4.19E-03	4.20E-03	2.13E-02	4.09E-03	4.08E-03
CHILD	4.98E-03	4.93E-03	1.52E-04	5.08E-03	5.08E-03	3.09E-02	4.94E-03	4.93E-03

MEAT ANIMAL SSW 198 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.96E-03	6.90E-03	8.82E-05	7.01E-03	7.02E-03	2.80E-02	6.89E-03	6.89E-03
TEEN	4.15E-03	4.12E-03	7.32E-05	4.21E-03	4.21E-03	1.94E-02	4.11E-03	4.11E-03
CHILD	5.01E-03	4.97E-03	1.35E-04	5.09E-03	5.10E-03	2.81E-02	4.97E-03	4.96E-03

MEAT ANIMAL SW 286 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	5.53E-03	5.4 E-03	6.32E-05	5.57E-03	5.57E-03	2.06E-02	5.48E-03	5.48E-03
TEEN	3.30E-03	3.28E-03	5.25E-05	3.34E-03	3.34E-03	1.42E-02	3.27E-03	3.27E-03
CHILD	3.98E-03	3.95E-03	9.70E-05	4.04E-03	4.05E-03	2.05E-02	3.95E-03	3.95E-03

MEAT ANIMAL WSW 405 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	3.04E-03	3.01E-03	4.02E-05	3.06E-03	3.06E-03	1.26E-02	3.01E-03	3.01E-03
TEEN	1.81E-03	1.80E-03	3.34E-05	1.84E-03	1.84E-03	8.77E-03	1.80E-03	1.79E-03
CHILD	2.19E-03	2.17E-03	6.18E-05	2.23E-03	2.23E-03	1.27E-02	2.17E-03	2.17E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL W 509 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.72E-03	1.70E-03	2.78E-05	1.74E-03	1.74E-03	8.35E-03	1.70E-03	1.70E-03
TEEN	1.03E-03	1.02E-03	2.31E-05	1.04E-03	1.05E-03	5.83E-03	1.01E-03	1.01E-03
CHILD	1.24E-03	1.22E-03	4.27E-05	1.26E-03	1.27E-03	8.50E-03	1.22E-03	1.22E-03

MEAT ANIMAL WNW 442 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.65E-03	2.62E-03	5.61E-05	2.68E-03	2.69E-03	1.61E-02	2.61E-03	2.60E-03
TEEN	1.58E-03	1.56E-03	4.66E-05	1.62E-03	1.62E-03	1.13E-02	1.56E-03	1.55E-03
CHILD	1.91E-03	1.88E-03	8.61E-05	1.96E-03	1.96E-03	1.66E-02	1.88E-03	1.88E-03

MEAT ANIMAL NW 500 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.44E-03	2.38E-03	8.38E-05	2.48E-03	2.49E-03	2.25E-02	2.37E-03	2.36E-03
TEEN	1.45E-03	1.42E-03	6.96E-05	1.50E-03	1.51E-03	1.60E-02	1.42E-03	1.41E-03
CHILD	1.75E-03	1.71E-03	1.29E-04	1.83E-03	1.83E-03	2.37E-02	1.71E-03	1.70E-03

MEAT ANIMAL NNW 448 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	3.55E-03	3.41E-03	2.16E-04	3.67E-03	3.68E-03	5.51E-02	3.38E-03	3.36E-03
TEEN	2.12E-03	2.03E-03	1.80E-04	2.25E-03	2.27E-03	3.95E-02	2.02E-03	2.01E-03
CHILD	2.54E-03	2.44E-03	3.32E-04	2.75E-03	2.76E-03	5.90E-02	2.44E-03	2.42E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

MILK GOAT SW 5633 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	9.26E-05	8.98E-05	4.46E-06	9.51E-05	9.60E-05	1.29E-03	8.91E-05	8.88E-05
TEEN	1.21E-04	1.17E-04	8.10E-06	1.27E-04	1.28E-04	2.02E-03	1.16E-04	1.16E-04
CHILD	1.90E-04	1.84E-04	1.96E-05	2.02E-04	2.04E-04	3.94E-03	1.84E-04	1.83E-04
INFANT	2.91E-04	2.78E-04	3.68E-05	3.21E-04	3.14E-04	9.42E-03	2.79E-04	2.77E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST GARDEN ENE 1128 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.67E-03	1.63E-03	5.39E-05	1.69E-03	1.69E-03	1.33E-02	1.62E-03	1.62E-03
TEEN	1.89E-03	1.86E-03	6.99E-05	1.95E-03	1.93E-03	1.15E-02	1.86E-03	1.85E-03
CHILD	2.91E-03	2.88E-03	1.53E-04	3.02E-03	2.98E-03	1.75E-02	2.88E-03	2.87E-03

NEAREST GARDEN SE 6550 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	4.65E-05	4.58E-05	1.07E-06	4.71E-05	4.71E-05	2.77E-04	4.57E-05	4.56E-05
TEEN	5.30E-05	5.24E-05	1.39E-06	5.41E-05	5.38E-05	2.44E-04	5.24E-05	5.22E-05
CHILD	8.17E-05	8.10E-05	3.05E-06	8.38E-05	8.30E-05	3.71E-04	8.11E-05	8.09E-05

NEAREST GARDEN SSW 5327 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	9.57E-05	9.49E-05	1.30E-06	9.64E-05	9.64E-05	3.74E-04	9.47E-05	9.46E-05
TEEN	1.09E-04	1.09E-04	1.69E-06	1.11E-04	1.10E-04	3.40E-04	1.09E-04	1.08E-04
CHILD	1.69E-04	1.68E-04	3.70E-06	1.71E-04	1.70E-04	5.19E-04	1.68E-04	1.68E-04

NEAREST GARDEN SW 5633 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.30E-04	1.29E-04	1.39E-06	1.31E-04	1.31E-04	4.27E-04	1.29E-04	1.29E-04
TEEN	1.49E-04	1.48E-04	1.80E-06	1.50E-04	1.50E-04	3.95E-04	1.48E-04	1.48E-04
CHILD	2.30E-04	2.29E-04	3.95E-06	2.33E-04	2.31E-04	6.03E-04	2.29E-04	2.29E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

NEAREST GARDEN WSW 2816 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	4.92E-04	4.87E-04	7.54E-06	4.96E-04	4.96E-04	2.10E-03	4.86E-04	4.85E-04
TEEN	5.61E-04	5.57E-04	9.79E-06	5.69E-04	5.67E-04	1.90E-03	5.57E-04	5.56E-04
CHILD	8.67E-04	8.61E-04	2.15E-05	8.82E-04	8.76E-04	2.89E-03	8.63E-04	8.61E-04

NEAREST GARDEN W 7714 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.73E-05	6.68E-05	7.22E-07	6.76E-05	6.76E-05	2.22E-04	6.67E-05	6.66E-05
TEEN	7.68E-05	7.64E-05	9.39E-07	7.76E-05	7.73E-05	2.05E-04	7.64E-05	7.63E-05
CHILD	1.19E-04	1.18E-04	2.06E-06	1.20E-04	1.20E-04	3.13E-04	1.18E-04	1.18E-04

NEAREST GARDEN NW 7242 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.03E-04	1.01E-04	2.43E-06	1.04E-04	1.04E-04	6.24E-04	1.01E-04	1.00E-04
TEEN	1.17E-04	1.15E-04	3.16E-06	1.19E-04	1.19E-04	5.49E-04	1.15E-04	1.15E-04
CHILD	1.80E-04	1.78E-04	6.92E-06	1.85E-04	1.83E-04	8.35E-04	1.79E-04	1.78E-04

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

VISITOR CENTER E 225 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.30E-03	5.57E-03	1.54E-02
GROUND	1.47E-04	1.47E-04	1.47E-04	1.47E-04	1.47E-04	1.47E-04	1.47E-04	1.72E-04
INHAL								
ADULT	2.58E-03	2.57E-03	1.17E-05	2.59E-03	2.59E-03	7.47E-03	2.57E-03	2.57E-03
TEEN	2.60E-03	2.59E-03	1.65E-05	2.61E-03	2.62E-03	8.60E-03	2.59E-03	2.59E-03
CHILD	2.30E-03	2.29E-03	2.24E-05	2.31E-03	2.32E-03	8.96E-03	2.29E-03	2.29E-03
INFANT	1.32E-03	1.31E-03	1.72E-05	1.33E-03	1.34E-03	7.42E-03	1.31E-03	1.31E-03
TOTAL								
ADULT	8.03E-03	8.02E-03	5.46E-03	8.04E-03	8.04E-03	1.29E-02	8.29E-03	1.81E-02
TEEN	8.05E-03	8.04E-03	5.46E-03	8.06E-03	8.07E-03	1.40E-02	8.31E-03	1.82E-02
CHILD	7.75E-03	7.74E-03	5.47E-03	7.76E-03	7.77E-03	1.44E-02	8.01E-03	1.79E-02
INFANT	6.77E-03	6.76E-03	5.46E-03	6.78E-03	6.79E-03	1.29E-02	7.03E-03	1.69E-02

APPENDIX A

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 GASEOUS EFFLUENT PATHWAY

WAREHOUSE ESE 225 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	5.72E-03	5.72E-03	5.72E-03	5.72E-03	5.72E-03	5.72E-03	6.01E-03	1.67E-02
GROUND	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.69E-04
INHAL								
ADULT	3.04E-03	3.03E-03	1.26E-05	3.05E-03	3.06E-03	8.31E-03	3.03E-03	3.03E-03
TEEN	3.06E-03	3.05E-03	1.78E-05	3.07E-03	3.09E-03	9.54E-03	3.05E-03	3.05E-03
CHILD	2.71E-03	2.70E-03	2.41E-05	2.72E-03	2.73E-03	9.89E-03	2.70E-03	2.70E-03
INFANT	1.56E-03	1.55E-03	1.85E-05	1.57E-03	1.57E-03	8.13E-03	1.55E-03	1.55E-03
TOTAL								
ADULT	8.90E-03	8.89E-03	5.88E-03	8.91E-03	8.92E-03	1.42E-02	9.18E-03	1.99E-02
TEEN	8.92E-03	8.91E-03	5.88E-03	8.93E-03	8.95E-03	1.54E-02	9.20E-03	1.99E-02
CHILD	8.57E-03	8.56E-03	5.89E-03	8.58E-03	8.59E-03	1.57E-02	8.85E-03	1.96E-02
INFANT	7.42E-03	7.41E-03	5.88E-03	7.43E-03	7.43E-03	1.40E-02	7.70E-03	1.84E-02

DESIGN CITY ESE 250 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	4.72E-03	4.72E-03	4.72E-03	4.72E-03	4.72E-03	4.72E-03	4.97E-03	1.38E-02
GROUND	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.24E-04	1.45E-04
INHAL								
ADULT	2.51E-03	2.51E-03	1.04E-05	2.52E-03	2.53E-03	6.86E-03	2.50E-03	2.50E-03
TEEN	2.53E-03	2.52E-03	1.47E-05	2.54E-03	2.55E-03	7.88E-03	2.52E-03	2.52E-03
CHILD	2.24E-03	2.23E-03	1.99E-05	2.25E-03	2.26E-03	8.17E-03	2.23E-03	2.23E-03
INFANT	1.29E-03	1.28E-03	1.53E-05	1.30E-03	1.30E-03	6.71E-03	1.28E-03	1.28E-03
TOTAL								
ADULT	7.35E-03	7.35E-03	4.85E-03	7.36E-03	7.37E-03	1.17E-02	7.59E-03	1.64E-02
TEEN	7.37E-03	7.36E-03	4.86E-03	7.38E-03	7.39E-03	1.27E-02	7.61E-03	1.65E-02
CHILD	7.08E-03	7.07E-03	4.86E-03	7.09E-03	7.10E-03	1.30E-02	7.32E-03	1.62E-02
INFANT	6.13E-03	6.12E-03	4.86E-03	6.14E-03	6.14E-03	6.12E-03	6.37E-03	1.52E-02

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

GENERAL PUBLIC DOSE SUMMARY (MANREM)

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	5.79E-07	5.79E-07	5.79E-07	5.79E-07	5.79E-07	5.79E-07	1.88E-06	9.39E-05
INHAL	6.48E-03	6.48E-03	0.0	6.48E-03	6.48E-03	6.48E-03	6.48E-03	6.48E-03
VEGET	8.19E-03	8.19E-03	0.0	8.19E-03	8.19E-03	8.19E-03	8.19E-03	8.19E-03
COW MILK	2.82E-03	2.82E-03	0.0	2.82E-03	2.82E-03	2.82E-03	2.82E-03	2.82E-03
MEAT	1.85E-03	1.85E-03	0.0	1.85E-03	1.85E-03	1.85E-03	1.85E-03	1.85E-03
TOTAL	1.93E-02	1.93E-02	5.79E-07	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.94E-02

AVERAGE INDIVIDUAL (MREM)

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
TOTAL	9.51E-06	9.51E-06	2.85E-10	9.51E-06	9.51E-06	9.51E-06	9.51E-06	9.56E-06

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

SITE BOUNDARY

SECTOR	DISTANCE (METERS)	BETA AIR DOSE (MRAD)	GAMMA AIR DOSE (MRAD)	TOTAL BODY (MREM)	SKIN (MREM)
N	658	1.14E-04	1.06E-06	6.82E-07	7.91E-05
NNE	670	9.77E-05	9.10E-07	5.84E-07	6.77E-05
NE	792	6.99E-05	6.52E-07	4.18E-07	4.85E-05
ENE	1185	4.80E-05	4.48E-07	2.87E-07	3.33E-05
E	3605	1.77E-06	1.65E-08	1.06E-08	1.23E-06
ESE	1697	8.07E-06	7.52E-08	4.82E-08	5.59E-06
SE	1152	2.74E-05	2.55E-07	1.63E-07	1.90E-05
SSE	1170	2.91E-05	2.71E-07	1.74E-07	2.02E-05
S	1759	1.04E-05	9.73E-08	6.24E-08	7.24E-06
SSW	1103	2.78E-05	2.59E-07	1.66E-07	1.93E-05
SW	1146	2.94E-05	2.74E-07	1.76E-07	2.04E-05
WSW	987	3.08E-05	2.88E-07	1.84E-07	2.14E-05
W	969	2.45E-05	2.28E-07	1.46E-07	1.70E-05
WNW	987	4.18E-05	3.90E-07	2.50E-07	2.90E-05
NW	795	7.45E-05	6.94E-07	4.45E-07	5.16E-05
NNW	670	1.14E-04	1.07E-06	6.83E-07	7.93E-05

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

EXCLUSION AREA BOUNDARY

SECTOR	DISTANCE (METERS)	BETA AIR DOSE (MRAD)	GAMMA AIR DOSE (MRAD)	TOTAL BODY (MREM)	SKIN (MREM)
N	640	1.19E-04	1.11E-06	7.10E-07	8.24E-05
NNE	640	1.05E-04	9.75E-07	6.25E-07	7.26E-05
NE	640	9.70E-05	9.04E-07	5.79E-07	6.72E-05
ENE	640	1.28E-04	1.19E-06	7.65E-07	8.88E-05
E	640	6.18E-05	5.76E-07	3.69E-07	4.28E-05
ESE	640	5.04E-05	4.70E-07	3.01E-07	3.49E-05
SE	640	7.08E-05	6.60E-07	4.23E-07	4.91E-05
SSE	640	7.80E-05	7.27E-07	4.66E-07	5.41E-05
S	640	6.79E-05	6.33E-07	4.06E-07	4.71E-05
SSW	640	6.85E-05	6.39E-07	4.10E-07	4.75E-05
SW	640	7.47E-05	6.96E-07	4.47E-07	5.18E-05
WSW	640	6.24E-05	5.82E-07	3.73E-07	4.33E-05
W	640	4.71E-05	4.39E-07	2.81E-07	3.26E-05
WNW	640	8.21E-05	7.66E-07	4.91E-07	5.70E-05
NW	640	1.03E-04	9.57E-07	6.13E-07	7.12E-05
NNW	640	1.22E-04	1.14E-06	7.32E-07	8.49E-05

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST RESIDENCES DOSE SUMMARIES (MREM)

NEAREST HOUSE NE 1432 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	1.44E-07	3.74E-07	1.67E-05
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	1.40E-03	1.40E-03	0.0	1.40E-03	1.40E-03	1.40E-03	1.40E-03	1.40E-03
TEEN	1.41E-03	1.41E-03	0.0	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03
CHILD	1.24E-03	1.24E-03	0.0	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.24E-03
INFANT	7.16E-04	7.16E-04	0.0	7.16E-04	7.16E-04	7.16E-04	7.16E-04	7.16E-04
TOTAL								
ADULT	1.40E-03	1.40E-03	1.44E-07	1.40E-03	1.40E-03	1.40E-03	1.40E-03	1.40E-03
TEEN	1.41E-03	1.41E-03	1.44E-07	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03
CHILD	1.24E-03	1.24E-03	1.44E-07	1.24E-03	1.24E-03	1.24E-03	1.24E-03	1.24E-03
INFANT	7.16E-04	7.16E-04	1.44E-07	7.16E-04	7.16E-04	7.16E-04	7.16E-04	7.16E-04

NEAREST HOUSE ENE 1128 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.10E-07	3.10E-07	3.10E-07	3.10E-07	3.10E-07	3.10E-07	8.07E-07	3.59E-05
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	2.92E-03	2.92E-03	0.0	2.92E-03	2.92E-03	2.92E-03	2.92E-03	2.92E-03
TEEN	2.94E-03	2.94E-03	0.0	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
CHILD	2.60E-03	2.60E-03	0.0	2.60E-03	2.60E-03	2.60E-03	2.60E-03	2.60E-03
INFANT	1.49E-03	1.49E-03	0.0	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.49E-03
TOTAL								
ADULT	2.92E-03	2.92E-03	3.10E-07	2.92E-03	2.92E-03	2.92E-03	2.92E-03	2.92E-03
TEEN	2.94E-03	2.94E-03	3.10E-07	2.94E-03	2.94E-03	2.94E-03	2.94E-03	2.94E-03
CHILD	2.60E-03	2.60E-03	3.10E-07	2.60E-03	2.60E-03	2.60E-03	2.60E-03	2.60E-03
INFANT	1.49E-03	1.49E-03	3.10E-07	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.49E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE SE 2560 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	7.16E-08	3.19E-06
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	2.19E-04	2.19E-04	0.0	2.19E-04	2.19E-04	2.19E-04	2.19E-04	2.19E-04
TEEN	2.21E-04	2.21E-04	0.0	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04
CHILD	1.95E-04	1.95E-04	0.0	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04
INFANT	1.12E-04	1.12E-04	0.0	1.12E-04	1.12E-04	1.12E-04	1.12E-04	1.12E-04
TOTAL								
ADULT	2.19E-04	2.19E-04	2.75E-08	2.19E-04	2.19E-04	2.19E-04	2.19E-04	2.19E-04
TEEN	2.21E-04	2.21E-04	2.75E-08	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04
CHILD	1.95E-04	1.95E-04	2.75E-08	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04
INFANT	1.12E-04	1.12E-04	2.75E-08	1.12E-04	1.12E-04	1.12E-04	1.12E-04	1.12E-04

NEAREST HOUSE SSE 7803 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	3.57E-09	9.29E-09	4.14E-07
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	2.94E-05	2.94E-05	0.0	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05
TEEN	2.96E-05	2.96E-05	0.0	2.96E-05	2.96E-05	2.96E-05	2.96E-05	2.96E-05
CHILD	2.61E-05	2.61E-05	0.0	2.61E-05	2.61E-05	2.61E-05	2.61E-05	2.61E-05
INFANT	1.50E-05	1.50E-05	0.0	1.50E-05	1.50E-05	1.50E-05	1.50E-05	1.50E-05
TOTAL								
ADULT	2.94E-05	2.94E-05	3.57E-09	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05
TEEN	2.96E-05	2.96E-05	3.57E-09	2.96E-05	2.96E-05	2.96E-05	2.96E-05	2.96E-05
CHILD	2.61E-05	2.61E-05	3.57E-09	2.61E-05	2.61E-05	2.61E-05	2.61E-05	2.61E-05
INFANT	1.50E-05	1.50E-05	3.57E-09	1.50E-05	1.50E-05	1.50E-05	1.50E-05	1.50E-05

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE S 6492 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	4.44E-09	4.44E-09	4.44E-09	4.44E-09	4.44E-09	4.44E-09	1.16E-08	5.15E-07
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	3.41E-05	3.41E-05	0.0	3.41E-05	3.41E-05	3.41E-05	3.41E-05	3.41E-05
TEEN	3.43E-05	3.43E-05	0.0	3.43E-05	3.43E-05	3.43E-05	3.43E-05	3.43E-05
CHILD	3.03E-05	3.03E-05	0.0	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05
INFANT	1.74E-05	1.74E-05	0.0	1.74E-05	1.74E-05	1.74E-05	1.74E-05	1.74E-05
TOTAL								
ADULT	3.41E-05	3.41E-05	4.44E-09	3.41E-05	3.41E-05	3.41E-05	3.41E-05	3.41E-05
TEEN	3.43E-05	3.43E-05	4.44E-09	3.43E-05	3.43E-05	3.43E-05	3.43E-05	3.43E-05
CHILD	3.03E-05	3.03E-05	4.44E-09	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05
INFANT	1.74E-05	1.74E-05	4.44E-09	1.74E-05	1.74E-05	1.74E-05	1.74E-05	1.74E-05

NEAREST HOUSE SSW 3718 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.27E-08	1.27E-08	1.27E-08	1.27E-08	1.27E-08	1.27E-08	3.31E-08	1.47E-06
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	1.10E-04	1.10E-04	0.0	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
TEEN	1.10E-04	1.10E-04	0.0	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
CHILD	9.76E-05	9.76E-05	0.0	9.76E-05	9.76E-05	9.76E-05	9.76E-05	9.76E-05
INFANT	5.61E-05	5.61E-05	0.0	5.61E-05	5.61E-05	5.61E-05	5.61E-05	5.61E-05
TOTAL								
ADULT	1.10E-04	1.10E-04	1.27E-08	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
TEEN	1.10E-04	1.10E-04	1.27E-08	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
CHILD	9.76E-05	9.76E-05	1.27E-08	9.76E-05	9.76E-05	9.76E-05	9.76E-05	9.76E-05
INFANT	5.61E-05	5.61E-05	1.27E-08	5.61E-05	5.61E-05	5.61E-05	5.61E-05	5.61E-05

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE SW 1219 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	4.17E-07	1.86E-05
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	1.36E-03	1.36E-03	0.0	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03
TEEN	1.36E-03	1.36E-03	0.0	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03
CHILD	1.21E-03	1.21E-03	0.0	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03
INFANT	6.94E-04	6.94E-04	0.0	6.94E-04	6.94E-04	6.94E-04	6.94E-04	6.94E-04
TOTAL								
ADULT	1.36E-03	1.36E-03	1.60E-07	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03
TEEN	1.36E-03	1.36E-03	1.60E-07	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03
CHILD	1.21E-03	1.21E-03	1.60E-07	1.21E-03	1.21E-03	1.21E-03	1.21E-03	1.21E-03
INFANT	6.94E-04	6.94E-04	1.60E-07	6.94E-04	6.94E-04	6.94E-04	6.94E-04	6.94E-04

NEAREST HOUSE WSW 2103 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.73E-08	3.73E-08	3.73E-08	3.73E-08	3.73E-08	3.73E-08	9.70E-08	4.32E-06
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	2.84E-04	2.84E-04	0.0	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04
TEEN	2.85E-04	2.85E-04	0.0	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04
CHILD	2.52E-04	2.52E-04	0.0	2.52E-04	2.52E-04	2.52E-04	2.52E-04	2.52E-04
INFANT	1.45E-04	1.45E-04	0.0	1.45E-04	1.45E-04	1.45E-04	1.45E-04	1.45E-04
TOTAL								
ADULT	2.84E-04	2.84E-04	3.73E-08	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04
TEEN	2.85E-04	2.85E-04	3.73E-08	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04
CHILD	2.52E-04	2.52E-04	3.73E-08	2.52E-04	2.52E-04	2.52E-04	2.52E-04	2.52E-04
INFANT	1.45E-04	1.45E-04	3.73E-08	1.45E-04	1.45E-04	1.45E-04	1.45E-04	1.45E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE W 3414 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.04E-08	1.04E-08	1.04E-08	1.04E-08	1.04E-08	1.04E-08	2.72E-08	1.21E-06
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	8.07E-05	8.07E-05	0.0	8.07E-05	8.07E-05	8.07E-05	8.07E-05	8.07E-05
TEEN	8.12E-05	8.12E-05	0.0	8.12E-05	8.12E-05	8.12E-05	8.12E-05	8.12E-05
CHILD	7.18E-05	7.18E-05	0.0	7.18E-05	7.18E-05	7.18E-05	7.18E-05	7.18E-05
INFANT	4.13E-05	4.13E-05	0.0	4.13E-05	4.13E-05	4.13E-05	4.13E-05	4.13E-05
TOTAL								
ADULT	8.07E-05	8.07E-05	1.04E-08	8.07E-05	8.07E-05	8.07E-05	8.07E-05	8.07E-05
TEEN	8.12E-05	8.12E-05	1.04E-08	8.12E-05	8.12E-05	8.12E-05	8.12E-05	8.12E-05
CHILD	7.18E-05	7.18E-05	1.04E-08	7.18E-05	7.18E-05	7.18E-05	7.18E-05	7.18E-05
INFANT	4.13E-05	4.13E-05	1.04E-08	4.13E-05	4.13E-05	4.13E-05	4.13E-05	4.13E-05

NEAREST HOUSE WNW 4389 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.15E-08	1.15E-08	1.15E-08	1.15E-08	1.15E-08	1.15E-08	2.98E-08	1.33E-06
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	8.67E-05	8.67E-05	0.0	8.67E-05	8.67E-05	8.67E-05	8.67E-05	8.67E-05
TEEN	8.73E-05	8.73E-05	0.0	8.73E-05	8.73E-05	8.73E-05	8.73E-05	8.73E-05
CHILD	7.72E-05	7.72E-05	0.0	7.72E-05	7.72E-05	7.72E-05	7.72E-05	7.72E-05
INFANT	4.44E-05	4.44E-05	0.0	4.44E-05	4.44E-05	4.44E-05	4.44E-05	4.44E-05
TOTAL								
ADULT	8.67E-05	8.67E-05	1.15E-08	8.67E-05	8.67E-05	8.67E-05	8.67E-05	8.67E-05
TEEN	8.73E-05	8.73E-05	1.15E-08	8.73E-05	8.73E-05	8.73E-05	8.73E-05	8.73E-05
CHILD	7.72E-05	7.72E-05	1.15E-08	7.72E-05	7.72E-05	7.72E-05	7.72E-05	7.72E-05
INFANT	4.44E-05	4.44E-05	1.15E-08	4.44E-05	4.44E-05	4.44E-05	4.44E-05	4.44E-05

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST HOUSE NW 5334 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	9.59E-09	9.59E-09	9.59E-09	9.59E-09	9.59E-09	9.59E-09	2.50E-08	1.11E-06
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	7.45E-05	7.45E-05	0.0	7.45E-05	7.45E-05	7.45E-05	7.45E-05	7.45E-05
TEEN	7.50E-05	7.50E-05	0.0	7.50E-05	7.50E-05	7.50E-05	7.50E-05	7.50E-05
CHILD	6.63E-05	6.63E-05	0.0	6.63E-05	6.63E-05	6.63E-05	6.63E-05	6.63E-05
INFANT	3.81E-05	3.81E-05	0.0	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05
TOTAL								
ADULT	7.45E-05	7.45E-05	9.59E-09	7.45E-05	7.45E-05	7.45E-05	7.45E-05	7.45E-05
TEEN	7.50E-05	7.50E-05	9.59E-09	7.50E-05	7.50E-05	7.50E-05	7.50E-05	7.50E-05
CHILD	6.63E-05	6.63E-05	9.59E-09	6.63E-05	6.63E-05	6.63E-05	6.63E-05	6.63E-05
INFANT	3.81E-05	3.81E-05	9.59E-09	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05

NEAREST HOUSE NNW 7254 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	6.43E-09	6.43E-09	6.43E-09	6.43E-09	6.43E-09	6.43E-09	1.68E-08	7.46E-07
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	5.26E-05	5.26E-05	0.0	5.26E-05	5.26E-05	5.26E-05	5.26E-05	5.26E-05
TEEN	5.29E-05	5.29E-05	0.0	5.29E-05	5.29E-05	5.29E-05	5.29E-05	5.29E-05
CHILD	4.68E-05	4.68E-05	0.0	4.68E-05	4.68E-05	4.68E-05	4.68E-05	4.68E-05
INFANT	2.69E-05	2.69E-05	0.0	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05
TOTAL								
ADULT	5.26E-05	5.26E-05	6.43E-09	5.26E-05	5.26E-05	5.26E-05	5.26E-05	5.26E-05
TEEN	5.29E-05	5.29E-05	6.43E-09	5.29E-05	5.29E-05	5.29E-05	5.29E-05	5.29E-05
CHILD	4.68E-05	4.68E-05	6.43E-09	4.68E-05	4.68E-05	4.68E-05	4.68E-05	4.68E-05
INFANT	2.69E-05	2.69E-05	6.43E-09	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

MILK COW ENE 1128 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.78E-03	1.78E-03	0.0	1.78E-03	1.78E-03	1.78E-03	1.78E-03	1.78E-03
TEEN	2.32E-03	2.32E-03	0.0	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03
CHILD	3.66E-03	3.66E-03	0.0	3.66E-03	3.66E-03	3.66E-03	3.66E-03	3.66E-03
INFANT	5.55E-03	5.55E-03	0.0	5.55E-03	5.55E-03	5.55E-03	5.55E-03	5.55E-03

MILK COW SW 3187 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	9.96E-05	9.96E-05	0.0	9.96E-05	9.96E-05	9.96E-05	9.96E-05	9.96E-05
TEEN	1.30E-04	1.30E-04	0.0	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
CHILD	2.05E-04	2.05E-04	0.0	2.05E-04	2.05E-04	2.05E-04	2.05E-04	2.05E-04
INFANT	3.11E-04	3.11E-04	0.0	3.11E-04	3.11E-04	3.11E-04	3.11E-04	3.11E-04

MILK COW WSW 3621 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	5.72E-05	5.72E-05	0.0	5.72E-05	5.72E-05	5.72E-05	5.72E-05	5.72E-05
TEEN	7.44E-05	7.44E-05	0.0	7.44E-05	7.44E-05	7.44E-05	7.44E-05	7.44E-05
CHILD	1.18E-04	1.18E-04	0.0	1.18E-04	1.18E-04	1.18E-04	1.18E-04	1.18E-04
INFANT	1.78E-04	1.78E-04	0.0	1.78E-04	1.78E-04	1.78E-04	1.78E-04	1.78E-04

MILK COW W 7741 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.07E-05	1.07E-05	0.0	1.07E-05	1.07E-05	1.07E-05	1.07E-05	1.07E-05
TEEN	1.39E-05	1.39E-05	0.0	1.39E-05	1.39E-05	1.39E-05	1.39E-05	1.39E-05
CHILD	2.20E-05	2.20E-05	0.0	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05
INFANT	3.34E-05	3.34E-05	0.0	3.34E-05	3.34E-05	3.34E-05	3.34E-05	3.34E-05

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL N 433 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.68E-03	2.68E-03	0.0	2.68E-03	2.68E-03	2.68E-03	2.68E-03	2.68E-03
TEEN	1.60E-03	1.60E-03	0.0	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03
CHILD	1.93E-03	1.93E-03	0.0	1.93E-03	1.93E-03	1.93E-03	1.93E-03	1.93E-03

MEAT ANIMAL NNE 430 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.84E-03	2.84E-03	0.0	2.84E-03	2.84E-03	2.84E-03	2.84E-03	2.84E-03
TEEN	1.69E-03	1.69E-03	0.0	1.69E-03	1.69E-03	1.69E-03	1.69E-03	1.69E-03
CHILD	2.04E-03	2.04E-03	0.0	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03

MEAT ANIMAL NE 430 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.74E-03	2.74E-03	0.0	2.74E-03	2.74E-03	2.74E-03	2.74E-03	2.74E-03
TEEN	1.64E-03	1.64E-03	0.0	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
CHILD	1.98E-03	1.98E-03	0.0	1.98E-03	1.98E-03	1.98E-03	1.98E-03	1.98E-03

MEAT ANIMAL ENE 448 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	3.27E-03	3.27E-03	0.0	3.27E-03	3.27E-03	3.27E-03	3.27E-03	3.27E-03
TEEN	1.95E-03	1.95E-03	0.0	1.95E-03	1.95E-03	1.95E-03	1.95E-03	1.95E-03
CHILD	2.35E-03	2.35E-03	0.0	2.35E-03	2.35E-03	2.35E-03	2.35E-03	2.35E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL E 472 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.57E-03	1.57E-03	0.0	1.57E-03	1.57E-03	1.57E-03	1.57E-03	1.57E-03
TEEN	9.38E-04	9.38E-04	0.0	9.38E-04	9.38E-04	9.38E-04	9.38E-04	9.38E-04
CHILD	1.13E-03	1.13E-03	0.0	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03

MEAT ANIMAL ESE 667 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.73E-04	6.73E-04	0.0	6.73E-04	6.73E-04	6.73E-04	6.73E-04	6.73E-04
TEEN	4.01E-04	4.01E-04	0.0	4.01E-04	4.01E-04	4.01E-04	4.01E-04	4.01E-04
CHILD	4.85E-04	4.85E-04	0.0	4.85E-04	4.85E-04	4.85E-04	4.85E-04	4.85E-04

MEAT ANIMAL SE 235 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	5.08E-03	5.08E-03	0.0	5.08E-03	5.08E-03	5.08E-03	5.08E-03	5.08E-03
TEEN	3.03E-03	3.03E-03	0.0	3.03E-03	3.03E-03	3.03E-03	3.03E-03	3.03E-03
CHILD	3.66E-03	3.66E-03	0.0	3.66E-03	3.66E-03	3.66E-03	3.66E-03	3.66E-03

MEAT ANIMAL SSE 198 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	7.70E-03	7.70E-03	0.0	7.70E-03	7.70E-03	7.70E-03	7.70E-03	7.70E-03
TEEN	4.59E-03	4.59E-03	0.0	4.59E-03	4.59E-03	4.59E-03	4.59E-03	4.59E-03
CHILD	5.55E-03	5.55E-03	0.0	5.55E-03	5.55E-03	5.55E-03	5.55E-03	5.55E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL S 195 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.37E-03	6.37E-03	0.0	6.37E-03	6.37E-03	6.37E-03	6.37E-03	6.37E-03
TEEN	3.80E-03	3.80E-03	0.0	3.80E-03	3.80E-03	3.80E-03	3.80E-03	3.80E-03
CHILD	4.59E-03	4.59E-03	0.0	4.59E-03	4.59E-03	4.59E-03	4.59E-03	4.59E-03

MEAT ANIMAL SSW 198 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	7.27E-03	7.27E-03	0.0	7.27E-03	7.27E-03	7.27E-03	7.27E-03	7.27E-03
TEEN	4.34E-03	4.34E-03	0.0	4.34E-03	4.34E-03	4.34E-03	4.34E-03	4.34E-03
CHILD	5.24E-03	5.24E-03	0.0	5.24E-03	5.24E-03	5.24E-03	5.24E-03	5.24E-03

MEAT ANIMAL SW 286 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	4.03E-03	4.03E-03	0.0	4.03E-03	4.03E-03	4.03E-03	4.03E-03	4.03E-03
TEEN	2.41E-03	2.41E-03	0.0	2.41E-03	2.41E-03	2.41E-03	2.41E-03	2.41E-03
CHILD	2.91E-03	2.91E-03	0.0	2.91E-03	2.91E-03	2.91E-03	2.91E-03	2.91E-03

MEAT ANIMAL WSW 405 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.63E-03	1.63E-03	0.0	1.63E-03	1.63E-03	1.63E-03	1.63E-03	1.63E-03
TEEN	9.73E-04	9.73E-04	0.0	9.73E-04	9.73E-04	9.73E-04	9.73E-04	9.73E-04
CHILD	1.18E-03	1.18E-03	0.0	1.18E-03	1.18E-03	1.18E-03	1.18E-03	1.18E-03

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

MEAT ANIMAL W 509 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	8.12E-04	8.12E-04	0.0	8.12E-04	8.12E-04	8.12E-04	8.12E-04	8.12E-04
TEEN	4.84E-04	4.84E-04	0.0	4.84E-04	4.84E-04	4.84E-04	4.84E-04	4.84E-04
CHILD	5.85E-04	5.85E-04	0.0	5.85E-04	5.85E-04	5.85E-04	5.85E-04	5.85E-04

MEAT ANIMAL WNW 442 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.79E-03	1.79E-03	0.0	1.79E-03	1.79E-03	1.79E-03	1.79E-03	1.79E-03
TEEN	1.07E-03	1.07E-03	0.0	1.07E-03	1.07E-03	1.07E-03	1.07E-03	1.07E-03
CHILD	1.29E-03	1.29E-03	0.0	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03

MEAT ANIMAL NW 500 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.81E-03	1.81E-03	0.0	1.81E-03	1.81E-03	1.81E-03	1.81E-03	1.81E-03
TEEN	1.08E-03	1.08E-03	0.0	1.08E-03	1.08E-03	1.08E-03	1.08E-03	1.08E-03
CHILD	1.31E-03	1.31E-03	0.0	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03

MEAT ANIMAL NNW 448 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.72E-03	2.72E-03	0.0	2.72E-03	2.72E-03	2.72E-03	2.72E-03	2.72E-03
TEEN	1.62E-03	1.62E-03	0.0	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03
CHILD	1.96E-03	1.96E-03	0.0	1.96E-03	1.96E-03	1.96E-03	1.96E-03	1.96E-03

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

MILK GOAT SW 5633 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.91E-05	6.91E-05	0.0	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05
TEEN	9.00E-05	9.00E-05	0.0	9.00E-05	9.00E-05	9.00E-05	9.00E-05	9.00E-05
CHILD	1.42E-04	1.42E-04	0.0	1.42E-04	1.42E-04	1.42E-04	1.42E-04	1.42E-04
INFANT	2.16E-04	2.16E-04	0.0	2.16E-04	2.16E-04	2.16E-04	2.16E-04	2.16E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST GARDEN ENE 1128 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	5.27E-03	5.27E-03	0.0	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
TEEN	6.03E-03	6.03E-03	0.0	6.03E-03	6.03E-03	6.03E-03	6.03E-03	6.03E-03
CHILD	9.34E-03	9.34E-03	0.0	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03

NEAREST GARDEN SW 6550 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	6.12E-05	6.12E-05	0.0	6.12E-05	6.12E-05	6.12E-05	6.12E-05	6.12E-05
TEEN	7.01E-05	7.01E-05	0.0	7.01E-05	7.01E-05	7.01E-05	7.01E-05	7.01E-05
CHILD	1.09E-04	1.09E-04	0.0	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04

NEAREST GARDEN SSW 5327 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.01E-04	1.01E-04	0.0	1.01E-04	1.01E-04	1.01E-04	1.01E-04	1.01E-04
TEEN	1.16E-04	1.16E-04	0.0	1.16E-04	1.16E-04	1.16E-04	1.16E-04	1.16E-04
CHILD	1.79E-04	1.79E-04	0.0	1.79E-04	1.79E-04	1.79E-04	1.79E-04	1.79E-04

NEAREST GARDEN SW 5633 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	1.00E-04	1.00E-04	0.0	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
TEEN	1.15E-04	1.15E-04	0.0	1.15E-04	1.15E-04	1.15E-04	1.15E-04	1.15E-04
CHILD	1.78E-04	1.78E-04	0.0	1.78E-04	1.78E-04	1.78E-04	1.78E-04	1.78E-04

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

NEAREST GARDEN WSW 2816 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	2.79E-04	2.79E-04	0.0	2.79E-04	2.79E-04	2.79E-04	2.79E-04	2.79E-04
TEEN	3.20E-04	3.20E-04	0.0	3.20E-04	3.20E-04	3.20E-04	3.20E-04	3.20E-04
CHILD	4.95E-04	4.95E-04	0.0	4.95E-04	4.95E-04	4.95E-04	4.95E-04	4.95E-04

NEAREST GARDEN W 7714 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	3.19E-05	3.19E-05	0.0	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05
TEEN	3.65E-05	3.65E-05	0.0	3.65E-05	3.65E-05	3.65E-05	3.65E-05	3.65E-05
CHILD	5.65E-05	5.65E-05	0.0	5.65E-05	5.65E-05	5.65E-05	5.65E-05	5.65E-05

NEAREST GARDEN NW 7242 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
ADULT	7.66E-05	7.66E-05	0.0	7.66E-05	7.66E-05	7.66E-05	7.66E-05	7.66E-05
TEEN	8.77E-05	8.77E-05	0.0	8.77E-05	8.77E-05	8.77E-05	8.77E-05	8.77E-05
CHILD	1.36E-04	1.36E-04	0.0	1.36E-04	1.36E-04	1.36E-04	1.36E-04	1.36E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

VISITOR CENTER E 225 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	4.08E-07	1.06E-06	4.73E-05
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	4.01E-03	4.01E-03	0.0	4.01E-03	4.01E-03	4.01E-03	4.01E-03	4.01E-03
TEEN	4.04E-03	4.04E-03	0.0	4.04E-03	4.04E-03	4.04E-03	4.04E-03	4.04E-03
CHILD	3.57E-03	3.57E-03	0.0	3.57E-03	3.57E-03	3.57E-03	3.57E-03	3.57E-03
INFANT	2.05E-03	2.05E-03	0.0	2.05E-03	2.05E-03	2.05E-03	2.05E-03	2.05E-03
TOTAL								
ADULT	4.01E-03	4.01E-03	4.08E-07	4.01E-03	4.01E-03	4.01E-03	4.01E-03	4.01E-03
TEEN	4.04E-03	4.04E-03	4.08E-07	4.04E-03	4.04E-03	4.04E-03	4.04E-03	4.04E-03
CHILD	3.57E-03	3.57E-03	4.08E-07	3.57E-03	3.57E-03	3.57E-03	3.57E-03	3.57E-03
INFANT	2.05E-03	2.05E-03	4.08E-07	2.05E-03	2.05E-03	2.05E-03	2.05E-03	2.05E-03

PARK KIOSK E 525 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.13E-07	2.13E-07	2.13E-07	2.13E-07	2.13E-07	2.13E-07	5.54E-07	2.47E-05
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	2.11E-03	2.11E-03	0.0	2.11E-03	2.11E-03	2.11E-03	2.11E-03	2.11E-03
TEEN	2.13E-03	2.13E-03	0.0	2.13E-03	2.13E-03	2.13E-03	2.13E-03	2.13E-03
CHILD	1.88E-03	1.88E-03	0.0	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03
INFANT	1.08E-03	1.08E-03	0.0	1.08E-03	1.08E-03	1.08E-03	1.08E-03	1.08E-03
TOTAL								
ADULT	2.11E-03	2.11E-03	2.13E-07	2.11E-03	2.11E-03	2.11E-03	2.11E-03	2.11E-03
TEEN	2.13E-03	2.13E-03	2.13E-07	2.13E-03	2.13E-03	2.13E-03	2.13E-03	2.13E-03
CHILD	1.88E-03	1.88E-03	2.13E-07	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03
INFANT	1.08E-03	1.08E-03	2.13E-07	1.08E-03	1.08E-03	1.08E-03	1.08E-03	1.08E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX B

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 GASEOUS EFFLUENT PATHWAY

WAREHOUSE ESE 225 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	1.11E-06	2.90E-06	1.29E-04
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	1.00E-02	1.00E-02	0.0	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02
TEEN	1.01E-02	1.01E-02	0.0	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
CHILD	8.89E-03	8.89E-03	0.0	8.89E-03	8.89E-03	8.89E-03	8.89E-03	8.89E-03
INFANT	5.11E-03	5.11E-03	0.0	5.11E-03	5.11E-03	5.11E-03	5.11E-03	5.11E-03
TOTAL								
ADULT	1.00E-02	1.00E-02	1.11E-06	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02
TEEN	1.01E-02	1.01E-02	1.11E-06	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
CHILD	8.89E-03	8.89E-03	1.11E-06	8.89E-03	8.89E-03	8.89E-03	8.89E-03	8.89E-03
INFANT	5.11E-03	5.11E-03	1.11E-06	5.11E-03	5.11E-03	5.11E-03	5.11E-03	5.11E-03

DESIGN CITY ESE 250 METERS

PATHWAY	T.BODY	GI-TRAC	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	9.20E-07	9.20E-07	9.20E-07	9.20E-07	9.20E-07	9.20E-07	2.40E-06	1.07E-04
GROUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INHAL								
ADULT	8.28E-03	8.28E-03	0.0	8.28E-03	8.28E-03	8.28E-03	8.28E-03	8.28E-03
TEEN	8.33E-03	8.33E-03	0.0	8.33E-03	8.33E-03	8.33E-03	8.33E-03	8.33E-03
CHILD	7.37E-03	7.37E-03	0.0	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03
INFANT	4.24E-03	4.24E-03	0.0	4.24E-03	4.24E-03	4.24E-03	4.24E-03	4.24E-03
TOTAL								
ADULT	8.28E-03	8.28E-03	9.20E-07	8.28E-03	8.28E-03	8.28E-03	8.28E-03	8.28E-03
TEEN	8.33E-03	8.33E-03	9.20E-07	8.33E-03	8.33E-03	8.33E-03	8.33E-03	8.33E-03
CHILD	7.37E-03	7.37E-03	9.20E-07	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03
INFANT	4.24E-03	4.24E-03	9.20E-07	4.24E-03	4.24E-03	4.24E-03	4.24E-03	4.24E-03

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX C

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX C

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 LIQUID EFFLUENT PATHWAY

MAXIMUM ADULT (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	2.70E-01	3.89E-01	2.61E-01	1.91E-02	1.45E-01	6.08E-02	2.63E-02
INVERT	0.0	5.51E-04	1.30E-03	1.04E-03	5.47E-04	8.03E-04	6.32E-04	5.62E-04
DRINK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORE	2.14E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02
SWIM	0.0	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06
VEGE	0.0	6.38E-02	3.97E-01	3.67E-0	3.10E-01	3.40E-01	3.20E-01	3.12E-01
MILK	0.0	2.63E-02	1.20E-01	1.08E-0	8.42E-02	9.64E-02	8.83E-02	8.49E-02
MEAT	0.0	3.23E-03	7.01E-02	6.86E-0	6.57E-02	6.72E-02	6.62E-02	6.58E-02
TOTAL	2.14E-02	3.82E-01	9.95E-01	8.25E-01	4.98E-01	6.68E-01	5.54E-01	5.08E-01

MAXIMUM TEENAGER (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	2.28E-01	3.15E-01	1.17E-01	1.16E-02	1.15E-01	5.17E-02	1.59E-02
INVERT	0.0	7.75E-04	1.58E-03	9.11E-04	5.52E-04	9.03E-04	6.89E-04	5.67E-04
DRINK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORE	2.14E-03	1.83E-03	1.83E-03	1.83E-03	1.83E-03	1.83E-03	1.83E-03	1.83E-03
SWIM	0.0	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06
VEGE	0.0	1.09E-01	5.24E-01	4.30E-0	3.79E-01	4.28E-01	3.98E-01	3.81E-01
MILK	0.0	4.77E-02	1.73E-01	1.32E-0	1.10E-01	1.31E-01	1.18E-01	1.11E-01
MEAT	0.0	2.68E-03	4.28E-02	4.05E-0	3.92E-02	4.04E-02	3.97E-02	3.93E-02
TOTAL	2.14E-03	3.89E-01	1.06E+00	7.22E-01	5.42E-01	7.16E-01	6.10E-01	5.50E-01

MAXIMUM CHILD (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	6.65E-01	6.59E-01	1.16E-01	2.22E-02	2.30E-01	9.68E-02	2.62E-02
INVERT	0.0	2.26E-03	3.22E-03	1.38E-03	1.06E-03	1.76E-03	1.31E-03	1.07E-03
DRINK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORE	2.99E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
SWIM	0.0	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.92E-06
VEGE	0.0	2.62E-01	8.50E-01	6.36E-0	5.99E-01	6.81E-01	6.29E-01	6.01E-01
MILK	0.0	1.15E-01	2.83E-01	1.90E-0	1.73E-01	2.09E-01	1.86E-01	1.74E-01
MEAT	0.0	4.94E-03	5.21E-02	4.81E-0	4.74E-02	4.89E-02	4.79E-02	4.74E-02
TOTAL	2.99E-04	1.05E+00	1.85E+00	9.92E-01	8.43E-01	1.17E+00	9.61E-01	8.50E-01

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX C

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 LIQUID EFFLUENT PATHWAY

AVERAGE ADULT (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	5.33E-05	7.66E-05	5.15E-05	3.77E-06	2.85E-05	1.20E-05	5.18E-06
INVERT	0.0	5.51E-07	1.30E-06	1.04E-06	5.47E-07	8.03E-07	6.32E-07	5.62E-07
DRINK	0.0	2.04E-06	2.28E-04	2.27E-04	2.25E-04	2.26E-04	2.25E-04	2.25E-04
SHORE	1.78E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07	1.52E-07
SWIM	0.0	5.74E-10	5.74E-10	5.74E-10	5.74E-10	5.74E-10	5.74E-10	5.74E-10
BOATING	0.0	2.87E-10	2.87E-10	2.87E-10	2.87E-10	2.87E-10	2.87E-10	2.87E-10
VEGE	0.0	2.38E-05	1.48E-04	1.37E-04	1.15E-04	1.26E-04	1.19E-04	1.16E-04
L VEGE	0.0	4.57E-06	2.77E-05	2.55E-05	2.14E-05	2.35E-05	2.21E-05	2.15E-05
MILK	0.0	9.71E-06	4.43E-05	3.97E-05	3.10E-05	3.55E-05	3.25E-05	3.12E-05
MEAT	0.0	2.96E-06	6.42E-05	6.29E-05	6.02E-05	6.16E-05	6.07E-05	6.03E-05
TOTAL	1.78E-07	9.70E-05	5.90E-04	5.44E-04	4.57E-04	5.02E-04	4.72E-04	4.60E-04

AVERAGE TEENAGER (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	5.64E-05	7.79E-05	2.90E-05	2.87E-06	2.84E-05	1.28E-05	3.94E-06
INVERT	0.0	5.81E-07	1.19E-06	6.83E-07	4.14E-07	6.77E-07	5.16E-07	4.25E-07
DRINK	0.0	2.01E-06	1.62E-04	1.60E-04	1.60E-04	1.60E-04	1.60E-04	1.60E-04
SHORE	1.01E-06	8.62E-07	8.62E-07	8.62E-07	8.62E-07	8.62E-07	8.62E-07	8.62E-07
SWIM	0.0	3.25E-09	3.25E-09	3.25E-09	3.25E-09	3.25E-09	3.25E-09	3.25E-09
BOATING	0.0	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09	1.63E-09
VEGE	0.0	4.23E-05	2.03E-04	1.66E-04	1.47E-04	1.66E-04	1.54E-04	1.48E-04
L VEGE	0.0	4.28E-06	2.01E-05	1.64E-05	1.44E-05	1.63E-05	1.52E-05	1.45E-05
MILK	0.0	2.48E-05	9.00E-05	6.85E-05	5.69E-05	6.81E-05	6.13E-05	5.73E-05
MEAT	0.0	2.58E-06	4.12E-05	3.90E-05	3.77E-05	3.89E-05	3.82E-05	3.78E-05
TOTAL	1.01E-06	1.34E-04	5.96E-04	4.81E-04	4.20E-04	4.79E-04	4.43E-04	2.58E-04

AVERAGE CHILD (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	6.97E-05	6.90E-05	1.22E-05	2.33E-06	2.41E-05	1.01E-05	2.74E-06
INVERT	0.0	7.46E-07	1.06E-06	4.54E-07	3.49E-07	5.82E-07	4.33E-07	3.53E-07
DRINK	0.0	5.88E-06	3.11E-04	3.06E-04	3.06E-04	3.07E-04	3.06E-04	3.06E-04
SHORE	2.03E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07	1.74E-07
SWIM	0.0	6.57E-10	6.57E-10	6.57E-10	6.57E-10	6.57E-10	6.57E-10	6.57E-10
BOATING	0.0	3.29E-10	3.29E-10	3.29E-10	3.29E-10	3.29E-10	3.29E-10	3.29E-10
VEGE	0.0	1.03E-04	3.34E-04	9.49E-04	2.34E-04	2.67E-04	2.46E-04	2.35E-04
L VEGE	0.0	6.24E-06	1.98E-05	1.47E-05	1.38E-05	1.57E-05	1.45E-05	1.38E-05
MILK	0.0	6.16E-05	1.51E-04	1.01E-04	9.25E-05	1.12E-04	9.96E-05	9.30E-05
MEAT	0.0	4.73E-06	4.98E-05	4.60E-05	4.54E-05	4.68E-05	4.60E-05	4.54E-05
TOTAL	2.03E-07	2.52E-04	9.36E-04	1.43E-03	6.94E-04	7.73E-04	7.23E-04	6.96E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX C

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 1 LIQUID EFFLUENT PATHWAY

		GENERAL PUBLIC			MAN-REM			
PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	1.13E-02	1.50E-02	8.36E-03	6.81E-04	5.52E-03	2.34E-03	9.19E-04
INVER	0.0	1.18E-04	2.48E-04	1.79E-04	9.90E-05	1.49E-04	1.16E-04	1.01E-04
DRINK	0.0	5.54E-04	4.78E-02	4.74E-02	4.71E-02	4.74E-02	4.72E-02	4.71E-02
SHORE	5.55E-05	0.0	0.0	4.75E-05	4.75E-05	0.0	0.0	0.0
SWIM	0.0	0.0	0.0	1.79E-07	1.79E-07	0.0	0.0	0.0
BOATING	0.0	0.0	0.0	8.97E-08	8.97E-08	0.0	0.0	0.0
VEGE	0.0	8.13E-03	3.80E-02	3.25E-02	2.85E-02	3.17E-02	2.96E-02	2.86E-02
L VEGE	0.0	9.82E-04	5.16E-03	4.58E-03	3.91E-03	4.33E-03	4.06E-03	3.93E-03
MILK	0.0	4.19E-03	1.39E-02	1.09E-02	9.12E-03	1.07E-02	9.69E-03	9.18E-03
MEAT	0.0	6.57E-04	1.20E-02	1.16E-02	1.12E-02	1.16E-02	1.13E-02	1.12E-02
TOTAL	5.55E-05	2.59E-02	1.32E-01	1.16E-01	1.01E-01	1.11E-01	1.04E-01	1.01E-01

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX D

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX D

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 LIQUID EFFLUENT PATHWAY

MAXIMUM ADULT (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	1.38E-02	1.89E-02	1.24E-02	1.78E-06	6.41E-03	2.13E-03	3.67E-04
INVERT	0.0	2.82E-05	3.86E-05	2.53E-05	5.09E-08	1.31E-05	4.40E-06	7.96E-07
DRINK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORE	1.09E-03	9.36E-04	9.36E-04	9.36E-04	9.36E-04	9.36E-04	9.36E-04	9.36E-04
SWIM	0.0	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07
VEGE	0.0	3.26E-03	4.48E-03	2.95E-03	2.88E-05	1.54E-03	5.32E-04	1.15E-04
MILK	0.0	1.34E-03	1.85E-03	1.21E-03	7.83E-06	6.32E-04	2.15E-04	4.34E-05
MEAT	0.0	1.65E-04	2.32E-04	1.54E-04	6.11E-06	8.27E-05	3.16E-05	1.05E-05
TOTAL	1.09E-03	1.96E-02	2.64E-02	1.76E-02	9.82E-04	9.61E-03	3.85E-03	1.47E-03

MAXIMUM TEENAGER (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	1.16E-02	1.55E-02	5.39E-03	1.08E-06	5.27E-03	2.05E-03	2.21E-04
INVERT	0.0	3.96E-05	5.27E-05	1.84E-05	5.14E-08	1.80E-05	7.01E-06	8.00E-07
DRINK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORE	1.09E-04	9.36E-05	9.36E-05	9.36E-05	9.36E-05	9.36E-05	9.36E-05	9.36E-05
SWIM	0.0	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07
VEGE	0.0	5.55E-03	7.41E-03	2.61E-03	3.53E-05	2.55E-03	1.01E-03	1.40E-04
MILK	0.0	2.44E-03	3.25E-03	1.14E-03	1.02E-05	1.11E-03	4.39E-04	5.63E-05
MEAT	0.0	1.37E-04	1.86E-04	6.71E-05	3.65E-06	6.56E-05	2.77E-05	6.24E-06
TOTAL	1.09E-04	1.99E-02	2.64E-02	9.32E-03	1.44E-04	9.11E-03	3.63E-03	5.18E-04

MAXIMUM CHILD (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	3.40E-02	3.25E-02	4.80E-03	2.07E-06	1.06E-02	3.81E-03	2.06E-04
INVERT	0.0	1.16E-04	1.11E-04	1.64E-05	9.84E-08	3.61E-05	1.31E-05	7.91E-07
DRINK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SHORE	1.53E-05	1.31E-05	1.31E-05	1.31E-05	1.31E-05	1.31E-05	1.31E-05	1.31E-05
SWIM	0.0	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07	3.53E-07
VEGE	0.0	1.34E-02	1.28E-02	1.94E-03	5.57E-05	4.22E-03	1.56E-03	1.36E-04
MILK	0.0	5.87E-03	5.64E-03	8.46E-04	1.61E-05	1.85E-03	6.75E-04	5.13E-05
MEAT	0.0	2.52E-04	2.46E-04	4.00E-05	4.40E-06	8.31E-05	3.27E-05	5.92E-06
TOTAL	1.53E-05	5.36E-02	5.13E-02	7.66E-03	9.18E-05	1.67E-02	6.11E-03	4.13E-04

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX D

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 LIQUID EFFLUENT PATHWAY

AVERAGE ADULT (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	2.72E-05	3.72E-05	2.44E-05	3.51E-09	1.26E-05	4.20E-06	7.24E-07
INVERT	0.0	2.82E-07	3.86E-07	2.53E-07	5.09E-10	1.31E-07	4.40E-08	7.96E-09
DRINK	0.0	1.04E-06	1.63E-06	1.14E-06	2.09E-07	6.93E-07	3.70E-07	2.37E-07
SHORE	9.07E-08	7.77E-08	7.77E-08	7.77E-08	7.77E-08	7.77E-08	7.77E-08	7.77E-08
SWIM	0.0	2.93E-10	2.93E-10	2.93E-10	2.93E-10	2.93E-10	2.93E-10	2.93E-10
BOATING	0.0	1.47E-10	1.47E-10	1.47E-10	1.47E-10	1.47E-10	1.47E-10	1.47E-10
VEGE	0.0	1.19E-05	1.64E-05	1.07E-05	1.05E-07	5.63E-06	1.95E-06	4.20E-07
L VEGE	0.0	1.99E-06	2.74E-06	1.80E-06	1.70E-08	9.43E-07	3.24E-07	6.94E-08
MILK	0.0	4.79E-06	6.58E-06	4.31E-06	2.79E-08	2.25E-06	7.70E-07	1.55E-07
MEAT	0.0	1.44E-06	2.01E-06	1.34E-06	5.31E-08	7.22E-07	2.74E-07	9.10E-08
TOTAL	9.07E-08	4.87E-05	6.70E-05	4.39E-05	4.94E-07	2.30E-05	8.01E-06	1.78E-06

AVERAGE TEENAGER (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	2.88E-05	3.83E-05	1.34E-05	2.67E-09	1.30E-05	5.07E-06	5.48E-07
INVERT	0.0	2.97E-07	3.95E-07	1.38E-07	3.85E-10	1.35E-07	5.26E-08	6.00E-09
DRINK	0.0	1.03E-06	1.52E-06	6.25E-07	1.48E-07	6.14E-07	3.29E-07	1.68E-07
SHORE	5.13E-07	4.40E-07	4.40E-07	4.40E-07	4.40E-07	4.40E-07	4.40E-07	4.40E-07
SWIM	0.0	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09	1.66E-09
BOATING	0.0	8.30E-10	8.30E-10	8.30E-10	8.30E-10	8.30E-10	8.30E-10	8.30E-10
VEGE	0.0	2.11E-05	2.82E-05	9.94E-06	1.34E-07	9.67E-06	3.85E-06	5.33E-07
L VEGE	0.0	1.87E-06	2.49E-06	8.78E-07	1.14E-08	8.55E-07	3.39E-07	4.66E-08
MILK	0.0	1.22E-05	1.63E-05	5.73E-06	5.10E-08	5.60E-06	2.20E-06	2.82E-07
MEAT	0.0	1.25E-06	1.70E-06	6.13E-07	3.33E-08	6.00E-07	2.53E-07	5.69E-08
TOTAL	5.13E-07	6.70E-05	8.94E-05	1.06E-04	8.24E-07	3.09E-05	1.25E-05	2.08E-06

AVERAGE CHILD (MREM)

PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	3.56E-05	3.41E-05	5.03E-06	2.16E-09	1.11E-05	4.00E-06	2.15E-07
INVERT	0.0	3.81E-07	3.65E-07	5.42E-08	3.25E-10	1.19E-07	4.31E-08	2.61E-09
DRINK	0.0	3.00E-06	3.16E-06	7.09E-07	2.84E-07	1.22E-06	6.21E-07	3.02E-07
SHORE	1.04E-07	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08	8.89E-08
SWIM	0.0	3.36E-10	3.36E-10	3.36E-10	3.36E-10	3.36E-10	3.36E-10	3.36E-10
BOATING	0.0	1.68E-10	1.68E-10	1.68E-10	1.68E-10	1.68E-10	1.68E-10	1.68E-10
VEGE	0.0	1.88E-03	1.80E-03	2.73E-04	7.80E-06	5.93E-04	2.19E-04	1.91E-05
L VEGE	0.0	9.95E-05	9.57E-05	1.45E-05	4.00E-07	3.14E-05	1.16E-05	9.97E-07
MILK	0.0	1.11E-03	1.06E-03	1.60E-04	3.04E-06	3.49E-04	1.28E-04	9.69E-06
MEAT	0.0	8.37E-05	8.15E-05	1.33E-05	1.46E-06	2.76E-05	1.09E-05	1.96E-06
TOTAL	1.04E-07	2.29E-06	2.23E-06	3.64E-07	4.00E-08	7.55E-07	2.98E-07	5.36E-08

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
JANUARY-JUNE 1986
RANCHO SECO NUCLEAR GENERATING STATION

APPENDIX D

RADIOLOGICAL IMPACT ON MAN
1986 QUARTER 2 LIQUID EFFLUENT PATHWAY

	GENERAL PUBLIC			MAN-REM			
PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-TRAC
FISH	0.0	5.76E-03	7.33E-03	3.93E-03	6.33E-07	2.47E-03	8.50E-04	1.22E-04
INVER	0.0	6.01E-05	7.64E-05	4.08E-05	9.21E-08	2.58E-05	8.93E-06	1.35E-06
DRINK	0.0	2.83E-04	3.85E-04	2.05E-04	4.38E-05	1.58E-04	8.34E-05	4.89E-05
SHORE	2.83E-05	0.0	0.0	2.43E-05	2.43E-05	0.0	0.0	0.0
SWIM	0.0	0.0	0.0	9.16E-08	9.16E-08	0.0	0.0	0.0
BOATING	0.0	0.0	0.0	4.58E-08	4.58E-08	0.0	0.0	0.0
VEGE	0.0	4.06E-03	4.80E-03	2.05E-03	2.59E-05	1.62E-03	5.84E-04	9.15E-05
L VEGE	0.0	4.28E-04	5.46E-04	2.94E-04	3.10E-06	1.86E-04	6.59E-05	1.21E-05
MILK	0.0	2.07E-03	2.38E-03	9.10E-04	8.21E-06	7.98E-04	2.87E-04	3.83E-05
MEAT	0.0	3.18E-04	4.10E-04	2.20E-04	9.86E-06	1.44E-04	5.60E-05	1.64E-05
TOTAL	2.83E-05	1.30E-02	1.59E-02	7.67E-03	1.16E-04	5.40E-03	1.93E-03	3.30E-04