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PG&E Letter DCL-01-045

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
2000 Annual Radiological Environmental Operating Report

Dear Commissioners and Staff:

Enclosed is the 2000 Annual Radiological Environmental Operating Report for Diablo Canyon Power Plant, Units 1 and 2, submitted in accordance with Technical Specification 5.6.2. The enclosure contains material consistent with the objectives of the Offsite Dose Calculation Manual, and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

Should you have any questions regarding this submittal, please contact Bob Lorenz at (925) 866-5302.

Sincerely,

David H. Oatley

cc: Edgar D. Bailey, DHS
Roger W. Briggs
Robert M. Carr
Ellis W. Merschoff
David L. Proulx
Girija S. Shukla
Diablo Distribution (w/o enc.)

Enclosure

LMP/1813/R0210644

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Enclosure
PG&E Letter DCL 01-045

2000 Annual Radiological Environmental Operating Report Diablo Canyon Power Plant

TES

2000 Annual Radiological
Environmental Operating Report
Diablo Canyon Power Plant

Prepared by

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April 2001

Report No.: 420DC-01.13

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EXECUTIVE SUMMARY

This report contains results from the operational Radiological Environmental Monitoring Program (REMP) for Diablo Canyon Power Plant (DCPP) compiled for the period January 1, 2000, through December 31, 2000. This program is conducted in accordance with DCPP Program Directive CY2, "Radiological Monitoring and Controls Program," and RP1.ID11, "Environmental Radiological Monitoring Procedure."

The results of the 2000 REMP showed no unusual findings from plant operations, and that the operation of DCPP had no significant radiological impact on the environment. Plant operations had no significant impact on airborne radioactivity in the environment. The ambient direct radiation levels in the DCPP environs did not change and were within the preoperational range. Two out of 34 surface water samples contained tritium above detection levels, but at levels well below reporting levels for tritium. The plant had no significant impact on surface water. Food crops sampled during their growing season and milk samples collected detected only naturally occurring radioactivity; and therefore, there was no impact from plant operation. One out of 87 marine samples contained other than naturally occurring radionuclides. This sample was a commercial fish sample containing a small concentration of cesium-137. The activity in this sample is attributed to global fallout rather than plant operation.

CONTENTS

CONTENTS (Continued)

FIGURES

TABLES

TABLES (Continued)

Section 1

INTRODUCTION

Diablo Canyon Power Plant (DCPP) consists of two Westinghouse pressurized water reactors. Unit 1 began commercial operation in 1985, and Unit 2 began commercial operation in 1986. This report contains results from the operational Radiological Environmental Monitoring Program (REMP) for DCPP compiled for the period January 1, 2000, through December 31, 2000. This program was designed to identify and quantify ambient radioactivity concentrations in the DCPP environs and to determine whether there were any significant increases in the concentration of radionuclides, attributable to plant operations, in the critical dose pathways from the environment to man. Also included in this report are the results of PG&E's Technical and Ecological Services (TES) participation in an external lab cross check program, the State of California Department of Health Services cross-check program and the current land use census of the plant environs conducted by plant personnel.

DCPP ENVIRONMENTAL MONITORING PROGRAM

The REMP was conducted in accordance with DCPP Program Directive CY2, "Radiological Monitoring and Controls Program," and RP1.ID11, "Environmental Radiological Monitoring Procedure."

The environmental media selected were based on the critical dose pathways of the radionuclides from the environment to man. They included the following: direct radiation, air, water, fish, and invertebrates. Supplemental samples such as algae, local agricultural crops, and milk were also collected. The collection frequency of the samples from the different media is summarized in Table 1. Samples are collected by PG&E's DCPP personnel.

The sampling locations were determined by land use, site meteorology, and local demographics. The distances and directions to the environmental monitoring stations are listed in Table 2. The off-site and on-site stations are shown in Figures 1 and 2, respectively.

Table 1

Summary of the Radiological Environmental Monitoring Program

Exposure Pathway and/or Sample	Sampling Locations[b]	Type of Analysis	Collection Frequency
Direct radiation[a]	31 stations (MT1, WN1, OS1, 5S1, 6S1, 8S1, 8S2, 5S3, 2D1, 4D1, 5F1, 1A1, 7D2, 7G2, 7C1, 7F1, OB1, 7D1, 4C1, OS2, 1S1, 2S1, 3S1, 4S1, 7S1, 9S1, 1C1, 5C1, 3D1, 6D1, 5F3)	Gamma exposure	Quarterly
Particulate filters	7 stations (MT1, OS2, 1S1, 5F1, 7D1, 8S1, 8S2)	Gross beta, gamma isotopic	Weekly[c] Quarterly composite
Iodine cartridges	7 stations (MT1, OS2, 1S1, 5F1, 7D1, 8S1, 8S2)	Gamma for I-131	Weekly
Surface water	3 stations (DCM, 7C2, OUT)	Gamma isotopic, tritium	Monthly
Drinking water	2 stations (DW1, 5S2)	Gamma isotopic, radioiodine, tritium	Monthly
Sediment	Diablo Cove (DCM) Rattlesnake Canyon (7C2)	Gamma isotopic	Annually
Intertidal algae[d]	Diablo Cove (DCM) Rattlesnake Canyon (7C2)	Gamma isotopic	Quarterly if Available
Kelp[d]	Diablo Cove (DCM) Pacific Ocean North (PON) Pacific Ocean South (POS) Rattlesnake Canyon (7C2)	Gamma isotopic	Quarterly if Available
Milk[d]	1 station (5F2)	Gamma isotopic, radioiodine	Monthly

Table Notation:

(a) Three TLD badges are placed at each station.

(b) See Figures 1 and 2 for locations.

(c) Filters changed weekly or more frequently as required by dust loading; analyzed at least 24 hours after filter change.

(d) Supplemental sample.

Table 1 (continued)

Summary of the Radiological Environmental Monitoring Program

Exposure Pathway and/or Sample	Sampling Locations[b]	Type of Analysis	Collection Frequency
Rockfish (Sebastes sp.)	Diablo Cove (DCM) Pacific Ocean North (PON)[d] Pacific Ocean South (POS)[d] Rattlesnake Canyon (7C2)	Gamma isotopic	Quarterly if Available
Perch (Family Embiotocidae)	Diablo Cove (DCM) Pacific Ocean North (PON)[d] Pacific Ocean South (POS)[d] Rattlesnake Canyon (7C2)	Gamma isotopic	Quarterly if available
Fish (species unspecified)	Fish Market at Avila Pier (7D3)[d]	Gamma isotopic	Quarterly if available
Mussels (Mytilus californianus)	Diablo Cove (DCM) Pacific Ocean North (PON)[d] Pacific Ocean South (POS)[d] Rattlesnake Canyon (7C2)	Gamma isotopic	Quarterly if available
Red abalone[d] (Haliotis refescens)	Diablo Cove (DCM) Rattlesnake Canyon (7C2)	Gamma isotopic	Semiannually if available
Food crops[d]	4 stations (5F2, 7G1, 7C1, 6C1)	Gamma isotopic	Monthly if available (6C1 is sampled quarterly)

Table Notation:

(a) Three TLD badges are placed at each station.
(b) See Figures 1 and 2 for locations.
(c) Filters changed weekly or more frequently as required by dust loading; analyzed at least 24 hours after filter change.
(d) Supplemental sample.

Table 2

Distances and Directions to Environmental Monitoring Stations*

Station Code[a]	Station Name	Radial Direction** (True Heading) (Degrees)	Radial Distance** from Plant (km)	(Miles)
ØS1	Exclusion Fence-Northwest Corner	320	0.2	(0.1)
ØS2	North Gate	320	0.8	(0.5)
1S1	Wastewater Pond	330	0.6	(0.4)
2S1	Back Road-300 m North of Plant	0	0.3	(0.2)
3S1	Road NW of 230 kV Switchyard	23	0.6	(0.4)
4S1	Back Road between Switchyard	43	0.8	(0.5)
5S1	500 kV Switchyard	58	0.6	(0.4)
5S2	Diablo Creek Weir	65	1.0	(0.6)
5S3	Microwave Tower Road	70	1.0	(0.7)
6S1	Microwave Tower	94	0.8	(0.5)
7S1	Overlook Road	112	0.5	(0.3)
8S1	Target Range	125	0.8	(0.5)
8S2	Southwest Site Boundary (Sec. Met Tower)	128	1.8	(1.1)
9S1	South Cove	167	0.6	(0.4)
MT1	Meteorological Tower	185	0.3	(0.2)
DCM	Diablo Cove	270	0.3	(0.2)
WN1	Northwest Guard Shack	290	0.3	(0.2)
1A1	Crowbar Canyon	327	2.6	(1.6)
ØB1	Point Buchon	325	5.8	(3.6)
1C1	Montana de Oro Campground	336	7.5	(4.7)
4C1	Clark Valley Gravel Pit	45	9.3	(5.8)
5C1	Junction Prefumo/See Canyon roads	64	7.5	(4.7)
6C1	Household garden (nearest site boundary)	97.5	7.2	(4.6)
7C1	Pecho Creek Ruins (Mello Farm)	120	6.6	(4.1)
7C2	Rattlesnake Canyon	124	7.5	(4.7)
2D1	Sunnyside School	10	11.0	(6.9)
3D1	Clark Valley	24	9.9	(6.2)
4D1	Los Osos School	36	12.2	(7.6)
6D1	Junction See Canyon/Davis Canyon roads	89	12.0	(7.5)
7D1	Avila Gate	118	10.6	(6.6)
7D2	Avila Beach	110	12.2	(7.6)
7D3	Avila Pier	120	11.0	(6.9)
2F1	Morro Bay (Commercial Landing)	0	17.4	(10.9)
5F1	SLO Zone 1 Substation	68	17.9	(11.2)
5F2	Cal Poly Farm	60	20.2	(12.6)
5F3	SLO County Health Department	70	20.3	(12.7)
7F1	Shell Beach	110	17.3	(10.8)
7G1	Arroyo Grande (Kawaoka Farm)	115	26.9	(16.8)
7G2	Oceano Substation	118	27.7	(17.3)
OUT	Plant Outfall	270	0.3	(0.2)
DW1	Drinking Water	On site	---	---
PON	Pacific Ocean North of Diablo Cove	305	2.4	(1.5)
POS	Pacific Ocean South of Diablo Cove	145	1.3	(0.8)

*Stations are shown in Figures 1 and 2.

**The reference point used is the dome of Unit 1 containment.

Table 2 (continued)

Distances and Directions to Environmental Monitoring Stations

(a) Station Code (XYZ):

X - First number (0-9) represents the radial sector in which the station is located:

0 - Northwest
1 - North-northwest
2 - North
3 - North-northeast
4 - Northeast
5 - East-northeast
6 - East
7 - East-southeast
8 - Southeast
9 - South-southeast

Y - Letter (S, A-H) represents the distance from the plant:

S - On site
A - 0-2 miles from plant (but off-site)
B - 2-4 miles from plant
C - 4-6 miles from plant
D - 6-8 miles from plant
E - 8-10 miles from plant
F - 10-15 miles from plant
G - 15-20 miles from plant
H - Greater than 20 miles from plant

Z - Second number represents the station number within the zone.

Station Code (DCM, MT1, WN1, PON, POS, OUT, DW1):

The following stations do not follow the coding system: Diablo Cove Marine (DCM), Meteorological Tower (MT1), Northwest guard shack (WN1), Pacific Ocean North (PON), Pacific Ocean South (POS), Plant Outfall (OUT), and Drinking Water (DW1).

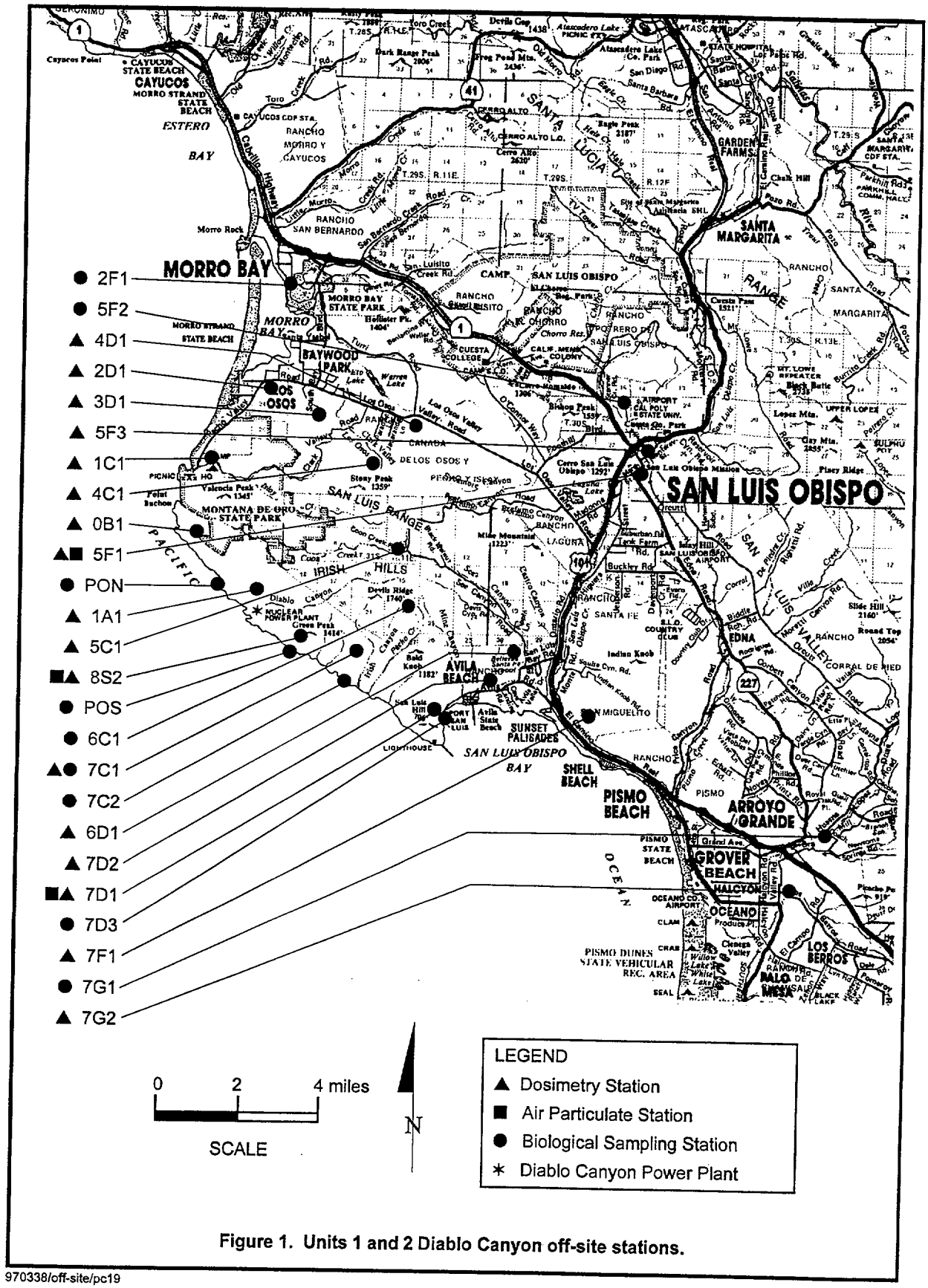

Figure 1. Units 1 and 2 Diablo Canyon off-site stations.

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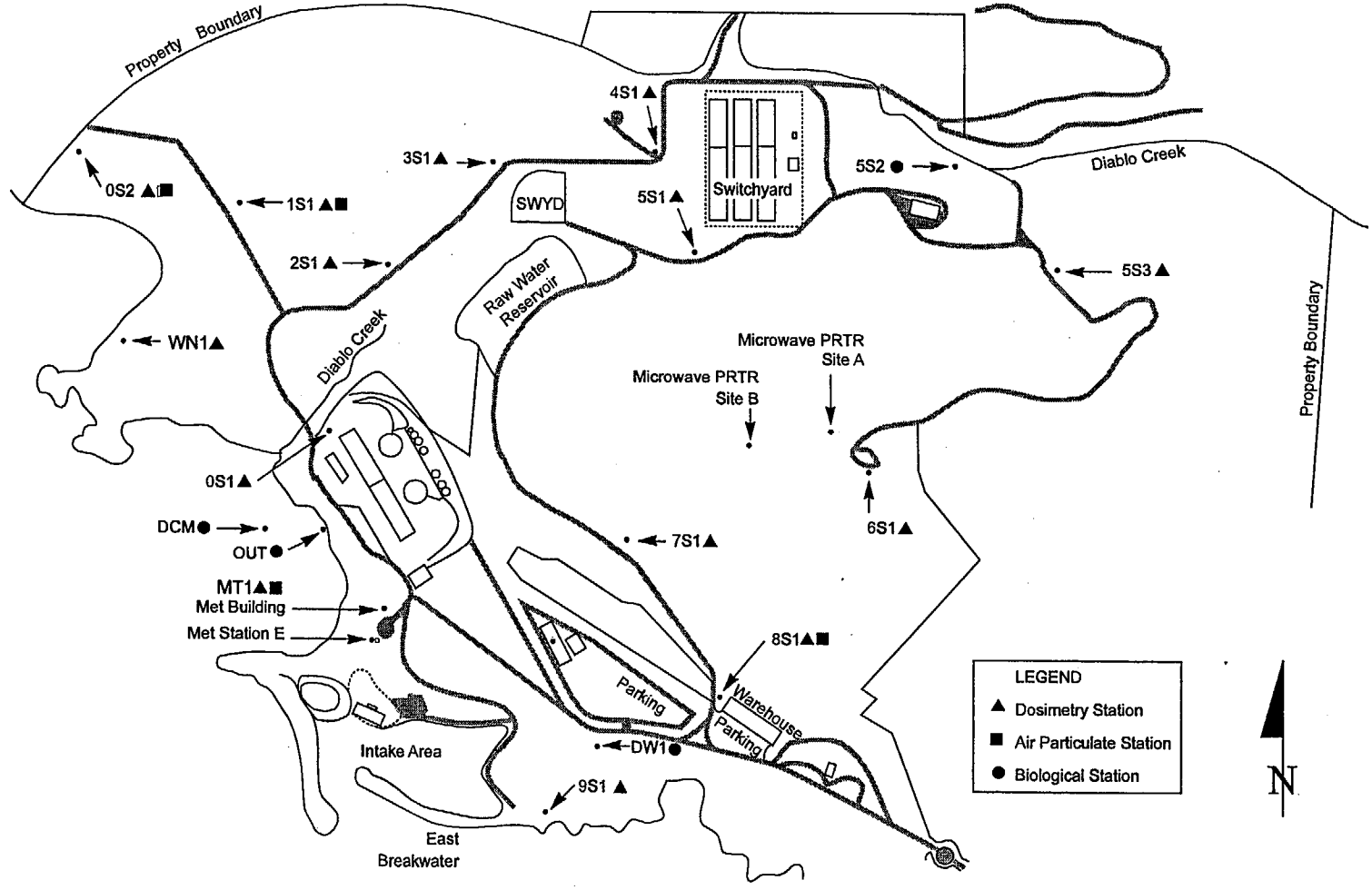


Figure 2. Units 1 and 2 Diablo Canyon on-site stations.

Section 2

SAMPLING METHODS

This section summarizes briefly the various sampling methods.

AIRBORNE RADIOACTIVITY

Air particulate and radioiodine sampling were performed weekly at six indicator stations: MT1, 0S2, 1S1, 7D1, 8S1 and 8S2, and at one control station 5F1.

Constant flow air samplers were used to draw air through paper filters to collect air particulates, and through TEDA impregnated charcoal cartridges to collect radioiodine. The air samplers were set at a flow rate of 1.5 cubic foot per minute and were located one meter above the ground. Sample volumes were determined using gas meters which were installed downstream of the sample head.

At the end of the sampling period, the filter and cartridge were collected. All necessary data regarding the air volume readings on and off, run time, sampler time on and off, date of collection, and sampler location were recorded and submitted, along with the samples, to TES for analysis.

DIRECT RADIATION

Direct radiation was measured at 31 stations in the vicinity of Diablo Canyon using Panasonic UD814 TLD badges. These badges were replaced on a quarterly basis.

The field TLD badge packets were prepared by DCPP personnel. Control badges were carried with the field badges to measure any dose received during transit. The location, date, and time of exchange were recorded on the log sheet which accompanied the field badges.

WATER SAMPLES

Water samples (drinking water and surface water) were collected monthly. Two 1-gallon plastic bottles of each water sample type were collected at their respective locations each month.

Surface water samples were collected at Diablo Cove (station DCM), Rattlesnake Canyon (station 7C2), and at the plant outfall. Drinking water samples were collected from Diablo Creek Weir (station 5S2) located on site and from the drinking water system at DCPP. After collection, the samples were securely sealed and labeled with sample type, location, date, time of collection, and the person performing the collection and sent to TES for analysis.

MARINE BIOLOGICAL AND SEDIMENT SAMPLES

The REMP requires only one sample of rockfish (Sebastes sp.), one sample of perch (family Embiotocidae), and one sample of mussels (mytilus) from indicator station DCM and control station 7C2. All other marine samples collected are considered supplemental. These supplemental marine samples included, but were not limited to, the following: intertidal algae, kelp, and market fish. The intertidal samples (algae and mussels) were collected quarterly during low tidal conditions. Kelp was collected quarterly from the offshore kelp bed in the vicinity of the plant. Quarterly samples of fish and an annual sample of ocean bottom sediment were collected from the plant environs by divers. Fish caught locally and purchased from the fish market were also analyzed. All samples were subject to unavailability due to seasonal fluctuations or unfavorable sampling conditions.

The samples were sealed in plastic bags immediately upon collection and labeled with sample type, location, date, time of collection, and individual performing the collection before they were sent to TES.

FOOD CROPS

The REMP requires broadleaf vegetation to be collected in the nearest offsite locations of the highest calculated annual average ground level D/Q (dispersion parameter). There is no broadleaf vegetation available that satisfies this requirement. However, representative samples of food crops in season were collected monthly from supplemental stations: Cal Poly Farm (station 5F2), Kawaoka Farm in Arroyo Grande (station 7G1), Mello Farm (station 7C1) along the site access road, and quarterly at a household garden (station 6C1). The samples were collected, sealed immediately in plastic bags, labeled with sample type, sample location, collection date, time of collection, and the individual performing the collection, and sent to TES for analysis.

MILK

There are no milking animals in the vicinity of the plant. However, supplemental samples of milk were collected monthly from Cal Poly Farm (station 5F2). Two 1-gallon plastic bottles of milk were collected. Forty grams of sodium bisulfite preservative were added to each gallon of milk sample. The bottles were sealed and shaken thoroughly to distribute the preservative. They were labeled with sample type, sample location, date and time of collection, and the individual performing the collection, and sent to TES for analysis.

Section 3

SAMPLE ANALYSES

Samples received at TES were analyzed for radioactivity by standard methods as outlined in TES Work Instructions. The results of the analyses were reported at the 95 percent confidence level. All analyses were performed such that the lower limits of detection (LLDs), listed on Table 3, were achieved under routine conditions. The LLD is an a priori (before the fact) estimate of the activity concentration that can be practically achievable with a given measuring instrument, procedure, and type of sample. This value is not intended to be used as an a posteriori (after the fact) criterion for the presence of activity. Background fluctuation, unavoidably small sample size, the presence of interfering nuclides or other uncontrollable circumstances may occasionally render these LLDs unachievable. In such cases, the contributing factors are identified and described in this report. A brief description of the analyses of the different sample types and the general method of counting is discussed below. See Table 1 for the summary of the type of analyses that were done on the different sample media.

AIRBORNE RADIOACTIVITY

The filter papers collected from the field were placed on individual planchets and counted for gross beta activity in a low-background, thin-window gas proportional counter. They were analyzed at least twenty-four hours after sampling to allow for radon and thoron daughter decay. Gamma isotopic analysis was then performed on quarterly composites of the filters to determine the activity concentration of gamma emitting isotopes.

Gamma isotopic analyses were also performed on the TEDA impregnated charcoal cartridges to determine the radioiodine concentration. The cartridges and filter papers were counted for a time period such that the LLDs were met.

DIRECT RADIATION

Panasonic (UD814) TLD badges were used to measure the ambient radiation level. The TLD badges were annealed and packaged to be sent out in the field by plant dosimetry personnel. After field exposure, the TLD badges were processed on site. The badges were calibrated using an NIST-traceable cesium-137 source.

Table 3

Maximum Values for Lower Limits of Detection (LLD)[a]

Analysis	Water (pCi/L)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/L)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
Gross beta	4	$1x10^{-2}$				
H-3	2000					
Mn-54	15		130			
Fe-59	30		260			
Co-58, 60	15		130			
Zn-65	30		260			
Zr-Nb-95	15					
I-131	1[b]	$7x10^{-2}$		1	60	
Cs-134	15	$5x10^{-2}$	130	15	60	150
Cs-137	18	$6x10^{-2}$	150	18	80	180
Ba-La-140	15			15		

Table Notation:

(a) The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95 percent probability with 5 percent probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ s_b}{E \times V \times 2.22 \times Y \times \exp(-\lambda t)}$$

where

LLD is the lower limit of detection as defined (as pCi per unit mass or volume)

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute)

E is the counting efficiency (as counts per disintegration)

V is the sample size (in units of mass or volume)

2.22 is the number of disintegrations per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

t is the elapsed time between sample collection (or end of the sample collection period) and time of counting

The value of s_b used in the calculation of the LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. In calculating the LLD for a radionuclide determined by gamma ray spectrometry, the background shall include the typical contributions of other radionuclides normally present in the samples (e.g., potassium-40 in milk samples).

(b) LLD for drinking water.

WATER SAMPLES

Gamma isotopic analyses were performed on all water sample types. To determine the activity concentration of gamma emitters, a known volume of the water sample was analyzed using a gamma spectrometer.

Tritium analyses were performed on drinking water and surface water. The water samples were distilled and analyzed for tritium using a liquid scintillation spectrometer. Iodine-131 analysis was also performed on each drinking water sample.

MARINE BIOLOGICAL AND SEDIMENT SAMPLES

Only the edible portion of the fish, abalone, and mussels were analyzed for gamma emitters. A weighed amount of the prepared sample was analyzed using a gamma spectrometer.

The kelp blades and the pneumatocyst were prepared separately for analysis. The weighed samples were then counted on the gamma spectrometer to determine the activity concentration of gamma emitters. The results reported were based on wet weight for the marine samples.

The sediment samples were first oven-dried before performing gamma isotopic analysis. The results reported for the sediment samples were based on dry weight.

FOOD CROPS

The samples were placed in appropriate counting containers and analyzed to determine the gamma isotopic content. The results obtained were based on wet weight.

MILK

A known volume of the milk sample was first analyzed on a gamma spectrometer to determine its gamma isotopic content. Stable iodine carrier was then added to the milk sample for determination of chemical recovery. The total iodine was separated from the sample by passing the sample through an anion resin column. The iodine was chemically extracted from the resin, precipitated as cuprous iodide and counted on the gamma spectrometer.

Section 4

QUALITY CONTROL

Routine quality control was performed throughout the year to ensure the accuracy of equipment and procedures used in determining the results. The TES radiological laboratory also participates in an external lab Performance Evaluation Program and in the California State Cross-Check Program.

The results of TES participation in Analytics Performance Evaluation Study for this year are shown in Appendix A, Table A-10. Participation included analysis of:

- gross alpha and gross beta emitters in water
- gross alpha and gross beta emitters on particulate filter
- iodine-131 and gamma emitters in milk
- tritium in water
- iodine-131 in charcoal cartridge
- gamma emitters in soil;
- gamma emitters in vegetation
- gamma emitters in water

TES results of these blind samples were in good agreement with the known results as seen in Table A-10.

The 1998 state cross-check report, "California Nuclear Power Plant Environmental Surveillance Report," showed that there were no discrepancies between the results of the state of California Standard and Research Laboratory and TES. The table of TES results for the 2000 cross-check program can be found in Appendix B, Table B-1. The California Department of Health Services (DHS) has yet to issue a report for 1999, and TES has been informed that the report for 2000 has a low priority with DHS. TES personnel are negotiating with the DHS to obtain cross-check results prior to the formal reports being issued. The results of these negotiations will be discussed in next year's report.

Section 5

LAND USE CENSUS

DCPP Radiation Protection personnel conducted a land use census in the vicinity of DCPP for 2000. The land use census is based on Nuclear Regulatory Commission (NRC), Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants," and required by DCPP Program Directive CY2, "Radiological Monitoring and Controls Program." The census is conducted at least once per year during the growing season for the Diablo Canyon environs.

The land use census identifies the nearest milk animal and garden greater than 50 square meters (500 square feet) producing broadleaf vegetation in each of the landward meteorological sectors within a distance of 8 kilometers (5 miles) of the plant. DCPP IDAP RP1.ID11 "Environmental Radiological Monitoring Program," requires that the nearest residence be identified in each of the landward sectors within a distance of 5 miles.

The land use census was performed by directly contacting individual landowners or tenants, or by aerial surveys. The landowners or tenants were contacted between October 17 and December 23, 2000. The aerial survey was done on October 17, 2000.

The census identified one household garden in the east sector at 4.5 miles, greater than 50 square meters (500 square feet) that produces broadleaf vegetation. No milk animals were identified within the first 5 miles in any sector. Much of the area surrounding the plant site is used for cattle grazing. Goats were used for weed abatement for approximately 5 months within the area surrounding the plant site. A farm is located on the coastal plateau in the east-southeast (ESE) sector, along the site access road. The farm starts at approximately 3.3 miles and extends to 4.5 miles from the plant. It produces only legumes and cereal grass (grains).

A total of 13 residences were identified within the 5-mile radius of the plant. They were confirmed to be, or appeared to be, occupied during 2000. The nearest residence is 1.2 miles northwest (NW) of the plant. Table B-5 summarizes the results of the land use census and Figure 3 shows the locations of the farm and residences in the vicinity of DCPP.

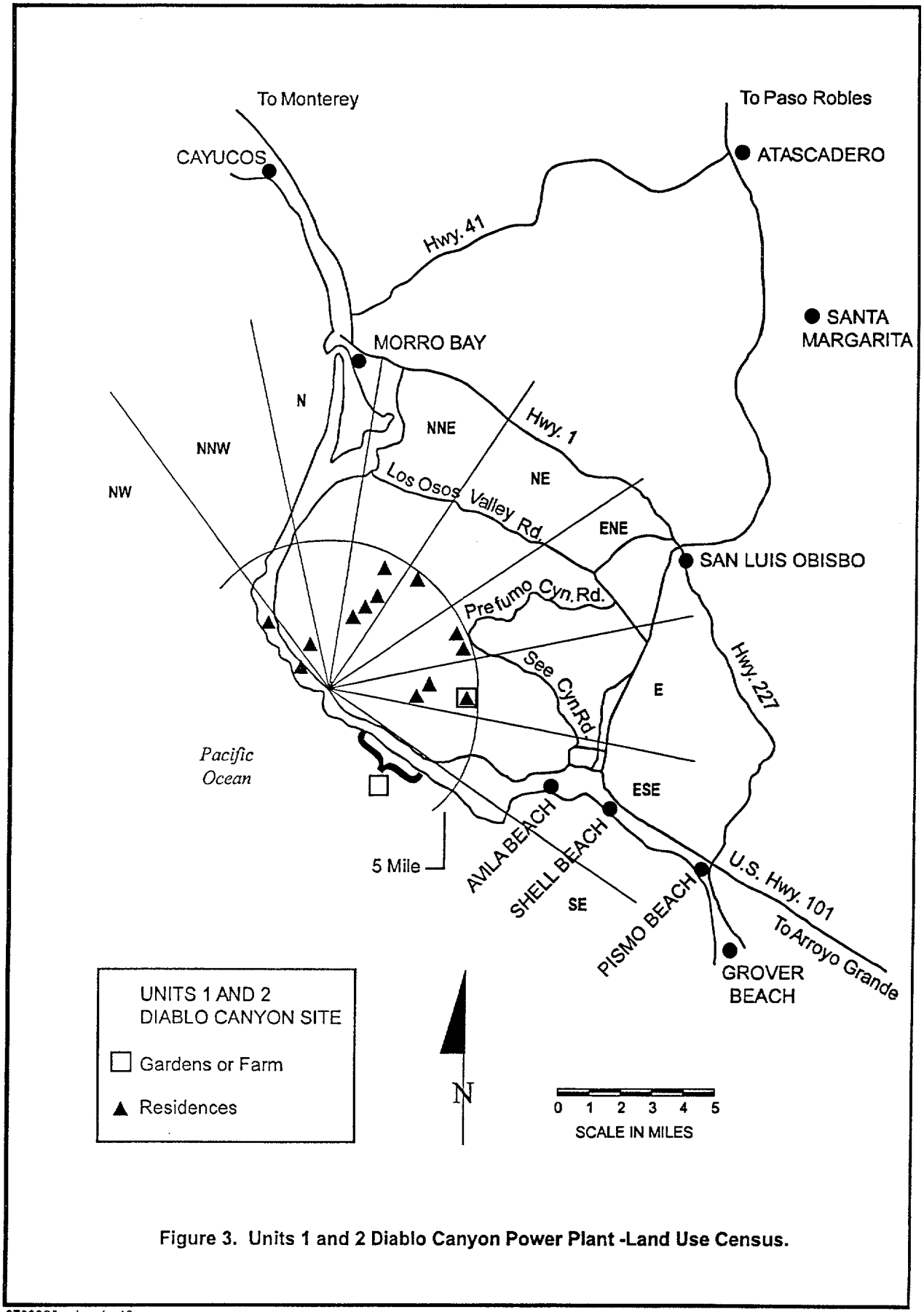


Figure 3. Units 1 and 2 Diablo Canyon Power Plant -Land Use Census.

Section 6

RESULTS AND DISCUSSION

The results for the DCPP REMP are listed in Appendices A and B. The ± terms listed in the tables in the appendices are the uncertainties within the 95 percent confidence level. The tables in Appendix A present summaries of the results, formatted in accordance with current NRC guidelines (NRC Branch Technical Position, Revision 1, November 1979). Appendix A also includes the results of the performance evaluation studies. The tables in Appendix B contain analytical results of the individual samples and the state cross-check results. The lower limits of detection (LLD) for the nuclides of interest listed in Table 3 were met for all analyses performed except for those samples listed in Table B-6. The LLDs were unachievable in these cases due to small sample size in case of the mussel sample and difficulties with iodine specific analyses in the case of one water and one milk sample. The analytical results for the different sample types are discussed below. The reporting levels for radioactivity concentrations in environmental samples are listed in Table 4, page 6-8.

AIRBORNE RADIOACTIVITY

Air particulates and radioiodine samples were collected weekly from six indicator stations (MT1, ØS2, 1S1, 7D1, 8S1, and 8S2) in the DCPP environs and one control station (5F1). A total of 364 air particulate filters and 364 iodine cartridges were collected and analyzed. In addition, an iodine cartridge and air particulate filter from each station was lost in the Company mail for one collection week in November. The data collected for the air-sampling program is summarized in Appendix A, Table A-1.

Air Particulates

Gross beta activity was detected in every weekly air particulate sample collected from all indicator and control stations. The range for the indicator stations was 0.003 - 0.052 pCi/m^3 with a mean of 0.011 pCi/m^3. The range for the control station was 0.003 - 0.053 pCi/m^3 with a mean of 0.011 pCi/m^3. Comparison of the data showed that the mean values of gross beta activities for the indicator stations were consistent with those obtained for the control station. The gross beta activities detected at the air sampling stations are tabulated in Appendix B, Table B-3 and shown in Figure 4.

Gamma isotopic analyses were performed on quarterly composites of the air particulate filters from each station. All samples collected during the year contained only naturally occurring radioactivity.

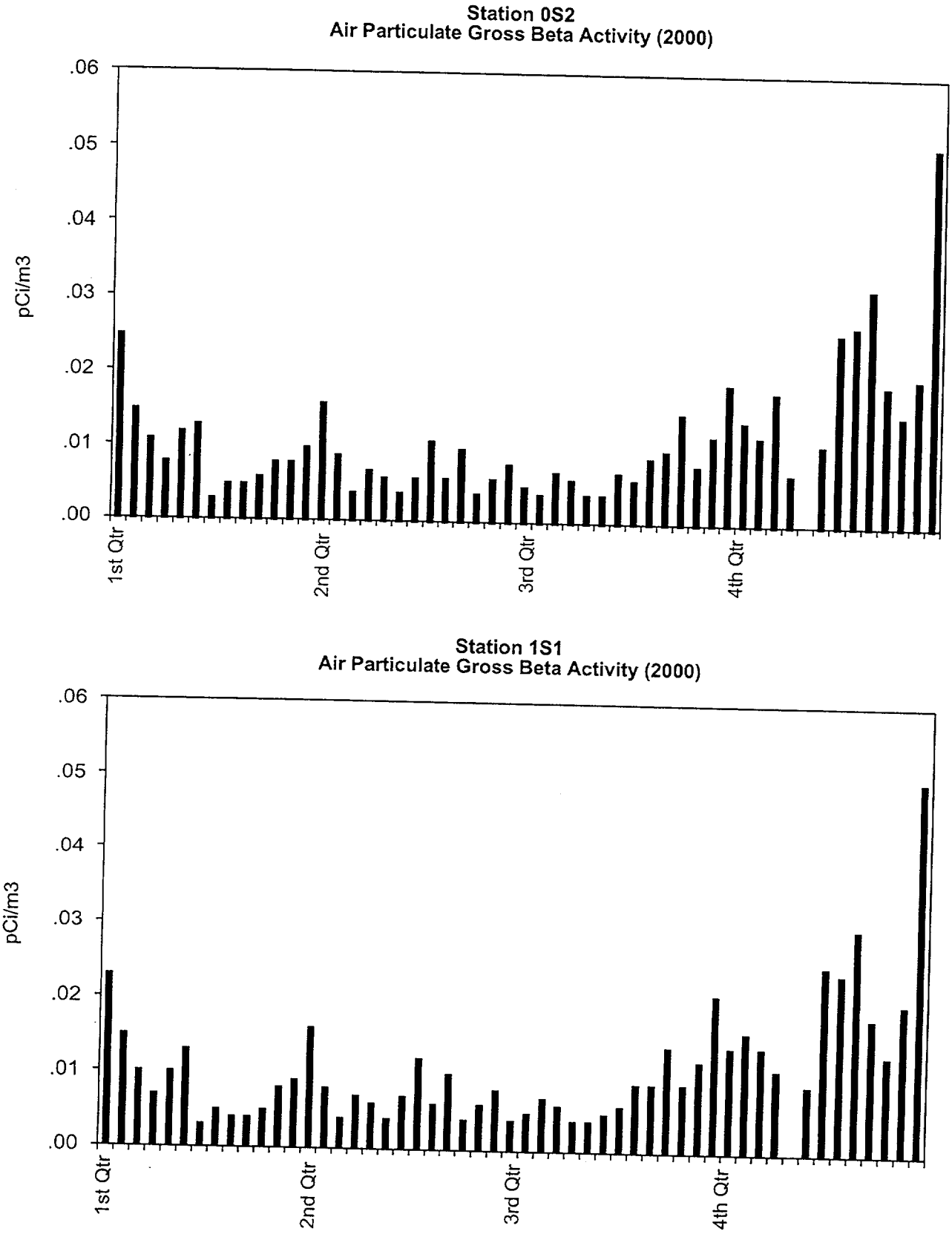
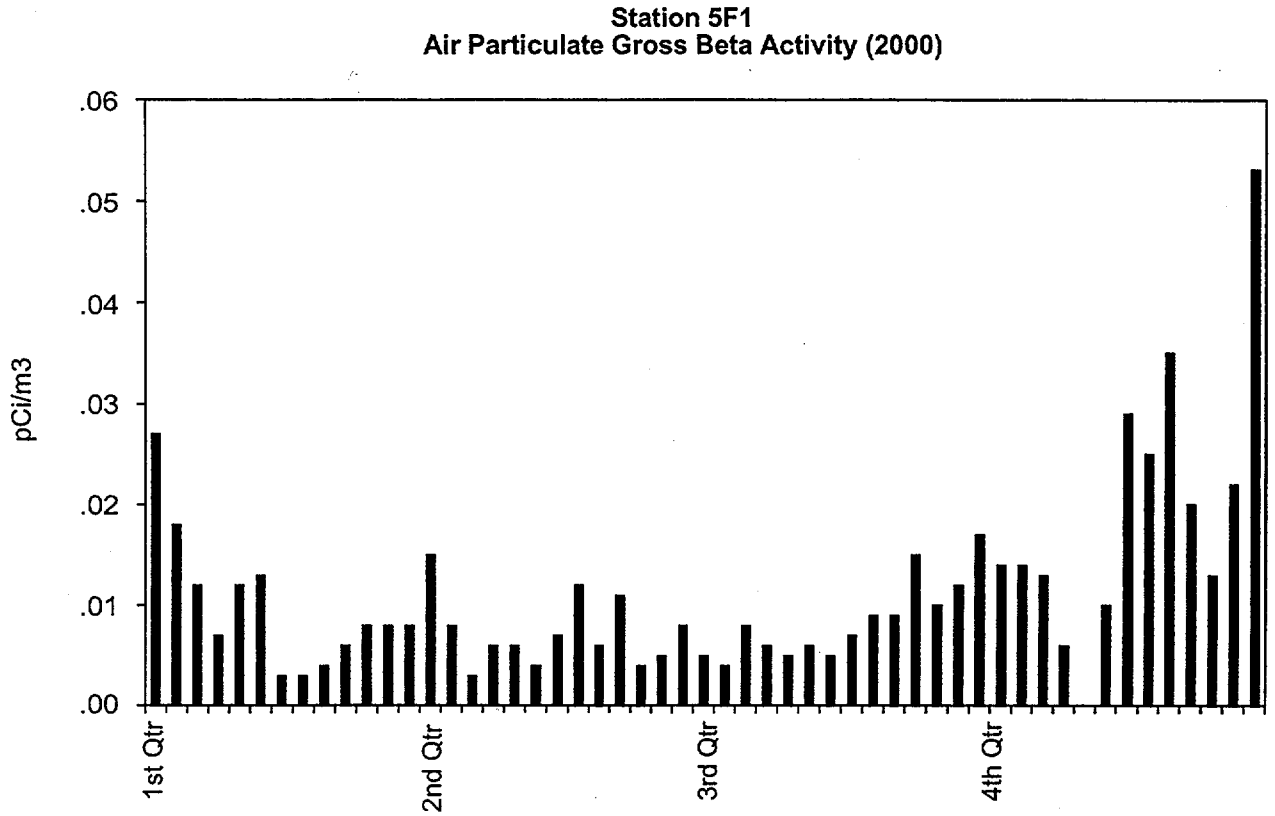


Figure 4. Air particulate gross beta activities.

990308/0S2 and 1S1



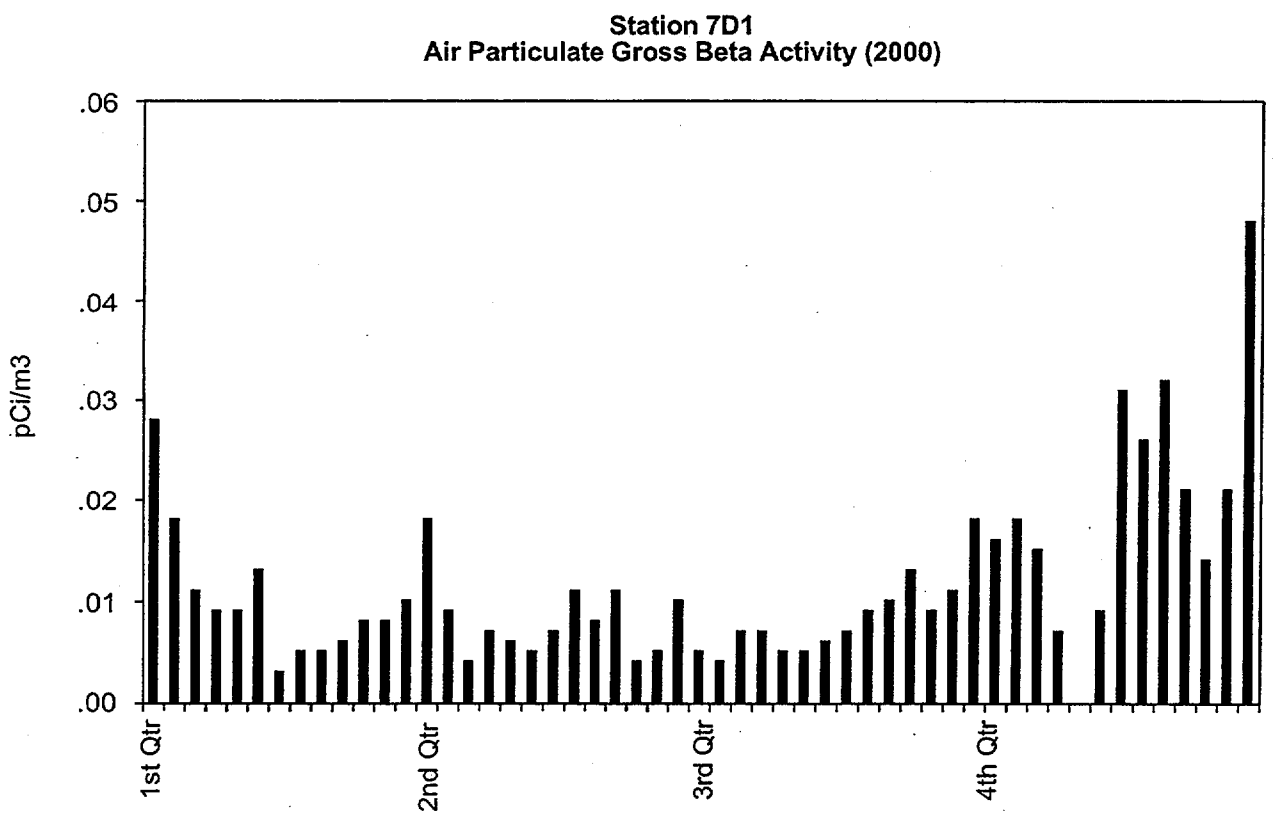
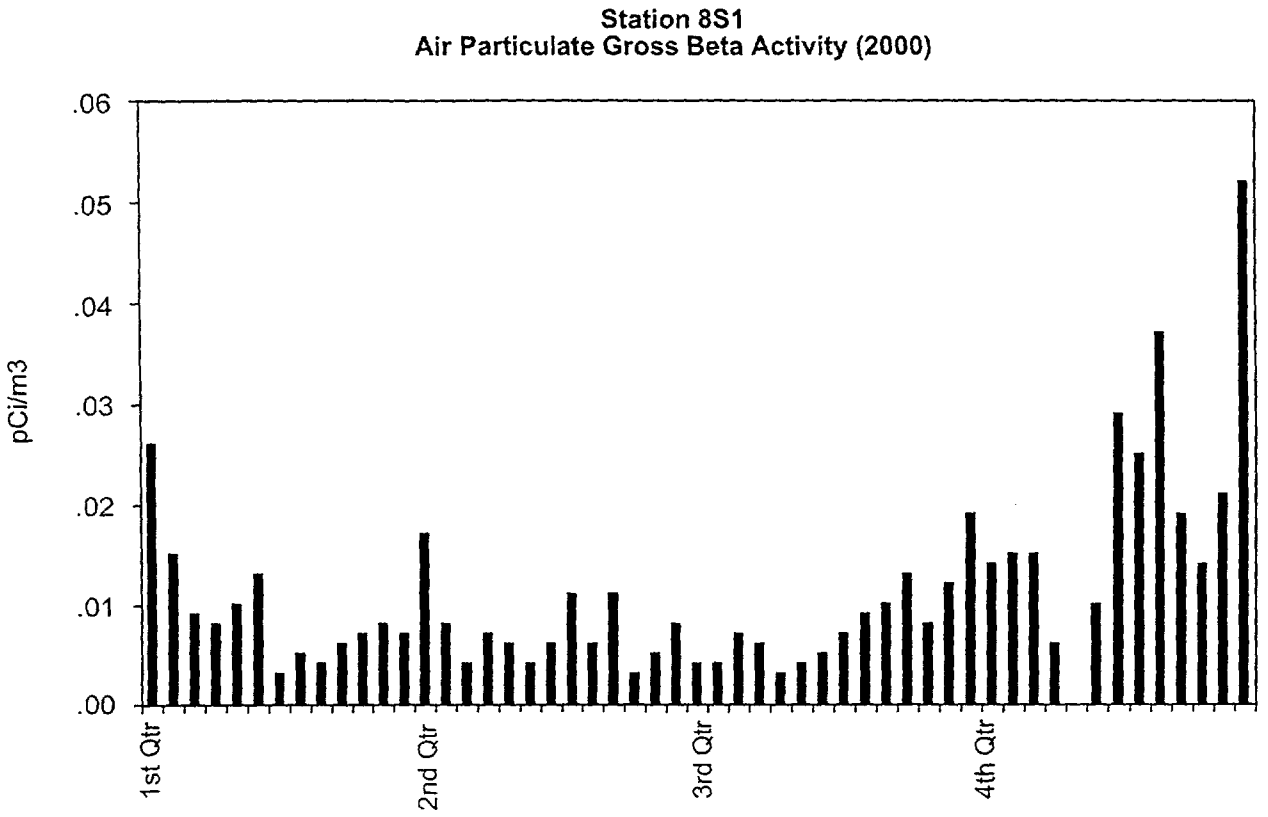


Figure 4. continued.



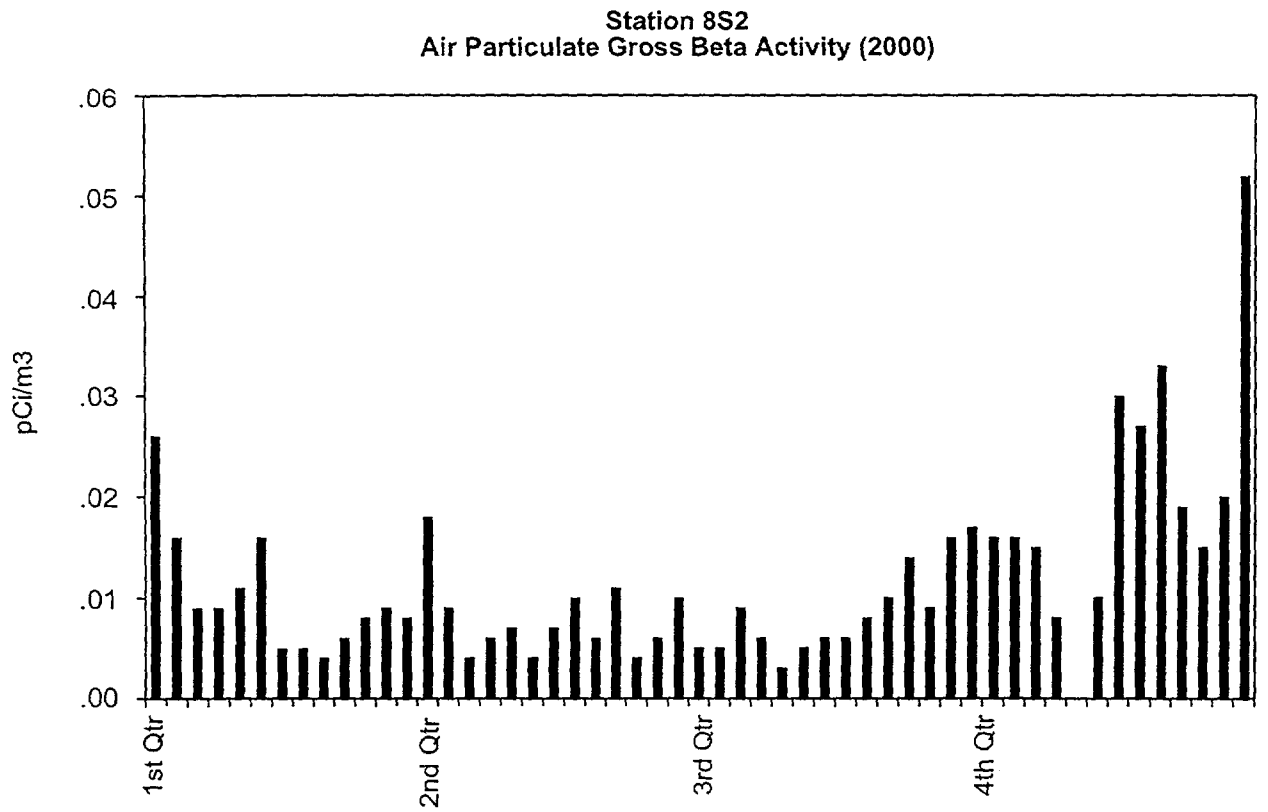
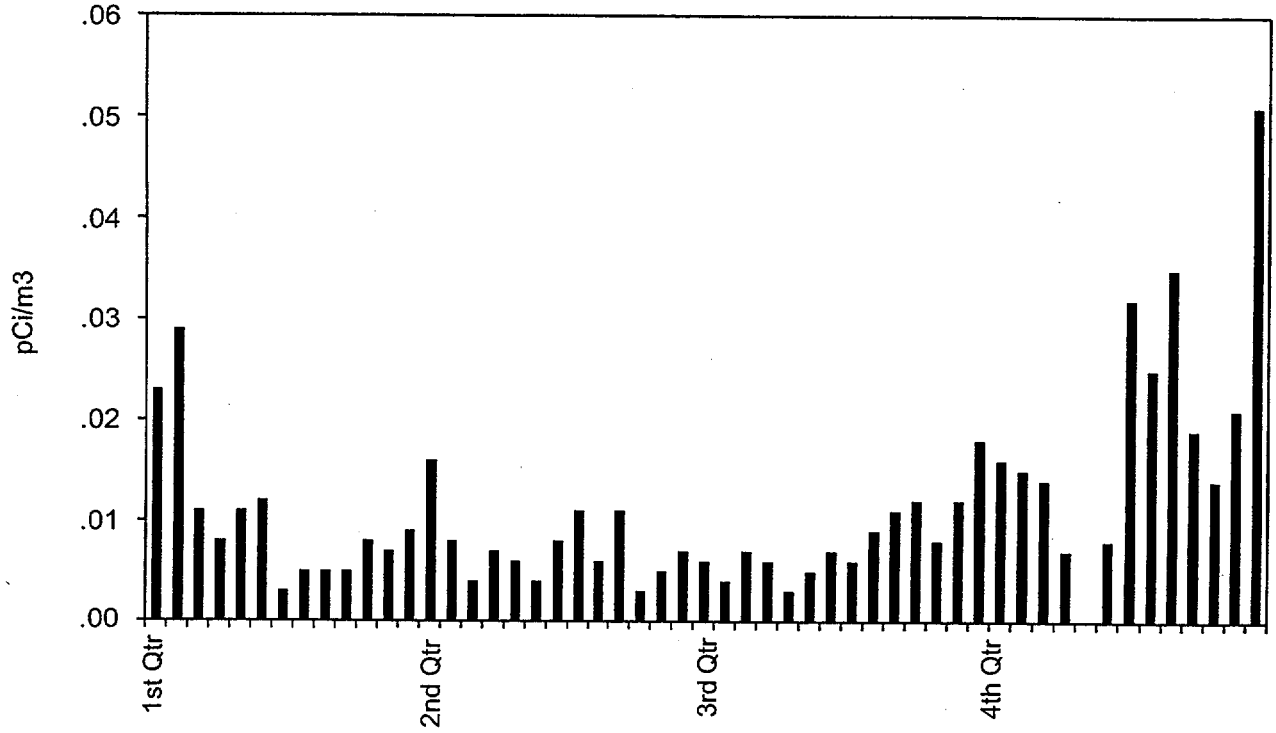


Figure 4. continued.

Station MT1
Air Particulate Gross Beta Activity (2000)



Radioiodine

A total of 364 iodine cartridges were analyzed for iodine-131. No iodine-131 was detected in any iodine cartridge during the year.

DIRECT RADIATION

TLD badges from 31 stations were collected on a quarterly basis and processed. A total of 372 TLD badges were distributed to field locations (three TLD badges at each location) and processed. The quarterly average exposure level from all indicator stations ranged from 10.1 – 22.1 mR/qtr with a mean of 16.3 mR/qtr. The exposure level at the control station 5F1 ranged from 16.4 – 17.7 mR/qtr with a mean of 17.2 mR/qtr. The exposure levels for 2000 did not differ significantly from the previous year, nor from the pre-operational data (see Figure 6 in Section 7). They indicate that the operation of DCPP did not significantly affect the ambient radiation exposure levels in the plant environs. See Appendix A, Table A-2, for the TLD data summary and Appendix B, Table B-4, for the individual station data.

WATER SAMPLES

A total of 58 water samples (24 drinking water samples, 34 surface water samples) were collected and analyzed. The results of the water samples collected from the indicator and control stations are summarized in Appendix A, Tables A-3 (a) and (b).

Gamma isotopic and tritium analyses were performed on all water samples. Tritium was detected in two surface water samples from DCM. The tritium activity levels detected in these two samples was well below the reporting levels. These samples were collected during routine releases from the plant and do not represent the average tritium levels in Diablo Cove.

Iodine-131 analysis was also performed on drinking water. Iodine-131 was not detected in any drinking water samples. The water sample data indicates that the operation of DCPP did not have any detectable impact on the plant environs.

MARINE BIOLOGICAL AND SEDIMENT SAMPLES

A total of 89 marine biological and sediment samples were collected from the indicator, control and supplemental stations. They included 36 fish samples, 12 mussel samples, 39 algae samples, and 2 ocean bottom sediment samples. Table B-7 lists the marine samples collected for 2000. The results obtained from the indicator stations and control station are summarized in Appendix A, Tables A-4 to A-7. The individual samples and their detected nuclides are listed in Appendix B, Table B-2.

Abalone

Red abalone were not collected in 2000. It is unlikely that abalone will be collected at DCPP in the future as the California Marine, Sport Fishing Regulations were amended on December 8, 2000 to state that no abalone can be taken south of San Francisco Bay.

California Mussels

A total of 12 mussel samples were collected from stations DCM, 7C2, PON and POS. All samples contained only naturally occurring radioactivity.

Fish

A total of 36 fish samples from stations DCM, 7C2, PON, POS and 7D3 were analyzed. Cesium-137 was detected in one of the fish samples purchased from the fish market (station 7D3). The Cs-137 value in the sample was 2.7 pCi/kg. This value is comparable to the preoperational range of 6 to 38 pCi/kg Cs-137 and is attributable to global fallout. These values are also well below DCPP administrative limit of 200 pCi/kg and the reporting level of 2,000 pCi/kg. All other samples contained only naturally occurring radioactivity. The operation of DCPP had no detectable impact on fish in the plant environs.

Algae

A total of 39 algae samples were collected from stations DCM, 7C2, PON, and POS. These samples are supplemental to the REMP. All samples contained only naturally occurring radioactivity.

Sediment

An annual sample of ocean bottom sediment was collected from stations DCM and 7C2. The data indicated no increasing trend in isotope concentration. The operation of DCPP had no detectable impact in ocean sediment in the plant environs.

FOOD CROPS

A total of 33 vegetative samples were collected from four supplemental stations: Cal Poly Farm (station 5F2), Kawaoka Farm (station 7G1), Mello Farm (station 7C1), and a household garden (station 6C1). All of the samples analyzed contained only naturally occurring radioactivity. The operation of DCPP had no detectable impact on food crops in the plant environs.

MILK

A total of 12 monthly milk samples were collected from Cal Poly Farm, station 5F2. Iodine-131 was not detected in any of the samples. The samples contained only natural radioactivity. The operation of the plant had no detectable impact on this environmental medium.

Table 4

Reporting Levels for Radioactivity Concentrations in Environmental Samples

Analysis	Water (pCi/L)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/L)	Food Products (pCi/kg, wet)
H-3	20,000[a]				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400				
I-131	2[b]	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200			300	

Table Notation:

(a) For drinking water samples. This is the 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/L may be used.

(b) If no drinking water pathway exists, a value of 20 pCi/L may be used.

Section 7

COMPARISON OF PREOPERATIONAL AND OPERATIONAL DATA

Diablo Canyon Power Plant began commercial operation in 1985. Data from the preoperational years (1981 to 1984), are included for comparison.

CUSUM CONTROL CHARTS

The CUSUM control chart technique was used to determine whether the levels of radioactivity are increasing over time. It is assumed that all sampling distributions were log-normally distributed. The log transformed data [ln(x+1), where x is the raw radiological data] were used for the control charts.

Applying CUSUM Control Charts

The data are standardized by subtracting the background mean radioactivity level for the station from the current observation, and then dividing it by the background standard deviation for that station. For Air Particulate Gross Beta Activity and Environmental TLD measurements, the standardized difference between the indicator and control stations is trended. The standardized data are represented by *square symbols* in the graphical output.

The K value (the reference value or allowable slack for the CUSUM procedure) was set at 1 standard deviation, and the control limit for the CUSUM procedure was set at 3.0. The CUSUM is represented by *diamond symbols* in the graphical output. For further explanation of the interpretation of these control charts see Appendix C.

AIRBORNE RADIOACTIVITY

Air Particulates

The control chart for gross beta activities in air particulates (see Figure 5) showed that there is no increasing trend at any station during the operational years (1985-2000), and that the range during the operational period remained within the preoperational range (1981-1984). The high gross beta activity in 1981 was attributed to fallout from Chinese atmospheric nuclear weapons testing.

In 1998, gamma analysis showed only natural radioactivity at all stations except for one sample from station MT1. Cobalt-58 (0.07 pCi/m^3) and Mn-54 (0.009 pCi/m^3) were detected on a filter from station MT1. This sample was collected during the period February 18, 1998 – February 25, 1998. There are no reportable levels of these two isotopes for airborne particulates. This was an isolated incident. All other

samples collected during the year at this station contained naturally occurring radioactivity. The impact of plant operations on the environment was considered to be negligible.

In 2000, only naturally occurring radioactivity was detected. A review of the data indicates that there is no increasing trend in the quarterly gross beta activities over time. The mean concentration at the indicator stations were comparable to those at the control station. It can be concluded that plant operations had no detectable impact on this environmental medium.

Radioiodine

During the preoperational period, iodine-131 was not detected in 1981 through 1983. In 1984, I-131 was detected in three iodine cartridges from Lompoc, a supplemental station in Santa Barbara County. The mean activity concentration was 0.108 pCi/m^3 and the range was 0.014 to 0.159 pCi/m^3. Despite a thorough investigation, no explanation could be found for the source of the I-131 (see the 1984 Annual Environmental Radiological Report, Diablo Canyon Power Plant). Iodine-131 was not detected at any other station that year.

During the operational years (1985-2000), I-131 was detected in the second quarter of 1986 at all stations. The mean at the indicator stations was 0.213 pCi/m^3 with a range of 0.007-0.823 pCi/m^3. The mean at the control station was 0.209 pCi/m^3 with a range of 0.007-0.770 pCi/m^3. The detected I-131 was attributed to worldwide fallout from the Chernobyl accident. In the first quarter of 1988, I-131 (0.004 pCi/m^3) was detected in one of the cartridges from station 8S1. In October of 1999, I-131 was detected at Station 8S1 during a refueling outage of Unit 2. The I-131 concentration was 0.013 pCi/m^3. These were the only instances that I-131 was detected in iodine cartridges from indicator and control stations.

In 2000, no I-131 was detected at any station. It can be concluded that plant operations had no detectable impact on this environmental medium.

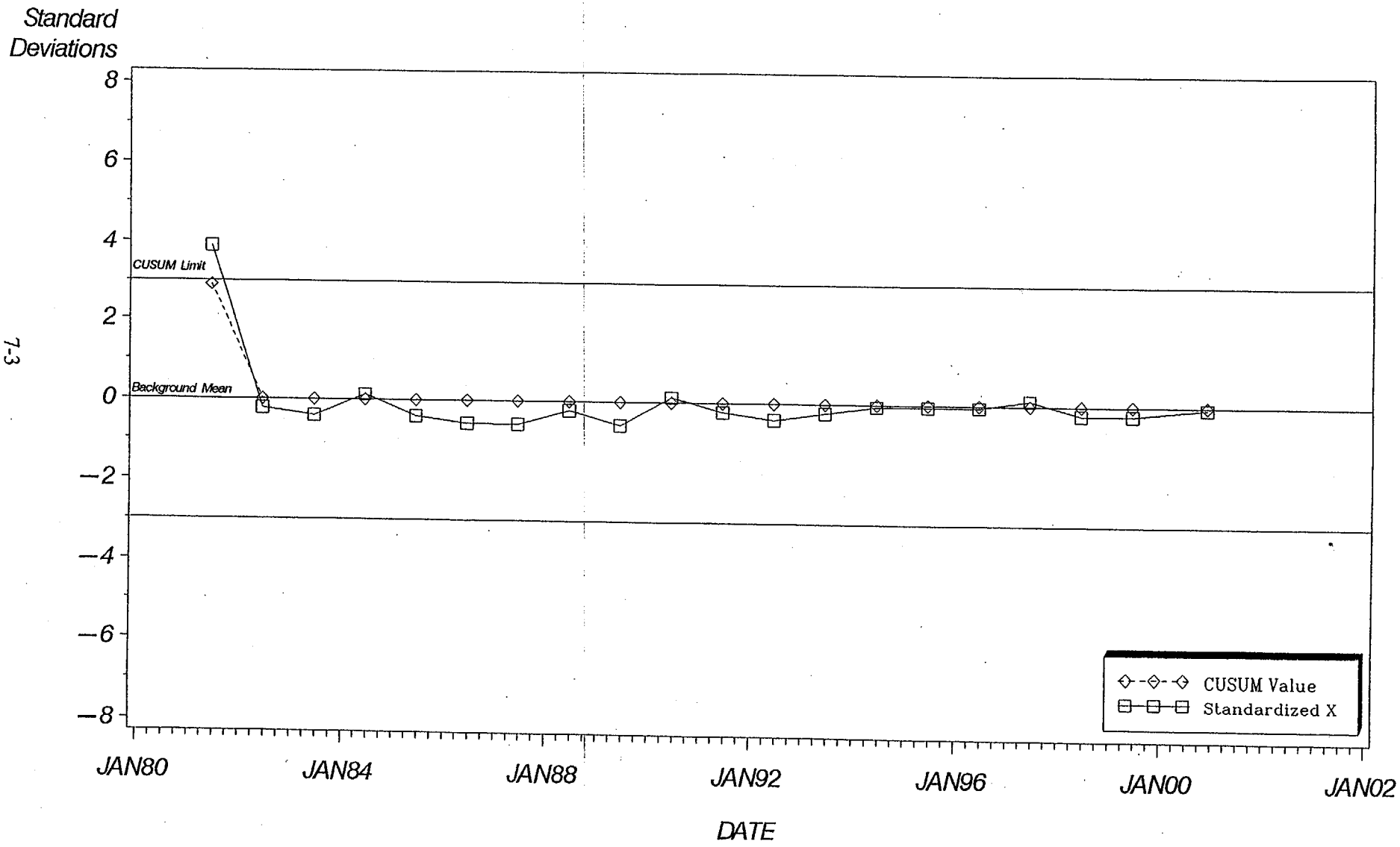
DIRECT RADIATION

Comparing the preoperational and operational TLD data as seen in the control chart, Figure 6, it can be seen that the data collected during the operational years were within the preoperational range. It also shows that there is no increasing trend in ambient radiation level. Plant operations had no detectable impact on the ambient radiation level in the plant environs. This control chart has been changed from previous years. In previous years, several stations have been used to determine the control value. The current chart uses only Station 5F1 as the control station.

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 5. Control Chart for Air Particulate Filters — Difference Between Indicator and Control Stations



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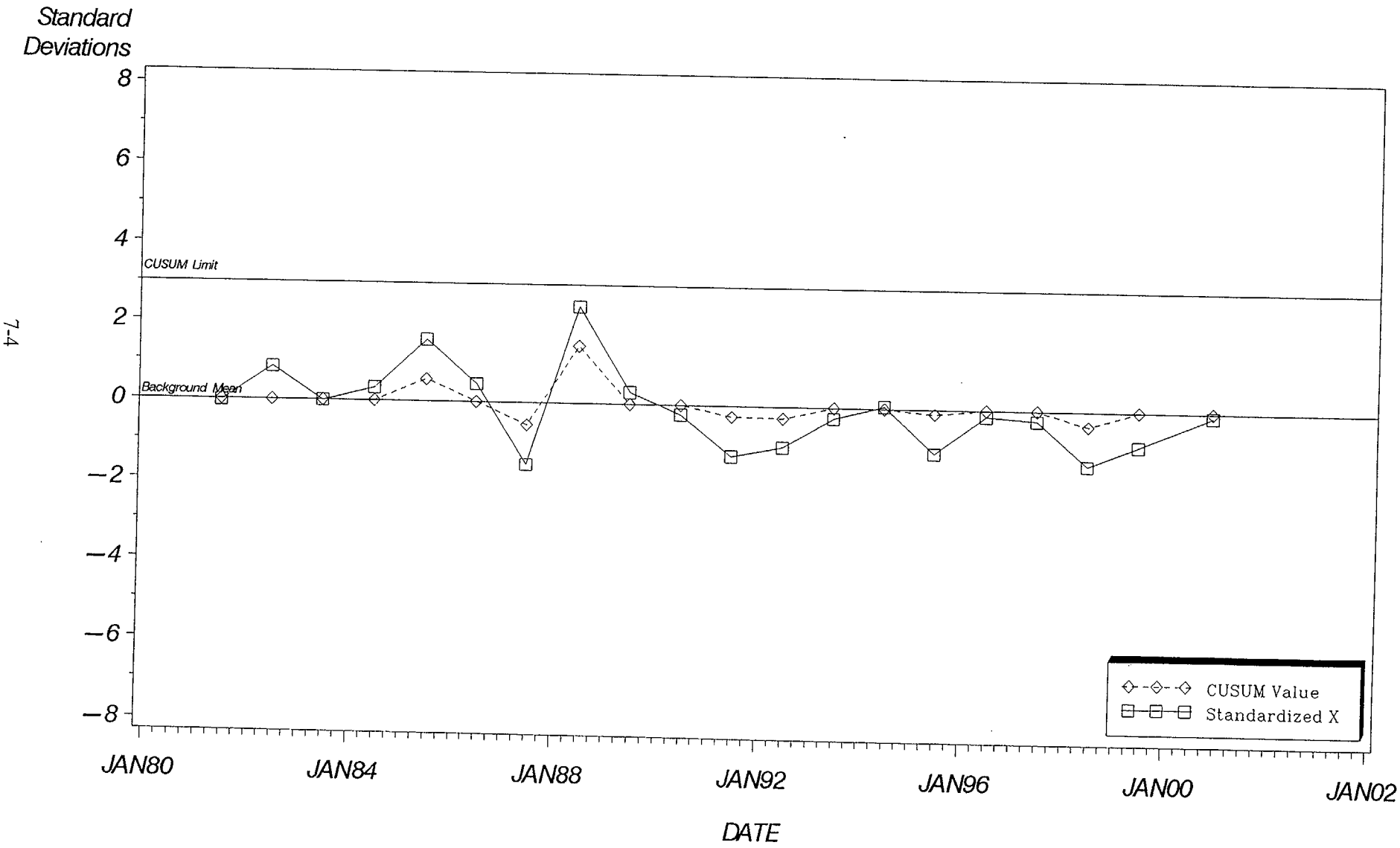
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 6. Control Chart for TLD Data — Difference Between Indicator and Control Stations



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Health Physics Unit

WATER SAMPLES

Surface Water (Seawater)

During the preoperational period, only naturally occurring radioactivity was detected in seawater samples. In April 1996, DCPP began tritium analysis of seawater in the REMP. Tritium which is both naturally occurring and plant related, was detected in a fourth quarter 1996 seawater sample (1,240 pCi/L). In 1997, tritium was detected in a December sample from station DCM (1,870 pCi/L). In 1998, tritium was detected in three seawater samples collected in January, May and October from station DCM. The mean was 3270 pCi/L and the range was 2560 to 4320 pCi/L. The activity concentrations of these three samples were found to be well below the reportable value of 30,000 pCi/L for tritium. No increasing trend was observed (see Figures 11a-11b). In 2000, tritium was detected in a March and May seawater sample. The mean value was 956 pCi/liter, and the range was 510 to 1410 pCi/liter.

Cobalt-60 was detected in the October 1998 sample from DCM. Its concentration level was 1.79 pCi/L which is well below the reportable level of 300 pCi/L. All other seawater samples analyzed for gamma emitters during the operational years (1985-2000) contained naturally occurring radioactivity. Review of the data showed that the operation of the plant had no significant impact on the environment.

Surface Water (Outfall Water)

Only naturally occurring radionuclides were detected during the preoperational years. During the operational years, Co-58 was detected in a fourth quarter, 1992 sample (3.09 pCi/L). This value was well below the reportable level of 1,000 pCi/L. Tritium was detected in one fourth quarter, 1987 sample (621 pCi/L), in one fourth quarter, 1989 sample (8,650 pCi/L), and in one first quarter, 1995 sample (720 pCi/L). In 1997, tritium was detected in two samples of outfall water (1,540 pCi/L and 4,990 pCi/L). In 1998, 1999, and 2000, all samples contained only natural occurring radioactivity. Review of the data showed that the operation of the plant had no significant impact on the environment.

Drinking Water (Diablo Creek, 5S2)

During the preoperational period (1981–1984), no tritium was detected in any of the surface water samples. However, Zr-95 (11.3 pCi/L), Nb-95 (15.2 pCi/L), and Ru-103 (5.3 pCi/L) were detected in one sample during this preoperational period. The presence of these radionuclides was attributed to worldwide fallout from Chinese nuclear weapons testing. For the rest of the preoperational period, only naturally occurring radioactivity was detected. During the operational years (1985-2000) only naturally occurring radionuclides were detected in the samples analyzed. The data indicates that the operation of the plant had no detectable impact on water in the plant environs.

Drinking Water (plant site, DW1)

In 1981, Nb-95 was detected in one sample (1.84 pCi/L) which was attributed to worldwide fallout. Only naturally occurring nuclides were detected in all other samples collected during the preoperational and operational period. The operation of the plant had no detectable impact on drinking water on site.

MARINE BIOLOGICAL AND SEDIMENT SAMPLES

Fish

The principal radionuclide detected in fish samples during the preoperational and operational years was Cs-137. The presence of this nuclide in the environment is attributed to worldwide fallout from weapons testing and the Chernobyl accident. Due to its long half-life, it was detected as part of the environmental background in fish samples.

Review of the control charts (see Figures 7a-7d [rockfish] and Figures 7e-7h [perch]) indicates no increasing trend in the accumulation of Cs-137 in rockfish or perch at the control station or indicator station. In 1997, Cs-137 was only detected in three fish samples from the fish market at station 7D3. The Cs-137 levels ranged from 5.6 to 9.8 pCi/kg, and were within the preoperational range of 6 to 38 pCi/kg. In 1998, Cs-137 was detected in two fish samples purchased from the fish market (station 7D3) and in one sample from control station 7C2. Their values ranged from 5.8 to 9.3 pCi/kg. In 1999, Cs-137 was detected in three fish samples from the fish market. Their values ranged from 4.16 to 10.8 pCi/kg. These values are also within the preoperational range of 6 to 38 pCi/kg Cs-137 and are attributable to global fallout. In 2000, Cs-137 was detected in one fish sample at the value of 2.7 pCi/kg, The data for fish bought at the market (Figures 7i-7k [salmon, rockcod and snapper]) are trended by species for Cs-137. No increasing trend was observed in these sample types.

During the operational years, some plant-related nuclides other than Cs-137 were detected in fish samples collected at stations DCM and PON. They are listed as follows.

Table 5

Nuclides Detected in Fish

Year	Station	Nuclides	Activity concentration pCi/kg original
1986	DCM	I-131	70
1987	PON	Co-58	53
1988	DCM	Co-60	37

These activity concentrations were well below reporting levels (see Table 4). No increasing trend of these isotopes was observed in subsequent years of operation. The operation of the plant had no significant impact on this environmental medium.

Abalone

Red abalone were collected at indicator station DCM and control station 7C2. Only naturally occurring radionuclides were detected in samples collected during the preoperational period. However, during the operational years 1985-1992 some plant-related nuclides, Co-58, Co-60 and Mn-54 were detected in abalone samples at station DCM. The detected activity concentrations of these isotopes were all well below the reporting levels. Samples collected in 1993-1995 did not contain any Co-58, Co-60 or Mn-54. In 1996, Mn-54 was detected in one sample collected from supplemental station POS. In 1997, only naturally occurring radioactivity was detected in all abalone samples collected. In August 1997, the Fish and Game Commission issued a moratorium on the collection abalone along the coasts of central and southern California. This moratorium was codified by regulations in 2000. Consequently, abalone was not collected in 1998, 1999, and 2000.

Mussels

All samples collected during the preoperational period contained only naturally occurring radionuclides. However, some samples collected from indicator station DCM and supplemental stations POS and PON during the operational period contained nuclides that were plant-related. They were Co-58, Co-60, Mn-54 and Nb-95. Co-58, Co-60 and Mn-54 activity concentrations were well below the reporting levels (there is no reporting level for Nb-95). Review of the control charts for Co-58, Co-60 and Mn-54 at station DCM (Figures 8a-8f) showed that these nuclides were first detected at the beginning of plant operation. There is no increasing trend of these radionuclides in subsequent years of operation. On two isolated occasions, Nb-95 was detected in samples from DCM, once in 1986, during the time of the Chernobyl accident, and in 1990. No increasing trend of Nb-95 was observed in this medium.

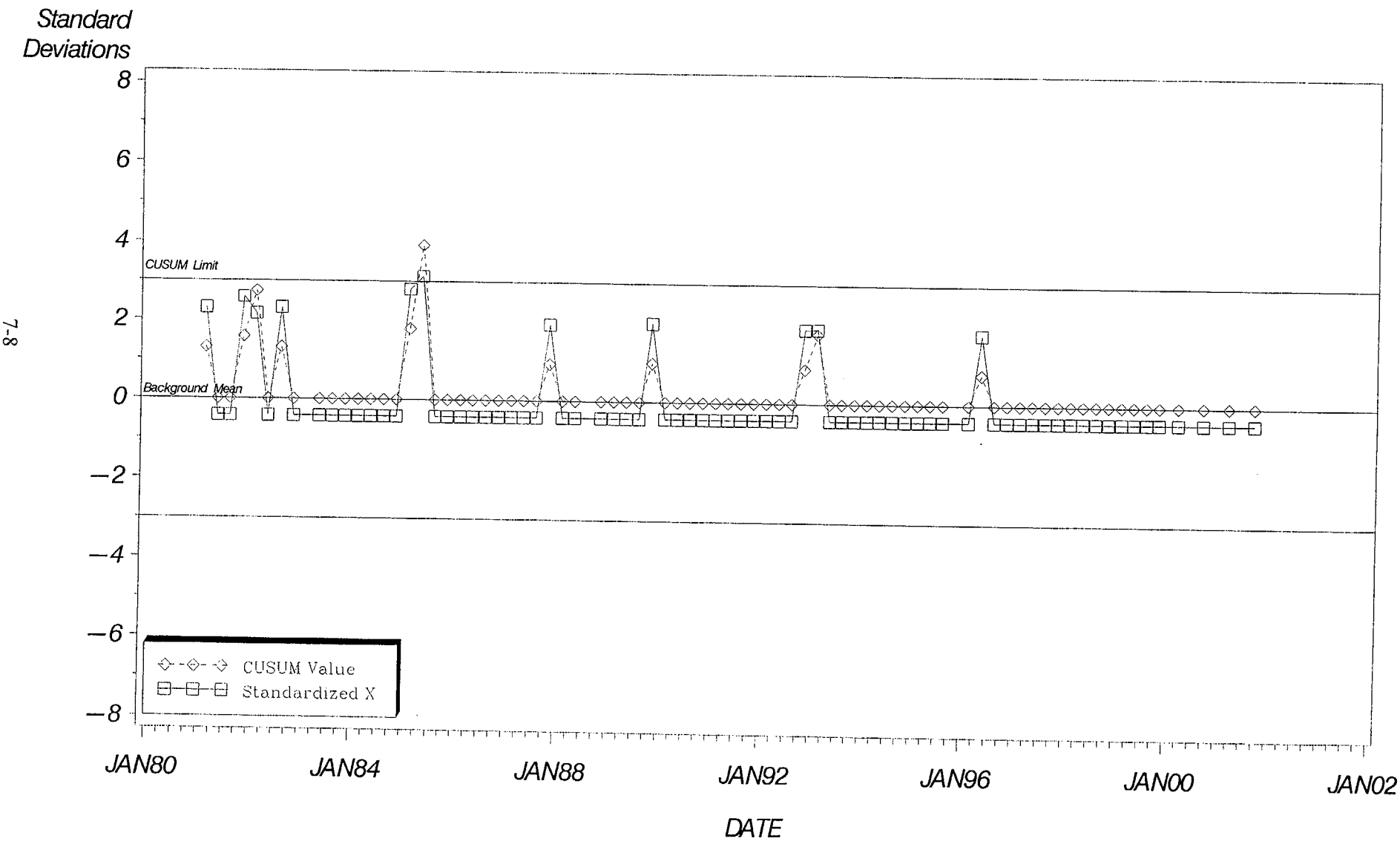
In 1998, cobalt-58 was detected in a sample collected in April at station DCM (56.9 pCi/kg). All other samples analyzed contained only naturally occurring radioactivity. No increasing trend in radiocobalt is observed at station DCM.

In 1999 and 2000, only naturally occurring radioactivity was detected in all mussel samples. The operation of the plant had no detectable impact on the mussels population in the plant environs.

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 7a. Control Chart for Cs—137 Levels in Rockfish *(Sebastes spp.)* — Station DCM



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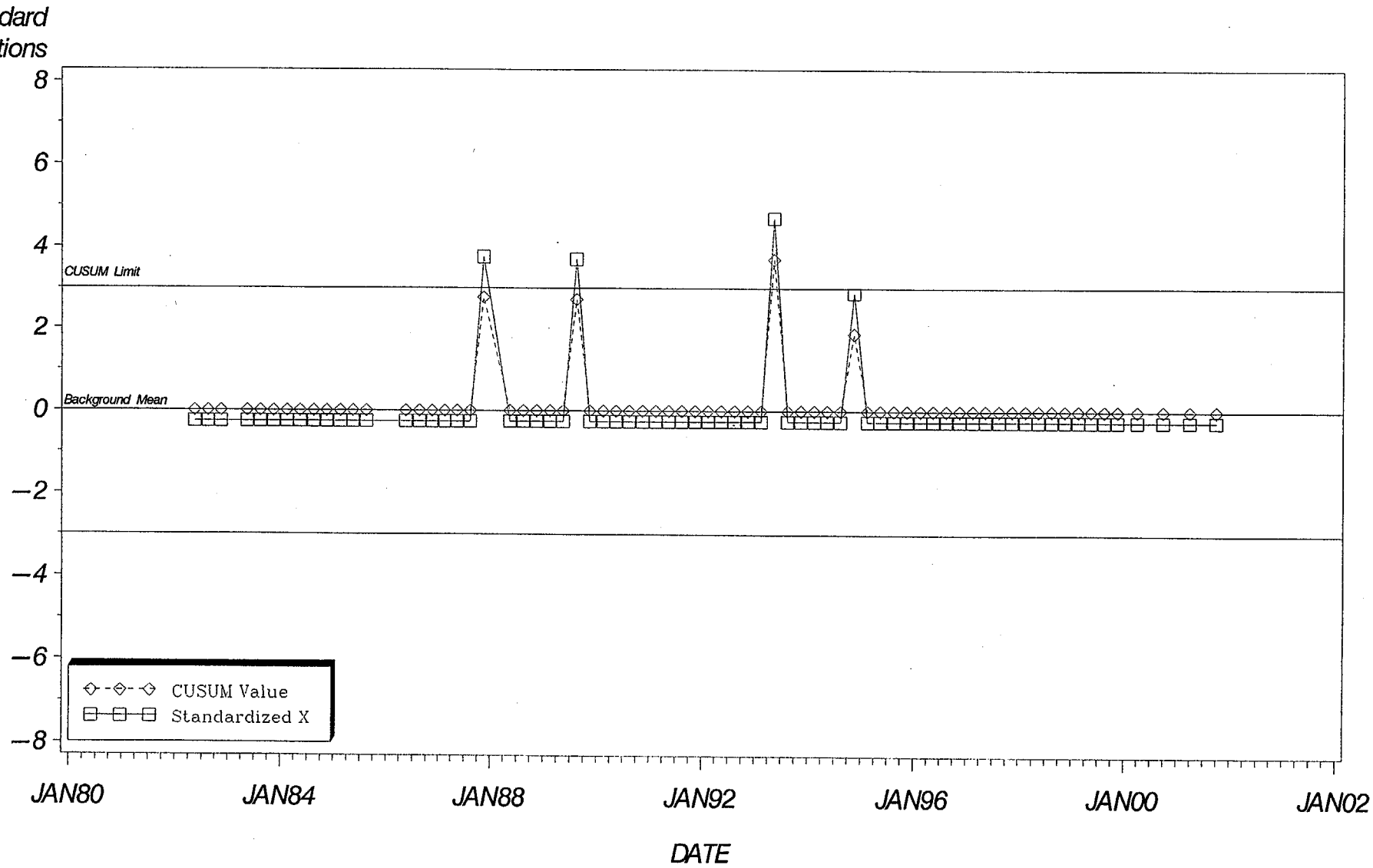
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 7b. Control Chart for Cs—137 Levels in Rockfish *(Sebastes spp.)* — Station POS



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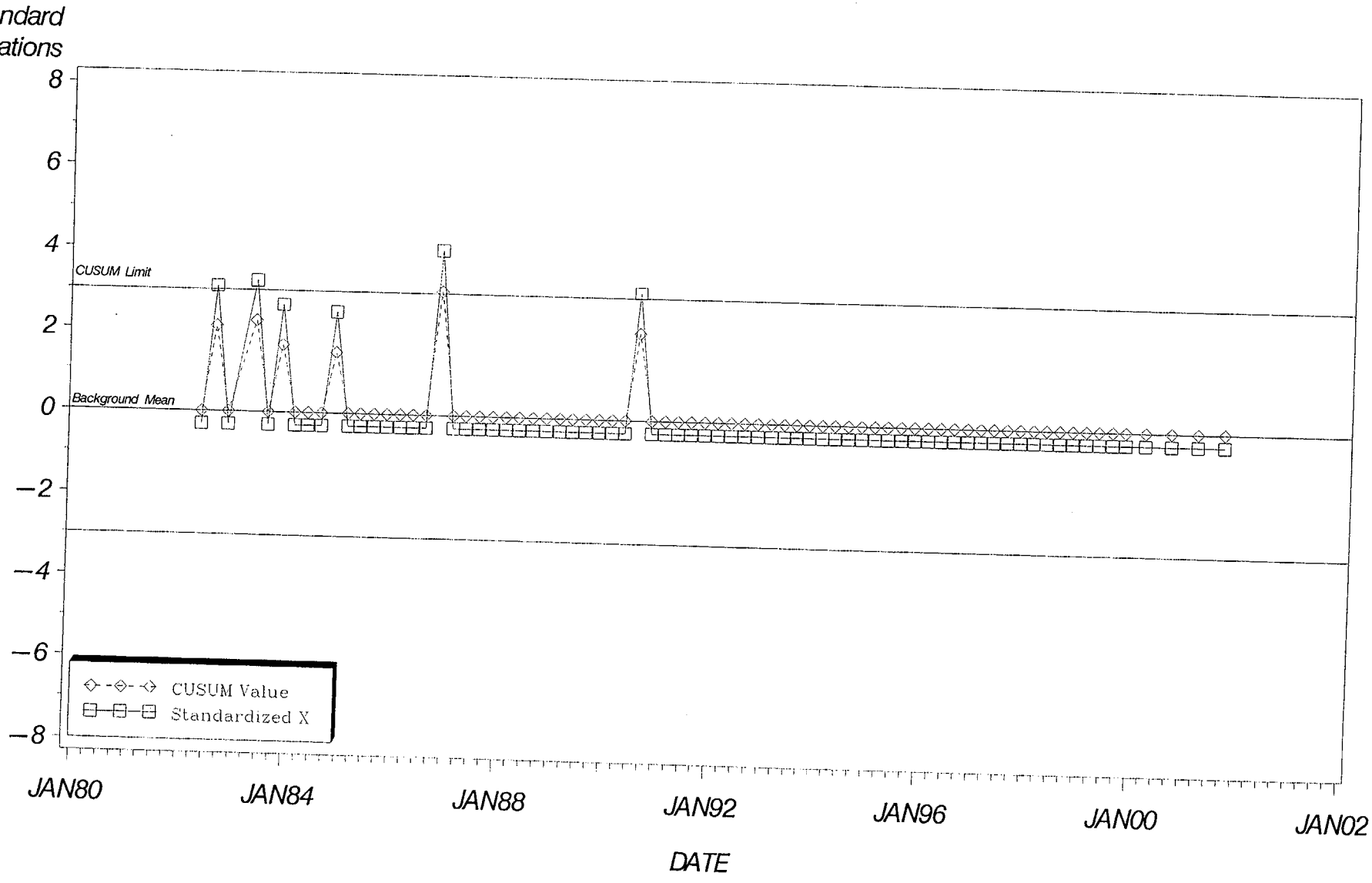
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

Figure 7c. Control Chart for Cs–137 Levels in Rockfish *(Sebastes spp.)* – Station PON



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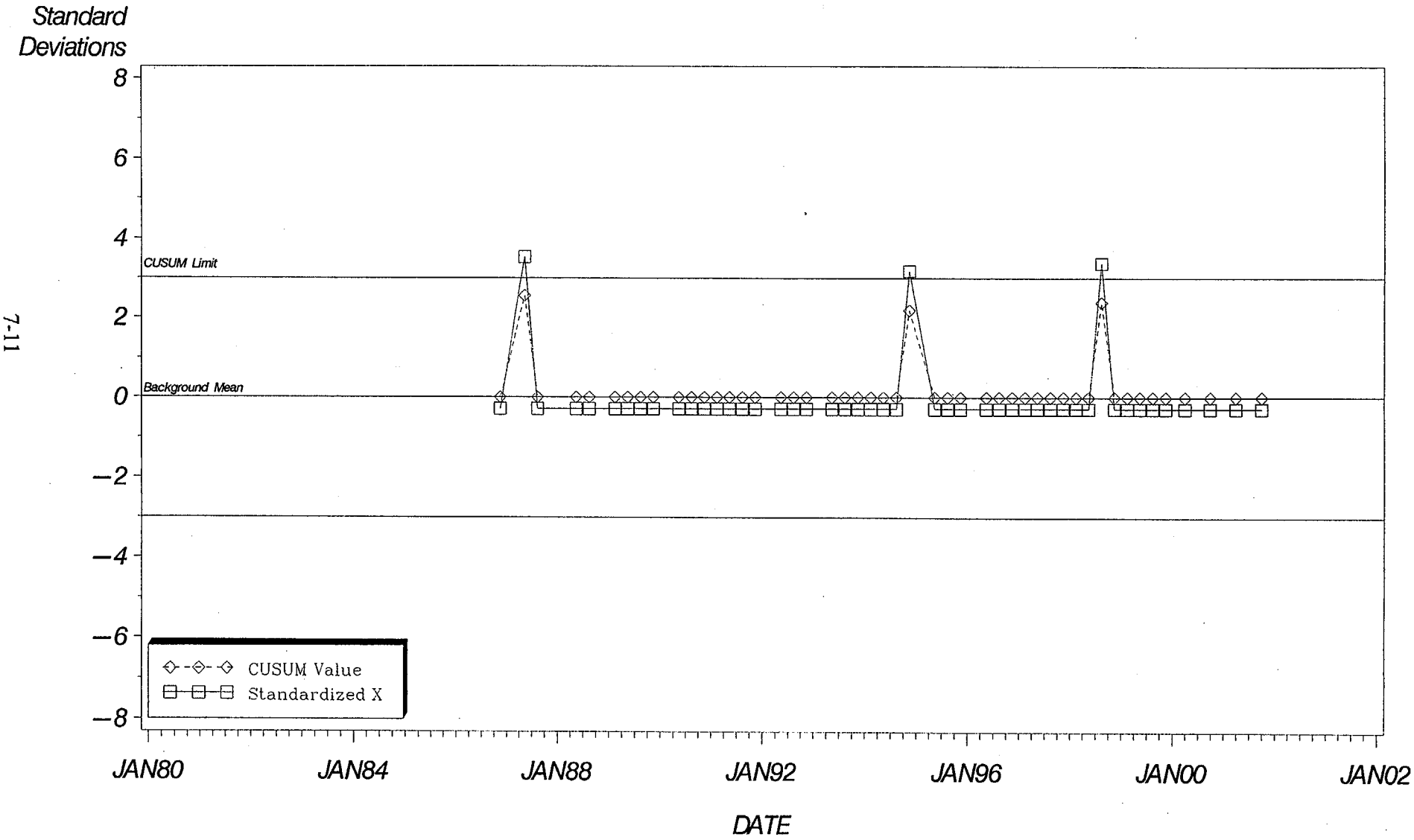
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
Annual Report — 2000

Figure 7d. Control Chart for Cs—137 Levels in Rockfish *(Sebastes spp.)* — Station 7C2



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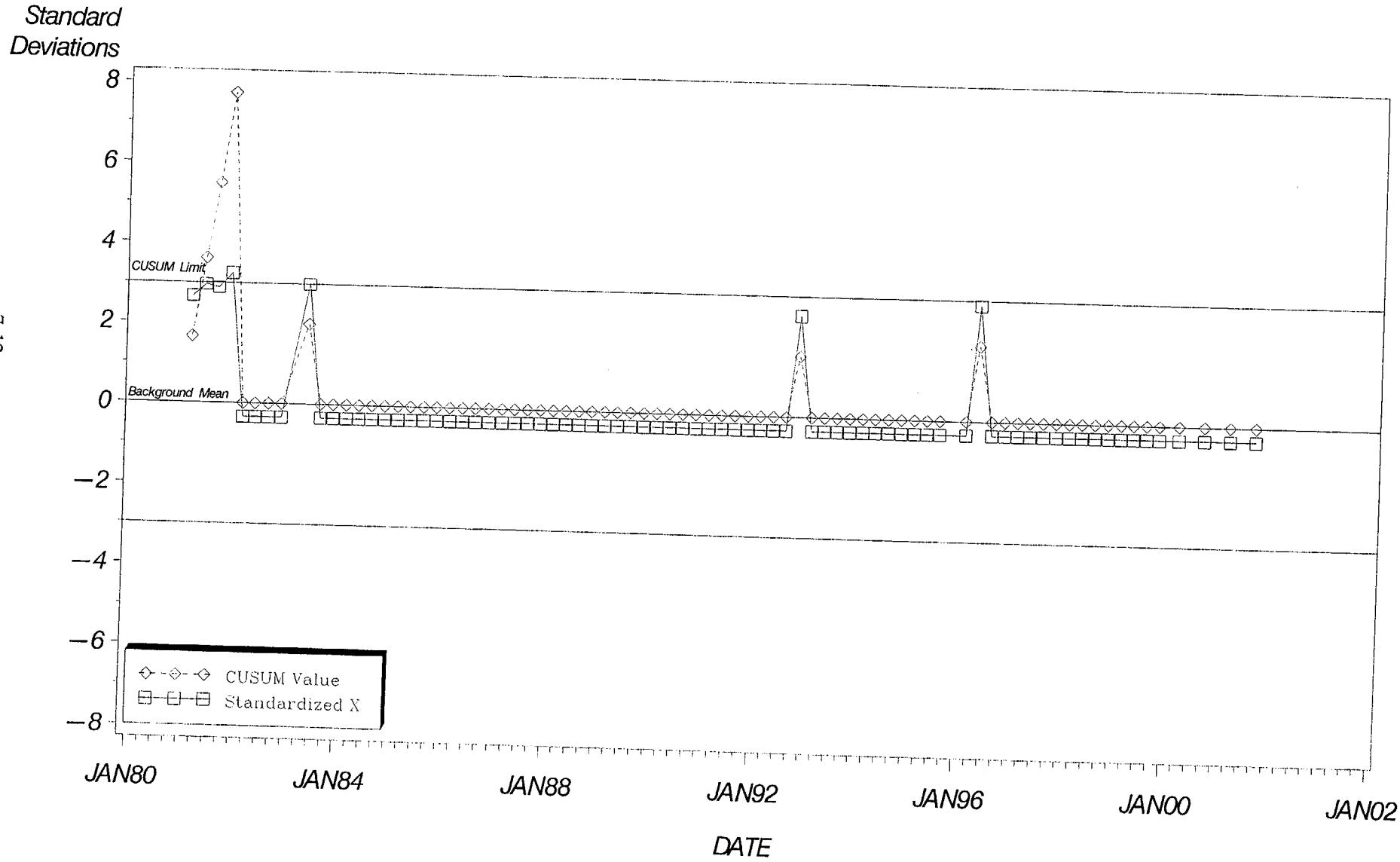
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

Figure 7e. Control Chart for Cs–137 Levels in Surfperch *(Embiotocidae)* – Station DCM



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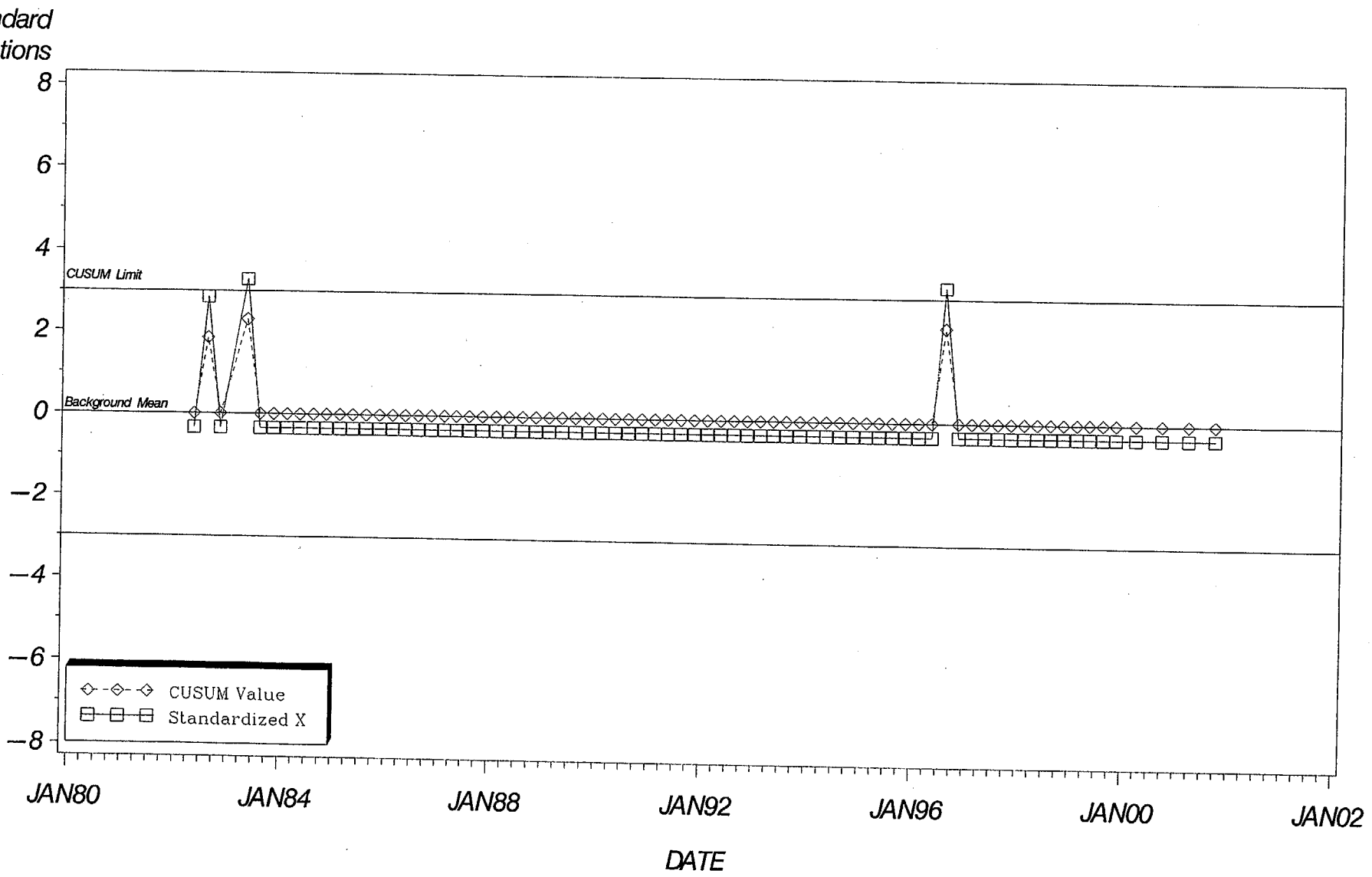
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 7f. Control Chart for Cs—137 Levels in Surfperch *(Embiotocidae)* — Station POS



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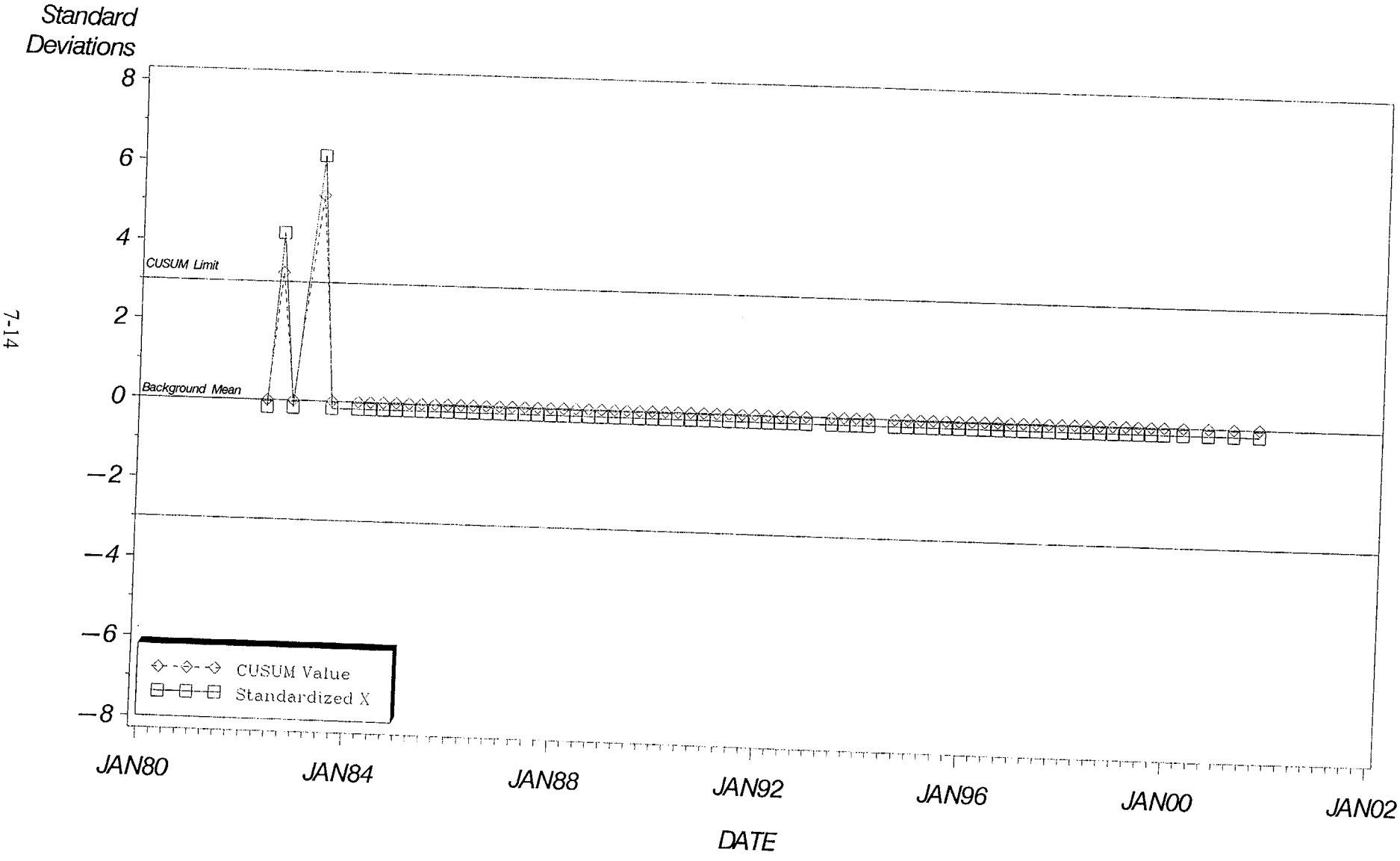
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 7g. Control Chart for Cs—137 Levels in Surfperch *(Embiotocidae)* — Station PON



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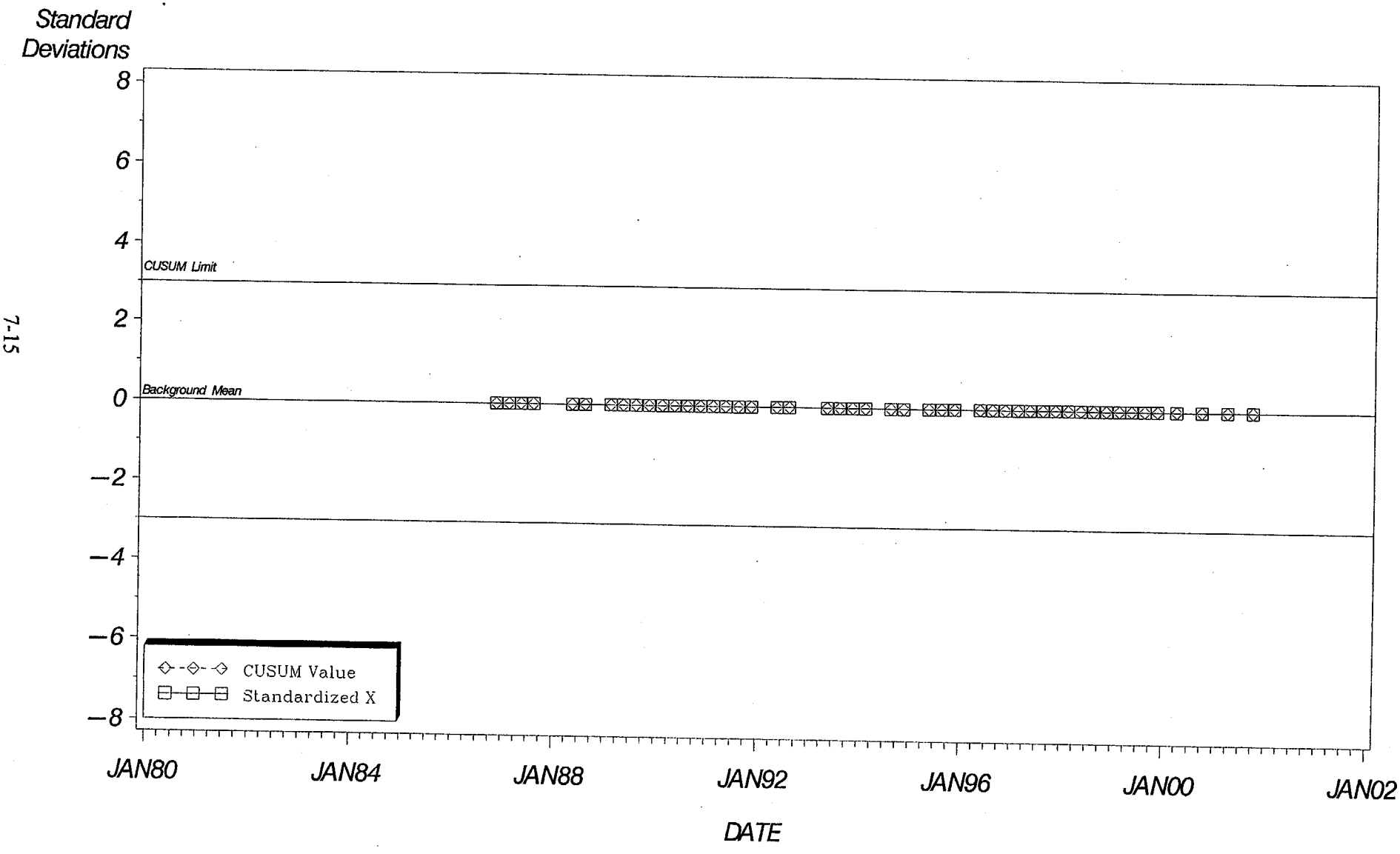
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 7h. Control Chart for Cs—137 Levels in Surfperch *(Embiotocidae)* — Station 7C2



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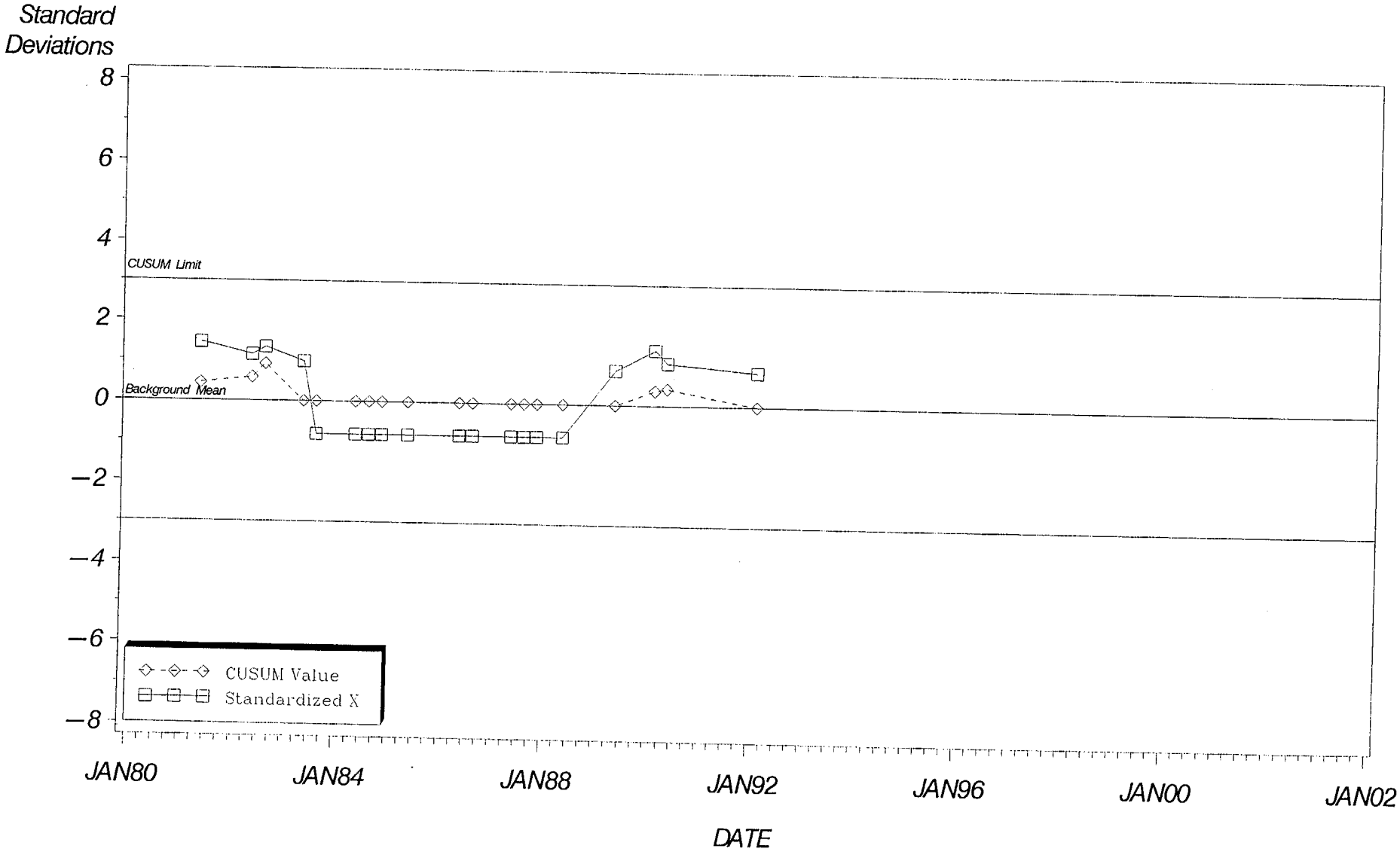
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

Figure 7i. Control Chart for Cs–137 Levels in Commerical Fish – Salmon



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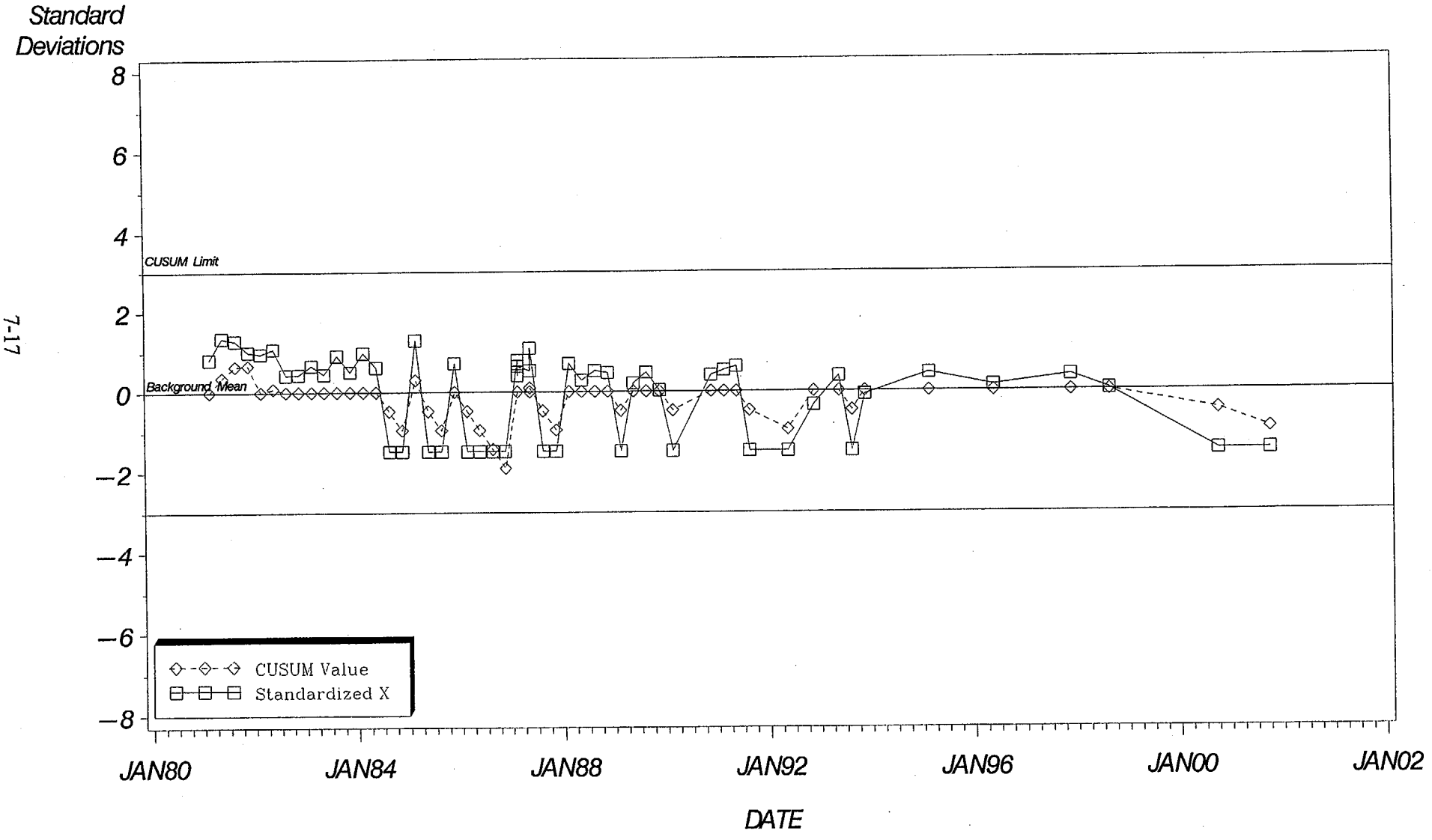
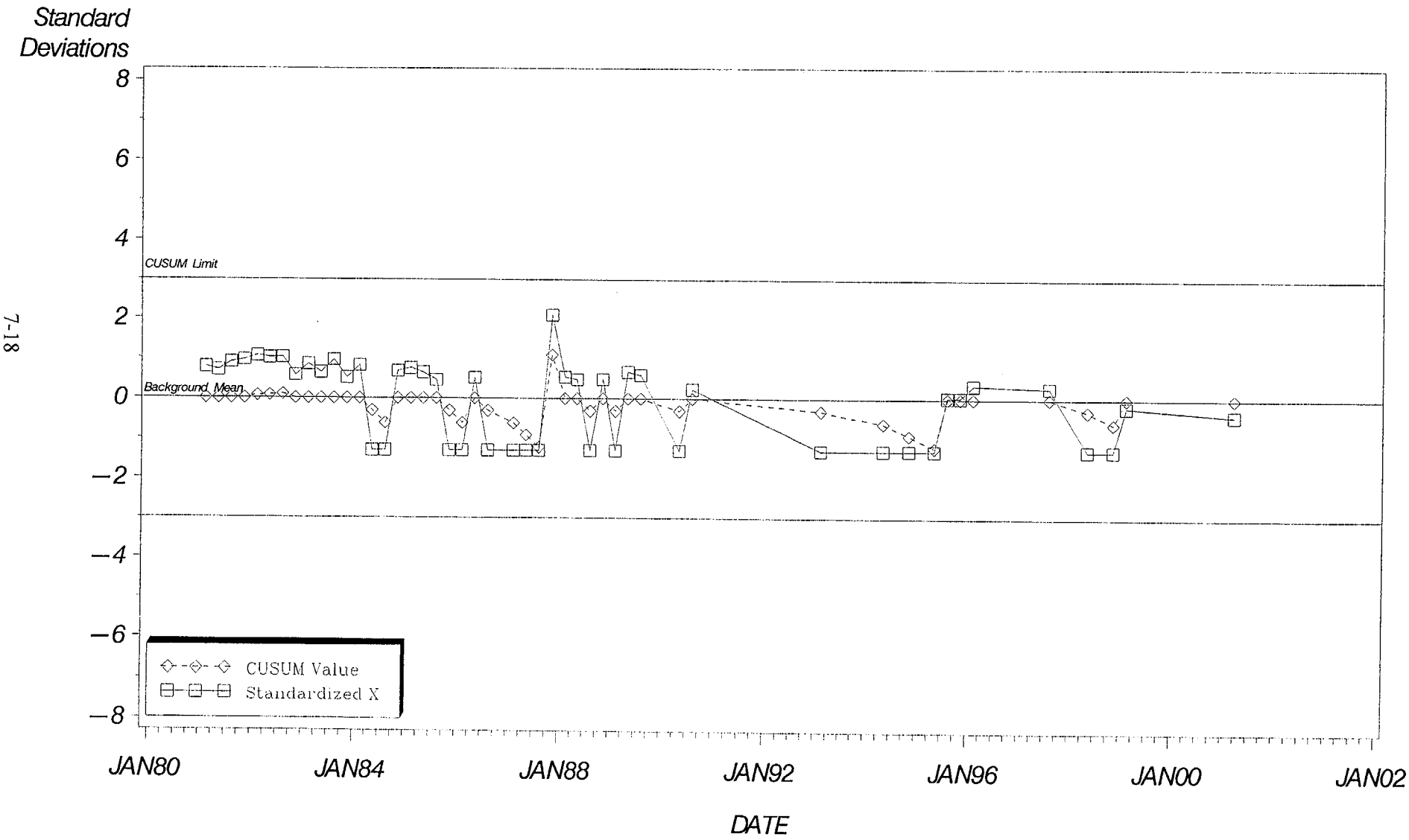
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
Annual Report — 2000

Figure 7j. Control Chart for Cs—137 Levels in Commerical Fish — Rockfish



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
Annual Report — 2000
Figure 7k. Control Chart for Cs—137 Levels in Commerical Fish — Snapper



Algae

Algae sampling is not a REMP requirement and therefore is considered supplemental. There is no reporting requirement for algae. However, kelp is collected from indicator station DCM, control station 7C2, and supplemental stations, POS and PON. Iridaea is collected from stations DCM and 7C2. All samples collected during the preoperational period contained only naturally occurring radionuclides. During the operational period, some samples collected from these stations contained plant related radionuclides, mainly Co-58, Co-60 and Mn-54. Data of these isotopes from these stations were trended from 1981 to 2000.

In 1998, one iridaea sample collected in April at DCM, and one sample of giant kelp collected in October at DCM contained Co-58. Their concentration level was 196 pCi/kg and 11.2 pCi/kg, respectively. There are no NRC reporting levels for algae. However, these values were well below DCPP administrative limit of 3,000 pCi/kg for Co-58. In 1999 and 2000, all samples contained only naturally occurring radioactivity. No increasing trends were observed. Figures 9a-9r show the control charts for the indicator station DCM and the control station 7C2.

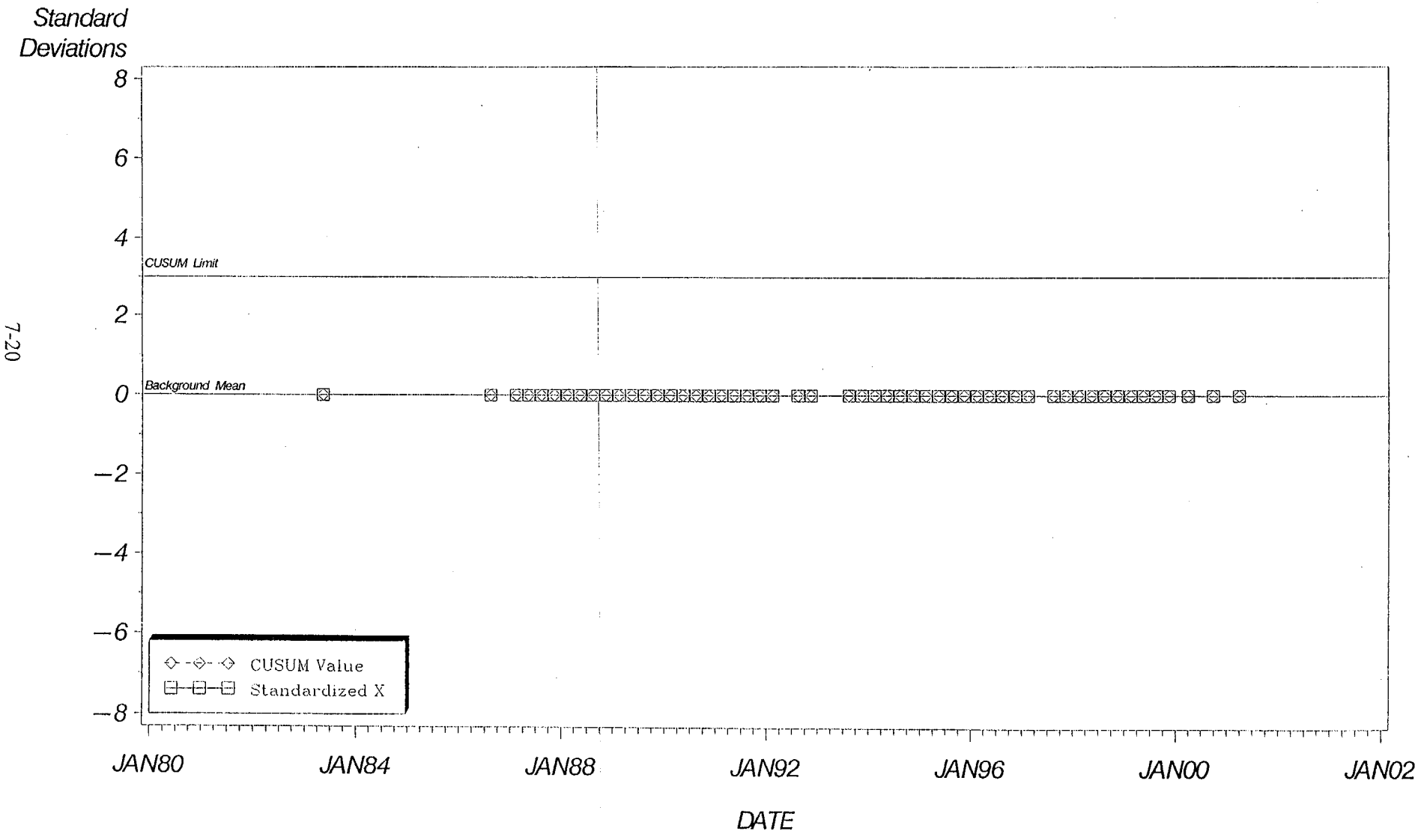
Sediment

Sediment samples collected during preoperational and operational years from DCPP environs contained Cs-137 which was attributed to worldwide fallout from previous nuclear weapons testing. Historically, Cs-137 was detected in sediment samples from stations DCM and 7C2. In 1998, 1999, and 2000, Cs-137 was not detected in any sample from control station 7C2 or the indicator station DCM.

The sediment sample data from 1981 to 2000 from indicator station DCM and control station 7C2 are trended in Figures 10a and 10b. The control charts indicate that there is no increasing trend. The data indicated that Cs-137 activity concentrations in sediment during the operational period were within the preoperational range. In 1998, Co-60 was detected in the December sediment sample collected at DCM. Its concentration level was 13.4 pCi/kg. There is no NRC reportable level for Co-60 in sediment. This is an isolated incident. No increasing trend was observed in data. In 2000, only naturally occurring radioactivity was found in the sediment samples from DCM and 7C2. It can be concluded that the operation of the plant had negligible impact on this environmental medium.

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
Annual Report — 2000

Figure 8a. Control Chart for Co—58 Levels in Mussels — Station DCM

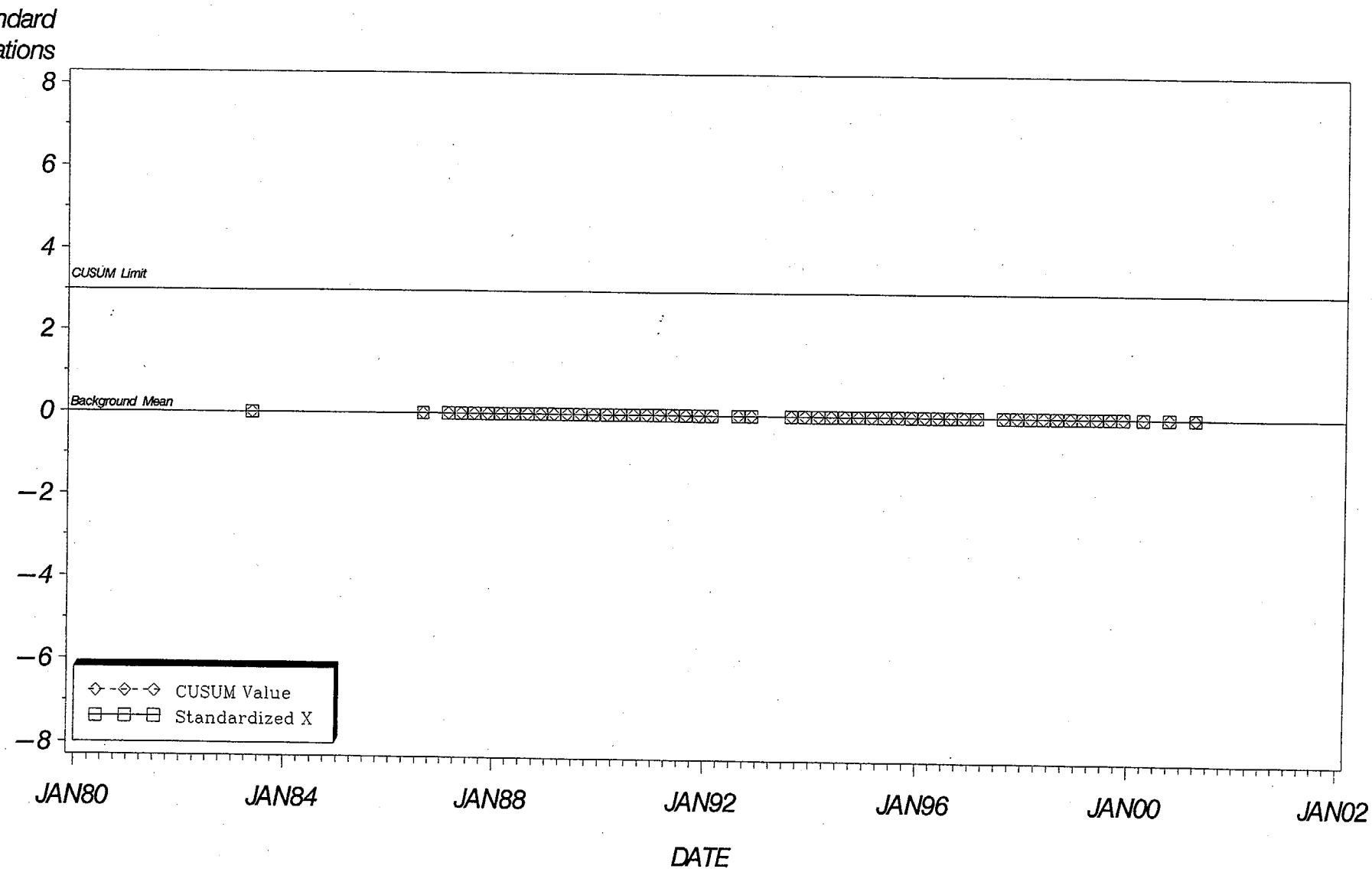


TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

Figure 8b. Control Chart for Co–60 Levels in Mussels – Station DCM

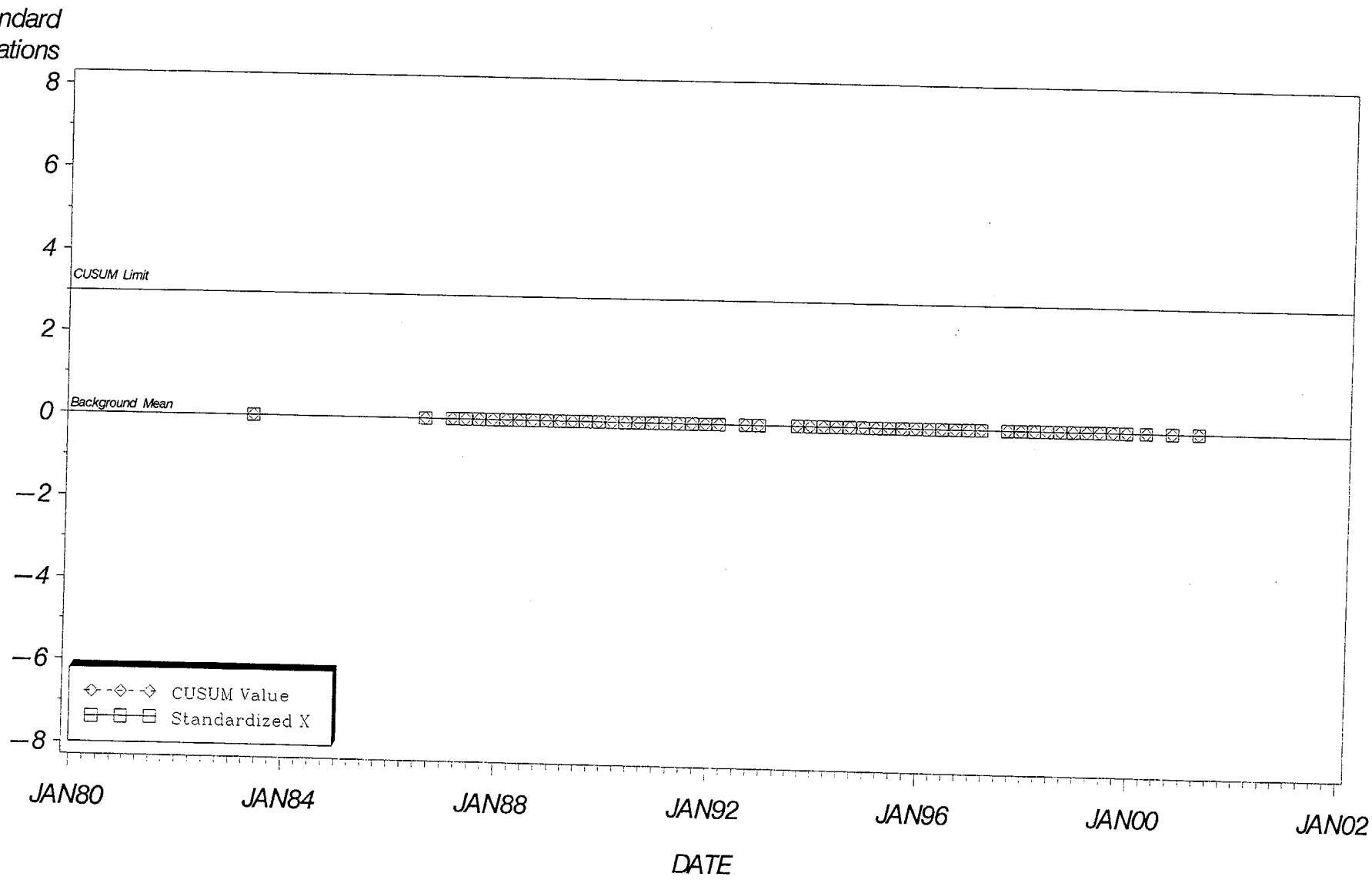


TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

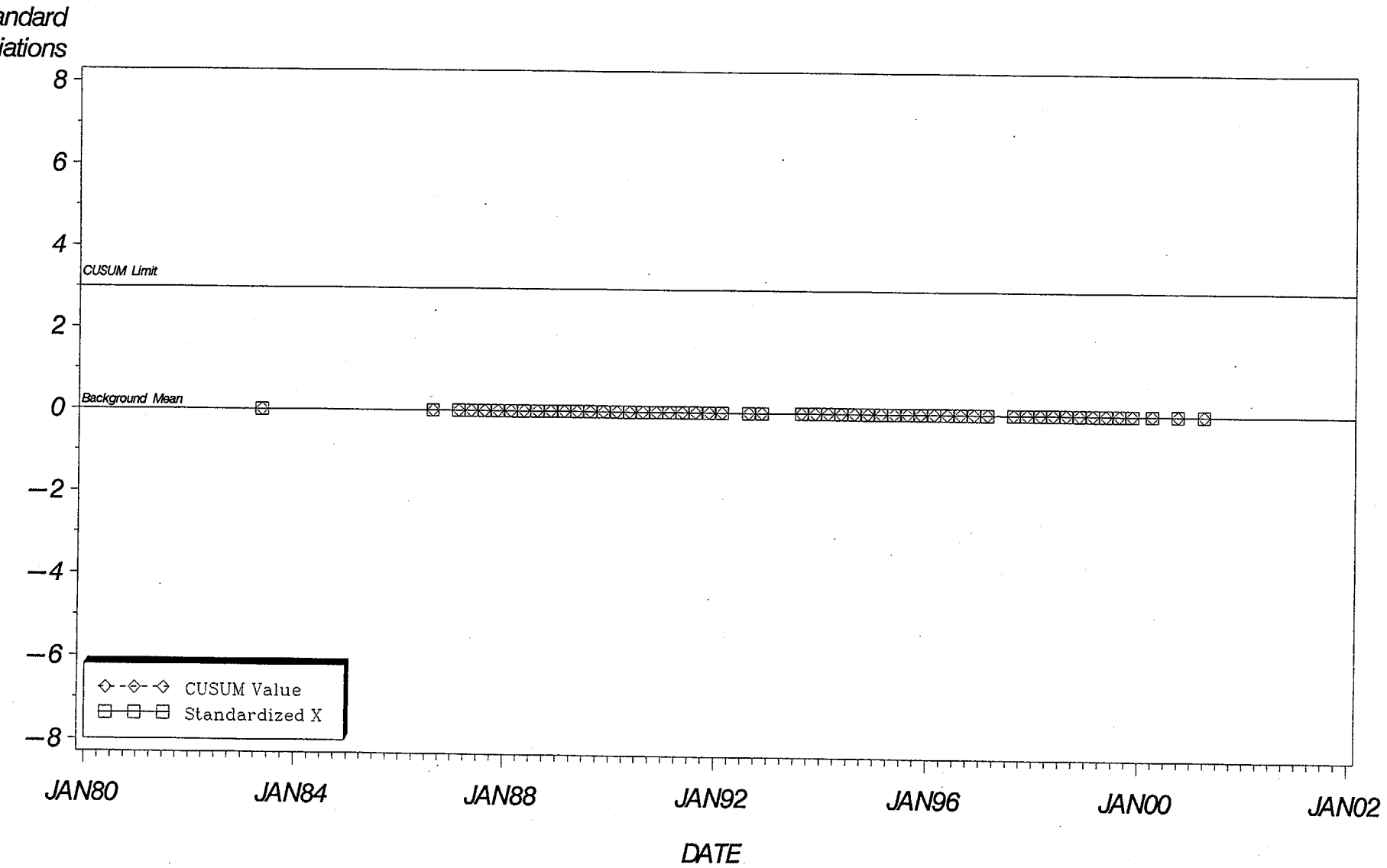
Figure 8c. Control Chart for Mn—54 Levels in Mussels — Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

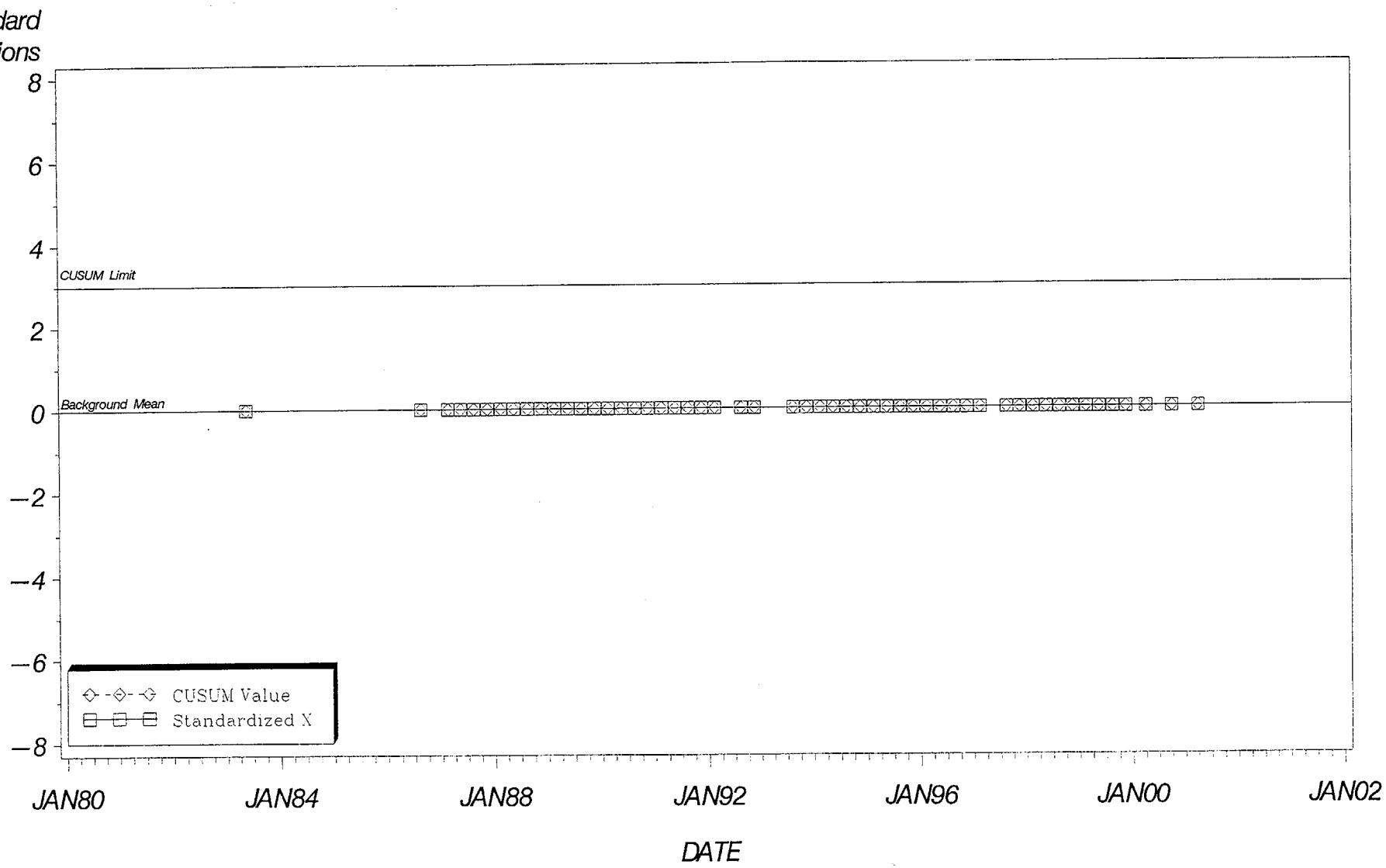
Figure 8d. Control Chart for Co—58 Levels in Mussels — Station 7C2



TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
Annual Report — 2000

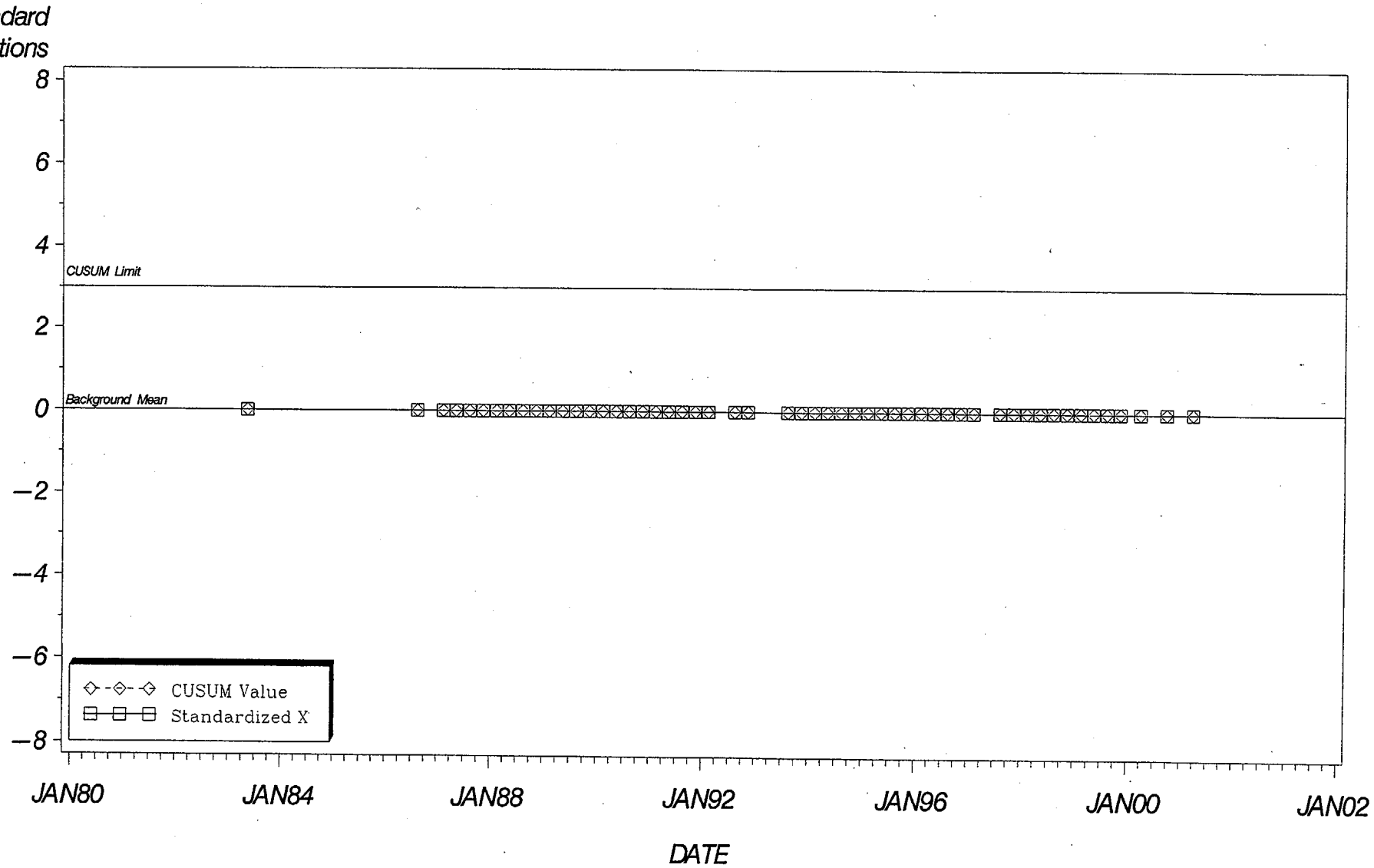
Figure 8e. Control Chart for Co—60 Levels in Mussels — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

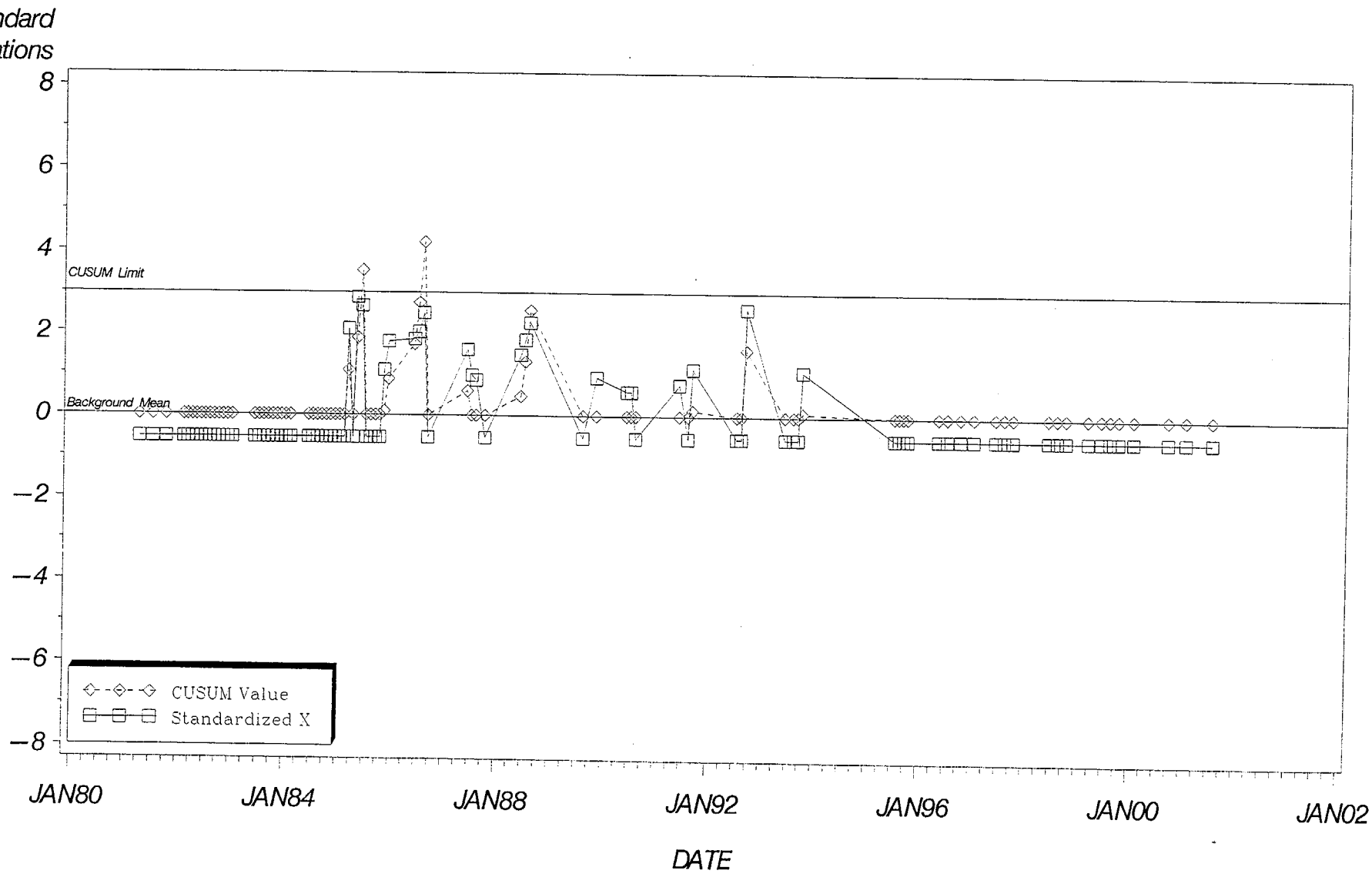
Figure 8f. Control Chart for Mn—54 Levels in Mussels — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 9a. Control Chart for Co−58 Levels in Blades of Kelp — Station DCM

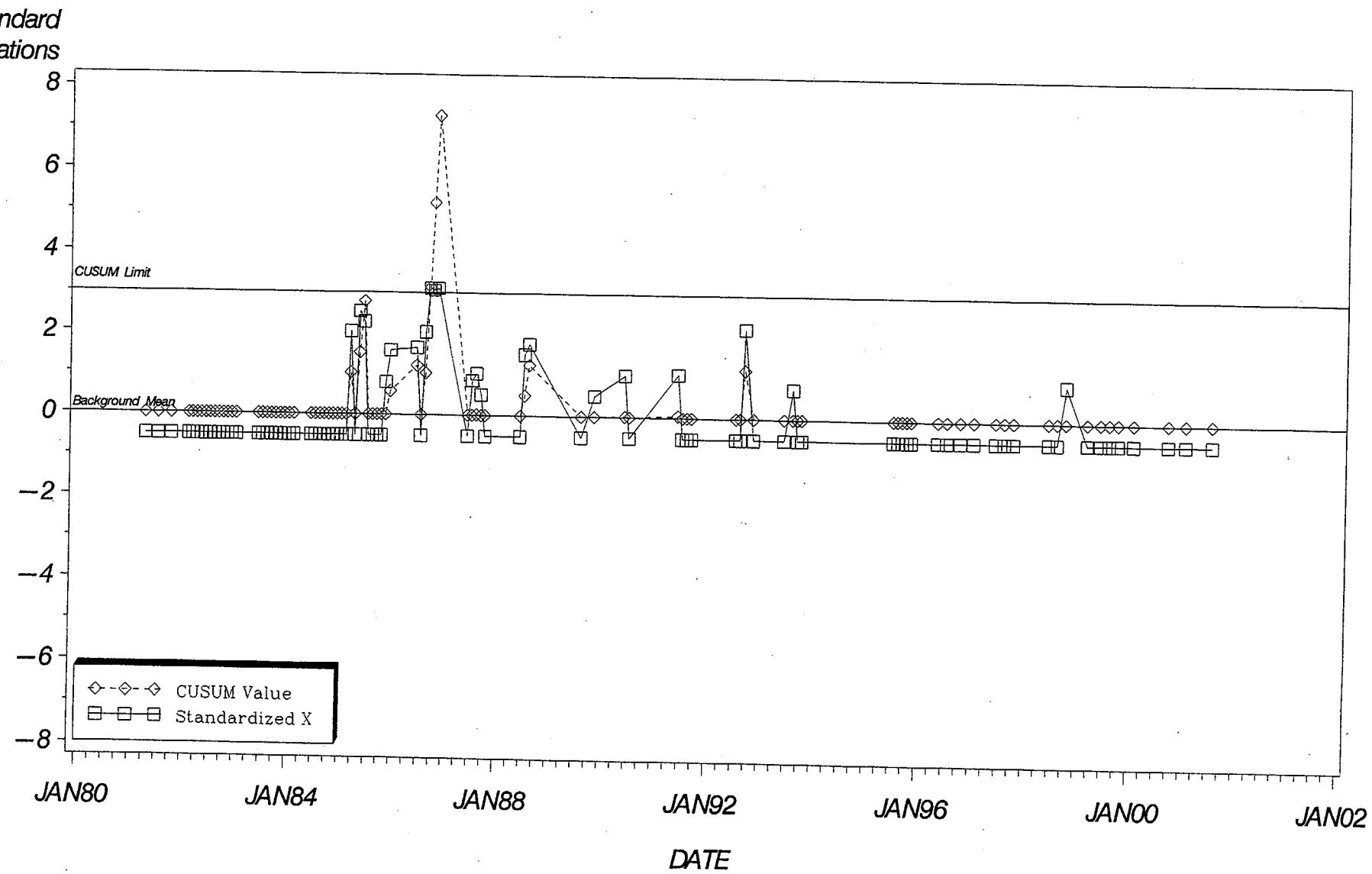


TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

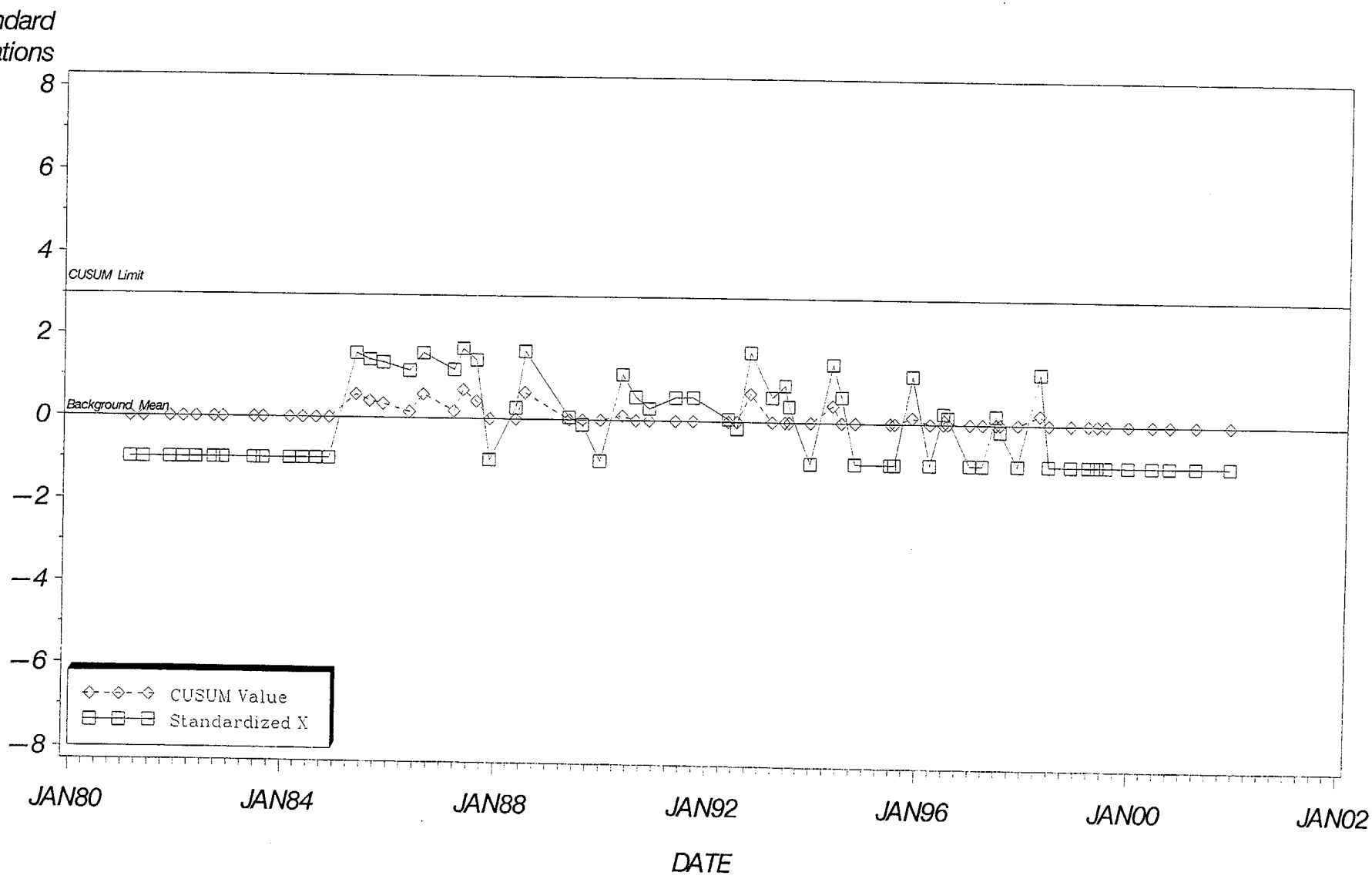
Figure 9b. Control Chart for Co—58 Levels in Pneumatocysts of Kelp — Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

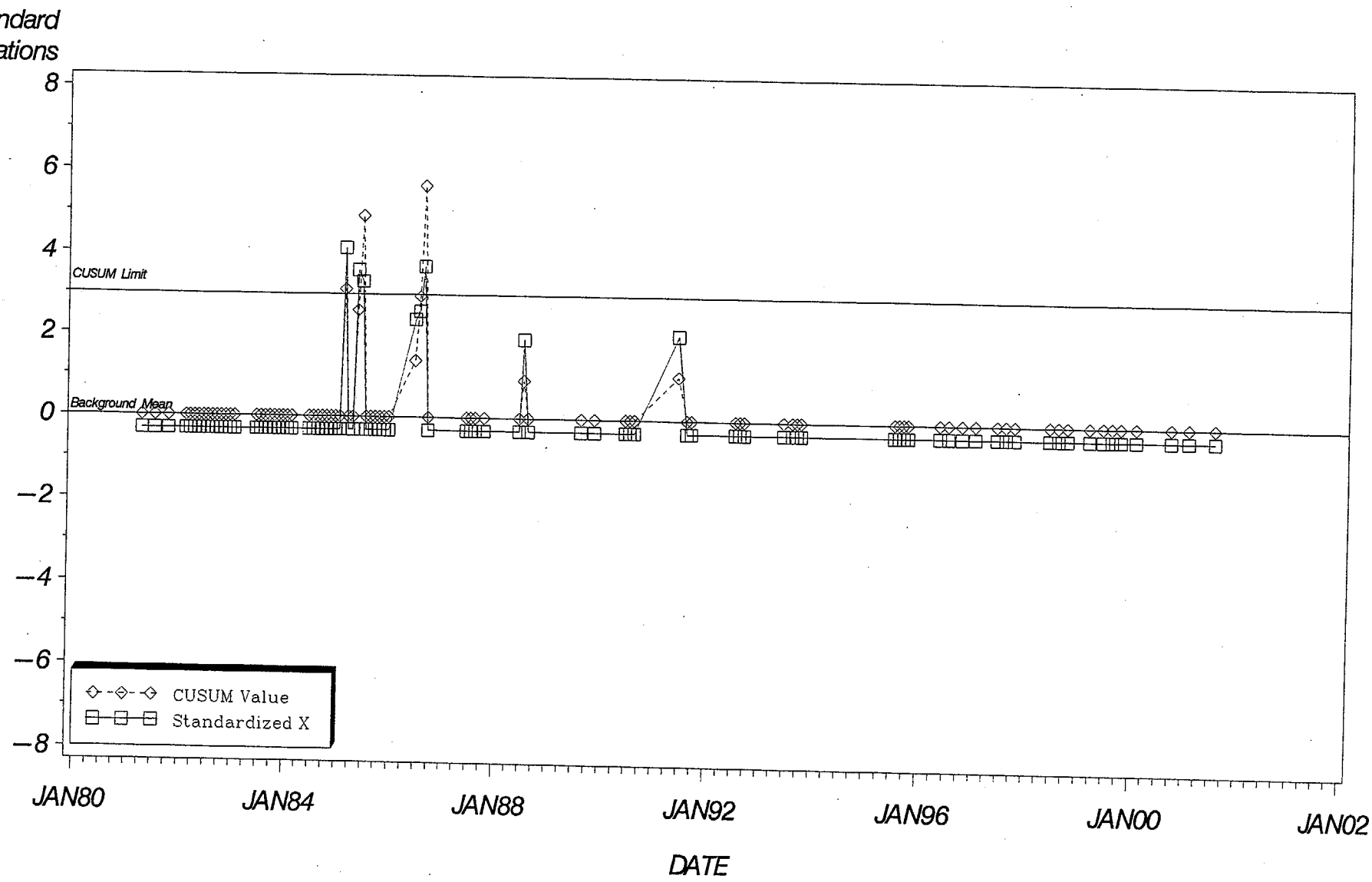
Figure 9c. Control Chart for Co—58 Levels in Algae— Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

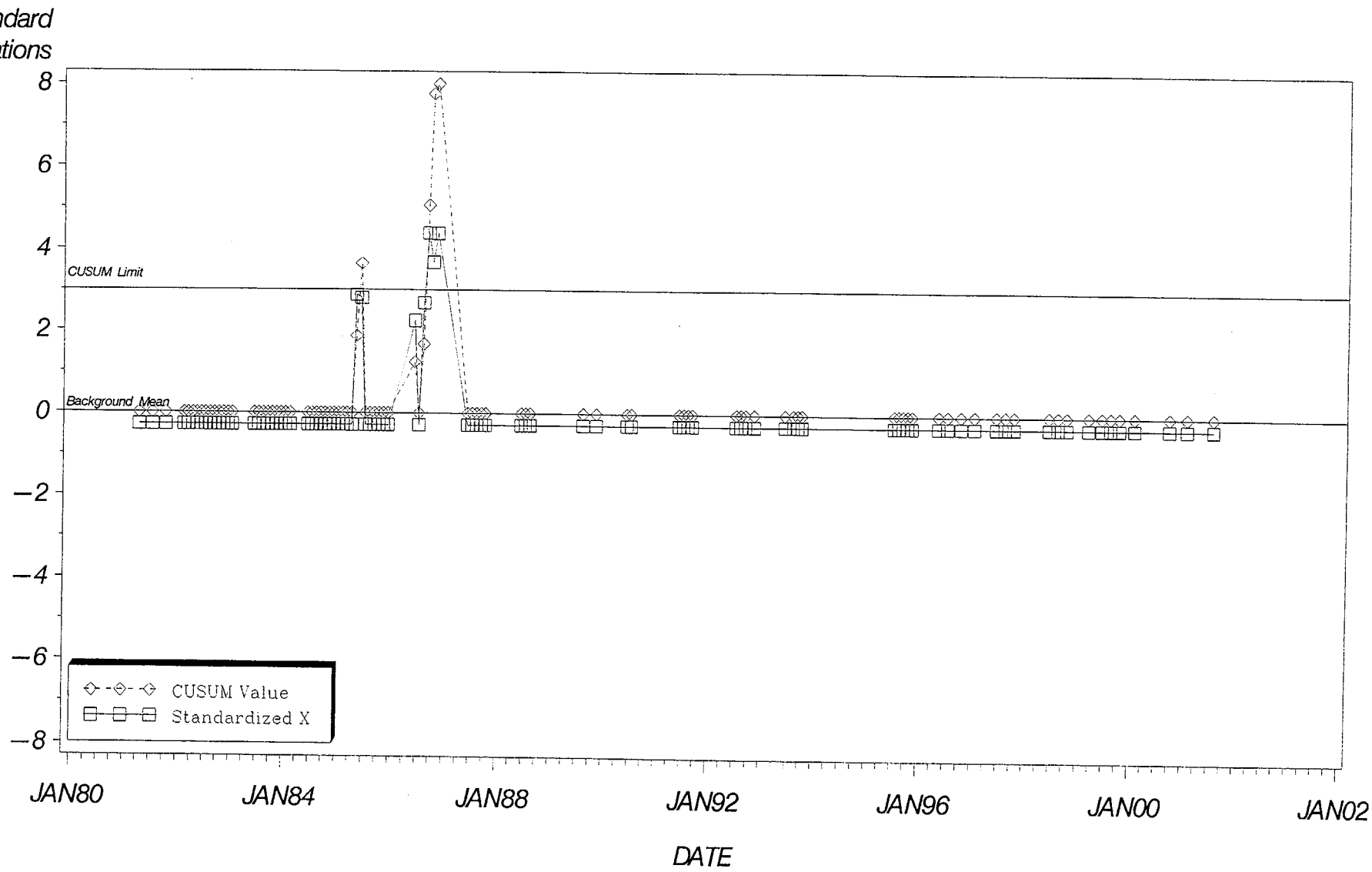
Figure 9d. Control Chart for Co—60 Levels in Blades of Kelp — Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

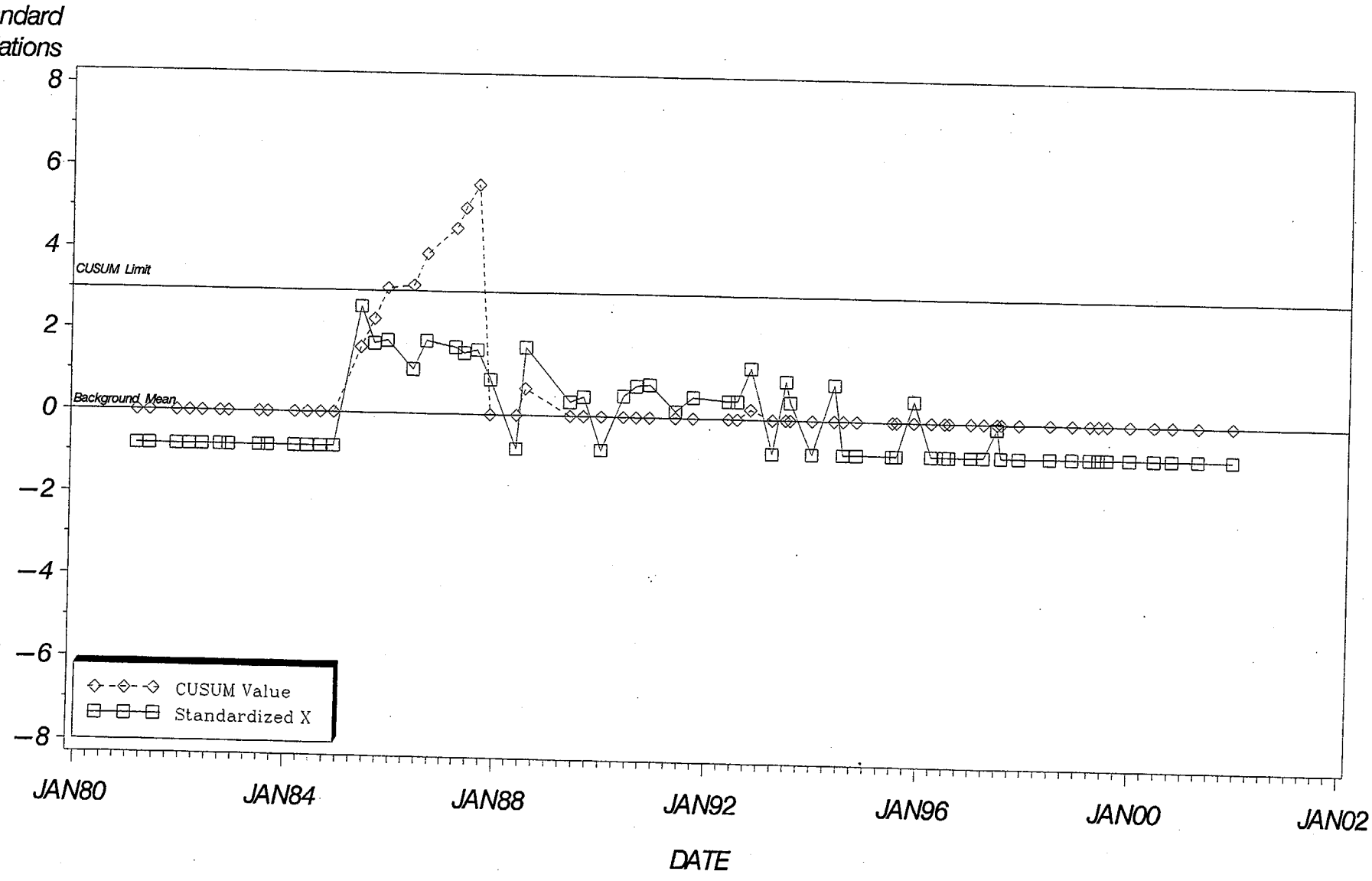
Annual Report — 2000

Figure 9e. Control Chart for Co—60 Levels in Pneumatocysts of Kelp — Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
Annual Report — 2000

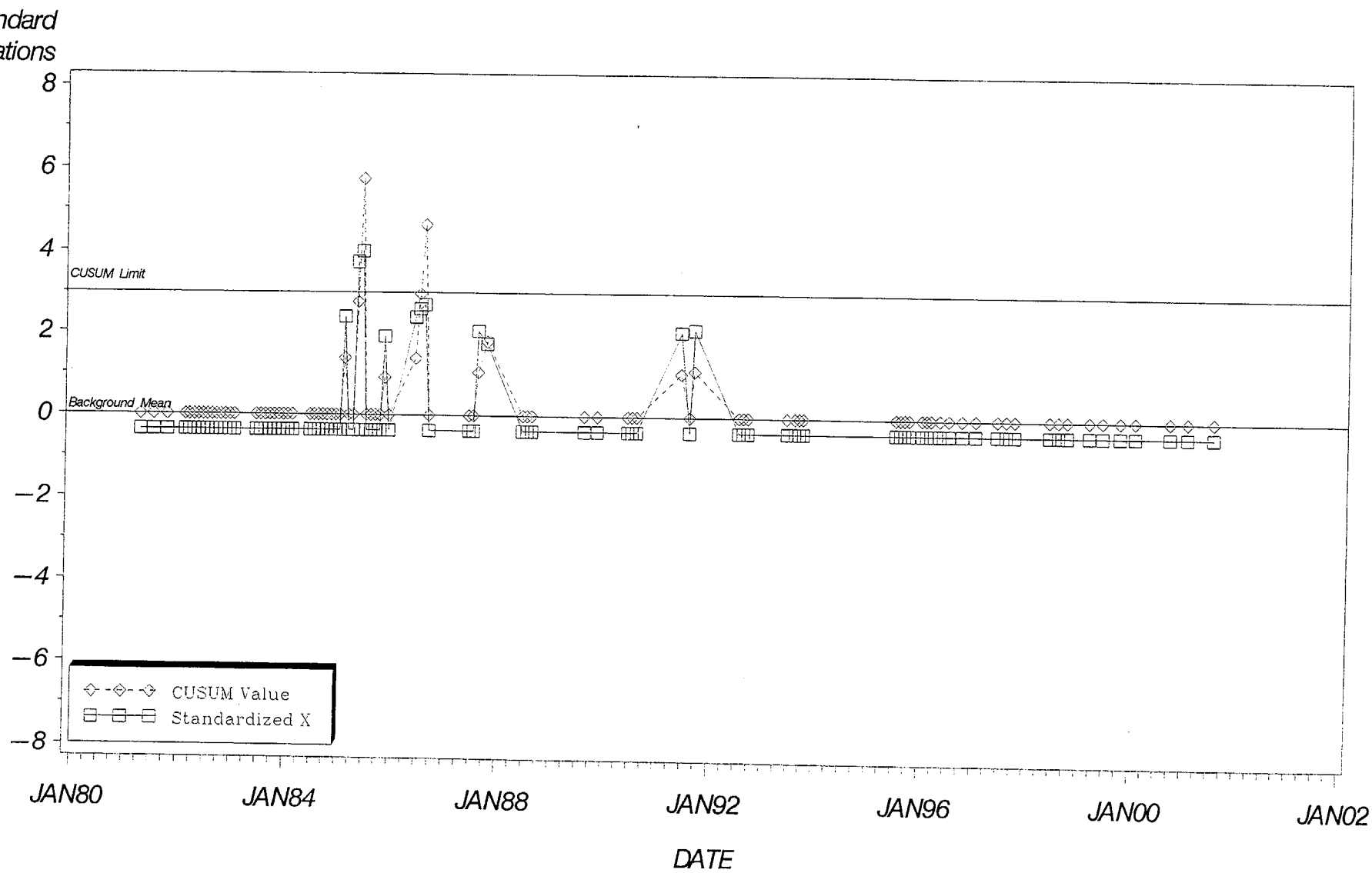
Figure 9f. Control Chart for Co–60 Levels in Algae— Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

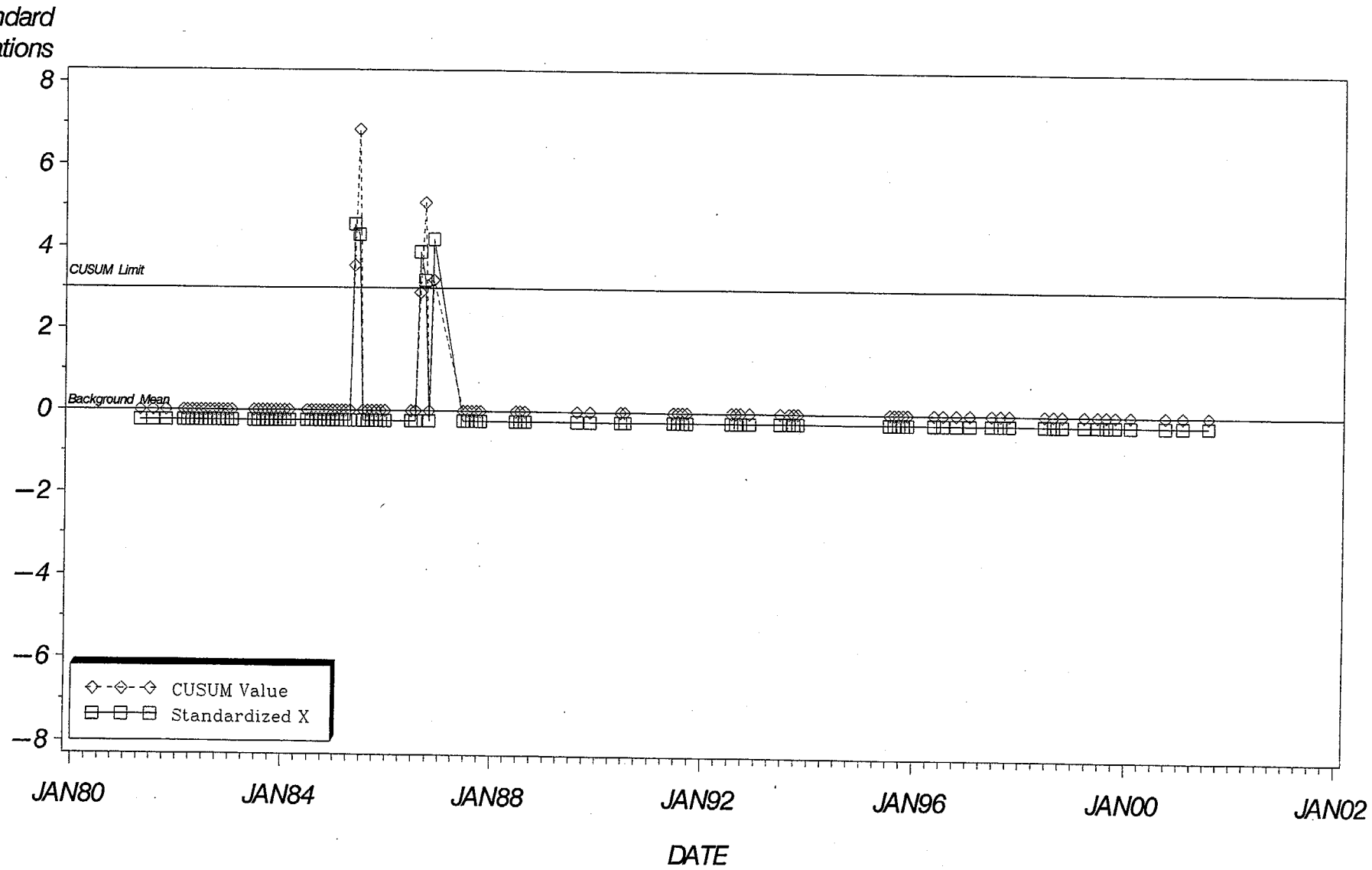
Figure 9g. Control Chart for Mn–54 Levels in Blades of Kelp – Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

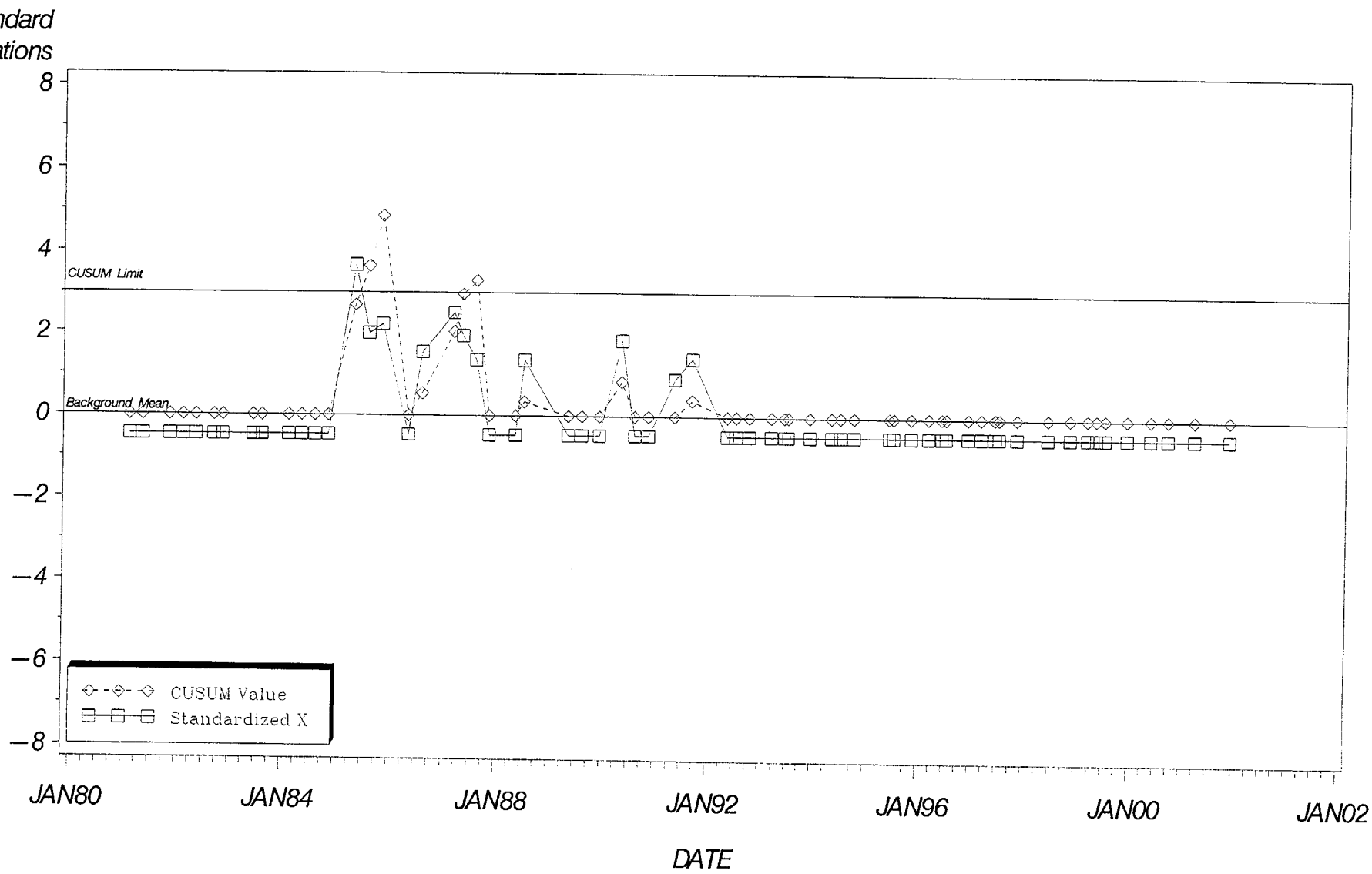
Figure 9h. Control Chart for Mn—54 Levels in Pneumatocysts of Kelp — Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

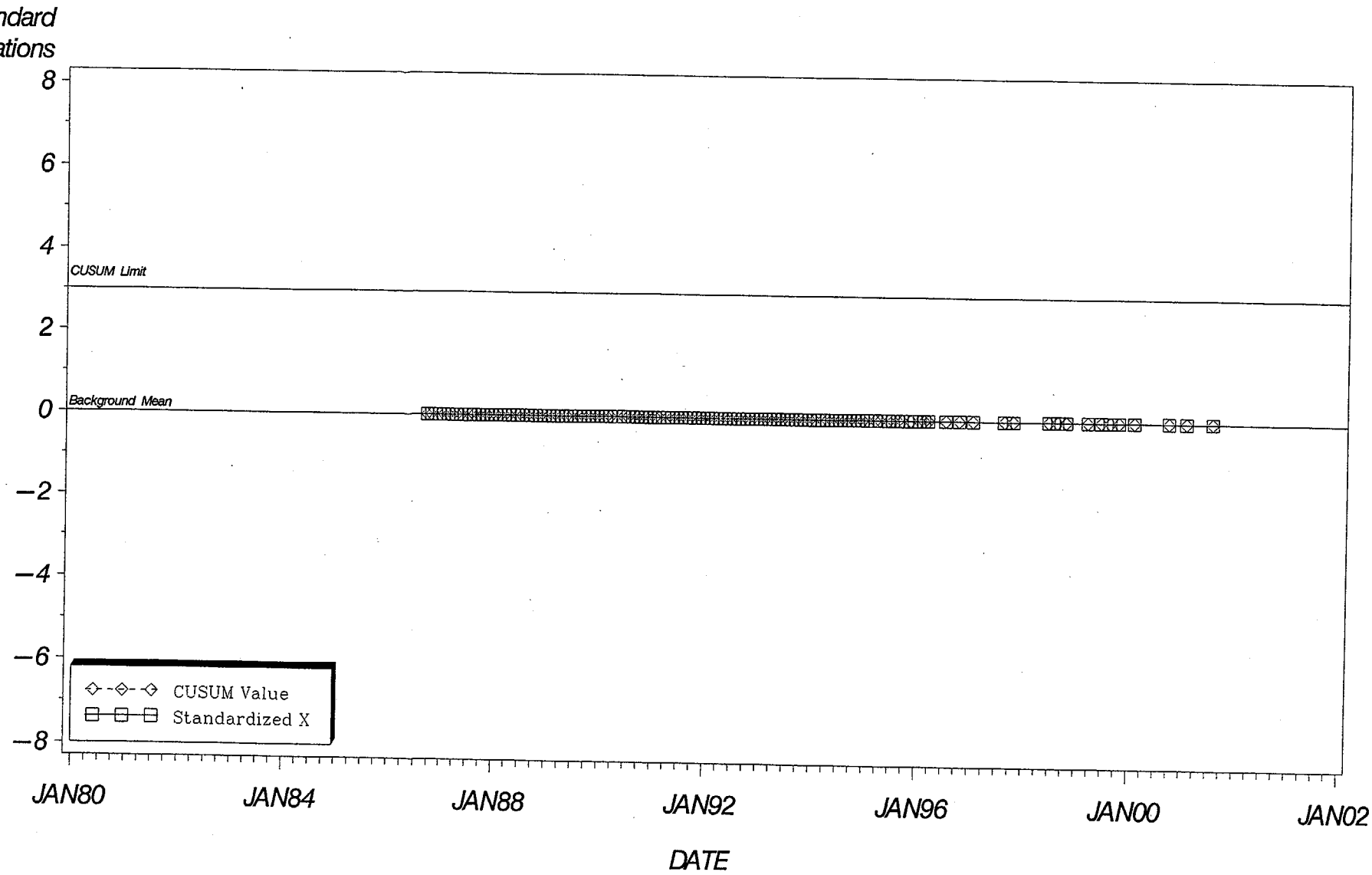
Figure 9i. Control Chart for Mn—54 Levels in Algae— Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

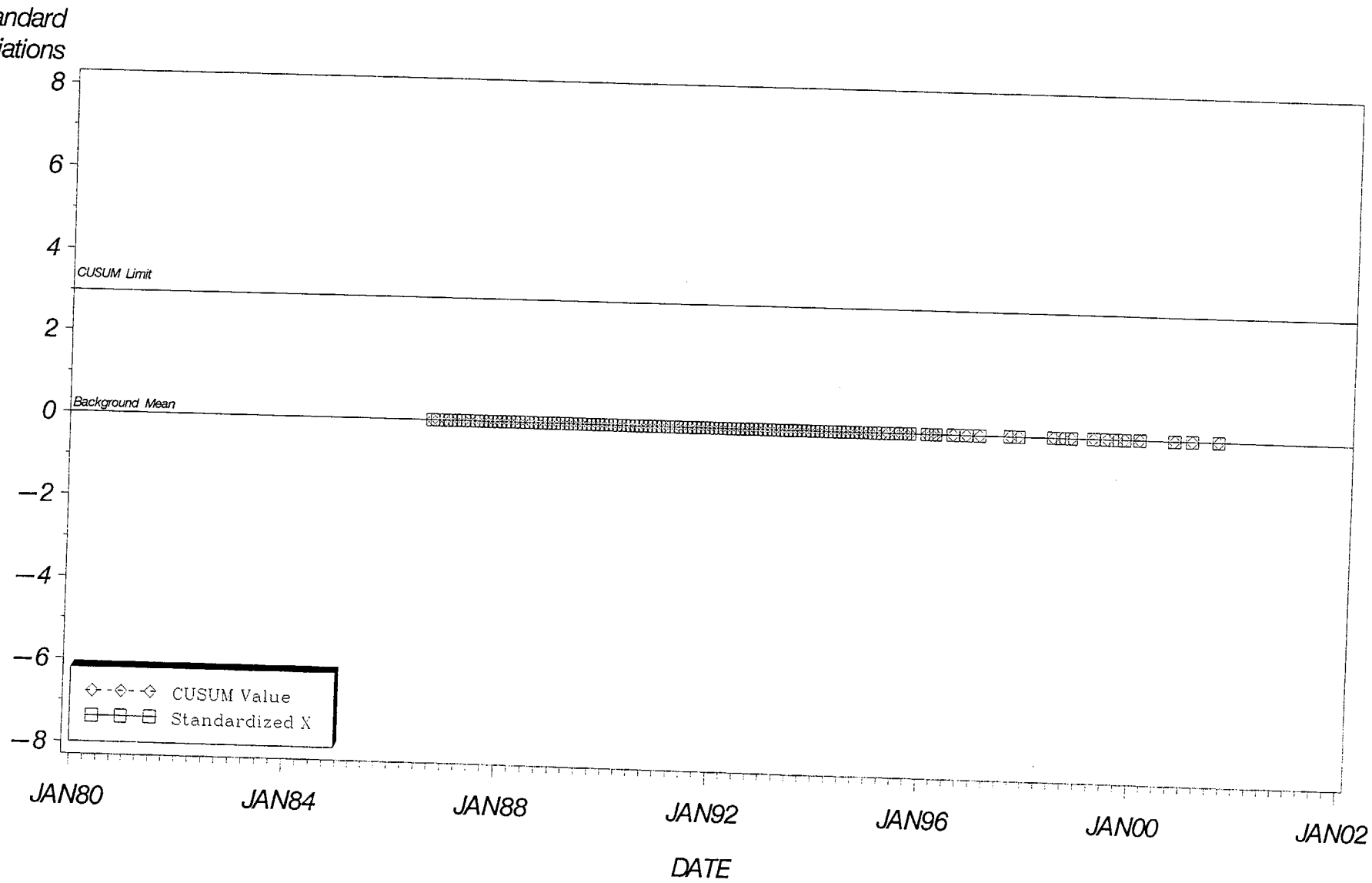
Figure 9j. Control Chart for Co—58 Levels in Blades of Kelp — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

Figure 9k. Control Chart for Co–58 Levels in Pneumatocysts of Kelp – Station 7C2

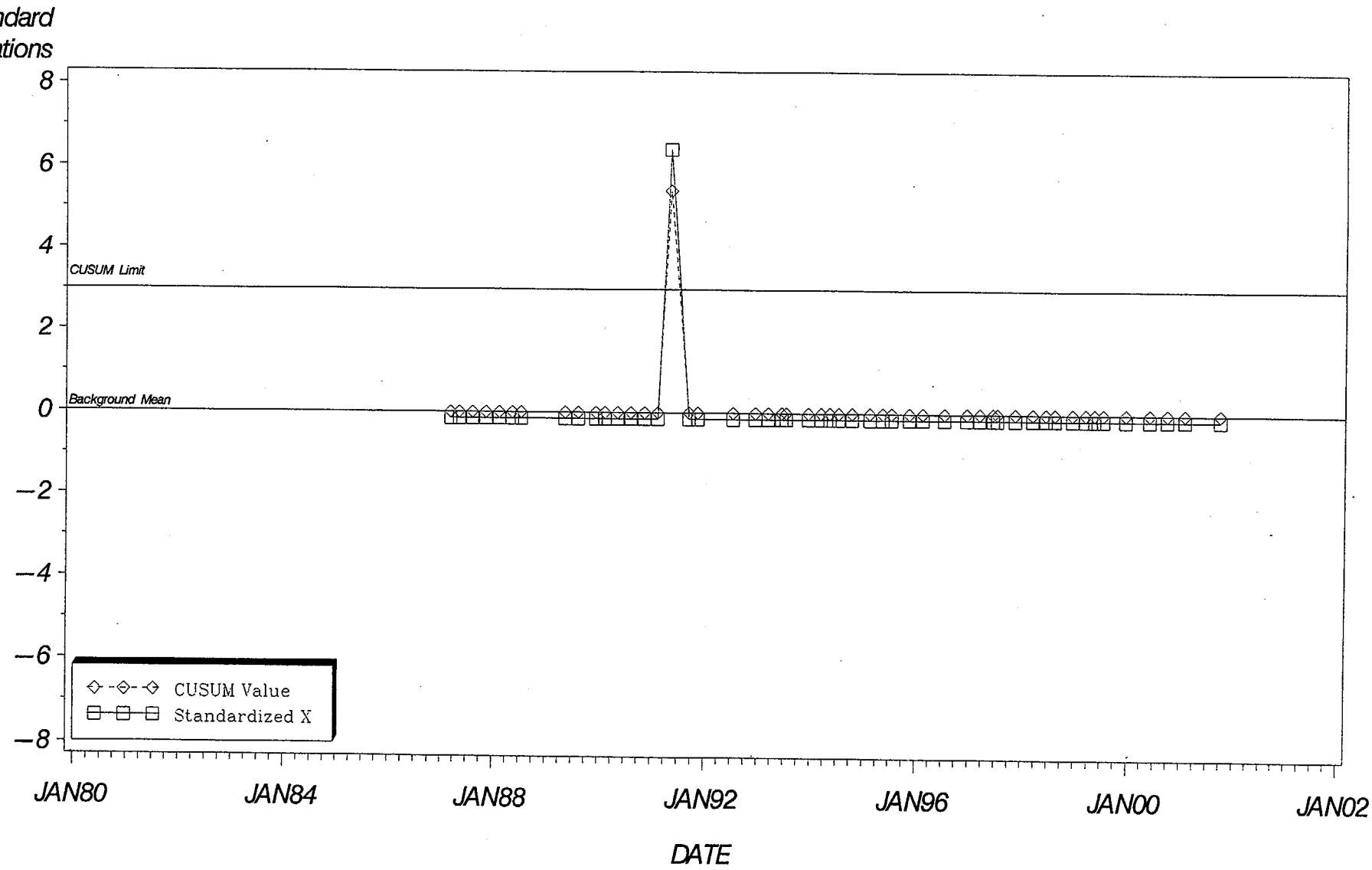


TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

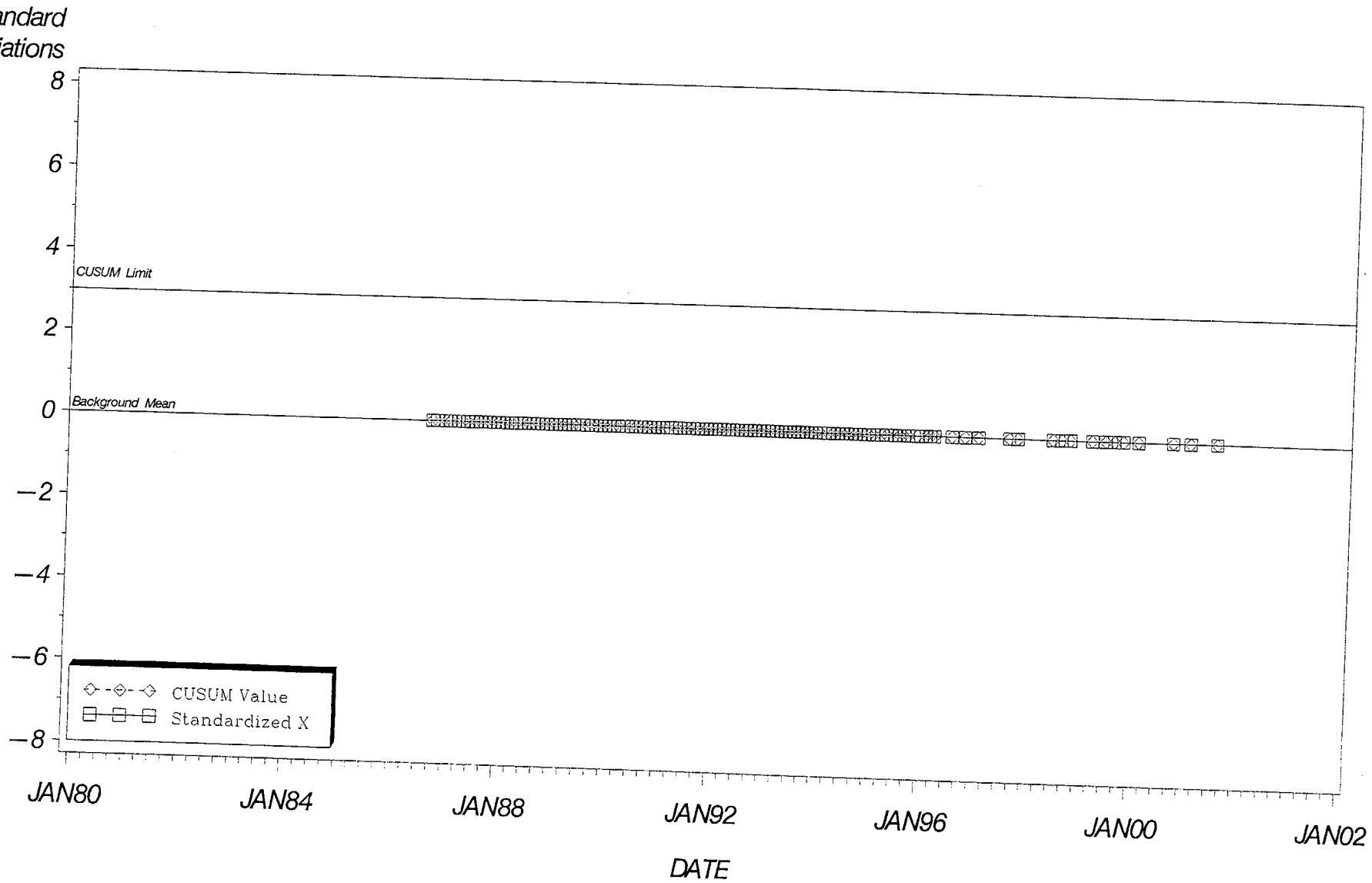
Figure 9l. Control Chart for Co—58 Levels in Algae— Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

Figure 9m. Control Chart for Co–60 Levels in Blades of Kelp – Station 7C2

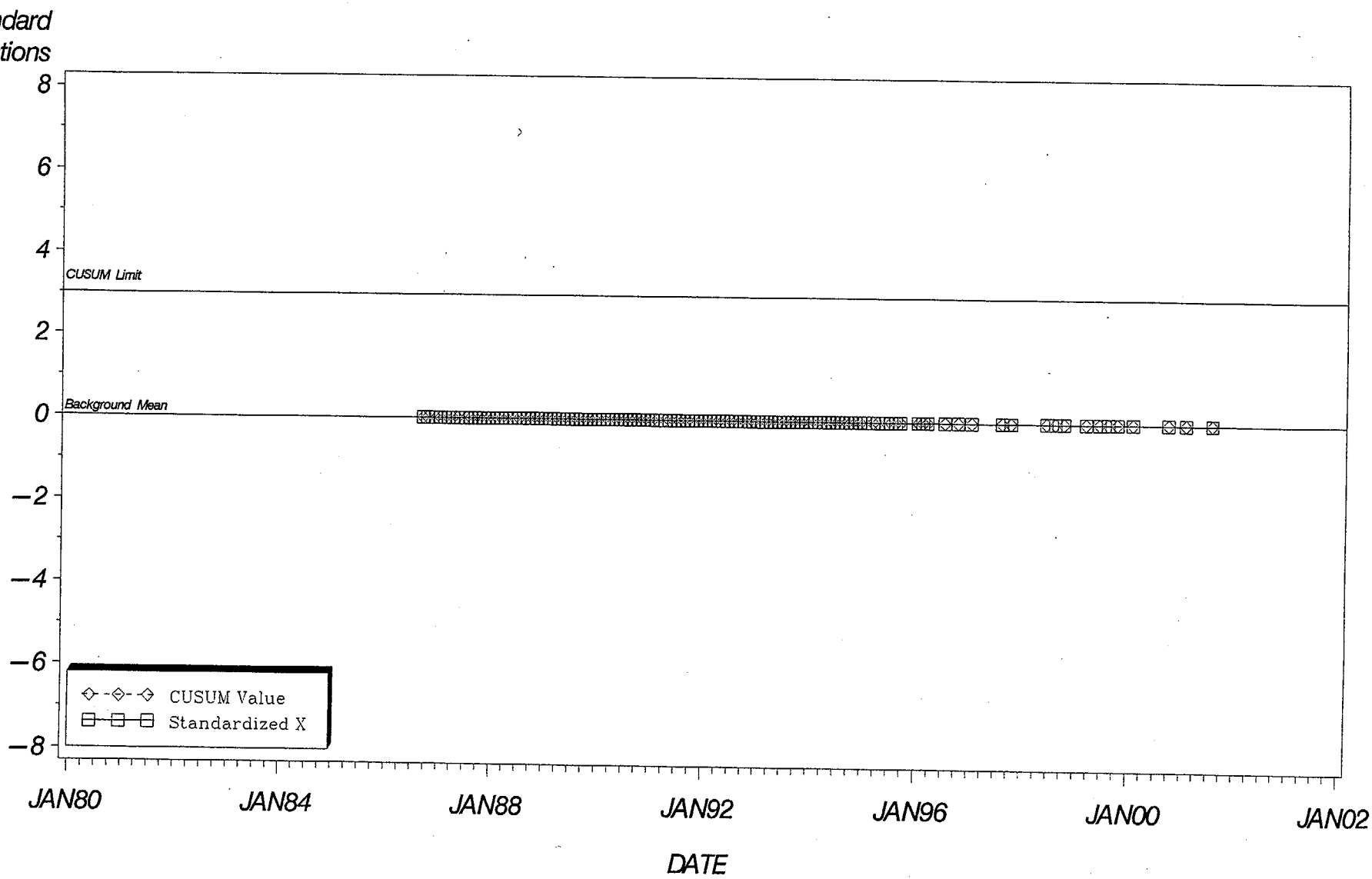


TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

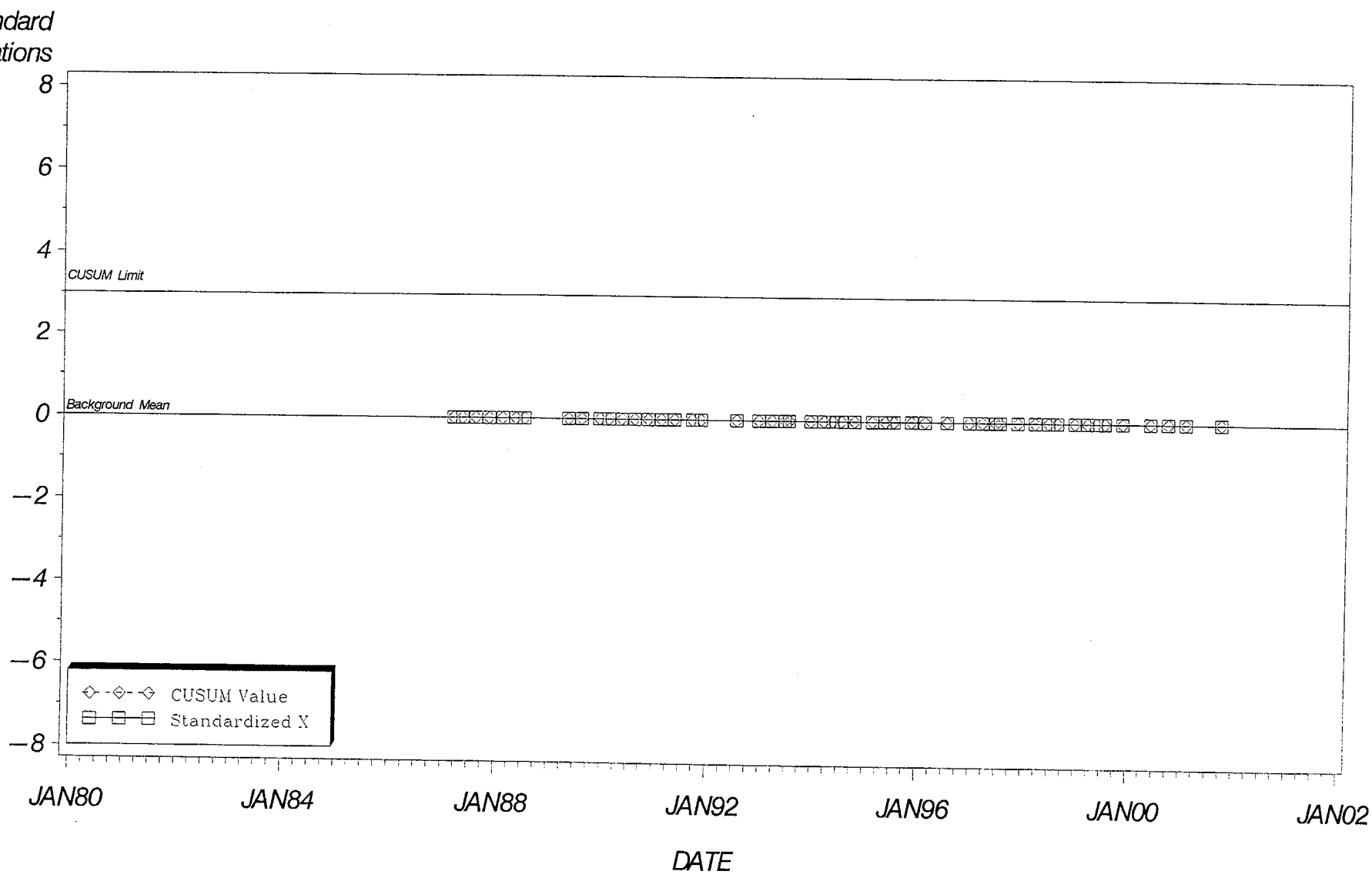
Figure 9n. Control Chart for Co—60 Levels in Pneumatocysts of Kelp — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

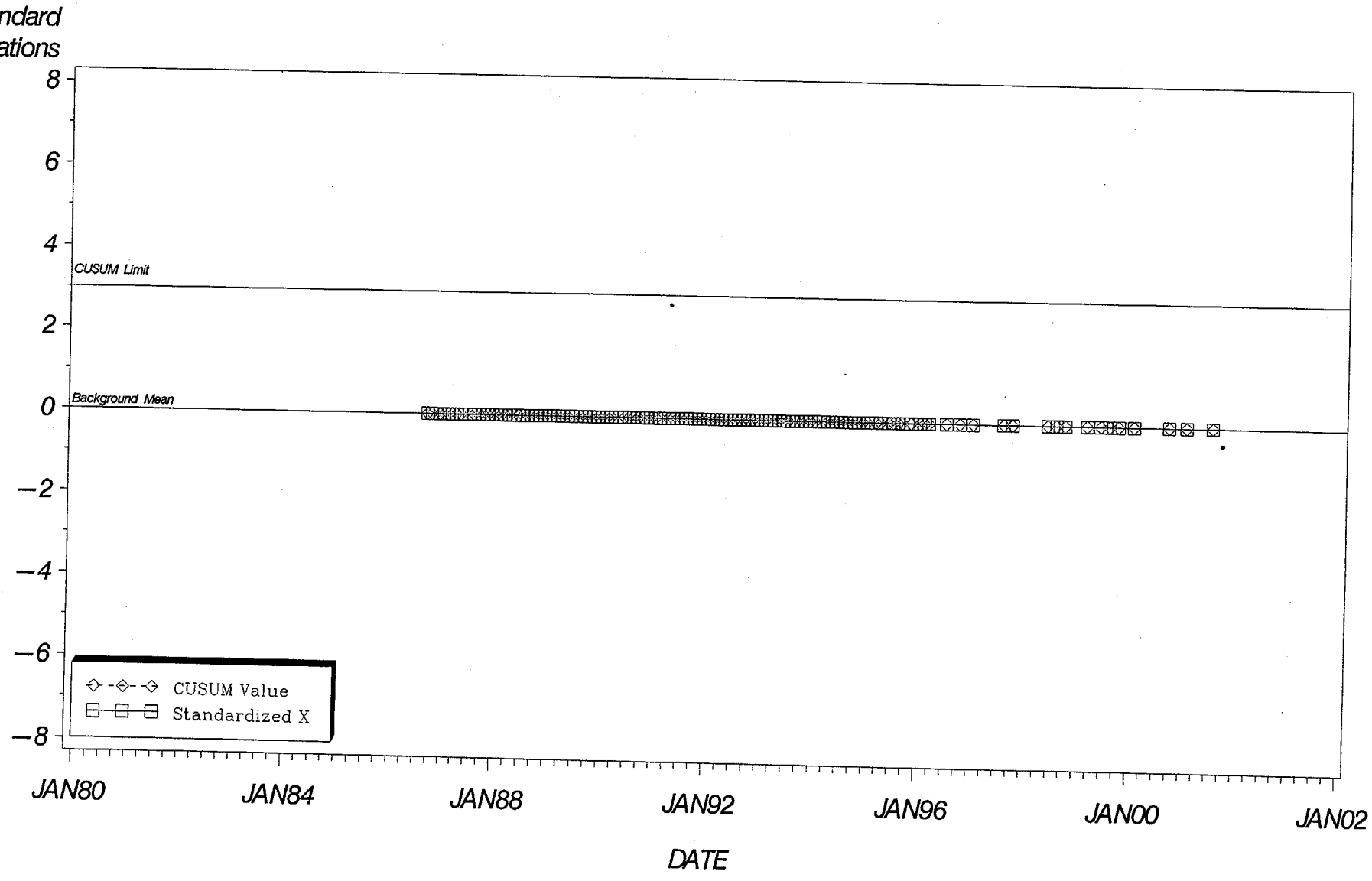
Figure 9o. Control Chart for Co—60 Levels in Algae— Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

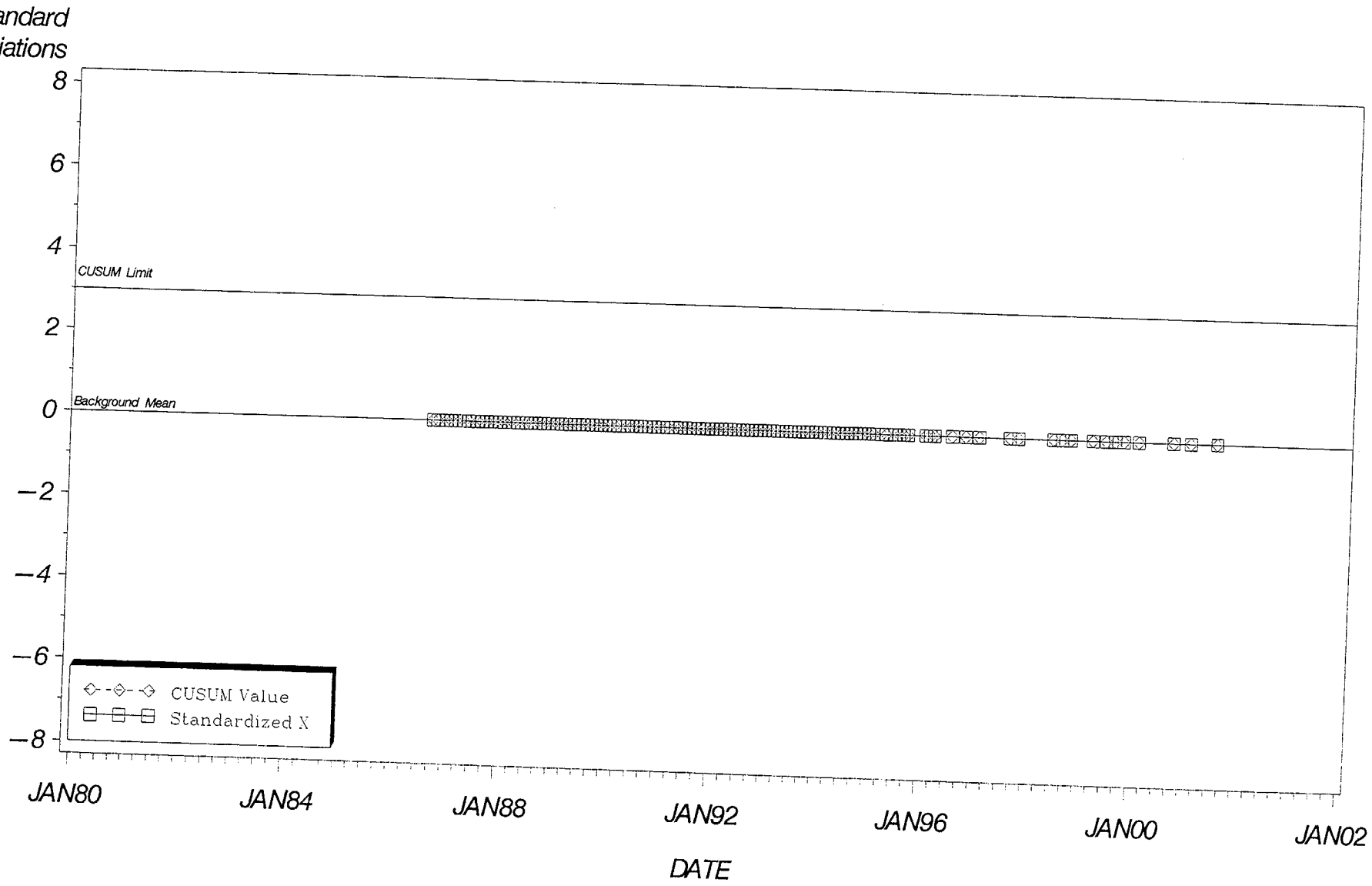
Figure 9p. Control Chart for Mn–54 Levels in Blades of Kelp — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

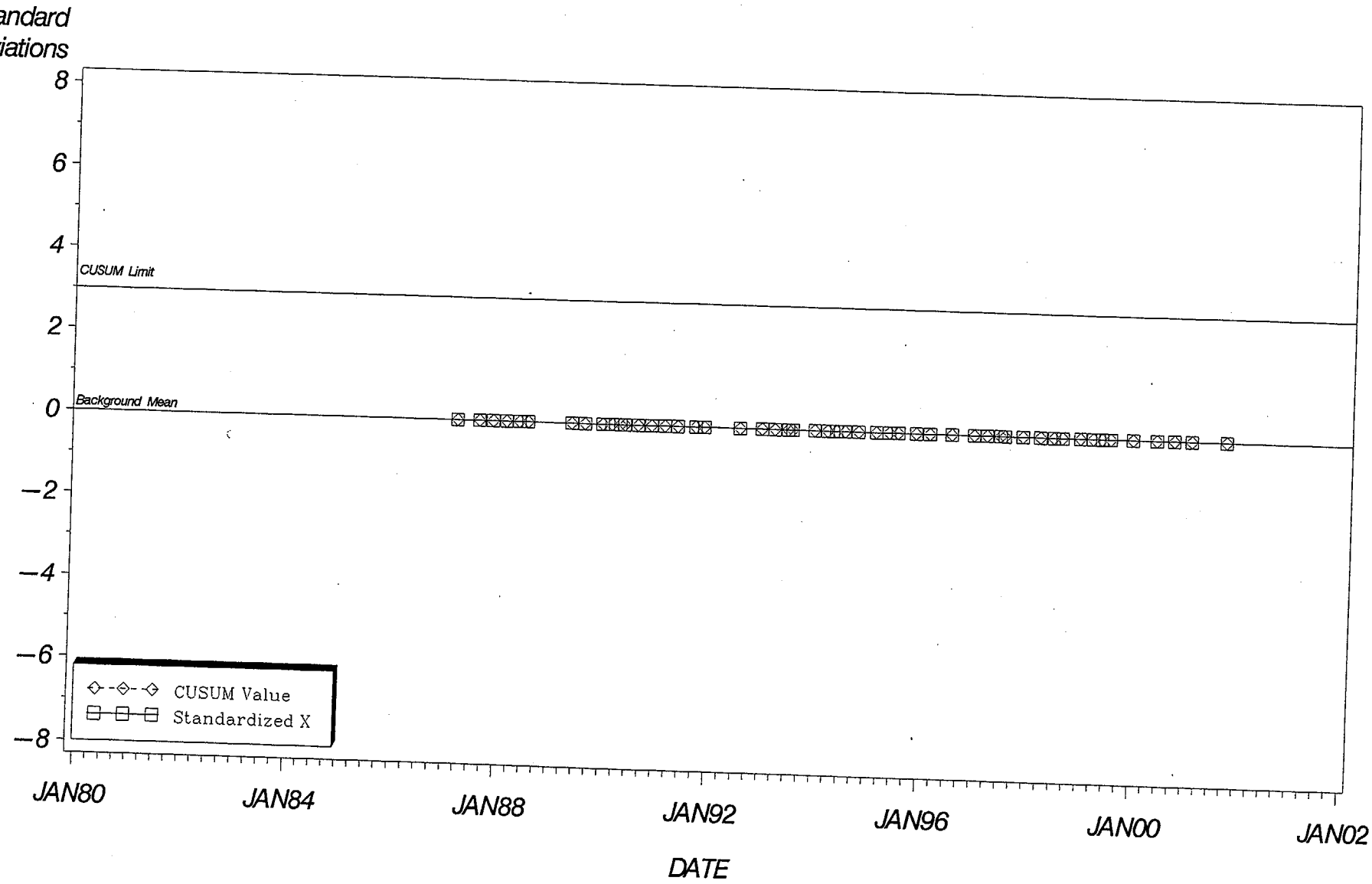
Figure 9q. Control Chart for Mn—54 Levels in Pneumatocysts of Kelp — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 9r. Control Chart for Mn—54 Levels in Algae— Station 7C2

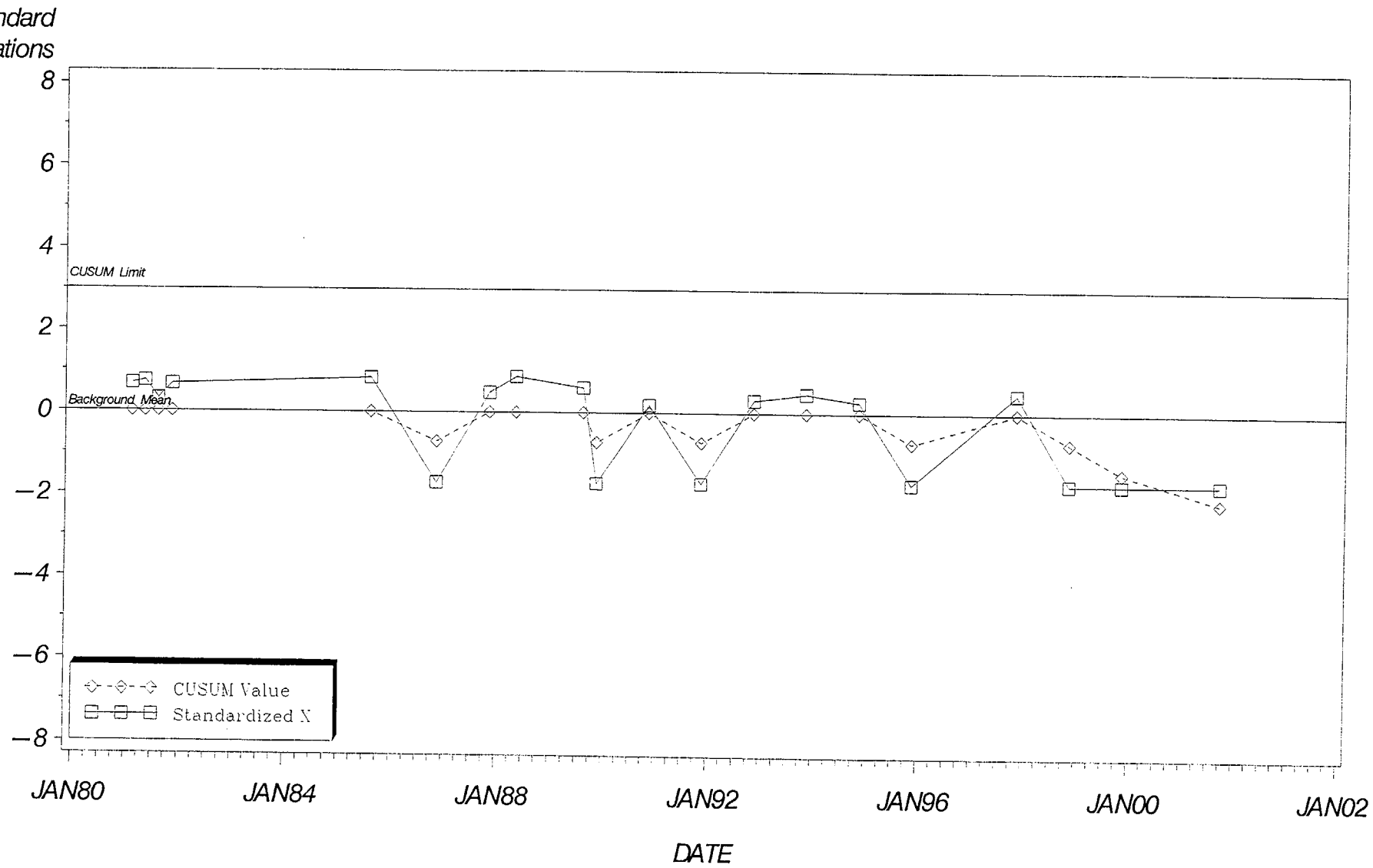


TECHNICAL AND ECOLOGICAL SERVICES
Health Physics Unit

DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report – 2000

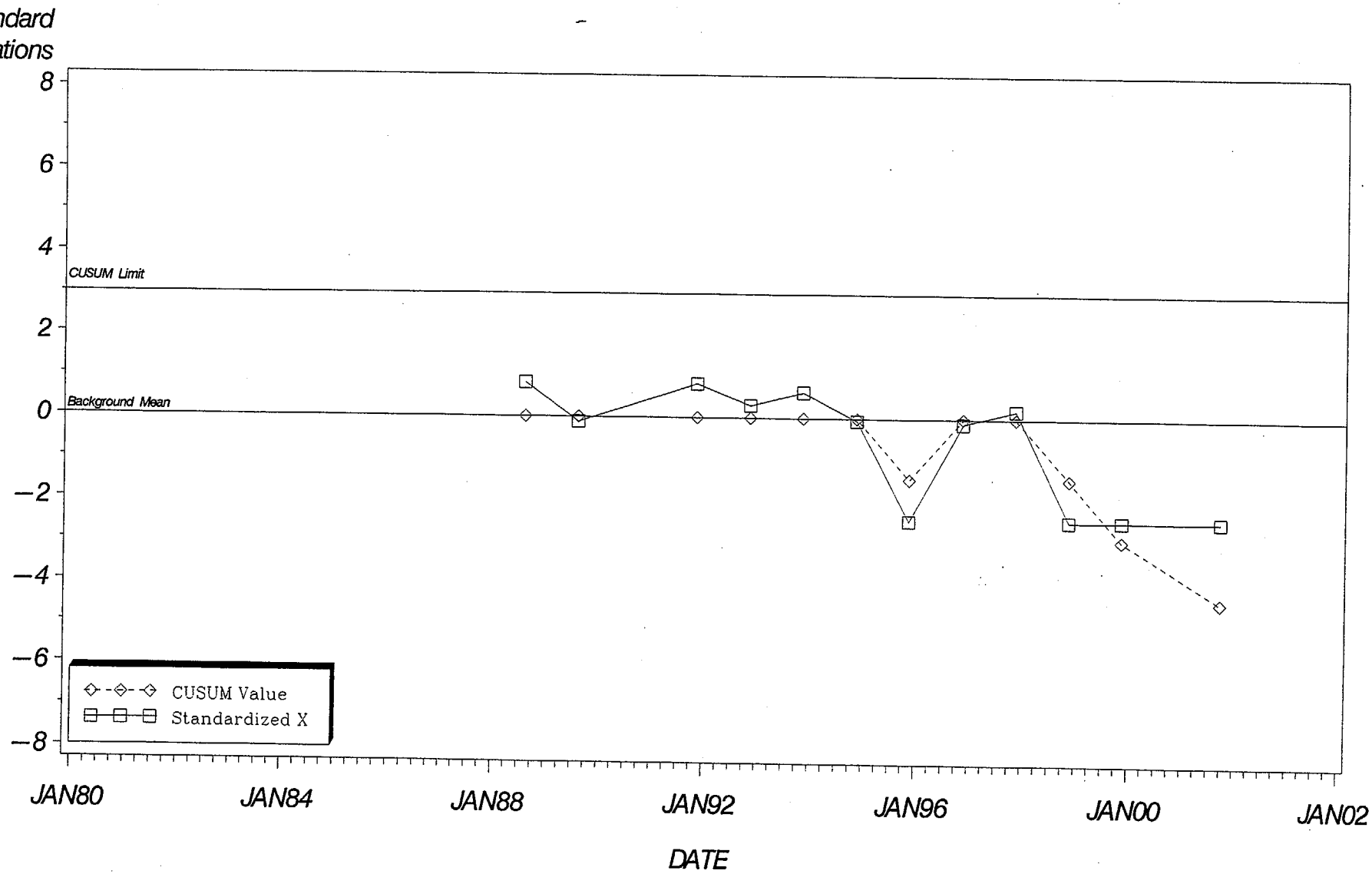
Figure 10a. Control Chart for Cs–137 Levels in Sediment – Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

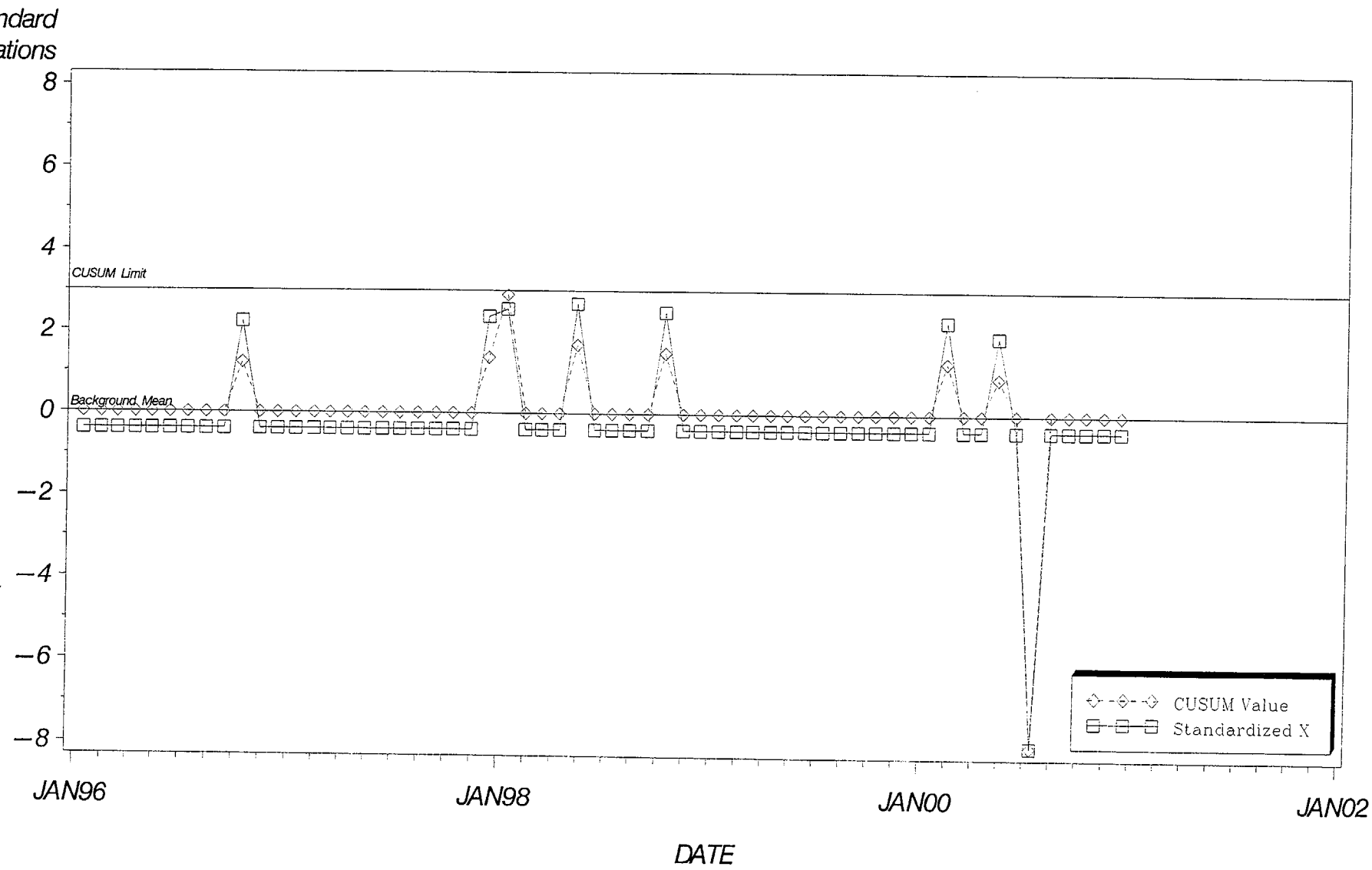
Figure 10b. Control Chart for Cs—137 Levels in Sediment — Station 7C2



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

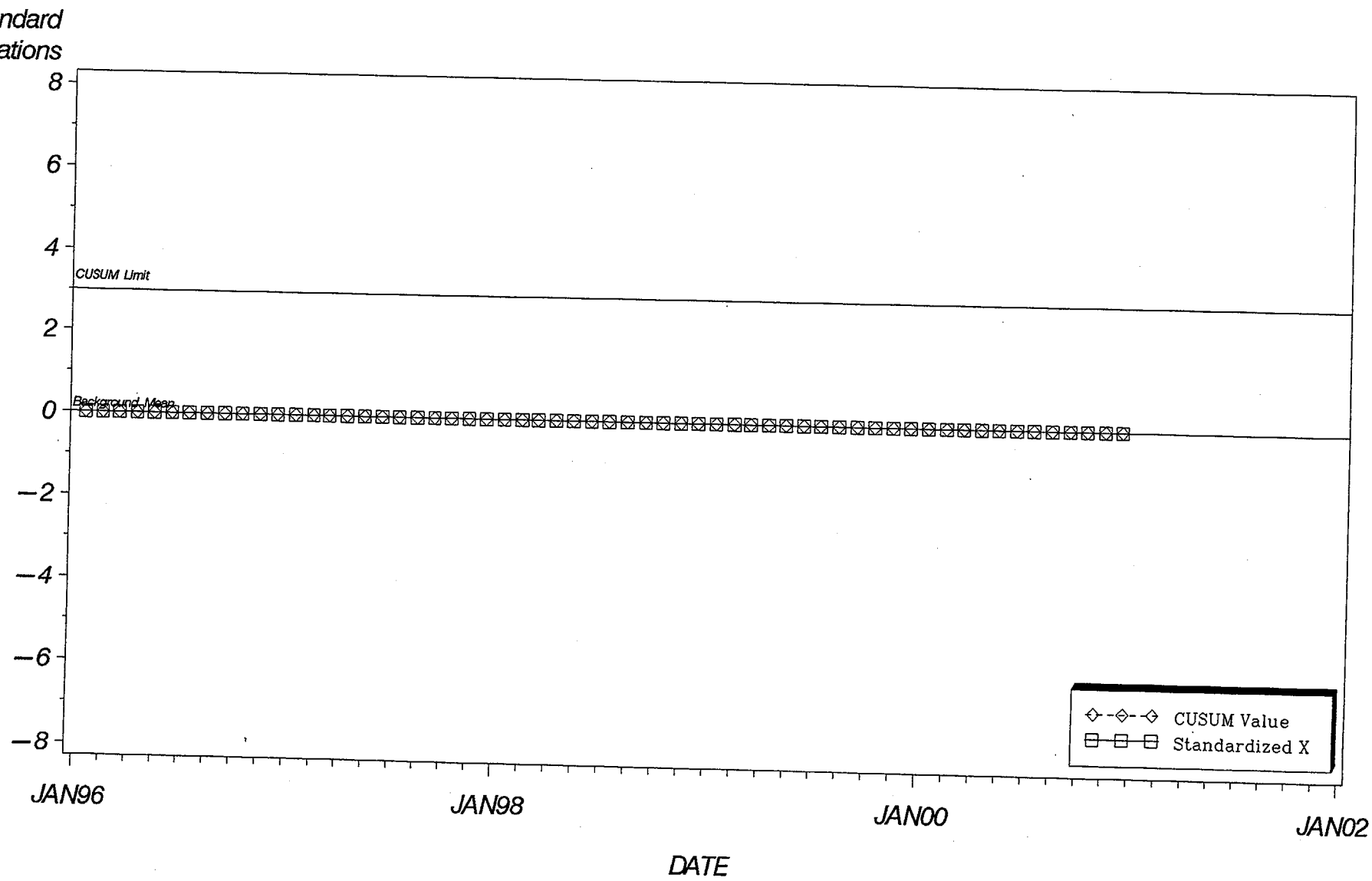
Figure 11a. Control Chart for Tritium Levels in Seawater — Station DCM



DIABLO CANYON POWER PLANT
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Annual Report — 2000

Figure 11b. Control Chart for Tritium Levels in Seawater — Station 7C2



FOOD CROPS

Monthly vegetative samples were collected from supplemental stations 5F2, 7G1, 7C1 and a quarterly sample from station 6C1. Review of preoperational and operational data for food crops indicated that samples collected from these stations contained only natural radioactivity with two exceptions. In 1981, during the preoperational period, Cs-137 was detected in some vegetative samples. This is attributed to worldwide fallout from nuclear weapons testing. The mean activity concentration was 48 pCi/kg and the range was 3 to 136 pCi/kg. It was not detected in subsequent years until 1986.

In 1986, Cs-137, I-131, Cs-134, and Ru-103 (see Table 6 below) were detected in vegetative samples from these stations. Their presence is attributed to worldwide fallout from the Chernobyl accident.

Table 6

Nuclides Detected in Food Crops

Year		Stations 7G1, 7C1 Mean (range) pCi/kg wet	Station 5F2 Mean (range) pCi/kg wet
1986	I-131	27 (4-49)	90 (one sample)
	Cs-134	4 (one sample)	none detected
	Ru-103	9 (one sample)	none detected
	Cs-137	9 (one sample)	none detected

In 1994, Cs-137 was detected in one sample from Cal Poly station 5F2. Its value, 26.9 pCi/kg, was within preoperational range. In 2000, only naturally occurring radioactivity was detected at the supplemental stations 5F2, 7G1, 7C1 and 6C1. The operation of the plant had no detectable impact on vegetation in its environs.

MILK

During the preoperational period, Cs-137 was detected only in samples collected in 1981; the mean and range at indicator and control stations were 1.59, (1.11-2.06) and 1.73, (1.35-2.29) pCi/L respectively. During the operational years, Cs-137 (2 pCi/L) was detected in only one sample from station 8H1 in 1987. This station, Caroni Dairy, was closed in 1988. The Cs-137 concentration level detected was within the preoperational range.

During the preoperational years, I-131 was not detected in any milk samples collected. During the operational years, due to worldwide fallout during the Chernobyl accident, I-131 was detected in two samples from station 8H1 and one sample from station 5F2 in 1986. Their values were as follows:

Table 7

Nuclides Detected in Milk

Station	Collection Date	I-131 pCi/L
8H1	5/19/86	89
5F2	5/19/86	2
8H1	6/23/86	2

I-131 was not detected in samples collected and analyzed in subsequent years. In 2000, only naturally occurring radioactivity was detected in the milk samples. The data indicates that plant operations had no detectable impact on this environmental medium.

Section 8

PROGRAM VARIANCE

AIRBORNE RADIOACTIVITY

The mean percent availability for all on-site and off-site samplers was 99.8 percent. That is, on average, all samplers were up and running 99.8 percent of the time. At station 7D1, the sampler malfunctioned during the sampling period 12/29/99 – 1/7/00. Approximately two (2) days of sampling was lost. At station 1S1, the sampler malfunctioned during the sampling period 10/25/00 – 11/1/00. Approximately 4-½ days of sampling was lost. All air sample collections for the period 11/1/00 – 11/8/00 were lost in transit to TES. Since the samples were collected for this time period, the only time loss recorded in 2000 was that for stations 1S1 and 7D1 mentioned above.

TERRESTRIAL SAMPLES

Food crops are collected at four supplemental stations during the growing season: 5F2, 7G1, 7C1 and 6C1. However, they were unavailable in January, February, April, June and July at station 5F2, in the second quarter at station 6C1, and in February at station 7C1. During these periods, the farmland or garden was either plowed over, the plants were in the seedling stage or the sampling location was inaccessible.

MARINE SAMPLES

Marine Flora: Kelp, a supplemental sample, is required to be sampled quarterly at stations DCM, 7C2, PON and POS. Kelp blade was unavailable in July at station 7C2.

Mussels: Mussels are required to be collected quarterly at stations DCM, 7C2, PON, POS. Mussels were unavailable in the first and fourth quarter at supplemental stations POS and PON.

Abalone: As mentioned earlier in our discussion, the Fish and Game Commission has issued regulations prohibiting the collection of abalone along the central and southern coast of California. PG&E considers it unlikely that collection of abalone will be allowed in the DCPP environs in the near future. Note that the sampling of abalone is supplemental to the REMP.

Section 9

REFERENCES

1. DCPP Interdepartmental Administrative Procedure (IDAP), RP1.ID11, "Environmental Radiological Monitoring Procedure."

2. NRC Branch Technical Position, Revision 1, November 1979.

3. DCPP Program Directive, CY2, "Radiological Monitoring and Controls Program."

Appendix A

ENVIRONMENTAL RADIATION MONITORING PROGRAM SUMMARIES

Table A-1

Environmental Radiological Monitoring Program Summary

Name of Facility: Diablo Canyon Power Plant
Docket No.: 50-275 and 50-323
Location of Facility: San Luis Obispo, California (County, State)
Report Period: 1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator with Highest Annual Mean		All Indicator Locations	All Control Locations	Number of Reportable Occurrences
			Name, Distance and Direction	Mean[b] Range[b]	Mean[b] Range[b]	Mean[b] Range[b]	
Airborne (pCi/m^3)	**Cartridge**						
	^{131}I (364)				None detected	None detected	0
	Air Particulates						
	Gross Beta (364)		Sta. 8S2 1.1 mi., 128°	1.2E-2 3.0E-3–5.2E-2	1.1E-2(312/312) 3.0E-3–5.2E-2	1.1E-2(52/52) 3.0E-3–5.3E-2	0
	Gamma Isotopic (364)						
	^{131}I				None detected	None detected	0

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
ND Radionuclides of interest other than naturally occurring were not detected.

Table A-2

Environmental Radiological Monitoring Program Summary

Name of Facility: Diablo Canyon Power Plant
Docket No.: 50-275 and 50-323
Location of Facility: San Luis Obispo, California (County, State)
Report Period: 1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator with Highest Annual Mean		All Indicator Locations	All Control Locations	Number of Reportable Occurrences
			Name, Distance and Direction	Mean[b] Range[b]	Mean[b] Range[b]	Mean[b] Range[b]	
Direct radiation (mR)	TLD Packet[c] (372)	3 mR/qtr	Sta. 5S1 0.4 mi, 58°	22.1 mR/qtr (12/12) 21.0–23.0 mR/qtr	16.3 mR/qtr (360/360) 10.1–22.1 mR/qtr	Sta. 5F1 17.2 mR/qtr (12/12) 16.4–17.7 mR/qtr	0
				88.5 mR/yr	65.0 mR/yr (360/360) 40.3–88.5 mR/yr	68.7 mR/yr	

Table Notation:

(a) Sensitivity of TLD system.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) 96 TLD packets are distributed quarterly at 32 locations.

Table A-3a

Environmental Radiological Monitoring Program Summary

Name of Facility: Diablo Canyon Power Plant
Docket No.: 50-275 and 50-323
Location of Facility: San Luis Obispo, California (County, State)
Report Period: 1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator with Highest Annual Mean		All Indicator Locations	All Control Locations	Number of Reportable Occurrences
			Name, Distance and Direction	Mean[b] Range[b]	Mean[b] Range[b]	Mean[b] Range[b]	
Surface water (pCi/L)	Gamma Isotopic (34)				Sta. DCM Sta. OUT	Sta. 7C2	0
	^{54}Mn				None detected	None detected	
	^{59}Fe				None detected	None detected	
	^{58}Co				None detected	None detected	
	^{60}Co				None detected	None detected	
	^{65}Zn				None detected	None detected	
	^{95}Zr				None detected	None detected	
	^{95}Nb				None detected	None detected	
	^{131}I				None detected	None detected	
	^{134}Cs				None detected	None detected	
	^{137}Cs				None detected	None detected	
	^{140}Ba-La				None detected	None detected	
	Tritium Analysis (34)						
	^{3}H		Sta. DCM 0.2mi, 270°		9.558E2(2/22) (5.07E2-1.41E3)	None detected	0

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.

Table A-3b

Environmental Radiological Monitoring Program Summary

Name of Facility: Diablo Canyon Power Plant
Docket No.: 50-275 and 50-323
Location of Facility: San Luis Obispo, California (County, State)
Report Period: 1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Locations Name, Distance and Direction	Mean[b] Range[b]	Number of Reportable Occurrences
Drinking water (pCi/L)	Tritium (24)		Sta. 5S2, DW1	None detected	0
	Gamma Isotopic (24)				0
	^{54}Mn			None detected	
	^{59}Fe			None detected	
	^{58}Co			None detected	
	^{60}Co			None detected	
	^{65}Zn			None detected	
	^{95}Zr			None detected	
	^{95}Nb			None detected	
	^{131}I	2.6E0 (1/24)		None detected	
	^{134}Cs			None detected	
	^{137}Cs			None detected	
	^{140}Ba-La			None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.

Table A-4

Environmental Radiological Monitoring Program Summary

Name of Facility	Diablo Canyon Power Plant	Docket No.	50-275 and 50-323
Location of Facility	San Luis Obispo, California (County, State)	Report Period	1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator Location[c] Name, Distance and Direction	Indicator Locations Mean[b] Range[b]	All Control Locations Mean[b] Range[b]	Number of Reportable Occurrences
Mussels (pCi/kg original)	Gamma Isotopic (8)		Sta. DCM 0.2 mi., 270°	Sta. DCM	Sta. 7C2	0
	^{54}Mn	3.08E2 (1/8)		None detected	None detected	
	^{59}Fe			None detected	None detected	
	^{58}Co			None detected	None detected	
	^{60}Co			None detected	None detected	
	^{95}Nb			None detected	None detected	
	^{134}Cs			None detected	None detected	
	^{137}Cs			None detected	None detected	
	^{131}I			None detected	None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type.

Table A-5

Environmental Radiological Monitoring Program Summary

Name of Facility	Diablo Canyon Power Plant	Docket No.	50-275 and 50-323
Location of Facility	San Luis Obispo, California (County, State)	Report Period	1/1/00- 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator Location[c] Name, Distance and Direction	Indicator Locations Mean[b] Range[b]	All Control Locations Mean[b] Range[b]	Number of Reportable Occurrences
Fish (pCi/kg original)	Gamma Isotopic (16)		Sta. DCM 0.2 mi., 270°	Sta. DCM	Sta. 7C2	0
	^{54}Mn			None detected	None detected	
	^{59}Fe			None detected	None detected	
	^{58}Co			None detected	None detected	
	^{60}Co			None detected	None detected	
	^{65}Zn			None detected	None detected	
	^{134}Cs			None detected	None detected	
	^{137}Cs			None detected	None detected	
	^{131}I			None detected	None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.

(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.

(c) Only one station location for this sample type.

Table A-6

Environmental Radiological Monitoring Program Summary

Name of Facility	Diablo Canyon Power Plant	Docket No.	50-275 and 50-323
Location of Facility	San Luis Obispo, California (County, State)	Report Period	1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator Location[c] Name, Distance and Direction	Indicator Locations Mean[b] Range[b]	All Control Locations Mean[b] Range[b]	Number of Reportable Occurrences
Algae* (pCi/kg original)	Gamma Isotopic (23)		Sta. DCM 0.2 mi., 270°	Sta. DCM	Sta. 7C2	0
	^{54}Mn			None detected	None detected	
	^{59}Fe			None detected	None detected	
	^{57}Co			None detected	None detected	
	^{58}Co			None detected	None detected	
	^{60}Co			None detected	None detected	
	^{131}I			None detected	None detected	
	^{110m}Ag			None detected	None detected	
	^{137}Cs			None detected	None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type.
* These samples are supplemental samples.

Table A-7

Environmental Radiological Monitoring Program Summary

Name of Facility	Diablo Canyon Power Plant	Docket No.	50-275 and 50-323
Location of Facility	San Luis Obispo, California (County, State)	Report Period	1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Indicator Location[c] Name, Distance and Direction	Indicator Locations Mean[b] Range[b]	All Control Locations Mean[b] Range[b]	Number of Reportable Occurrences
Sediment (pCi/kg dry)	Gamma Isotopic (2)		Sta. DCM 0.2 mi., 270°	Sta. DCM	Sta. 7C2	0
	^{54}Mn			None detected	None detected	
	^{59}Fe			None detected	None detected	
	^{58}Co			None detected	None detected	
	^{60}Co			None detected	None detected	
	^{65}Zn			None detected	None detected	
	^{134}Cs			None detected	None detected	
	^{137}Cs			None detected	None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type.

Table A-8

Environmental Radiological Monitoring Program Summary

Name of Facility	Diablo Canyon Power Plant	Docket No.	50-275 and 50-323
Location of Facility	San Luis Obispo, California (County, State)	Report Period	1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Location with Highest Annual Mean		Locations Mean[b] Range[b]	Number of Reportable Occurrences
			Name, Distance and Direction	Mean[b] Range[b]		
Food crops* (pCi/kg original)	Gamma Isotopic (33)				Sta. 7C1, 7G1, 5F2, 6C1	0
	^{131}I				None detected	
	^{134}Cs				None detected	
	^{137}Cs				None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.

(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.

* These samples are supplemental samples.

Table A-9

Environmental Radiological Monitoring Program Summary

Name of Facility	Diablo Canyon Power Plant	Docket No.	50-275 and 50-323
Location of Facility	San Luis Obispo, California (County, State)	Report Period	1/1/00 - 12/31/00

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	Location[c] Name, Distance and Direction	Mean[b] Range[b]	Number of Reportable Occurrences
Milk* (pCi/L)	^{131}I (12)	1.25E0 (1/12)	Sta 5F2, 12.6 mi, 60°	None detected	0
	Gamma Isotopic (12)				0
	^{134}Cs			None detected	
	^{137}Cs			None detected	
	^{140}Ba-La			None detected	

Table Notation:

(a) Unless specified, all required LLDs were met in accordance with Table 3.
(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis e.g. (10/12) means 10 samples out of 12 collected showed activity.
(c) Only one station location for this sample type.
ND: Radionuclides of interest other than naturally occurring were not detected.
* These samples are supplemental samples.

Table A-10

Analytics Performance Evaluation Program[a]

Sample/Analysis	Radionuclide	Month	TES	Analytics	Ratio	Evaluation
Milk/Gamma	I-131	December	85.23	85	1.00	Agreement
	Ce-141	December	353.9	356	.99	Agreement
	Cr-51	December	518.2	503	1.03	Agreement
	Cs-134	December	75.23	85	.89	Agreement
	Cs-137	December	210.2	199	1.06	Agreement
	Mn-54	December	160	152	1.05	Agreement
	Fe-59	December	83.81	82	1.02	Agreement
	Zn-65	December	155.2	148	1.05	Agreement
	Co-60	December	187.2	184	1.02	Agreement
	Co-58	December	78.42	76	1.03	Agreement
Water/Gamma	Cr-51	December	479.9	532	.90	Agreement
	Mn-54	December	166.8	161	1.04	Agreement
	Co-58	December	77.1	81	.95	Agreement
	Fe-59	December	93.5	86	1.09	Agreement
	Co-60	December	200.9	194	1.04	Agreement
	Zn-65	December	159.7	156	1.02	Agreement
	Cs-134	December	78.6	90	.87	Agreement
	Cs-137	December	216.4	210	1.03	Agreement
	Ce-141	December	378.6	376	1.01	Agreement
	I-131	December	51.4	60	.86	Agreement
Soil/Gamma	Mn-54	May	.299	.300	1.00	Agreement
	Co-60	May	.369	.359	1.03	Agreement
	Zn-65	May	.379	.375	1.01	Agreement
	Cs-134	May	.218	.232	.94	Agreement
	Cs-137	May	.644	.610	1.06	Agreement
	Ce-141	May	.169.	.175	.97	Agreement
	Cr-51	May	.529	.536	.99	Agreement
	Co-58	May	.247	.263	.94	Agreement
	Fe-59	May	.124	.128	.97	Agreement
	Cd-109	May	.784	Not Measured	Not Measured	
Vegetation/Gamma	Ce-141	December	.758	.687	1.10	Agreement
	Cr-51	December	1.06	.971	1.09	Agreement
	Cs-134	December	.151	.164	.92	Agreement
	Cs-137	December	.396	.384	1.03	Agreement
	Co-58	December	.157	.148	1.06	Agreement
	Mn-54	December	.320	.294	1.09	Agreement
	Fe-59	December	.160	.158	1.01	Agreement
	Zn-65	December	.298	.285	1.05	Agreement
	Co-60	December	.385	.355	1.08	Agreement
	Ba-133	December	.020	Not Measured	Not Measured	
Cartridge/Gamma	I-131	May	76	71	1.07	Agreement
Water/Alpha	Gross Alpha	May	40.9	44	.93	Agreement
Water/Beta	Gross Beta	May	140	170	.82	Agreement
Water/Tritium	Tritium	May	11100	11400	.97	Agreement
Particulate Filter	Alpha	December	23.7	32	.74	Agreement
Particulate Filter	Beta	December	163.1	174	.94	Agreement

Table Notation:
(a) All of the values shown are relative; therefore, the units for total activity or concentration levels are not shown.

Appendix B

ANALYTICAL RESULTS

Table B-1

Diablo Canyon Power Plant 2000 Annual Report
State Cross-Check Results[a]

Sample	Station	Sample No.	Collection Date	Gamma Activity pCi/L Original	K-40 Activity pCi/L Original	H-3 Activity pCi/L	I-131 Activity pCi/L
Drinking Water	DW1	00A39	01/25/00	ND	9.8 ± 22.8	ND	ND
		00B04	02/22/00	ND	21.2 ± 7.8	ND	ND
		00B94	03/23/00	ND	ND	ND	ND
		00C59	04/18/00	ND	ND	ND	ND
		00D83	05/25/00	ND	33 ± 29	ND	ND
		00E20	06/20/00	ND	ND	ND	ND
		00F14	07/24/00	ND	14 ± 6	ND	ND
		00F89	08/25/00	ND	ND	ND	ND
		00G40	09/19/00	ND	ND	ND	ND
		00H05	10/24/00	ND	18 ± 17	ND	ND
		00H87	11/20/00	ND	ND	ND	ND
		00I47	12/12/00	ND	ND	ND	ND
Milk	5F2	00A40	01/25/00	ND	1368 ± 126	—	ND
		00B06	02/22/00	ND	1326 ± 143	—	ND
		00B84	03/21/00	ND	1290 ± 139	—	ND
		00C60	04/20/00	ND	1409 ± 138	—	ND
		00D63	05/23/00	ND	1351 ± 136	—	ND
		00E18	06/20/00	ND	1119 ± 125	—	ND
		00F12	07/24/00	ND	1228 ± 126	—	ND
		00F90	08/25/00	ND	1322 ± 136	—	ND
		00G41	09/19/00	ND	1289 ± 136	—	ND
		00H06	10/23/00	ND	1231 ± 119	—	ND
		00H88	11/20/00	ND	1197 ± 126	—	ND
		00I48	12/12/00	ND	1283 ± 118	—	ND

Table Notation:

(a) Airborne radioisotope analyses for stations 5F1 and 7D1 are located in Table B-3. Direct Radiation measurements for stations MT1, 4D1, 5F3, 7D1, and 7C1 are located in Table B-4.

Table B-1 (Continued)

Diablo Canyon Power Plant 2000 Annual Report
State Cross-Check Results

Sample	Station	Sample No.	Collection Date	Gamma Activity pCi/L Original	K-40 Activity pCi/L Original	H-3 Activity pCi/L	I-131 Activity pCi/L
Outfall Water	OUT	00A37	01/25/00	ND	291 ± 58	ND	—
		00B03	02/22/00	ND	334 ± 41	ND	—
		00B92	03/23/00	ND	350 ± 55	ND	—
		00C57	04/18/00	ND	323 ± 39	ND	—
		00D81	05/25/00	ND	315 ± 64	ND	—
		00E21	06/20/00	ND	329 ± 47	ND	—
		00F15	07/24/00	ND	317 ± 39	ND	—
		00F87	08/25/00	ND	310 ± 49	ND	—
		00G38	09/19/00	ND	322 ± 43	ND	—
		00H03	10/24/00	ND	262 ± 62	ND	—
		00H85	11/20/00	ND	311 ± 51	ND	—
		00I45	12/12/00	ND	366 ± 65	ND	—
Drinking Water	5S2	00A38	01/25/00	ND	ND	ND	ND
		00B05	02/22/00	ND	ND	ND	ND
		00B93	03/23/00	ND	ND	ND	ND
		00C58	04/18/00	ND	ND	ND	ND
		00D82	05/25/00	ND	ND	ND	ND
		00E19	06/20/00	ND	ND	ND	ND
		00F13	07/24/00	ND	ND	ND	ND
		00F88	08/25/00	ND	ND	ND	ND
		00G39	09/19/00	ND	ND	ND	ND
		00H04	10/24/00	ND	ND	ND	ND
		00H86	11/20/00	ND	ND	ND	ND
		00I46	12/12/00	ND	ND	ND	ND

Table B-1 (Continued)

Diablo Canyon Power Plant 2000 Annual Report
State Cross-Check Results

Sample	Station	Sample No.	Collection Date	Gamma Activity pCi/L Original	K-40 Activity pCi/L Original	H-3 Activity pCi/L	I-131 Activity pCi/L
Giant Kelp[b]	DCM	00A61	01/28/00	ND	13070 ± 1470	—	—
		00D75	05/23/00	ND	8493 ± 857	—	—
		00F36	07/28/00	ND	4417 ± 425	—	—
		00H35	10/25/00	ND	7301 ± 750	—	—
Vegetable Greens[b]	7G1	00A56	01/31/00	^{7}Be 207 ± 93	3386 ± 344	—	—
		00D02	05/09/00	ND	5198 ± 564	—	—
		00F76	08/24/00	ND	2850 ± 329	—	—
		00H72	11/07/00	^{7}Be 77 ± 58	5059 ± 489	—	—
Fish[b]	DCM	00C40	04/04/00	ND	8036 ± 902	—	—
		00E52	06/22/00	ND	11620 ± 1150	—	—
		00G62	09/25/00	ND	4829 ± 662	—	—
		00I20	12/04/00	ND	2617 ± 304	—	—
Sediment[c]	DCM	00I26	12/04/00	ND	12710 ± 1300	—	—

Table Notation:

(b) Results reported in pCi/kg original sample.

(c) Results reported in pCi/kg dry sample.

Table B-2

Diablo Canyon Power Plant 2000 Annual Report
Marine and Terrestrial Sample Data
Detected Nuclides (Nonnaturally Occurring) - pCi/kg Original

Description	Sta. No.	Collection Date	Sam. No.	^{58}Co	^{60}Co	^{54}Mn	^{137}Cs	3H
Surface Water (Seawater)	DCM	03/01/00	00B35					1.41E+3 ± 3.78E+2
Surface Water (Seawater)	DCM	05/23/00	00D64					5.07E+2 ± 2.12E+2
Commercial Snapper	7D3	09/06/00	00G10				2.70E+0 ± 1.85E+0	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 0S2 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
12/29/99-01/07/00	617.9	01/27/00	.025	.002	
01/07/00-01/12/00	326.8	02/01/00	.015	.002	
01/12/00-01/19/00	463.2	02/09/00	.011	.001	
01/19/00-01/26/00	455.1	02/09/00	.008	.001	
01/26/00-02/02/00	458.2	02/17/00	.012	.001	
02/02/00-02/09/00	454.6	02/26/00	.013	.001	
02/09/00-02/16/00	477.4	03/04/00	.003	.001	
02/16/00-02/23/00	474.7	03/04/00	.005	.001	
02/23/00-03/01/00	461.2	03/11/00	.005	.001	
03/01/00-03/08/00	473.4	03/27/00	.006	.001	
03/08/00-03/15/00	467.5	04/07/00	.008	.001	
03/15/00-03/22/00	473.2	04/07/00	.008	.001	
03/22/00-03/29/00	462.1	04/12/00	.010	.001	
03/29/00-04/05/00	467.4	04/20/00	.016	.002	
04/05/00-04/12/00	480.9	04/25/00	.009	.001	
04/12/00-04/19/00	486.3	04/26/00	.004	.001	
04/19/00-04/26/00	474.1	05/03/00	.007	.001	
04/26/00-05/03/00	464.1	05/09/00	.006	.001	
05/03/00-05/10/00	466.3	05/19/00	.004	.001	
05/10/00-05/17/00	469.1	05/27/00	.006	.001	
05/17/00-05/24/00	465.4	06/03/00	.011	.001	
05/24/00-05/31/00	486.1	06/09/00	.006	.001	
05/31/00-06/07/00	487.1	06/17/00	.010	.001	
06/07/00-06/14/00	461.6	06/22/00	.004	.001	
06/14/00-06/21/00	478.8	06/28/00	.006	.001	
06/21/00-06/28/00	478.6	07/11/00	.008	.001	
06/28/00-07/05/00	471.1	07/18/00	.005	.001	
07/05/00-07/12/00	483.6	07/21/00	.004	.001	
07/12/00-07/19/00	478.3	08/10/00	.007	.001	
07/19/00-07/26/00	477.5	08/12/00	.006	.001	
07/26/00-08/02/00	476.4	08/18/00	.004	.001	
08/02/00-08/09/00	490.1	08/23/00	.004	.001	
08/09/00-08/16/00	485.5	08/26/00	.007	.001	
08/16/00-08/23/00	471.9	09/09/00	.006	.001	
08/23/00-08/30/00	485.3	09/22/00	.009	.001	
08/30/00-09/06/00	477.2	09/25/00	.010	.001	
09/06/00-09/13/00	478.7	09/26/00	.015	.002	
09/13/00-09/20/00	482.5	09/28/00	.008	.001	
09/20/00-09/27/00	485.4	10/05/00	.012	.001	
09/27/00-10/04/00	491.1	10/10/00	.019	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 0S2 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	469.9	10/18/00	.014	.002	
10/11/00-10/18/00	586.0	10/17/00	.012	.001	
10/18/00-10/25/00	379.8	11/04/00	.018	.002	
10/25/00-11/01/00	456.0	11/07/00	.007	.001	
*11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	455.4	12/05/00	.011	.001	
11/15/00-11/22/00	466.2	12/05/00	.026	.003	
11/22/00-11/29/00	458.2	12/08/00	.027	.003	
11/29/00-12/06/00	459.9	12/12/00	.032	.003	
12/06/00-12/13/00	457.8	12/20/00	.019	.002	
12/13/00-12/20/00	464.4	12/29/00	.015	.002	
12/20/00-12/27/00	463.0	01/04/01	.020	.002	
12/27/00-01/03/01	467.2	01/14/01	.051	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/01/2000	ND	
03/29/00-06/28/00	07/25/2000	ND	
06/28/00-09/27/00	10/18/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*Air Samples Lost in Mail

Table Notation:

ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 1S1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
12/29/99-01/07/00	561.4	01/27/00	.023	.002	
01/07/00-01/12/00	300.4	02/01/00	.015	.002	
01/12/00-01/19/00	468.7	02/09/00	.010	.001	
01/19/00-01/26/00	463.7	02/09/00	.007	.001	
01/26/00-02/02/00	471.9	02/17/00	.010	.001	
02/02/00-02/09/00	465.0	02/26/00	.013	.001	
02/09/00-02/16/00	470.6	03/04/00	.003	.001	
02/16/00-02/23/00	478.4	03/05/00	.005	.001	
02/23/00-03/01/00	457.8	03/10/00	.004	.001	
03/01/00-03/08/00	480.6	03/27/00	.004	.001	
03/08/00-03/15/00	472.8	04/07/00	.005	.001	
03/15/00-03/22/00	476.4	04/09/00	.008	.001	
03/22/00-03/29/00	463.1	04/12/00	.009	.001	
03/29/00-04/05/00	470.8	04/20/00	.016	.002	
04/05/00-04/12/00	478.6	04/25/00	.008	.001	
04/12/00-04/19/00	472.7	04/26/00	.004	.001	
04/19/00-04/26/00	465.2	05/03/00	.007	.001	
04/26/00-05/03/00	460.1	05/09/00	.006	.001	
05/03/00-05/10/00	466.0	05/19/00	.004	.001	
05/10/00-05/17/00	469.0	05/27/00	.007	.001	
05/17/00-05/24/00	470.4	06/03/00	.012	.001	
05/24/00-05/31/00	477.7	06/09/00	.006	.001	
05/31/00-06/07/00	489.7	06/17/00	.010	.001	
06/07/00-06/14/00	455.6	06/22/00	.004	.001	
06/14/00-06/21/00	400.2	06/28/00	.006	.001	
06/21/00-06/28/00	381.1	07/11/00	.008	.001	
*06/28/00-07/05/00	372.2	07/18/00	.004	.001	
07/05/00-07/12/00	373.2	07/20/00	.005	.001	
07/12/00-07/19/00	488.1	08/10/00	.007	.001	
07/19/00-07/26/00	498.6	08/11/00	.006	.001	
07/26/00-08/02/00	481.1	08/18/00	.004	.001	
08/02/00-08/09/00	498.7	08/23/00	.004	.001	
08/09/00-08/16/00	498.2	08/26/00	.005	.001	
08/16/00-08/23/00	489.0	09/09/00	.006	.001	
08/23/00-08/30/00	496.7	09/22/00	.009	.001	
08/30/00-09/06/00	490.4	09/25/00	.009	.001	
09/06/00-09/13/00	479.7	09/26/00	.014	.002	
09/13/00-09/20/00	483.2	09/28/00	.009	.001	
09/20/00-09/27/00	490.4	10/05/00	.012	.001	
09/27/00-10/04/00	498.1	10/10/00	.021	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 1S1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	479.1	10/18/00	.014	.002	
10/11/00-10/18/00	489.3	10/27/00	.016	.002	
10/18/00-10/25/00	477.7	11/04/00	.014	.002	
**10/25/00-11/01/00	81.5	11/07/00	.011	.004	
***11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	475.8	12/05/00	.009	.001	
11/15/00-11/22/00	481.7	12/05/00	.025	.003	
11/22/00-11/29/00	470.5	12/08/00	.024	.002	
11/29/00-12/06/00	470.5	12/12/00	.030	.003	
12/06/00-12/13/00	474.7	12/20/00	.018	.002	
12/13/00-12/20/00	475.0	12/29/00	.013	.002	
12/20/00-12/27/00	475.9	01/04/01	.020	.002	
12/27/00-01/03/01	474.9	01/14/01	.050	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/08/2000	ND	
03/29/00-06/28/00	07/25/2000	ND	
06/28/00-09/27/00	10/19/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*5-Day Sample Time
**Equipment Malfunction
***Air Samples Lost in Mail

Table Notation:
ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 5F1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
12/29/99-01/07/01	604.6	01/27/00	.027	.003	
01/07/00-01/12/00	321.5	02/01/00	.018	.002	
01/12/00-01/19/00	447.2	02/09/00	.012	.001	
01/19/00-01/26/00	441.7	02/09/00	.007	.001	
01/26/00-02/02/00	447.7	02/17/00	.012	.001	
02/02/00-02/09/00	456.4	02/26/00	.013	.001	
02/09/00-02/16/00	438.5	03/04/00	.003	.001	
02/16/00-02/23/00	447.4	03/04/00	.003	.001	
02/23/00-03/01/00	422.2	03/10/00	.004	.001	
03/01/00-03/08/00	437.1	03/27/00	.006	.001	
03/08/00-03/15/00	440.9	04/07/00	.008	.001	
03/15/00-03/22/00	449.9	04/06/00	.008	.001	
03/22/00-03/29/00	436.2	04/12/00	.008	.001	
03/29/00-04/05/00	434.2	04/20/00	.015	.002	
04/05/00-04/12/00	451.8	04/24/00	.008	.001	
04/12/00-04/19/00	448.0	04/25/00	.003	.001	
04/19/00-04/26/00	422.8	05/03/00	.006	.001	
04/26/00-05/03/00	440.6	05/08/00	.006	.001	
05/03/00-05/10/00	439.2	05/18/00	.004	.001	
05/10/00-05/17/00	434.5	05/26/00	.007	.001	
05/17/00-05/24/00	481.6	06/03/00	.012	.001	
05/24/00-05/31/00	439.1	06/09/00	.006	.001	
05/31/00-06/07/00	470.7	06/16/00	.011	.001	
06/07/00-06/14/00	444.0	06/21/00	.004	.001	
06/14/00-06/21/00	460.1	06/28/00	.005	.001	
06/21/00-06/28/00	459.4	07/11/00	.008	.001	
06/28/00-07/05/00	456.7	07/17/00	.005	.001	
07/05/00-07/12/00	464.1	07/20/00	.004	.001	
07/12/00-07/19/00	508.4	08/10/00	.008	.001	
07/19/00-07/26/00	481.0	08/10/00	.006	.001	
07/26/00-08/02/00	423.1	08/18/00	.005	.001	
08/02/00-08/09/00	454.2	08/22/00	.006	.001	
08/09/00-08/16/00	449.4	08/26/00	.005	.001	
08/16/00-08/23/00	438.5	09/09/00	.007	.001	
08/23/00-08/30/00	471.7	09/21/00	.009	.001	
08/30/00-09/06/00	464.0	09/25/00	.009	.001	
09/06/00-09/13/00	463.7	09/25/00	.015	.002	
09/13/00-09/20/00	457.5	09/27/00	.010	.001	
09/20/00-09/27/00	482.1	10/05/00	.012	.001	
09/27/00-10/04/00	464.8	10/10/00	.017	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 5F1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	444.8	10/18/00	.014	.002	
10/11/00-10/18/00	482.1	10/27/00	.014	.002	
10/18/00-10/25/00	476.5	11/04/00	.013	.001	
10/25/00-11/01/00	481.6	11/06/00	.006	.001	
*11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	477.7	12/05/00	.010	.001	
11/15/00-11/22/00	481.6	12/05/00	.029	.003	
11/22/00-11/29/00	483.8	12/08/00	.025	.003	
11/29/00-12/06/00	483.1	12/12/00	.035	.003	
12/06/00-12/13/00	485.1	12/20/00	.020	.002	
12/13/00-12/20/00	482.3	12/29/00	.013	.002	
12/20/00-12/27/00	483.3	01/03/01	.022	.002	
12/27/00-01/03/01	483.8	01/14/01	.053	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/01/2000	ND	
03/29/00-06/28/00	07/24/2000	ND	
06/28/00-09/27/00	10/16/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*Air Samples Lost in Mail

Table Notation:

ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 7D1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
*12/29/99-01/07/00	507.4	01/27/00	.028	.003	
01/07/00-01/12/00	318.3	02/01/00	.018	.002	
01/12/00-01/19/00	515.9	02/09/00	.011	.001	
01/19/00-01/26/00	532.3	02/09/00	.009	.001	
01/26/00-02/02/00	539.9	02/17/00	.009	.001	
02/02/00-02/09/00	542.0	02/26/00	.013	.001	
02/09/00-02/16/00	544.9	03/04/00	.003	.001	
02/16/00-02/23/00	548.7	03/04/00	.005	.001	
02/23/00-03/01/00	531.6	03/10/00	.005	.001	
03/01/00-03/08/00	556.0	03/27/00	.006	.001	
03/08/00-03/15/00	553.1	04/01/00	.008	.001	
03/15/00-03/22/00	559.9	04/07/00	.008	.001	
03/22/00-03/29/00	543.4	04/12/00	.010	.001	
03/29/00-04/05/00	546.3	04/20/00	.018	.002	
04/05/00-04/12/00	560.0	04/25/00	.009	.001	
04/12/00-04/19/00	434.3	04/25/00	.004	.001	
04/19/00-04/26/00	443.6	05/03/00	.007	.001	
04/26/00-05/03/00	463.0	05/09/00	.006	.001	
05/03/00-05/10/00	482.7	05/18/00	.005	.001	
05/10/00-05/17/00	495.9	05/27/00	.007	.001	
05/17/00-05/24/00	399.7	06/03/00	.011	.001	
05/24/00-05/31/00	452.1	06/09/00	.008	.001	
05/31/00-06/07/00	483.8	06/17/00	.011	.001	
06/07/00-06/14/00	454.6	06/22/00	.004	.001	
06/14/00-06/21/00	484.9	06/28/00	.005	.001	
06/21/00-06/28/00	495.6	07/11/00	.010	.001	
06/28/00-07/05/00	499.3	07/17/00	.005	.001	
07/05/00-07/12/00	505.2	07/20/00	.004	.001	
07/12/00-07/19/00	506.9	08/10/00	.007	.001	
07/19/00-07/26/00	491.9	08/11/00	.007	.001	
07/26/00-08/02/00	417.2	08/18/00	.005	.001	
08/02/00-08/09/00	423.6	08/22/00	.005	.001	
08/09/00-08/16/00	435.5	08/26/00	.006	.001	
08/16/00-08/23/00	432.7	09/09/00	.007	.001	
08/23/00-08/30/00	445.0	09/22/00	.009	.001	
08/30/00-09/06/00	462.2	09/25/00	.010	.001	
09/06/00-09/13/00	458.4	09/26/00	.013	.001	
09/13/00-09/20/00	461.5	09/28/00	.009	.001	
09/20/00-09/27/00	464.8	10/05/00	.011	.001	
09/27/00-10/04/00	473.6	10/10/00	.018	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 7D1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	456.9	10/18/00	.016	.002	
10/11/00-10/18/00	469.3	10/27/00	.018	.002	
10/18/00-10/25/00	458.7	11/04/00	.015	.002	
10/25/00-11/01/00	455.2	11/07/00	.007	.001	
**11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	468.5	12/05/00	.009	.001	
11/15/00-11/22/00	477.0	12/05/00	.031	.003	
11/22/00-11/29/00	480.8	12/08/00	.026	.003	
11/29/00-12/06/00	475.9	12/12/00	.032	.003	
12/06/00-12/13/00	479.3	12/20/00	.021	.002	
12/13/00-12/20/00	487.2	12/29/00	.014	.002	
12/20/00-12/27/00	487.5	01/04/01	.021	.002	
12/27/00-01/03/01	486.2	01/14/01	.048	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/01/2000	ND	
03/29/00-06/28/00	07/24/2000	ND	
06/28/00-09/27/00	10/16/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*Equipment failure
**Air Samples Lost in Mail

Table Notation:

ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 8S1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
12/29/99-01/07/00	580.8	01/27/00	.026	.003	
01/07/00-01/12/00	297.6	02/01/00	.015	.002	
01/12/00-01/19/00	459.0	02/09/00	.009	.001	
01/19/00-01/26/00	458.6	02/09/00	.008	.001	
01/26/00-02/02/00	460.7	02/17/00	.010	.001	
02/02/00-02/09/00	454.6	02/26/00	.013	.001	
02/09/00-02/16/00	457.4	03/04/00	.003	.001	
02/16/00-02/23/00	460.3	03/04/00	.005	.001	
02/23/00-03/01/00	454.5	03/10/00	.004	.001	
03/01/00-03/08/00	460.5	03/27/00	.006	.001	
03/08/00-03/15/00	461.6	04/07/00	.007	.001	
03/15/00-03/22/00	470.8	04/07/00	.008	.001	
03/22/00-03/29/00	452.9	04/12/00	.007	.001	
03/29/00-04/05/00	459.8	04/20/00	.017	.002	
04/05/00-04/12/00	470.2	04/25/00	.008	.001	
04/12/00-04/19/00	478.0	04/25/00	.004	.001	
04/19/00-04/26/00	462.1	05/03/00	.007	.001	
04/26/00-05/03/00	465.1	05/09/00	.006	.001	
05/03/00-05/10/00	470.2	05/18/00	.004	.001	
05/10/00-05/17/00	472.8	05/27/00	.006	.001	
05/17/00-05/24/00	470.2	06/03/00	.011	.001	
05/24/00-05/31/00	480.1	06/09/00	.006	.001	
05/31/00-06/07/00	453.6	06/16/00	.011	.001	
06/07/00-06/14/00	467.1	06/22/00	.003	.001	
06/14/00-06/21/00	510.0	06/28/00	.005	.001	
06/21/00-06/28/00	515.7	07/11/00	.008	.001	
06/28/00-07/05/00	511.4	07/17/00	.004	.001	
07/05/00-07/12/00	508.9	07/20/00	.004	.001	
07/12/00-07/19/00	513.4	08/10/00	.007	.001	
07/19/00-07/26/00	509.5	08/11/00	.006	.001	
07/26/00-08/02/00	505.1	08/18/00	.003	.001	
08/02/00-08/09/00	514.8	08/23/00	.004	.001	
08/09/00-08/16/00	512.7	08/26/00	.005	.001	
08/16/00-08/23/00	504.4	09/09/00	.007	.001	
08/23/00-08/30/00	508.7	09/22/00	.009	.001	
08/30/00-09/06/00	523.7	09/25/00	.010	.001	
09/06/00-09/13/00	518.5	09/26/00	.013	.001	
09/13/00-09/20/00	515.0	09/28/00	.008	.001	
09/20/00-09/27/00	521.0	10/05/00	.012	.001	
09/27/00-10/04/00	525.3	10/10/00	.019	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 8S1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	501.7	10/18/00	.014	.002	
10/11/00-10/18/00	495.2	10/27/00	.015	.002	
10/18/00-10/25/00	482.6	11/04/00	.015	.002	
10/25/00-11/01/00	487.2	11/07/00	.006	.001	
*11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	459.3	12/05/00	.010	.001	
11/15/00-11/22/00	457.7	12/05/00	.029	.003	
11/22/00-11/29/00	459.1	12/08/00	.025	.003	
11/29/00-12/06/00	455.7	12/12/00	.037	.004	
12/06/00-12/13/00	459.0	12/20/00	.019	.002	
12/13/00-12/20/00	458.6	12/29/00	.014	.002	
12/20/00-12/27/00	461.9	01/04/01	.021	.002	
12/27/00-01/03/01	459.1	01/14/01	.052	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/01/2000	ND	
03/29/00-06/28/00	07/24/2000	ND	
06/28/00-09/27/00	10/16/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*Air Samples Lost in Mail

Table Notation:

ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 8S2 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
12/29/99-01/07/00	607.8	01/27/00	.026	.003	
01/07/00-01/12/00	320.5	02/01/00	.016	.002	
01/12/00-01/19/00	462.1	02/09/00	.009	.001	
01/19/00-01/26/00	457.8	02/09/00	.009	.001	
01/26/00-02/02/00	471.5	02/17/00	.011	.001	
02/02/00-02/09/00	459.9	02/26/00	.016	.002	
02/09/00-02/16/00	469.8	03/04/00	.005	.001	
02/16/00-02/23/00	477.0	03/04/00	.005	.001	
02/23/00-03/01/00	463.9	03/10/00	.004	.001	
03/01/00-03/08/00	471.6	03/27/00	.006	.001	
03/08/00-03/15/00	475.5	04/07/00	.008	.001	
03/15/00-03/22/00	480.9	04/07/00	.009	.001	
03/22/00-03/29/00	467.5	04/12/00	.008	.001	
03/29/00-04/05/00	472.0	04/20/00	.018	.002	
04/05/00-04/12/00	484.2	04/25/00	.009	.001	
04/12/00-04/19/00	456.7	04/25/00	.004	.001	
04/19/00-04/26/00	448.5	05/03/00	.006	.001	
04/26/00-05/03/00	440.5	05/09/00	.007	.001	
05/03/00-05/10/00	443.7	05/18/00	.004	.001	
05/10/00-05/17/00	446.1	05/27/00	.007	.001	
05/17/00-05/24/00	441.7	06/03/00	.010	.001	
05/24/00-05/31/00	445.5	06/09/00	.006	.001	
05/31/00-06/07/00	448.9	06/17/00	.011	.001	
06/07/00-06/14/00	426.5	06/22/00	.004	.001	
06/14/00-06/21/00	444.2	06/28/00	.006	.001	
06/21/00-06/28/00	443.2	07/11/00	.010	.001	
06/28/00-07/05/00	444.0	07/18/00	.005	.001	
07/05/00-07/12/00	445.1	07/20/00	.005	.001	
07/12/00-07/19/00	448.0	08/10/00	.009	.001	
07/19/00-07/26/00	449.9	08/11/00	.006	.001	
07/26/00-08/02/00	456.3	08/18/00	.003	.001	
08/02/00-08/09/00	456.2	08/23/00	.005	.001	
08/09/00-08/16/00	454.1	08/26/00	.006	.001	
08/16/00-08/23/00	441.6	09/09/00	.006	.001	
08/23/00-08/30/00	452.3	09/22/00	.008	.001	
08/30/00-09/06/00	451.0	09/25/00	.010	.001	
09/06/00-09/13/00	446.3	09/26/00	.014	.002	
09/13/00-09/20/00	444.9	09/28/00	.009	.001	
09/20/00-09/27/00	446.3	10/05/00	.016	.002	
09/27/00-10/04/00	451.7	10/10/00	.017	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station 8S2 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	432.9	10/18/00	.016	.002	
10/11/00-10/18/00	473.9	10/27/00	.016	.002	
10/18/00-10/25/00	464.5	11/04/00	.015	.002	
10/25/00-11/01/00	456.7	11/07/00	.008	.001	
*11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	467.9	12/05/00	.010	.001	
11/15/00-11/22/00	471.1	12/05/00	.030	.003	
11/22/00-11/29/00	473.1	12/08/00	.027	.003	
11/29/00-12/06/00	471.1	12/12/00	.033	.003	
12/06/00-12/13/00	469.0	12/20/00	.019	.002	
12/13/00-12/20/00	473.2	12/29/00	.015	.002	
12/20/00-12/27/00	468.7	01/04/01	.020	.002	
12/27/00-01/03/01	470.5	01/14/01	.052	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/01/2000	ND	
03/29/00-06/28/00	07/24/2000	ND	
06/28/00-09/27/00	10/18/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*Air Samples Lost in Mail

Table Notation:

ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station MT1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
12/29/99-01/07/00	617.4	01/27/00	.023	.002	
01/07/00-01/12/00	322.3	02/01/00	.029	.003	
01/12/00-01/19/00	471.6	02/09/00	.011	.001	
01/19/00-01/26/00	461.6	02/09/00	.008	.001	
01/26/00-02/02/00	474.0	02/17/00	.011	.001	
02/02/00-02/09/00	465.0	02/26/00	.012	.001	
02/09/00-02/16/00	472.0	03/03/00	.003	.001	
02/16/00-02/23/00	463.6	03/04/00	.005	.001	
02/23/00-03/01/00	454.8	03/10/00	.005	.001	
03/01/00-03/08/00	470.7	03/27/00	.005	.001	
03/08/00-03/15/00	470.7	04/07/00	.008	.001	
03/15/00-03/22/00	470.5	04/06/00	.007	.001	
03/22/00-03/29/00	461.5	04/12/00	.009	.001	
03/29/00-04/05/00	463.2	04/20/00	.016	.002	
04/05/00-04/12/00	479.9	04/24/00	.008	.001	
04/12/00-04/19/00	476.7	04/25/00	.004	.001	
04/19/00-04/26/00	472.4	05/03/00	.007	.001	
04/26/00-05/03/00	467.7	05/08/00	.006	.001	
05/03/00-05/10/00	473.4	05/18/00	.004	.001	
05/10/00-05/17/00	469.3	05/26/00	.008	.001	
05/17/00-05/24/00	451.4	06/03/00	.011	.001	
05/24/00-05/31/00	460.6	06/09/00	.006	.001	
05/31/00-06/07/00	475.0	06/16/00	.011	.001	
06/07/00-06/14/00	443.5	06/21/00	.003	.001	
06/14/00-06/21/00	463.3	06/28/00	.005	.001	
06/21/00-06/28/00	455.8	07/11/00	.007	.001	
06/28/00-07/05/00	454.1	07/17/00	.006	.001	
07/05/00-07/12/00	459.0	07/20/00	.004	.001	
07/12/00-07/19/00	453.4	08/10/00	.007	.001	
07/19/00-07/26/00	454.6	08/10/00	.006	.001	
07/26/00-08/02/00	454.3	08/18/00	.003	.001	
08/02/00-08/09/00	457.7	08/22/00	.005	.001	
08/09/00-08/16/00	462.8	08/25/00	.007	.001	
08/16/00-08/23/00	444.5	09/09/00	.006	.001	
08/23/00-08/30/00	459.9	09/21/00	.009	.001	
08/30/00-09/06/00	473.7	09/25/00	.011	.001	
09/06/00-09/13/00	467.7	09/25/00	.012	.001	
09/13/00-09/20/00	463.4	09/27/00	.008	.001	
09/20/00-09/27/00	464.7	10/05/00	.012	.002	
09/27/00-10/04/00	474.2	10/10/00	.018	.002	

Table B-3

Diablo Canyon Power Plant 2000 Annual Report
Airborne Radioactivity
Station MT1 (pCi/m^3)

Collection Period	Volume (m^3)	Counting Date	Gross Beta Activity	2Sigma	Gamma Scan
10/04/00-10/11/00	453.3	10/18/00	.016	.002	
10/11/00-10/18/00	398.1	10/27/00	.015	.002	
10/18/00-10/25/00	427.0	11/04/00	.014	.002	
10/25/00-11/01/00	434.9	11/06/00	.007	.001	
*11/01/00-11/08/00	N/A	N/A	N/A	N/A	
11/08/00-11/15/00	458.7	12/05/00	.008	.001	
11/15/00-11/22/00	464.7	12/05/00	.032	.003	
11/22/00-11/29/00	457.4	12/08/00	.025	.003	
11/29/00-12/06/00	467.3	12/12/00	.035	.003	
12/06/00-12/13/00	470.3	12/20/00	.019	.002	
12/13/00-12/20/00	471.7	12/29/00	.014	.002	
12/20/00-12/27/00	471.8	01/03/01	.021	.002	
12/27/00-01/03/01	474.7	01/14/01	.051	.005	

Gamma Activity on Filter Composites

Collection Period	Counting Date	Nuclide	Concentration (pCi/m^3)
12/29/99-03/29/00	05/01/2000	ND	
03/29/00-06/28/00	07/24/2000	ND	
06/28/00-09/27/00	10/13/2000	ND	
09/27/00-01/03/01	01/24/2001	ND	

*Air Samples Lost in Mail

Table Notation:

ND: Radionuclides of interest other than naturally occurring were not detected.

Table B-4

Diablo Canyon Power Plan 2000 Annual Report
Environmental Doismetry

Station	Quarterly Total (mR) [a] 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Total	Quarterly Avg	±2σ
MT1	20.4 ± 0.1	20.5 ± 0.8	21.6 ± 0.7	21.3 ± 0.8	83.8	21.0	1.2
WN1	11.3 ± 0.5	12.0 ± 0.4	12.9 ± 0.6	12.5 ± 0.3	48.7	12.2	1.4
OS1	19.6 ± 0.6	19.3 ± 0.7	21.2 ± 0.8	21.0 ± 0.5	81.1	20.3	1.9
5S1	21.8 ± 1.0	21.0 ± 0.8	23.0 ± 0.5	22.7 ± 0.9	88.5	22.1	1.8
6S1	12.8 ± 0.3	12.6 ± 0.5	14.2 ± 0.6	13.9 ± 0.4	53.5	13.4	1.6
8S1	15.4 ± 0.5	15.8 ± 0.5	16.4 ± 0.6	16.3 ± 0.6	63.9	16.0	1.0
8S2	20.0 ± 0.8	19.8 ± 0.7	20.7 ± 0.9	20.4 ± 0.5	80.9	20.2	0.8
5S3	17.8 ± 0.7	17.3 ± 0.5	18.9 ± 0.6	18.1 ± 0.5	72.1	18.0	1.3
2D1	11.0 ± 0.2	11.5 ± 0.4	11.6 ± 0.2	11.8 ± 0.3	45.9	11.5	0.7
4D1	10.9 ± 0.3	11.1 ± 0.5	12.1 ± 0.4	12.2 ± 0.5	46.3	11.6	1.3
5F1	17.0 ± 0.7	16.4 ± 0.3	17.6 ± 0.7	17.7 ± 0.5	68.7	17.2	1.2
1A1	10.9 ± 0.3	12.0 ± 0.4	12.6 ± 0.5	12.0 ± 0.4	47.5	11.9	1.4
7D2	15.1 ± 0.5	15.4 ± 0.6	16.9 ± 0.5	16.7 ± 0.4	64.1	16.0	1.8
7G2	16.3 ± 0.5	16.4± 0.3	17.7 ± 0.3	17.5 ± 0.4	67.9	17.0	1.4
7C1	17.6 ± 0.7	16.9 ± 0.5	18.5 ± 0.4	18.2 ± 0.6	71.2	17.8	1.4
7F1	16.1 ± 0.5	15.9 ± 0.7	16.8 ± 0.5	16.5 ± 0.4	65.3	16.3	0.8
OB1	9.2 ± 0.3	9.2 ± 0.3	10.9 ± 0.2	11.0 ± 0.4	40.3	10.1	2.1
7D1	10.7 ± 0.4	11.4 ± 0.2	11.6 ± 0.3	12.0 ± 0.4	45.7	11.4	1.1
4C1	10.1 ± 0.4	10.8 ± 0.3	11.1 ± 0.4	11.4 ± 0.4	43.4	10.9	1.1
OS2	16.6 ± 0.4	16.4 ± 0.4	18.1 ± 0.6	18.1 ± 0.6	69.2	17.3	1.9
1S1	15.8 ± 0.5	15.8 ± 0.6	17.7 ± 0.4	17.9 ± 0.6	67.2	16.8	2.3
2S1	15.9 ± 0.7	16.2 ± 0.4	17.5 ± 0.6	17.3 ± 0.6	66.9	16.7	1.6
3S1	20.4 ± 0.8	19.9 ± 0.8	22.7 ± 0.6	21.2 ± 0.9	84.2	21.1	2.4
4S1	17.9 ± 1.0	17.7 ± 0.7	18.9 ± 0.2	19.5 ± 0.5	74.0	18.5	1.7
7S1	16.9 ± 0.7	20.8 ± 0.7	18.7 ± 0.4	19.1 ± 0.9	75.5	18.9	3.2
9S1	20.3 ± 0.7	12.8 ± 0.3	23.2 ± 0.4	22.7 ± 0.9	79.0	19.8	9.6
1C1	12.7 ± 0.4	15.3 ± 0.4	13.7 ± 0.5	14.6 ± 0.5	56.3	14.1	2.3
5C1	15.1 ± 0.6	17.4 ± 0.3	17.5± 0.4	16.8 ± 0.7	66.8	16.7	2.2
3D1	11.3 ± 0.4	12.6 ± 0.4	13.2 ± 0.4	13.5 ± 0.4	50.6	12.6	2.0
6D1	15.1 ± 0.6	15.5 ± 0.6	16.3 ± 0.5	17.2 ± 1.1	64.1	16.0	1.8
5F3	20.4 ± 0.6	21.5 ± 1.1	22.4 ±0.9	22.3 ± 0.6	86.6	21.7	1.8

Table Notation:
[a] The exposure (mR) has been normalized for a standard quarter (i.e., for a 90-day period).

Table B5

Land Use Census

Distance in Miles from the Unit 1 Center Line to the Nearest Milk Animal, Residence, Vegetable Garden

22½ Degree[a] Radial Sector	Nearest Milk Animal	Nearest Residence km (mi)	Residence Azimuth Degree	Nearest Vegetable Garden km (mi)
NW	None	1.93 (1.2)	319.5	None
NNW	None	2.41 (1.5)	331	None
N	None	None	—	None
NNE	None	5.3 (3.3)	018.5	None
NE	None	7.89 (4.9)	036	None
ENE	None	7.08 (4.4)	063.5	None
E	None	5.95 (3.7)	097.5	None
E	None	7.24 (4.5)	098	7.24 (4.5)
ESE	None	None	—	5.28 (3.3)[b]
SE	None	None	—	None

Table Notation:

(a) Sectors not shown contain no land beyond the site boundary, other than islets not used for the purposes indicated in this table.

(b) The vegetable garden indicated is the farm along the site access road; however, it does not grow broadleaf vegetation.

Table B-6

Diablo Canyon Power Plant 2000 Annual Report
Sensitivity Limits (LLD) Exceeded*

Sample	Station No.	Date Collected	^{131}I**	^{59}Fe**
California Mussels	7C2	7/18/2000		3.08E+02
Milk	5F2	10/23/2000	1.25E0	
Drinking Water	DW1	10/24/2000	2.6E0	

Table Notation:

* Table Lists all samples for which the sensitivity limits did not meet the values on Table 3.

** Results are reported in pCi/L for liquids; in pCi/m^3, for iodine cartridges; and pCi/kg, for fish and food craps.

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00A37	Surface Water (Outfall)	OUT	1/25/2000
00A38	Drinking Water	5S2	1/25/2000
00A39	Drinking Water	DW1	1/25/2000
00A40	Milk	5F2	1/25/2000
00A41	Snow peas	7C1	1/27/2000
00A43	Surface Water (Seawater)	DCM	1/28/2000
00A44	Surface Water (Seawater)	7C2	1/28/2000
00A58	Bull Kelp Blade	PON	1/28/2000
00A59	Bull Kelp Pheumatocyst	PON	1/28/2000
00A60	Giant Kelp Blade	DCM	1/28/2000
00A61	Giant Kelp Pneumatocyst	DCM	1/28/2000
00A62	Bull Kelp Blade	POS	1/28/2000
00A63	Bull Kelp Pheumatocyst	POS	1/28/2000
00A64	Bull Kelp Blade	7C2	1/28/2000
00A65	Bull Kelp Pheumatocyst	7C2	1/28/2000
00A56	Cabbage	7G1	1/31/2000
00E69	Goat Meat		2/3/2000
00B03	Surface Water (Outfall)	OUT	2/22/2000
00B04	Drinking Water	DW1	2/22/2000
00B05	Drinking Water	5S2	2/22/2000
00B06	Milk	5F2	2/22/2000
00B14	Boy Choy	7G1	2/22/2000
00B35	Surface Water (Seawater)	DCM	3/1/2000
00B36	Surface Water (Seawater)	7C2	3/1/2000
00B63	Broccoli	5F2	3/13/2000
00B64	Snow Peas	7C1	3/13/2000
00B87	Iridaea	7C2	3/15/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00B88	California Mussels	7C2	3/15/2000
00B85	Intertidal Algae	DCM	3/16/2000
00B86	California Mussels	DCM	3/16/2000
00B84	Milk	5F2	3/21/2000
00B91	Lettuce	7G1	3/23/2000
00B92	Surface Water (Outfall)	OUT	3/23/2000
00B93	Drinking Water	5S2	3/23/2000
00B94	Drinking Water	DW1	3/23/2000
00C14	Surface Water (Seawater)	DCM	3/31/2000
00C15	Surface Water (Seawater)	7C2	3/31/2000
00C25	Mixed Salad greens	6C1	3/31/2000
00C26	Commercial Fish (Sole)	7D3	3/31/2000
00C37	Perch	PON	4/4/2000
00C38	Rockfish	PON	4/4/2000
00C39	Perch	DCM	4/4/2000
00C40	Rockfish	DCM	4/4/2000
00C41	Perch	POS	4/4/2000
00C42	Rockfish	POS	4/4/2000
00C43	Perch	7C2	4/4/2000
00C44	Rockfish	7C2	4/4/2000
00C35	Cabbage	7G1	4/11/2000
00C36	Snow Peas	7C1	4/11/2000
00C57	Surface Water (Outfall)	OUT	4/18/2000
00C58	Drinking Water	5S2	4/18/2000
00C59	Drinking Water	DW1	4/18/2000
00C60	Milk	5F2	4/20/2000
00C90	Surface Water (Seawater)	DCM	5/5/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00C91	Surface Water (Seawater)	7C2	5/5/2000
00C96	California Mussels	PON	5/8/2000
00C97	California Mussels	DCM	5/8/2000
00C98	Iridaea	DCM	5/8/2000
00C99	California Mussels	POS	5/8/2000
00D00	California Mussels	7C2	5/8/2000
00D01	Iridaea	7C2	5/8/2000
00D02	Lettuce	7G1	5/9/2000
00D03	Snow Peas	7C1	5/9/2000
00D62	Onions	5F2	5/23/2000
00D63	Milk	5F2	5/23/2000
00D64	Surface Water (Seawater)	DCM	5/23/2000
00D65	Surface Water (Seawater)	7C2	5/23/2000
00D73	Bull Kelp Blade	PON	5/23/2000
00D74	Bull Kelp Pneumatocyst	PON	5/23/2000
00D75	Giant Kelp Blade	DCM	5/23/2000
00D76	Giant Kelp Pneumatocyst	DCM	5/23/2000
00D77	Bull Kelp Blade	POS	5/23/2000
00D78	Bull Kelp Pneumatocyst	POS	5/23/2000
00D79	Bull Kelp Blade	7C2	5/23/2000
00D80	Bull Kelp Pneumatocyst	7C2	5/23/2000
00D81	Surface Water (Outfall)	OUT	5/25/2000
00D82	Drinking Water	5S2	5/25/2000
00D83	Drinking Water	DW1	5/25/2000
00D87	Snow Peas	7C1	5/31/2000
00D88	Cabbage	7G1	5/31/2000
00E18	Milk	5F2	6/20/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00E19	Drinking Water	5S2	6/20/2000
00E20	Drinking Water	DW1	6/20/2000
00E21	Surface Water (Outfall)	OUT	6/20/2000
00E50	Perch	PON	6/22/2000
00E51	Rockfish	PON	6/22/2000
00E52	Perch	DCM	6/22/2000
00E53	Rockfish	DCM	6/22/2000
00E54	Perch	POS	6/22/2000
00E55	Rockfish	POS	6/22/2000
00E56	Perch	7C2	6/22/2000
00E58	Commercial Fish (Cod)	7D3	6/22/2000
00E57	Rockfish	7C2	6/23/2000
00E38	Surface Water (Seawater)	DCM	6/26/2000
00E39	Surface Water (Seawater)	7C2	6/26/2000
00F46	Intertidal Algae	7C2	7/18/2000
00F47	California Mussels	7C2	7/18/2000
00F10	Lettuce	7G1	7/21/2000
00F11	Snow Peas	7C1	7/21/2000
00F12	Milk	5F2	7/24/2000
00F13	Drinking Water	5S2	7/24/2000
00F14	Drinking Water	DW1	7/24/2000
00F15	Surface Water (Outfall)	OUT	7/24/2000
00F34	Bull Kelp Blade	PON	7/28/2000
00F35	Bull Kelp Pneumatocyst	PON	7/28/2000
00F36	Bull Kelp Blade	DCM	7/28/2000
00F37	Bull Kelp Pneumatocyst	DCM	7/28/2000
00F38	Bull Kelp Blade	POS	7/28/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00F39	Bull Kelp Pneumatocyst	POS	7/28/2000
00F41	Bull Kelp Pneumatocyst	7C2	7/28/2000
00F45	California Mussels	POS	7/31/2000
00F43	Iridaea	DCM	8/1/2000
00F44	California Mussels	DCM	8/1/2000
00F42	California Mussels	PON	8/2/2000
00F75	Tomatoes	5F2	8/24/2000
00F76	Cabbage	7G1	8/24/2000
00F77	Snow Peas	7C1	8/24/2000
00F87	Surface Water (Outfall)	OUT	8/25/2000
00F88	Drinking Water	5S2	8/25/2000
00F89	Drinking Water	DW1	8/25/2000
00F90	Milk	5F2	8/25/2000
00F93	Surface Water (Seawater)	DCM	8/29/2000
00F94	Surface Water (Seawater)	7C2	8/29/2000
00G03	Mixed Salad greens	6C1	9/1/2000
00G08	Tomatoes	5F2	9/6/2000
00G10	Commercial Fish (Snapper)	7D3	9/6/2000
00G11	Snow Peas	7C1	9/7/2000
00G12	Cabbage	7G1	9/7/2000
00G38	Surface Water (Outfall)	OUT	9/19/2000
00G39	Drinking Water	5S2	9/19/2000
00G40	Drinking Water	DW1	9/19/2000
00G41	Milk	5F2	9/19/2000
00G52	Surface Water (Seawater)	DCM	9/21/2000
00G53	Surface Water (Seawater)	7C2	9/21/2000
00G64	Perch	POS	9/21/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00G65	Rockfish	POS	9/21/2000
00G66	Perch	7C2	9/21/2000
00G67	Rockfish	7C2	9/21/2000
00G62	Perch	DCM	9/25/2000
00G63	Rockfish	DCM	9/25/2000
00G78	Perch	PON	9/25/2000
00G79	Rockfish	PON	9/25/2000
00G91	Corn	5F2	10/18/2000
00G92	Cabbage	7G1	10/18/2000
00G93	Snow Peas	7C1	10/18/2000
00H06	Milk	5F2	10/23/2000
00H03	Surface Water (Outfall)	OUT	10/24/2000
00H04	Drinking Water	5S2	10/24/2000
00H05	Drinking Water	DW1	10/24/2000
00H07	Surface Water (Seawater)	DCM	10/25/2000
00H08	Surface Water (Seawater)	7C2	10/25/2000
00H33	Bull Kelp Blade	PON	10/25/2000
00H34	Bull Kelp Pneumatocyst	PON	10/25/2000
00H35	Giant Kelp Blade	DCM	10/25/2000
00H36	Giant Kelp Pneumatocyst	DCM	10/25/2000
00H37	Bull Kelp Blade	POS	10/25/2000
00H38	Bull Kelp Pneumatocyst	POS	10/25/2000
00H39	Bull Kelp Blade	7C2	10/25/2000
00H40	Bull Kelp Pneumatocyst	7C2	10/25/2000
00H71	Corn	5F2	11/7/2000
00H72	Lettuce	7G1	11/7/2000
00I00	California Mussels	7C2	11/10/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00I01	Iridaea	7C2	11/10/2000
00H85	Surface Water (Outfall)	OUT	11/20/2000
00H86	Drinking Water	5S2	11/20/2000
00H87	Drinking Water	DW1	11/20/2000
00H88	Milk	5F2	11/20/2000
00H89	Surface Water (Seawater)	DCM	11/22/2000
00H90	Surface Water (Seawater)	7C2	11/22/2000
00H99	Snow Peas	7C1	11/27/2000
00I18	Perch	PON	12/4/2000
00I19	Rockfish	PON	12/4/2000
00I20	Perch	DCM	12/4/2000
00I21	Rockfish	DCM	12/4/2000
00I22	Perch	POS	12/4/2000
00I23	Rockfish	POS	12/4/2000
00I24	Perch	7C2	12/4/2000
00I25	Rockfish	7C2	12/4/2000
00I26	Sediment	DCM	12/4/2000
00I27	Sediment	7C2	12/4/2000
00I16	Lettuce	5F2	12/5/2000
00I17	Lettuce	7G1	12/5/2000
00I60	Intertidal Algae	DCM	12/7/2000
00I61	California Mussels	DCM	12/7/2000
00I45	Surface Water (Outfall)	OUT	12/12/2000
00I46	Drinking Water	5S2	12/12/2000
00I47	Drinking Water	DW1	12/12/2000
00I48	Milk	5F2	12/12/2000
00I62	Commercial Fish (Cod)	7D3	12/18/2000

Table B-7

Diablo Canyon Power Plant 2000 Annual Report
List of Marine and Terrestrial Samples Collected and Analyzed

Sample No.	Description	Station No.	Collection Date
00163	Snow Peas	7C1	12/18/2000
00165	Surface Water (Seawater)	DCM	12/19/2000
00166	Surface Water (Seawater)	7C2	12/19/2000
00164	Mixed Salad greens	6C1	12/20/2000

Appendix C

STATISTICAL ANALYSIS

STATISTICAL ANALYSIS
Example of Shewhart/CUSUM Control Charts *

Shewhart/CUSUM Control Chart Interpretation

The combined Shewhart-CUSUM control chart technique is applied here to fabricated log-transformed radioactivity data to illustrate its use. First, the data are standardized by subtracting the overall mean radioactivity level for the station from the current observation, and then dividing by the overall standard deviation for that station (represented by *square symbols* in the graphical output). The control charts are used to test whether fluctuations in the standardized data are random or from a change in the concentration of a particular parameter. The Shewhart Control Limit is equal to the maximum fluctuation expected between the arithmetic mean from each station, and with reasonable assurance would not be exceeded when sampling from a fixed distribution of constituent concentrations (EPA 1992). The Shewhart Control Limit (SCL) was set at 3.0.

The CUSUM value (the *diamond symbols* in the graphical output) is an additional check to see if radiological levels are increasing over time. The K value (the reference value, or allowable slack for the CUSUM procedure) will be set at 1 standard deviation, and the control limit for the CUSUM procedure was also set at 3.0. If the current sampling period has a standardized value below the K value 1, in this case, then the CUSUM value is set to zero. If the standardized data are larger than the upper K value (1), then the CUSUM value would be calculated as the current sampling events standardized data minus the K value, plus the CUSUM value from the last sampling event, if it was positive.

In the two examples provided, the data were fabricated to show examples of significant events. The first chart (Figure C-1) shows a one time value that exceeds the 3 standard deviation limit. For illustration, the November 1992, fictitious standardized data were shown to exceed the SCL with a 3.23.

The second example (Figure C-2) shows a gradual increase in radiological activity over time. After August 1992, the observations are above 1 standard deviation, but well below the upper SCL. The CUSUM starts to increase until it exceeds the upper CUSUM limit in November 1993.

* numbers used in examples are fictitious and are used for illustration purposes only.

Table C-1

Log-Transformed Example Data

Month	Year	Location A	Location B
2	1981	0.00	0.00
5	1981	0.00	0.00
8	1981	0.00	0.00
11	1981	0.00	0.00
2	1982	0.00	0.00
5	1982	3.56	0.00
8	1982	0.00	0.00
11	1982	0.00	0.00
2	1983	•	•
5	1983	0.00	0.00
8	1983	5.01	0.00
11	1983	3.74	0.00
2	1984	0.00	0.00
5	1984	0.00	0.00
8	1984	0.00	0.00
11	1984	0.00	0.00
2	1985	5.03	5.86
5	1985	4.88	5.53
8	1985	5.02	0.00
11	1985	0.00	0.00
2	1986	4.98	5.35
5	1986	4.91	5.34
8	1986	0.00	5.47
11	1986	0.00	0.00
2	1987	3.74	0.00
5	1987	0.00	4.61
8	1987	3.26	4.71
11	1987	0.00	0.00
2	1988	0.00	0.00
5	1988	0.00	5.39
8	1988	0.00	0.00
11	1988	4.20	5.84
2	1989	0.00	0.00
5	1989	0.00	3.33
8	1989	0.00	0.00
11	1989	0.00	0.00
2	1990	0.00	0.00
5	1990	0.00	0.00
8	1990	0.00	1.61
11	1990	0.00	0.00
2	1991	0.00	0.00
5	1991	0.00	4.55
8	1991	•	3.76
11	1991	0.00	4.03
2	1992	0.00	0.00
5	1992	0.00	3.56
8	1992	0.00	4.83
11	1992	8.18	5.50
2	1993	4.09	5.87
5	1993	0.00	6.40
8	1993	0.00	6.75
11	1993	0.00	8.02

Table C-2

Example Calculation of Mean, Standard Deviation, Standardized Data, and CUSUM Values

Variable	Mean	Standard Deviation
Location A	1.2117106	2.1538522
Location B	2.0841500	2.6577090

Example Calculations of Standardized Datas and CUSUM Values

*Sample B **Standardized Data** (SD-B) Calculation for November 1993*

(Nov-93 Sample B data - mean of Sample B data / deviation of Sample B data or,

(8.02 - 2.084) / 2.658 = 2.23

*Sample B **CUSUM** (CS-B) Calculation for November 1993*

If the Nov-93 standardized data are > 1, then:

CS-B = SD-B - 1 + CS-B for Aug-93, if the CUSUM for Aug-93 > 0 or;
CS-B = SD-B - 1, if the CUSUM for Aug-93 ≤ 0

If standardized data are < 1 then

CS-B = 0

For the Nov-93 data, since the standardized data for Sample B is 2.23, the calculation of CS-B would be:

(2.23 - 1) + 2.12 = 3.35

Table C-3

Example Standardized Data and CUSUM Values

Month	Year	SD-A	CS-A	SD-B	CS-B
2	1981	-0.56	0.00	-0.78	0.00
5	1981	-0.56	0.00	-0.78	0.00
8	1981	-0.56	0.00	-0.78	0.00
11	1981	-0.56	0.00	-0.78	0.00
2	1982	-0.56	0.00	-0.78	0.00
5	1982	1.09	0.09	-0.78	0.00
8	1982	-0.56	0.00	-0.78	0.00
11	1982	-0.56	0.00	-0.78	0.00
2	1983	•	•	•	•
5	1983	-0.56	0.00	-0.78	0.00
8	1983	1.76	0.76	-0.78	0.00
11	1983	1.17	0.94	-0.78	0.00
2	1984	-0.56	0.00	-0.78	0.00
5	1984	-0.56	0.00	-0.78	0.00
8	1984	-0.56	0.00	-0.78	0.00
11	1984	-0.56	0.00	-0.78	0.00
2	1985	1.77	0.77	1.42	0.42
5	1985	1.70	1.47	1.30	0.72
8	1985	1.77	2.24	-0.78	0.00
11	1985	-0.56	0.00	-0.78	0.00
2	1986	1.75	0.75	1.23	0.23
5	1986	1.71	1.46	1.22	0.45
8	1986	-0.56	0.00	1.27	0.73
11	1986	-0.56	0.00	-0.78	0.00
2	1987	1.17	0.17	-0.78	0.00
5	1987	-0.56	0.00	0.95	0.00
8	1987	0.95	0.00	0.99	0.00
11	1987	-0.56	0.00	-0.78	0.00
2	1988	-0.56	0.00	-0.78	0.00
5	1988	-0.56	0.00	1.24	0.24
8	1988	-0.56	0.00	-0.78	0.00
11	1988	1.39	0.39	1.41	0.41
2	1989	-0.56	0.00	-0.78	0.00
5	1989	-0.56	0.00	0.47	0.00
8	1989	-0.56	0.00	-0.78	0.00
11	1989	-0.56	0.00	-0.78	0.00
2	1990	-0.56	0.00	-0.78	0.00
5	1990	-0.56	0.00	-0.78	0.00
8	1990	-0.56	0.00	-0.18	0.00
11	1990	-0.56	0.00	-0.78	0.00
2	1991	-0.56	0.00	-0.78	0.00
5	1991	-0.56	0.00	0.93	0.00
8	1991	•	•	0.63	0.00
11	1991	-0.56	0.00	0.73	0.00
2	1992	-0.56	0.00	-0.78	0.00
5	1992	-0.56	0.00	0.55	0.00
8	1992	-0.56	0.00	1.03	0.03
11	1992	3.23	2.23	1.29	0.32
2	1993	1.34	2.57	1.42	0.74
5	1993	-0.56	0.00	1.62	1.37
8	1993	-0.56	0.00	1.75	2.12
11	1993	-0.56	0.00	2.23	3.35

Footnote: SD = Standardized data
CS = CUSUM value

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Figure C–1. Control Chart Showing Example of No Change in Radiological Levels

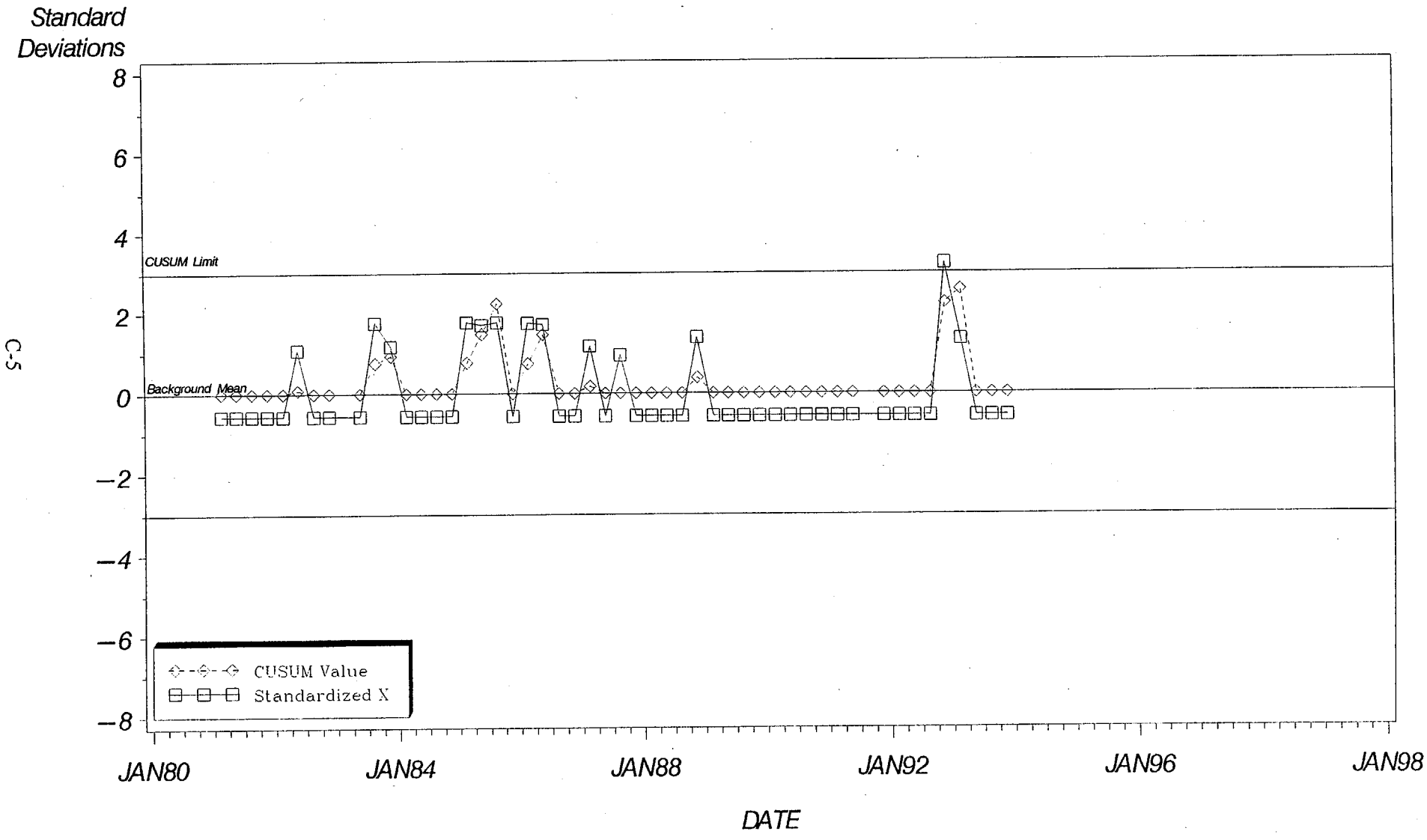

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Figure C–2. Control Chart Showing Example of a Increasing in Radiological Levels