VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

April 29, 2003

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Serial No. 03-306
SS&L/BAG
Docket Nos. 50-280
50-281
72-2
License Nos. DPR-32
DPR-37
SNM-2501

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

Surry Units 1 and 2 Technical Specification 6.6.B.2 requires the submittal of an Annual Radiological Environmental Operating Report for Surry Power Station. Surry Independent Spent Fuel Storage Installation (ISFSI) Technical Specification Appendix C.1.3.1 requires that the Surry ISFSI be included in the environmental monitoring for the Surry Power Station. Accordingly, enclosed is the Surry Power Station Radiological Environmental Operating Report for the period of January 1, 2002 through December 31, 2002 which includes environmental monitoring for the Surry ISFSI.

If you have any questions or require additional information, please contact us.

Very truly yours,

R. H. Blount

Richard H. Blount, Site Vice President
Surry Power Station

Attachment

Commitments made in this letter: None

NMSS01
IE25

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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

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NRC Senior Resident Inspector
Surry Power Station

Commissioner
Bureau of Radiological Health
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ATTACHMENT

2002 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

SURRY POWER STATION UNITS 1 AND 2
LICENSE NOS. DPR-32 AND DPR-37

INDEPENDENT SPENT FUEL STORAGE INSTALLATION
LICENSE NO. SNM-2501

Surry Power Station

2002 Annual Radiological Environmental Operating Report

Dominion

Dominion

Surry Power Station

Radiological Environmental Monitoring Program

January 1, 2002 to December 31, 2002

Prepared by
Dominion Surry Power Station
and
Dominion Nuclear Connecticut

Annual Radiological Environmental Operating Report

Surry Power Station

January 1, 2002 to December 31, 2002

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PREFACE

This report is submitted as required by Technical Specification 6.6.B.2, Annual Radiological Environmental Operating Report, for Surry, Units 1 and 2, Virginia Electric and Power Company Docket Nos. 50-280 and 50-281.

1. EXECUTIVE SUMMARY

This document is a detailed report of the 2002 Surry Power Station Radiological Environmental Monitoring Program (REMP). Radioactivity levels from January 1 through December 31, 2002, in air, water, silt, shoreline sediment, milk, aquatic biota, food products and direct exposure pathways have been analyzed, evaluated and summarized. The REMP is designed to confirm that radiological effluent releases are As Low as is Reasonably Achievable (ALARA), no undue environmental effects occur and the health and safety of the public are protected. The program also detects any unexpected environmental processes that could allow radiation accumulations in the environment or food pathway chains.

Radiation and radioactivity in the environment is monitored within a 20-mile radius of the station. Surry Power Station personnel collect a variety of samples within this area. A number of sampling locations for each medium are selected using available meteorological, land use, and water use data. Two types of samples are obtained. The first type, control samples, are collected from areas that are beyond the measurable influence of Surry Power Station or any other nuclear facility. These samples are used as reference data. Normal background radiation levels, or radiation present due to causes other than Surry Power Station, can be compared to the environment surrounding the station. Indicator samples are the second sample type obtained. These samples show how much radiation is contributed to the environment by the station. Indicator samples are taken from areas close to the station where any station contribution will be at the highest concentration.

Prior to station operation, samples were collected and analyzed to determine the amount of radioactivity present in the area. The resulting values are used as a "pre-operational baseline." Analysis results from the indicator samples are compared to both current control sample values and the pre-operational baseline to determine if changes in radioactivity levels are attributable to station operations, or causes such as the Chernobyl accident or natural variation.

The Framatome ANP DE&S Environmental Laboratory provides radioanalyses for this program and ICN Biomedicals provides thermoluminescent dosimetry (TLD) services. Participation in an Interlaboratory Comparison Program provides an independent check of sample measurement precision and accuracy. Typically, radioactivity levels in the environment are so low that analysis values frequently fall below the minimum detection limits of state-of-the-art measurement methods. Because of this, the United States Nuclear Regulatory Commission (USNRC) requires that equipment used for radiological environmental monitoring must be able to detect specified minimum Lower Limits of Detection (LLDs). This ensures that analyses are as accurate as possible. The USNRC also mandates a reporting

level for certain radionuclides. Licensed nuclear facilities must report the radionuclide activities in those environmental samples that are equal to or greater than the specified reporting level. Environmental radiation levels are sometimes referred to as a percent of the reporting level.

Analytical results are reported for all possible radiation exposure pathways to man. These pathways include airborne, aquatic, terrestrial and direct radiation exposure. The airborne exposure pathway includes radioactive airborne iodine and particulates. The 2002 airborne results were similar to previous years. No plant related radioactivity was detected and fallout or natural radioactivity levels remained at levels consistent with past years' results. Aquatic exposure pathway samples include well and river water, silt and shoreline sediments, crabs, fish, clams and oysters. Naturally occurring potassium-40 was detected at average environmental levels. No man-made radioisotopes were detected in well water. This trend is consistent throughout the operational environmental monitoring program. Silt samples indicated the presence of cesium-137 and cobalt-60. The cesium-137 activity was present in the control and indicator locations and is attributable to global fallout from past nuclear weapons testing and nuclear accidents such as Chernobyl. The cobalt-60 was detected at the indicator location. There is no reporting level assigned for cobalt-60 and the trend over the past ten to fifteen year period continues to decrease. Shoreline sediment, which may provide a direct exposure pathway, contained no station related radioisotopes. The terrestrial exposure pathway includes milk and food products. Iodine-131 was not detected in any 2002 milk samples and has not been detected in milk prior to or since the 1986 Chernobyl accident. Strontium-90 was again detected in milk and this activity is attributable to past atmospheric nuclear weapons testing. A ten-year activity trend continues to indicate the slow decrease in Sr-90 activity. Naturally occurring potassium-40 and thorium-228 were detected at average environmental levels. No man-made radioisotopes were detected in food product samples. Consistent with historical data, potassium-40 was detected. The direct exposure pathway measures environmental radiation doses by use of thermoluminescent dosimeters (TLDs). TLD results have remained relatively constant over the years.

During 2002, as in previous years, operation of the Surry Power Station has created no adverse environmental effects or health hazards. The maximum dose calculated for a hypothetical individual at the station site boundary due to liquid and gaseous effluents released from the station during 2002 was 0.0004 millirem. For reference, this dose may be compared to the 360 millirem average annual exposure to every person in the United States from natural and man-made sources. Natural sources in the environment provide approximately 82% of radiation exposure to man, while nuclear power contributes less than 0.1%. These results demonstrate not only compliance with federal and state regulations

but also demonstrate the adequacy of radioactive effluent control at Surry Power Station.

2. PROGRAM DESCRIPTION

2.1 Introduction

This report documents the 2002 Surry Power Station operational Radiological Environmental Monitoring Program (REMP). The Dominion Surry Power Station is located on the Gravel Neck peninsula adjacent to the James River, approximately 25 miles upstream of the Chesapeake Bay. The site consists of two units, each with a pressurized water reactor (PWR) nuclear steam supply system and turbine generator furnished by Westinghouse Electric Corporation. Each unit is designed with a gross electrical output of 861 megawatts electric (MWe). Unit 1 achieved commercial operation on December 22, 1972, and Unit 2 on May 1, 1973.

The United States Nuclear Regulatory Commission (USNRC) regulations (10CFR50.34a) require that nuclear power plants be designed, constructed and operated to keep levels of radioactive material in effluents to unrestricted areas As Low as is Reasonably Achievable (ALARA). To ensure these criteria are met, the operating license for Surry Power Station includes Technical Specifications that address the release of radioactive effluents. In-plant monitoring is used to ensure that these release limits are not exceeded. As a precaution against unexpected or undefined environmental processes which might allow undue accumulation of radioactivity in the environment, a program for monitoring the station environs is also included in Surry Power Station Technical Specifications.

Dominion personnel are responsible for collecting the various indicator and control environmental samples. ICN Biomedicals is responsible for processing the TLDs. The Framatome ANP DE&S Environmental Laboratory is responsible for sample analyses. The results of the analyses are used to determine if changes in radioactivity levels may be attributable to station operations. Measured values are compared with control levels, which vary with time due to external events, such as cosmic ray bombardment, nuclear weapons test fallout and seasonal variations of naturally occurring radioisotopes. Data collected prior to station operation is used to indicate the degree of natural variation to be expected. This pre-operational data is compared with data collected during the operational phase to assist in evaluating any radiological impact of station operation.

Occasionally, samples of environmental media show the presence of man-made radioisotopes. As a method of referencing the measured radionuclide concentrations in the sample media to a dose consequence to man, the data is compared to the reporting level concentrations listed in the USNRC Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants", (December, 1975) and VPAP-2103S, Offsite Dose Calculation Manual (Surry). These concentrations are based upon the annual dose commitment recommended

by 10CFR50, Appendix I, to meet the criterion of "As Low as is Reasonably Achievable."

This report documents the results of the Radiological Environmental Monitoring Program for 2002 and satisfies the following objectives of the program:

- To provide measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of the maximum exposed member of the public resulting from station operations.

- To supplement the radiological effluent monitoring program by verifying that radioactive effluents are within allowable limits.

- To identify changes in radioactivity in the environment.

- To verify that station operations have no detrimental effect on the health and safety of the public.

2.2 Sampling and Analysis Program

Table 2-1 summarizes the 2002 sampling program for Surry Power Station. All samples listed in Table 2-1 are taken at indicator locations except those labeled "control." The Surry Radiological Monitoring Locations maps (Figures 1 – 5) denote sample locations for Surry Power Station. The locations are color coded to designate sample types. Table 2-2 summarizes the analysis program conducted by Framatome ANP DE&S Environmental Laboratory for Surry Power Station during the year 2002.

On June 30, 1998, the Commonwealth of Virginia, Department of Health, discontinued its comparative analysis (state split) program with Surry Power Station. Although the routine splitting of samples with the Commonwealth of Virginia has been discontinued, samples will be split at the request of the state. Dominion personnel collect all samples listed in Table 2-1. All samples, with the exception of the TLDs, are shipped to Framatome ANP DE&S Environmental Laboratory, located in Westborough, MA, for analysis. The TLDs are shipped to ICN Biomedicals, located in Costa Mesa, CA, for processing.

Table 2-1

SURRY - 2002

RADIOLOGICAL SAMPLING STATION

DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Environmental	Control	(00)	-	-	-	Quarterly	Onsite *(Stored in lead container outside protected area)*
TLDs	West North West	(02)	0.17 mi	WNW	292°	Quarterly	Site Boundary
	Surry Station Discharge	(03)	0.60 mi	NW	309°	Quarterly	Site Boundary
	North North West	(04)	0.40 mi	NNW	330°	Quarterly	Site Boundary
	North	(05)	0.29 mi	N	357°	Quarterly	Site Boundary
	North North East	(06)	0.28 mi	NNE	22°	Quarterly	Site Boundary
	North East	(07)	0.31 mi	NE	45°	Quarterly	Site Boundary
	East North East	(08)	0.43 mi	ENE	68°	Quarterly	Site Boundary
	East (Exclusion)	(09)	0.31 mi	E	90°	Quarterly	Onsite
	West	(10)	0.40 mi	W	270°	Quarterly	Site Boundary
	West South West	(11)	0.45 mi	WSW	250°	Quarterly	Site Boundary
	South West	(12)	0.30 mi	SW	225°	Quarterly	Site Boundary
	South South West	(13)	0.43 mi	SSW	203°	Quarterly	Site Boundary
	South	(14)	0.48 mi	S	180°	Quarterly	Site Boundary
	South South East	(15)	0.74 mi	SSE	157°	Quarterly	Site Boundary
	South East	(16)	1.00 mi	SE	135°	Quarterly	Site Boundary
	East	(17)	0.57 mi	E	90°	Quarterly	Site Boundary
	Station Intake	(18)	1.23 mi	ESE	113°	Quarterly	Site Boundary
	Hog Island Reserve	(19)	1.94 mi	NNE	26°	Quarterly	Near Resident
	Bacon's Castle	(20)	4.45 mi	SSW	202°	Quarterly	Apx. 5 mile
	Route 633	(21)	5.00 mi	SW	224°	Quarterly	Apx. 5 mile
	Alliance	(22)	5.10 mi	WSW	248°	Quarterly	Apx. 5 mile
	Surry	(23)	8.00 mi	WSW	250°	Quarterly	Population Center
	Route 636 and 637	(24)	4.00 mi	W	270°	Quarterly	Apx. 5 mile
	Scotland Wharf	(25)	5.00 mi	WNW	285°	Quarterly	Apx. 5 mile
	Jamestown	(26)	6.30 mi	NW	310°	Quarterly	Apx. 5 mile
	Colonial Parkway	(27)	3.70 mi	NNW	330°	Quarterly	Apx. 5 mile
	Route 617 and 618	(28)	4.70 mi	NNW	340°	Quarterly	Apx. 5 mile
	Kingsmill	(29)	4.80 mi	N	2°	Quarterly	Apx. 5 mile
	Williamsburg	(30)	7.80 mi	N	0°	Quarterly	Population Center
	Kingsmill North	(31)	5.60 mi	NNE	14°	Quarterly	Apx. 5 mile
	Budweiser	(32)	5.70 mi	NNE	27°	Quarterly	Population Center
	Water Plant	(33)	4.80 mi	NE	41°	Quarterly	Apx. 5 mile

Table 2-1

SURRY - 2002
RADIOLOGICAL SAMPLING STATION
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
	BASF	(34)	5.10 mi	ENE	70°	Quarterly	Apx. 5 mile
	Lee Hall	(35)	7.10 mi	ENE	73°	Quarterly	Population Center
	Goose Island	(36)	5.00 mi	E	88°	Quarterly	Apx. 5 mile
	Fort Eustis	(37)	4.80 mi	ESE	107°	Quarterly	Population Center
	Newport News	(38)	16.50 mi	ESE	122°	Quarterly	Population Center
	James River Bridge	(39)	14.80 mi	SSE	147°	Quarterly	Control Location
	Benn's Church	(40)	14.50 mi	S	175°	Quarterly	Control Location
	Smithfield	(41)	11.50 mi	S	176°	Quarterly	Control Location
	Rushmere	(42)	5.20 mi	SSE	156°	Quarterly	Apx. 5 mile
	Route 628	(43)	5.00 mi	S	177°	Quarterly	Apx. 5 mile
Air Charcoal	Surry Station	(SS)	0.37 mi	NNE	15°	Weekly	Site Boundary (Highest D/Q)
and Particulate	Hog Island Reserve	(HIR)	2.00 mi	NNE	26°	Weekly	
	Bacon's Castle	(BC)	4.50 mi	SSW	202°	Weekly	
	Alliance	(ALL)	5.10 mi	WSW	248°	Weekly	
	Colonial Parkway	(CP)	3.70 mi	NNW	330°	Weekly	
	BASF	(BASF)	5.10 mi	ENE	70°	Weekly	
	Fort Eustis	(FE)	4.80 mi	ESE	107°	Weekly	
	Newport News	(NN)	16.50 mi	ESE	122°	Weekly	Control Location
River Water	Surry Station Discharge	(SD)	0.17 mi	NW	325°	Monthly	
	Scotland Wharf	(SW)	5.00 mi	WNW	285°	Monthly	Control Location
Well Water	Surry Station	(SS)	-	-		Quarterly	Onsite
	Hog Island Reserve	(HIR)	2.00 mi	NNE	27°	Quarterly	
Shoreline	Hog Island Reserve	(HIR)	0.80 mi	N	5°	Semi-Annually	
Sediment	Chickahominy River	(CHIC)	11.20 mi	WNW	300°	Semi-Annually	Control Location
Silt	Chickahominy River	(CHIC)	11.20 mi	WNW	300°	Semi-Annually	Control Location
	Surry Station Discharge	(SD)	1.30 mi	NNW	341°	Semi-Annually	

Table 2-1

SURRY - 2002
RADIOLOGICAL SAMPLING STATION
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Milk	Colonial Parkway	(CP)	3.70 mi	NNW	337°	Monthly	
	Pivarnik	(PIV)	17.60 mi	NNE	25°	Monthly	Control Location
	Epp's	(EPPS)	4.80 mi	SSW	201°	Monthly	
Oysters	Point of Shoals	(POS)	6.40 mi	SSE	157°	Semi-Annually	
	Mulberry Point	(MP)	4.90 mi	ESE	124°	Semi-Annually	
Clams	Chickahominy River	(CHIC)	11.20 mi	WNW	300°	Semi-Annually	Control Location
	Surry Station Discharge	(SD)	1.30 mi	NNW	341°	Semi-Annually	
	Hog Island Point	(HIP)	2.40 mi	NE	52°	Semi-Annually	
	Lawne's Creek	(LC)	2.40 mi	SE	131°	Semi-Annually	
Fish	Surry Station Discharge	(SD)	1.30 mi	NNW	341°	Semi-Annually	
Crabs	Surry Station Discharge	(SD)	1.30 mi	NNW	341°	Annually	
Food Products (Corn, Peanuts, Soybeans)	Brock's Farm	(BROCK'S)	3.80 mi	S	188°	Annually	
	Slade's Farm	(SLADE'S)	2.40 mi	S	177°	Annually	

Table 2-2

(Page 1 of 3)
SURRY - 2002
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD*	REPORT UNITS
Thermoluminescent Dosimetry (TLD)	Quarterly	Gamma Dose	2	mR/Std. Month
Air Iodine	Weekly	I-131	0.07	pCi/m^3
Air Particulate	Weekly	Gross Beta	0.01	pCi/m^3
	Quarterly (a)	Gamma Isotopic		pCi/m^3
		Cs-134	0.05	
		Cs-137	0.06	
River Water	Quarterly Composite of monthly sample	Tritium (H-3)	2000	pCi/L
	Monthly	I-131	10	pCi/L
		Gamma Isotopic		
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
Well Water	Quarterly	Tritium (H-3)	2000	pCi/L
		I-131	1	
		Gamma Isotopic		
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	

Footnotes located at end of table.

Table 2-2 (Cont.)
(Page 2 of 3)
SURRY - 2002
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD*	REPORT UNITS
Shoreline Sediment	Semi-Annual	Gamma Isotopic		pCi/kg - dry
		Cs-134	150	
		Cs-137	180	
Silt	Semi-Annual	Gamma Isotopic		pCi/kg - dry
		Cs-134	150	
		Cs-137	180	
Milk	Monthly	I-131	1	pCi/L
		Gamma Isotopic		
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
Oysters	Semi-Annual	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Clams	Semi-Annual	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Crabs	Annually	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	

Footnotes located at end of table.

Table 2-2 (Cont.)
(Page 3 of 3)
SURRY - 2002
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD*	REPORT UNITS
Fish	Semi-Annual	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Food Products	Annually	Gamma Isotopic		pCi/kg - wet
		I-131	60	
		Cs-134	60	
		Cs-137	80	

Note: This table is not a complete listing of nuclides that can be detected and reported. Other peaks that are measurable and identifiable, together with the above nuclides, are also identified and reported.

* *LLDs indicate those levels that the environmental samples should be analyzed to, in accordance with the Surry Radiological Environmental Monitoring Program. Actual analysis of the samples by the Framatome laboratory may be lower than those LLD values listed.*

(a) Quarterly composites of each location's weekly air particulate samples are analyzed for gamma emitters.

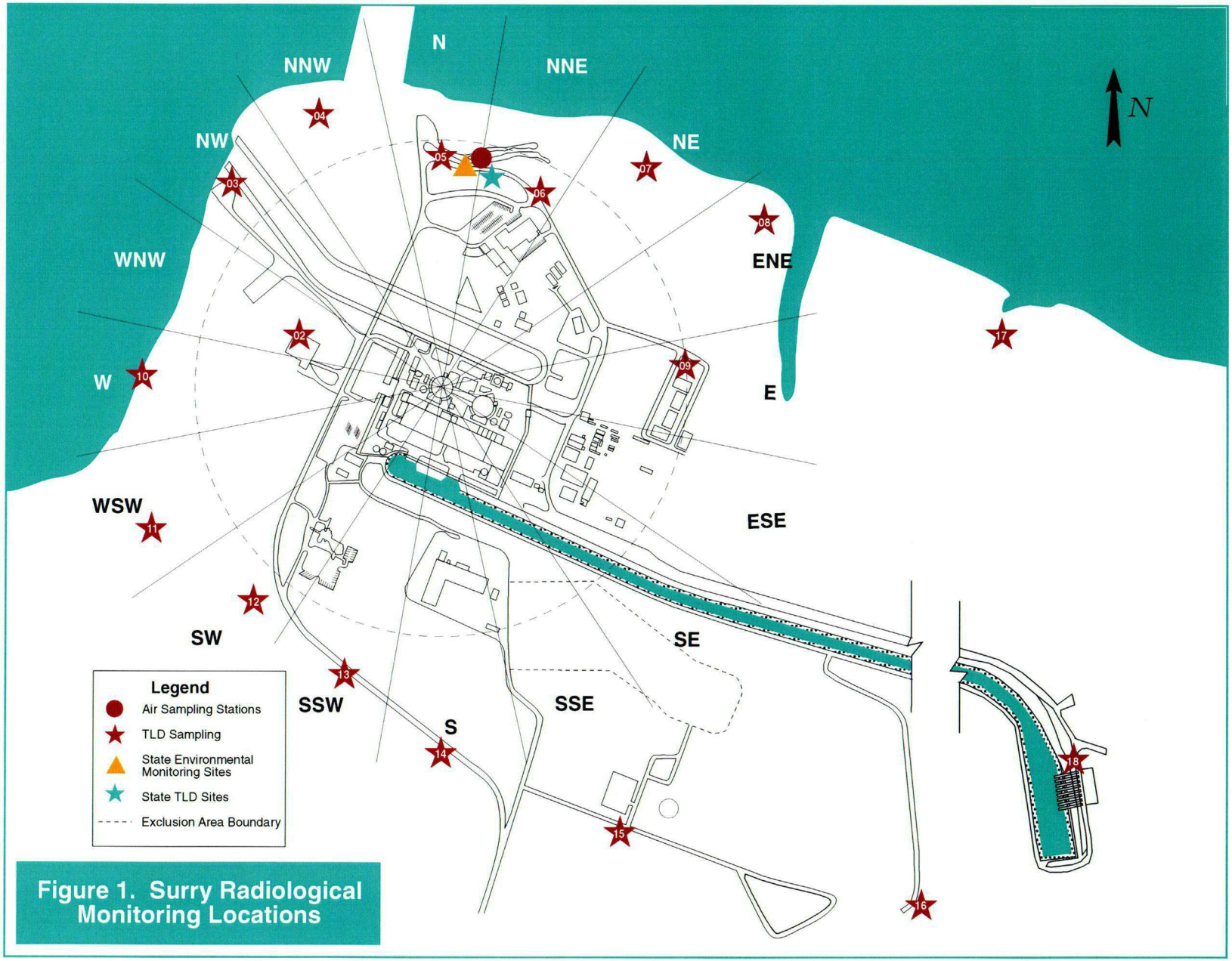

Figure 1. Surry Radiological Monitoring Locations

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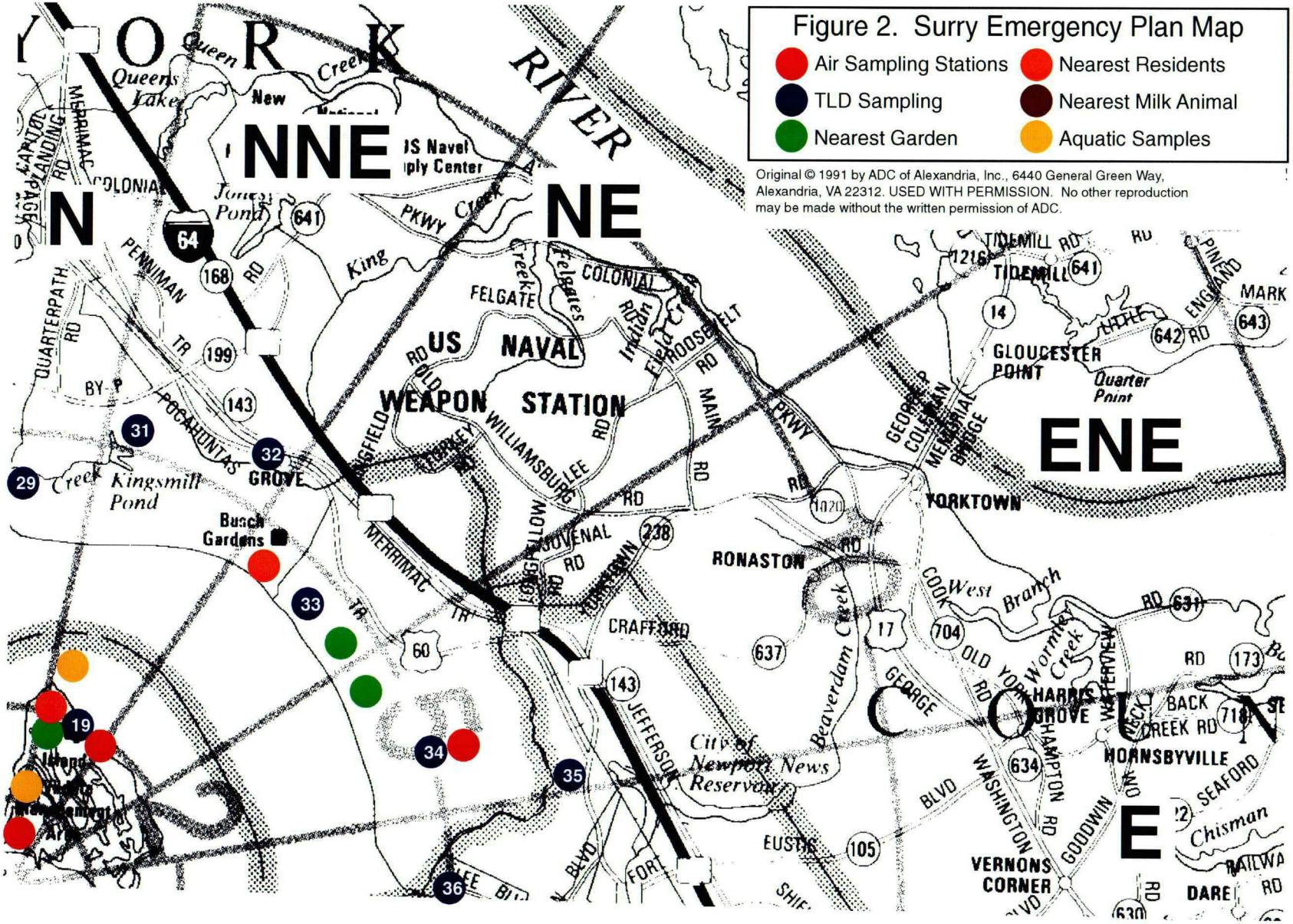
Figure 2. Surry Emergency Plan Map
Air Sampling Stations
TLD Sampling
Nearest Garden
Nearest Residents
Nearest Milk Animal
Aquatic Samples
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US NAVAL WEAPON STATION
GROVE
RONASTON
CRAFFORD
YORKTOWN
GLOUCESTER POINT
HORNSBYVILLE
VERNONS CORNER
Busch Gardens
Kingsmill Pond
Queens Lake
Jones Pond
Felgates Creek
Beaverdam Creek
Wormley Creek
West Branch
City of Newport News Reservoir
Chisman
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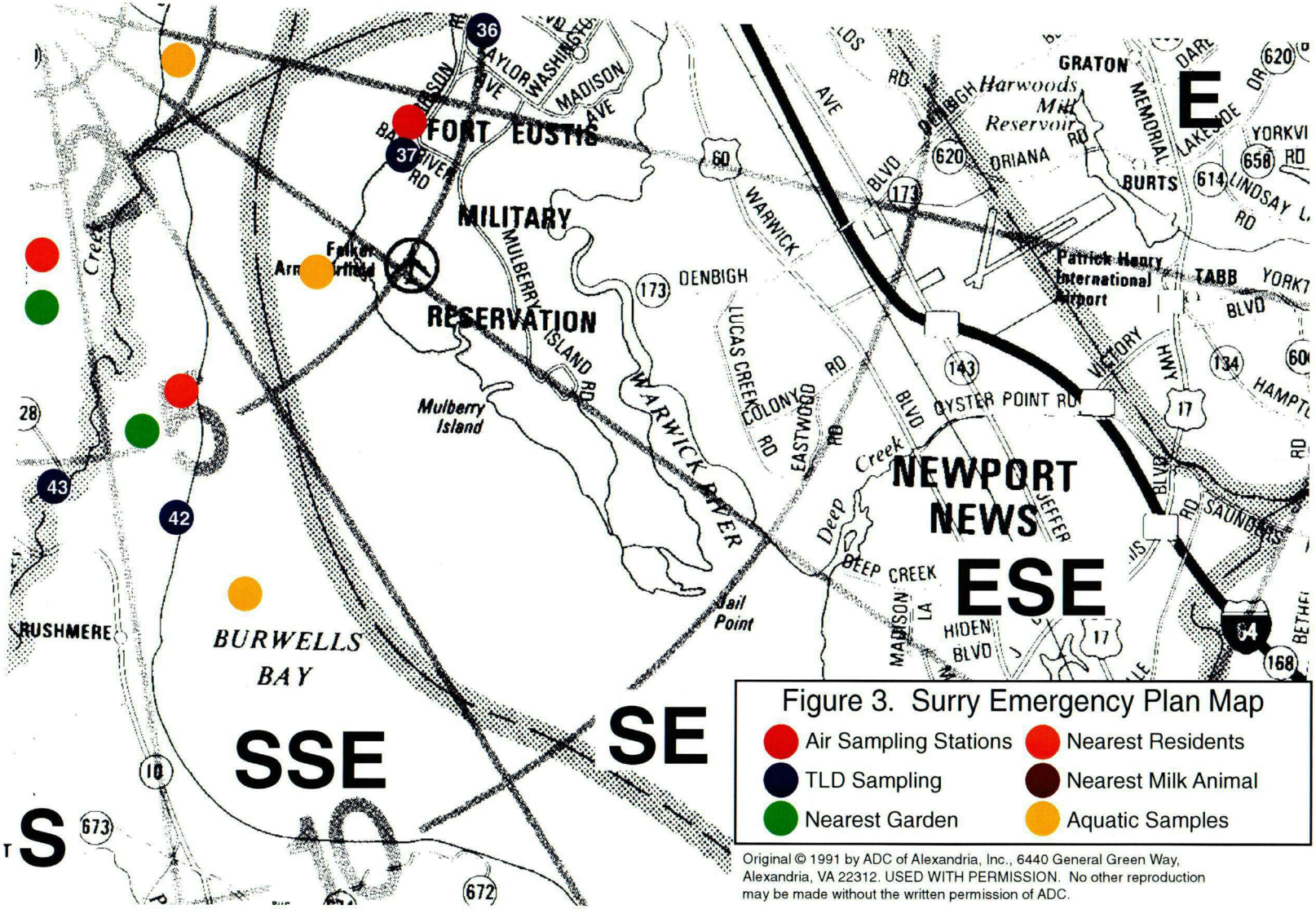

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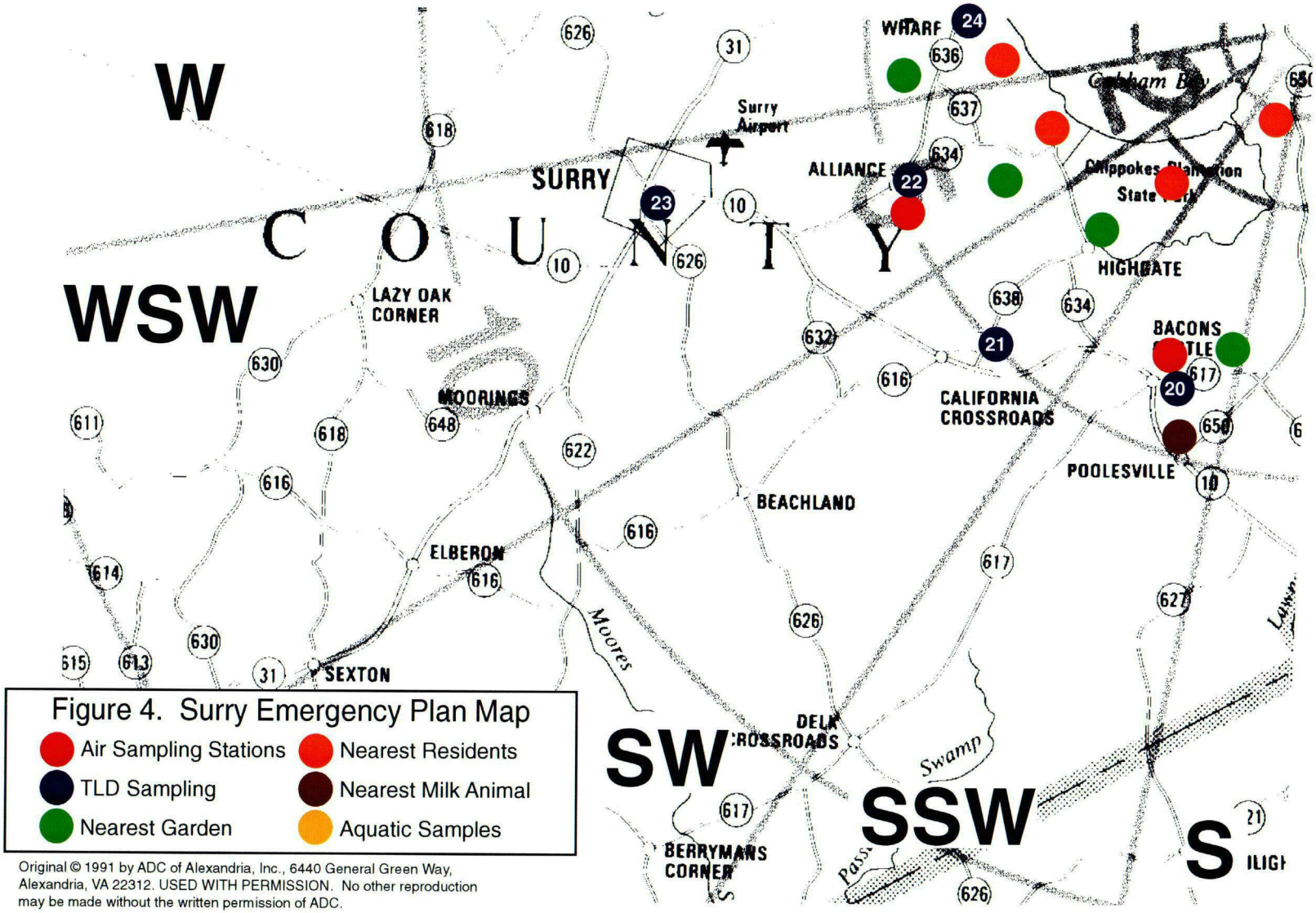

Figure 4. Surry Emergency Plan Map

- Air Sampling Stations
- Nearest Residents
- TLD Sampling
- Nearest Milk Animal
- Nearest Garden
- Aquatic Samples

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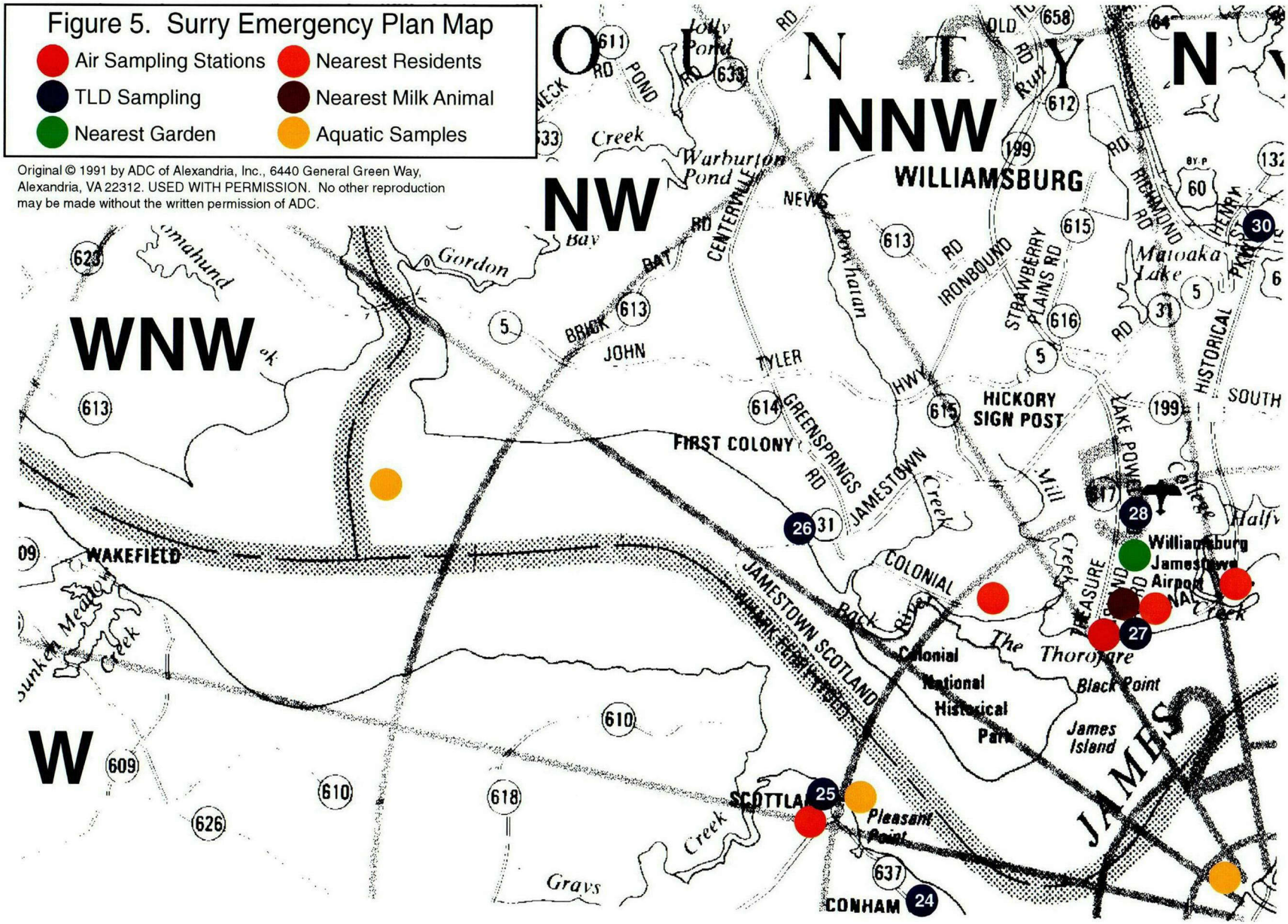
Figure 5. Surry Emergency Plan Map

- Air Sampling Stations
- Nearest Residents
- TLD Sampling
- Nearest Milk Animal
- Nearest Garden
- Aquatic Samples



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3. ANALYTICAL RESULTS

3.1 Summary of Results

In accordance with the Surry Offsite Dose Calculation Manual (ODCM), a summary table of the analytical results has been prepared and is presented in Table 3-1. A more detailed analysis of the data is given in Section 4.

Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Surry Power Station, Surry County, Virginia - 2002
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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measure-ments
Air Iodine (pCi/m^3)	I-131	416	0.07	< LLD	N/A		< LLD	< LLD	0
Air Particulate ($1E-3\ pCi/m^3$)	Gross Beta	416	10	24.6(364/364) (8.9-79.7)	ALL	5.1 mi. WSW	26.2(52/52) (8.9-41.3)	24.9(52/52) (9.9-46.2)	0
	Gamma	32							
	Be-7	32		87(28/28) (47-141)	NN	16.5 mi. ESE	98(4/4) (55-120)	98(4/4) (55-120)	0
	Cs-134	32	50	< LLD	N/A		< LLD	< LLD	0
	Cs-137	32	60	< LLD	N/A		< LLD	< LLD	0
River Water (pCi/Liter)	Gamma	24							
	K-40	24		122(10/12) (59-155)	SD	0.17 mi. NW	122(10/12) (59-155)	88(6/12) (36-135)	0
	Th-228	24		< LLD	N/A		< LLD	< LLD	0
	I-131	24	10	< LLD	N/A		< LLD	< LLD	0
	Mn-54	24	15	< LLD	N/A		< LLD	< LLD	0
	Fe-59	24	30	< LLD	N/A		< LLD	< LLD	0
	Co-58	24	15	< LLD	N/A		< LLD	< LLD	0
	Co-60	24	15	< LLD	N/A		< LLD	< LLD	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measurements
River Water	Gamma	24							
(pCi/Liter)	Zn-65	24	30	< LLD	N/A		< LLD	< LLD	0
	Zr-95	24	30	< LLD	N/A		< LLD	< LLD	0
	Nb-95	24	15	< LLD	N/A		< LLD	< LLD	0
	Cs-134	24	15	< LLD	N/A		< LLD	< LLD	0
	Cs-137	24	18	< LLD	N/A		< LLD	< LLD	0
	Ba-140	24	60	< LLD	N/A		< LLD	< LLD	0
	La-140	24	15	< LLD	N/A		< LLD	< LLD	0
	Tritium H-3	8	2000	< LLD	N/A		< LLD	< LLD	0
Well Water	Gamma	8							
(pCi/Liter)	I-131	8	1	< LLD	N/A		< LLD	N/A	0
	Mn-54	8	15	< LLD	N/A		< LLD	N/A	0
	Fe-59	8	30	< LLD	N/A		< LLD	N/A	0
	Co-58	8	15	< LLD	N/A		< LLD	N/A	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measurements
Well Water (pCi/Liter)	Gamma	8							
	Co-60	8	15	< LLD	N/A		< LLD	N/A	0
	Zn-65	8	30	< LLD	N/A		< LLD	N/A	0
	Zr-95	8	30	< LLD	N/A		< LLD	N/A	0
	Nb-95	8	15	< LLD	N/A		< LLD	N/A	0
	Cs-134	8	15	< LLD	N/A		< LLD	N/A	0
	Cs-137	8	18	< LLD	N/A		< LLD	N/A	0
	Ba-140	8	60	< LLD	N/A		< LLD	N/A	0
	La-140	8	15	< LLD	N/A		< LLD	N/A	0
	Tritium H-3	8	2000	< LLD	N/A		< LLD	N/A	0
Silt (pCi/kg dry)	Gamma	4							
	K-40	4		15785(2/2) (13770-17800)	CHIC	11.2 mi. WNW	17335(2/2) (17170-17500)	17335(2/2) (17170-17500)	0
	Th-228	4		975(2/2) (959-990)	CHIC	11.2 mi. WNW	1215(2/2) (1150-1280)	1215(2/2) (1150-1280)	0
	Cs-134	4	150	< LLD	N/A		< LLD	< LLD	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measurements
Silt	Gamma	4							
(pCi/kg dry)	Cs-137	4	180	286(2/2) (259-313)	SD	1.3 mi. NNW	286(2/2) (259-313)	224(2/2) (212-236)	0
	Co-60	4		53(2/2) (38-67)	SD	1.3 mi. NNW	53(2/2) (38-67)	< LLD	0
Shoreline Sediment	Gamma	4							
(pCi/kg dry)	K-40	4		7865(2/2) (6780-8950)	HIR	0.8 mi. N	7865(2/2) (6780-8950)	1025(2/2) (970-1080)	0
	Th-228	4		127(2/2) (116-138)	CHIC	11.2 mi. WNW	666(2/2) (131-1200)	666(2/2) (131-1200)	0
	Cs-134	4	150	< LLD	N/A		< LLD	< LLD	0
	Cs-137	4	180	< LLD	N/A		< LLD	< LLD	0
Milk	Gamma	36							
(pCi/Liter)	K-40	36		1392(24/24) (1240-1520)	CP	3.7 mi. NNW	1398(12/12) (1240-1520)	1324(12/12) (1037-1770)	0
	I-131	36	1	< LLD	N/A		< LLD	< LLD	0
	Cs-134	36	15	< LLD	N/A		< LLD	< LLD	0
	Cs-137	36	18	< LLD	N/A		< LLD	< LLD	0
	Strontium								
	Sr-89	4		< LLD	N/A		< LLD	N/A	0
	Sr-90	4		1.95(3/4) (1.52-2.5)	CP	3.7 mi. NNW	1.95(3/4) (1.52-2.5)	N/A	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measurements
Milk	Gamma	36							
(pCi/Liter)	Ba-140	36	60	< LLD	N/A		< LLD	< LLD	0
	La-140	36	15	< LLD	N/A		< LLD	< LLD	0
Clams	Gamma	8							
(pCi/kg wet)	K-40	8		733(4/6) (480-1090)	HIP	2.4 mi. NE	840(1/2)	620(1/2)	0
	Mn-54	8	130	< LLD	N/A		< LLD	< LLD	0
	Fe-59	8	260	< LLD	N/A		< LLD	< LLD	0
	Co-58	8	130	< LLD	N/A		< LLD	< LLD	0
	Co-60	8	130	< LLD	N/A		< LLD	< LLD	0
	Zn-65	8	260	< LLD	N/A		< LLD	< LLD	0
	Cs-134	8	130	< LLD	N/A		< LLD	< LLD	0
	Cs-137	8	150	< LLD	N/A		< LLD	< LLD	0
Oysters	Gamma	4							
(pCi/kg wet)	K-40	4		817(3/4) (590-970)	POS	6.4 mi. SSE	930(2/2) (890-970)	N/A	0
	Mn-54	4	130	< LLD	N/A		< LLD	N/A	0
	Fe-59	4	260	< LLD	N/A		< LLD	N/A	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measurements
Oysters	Gamma	4							
(pCi/kg wet)	Co-58	4	130	< LLD	N/A		< LLD	N/A	0
	Co-60	4	130	< LLD	N/A		< LLD	N/A	0
	Zn-65	4	260	< LLD	N/A		< LLD	N/A	0
	Cs-134	4	130	< LLD	N/A		< LLD	N/A	0
	Cs-137	4	150	< LLD	N/A		< LLD	N/A	0
Crabs	Gamma	1							
(pCi/kg wet)	K-40	1		1560(1/1)	SD	1.3 mi. NNW	1560(1/1)	N/A	0
	Mn-54	1	130	< LLD	N/A		< LLD	N/A	0
	Fe-59	1	260	< LLD	N/A		< LLD	N/A	0
	Co-58	1	130	< LLD	N/A		< LLD	N/A	0
	Co-60	1	130	< LLD	N/A		< LLD	N/A	0
	Zn-65	1	260	< LLD	N/A		< LLD	N/A	0
	Cs-134	1	130	< LLD	N/A		< LLD	N/A	0
	Cs-137	1	150	< LLD	N/A		< LLD	N/A	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD*	All Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Location Mean Range	Non-Routine Reported Measurements
Fish	Gamma	4							
(pCi/kg wet)	K-40	4		2413(4/4) (2200-2570)	SD	1.3 mi. NNW	2413(4/4) (2200-2570)	N/A	0
	Mn-54	4	130	< LLD	N/A		< LLD	N/A	0
	Fe-59	4	260	< LLD	N/A		< LLD	N/A	0
	Co-58	4	130	< LLD	N/A		< LLD	N/A	0
	Co-60	4	130	< LLD	N/A		< LLD	N/A	0
	Zn-65	4	260	< LLD	N/A		< LLD	N/A	0
	Cs-134	4	130	< LLD	N/A		< LLD	N/A	0
	Cs-137	4	150	< LLD	N/A		< LLD	N/A	0
Food Products	Gamma	3							
(pCi/kg wet)	K-40	3		8433(3/3) (3310-15610)	Brock's Farm	3.8 mi. S	8433(3/3) (3310-15610)	N/A	0
	I-131	3	60	< LLD	N/A		< LLD	N/A	0
	Cs-134	3	60	< LLD	N/A		< LLD	N/A	0
	Cs-137	3	80	< LLD	N/A		< LLD	N/A	0

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Table 3-1
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis		LLD*	All Indicator Locations	Location with Highest Mean			Control Location	Non-Routine
	Type	Total No.		Mean Range	Name	Distance Direction	Mean Range	Mean Range	Reported Measure-ments
Direct Radiation TLD (mR/ Std.Month)	Gamma	168	2	2.9(156/156) (0.9-5.9)	STA-38	16.5 mi. ESE	5.4(4/4) (4.5-5.9)	3.8(12/12) (1.4-6.6)	0

**LLD is the Lower Limit of Detection as defined and required in the USNRC Branch Technical Position on an Acceptable Radiological Environmental Monitoring Program, Revision 1, November 1979.*

3.2 Analytical Results of 2002 REMP Samples

Radiological analyses of environmental media characteristically approach and frequently fall below the detection limits of state-of-the-art measurement methods. The reported error is two times the standard deviation (2σ) of the net activity. Unless otherwise noted, the overall error (counting, sample size, chemistry, errors, etc.) is estimated to be 2 to 5 times that listed. Results are considered positive when the measured value exceeds 1.5 times the listed 2σ error (i.e., the measured value exceeds 3σ).

Because of counting statistics, negative values, zeros and numbers below the Minimum Detectable Level (MDL) are statistically valid pieces of data[1]. For the purposes of this report all valid data are presented, in order to indicate any background biases. Framatome ANP DE&S's analytical methods meet the Lower Limit of Detection (LLD) requirements given in Table 2 of the USNRC Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program", (November 1979, Revision 1) and the Surry ODCM.

Data are given according to sample type as indicated below.

1. Gamma Exposure Rate
2. Air Particulates, Gross Beta Radioactivity
3. Air Particulates, Weekly I-131
4. Air Particulates, Quantitative Gamma Spectra
5. Cow Milk
6. Food Products
7. Well Water
8. River Water
9. Silt
10. Shoreline Sediment
11. Fish
12. Oysters
13. Clams
14. Crabs

1 Analytical results are handled as recommended by HASL ("Reporting of Analytical Results from HASL," letter by Leo B. Higginbotham) and NUREG/CR-4007 (Sept. 1984).

TABLE 3-2
QUARTERLY
GAMMA EXPOSURE RATE
(MR/STD MONTH +/- 2 SIGMA)

L O C A T I O N S

PERIOD	02		03		04		05		06		07		08		09		10		11		12	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	4.9	0.5	4.7	0.4	3.4	0.3	3.8	0.7	4.3	0.2	3.3	0.3	3.3	0.3	3.6	0.6	3.4	0.4	3.4	0.5	4.1	0.9
2Q	4.1	0.4	3.1	1.3	2.1	2.5	3.7	0.8	3.4	0.9	2.3	0.4	3.0	0.4	2.5	1.1	1.9	0.2	3.0	0.4	2.4	1.0
3Q	4.8	0.5	4.3	0.6	2.8	1.6	2.4	0.9	3.3	0.9	3.9	1.2	3.2	0.5	2.3	1.5	2.8	0.5	3.3	2.0	2.8	0.4
4Q	5.0	0.5	5.1	0.2	4.1	0.6	4.0	0.4	4.7	0.5	3.6	0.3	3.3	0.3	3.7	0.3	3.3	0.6	3.7	0.4	3.8	0.1

PERIOD	13		14		15		16		17		18		19		20		21		22		23	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	3.9	0.8	4.2	1.0	3.1	0.7	3.6	0.4	2.4	0.5	1.8	0.5	2.5	0.5	2.7	0.4	2.3	1.1	1.8	1.3	3.3	1.3
2Q	3.2	0.2	3.7	0.4	2.1	1.5	3.1	0.8	2.3	0.6	1.0	0.9	2.4	0.2	2.1	0.6	2.6	0.6	1.7	1.6	2.6	1.1
3Q	2.6	0.7	3.0	0.7	2.4	0.2	2.3	1.9	2.6	0.6	1.7	0.7	1.6	0.3	1.7	1.5	2.3	1.3	1.0	0.7	2.2	0.8
4Q	4.1	0.3	4.6	0.4	3.5	0.5	3.5	0.5	3.2	0.4	2.2	0.2	2.7	0.2	2.9	0.1	2.8	0.4	2.3	0.7	4.4	0.5

PERIOD	24		25		26		27		28		29		30		31		32		33		34	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	2.9	0.5	3.2	0.8	2.7	0.2	2.9	1.4	2.7	0.7	2.6	1.0	2.7	0.5	1.6	1.0	2.8	0.2	2.9	0.2	3.1	0.3
2Q	2.0	0.8	1.8	0.6	1.6	0.3	1.4	0.3	1.7	0.5	0.9	0.2	1.7	1.2	1.7	0.5	1.4	0.1	2.3	1.2	2.3	0.4
3Q	1.9	0.3	2.8	1.0	1.9	0.3	1.4	1.1	1.6	0.4	1.3	2.3	2.3	0.8	1.7	1.1	2.3	1.0	2.1	0.5	2.8	0.8
4Q	3.3	0.3	3.5	0.6	3.1	0.5	2.8	0.8	3.0	0.9	2.6	0.3	2.8	0.4	2.2	0.3	3.1	0.6	2.9	1.2	3.5	0.2

PERIOD	35		36		37		38		39C		40C		41C		42		43	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	4.3	0.5	5.0	0.9	3.4	1.2	5.9	0.6	2.7	0.4	3.6	0.5	6.6	1.2	2.9	0.4	2.7	0.4
2Q	2.4	0.3	2.9	1.1	2.7	0.4	5.1	0.4	2.0	1.0	3.1	0.2	5.3	0.6	2.1	0.6	1.7	1.0
3Q	3.1	1.1	2.9	1.7	2.0	2.2	4.5	0.6	1.4	1.0	2.5	0.6	5.3	0.7	2.3	0.6	1.8	0.6
4Q	4.0	0.4	4.5	0.4	2.7	0.9	5.9	0.6	2.9	0.2	3.6	0.3	6.6	0.8	3.0	0.4	3.0	0.5

TABLE 3-3
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(1E-3 PCI/M3)

L O C A T I O N S

PERIOD ENDING	SS	(+/-)	HIR	(+/-)	BC	(+/-)	ALL	(+/-)	CP	(+/-)	BASF	(+/-)	FE	(+/-)	NN-C	(+/-)
JAN 09	26.6	3.1	27.4	3.1	28.1	3.1	41.3	3.7	27.4	3.2	29.6	3.1	30.8	3.2	26.3	3.1
JAN 15	23.9	3.0	24.0	3.0	27.2	3.1	32.3	3.2	26.5	3.1	27.2	3.1	28.3	3.2	27.3	3.1
JAN 22	30.1	3.1	30.5	3.1	28.9	3.1	35.0	3.2	35.4	3.3	35.2	3.2	35.4	3.2	31.1	3.3
JAN 29	14.4	2.8	18.1	2.9	19.6	2.9	20.5	3.0	19.4	3.0	21.4	3.0	22.0	3.0	20.9	3.0
FEB 05	20.6	2.5	25.9	2.7	21.1	2.5	26.0	2.7	24.4	2.7	24.4	2.7	25.4	2.7	23.7	2.7
FEB 12	20.5	2.9	20.9	2.9	22.2	2.9	24.3	2.9	24.2	3.1	22.8	2.9	24.9	3.0	23.9	3.0
FEB 19	18.8	2.6	20.7	2.6	21.4	2.6	25.8	2.7	21.4	2.7	23.8	2.7	22.0	2.7	23.3	2.7
FEB 26	23.3	2.8	25.5	2.5 A	23.0	2.7	29.9	3.0	24.9	2.8	28.1	2.9	24.2	2.8	24.1	2.8
MAR 05	18.6	2.8	22.1	3.4	21.2	2.9	27.1	3.0	24.4	3.0	19.5	2.8	21.8	2.9	25.6	3.1
MAR 12	27.9	2.7	28.9	2.8	30.2	2.8	33.2	2.8	29.1	2.8	30.5	2.8	55.0	12.0 B	27.4	2.8
MAR 20	17.1	2.2	16.4	2.1	19.3	2.2	21.7	2.3	18.0	2.2	18.5	2.2	16.0	2.1	18.9	2.2
MAR 26	26.1	3.8	25.8	3.7	27.2	3.7	33.6	3.9	25.6	3.7	27.8	3.7	29.7	3.9	25.9	3.7
APR 02	17.4	2.4	19.8	2.6	17.6	2.4	24.8	2.6	22.7	2.6	21.7	2.6	18.8	2.5	19.8	2.5
APR 09	20.8	2.4	32.3	6.8 C	20.3	2.4	29.1	2.7	22.6	2.5	21.3	2.4	25.6	2.6	24.2	2.5
APR 16	15.0	2.3	18.3	2.4	16.7	2.4	24.0	2.6	17.3	2.4	14.8	2.3	18.4	2.4	14.2	2.3
APR 23	18.5	2.5	23.3	2.6	21.5	2.6	22.1	2.6	19.0	2.5	18.5	2.5	21.3	2.6	21.5	2.6
APR 30	21.6	2.7	23.3	2.8	21.0	2.7	23.3	2.7	15.8	2.6	21.1	2.7	22.4	2.8	19.7	2.7
MAY 06	19.2	3.0	20.6	3.1	20.0	3.1	20.6	3.1	20.6	3.3	21.0	3.1	22.2	3.1	18.0	3.0
MAY 14	17.8	2.3	25.2	2.5	22.4	2.5	28.7	2.7	29.8	2.6	22.2	2.4	23.7	2.5	23.0	2.4
MAY 21	21.0	2.4	22.9	2.5	20.2	2.4	25.3	2.6	22.3	2.5	20.3	2.4	26.1	2.6	19.9	2.4
MAY 29	22.5	2.4	24.9	2.4	21.0	2.3	24.0	2.4	25.9	2.5	22.6	2.3	22.8	2.3	19.0	2.2
JUN 04	18.2	2.5	20.9	2.6	18.9	2.6	22.7	2.7	22.4	2.6	21.4	2.7	24.2	2.8	25.6	2.8
JUN 11	18.6	2.4	32.3	3.7	25.3	2.6	24.3	2.5	31.3	3.7	21.8	2.5	21.5	2.5	25.7	2.6
JUN 18	19.2	2.7	24.0	2.9	26.4	2.9	39.2	4.4	22.3	1.8	23.2	2.8	18.6	2.7	27.1	2.9
JUN 25	31.4	5.8 D	24.8	2.8	24.4	2.8	20.2	2.7	19.9	2.7	17.8	2.6	18.4	2.7	21.3	2.8

TABLE 3-3
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(1E-3 PCI/M3)

L O C A T I O N S

PERIOD ENDING	SS	(+/-)	HIR	(+/-)	BC	(+/-)	ALL	(+/-)	CP	(+/-)	BASF	(+/-)	FE	(+/-)	NN-C	(+/-)
JUL 02	16.3	2.2	19.0	2.3	22.0	2.5	20.6	2.4	18.9	2.3	18.4	2.3	19.1	2.3	20.2	2.4
JUL 09	35.1	3.4	30.7	3.0	42.7	3.7	30.4	3.0	35.0	3.2	31.4	3.0	33.5	3.3	36.8	3.5
JUL 16	15.1	2.4	15.3	2.4	13.2	2.3	12.2	2.3	16.3	2.4	12.9	2.3	13.8	2.4	13.3	2.3
JUL 23	40.2	3.4	38.7	3.1	39.4	3.7	38.9	3.2	37.1	3.1	39.0	3.2	36.0	3.1	37.5	3.8
JUL 30	21.8	3.1	23.2	3.2	23.1	3.1	21.6	3.1	21.2	3.1	18.6	3.0	22.8	3.1	22.6	3.2
AUG 06	29.9	3.9	32.6	3.9	41.1	4.5	30.4	3.8	31.5	3.9	32.2	3.9	30.4	3.9	35.7	4.0
AUG 13	20.6	2.9	22.2	3.0	25.4	3.1	22.3	3.0	23.8	3.1	19.7	2.5 E	24.7	3.1	24.8	2.9 E
AUG 20	24.2	2.5	24.2	2.5	26.4	2.6	24.9	2.5	23.4	2.5	22.3	2.6	22.8	2.6	24.5	2.8
AUG 27	33.4	3.0	79.7	7.0 C	42.7	3.7	33.6	2.8	31.8	2.7	31.6	2.7	31.8	2.8	46.2	3.7
SEP 03	10.1	2.5	10.6	2.5	11.5	2.5	8.9	2.4	9.7	2.4	10.3	2.5	10.0	2.5	9.9	2.5
SEP 10	22.7	2.9	22.0	2.9	25.6	3.0	22.2	2.9	20.9	2.8	18.5	2.8	19.4	2.8	23.4	3.0
SEP 17	24.2	3.3	23.8	3.3	30.8	3.6	24.3	3.3	22.6	3.2	24.5	3.3	27.3	3.4	28.2	3.4
SEP 24	31.7	3.5	31.7	3.5	42.8	4.5	33.8	3.6	29.9	3.4	31.6	3.5	30.0	3.5	34.8	3.7
OCT 01	26.6	3.6	25.7	3.6	29.4	3.7	25.5	3.5	25.3	3.5	24.0	3.5	23.9	3.5	25.4	3.6
OCT 08	36.5	3.6	29.1	3.1	32.0	3.6	28.8	3.0	35.0	3.3	29.5	3.0	31.2	3.2	35.1	3.5
OCT 15	19.5	3.0	21.6	3.0	20.4	3.0	22.6	3.1	18.0	2.9	18.8	3.0	20.0	3.0	20.3	3.0
OCT 22	26.8	3.4	27.8	3.4	32.9	3.7	23.8	3.2	26.3	3.3	23.9	3.2	25.7	3.3	30.7	3.7
OCT 29	26.4	3.2	31.8	3.4	33.8	3.5	31.6	3.4	27.2	3.1	30.1	3.9	27.5	3.2	36.2	3.9
NOV 05	20.4	3.2	26.7	3.3	29.0	3.6	23.9	3.4	22.6	3.1	20.8	3.3	24.3	3.4	25.4	3.5
NOV 12	22.0	3.3	22.7	3.4	25.0	3.4	27.5	3.5	24.6	3.4	22.2	3.3	22.4	3.3	26.2	3.5
NOV 19	19.1	3.2	18.2	3.2	20.4	3.3	18.7	3.2	18.1	3.2	18.0	3.2	20.9	3.3	21.8	3.4
NOV 26	23.3	3.3	22.5	3.3	32.9	3.7	28.5	3.5	23.5	3.3	24.9	3.4	23.3	3.3	22.2	3.8
DEC 02	22.9	3.8	20.8	3.7	26.7	4.0	23.5	3.8	21.3	3.7	20.0	3.7	26.1	3.9	20.8	3.8
DEC 10	30.6	3.4	27.3	3.2	31.6	3.7	29.1	3.3	28.0	3.2	24.7	3.1	28.3	3.3	27.1	3.3
DEC 17	21.7	2.9	17.9	2.8	23.0	2.9	20.3	2.8	18.4	2.8	18.0	2.8	20.8	2.9	17.7	2.8
DEC 23	20.6	3.9	23.9	4.1	25.1	4.1	25.0	4.0	20.0	3.9	18.9	3.9	20.8	4.0	21.4	4.0
DEC 31	27.5	3.2	24.7	3.1	32.1	3.5	29.7	3.2	25.4	3.1	25.5	3.1	26.9	3.2	27.8	3.3

Table 3-3 Footnotes

A Sample collected on 2/27/02.
B Sampler malfunction. Sample volume based on sampler timer indication at time of malfunction. See Program Exceptions.
C Sampler malfunction. Sample volume based on sampler timer indication at time of malfunction. LLD met.
D Sampler inoperable at time of sample collection. The sampler timer indicated 0.0 hours of sampler run time. Typical weekly particulate loading was evident on sample filter. Conservative estimate of 3 days sampler run time was assigned for sample volume determination. LLD met.
E Samples collected on 8/14/02.

TABLE 3-4
AIRBORNE IODINE
I-131 (1E-3 PCI/M3)

L O C A T I O N S

PERIOD ENDING	SS	(+/-)	HIR	(+/-)	BC	(+/-)	ALL	(+/-)	CP	(+/-)	BASF	(+/-)	FE	(+/-)	NN-C	(+/-)
JAN 09	-18	19	5	17	-21	16	7	18	0	18	4	16	21	14	-4	17
JAN 15	7	15	3	13	-2	14	2	14	-7	15	-3	14	-4	16	-1	14
JAN 22	-1	11	-3	13	-7	12	-12	12	0	12	-5	12	0	11	-4	11
JAN 29	4	13	-3	11	6	12	-12	10	-5	11	-3	11	-2	13	1	11
FEB 05	3	12	2	12	0	12	1	13	3	12	-1	13	0	13	0	12
FEB 12	-17	14	-8	13	2	11	4	13	-3	13	-7	11	4	12	-1	13
FEB 19	0	13	-13	15	2	13	2	11	-7	11	-3	11	-6	11	12	11
FEB 26	-5	19	1	14 A	0	15	-7	19	-8	18	2	15	20	20	2	21
MAR 05	4	17	15	20	4	15	6	20	-1	19	1	17	-3	19	1	17
MAR 12	-3	19	11	21	-5	17	18	18	0	21	19	20	26	22 B	19	20
MAR 20	11	14	4	16	2	15	11	15	-9	15	4	15	-9	14	-6	17
MAR 26	2	15	0	18	0	17	4	17	11	16	2	13	-2	13	-4	11
APR 02	-6	13	11	15	1	12	1	11	-1	11	-8	12	12	12	-5	12
APR 09	11	16	8	41 C	-5	16	0	17	-4	20	5	17	0	14	0	13
APR 16	-3	16	14	18	8	18	-7	17	7	19	15	16	0	16	4	17
APR 23	-1	16	-9	17	-6	19	-7	18	-3	15	-12	19	3	16	15	20
APR 30	-14	20	14	19	12	18	-2	16	3	22	-16	17	-10	21	10	21
MAY 06	-2	14	-2	13	-5	13	1	12	-3	13	-1	14	-4	12	-5	9
MAY 14	2	12	6	12	0	11	10	12	-3	11	0	10	1	10	-5	10
MAY 21	0	16	-2	18	-2	17	13	17	-6	20	-7	16	0	21	2	15
MAY 29	16	18	-3	16	11	17	11	17	5	15	20	19	-3	17	-3	18
JUN 04	0	11	1	12	-5	14	-15	13	-5	14	-8	17	-15	15	-4	16
JUN 11	1	11	-2	24	4	13	-4	9	15	22	-1	11	-3	13	1	13
JUN 18	-3	18	-6	16	1	18	9	31	-7	18	7	16	6	14	0	17
JUN 25	-10	17 D	5	16	-4	15	-10	18	-8	21	12	16	-14	15	-4	17

TABLE 3-4
AIRBORNE IODINE
I-131 (1E-3 PCI/M3)

L O C A T I O N S

PERIOD ENDING	SS	(+/-)	HIR	(+/-)	BC	(+/-)	ALL	(+/-)	CP	(+/-)	BASF	(+/-)	FE	(+/-)	NN-C	(+/-)
JUL 02	4	23	-9	18	-1	26	12	19	14	24	-12	27	-22	18	-13	16
JUL 09	-4	13	-2	14	-18	17	-11	15	2	15	-3	14	-3	15	0	15
JUL 16	-10	9	-1	11	1	13	4	13	1	10	2	11	-3	8	7	11
JUL 23	-7	13	0	11	1	13	-8	10	1	12	-6	14	4	12	8	18
JUL 30	5	10	-7	15	-7	13	6	16	13	16	7	13	-13	14	0	18
AUG 06	2	10	-8	14	0	14	2	13	-2	15	-20	26	-2	17	-2	14
AUG 13	9	11	0	10	-3	12	13	13	-8	16	-6	12 E	9	15	7	13 E
AUG 20	6	13	3	11	4	13	-10	11	-4	13	-5	14	11	12	0	11
AUG 27	12	15	-5	19 C	-5	18	-9	14	11	14	1	12	7	15	3	16
SEP 03	6	19	10	18	-10	13	8	21	6	17	-4	19	-8	16	2	16
SEP 10	2	9	-4	9	-6	11	-4	11	4	9	-1	9	2	9	-4	10
SEP 17	-2	14	2	10	-4	11	2	11	1	13	9	12	2	10	5	11
SEP 24	-20	18	2	21	-6	23	2	16	1	12	-2	17	0	18	5	17
OCT 01	9	10	0	9	10	9	-1	14	0	11	1	11	-4	12	-14	13
OCT 08	-17	20	-2	16	-3	15	9	14	-4	18	-1	15	0	15	-4	11
OCT 15	-3	8	4	9	5	11	6	11	-10	10	-5	12	0	12	-1	9
OCT 22	-5	22	-5	21	5	21	-1	24	-9	21	-19	20	-3	23	-1	21
OCT 29	9	21	-11	15	-9	12	8	21	-3	17	-12	28	-7	22	-1	25
NOV 05	2	10	3	9	-3	10	2	9	-7	9	-10	12	-2	11	2	14
NOV 12	-6	8	-4	7	-4	7	0	8	-1	9	-7	8	0	8	2	8
NOV 19	-6	15	9	14	6	14	-13	15	-3	15	8	16	11	14	2	12
NOV 26	13	24	2	20	-2	20	9	19	-1	13	1	11	-5	13	11	14
DEC 02	6	16	0	16	-1	14	5	16	-6	20	19	20	0	18	-16	18
DEC 10	13	17	3	9	3	22	8	18	10	20	-5	16	3	18	-5	17
DEC 17	-6	18	0	16	6	18	0	21	6	18	0	18	6	16	-6	14
DEC 23	-1	15	8	13	-7	13	-4	13	-8	13	-3	15	4	14	8	14
DEC 31	-11	13	0	11	-1	13	-3	17	8	18	2	23	-4	21	-9	21

Table 3-4 Footnotes

A Sample collected on 2/27/02.

B Sampler malfunction. Sample volume based on sampler timer indication at time of malfunction. Sample was analyzed with an extended count time to meet the required LLD.

C Sampler malfunction. Sample volume based on sampler timer indication at time of malfunction. LLD met.

D Sampler inoperable at time of sample collection. The sampler timer indicated 0.0 hours of sampler run time. Typical weekly particulate loading was evident on sample filter. Conservative estimate of 3 days sampler run time was assigned for sample volume determination. LLD met.

E Samples collected on 8/14/02.

TABLE 3-5
AIR PARTICULATES
GAMMA SPECTRA - QTR 1
(1E-3 PCI/M3)

LOCATION	BE-7		K-40		CO-60		ZR-95		NB-95		RU-103	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
SS	119	45	-3.6	7.2	0.14	0.58	0.8	2.7	1.1	4.1	1.6	3.3
HIR	97	37	1.5	7.8	0.32	0.79	-0.6	3.0	-5.7	6.0	0.0	4.3
BC	81	36	5.4	7.9	0.51	0.82	0.1	1.6	-1.7	4.1	2.1	2.5
ALL	81	42	3.5	8.7	0.32	0.45	-1.1	1.5	2.1	5.1	0.0	2.6
CP	91	37	14.0	11.0	-0.32	0.65	-1.7	3.5	-4.0	4.9	-2.5	3.9
BASF	70	42	9.0	10.0	0.51	0.82	0.7	2.0	2.9	5.8	1.0	1.5
FE	72	36	9.0	10.0	-0.02	0.83	1.3	1.9	-2.7	3.1	1.2	3.3
NN-C	120	36	8.5	7.9	-0.24	0.59	-0.4	2.6	3.3	5.5	-0.4	2.5

LOCATION	RU-106		CS-134		CS-137		BA-140		CE-141		TH-228	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
SS	0.7	5.0	-0.49	0.60	-0.27	0.56	170	250	-0.3	4.7	0.3	2.4
HIR	1.9	4.6	-0.61	0.92	-0.09	0.49	100	140	-3.4	7.1	-0.5	2.5
BC	4.4	6.9	-0.44	0.57	0.08	0.36	50	190	-0.2	4.4	-1.4	2.0
ALL	2.9	4.7	0.03	0.71	-0.17	0.58	0	0	-0.8	5.2	0.3	2.4
CP	0.0	6.0	-0.36	0.70	0.28	0.68	-110	210	-1.5	6.4	-1.0	2.9
BASF	2.6	5.5	0.03	0.49	-0.16	0.57	-50	110	-3.7	3.7	1.1	2.0
FE	1.8	5.7	0.05	0.86	-0.05	0.58	0	230	-2.1	5.0	0.8	1.6
NN-C	1.4	6.7	-0.57	0.49	0.42	0.44	60	210	4.5	6.0	-1.2	1.9

TABLE 3-5
AIR PARTICULATES
GAMMA SPECTRA - QTR 2
(1E-3 PCI/M3)

LOCATION	BE-7		K-40		CO-60		ZR-95		NB-95		RU-103	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
SS	120	36	5.4	8.2	0.16	0.67	-0.8	3.1	0.1	3.7	0.3	2.9
HIR	70	30	13.0	11.0	-0.28	0.55	0.8	1.9	0.7	3.4	0.3	2.7
BC	136	36	10.0	10.0	-0.15	0.46	0.1	1.1	0.9	3.7	0.3	2.1
ALL	141	31	7.1	7.1	0.15	0.44	0.2	1.9	0.2	3.2	1.8	2.4
CP	114	35	0.2	5.1	-0.06	0.65	0.8	2.0	1.8	3.9	-1.7	2.6
BASF	109	34	2.1	8.8	-0.03	0.53	-0.3	1.4	1.5	3.6	-0.3	2.1
FE	119	32	-0.3	5.1	-0.04	0.44	-0.4	1.8	-1.8	2.8	-1.0	1.8
NN-C	112	33	10.0	11.0	0.16	0.64	0.4	2.4	2.3	3.9	-0.3	3.3

LOCATION	RU-106		CS-134		CS-137		BA-140		CE-141		TH-228	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
SS	3.8	5.0	-0.22	0.45	0.46	0.61	-4	89	0.0	5.0	1.7	2.3
HIR	-1.5	5.0	-0.11	0.47	-0.66	0.60	38	83	-0.8	4.1	0.9	2.5
BC	-4.2	6.1	-0.49	0.41	0.26	0.58	-70	100	1.7	3.5	-0.2	2.2
ALL	-2.2	3.5	0.05	0.45	-0.06	0.44	46	68	0.3	3.6	1.3	1.8
CP	0.7	6.5	0.08	0.40	-0.07	0.54	-30	100	-1.1	4.6	2.6	2.3
BASF	-0.5	4.8	0.29	0.46	0.44	0.57	23	47	-0.8	4.0	-0.2	2.8
FE	-2.6	4.9	-0.05	0.31	-0.04	0.35	15	69	0.5	3.2	-0.6	1.6
NN-C	4.4	6.5	0.36	0.64	0.07	0.57	62	72	1.8	4.5	-2.9	2.5

TABLE 3-5
AIR PARTICULATES
GAMMA SPECTRA - QTR 3
(1E-3 PCI/M3)

LOCATION	BE-7		K-40		CO-60		ZR-95		NB-95		RU-103	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
SS	65	17	-0.2	5.3	-0.35	0.55	0.1	1.3	0.3	1.3	-0.6	0.8
HIR	47	20	6.6	9.5	0.22	0.65	1.0	1.4	-1.2	1.6	0.0	1.3
BC	54	21	-2.9	8.1	0.10	0.62	-1.1	1.4	-1.3	2.2	1.1	1.4
ALL	64	17	0.7	7.2	-0.03	0.52	-0.7	1.6	-0.8	1.7	0.6	1.0
CP	57	19	2.5	6.8	-0.34	0.84	0.5	1.7	0.1	1.4	0.0	1.2
BASF	80	21	3.0	8.5	0.14	0.55	0.3	2.0	-0.6	1.9	1.8	1.4
FE	50	18	0.5	4.9	0.48	0.62	0.2	2.0	-0.4	1.6	0.4	1.3
NN-C	55	20	-3.1	5.7	-0.32	0.69	-1.1	1.4	-1.1	1.1	-0.6	1.2

LOCATION	RU-106		CS-134		CS-137		BA-140		CE-141		TH-228	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
SS	2.3	4.5	0.10	0.37	-0.09	0.54	-3	11	0.4	1.4	-1.2	1.7
HIR	-2.0	4.1	0.12	0.35	-0.06	0.43	-8	23	0.3	1.9	-1.9	1.7
BC	-0.7	5.5	-0.16	0.49	-0.24	0.54	-8	17	-1.4	1.8	0.5	1.9
ALL	0.1	5.2	-0.06	0.41	-0.39	0.43	12	14	0.4	1.6	0.5	2.2
CP	-2.9	4.4	-0.14	0.53	0.03	0.52	0	11	-0.6	1.5	1.1	2.0
BASF	0.7	5.2	-0.37	0.63	-0.07	0.56	7	10	0.1	2.6	-0.9	1.6
FE	2.0	4.1	-0.08	0.32	-0.14	0.51	-8	11	-1.1	1.9	1.8	2.2
NN-C	0.4	4.5	0.27	0.65	0.24	0.39	8	17	-0.3	1.8	2.6	2.6

TABLE 3-5
AIR PARTICULATES
GAMMA SPECTRA - QTR 4
(1E-3 PCI/M3)

LOCATION	BE-7	(+/-)	K-40	(+/-)	CO-60	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)
SS	75	15	4.8	5.1	0.12	0.33	0.2	1.1	-1.1	1.5	-0.2	1.1
HIR	89	19	2.3	5.3	0.21	0.50	0.0	1.3	1.4	2.3	-0.5	1.6
BC	108	20	7.8	7.4	-0.22	0.54	0.1	1.2	0.6	1.7	-0.7	1.2
ALL	85	19	-3.0	3.7	0.21	0.42	0.5	1.2	0.3	1.1	-0.4	1.3
CP	86	15	3.0	5.0	-0.05	0.35	-0.8	1.2	-0.4	1.3	0.0	1.1
BASF	79	21	1.9	6.7	0.09	0.54	0.5	1.5	0.3	1.8	0.0	1.9
FE	75	19	-1.2	5.5	0.17	0.51	-1.0	1.2	0.4	1.6	0.2	1.1
NN-C	106	23	0.3	7.9	0.30	0.49	-0.5	1.9	-0.1	1.9	0.0	1.4

LOCATION	RU-106	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	CE-141	(+/-)	TH-228	(+/-)
SS	-0.2	3.9	-0.15	0.41	0.20	0.36	-15	16	-0.5	1.6	-0.7	1.3
HIR	1.9	3.9	-0.25	0.44	-0.36	0.43	7	23	0.5	2.6	0.1	1.7
BC	-1.9	3.6	-0.08	0.30	-0.07	0.41	5	21	0.7	1.8	-0.2	1.6
ALL	-2.3	3.5	0.06	0.43	0.24	0.32	18	22	-1.3	1.5	-0.5	1.3
CP	-3.7	3.6	-0.11	0.27	-0.19	0.31	-15	19	-0.4	1.4	-0.5	1.1
BASF	-0.5	3.6	0.36	0.63	0.26	0.46	-7	29	-2.0	2.8	-0.5	1.7
FE	-1.0	3.5	-0.37	0.36	-0.20	0.28	-6	26	-0.3	1.7	0.5	1.4
NN-C	0.1	4.1	-0.04	0.38	-0.17	0.38	12	39	1.1	2.0	-0.6	1.3

TABLE 3-6
COW MILK
(PCI/L)

LOCATION	COLLECTION DATE	K-40	(+/-)	SR-89	(+/-)	SR-90	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)
CP	01/09/02	1340	110					0.16	0.24	1.9	2.7	1.8	2.4	0.6	3.3	0.7	3.8
	02/05/02	1520	110					0.01	0.08	0.3	2.9	-0.6	2.5	1.8	2.3	2.1	2.6
	03/05/02	1400	98	-6.4	6.6	2.5	1.1	-0.06	0.08	1.8	2.5	-2.1	2.5	-2.0	4.9	-2.3	5.6
	04/17/02	1420	120					0.21	0.26	2.9	3.6	-2.7	3.2	-1.7	5.6	-2.0	6.4
	05/15/02	1510	140					-0.02	0.07	3.8	3.5	0.2	3.6	0.5	5.7	0.6	6.5
	06/18/02	1450	100	-6.7	5.1	1.5	0.7	0.70	0.78	0.6	2.8	2.1	2.9	2.4	3.7	2.7	4.2
	07/02/02	1300	110					0.35	0.49	1.1	3.4	-2.6	3.1	-3.1	5.6	-3.5	6.5
	08/06/02	1240	110					0.11	0.33	-0.3	3.3	2.2	3.1	-5.3	5.6	-6.0	6.5
	09/03/02	1390	110	-4.2	4.0	1.1	1.0	0.73	0.72	0.6	3.3	1.5	3.0	0.6	4.3	0.7	4.9
	10/01/02	1400	100					0.17	0.52	-1.8	2.7	-2.1	2.8	-2.6	4.2	-3.0	4.9
	11/12/02	1450	110					0.02	0.28	-1.3	3.1	0.3	3.1	1.5	5.1	1.8	5.9
	12/02/02	1350	110	6.3	5.6	1.8	0.9	0.04	0.30	-2.4	2.9	-0.7	3.1	1.7	4.3	2.0	5.0
EPPS	01/22/02	1430	130					0.05	0.12	-1.1	3.3	-1.5	3.1	3.9	4.4	4.5	5.0
	02/26/02	1370	150					0.07	0.14	0.5	3.6	3.2	4.1	2.0	5.1	2.3	5.9
	03/26/02	1452	96					0.04	0.23	-2.6	2.5	-0.1	2.6	-0.8	3.8	-0.9	4.4
	04/23/02	1420	110					0.03	0.09	0.5	2.8	1.5	3.0	-3.6	5.3	-4.2	6.1
	05/29/02	1450	100					-0.08	0.03	-0.9	2.8	-0.1	2.6	-1.2	3.7	-1.4	4.2
	06/18/02	1340	110					0.28	0.52	-2.2	3.2	-0.9	3.1	-2.4	4.8	-2.8	5.5
	07/23/02	1480	100					0.08	0.21	1.2	2.9	-1.4	3.1	-0.5	4.1	-0.5	4.8
	08/20/02	1280	120					0.14	0.53	2.5	3.6	1.6	3.4	-0.4	4.8	-0.4	5.5
	09/24/02	1430	110					0.22	0.52	2.6	2.3	0.1	2.6	3.0	3.1	3.4	3.6
	10/22/02	1322	83					0.27	0.53	0.2	2.3	0.6	2.4	0.7	3.9	0.9	4.5
	11/26/02	1372	80					0.39	0.49	-0.2	2.0	-0.3	2.2	0.7	3.1	0.8	3.6
	12/17/02	1300	120					0.22	0.43	1.9	3.3	-0.3	3.2	-0.8	4.2	-0.9	4.8

STRONTIUM ANALYSES FOR CP MILK SAMPLES REQUESTED BY THE COMMONWEALTH OF VIRGINIA

TABLE 3-6
COW MILK
(PCI/L)

LOCATION	COLLECTION DATE	K-40	(+/-)	SR-89	(+/-)	SR-90	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)
PIV-C	01/22/02	1190	140					0.00	0.12	1.3	3.6	-1.2	3.1	0.6	4.5	0.7	5.2
	02/26/02	1170	120					-0.03	0.08	1.8	3.2	0.8	3.1	1.9	5.2	2.1	6.0
	03/26/02	1037	87					0.08	0.13	0.7	2.8	0.7	2.7	0.7	4.8	0.8	5.6
	04/23/02	1770	120					0.04	0.09	-0.5	2.9	0.5	3.2	-1.5	3.3	-1.7	3.8
	05/23/02	1410	120					0.00	0.17	-0.2	2.7	0.8	3.1	-2.8	5.3	-3.3	6.1
	06/18/02	1290	130					0.27	0.50	-1.3	3.4	-1.4	3.9	0.0	5.1	0.0	5.9
	07/23/02	1332	92					0.11	0.25	-2.8	2.7	0.1	2.3	-0.7	3.3	-0.8	3.8
	08/20/02	1285	94					0.27	0.53	-1.6	2.6	0.5	2.8	-3.6	4.2	-4.1	4.8
	09/24/02	1310	140					-0.06	0.48	1.0	3.4	0.7	3.7	0.0	5.0	0.0	5.7
	10/15/02	1320	110					0.37	0.59	1.2	3.0	-1.0	3.0	-4.6	5.0	-5.3	5.7
	11/19/02	1320	120					0.18	0.41	3.9	3.0	0.3	3.3	-1.8	4.0	-2.1	4.5
	12/17/02	1457	99					0.24	0.45	2.1	3.0	-0.5	2.7	2.1	3.5	2.4	4.1

TABLE 3-7
FOOD PRODUCTS
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	TYPE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
BROCK'S	11/19/02	PEANUTS	36	47	6380	320	13	52	-4.8	6.0	-2.1	5.9	-5	14
	11/19/02	CORN	-35	57	3310	250	-2	63	-6.3	7.3	14.0	12.0	1	16
	12/18/02	SOYBEANS	9	31	15610	270	-2	35	-2.1	4.3	-2.5	4.3	8	14

LOCATION	COLLECTION DATE	TYPE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
BROCK'S	11/19/02	PEANUTS	2.4	8.0	24	36	-1.0	10.0	-2.0	10.0	-2.4	5.7	-28	58
	11/19/02	CORN	8.5	9.0	54	41	-9.0	10.0	9.0	13.0	-1.3	6.5	-29	62
	12/18/02	SOYBEANS	0.3	7.6	0	12	-1.7	7.5	0.1	4.9	-2.0	3.9	16	34

LOCATION	COLLECTION DATE	TYPE	SB-125	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)
BROCK'S	11/19/02	PEANUTS	8.0	17.0	1.7	7.4	1.3	6.6	-2.6	7.3	1.9	5.8	2.2	6.7
	11/19/02	CORN	-9.0	20.0	-1.1	8.8	-0.4	7.2	1.0	13.0	-3.2	7.0	-3.7	8.1
	12/18/02	SOYBEANS	-3.5	8.3	-5.0	12.0	1.6	4.2	2.3	4.0	2.0	5.6	2.3	6.4

LOCATION	COLLECTION DATE	TYPE	CE-141	(+/-)	CE-144	(+/-)	TH-228	(+/-)
BROCK'S	11/19/02	PEANUTS	-4.3	8.5	-4	34	7	24
	11/19/02	CORN	5.0	11.0	59	45	8	27
	12/18/02	SOYBEANS	2.8	5.5	1	16	17	16

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TABLE 3-8
WELL WATER
(PCI/L)

LOCATION	COLLECTION DATE	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
HIR	03/26/02	8.0	36.0	-3.0	22.0	0.6	2.6	0.7	2.3	0.6	6.5	-0.3	2.4
	06/18/02	2.0	18.0	15.0	18.0	-0.3	1.5	-0.5	1.5	-2.1	4.4	-0.1	1.3
	09/24/02	-26.0	31.0	9.0	27.0	-2.3	2.6	-1.2	2.3	-1.0	5.2	0.4	2.5
	12/02/02	-1.0	41.0	-4.0	30.0	-2.0	2.7	0.3	2.9	-5.1	6.2	1.7	3.1
SS	03/26/02	7.0	35.0	4.0	23.0	-0.5	2.2	-0.3	2.1	2.0	5.3	1.0	2.3
	06/18/02	20.0	29.0	-9.0	23.0	-0.2	2.3	-0.1	2.1	3.7	5.0	-1.2	2.2
	09/24/02	-22.0	28.0	1.0	23.0	1.5	2.0	-1.1	2.0	-0.4	4.4	0.7	2.6
	12/02/02	2.0	38.0	9.0	30.0	0.0	3.0	0.2	3.2	3.2	7.1	1.2	3.6

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)
HIR	03/26/02	-3.7	5.3	0.0	4.2	-0.3	2.6	-0.6	2.7	-2.0	21.0	0.01	0.26
	06/18/02	-3.0	3.5	-1.0	2.7	0.4	1.8	-2.2	1.9	11.0	15.0	0.30	0.53
	09/24/02	5.0	10.0	-2.1	4.3	2.5	2.8	-1.3	2.9	-6.0	23.0	-0.06	0.31
	12/02/02	-1.9	6.6	-0.3	4.9	-2.6	2.8	-0.6	3.1	3.0	25.0	0.59	0.61
SS	03/26/02	-3.4	4.6	2.8	3.8	1.4	2.5	-1.1	2.4	-1.0	20.0	0.00	0.24
	06/18/02	-6.1	5.1	-0.3	3.6	-2.9	2.8	-3.9	2.4	-14.0	19.0	-0.05	0.29
	09/24/02	3.8	9.1	0.3	3.3	1.6	2.3	-1.7	2.5	5.0	19.0	0.21	0.41
	12/02/02	-4.0	17.0	-1.4	4.2	-0.2	3.7	-1.7	3.4	-2.0	26.0	0.38	0.56

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TABLE 3-8
WELL WATER
(PCI/L)

LOCATION	COLLECTION DATE	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	H-3	(+/-)
HIR	03/26/02	1.2	2.2	1.7	2.5	-2.6	4.5	-3.0	5.1	-140	730
	06/18/02	1.8	1.5	-0.6	1.5	-0.5	3.2	-0.6	3.7	-90	740
	09/24/02	1.7	2.6	-0.9	2.7	-1.5	4.5	-1.7	5.2	-500	1000
	12/02/02	-0.8	2.8	3.0	3.5	0.6	5.2	0.7	6.0	400	900
SS	03/26/02	-0.5	2.3	0.4	2.3	-3.1	3.6	-3.6	4.2	-40	760
	06/18/02	0.0	1.7	1.9	2.1	2.0	4.9	2.3	5.6	0	760
	09/24/02	-1.8	1.9	-1.8	2.2	-0.8	3.6	-0.9	4.1	600	1100
	12/02/02	3.3	3.9	-2.0	5.9	3.8	5.6	4.3	6.4	780	920

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TABLE 3-9
RIVER WATER
(PCI/L)

LOCATION	COLLECTION DATE	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
SD	01/29/02	154	42	-7	20	0.2	1.7	-0.8	1.7	3.7	5.6	0.1	1.8
	02/26/02	106	53	-13	29	-1.4	2.4	2.3	2.5	0.0	6.6	-0.3	2.7
	03/26/02	150	51	11	22	0.0	2.1	0.9	1.9	-6.8	6.5	-1.2	2.7
	04/30/02	61	31	-10	19	0.8	1.9	-0.8	1.7	-2.5	4.1	1.7	1.7
	05/29/02	59	27	-7	17	0.4	1.5	-1.2	1.5	-1.1	4.1	1.1	1.6
	06/18/02	147	33	2	16	-0.9	1.5	-0.2	1.7	1.1	3.5	0.2	1.6
	07/30/02	145	42	-13	21	-0.1	1.8	-1.5	2.0	2.3	4.7	1.3	2.1
	08/20/02	145	39	0	18	-0.7	1.5	-0.8	1.6	-0.8	4.9	-0.3	1.8
	09/24/02	155	49	4	25	0.7	2.7	-2.9	2.5	1.9	4.8	0.7	2.6
	10/22/02	94	23	-5	12	0.4	1.1	-0.4	1.1	0.3	2.3	-0.8	1.0
	11/26/02	39	30	2	17	-1.7	1.9	-0.1	1.6	0.3	3.7	0.3	1.7
	12/23/02	42	29	1	17	0.4	1.7	-0.6	1.8	-1.3	3.8	0.3	1.8
SW-C	01/29/02	68	52	23	27	-0.8	2.4	1.9	2.6	4.4	7.2	2.5	2.9
	02/26/02	59	45	10	25	3.2	2.5	0.0	2.4	-3.8	8.3	0.9	2.8
	03/26/02	31	30	-4	16	-0.9	1.5	0.1	1.6	-1.7	5.1	-0.3	1.8
	04/30/02	34	26	3	19	0.6	1.8	1.8	2.0	-1.2	4.2	-0.1	1.7
	05/29/02	36	24	4	16	0.8	1.4	-0.2	1.5	-4.0	4.2	0.2	1.3
	06/18/02	76	28	-1	16	0.1	1.3	0.5	1.2	-0.8	3.0	-0.7	1.4
	07/30/02	91	38	-12	21	-0.1	1.9	-0.4	2.0	-0.6	6.3	1.7	2.1
	08/20/02	83	32	-1	15	-0.5	1.3	1.0	1.6	0.1	4.2	0.1	1.6
	09/24/02	104	51	9	24	0.4	2.5	0.8	2.6	0.0	5.1	-0.4	2.8
	10/22/02	135	25	10	11	-0.6	1.1	-0.4	1.1	-0.3	2.3	0.7	1.2
	11/26/02	16	33	-3	21	0.2	2.2	0.0	2.1	2.1	4.4	-0.2	2.0
	12/23/02	-17	21	6	16	-1.0	1.5	-0.9	1.5	-1.5	3.4	1.6	1.6

TABLE 3-9
RIVER WATER
(PCI/L)

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)
SD	01/29/02	0.7	4.7	3.2	3.3	1.1	1.8	-1.7	2.3	-5	17	-0.1	0.3
	02/26/02	-4.6	5.3	5.1	4.4	1.7	2.8	1.5	3.0	-3	21	0.2	1.5
	03/26/02	1.7	5.7	-1.4	3.8	1.2	2.2	-1.3	2.2	-5	20	-0.4	4.0
	04/30/02	-1.8	3.5	-1.0	2.7	-1.3	2.3	-1.6	2.0	4	16	2.9	5.8
	05/29/02	-4.0	3.2	2.4	2.5	0.8	1.6	-0.7	1.6	-2	14	-1.7	4.6
	06/18/02	-3.9	3.5	-0.3	2.6	-0.2	1.7	-1.8	1.8	1	14	-0.5	5.0
	07/30/02	-0.4	9.8	-1.3	3.1	-1.6	2.2	-1.2	2.1	-7	20	-0.5	3.9
	08/20/02	-4.4	4.1	0.8	3.1	-1.8	1.5	0.6	1.8	6	16	-0.2	3.8
	09/24/02	-9.6	9.7	-0.2	3.7	-1.1	2.9	-0.1	2.9	-12	21	-0.3	4.7
	10/22/02	-1.5	2.3	-0.8	2.0	-0.6	1.3	-2.1	1.3	4	9	1.0	3.0
	11/26/02	5.3	6.7	0.9	2.9	0.9	1.8	-1.8	1.9	-4	17	1.9	3.5
	12/23/02	1.2	6.4	0.2	2.5	0.1	1.9	-0.9	2.0	-7	16	-2.1	3.2
SW-C	01/29/02	-7.4	5.7	1.1	4.7	-2.4	3.1	-4.1	3.1	-3	22	0.0	0.4
	02/26/02	-1.6	5.9	-1.6	4.6	1.2	2.7	-2.3	3.0	0	23	2.8	3.3
	03/26/02	-0.3	3.8	2.0	2.7	-0.2	1.9	-1.4	1.9	-10	18	-1.8	3.3
	04/30/02	-4.7	4.3	1.7	2.9	0.7	2.0	-1.6	2.3	-5	17	2.6	5.8
	05/29/02	-1.4	3.4	0.4	2.4	0.0	1.7	-1.3	1.8	0	14	2.4	4.4
	06/18/02	-2.8	3.1	0.1	2.6	0.5	1.7	-0.7	1.6	-3	13	-5.7	4.6
	07/30/02	0.3	4.0	0.6	3.5	-1.3	2.3	-1.4	2.3	-7	18	-0.6	4.1
	08/20/02	-0.8	3.0	-1.0	2.5	-2.1	1.7	-0.4	1.7	-6	14	2.4	3.6
	09/24/02	-0.5	6.5	0.8	3.9	-0.8	2.8	-2.2	2.6	-2	22	4.4	5.1
	10/22/02	-0.4	2.4	1.2	1.7	-0.2	1.2	-1.8	1.2	-2	9	0.7	3.0
	11/26/02	0.9	8.2	0.2	3.4	0.4	2.3	-0.5	2.3	8	18	-2.9	4.0
	12/23/02	2.7	7.3	-0.3	2.8	0.3	3.0	-0.4	1.8	-7	17	0.6	3.3

TABLE 3-9
RIVER WATER
(PCI/L)

LOCATION	COLLECTION DATE	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	H-3	(+/-)
SD	01/29/02	1.3	1.6	-0.6	1.8	-2.0	2.7	-2.3	3.1		
	02/26/02	-1.0	2.6	-2.0	2.4	-0.6	5.6	-0.7	6.4		
	03/26/02	-0.8	2.6	-0.5	2.4	0.4	4.1	0.5	4.7	40	830
	04/30/02	0.3	1.7	0.2	1.7	4.7	3.8	5.4	4.4		
	05/29/02	0.9	1.5	-0.4	1.5	0.2	3.1	0.3	3.6		
	06/18/02	0.0	1.6	-0.7	1.5	-1.2	2.9	-1.3	3.3	-1200	1100
	07/30/02	1.8	1.8	-1.3	2.1	-0.5	3.3	-0.6	3.8		
	08/20/02	0.3	1.7	0.2	1.8	0.3	2.7	0.3	3.1		
	09/24/02	0.3	2.3	-3.7	2.4	-2.0	4.2	-2.3	4.9	0	830
	10/22/02	0.2	1.2	-0.5	1.0	-0.8	2.2	-0.9	2.6		
	11/26/02	1.2	1.6	-0.4	1.7	-0.5	2.5	-0.6	2.9		
	12/23/02	1.0	1.9	-0.9	1.8	-0.2	2.5	-0.3	2.9	120	900
SW-C	01/29/02	-2.2	2.9	-1.3	2.8	-0.5	4.7	-0.6	5.4		
	02/26/02	0.4	2.8	0.8	2.7	0.7	6.2	0.8	7.2		
	03/26/02	0.3	1.9	-0.7	1.9	-1.1	2.6	-1.3	3.0	280	780
	04/30/02	0.5	2.0	0.1	1.7	0.6	4.2	0.7	4.9		
	05/29/02	1.0	1.7	0.2	1.5	-0.4	2.8	-0.5	3.2		
	06/18/02	-0.2	1.4	0.5	1.4	1.1	2.8	1.3	3.3	-700	1100
	07/30/02	1.7	2.1	0.3	2.4	-0.9	3.7	-1.0	4.2		
	08/20/02	-1.3	1.5	-0.5	1.6	0.3	2.4	0.3	2.7		
	09/24/02	-1.1	2.7	-0.5	2.8	-1.5	4.6	-1.7	5.3	300	840
	10/22/02	0.1	1.0	-0.7	1.1	0.1	2.5	0.1	2.8		
	11/26/02	-1.1	2.2	0.8	2.2	-1.5	2.5	-1.8	2.9		
	12/23/02	-0.4	1.6	-0.6	1.6	-1.6	2.4	-1.8	2.8	290	930

TABLE 3-10
SILT
(PCI/KG DRY WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
CHIC-C	03/14/02	640	440	17170	980	-60	410	6	30	-20	32	50	100
	09/17/02	-170	370	17500	1000	-30	490	-22	30	9	36	-62	91
SD	03/14/02	-30	210	13770	660	130	330	14	18	-7	21	26	72
	09/17/02	470	480	17800	1100	-390	570	1	32	22	44	-30	110

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
CHIC-C	03/14/02	36	36 A	40	130	-15	58	-10	70	-7	37	-10	250
	09/17/02	18	30	80	140	-14	70	1	76	-12	41	-20	290
SD	03/14/02	38	17	-15	86	22	43	-38	33	-18	29	60	160
	09/17/02	67	32	-30	160	0	71	-81	98	-39	49	-10	290

LOCATION	COLLECTION DATE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
CHIC-C	03/14/02	7	39	-60	270	-9	28	236	47	57	71	1280	110
	09/17/02	-27	37	380	490	10	41	212	46	42	74	1150	110
SD	03/14/02	23	23	90	300	54	71	259	36	0	50	959	75
	09/17/02	-12	47	-140	530	-42	34	313	57	7	90	990	140

A: CO-60 WAS REANALYZED DUE TO A FALSE PEAK IDENTIFIED IN THE ORIGINAL ANALYSIS

TABLE 3-11
SHORELINE SEDIMENT
(PCI/KG DRY WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
CHIC-C	02/26/02	150	190	1080	360	-90	240	-15	19	16	21	7	62
	09/03/02	40	340	970	450	-240	430	9	34	-25	33	43	82
HIR	02/27/02	140	130	8950	820	-110	140	-4	16	4	14	-9	60
	09/03/02	5	75	6780	490	56	99	6	9	-9	9	36	34

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
CHIC-C	02/26/02	0	18	39	79	-6	36	-29	30	6	22	0	200
	09/03/02	-3	24	-110	130	36	61	-5	45	18	41	90	290
HIR	02/27/02	9	18	84	79	29	28	2	18	-2	15	-10	120
	09/03/02	-8	11	-19	49	-14	15	-4	10	6	10	-11	82

LOCATION	COLLECTION DATE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
CHIC-C	02/26/02	-2	22	-70	110	-41	79	-17	21	46	54	131	57
	09/03/02	-17	42	-60	110	4	31	-5	35	51	93	1200	140
HIR	02/27/02	-2	21	-36	63	3	14	3	15	-7	35	116	59
	09/03/02	0	12	41	30	6	7	12	13	-4	21	138	39

TABLE 3-12
FISH
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	TYPE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
SD	04/03/02	CATFISH	80	250	2200	550	70	350	-20	22	-4	29	17	74
	04/03/02	PERCH	220	300	2570	770	300	470	12	27	14	31	-60	110
	10/30/02	CATFISH	170	300	2460	820	-40	660	0	35	-35	41	30	110
	10/09/02	PERCH	-360	480	2420	710	190	850	3	30	-38	39	-10	130

LOCATION	COLLECTION DATE	TYPE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
SD	04/03/02	CATFISH	-15	22	-32	53	4	41	19	39	-11	31	30	200
	04/03/02	PERCH	12	31	-25	73	-25	74	9	51	0	41	140	300
	10/30/02	CATFISH	-10	40	9	63	10	69	-33	62	54	47	210	310
	10/09/02	PERCH	-10	29	-20	67	60	73	29	80	-5	65	-60	260

LOCATION	COLLECTION DATE	TYPE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
SD	04/03/02	CATFISH	5	28	0	240	14	24	-9	24	43	61	-29	87
	04/03/02	PERCH	-42	42	230	370	29	28	5	29	31	71	30	130
	10/30/02	CATFISH	0	50	-200	1100	19	33	-22	34	-6	75	-40	110
	10/09/02	PERCH	-38	36	1600	5500	-9	29	13	26	-4	57	90	110

TABLE 3-13
OYSTERS
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
MP	03/14/02	80	200	540	530	20	250	-10	22	-5	26	-33	81
	09/17/02	-130	180	590	280	-210	270	-7	15	-14	18	-28	43
POS	03/14/02	0	260	970	520	-10	350	24	20	-9	26	87	87
	09/17/02	-100	170	890	280	0	290	-5	14	-11	18	6	42

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
MP	03/14/02	1	27	-54	71	-4	41	-19	28	0	26	110	210
	09/17/02	-10	15	-4	35	36	43	-17	32	-21	26	0	120
POS	03/14/02	14	19	-43	65	35	52	14	33	5	32	0	230
	09/17/02	2	14	-34	37	-7	31	-8	30	12	23	-40	130

LOCATION	COLLECTION DATE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
MP	03/14/02	31	29	-30	120	14	23	9	21	-5	43	-16	96
	09/17/02	-1	20	-300	490	5	16	3	15	20	41	-75	53
POS	03/14/02	-12	34	10	140	3	29	18	24	-5	57	-1	93
	09/17/02	1	22	-530	440	5	14	4	13	-20	37	-21	49

SURRY 2002

TABLE 3-14
CLAMS
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
CHIC-C	03/14/02	-80	150	200	380	-40	230	-10	22	13	20	44	69
	09/17/02	50	220	620	300	-20	320	4	20	-25	23	22	45
HIP	03/14/02	60	230	430	370	-60	240	-16	19	8	21	46	72
	09/17/02	-10	190	840	290	-100	270	4	15	10	19	53	56
LC	03/14/02	-100	130	480	260	-30	170	-3	12	-3	16	2	51
	09/17/02	-40	220	1090	380	50	370	-9	20	-14	23	-32	50
SD	03/14/02	-120	150	130	300	10	240	-3	16	18	19	7	62
	09/17/02	40	190	520	320	110	310	-3	19	4	23	6	53

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
CHIC-C	03/14/02	-10	23	-67	53	-5	38	10	27	18	22	10	200
	09/17/02	-18	26	-5	36	-6	40	-25	31	5	24	-30	160
HIP	03/14/02	-4	34	0	44	0	39	-6	31	-5	22	90	170
	09/17/02	5	14	8	41	20	32	2	30	-7	26	90	160
LC	03/14/02	5	17	-43	36	4	33	1	19	8	21	-40	170
	09/17/02	-19	18	-21	47	33	41	-4	36	-11	28	150	170
SD	03/14/02	-7	15	27	50	4	29	0	25	-9	20	-50	190
	09/17/02	8	16	-8	32	4	31	-16	33	-11	24	-70	160

SURRY 2002

TABLE 3-14
CLAMS
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
CHIC-C	03/14/02	-19	31	50	120	-5	23	17	20	14	45	13	76
	09/17/02	-8	20	-110	570	14	18	19	16	-4	42	5	67
HIP	03/14/02	-20	31	70	120	-4	25	-9	24	-20	51	-43	87
	09/17/02	20	19	-200	500	14	17	-6	16	-8	35	-15	52
LC	03/14/02	23	23	-53	88	-8	14	0	17	-28	44	18	53
	09/17/02	-21	30	-120	500	-10	15	-18	18	10	39	-2	69
SD	03/14/02	7	24	10	100	4	16	-8	17	3	46	68	68
	09/17/02	4	22	-130	560	4	15	-1	19	23	36	-27	61

SURRY 2002

TABLE 3-15
CRABS
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
SD	06/07/02	-110	210	1560	600	-150	450	-3	20	-8	30	10	120

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
SD	06/07/02	-27	23	-16	70	-13	56	-11	53	-21	41	30	170

LOCATION	COLLECTION DATE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
SD	06/07/02	4	35	240	990	4	25	19	23	5	57	-20	100

4. DISCUSSION OF RESULTS

Data from the radiological analyses of environmental media collected during 2002 and tabulated in Section 3, are discussed below. The procedures and specifications followed in the laboratory for these analyses are as required in the Framatome ANP DE&S Environmental Laboratory quality assurance manual and laboratory procedures. In addition to internal quality control measures performed by the laboratory, it also participates in an Interlaboratory Comparison Program. Participation in this program ensures that independent checks on the precision and accuracy of the measurements of radioactive material in environmental samples are performed. The results of the Interlaboratory Comparison Program are provided in Appendix C.

The predominant radioactivity detected throughout 2002 was that from external sources, such as fallout from nuclear weapons tests and naturally occurring radionuclides. Naturally occurring nuclides such as beryllium-7, potassium-40, and thorium-228 were detected in numerous samples.

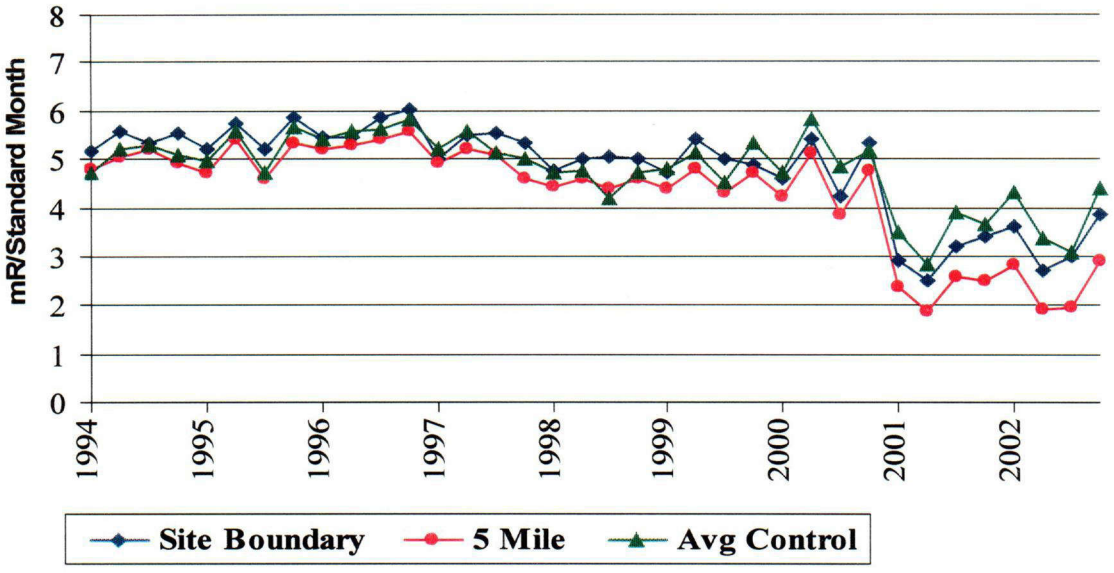
The following is a discussion and summary of the results of the environmental measurements taken during the 2002 reporting period.

4.1 Gamma Exposure Rate

A thermoluminescent dosimeter (TLD) is an inorganic crystal used to detect ambient radiation. TLDs are placed in two concentric rings around the station. The inner ring is located at the site boundary, and the outer ring is located at approximately five miles from the station. TLDs are also placed in special interest areas, such as population centers and nearby residences. Additional TLDs serve as controls. Ambient radiation comes from naturally occurring radioisotopes in the air and soil, radiation from cosmic origin, fallout from nuclear weapons testing, station effluents and direct radiation from the station.

The results of the analyses are presented in Table 3-2. Figure 4-1 shows a historical trend of TLD exposure rate measurements, comparing the average of indicator TLDs located near the site boundary and at 5 miles to the average of all control TLD locations. Control and indicator averages indicate a steady relationship. Also apparent in Figure 4-1 is the replacement, in 2001, of the previously used CaSO4:Dy in Teflon TLDs with a new type of TLD comprised of two elements each of CaF and LiF. Two TLDs are deployed at each monitoring location. The difference in response between the two systems is very apparent with the new TLDs reading up to 50% lower. This trend will continue to be monitored.

Figure 4-1: DIRECT RADIATION MEASUREMENT TLD RESULTS

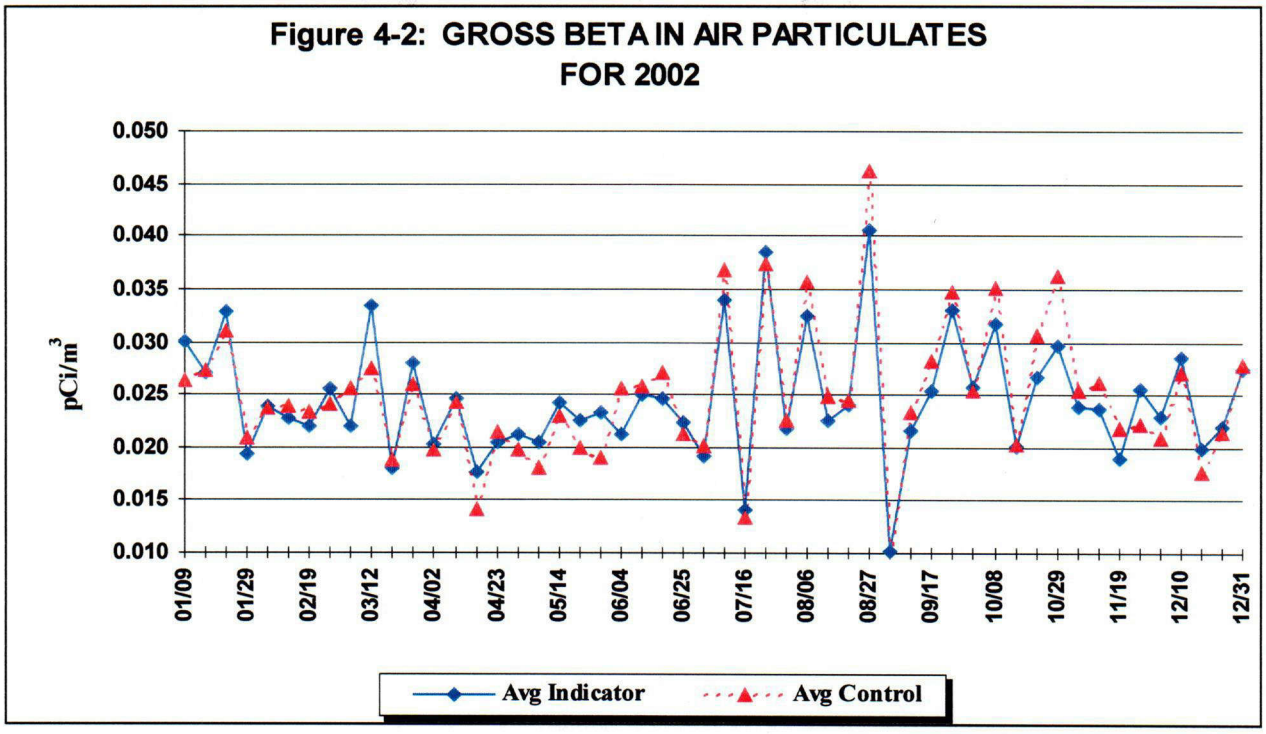


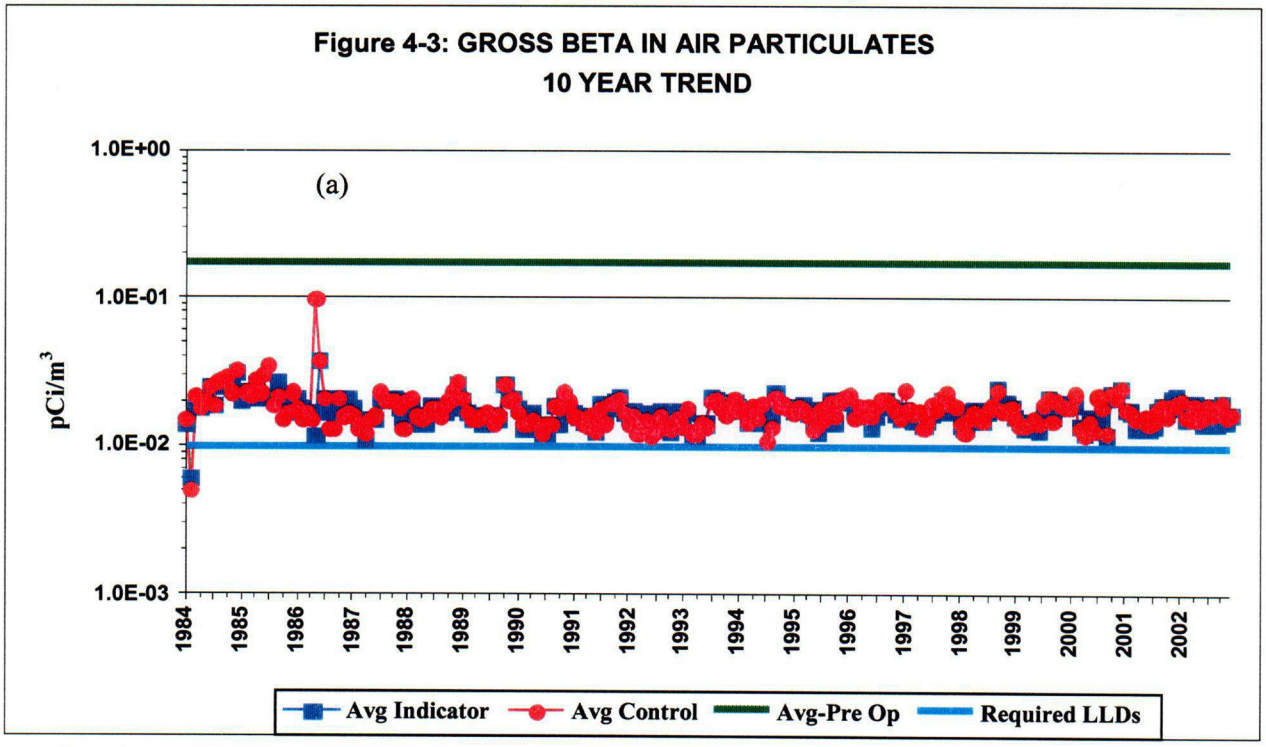
4.2 Airborne Gross Beta

Air is continuously sampled by passing it through glass fiber particulate filters. The filters collect airborne particulate radionuclides. Once a week the samples are collected and analyzed for gross beta activity. Results of the weekly gross beta analyses are presented in Table 3-3. A review of the results indicates gross beta activity at levels similar to that seen over the last decade. Results from control and indicator locations continue to show no significant variation in measured activities (see Figure 4-2). This indicates that any station contribution is not measurable.

Gross beta activity found during the pre-operational and early operating period of Surry Power Station was higher because of nuclear weapons testing. During that time, nearly 740 nuclear weapons were tested worldwide. In 1985 weapons testing ceased, and with the exception of the Chernobyl accident in 1986, airborne gross beta results have remained steady (see Figure 4-3).

C06





(a) Chernobyl

C07

4.3 Airborne Radioiodine

Air is also continuously sampled for radioiodines by passing it through charcoal cartridges. Once a week the charcoal cartridge samples are collected and analyzed. The results of the analyses are presented in Table 3-4. All results are below the lower limit of detection with no positive activity detected. These results are similar to pre-operational data and the results of samples taken prior to and after the 1986 accident in the Soviet Union at Chernobyl.

4.4 Air Particulate Gamma

The air particulate filters from the weekly gross beta analyses are composited by location and analyzed quarterly by gamma spectroscopy. The results are listed in Table 3-5. The results indicate the presence of naturally occurring beryllium-7, which is produced by cosmic processes. Examination of pre-operational data indicates comparable measurements of Be-7, as would be expected. No man-made radionuclides were identified. These analyses confirm the lack of station effects.

4.5 Cow Milk

Analysis of milk samples is generally the most sensitive indicator of fission product existence in the terrestrial environment. This, in combination with the fact that consumption of milk is significant, results in this pathway usually being the most critical from the plant release viewpoint. This pathway also shows measurable amounts of nuclear weapons testing fallout. Therefore, this media needs to be evaluated very carefully when trying to determine if there are any station effects.

Analysis results for cow milk are contained in Table 3-6. All results show a lack of detectable iodine-131 above the LLD of 1 pCi/L. Results of gamma spectroscopy indicate no other detectable station related radioactivity in the milk samples. In years past, cesium-137 has been detected sporadically. The occurrences were attributed to residual global fallout from past atmospheric weapons testing. Cs-137 was not detected at a level above the LLD in 2002.

At the request of the Commonwealth of Virginia, a quarterly composite sample is prepared from the monthly milk samples from the Colonial Parkway collection station. The composite samples are analyzed for strontium-89 and strontium-90. Sr-90 was detected in three of the four composites analyzed. The average yearly Sr-90 measured at the indicator location was 1.95 pCi/L. The long-term activity trend for Sr-90 continues to slowly decrease. It should be noted that Sr-90 is not

a part of station effluents but, rather, a product of nuclear weapons testing fallout. This conclusion can be made based upon: examination of effluent release totals showing the lack of any positive indications of Sr-90 to account for such measurements, the lack of any positive indications of Sr-89 which is chemically similar and generally released in comparable quantities from the station, and the trend of consistent declining levels since the pre-operational period.

4.6 Food Products

Three samples were collected and analyzed by gamma spectroscopy. The results of the analyses are presented in Table 3-7. As expected, naturally occurring potassium-40 was detected in all samples. The average concentration is consistent with that observed in previous years. No other gamma emitters were detected.

4.7 Well Water

Well water is not considered to be affected by station operations because there are no discharges made to this pathway. However, Surry Power Station monitors well water quarterly at two indicator locations and analyzes for gamma radiation and for tritium. The results of these analyses are presented in Table 3-8. Consistent with past monitoring, no station related radioactivity was detected. No gamma emitting isotopes were detected during the pre-operational period.

4.8 River Water

The analysis results for the James River water sampling program are presented in Table 3-9. All samples are analyzed by gamma spectroscopy. These samples are also composited and analyzed for tritium on a quarterly basis. With the exception of naturally occurring potassium-40 observed in some samples analyzed, no other gamma emitters were detected.

4.9 Silt

Silt is sampled to evaluate any buildup of radionuclides in the environment due to the operation of the station. Sampling of this pathway provides a good indication of the dispersion effects of effluents to the river. Buildup of radionuclides in silt could indirectly lead to increasing radioactivity levels in clams, oysters, crabs and fish.

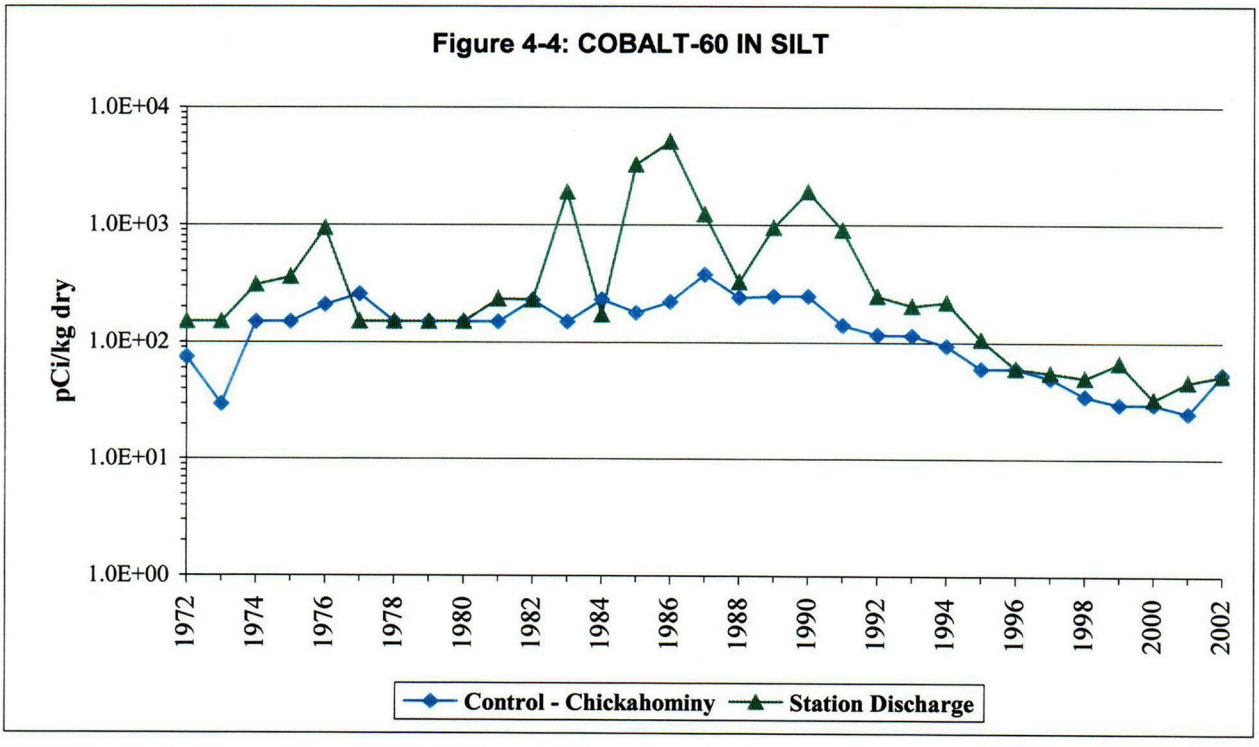
Samples of silt are collected from two locations, one upstream and one downstream of the station. The results of the gamma spectroscopy analyses are

presented in Table 3-10 and trending graphs of cobalt-60 and cesium-137 in silt appear in Figures 4-4 and 4-5.

Cobalt-60 was detected in both indicator samples collected in 2002. The average level observed from the station discharge at 53 pCi/kg is station related and is comparable to levels detected in past years. Cobalt-60 was detected in 2001 with an average activity of 46.5 pCi/kg. In 1999, cobalt-60 was detected with an activity of 67 pCi/kg.

Cesium-137 was also detected, as usual, in both the control and indicator samples. The levels detected indicate a continual decreasing trend seen for over a decade. The detection of Cs-137 in both the control and indicator samples and decreasing levels indicate that the presence of Cs-137 is the result of accumulation and runoff into the river of residual weapons testing fallout. Its global presence has been well documented. During the pre-operational period, Cs-137 was detected in most silt samples with concentrations as high as 800 pCi/kg (dry weight). In 2002, cesium-137 was detected with an average indicator location concentration of 286 pCi/kg and an average control location concentration of 224 pCi/kg. These activities continue to represent fallout from nuclear weapons testing. Both indicator and control cesium-137 activities trend closely as shown in Figure 4-5.

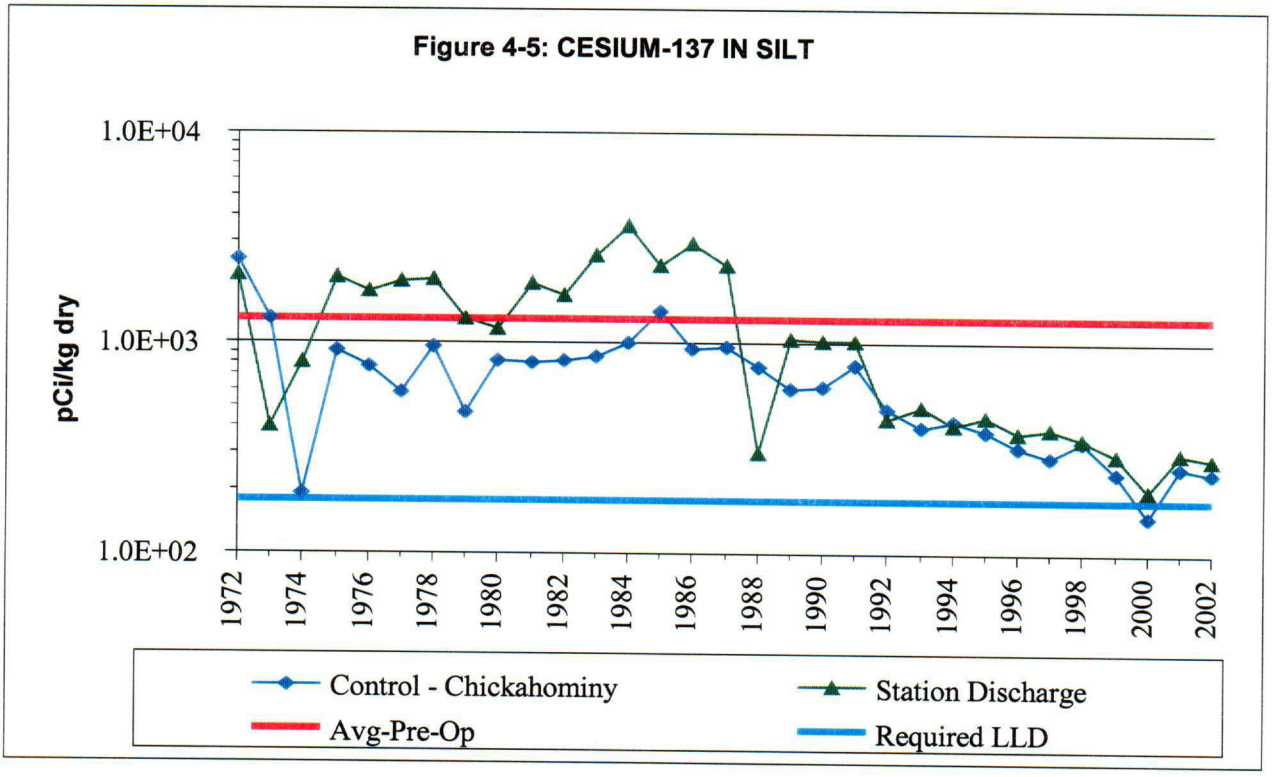
Figure 4-4: COBALT-60 IN SILT



Chickahominy had detectable activity in 1982 and 1984 through 1994. Other years were <MDL.
Station Discharge was < MDL activity 1996 through 1998.

C08

Figure 4-5: CESIUM-137 IN SILT



4.10 Shoreline Sediment

Shoreline sediment, unlike river silt, may provide a direct dose to humans. Buildup of radioisotopes along the shoreline may provide a source of direct exposure for those using the area for commercial and recreational uses. The results are presented in Table 3-11.

The naturally occurring radioisotopes potassium-40 and thorium-228 were detected at concentrations equivalent to normal background activities. The activities of these radioisotopes indicate a steady trend. There were no radioisotopes attributable to the operation of the station found in any shoreline sediment samples.

4.11 Fish

The radioactivity measured in fish sampled from the station discharge canal and analyzed by gamma spectroscopy is presented in Table 3-12. These results are the same as those seen over the last decade. No activity was observed in this media except for naturally occurring potassium-40.

C09

4.12 Oysters

Oysters are collected from two different locations. The results of the oyster analyses are presented in Table 3-13.

There were no gamma emitting radioisotopes detected in oysters sampled except for naturally occurring radionuclides such as potassium-40. No station related radioactivity has been detected in this media since 1991. The absence of station related radionuclides is attributable to the replacement of steam generators in 1982 and past improvements made to liquid effluent treatment systems.

4.13 Clams

Clams are analyzed from four different locations. The results of the gamma spectroscopy analyses are presented in Table 3-14. Like oysters, no station related radioactivity was detected. Only naturally occurring potassium-40 activity at levels comparable to past years was detected.

4.14 Crabs

A crab sample was collected in June from the station discharge canal and analyzed by gamma spectroscopy. The results of this analysis are presented in Table 3-15. Other than naturally occurring potassium-40, no other gamma emitting radioisotope was detected in this sample. This is consistent with pre-operational data and data collected during the past ten years.

5. PROGRAM EXCEPTIONS

REMP Exceptions for Scheduled Sampling and Analysis During 2002 – Surry

Location	Description	Date of Sampling	Reason(s) for Loss/Exception
FE	Air Part. Gross Beta	03/12/02	Air sampler malfunction. Sample volume was insufficient to meet the gross beta LLD with the standard sample count time. Prior to sampler malfunction, sufficient activity was deposited on the filter to determine a gross beta activity. Because a quantifiable activity was determined, a reanalysis with an extended count time was not performed to meet the LLD.

6. CONCLUSIONS

The results of the 2002 Radiological Environmental Monitoring Program (REMP) for Surry Power Station have been presented in previous sections. This section presents conclusions for each pathway.

- **Direct Radiation Exposure Pathway** - Control and indicator location averages continue to indicate a steady relationship. A new type of TLD was placed in the field in 2001. The ambient dose trend has reduced from that of the previously used TLD. This trend will continue to be monitored and evaluated.

- **Airborne Exposure Pathway** - Air particulate gross beta concentrations at all of the indicator locations for 2002 trend well with the control location. The gross beta concentrations also indicate a steady trend over the past decade. Quarterly gamma isotopic analyses of the composite particulate samples identified only naturally occurring beryllium-7. Analysis of charcoal cartridge samples for radioiodines indicated no positive activity was detected.

- **Milk** - Milk samples are an important indicator measuring the effect of radioactive iodine and radioisotopes in airborne releases. Cesium-137 and iodine-131 were not detected in any of the thirty-six samples. Naturally occurring potassium-40 was detected at a similar level when compared to the average of the previous year.

  The concentration of strontium-90 in this year's analysis was 1.95 pCi/L. Strontium-90 is not a part of station effluents, but rather, a product of nuclear weapons testing fallout. The long-term activity trend continues to decrease.

- **Food Products** - As expected, naturally occurring potassium-40 was detected in all three samples. In the past, cesium-137 has occasionally been detected in these samples and is attributable to global fallout from past nuclear weapons testing. Cesium-137 and beryllium-7 were not detected in any of the three samples collected in 2002.

- **Well Water** - Well water samples were analyzed and the analyses indicated that there were no man-made radioisotopes present. This trend is consistent throughout the monitoring period. No radioactivity attributable to the operation of the station was identified.

- **River Water** - All river water samples were analyzed for gamma emitting radioisotopes. Naturally occurring potassium-40 was detected in many of the samples. Tritium was not detected at levels exceeding the lower limit of detection for any samples in 2002.

- **Silt** – Cesium-137 was detected in both the control and indicator samples. The presence of Cs-137 is attributable to residual weapons testing fallout; its presence has been well documented. Cobalt-60 was detected in the indicator sample location; however, the long-term trend continues to reflect decreasing activity.

- **Shoreline Sediment** - Only naturally occurring radioisotopes were detected, at concentrations equivalent to normal background activities. There were no radioisotopes attributable to the operation of Surry Power Station found in any sample.

- **Aquatic Biota**

  1. Fish - As expected, naturally occurring potassium-40 was detected in all four samples. There were no other gamma emitting radioisotopes detected in any of the fish samples.

  2. Oysters and Clams - Naturally occurring potassium-40 was detected in three of the four oyster samples and in five of the eight clam samples. A review of the previous ten years indicates the potassium-40 in clams and oysters is at average environmental levels. There were no other gamma emitting radioisotopes detected in any of the samples. This trend is consistent with pre-operational data.

  3. Crabs – Naturally occurring potassium-40 was detected in the crab sample. No other gamma emitting radioisotopes were detected.

REFERENCES

References

1. NUREG-0472, "Radiological Effluent Technical Specifications for PWRs", Draft Rev. 3, March 1982.

2. United States Nuclear Regulatory Commission Regulatory Guide 1.109, Rev. 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR50, Appendix I", October, 1977.

3. United States Nuclear Regulatory Commission, Regulatory Guide 4.8 "Environmental Technical Specifications for Nuclear Power Plants", December, 1975.

4. United States Nuclear Regulatory Commission Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Rev. 1, November 1979.

5. Dominion, Station Administrative Procedure, VPAP-2103S, "Offsite Dose Calculation Manual (Surry)".

6. Virginia Electric and Power Company, Surry Power Station Technical Specifications, Units 1 and 2.

7. HASL-300, Environmental Measurements Laboratory, "EML Procedures Manual," 27th Edition, Volume 1, February 1992.

8. NUREG/CR-4007, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," September 1984.

APPENDICES

APPENDIX A: LAND USE CENSUS

Year 2002

*LAND USE CENSUS**

Surry Power Station, Surry County, Virginia

January 1 to December 31, 2002 Page 1 of 1

Sector	Direction	Nearest Resident	Nearest Garden**	Nearest Cow	Nearest Goat
A	N	4.12 @ 8°	(a)	(a)	(a)
B	NNE	1.90 @ 34°	1.90 @ 34°	(a)	(a)
C	NE	4.60 @ 34°	4.91 @ 56°	(a)	(a)
D	ENE	(a)	4.91 @ 56°	(a)	(a)
E	E	(a)	(a)	(a)	(a)
F	ESE	(a)	(a)	(a)	(a)
G	SE	(a)	(a)	(a)	(a)
H	SSE	4.75 @ 152°	5.00 @ 160°	(a)	(a)
J	S	1.69 @ 182°	2.05 @ 183°	(a)	(a)
K	SSW	1.87 @ 193°	4.26 @ 195°	4.84 @ 201°	(a)
L	SW	2.28 @ 222°	3.65 @ 224°	(a)	(a)
M	WSW	2.82 @ 243°	3.57 @ 246°	(a)	(a)
N	W	3.15 @ 260°	4.14 @ 269°	(a)	(a)
P	WNW	4.79 @ 281°	(a)	(a)	(a)
Q	NW	4.84 @ 319°	(a)	(a)	(a)
R	NNW	3.73 @ 339°	4.39 @ 334°	3.65 @ 337°	(a)

* *Locations are listed by miles and degrees heading relative to true north from center of Unit #1 Containment.*

** *Area greater than 50 m^2 and contains broadleaf vegetation.*

(a) None

APPENDIX B: DOMINION NUCLEAR CONNECTICUT QUALITY ASSURANCE PROGRAM

YEAR 2002

INTRODUCTION

Dominion Nuclear Connecticut (DNC) maintains an independent non-required quality assurance (QA) program as part of the radiological environmental monitoring program (REMP). The QA program consists of contractor appraisals and quality control samples.

DNC QA PROGRAM

The DNC QA Program includes spikes of various sample media and duplicate samples. Sample spikes are a check on the accuracy of results of the contractor's radioanalyses. Duplicate samples test the contractor's precision, or reproducibility of results, by comparing analytical results of split samples. The number and type of DNC QA Program quality control samples are defined in DNC Radiological Engineering Instructions RAB B-3, "Quality Control of Radiological Environmental Monitoring Program Sample Analyses". An investigation is conducted on any result or trend that does not satisfy acceptance criteria.

OTHER QA PROGRAMS

The DNC QA Program is not the only QA Program that monitors REMP radioanalysis performance. Other programs include:

1. Contractor lab's internal QA program. In addition to the DNC quality control samples, the radioanalysis contractor has its own quality control samples. In total, at least five percent of the contractor's sample analyses include quality control samples.

2. Contractor lab's interlaboratory comparison program with an independent third party, Analytics, Inc. Results of the Analytics intercomparison are contained in Appendix C.

3. Contractor lab's participation in the National Institute of Standards and Technology (NIST) Measurement Assurance Program (MAP), the Environmental Resource Associates (ERA) Proficiency Test (PT) Program, the Department of Energy (DOE) Quality Assessment Program (QAP) and the Mixed Analyte Performance Evaluation Program (MAPEP). The lab participates in these interlaboratory QA programs because of other clients' needs, not because of nuclear power station environmental sample analyses. However, some of these intercomparison samples are also applicable to nuclear power environmental samples.

RESULTS OF DNC QA PROGRAM FOR CONTRACTOR RADIOANALYSES

Criteria for passing QA sample analysis is that the result be within 20% of the known spike except in the case of strontium-89 or strontium-90 spikes in milk which have to be within 30% of the known spike. To allow more tolerance for lower activity spikes, an alternate criterion is used. If the two sigma error range of the analyzed result includes the known spike value, the result passes.

The DNC QA Program indicated that the contractor lab's environmental radiological analysis program was adequate in 2002. Results are shown on Table B-2. Of 97 analysis results on QA samples, 77 passed criteria, for a 79% success rate. Sample results, which did not pass criteria, failed because of problems with the spike source or with sample preparation. There were no failures in QA sample results associated with contractor lab analyses. The contractor laboratory is Framatome ANP DE&S Environmental Laboratory.

TABLE B-1
2002 QUALITY CONTROL SAMPLES

SAMPLE TYPE			QC ANALYSES (Note 1)	ROUTINE ANALYSES
Milk - Strontium			3 (Note 2)	12
Milk - Iodine			4	36
Milk - Gamma			(Note 3)	36
Water - Gamma			58	24
Water - Tritium			4	32
Oysters - Gamma			5	60
Vegetation/Aquatic Flora/Sediment - Gamma			0	2079
Air Particulate	-	Gross Beta	4	832
	-	Iodine	4	416
	-	Gamma	15	740

1. All samples are spikes except fish/invertebrate that are duplicate oyster samples from the Millstone quarry.
2. One sample with Sr-89 and Sr-90 and one sample with Sr-90 only.
3. Gamma in water QA spikes are treated as milk surrogates.

TABLE B-2
RESULTS OF 2002 QUALITY CONTROL SAMPLE ANALYSES

SAMPLE TYPE			PASS	FAIL
Milk - Strontium			3	0
Milk - Iodine			4	0
Water - Gamma			49	9
Water - Tritium			4	0
Oysters - Gamma			5	0
Air Particulate	-	Gross Beta	2	2
	-	Iodine	1	3
	-	Gamma	9	6
		TOTALS	Samples: 77	Samples: 20*

* There were no failures in QA sample results associated with contractor lab analyses. Sample results, which did not pass criteria, failed because of problems with the spike source or with sample preparation.

APPENDIX C: SUMMARY OF INTERLABORATORY COMPARISONS

YEAR 2002

INTRODUCTION

This appendix includes the Interlaboratory Comparison Program (ICP) of the Framatome ANP DE&S Environmental Laboratory. Framatome uses independently prepared QA/QC samples to monitor the quality of analytical processing associated with the Radiological Environmental Monitoring Program (REMP). The suite of QA/QC samples is designed to be comparable with the pre-1996 US EPA Interlaboratory Cross-Check Program in terms of sample number, matrices, and nuclides. The suite was modified to more closely to match the media mix presently being processed by Framatome. The Framatome ANP DE&S Environmental Laboratory's Interlaboratory Comparison Program for environmental sample analyses consists of samples from the following three sources:

1. Environmental Crosscheck Program administered by Analytics, Inc.,
2. Environmental Resource Associates (ERA) Proficiency Test (PT) Program, and
3. Department of Energy (DOE) Quality Assessment Program (QAP).

All samples required by the ODCM for Surry Power Station were included in the ICP for the year 2002. Of the 151 analyses, only one analysis did not meet the acceptance criteria. Results are presented in tables and trending graphs on the following pages. Trending graphs are provided when there were two or more data points to plot.

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY QA PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY

1st Quarter 2002	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c)	Evaluation (d)
	E3096-186	Milk	I-131LL	pCi/L	99	90	1.09	A
			Ce-141	pCi/L	32	29	1.10	A
			Cr-51	pCi/L	262	241	1.09	A
			Cs-134	pCi/L	103	110	0.94	A
			Cs-137	pCi/L	248	240	1.03	A
			Mn-54	pCi/L	224	202	1.11	A
			Fe-59	pCi/L	112	104	1.08	A
			Zn-65	pCi/L	215	199	1.08	A
			Co-60	pCi/L	144	142	1.01	A
	E3027-162	Milk	I-131	pCi/L	87.9	92	0.96	A
			I-131LL	pCi/L	93	92	1.01	A
			Ce-141	pCi/L	317.8	326	0.98	A
			Cr-51	pCi/L	277	267	1.04	A
			Cs-134	pCi/L	119	122	0.98	A
			Cs-137	pCi/L	271.2	266	1.02	A
			Mn-54	pCi/L	231.2	224	1.03	A
			Fe-59	pCi/L	123.6	116	1.07	A
			Zn-65	pCi/L	225.9	221	1.02	A
			Co-60	pCi/L	152.9	158	0.97	A
	E3028-162	Milk	Sr-89	pCi	79.9	83	0.96	A
			Sr-90	pCi	24.7	27	0.93	A
	E3023-162	Water	Gr-Beta	pCi/L	310.3	313	0.99	A
	E3024-162	Water	I-131	pCi/L	54.5	61	0.90	A
			I-131LL	pCi/L	63.4	61	1.04	A
			Ce-141	pCi/L	239.4	242	0.99	A
			Cr-51	pCi/L	175.7	198	0.89	A
			Cs-134	pCi/L	87.8	91	0.97	A
			Cs-137	pCi/L	197.7	197	1.01	A
			Mn-54	pCi/L	168.5	166	1.02	A
			Fe-59	pCi/L	87.6	86	1.02	A
			Zn-65	pCi/L	157.2	164	0.96	A
			Co-60	pCi/L	114.6	117	0.98	A
	E3026-162	Filter	Gr-Beta	pCi	149	136	1.1	A
	E3097-186	Charcoal	I-131	pCi	74	77	0.96	A
	E3098-186	Charcoal	I-131	pCi	65	69	0.94	A
	E3099-186	Charcoal	I-131	pCi	91	87	1.05	A

Footnotes are on page 4 of 4.

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY QA PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY

2nd Quarter 2002	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c)	Evaluation (d)
	E3153-162	Milk	I-131	pCi/L	88	87	1.01	A
			I-131LL	pCi/L	85	87	0.98	A
			Ce-141	pCi/L	86	90	0.96	A
			Cr-51	pCi/L	230	235	0.98	A
			Cs-134	pCi/L	121	120	1.01	A
			Cs-137	pCi/L	89	91	0.98	A
			Co-58	pCi/L	100	100	1.00	A
			Mn-54	pCi/L	97	95	1.02	A
			Fe-59	pCi/L	83	81	1.02	A
			Zn-65	pCi/L	179	180	0.99	A
			Co-60	pCi/L	127	125	1.02	A
	E3148-162	Water	H-3	pCi/L	6970	6970	1.00	A
	E3149-162	Water	Sr-89	pCi/L	42	64	0.66	U (1)
		Water	Sr-90	pCi/L	36	39	0.92	A
	E3150-162	Filter	Gr-Beta	pCi	(2)	(2)	(2)	(2)
	E3151-162	Filter	Ce-141	pCi	59	61	0.97	A
			Cr-51	pCi	165	160	1.03	A
			Cs-134	pCi	77	82	0.94	A
			Cs-137	pCi	64	62	1.03	A
			Co-58	pCi	68	68	1.00	A
			Mn-54	pCi	69	65	1.06	A
			Fe-59	pCi	62	55	1.13	A
			Zn-65	pCi	131	122	1.07	A
			Co-60	pCi	82	85	0.96	A
	E3151-162	Filter	Sr-90	pCi	41	48	0.85	A

(1) Sample was not analyzed in a timely manner due to high volume of client samples.

(2) Filter damaged during sample preparation.

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY QA PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY

3rd Quarter 2002	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c)	Evaluation (d)
	E3292-162	Milk	I-131	pCi/L	79	80	0.99	A
			I-131LL	pCi/L	77	80	0.96	A
			Ce-141	pCi/L	156	160	0.98	A
			Cr-51	pCi/L	231	227	1.02	A
			Cs-134	pCi/L	128	132	0.97	A
			Cs-137	pCi/L	122	127	0.96	A
			Co-58	pCi/L	95	97	0.98	A
			Mn-54	pCi/L	151	152	0.99	A
			Fe-59	pCi/L	94	89	1.06	A
			Zn-65	pCi/L	180	187	0.96	A
			Co-60	pCi/L	142	149	0.95	A
	E3293-162	Milk	Sr-89	pCi	84	92	0.91	A
			Sr-90	pCi	36	39	0.92	A
	E3288-162	Water	Gr-Beta	pCi/L	204	239	0.85	A
	E3289-162	Water	I-131	pCi/L	68	79	0.86	A
			I-131LL	pCi/L	77	79	0.97	A
			Ce-141	pCi/L	209	214	0.98	A
			Cr-51	pCi/L	289	304	0.95	A
			Cs-134	pCi/L	169	176	0.96	A
			Cs-137	pCi/L	167	169	0.99	A
			Co-58	pCi/L	129	130	0.99	A
			Mn-54	pCi/L	206	204	1.01	A
			Fe-59	pCi/L	118	119	0.99	A
			Zn-65	pCi/L	251	251	1.00	A
			Co-60	pCi/L	187	199	1.04	A
	E3291-162	Filter	Gr-Beta	pCi	144	155	0.93	A

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY QA PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY

4th Quarter 2002	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c)	Evaluation (d)
	E3466-162	Milk	I-131	pCi/L	81	86	0.94	A
			I-131LL	pCi/L	89	86	1.03	A
			Ce-141	pCi/L	103	111	0.93	A
			Cr-51	pCi/L	334	346	0.97	A
			Cs-134	pCi/L	98	99	0.99	A
			Cs-137	pCi/L	220	220	1.00	A
			Co-58	pCi/L	134	139	0.96	A
			Mn-54	pCi/L	142	142	1.00	A
			Fe-59	pCi/L	74	72	1.03	A
			Zn-65	pCi/L	177	178	0.99	A
			Co-60	pCi/L	162	164	0.99	A
	E3461-162	Water	H-3	pCi	5450	5987	0.91	A
	E3462-162	Water	Sr-89	pCi	72	79	0.91	A
			Sr-90	pCi	16	16	1.00	A
	E3463-162	Filter	Gr-Beta	pCi	147	150	0.98	A
	E3464-162	Filter	Ce-141	pCi	59	59	1.00	A
			Cr-51	pCi	184	184	1.00	A
			Cs-134	pCi	51	53	0.96	A
			Cs-137	pCi	125	117	1.07	A
			Co-58	pCi	75	74	1.01	A
			Mn-54	pCi	83	75	1.11	A
			Fe-59	pCi	43	38	1.13	A
			Zn-65	pCi	103	95	1.08	A
			Co-60	pCi	84	87	0.97	A
	E3465-162	Filter	Sr-90	pCi	61	60	1.02	A

(a) Framatome reported result.

(b) The Analytics standard.

(c) Ratio of Framatome to Analytics results.

(d) Analytics evaluation: A= Acceptable. W= Acceptable with warning. U= Unacceptable.

QAP/DOE-EML ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY QA PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) FRM/EML	Evaluation (d)
January - June 2002	QAP 56	Water	Co-60	Bq/L	350.300	347.330	1.009	A
			Cs-137	Bq/L	55.300	56.067	0.986	A
			Sr-90	Bq/L	6.260	7.579	0.826	A
			H-3	Bq/L	309.000	283.700	1.089	A
			Gr-Beta	Bq/L	951.000	1030.000	0.923	A
		Filter	Co-60	Bq	29.700	30.520	0.973	A
			Cs-137	Bq	28.400	28.230	1.006	A
			Mn-54	Bq	38.700	38.530	1.004	A
			Sr-90	Bq	4.100	4.832	0.849	A
			Gr-Beta	Bq	1.174	1.300	0.903	A
July - December 2002	QAP 57	Water	Co-60	Bq/L	257.200	268.570	0.957	A
			Cs-134	Bq/L	60.700	60.200	1.008	A
			Cs-137	Bq/L	79.700	81.430	0.979	A
			Sr-90	Bq/L	7.770	8.690	0.894	A
			H-3	Bq/L	252.100	227.300	1.109	A
			Gr-Beta	Bq/L	808.700	900.000	0.899	A
		Filter	Co-60	Bq	23.195	23.000	1.008	A
			Cs-137	Bq	33.400	32.500	1.028	A
			Mn-54	Bq	51.680	52.200	0.990	A
			Sr-90	Bq	4.820	5.561	0.867	A
			Gr-Beta	Bq	0.785	0.871	0.901	A

(a) Framatome reported result.
(b) The DOE/EML standard.
(c) Ratio of Framatome to DOE/EML results.
(d) DOE/EML evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

PT/ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY QA PROGRAM
FRAMATOME ANP DE&S ENVIRONMENTAL LABORATORY

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	ERA Control Limits (c)	Evaluation (d)
January - June 2002	12030105	Water	Gr-Beta	pCi/L	16.9	16.3	7.6 - 25.0	A
	RAD-49	Water	Gr-Beta	pCi/L	174	189	140 - 238	A
			Co-60	pCi/L	39.5	39.1	30.4 - 47.8	A
			Cs-134	pCi/L	17.1	17.1	8.44 - 25.8	A
			Cs-137	pCi/L	53.6	52.1	43.4 - 60.8	A
			I-131LL	pCi/L	19.5	14.7	11.2 - 18.2	NA (1)
			H-3	pCi/L	17100	17400	14400 - 20400	A
			Sr-89	pCi/L	31.1	31.7	23.0 - 40.4	A
			Sr-90	pCi/L	28.6	28.3	19.6 - 37.0	A
July - December 2002	RAD-50	Water	Gr-Beta	pCi/L	23.1	21.9	13.2 - 30.6	A
			Ba-133	pCi/L	74.9	80	66.4 - 93.6	A
			Co-60	pCi/L	24.5	23.3	14.6 - 32.0	A
			Cs-134	pCi/L	73	71.7	63.0 - 80.4	A
			Cs-137	pCi/L	228	214	195 - 233	CE (2)
			Zn-65	pCi/L	95.6	95.7	79.4 - 112	A
			Sr-89	pCi/L	26.3	29	20.3 - 37.7	A
			Sr-90	pCi/L	33.3	36.4	27.7 - 45.1	A
	RAD-51	Water	H-3	pCi/L	10100	10200	8440 - 12000	A
			I-131LL	pCi/L	6.83	6.76	3.30 - 10.2	A

(1) Equipment problem with iodine probe. Probe replaced and re-analysis result was acceptable at 14.5 pCi/L.

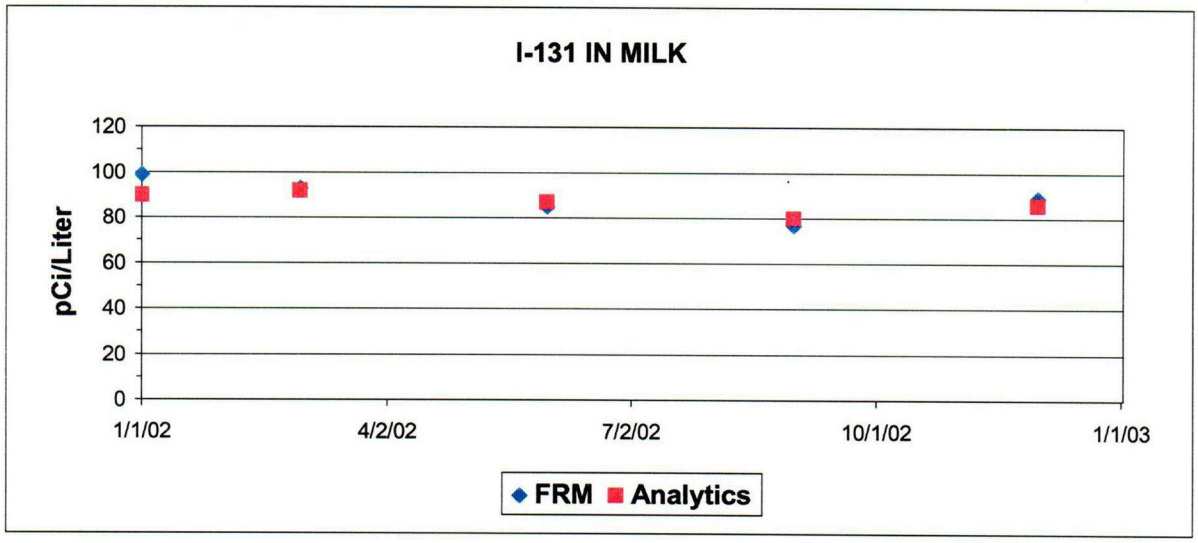
(2) A review of the sample documentation, Proficiency Test participant data and instrument calibration data was performed. No problems were noted with any sample or calibration documentation.

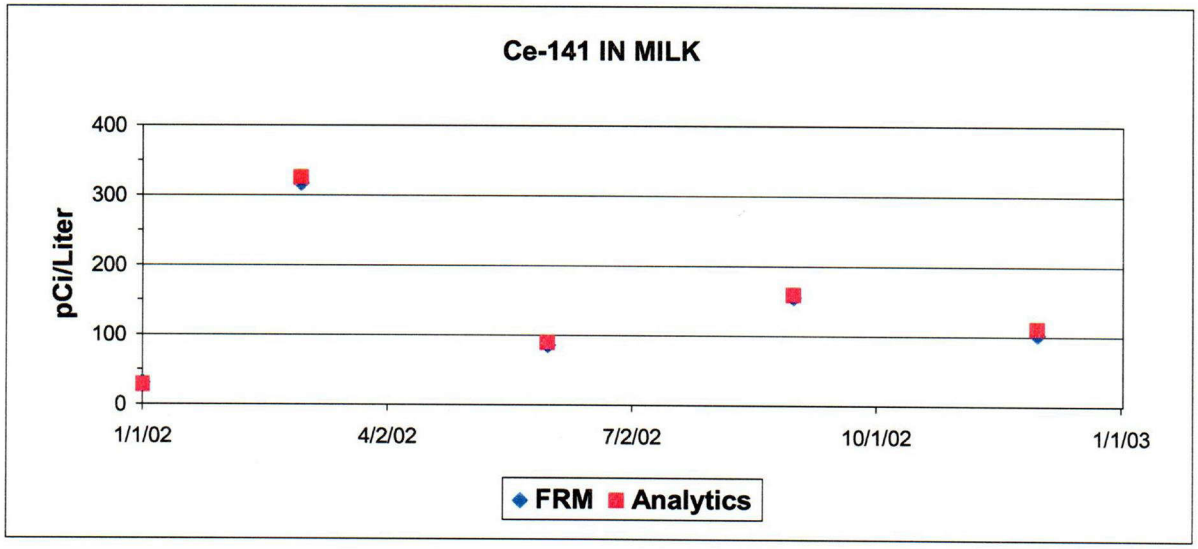
(a) Framatome reported result.

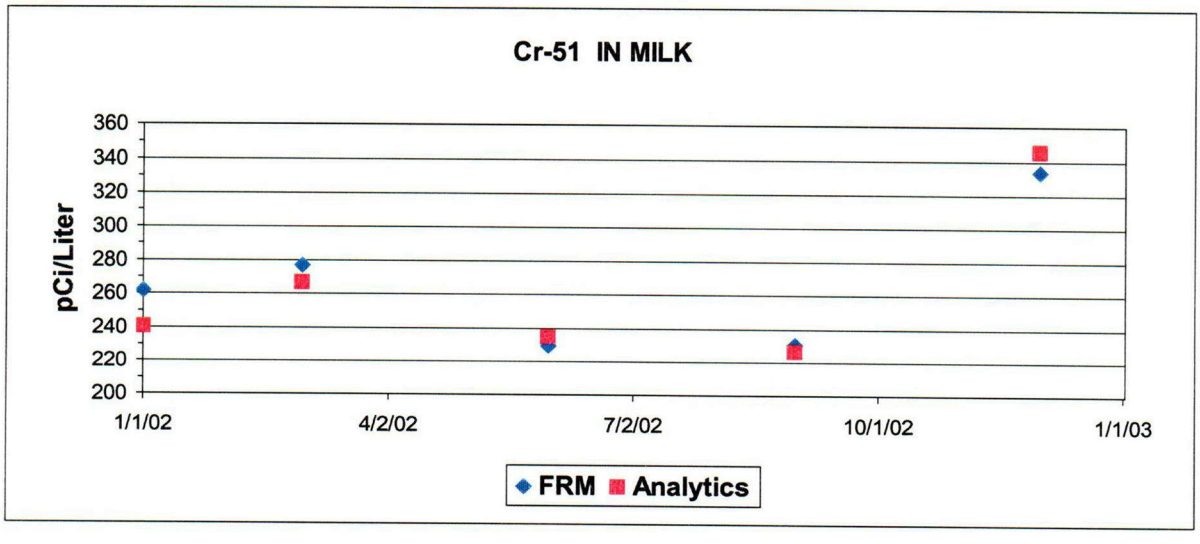
(b) The ERA standard.

(c) Range of acceptable results.

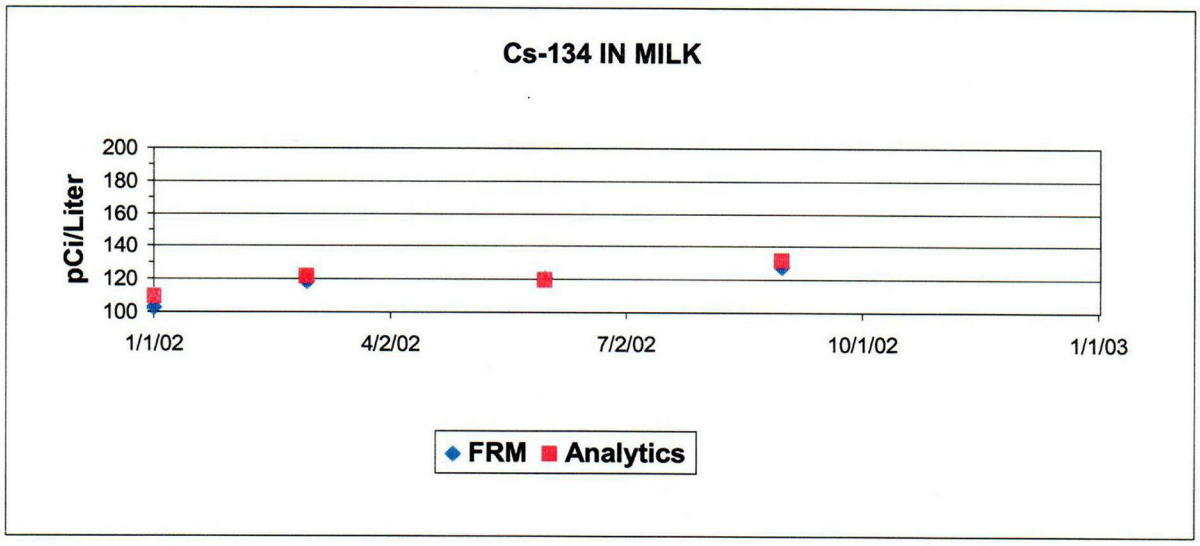
(d) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for error. Reported result falls within the Control Limits and outside of the Warning Limits.

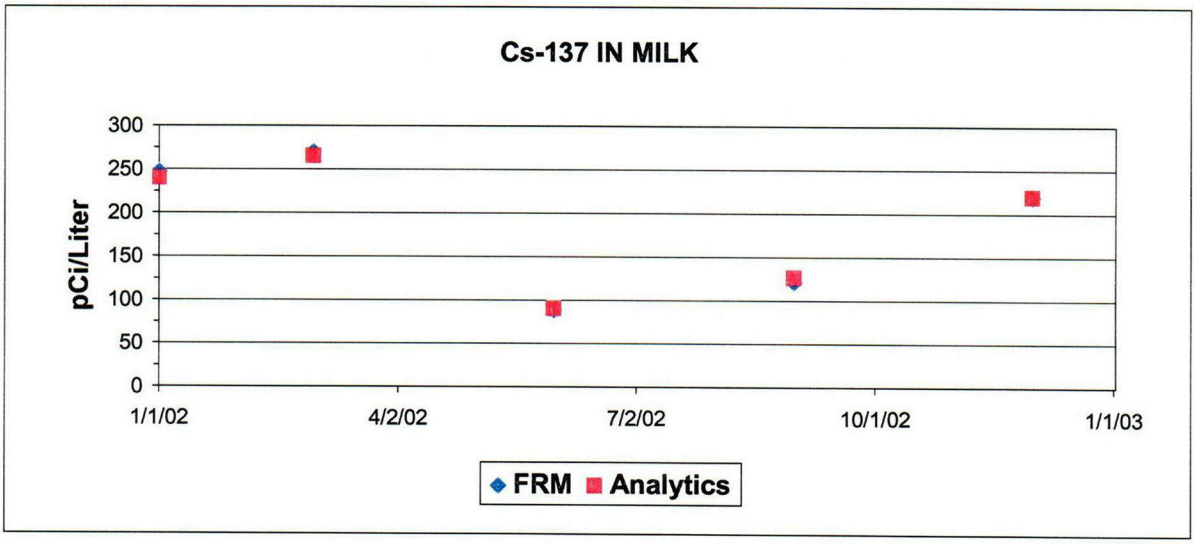

I-131 IN MILK
120
100
80
60
40
20
0
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

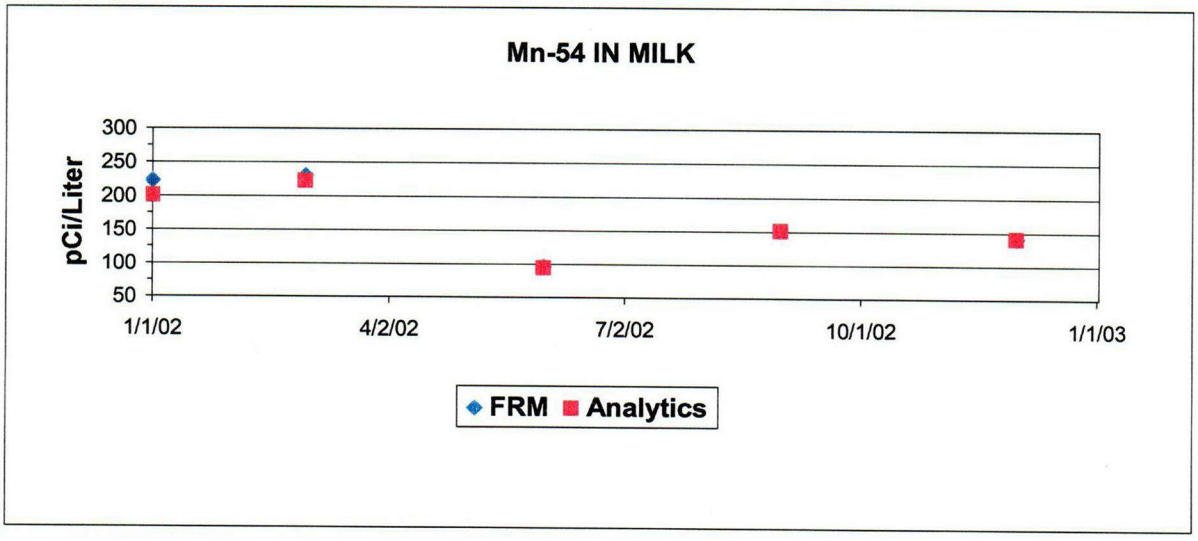

Ce-141 IN MILK
400
300
200
100
0
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Cr-51 IN MILK
360
340
320
300
280
260
240
220
200
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

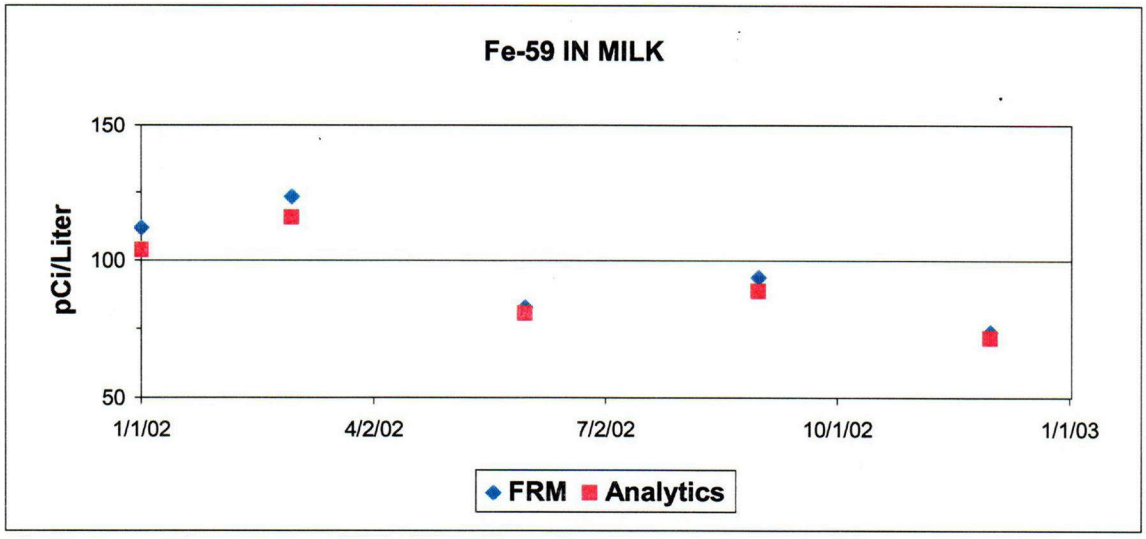
C10

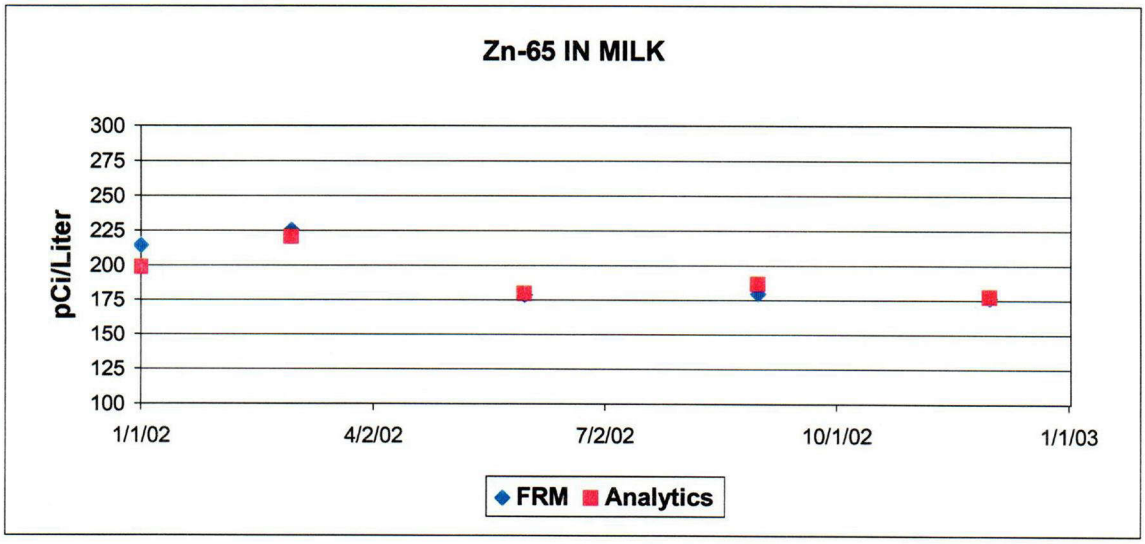

Cs-134 IN MILK
pCi/Liter
200
180
160
140
120
100
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

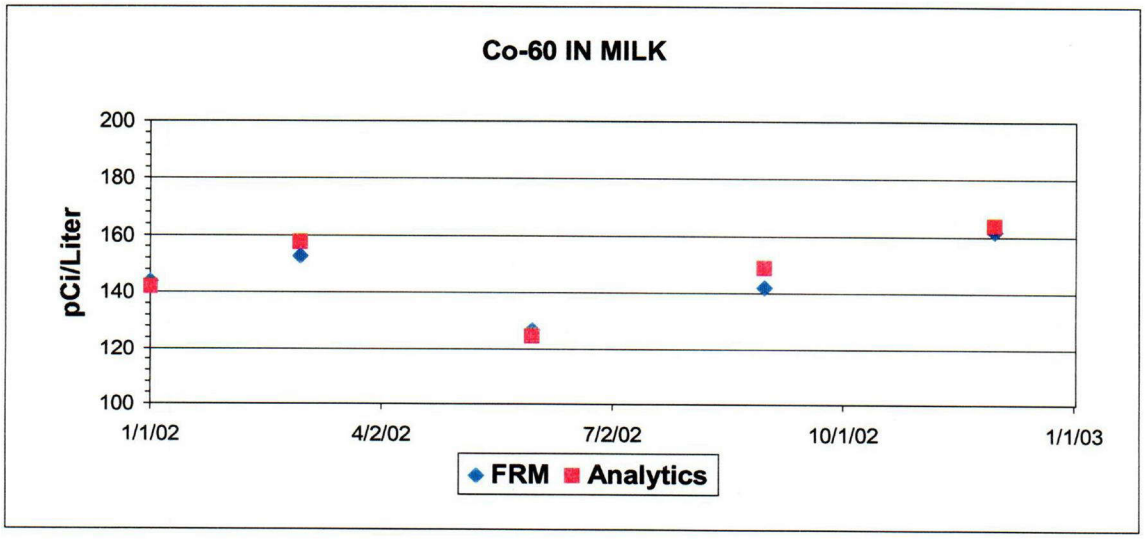

Cs-137 IN MILK
pCi/Liter
300
250
200
150
100
50
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Mn-54 IN MILK
pCi/Liter
300
250
200
150
100
50
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

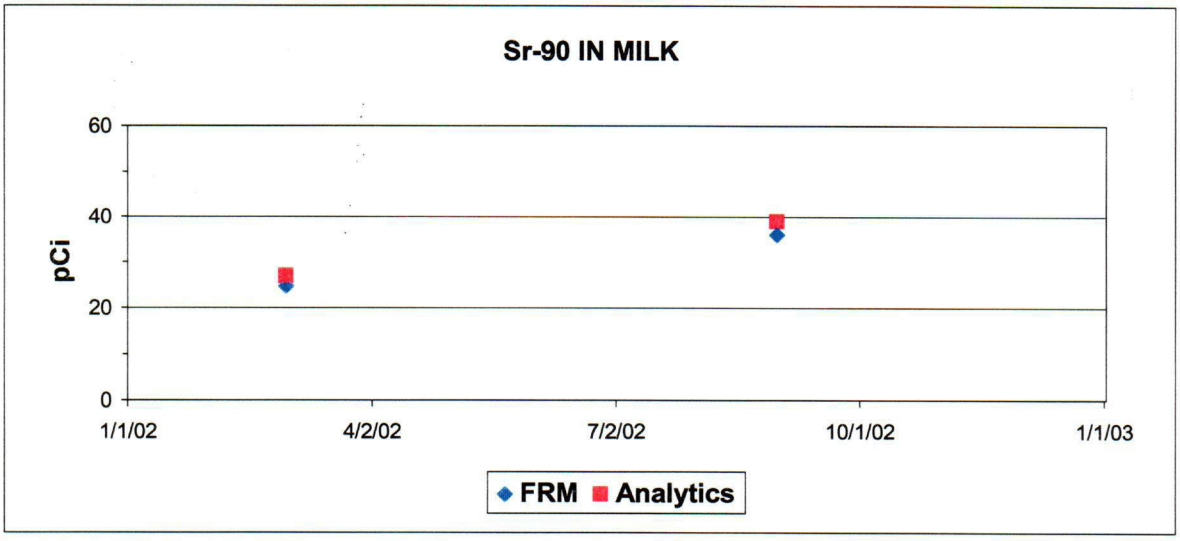
C11

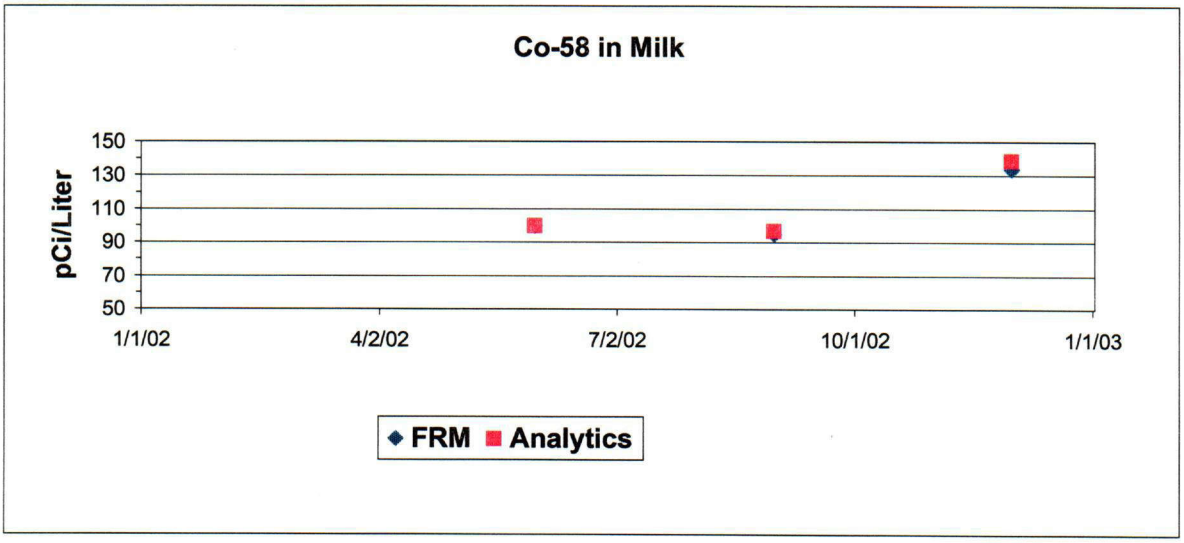

Fe-59 IN MILK
150
100
50
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

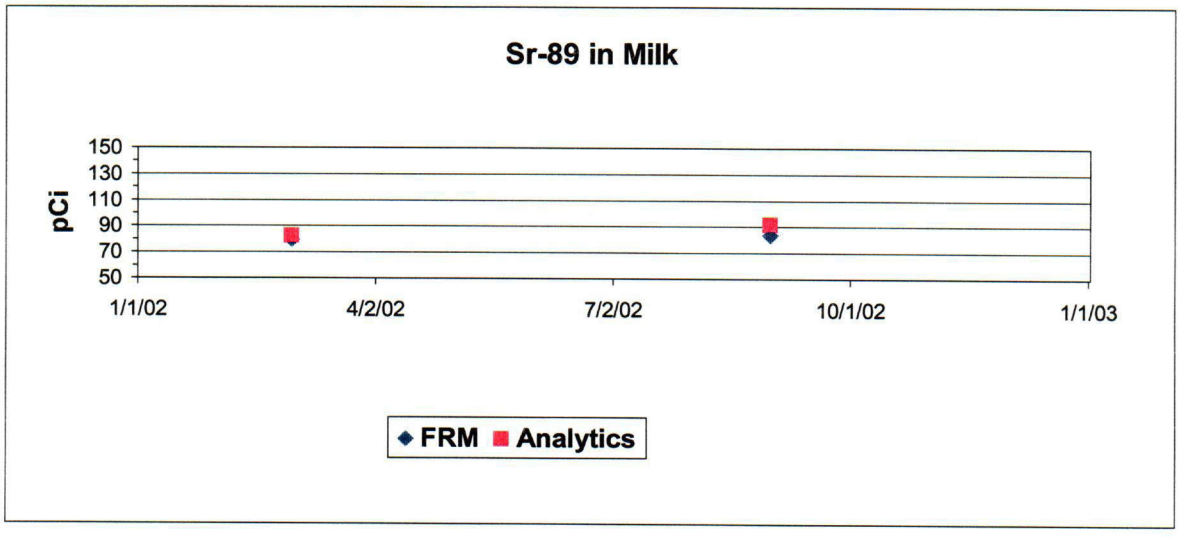

Zn-65 IN MILK
300
275
250
225
200
175
150
125
100
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Co-60 IN MILK
200
180
160
140
120
100
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

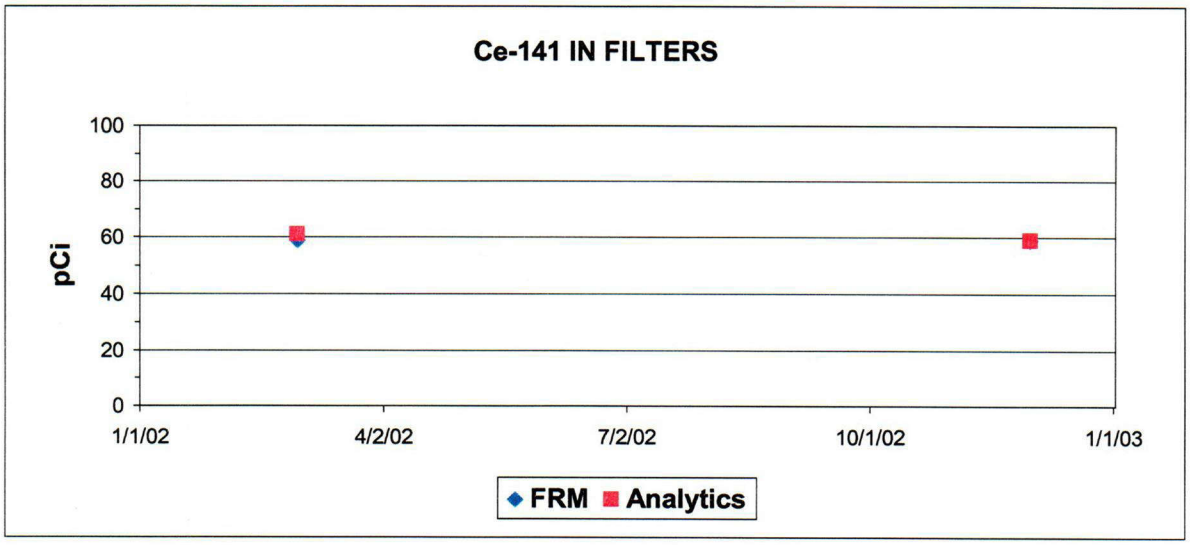
C12

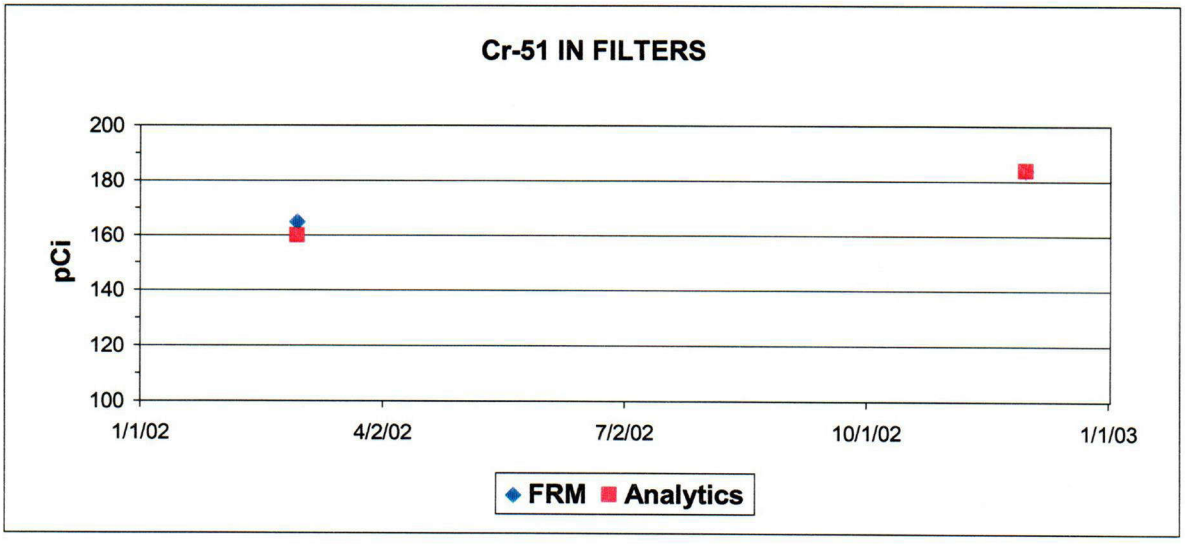

Sr-90 IN MILK
60
40
20
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

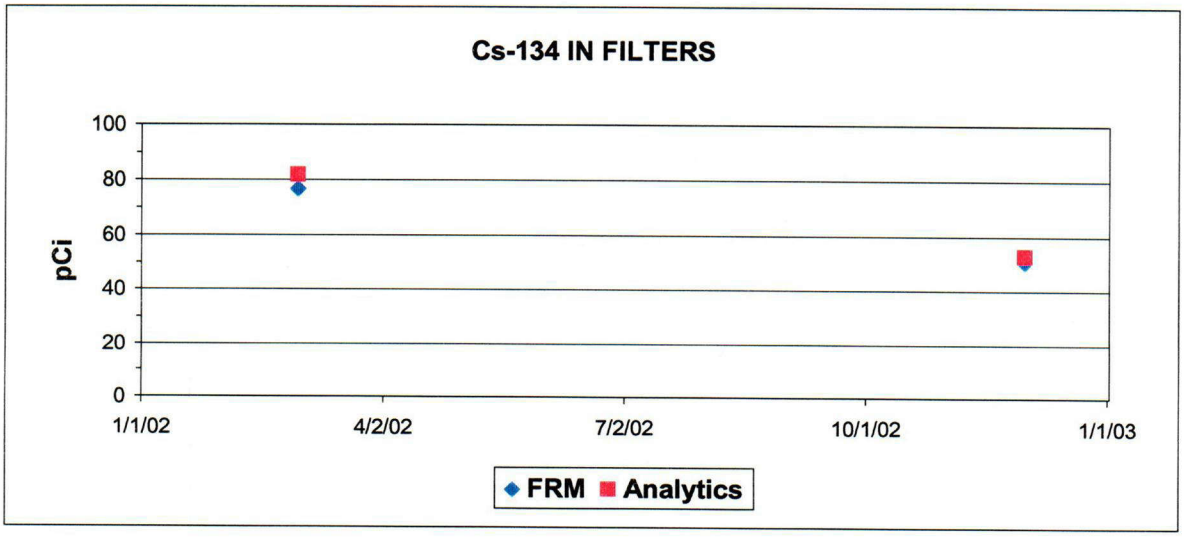

Co-58 in Milk
150
130
110
90
70
50
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Sr-89 in Milk
150
130
110
90
70
50
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

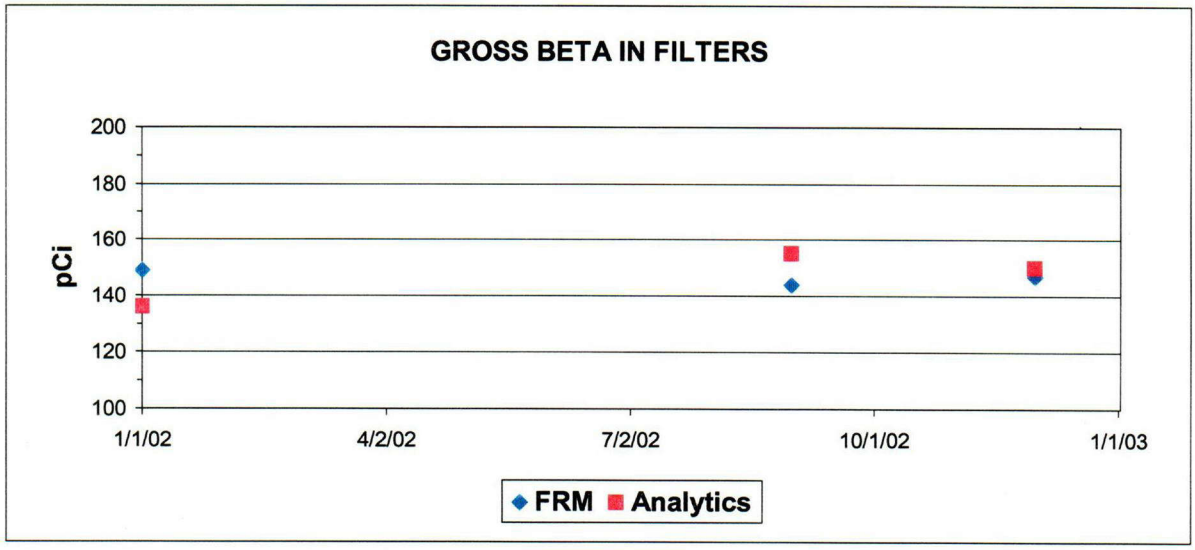
C13

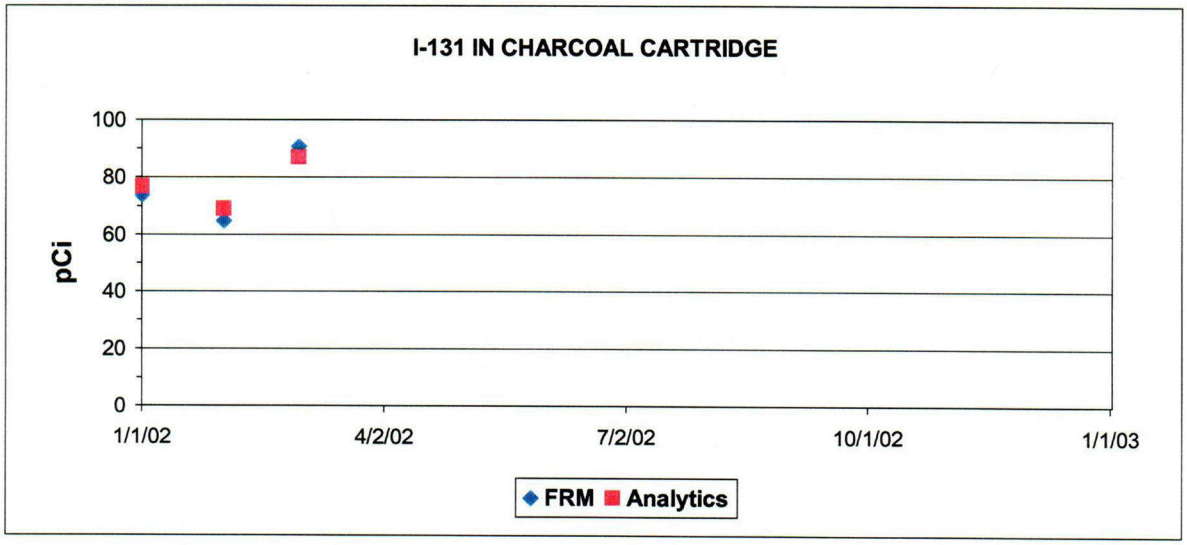

Ce-141 IN FILTERS
100
80
60
40
20
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Cr-51 IN FILTERS
200
180
160
140
120
100
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

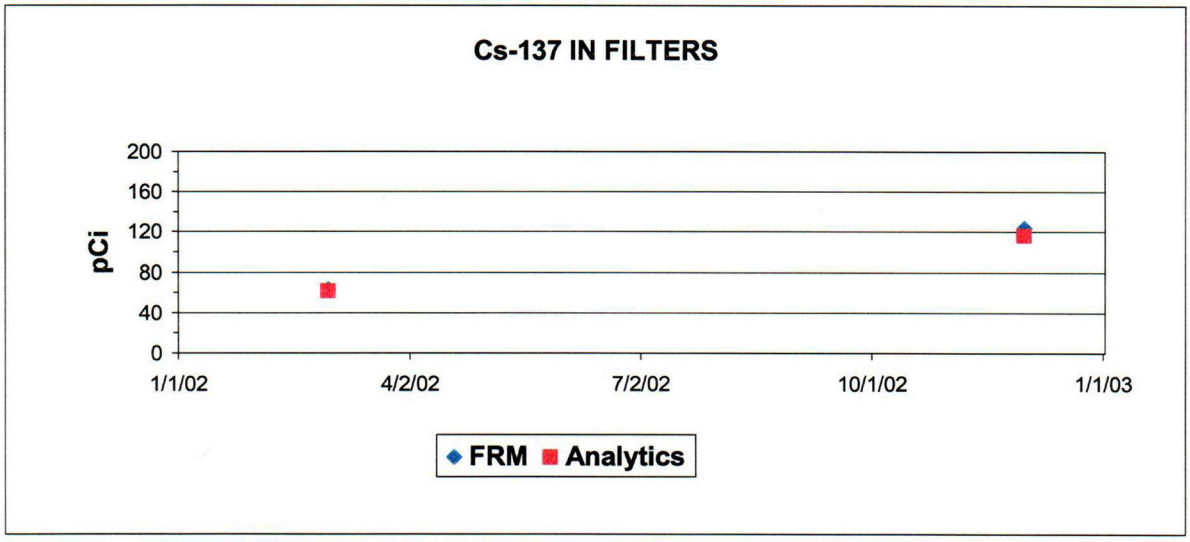

Cs-134 IN FILTERS
100
80
60
40
20
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

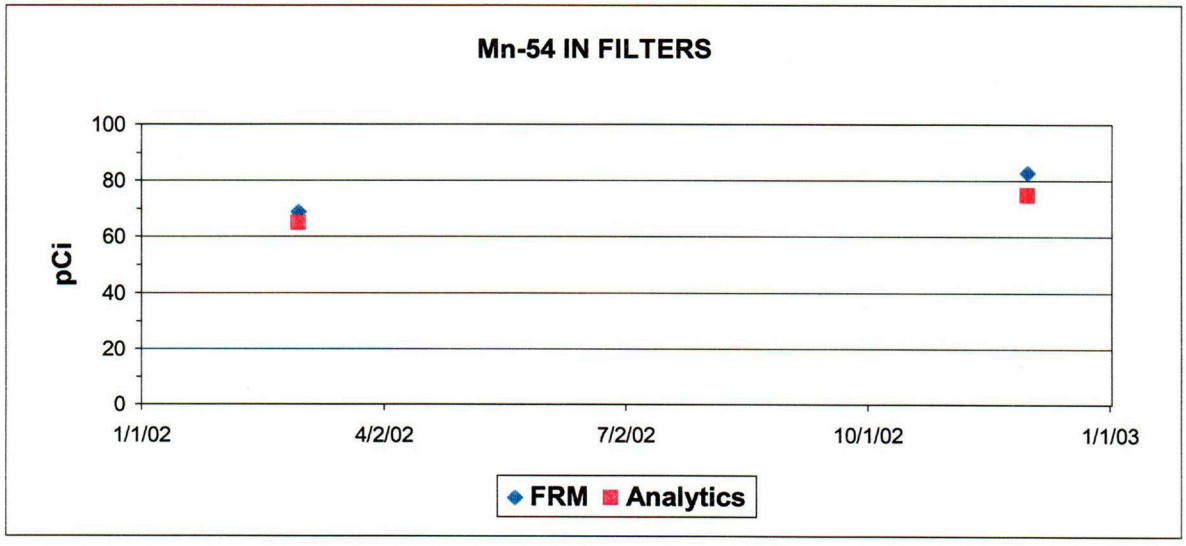
C14

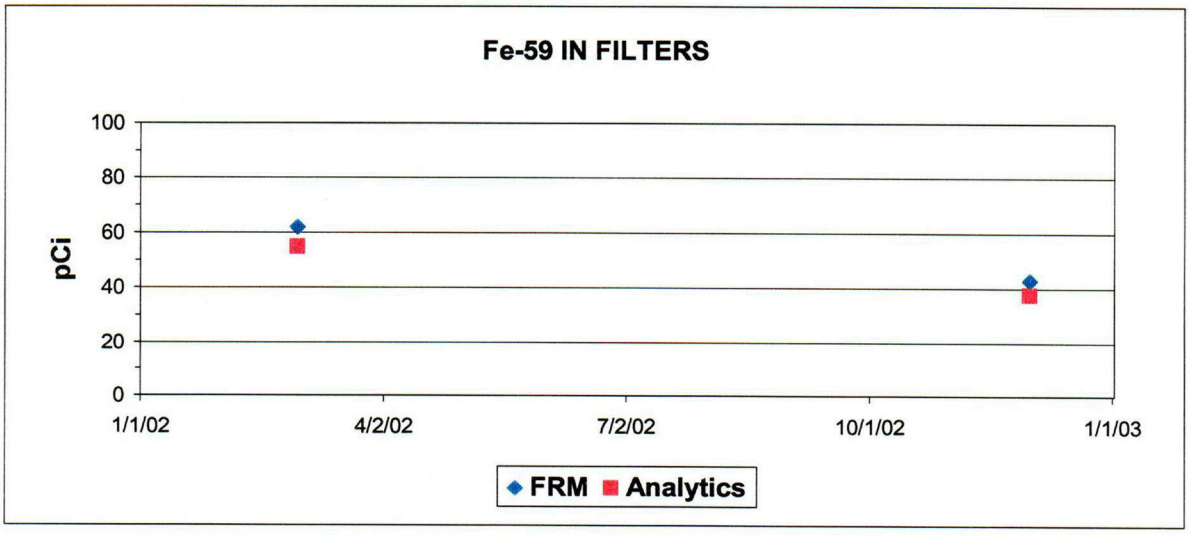

GROSS BETA IN FILTERS
200
180
160
140
120
100
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


I-131 IN CHARCOAL CARTRIDGE
100
80
60
40
20
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

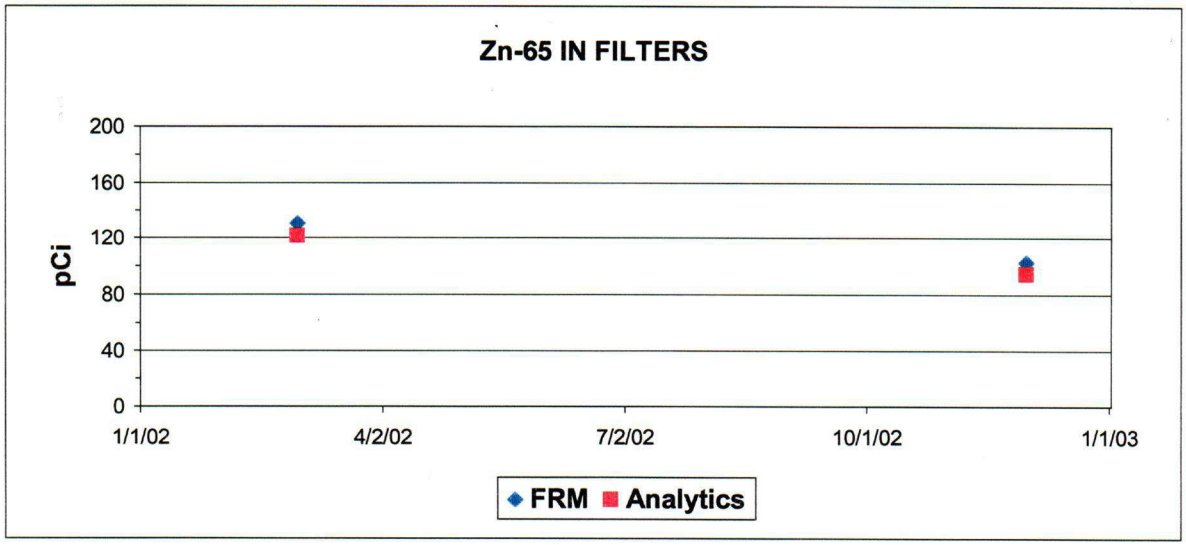
C15

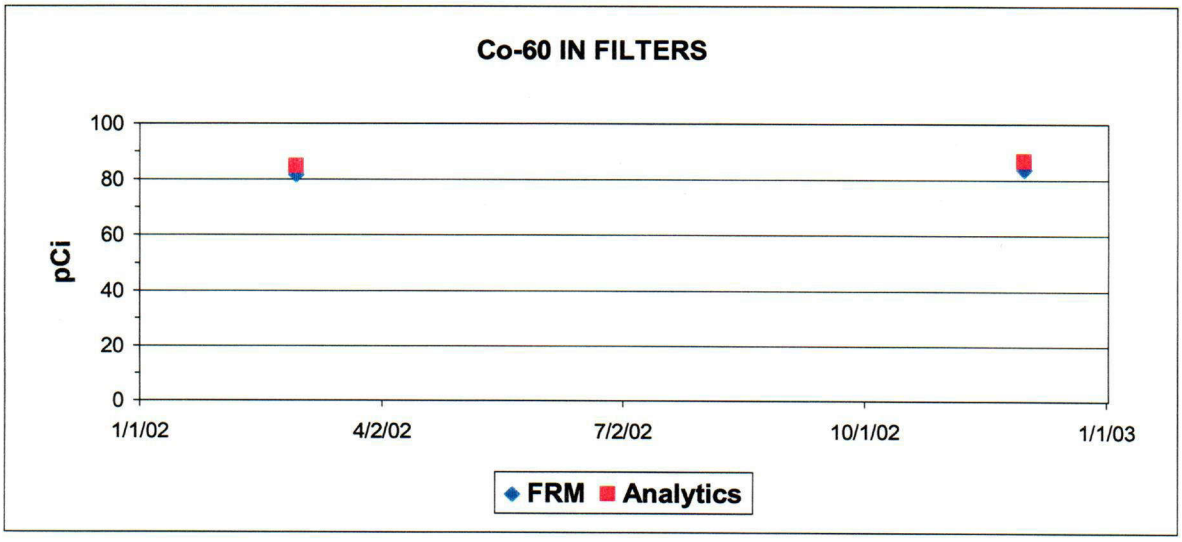

Cs-137 IN FILTERS
pCi
200
160
120
80
40
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

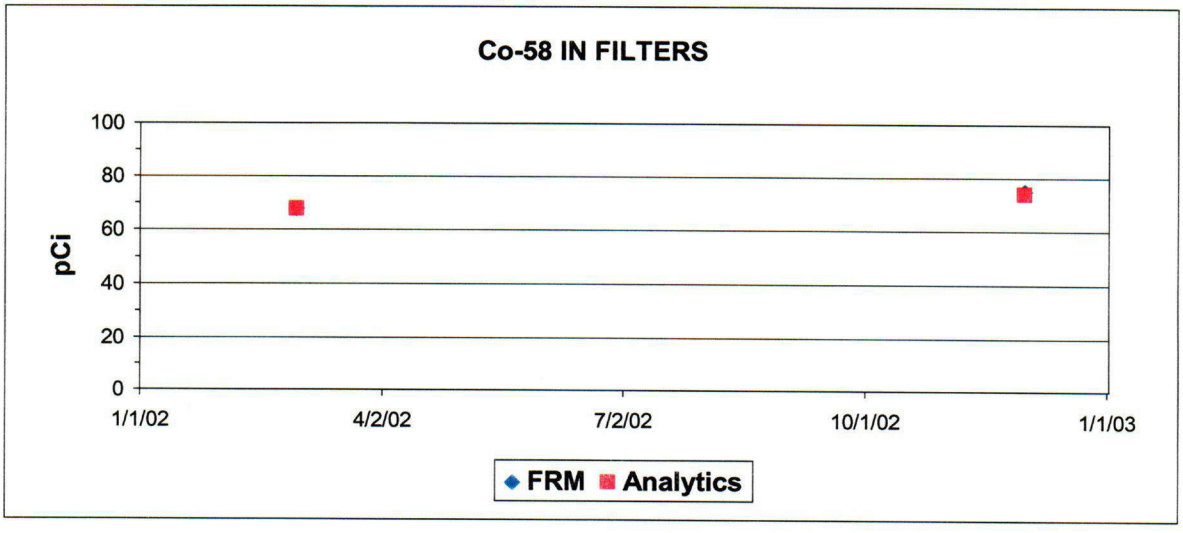

Mn-54 IN FILTERS
pCi
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Fe-59 IN FILTERS
pCi
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

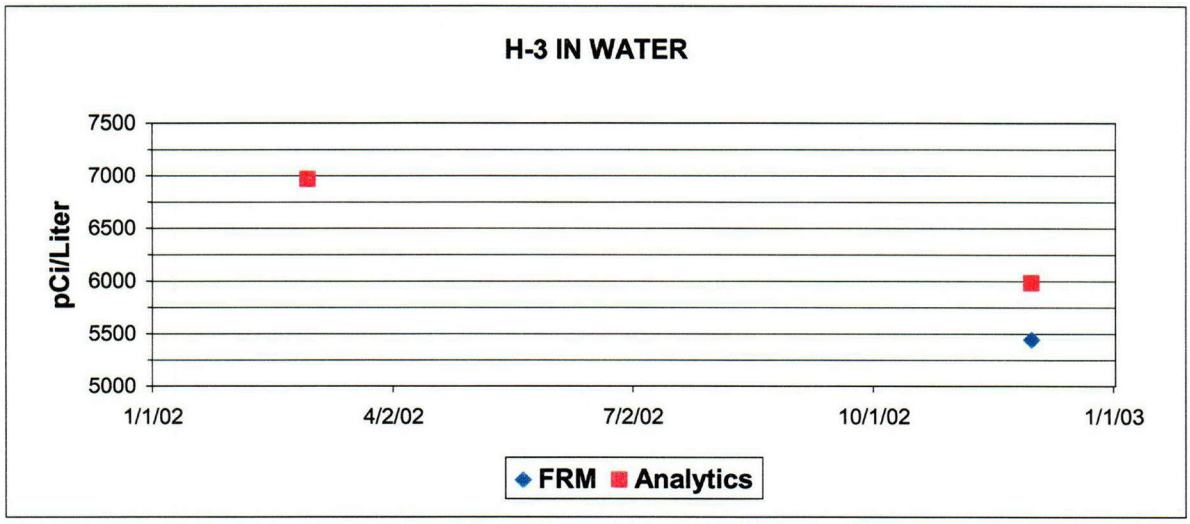
C16

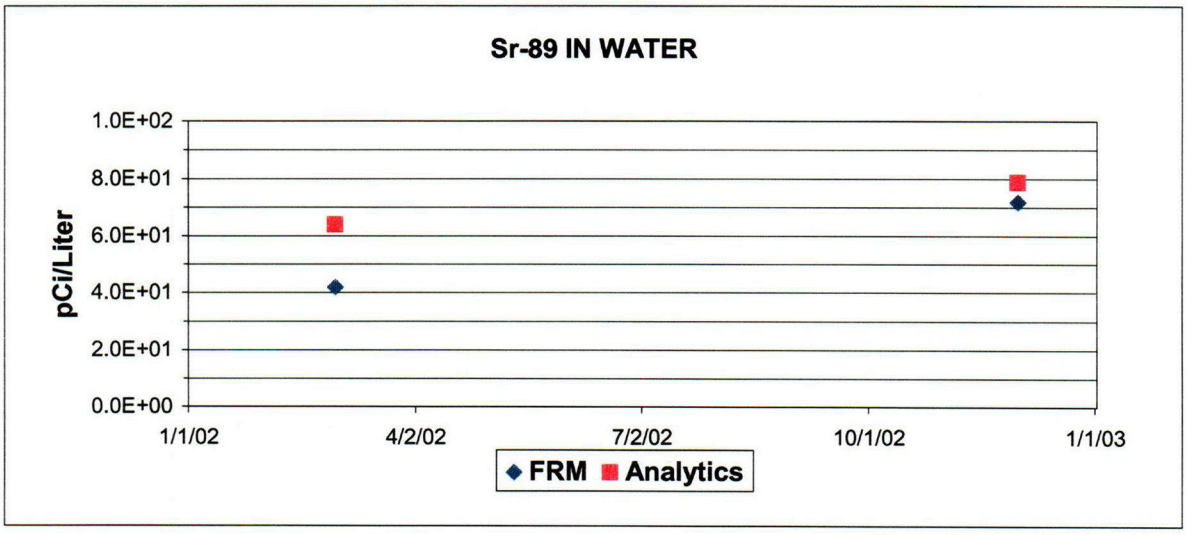

Zn-65 IN FILTERS
200
160
120
80
40
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

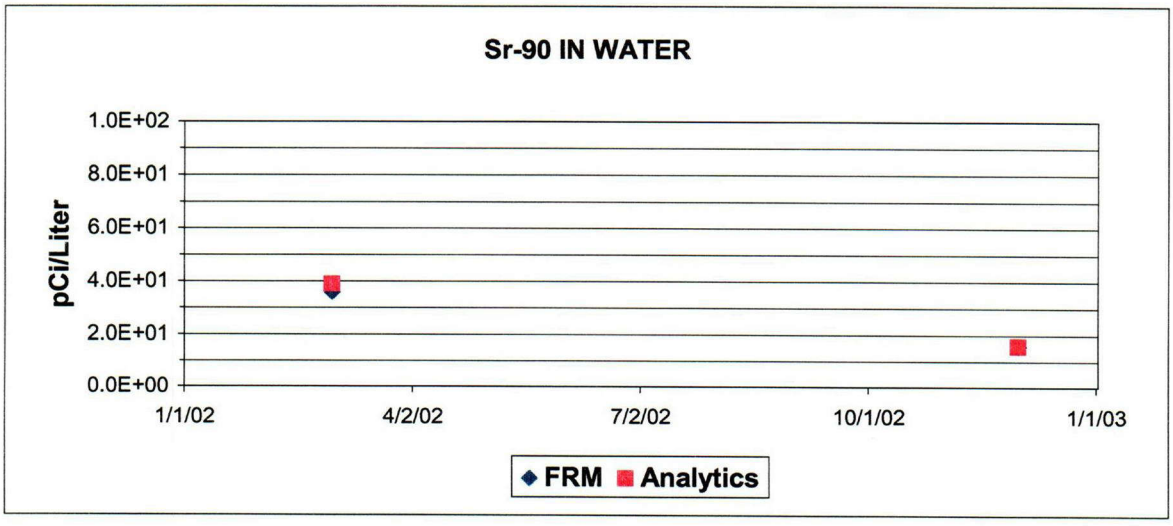

Co-60 IN FILTERS
100
80
60
40
20
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Co-58 IN FILTERS
100
80
60
40
20
0
pCi
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

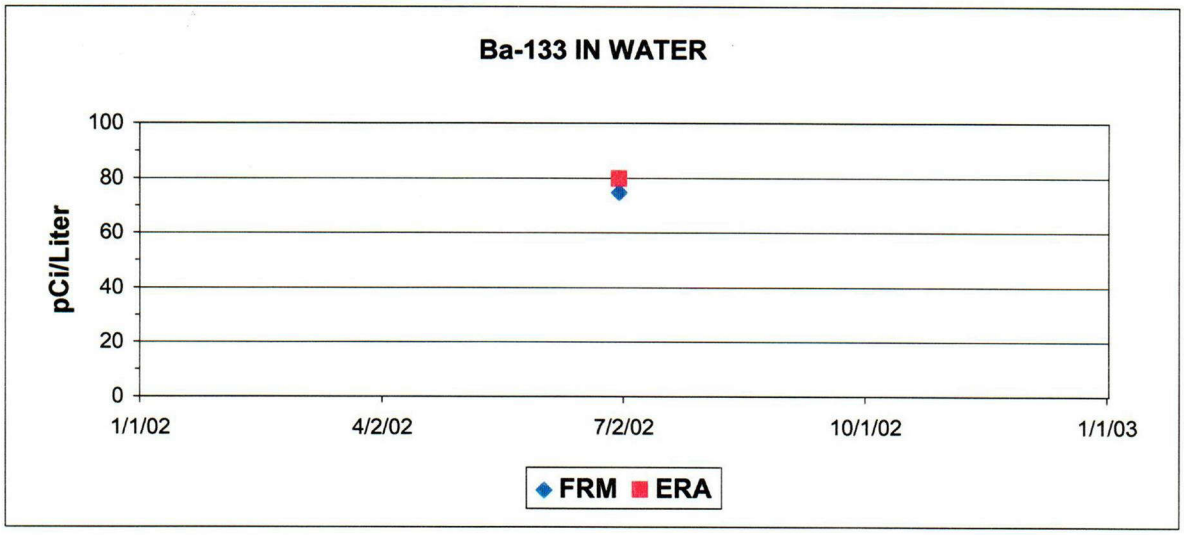
C17

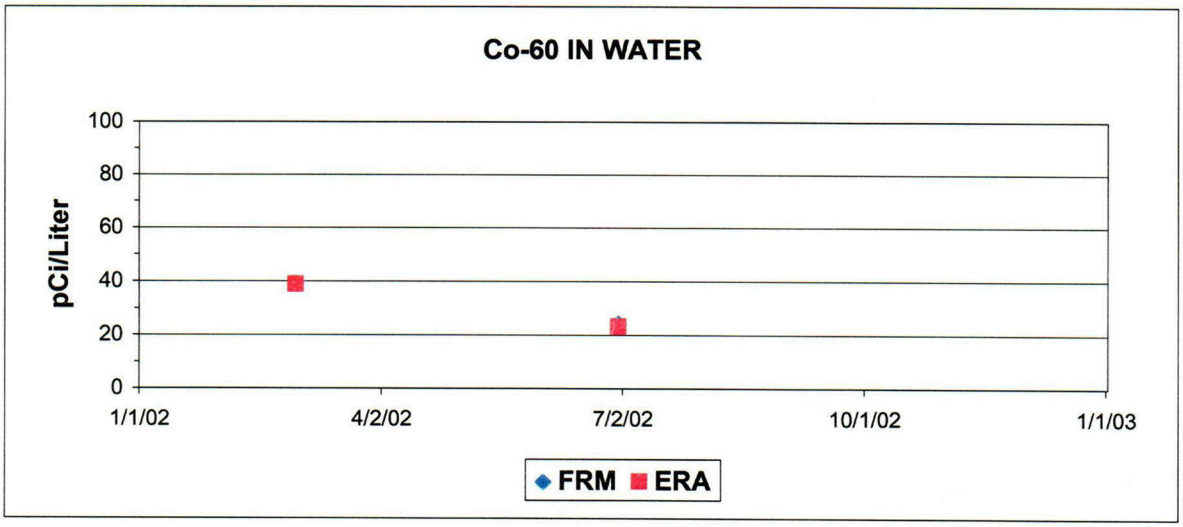

H-3 IN WATER
7500
7000
6500
6000
5500
5000
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

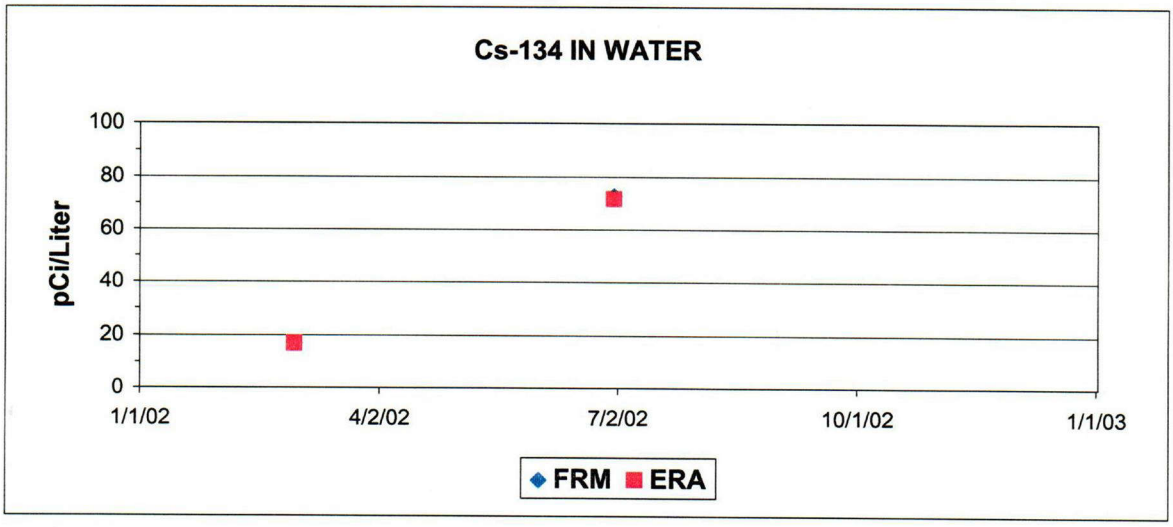

Sr-89 IN WATER
1.0E+02
8.0E+01
6.0E+01
4.0E+01
2.0E+01
0.0E+00
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics


Sr-90 IN WATER
1.0E+02
8.0E+01
6.0E+01
4.0E+01
2.0E+01
0.0E+00
pCi/Liter
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
Analytics

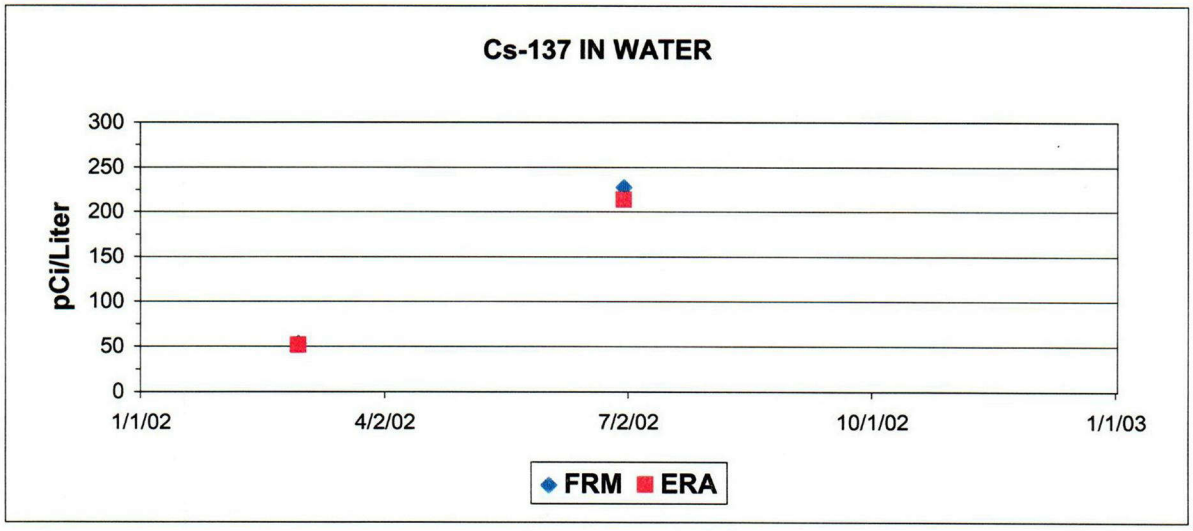
C18

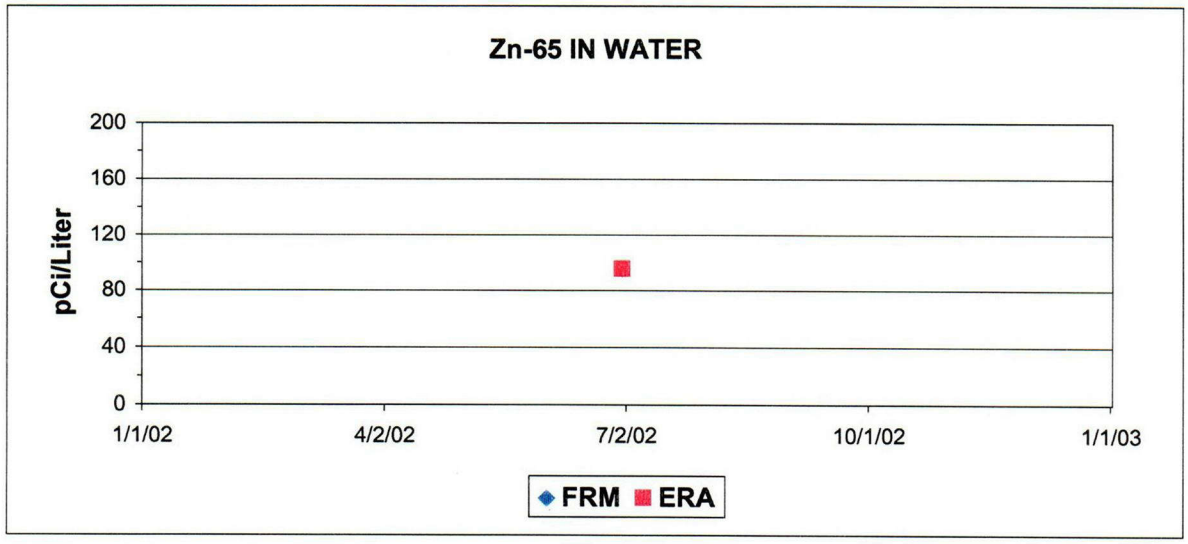

Ba-133 IN WATER
pCi/Liter
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA

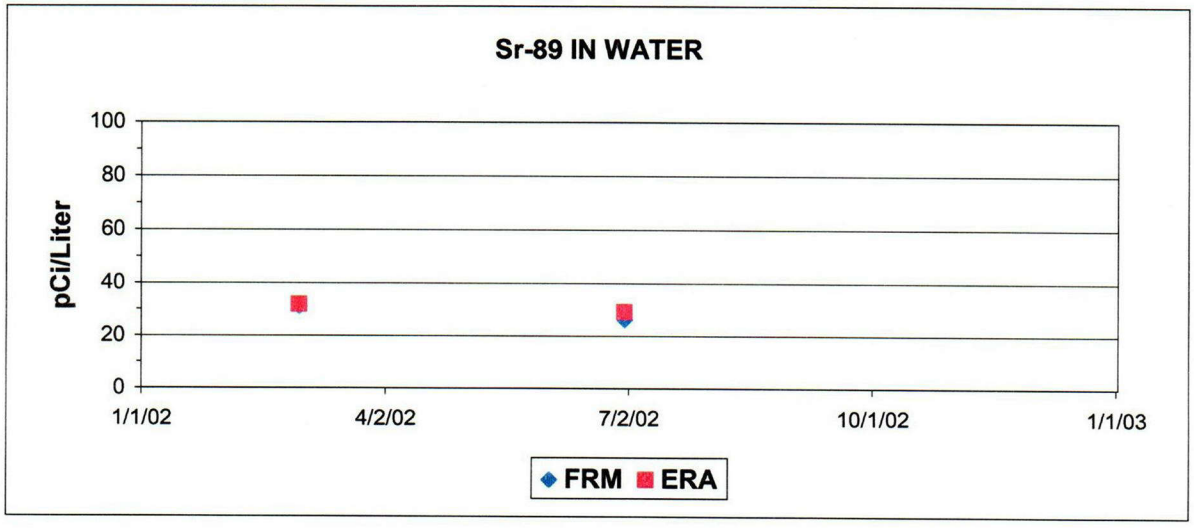

Co-60 IN WATER
pCi/Liter
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA


Cs-134 IN WATER
pCi/Liter
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA

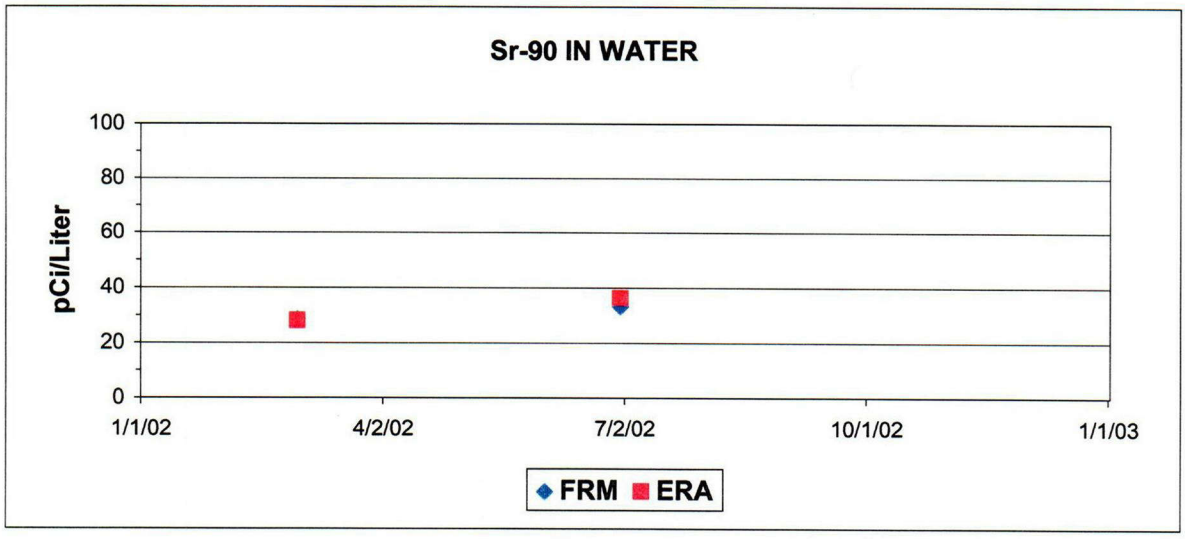
C19

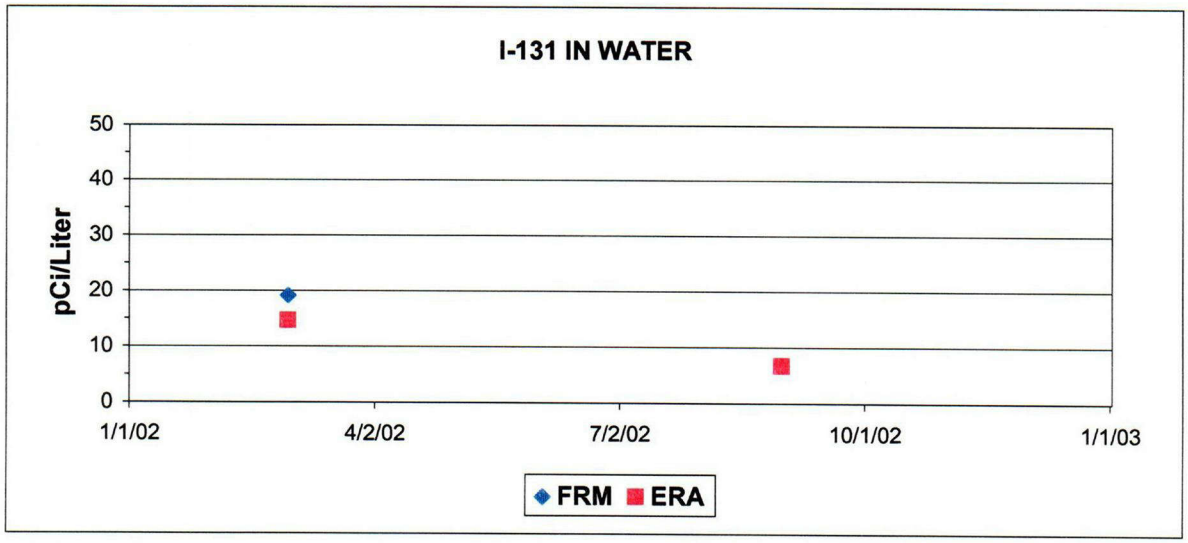

Cs-137 IN WATER
pCi/Liter
300
250
200
150
100
50
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA

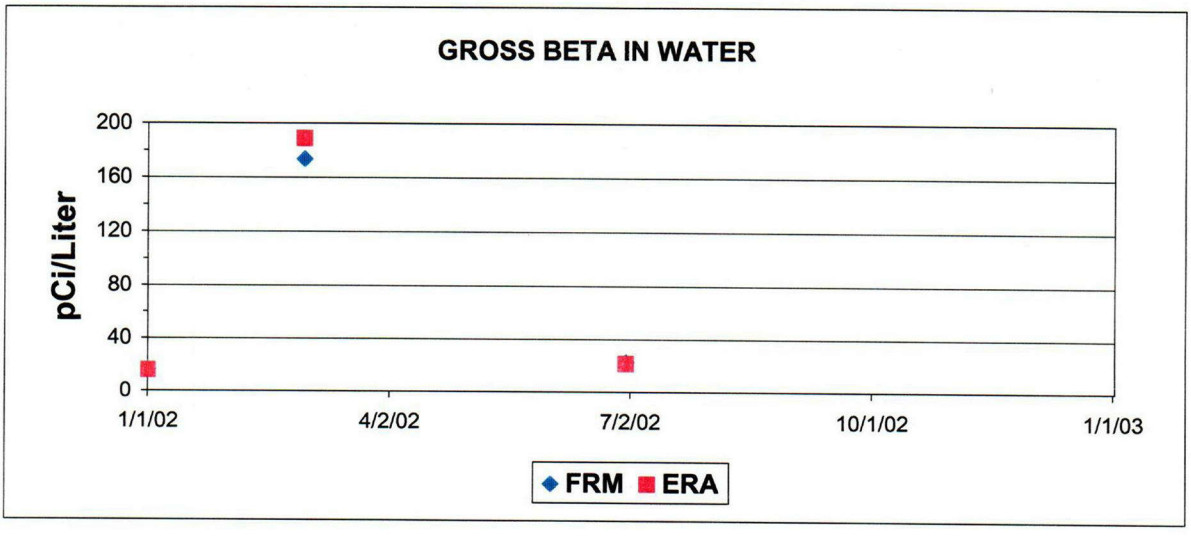

Zn-65 IN WATER
pCi/Liter
200
160
120
80
40
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA


Sr-89 IN WATER
pCi/Liter
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA

CZO


Sr-90 IN WATER
pCi/Liter
100
80
60
40
20
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA


I-131 IN WATER
pCi/Liter
50
40
30
20
10
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA


GROSS BETA IN WATER
pCi/Liter
200
160
120
80
40
0
1/1/02
4/2/02
7/2/02
10/1/02
1/1/03
FRM
ERA