VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

April 28, 2003

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

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Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 & 2 AND
INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

Enclosed is the Annual Radiological Environmental Operating Report for the reporting period of January 1, 2002 through December 31, 2002. This report is provided pursuant to North Anna Units 1 and 2, Technical Specifications 5.6.2, and North Anna Independent Spent Fuel Storage Installation Technical Specification 5.5.2b.

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

Very truly yours,

DAHeacock

D. A. Heacock
Site Vice President

Enclosure

Commitments made in this letter: None

IE25

cc: U. S. Nuclear Regulatory Commission
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Director, Nuclear Material Safety and Safeguards
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Washington, D. C. 20555

Mr. M. J. Morgan
NRC Senior Resident Inspector
North Anna Power Station

Dominion

North Anna Power Station

Radiological Environmental Monitoring Program

January 1, 2002 to December 31, 2002

Prepared by

Dominion, North Anna Power Station

and

Dominion Nuclear Connecticut

Annual Radiological Environmental Operating Report

North Anna Power Station

January 1, 2002 to December 31, 2002

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Table of Contents

1. EXECUTIVE SUMMARY

This document is a detailed report of the 2002 North Anna Nuclear Power Station Radiological Environmental Monitoring Program (REMP). It is submitted in accordance with North Anna Unit 1 and 2 Technical Specification 5.6.2 and North Anna Independent Spent Fuel Storage Installation (ISFSI) Technical Specification 5.5.2b. Radioactivity levels from January 1 through December 31, 2002, in water, silt, shoreline sediment, milk, aquatic biota, food products, vegetation, 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 25-mile radius of the station. North Anna 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 North Anna 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 North Anna 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.

In 2002, ICN Biomedicals provided thermoluminescent dosimetry (TLD) services, Teledyne Brown Engineering [TBE] provided radioanalytical services for all first quarter samples. Thereafter, the Framatome ANP DE&S Environmental Laboratory provided radioanalyses for the remainder of the year with the exception that TBE retained and analyzed the precipitation for the first 6 months due to evaluation of a semi-annual composite. 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 Nuclear Regulatory Commission (NRC) 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 NRC 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, water, aquatic, terrestrial and direct radiation exposure. The airborne exposure pathway includes radioactive airborne iodine and particulates and precipitation. 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.

Water and aquatic exposure pathway samples include surface, river and well water, silt and shoreline sediments, and fish. No plant related isotopes were detected in Lake Anna surface water except for tritium. The average tritium activity in surface water for 2002 was 3908 pCi/liter. Naturally occurring potassium-40 was detected at average environmental levels. River water collected from the North Anna River, 5.8 miles downstream of the site had an average tritium level of 3890 pCi/liter. No plant related radioisotopes were detected in well water. This trend is consistent throughout the environmental operational monitoring program. Silt samples indicated the presence of cesium-137. 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. Shoreline sediment, which may provide a direct exposure pathway, indicated the presence of Cs-137 also at levels consistent with global fallout levels. The terrestrial exposure pathway includes milk and food/vegetation 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 detected in one milk sample 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 vegetation 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 North Anna Power Station and the Independent Spent Fuel Storage Installation (ISFSI) 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 0.25 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 North Anna Power Station.

2. PROGRAM DESCRIPTION

2.1 Introduction

This report documents the 2002 North Anna Power Station operational Radiological Environmental Monitoring Program (REMP).

The North Anna Power Station of Dominion Virginia Power Company is located on Lake Anna in Mineral, Virginia, approximately 35 miles southwest of Fredericksburg, Virginia. 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 was designed with a gross electrical output of 979 megawatts electric (MWe). Unit 1 achieved commercial operation on June 6, 1978 and Unit 2 on December 14, 1980. An independent spent fuel storage facility was licensed for dry cask storage of spent fuel in 1998.

The United States Nuclear Regulatory Commission (USNRC) regulations 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 North Anna Power Station includes Technical Specifications which address the release of radioactive effluents. In-plant monitoring is used to ensure 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 plant environs is also included in North Anna Power Station Offsite Dose Calculation Manual (ODCM).

North Anna Power Station is responsible for collecting the various indicator and control environmental samples. ICN Biomedicals is responsible for processing the TLDs. Teledyne Brown Engineering and the Framatome ANP DE&S Environmental Laboratory are 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.

Occasional samples of environment media show the presence of man-made isotopes. 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 and North Anna's ODCM. 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 North Anna Power Station. All samples listed in Table 2-1 are taken at indicator locations except those labeled "control." The North Anna Radiological Monitoring Locations maps denote sample locations for North Anna Power Station. The locations are color coded to designate sample types. Table 2-2 summarizes the analysis program conducted by Teledyne Brown Engineering and Framatome ANP DE&S Environmental Laboratory for North Anna Power Station during the year 2002.

Table 2-1

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

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Environmental	NAPS Sewage Treatment Plant	01	0.20	NE	42°	Quarterly & Annually	
Thermoluminescent	Fredericks Hall	02	5.30	SSW	225°	Quarterly & Annually	
Dosimetry (TLD)	Mineral, Va	03	7.10	WSW	243°	Quarterly & Annually	
	Wares Crossroads	04	5.10	WNW	287°	Quarterly & Annually	
	Route 752	05	4.20	NNE	20°	Quarterly & Annually	
	Sturgeon's Creek Marina	05A	3.20	N	11°	Quarterly & Annually	
	Levy, VA	06	4.70	ESE	115°	Quarterly & Annually	
	Bumpass, VA	07	7.30	SSE	167°	Quarterly & Annually	
	End of Route 685	21	1.00	WNW	301°	Quarterly & Annually	
	Route 700	22	1.00	WSW	242°	Quarterly & Annually	
	"Aspen Hills"	23	0.93	SSE	158°	Quarterly & Annually	
	Orange, VA	24	22.00	NW	325°	Quarterly & Annually	Control
	Bearing Cooling Tower	N-1/33	0.06	N	10°	Quarterly	
	Sturgeon's Creek Marina	N-2/34	3.20	N	11°	Quarterly	
	Parking Lot "C" (on-site)	NNE-3/35	0.24	NNE	32°	Quarterly	
	Good Hope Church	NNE-4/36	4.96	NNE	25°	Quarterly	
	Parking Lot "B"	NE-5/37	0.20	NE	42°	Quarterly	
	Lake Anna Marina (Bogg's Drive)	NE-6/38	1.46	NE	34°	Quarterly	
	Weather Tower Fence	ENE-7/39	0.36	ENE	74°	Quarterly	
	Route 689	ENE-8/40	2.43	ENE	65°	Quarterly	
	Near Training Facility	E-9/41	0.30	E	91°	Quarterly	
	"Morning Glory Hill"	E-10/42	2.85	E	93°	Quarterly	
	Island Dike	ESE-11/43	0.12	ESE	103°	Quarterly	
	Route 622	ESE-12/44	4.70	ESE	115°	Quarterly	
	DVP Biology Lab	SE-13/45	0.75	SE	138°	Quarterly	
	Route 701 (Dam Entrance)	SE-14/46	5.88	SE	137°	Quarterly	
	"Aspen Hills"	SSE-15/47	0.93	SSE	158°	Quarterly	
	Elk Creek	SSE-16/48	2.33	SSE	165°	Quarterly	
	NAPS Access Rd.	S-17/49	0.47	S	173°	Quarterly	
Environmental	Elk Creek Church	S-18/50	1.55	S	178°	Quarterly	

Table 2-1

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

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Thermoluminescent Dosimetry (TLD)	NAPS Access Rd.	SSW-19/51	0.42	SSW	197°	Quarterly	
	Route 618	SSW-20/52	5.30	SSW	205°	Quarterly	
	500kv Tower	SW-21/53	0.6	SW	218°	Quarterly	
	Route 700	SW-22/54	4.36	SW	232°	Quarterly	
	NAPS Radio Tower	WSW-23/55	0.38	WSW	237°	Quarterly	
	Route 700 (Exclusion Boundary)	WSW-24/56	1.00	WSW	242°	Quarterly	
	South Gate Switchyard	W-25/57	0.32	W	279°	Quarterly	
	Route 685	W-26/58	1.55	W	274°	Quarterly	
	End of Route 685	WNW-27/59	1.00	WNW	301°	Quarterly	
	Route 685	WNW-28/60	1.40	WNW	303°	Quarterly	
	North Gate - Construction Side Laydown Area	NW-29/61	0.45	NW	321°	Quarterly	
	Lake Anna Campground	NW-30/62	2.54	NW	319°	Quarterly	
	#1/#2 Intake	NNW-31/63	0.07	NNW	349°	Quarterly	
	Route 208	NNW-32/64	3.43	NNW	344°	Quarterly	
	Bumpass Post Office	C-1/2	7.30	SSE	167°	Quarterly	Control
	Orange, VA	C-3/4	22.00	NW	325°	Quarterly	Control
	Mineral, VA	C-5/6	7.10	WSW	243°	Quarterly	Control
	Louisa, VA	C-7/8	11.54	WSW	257°	Quarterly	Control
Airborne Particulate and Radioiodine	NAPS Sewage Treatment Plant	01	0.20	NE	42°	Weekly	
	Fredericks Hall	02	5.30	SSW	205°	Weekly	
	Mineral, VA	03	7.10	WSW	243°	Weekly	
	Wares Crossroads	04	5.10	WNW	287°	Weekly	
	Route 752	05	4.20	NNE	20°	Weekly	
	Sturgeon's Creek Marina	05A	3.20	N	11°	Weekly	
	Levy, VA	06	4.70	ESE	115°	Weekly	
	Bumpass, VA	07	7.30	SSE	167°	Weekly	

Table 2-1

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

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Airborne Particulate and Radioiodine	End of Route 685	21	1.00	WNW	301°	Weekly	
	Route 700	22	1.00	WSW	242°	Weekly	
	"Aspen Hills"	23	0.93	SSE	158°	Weekly	
	Orange, VA	24	22.00	NW	325°	Weekly	Control
Surface Water	Waste Heat Treatment Facility (Second Cooling Lagoon)	08	1.10	SSE	148°	Monthly	
	*Lake Anna (upstream) (Route 669 Bridge)	09A	12.90	WNW	295°	Monthly	Control
River Water	North Anna River (downstream)	11	5.80	SE	128°	Monthly	
Ground Water (Well Water)	Biology Lab	01A	0.75	SE	138°	Quarterly	
Precipitation	Biology Lab	01A	0.75	SE	138°	Monthly	
Aquatic Sediment	Waste Heat Treatment Facility (Second Cooling Lagoon)	08	1.10	SSE	148°	Semi-Annually	
	Lake Anna (upstream) (Route 669 Bridge)	09A	12.90	WNW	320°	Semi-Annually	Control
	North Anna River (Downstream)	11	5.80	SE	128°	Semi-Annually	
Shoreline Soil	Waste Heat Treatment Facility (Second Cooling Lagoon)	08 **	1.10	SSE	148°	Semi-Annually	
Soil	NAPS Sewage Treatment Plant	01	0.20	NE	42°	Once/3 years	
	Fredericks Hall	02	5.30	SSW	205°	Once/3 years	
	Mineral, VA	03	7.10	WSW	243°	Once/3 years	
	Wares Crossroads	04	5.10	WNW	287°	Once/3 years	

* In October 1991 the Surface Water Sample location at station 09 was moved to 09A.
** Shoreline soil was changed from station 09 to 08 effective with the August 1996 sample.

Table 2-1

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

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Soil	Route 752	05	4.20	NNE	20°	Once/3 years	
	Sturgeon's Creek Marina	05A	3.20	N	11°	Once/3 years	
	Levy, VA	06	4.70	ESE	115°	Once/3 years	
	Bumpass, VA	07	7.30	SSE	167°	Once/3 years	
	End of Route 685	21	1.00	WNW	301°	Once/3 years	
	Route 700 (Exclusion Boundary)	22	1.00	WSW	242°	Once/3 years	
	"Aspen Hills"	23	0.93	SSE	158°	Once/3 years	
	Orange, VA	24	22.00	NW	325°	Once/3 years	Control
Milk	Holladay Dairy (R.C. Goodwin)	12	8.30	NW	310°	Monthly	
	Terrell's Dairy (Fredericks Hall)	13	5.60	SSW	205°	Monthly	
Fish	Waste Heat Treatment Facility (Second Cooling Lagoon)	08	1.10	SSE	148°	Semi-Annually	
	Lake Orange	25	16.5	NW	312°	Semi-Annually	Control
Food Products (Broadleaf Vegetation)	Bel Aire Plantation	14	1.20	NE	43°	Monthly if available or at harvest	
	Route 614	15	1.37	SE	133°	Monthly if available or at harvest	
	Route 629/522	16	12.60	NW	314°	Monthly if available or at harvest	Control
	Aspen Hills	23	0.93	SSE	158°	Monthly if available or at harvest	
	"Historic Lane"	26	1.15	S	172°	Monthly if available or at harvest	

TABLE 2-2

North Anna Power Station

SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD	REPORT UNITS
Thermoluminescent Dosimetry (TLD)				
(84 TLDs)	Quarterly	Gamma Dose	2 mR±2mR	mR/std. Month
(12 TLDs)	Annually	Gamma Dose	2 mR±2mR	mR/std. Month
Airborne Radioiodine	Weekly	I-131	0.07	pCi/m^3
Airborne Particulate	Weekly	Gross Beta	0.01	pCi/m^3
	Quarterly (a)	Gamma Isotopic		pCi/m^3
		Cs-134	0.05	
		Cs-137	0.06	
	2^{nd} Quarter	Sr-89	(b)	pCi/m^3
	Composite	Sr-90	(b)	
Surface Water	Monthly	I-131	1(c)	pCi/L
		Gamma Isotopic		pCi/L
		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	
	Quarterly(a)	Tritium (H-3)	2000	pCi/L
	2^{nd} Quarter	Sr-89	(b)	pCi/L
	Composite	Sr-90	(b)	
River Water	Monthly	I-131	1(c)	pCi/L
		Gamma Isotopic		pCi/L
		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	

*LLDs indicate those levels to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than the these listed values.

(a) Quarterly composite of each location's samples are used for the required analysis

(b) There are no required LLDs for Sr-89/90

(c) LLD for non-drinking water is 10 pCi/liter.

TABLE 2-2
North Anna Power Station
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD	REPORT UNITS
River Water	Quarterly(a)	Tritium (H-3)	2000	pCi/L
	2nd Quarter	Sr-89	(b)	pCi/L
	Composite	Sr-90	(b)	
Ground Water (Well Water)	Quarterly	Gamma Isotopic		pCi/L
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		I-131	1(c)	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
	Quarterly(a)	Tritium (H-3)	2000	pCi/L
	2nd Quarter	Sr-89	(b)	pCi/L
		Sr-90	(b)	
Aquatic Sediment	Semi-Annually	Gamma Isotopic		pCi/kg (dry)
		Cs-134	150	
		Cs-137	180	
	Annually	Sr-89	(b)	pCi/kg (dry)
		Sr-90	(b)	
Precipitation	Monthly	Gross Beta	4	pCi/L
	Semi-Annual	Gamma Isotopic		pCi/L
	Composite	Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		I-131	1(c)	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
Shoreline Soil	Semi-Annually	Gamma Isotopic		pCi/kg (dry)
		Cs-134	150	
		Cs-137	180	
	Annually	Sr-89	(b)	pCi/kg (dry)
		Sr-90	(b)	

*LLDs indicate those levels to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than the these listed values.

(a) Quarterly composite of each location's samples are used for the required analysis

(b) There are no required LLDs for Sr-89/90

(c) LLD for non-drinking water is 10 pCi/liter.

TABLE 2-2
North Anna Power Station
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD	REPORT UNITS
Soil	Once per 3 years	Gamma Isotopic		pCi/kg (dry)
		Cs-134	150	
		Cs-137	180	
		Sr-89	(b)	pCi/kg (dry)
		Sr-90	(b)	
Milk	Monthly	I-131	1	pCi/L
	Monthly	Gamma Isotopic		
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
	Quarterly	Sr-89	(b)	pCi/L
		Sr-90	(b)	
Fish	Semi-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	
Food Products (Broadleaf Vegetation)	Monthly if available or at harvest	Gamma Isotopic		pCi/kg (wet)
		Cs-134	60	
		Cs-137	80	
		I-131	60	

*LLDs indicate those levels to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than the these listed values.

(a) Quarterly composite of each location's samples are used for the required analysis

(b) There are no required LLDs for Sr-89/90

(c) LLD for non-drinking water is 10 pCi/liter.

Legend For The North Anna Power Station
Environmental Monitoring Stations Overview Maps

Map Designation		Environmental Station Identification	Map Designation	Environmental Station
1	(a)	01,NE-5/37	7/8	C-7/8
1A		01A,SE-13/45	1/33	N-1/33
2	(a)	02,SSW-20/52	31/63	NNW-31/63
3	(a)	03,C-5/16	29/61	NW-29/61
4	(a)	04	3/35	NNE-3/35
5	(a)	05	7/39	ENE-7/39
5A	(a)	05A,N-2/34	9/41	E-9/41
6	(a)	06,ESE-12/44	11/43	ESE-11/43
7	(a)	07,C-1&2	17/49	S-17/49
8		08-Water, Fish Sediment, Shoreline Soil (d)	19/51 21/53	SSW-19/51 SW-21/53
9A		09A-Water sample, sediment	23/55	WSW-23/55
11		11-River Water, Sediment	25/57	W-25/57
12		12-Milk16/48	SSE-16/48	
13		13-Milk18/50	S-18/50	
14		14-Vegetation, NE-6/38	14/46	SE-14/46
15		Vegetation22/54	SW-22/54	
16		Vegetation26/58	W-26/58	
21	(a)	21,WNW-27/59	28/60	WNW-28/60
22	(a)	22,WSW-24/56	32/64	NNW-32/64
23	(a)	23-SSE-15/47	8/40	ENE-8/40
24	(a)(b)	24,C-3&4	4/36	NNE-40/36
25	(c)	25-Fish	10/42	E-10/42
26	(e)	26-Vegetation		

(a) Indicates air sample station, annual and quarterly TLD, Triennial soil.
(b) In Orange
(c) In Lake Orange
(d) Station 09 changed to 08 effective August 1996.
(e) Vegetation changed to Station 26 effective Oct 2001

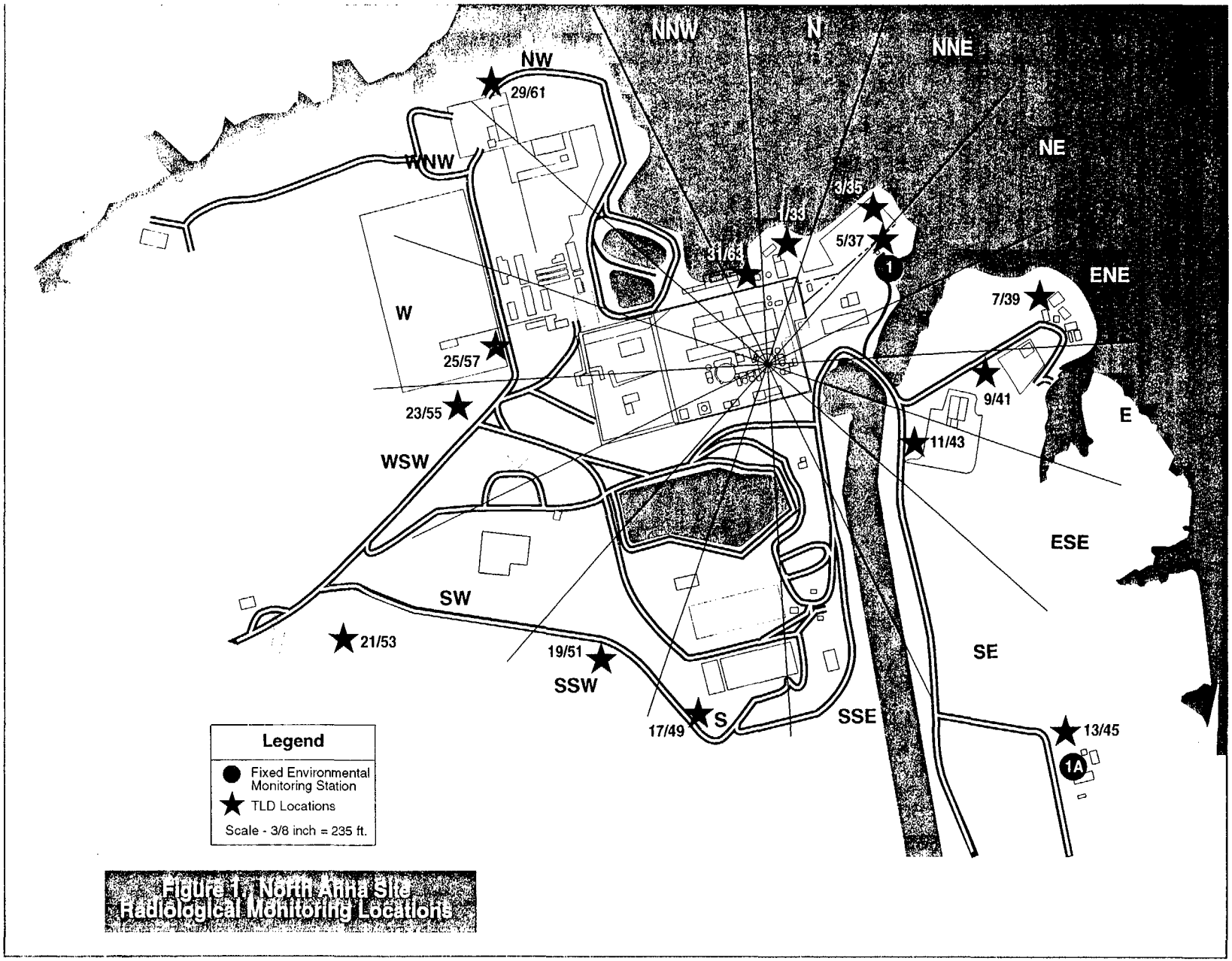
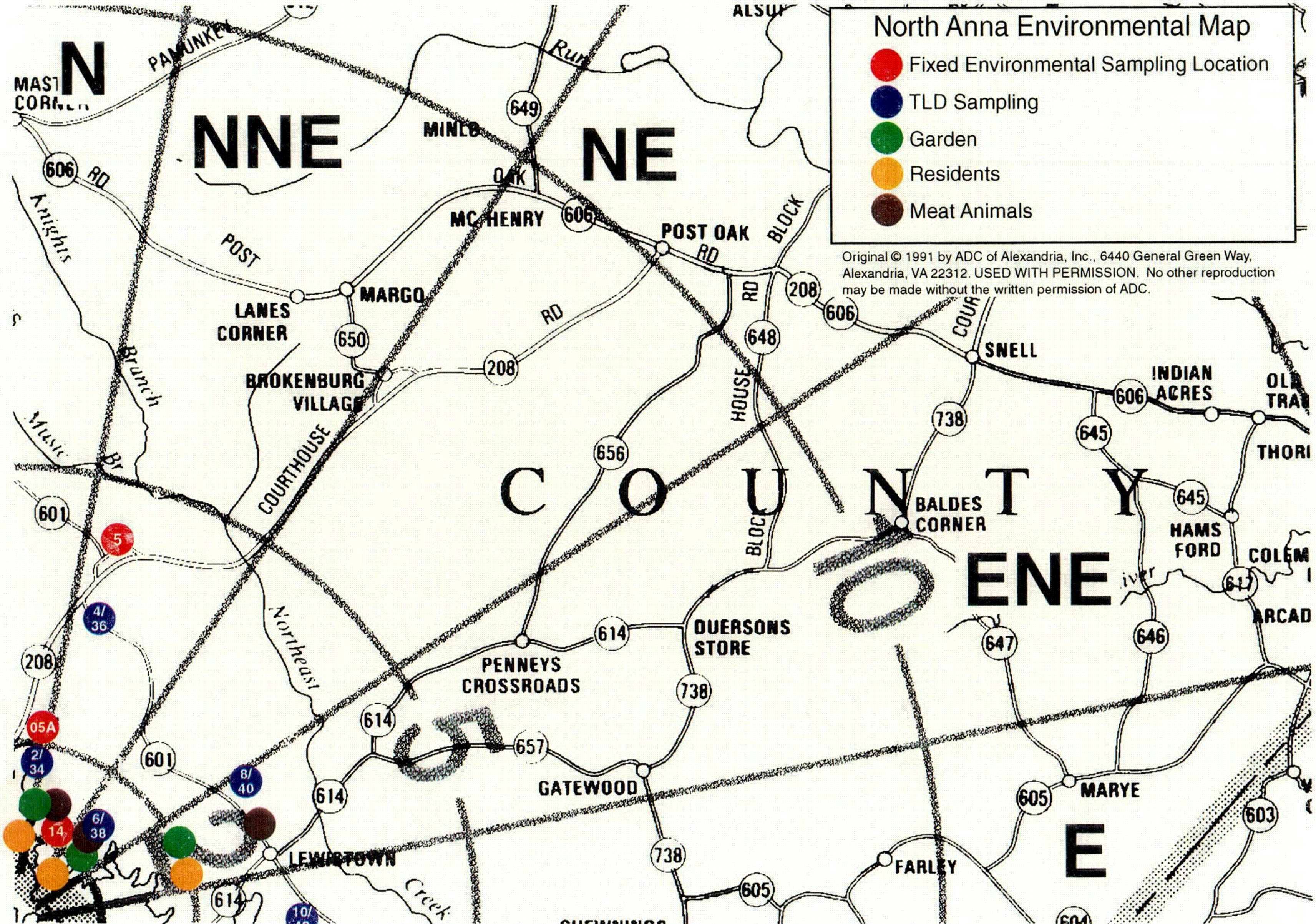


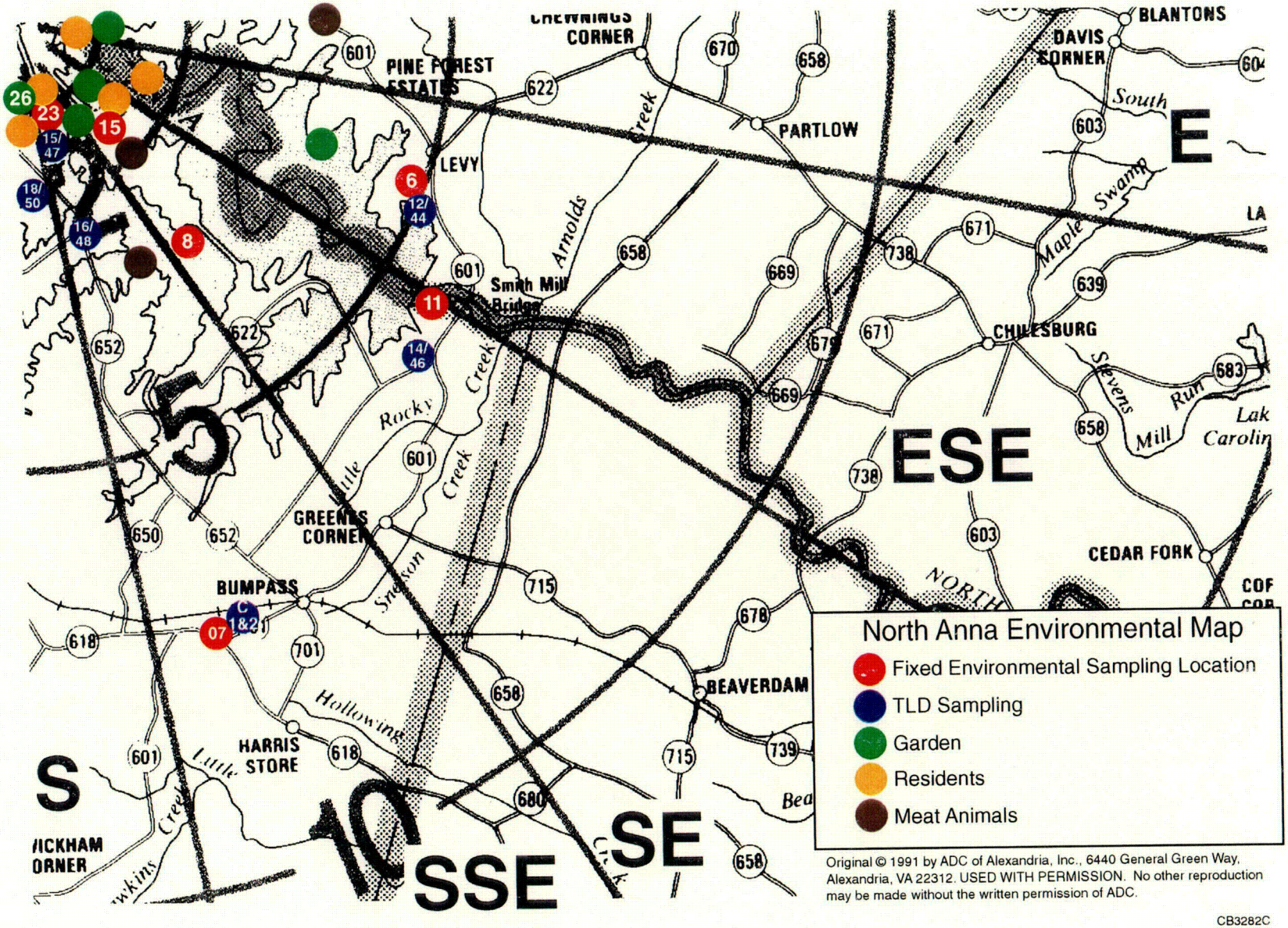
Figure 1: North Anna Site Radiological Monitoring Locations

SV6441


North Anna Environmental Map
Fixed Environmental Sampling Location
TLD Sampling
Garden
Residents
Meat Animals
Original © 1991 by ADC of Alexandria, Inc., 6440 General Green Way, Alexandria, VA 22312. USED WITH PERMISSION. No other reproduction may be made without the written permission of ADC.
N
NNE
NE
ENE
E
COUNTY
PAMUNKEY
POST OAK
MC HENRY
MARGO
LANES CORNER
BROKENBURG VILLAGE
SNELL
INDIAN ACRES
BALDES CORNER
HAMS FORD
DUERSONS STORE
PENNEYS CROSSROADS
GATEWOOD
LEWISTOWN
MARYE
FARLEY
COURTHOUSE
5
05A
2/34
4/36
6/38
8/40
10/42
14

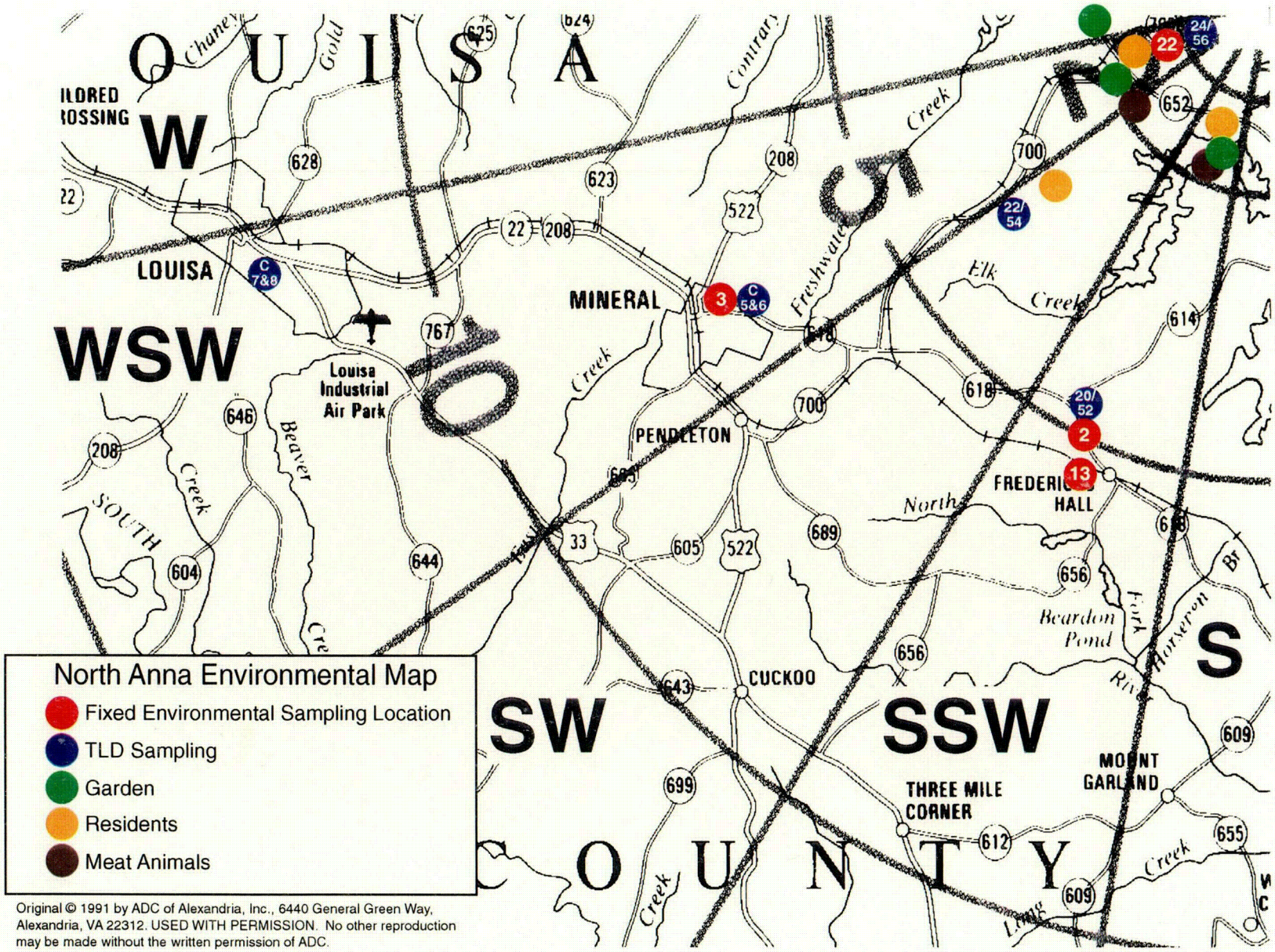
CB3280C

C01

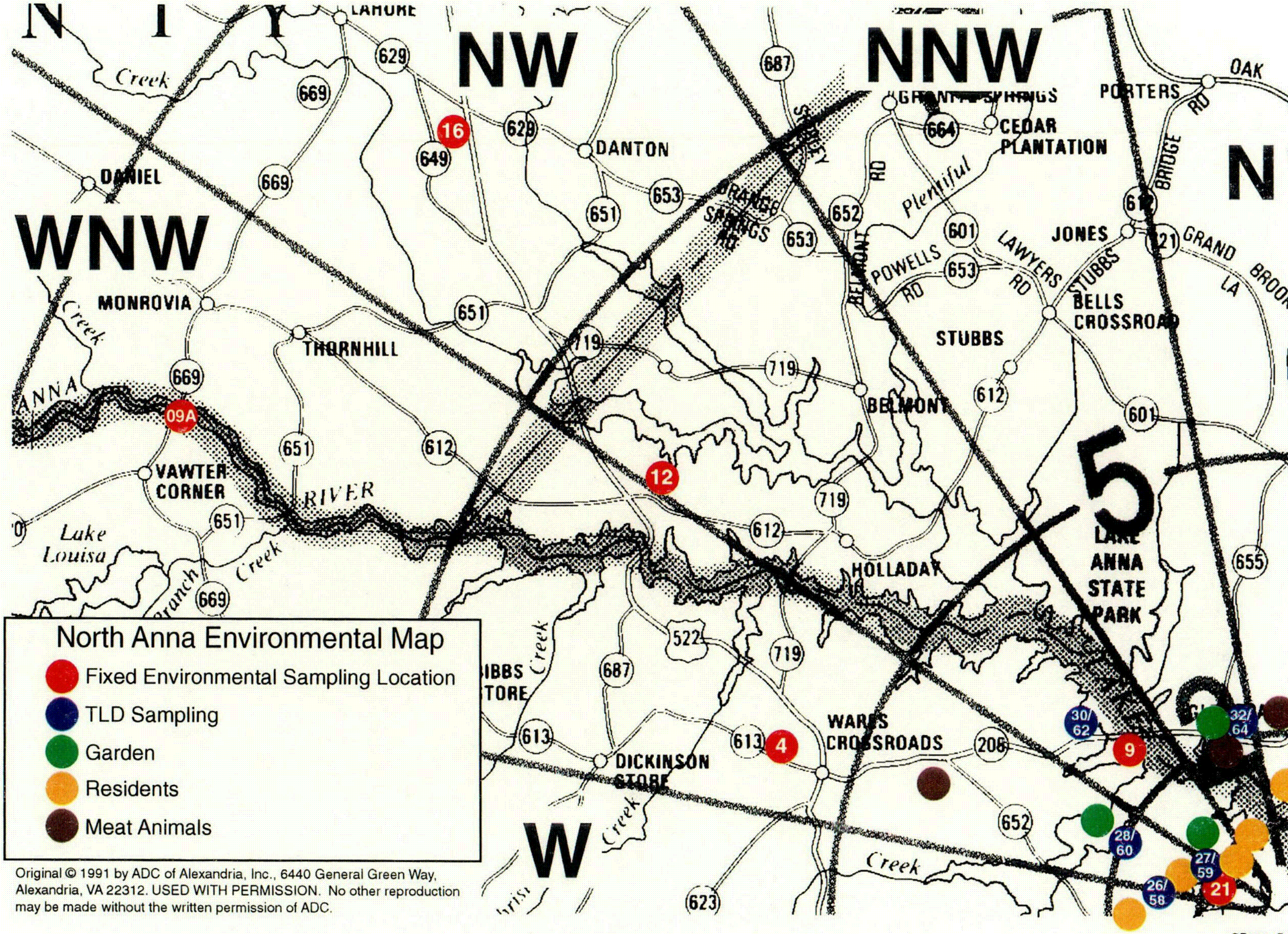


CB3282C

C02


LOUISA
MINERAL
PENDLETON
CUCKOO
THREE MILE CORNER
MOUNT GARLAND
Louisa Industrial Air Park
WSW
SW
SSW
S
North Anna Environmental Map
Fixed Environmental Sampling Location
TLD Sampling
Garden
Residents
Meat Animals
Original © 1991 by ADC of Alexandria, Inc., 6440 General Green Way, Alexandria, VA 22312. USED WITH PERMISSION. No other reproduction may be made without the written permission of ADC.
CB3283B

C03



CB3281D

C04

3. ANALYTICAL RESULTS

3.1 Summary of Results

In accordance with the North Anna Offsite Dose Calculation Manual (ODCM), a summary table of the analytical results has been prepared and is presented in Table 3-1. This data is presented in accordance with the format of the USNRC Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Rev. 1, November 1979.

A more detailed analysis of the data is given in Section 4 where a discussion of the variations in the data explains many aspects that are not evident in the Summary Table because of the basic limitation of data summaries.

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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	623	0.07	(0/571)(a) -	N/A -		N/A -	(0/52) -	0
Airborne Particulates (1E-03 pCi/m^3)	Gross 24.1(52/52) Beta	623 0	0.01	22.6(569/571)(a) (4.7-42.1)	03	7.10 mi. WSW	24.2(52/52) (13.0-38.3)	(9.5-37.8)	
	Gamma	48							
	Be-7	48	-	99.0(43/44) (60-134)	05A	3.20 mi. N	99.0(4/4) (74-121)	99(4/4) (65-126)	0
	Cs-134	48	0.05	(0/44) -	N/A		N/A	(0/4) -	0
	Cs-137	48	0.06	(0/44) -	N/A		N/A	(0/4) -	0
	Sr-89	36	-	(0/36) -	N/A		N/A	(0/3) -	0
	Sr-90	36	-	(0/36) -	N/A		N/A	(0/3) -	0
Ground Well Water (pCi/liter)	Tritium	4	2000	(0/4) -	N/A		N/A	N/A -	0
	Gamma	4							
	Mn-54	4	15	(0/4) -	N/A		N/A	N/A -	0
	Fe-59	4	30	(0/4) -	N/A		N/A	N/A -	0
	Co-58	4	15	(0/4) -	N/A		N/A	N/A -	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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
Ground Well Water (pCi/liter)	Co-60	4	15	(0/4) -	N/A		N/A	N/A -	0
	Zn-65	4	30	(0/4) -	N/A		N/A	N/A -	0
	Zr-95	4	30	(0/4) -	N/A		N/A	N/A -	0
	Nb-95	4	15	(0/4) -	N/A		N/A	N/A -	0
	I-131	4	10	(0/4) -	N/A		N/A	N/A -	0
	Cs-134	4	15	(0/4) -	N/A		N/A	N/A -	0
	Cs-137	4	18	(0/4) -	N/A		N/A	N/A -	0
	Ba-140	4	60	(0/4) -	N/A		N/A	N/A -	0
	La-140	4	15	(0/4) -	N/A		N/A	N/A -	0
	Sr-89	1	-	(0/1) -	N/A		N/A	N/A -	0
	Sr-90	1	-	(0/1) -	N/A		N/A	N/A -	0
River Water (pCi/liter)	Tritium	4	2000	3890(4/4) (3400-4900)	11	5.80 mi. SE	3890(4/4) (3400-4900)	N/A -	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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
River Water	Gamma	12							
(pCi/liter)	Mn-54	12	15	(0/12) -	N/A	N/A	N/A	N/A -	0
	Fe-59	12	30	(0/12) -	N/A	N/A	N/A	N/A -	0
	Co-58	12	15	(0/12) -	N/A	N/A	N/A	N/A -	0
	Co-60	12	15	(0/12) -	N/A	N/A	N/A	N/A -	0
	Zn-65	12	30	(0/12) -	N/A	N/A	N/A	N/A -	0
	Zr-95	12	30	(0/12) -	N/A	N/A	N/A	N/A -	0
	Nb-95	12	15	(0/12) -	N/A	N/A	N/A	N/A -	0
	I-131	12	1	(0/12) -	N/A	N/A	N/A	N/A -	0
	Cs-134	12	15	(0/12) -	N/A	N/A	N/A	N/A -	0
	Cs-137	12	18	(0/12) -	N/A	N/A	N/A	N/A -	0
	Ba-140	12	60	(0/12) -	N/A	N/A	N/A	N/A -	0
	La-140	12	15	(0/12) -	N/A	N/A	N/A	N/A -	0
	Sr-89	1	-	(0/1)	N/A	N/A	N/A	N/A	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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 Measurements
River Water (pCi/liter)	Sr-90	1	-	(0/1) -	N/A		N/A	N/A -	0
Surface Water (pCi/liter)	Tritium	8	2000	3908(4/4) (3130-4500)	08	1.10 mi. SSE	3908(4/4) (3130-4500)	(0/4) -	0
	Gamma	24							
	Mn-54	24	15	(0/12) -	N/A		N/A	(0/12) -	0
	Fe-59	24	30	(0/12) -	N/A		N/A	(0/12) -	0
	Co-58	24	15	(0/12) -	N/A		N/A	(0/12) -	0
	Co-60	24	15	(0/12) -	N/A		N/A	(0/12) -	0
	Zn-65	24	30	(0/12) -	N/A		N/A	(0/12) -	0
	Zr-95	24	30	(0/12) -	N/A		N/A	(0/12) -	0
	Nb-95	24	15	(0/12) -	N/A		N/A	(0/12) -	0
	I-131	24	1	(0/12) -	N/A		N/A	(0/12) -	0
	Cs-134	24	15	(0/12) -	N/A		N/A	(0/12) -	0
	Cs-137	24	18	(0/12)	N/A		N/A	(0/12)	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa County, Virginia - 2002
Docket No. 50-338/339 Page 5 of 10

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
Surface Water (pCi/liter)	Ba-140	24	60	(0/12) -	N/A		N/A	(0/12) -	0
	La-140 -	24 -	15	(0/12)	N/A		N/A	(0/12)	0
	Sr-89	1	-	(0/1) -	N/A		N/A	(0/1) -	0
	Sr-90	1	-	(0/1) -	N/A		N/A	(0/1) -	0
Precipitation (pCi/liter)	Monthly Gross Beta	12	4	6.08(9/12) (1.3-15.1)	01A	0.75 mi. SE	6.08 (1.3-15.1)	N/A -	
	Tritium	2	2000	185(1/2) -	01A	0.75 mi. SE	185 -	N/A	0
	Semiannually Gamma	2							
	Mn-54	2	15	(0/2) -	N/A		N/A	N/A -	0
	Fe-59	2	30	(0/2) -	N/A		N/A	N/A -	0
	Co-58	2	15	(0/2) -	N/A		N/A	N/A -	0
	Co-60	2	15	(0/2) -	N/A		N/A	N/A -	0
	Zn-65	2	30	(0/2) -	N/A		N/A	N/A -	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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
Precipitation (pCi/liter)	Zr-95	2	30	(0/2) -	N/A		N/A	N/A -	0
	Nb-95	2	15	(0/2) -	N/A		N/A	N/A -	0
	I-131	2	10	(0/2) -	N/A		N/A	N/A -	0
	Cs-134	2	15	(0/2) -	N/A		N/A	N/A -	0
	Cs-137	2	18	(0/2) -	N/A		N/A	N/A -	0
	Ba-140	2	60	(0/2) -	N/A		N/A	N/A -	0
	La-140	2	15	(0/2) -	N/A		N/A	N/A -	0
Sediment Silt	Gamma	6							
(pCi/kg (dry)	K-40	6	-	10185(4/4)	11	5.80 mi.	17000(2/2)		
	12950(2/2)	0		(2160-19100)		SSE	(14900-19100)	(10700-	
15200)									
	Cs-134	6	150	(0/4) -	N/A		N/A	(0/2) -	0
	Cs-137	6	180	65(1/4) -	08	1.10 mi. SE	65(1/2) -	97(1/2) -	0
	Th-228	6	-	799(3/4) (320-1130)	11	5.80 mi. SSE	1130(1/2) -	735(2/2) (380-	0
1090)									
	Sr-89 (Annually)	3	-	(0/2) -	N/A		N/A	(0/1) -	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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
Sediment Silt (pCi/kg) (dry)	Sr-90 (Annually)	3	-	(0/2) -	N/A		N/A	(0/1)	0
Soil (pCi/Kg) (dry)	Triennial Gamma	0							
	Cs-134	0	150						
	Cs-137	0	180						
	Sr-89	0	-						
	Sr-90	0	-						
Shoreline Soil (pCi/kg) (dry)	Gamma	2							
	K-40	2	-	2005(2/2) (1070-2940)	8	1.10 mi. SSE	2005(2/2) (1070-2940)	N/A -	0
	Th-228	2	-	374(1/2) -	8	1.10 mi. SSE	374(1/2) -	N/A -	0
	Cs-134	2	150	(0/2) -	N/A		N/A	N/A -	0
	Cs-137	2	180	31(1/2) -	8	1.10 mi. SSE	31(1/2) -	N/A -	0
	Sr-89 (Annually)	1	-	(0/1) -	N/A		N/A	N/A -	0
	Sr-90 (Annually)	1	-	(0/1) -	N/A		N/A	N/A -	0

Soil samples are collected every three years. Since they were collected in 2001, they were not collected during 2002.

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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
Milk (pCi/liter)	Gamma	24							
	K-40	24	-	1322.5(24/24) (1027-1460)	12	8.3 mi. NW	1460(12/12) (1219-1460)	N/A -	0
	I-131	24	1	(0/24) -	N/A		N/A	N/A -	0
	Cs-134	24	15	(0/24) -	N/A		N/A	N/A -	0
	Cs-137	24	18	(0/24) -	N/A		N/A	N/A -	0
	Ba-140	24	60	(0/24) -	N/A		N/A	N/A -	0
	La-140	24	15	(0/24) -	N/A		N/A	N/A -	0
	Sr-89 (Quarterly)	8	-	(0/8) -	N/A		N/A	N/A -	0
	Sr-90 (Quarterly)	8	-	0.29(1/8) -	12	8.3 mi. NW	0.29(1/8)	N/A -	0
Fish (pCi/kg) (wet)	Gamma	4							
	K-40	4	-	1617.5(2/2)	08	1.10 mi.	1617.5(4/4)		
1910)	1497.5(4/4)	0		(1200-1960)		SSE	(1200-1960)	(890-	
	Mn-54	4	130	(0/2) -	N/A		N/A	(0/2) -	0
	Fe-59	4	260	(0/2) -	N/A		N/A	(0/2) -	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa 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
Fish (pCi/kg) (wet)	Co-60	4	130	(0/2) -	N/A		N/A	(0/2) -	0
	Zn-65	4	260	(0/2) -	N/A		N/A	(0/2) -	0
	Cs-134	4	130	(0/2) -	N/A		N/A	(0/2) -	0
	Cs-137	4	150	37(1/2) -	8	1.10 mi. SSE	37(1/4) -	(0/2) -	0
Food Vegetation (pCi/kg (wet))	Gamma	25							
	Be-7	25	-	837(15/20) (420-1260)	26	1.15 mi. S	950(4/5) (650-1260)	1020(4/5) (750-1560)	0
	K-40	25	-	11384(20/20)	15	1.37 mi.	11732(5/5)		
	12590(5/5)	0		(4940-18700)		SE	(7310-13880)	(10000-14630)	
	I-131	25	60	(0/24) -	N/A		N/A	(0/5) -	0
	Cs-134	25	60	(0/24) -	N/A		N/A	(0/5) -	0
	Cs-137	25	80	(0/24) -	N/A		N/A	(0/5) -	0
	Th-228	25	-	162(4/20) (150-181)	23	0.93 mi. SSE	181(1/5) -	210(1/5) -	0
Direct Radiation (mR/std. month) (Environmental TLDs)	Gamma Dose	47	2	3.5(43/44) (1.2-6.3)	01	0.20 mi. NE	5.5(4/4) (4.0-6.3)	3.1(4/4) (3.0-3.2)	0

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

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa County, Virginia - 2002
Docket No. 50-338/339 Page 10 of 10

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
Direct Radiation (mR/std. Month) (Sector TLDs)	Gamma Dose	288	2	4.6(256/256) (1.7-16.5)	19/51	0.42 mi. SSW	10.3(8/8)	3.0(32/32) (8.4-13.0)	0

* LLD is the Lower Limit of Detection as defined and required in 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 data reported in the following tables are strictly counting statistics. 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. Both Teledyne Brown Engineering's and 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 North Anna ODCM.

Because of the difference in the manner in which results were reported between Teledyne Brown Engineering and Framatome ANP DE&S, there is a difference in the presentation of data. For Teledyne-Brown Engineering data either no result, i.e., a blank, or a "<" indicates a value less than the required LLD or less than MDL if there is no required LLD. No error is reported in these instances. A result greater than LLD or MDL is presented as a positive number with an associated error. All Framatome ANP DE&S results are reported as a result, whether positive or negative, and its associated error.

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. Air Particulate Strontium
6. Soil*
7. Precipitation
8. Cow Milk
9. Food Products and Vegetation
10. Well Water

[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).

11. River Water
12. Surface Water
13. Bottom Sediment/Silt
14. Shoreline Soil
15. Fish

* Soil sampling is performed once per three years, therefore no table is included this year. Next sample will be collected 2004.

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

L O C A T I O N S

PERIOD	N-01/33		N-02/34		NNE-03/35		NNE-04/36		NE-05/37		NE-06/38		ENE-07/39		ENE-08/40		E-09/41		E-10/42	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	4.7	0.3	2.0	0.1	6.4	2.5	3.8	0.4	5.3	2.8	3.4	1.1	5.1	0.4	3.2	0.7	5.0	0.6	4.9	0.7
2Q	5.4	2.1	4.0	1.6	8.2	0.8	5.0	3.1	5.9	0.3	4.6	1.3	6.4	0.3	5.3	0.0	5.9	2.8	6.5	0.1
3Q	3.8	1.3	2.9	0.4	5.7	2.1	3.3	1.1	4.3	2.0	3.6	0.4	4.2	2.1	3.2	0.0	4.4	2.8	3.7	1.7
4Q	4.7	0.3	3.5	0.4	7.4	0.4	4.4	0.4	5.9	0.0	4.0	0.1	5.2	0.7	3.3	0.0	5.5	0.4	4.5	0.6

PERIOD	ESE-11/43		ESE-12/44		SE-13/45		SE-14/46		SSE-15/47		SSE-16/48		S-17/49		S-18/50		SSW-19/51		SSW-20/52	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	2.9	0.8	4.3	0.7	3.5	0.8	7.3	1.0	5.2	0.1	3.2	0.1	6.7	2.1	2.3	0.6	9.8	1.4	1.7	1.1
2Q	6.3	0.7	6.0	1.0	5.4	2.4	7.1	3.0	5.8	1.8	3.6	0.3	7.8	2.0	3.4	0.4	10.0	1.6	3.6	2.1
3Q	3.2	1.1	3.3	1.0	2.8	0.3	4.9	0.8	4.0	0.4	2.7	1.3	6.4	3.7	2.2	0.0	8.4	0.8	2.3	1.0
4Q	4.7	0.0	4.4	0.1	4.6	0.7	7.1	1.4	5.7	0.3	3.9	0.4	7.8	0.4	2.9	0.6	13.0	10.0	2.9	0.1

PERIOD	SW-21/53		SW-22/54		WSW-23/55		WSW-24/56		W-25/57		W-26/58		WNW-27/59		WNW-28/60		NW-29/61		NW-30/62	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	3.5	1.6	4.3	1.6	4.9	2.5	4.1	0.0	4.7	0.6	2.6	2.1	2.2	0.4	1.7	0.1	6.4	0.3	2.2	1.6
2Q	5.1	1.4	5.0	0.8	6.0	2.0	4.6	0.1	6.4	1.4	3.9	1.0	4.9	0.1	4.8	0.0	6.3	2.3	3.9	0.7
3Q	3.6	2.3	4.5	0.1	4.7	2.4	3.5	0.7	4.6	1.0	2.4	0.1	2.8	1.8	2.9	0.3	5.1	1.0	2.7	0.7
4Q	4.3	1.0	4.5	0.6	5.9	1.0	4.6	0.3	6.2	0.3	3.4	0.1	3.4	0.3	3.5	0.6	6.3	1.3	2.6	0.6

PERIOD	NNW-31/63		NNW-32/64		C-1/2		C-3/4		C-5/6		C-7/8	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
1Q	3.0	1.6	3.1	1.7	2.6	1.6	2.0	0.3	1.6	2.0	4.4	0.4
2Q	3.9	0.3	5.5	0.3	4.0	0.0	3.5	1.4	2.2	0.1	3.3	0.4
3Q	3.5	0.1	3.6	0.0	2.8	1.6	2.7	1.4	1.8	0.6	2.6	0.1
4Q	4.5	1.0	4.3	0.7	3.5	0.7	3.8	0.4	3.2	0.4	4.3	0.4

* BASED UPON AVERAGING TWO TLDS

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

L O C A T I O N S

PERIOD	STA-01	(+/-)	STA-02	(+/-)	STA-03	(+/-)	STA-04	(+/-)	STA-05	(+/-)	STA-05A	(+/-)	STA-06	(+/-)	STA-07	(+/-)	STA-21	(+/-)	STA-22	(+/-)
QUARTERLY																				
1Q	6.3		1.2		1.2		1.9		3.5			A	4.3		3.2		3.3		4.3	
2Q	5.8		3.1		3.2		2.9		4.5		3.8		4.9		3.0		3.1		3.8	
3Q	4.0		1.5		1.6		1.8		4.0		2.3		2.7		2.2		2.3		3.3	
4Q	5.7		2.6		2.3		3.7		3.8		3.9		5.3		3.3		3.7		4.3	
ANNUAL																				
2002	5.4		2.1		2.0		1.6		3.4		1.8		4.1		2.2		2.2		4.3	

PERIOD	STA-23	(+/-)	STA-24C	(+/-)
QUARTERLY				
1Q	3.8		3.0	
2Q	5.6		3.2	
3Q	5.2		3.1	
4Q	5.7		3.1	
ANNUAL				
2002	4.1		2.3	

A: TLD WAS DAMAGED
** BASED UPON A SINGLE TLD

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

PERIOD ENDING	LOCATIONS															
	01		02		03		04		05		05A		06		07	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
JAN 02	26	2	26	2	24	2	26	2	21	2	28	2	24	2	27	2
JAN 10	20	2	16	2	19	2	22	2	18	2	20	2	14	1	18	2
JAN 16	21	2	21	2	22	2	20	2	20	2	22	2	17	2	21	2
JAN 24	13	1	19	2	22	2	20	2	19	2	19	2	20	2	20	2
JAN 31	16	2	15	2	17	2	17	2	16	2	15	2	18	2	18	2
FEB 07	15	2	15	2	14	2	16	2	13	2	13	2	14	2	15	2
FEB 13	20	2	19	2	22	2	22	2	19	2	18	2	17	2	21	2
FEB 20	14	2	15	2	16	2	16	2	11	1	16	2	15	2	14	2
FEB 27	18	2	18	2	18	2	18	2	16	2	18	2	16	2	18	2
MAR 03	16	2	16	2	17	2	17	2	16	2	17	2	16	2	18	2
MAR 13	21	2	21	2	22	2	21	2	23	2	24	2	19	2	18	2
MAR 20	12	2	11	1	13	2	12	2	11	1	11	1	11	1	12	2
MAR 27	18	2	15	2	20	2	17	2	17	2	18	2	16	2	16	2
APR 03	20.3	2.5	19.3	2.4	23.6	2.5	21.9	2.4	18.8	2.3	19.2	2.4	19.6	2.4	22.0	2.4
APR 10	21.3	2.4	20.9	2.4	24.0	2.5	21.4	2.4	22.2	2.4	23.2	2.5	21.5	2.4	24.2	2.5
APR 17	22.8	2.7	25.3	2.8	27.2	2.9	27.5	2.9	23.2	2.7	27.6	2.9	25.0	2.8	26.3	2.8
APR 24	17.8	3.1	18.9	2.3	20.9	2.4	17.9	2.2	14.7	2.2	20.1	2.3	17.3	2.2	18.8	2.3
MAY 01	23.8	2.8	20.7	2.4	23.2	2.4	22.6	2.4	21.5	2.4	25.2	4.7	22.8	2.4	23.0	2.4
MAY 08	22.2	2.6	21.2	2.6	22.7	2.6	35.0	12.0 A	20.7	2.6	21.3	2.6	19.8	2.5	22.6	2.6
MAY 15	27.7	2.6	23.4	2.5	25.4	2.6	24.6	2.5	24.3	2.5	23.0	2.5	24.4	2.5	24.6	2.5
MAY 23	22.0	2.3	21.1	2.3	21.0	2.3	19.4	2.3	17.8	2.2	18.1	2.2	19.9	2.3	18.8	2.2
MAY 29	32.4	3.2	26.5	3.0	29.2	3.2	28.9	3.1	27.5	3.0	27.0	3.0	32.4	3.2	25.5	3.0
JUN 06	27.7	2.5	28.4	2.5	27.0	2.4	24.7	2.4	23.0	2.3	25.6	2.4	26.2	2.4	23.6	2.4
JUN 12	28.3	2.8	28.2	2.8	27.5	2.9	28.3	2.9	23.7	2.7	24.9	2.8	28.1	2.9	23.7	2.7
JUN 19	21.8	2.7	19.6	2.6	22.5	2.7	18.3	2.6	16.0	2.5	18.2	2.6	18.7	2.6	17.5	2.6
JUN 26	21.3	2.6	20.7	2.6	20.1	2.6	20.4	2.6	18.3	2.5	21.1	2.6	20.6	2.6	20.6	2.6

A: REQUIRED LLD NOT MET (SEE PROGRAM EXCEPTIONS)
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

PERIOD ENDING	LOCATIONS 21	(+/-)	22	(+/-)	23	(+/-)	24C	(+/-)
JAN 02	25	2	24	2	29	2	28	2
JAN 10	20	2	18	2	20	2	20	2
JAN 16	18	2	18	2	17	2	21	2
JAN 24	18	2	18	2	18	2	21	2
JAN 31	15	2	15	2	19	2	17	2
FEB 07	14	2	12	2	15	2	17	2
FEB 13	19	2	19	2	18	2	18	2
FEB 20	15	2	13	2	13	2	16	2
FEB 27	16	2	18	2	17	2	19	2
MAR 03	18	2	15	2	15	2	17	2
MAR 13	23	2	21	2	23	2	23	2
MAR 20	12	2	11	1	12	2	11	1
MAR 27	17	2	16	2	19	2	18	2
APR 03	19.4	2.4	21.4	2.4	23.1	2.5	22.9	2.5
APR 10	21.1	2.4	20.7	2.4	25.2	2.5	21.6	2.4
APR 17	25.1	2.8	25.0	2.8	27.9	2.9	26.9	2.9
APR 24	19.8	2.3	19.7	2.3	19.6	2.3	20.1	2.3
MAY 01	21.5	2.4	21.9	2.4	21.0	2.4	21.9	2.4
MAY 08	20.2	2.5	20.5	2.5	23.1	2.7	20.9	2.6
MAY 15	24.1	2.5	24.5	2.6	24.3	2.5	25.3	2.5
MAY 23	22.2	2.3	18.6	2.2	19.2	2.2	20.1	2.2
MAY 29	30.0	3.1	28.1	3.1	30.4	3.1	30.3	3.1
JUN 06	27.1	2.4	26.5	2.4	25.9	2.4	30.1	2.5
JUN 12	26.0	2.8	28.8	2.9	27.5	2.8	31.0	3.0
JUN 19	15.3	2.5	15.0	7.5 B	20.3	2.7	20.5	2.6
JUN 26	20.6	2.6	22.2	2.7	19.6	2.6	26.0	2.8

B: REQUIRED LLD NOT MET (SEE PROGRAM EXCEPTIONS)
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

L O C A T I O N S

PERIOD ENDING	01		02		03		04		05		05A		06		07	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
JUL 03	25.8	3.1	20.7	2.9	23.2	3.0	23.0	3.0	17.8	2.8	22.1	3.0	24.5	3.1	12.8	2.6
JUL 10	29.6	2.9	25.4	2.8	28.5	2.9	29.8	2.9	25.4	2.8	27.5	2.8	29.1	2.9	26.4	2.8
JUL 17	23.5	2.6	21.4	2.5	24.8	2.6	25.0	2.6	21.5	2.5	23.5	2.6	23.2	2.6	20.7	2.5
JUL 24	41.5	3.8	33.2	3.6	36.6	3.6	39.0	3.8	29.4	3.4	32.7	3.6	42.1	3.9	33.0	3.6
AUG 01	22.9	2.8	20.1	2.7	20.1	2.7	24.6	2.9	21.5	2.7	25.2	2.8	22.6	2.7	18.2	2.6
AUG 07	33.7	3.3	33.8	3.3	38.3	3.5	36.6	3.4	30.5	3.3	34.3	3.4	36.0	3.4	29.5	3.2
AUG 14	30.2	2.9	25.8	2.8	29.9	2.9	27.2	2.8	19.7	2.6	29.2	2.9	24.7	2.7	17.8	2.5
AUG 21	24.4	2.5	22.7	2.4	23.7	2.4	20.5	2.3	21.4	2.4	23.4	2.4	19.1	2.3	17.0	2.2
AUG 28	32.2	2.8	28.7	2.7	33.5	2.9	32.2	2.9	30.2	2.8	30.0	2.8	28.3	2.7	27.1	2.7
SEP 04	8.5	2.7	11.5	2.9	3.9	2.6	7.9	2.8	9.3	2.8	7.9	2.8	7.6	2.8	8.1	2.8
SEP 11	29.4	3.3	24.2	3.1	27.2	3.2	32.5	3.3	28.8	3.2	26.9	3.2	28.0	3.2	23.7	3.0
SEP 18	24.7	2.6	20.1	4.9	27.7	2.6	21.8	2.4	28.9	2.7	25.9	2.6	29.2	2.7	26.4	2.6
SEP 25	37.8	3.5	29.2	3.2	36.0	3.5	35.0	3.5	33.4	3.4	36.5	3.5	33.7	3.4	27.0	3.1
OCT 02	35.0	3.5	26.6	3.2	23.3	3.1	20.6	3.0	23.7	3.1	24.5	3.1	26.9	3.2	25.0	3.1
OCT 09	31.1	2.9	27.9	2.9	24.5	2.7	3.0	2.9	29.6	2.9	23.0	2.7	30.6	2.9	25.7	2.8
OCT 18	17.7	2.7	15.8	2.7	17.1	2.7	16.9	2.7	16.9	2.7	18.3	2.8	20.0	2.8	14.7	2.6
OCT 23	36.9	4.4	36.4	4.4	33.4	4.4	38.9	4.5	33.4	4.4	34.8	4.4	38.4	4.5	34.0	4.4
OCT 30	23.7	2.5	21.8	2.4	22.5	2.5	26.1	2.6	22.9	2.5	25.1	2.5	21.4	2.4	23.8	2.5
NOV 06	29.4	3.4	21.4	3.0	28.4	3.3	27.8	3.3	24.6	3.1	27.9	3.3	27.1	3.2	24.6	3.2
NOV 13	30.6	3.3	25.8	3.1	29.2	3.3	26.2	3.2	28.9	3.3	28.0	3.2	27.7	3.2	25.2	3.1
NOV 20	22.9	3.4	24.7	3.4	24.3	3.4	20.4	3.3	25.4	3.4	23.4	3.4	21.8	3.3	21.9	3.3
NOV 27	30.2	2.7	25.5	2.5	31.0	2.7	30.1	2.7	29.3	2.7	30.3	2.7	30.0	2.7	24.6	2.5
DEC 04	25.0	3.6	22.8	3.5	21.8	3.5	20.4	3.4	20.3	3.4	20.1	3.4	23.4	3.5	19.8	3.4
DEC 11	31.5	3.5	32.0	3.5	31.9	3.5	32.6	3.6	31.4	3.5	32.4	3.6	34.7	3.6	33.7	3.6
DEC 18	17.9	2.6	20.2	2.7	18.4	2.7	17.2	2.8	20.4	2.7	18.1	2.7	14.1	2.6	18.1	2.7
DEC 26	19.1	2.9	20.5	3.0	17.4	2.8	17.7	2.9	13.7	2.7	18.2	2.9	18.6	2.9	19.6	2.9

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

PERIOD ENDING	LOCATIONS 21	(+/-)	22	(+/-)	23	(+/-)	24C	(+/-)
JUL 03	20.4	2.9	19.2	2.9	21.6	3.0	26.0	3.1
JUL 10	26.9	2.8	30.9	2.9	28.2	2.9	28.6	2.9
JUL 17	22.6	2.6	16.5	2.4	23.9	2.6	23.2	2.6
JUL 24	39.4	3.7	36.1	3.6	36.7	3.6	37.8	3.7
AUG 01	19.2	2.7	18.4	2.6	22.3	2.8	22.7	2.8
AUG 07	32.9	3.3	34.9	3.3	37.5	3.4	37.8	3.3
AUG 14	26.2	2.8	26.3	2.8	29.1	2.9	33.9	2.8
AUG 21	23.1	2.4	19.1	8.2 C	22.7	2.4	19.3	2.5
AUG 28	21.6	2.5	27.6	3.8	23.1	2.6	28.1	2.7
SEP 04	8.5	2.8	4.7	2.6	8.2	2.8	9.5	2.8
SEP 11	26.0	3.1	25.1	3.1	25.5	3.1	30.2	3.3
SEP 18	26.5	2.6	24.4	2.5	31.3	2.7	29.4	2.7
SEP 25	30.8	3.3	30.1	3.2	34.0	3.4	37.5	3.6
OCT 02	27.0	3.2	23.6	3.1	21.5	3.0	28.8	3.3
OCT 09	23.6	2.7	25.2	2.7	27.9	2.9	28.4	2.8
OCT 18	18.1	2.8	18.4	2.8	19.5	2.8	19.4	2.8
OCT 23	36.6	4.4	33.9	4.4	35.8	4.4	35.0	4.4
OCT 30	10.7	2.0	24.2	2.5	23.7	2.5	21.9	2.4
NOV 06	12.9	2.7	28.8	3.3	31.2	4.1	25.0	3.2
NOV 13	11.7	2.6	29.1	3.3	26.2	3.2	30.1	3.3
NOV 20	9.4	2.8	18.6	3.2	21.4	3.3	19.0	3.2
NOV 27	10.1	2.0	26.2	4.1	25.7	2.6	28.5	2.7
DEC 04	9.0	3.1		D	20.0	3.4	20.8	3.4
DEC 11	13.3	2.9	32.0	3.4	35.6	3.6	34.2	3.6
DEC 18	7.9	2.4	20.3	2.7	14.6	2.6	17.2	2.6
DEC 26	6.9	2.5	19.5	2.9	18.8	2.9	19.8	2.9

C: REQUIRED LLD NOT MET (SEE PROGRAM EXCEPTIONS)
D: NO SAMPLE COLLECTED (SEE PROGRAM EXCEPTIONS)
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

L O C A T I O N S

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	05	(+/-)	05A	(+/-)	06	(+/-)	07	(+/-)
JAN 02	< 24		< 24		< 24		< 24		< 24		< 24		< 24		< 24	
JAN 10	< 12		< 12		< 12		< 12		< 9		< 9		< 9		< 9	
JAN 16	< 7		< 7		< 7		< 7		< 7		< 7		< 7		< 7	
JAN 24	< 18		< 18		< 18		< 18		< 22		< 22		< 22		< 22	
JAN 31	< 7		< 7		< 7		< 7		< 7		< 7		< 7		< 7	
FEB 07	< 10		< 10		< 10		< 10		< 9		< 9		< 9		< 9	
FEB 13	< 9		< 9		< 9		< 9		< 9		< 9		< 9		< 9	
FEB 20	< 8		< 8		< 8		< 8		< 8		< 8		< 8		< 8	
FEB 27	< 10		< 10		< 10		< 10		< 7		< 7		< 7		< 7	
MAR 03	< 8		< 8		< 8		< 8		< 6		< 6		< 6		< 6	
MAR 13	< 9		< 9		< 9		< 9		< 8		< 8		< 8		< 8	
MAR 20	< 7		< 7		< 7		< 7		< 6		< 6		< 6		< 6	
MAR 27	< 13		< 13		< 13		< 13		< 10		< 10		< 10		< 10	
APR 03	0	20	12	16	21	17	-9	18	-7	18	-4	18	7	18	-5	19
APR 10	5	15	-21	15	4	16	3	15	5	15	-5	17	5	16	-7	14
APR 17	-1	11	0	12	4	11	9	11	-1	12	-8	11	1	11	8	12
APR 24	3	21	-3	14	-1	14	4	14	5	15	1	14	0	15	-5	16
MAY 01	-10	21	-12	15	-6	18	9	15	-6	14	-19	35	-8	17	-2	15
MAY 08	-6	15	-10	14	-13	15	-34	39	-3	16	14	13	11	12	-1	12
MAY 15	6	13	1	14	4	14	-2	6	5	15	16	15	5	15	-6	17
MAY 23	0	12	-5	15	6	14	-12	13	-1	13	-1	12	-3	14	-13	13
MAY 29	-8	16	-4	17	-8	18	4	16	-10	17	-6	16	2	14	5	17
JUN 06	-8	10	6	11	6	12	-6	11	-10	13	5	12	2	11	-2	10
JUN 12	-2	14	-9	15	1	16	7	14	5	12	-7	12	1	12	-5	14
JUN 19	7	13	-5	14	-2	14	4	16	-9	13	21	17	-3	15	-4	15
JUN 26	-4	16	4	14	-12	15	4	16	0	14	2	15	8	16	-11	18

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

L O C A T I O N S

PERIOD ENDING	21	(+/-)	22	(+/-)	23	(+/-)	24C	(+/-)
JAN 02	< 23		< 23		< 23		< 23	
JAN 10	< 9		< 9		< 9		< 9	
JAN 16	< 10		< 10		< 10		< 10	
JAN 24	< 16		< 15		< 16		< 16	
JAN 31	< 6		< 7		< 6		< 7	
FEB 07	< 8		< 8		< 8		< 8	
FEB 13	< 12		< 12		< 12		< 12	
FEB 20	< 8		< 8		< 8		< 8	
FEB 27	< 8		< 8		< 7		< 8	
MAR 03	< 8		< 8		< 8		< 8	
MAR 13	< 6		< 6		< 6		< 6	
MAR 20	< 7		< 7		< 7		< 7	
MAR 27	< 10		< 10		< 10		< 10	
APR 03	-6	17	8	18	-13	18	-10	18
APR 10	-2	15	8	15	6	16	-6	14
APR 17	-4	12	-4	11	-1	12	-6	12
APR 24	-3	14	-12	14	-3	14	-2	15
MAY 01	-8	16	-2	15	2	15	-16	16
MAY 08	-7	13	-1	15	-10	13	1	13
MAY 15	-6	16	-6	15	-15	14	-4	16
MAY 23	-8	14	1	13	-8	15	6	14
MAY 29	-9	19	-5	19	3	17	-4	17
JUN 06	-6	10	1	10	-5	11	-3	10
JUN 12	-8	13	-7	14	-4	13	-3	15
JUN 19	-13	15	-21	23	9	15	-2	14
JUN 26	3	18	-11	19	1	18	26	19

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

L O C A T I O N S

PERIOD ENDING	01	(+/-)	02	(+/-)	03	(+/-)	04	(+/-)	05	(+/-)	05A	(+/-)	06	(+/-)	07	(+/-)
JUL 03	5	17	2	18	1	16	-3	14	-10	16	-5	17	3	16	10	16
JUL 10	-18	19	-14	13	4	15	-5	12	0	15	-5	14	6	13	14	12
JUL 17	-9	15	4	17	-1	18	0	16	-6	17	-11	17	-1	15	-5	17
JUL 24	5	14	-5	12	4	13	-5	15	0	13	-2	12	-5	13	-9	13
AUG 01	1	14	2	12	3	14	3	14	5	13	-2	12	-10	12	3	12
AUG 07	2	17	-6	16	2	17	5	17	-3	16	9	19	0	13	-4	16
AUG 14	-9	18	10	20	-6	19	-6	18	-1	20	0	19	5	20	6	16
AUG 21	-9	11	0	12	-1	13	-2	12	-4	13	-2	11	-3	12	1	14
AUG 28	9	13	1	14	-1	13	0	13	-7	13	2	13	-9	12	1	13
SEP 04	-19	19	-4	15	10	15	2	14	-6	17	2	16	-6	16	0	16
SEP 11	-3	18	3	20	-5	19	17	21	3	20	-3	16	9	22	11	18
SEP 18	4	20	-12	31	6	20	16	20	-6	19	5	19	11	20	-1	19
SEP 25	3	17	-16	17	-10	18	0	18	-2	17	-8	15	2	17	7	18
OCT 02	-10	10	-10	19	-6	12	-10	12	5	15	-1	14	14	14	-7	14
OCT 09	7	12	-2	13	3	12	-8	12	-3	12	3	14	-6	11	5	12
OCT 18	-4	10	3	10	0	10	-6	8	3	11	-3	9	6	10	-6	9
OCT 23	-12	23	-3	19	12	20	3	18	-3	19	-19	24	-8	24	-10	19
OCT 30	7	11	-8	11	-15	11	2	12	5	14	-3	16	-11	12	1	11
NOV 06	-4	15	9	15	3	11	-1	10	-2	11	-1	11	1	14	-7	13
NOV 13	-2	16	5	17	2	14	1	16	14	20	4	13	-12	16	-3	15
NOV 20	4	15	-6	16	-3	17	-7	20	-12	15	8	19	1	16	13	16
NOV 27	-4	16	-1	17	-4	18	-7	18	7	17	-5	17	-2	16	5	15
DEC 04	1	19	5	12	10	18	-4	20	7	18	-6	15	-1	17	7	16
DEC 11	1	14	-1	18	-8	11	7	13	13	17	2	14	-4	15	-13	15
DEC 18	2	12	2	15	-5	16	2	14	-7	16	-1	14	3	18	-11	18
DEC 26	-1	19	-3	20	7	18	-7	19	-13	19	-13	19	6	17	-16	21

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

L O C A T I O N S

PERIOD ENDING	21	(+/-)	22	(+/-)	23	(+/-)	24C	(+/-)	
JUL 03	0	15	-5	17	0	16	-12	14	
JUL 10	3	13	-2	13	2	15	-12	13	
JUL 17	-10	18	4	19	-19	17	-15	16	
JUL 24	-8	13	7	13	9	14	7	14	
AUG 01	-9	13	3	14	2	12	3	13	
AUG 07	-2	14	-6	16	-8	19	-7	18	
AUG 14	-13	19	-1	18	0	18	-8	15	A
AUG 21	-4	12	-10	29	6	13	4	15	
AUG 28	4	13	10	20	1	14	-1	14	
SEP 04	-4	16	11	17	0	19	-3	15	
SEP 11	15	21	1	21	7	18	-1	22	
SEP 18	-1	17	-7	18	-16	20	2	19	
SEP 25	1	18	6	18	-17	16	13	19	
OCT 02	2	15	2	15	7	13	-3	14	
OCT 09	-4	13	9	15	-13	12	1	12	
OCT 18	-5	10	-3	11	0	12	-3	12	
OCT 23	-1	18	20	23	8	22	-8	18	
OCT 30	1	10	-2	11	4	10	12	12	
NOV 06	1	16	14	17	-7	22	-9	16	
NOV 13	7	20	7	18	13	15	-3	16	
NOV 20	5	19	7	18	-1	17	-4	16	
NOV 27	-1	15	7	29	21	18	-1	18	
DEC 04	13	16		B	-6	18	5	16	
DEC 11	-12	13	9	15	-7	14	-1	19	
DEC 18	9	12	-4	14	11	15	-1	14	
DEC 26	6	16	10	22	-13	16	-3	22	

A: SAMPLE OBTAINED ON 8/15/02 FOR STATION 24C
B: NO SAMPLE COLLECTED (SEE PROGRAM EXCEPTIONS)
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

A N A L Y S E S

LOCATION	BE-7	(+/-)	K-40	(+/-)	CO-60	(+/-)	NB-95	(+/-)	ZR-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	CS-134	(+/-)
01	61	4	< 7		< 4						< 6				< 4	
02	68	5	< 5		< 4						< 7				< 5	
03	73	6	< 6		< 4						< 7				< 5	
04	73	6	< 11		< 5						< 9				< 6	
05	60	5	< 8		< 6						< 9				< 6	
05A	74	6	< 6		< 4						< 8				< 5	
06	60	5	< 6		< 3						< 5				< 3	
07	74	6	< 9		< 3						< 6				< 3	
21	65	5	< 4		< 4						< 5				< 3	
22	67	5	< 6		< 3						< 6				< 3	
23	72	6	< 7		< 3						< 6				< 3	
24C	65	5	< 5		< 3						< 5				< 3	

LOCATION	CS-137	(+/-)	BA-140	(+/-)	CE-141	(+/-)	TH-228	(+/-)
01	< 4						< 3	
02	< 4						< 3	
03	< 4						< 3	
04	< 5						< 4	
05	< 5						< 4	
05A	< 4						< 3	
06	< 3						< 2	
07	< 3						< 3	
21	< 3						< 2	
22	< 3						< 3	
23	< 4						< 3	
24C	< 3						< 2	

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

A N A L Y S E S

LOCATION	BE-7		K-40		CO-60		NB-95		ZR-95		RU-103		RU-106		CS-134	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
01	88	31	3.2	7.7	0.33	0.52	-0.8	2.5	1.7	2.0	-0.3	1.5	-2.7	6.8	0.35	0.39
02	97	25	-1.8	5.0	0.05	0.35	-0.2	2.6	0.9	1.6	-2.1	2.0	0.3	2.9	0.15	0.35
03	129	34	3.4	6.6	0.13	0.50	2.1	3.0	0.0	2.5	-0.6	2.6	-0.6	3.4	0.15	0.56
04	134	34	-3.3	0.7	-0.39	0.45	-2.9	3.3	-2.2	1.8	1.4	1.9	4.2	4.9	-0.10	0.32
05	121	26	3.0	5.6	0.07	0.15	-0.6	2.7	-0.6	1.7	-0.2	2.1	2.5	4.5	0.04	0.39
05A	120	31	7.0	8.5	0.04	0.55	-0.4	2.9	0.0	2.1	-1.8	2.8	1.3	6.0	0.25	0.50
06	96	33	-1.9	4.3	-0.01	0.33	1.8	3.1	0.6	2.2	1.3	2.6	-1.3	4.6	-0.25	0.45
07	91	25	6.2	6.5	-0.11	0.42	1.1	2.2	0.1	1.5	-2.1	1.6	-1.5	3.5	0.15	0.35
21	127	31	5.6	7.9	0.11	0.50	-2.4	4.0	-1.8	2.6	0.3	2.0	-1.3	5.8	-0.18	0.45
22	82	31	3.2	6.9	0.25	0.68	0.4	3.4	1.3	1.8	-1.0	1.8	-1.2	4.3	-0.16	0.51
23	133	29	2.9	5.1	0.32	0.42	0.7	1.8	0.7	1.5	-0.7	1.6	-1.1	4.0	0.07	0.49
24C	126	32	-5.3	5.8	-0.22	0.44	0.6	2.8	-0.7	2.0	-0.3	2.3	-3.2	5.0	0.24	0.42

LOCATION	CS-137		BA-140		CE-141		TH-228	
		(+/-)		(+/-)		(+/-)		(+/-)
01	-0.06	0.50	22	76	-2.3	3.2	1.7	1.8
02	0.12	0.36	0	55	2.4	2.9	-0.1	1.0
03	0.13	0.36	-150	120	4.2	4.7	-0.6	2.3
04	0.10	0.50	-110	100	-1.9	3.2	1.1	1.9
05	0.24	0.27	-28	56	-1.2	3.0	-1.1	1.2
05A	0.40	0.42	-86	86	2.9	4.7	2.1	2.0
06	0.12	0.36	42	60	3.2	3.2	-0.7	1.3
07	0.21	0.41	28	56	-1.1	2.8	0.1	1.6
21	-0.32	0.53	55	86	0.6	4.4	0.3	1.8
22	0.27	0.44	50	110	-1.9	3.2	0.5	2.1
23	-0.30	0.30	-42	49	0.5	3.0	-0.3	0.9
24C	0.06	0.43	55	86	-0.9	4.0	2.0	1.7

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

A N A L Y S E S

LOCATION	BE-7		K-40		CO-60		NB-95		ZR-95		RU-103		RU-106		CS-134	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
01	82	23	8.2	7.1	0.00	0.47	-1.9	1.7	1.5	1.8	-0.3	1.7	3.8	4.5	-0.26	0.53
02	102	21	3.0	6.6	-0.33	0.60	-1.1	1.0	-0.9	1.7	0.0	1.1	-1.7	6.0	0.15	0.56
03	9	23	-3.3	6.5	-0.33	0.70	0.2	1.4	0.4	1.4	-1.2	1.4	0.5	3.4	0.14	0.55
04	103	21	-0.4	5.0	-0.16	0.63	-1.5	1.6	0.5	1.2	-0.5	1.2	-1.7	4.2	0.02	0.40
05	96	23	5.9	7.1	-0.24	0.58	-0.3	1.8	-1.0	2.3	-0.5	1.4	-1.4	4.8	0.26	0.52
05A	121	24	2.9	6.3	0.25	0.54	-1.2	1.8	0.6	1.3	0.0	1.1	2.3	5.0	0.22	0.51
06	97	23	0.1	3.6	0.12	0.48	-1.2	1.7	0.1	1.3	0.4	1.1	-2.5	6.2	0.06	0.57
07	85	22	3.5	7.0	0.31	0.61	-1.4	1.5	1.0	1.5	0.3	1.4	0.5	4.7	0.35	0.61
21	92	23	8.2	8.2	0.09	0.55	-1.6	1.6	-0.2	1.2	0.0	1.3	-0.5	4.3	0.02	0.36
22	88	19	4.1	5.3	-0.14	0.56	-1.0	1.2	0.0	1.6	0.9	1.1	0.6	4.5	0.33	0.57
23	100	23	12.9	9.7	-0.29	0.52	0.4	2.1	0.0	1.6	0.0	1.6	-2.7	4.5	0.00	0.55
24C	123	24	5.4	6.4	0.35	0.40	1.4	1.8	1.3	1.9	0.2	1.3	-2.0	4.4	0.12	0.41

LOCATION	CS-137		BA-140		CE-141		TH-228	
		(+/-)		(+/-)		(+/-)		(+/-)
01	0.00	0.52	-1	12	-1.9	2.1	0.7	2.7
02	0.02	0.44	0	10	0.4	1.5	0.1	1.6
03	-0.36	0.42	-6	13	-1.7	1.5	-0.2	1.7
04	-0.30	0.45	11	13	-0.1	1.7	-1.3	1.7
05	0.21	0.53	-16	16	0.0	2.2	-0.6	1.8
05A	-0.07	0.45	0	13	-0.5	1.3	0.4	1.4
06	-0.13	0.44	3	11	0.4	1.6	1.0	2.1
07	0.21	0.53	3	6	1.4	2.2	-0.3	1.7
21	-0.55	0.54	7	13	-0.4	1.7	-0.2	1.9
22	-0.54	0.55	2	8	-1.0	1.5	-0.9	1.7
23	0.14	0.67	8	18	-0.3	1.9	-1.2	1.9
24C	-0.10	0.29	-3	7	-0.3	1.6	0.1	2.0

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

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

A N A L Y S E S

LOCATION	BE-7		K-40		CO-60		NB-95		ZR-95		RU-103		RU-106		CS-134	
		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
01	89	18	4.5	5.7	0.08	0.38	0.3	1.6	-0.1	0.9	-0.1	1.2	-0.1	3.3	0.01	0.32
02	83	18	6.1	7.1	0.07	0.29	0.4	1.4	0.7	1.3	-0.5	1.4	1.8	3.2	-0.24	0.31
03	88	17	-1.6	4.5	-0.02	0.31	-1.0	1.2	0.0	1.2	0.5	1.1	-2.4	4.0	-0.06	0.34
04	84	18	-1.3	4.5	-0.12	0.48	-0.4	1.4	-0.5	1.5	-1.2	1.2	-1.4	3.5	-0.18	0.28
05	84	16	0.3	4.3	0.00	0.32	0.1	1.1	0.6	1.2	0.3	0.9	0.1	2.9	0.08	0.29
05A	81	17	2.9	4.9	-0.26	0.37	0.2	1.7	0.2	1.1	0.1	1.3	2.6	4.0	-0.04	0.40
06	82	18	-0.7	5.1	0.06	0.27	0.7	1.4	0.2	1.3	0.9	1.2	0.9	2.7	0.24	0.35
07	72	17	5.8	5.5	-0.19	0.39	0.0	2.1	0.1	1.1	-0.1	1.2	1.8	2.8	-0.02	0.30
21	44	13	3.1	4.5	-0.11	0.38	-0.6	1.5	-0.7	1.2	-0.6	1.1	2.4	2.5	0.21	0.26
22	75	18	6.1	6.6	0.00	0.36	-0.6	2.0	0.0	1.5	-0.8	1.5	-2.1	4.1	-0.27	0.44
23	87	18	0.0	5.4	-0.12	0.48	0.4	1.4	-0.7	1.1	0.3	1.1	2.4	3.6	-0.12	0.30
24C	82	18	2.9	5.0	-0.27	0.42	0.1	1.7	0.2	1.5	-0.4	1.0	3.7	3.5	-0.05	0.37

LOCATION	CS-137		BA-140		CE-141		TH-228	
		(+/-)		(+/-)		(+/-)		(+/-)
01	-0.13	0.34	3	18	0.4	1.5	0.2	1.2
02	0.11	0.30	-2	24	-0.7	2.0	2.0	1.4
03	0.21	0.34	-8	20	0.1	1.3	-0.3	1.2
04	0.43	0.38	-12	14	-1.5	1.6	1.3	1.2
05	-0.03	0.33	-11	13	0.9	1.5	-0.7	1.0
05A	0.00	0.39	-5	21	0.9	2.1	0.5	1.5
06	-0.14	0.33	-4	22	-0.3	1.4	0.0	1.1
07	-0.47	0.39	0	12	1.8	1.7	0.4	1.2
21	0.06	0.25	-6	13	-1.4	1.4	0.4	1.2
22	-0.21	0.45	3	19	-0.4	2.2	1.4	1.9
23	-0.28	0.38	-4	19	-0.9	1.4	0.0	1.1
24C	-0.06	0.38	-8	20	0.7	1.4	0.2	1.5

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-6
AIR PARTICULATES
QUARTERLY SR
(1E-3 PCI/M3)

S T R O N T I U M - 8 9

LOCATION	2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)
01	-11	18	-5.4	6.6	4.3	7.7
02	1	29	-4.1	7.0	4.0	16.0
03	-3	19	-4.9	6.5	-3.0	17.0
04	-7	19	-2.1	6.4	-2.0	20.0
05	-8	18	-2.4	8.6	-2.0	15.0
05A	-2	21	-6.4	7.1	2.7	9.2
06	5	30	-5.6	6.4	3.0	11.0
07	-1	17	-9.0	6.6	4.0	10.0
21	-15	19	-7.6	8.5	3.0	18.0
22	-9	18	7.0	12.0	-9.0	18.0
23	-8	24	-8.4	7.6	-3.0	21.0
24C	-5	24	-3.8	6.7	0.0	15.0

S T R O N T I U M - 9 0

LOCATION	2ND QTR		3RD QTR		4TH QTR	
		(+/-)		(+/-)		(+/-)
01	1.0	1.7	1.9	1.3	-2.8	4.1
02	0.7	2.5	0.6	1.3	-1.7	3.7
03	-0.7	1.6	-0.1	1.2	0.2	3.8
04	0.9	1.7	0.8	1.2	0.2	4.5
05	-1.5	1.8	2.0	1.5	-0.3	3.4
05A	-0.1	1.8	1.4	1.3	-0.4	4.8
06	-0.6	2.5	1.0	1.2	-5.6	5.6
07	-0.1	1.4	0.7	1.2	-1.1	4.9
21	1.1	1.8	1.1	1.6	-0.3	4.1
22	-0.1	1.6	-0.6	2.0	0.8	4.1
23	-1.0	2.2	1.1	1.4	-1.4	4.8
24C	0.3	2.2	0.9	1.3	-1.3	3.3

SR-89/90 ANALYSES WERE NOT PERFORMED IN THE FIRST QUARTER
STRONTIUM ANALYSIS NORMALLY PERFORMED ONLY FOR 2ND QTR

TABLE 3-7

SOIL

Soil sampling is performed once per three years, therefore no table is included this year.

Next sample will be collected 2004.

TABLE 3-8
PRECIPITATION
(PCI/L)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
SEMI-ANNUAL															
01A	06/26/02	< 35.2		< 76				< 3.78		< 4.0		< 8.18		< 3.53	
	12/26/02	8	6	1.4	9.9	-2.9	9.1	-0.1	0.6	-0.35	0.61	0.00	1.50	-0.74	0.81

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)	CS-134	(+/-)
SEMI-ANNUAL															
01A	06/26/02	< 7.45		< 3.86				< 4.42		< 33.7		< 9.97		< 3.62	
	12/26/02	-0.70	1.60	0.10	1.10	0.10	0.83	-1.03	0.86	2.40	5.40	0.8	5.8	-0.1	0.5

LOCATION	COLLECTION DATE	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	SB-125	(+/-)	TH-228	(+/-)	H-3	(+/-)	
SEMI-ANNUAL														
01A	06/26/02	< 4.16		< 7.58						< 33.8		185.0	83.0	
	12/26/02	0.09	0.58	0.90	2.50	1.1	2.9	0.5	1.5	-0.1	3.0	160.0	840.0	A

FIRST HALF OF 2002 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-8
PRECIPITATION
(PCI/L)

LOCATION	COLLECTION DATE	GROSS BETA	(+/-)	RAIN
MONTHLY				
01A	01/31/02	1.3	0.6	2.25"
	02/27/02	7.1	1.4	0.70"
	03/27/02	2.3	0.6	2.91"
	04/24/02	4.6	0.8	1.82"
	05/28/02	3.1	0.8	3.22"
	06/26/02	15.1	1.3	2.69"
	08/01/02	13.0	2.8	2.32"
	08/28/02	3.3	2.0	3.65"
	09/25/02	1.5	1.5	2.66"
	10/30/02	2.7	1.8	6.65"
	11/27/02	-0.2	1.5	5.35"
	12/26/02	4.9	2.0	3.66"

FIRST HALF OF 2002 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-9
COW MILK
(PCI/L)

LOCATION	COLLECTION DATE	K-40	(+/-)	SR-89	(+/-)	SR-90	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)
12	01/24/02	1370	75					< 0.4				< 4					
	02/20/02	1240	69					< 0.5				< 5					
	03/22/02	1310	83	< 2		0.29	0.18	< 0.3				< 5					
	04/17/02	1440	100					0.00	0.19	0.2	3.0	1.1	2.8	3.3	3.9	3.8	4.5
	05/23/02	1460	98					0.14	0.28	0.1	2.6	0.6	2.7	1.7	3.4	2.0	3.9
	06/19/02	1430	140	-12.8	4.3	-0.50	0.88	0.70	0.76	1.4	4.0	0.3	3.7	-2.0	5.4	-2.3	6.2
	07/24/02	1320	120					0.28	0.48	1.2	3.3	2.0	3.3	2.8	5.4	3.3	6.3
	08/28/02	1219	90					0.36	0.54	-0.9	2.3	-2.2	2.5	-2.3	4.1	-2.7	4.7
	09/18/02	1372	78	-2.0	4.6	0.85	0.88	0.17	0.42	-0.3	2.1	0.9	2.0	0.1	4.0	0.2	4.6
	10/28/02	1353	83					0.07	0.36	0.9	2.6	-1.4	2.5	5.9	4.1	6.8	4.8
	11/20/02	1381	93					0.18	0.40	0.3	2.2	0.2	2.4	-0.9	3.6	-1.0	4.1
	12/18/02	1400	120	-3.9	4.1	0.26	0.96	0.00	0.27	1.3	3.5	1.6	3.3	1.2	6.3	1.4	7.2
13	01/24/02	1300	74					< 0.3				< 4					
	02/20/02	1260	65					< 0.4				< 5					
	03/22/02	1310	106	< 2		< 0.23		< 0.3				< 5					
	04/17/02	1380	110					0.19	0.33	-0.3	3.0	-2.0	2.8	0.1	4.8	0.2	5.5
	05/23/02	1346	94					0.53	0.53	-1.8	2.4	-0.9	2.5	0.9	3.3	1.0	3.8
	06/19/02	1440	140	-13.7	5.1	0.20	1.00	0.17	0.49	-0.5	3.4	0.7	3.8	2.5	5.0	2.9	5.8
	07/24/02	1350	130					-0.04	0.29	0.7	3.5	2.7	3.4	0.9	4.9	1.0	5.6
	08/28/02	1027	76					0.78	0.79	1.0	2.2	-0.8	1.9	0.8	3.8	0.9	4.3
	09/18/02	1250	76	-6.8	5.5	0.70	1.10	0.36	0.54	-1.5	2.3	-0.6	2.0	3.1	5.8	3.5	6.6
	10/24/02	1301	76					0.36	0.57	0.5	1.9	0.4	2.0	-1.6	3.4	-1.9	3.9
	11/20/02	1300	110					0.37	0.53	-0.3	3.5	-2.6	3.4	-6.4	6.1	-7.3	7.0
	12/18/02	1180	110	-1.6	5.0	1.10	1.10	0.02	0.29	-0.2	2.9	0.8	3.1	0.5	4.9	0.5	5.7

STRONTIUM ANALYSES ARE PERFORMED ONCE PER QUARTER
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-10
FOOD/VEGETATION
(PCI/KG)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
14	05/15/02	450	320	14800	1000	-120	330	-3	29	-18	29	30	110	17	31
	06/19/02	650	240	12090	790	-20	220	-3	16	1	19	-9	73	-5	15
	07/17/02	500	230	8880	720	-20	170	-11	19	6	19	-40	58	-7	19
	08/21/02	1220	330	6820	660	40	320	-1	20	-17	24	7	69	-1	24
	09/18/02	760	230	13110	670	-220	210	3	18	-16	19	0	50	-12	24
15	05/15/02	180	210	13470	820	50	160	1	18	-8	18	30	65	13	15
	06/19/02	350	290	13500	1100	90	260	0	25	-2	22	-80	110	6	30
	07/17/02	420	200	7310	800	60	150	-19	18	-12	18	-16	79	4	24
	08/21/02	620	410	10500	1100	-170	640	-4	29	-14	42	-20	150	-25	36
	09/18/02	1170	220	13880	590	-10	190	3	16	3	18	-25	51	-2	20
16C	05/15/02	940	340	14630	980	-180	260	18	25	-9	26	-30	100	2	29
	06/19/02	750	270	14490	940	140	260	3	19	-20	27	13	79	12	21
	07/17/02	830	330	10000	1000	260	210	-20	25	-21	22	48	84	13	26
	08/21/02	490	380	11240	960	60	400	4	3	-15	30	30	90	11	35
	09/18/02	1560	220	12590	600	110	180	-8	16	-16	17	4	68	10	21
23	05/15/02	1160	320	14870	770	130	270	-14	23	-9	26	12	78	-14	23
	06/19/02	230	200	13010	790	50	230	-18	16	12	19	27	68	2	16
	07/17/02	490	210	4940	500	30	160	19	17	-8	17	-18	47	2	16
	08/21/02	780	420	12100	1300	-70	410	4	33	-9	30	15	96	-1	44
	09/18/02	990	220	12370	510	140	190	1	14	0	16	-9	53	-11	19
26	05/15/02	92	97	9310	540	-70	120	-17	11	3	12	-47	52	2	12
	06/19/02	1260	460	18700	1500	110	380	-26	32	-16	33	-50	140	27	37
	07/17/02	650	230	7800	670	-210	160	4	17	2	17	36	56	-6	18
	08/21/02	1050	360	11300	1000	-50	350	2	25	-6	29	27	83	-28	33
	09/18/02	840	200	8910	490	-130	150	11	14	-13	15	11	59	3	18

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-10
FOOD/VEGETATION
(PCI/KG)

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)	CS-134	(+/-)
14	05/15/02	-49	74	-17	54	-42	43	18	31	-180	250	-17	25	41	29
	06/19/02	-25	46	-5	32	-11	25	7	19	-100	160	33	38	-3	18
	07/17/02	11	69	-22	29	-24	22	13	19	0	180	28	31	21	20
	08/21/02	-64	53	52	45	-5	40	27	26	-50	170	-1	33	21	19
	09/18/02	27	43	-21	35	-21	27	-4	20	-60	150	16	31	7	19
15	05/15/02	-3	47	32	28	0	24	-9	18	-50	140	9	30	-7	18
	06/19/02	-16	58	-23	40	-6	34	-2	25	0	200	33	39	8	23
	07/17/02	13	50	2	30	1	23	8	17	-210	170	8	23	-7	18
	08/21/02	40	160	43	75	27	75	-3	52	-160	250	-31	30	18	33
	09/18/02	-5	61	22	31	7	20	1	19	-40	150	0	27	14	17
16C	05/15/02	-12	60	-7	44	18	36	12	25	-60	200	8	32	16	26
	06/19/02	30	51	12	39	-23	31	-4	26	-10	170	12	20	-21	22
	07/17/02	70	120	-9	39	-9	30	-19	23	-20	190	44	39	-8	23
	08/21/02	36	91	-14	55	-9	52	45	36	-40	200	32	37	29	26
	09/18/02	0	54	-9	29	-9	27	-11	17	30	130	7	31	12	19
23	05/15/02	38	82	13	43	-14	36	11	27	20	210	-7	25	15	25
	06/19/02	-2	49	4	34	-13	24	10	21	-80	150	32	37	-5	19
	07/17/02	-41	44	15	29	-3	21	-13	17	-20	140	47	34	2	17
	08/21/02	-107	85	-33	61	-3	52	11	37	-70	260	-1	22	16	30
	09/18/02	-5	54	43	29	15	29	-4	19	-11	130	6	32	-2	16
26	05/15/02	-15	29	2	19	-16	16	-2	13	36	85	-8	23	13	11
	06/19/02	-74	82	16	62	-38	47	29	37	150	230	28	35	29	33
	07/17/02	31	80	-13	28	0	22	3	17	-40	170	-5	30	-7	15
	08/21/02	-53	66	21	48	-49	39	18	32	-30	220	-9	25	15	28
	09/18/02	0	45	8	26	-22	19	-4	15	0	120	0	29	7	16

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-10
FOOD/VEGETATION
(PCI/KG)

LOCATION	COLLECTION DATE	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	CE-141	(+/-)	CE-144	(+/-)	SB-125	(+/-)	TH-228	(+/-)
14	05/15/02	-15	29	-10	110	-10	130	-1	41	50	100	17	58	89	73
	06/19/02	-6	17	6	56	6	65	10	29	24	72	-11	38	52	78
	07/17/02	-22	19	15	37	18	43	17	26	-3	77	-9	45	76	94
	08/21/02	-17	19	40	150	40	170	39	36	-44	74	12	41	159	97
	09/18/02	0	17	4	81	4	94	-3	30	-30	62	-2	37	134	91
15	05/15/02	-4	16	12	44	14	50	11	25	69	69	-3	32	-13	69
	06/19/02	16	22	70	110	80	120	7	32	-14	80	5	45	49	90
	07/17/02	0	19	18	43	21	50	6	22	16	65	24	40	89	95
	08/21/02	14	27	70	300	80	350	-60	85	-50	140	-11	71	40	100
	09/18/02	5	19	-38	50	-44	57	-8	27	-62	82	-22	46	150	67
16C	05/15/02	-5	25	-37	84	-43	97	-27	37	-13	90	27	51	111	95
	06/19/02	-12	21	-14	69	-16	79	-32	35	30	88	60	45	-40	110
	07/17/02	0	25	6	46	7	53	0	28	-3	91	8	53	210	130
	08/21/02	7	23	-240	240	-270	270	24	51	-36	84	16	48	70	110
	09/18/02	-4	17	-12	57	-14	65	-11	21	37	57	17	33	107	86
23	05/15/02	-2	22	23	67	27	77	5	44	-50	100	-12	54	40	78
	06/19/02	7	16	-28	78	-33	89	-7	31	-7	72	2	36	12	65
	07/17/02	3	16	-14	33	-16	38	0	23	9	73	12	38	0	66
	08/21/02	-16	25	-120	150	-140	170	-50	47	11	100	-83	57	120	140
	09/18/02	-9	17	-13	51	-14	59	8	30	-9	77	-24	43	181	65
26	05/15/02	4	10	-15	47	-17	54	14	15	-31	36	16	21	56	49
	06/19/02	1	32	80	130	90	150	-11	45	-60	100	24	61	80	140
	07/17/02	4	16	3	33	4	38	-6	23	17	73	-11	40	3	63
	08/21/02	-4	26	11	120	20	130	32	45	-80	110	-27	54	96	96
	09/18/02	1	14	-44	55	-50	63	17	19	-15	49	-12	29	159	72

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-11
WELL WATER
(PCI/L)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
01A	03/27/02	< 17		< 30											
	06/26/02	-1.00	11.00	16.00	24.00	13.00	13.00	0.70	1.30	1.20	1.20	0.40	3.90	1.40	1.30
	09/25/02	1.90	6.60	-8.00	12.00	7.80	8.10	0.10	0.71	-0.64	0.69	-0.70	2.00	0.28	0.74
	12/27/02	6.00	12.00	7.00	17.00	4.00	13.00	1.00	1.10	-0.30	1.10	0.80	2.60	-0.70	1.30

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)	CS-134	(+/-)
01A	03/27/02											< 4			
	06/26/02	-0.30	2.50	-0.50	2.10	-0.50	1.50	-0.60	1.40	-7.00	12.00	-2.30	3.70	0.10	1.30
	09/25/02	0.50	3.00	0.00	1.10	0.40	1.30	-0.10	1.10	3.00	6.40	-1.00	2.20	0.71	0.70
	12/27/02	-0.70	2.80	-1.10	1.90	0.40	1.50	-2.10	1.40	-3.00	11.00	-1.40	4.00	1.30	1.20

LOCATION	COLLECTION DATE	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	SB-125	(+/-)	TH-228	(+/-)	SR-89 *	(+/-)	SR-90 *	(+/-)
01A	03/27/02			< 3						< 15					
	06/26/02	-0.30	1.30	1.10	3.00	1.30	3.40	2.20	3.30	2.80	6.80	-1.00	3.50	0.76	0.94
	09/25/02	-0.13	0.76	-0.60	1.40	-0.70	1.60	-0.90	2.00	2.40	2.60				
	12/27/02	-0.30	1.20	0.00	2.40	0.00	2.80	-3.20	3.10	0.70	4.80				

LOCATION	COLLECTION DATE	H-3	(+/-)
01A	03/27/02	< 106	
	06/26/02	-420	780
	09/25/02	100	1000
	12/27/02	160	840

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP
* STRONTIUM ANALYSIS ONLY PERFORMED ON SECOND QUARTER SAMPLES

TABLE 3-12
RIVER WATER
(PCI/L)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
11	01/16/02	< 50		< 80											
	02/11/02	< 50		< 90											
	03/13/02	< 40		< 80											
	04/12/02	-5	15	12	26	-10	21	0.0	1.6	-0.5	1.9	2.5	5.1	-0.5	1.6
	05/14/02	2	26	13	51	-27	31	-2.1	3.4	-2.7	3.1	-1.6	8.5	-1.2	3.0
	06/13/02	4	18	4	34	6	20	1.4	1.9	-0.5	1.9	-1.6	5.7	-0.2	2.2
	07/12/02	7	12	3	20	-5	16	-0.2	1.2	-0.2	1.4	-0.4	4.5	0.7	1.5
	08/16/02	1	18	-7	35	12	21	0.1	1.9	-1.3	2.0	-3.7	6.1	-0.6	2.1
	09/13/02	-4	23	-22	29	5	27	-1.0	2.2	-0.8	2.4	-0.4	4.7	1.8	2.5
	10/14/02	-2	15	23	32	15	19	0.4	1.8	-1.6	1.9	-3.4	4.1	-1.0	2.3
	11/14/02	5	18	15	31	9	24	-0.1	2.1	0.1	1.9	1.6	4.5	0.8	1.9
	12/17/02	1	13	-1	28	7	19	-0.5	1.5	-0.8	1.7	0.0	4.1	0.2	2.0

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)		CS-134	(+/-)
11	01/16/02											< 0.3				
	02/11/02											< 0.8				
	03/13/02											< 0.6				
	04/12/02	1.7	3.6	2.0	3.2	-1.5	2.5	-1.2	2.1	-2.0	16.0	0.31	0.42		-1.0	1.9
	05/14/02	2.0	5.9	-1.8	4.9	1.7	3.6	-2.4	3.3	-3.0	27.0	-0.05	0.51		0.5	2.9
	06/13/02	-3.4	4.2	5.3	3.9	1.1	2.3	1.1	2.2	3.0	20.0	0.43	0.59		0.1	2.1
	07/12/02	-3.6	3.0	0.3	2.9	0.5	1.7	-0.3	1.7	3.0	14.0	17.00	17.00	A	-0.5	1.4
	08/16/02	-4.5	4.6	1.0	3.9	-1.2	2.4	-0.2	2.3	5.0	18.0	-0.15	0.48		-0.2	2.0
	09/13/02	0.0	12.0	0.9	4.1	0.4	4.6	-3.0	2.5	-6.0	22.0	0.48	0.61		-1.3	2.2
	10/14/02	-1.5	4.8	1.0	3.8	-1.4	2.3	1.0	2.1	9.0	18.0	0.76	0.69		1.6	2.2
	11/14/02	4.7	8.9	1.2	4.1	0.1	2.5	-1.5	2.7	-2.0	18.0	0.36	0.50		0.0	2.1
	12/17/02	-6.8	4.5	1.0	3.1	0.2	2.2	0.7	2.2	-9.0	19.0	0.72	0.71		0.1	2.0

A REQUIRED LLD NOT MET (SEE PROGRAM EXCEPTIONS)
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-12
RIVER WATER
(PCI/L)

LOCATION	COLLECTION DATE	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	SB-125	(+/-)	TH-228	(+/-)	SR-89 *	(+/-)	SR-90 *	(+/-)
11	01/16/02	< 6		< 8						< 30					
	02/11/02	< 5		< 10						< 40					
	03/13/02	< 5		< 9						< 30					
	04/12/02	-1.1	1.8	-1.1	5.1	-1.3	5.8	-1.0	4.3	2.6	7.9				
	05/14/02	-1.3	3.1	-3.2	5.2	-3.7	6.0	-2.1	7.3	3.0	15.0				
	06/13/02	-1.0	2.2	0.4	3.5	0.5	4.0	-0.8	5.6	-1.4	9.5				
	07/12/02	0.5	1.4	1.2	2.9	1.4	3.3	-1.8	4.0	6.5	5.6				
	08/16/02	-0.5	2.0	0.2	3.9	0.2	4.5	1.0	5.2	1.5	9.5				
	09/13/02	-2.1	2.5	0.4	4.4	0.5	5.1	1.1	7.8	-0.4	8.5	-7.8	6.9	1.0	1.0
	10/14/02	-0.1	1.8	-3.2	3.1	-3.6	3.5	4.0	5.6	2.2	7.3				
	11/14/02	0.4	1.9	0.2	4.3	0.2	5.0	1.3	6.3	3.5	7.0				
	12/17/02	0.4	1.9	-0.4	2.9	-0.5	3.3	0.7	5.5	0.6	7.8				

LOCATION	COLLECTION DATE	H-3 **	(+/-)
11	01/16/02		
	02/11/02		
	03/13/02	3770	150
	04/12/02		
	05/14/02		
	06/13/02	3400	1000
	07/12/02		
	08/16/02		
	09/13/02	3490	990
	10/14/02		
	11/14/02		
	12/17/02	4900	1000

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP
* ANNUAL STRONTIUM ANALYSIS (USUALLY PERFORMED ON SECOND QUARTER SAMPLES)
** TRITIUM ANALYSIS PERFORMED ON QUARTERLY COMPOSITE

TABLE 3-13
SURFACE WATER
(PCI/L)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)	CO-60	(+/-)
08	01/16/02	< 40		< 60											
	02/11/02	< 50		371	65										
	03/13/02	< 30		< 80											
	04/12/02	4	22	-40	37	-16	27	-1.0	2.4	1.6	2.3	0.6	7.1	-1.0	2.3
	05/14/02	-20	22	25	42	4	25	-0.8	2.5	-0.6	2.5	-4.4	6.8	1.3	2.9
	06/13/02	1	19	5	39	-17	23	-0.8	2.1	-2.2	2.1	-0.6	6.3	-0.3	2.5
	07/12/02	-5	14	-19	17	-7	17	0.4	1.7	-1.0	1.6	-1.6	4.8	0.8	1.8
	08/16/02	-1	19	6	29	-6	23	1.2	2.1	0.6	2.2	-2.1	5.7	1.0	2.0
	09/13/02	5	11	-11	20	-3	13	0.5	1.6	0.1	1.5	1.1	3.3	-0.8	1.5
	10/14/02	-5	26	-10	34	13	26	2.3	2.7	-1.6	2.3	1.9	5.3	-0.7	3.0
	11/14/02	-22	25	-23	31	24	26	-0.9	2.6	-0.6	2.5	-3.9	5.0	1.2	2.3
	12/17/02	-3	15	-16	24	9	20	0.1	1.6	-1.7	1.7	1.5	4.2	-0.4	2.1
09AC	01/16/02	< 60		< 90											
	02/11/02	< 40		< 70											
	03/13/02	< 50		< 130											
	04/12/02	8	15	-12	26	10	20	-0.6	1.8	0.7	1.6	1.3	5.1	0.7	1.8
	05/14/02	-16	20	-32	37	-6	24	0.0	2.4	-1.1	2.3	3.3	6.6	-2.4	2.4
	06/13/02	-7	19	45	36	1	22	0.0	2.3	-0.1	2.4	0.9	6.0	-0.1	2.1
	07/12/02	-1	13	-17	20	-1	17	-1.4	1.7	-1.6	1.6	3.8	4.3	0.1	1.6
	08/16/02	-5	20	0	35	14	25	-0.4	2.1	0.4	2.1	0.5	7.2	1.4	2.3
	09/13/02	-15	18	34	28	-7	22	3.1	2.1	-1.3	1.9	1.3	4.2	0.2	2.0
	10/14/02	16	19	-1	33	-2	26	-0.8	2.3	-0.6	2.5	-5.7	4.7	0.4	2.2
	11/14/02	19	25	-30	38	-3	30	0.0	2.8	1.4	2.6	0.7	5.8	-1.8	3.0
	12/17/02	-10	18	-22	23	-7	22	1.0	2.0	0.4	2.0	-2.5	3.5	-1.8	2.2

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-13
SURFACE WATER
(PCI/L)

LOCATION	COLLECTION DATE	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)	I-131	(+/-)		CS-134	(+/-)
08	01/16/02											< 0.4				
	02/11/02															
	03/13/02											< 0.7				
	04/12/02	-1.7	6.6	-0.6	4.3	-5.2	4.2	-0.2	2.9	-13.0	20.0	0.11	0.38		0.9	2.3
	05/14/02	0.1	5.7	-0.9	4.1	-2.1	2.8	0.6	2.6	1.0	24.0	0.19	0.53		0.2	3.0
	06/13/02	-1.6	5.1	0.7	3.4	1.2	2.9	0.6	2.4	-6.0	22.0	0.74	0.66		-0.4	2.4
	07/12/02	1.2	3.0	-1.9	2.9	-0.5	1.8	-0.8	2.0	-4.0	15.0	0.80	2.80	A	0.5	1.4
	08/16/02	-0.9	5.1	2.3	4.1	-1.8	2.7	-2.4	2.7	1.0	18.0	0.37	0.58		-1.2	2.2
	09/13/02	-0.4	2.9	1.4	2.5	0.8	1.7	0.0	1.3	10.0	13.0	0.02	0.30		-0.7	1.3
	10/14/02	-3.2	6.4	-2.7	5.5	-1.6	2.8	-2.2	2.8	-18.0	23.0	0.03	0.49		1.2	2.6
	11/14/02	-3.8	4.9	-2.8	5.0	1.3	3.1	-1.6	3.0	-8.0	24.0	-0.18	0.27		-0.8	2.8
	12/17/02	-0.8	4.1	1.2	4.0	0.1	2.0	-2.3	2.1	11.0	19.0	0.15	0.42		0.8	1.8
09AC	01/16/02											< 0.4				
	02/11/02											< 0.8				
	03/13/02											< 0.7				
	04/12/02	-3.5	4.0	0.8	3.0	1.1	3.6	0.1	2.0	-9.0	15.0	-0.26	0.24		0.4	1.6
	05/14/02	0.0	7.1	2.6	4.1	2.5	2.9	-0.3	2.8	-12.0	24.0	-0.26	0.36		-1.1	2.3
	06/13/02	-3.4	6.9	-1.1	3.8	-3.5	2.7	0.6	2.4	-2.0	19.0	0.54	0.57		-0.7	2.5
	07/12/02	0.1	3.4	0.0	2.7	-0.1	1.8	-1.2	1.7	-7.0	14.0	1.30	3.10	A	-0.4	1.7
	08/16/02	-5.1	4.6	1.9	3.5	-1.8	2.8	-2.3	2.6	-6.0	22.0	0.14	0.52		1.9	2.1
	09/13/02	-3.7	4.3	-1.5	3.0	-2.1	2.5	-1.3	2.2	-10.0	21.0	0.06	0.34		-0.1	2.0
	10/14/02	0.3	9.9	2.5	4.1	-0.2	2.9	-0.8	2.3	9.0	19.0	0.42	0.59		-1.1	2.4
	11/14/02	8.0	12.0	-0.1	4.7	1.2	3.3	2.0	3.5	0.0	28.0	-0.19	0.28		0.7	3.4
	12/17/02	-5.3	4.7	-2.5	3.5	0.0	2.0	-1.1	2.1	-7.0	19.0	0.02	0.34		-0.1	2.2

A REQUIRED LLD NOT MET (SEE PROGRAM EXCEPTIONS)
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-13
SURFACE WATER
(PCI/L)

LOCATION	COLLECTION DATE	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)	SB-125	(+/-)	TH-228	(+/-)	SR-89 *	(+/-)	SR-90 *	(+/-)
08	01/16/02	< 6		< 6						< 30					
	02/11/02	< 5		< 10						< 40					
	03/13/02	< 4		< 9						< 30					
	04/12/02	0.5	2.1	0.3	6.5	0.3	7.5	-0.4	5.0	-3.8	9.6				
	05/14/02	0.2	2.7	1.0	4.3	1.2	4.9	-1.7	7.1	-3.0	11.0				
	06/13/02	-1.3	2.4	-1.7	3.9	-1.9	4.5	-1.9	5.6	6.7	8.3				
	07/12/02	1.2	1.6	1.8	3.6	2.1	4.2	1.9	4.4	-0.5	5.2				
	08/16/02	1.1	2.1	-2.4	4.9	-2.8	5.7	1.2	5.2	-1.5	8.6				
	09/13/02	0.3	1.3	1.6	2.9	1.8	3.4	0.5	3.5	-0.9	5.9	-9.7	6.0	1.2	0.9
	10/14/02	-1.8	3.3	-3.3	4.7	-3.8	5.5	-5.0	6.7	1.0	10.0				
	11/14/02	-0.5	2.4	-2.3	5.2	-2.6	6.0	1.8	6.2	-2.0	10.0				
	12/17/02	2.5	1.9	-0.3	3.3	-0.3	3.8	-2.3	5.1	3.5	7.4				
09AC	01/16/02	< 7		< 10						< 50					
	02/11/02	< 4		< 10						< 30					
	03/13/02	< 5		< 10						< 30					
	04/12/02	0.1	1.6	-0.5	4.8	-0.5	5.5	-1.9	4.4	-7.8	7.7				
	05/14/02	-0.5	2.7	-4.0	3.8	-4.6	4.4	-5.0	5.9	-2.0	11.0				
	06/13/02	-1.7	2.3	0.8	3.9	0.9	4.5	-5.4	5.8	-0.7	9.2				
	07/12/02	-0.9	1.7	-4.1	3.7	-4.7	4.2	1.5	4.1	-3.4	5.9				
	08/16/02	0.4	2.3	0.0	4.2	0.0	4.9	-2.1	6.1	6.3	9.1				
	09/13/02	-2.3	2.5	-0.8	4.0	-1.0	4.6	1.8	5.4	4.7	7.7	-3.5	7.5	1.5	1.0
	10/14/02	-3.1	2.4	0.4	3.8	0.4	4.3	-1.4	6.3	1.0	10.0				
	11/14/02	-0.2	2.6	1.5	5.1	1.7	5.9	-8.0	7.3	-1.0	11.0				
	12/17/02	1.6	2.2	1.6	3.8	1.9	4.4	-2.5	5.3	-2.8	7.8				

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP
* ANNUAL STRONTIUM ANALYSIS (USUALLY PERFORMED ON SECOND QUARTER SAMPLES)

TABLE 3-13
SURFACE WATER
(PCI/L)

LOCATION	COLLECTION DATE	H-3 **	(+/-)
08	01/16/02		
	02/11/02		
	03/13/02	3130	130
	04/12/02		
	05/14/02		
	06/13/02	3900	1000
	07/12/02		
	08/16/02		
	09/13/02	4100	1000
	10/14/02		
	11/14/02		
	12/17/02	4500	1000
09AC	01/16/02		
	02/11/02		
	03/13/02	< 100	
	04/12/02		
	05/14/02		
	06/13/02	-760	950
	07/12/02		
	08/16/02		
	09/13/02	-170	950
	10/14/02		
	11/14/02		
	12/17/02	-740	880

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP
** TRITIUM ANALYSIS PERFORMED ON QUARTERLY COMPOSITE

TABLE 3-14
SEDIMENT SILT
(PCI/KG DRY WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
08	02/12/02	< 330		4580	324			< 20		< 40			
	08/26/02	0	330	2160	620	30	450	13	29	-44	29	0	82
11	02/12/02	< 270		19100	690			< 20		< 30			
	08/26/02	380	560	14900	1800	-300	930	10	54	-53	62	-20	150
09AC	02/12/02	< 370		15200	630			< 30		< 40			
	08/26/02	190	470	10700	1500	-440	710	38	46	9	51	9	150

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
08	02/12/02	< 30											
	08/26/02	39	31	80	130	17	61	-76	45	-13	37	-70	290
11	02/12/02	< 30											
	08/26/02	-16	50	260	230	140	130	14	91	0	77	-130	480
09AC	02/12/02	< 40											
	08/26/02	5	38	40	190	40	100	-81	77	-13	54	-120	350

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-14
SEDIMENT SILT
(PCI/KG DRY WT.)

LOCATION	COLLECTION DATE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
08	02/12/02					< 40		65	12			947	31
	08/26/02	-12	44	210	300	34	35	35	38	-33	86	320	140
11	02/12/02					< 40		< 40				< 80	
	08/26/02	11	72	310	580	6	52	-15	61	3	120	1130	240
09AC	02/12/02					< 50		97	16			1090	35
	08/26/02	-64	55	-80	460	-3	41	14	47	50	98	380	180

LOCATION	COLLECTION DATE	SR-89 *	(+/-)	SR-90 *	(+/-)
08	02/12/02				
	08/26/02	-1040	680	20	76
11	02/12/02				
	08/26/02	-1250	730	44	86
09AC	02/12/02				
	08/26/02	-600	630	-18	68

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP
* STRONTIUM ANALYSIS PERFORMED ANNUALLY

TABLE 3-15
SHORELINE SOIL
(PCI/KG DRY WT.)

LOCATION	COLLECTION DATE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
08	02/11/02	< 200		2940	203			< 10		< 20			
	08/26/02	-40	370	1070	650	-120	510	8	36	-1	32	10	130

LOCATION	COLLECTION DATE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
08	02/11/02	< 20											
	08/26/02	4	37	100	150	3	78	-19	49	-30	40	10	340

LOCATION	COLLECTION DATE	CS-134	(+/-)	CS-137	(+/-)	CE-141	(+/-)	CE-144	(+/-)	SB-125	(+/-)	TH-228	(+/-)
08	02/11/02	< 20		31	11							374	72
	08/26/02	2	29	28	32	27	84	10	180	48	91	200	180

LOCATION	COLLECTION DATE	SR-89 *	(+/-)	SR-90 *	(+/-)
08	02/11/02				
	08/26/02	-1130	630	-33	73

QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP
* STRONTIUM ANALYSIS PERFORMED ANNUALLY

TABLE 3-16
FISH
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	TYPE	BE-7	(+/-)	K-40	(+/-)	CR-51	(+/-)	MN-54	(+/-)	CO-58	(+/-)	FE-59	(+/-)
08	02/12/02	CATFISH (B)			1760	313					< 40			
	02/12/02	FISH (A)			1960	354					< 30			
	08/28/02	CATFISH (B)	-130	190	1200	370	-90	280	-4	19	-39	24	-22	47
	08/28/02	FISH (A)	-210	190	1550	550	130	320	-7	25	8	20	-16	60
25C	02/12/02	CATFISH (B)			1560	258					< 20			
	02/12/02	FISH (A)			1630	243					< 20			
	08/28/02	CATFISH (B)	-50	150	1910	350	-240	220	-15	13	17	19	26	44
	08/27/02	FISH (A)	-260	220	890	460	-320	310	-24	26	4	23	7	49

LOCATION	COLLECTION DATE	TYPE	CO-60	(+/-)	ZN-65	(+/-)	ZR-95	(+/-)	NB-95	(+/-)	RU-103	(+/-)	RU-106	(+/-)
08	02/12/02	CATFISH (B)												
	02/12/02	FISH (A)												
	08/28/02	CATFISH (B)	-3	20	37	82	3	37	-7	32	-7	27	-130	170
	08/28/02	FISH (A)	10	23	-24	50	-14	35	6	30	8	22	-70	170
25C	02/12/02	CATFISH (B)												
	02/12/02	FISH (A)												
	08/28/02	CATFISH (B)	19	16	38	63	-18	26	14	32	5	19	100	130
	08/27/02	FISH (A)	11	24	64	94	4	43	24	58	-18	30	50	200

(A) NON-BOTTOM DWELLING SPECIES OF GAME FISH
(B) BOTTOM DWELLING SPECIES OF FISH
QTR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

TABLE 3-16
FISH
(PCI/KG WET WT.)

LOCATION	COLLECTION DATE	TYPE	AG-110M	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	SB-125	(+/-)	TH-228	(+/-)
08	02/12/02	CATFISH (B)					< 40		< 30					
	02/12/02	FISH (A)					< 20		37	10				
	08/28/02	CATFISH (B)	20	26	90	200	-11	18	-14	20	33	45	-14	68
	08/28/02	FISH (A)	13	27	-70	260	-6	20	9	22	-37	43	-15	82
25C	02/12/02	CATFISH (B)					< 20		< 30					
	02/12/02	FISH (A)					< 20		< 20					
	08/28/02	CATFISH (B)	-23	17	-80	170	-7	14	13	15	-5	35	-21	56
	08/27/02	FISH (A)	-9	34	-60	270	6	23	-21	25	-25	53	32	81

A) NON-BOTTOM DWELLING SPECIES OF GAME FISH
B) BOTTOM DWELLING SPECIES OF FISH
TR 1 RESULTS FROM TELEDYNE BROWN ENGINEERING; REMAINDER OF YEAR RESULTS FROM FRAMATOME ANP

4. DISCUSSION OF RESULTS

Data from the radiological analyses of environmental media collected during 2002 and tabulated in Section 3, are discussed below. Except for TLDs, Teledyne Brown Engineering performed analyses for all samples within the first quarter of 2002 and precipitation samples for the first half of 2002, the Framatome ANP DE&S Environmental Laboratory analyzed the remaining samples throughout the year. The procedures and specifications followed in the laboratories for these analyses are as required separately in the Teledyne Brown Engineering and the Framatome ANP DE&S Environmental Laboratory quality assurance manuals and laboratory procedures. In addition to internal quality control measures performed by each laboratory, they also participate 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 Programs 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 Be-7, K-40, and Th-228 were detected in numerous samples. Th-228 results were variable and are generally at levels higher than plant related radionuclides.

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

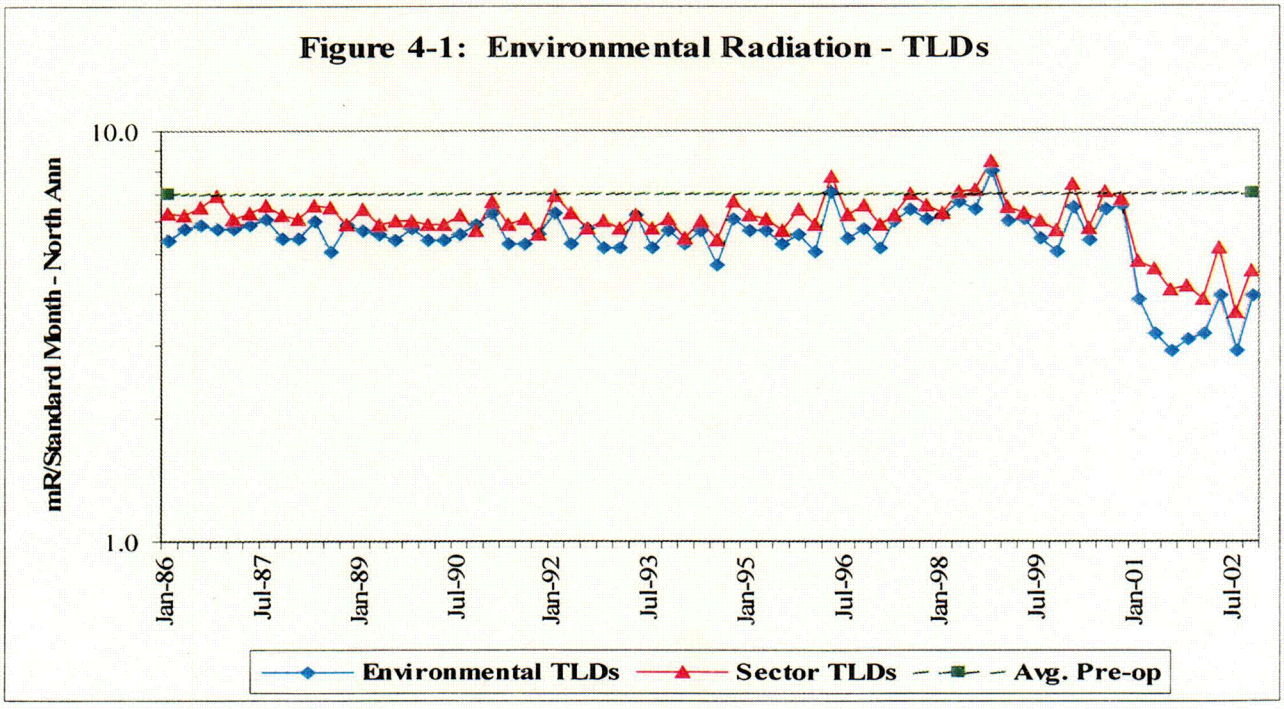
4.1 Gamma Exposure Rate

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 areas 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. Control and indicator averages indicate a steady relationship. Two dosimeters made of CaF and LiF sensitive elements are deployed at each sampling location. These TLDs replaced the previously used CaSO4:Dy in Teflon TLDs. The dose trend with the replacement TLDs is lower than that of the previously used TLDs. This trend will continue to be monitored.

Sector TLDs are deployed quarterly at thirty-two locations in the environs of the North Anna site. Two badges are placed at each location. The average level of the 32 locations (two badges at each location) was 4.6 mR/standard month with a range of 1.7 to 13.0 mR/standard month. The highest quarterly average reading and highest single quarter average for any single location were obtained at location SSW-19/51. These values were 10.3 mR/standard month and 13.0 mR/standard month, respectively. This location is on site directly across the access road from the Independent Spent Fuel Storage Facility. The higher values can thus be attributed to the spent fuel stored in the ISFSI. Quarterly and annual TLDs are also located at each of the twelve environmental air sampling stations. For the eleven locations within 10 miles of the station the average quarterly reading was 3.5 mR/standard month with a range of 1.2 to 6.3 mR/standard month. The average annual reading for these locations was 3.0 mR/standard month with a range of from 1.6 to 5.4 mR/standard month. The control location showed a quarterly average of 3.0 mR/standard month with a range of 3.0 to 3.1 mR/standard month. Its annual reading was 2.3 mR/standard month. Eight other TLDs, designated C-1 thru C-8 were collected quarterly from four locations and showed an average reading of 3.0 mR/standard month with a range of 1.3 to 4.4 mR/standard month. During the pre-operational period (starting in 1977) the doses were measured between 4.3 and 8.8 mR/standard month.

Figure 4-1: Environmental Radiation - TLDs



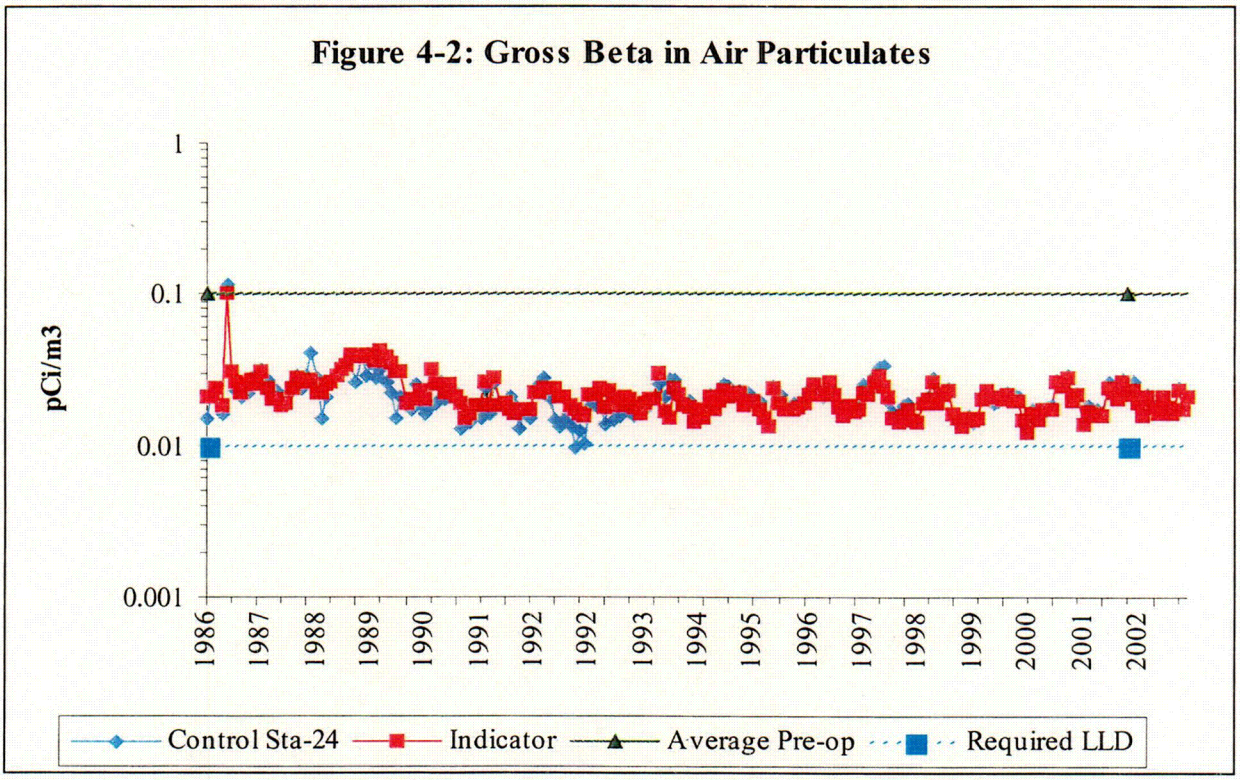
C05

4.2 Airborne Gross Beta

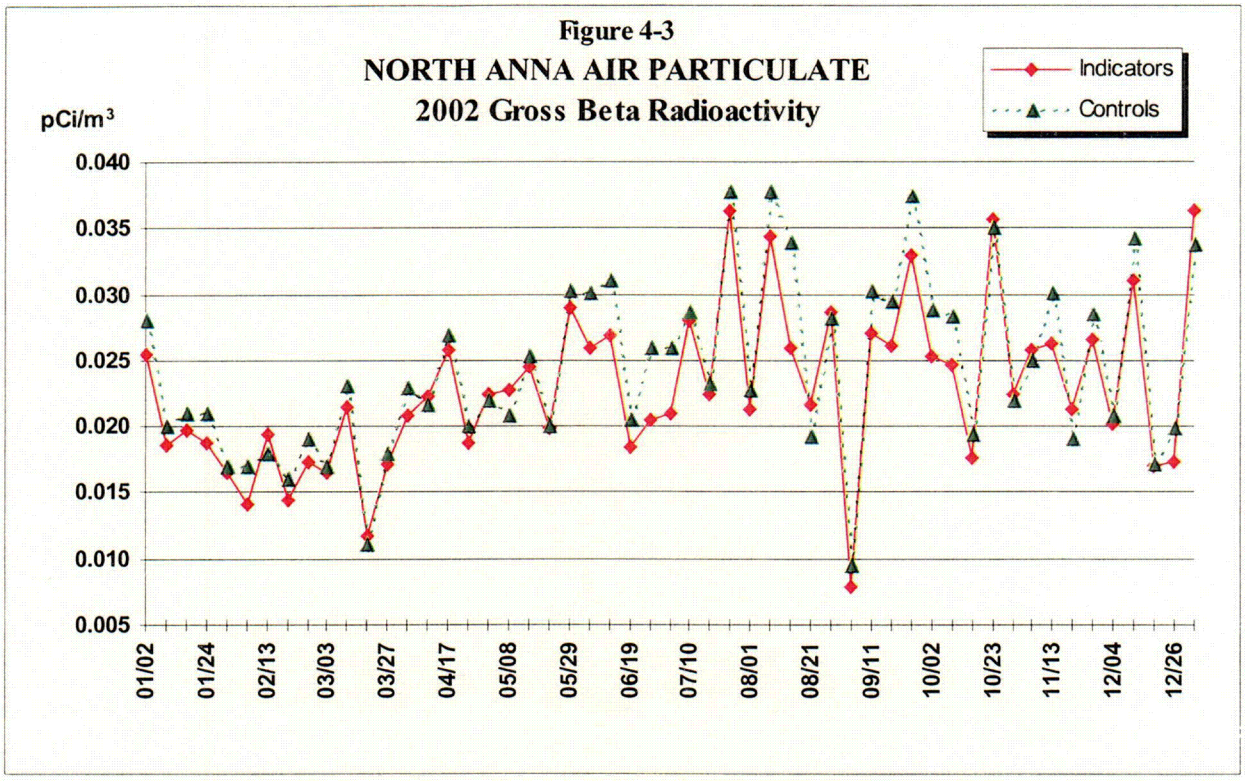
Results of the weekly gross beta analyses are presented in Table 3-3. A review of the results, shown in a historical plot in Figure 4-2, indicates gross beta activity at levels similar to that seen over the last decade. Inner and outer ring monitoring locations continue to show no significant variation in measured activities (see Figure 4-3). This indicates that any station contribution is not measurable.

Gross beta activity found during the pre-operational and early operating period of North Anna 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. During the preoperational period of July 1, 1974 through March 31, 1978 gross beta activities ranged from a low of 0.005 pCi/m^3 to a high of 0.75 pCi/m^3.

Figure 4-2: Gross Beta in Air Particulates



C06



4.3 Airborne Radioiodine

Charcoal cartridges are used to collect airborne radioiodine. Once a week the 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 that are utilized for the weekly gross beta analyses are composited by location and analyzed quarterly by gamma spectrometry. The results are listed in Table 3-5. The results indicate the presence of naturally occurring Be-7, which is produced by cosmic processes. Examination of pre-operational data indicates comparable measurements of Be-7, as would be expected. No other positive results were seen. These analyses indicate the lack of station effects.

C07

4.4 Air Particulate Strontium

Strontium-89 and 90 analyses were performed on the second, third, and fourth quarter composites of air particulate filters from all twelve monitoring stations. The results are listed in Table 3-6. There was no detection of these fission products at any of the indicator or control stations.

4.6 Soil

Per the sampling frequency defined in the North Anna ODCM, soil samples are collected every three years. The last sampling period for soil was 2001.

4.7 Precipitation

A sample of rain water was collected monthly at on-site station 01A and analyzed for gross beta activity. The results are presented in Table 3-8. The average gross beta activity for 2002 in the nine samples that showed positive results was 6.1 pCi/liter with a range from 1.3 to 15.1 pCi/liter. Semi-annual composites were prepared and analyzed for gamma emitting isotopes and tritium. No positive indications of gamma emitting radioisotopes were observed in the semi-annual composite samples for 2002. Tritium was detected in one of the two semi-annual composite samples with a concentration of 185 pCi/liter. These results are comparable to those measured since 1986. During the pre-operational period gross beta activity in rain water was expressed in nCi per square meter of the collector surface, thus a direct comparison can not be made to the 2002 period. During the pre-operational period, tritium was measured in over half of the few quarterly composites made. The tritium activity ranged from 100 to 330 pCi/liter.

4.8 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 is any plant effect.

Analysis results for cow milk are contained in Table 3-9. All results show a lack of detectable I-131 above the LLD of 1 pCi/l. Results of gamma ray spectroscopy indicate no detectable plant related radioactivity in the milk samples. In years past, Cs-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.

Once each quarter a sample from each of the two collection stations is analyzed for strontium-89 and strontium-90. Positive indication of Sr-89 was not detected. One positive indication of Sr-90 was detected in the first quarter milk sample collected from station 12 at 0.29 pCi/liter. Sr-90 has been observed in the past. Pre-operational levels of 2.2 to 5.4 pCi/liter were measured for Sr-90. There has been a long-term activity trend for Sr-90 showing a continuous decline. It should be noted that strontium-90 is not a part of station effluents. Its detection is the product of nuclear weapons testing fallout. This conclusion can be made based upon the fact that Sr-89 and Sr-90 have not been detected in effluents released from the station in many years, and the trend of consistent declining levels since the pre-operational period.

4.9 Food Products and Vegetation

Twenty-five food samples were collected from five locations and analyzed by gamma spectrometry. The results of the analyses are presented in Table 3-10. As expected, naturally occurring potassium-40 was detected in all samples, cosmogenic beryllium-7 was detected in most, and thorium-228 was detected in some. No other gamma emitters were detected. Although observed in the past, cesium-137 was not detected in any of the food product or vegetation samples in 2002. The average concentrations of the naturally occurring radioisotopes are consistent with those observed in previous years.

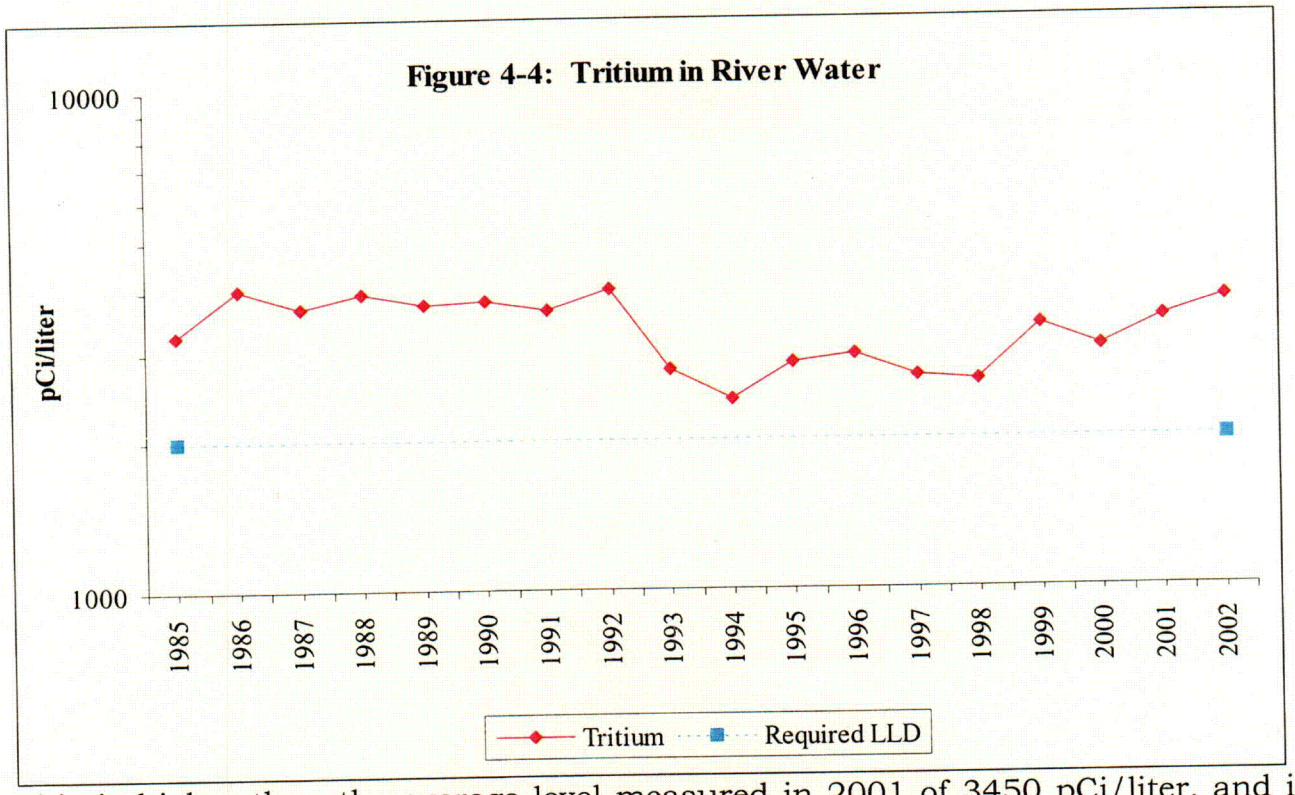
4.10 Well Water

Water was sampled quarterly from the on site well at the metrology laboratory. These samples were analyzed for gamma radiation and for tritium. The second quarter sample was analyzed for strontium-89 and strontium-90. The results of these analyses are presented in Table 3-11. Consistent with past monitoring, no plant related radioactivity was detected. No gamma emitting isotopes were detected during the pre-operational period.

4.11 River Water

A sample of water from the North Anna River was collected monthly, the analyses are presented in Table 3-12. All monthly samples are analyzed by gamma spectroscopy. The monthly samples were composited quarterly and analyzed for tritium, the third quarter samples were additionally analyzed for strontium-89 and strontium-90. No gamma emitting radioisotopes were detected in any of the

samples. There was no measured activity of strontium-89 or strontium-90. Tritium was measured in all four samples with an average concentration of 3890 pCi/liter and a range of 3890 pCi/liter and a range of 3400 to 4900 pCi/liter.



This is higher than the average level measured in 2001 of 3450 pCi/liter, and is likely due to reduced volume of water present in Lake Anna during the recent drought. See Figure 4-4. No river water samples were collected during the pre-operational period.

4.12 Surface Water

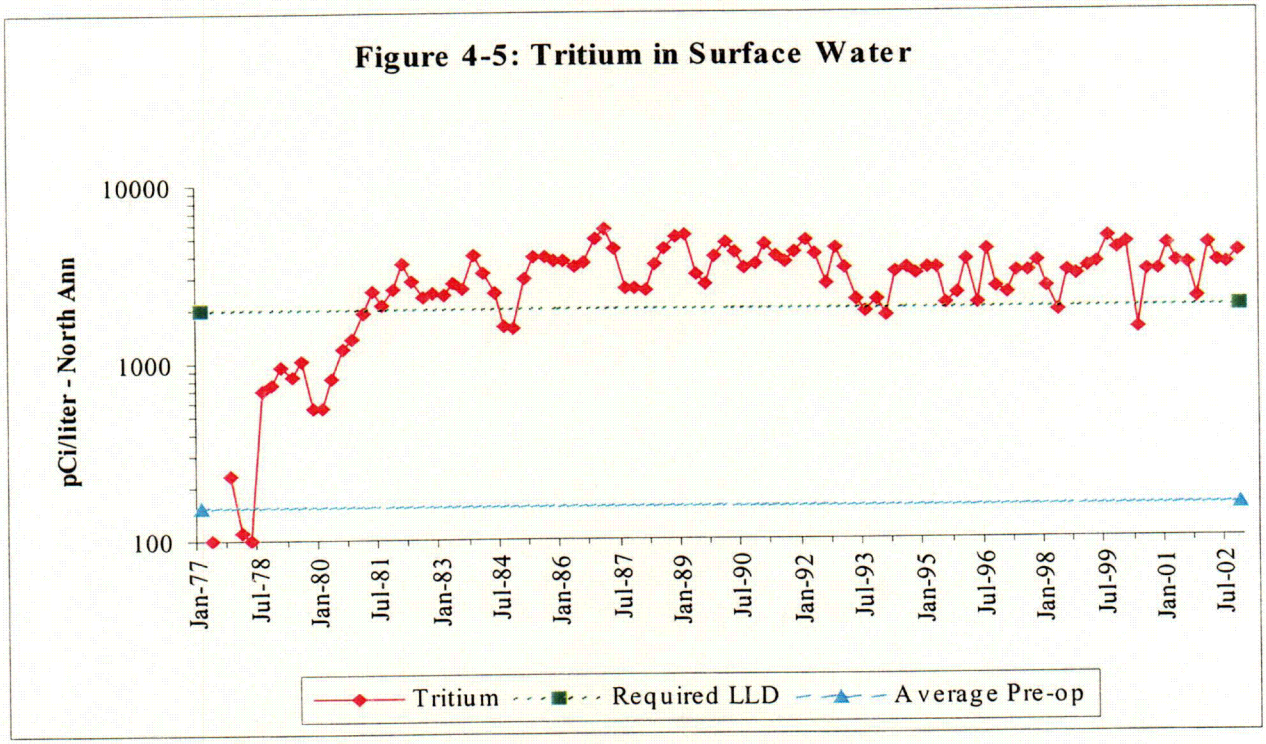
Samples of surface water were collected monthly from two stations, an indicator station located at the discharge lagoon and a control station located 12.9 miles WNW. The samples were analyzed by gamma ray spectrometry and for iodine-131 by radiochemical separation. A quarterly composite from each station was prepared and analyzed for tritium, and the third quarter samples were additionally analyzed for strontium-89 and strontium-90. The results are presented in Table 3-13.

No gamma emitting radioisotopes nor iodine were detected in any of the samples. The average level of tritium activity at the indicator station was 3908 pCi/liter with a range of 3130 to 4500 pCi/liter. The control station had no positive indications of tritium. Levels of tritium have been increasing since 1978 when the

C08

average level was below 300 pCi/liter. Levels are comparable to those measured since 1986, see Figure 4-5. During the pre-operational period tritium was measured in several samples with concentrations between 90 and 250 pCi/liter.

Figure 4-5: Tritium in Surface Water



4.13 Bottom Sediment

Bottom sediment or silt is sampled to evaluate any buildup of radionuclides in the environment due to the operation of the station. Buildup of radionuclides in bottom sediment could indirectly lead to increasing radioactivity levels in fish.

Sediment samples were collected during February and August from each of three locations and were analyzed by gamma spectrometry. The August samples were analyzed for strontium-89 and strontium-90. The results are presented in Table 3-14. Figure 4-6 shows the historical trend of Cs-137 in sediments.

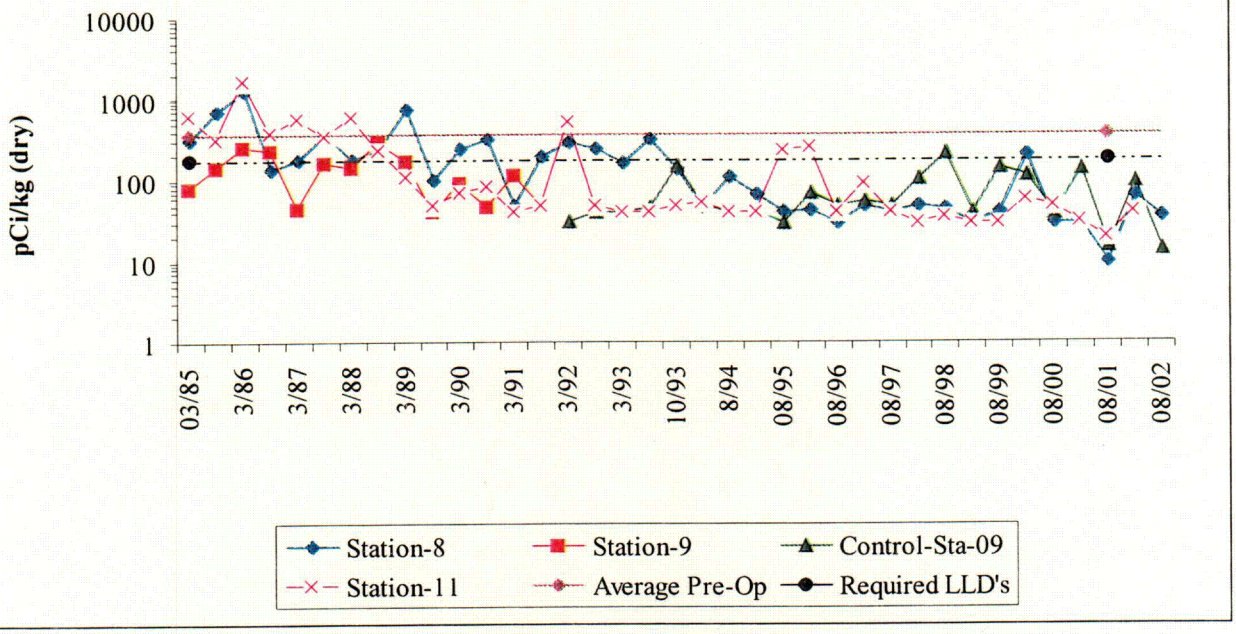
Cesium-137 was detected in both the control and indicator samples. The highest reading for Cs-137, 97 pCi/kg dry weight, was obtained from the control station located 12.90 miles WNW. The indicator showed a level of 65 pCi/kg dry weight. The levels detected continue a decreasing trend seen for over a 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

C09

runoff into the lake of residual weapons testing fallout; its global presence has been well documented. During the pre-operational period sediment samples were analyzed by gamma ray spectroscopy. Cesium-137 was measured in most of the samples with concentrations between 33 and 1210 pCi/kg (dry weight).

There was no measurable amount of strontium-89 or 90 in aquatic sediment/silt. A number of naturally occurring radioisotopes were detected in these samples at background levels.

Figure 4-6: Cesium-137 in Sediment Silt



4.14 Shoreline Soil

Shoreline soil/sediment, unlike bottom sediment, 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. A sample of shoreline sediment was collected in February and August from station 08. The samples were analyzed by gamma ray spectrometry. The August sample was analyzed for strontium-89 and strontium-90. The results are presented in Table 3-15.

Naturally occurring radioisotopes were detected at concentrations equivalent to normal background activities. The activities of these radioisotopes indicate a steady trend. Cesium-137 was measured in one sample with at a concentration of 31 pCi/kg (dry weight). No Strontium was detected in either sample in 2002.

C10

Strontium-90 is normally detected in this media, however as discussed previously, the presence of Sr-90 and Cs-137 is attributed to accumulation of residual global fallout from past atmospheric weapons testing.

4.15 Fish

Four sample sets of fish, two from Lake Anna and two from the control station, Lake Orange, were collected during 2002 and analyzed by gamma spectroscopy. Each sample set consisted of a sample of game species and a sample of bottom-dwelling species, which were analyzed separately. The results are presented in Table 3-16. These results are the same as previously seen. Cesium-137 was measured in one sample from Lake Anna with an activity of 37 pCi/kg (wet weight). Only Cs-137 was measured in pre-operational environmental fish samples. No other activity, except for naturally occurring K-40, was observed in this media in 2002.

5. PROGRAM EXCEPTIONS

REMP Exceptions for Scheduled Sampling and Analysis During 2002 – North Anna

Location	Description	Date of Sampling	Reason(s) for Loss/Exception
Sta. 14-16, 23, 26	Vegetation	January	Seasonal Unavailability
Sta. 14-16, 23, 26	Vegetation	February	Seasonal Unavailability
Sta. 14-16, 23, 26	Vegetation	March	Seasonal Unavailability
Sta. 14-16, 23, 26	Vegetation	April	Seasonal Unavailability due to drought
Sta. 05A	TLD	1/8/02 – 4/3/02	TLD was damaged causing the loss of the quarterly reading
Sta. 04	Air Iodine and Particulate	5/8/02	Pump found not running causing low volume collection. LLD not met for air particulate gross beta analysis.
Sta. 22	Air Iodine and Particulate	6/19/02	GFCI tripped causing low volume collection. LLD not met for air particulate gross beta analysis.
Sta. 08,09A,11	River/Surface Water	07/12/02	I-133 Low Level analysis requested, not performed by vendor. LLD not met.
Sta. 22	Air Iodine and Particulate	8/21/02	GFCI tripped causing low volume collection. LLD not met for air particulate gross beta analysis.
Sta. 12	Milk	8/21/02	Sample curdled due to delay caused by labor strike, resampled on 8/28
Sta. 13	Milk	8/22/02	Sample curdled due to delay caused by labor strike, resampled on 8/28
Sta. 14-16, 23, 26	Vegetation	October	Seasonal Unavailability due to drought
Sta. 14-16, 23, 26	Vegetation	November	Seasonal Unavailability
Sta. 22	Air Iodine and Particulate	12/4/02	Equipment failure. No sample collected.
Sta. 14-16, 23, 26	Vegetation	December	Seasonal Unavailability

REFERENCES

References

1. Dominion, North Anna Power Station Technical Specifications, Units 1 and 2.

2. Dominion, North Anna Power Station Independent Spent Fuel Storage Installation Technical Specifications.

3. Dominion, Station Administrative Procedure, VPAP-2103N, "Offsite Dose Calculation Manual".

4. Virginia Electric and Power Company, North Anna Technical Procedure, HP-3051.010, "Radiological Environmental Monitoring Program".

5. Title 10 Code of Federal Regulation, Part 50 (10CFR50), "Domestic Licensing of Production and Utilization Facilities".

6. 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.

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

8. USNRC Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Rev. 1, November 1979.

9. NUREG 0472, "Radiological Effluent Technical Specifications for PWRs", Rev. 3, March 1982.

10. "Technical Specifications for North Anna Independent Spent Fuel Storage Installation (ISFSI)".

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

12. 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

North Anna Power Station
North Anna County, Virginia

January 1 to December 31, 2002

Direction	Distance *(miles)*					
	Nearest Site Boundary	Nearest Resident	Nearest Garden (> 50 m^2)	Nearest Meat Animal	Nearest Milch Cow *	Nearest Milch Goat *
N	0.9	1.5	1.8	2.2		
NNE	0.9	0.9	1.6	1.5		
NE	0.8	0.9	0.9	1.4		
ENE	0.8	2.1	2.1	2.5		
E	0.8	1.3	1.3	3.5		
ESE	0.9	1.7	3.5	*None*		
SE	0.9	1.4	1.4	1.4		
SSE	0.9	1.0	1.3	2.8		
S	0.9	1.1	1.2	*None*		
SSW	1.0	1.2	1.6	2.0		
SW	1.1	3.1	*None*	*None*		
WSW	1.1	1.7	2.0	1.7		
W	1.1	1.5	1.9	None		
WNW	1.0	1.1	2.8	4.1		
NW	1.0	1.0	1.4	*None*		
NNW	0.9	1.0	2.2	2.0		

* No milch cow or milch goat within 5.0 miles of North Anna Power Station

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2001 to 2002 Land Use Census Changes

Nearest	Direction	2001 Distance	2002 Distance
Site Boundary	*No Changes*		
Resident	W	1.5 mi	1.5 mi **
	WNW	1.1 mi	1.1 mi **
Garden	SW	3.1 mi	None
	W	5.0 mi	1.9 mi
	WNW	None	2.8 mi
	NW	1.1 mi	1.4 mi
	NNW	1.2 mi	2.2 mi
Meat Animal	W	4.4 mi	None
Milch Cow	*No Changes*		
Milch Goat	*No Changes*		

** Nearest Resident moved less than 0.01 mile closer due to new construction but did not significantly change reported distance

APPENDIX B: DOMINION NUCLEAR CONNECTICUT QA 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 tests 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 it's own quality control samples. In total, at least five percent of the contractor's sample analyses include quality control samples.

2. Contractor lab's interlaboratary comparison program with an independent third party, Analytics, Inc. Results of the Analytics intercomparison are contained in Appendix C. Primary contractor participation in an interlaboratory comparison program is required by station Technical Specifications. The Analytics comparison satisfies this requirement.

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), 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 Sr-89 or Sr-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 2. Of 97 analysis results on QA samples, 77 passed criteria, 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.

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

FOOTNOTES:

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 covers the Intercomparison Programs of the Framatome ANP Environmental Laboratory as required by technical specifications. The Teledyne Brown Engineering Intercomparison Program is also included since Teledyne was responsible for sample analysis in the first quarter of 2002. Both laboratories use QA/QC samples provided by Analytics, Inc to monitor the quality of analytical processing associated with the Radiological Environmental Monitoring Program (REMP). The suite of Analytics QA/QC samples are designed to be comparable with the pre-1996 US EPA Interlaboratory Cross-Check Program in terms of sample number, matrices, and nuclides. It was modified to more closely match the media mix presently being processed by Framatome and includes:

- milk for gamma (10 nuclides) and low-level (LL) Iodine-131 analyses once per quarter,
- milk for Sr-89 and Sr-90 analyses during the 1st and 3rd quarters,
- water for gamma (9 nuclides) and low-level (LL) Iodine-131 analyses during the 1st and 3rd quarters,
- water tritium analysis during the 2nd and 4th quarters,
- air filter for gamma (9 nuclides) analyses during the 2nd quarter,
- air filter for gross beta analysis during the 1st and 3rd quarters, and
- charcoal air filter for Iodine-131 analyses during 1st quarter.

In addition to the Analytics Intercomparison Program, Framatome also participates in other intercomparison programs that include radionuclides and media similar to those required by the station's REMP program. Framatome Lab's Interlaboratory Comparison Program (ICP) for environmental sample analyses consists of QA 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).
4.

Framatome Lab participates in these programs to the fullest extent possible for all radioactive isotopes prepared and at the maximum frequency of availability. All samples required by the ODCM were included in the ICP for the year 2002. Results are presented on tables and trending graphs on the following pages. Trending graphs are provided when there were two or more data points to plot.

RESULTS

Intercomparison program results are evaluated using FRAMATOME's internal bias

acceptance criterion. The criterion is defined as within 25% of the known strontium value for samples containing both Sr-89 and Sr-90 and within 15% of the known value for other radionuclides, or within two sigma of the known value. Any sample analysis result that does not pass the criteria is investigated by FRAMATOME.

All samples required by the ODCM for North Anna Power Station were included in the ICP for the year 2002. Of the 151 Framatome 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.

ICP results provided by Teledyne Brown Engineering [TBE] are included in pages 110 through 113 and described the results for the first six months of 2002. TBE was used for all environmental samples for the first quarter of 2002 and for precipitation analysis through the second quarter. The balance of the second quarter samples and all third and fourth quarter analyses were conducted by FRAMATOME. A total of 95 ICP analysis results were obtained by TBE with 94 passing the criteria yielding a 98.9% success rate.

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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.

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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
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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

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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.

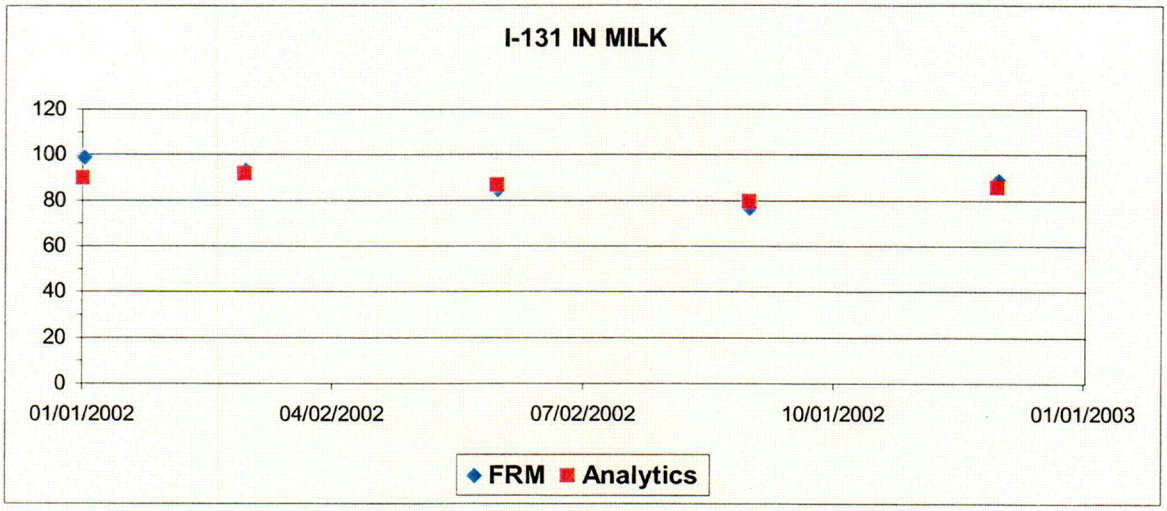
(2) A review of the sample documentation, Proficiency Test participant data and instrument calibration data was performed. No problems were noted with any sample or calibration documentation.

(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.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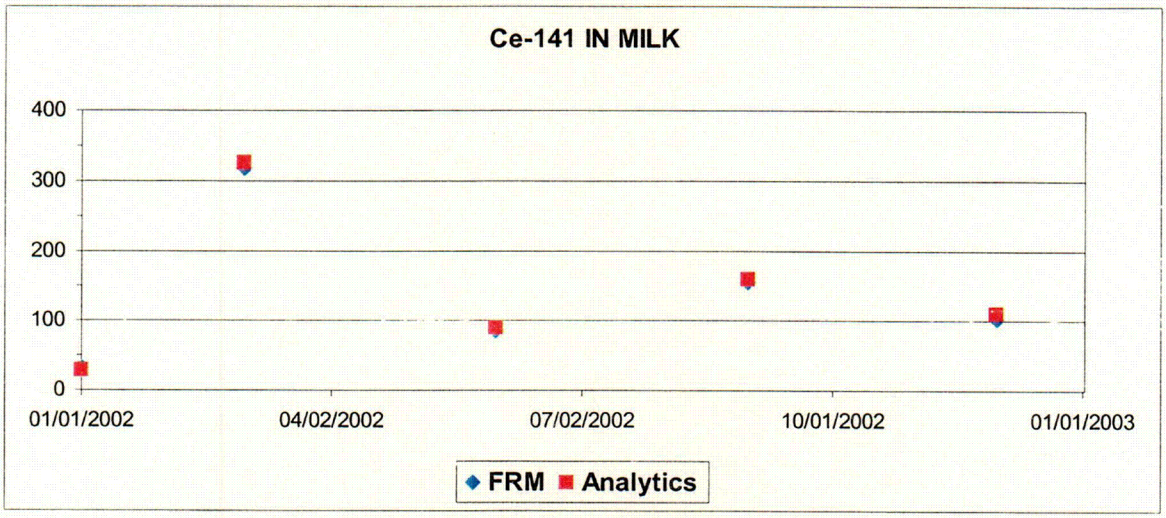
Analytics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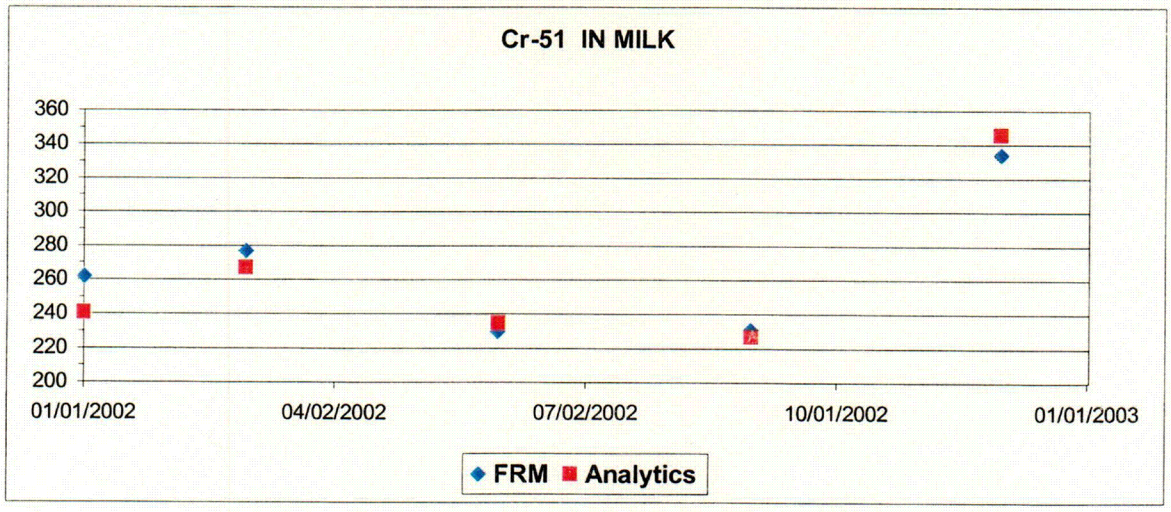
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01/01/2003
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Analytics

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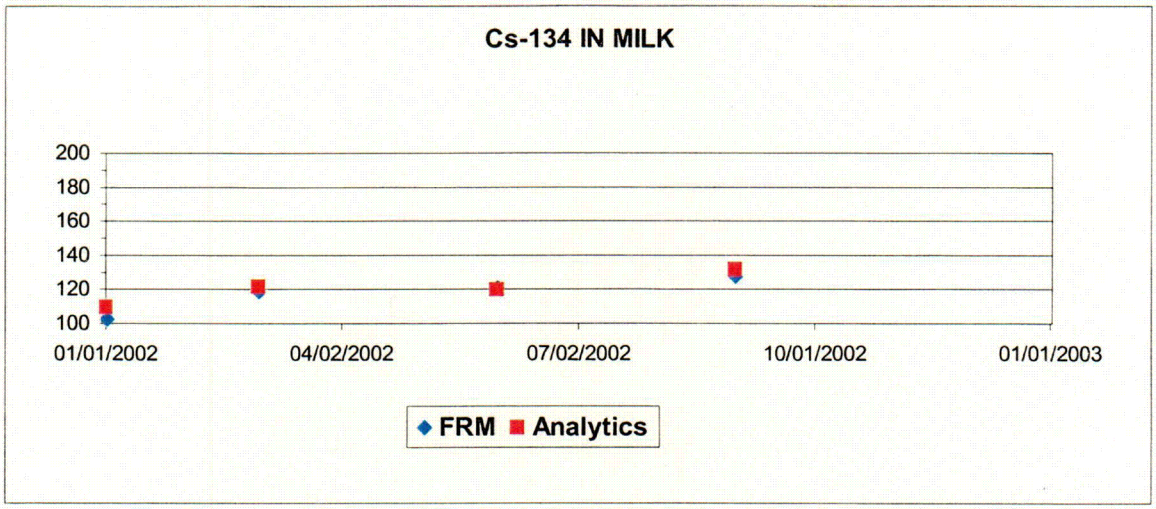
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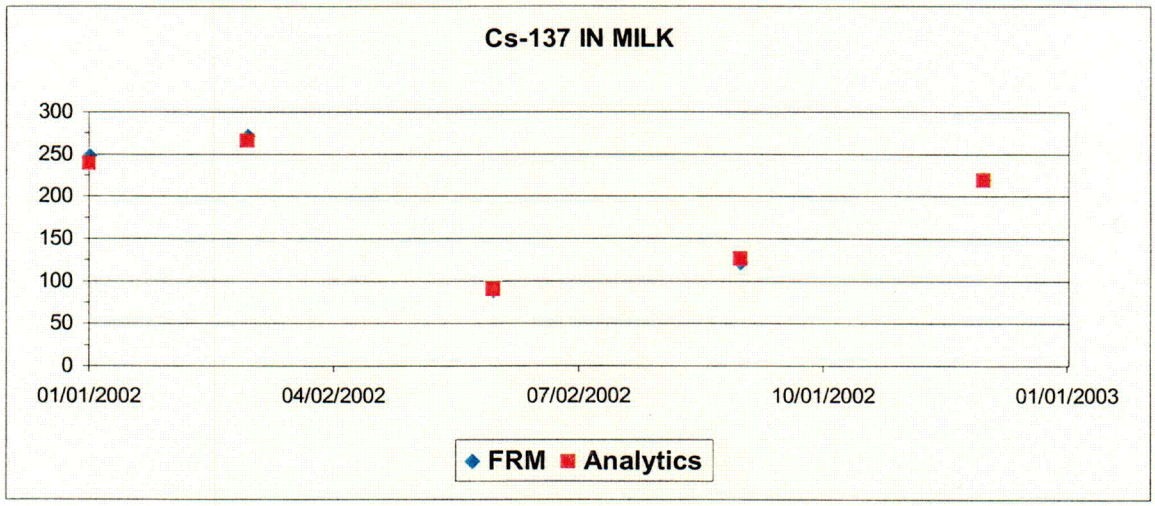
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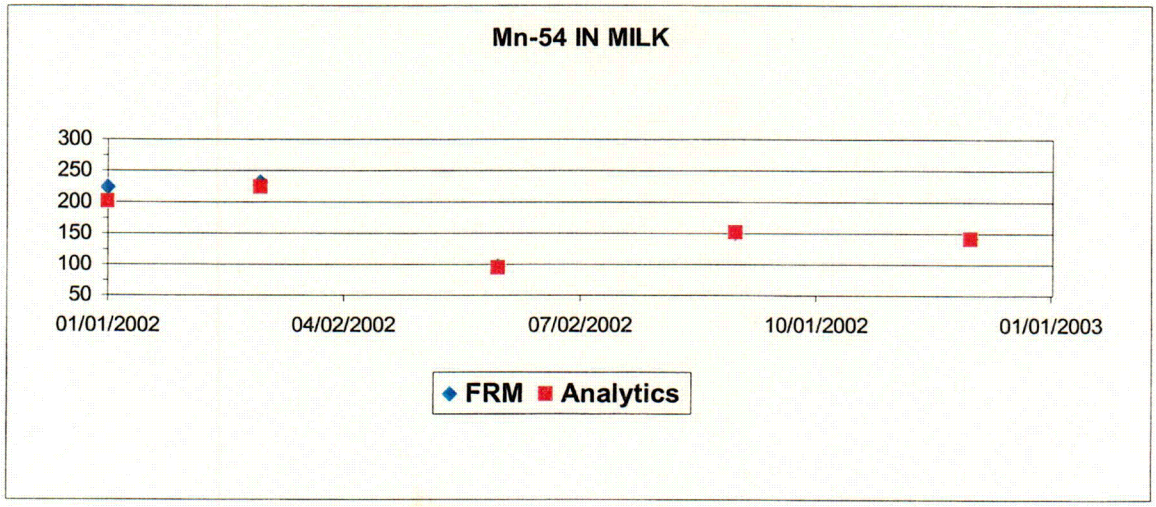
Analytics


Mn-54 IN MILK
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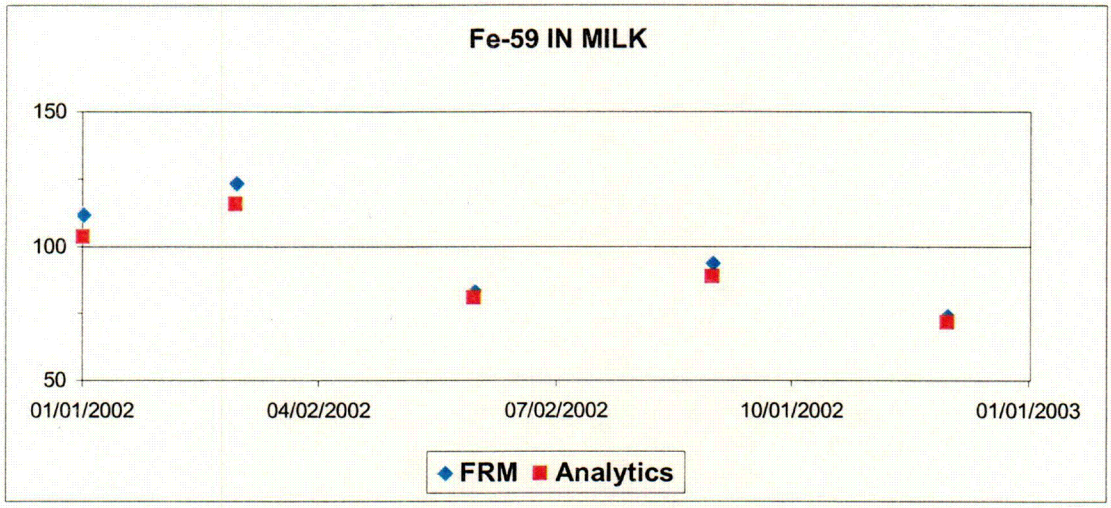
Analytics

C12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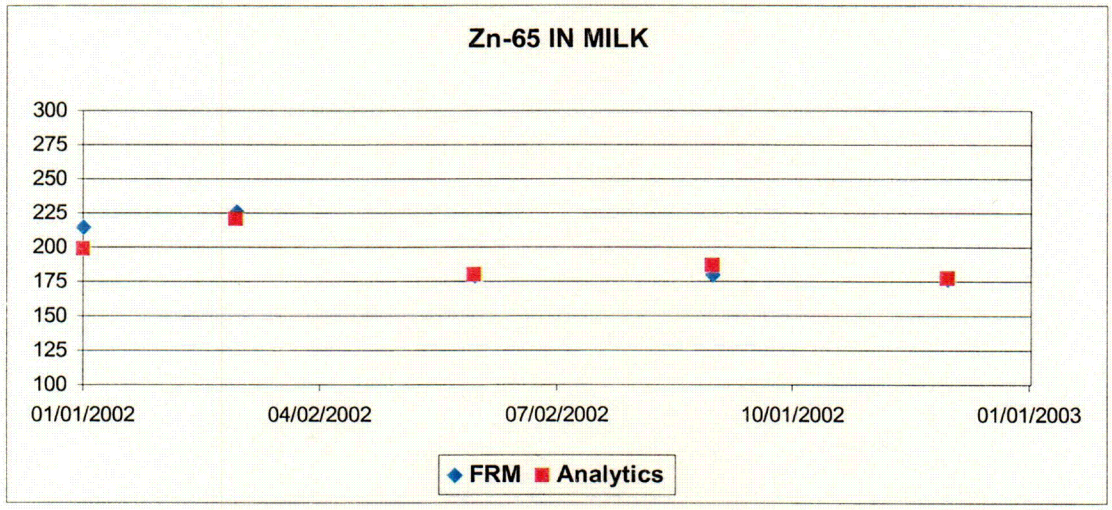
Analytics


Zn-65 IN MILK
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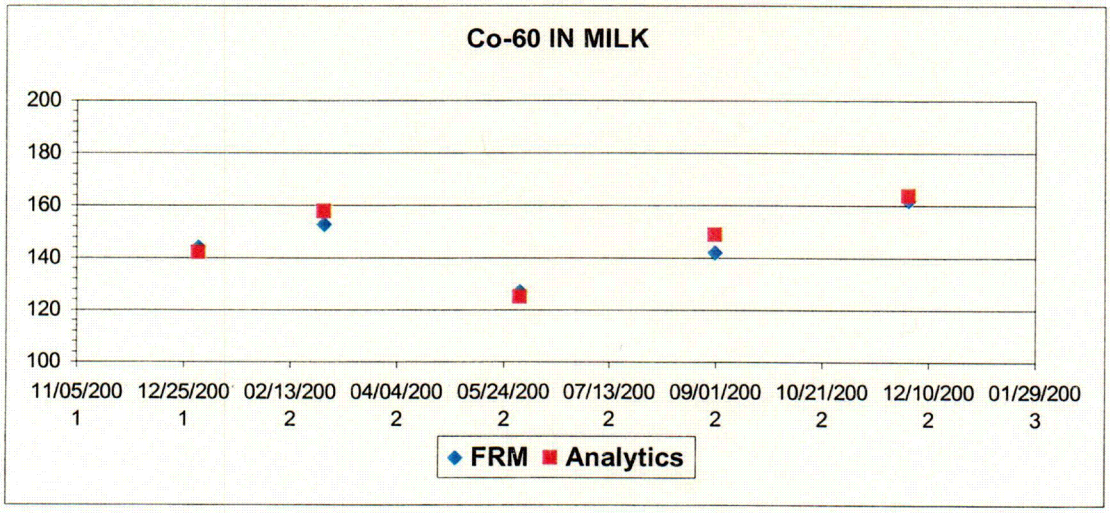
01/01/2003
FRM
Analytics


Co-60 IN MILK
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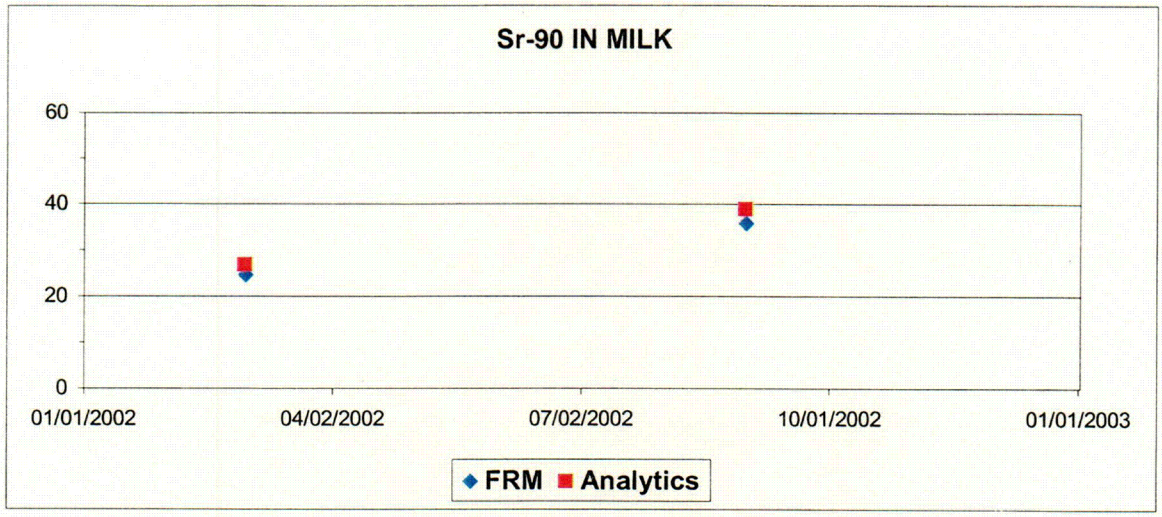
Analytics

C13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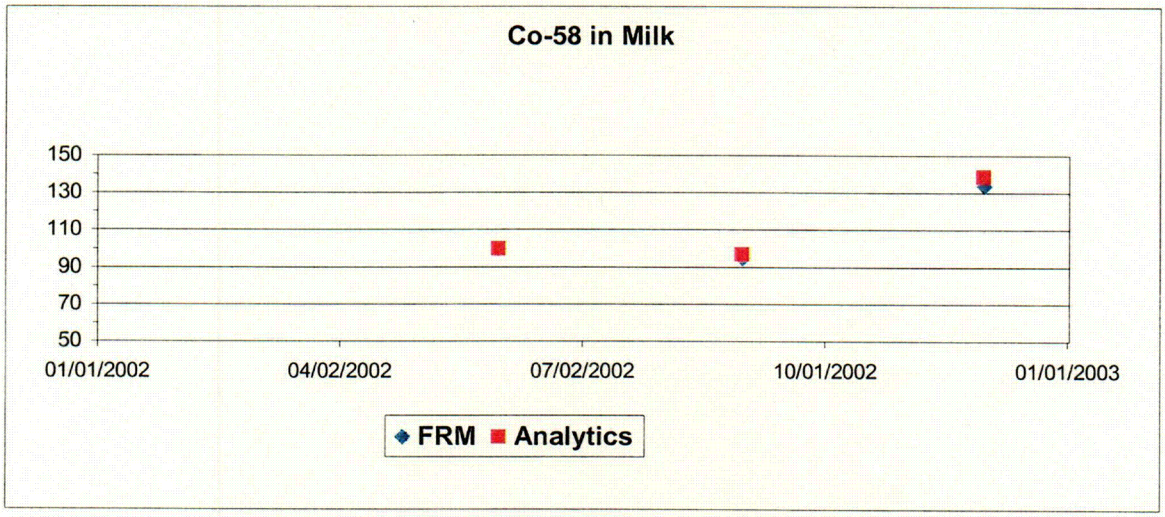
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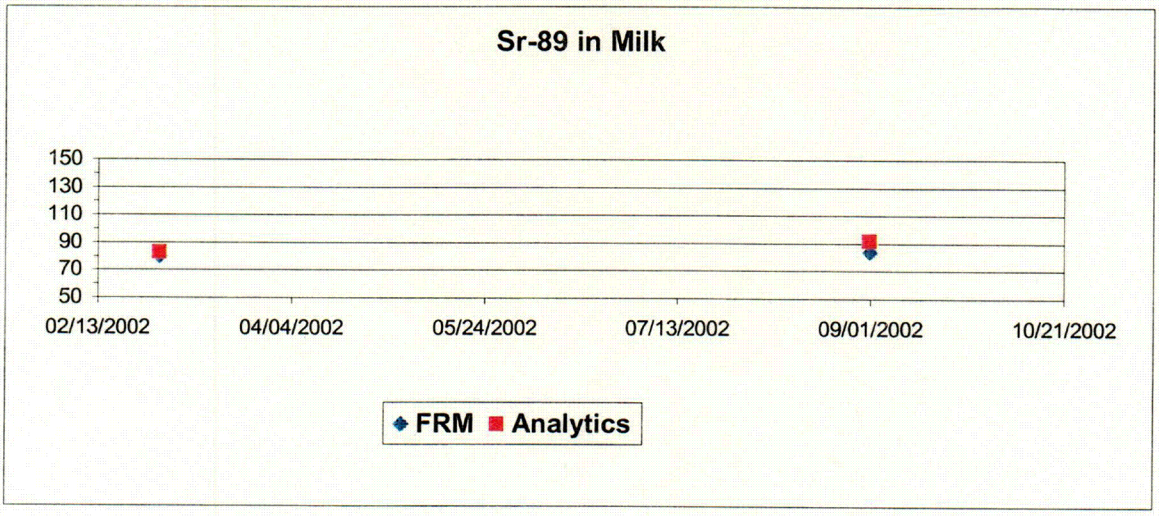
01/01/2003
FRM
Analytics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FRM
Analytics

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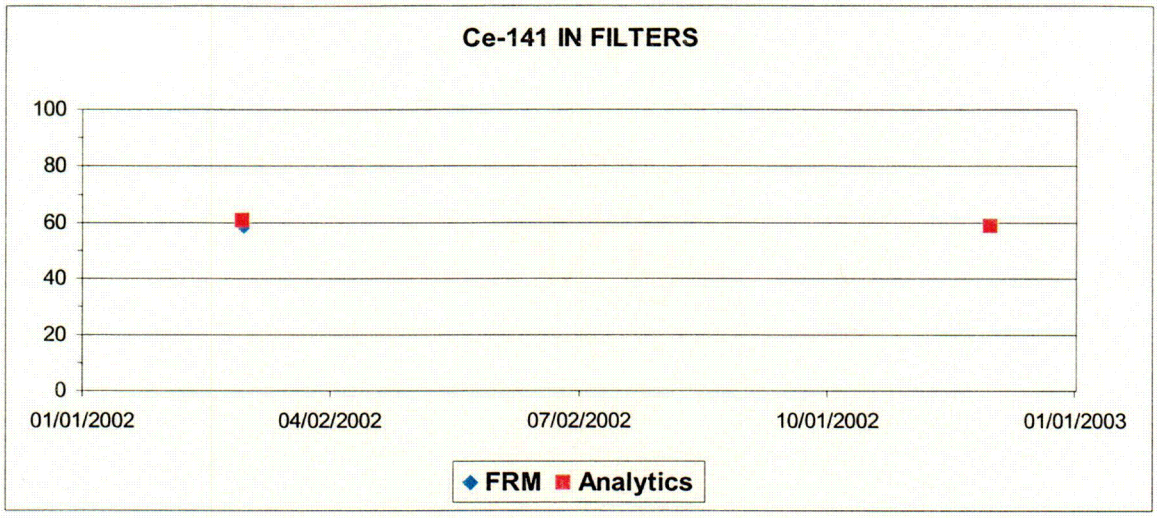
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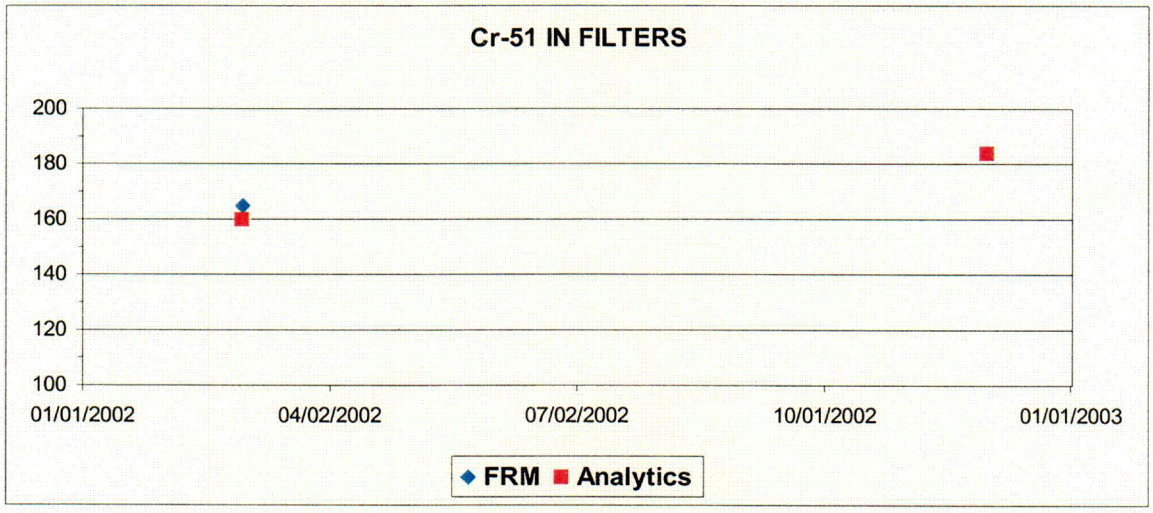
01/01/2003
FRM
Analytics


Cr-51 IN FILTERS
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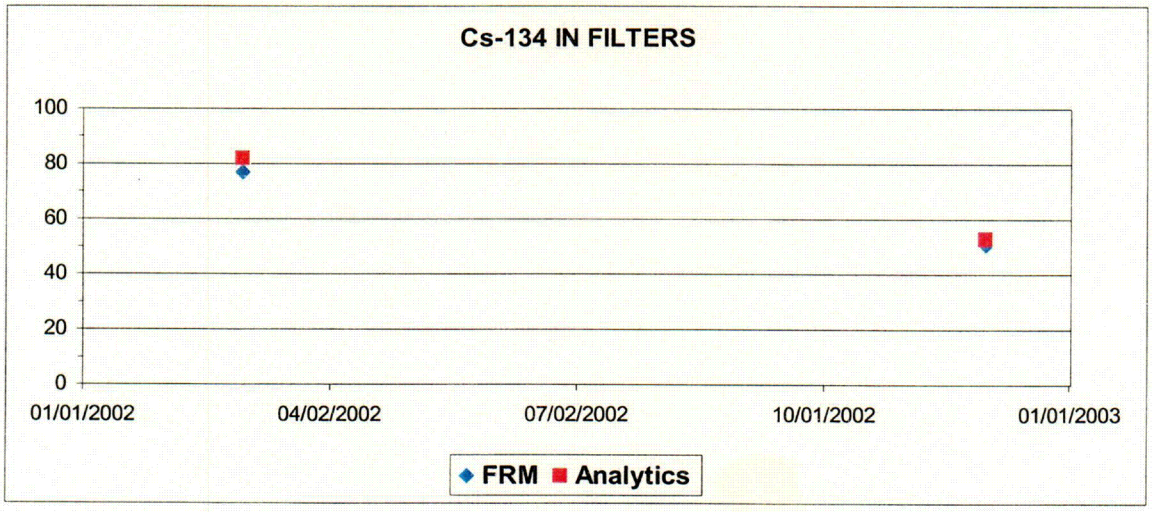
Cs-134 IN FILTERS
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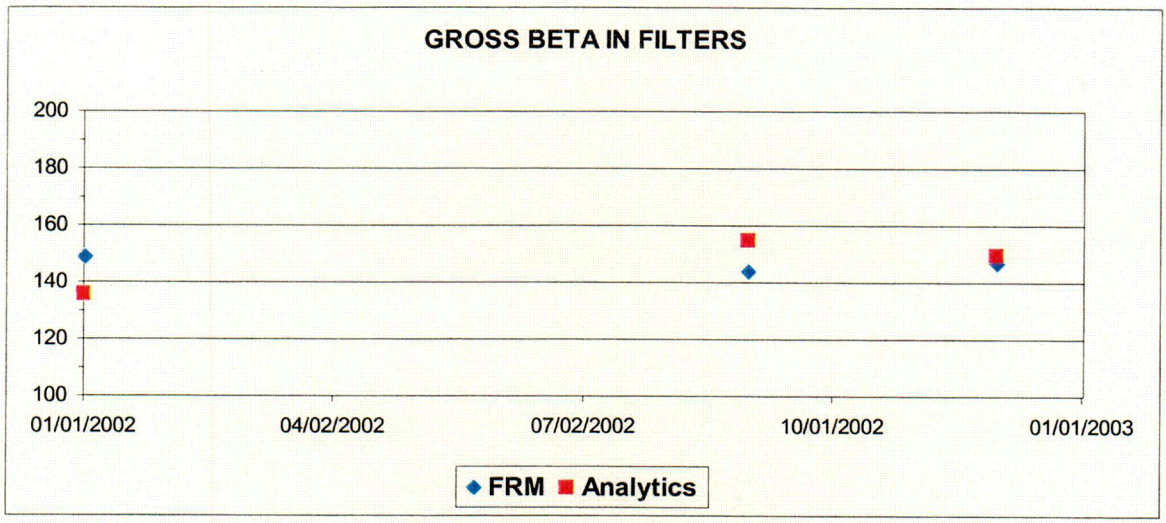
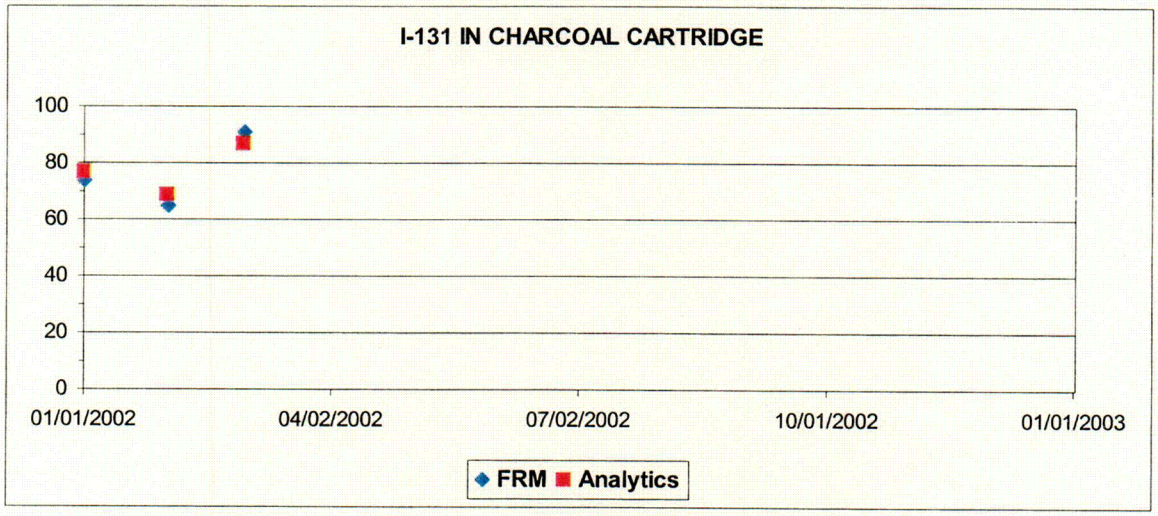
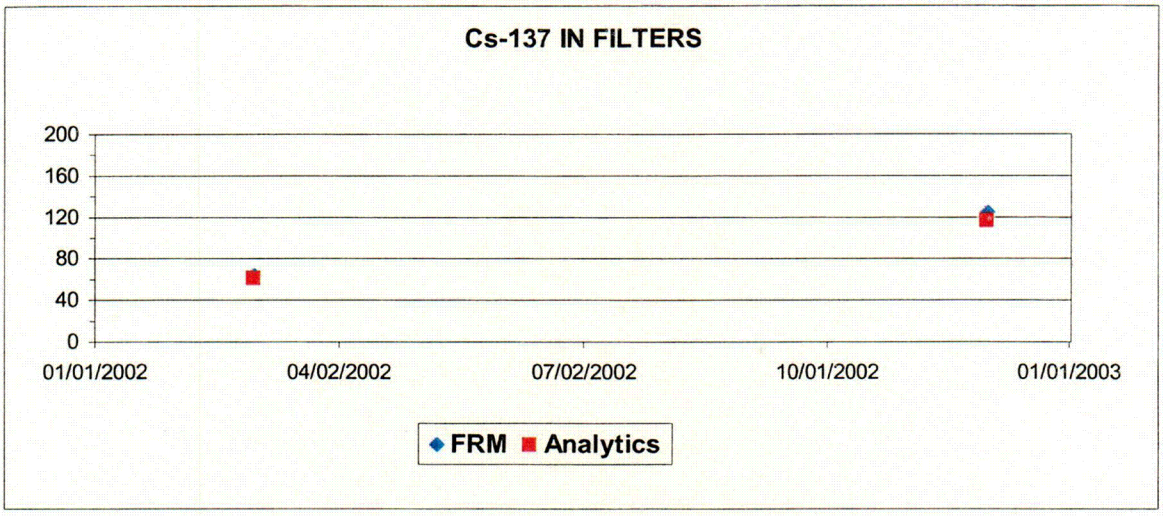
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

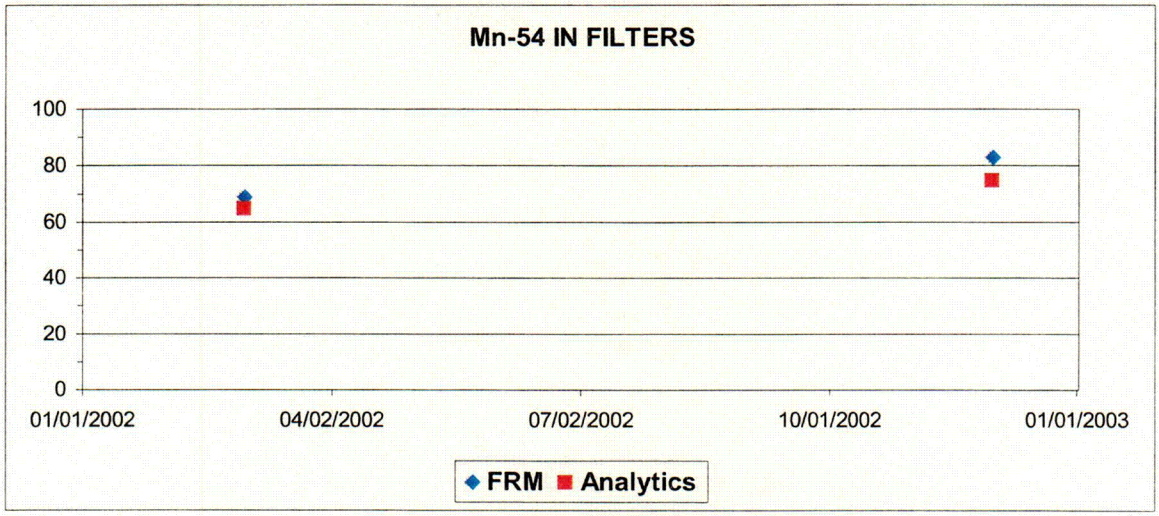
C15

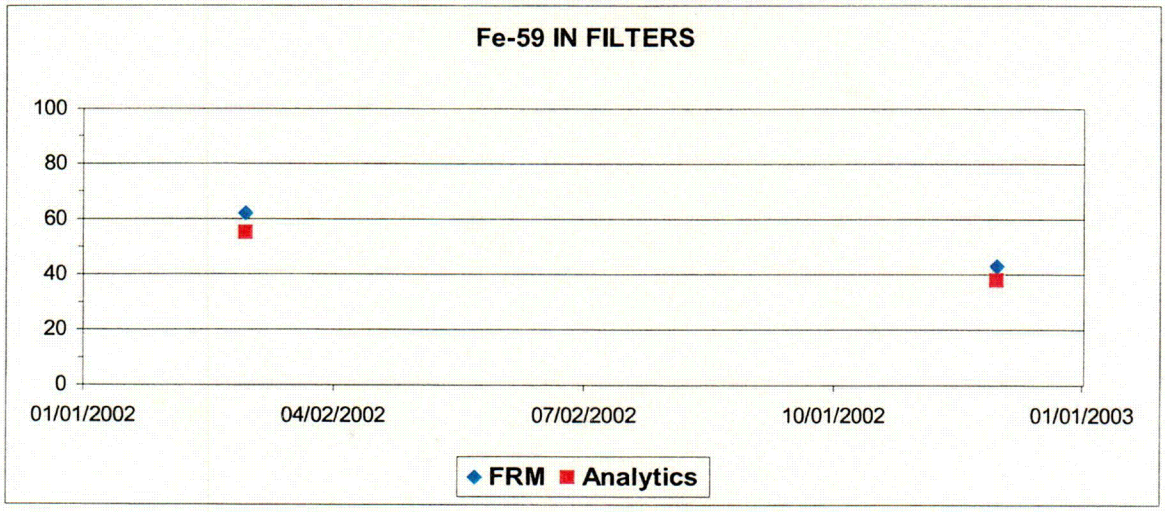

GROSS BETA IN FILTERS
200
180
160
140
120
100
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics


I-131 IN CHARCOAL CARTRIDGE
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

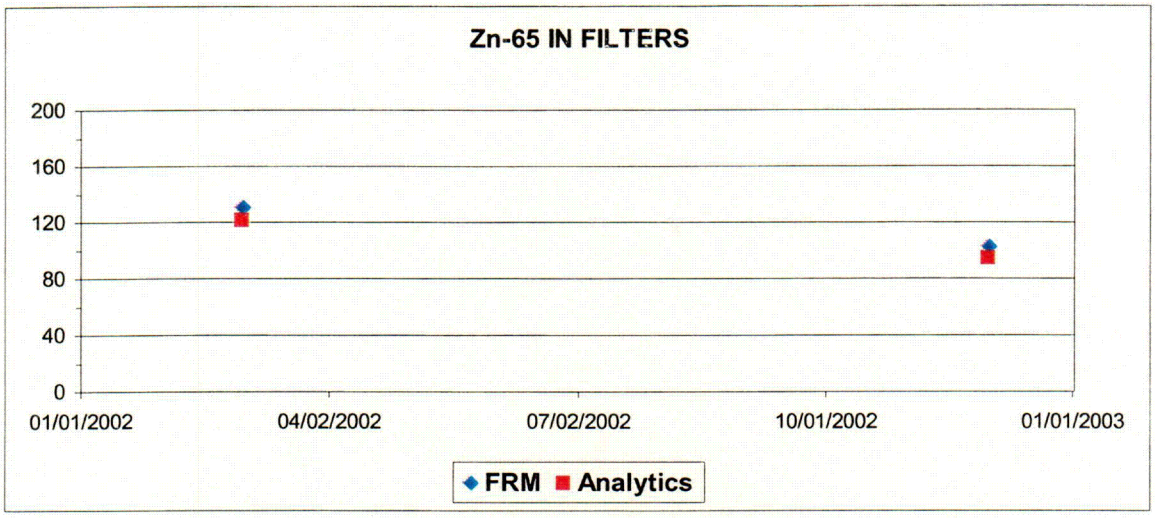
C16

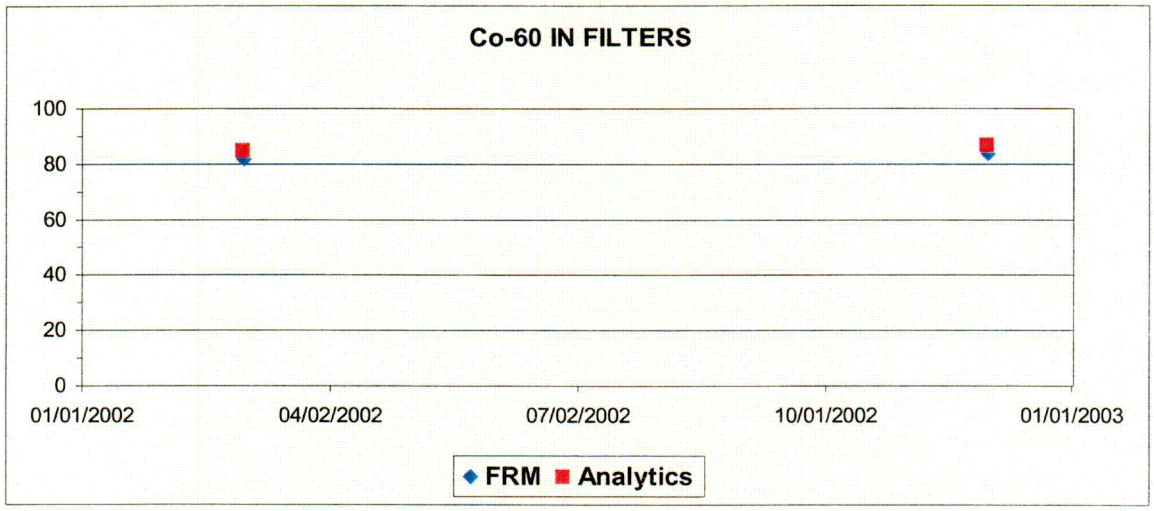

Cs-137 IN FILTERS
200
160
120
80
40
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

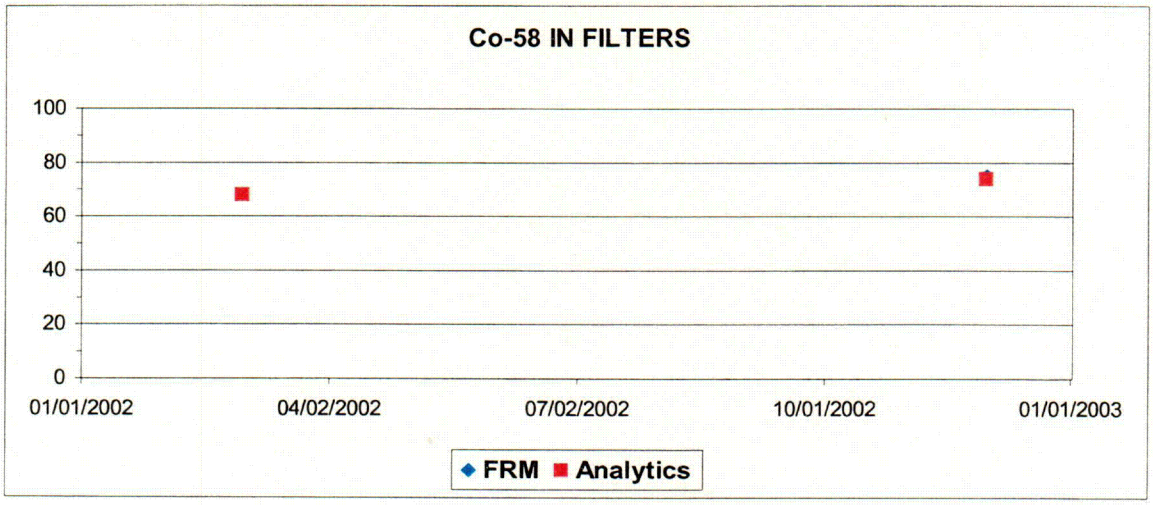

Mn-54 IN FILTERS
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics


Fe-59 IN FILTERS
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

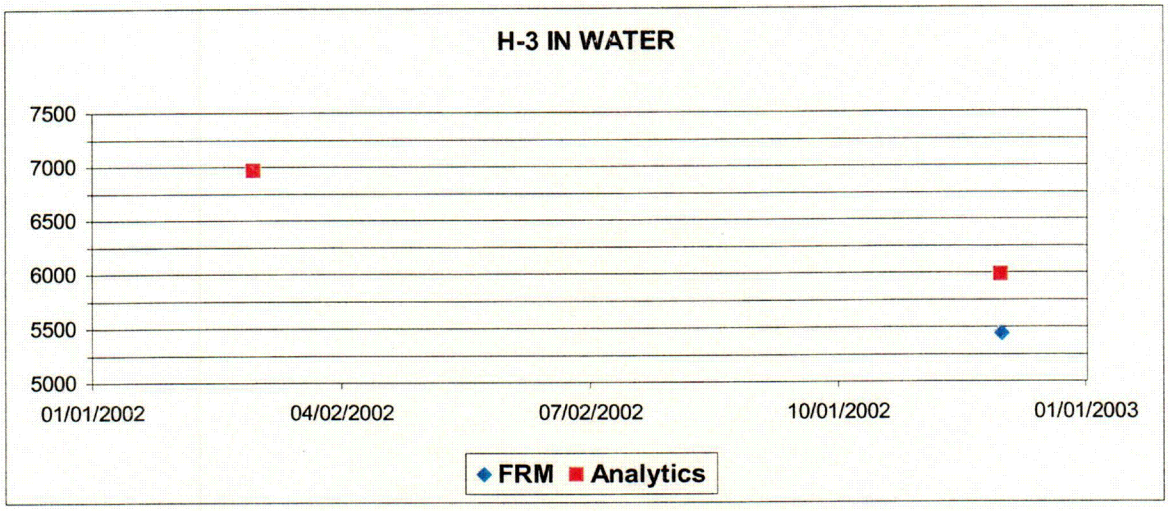
C17

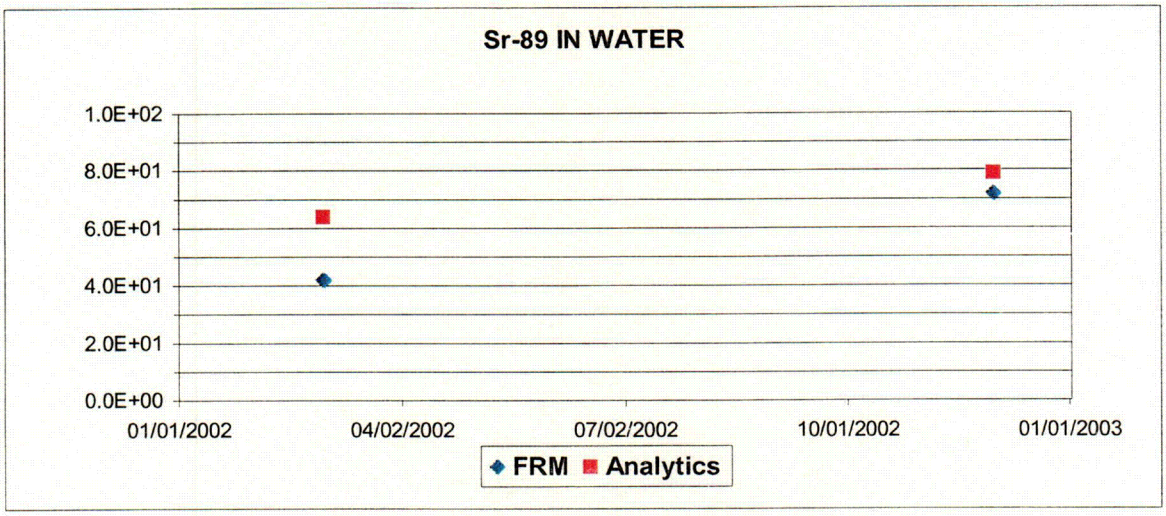

Zn-65 IN FILTERS
200
160
120
80
40
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

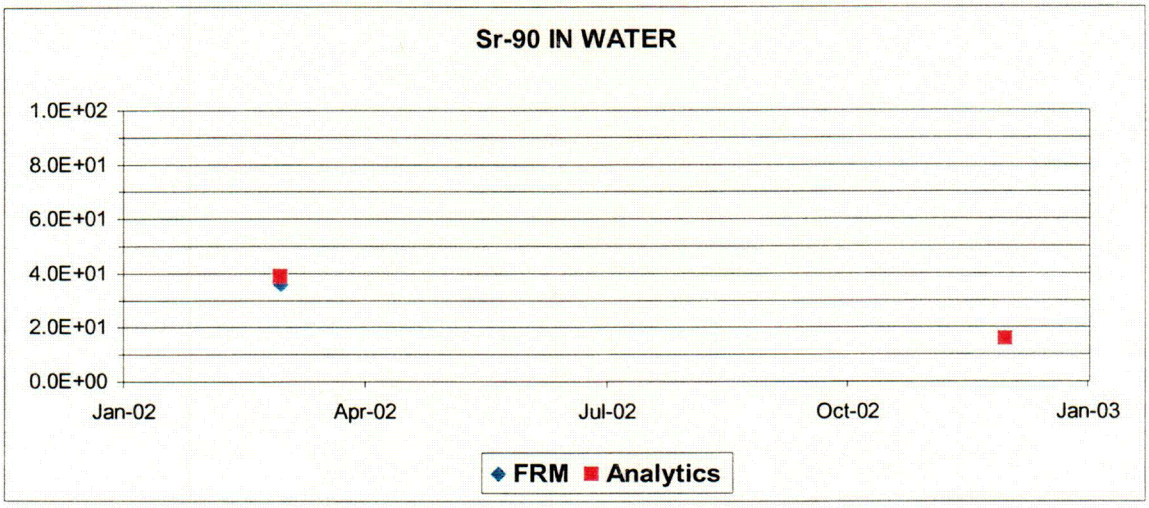

Co-60 IN FILTERS
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics


Co-58 IN FILTERS
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

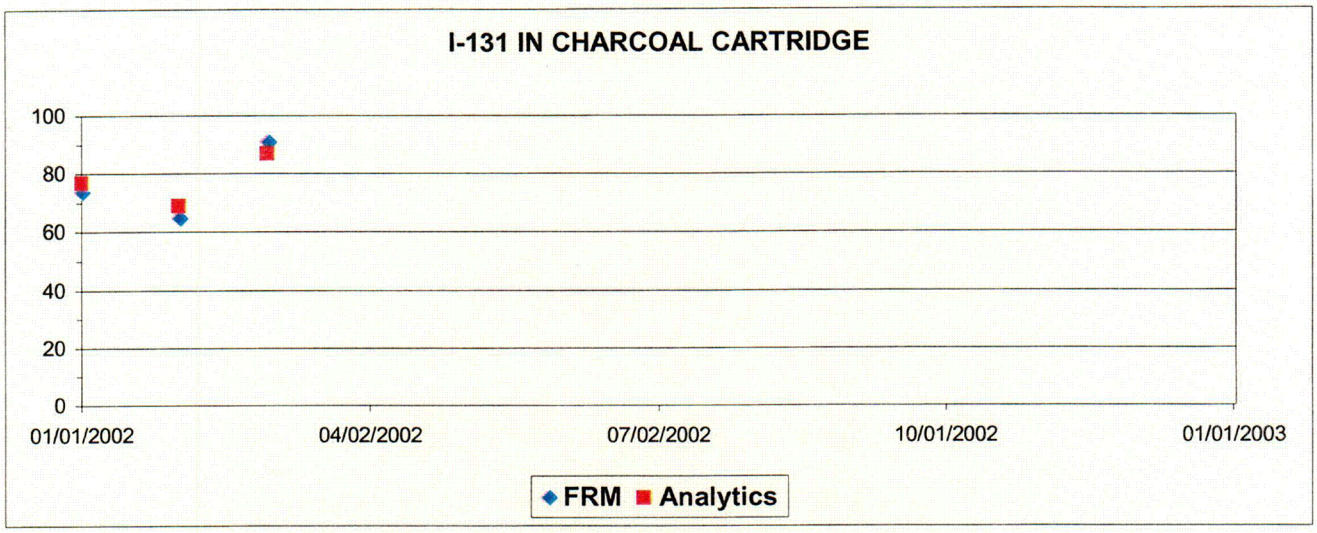
C18


H-3 IN WATER
7500
7000
6500
6000
5500
5000
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

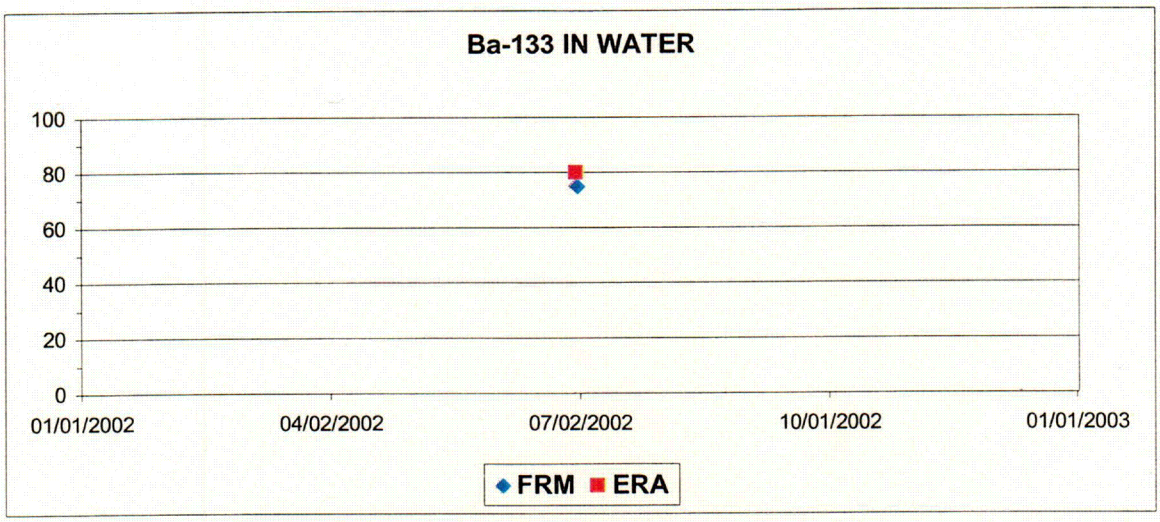

Sr-89 IN WATER
1.0E+02
8.0E+01
6.0E+01
4.0E+01
2.0E+01
0.0E+00
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

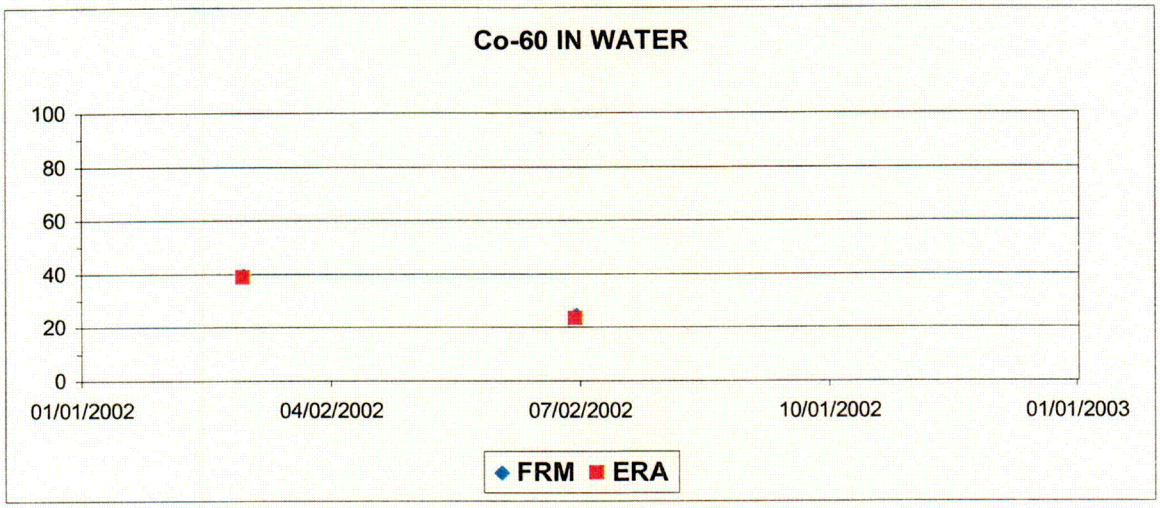

Sr-90 IN WATER
1.0E+02
8.0E+01
6.0E+01
4.0E+01
2.0E+01
0.0E+00
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
FRM
Analytics

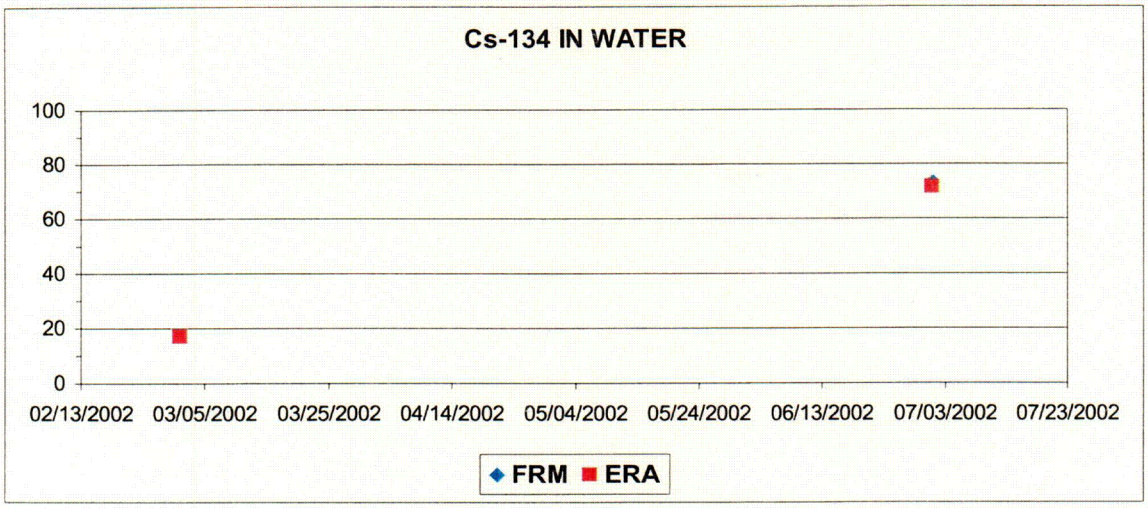
C19


I-131 IN CHARCOAL CARTRIDGE
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
Analytics

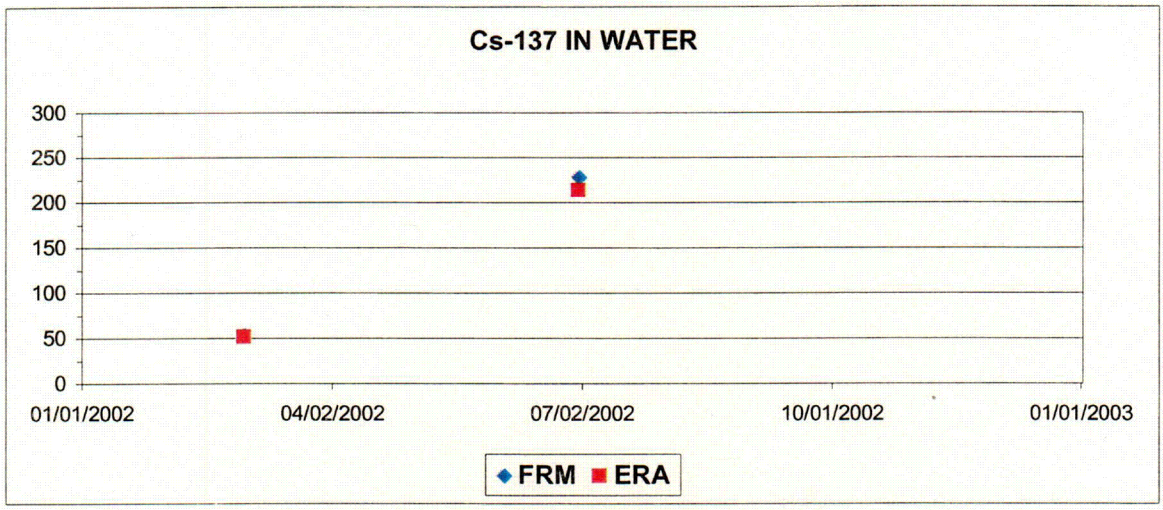
C20

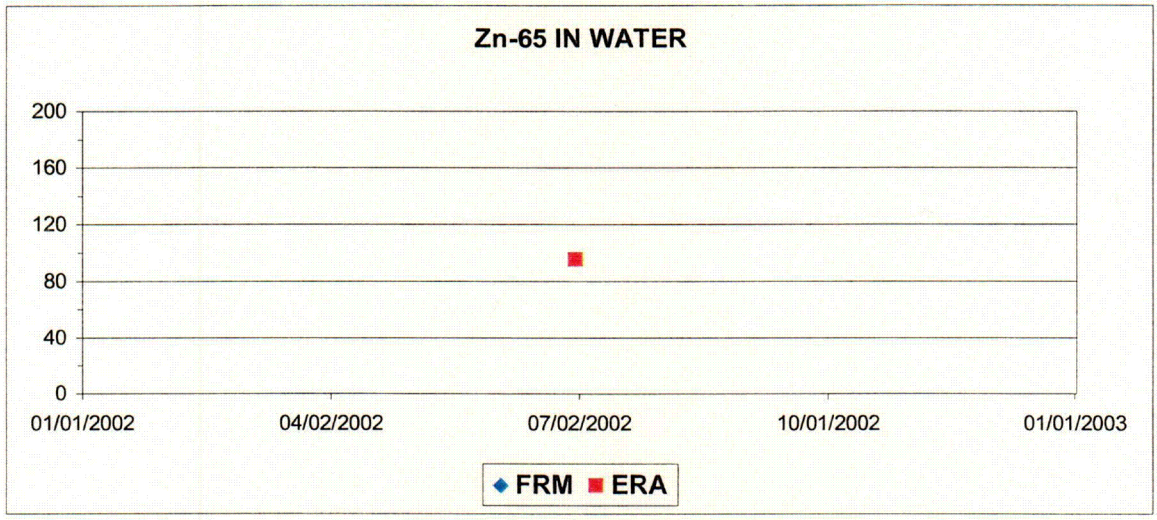

Ba-133 IN WATER
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
ERA

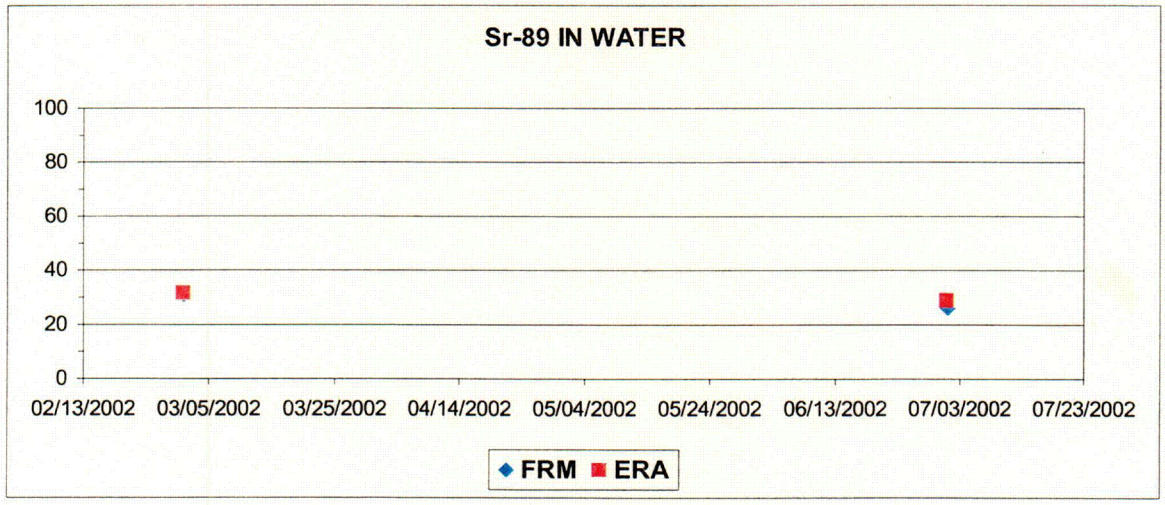

Co-60 IN WATER
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
ERA


Cs-134 IN WATER
100
80
60
40
20
0
02/13/2002
03/05/2002
03/25/2002
04/14/2002
05/04/2002
05/24/2002
06/13/2002
07/03/2002
07/23/2002
FRM
ERA

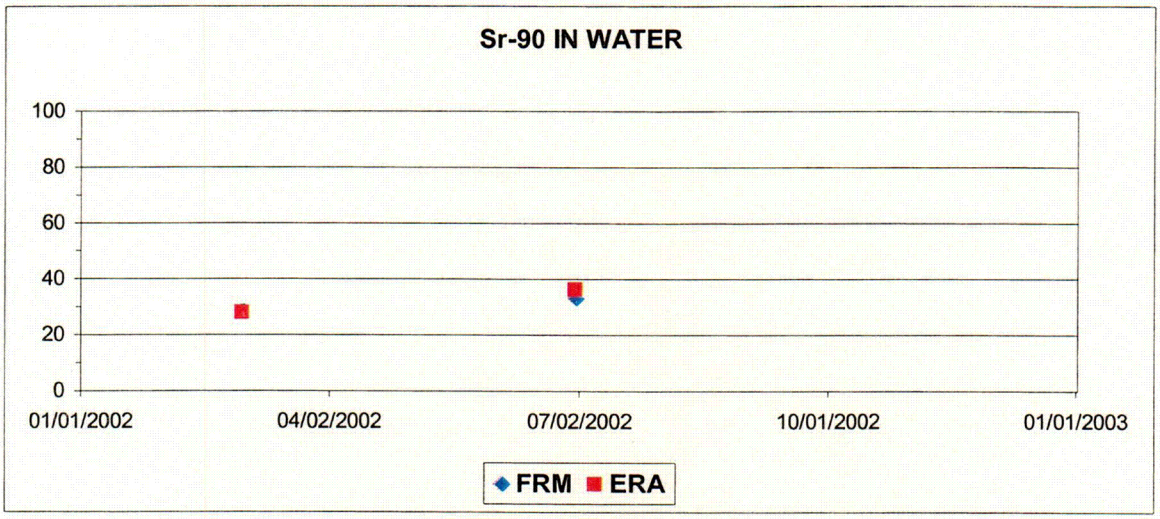
C21

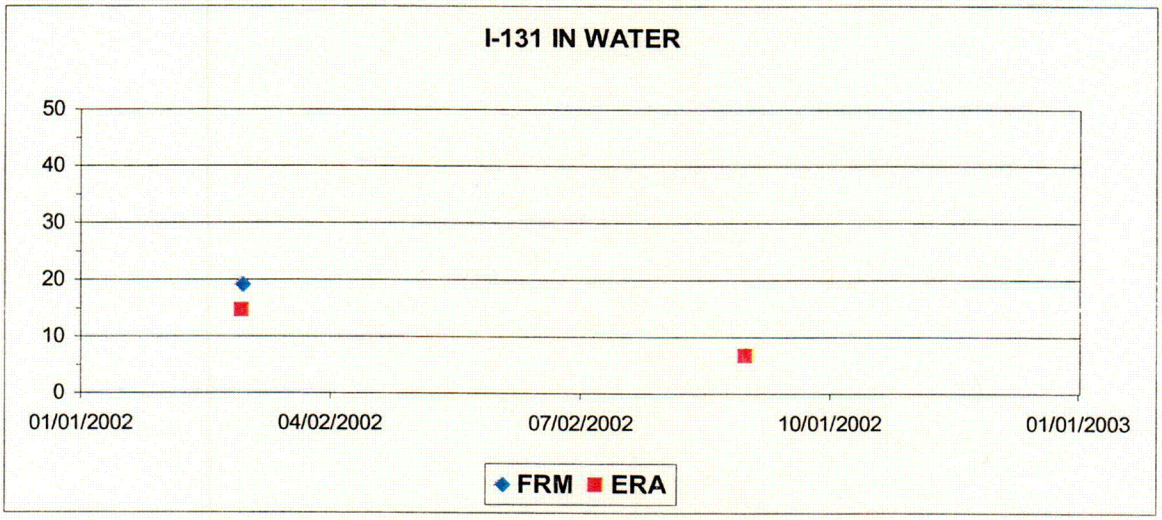

Cs-137 IN WATER
300
250
200
150
100
50
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
ERA

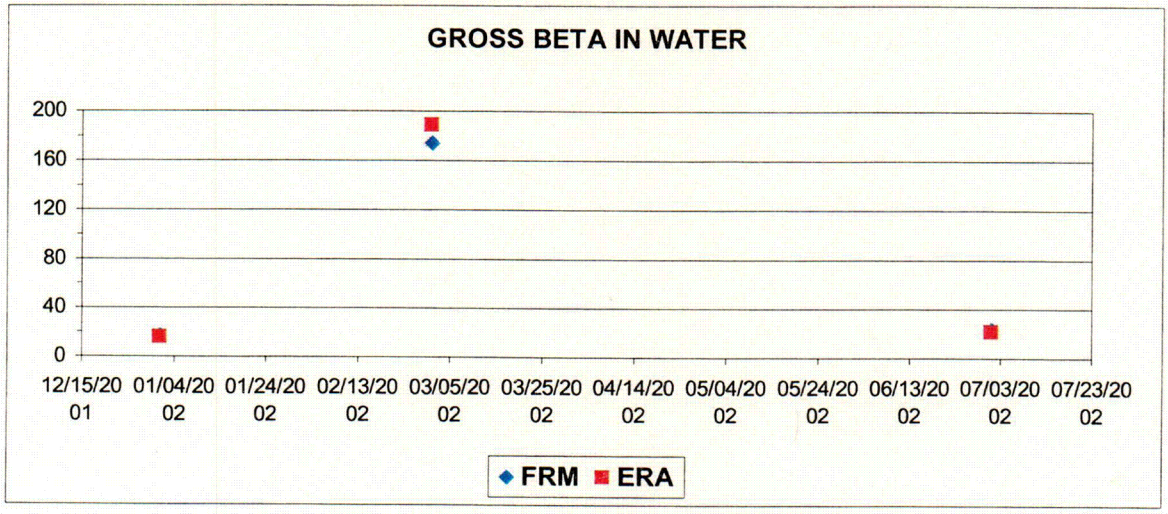

Zn-65 IN WATER
200
160
120
80
40
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
ERA


Sr-89 IN WATER
100
80
60
40
20
0
02/13/2002
03/05/2002
03/25/2002
04/14/2002
05/04/2002
05/24/2002
06/13/2002
07/03/2002
07/23/2002
FRM
ERA

C22


Sr-90 IN WATER
100
80
60
40
20
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
ERA


I-131 IN WATER
50
40
30
20
10
0
01/01/2002
04/02/2002
07/02/2002
10/01/2002
01/01/2003
FRM
ERA


GROSS BETA IN WATER
200
160
120
80
40
0
12/15/2001
01/04/2002
01/24/2002
02/13/2002
03/05/2002
03/25/2002
04/14/2002
05/04/2002
05/24/2002
06/13/2002
07/03/2002
07/23/2002
FRM
ERA

CZ3

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide (1)	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
February, 2002	A15211-55	Liquid	Sr-89	uCi/mL	1.60E-03	2.03E-03	0.79	A
			Sr-90		2.90E-04	3.64E-04	0.80	A
	A15213-55	Liquid	H-3	uCi/mL	1.08E-03	1.19E-03	0.90	A
March, 2002	E3064-396	Milk	Sr-89	pCi/L	80	83	0.96	A
			Sr-90		28	27	1.04	A
	* E3065-396	Milk	I-131	pCi/L	86	92	0.93	A
			Ce-141		300	326	0.92	A
			Cr-51		256	267	0.96	A
			Cs-134		94	122	0.77	W
			Cs-137		252	266	0.95	A
			Mn-54		217	224	0.97	A
			Fe-59		108	116	0.93	A
			Zn-65		218	221	0.99	A
			Co-60		147	158	0.93	A
	E3067-396	AP	I-131	pCi	202	199	1.02	A
			Cr-51		166	163	1.02	A
			Cs-134		77	74	1.04	A
			Cs-137		162	162	1.00	A
			Mn-54		135	136	0.99	A
			Fe-59		70	70	1.00	A
			Zn-65		128	134	0.96	A
			Co-60		95	96	0.99	A
	E3066-396	Charcoal	I-131	pCi	66	77	0.86	A
May, 2002	A15521-55	Liquid	Gr-Alpha	uCi/mL	8.48E-04	7.15E-04	1.19	A
	A15520-55	Liquid	Sr-89	uCi/mL	2.63E-03	3.25E-03	0.81	A
			Sr-90		2.51E-04	2.70E-04	0.93	A
	A15522-55	Liquid	Tritium	uCi/mL	1.35E-03	1.46E-03	0.92	A

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide (1)	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June, 2002	E3220-396	Milk	I-131	pCi/L	86	87	0.99	A
			Ce-141		84	90	0.93	A
			Cr-51		197	235	0.84	A
			Cs-134		110	120	0.92	A
			Cs-137		96	91	1.05	A
			Co-58		95	100	0.95	A
			Mn-54		106	95	1.12	A
			Fe-59		95	81	1.17	A
			Zn-65		186	180	1.03	A
			Co-60		132	125	1.06	A
June, 2002	E3222-396	AP	Ce-141	pCi	85	75	1.13	A
			Cr-51		199	196	1.02	A
			Cs-134		96	100	0.96	A
			Cs-137		92	76	1.21	W
			Co-58		98	83	1.18	A
			Mn-54		87	79	1.10	A
			Fe-59		85	67	1.27	W
			Zn-65		182	150	1.21	W
			Co-60		121	104	1.16	A
August, 2002	A16018-55	Liquid	Sr-89	uCi/mL	4.12E-03	4.99E-03	0.83	A
			Sr-90		2.43E-04	2.64E-04	0.92	A
	A16020-55	Liquid	Tritium	uCi/mL	1.93E-03	2.00E-03	0.97	A
September, 2002	A15989-148	Liquid	Sr-89	uCi/mL	4.02E-03	4.99E-03	0.81	A
			Sr-90		2.49E-04	2.64E-04	0.94	A
	E3324-396	Milk	Sr-89	pCi/L	106	92	1.15	A
			Sr-90		39	39	1.00	A
September, 2002	E3325-396	Milk	I-131	pCi/L	105	80	1.31	A
			Ce-141		168	160	1.05	A
			Cr-51		210.5	227	0.93	A
			Cs-134		127	132	0.96	A
			Cs-137		136	127	1.07	A
			Co-58		93	97	0.96	A
			Mn-54		165	152	1.09	A
			Fe-59		90	89	1.01	A
			Zn-65		196	187	1.05	A
			Co-60		147	149	0.99	A

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide (1)	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
September, 2002	E-3327-396	Filter	Ce-141	pCi	115	110	1.05	A
			Cr-51		163.6	156	1.05	A
			Cs-134		79	90	0.88	A
			Cs-137		95	87	1.09	A
			Co-58		71	67	1.06	A
			Mn-54		118	104	1.13	A
			Fe-59		76	61	1.25	A
			Zn-65		155	130	1.19	A
			Co-60		108	102	1.06	A
	E3326-396	Charcoal	I-131	pCi	73	85	0.86	A
December, 2002	E3520-396	Milk	Sr-89	pCi/L	88	68	1.29	W
			Sr-90		40	38	1.05	A
	E3521-396	Milk	I-131	pCi/L	97	86	1.13	A
			Ce-141		136	111	1.23	W
			Cr-51		347	346	1.00	A
			Cs-134		97	99	0.98	A
			Cs-137		229	220	1.04	A
			Co-58		143	139	1.03	A
			Mn-54		162	142	1.14	A
			Fe-59		80	72	1.11	A
			Zn-65		217	178	1.22	W
			Co-60		172	164	1.05	A
December, 2002	E3523-396	Filter	Ce-141	pCi	108	128	0.84	A
			Cr-51		370	398	0.93	A
			Cs-134		79	114	0.69	U (e)
			Cs-137		226	253	0.89	A
			Co-58		141	160	0.88	A
			Mn-54		152	163	0.93	A
			Fe-59		89	83	1.07	A
			Zn-65		196	206	0.95	A
			Co-60		170	189	0.90	A
	E3522-396	Charcoal	I-131	pCi	84	96	0.88	A

(1) Only analyses performed routinely for the REMP are included on this table.

* Analytics known values were incorrectly calculated. Revised (as shown) evaluation was acceptable.

(a) Teledyne Brown Engineering reported result.

(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) Analytics evaluation: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20. W=Acceptable with warning. Reported result falls within ratio limits of 0.70-0.79 and 1.21-1.30. U=Unacceptable.

(e) Low response attributed to coincidence peak summing.
Reanalysis of sample overnight at 3" above detector yielded acceptable results of 110.9 +/- 8.6