Progress Energy

Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

Ref: ITS 5.7.1.1(b)

May 12, 2005
3F0505-03

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

Subject: Crystal River Unit 3 – 2004 Annual Radiological Environmental Operating Report

Dear Sir:

Florida Power Corporation, doing business as Progress Energy Florida, Inc., hereby submits the 2004 Annual Radiological Environmental Operating Report for Crystal River Unit 3 (CR-3) in accordance with the CR-3 Improved Technical Specifications, Section 5.7.1.1(b) and Section 6.6 of the Offsite Dose Calculation Manual (ODCM). The data provided in the attached report is consistent with the objectives outlined in the ODCM, and includes all radiological environmental samples taken during the report period from January 1, 2004 through December 31, 2004.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

J. A. Franke
Plant General Manager

JAF/ff

Attachment

xc: NRR Project Manager
Regional Administrator, Region II
Senior Resident Inspector

IE25
A009

Progress Energy Florida, Inc.
Crystal River Nuclear Plant
15760 W. Power Line Street
Crystal River, FL 34428

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302 / LICENSE NUMBER DPR-72

ATTACHMENT

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT 2004

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

2004

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INTRODUCTION

This report is submitted as required by Technical Specification 5.7.1.1(b) to the Crystal River Facility Operating License No. DPR-72, and Section 6.6 of the Offsite Dose Calculation Manual.

The following information is required to be included in this report:

- Data Summaries
- Interpretations
- Unachievable LLDs
- An analysis of trends
- An assessment of any observed impact of plant operation on the environment

  NOTE: If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to correct it.

- Summarized and tabulated results of all radiological environmental samples taken during the report period, in the format of Radiological Assessment Branch Technical Position, Revision 1, November, 1979

  NOTE: If some results are not available for inclusion, the report shall note and explain the reason for the missing results. The missing results shall be submitted as soon as possible in a supplementary report.

- A summary description of the Radiological Environmental Monitoring Program
- A map of all sampling locations keyed to a table giving distances and directions from the reactor
- Land-use census results
- Interlaboratory Comparison Program results

I. SUMMARY DESCRIPTION OF THE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

The analytical results of the Crystal River Unit 3 (CR-3) operational Radiological Environmental Monitoring Program (REMP) for 2004 are contained in this report. The operational program began on January 1, 1977 just prior to initial criticality, which was achieved on January 14, 1977.

Sampling of the facility environs is performed by the Florida Department of Health, Bureau of Radiation Control. The State also performs the required analyses, participates in the Interlaboratory Comparison Program, and performs the annual land-use census. Prior to 1990, the program was split between the Department of Health and the University of Florida. The transition to the State performing all of the programs sampling and analysis in 1990 is evident in several of the trend graphs, most notably oysters and carnivorous fish, and is due to the State using less sensitive measurement techniques for several of the pathways which were formerly evaluated by the University of Florida.

Sample station locations are given in Table I-1 and Figures I-2, -3, and -4. Sample frequency and analysis type may be determined from Table I-2. Figure I-1 illustrates the relevant exposure pathways.

Except for air sample gross beta results and direct radiation measurements, most of the analytical results are below the lower limit of detection (LLD) of the sample. Sample LLDs are generally much lower than the required "a priori" LLD. When measurable results are reported, the values are also usually less than the required "a priori" LLD.

The results of the 2004 REMP have been compared to previous years' results. This comparison, in part illustrated by the trend graphs of Section IV, shows no evidence of consistent long-term increasing trends in any of the sample media. However, radioactive material is routinely quantified in sediment samples which are taken in the discharge canal near the liquid release discharge point. In general, these results verify the effectiveness of in-plant measures for controlling radioactive releases.

Trend graphs illustrate the mean measured concentration of a particular radionuclide for the year. When measurable results are not obtained, the highest sample LLD is plotted. LLD and measured values are plotted on the same line to best illustrate any trend. As shown on each graph's key, shaded boxes indicate LLD values, while open boxes indicate measured values.

Statistical summary pages are provided for each medium or pathway. Measured values are reported in terms of a mean and range. In addition, the number of measured values versus samples obtained is reported. For example, the following entry

15 (249/256)
(4 - 35)

in the "All Indicator Locations" column would be interpreted as indicating a mean measured value of 15, with measured values ranging from 4 to 35. (249/256) means that out of 256 samples 249 were measured values.

TABLE I-1

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

SAMPLE STATION LOCATIONS

SAMPLE MEDIA	STATION ID	DIRECTION	APPROX. DISTANCE (Miles)
TLD	C60	N	0.88
	C61	NNE	0.92
	C62	NE	1.17
	C63	ENE	0.87
	C64	E	0.80
	C65	ESE	0.33
	C66	SE	0.36
	C67	SSE	0.33
	C68	S	0.27
	C69	SSW	0.31
	C41	SW	0.43
	C70	WSW	0.74
	C71	WNW	0.58
	C72	NW	0.30
	C73	NNW	0.74
	C27	W	0.41
	C18	N	5.3
	C03	NNE	4.89
	C04	NE	5.95
	C74	ENE	5.13
	C75	E	3.99
	C76	ESE	5.61
	C08	SE	5.66
	C77	SSE	3.39
	C09	S	3.23
	C78	WSW	4.59
	C14G	W	2.46
	C01	NW	4.8
	C79	NNW	4.97
	C47-Control	ESE	78
	C07*	ESE	7.67
	C40*	E	3.48
	C46*	N	0.37

*TLDs not required by ODCM. Deployed at air sample locations.

TABLE I-1 (CONT'D)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

SAMPLE STATION LOCATIONS

SAMPLE MEDIA	STATION ID	DIRECTION	DISTANCE (Miles)
AIR	C07	ESE	7.7
	C18	N	5.3
	C40	E	3.5
	C41	SW	0.4
	C46	N	0.4
	C47-Control	ESE	78
SEAWATER	C14H	NW	0.1
	C14G	W	2.5
	C13-Control	WSW	4.6
GROUND WATER	C40-Control	E	3.6
DRINKING WATER	C07-Control	ESE	7.4
	C10-Control	ESE	6.0
	C18-Control	N	5.3
SHORELINE SEDIMENT	C09-Control	S	3.2
	C14H	NW	0.1
	C14M	W	1.2
	C14G	W	2.5
FISH & OYSTERS	C29	W	2.0
	C30-Control	WSW	3.4
BROAD LEAF VEGETATION	C48A	N	0.4
	C48B	NNE	0.9
	C47-Control	ESE	78
WATERMELON	C04	ENE	6.0
CITRUS	C19	ENE	9.6

TABLE I-2

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

SAMPLING AND ANALYSIS PROGRAM

SAMPLE MEDIA	# OF STATIONS	FREQUENCY	ANALYSIS		LLD[1]
TLD	33*	Quarterly	γ Dose		—
Air Iodine	6	Weekly	I-131		0.07 pCi/m^3
Air Particulate	6	Weekly	Gross ß		0.01
		Quarterly	γ Spec :	Cs-134	0.05
				Cs-137	0.06
Seawater	3	Monthly	Tritium		3000 pCi/L
		Monthly	γ Spec :	Mn-54	15
				Fe-59	30
				Co-58	15
				Co-60	15
				Zn-65	30
				Zr-Nb-95	15
				I-131	1
				Cs-134	15
				Cs-137	18
				Ba-La-140	15
Ground Water	1	Semiannual	Tritium		2000 pCi/L
		Semiannual	γ Spec :	[2]	[2]
Drinking Water	3	Quarterly	Tritium		2000 pCi/L
		Quarterly	γ Spec :	[2]	[2]
Shoreline Sediment	4	Semiannual	γ Spec :	Cs-134	150 pCi/kg
				Cs-137	180

*Includes 3 stations which are not required by the ODCM
[1]The maximum "a priori" LLD
[2]Same as Seawater γ Spec
[3]When available
[4]During harvest
[5]Same as broad leaf vegetation

TABLE I-2 (Cont'd)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

SAMPLING AND ANALYSIS PROGRAM

SAMPLE MEDIA	# OF STATIONS	FREQUENCY	ANALYSIS		LLD[1]
Carnivorous Fish and Oysters	2	Quarterly	γ Spec :	Mn-54	130 pCi/kg
				Fe-59	260
				Co-58	130
				Co-60	130
				Zn-65	260
				Cs-134	130
				Cs-137	150
Broad Leaf Vegetation	3	Monthly[3]	γ Spec :	I-131	60 pCi/kg
				Cs-134	60
				Cs-137	80
Watermelon	1	Annual[4]	γ Spec :	[5]	[5]
Citrus	1	Annual[4]	γ Spec :	[5]	[5]

[1]The maximum "a priori" LLD
[2]Same as Seawater γ Spec
[3]When available
[4]During harvest
[5]Same as broad leaf vegetation

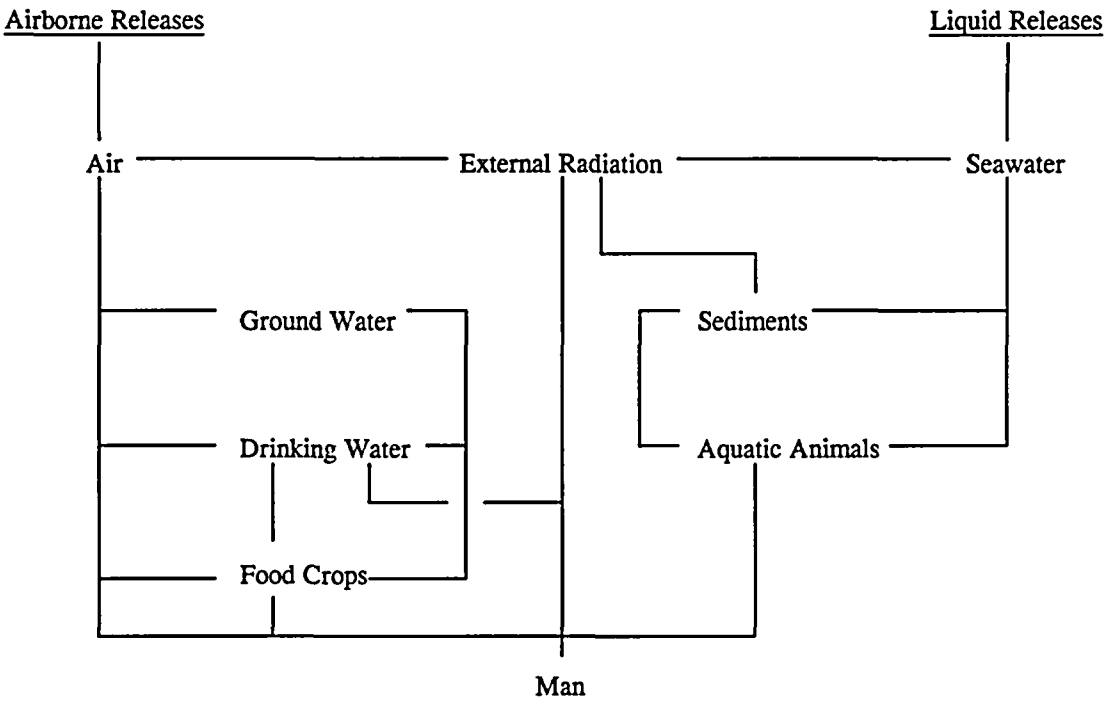


FIGURE I-1: Environmental Media and Exposure Pathways

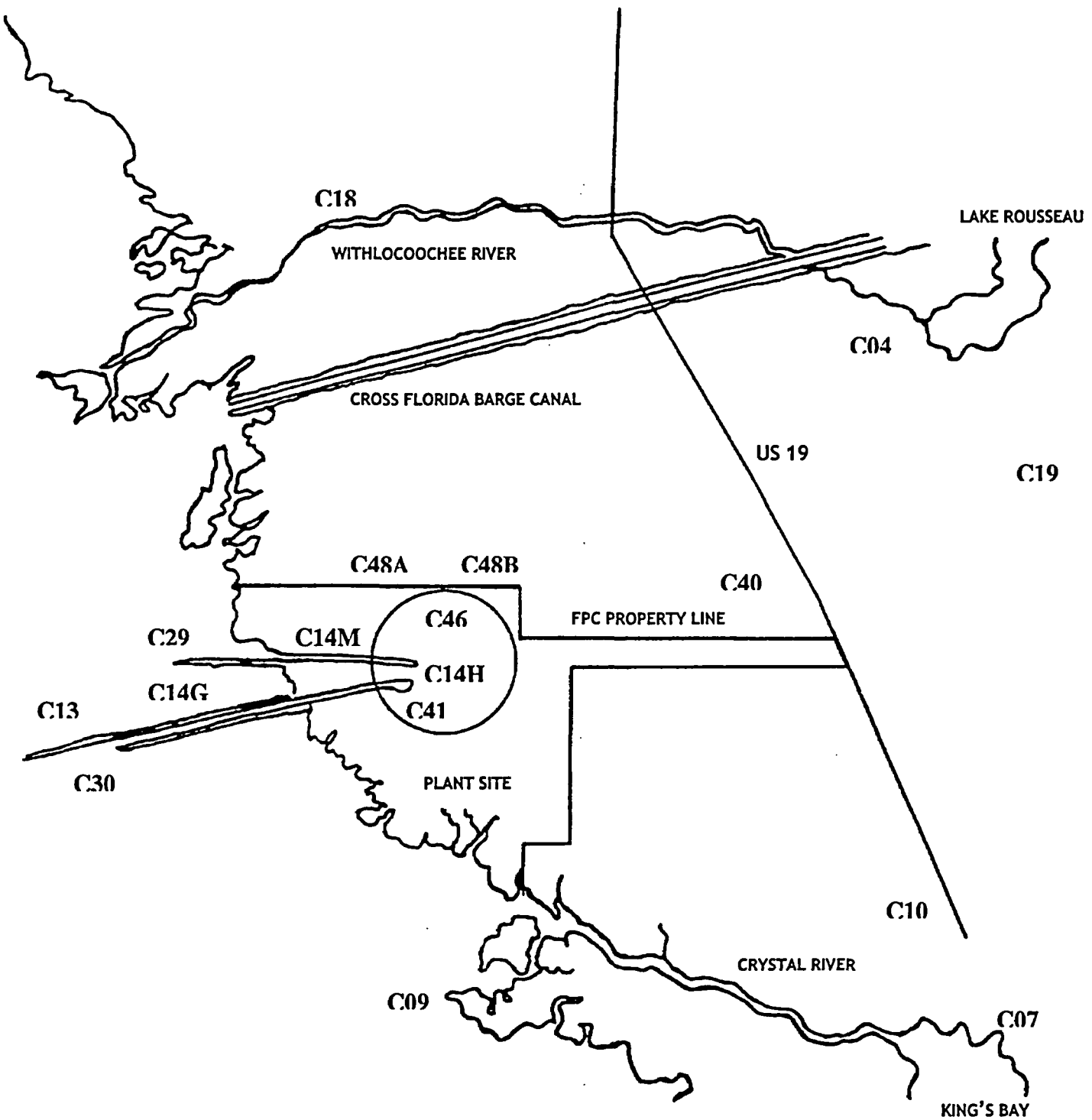


FIGURE I-2: Environmental Monitoring Sample Stations (non-TLDs)

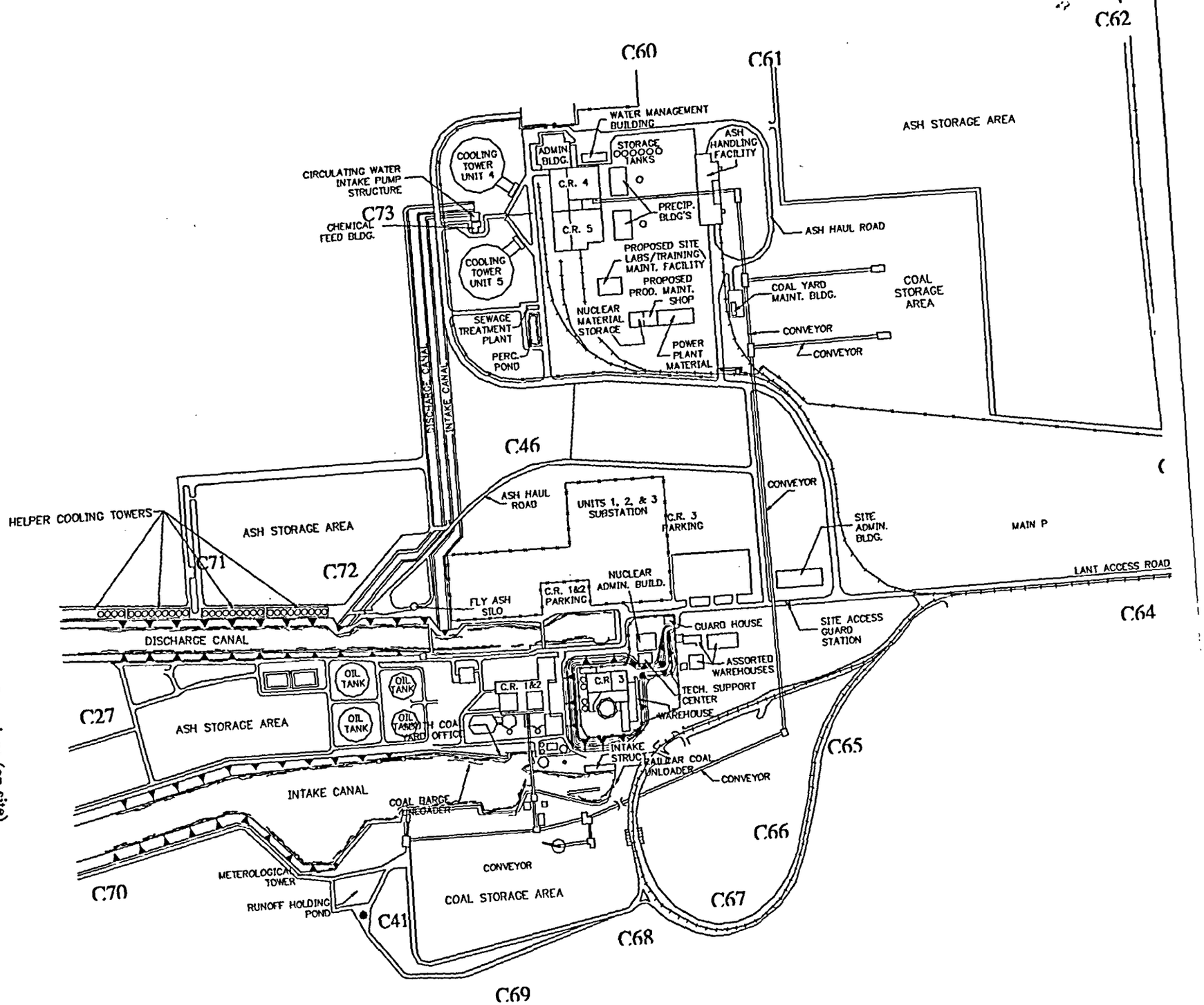


FIGURE I-3: Environmental Monitoring TLD Locations (on site)

8

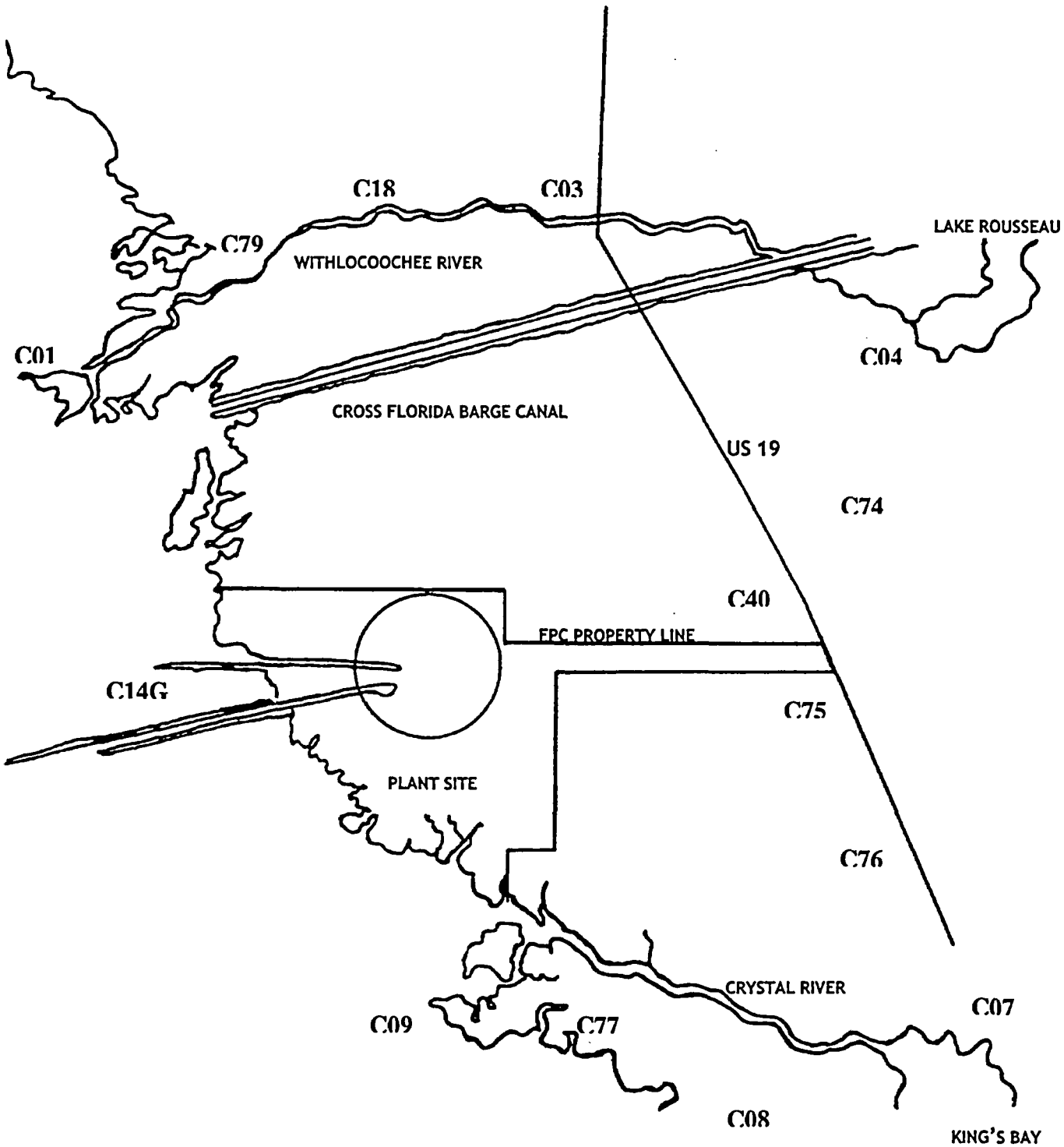


FIGURE I-4: Environmental Monitoring TLD Locations (off site)

II. LAND-USE CENSUS

A land-use census was conducted during June. The purpose of this census is to identify the nearest residences, vegetable gardens, and potential milk-producing animals within a five mile radius of the nuclear plant. The distance in miles and bearing in degrees for each receptor type in each of the sixteen sectors is summarized below.

SECTOR	NEAREST RESIDENCE	NEAREST GARDEN	NEAREST MILK ANIMAL
N	4.46 @ 2°	4.77 @ 2°	*
NNE	3.95 @ 15°	4.88 @ 17°	*
NE	3.84 @ 54°	*	*
ENE	3.43 @ 60°	*	*
E	2.40 @ 92°	*	*
ESE	4.24 @ 102°	*	*
SE	4.90 @ 133°	*	*
SSE	3.53 @ 149°	*	*
S	*	*	*
SSW	*	*	*
SW	*	*	*
WSW	*	*	*
W	*	*	*
WNW	*	*	*
NW	4.77 @ 323°	*	*
NNW	4.60 @ 339°	*	*

* No suitable sites were located within 5 miles.

FLORIDA DEPARTMENT OF HEALTH - INTERLABORATORY COMPARISON PROGRAM DATA

The EPA crosscheck program ceased operation at the end of 1998. To meet the requirements for a crosscheck program for 2004, the Florida Department of Health participates in the Department of Energy's Environmental Measurements Laboratory (EML) and Mixed Analyte Performance Evaluation Program (MAPEP) Quality Assurance Programs. As of March 2004, EML transferred to the Department of Homeland Security. QA results beginning with July, 2004 are performed under MAPEP.

All results were within the acceptable range.

The following units are used for each of the four media:

Air Filters:	Bq/filter
Soil:	Bq/kg
Vegetation:	Bq/kg
Water:	Bq/L

Analytical performance is based on historical analytical capabilities for individual analyte/matrix pairs.
Acceptable performance is designated by an "A".
Acceptable with warning is designated by a "W".
Performance which is not acceptable is designated by an "N".

Results for June 2004:

Media	Nuclide	Reported Value	Reported Error	EML Value	EML Error	Reported/ EML	Evaluation
Air	Co-60	37.85	0.13	35.4	0.85	1.069	A
Air	Cs-137	30.08	0.1	26.4	0.86	1.139	A
Air	Gross Beta	3.0	0.05	2.85	0.28	1.053	A
Soil	Cs-137	1509.0	3.0	1323.0	66.17	1.141	A
Soil	K-40	616.0	8.0	539.0	29.11	1.143	A
Vegetation	Co-60	15.2	0.6	14.47	0.64	1.050	A
Vegetation	Cs-137	634.0	3.0	584.67	29.23	1.084	A
Vegetation	K-40	800.0	10.0	720.0	37.92	1.111	A
Water	Co-60	160.1	0.5	163.2	5.9	0.981	A
Water	Cs-137	52.04	0.49	51.95	2.7	1.002	A
Water	H-3	237.17	4.75	186.6	3.3	1.271	A

Results for July 2004:

Media	Nuclide	Result	Reference Value	Acceptance Range	Evaluation
Air	Co-60	2.35	2.3	1.61 - 2.99	A
Air	Cs-137	1.90	2	1.40 - 2.60	A
Air	Gross Beta	1.27	1.2	0.60 - 1.80	A
Soil	Cs-137	948	836.2	585.34 - 1,088	A
Soil	K-40	692	604	422.80 - 785.20	A
Water	Co-60	158.1	163	114.1 - 211.90	A
Water	Cs-137	234.5	250	175.00 - 325.00	A
Water	H-3	90.5	83	58.10 - 107.90	A

These results were reported from MAPEP and are in a different format than the June EML results.

IV-A. AIRBORNE PATHWAY

Air samples are taken at five locations in the vicinity of the plant. The control location is 78 miles ESE of the plant, at the State Bureau of Radiation Control in Orlando.

Table IV-A.1 provides a statistical summary of the analytical results for 312 gross beta samples and 312 iodine samples.

Tables IV-A.2 and IV-A.3 provide the results for each weekly air sample.

Of 312 particulate samples analyzed for gross beta activity, 312 had measurable activity. The average indicator concentration was 17 pCi/1000 m^3 with a range of 4 to 37 pCi/1000 m^3. The average indicator concentration for 1996 through 2001 was 15 pCi/1000 m^3, 17 pCi/1000 m^3 for 2002, and 15 pCi/1000 m^3 for 2003. The control location concentration for 2004 averaged 17 pCi/1000 m^3, with a range of 6 to 41 pCi/1000 m^3.

Three hundred and twelve samples were analyzed for iodine activity, with none having measurable activity.

Quarterly composite data are summarized in Table IV-A.4. Measurable quantities of cesium were not identified. The highest cesium LLD was 1.8 pCi/1000 m^3 for cesium 134.

The gross beta LLD of 0.01 pCi/m^3 and Iodine 131 LLD of 0.07 pCi/m^3 were not attained for air sample stations C07, C18, C40, C41, and C47 as complete samples were not obtained for several sampling periods as listed below. Station C47 is the control station in Orlando. Out of service times were higher than normal in 2004 due to an unusually active hurricane season.

C07: 7/20 collection - Run time approx. 133 out of 167.75 hours due to loss of power.
C07: 7/26 collection - Run time approx. 117 out of 143.5 hours due to loss of power.
C07: 9/7 collection - Run time approx. 119 out of 164 hours. Power outage due to Hurricane Frances.
C07: 9/13 collection - Run time approx. 41 out of 146 hours. Power outage due to Hurricane Frances.
C07: 9/27 collection - Run time approx. 129 out of 150 hours. Power outage due to Hurricane Jeanne,

C18: 9/7 collection - Run time approx. 117.5 out of 163 hours. Power outage due to Hurricane Frances,
C18: 9/13 collection - Run time approx. 95 out of 143.5 hours. Power outage due to Hurricane Frances,

C40: 5/3 collection - Run time approx.141 out of 169 hours due to power outage. Outage lasted into next period, resulting in a run time of 145 out of 195 hours.
C40: 6/15 collection - Run time approx. 161 hours out of 194 due to a power outage. The outage lasted into the next collection period, resulting in a run time of 147 out of 167 hours.
C40: 9/7 collection - Site inaccessible due to flooding from Hurricane Frances.
C40: 9/13 collection - Run time approx. 117 out of 309 hours. Power outage due to Hurricane Frances.
C40: 9/20 collection - Run time approx. 161 out of 191 hours. Power outage due to Hurricane Frances.
C40: 9/27 collection - Run time approx. 126 out of 194.5 hours. Power outage due to Hurricane Frances.
C40 10/5 collection - Run time approx. 118 out of 143 hours. Power outage due to Hurricane Frances.

C41: 9/27 collection - Run time approx. 133 out of 146.5 hours. Power outage due to Hurricane Frances.
C47: 8/17 collection - Run time approx. 156 out of 191.5 hours. Power outage due to Hurricane Charley.

The following data was omitted from the 2003 report (ref. NCR 130223):
C40: 12/10/2003 collection - Run time approx. 21 out of 190 hours due to a failed pump
C41: 10/28/2003 collection – Run time approx. 146 out of 169 hours due to a power outage.
The power outage lasted into the next collection resulting in a run time of 172 out of 195 hours.

TABLE IV-A.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIRBORNE IODINE (pCi/m³)	γ Spec 312 I-131	0.012	<LLD	-	-	<LLD	0
AIRBORNE PARTICULATES (pCi/1000m³ for Gross ß, pCi/1000m³ for γ Spec)	Gross ß 312	6.4	17 (260/260) (4 – 37)	C18 5.3 @ 356°	19 (52/52) (6 – 36)	17 (52/52) (6 – 41)	0
	γ Spec 24 Cs-134	0.8	<LLD	-	-	<LLD	0
	Cs-137	0.8	<LLD	-	-	<LLD	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-A.2

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/m^3 IODINE - 131 IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
01-05	<.02	<.02	<.02	<.02	<.02	<.02
01-12	<.01	<.01	<.01	<.01	<.01	<.01
01-20	<.01	<.01	<.01	<.01	<.01	<.01
01-26	<.02	<.02	<.02	<.02	<.02	<.02
02-03	<.01	<.01	<.01	<.01	<.01	<.01
02-10	<.02	<.01	<.02	<.02	<.02	<.02
02-16	<.02	<.02	<.02	<.02	<.02	<.02
02-23	<.02	<.02	<.02	<.02	<.02	<.02
03-02	<.02	<.02	<.02	<.02	<.02	<.02
03-08	<.02	<.02	<.02	<.02	<.02	<.02
03-15	<.01	<.01	<.01	<.01	<.01	<.01
03-22	<.02	<.02	<.02	<.02	<.02	<.02
03-30	<.01	<.01	<.01	<.01	<.01	<.01
04-06	<.02	<.02	<.02	<.02	<.02	<.02
04-13	<.02	<.02	<.02	<.02	<.02	<.02
04-20	<.01	<.01	<.01	<.01	<.01	<.01
04-26	<.02	<.02	<.02	<.02	<.02	<.02

TABLE IV-A.2 (Cont'd)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/m^3 IODINE - 131 IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
05-03	<.02	<.02	<.02	<.02	<.02	<.02
05-11	<.01	<.01	<.01	<.01	<.01	<.01
05-17	<.03	<.03	<.03	<.03	<.04	<.03
05-25	<.01	<.01	<.01	<.01	<.01	<.01
06-01	<.02	<.02	<.02	<.02	<.02	<.02
06-07	<.01	<.01	<.01	<.01	<.01	<.01
06-15	<.01	<.01	<.01	<.01	<.01	<.01
06-22	<.01	<.01	<.02	<.01	<.01	<.01
06-29	<.01	<.01	<.01	<.01	<.01	<.01
07-06	<.02	<.02	<.02	<.02	<.02	<.02
07-13	<.03	<.03	<.03	<.03	<.02	<.03
07-20	<.02	<.01	<.01	<.01	<.01	<.01
07-26	<.02	<.02	<.02	<.02	<.02	<.02
08-03	<01	<.01	<.01	<.01	<.01	<.02
08-09	<.02	<.02	<.02	<.02	<.02	<.02
08-17	<.02	<.02	<.02	<.02	<.02	<.03
08-24	<.02	<.02	<.02	<.02	<.02	<.02
08-31	<.02	<.02	<.02	<.02	<.02	<.02

TABLE IV-A.2 (Cont'd)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/m^3 IODINE - 131 IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
09-07	<.02	<.02	<.02	<.01	<.01	<.01
09-13	<.04	<.02	<.01	<.01	<.01	<.01
09-21	<.01	<.01	<.02	<.01	<.01	<.01
09-27	<.01	<.01	<.01	<.01	<.01	<.01
10-05	<.01	<.01	<.03	<.01	<.01	<.01
10-12	<.01	<.01	<.01	<.01	<.01	<.01
10-20	<.01	<.01	<.01	<.01	<.01	<.01
10-26	<.01	<.01	<.01	<.01	<.01	<.01
11-02	<.01	<.01	<.01	<.01	<.01	<.01
11-09	<.03	<.02	<.02	<.03	<.02	<.02
11-15	<.01	<.01	<.01	<.01	<.01	<.01
11-22	<.02	<.02	<.02	<.02	<.02	<.02
11-30	<.01	<.01	<.01	<.01	<.01	<.01
12-08	<.01	<.01	<.01	<.01	<.01	<.01
12-13	<.02	<.02	<.02	<.02	<.02	<.02
12-20	<.01	<.01	<.01	<.01	<.01	<.01
12-28	<.01	<.01	<.01	<.01	<.01	<.01

TABLE IV-A.3

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/1000m^3 GROSS ß IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
01-05	22	19	16	15	17	18
01-12	16	19	16	16	17	22
01-20	27	33	33	20	26	29
01-26	28	36	25	23	37	41
02-03	13	20	15	21	20	21
02-10	18	19	16	14	17	20
02-16	12	10	10	12	8	9
02-23	28	28	27	23	22	24
03-02	14	16	10	14	14	16
03-08	15	18	15	18	22	21
03-15	21	22	19	20	20	23
03-22	16	18	18	22	14	21
03-30	15	15	10	14	15	14
04-06	21	17	14	12	17	22
04-13	19	20	20	14	18	18
04-20	18	13	10	22	19	19
04-26	23	25	21	20	23	22

TABLE IV-A.3 (Cont'd)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/1000m^3 GROSS ß IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
05-03	19	17	14	14	18	15
05-11	18	21	18	22	23	16
05-17	25	24	26	19	26	19
05-25	19	22	21	16	20	23
06-01	23	26	21	20	18	23
06-07	14	14	16	12	15	16
06-15	11	9	6	5	9	7
06-22	19	11	10	14	13	14
06-29	21	23	23	22	19	17
07-06	12	13	11	12	14	7
07-13	15	14	19	15	15	18
07-20	13	11	12	13	12	13
07-26	23	29	27	28	24	29
08-03	12	10	9	12	11	9
08-09	14	19	17	20	20	16
08-17	12	11	10	11	13	13
08-24	10	12	10	14	7	11

TABLE IV-A.3 (Cont'd)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/1000m^3 GROSS ß IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
08-31	15	9	11	16	17	11
09-07	4	10		9	7	6
09-13	10	6	5	7	8	8
09-21	13	12	10	11	12	11
09-27	18	23	22	23	15	12
10-05	22	25	7	17	23	18
10-12	23	25	28	22	18	17
10-20	19	23	20	17	23	24
10-26	17	15	9	14	18	16
11-02	25	28	16	28	25	19
11-09	17	22	17	19	21	19
11-15	10	17	12	11	13	8
11-22	17	17	15	17	20	15
11-30	15	16	15	13	16	14
12-08	24	26	23	24	32	22
12-13	17	21	18	17	18	21
12-20	20	18	22	20	19	19
12-28	14	18	15	16	15	14

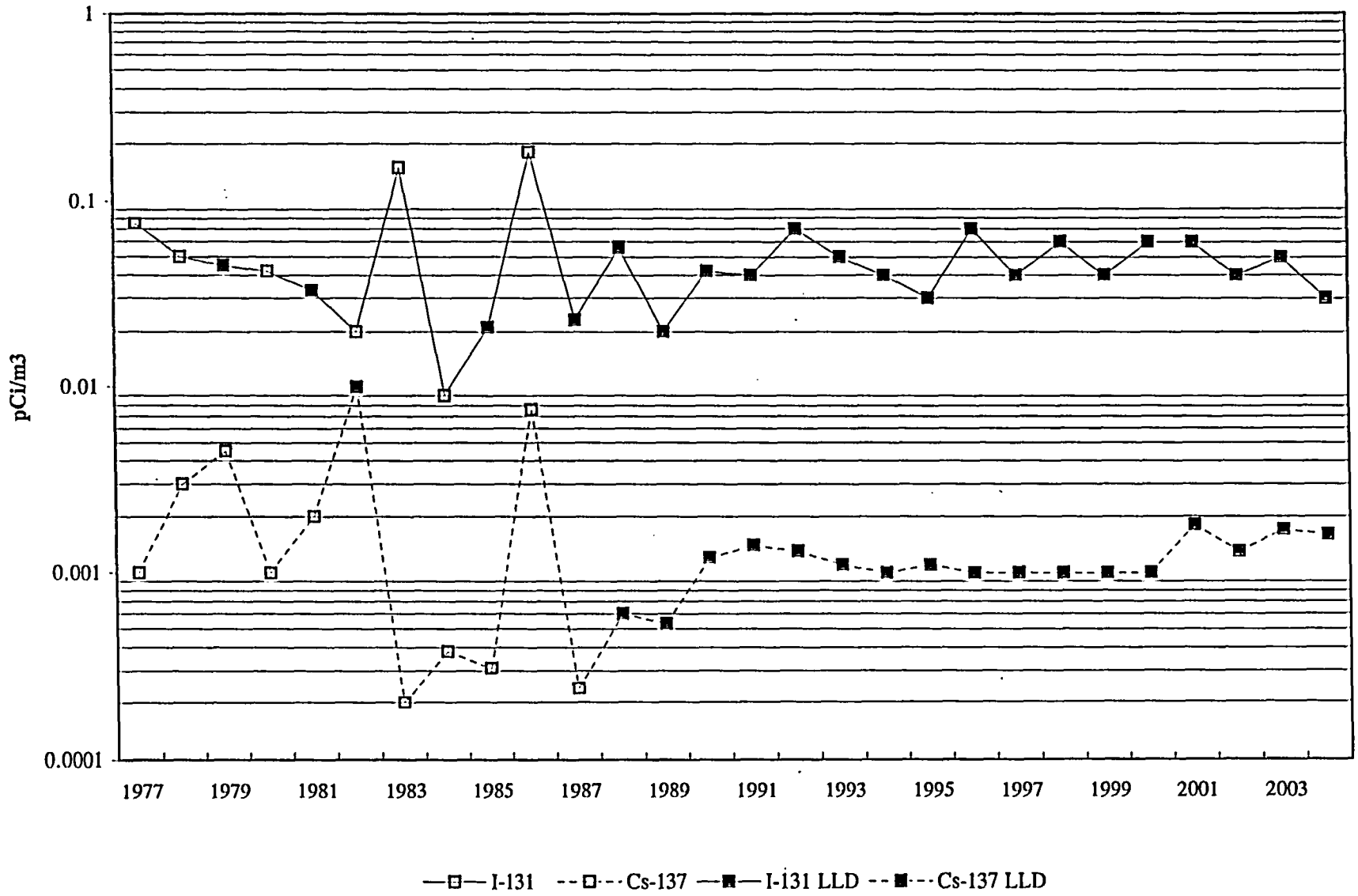
TABLE IV-A.4

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/1000m³ γ EMITTERS IN QUARTERLY COMPOSITES OF AIR PARTICULATES

STATION	NUCLIDE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
C07	Be-7	150	156	115	182
	K-40	<19	<30	<19	<24
	Cs-134	<0.7	<1.8	<0.9	<1.2
	Cs-137	<0.9	<1.3	<0.9	<0.9
C18	Be-7	176	162	116	162
	K-40	<22	<34	<12	<30
	Cs-134	<1.1	<1.8	<0.9	<1.0
	Cs-137	<1.1	<1.4	<1.2	<1.0
C40	Be-7	120	160	115	164
	K-40	<19	<23	<7	<22
	Cs-134	<1.5	<1.1	<0.4	<1.1
	Cs-137	<0.7	<1.0	<0.3	<0.9
C41	Be-7	152	136	121	162
	K-40	<17	<32	<23	<25
	Cs-134	<1.4	<1.7	<1.3	<1.4
	CS-137	<1.0	<1.5	<1.2	<1.4
C46	Be-7	136	149	102	156
	K-40	<25	<24	<28	<18
	Cs-134	<0.8	<1.5	<1.8	<0.9
	Cs-137	<0.8	<1.4	<1.6	<1.1
C47	Be-7	175	177	117	144
	K-40	<23	<29	<8	<34
	Cs-134	<1.7	<1.8	<0.5	<1.4
	Cs-137	<0.9	<1.2	<0.4	<1.4

Airborne


1
0.1
0.01
0.001
0.0001
pCi/m3
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
I-131
Cs-137
I-131 LLD
Cs-137 LLD

IV-B. DIRECT RADIATION

Direct radiation measurements (using TLDs) were taken at seventeen locations (stations C60 through C73 and station C27) within 1.2 miles of the plant, at fifteen locations ranging from 2.5 to 7.7 miles from the plant, and at one control location 78 miles from the site. One-hundred and thirty-two TLDs were collected during 2004.

The highest on-site dose was 115 mrem/yr at station C71 (WNW at 0.6 miles). Station C71 was relocated in 1992 due to construction of the helper cooling towers on the former site. The new location has a higher background radiation level due to being closer to the storage pond for Units 4 & 5 fly ash, which produces a higher external radiation component than normal levels of natural background. The second highest on-site dose was 77 mrem/yr at station C65 (ESE at 0.3 miles).

The highest off-site dose was 58 mrem/yr at station C40 (east at 3.5 miles). The control station (C47) dose was 47 mrem/yr. The average for all stations (except control) was 54 mrem/yr for 2004 and 58 mrem/yr for 2003. Direct radiation results are similar to previous years and show no change of significance.

TABLE IV-B

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	LOCATION WITH HIGHEST MEAN MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
DIRECT RADIATION (mrem/yr)	γ DOSE 132	15	54 (128/128) (37 - 123)	C71 0.6 @ 296°	115 (4/4) (105 - 123)	47 (4/4) (46 - 48)	0

TABLE IV-B.1

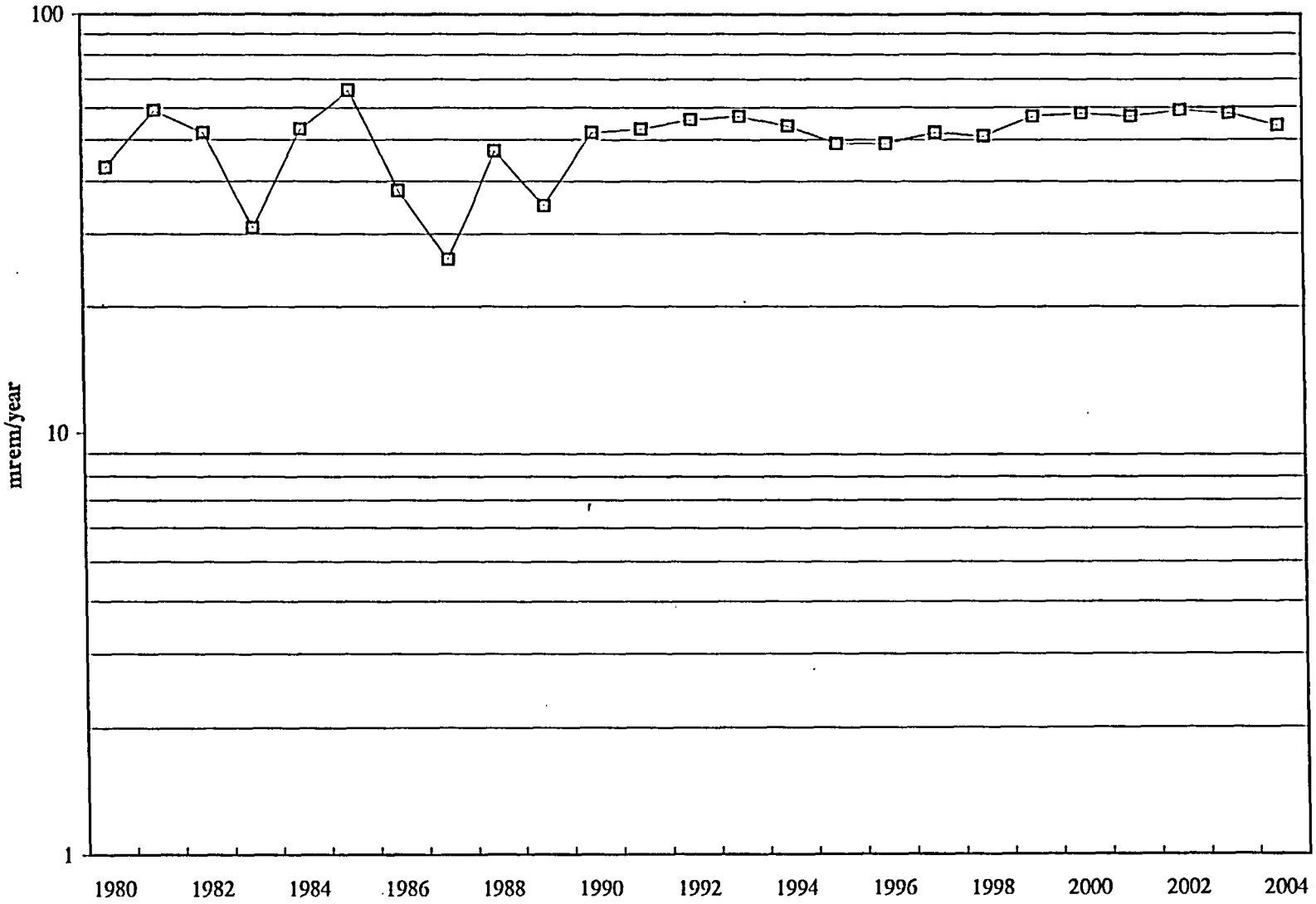
PROGRESS ENERGY FLORIDA, INC. - CR-3 - 2004

mrem/yr γ Dose

TLD STATION	Quarter	1	2	3	4
CO1		46	42	41	42
CO3		45	45	40	42
CO4		43	42	42	42
CO7*		41	42	42	40
CO8		43	41	39	40
C09		46	44	48	42
C14G		56	53	50	50
C18		49	46	44	44
C27		70	61	56	59
C40*		62	59	56	54
C41		58	55	52	50
C46*		56	52	50	52
C47 (CONTROL)		48	47	46	47
C60		58	53	53	54
C61		60	55	53	54
C62		67	60	60	59
C63		59	53	52	54
C64		59	51	52	53
C65		86	74	74	75
C66		64	59	60	59
C67		60	57	49	56
C68		63	55	56	57
C69		63	54	54	57
C70		69	62	57	62
C71		123	119	105	113
C72		63	62	55	66
C73		55	53	49	53
C74		45	41	37	41
C75		55	52	52	49
C76		50	46	48	42
C77		38	37	38	37
C78		50	43	46	39
C79		54	45	46	42

*TLDs not required by the ODCM.
Quarterly values are multiplied by 4 to obtain an equivalent yearly dose.

Direct Radiation



IV-C. WATERBORNE PATHWAY

To evaluate the waterborne pathway, samples are taken of seawater, ground water, drinking water, and shoreline sediment.

1. Monthly seawater grab samples are taken at two locations in the discharge canal (C14G and C14H) and at one control location (C13) near the mouth of the intake canal. Of twenty-four indicator samples, eight had measurable tritium at an average concentration of 5294 pCi/L. The sample with the highest concentration of tritium, 20922 pCi/L, was obtained in November at station C14H near the head of the discharge canal. The seawater tritium activity is consistent with the concentration of tritium in the liquid waste stream. Three control station samples contained tritium at an average concentration of 104 pCi/L, which is similar to 2003 results. Control samples were not obtained in October and November (ref. NCR 145983).

   Gamma spectral analysis was performed on thirty-four samples, none of which showed measurable amounts of the gamma emitters of interest.

2. Semiannual ground water samples are taken at one location, station C40, located approximately 3.5 miles east of CR-3. Gamma spectral and tritium analyses are performed on both samples. All results were less than the detection limits. Since plant startup, all results, except for the results of one 1985 tritium analysis, have been less than LLD. The required sensitivity for measuring tritium in ground water is 2000 pCi/L. Analysis of ground water in the vicinity of CR-3 is done at a sensitivity of approximately 130 pCi/L for tritium and less than 10 pCi/L for select gamma emitters.

3. Quarterly drinking water samples are drawn from three locations: the Crystal River City Hall (C07), the Days Inn Motel (C10), and the Yankeetown City Well (C18). All samples were collected and analyzed for gamma emitters and tritium. None of the samples yielded measurable activities of tritium or the required gamma emitters. The measurement sensitivity for drinking water samples are the same as those for ground water samples.

4. Semiannual shoreline sediment samples are taken at three indicator locations in the discharge canal (C14H, C14M, C14G) and one control location (C09) at Fort Island Gulf Beach. Of the six indicator samples, five had measurable amounts of cobalt-60 or cesium-137. The average cobalt-60 concentration at the indicator locations was 63 pCi/L for 2004, as compared to 126 pCi/L for 2003, 54 pCi/L for 2002, 30 pCi/L for 2001, 98 pCi/L for 2000, 118 pCi/L for 1999, and 389 pCi/L for 1998. The average cesium-137 concentration at the indicator locations was 44 pCi/L for 2004, as compared to 37 pCi/L for 2003, 53 pCi/L for 2002, 28 pCi/L for 2001, 49 pCi/L for 2000 and 65 pCi/L for 1999. None of the samples taken at Fort Island Gulf Beach, the control location, indicated measurable amounts of cobalt or cesium. These results are similar to previous years' results.

TABLE IV-C.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEAWATER (pCi/L)	Tritium 36	131	5294 (8/24) (76 - 20922)	C14H 0.1 @ 325°	7030 (3/12) (84 - 20922)	104 (3/10) (89 – 132)	0
	γ Spec 36						
	Mn-54	3	<LLD	-	-	<LLD	0
	Fe-59	6	<LLD	-	-	<LLD	0
	Co-58	3	<LLD	-	-	<LLD	0
	Co-60	4	<LLD	-	-	<LLD	0
	Zn-65	7	<LLD	-	-	<LLD	0
	Zr-Nb-95	6	<LLD	-	-	<LLD	0
	I-131	4	<LLD	-	-	<LLD	0
	Cs-134	4	<LLD	-	-	<LLD	0
	Cs-137	4	<LLD	-	-	<LLD	0
	Ba-La-140	9	<LLD	-	-	<LLD	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.1.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/L γ EMITTERS AND TRITIUM IN SEAWATER

STATION	MONTH	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-Nb-95	I-131	Cs-134	Cs-137	Ba-La-140
C13	JAN	<119	267 ± 23	<2	<2	<4	<2	<5	<4	<3	<3	<2	<4
	FEB	89 ±18	161 ± 41	<5	<5	<7	<8	<11	<9	<6	<5	<5	<8
	MAR	<125	191 ± 34	<6	<6	<8	<6	<9	<8	<6	<6	<6	<13
	APR	132 ± 40	217 ± 31	<4	<4	<7	<4	<6	<6	<4	<4	<4	<7
	MAY	<122	231 ± 29	<3	<3	<5	<4	<6	<6	<5	<4	<4	<13
	JUN	<124	331 ± 33	<3	<3	<8	<4	<7	<6	<4	<4	<4	<6
	JUL	<125	244 ± 34	<4	<5	<10	<5	<10	<7	<5	<5	<4	<12
	AUG	<127	290 ± 30	<5	<4	<8	<4	<9	<6	<4	<6	<4	<8
	SEP	<127	169 ± 23	<4	<3	<7	<3	<7	<5	<5	<4	<4	<8
	OCT	--	--	--	--	--	--	--	--	--	--	--	--
	NOV	--	--	--	--	--	--	--	--	--	--	--	--
	DEC	91±23	188 ± 24	<2	<2	<4	<3	<5	<4	<2	<3	<3	<7
C14G	JAN	<119	323 ± 31	<4	<4	<9	<5	<10	<7	<5	<5	<4	<7
	FEB	101 ±23	220 ± 27	<3	<3	<7	<5	<10	<5	<5	<4	<3	<6
	MAR	76 ± 23	240 ± 27	<3	<3	<6	<4	<7	<7	<5	<3	<4	<6
	APR	<119	246 ± 35	<5	<5	<10	<6	<11	<8	<6	<5	<5	<9
	MAY	<122	211 ± 36	<4	<4	<8	<6	<10	<7	<5	<6	<4	<9
	JUN	<124	313 ± 35	<3	<4	<8	<5	<8	<6	<4	<4	<4	<8
	JUL	<125	271 ± 32	<5	<4	<10	<5	<7	<8	<4	<5	<5	<9
	AUG	765±32	272 ± 30	<4	<3	<9	<4	<9	<6	<5	<4	<4	<7
	SEP	<127	195 ± 38	<6	<5	<12	<6	<10	<9	<5	<7	<5	<6
	OCT	<124	209 ± 31	<3	<3	<7	<4	<7	<5	<4	<4	<4	<7
	NOV	19979±202	98 ± 31	<3	<4	<5	<4	<7	<6	<3	<4	<4	<7
	DEC	341± 26	226 ± 13	<2	<1	<3	<2	<3	<3	<2	<2	<2	<4

TABLE IV-C.1a (CONT'D)
PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/L γ EMITTERS AND TRITIUM IN SEAWATER

STATION	MONTH	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-Nb-95	I-131	Cs-134	Cs-137	Ba-La-140
C14H	JAN	<119	291 ± 30	<4	<3	<8	<4	<8	<6	<5	<3	<4	<6
	FEB	<122	295 ± 31	<4	<4	<8	<5	<6	<7	<5	<3	<5	<5
	MAR	<125	234 ± 27	<4	<3	<7	<4	<6	<6	<4	<4	<4	<6
	APR	85 ± 38	183 ± 32	<4	<3	<6	<4	<9	<7	<4	<4	<3	<4
	MAY	<122	231 ± 20	<2	<2	<4	<3	<5	<4	<3	<2	<2	<4
	JUN	<124	289 ± 35	<3	<3	<8	<3	<7	<6	<4	<3	<3	<6
	JUL	<125	251± 38	<3	<4	<4	<4	<9	<6	<5	<4	<4	<7
	AUG	<127	265 ± 5	<3	<3	<5	<3	<6	<4	<3	<3	<3	<4
	SEP	<126	152 ± 23	<4	<3	<7	<4	<7	<6	<5	<3	<3	<7
	OCT	<124	217±28	<3	<3	<7	<4	<6	<5	<4	<4	<3	<6
	NOV	20922±207	299± 27	<4	<4	<7	<3	<8	<6	<4	<3	<4	<8
	DEC	84±23	278± 32	<3	<4	<6	<5	<7	<6	<5	<4	<4	<4

Seawater

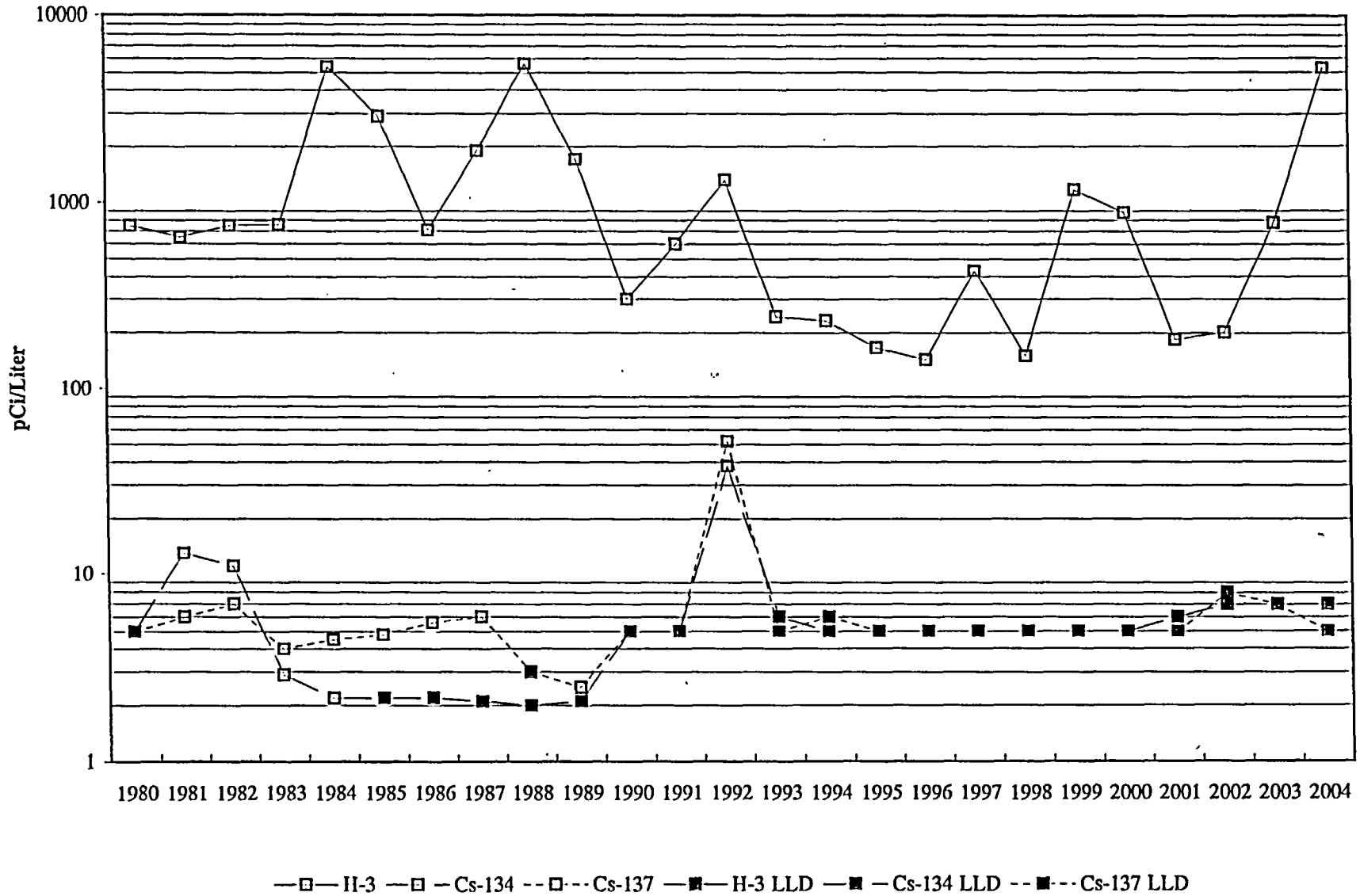

10000
1000
100
10
1
pCi/Liter
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004
H-3
Cs-134
Cs-137
H-3 LLD
Cs-134 LLD
Cs-137 LLD

TABLE IV-C.2

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	LOCATION WITH HIGHEST MEAN MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (pCi/L)	Tritium 2	131	None	-	-	<LLD	0
	γ Spec 2						
	Mn-54	3	None	-	-	<LLD	0
	Fe-59	6	None	-	-	<LLD	0
	Co-58	3	None	-	-	<LLD	0
	Co-60	4	None	-	-	<LLD	0
	Zn-65	7	None	-	-	<LLD	0
	Zr-Nb-95	6	None	-	-	<LLD	0
	I-131	4	None	-	-	<LLD	0
	Cs-134	4	None	-	-	<LLD	0
	Cs-137	4	None	-	-	<LLD	0
	Ba-La-140	9	None	-	-	<LLD	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.2.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/L γ EMITTERS AND TRITIUM IN GROUND WATER

STATION	NUCLIDE	FIRST HALF	SECOND HALF
C40	H-3	<122	<126
	Mn-54	<4	<3
	Fe-59	<8	<6
	Co-58	<4	<3
	Co-60	<4	<4
	Zn-65	<8	<8
	Zr-Nb-95	<6	<5
	I-131	<5	<4
	Cs-134	<5	<3
	Cs-137	<4	<4
	Ba-La-140	<11	<15
	K-40	<56	<58

Ground Water

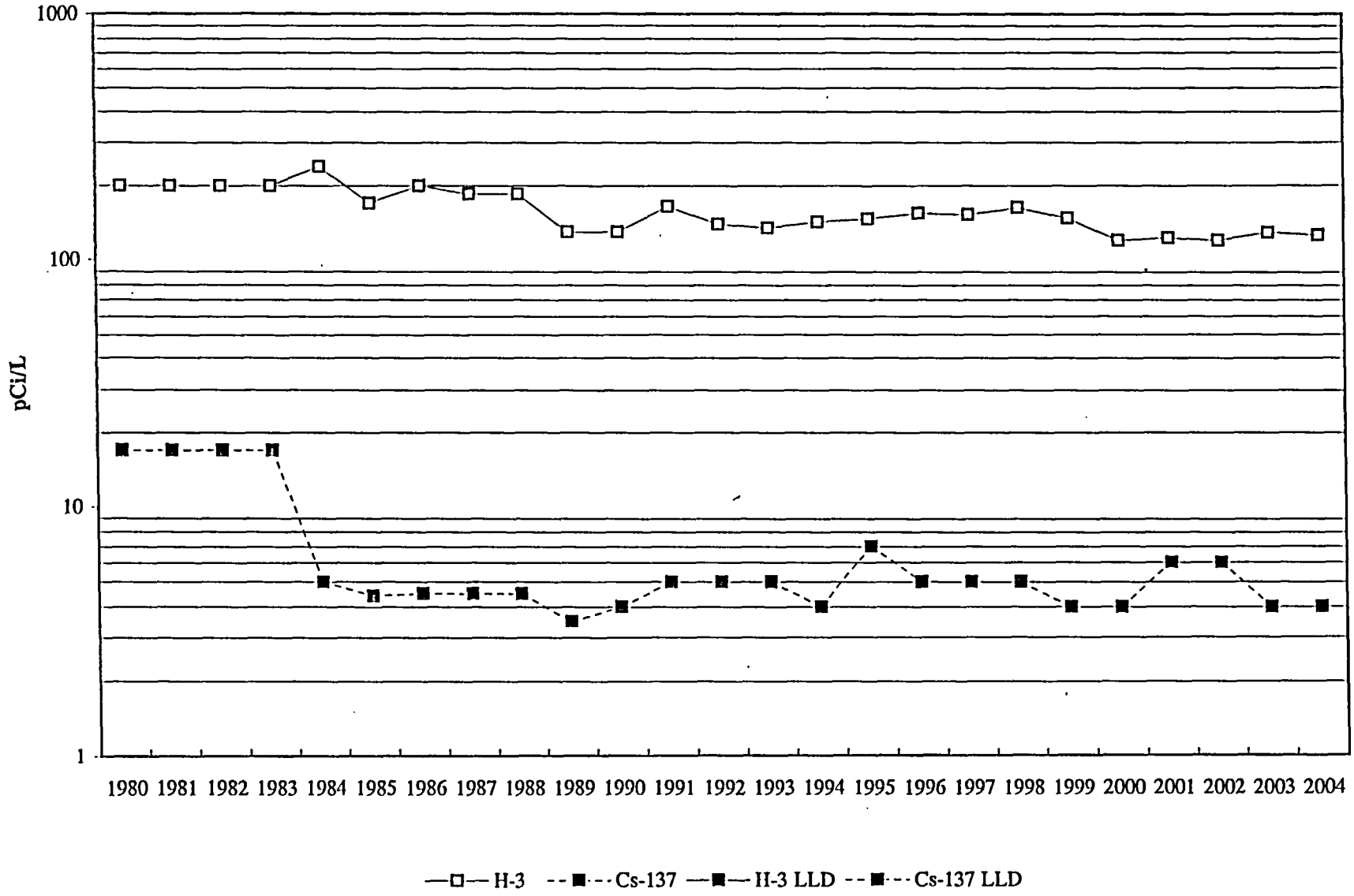


TABLE IV-C.3

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
DRINKING WATER (pCi/L)	Tritium 12	131	None	-	-	<LLD	0
	γ Spec 12						
	Mn-54	3	None	-	-	<LLD	0
	Fe-59	6	None	-	-	<LLD	0
	Co-58	3	None	-	-	<LLD	0
	Co-60	4	None	-	-	<LLD	0
	Zn-65	7	None	-	-	<LLD	0
	Zr-Nb-95	6	None	-	-	<LLD	0
	I-131	4	None	-	-	<LLD	0
	Cs-134	4	None	-	-	<LLD	0
	Cs-137	4	None	-	-	<LLD	0
	Ba-La-140	9	None	-	-	<LLD	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.3.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/L γ EMITTERS AND TRITIUM IN DRINKING WATER

STATION	DATE	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zn-Nb-95	I-131	Cs-134	Cs-137	Ba-La-140
C07	01-05	<121	<97	<4	<5	<11	<4	<10	<8	<6	<6	<5	<7
	04-06	<128	<54	<3	<4	<6	<3	<8	<5	<4	<4	<4	<9
	07-13	<126	<66	<4	<5	<8	<5	<10	<7	<5	<5	<4	<9
	10-12	<123	<55	<4	<3	<7	<4	<8	<6	<4	<4	<4	<6
C10	01-05	<119	<84	<4	<4	<8	<5	<7	<8	<5	<6	<4	<10
	04-06	<128	<61	<4	<3	<7	<3	<7	<6	<4	<3	<4	<7
	07-13	<126	<45	<3	<4	<7	<4	<8	<7	<4	<5	<4	<7
	10-12	<123	<43	<3	<3	<5	<3	<7	<7	<5	<4	<3	<6
C18	01-05	<119	<53	<3	<3	<7	<2	<7	<5	<5	<4	<4	<8
	04-06	<128	<59	<3	<3	<6	<3	<6	<6	<5	<4	<4	<8
	07-13	<126	<68	<4	<3	<6	<3	<9	<6	<5	<4	<4	<10
	10-12	<123	<52	<4	<3	<6	<4	<5	<6	<5	<2	<4	<5

Drinking Water

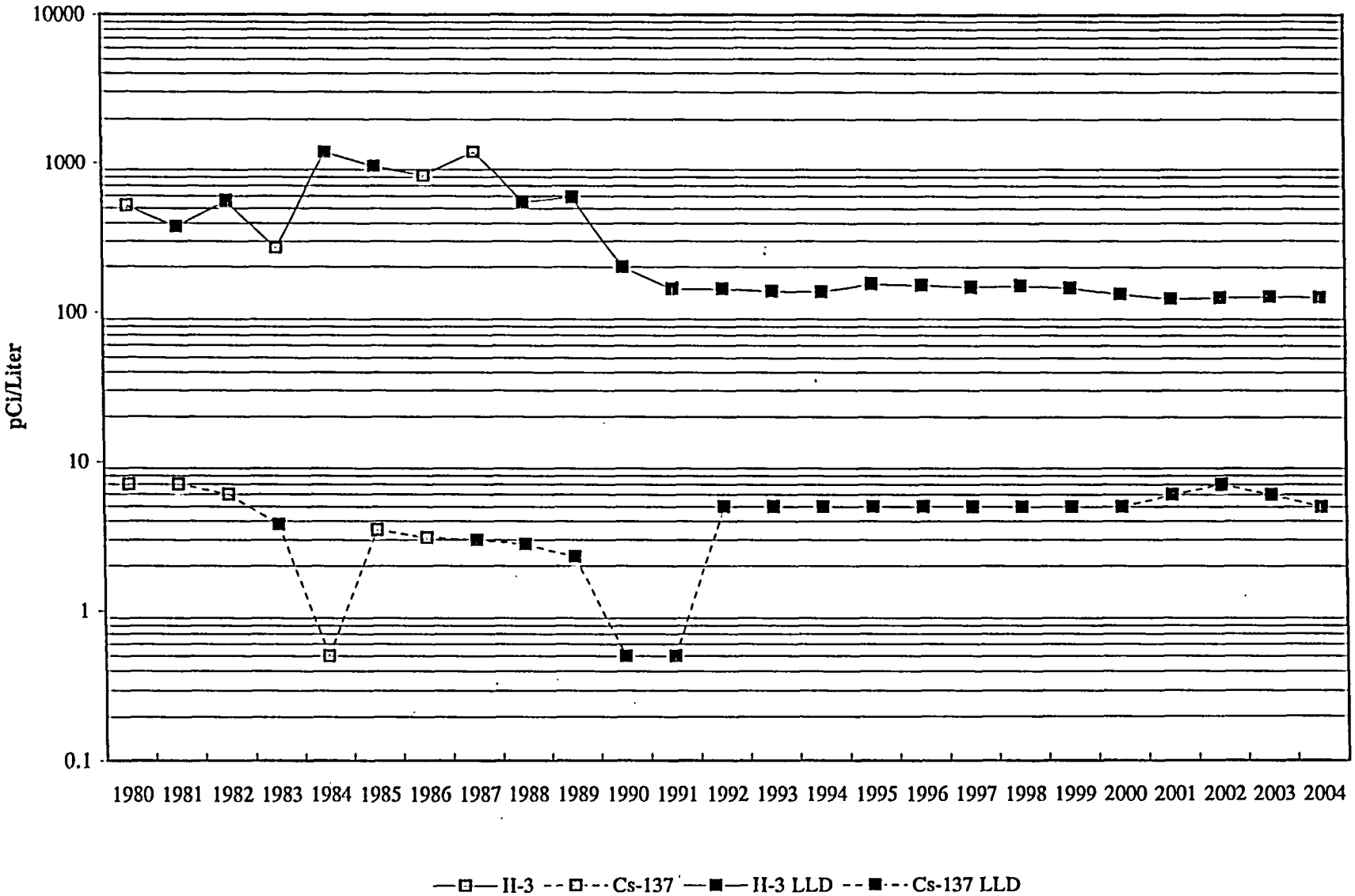


TABLE IV-C.4

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SHORELINE SEDIMENT	γ Spec 8						
(pCi/kg)	Cs-134	7	<LLD	—	—	<LLD	0
	Cs-137	7	44 (5/6)	C14H	67 (2/2)	<LLD	0
			(12 – 82)	0.1 @ 325°			

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.4.a

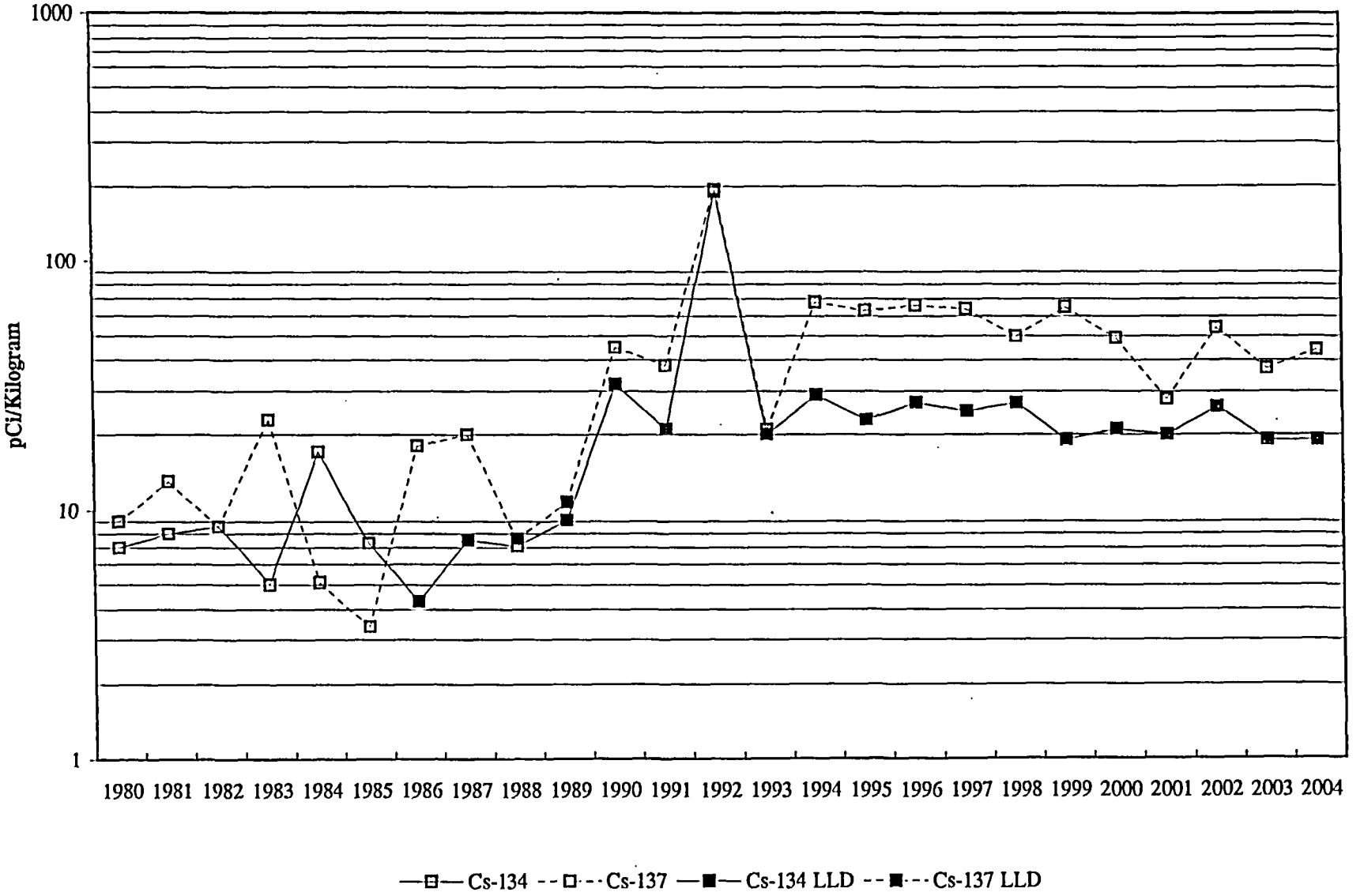
PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/kg γ EMITTERS IN SHORELINE SEDIMENT

STATION	PERIOD	Co-58	Co-60	Cs-134	Cs-137	K-40	Ra-226
C09	First Half	<10	<9	<14	<12	415 ± 59	405 ± 13
	Second Half	<12	<15	<16	<13	489 ± 88	416 ± 16
C14H	First Half	<10	25 ± 7	<19	51 ± 10	1496 ± 133	1009 ± 23
	Second Half	<15	178 ± 9	<18	82 ± 12	2106 ± 124	870 ± 25
C14M	First Half	<16	41 ± 8	<17	26 ± 6	753 ± 116	770 ± 22
	Second Half	<5	52 ± 3	<7	49 ± 5	1234 ± 50	872 ± 26
C14G	First Half	<10	<12	<12	<10	258 ± 86	1082 ± 15
	Second Half	<8	17 ± 2	<9	12 ± 3	478 ± 59	1209 ± 12

C09 is the control station at Ft. Island Beach. C14H, C14M, & C14G are discharge canal stations.

Shoreline Sediment



IV-D. INGESTION PATHWAY

To evaluate the ingestion pathway, samples are taken of fish, oysters, broad leaf vegetation, citrus, and watermelon.

1. Quarterly carnivorous fish samples were taken at two locations: C29 at the end of the discharge canal, and C30, the control location near the mouth of the intake canal. None of the required radionuclides were found in measurable quantities. The highest cesium-137 LLD for station C29 was 22 pCi/kg. Naturally occurring potassium-40 was quantified in all eight samples at concentrations near 3000 pCi/kg.

2. Quarterly oyster samples were taken at the same locations as fish samples, C29 and C30. Of the isotopes required to be evaluated, none indicated measurable amounts of radioactivity. However, silver-110m was quantified in two samples at C29, with concentrations of 118 pCi/kg and 97 pCi/kg. This is lower than 2003; silver-110m was identified at a maximum of 545 pCi/L.

3. Monthly broad leaf vegetation samples were taken at two indicator locations, C48A and C48B, and one control location, C47. Four of twenty-four indicator samples had measurable amounts of cesium-137 with an average concentration of 29 pCi/kg and a range of 12 to 51 pCi/kg. This is similar to recent years results. Five of twelve control station samples had measurable amounts of cesium-137 with an average of 26 pCi/kg and a range of 18 to 34 pCi/kg.

4. Citrus samples are taken at station C19 and watermelon samples were obtained at station C04. None of the required radionuclides were found in measurable quantities in watermelon, but Cs-137 was quantified at 69 pCi/kg in the citrus sample. Cs-137 was quantified in the 2003 citrus sample at 20 pCi/kg.

TABLE IV-D.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
CARNIVOROUS FISH	γ Spec 8						
(pCi/kg)	Mn-54	16	<LLD	-	-	<LLD	0
	Fe-59	28	<LLD	-	-	<LLD	0
	Co-58	15	<LLD	-	-	<LLD	0
	Co-60	16	<LLD	-	-	<LLD	0
	Zn-65	32	<LLD	-	-	<LLD	0
	Cs-134	16	<LLD	-	-	<LLD	0
	Cs-137	18	<LLD	-	-	<LLD	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.1.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/kg γ EMITTERS IN CARNIVOROUS FISH

STATION	QUARTER	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	K-40
C29	1	<22	<22	<42	<21	<39	<20	<22	2205 ± 185
	2	<16	<16	<35	<19	<33	<17	<17	2569 ± 174
	3	<15	<15	<35	<21	<36	<20	<17	2276 ± 196
	4	<18	<21	<41	<26	<38	<16	<20	2172 ± 205
C30	1	<9	<8	<17	<11	<18	<9	<10	2458 ± 97
	2	<19	<22	<66	<24	<50	<21	<17	2770 ± 224
	3	<7	<6	<14	<9	<15	<8	<8	1969 ± 78
	4	<14	<18	<47	<16	<46	<15	<20	1798 ± 190

Carnivorous Fish

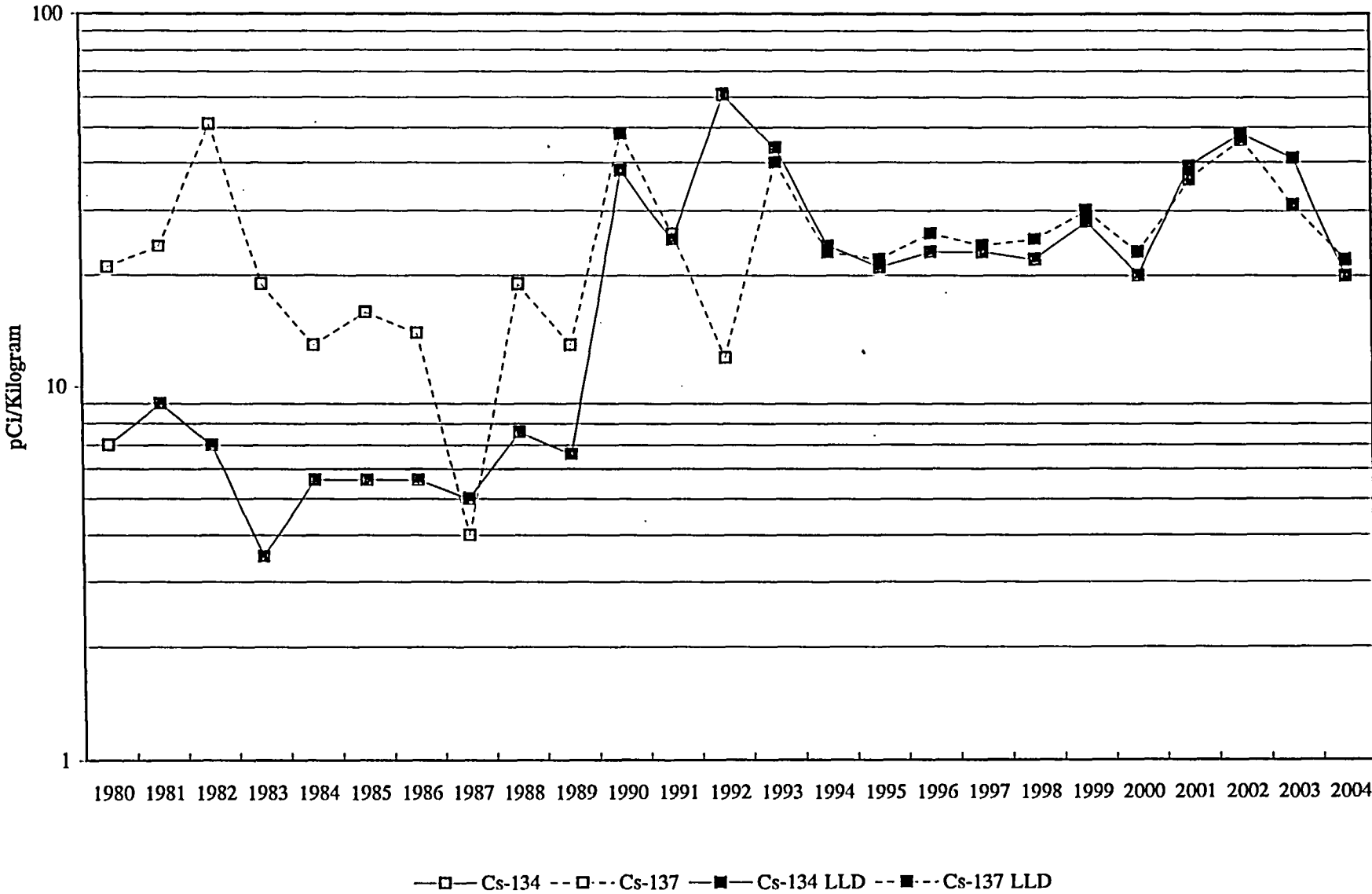


TABLE IV-D.2

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
OYSTERS (pCi/kg)	γ Spec 8						
	Mn-54	16	<LLD	-	-	<LLD	0
	Fe-59	28	<LLD	-	-	<LLD	0
	Co-58	15	<LLD	-	-	<LLD	0
	Co-60	16	<LLD	-	-	<LLD	0
	Zn-65	32	<LLD	-	-	<LLD	0
	Cs-134	16	<LLD	-	-	<LLD	0
	Cs-137	18	<LLD	-	-	<LLD	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.2.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/kg γ EMITTERS IN OYSTERS

STATION	QUARTER	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	K-40
C29	1	<20	<21	<28	<18	<42	<16	<21	1141 ± 132
	2	<13	<19	<33	<16	<37	<23	<19	600 ± 112
	3	<26	<23	<51	<28	<52	<30	<29	983 ± 147
	4	<18	<20	<49	<18	<47	<22	<20	657 ± 135
C30	1	<22	<29	<41	<21	<41	<22	<25	1371 ± 211
	2	<19	<16	<43	<25	<41	<23	<19	1210 ± 144
	3	<22	<29	<40	<25	<49	<24	<23	607 ± 146
	4	<23	<26	<53	<27	<59	<28	<23	1237 ± 236

Ag-110m was quantified in two samples taken at station C29, near the end of the discharge canal. Concentrations were 118 pCi/kg (Feb 6th), and 97 pCi/kg (May 4th).

Ag-110m was not quantified in samples taken at control station C30.

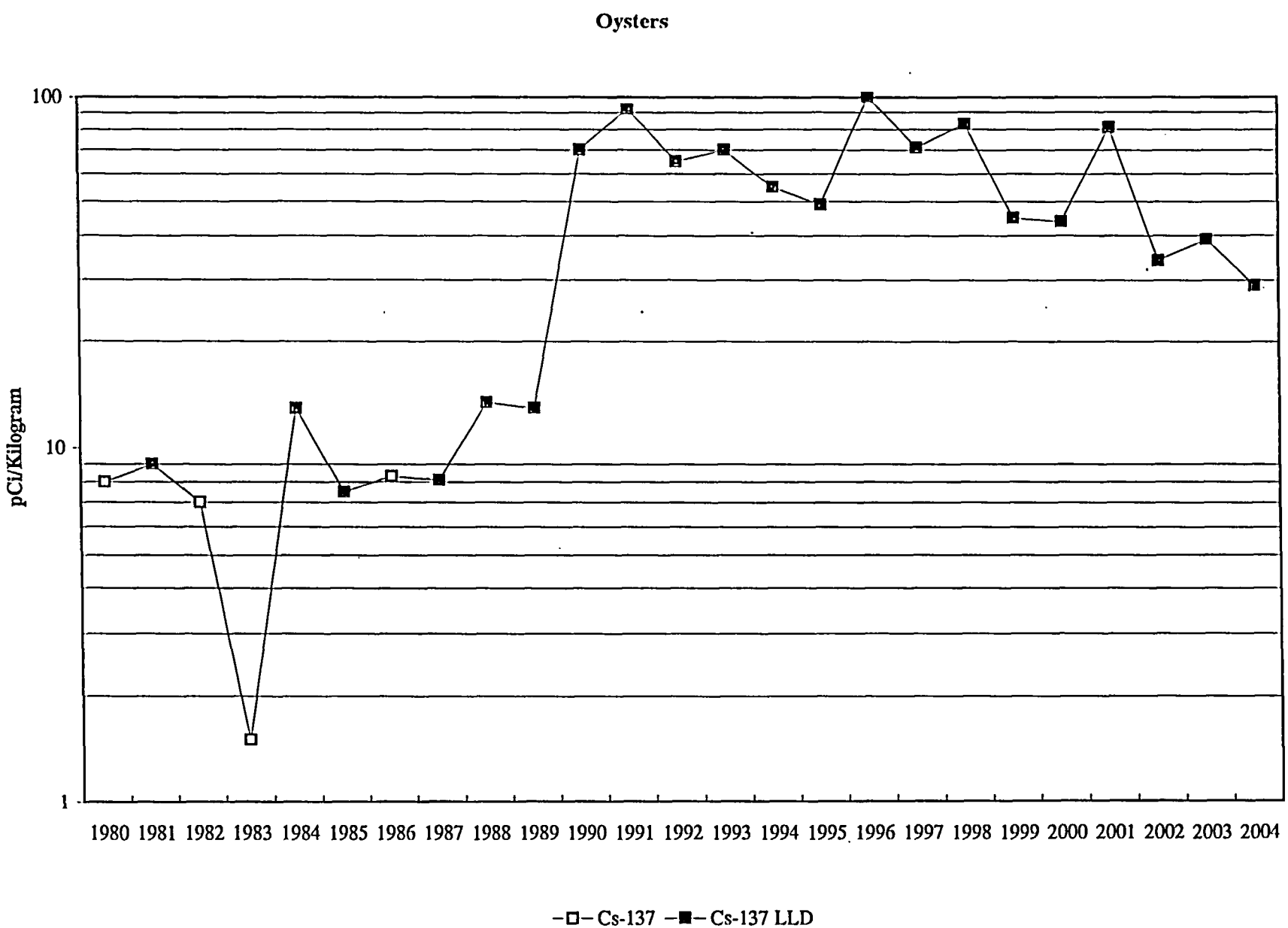

Oysters
100
10
1
pCi/Kilogram
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004
Cs-137
Cs-137 LLD

TABLE IV-D.3

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
BROAD LEAF VEGETATION (pCi/kg)	γ Spec 36						
	I-131	8	<LLD	-	-	<LLD	0
	Cs-134	8	<LLD	-	-	<LLD	0
	Cs-137	8	29 (4/24) (12 - 51)	C48A 0.4 @ 357°	29 (4/12)	26 (5/12) (18 - 34)	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.3.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/kg OF γ EMITTERS IN BROAD LEAF VEGETATION

STATION	MONTH	I-131	Cs-134	Cs-137	K-40
C47	JAN	<16	<13	<14	2827 ± 142
	FEB	<24	<20	<21	2709 ± 176
	MAR	<12	<13	22 ± 6	3018 ± 145
	APR	<13	<15	<15	3693 ± 208
	MAY	<8	<9	18 ± 6	3344 ± 99
	JUN	<17	<17	<24	3160 ± 189
	JUL	<6	<6	28 ± 3	3898 ± 75
	AUG	<15	<18	<15	3363 ± 198
	SEP	<6	<7	34 ± 4	3241± 92
	OCT	<21	<17	<20	4130 ± 199
	NOV	<14	<19	<16	4929 ± 246
	DEC	<13	<10	27 ± 6	5907 ± 258
C48A	JAN	<14	<12	<18	1245 ± 121
	FEB	<22	<15	<17	1638 ± 147
	MAR	<7	<7	<7	1680 ± 72
	APR	<17	<21	12 ± 5	2820 ± 207
	MAY	<12	<11	<13	2632 ± 123
	JUN	<11	<11	16 ± 4	3729 ± 158
	JUL	<15	<13	35 ± 8	4487 ± 182
	AUG	<8	<10	51 ± 6	3085 ± 109
	SEP	<15	<19	22	6370 ± 260
	OCT	<16	<16	<16	4340 ± 223
	NOV	<13	<15	<16	5301 ± 200
	DEC	<20	<18	<18	6986 ± 219

TABLE IV-D.3.a (CONT'D)

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/kg OF γ EMITTERS IN BROAD LEAF VEGETATION

STATION	MONTH	I-131	Cs-134	Cs-137	K-40
C48B	JAN	<13	<14	<13	2272 ± 127
	FEB	<15	<12	<13	2333 ± 126
	MAR	<14	<19	<15	3290 ± 200
	APR	<15	<16	<16	4132 ± 216
	MAY	<16	<15	<14	3233 ± 187
	JUN	<13	<11	<12	3726 ± 172
	JUL	<13	<10	<12	2570 ± 153
	AUG	<15	<19	<22	6370 ± 260
	SEP	<15	<19	<22	3168 ± 183
	OCT	<19	<16	<14	4391 ± 200
	NOV	<14	<14	<16	3707 ± 178
	DEC	<14	<12	<17	2775 ± 142

Broad Leaf Vegetation

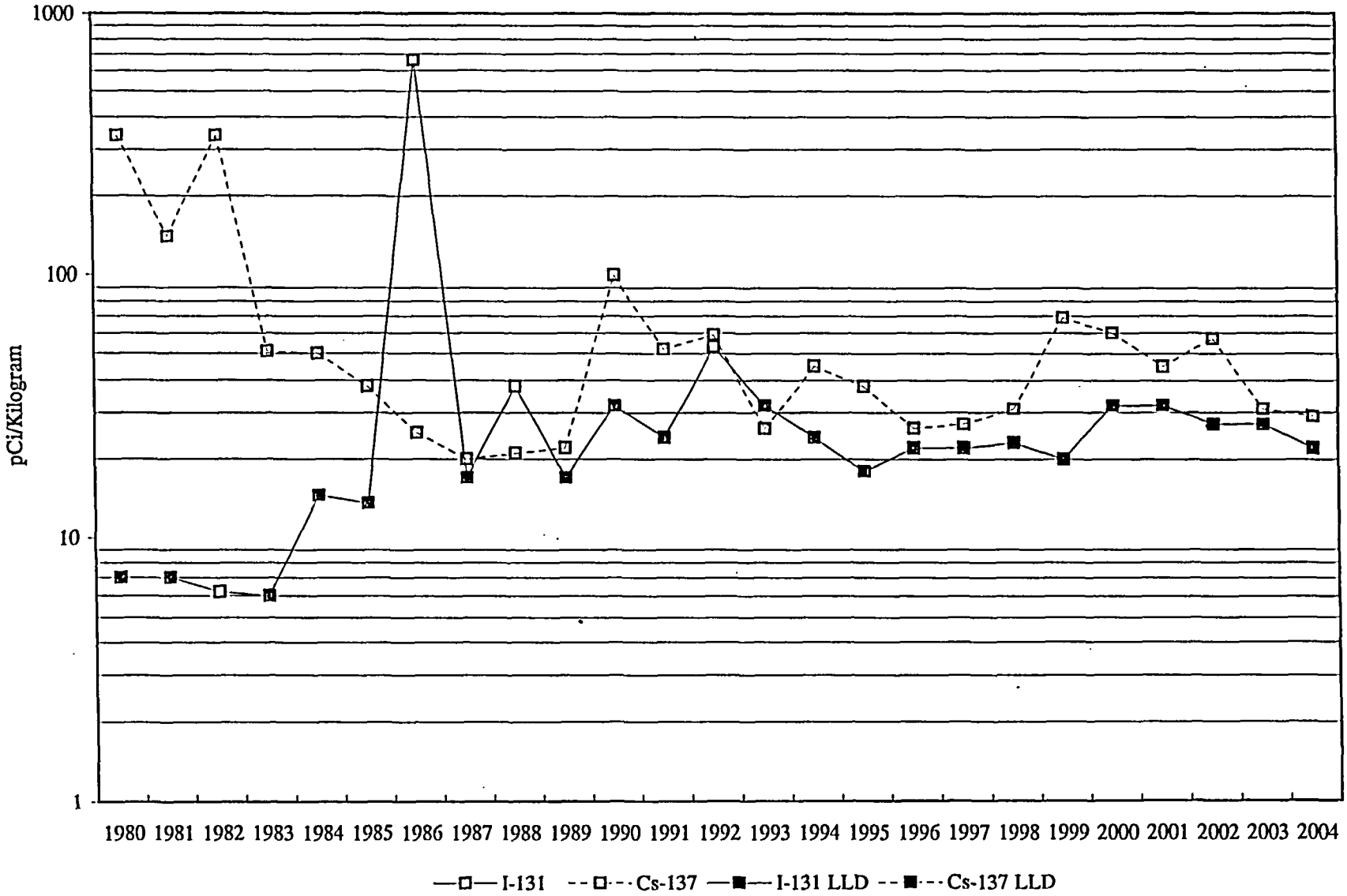


TABLE IV-D.4

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3 **DOCKET NO. 50-302**

CITRUS COUNTY, FLORIDA **JANUARY 1 TO DECEMBER 31, 2004**

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)[1]	ALL INDICATOR LOCATIONS MEAN RANGE	LOCATION WITH HIGHEST MEAN NAME DISTANCE & BEARING	MEAN RANGE	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
WATERMELON (pCi/kg)	γ Spec 1						
	I-131	8	<LLD	-	-	None	0
	Cs-134	8	<LLD	-	-	None	0
	Cs-137	8	<LLD	-	-	None	0
CITRUS (pCi/kg)	γ Spec 1						
	I-131	8	<LLD	-	-	None	0
	Cs-134	8	<LLD	-	-	None	0
	Cs-137	8	69 (1/1)	C19 9.6 @ 57°	69 (1/1)	None	0

[1]The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.4.a

PROGRESS ENERGY FLORIDA, INC. - CR3 - 2004

pCi/kg OF γ EMITTERS IN WATERMELON AND CITRUS

STATION	MONTH	I-131	Cs-134	Cs-137	K-40
C04 – Watermelon	June	<5	<6	<6	1523 ± 66
C19 – Citrus	January	<7	<9	69 ± 5	1857 ± 98