

DUKE POWER COMPANY  
MCGUIRE NUCLEAR STATION  
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM  
ANNUAL OPERATING REPORT

January 1, 1983 - December 31, 1983

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MCGUIRE NUCLEAR STATION  
ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM  
OPERATING REPORT FOR 1983

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Table 1 summarizes the results of the Environmental Radiological Monitoring Program for 1983. Table 2 provides a summary of the sampling locations and Table 3 summarizes the program analyses. Table 4 provides a map of sampling locations within a 13-mile radius of the station and Table 5 provides a map of sampling locations within a 0.6-mile radius of the station. Table 6 provides the location of the nearest milk animal, the nearest residence and the nearest garden of greater than 50 m<sup>2</sup> producing broad leaf vegetation in each of the 16 meteorological sectors within a 5-mile radius of the station as determined by the annual land use census.

Duke Power Company's Environmental Radiological Laboratory performs the program analyses with the exception of H-3 analyses which are performed by Teledyne Isotopes. Both the Environmental Radiological Laboratory and Teledyne Isotopes participate in the EPA Cross-Check Program; the cross-check code designations are CP and CJ, respectively. Table 7 provides the results of the Environmental Radiological Laboratory's participation in the program.

Some unavoidable deviations from the routine sampling schedule occurred during the year. These deviations are tabulated below.

Unavailable Analyses

<u>Sample</u>	<u>Reason</u>
<b>A. <u>Air Filter/Cartridge</u></b>	
1. (125), 5/17-5/24/83	Power to sampler cut off; insufficient sampler run time.
2. (134), 5/17-5/24/83	Sampler blew fuse; insufficient sampler run time.
3. (134), 12/20/-12/27/83	Power to sampler cut off; insufficient sampler run time.
<b>B. <u>Fish</u></b>	
1. (129), 10/4/83	Bottom feeder species could not be collected.
<b>C. <u>Milk</u></b>	
1. (139), 1/11/83	Goat freshening. No milk available.
2. (139), 1/25/83	Goat freshening. No milk available.

- |                   |                              |
|-------------------|------------------------------|
| 3. (139), 2/8/83  | Goat dry. No milk available. |
| 4. (139), 2/22/83 | Goat dry. No milk available. |
| 5. (139), 3/8/83  | Goat dry. No milk available. |
| 6. (139), 3/22/83 | Goat dry. No milk available. |
| 7. (139), 5/10/83 | Goat dry. No milk available. |

D. Drinking Water

1. (136), 2/15-3/15/83

Unable to perform beta analysis due to large quantity of crystals in sample.

E. TLD

1. (150), 12/30-3/30/83
2. (155), 12/30-3/30/83
3. (158), 12/30-3/30/83
4. (165), 3/30-6/30/83
5. (171), 3/30-6/30/83
6. (158), 6/30-9/30/83
7. (157), 9/30-12/29/83

Missing.  
Missing.  
Missing.  
Missing.  
Missing.  
Missing.  
Missing.

Deviations from Required Sampling Schedule

<u>Sample</u>	<u>Reason</u>
A. <u>Air Filter/Cartridge</u>	
1. (120), 6/28-7/5/83	Power to sampler cut off; sample collection period 6/30-7/5/83.
B. <u>Drinking Water</u>	
1. (136), 2/15-3/15/83	Tubing to sampler clogged; grab sample collected.
2. (142), 2/15-3/15/83	Tubing to sampler clogged; grab sample collected.
C. <u>Quarterly Drinking Water Composite for Tritium</u>	
1. (136), 12/21-3/15/83	Composite sample was not representative of required collection period due to unavailability of monthly composite from 2/15-3/15/83.
2. (142), 12/21-3/15/83	Composite sample was not representative of required collection period due to unavailability of monthly composite from 2/15-3/15/83.
D. <u>Surface Water</u>	
1. (135), 12/21-1/18/83	Line to sampler frozen; grab sample collected.
2. (128), 1/18-2/15/83	Tubing to sampler clogged; grab sample collected.
3. (135), 1/18-2/15/83	Tubing to sampler clogged; grab sample collected.

4. (128), 2/15-3/15/83 Composite unavailable; grab sample collected.
- E. Quarterly Surface Water Composite for Tritium
1. (128), 12/21-3/15/83 Composite sample was not representative of required collection period due to unavailability of monthly composites from 1/18-2/15/83 and 2/15-3/15/83.
2. (135), 12/21/82-3/15/83 Composite sample was not representative of required collection period due to unavailability of monthly composites from 12/21/82-1/18/83 and 1/18-2/15/83.
3. (128), 6/21-9/20/83 Composite sample was not representative of required collection period because the monthly composite from 7/19-8/16/83 was inadvertently discarded prior to addition to quarterly composite.
4. (130), 6/21-9/20/83 Composite sample was not representative of required collection period because the monthly composite from 7/19-8/16/83 was inadvertently discarded prior to addition to quarterly composite.
5. (135), 6/21-9/20/83 Composite sample was not representative of required collection period because the monthly composite from 7/19-8/16/83 was inadvertently discarded prior to addition to quarterly composite.

McGuire Nuclear Station's composite samplers operate such that the rate at which the sample is collected is uniform whereas table notation (7) of Table 3.12-1 of the station's Technical Specifications requires composite samplers to operate such that the rate at which the sample is collected is proportional to the flow of liquid at the collection location. These sampling techniques are approximately equivalent as the flow of liquid in the areas being sampled (station discharge canal and inlets to water purification facilities) is fairly constant. The primary purpose of the water samples is to quantify the concentration of radioactive effluents in the aqueous environment (the exact curie content is known at the time of release) and for this purpose, a time average sampling method is more representative than a flow proportional method and is also considerably less complicated.

One sample of a gamefish and one sample of a bottom feeder were collected in the vicinity of the station discharge area and at a control location in April and October of 1983. These samples were specified in Table 3.12-1 of the McGuire Technical Specifications until March 29, 1983 when revised Technical Specifications were implemented. Table 3.12-1 of the Revised Technical Specifications requires collection and analysis of one sample of each commercially and recreationally important species in the vicinity of the station discharge. There is no documentable commercial fishery in Lake Norman, however, there is a substantial recreational fishery based on creel surveys conducted by Duke Power Company in 1979 and 1982. All species of fish identified in the surveys can be divided into roughly three trophic levels: predatory species (game fish), their forage species and bottom sediment species. There are two basic pathways leading to radionuclide incorporation into fish tissues: uptake via the water column pathway and uptake via the bottom sediments. Because metabolic processes among species of fish do not vary drastically, monitoring species representative of one of each of the trophic levels mentioned meets the objective of the sampling requirement for fish samples. Addition of a forage species to the collection program is scheduled for 1984.

The control location for milk samples is located 12.5 km/NW and although it is not located within the 15-30 km distance or in the most prevalent wind direction from the station as required by Table 3.12-1 of the McGuire Technical Specifications, the location provides valid background information. Surveys made in an attempt to locate a milk sampling location that complies with the requirements of Table 3.12-1 have failed to identify a more practicable location than the one currently being used.

Increased attention to the maintenance of automatic samplers during the second half of 1983 has decreased the number of grab samples collected in lieu of the required composite samples.

A garden census was performed (the results of which are included in Table 6) in lieu of broad leaf sampling at the site boundary in two different direction sectors with the highest predicted D/Q's.

Lower Limits of Detection Not Achieved

	<u>Sample</u>	<u>Radionuclide</u>	<u>Reason</u>
A.	<u>Commercial Crops</u>		
	1. (8 mi/N), 7/19/83 Squash	I-131	Small quantities of squash, corn, and tomato samples made count times necessary to meet I-131 LLD's unacceptably long.
	2. (8 mi/N), 7/19/83 Corn	I-131	
	3. (8 mi/N), 7/19/83 Tomato	I-131	
B.	<u>Drinking Water</u>		
	1. (142), 3/5-4/19/83	Zr-95	A McGuire Nuclear Station Technical Specification revision decreased the required ZR-95 LLD in water samples from 30pCi/L to 15pCi/L. The analysis was performed from 4/83-6/83 using 30pCi/L.
	2. (131), 4/19-5/17/83	Zr-95	

3.	(131), (132), (136), (142)	3/15-4/19/83	I-131	MNS Technical Specifications were revised and became effective on 3/29/83. The LLD for I-131 in drinking water samples in the revised Technical Specifications is 1 pCi/L which is only achievable by performing a low-level I-131 analysis. Table 3.12-1 of MNS Technical Specifications requires an I-131 analysis on each monthly composite only when the dose calculated for consumption of the water is >1 mrem/year. The dose calculated for consumption of water is <1 mrem/year and the customary gamma analysis LLD of 15 pCi/L for I-131 was used for the required gamma analyses performed on these samples.
4.	(131), (132), (136), (142)	4/19-5/17/83	I-131	
5.	(131), (132), (136), (142)	5/17-6/21/83	I-131	
6.	(131), (132), (136), (142)	6/21-7/19/83	I-131	
7.	(131), (132), (136), (142)	7/19-8/16/83	I-131	
8.	(131), (132), (136), (142)	8/16-9/20/83	I-131	
9.	(131), (132), (136), (142)	9/20-10/18/83	I-131	
10.	(131), (132), (136), (142)	10/18-11/15/83	I-131	
11.	(131), (132), (136), (142)	11/15-12/20/83	I-131	

C. Surface Water

1.	(135),	9/20-10/18/83	I-131	Large sample backlog caused too much decay time between sample collection and count date. Count time necessary to meet I-131 LLD unacceptably long.
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Tritium concentrations in drinking water and surface water were closely monitored throughout 1983. No upward increase in tritium concentrations were observed in drinking water; however, an increase in tritium concentrations in surface water collected from locations 128 and 130 (discharge canal bridge and the Highway 73 bridge immediately downstream respectively) was observed. The increase does not pose a significant health hazard to the public as the maximum concentration of tritium reported in surface water represented less than 4% of the MNS Technical Specification 3/4.12.1, Table 3.12-2.

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MC GUIRE NUCLEAR STATION  
MECKLENBURG COUNTY, NORTH CAROLINA

DOCKET NUMBER 50-369,370  
JANUARY 1, 1983 - DECEMBER 31, 1983

Table 1

MEDIUM SAMPLED UNITS	I I I I	I I I I	I I I I	I I I I	I I I I	I I I I	I I I I	I I I I	I I I I	I I I I
		TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE 134 8.7 Mi/WNW			NO. OF NON- ROUTINE REPORT MEAS.
AIR FILTER & CARTRIDGE PCI/CUBIC M 5 LOCATIONS	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I
		MN-54	257	0.00	-1.51E-04( 9/ 207)	1.89E-04( 2/ 52)	10.7 Mi/NNE	5.52E-03-- 1.57E-02	3.44E-04( 2/ 50)	
		FE-59	257	0.00	8.22E-04( 7/ 207)	2.59E-03( 2/ 52)	133	5.52E-03-- 1.57E-02	7.88E-03-- 8.99E-03	
		CO-58	257	0.00	1.71E-02-- 4.26E-02	2.10E-02-- 2.93E-02	16.2 Mi/NE	1.79E-02-- 2.48E-02	2.25E-03( 3/ 50)	
		CO-68	257	0.00	1.41E-04( 3/ 207)	4.65E-04( 1/ 52)	120	7.16E-03-- 7.16E-03	-3.46E-04( 1/ 50)	
		ZN-65	257	0.00	6.57E-03-- 7.87E-03	7.16E-03-- 7.16E-03	133	1.92E-03( 5/ 52)	1.31E-02-- 1.31E-02	
		ZR-95	257	0.00	1.65E-03( 16/ 207)	1.92E-03( 5/ 52)	125	7.01E-03-- 2.56E-02	4.61E-03-- 7.35E-03	
		NB-95	257	0.00	5.75E-03-- 2.57E-02	7.01E-03-- 2.56E-02	133	-8.99E-05( 1/ 52)	-1.15E-03( 0/ 50)	
		I-131	257	0.07	1.96E-02-- 2.68E-02	2.36E-02-- 2.36E-02	133	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
		CS-134	257	0.05	1.81E-03( 11/ 207)	3.04E-03( 5/ 51)	120	1.19E-02-- 1.92E-02	1.15E-03( 1/ 50)	
		CS-137	257	0.06	9.99E-03-- 2.50E-02	1.19E-02-- 1.92E-02	10.5 Mi/SW	6.67E-04( 1/ 52)	1.68E-02-- 1.68E-02	
		BALA-140	257	0.00	4.40E-04( 5/ 207)	6.67E-04( 1/ 52)	121	-3.62E-05( 1/ 50)	-3.62E-05( 1/ 50)	
					6.75E-03-- 1.88E-02	6.75E-03-- 6.75E-03	121	7.78E-03-- 7.78E-03	7.78E-03-- 7.78E-03	
					7.19E-03-- 2.16E-02	7.19E-03-- 1.67E-02	121	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
					2.19E-04( 6/ 207)	6.80E-04( 2/ 52)	121	4.98E-04( 1/ 50)	4.98E-04( 1/ 50)	
					9.01E-03-- 1.32E-02	1.21E-02-- 1.32E-02	121	6.50E-03-- 6.50E-03	6.50E-03-- 6.50E-03	
					2.33E-03( 26/ 207)	2.93E-03( 7/ 52)	121	3.21E-03( 7/ 50)	3.21E-03( 7/ 50)	
					6.40E-03-- 1.70E-02	6.40E-03-- 1.27E-02	121	6.71E-03-- 1.68E-02	6.71E-03-- 1.68E-02	
					5.74E-04( 8/ 207)	9.17E-04( 2/ 52)	121	3.68E-04( 1/ 50)	3.68E-04( 1/ 50)	
					3.19E-03-- 1.89E-02	1.41E-02-- 1.89E-02	121	1.07E-02-- 1.07E-02	1.07E-02-- 1.07E-02	

MEAN BASED UPON ALL NET ACTIVITY MEASUREMENTS

RANGE BASED UPON DETECTABLE ACTIVITY MEASUREMENTS ONLY

ZERO RANGE INDICATES NO DETECTABLE ACTIVITY MEASUREMENTS

FRACTION OF DETECTABLE ACTIVITY MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES, (F)

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

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MECKLENBURG COUNTY, NORTH CAROLINA

DOCKET NUMBER 50-369,370  
JANUARY 1, 1983 - DECEMBER 31, 1983

MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NO. OF NON-ROUTINE REPORT MEAS.
				NAME DIST/ DIRECTION		136 12.5 Mi/NNE	
DRINKING WATER PCI/L							
4 LOCATIONS							
BETA-T	47	4.00	1.72E 00( 36/ 36) 9.63E-01-- 2.70E 00 1.63E-01( 1/ 36) 6.25E 00-- 6.25E 00 4.19E-01( 1/ 36) 1.59E 01-- 1.59E 01 4.76E-01( 1/ 36) 5.75E 00-- 5.75E 00 5.92E-01( 2/ 36) 4.66E 00-- 8.26E 00 -3.98E-01( 1/ 36) 9.47E 00-- 9.47E 00 9.99E-01( 2/ 36) 8.53E 00-- 1.24E 01 -8.34E-01( 0/ 36) 0.00E-01-- 0.00E-01 -2.70E-01( 0/ 36) 0.00E-01-- 0.00E-01 1.55E-01( 1/ 36) 6.51E 00-- 6.51E 00 3.57E-01( 1/ 36) 4.15E 00-- 4.15E 00 2.37E-01( 0/ 36) 0.00E-01-- 0.00E-01	142 7.5 Mi/NE 131 3.0 Mi/ENE 132 11.2 Mi/SSE 132	12/ 12) 2.70E 00 0/ 12) 0.00E-01 1/ 12) 1.59E 01 0/ 12) 0.00E-01 1/ 12) 8.26E 00 1/ 12) 9.47E 00 1/ 12) 0.53E 00 0/ 12) 0.00E-01 0/ 12) 0.00E-01 1/ 12) 6.51E 00 0/ 12) 4.15E 00 0/ 36) 0.00E-01	1.87E 00( 11/ 11) 0.88E-01-- 3.05E 00 -3.06E-02( 0/ 12) 0.00E-01-- 0.00E-01 7.93E-01( 0/ 12) 0.00E-01-- 0.00E-01 -2.60E-01( 0/ 12) 0.00E-01-- 0.00E-01 1.22E 00( 1/ 12) 0.27E 00-- 8.27E 00 -2.48E 00( 0/ 12) 0.00E-01-- 0.00E-01 1.05E 00( 1/ 12) 4.36E 00-- 4.36E 00 2.32E-01( 2/ 12) 6.38E 00-- 6.39E 00 -5.57E-01( 0/ 12) 0.00E-01-- 0.00E-01 1.54E 00( 0/ 12) 0.00E-01-- 0.00E-01 5.31E-01( 0/ 12) 0.00E-01-- 0.00E-01 1.13E 00( 1/ 12) 7.93E 00-- 7.93E 00	
MEAN BASED UPON ALL NET ACTIVITY MEASUREMENTS							
RANGE BASED UPON DETECTABLE ACTIVITY MEASUREMENTS ONLY							
ZERO RANGE INDICATES NO DETECTABLE ACTIVITY MEASUREMENTS							
FRACTION OF DETECTABLE ACTIVITY MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES, (F)							



ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

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MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	CONTROL LOCATIONS MEAN (F) RANGE 136 12.5 Mi/NNE	NO. OF NON-ROUTINE REPORT MEAS.
DRINKING WATER COMPOSITE						
4 LOCATIONS	16	2000.00	2.40E 02( 12/ 12) 1.50E 02-- 2.90E 02	131 3.0 Mi/ENE	2.65E 02( 4/ 4) 1.45E 02( 4/ 4) 1.00E 02-- 2.30E 02	

MEAN BASED UPON ALL NET ACTIVITY MEASUREMENTS  
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SURFACE WATER							
PCI/L							
3 LOCATIONS							
	MN-54	15.00	-2.40E-01( 0/ 24) 0.00E-01( 0/ 24)	130	0/ 12	9.74E-01( 0/ 12)	I
	FE-59	30.00	0.00E-01( 1/ 24) 1.93E-01( 1/ 24)	10.6 Mi/SW	0.00E-01( 1/ 12) 1.76E 00( 1/ 12)	0.00E-01( 0/ 12) -7.00E-01( 0/ 12)	I
	CO-58	15.00	6.94E 00( 0/ 24) 2.51E-01( 0/ 24)	10.4 Mi/ENE	6.94E 00( 0/ 12) 6.14E-01( 0/ 12)	0.00E-01( 0/ 12) 5.08E-02( 0/ 12)	I
	CO-60	15.00	0.00E-01( 3/ 24) 1.46E 00( 3/ 24)	128	0.00E-01( 0/ 12) 1.66E 00( 2/ 12)	0.00E-01( 0/ 12) 2.01E 00( 2/ 12)	I
	ZN-65	30.00	2.00E 00( 0/ 24) -1.87E 00( 0/ 24)	130	5.33E 00( 0/ 12) 2.51E 00( 0/ 12)	5.33E 00( 0/ 12) 4.71E-01( 0/ 12)	I
	ZR-95	15.00	0.00E-01( 0/ 24) -4.63E-01( 0/ 24)	128	0.00E-01( 0/ 12) 3.27E-02( 0/ 12)	0.00E-01( 0/ 12) 1.41E 00( 0/ 12)	I
	NB-95	15.00	0.00E-01( 1/ 24) 0.00E-01( 1/ 24)	130	0.00E-01( 0/ 12) 3.22E-01( 0/ 12)	0.00E-01( 0/ 12) 1.15E 00( 1/ 12)	I
	I-131	15.00	6.08E 00( 1/ 24) 5.70E-01( 1/ 24)	128	0.00E-01( 1/ 12) 1.89E 00( 1/ 12)	9.57E 00( 2/ 12) 2.88E 00( 2/ 12)	I
	CS-134	15.00	1.27E 01( 3/ 24) 1.61E-01( 3/ 24)	130	1.27E 01( 3/ 12) 7.87E-01( 3/ 12)	1.45E 01( 2/ 12) 2.50E-01( 0/ 12)	I
	CS-137	18.00	1.95E 00( 1/ 24) 5.17E-01( 1/ 24)	130	8.71E 00( 0/ 12) 8.43E-01( 0/ 12)	0.00E-01( 0/ 12) 2.39E-01( 0/ 12)	I
	BALA-140	15.00	5.00E 00( 0/ 24) 4.57E-01( 0/ 24)	128	0.00E-01( 0/ 12) 1.38E 00( 0/ 12)	0.00E-01( 0/ 12) 2.89E-01( 0/ 12)	I
			0.00E-01( 0.00E-01)		0.00E-01( 0.00E-01)	0.00E-01( 0.00E-01)	I

MEAN BASED UPON ALL NET ACTIVITY MEASUREMENTS  
RANGE BASED UPON DETECTABLE ACTIVITY MEASUREMENTS ONLY  
ZERO RANGE INDICATES NO DETECTABLE ACTIVITY MEASUREMENTS  
FRACTION OF DETECTABLE ACTIVITY MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES, (F)

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MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	CONTROL LOCATIONS MEAN (F) RANGE 135 12.0 Mi/N	NO. OF NON-ROUTINE REPORT MEAS.
SURFACE WATER COMPOSITE						
PCI/L						
3 LOCATIONS						
H-3	12	2000.00	4.40E 02( 8/ 8)	130 5.75E 02( 4/ 4)	3.67E 02( 3/ 4)	
			1.00E 02-- 7.10E 02	0.6 Mi/SW 3.90E 02-- 7.10E 02	1.00E 02-- 7.00E 02	

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6  
6  
6

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MEDIUM SAMPLED UNITS	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I	I I I I I
	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE 141 7.3 Mi/NW	NO. OF NON- ROUTINE REPORT MEAS.		
MILK									
PCI/L 4 LOCATIONS									
I-131/LL	89	1.00	-1.80E-02( 1/ 65) 8.55E-01-- 8.55E-01	138 1.8 Mi/ESE	1.23E-02( 0/ 24) 0.00E-01-- 0.00E-01	-4.57E-02( 0/ 24) 0.00E-01-- 0.00E-01			
MN-54	89	0.00	6.75E-01( 4/ 65) 5.36E 00-- 9.16E 00	140 2.8 Mi/SSE	1.14E 00( 2/ 24) 7.92E 00-- 9.15E 00	4.26E-01( 0/ 24) 0.00E-01-- 0.00E-01			
FE-59	89	0.00	1.19E-01( 3/ 65) 1.35E 01-- 2.17E 01	138	1.61E 00( 2/ 24) 1.63E 01-- 2.17E 01	4.75E 00( 2/ 24) 1.51E 01-- 2.56E 01			
CO-58	89	0.00	-1.36E-01( 0/ 65) 0.00E-01-- 0.00E-01	138	5.16E-01( 0/ 24) 0.00E-01-- 0.00E-01	-2.58E-02( 1/ 24) 6.29E 00-- 6.29E 00			
CO-60	89	0.00	9.88E-01( 3/ 65) 5.98E 00-- 1.10E 01	140	1.19E 00( 3/ 24) 5.98E 00-- 1.10E 01	1.01E 00( 0/ 24) 0.00E-01-- 0.00E-01			
ZN-65	89	0.00	-7.41E-01( 1/ 65) 2.17E 01-- 2.17E 01	140	1.89E-01( 1/ 24) 2.17E 01-- 2.17E 01	2.85E-01( 0/ 24) 0.00E-01-- 0.00E-01			
ZR-95	89	0.00	6.57E-01( 1/ 65) 1.11E 01-- 1.11E 01	140	1.05E 00( 1/ 24) 1.11E 01-- 1.11E 01	1.94E 00( 0/ 24) 0.00E-01-- 0.00E-01			
NB-95	89	0.00	-7.35E-01( 1/ 65) 1.06E 01-- 1.06E 01	140	-1.76E-01( 1/ 24) 1.06E 01-- 1.06E 01	1.76E 00( 6/ 24) 6.90E 00-- 1.13E 01			
I-131	89	15.00	5.32E-01( 2/ 65) 9.51E 00-- 1.16E 01	138	8.67E-01( 1/ 24) 9.51E 00-- 9.51E 00	4.76E-01( 0/ 24) 0.00E-01-- 0.00E-01			
CS-134	89	15.00	1.50E-02( 3/ 65) 6.76E 00-- 8.35E 00	139 1.8 Mi/SSE	1.26E 00( 1/ 17) 8.35E 00-- 8.35E 00	1.55E 00( 2/ 24) 8.38E 00-- 1.16E 01			
CS-137	89	18.00	7.55E 00( 20/ 65) 7.00E 00-- 4.10E 01	139	2.02E 01( 14/ 17) 1.02E 01-- 4.10E 01	2.02E 00( 2/ 24) 7.35E 00-- 0.65E 00			
BALA-140	89	15.00	1.80E-02( 0/ 65) 0.00E-01-- 0.00E-01	139	4.44E-01( 0/ 17) 0.00E-01-- 0.00E-01	2.35E-01( 0/ 24) 0.00E-01-- 0.00E-01			

MEAN BASED UPON ALL NET ACTIVITY MEASUREMENTS

RANGE BASED UPON DETECTABLE ACTIVITY MEASUREMENTS ONLY

ZERO RANGE INDICATES NO DETECTABLE ACTIVITY MEASUREMENTS

FRACTION OF DETECTABLE ACTIVITY MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES, (F)

MC GUIRE NUCLEAR STATION  
MECKLENBURG COUNTY, NORTH CAROLINA

DOCKET NUMBER 50-369,370  
JANUARY 1, 1983 - DECEMBER 31, 1983

MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE 134 8.7 Mi/WNW	NO. OF NON-ROUTINE REPORT MEAS.
BROAD-LEAF VEGETATION PCT/KG (WET) LOCATIONS							
MIN-54	48	0.00	-3.07E-01( 1/ 36) 3.43E 01-- 3.43E 01	125 0.5 Mi/SW	5.10E 00( 1/ 12) 3.43E 01-- 3.43E 01	-0.54E-01( 0/ 12) 0.00E-01-- 0.00E-01	
FE-59	48	0.00	3.03E 00( 0/ 36) 0.00E-01-- 0.00E-01	125	7.74E 00( 0/ 12) 0.00E-01-- 0.00E-01	9.23E 00( 1/ 12) 6.37E 01-- 6.37E 01	
CO-58	48	0.00	-2.53E 00( 0/ 36) 0.00E-01-- 0.00E-01	125	3.63E-01( 0/ 12) 0.00E-01-- 0.00E-01	5.66E-01( 1/ 12) 6.73E 01-- 6.73E 01	
CO-60	48	0.00	7.50E 00( 7/ 36) 1.90E 01-- 4.83E 01	159 4.4 Mi/NNE	1.13E 01( 3/ 12) 2.41E 01-- 4.10E 01	1.14E 01( 1/ 12) 2.45E 01-- 2.45E 01	
ZN-65	48	0.00	-1.32E 01( 0/ 36) 0.00E-01-- 0.00E-01	159	-7.65E 00( 0/ 12) 0.00E-01-- 0.00E-01	-1.34E 01( 0/ 12) 0.00E-01-- 0.00E-01	
ZR-95	48	0.00	4.96E 00( 0/ 36) 0.00E-01-- 0.00E-01	159	7.12E 00( 0/ 12) 0.00E-01-- 0.00E-01	6.78E 00( 1/ 12) 9.06E 01-- 9.06E 01	
NB-95	48	0.00	-4.37E 00( 0/ 36) 0.00E-01-- 0.00E-01	159	-1.29E 00( 0/ 12) 0.00E-01-- 0.00E-01	-3.66E 00( 0/ 12) 0.00E-01-- 0.00E-01	
I-131	48	60.00	4.35E 00( 1/ 36) 4.94E 01-- 4.94E 01	158 5.0 Mi/NE	1.13E 01( 1/ 12) 4.94E 01-- 4.94E 01	7.19E 00( 1/ 12) 4.66E 01-- 4.66E 01	
CS-134	48	60.00	2.18E 00( 1/ 36) 3.74E 01-- 3.74E 01	159	4.13E 00( 0/ 12) 0.00E-01-- 0.00E-01	1.24E 00( 2/ 12) 2.40E 01-- 6.45E 01	
CS-137	48	80.00	5.21E 00( 2/ 36) 1.52E 01-- 4.93E 01	125	9.07E 00( 1/ 12) 4.93E 01-- 4.93E 01	7.05E 00( 1/ 12) 4.02E 01-- 4.02E 01	
BALA-140	48	0.00	1.24E 00( 0/ 36) 0.00E-01-- 0.00E-01	125	2.34E 00( 0/ 12) 0.00E-01-- 0.00E-01	3.10E 00( 0/ 12) 0.00E-01-- 0.00E-01	

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ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

MCGUIRE NUCLEAR STATION  
MECKLENBURG COUNTY, NORTH CAROLINA

DOCKET NUMBER 50-369,370  
JANUARY 1, 1983 - DECEMBER 31, 1983

MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE 137	NO. OF NON-ROUTINE REPORT MEAS.
FISH						12.0 Mi/N	
PCI-KG (WET) 2 LOCATIONS							
	MN-54	7	130.00	-2.60E 00( 0/ 3)	0.00E-01-- 0.00E-01	-1.84E 00( 0/ 4)	
	FE-59	7	260.00	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
	CO-58	7	130.00	-0.68E 00( 0/ 3)	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
	CO-60	7	130.00	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
	ZN-65	7	260.00	2.60E 01( 2/ 3)	2.60E 01( 2/ 3)	-5.31E 00( 0/ 4)	
	ZR-95	7	0.00	3.04E 01-- 5.92E 01	3.04E 01-- 5.92E 01	0.00E-01-- 0.00E-01	
	NB-95	7	0.00	1.11E 01( 1/ 3)	1.11E 01( 1/ 3)	2.42E 00( 0/ 4)	
	I-131	7	0.00	2.05E 01-- 2.05E 01	2.05E 01-- 2.05E 01	0.00E-01-- 0.00E-01	
	CS-134	7	130.00	-1.07E 00( 0/ 3)	0.00E-01-- 0.00E-01	4.86E 00( 0/ 4)	
	CS-137	7	150.00	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
	BALA-140	7	0.00	1.34E 01( 0/ 3)	1.34E 01( 0/ 3)	2.23E-01( 0/ 4)	
				0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
				-1.69E 00( 0/ 3)	0.00E-01-- 0.00E-01	2.93E-01( 1/ 4)	
				0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	3.26E 01-- 3.26E 01	
				3.86E 00( 0/ 3)	0.00E-01-- 0.00E-01	-2.57E 01( 0/ 4)	
				0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
				-1.32E 00( 0/ 3)	0.00E-01-- 0.00E-01	-2.57E 00( 0/ 4)	
				0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	
				6.03E 01( 1/ 3)	1.31E 02-- 1.31E 02	2.08E 01( 1/ 4)	
				1.31E 02-- 1.31E 02	1.31E 02-- 1.31E 02	3.92E 01-- 3.92E 01	
				-8.01E 00( 0/ 3)	0.00E-01-- 0.00E-01	-1.67E-02( 0/ 4)	
				0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	0.00E-01-- 0.00E-01	

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ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

MCGUIRE NUCLEAR STATION  
MECKLENBURG COUNTY, NORTH CAROLINA

DOCKET NUMBER 50-369,370  
JANUARY 1, 1983 - DECEMBER 31, 1983

MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	CONTROL LOCATIONS MEAN (F) RANGE	NO. OF NON-ROUTINE REPORT MEAS.
CROPS						
PCI/KGM (WET)						
1 LOCATION						
MN-54	3	0.00	-1.52E-01( 0/ 3)	8 MI/N	No samples were	
			0.00E-01-- 0.00E-01		collected from	
FE-59	3	0.00	1.25E 01( 0/ 3)	8 MI/N	a control location	
			0.00E-01-- 0.00E-01			
CO-58	3	0.00	-8.27E-02( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
CO-60	3	0.00	8.16E 00( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
ZH-65	3	0.00	-2.77E 01( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
ZR-95	3	0.00	1.68E 01( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
NB-95	3	0.00	-2.30E 01( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
I-131	3	60.00	2.90E 00( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
CS-134	3	60.00	5.07E 00( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
CS-137	3	80.00	-6.08E 00( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			
BALA-140	3	0.00	3.51E 00( 0/ 3)	8 MI/N		
			0.00E-01-- 0.00E-01			

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 FRACTION OF DETECTABLE ACTIVITY MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES, (F)



ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

MCGUIRE NUCLEAR STATION  
 HECKLENBURG COUNTY, NORTH CAROLINA

DOCKET NUMBER 58-369,370  
 JANUARY 1, 1983 - DECEMBER 31, 1983

MEDIUM SAMPLED UNITS	TYPE & TOTAL NO. OF ANALYSES PERFORMED	(LLD)	ALL INDICATOR LOCATIONS MEANS (F) RANGE	LOCATION W/ HIGHEST ANN. MEAN NAME DIST/ DIRECTION	CONTROL LOCATIONS MEAN (F) RANGE 183 5.5 Mi/S	NO. OF NON-ROUTINE REPORT MEAS.
TLD						
MR/HOUR 41 LOCATIONS	MR/HOUR 157	0.00	1.35E-02( 153/ 153) 8.00E-03-- 2.60E-02	180 11.5 Mi/NNE	2.00E-02( 4/ 4) 1.70E-02-- 2.40E-02	1.48E-02( 4/ 4) 1.30E-02-- 1.60E-02

MEAN BASED UPON ALL NET ACTIVITY MEASUREMENTS  
 RANGE BASED UPON DETECTABLE ACTIVITY MEASUREMENTS ONLY  
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 FRACTION OF DETECTABLE ACTIVITY MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES, (F)

MCGUIRE RADIOLOGICAL MONITORING PROGRAM SAMPLING LOCATIONS  
TLD LOCATIONS  
TABLE 2

SAMPLING LOCATION DESCRIPTION *			SAMPLING LOCATION DESCRIPTION *		
143	SITE BOUNDARY	(0.5 MILES N)	163	4-5 MILE RADIUS	(5.0 MILES SE)
144	SITE BOUNDARY	(0.7 MILES NNE)	164	4-5 MILE RADIUS	(4.5 MILES SSE)
145	SITE BOUNDARY	(0.5 MILES NE)	165	4-5 MILE RADIUS	(5.0 MILES S)
146	SITE BOUNDARY	(0.5 MILES ENE)	166	4-5 MILE RADIUS	(5.2 MILES SSW)
147	SITE BOUNDARY	(0.5 MILES E)	167	4-5 MILE RADIUS	(4.9 MILES SW)
148	SITE BOUNDARY	(0.5 MILES ESE)	168	4-5 MILE RADIUS	(4.7 MILES WSW)
149	SITE BOUNDARY	(0.6 MILES SE)	169	4-5 MILE RADIUS	(4.4 MILES W)
150	SITE BOUNDARY	(0.5 MILES SSE)	170	4-5 MILE RADIUS	(4.4 MILES WNW)
151	SITE BOUNDARY	(0.5 MILES S)	171	4-5 MILE RADIUS	(4.5 MILES NW)
152	SITE BOUNDARY	(0.5 MILES SSW)	172	4-5 MILE RADIUS	(5.2 MILES NNW)
153	SITE BOUNDARY	(0.5 MILES SW)	173	SPECIAL INTEREST	(8.5 MILES NNW)
154	SITE BOUNDARY	(0.7 MILES WSW)	174	SPECIAL INTEREST	(8.7 MILES WNW)
155	SITE BOUNDARY	(0.7 MILES W)	175	SPECIAL INTEREST	(12.7 MILES WNW)
156	SITE BOUNDARY	(0.5 MILES WNW)	176	SPECIAL INTEREST	(11.0 MILES SW)
157	4-5 MILE RADIUS	(4.8 MILES N)	177	SPECIAL INTEREST	(8.6 MILES S)
158	4-5 MILE RADIUS	(4.4 MILES NNE)	178	SPECIAL INTEREST	(9.2 MILES SE)
159	4-5 MILE RADIUS	(5.0 MILES NE)	179	SPECIAL INTEREST	(10.4 MILES ESE)
160	4-5 MILE RADIUS	(4.9 MILES ENE)	180	SPECIAL INTEREST	(11.5 MILES NNE)
161	4-5 MILE RADIUS	(4.7 MILES E)	181	SPECIAL INTEREST	(6.7 MILES NE)
162	4-5 MILE RADIUS	(4.6 MILES ESE)	182	SPECIAL INTEREST	(6.0 MILES NE)
			183	CONTROL	(5.5 MILES S)

\* All TLD samples are collected quarterly

McGuire Environmental Radiological Monitoring Program  
 Other Sampling Locations  
 Table - 2 (Cont'd)

Code:

W - Weekly            Q - Quarterly  
 SM - Semimonthly    SA - Semiannual  
 M - Monthly         C - Control

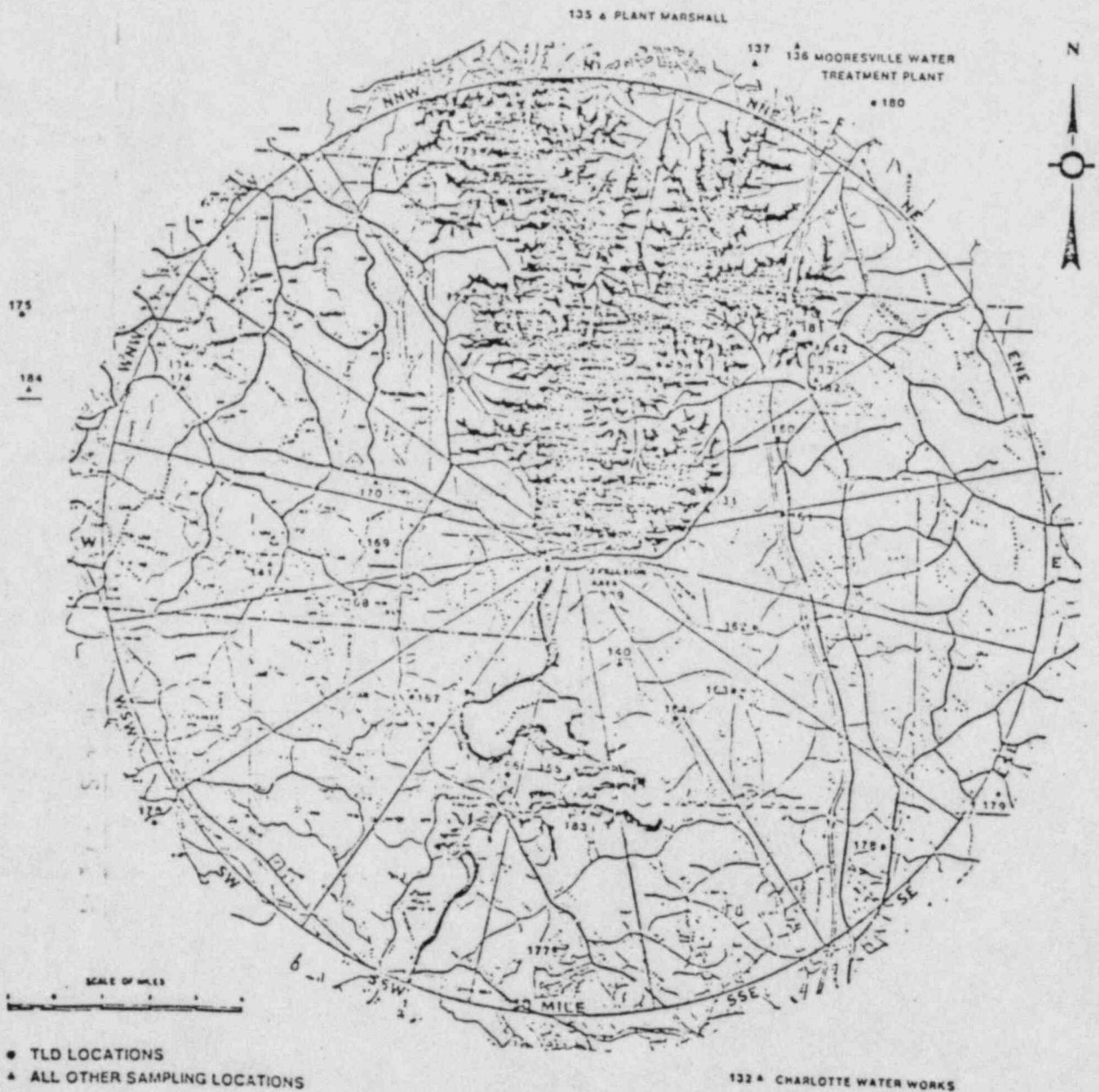
Sampling Location Description			Air Radionuclides and Particulates	Surface Water	Drinking Water	Shoreline Sediment	Milk	Fish	Broadleaf Vegetation
120	Site Boundary	(0.7 mi NNE)	W						
121	Site Boundary	(0.5 mi NE)	W						
125	Site Boundary	(0.5 mi SW)	W						M
128	Discharge Canal Bridge	(0.4 mi ENE)		M					
129	Discharge Canal	(0.6 mi ENE)				SA		SA	
130	Hwy 73 Bridge	(0.6 mi SW)		M		SA			
131	Huntersville Water Supply	(3.0 mi ENE)			M				
132	Charlotte Water Supply	(11.2 mi SSE)			M				
133	Cornelius	(6.2 mi NE)	W						
C134	East Lincoln Jr. High	(8.7 mi WNW)	W						M
C135	Marshall Plant Intake Canal	(12.0 mi N)		M					
C136	Mooreville Water Supply	(12.5 mi NNE)			M				
C137	Pinnacle Access Area	(12.0 mi N)				SA		SA	
138	Hubbard Dairy - Cows	(1.8 mi ESE)					SM		
139	Howell Residence - Goats	(1.8 mi SSE)					SM		
140	Kidd Dairy - Cows	(2.8 mi SSE)					SM		
C141	Keever Dairy - Cows	(7.3 mi NW)					SM		
142	Davidson Water Supply	(7.5 mi NE)			M				
184	Duke Power Substation	(18 mi WNW)							M

McGuire Environmental Radiological Monitoring Program  
 Program Analyses  
 Table 3

<u>Sample Medium</u>	<u>Analysis Schedule</u>	Gamma Isotopic	Tritium	Low-Level I-131	Gross Beta	Direct Radiation
1) Air Radioiodine and Particulates	Weekly	X				
2) TLD	Quarterly					X
3) Surface Water	Monthly	X				
	Quarterly Composite		X			
4) Drinking Water	Monthly	X			X	
	Quarterly Composite		X			
5) Shoreline Sediment	Semiannually	X				
6) Milk	Semimonthly	X		X		
7) Fish	Semiannually	X				
8) Broadleaf Vegetation	Monthly	X				

MCGUIRE NUCLEAR STATION  
MONITORING PP IGRAM LOCATIONS

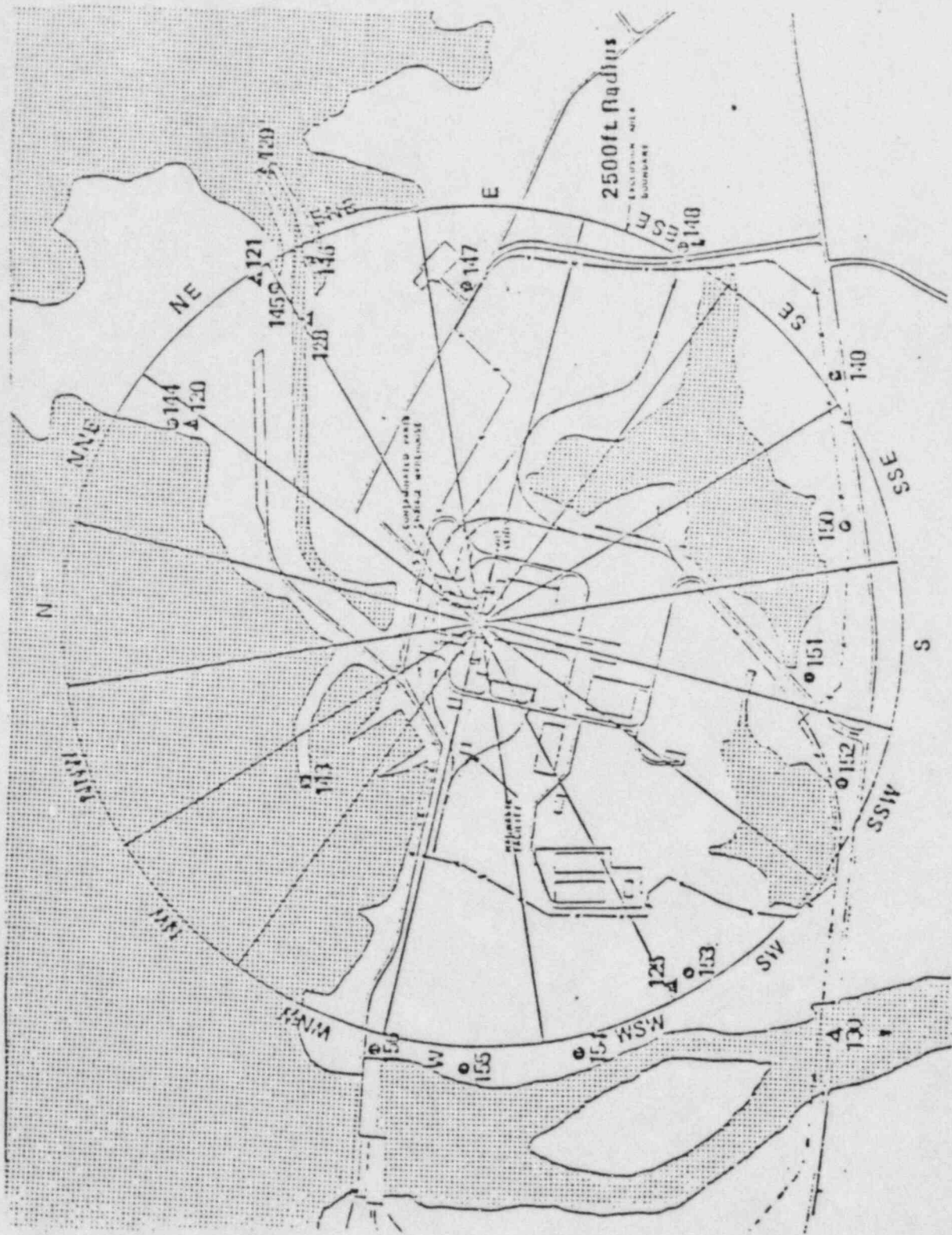
Table 4



Key - Tables 485

120	0.7 MILES NNE	140	2.8 MILES SSE	155	0.7 MILES W	170	4.4 MILES WNW
121	0.5 MILES NE	141	7.3 MILES NW	156	0.5 MILES WNW	171	4.5 MILES NW
125	0.5 MILES SW	142	7.5 MILES NE	157	4.8 MILES N	172	5.2 MILES NNW
128	0.4 MILES ENE	143	0.5 MILES N	158	4.4 MILES NNE	173	8.5 MILES NNW
129	0.6 MILES ENE	144	0.7 MILES NNE	159	5.0 MILES NE	174	8.7 MILES WNW
130	0.6 MILES SW	145	0.5 MILES NE	160	4.9 MILES ENE	175	12.7 MILES WNW
131	3.0 MILES ENE	146	0.5 MILES ENE	161	4.7 MILES E	176	11.0 MILES SW
132	11.2 MILES SSE	147	0.5 MILES E	162	4.6 MILES ESE	177	8.6 MILES S
133	6.2 MILES NE	148	0.5 MILES ESE	163	5.0 MILES SE	178	9.2 MILES SE
134	8.7 MILES WNW	149	0.6 MILES SE	164	4.5 MILES SSE	179	10.4 MILES ESE
135	12.0 MILES N	150	0.5 MILES SSE	165	5.0 MILES S	180	11.5 MILES NNE
136	12.5 MILES NNE	151	0.5 MILES S	166	5.2 MILES SSW	181	6.7 MILES NE
137	12.0 MILES N	152	0.5 MILES SSW	167	4.9 MILES SW	182	8.0 MILES NE
138	1.8 MILES ESE	153	0.5 MILES SW	168	4.7 MILES WSW	183	5.5 MILES S
139	1.8 MILES SSE	154	0.7 MILES WSW	169	4.4 MILES W	184	18 MILES WNW

McGuire Nuclear Station  
 Sampling Locations - 0.6 Mile Radius  
 Table 5



- TLD LOCATIONS
- ▲ OTHER SAMPLING LOCATIONS

MCGUIRE NUCLEAR STATION  
ANNUAL LAND USE CENSUS  
PERFORMED 7/18 -7/20/83

TABLE 6

<u>Sector</u>		<u>Distance</u>
N	Nearest milk animal	None within 5 miles
	Nearest residence	2.75 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
NNE	Nearest milk animal	None within 5 miles
	Nearest residence	1.5 miles
	Nearest garden >500 ft <sup>2</sup>	3.0 miles
NE	Nearest milk animal	None within 5 miles
	Nearest residence	2.0 miles
	Nearest garden >500 ft <sup>2</sup>	2.0 miles
ENE	Nearest milk animal	4.0 miles
	Nearest residence	2.5 miles
	Nearest garden >500 ft <sup>2</sup>	2.5 miles
E	Nearest milk animal	2.5 miles
	Nearest residence	0.5 miles
	Nearest garden >500 ft <sup>2</sup>	0.5 miles
ESE	Nearest milk animal	1.8 miles
	Nearest residence	0.5 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
SE	Nearest milk animal	2.5 miles
	Nearest residence	1.0 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
SSE	Nearest milk animal	1.8 miles
	Nearest residence	0.5 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
S	Nearest milk animal	3.3 miles
	Nearest residence	1.8 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
SSW	Nearest milk animal	None within 5 miles
	Nearest residence	3.0 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
SW	Nearest milk animal	None within 5 miles
	Nearest residence	2.0 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles

MCGUIRE NUCLEAR STATION  
 ANNUAL LAND USE CENSUS  
 PERFORMED 7/18 -7/20/83

TABLE 6 (cont'd)

WSW	Nearest milk animal	None within 5 miles
	Nearest residence	1.5 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
W	Nearest milk animal	None within 5 miles
	Nearest residence	1.1 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
WNW	Nearest milk animal	None within 5 miles
	Nearest residence	0.8 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
NW	Nearest milk animal	None within 5 miles
	Nearest residence	1.25 miles
	Nearest garden >500 ft <sup>2</sup>	None within 5 miles
NNW	Nearest milk animal	None within 5 miles
	Nearest residence	2.0 miles
	Nearest garden >500 ft <sup>2</sup>	None with 5 miles



RESULTS OF  
DUKE POWER COMPANY  
ENVIRONMENTAL RADIOLOGICAL LABORATORY  
PARTICIPATION IN  
1983 EPA CROSS-CHECK PROGRAM

TABLE 7

1 of 6

Cross-Check Type and Date: Alpha and Beta in Water - January, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Alpha	29.	7.25	25. 23. 25.	24.	.16	-1.1
Beta	31.	5.	35. 33. 34.	34.	.24	1.0
Cross-Check Type and Date: Alpha and Beta in Water - March, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Alpha	31.	7.8	24. 33. 19.	25.	.34	-1.3
Beta	28.	5.	29. 28. 30.	29.	.41	.3
Cross-Check Type and Date: Alpha and Beta in Water - May, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Alpha	11.	5.	8. 8. 10.	9.	.24	-.8
Beta	57.	5.	61. 59. 60.	60.	.24	1.0

Note: All results are reproduced exactly as they appear in the EPA Environmental Radioactivity Laboratory Intercomparison Studies Program analysis reports.

RESULTS OF  
DUKE POWER COMPANY  
ENVIRONMENTAL RADIOLOGICAL LABORATORY  
PARTICIPATION IN  
1983 EPA CROSS-CHECK PROGRAM

TABLE 7 (Cont'd)

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Cross-Check Type and Date: Alpha and Beta in Water - July, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Alpha	7.	5.	10. 7. 7.	8.	.35	.3
Beta	22.	5.	25. 24. 23.	24.	.24	.7
Cross-Check Type and Date: Alpha and Beta in Water - September, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Alpha	5.	5.	4. 4. 4.	4.	0.00	-.3
Beta	9.	5.	11. 10. 10.	10.	.12	.5
Cross-Check Type and Date: Alpha and Beta in Water - November, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Alpha	14.	5.	10. 11. 12.	11.	.24	-1.0
Beta	16.	5.	18. 20. 18.	19.	.24	.9

RESULTS OF  
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ENVIRONMENTAL RADIOLOGICAL LABORATORY  
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TABLE 7 (Cont'd)

Cross-Check Type and Date: Air Filter - March, 1983						
Radionuclide	Known Activity (pCi)	Expected Lab Precision (pCi)	ERL Results (pCi)	ERL Average (pCi)	Range Analysis	Normalized Deviation From Known
Alpha	26.	6.5	32. 31. 33.	32.	.18	1.6
Beta	68.	5.	75. 72. 73.	73.	.35	1.8
Cs-137	27.	5.	34. 32. 32.	33.	.24	2.0
Cross-Check Type and Date: Air Filter - August, 1983						
Radionuclide	Known Activity (pCi)	Expected Lab Precision (pCi)	ERL Results (pCi)	ERL Average (pCi)	Range Analysis	Normalized Deviation From Known
Alpha	13.	5.	15. 17. 16.	13.	.24	.1
Beta	36.	5.	36. 38. 37.	37.	.24	.3
Cs-137	15.	5.	20. 20. 20.	20.	0.00	1.7

Note: Sr-89 and Sr-90 analyses results are not included as these analyses are not performed by the Environmental Radiological Laboratory.

RESULTS OF  
DUKE POWER COMPANY  
ENVIRONMENTAL RADIOLOGICAL LABORATORY  
PARTICIPATION IN  
1983 EPA CROSS-CHECK PROGRAM

TABLE 7 (Cont'd)

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Cross-Check Type and Date: Gamma in Water - February, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Cr-51	45.	5.	71. <81. 91.	N/A	N/A	N/A
Co-60	22.	5.	23. 23. 24.	23.	.12	.5
Zn-65	21.	5.	17. 22 <23.	N/A	N/A	N/A
Ru-106	48.	5.	56. 62. <84.	N/A	N/A	N/A
Cs-134	20.	5.	21. 18. 23.	21.	.59	.2
Cs-137	19.	5.	21. 16. 16.	18.	.59	-.5

RESULTS OF  
DUKE POWER COMPANY  
ENVIRONMENTAL RADIOLOGICAL LABORATORY  
PARTICIPATION IN  
1983 EPA CROSS-CHECK PROGRAM

TABLE 7 (Cont'd)

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Cross-Check Type and Date: Gamma in Water - October, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
Cr-51	51.	5.	<100. <100. <123.	N/A	N/A	N/A
Co-60	19.	5.	22. 19. 18.	20.	.47	.2
Zn-65	40.	5.	35. 30. 26.	30.	1.12	-3.3
Ru-106	52.	5.	72. 63. <64.	N/A	N/A	N/A
Cs-134	15.	5.	15. 16. 15.	15.	.12	.1
Cs-137	22.	5.	26. 23. 17.	22.	1.12	0.0

RESULTS OF  
DUKE POWER COMPANY  
ENVIRONMENTAL RADIOLOGICAL LABORATORY  
PARTICIPATION IN  
1983 EPA CROSS-CHECK PROGRAM

TABLE 7 (Cont'd)

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Cross-Check Type and Date: Gamma in Milk - February, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
I-131	54.5	6.	59. 63. 48.	56.7	1.91	.6
Cs-137	25.6	5.	34. 21. 20.	25.0	2.25	-.2
Ba-140	0	N/A	<49 <53 <41	N/A	N/A	N/A
K-40	1512*	76.*	1630.* 1657.* 1726.*	1671.*	.75	3.6
Cross-Check Type and Date: Gamma in Milk - October, 1983						
Radionuclide	Known Activity (pCi/L)	Expected Lab Precision (pCi/L)	ERL Results (pCi/L)	ERL Average (pCi/L)	Range Analysis	Normalized Deviation From Known
I-131	40.	6.	72. <62. 72.	N/A	N/A	N/A
Cs-137	33.	5.	37. 26. 37.	33.	1.57	.1
Ba-140	0	N/A	<48. <83. <106.	N/A	N/A	N/A
K-40	1550.	78.	1547. 1613. 1579.	1580.	.36	.7

Note: Sr-89 and Sr-90 analyses results are not included as these analyses are not performed by the Environmental Radiological Laboratory.

\* K-40 Analyses results are reported in mg/liter

RP  
ajd

**DUKE POWER COMPANY**  
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HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

April 25, 1984

Mr. James P. O'Reilly  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30303

30  
AG:44

Reference: McGuire Nuclear Station  
Docket Nos. 50-369, 50-370  
Annual Radiological Environmental Operating Report

Dear Mr. O'Reilly:

Pursuant to Technical Specification 6.9.1.6, please find attached the McGuire Nuclear Station Annual Radiological Environmental Operating Report for the calendar year 1983. Please advise us if there are questions concerning this report.

Very truly yours,

*H.B. Tucker*  
Hal B. Tucker

WHM:glb

Attachment

cc: Mr. W. T. Orders  
NRC Resident Inspector  
McGuire Nuclear Station

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