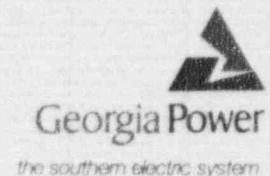


Georgia Power Company
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J. T. Beckham, Jr.
Vice President - Nuclear
Hatch Project



March 28, 1995

Docket Nos. 50-321
50-366

HL-4817

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Edwin I. Hatch Nuclear Plant
Assessment of Results of Augmented Radiological
Environmental Monitoring Program for the Years 1992 Through 1994

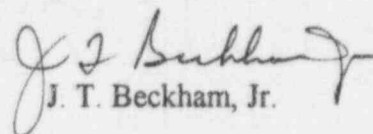
Gentlemen:

Georgia Power Company's (GPC's) letter to the NRC dated January 7, 1987, provided a description of an augmented Radiological Environmental Monitoring Program (REMP) that was initiated on December 15, 1986, following the release of radioactive water from the spent fuel storage pools at Plant Hatch to an onsite swamp on December 3 and 4, 1986. By letters dated March 31, 1988; April 3, 1989; and March 31, 1992, GPC provided the results of the augmented REMP and appropriate program modifications for the periods of December 15, 1986, through 1987; 1988; and 1989 through 1991, respectively.

Enclosed is an assessment of the program results for the years 1992 through 1994. The assessment indicates that radioactivity levels in the swamp continue to decrease. Consequently, the assessment period is being extended to 5-years. The next status report will be submitted by April 2000 at which time GPC plans to discontinue the augmented REMP.

Please contact this office should you have any questions.

Sincerely,


J. T. Beckham, Jr.

040139

WHO/eb

Enclosure: (See next page.)

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U.S. Nuclear Regulatory Commission
March 28, 1995

Page Two

Enclosure: Assessment of Results of Augmented Radiological Environmental
Monitoring Program for the Years 1992 through 1994

cc: Georgia Power Company

Mr. H. L. Sumner, Jr., Nuclear Plant General Manager
NORMS

U. S. Nuclear Regulatory Commission, Washington, D. C.

Mr. K. Jabbour, Licensing Project Manager - Hatch

U. S. Nuclear Regulatory Commission, Region II

Mr. S. D. Ebnetter, Regional Administrator

Mr. B. L. Holbrook, Senior Resident Inspector - Hatch

Enclosure

Assessment of Results of Augmented Radiological Environmental Monitoring Program for the Years 1992 Through 1994

On December 3 and 4, 1986, an event occurred at the Hatch Nuclear Plant (HNP) in which radioactive water from the Spent Fuel Storage Pools (SFSP) was released into the onsite swamp east of the cooling towers. As a result of this event, Georgia Power Company (GPC) initiated an augmented radiological environmental monitoring program concerning the swamp on December 15, 1986. This program, as described in a letter to the NRC dated January 7, 1987, calls for a periodic assessment of the program's results and any appropriate modifications to the program (including termination) as a consequence of the assessment.

Past assessments of the results of this program were reported to the NRC by letter as given below:

<u>Period</u>	<u>Date of Letter</u>
12/15/86 through 1987	03/31/88
1988	04/03/89
1989-1991	03/31/92

This report provides the assessment of the program's results for the years 1992 through 1994 with modifications thereto.

The program commitment for the years 1992 through 1994 calls for the annual collection of samples at Locations A, PL-2, PL-3, MBC and at a background location for gamma isotopic analysis. Collections were also made at Location B each year and at Location H in 1992 and 1994. In 1993, the collection for Location H was inadvertently taken about 15 yards south of the position intended. This unintended position is labeled Location New H. Collections were also made at Location New H in 1994. The activities of the manmade radionuclides found in each of the samples collected at these select locations during 1992-1994 are provided in Table 1. The average activities at these select locations for each year from 1987 through 1994 are presented in Table 2.

All of the sampling locations except for New H and the background location are shown in Figure 1 and/or Figure 2. The annual collections were made on September 14, 1992, October 4, 1993, and October 4, or November 30, 1994. At least two samples were taken at each location on the collection dates. The samples were composed of substantial quantities of root and other organic material, mud, and sediment. All of the laboratory analyses were performed at GPC's Environmental Laboratory in Smyrna, Georgia.

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Assessment of Results of Augmented Radiological
Environmental Monitoring Program for the
Years 1992 Through 1994

In 1994, muck samples were also collected at all of the other monitoring locations in the swamp where collections have not been made since 1987. The only manmade radionuclide found at these other locations (in 1994) was Cs-137; its activity in each of the samples collected is provided in Table 3. In Table 4, the average activities at these other locations for 1987 are compared with those for 1994.

Location A is situated in the swamp pond adjacent to the point where the water from the SFSP entered the swamp. Location B is positioned in an effluent stream from the pond; it is the only effluent stream from the pond when the water level in the river is low. Under high water conditions, Location H lies along a release pathway.

Locations PL-2 and PL-3 lie along the plant's eastern property line. Location MBC lies along the right bank of Bay Creek adjacent to its entry into the Altamaha River. Bay Creek provides a drain for the swamp; the mouth of Bay Creek is about three quarters of a mile east of the plant's eastern property line. Location PL-2 lies on the left bank of Bay Creek. The background location, like the swamp, lies in the floodplain of the Altamaha River but is positioned about 0.8 miles upstream of the plant's discharge and on the opposite side of the river.

From an examination of the results presented in the tables, the following observations are made.

As shown in Tables 1 and 2, Eu-154 was found in one of the samples collected in 1992 at the background location. This radionuclide is not released from the plant. An explanation for its presence at this location has not been determined.

As might be expected, the activities found in the samples collected at Location A continue to dominate those collected elsewhere both in the number of radionuclides detected and in the levels of these radionuclides. In general, the levels diminish with distance from Location A.

The variability in the activity levels found in the samples which were collected on the same dates at approximately the same locations (that is, within several feet of each other) as shown in Tables 1 and 3 suggests a lack of uniformity in surface contamination. It also reflects the difficulty in obtaining replicate samples, especially at locations where there is a preponderance of root matter in the soil. Efforts were made in obtaining samples to an average depth of approximately one inch. The variability may also be attributed in part to a failure in obtaining each sample to this depth.

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Assessment of Results of Augmented Radiological
Environmental Monitoring Program for the
Years 1992 Through 1994

Table 2 shows a generally steady reduction in the activity levels with time at the select locations as a consequence of decay and weathering. It should be noted that, due to the migration of the radioactive material through the swamp, activity levels deep in the swamp (locations PL-2, PL-3 and MBC) can be characterized as mixed or even slightly increasing. Table 4 echoes this general reduction throughout the swamp.

Only radionuclides with half lives greater than 2 years - namely, Co-60, Cs-134 and Cs-137 - were found in the samples collected during this three year period. Except at Location A, the levels found for Co-60 and Cs-134 (with radiological half lives of 5.3 and 2.1 years, respectively) were at most only a few times their nominal detection levels.

The swamp might be considered to have returned to a pristine condition when the levels found in the samples are not significantly different from those found at the background location. On a practical basis, this means that only Cs-137 which has a radiological half life of 30.2 years would be found at a level of about 400 pCi/kg dry. Except at Location A, the Cs-137 levels generally found during 1994 were only a few times greater than that for the background location.

Since reductions in the activity levels are anticipated to continue at about the same relative rate, a longer period for reporting is warranted. Henceforth, the program is modified to extend the assessment period up to five years. As a minimum, muck samples will continue to be collected annually at Locations A, PL-2, PL-3, MBC and at a background location for gamma isotopic analysis. By April 1, 2000, GPC will provide a written report of the assessment of the program results for the Years 1995 through 1999. Barring significant adverse changes in the results of that assessment, the augmented REMP will be terminated at that time.

Table 1

Activity of Manmade Radionuclides Found in Each Sample
Collected At Select Locations During 1992, 1993 and 1994
(pCi/kg dry)

Location Sample No.	1992			1993			1994	
	1	2	3	1	2	3	1	2
<u>Background</u>								
Cs-137	445	411		323	346		426	478
Eu-154		72						
<u>A</u>								
Co-60	1660	2350	1190	985	952	945	833	837
Cs-134	795	713	646	310	363	304	188	270
Cs-137	10400	9790	9100	4120	4230	3870	3810	3900
<u>B</u>								
Co-60	41	29			62			
Cs-137	107	105		239	191		177	149
<u>H</u>								
Cs-137	46	42					520	527
<u>New H</u>								
Co-60				72				
Cs-134				74	66			
Cs-137				1800	1730		1100	1360
<u>PL-2</u>								
Cs-137	953	879		580	583		585	715
<u>PL-3</u>								
Cs-137	288	287		132	123		136	131
<u>MBC</u>								
Co-60		70		101	78		171	97
Cs-137	305	303		363	390		271	260

Table 2 (Sheet 1 of 2)

Average Activity of Manmade Radionuclides Found in Samples
Collected at Select Locations in Each of the Following Years
(pCi/kg dry)

<u>Location</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
<u>Background</u>								
Cs-137	342	369	708	280	418	428	335	452
Eu-154						72		
<u>A</u>								
Mn-54	1684	183	513					
Fe-59	430							
Co-58	270							
Co-60	6202	3628	4627	2567	1312	1733	961	835
Zn-65	3118	631						
Sb-125	658							
Cs-134	10892	3642	3153	1400	576	718	326	229
Cs-137	19813	10708	12790	7667	5010	9763	4073	3855
<u>B</u>								
Mn-54	74							
Co-60	168	61	74	68	58	35	62	
Zn-65	165							
Cs-134	680	218	296	100				
Cs-137	1390	743	896	800	277	106	215	163
<u>H</u>								
Mn-54	23							
Co-60		38	61					
Cs-134	490	264	248	43				
Cs-137	1100	955	999	455	136	44		524

Table 2 (Sheet 2 of 2)

Average Activity of Manmade Radionuclides Found in Samples
Collected at Select Locations in Each of the Following Years
(pCi/kg dry)

<u>Location</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
<u>New H</u>								
Co-60							72	
Cs-134							70	
Cs-137							1765	1235
<u>PL-2</u>								
Co-60		27			49			
Cs-134	194	67		145				
Cs-137	1457	927	558	1450	1205	916	582	650
<u>PL-3</u>								
Mn-54	24							
Cs-134	340	91	84					
Cs-137	1488	862	76	870	967	288	128	134
<u>MBC</u>								
Mn-54	47							
Co-60	68	34		34	48	70	90	134
Zn-65	95							
Cs-134	331	224						
Cs-137	807	556	419	280	298	304	377	266

Table 3

Activity of Cs-137 Found in Each Sample
Collected at Other Locations During 1994
(pCi/kg dry)

<u>Location</u> Sample No.	1	2
D	1490	1300
E	1420	1570
F	1260	1180
G	1700	1730
I	1210	1110
J	351	352
K	145	394
L	1010	602
Z	214	181
PL-1	170	204

NOTE: No other manmade radionuclides were found in these samples.

Table 4 (Sheet 1 of 2)

Average Activity of Manmade Radionuclides Found In
 Samples Collected At Other Locations During 1987 and 1994
 (pCi/kg dry)

<u>Location</u>	<u>1987</u>	<u>1994</u>
<u>D</u>		
Mn-54	62	
Co-60	168	
Cs-134	720	
Cs-137	1505	1395
<u>E</u>		
Mn-54	45	
Co-60	137	
Zn-65	220	
Cs-134	1645	
Cs-137	4050	1495
<u>F</u>		
Mn-54	73	
Co-60	85	
Zn-65	97	
Cs-134	745	
Cs-137	2350	1220
<u>G</u>		
Mn-54	80	
Co-60	320	
Zn-65	455	
Cs-134	4250	
Cs-137	8800	1715
<u>I</u>		
Mn-54	45	
Co-60	27	
Zn-65	110	
Cs-134	1800	
Cs-137	3900	1160

Table 4 (Sheet 2 of 2)

Average Activity of Manmade Radionuclides Found In
 Samples Collected At Other Locations During 1987 and 1994
 (pCi/kg dry)

<u>Location</u>	<u>1987</u>	<u>1994</u>
<u>J</u>		
Mn-54	23	
Cs-134	1000	
Cs-137	3000	352
<u>K</u>		
Co-60	76	
Cs-134	1100	
Cs-137	2530	270
<u>L</u>		
Co-60	36	
Cs-134	1260	
Cs-137	3130	806
<u>Z</u>		
Co-60	57	
Cs-134	341	
Cs-137	1250	198
<u>PL-1</u>		
Cs-134	308	
Cs-137	2810	187

[illegible]

75.7

N 6,000

YAMAHA

FIGURE 1 (SHEET 2 OF 4)
SAMPLING LOCATIONS

78.8

74.1

(B)

N 5,500

78.1

77.3

N 5,000

(A)

E 7,500

(F)

New H

E 8,000

(I)

119.2

(E)

(G)

(D)

(J)

76.3

121.3

N 4,500

129.9

N 4,000

129.5

128.4

133.0

119.2

20.4

119.0

30

FIGURE 1 (SHEET 3 OF 4)
SAMPLING LOCATIONS

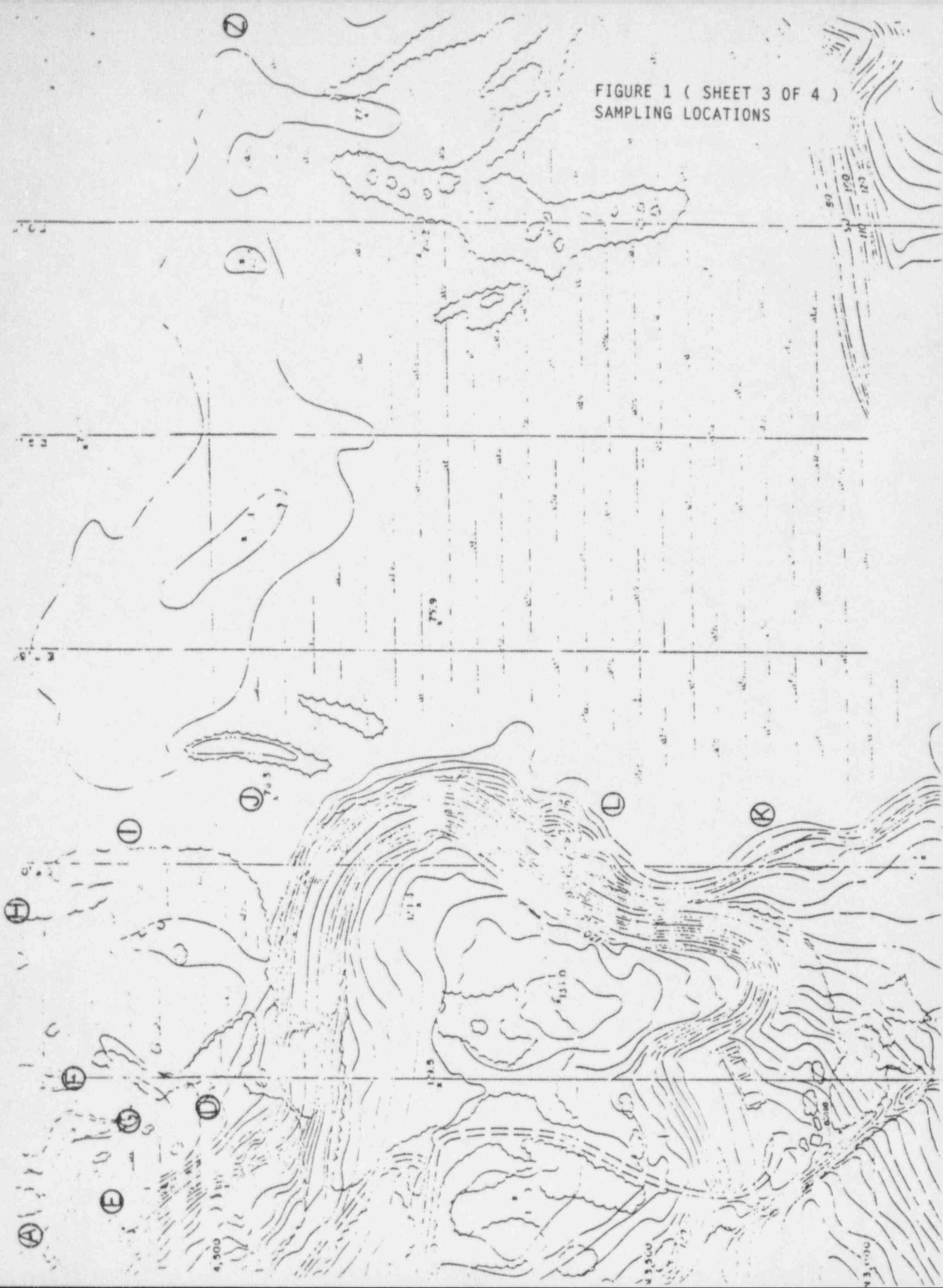


FIGURE 1 (SHEET 4 OF 4)
SAMPLING LOCATIONS