

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT FOR 1982
GRAND GULF NUCLEAR STATION

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PREFACE

This report presents the data obtained through the analysis of environmental samples collected in the Grand Gulf Nuclear Station (GGNS) Preoperational Radiological Environmental Surveillance Program from July 1978 - June 1982 and the Operational Radiological Environmental Surveillance Program for the period June 16, 1982, through December 31, 1982.

The analytical contractor for GGNS is Eberline Instrument Corporation, a division of Thermo Electric Corporation. Eberline has been the analytical contractor since the initiation of the GGNS Radiological Environmental Surveillance Program in 1978.

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Section 1
INTRODUCTION & SUMMARY

1.1 Introduction

Grand Gulf Nuclear Station (GGNS) is located in Claiborne County, Mississippi. The site is on the east bank of the Mississippi River, approximately 25 Miles south of Vicksburg, Mississippi, and 37 miles north-northeast of Natchez, Mississippi. Grand Gulf Military Park borders a portion of the north side of the property and the community of Grand Gulf is approximately 1.5 miles to the north. The town of Port Gibson is approximately 6 miles southeast of the site. Two lakes, Hamilton Lake and Gin Lake, are located in the western portion of the site.

The Station consists of two boiling water reactors (BWRs) rated at 1250 MWe each. Unit I received a Low-Power Operating License on June 16, 1982. Fuel loading began on July 1, 1982, and was completed on August 6, 1982. Initial criticality was achieved on August 18, 1982. Nuclear heatup is scheduled for July, 1983, with commercial operation scheduled for late 1983. Unit II is in a construction phase and is presently 31.0% complete.

The Grand Gulf Nuclear Plant has been designed to keep radioactive releases to as low as is practicable levels. The quantities of radionuclides released to the environment are expected to be insignificant as a source of potential exposure.

The Radiological Environmental Surveillance Programs are designed to serve the following purposes:

- (1) The Preoperational Program was designed to:
 - a) measure background levels and their variations in environmental media in the area surrounding the plant;
 - b) yield average values of radiation levels and concentrations of radioactive material in various media of the environment;
 - c) evaluate environmental procedures, equipment, and techniques; and
 - d) provide environmental assessment experience to personnel.
- (2) The Operational Program is an extension of the Preoperational Program. It was designed to:
 - a) ensure that data from the two programs are compatible, and that smooth transition between the programs is achieved;
 - b) detect what effect, if any, operation of GGNS will have on the radiation levels and concentrations in the environment around GGNS.

Both the Preoperational and the Operational Program are designed in accordance with the following criteria:

1. To analyze the important pathways for anticipated types and quantities of radionuclides released from the Station into the surrounding environment;

2. To consider the possibility of a buildup of long-lived radionuclides in the environment and identify physical and biological sites of accumulation that may contribute to human exposures;
3. To consider the potential radiation exposure to important plant and animal life in the environment surrounding GGNS;
4. To correlate levels of radiation and radioactivity in the environment with radioactive releases from Station operation.

The Preoperational Radiological Environmental Surveillance Program was initiated in July, 1978. It was continued until GGNS received its Low-Power Operating License. At that time the Operational Environmental Surveillance Program began. This report summarizes the data for the period June 16, 1982 to December 31, 1982. The Preoperational data collected from July, 1978 to June, 1982 has also been included in Tables 8-12 as background material.

1.2 Summary

GGNS Unit 1 received a Low-Power Operating License on June 16, 1982. However, at no time during 1982 did the Station enter a power ascension mode. Therefore, the results of the Operational Environmental Surveillance Program from June 16, 1982 to December 31, 1982 are actually an extension of the preoperational program data. The data are presented in Tables 8-12.

The most significant environmental dose pathways from a nuclear power station are direct doses from the gaseous effluent and thyroid dose due to the ingestion of milk. The operation of GGNS is expected to have little, if any, impact from these pathways due to the absence of milking animals within 5 miles of GGNS. Also since the first use of Mississippi River water as drinking water is more than 200 miles downstream of GGNS, the dose from this pathway is expected to be minimal.

Table 1 and Figures 1-4 lists the sample collection sites for air samples, TLD badges, milk, cistern water, ground water, surface water, vegetation, fish and sediment samples relative to the distance and direction from GGNS Unit 1. Table 2 summarizes the sample frequencies and type of analyses performed, and Table 4 summarizes the range and average concentrations for measurements at indicator and control locations, as well as the location with the highest annual mean value. Complete background information for the years 1978 through 1982 is provided in Tables 8 through 12 in Section 5.

Section 2
RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE PROGRAM

2.1 Air Particulate and Radiiodine

Eleven continuous air monitors are used in the GGNS Environmental Surveillance Program to provide for measurements of beta, gamma, and radiiodine activity in the airborne exposure pathway. The locations of these monitors range from 0 to 26 miles, as identified in Figures 1-3, and Table 1. Three samplers are located near the site (0-1 mile) in areas with the highest X/Q values. Two other samplers are located in a community (Port Gibson) having the highest X/Q value and in a control location (Vicksburg). These five air samplers are used to meet the requirements of GGNS Technical Specification 4.12.1. The remaining six samplers are located in areas which will provide additional data for the Environmental Surveillance Program.

The samplers are placed in weatherproof houses approximately one meter above the ground. A two-inch glass fiber filter is located in the intake line of the vacuum pump with a 2 X 1-inch charcoal cartridge located directly downstream. Flows are adjusted to approximately 1.25 cubic feet per minute. Filters and cartridges are changed weekly and analyzed for gross beta and radiiodine activity, respectively. In addition, the filters are composited quarterly and analyzed for gamma emitting radionuclides.

2.2 Thermoluminescent Dosimetry (TLD)

Eighty seven thermoluminescent dosimeters are used to measure direct radiation in the environment surrounding GGNS (Figures 1-3). Their locations are defined in Table 1. Forty of the TLDs are placed so as to meet the requirements of GGNS Technical Specification 4.12.1. This requires an inner ring of stations in the general area of the site boundary and an outer ring in the 4 to 5 mile range, with a station in each sector of each ring (16 stations X 2 rings = 32 stations). TLDs in the outer ring of sectors Q, R, and A are inaccessible; however, TLDs were placed in sectors Q and R at the first convenient locations, 8.0 miles and 7.5 miles respectively. The balance of the forty stations are located in special interest areas such as population centers, residences, and controls. Twenty-four of the 87 stations have recently been established on the protected area fence surrounding Unit 1. The remaining 23 stations are located in areas ranging from 0-15 miles away which will provide additional environmental data.

The dosimeters have five TLD chips sealed in plastic protective holders. These holders are suspended at each station approximately 1 meter above the ground. They are collected quarterly, with notations made concerning location, exposure period, and any abnormal conditions such as moisture and damage done by animals.

2.3 Milk Samples

Milk samples are collected in the vicinity of GGNS for the purpose of measuring radioactivity via the ingestion exposure pathway.

GGNS Technical Specifications require milk sampling at three locations within 5 km of the site and one control sample. No milking animals are

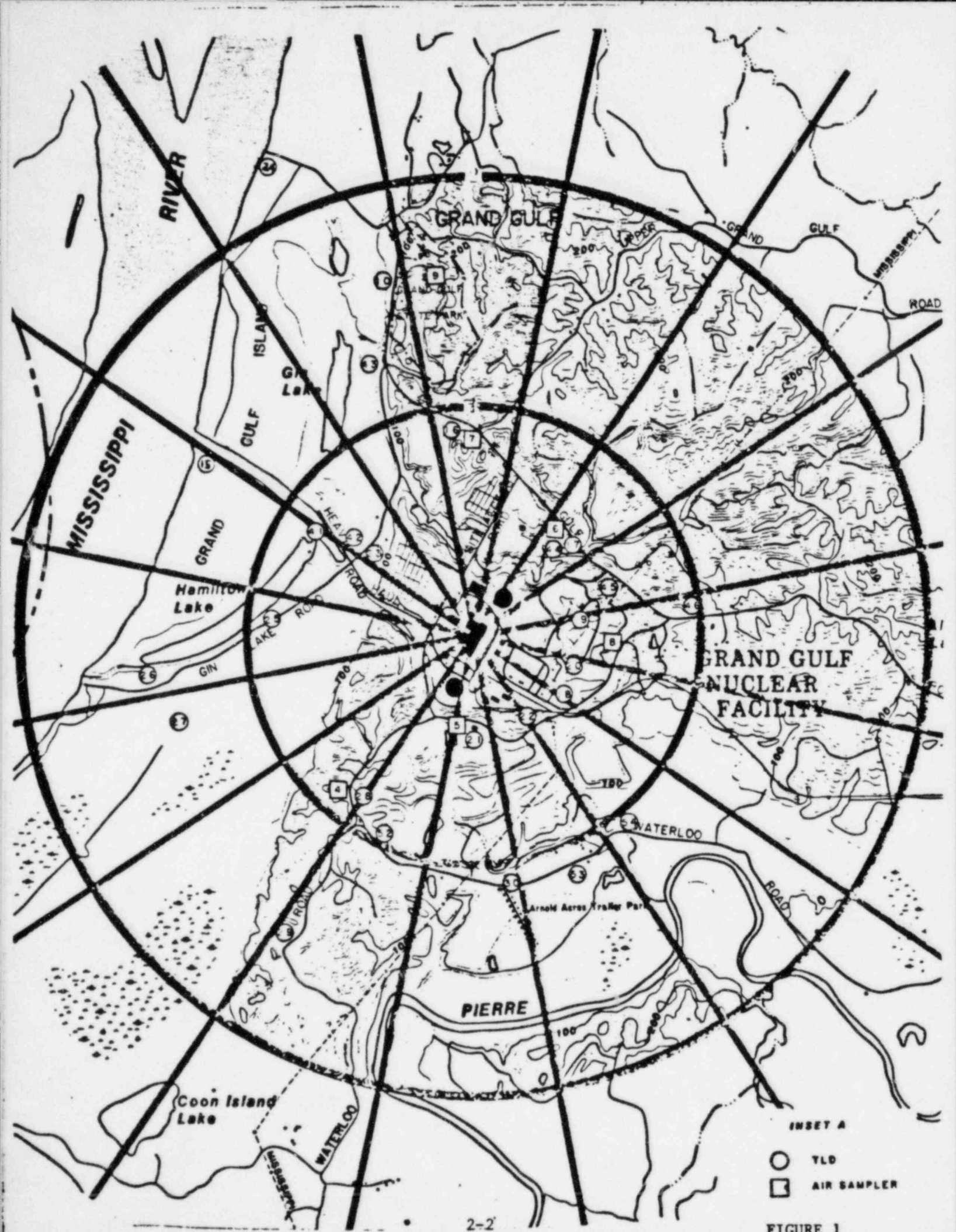
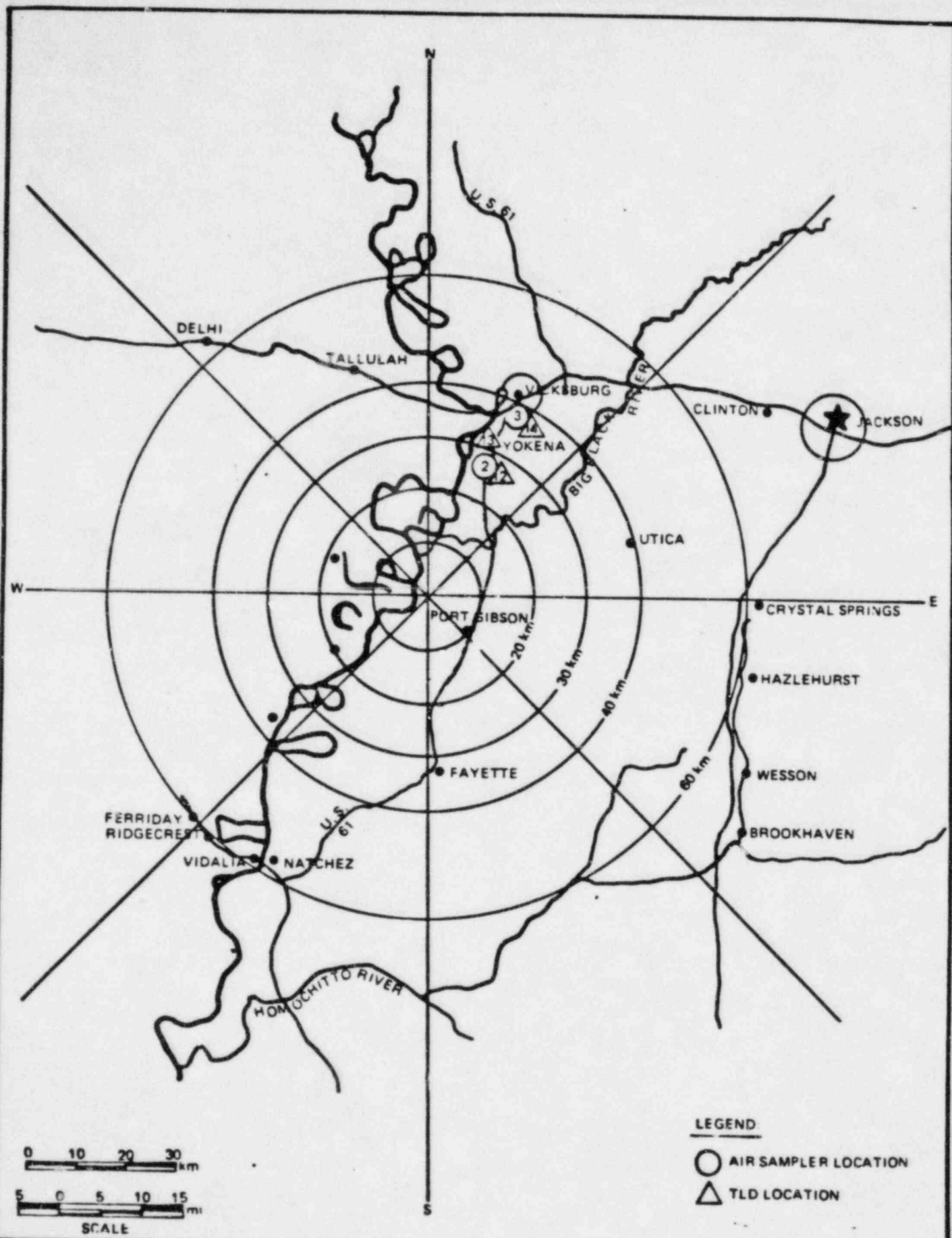


FIGURE 1



MISSISSIPPI POWER & LIGHT COMPANY
 GRAND GULF NUCLEAR STATION
 UNITS 1 & 2
 ENVIRONMENTAL REPORT

COLLECTION SITE LOCATIONS
 GENERAL AREA MAP

FIGURE 2

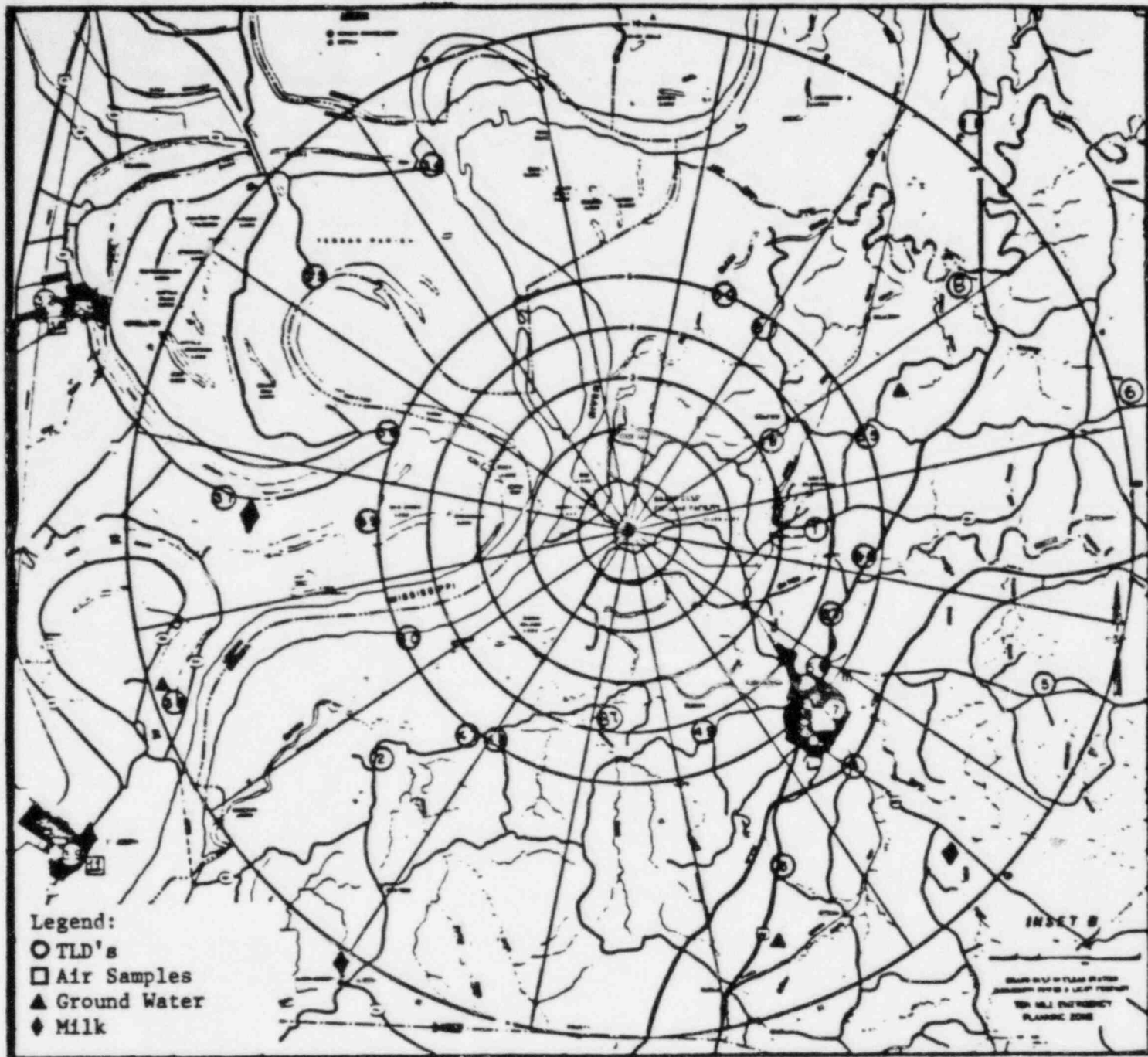


TABLE 1
Sample Collection Sites

AIR SAMPLES

<u>NUMBER</u>	<u>LOCATION</u>
* AS-1 PG	Southeast of GGNS at the Port Gibson City Barn. (Sector G Radius 5 miles)
AS-2 61N	North Northeast of GGNS, on Hwy 61 South across from the Yokena Church. Approximately 20 miles from GGNS. (Sector B Radius 13 miles)
* AS-3 61 VA	North Northeast of GGNS on Hwy 61 south at the Vicksburg Airport. (Sector B Radius 18 miles)
* AS-4 GJOE	Southwest of GGNS. Glodje property on Waterloo Road. (Sector L Radius .9 miles)
* AS-5 TC	South of GGNS behind MP&L training center building. (Sector J Radius .5 miles)
AS-6 RS	Northeast of GGNS, South of Grand Gulf Road. (Sector C Radius .5 miles)
* AS-7 MT	North of GGNS. Located next to the met tower and met tower control building. (Sector A Radius .8 miles)
AS-8 WR	East of GGNS, located at Maggie Jackson's trailer on Waterloo Road near the Eastern Site Boundary. (Sector E Radius .5 miles)
AS-9 GGMP	North of GGNS, located in Grand Gulf Military Park. (Sector A Radius 1.5 miles)
AS-10 NLT	West Northwest of GGNS, located at Newellton, Louisiana. (Sector P Radius 12.5 miles)
AS-11 STJ	West Southwest of GGNS, located at St. Joseph, Louisiana (Sector M Radius 13.0 miles)
* Technical Specification requirements	

TABLE 1 (Cont'd)

TLD LOCATIONS

<u>TLD NO.</u>	<u>LOCATION</u>	<u>SECTOR</u>	<u>MILE</u>
* M-01	REA Pole-East of Entry Gate at Lake Claiborne	E	3.5
M-02	REA Pole Left of Entry Gate Windsor Ruins	L	7.0
M-03	REA Pole-East Side Hwy 61 P.G. Country Club Entrance	H	7.0
M-04	MP&L Pole-Hwy 547 North Side Between Twin Power Poles	G	7.5
M-05	50 Yards North of Hwy 18 Approximately 5 miles East of U. S. 61	F	9.0
M-06	REA Pole-East of Willows Beyond MMB Church MS Highway 462	E	8.0
* M-07	Port Gibson City Barn AS-1	G	5.5
M-08	West Side Big Black River South Entrance	C	8.5
* M-09	Oak Tree Hanger-South Warner Tully Camp	D	3.5
* M-10	Entrance Gate Grand Gulf Military Park	R	1.5
M-11	Highway 61 3 Miles North of Big Black River at Twin Tower	C	10.5
M-12	Highway 61 at AS-2-61 North Yokena	B	13.0
M-13	Highway 61 LeTourneau Hill West Side of Road	B	15.0
* M-14 (CONTROL)	Highway 61 AS-3-61VA at Casket Company	B	18.0
M-15	Barge Slip (South edge)	P	1.5
* M-16	AS-7-MET Tower	A	1.0
M-17	AS-6-RS Grand Gulf Road	C	0.5
* M-18	Railroad Crossing Eastern Site Boundary	F	0.5

* Technical Specifications requirements

TABLE 1 (Cont'd)

TLD LOCATIONS

<u>TLD NO.</u>	<u>LOCATION</u>	<u>SECTOR</u>	<u>MILE</u>
M-19	Behind Burn Pit on Fence at Eastern Site Boundary	E	0.5
M-20	Eastern Site Boundary Behind Burn Pit (Pine)	F	0.5
M-21	AS-5-TC Training Center	J	0.5
M-22	South of RR Entrance Crossing 100 Yards on West Side	G	0.5
M-23	County Road/Heavy Haul Road 50 Yards North on Power Pole	Q	0.5
M-24	Upper Grand Gulf Landing	R	2.0
* M-25	Hamilton Lake Boat Launch	N	1.0
M-26	Hamilton Lake Outfall	N	1.0
* M-27	South Point Site Boundary 200 Yards along Property line	M	1.0
* M-28	AS-4-Glodjo Residence Glodjo	L	1.0
M-29	In sharp curve of Waterloo Road to Waterloo Plantation	K	1.5
* M-30	Arnold Acres Trailer Park Entrance	J	1.0
M-31	Duplicate TLD Installed at designated Site Number		
M-32	Duplicate TLD Installed at designated Site Number		
* M-33	Newellton, Louisiana Water Tower	P	12.0
* M-34	Primary Levee at End of Country Road at Point Pleasant, Louisiana	R	7.5
* M-35	Mor Landing - Lake Yucatan	Q	8.0
* M-36	Curve on 608 Point Nearest GGNS, at Power Pole	P	5.0
M-37	Winter Quarters Home	N	7.5
* M-38	Lake Bruin State Park Second Pole	M	9.0

* Technical Specification requirements

D31sp4

TABLE 1 (Cont'd)

TLD LOCATIONS

<u>TLD NO.</u>	<u>LOCATION</u>	<u>SECTOR</u>	<u>MILE</u>
* M-39	St. Joseph, Louisiana, Aux. Water Tank	M	12.0
* M-00	Maintained in lead shield during the exposure period		
* M-40	International Paper Road, Approximately 5 Miles from Site	M	5.0
* M-41	Heavy Haul Road---J Pipe on Concrete Block	P	1.0
* M-42	Heavy Haul Road North Iron Gate	Q	1.0
* M-43	Gin Lake Entrance	R	1.2
* M-44	Truck Bypass on Grand Gulf Road	C	0.5
* M-45	Visitor Center Gate East Side	D	0.5
* M-46	Power Pole Across from Grand Gulf/ Waterloo roads intersection	E	1.0
* M-47	Bridge 0.6 Miles past Rodney Road/ Greenwood Road intersection North Side	L	5.0
* M-48	Property Line Fence 0.4 miles on Greenwood Road on West Side	K	5.0
* M-49	Fork in Weathers Road	H	4.5
* M-50	Big Black River Boat Landing	B	5.0
* M-51	Power Pole 0.5 Miles on Gravel Road to Big Black on West Side	C	5.0
* M-52	Power Pole-Waterloo Road Marked with White Paint	K	1.0
* M-53	Arnold Acres Property Fence Past Trailer Park	H	1.0
* M-54	Bottom of Curve Arnold Acres	G	1.0
* M-55	Behind Bonner's Beauty Shop at MSBH Air Sample	D	5.0

* Technical Specification requirements
D31sp4.1

TABLE 1 (Cont'd)

TLD LOCATIONS

<u>TLD NO.</u>	<u>LOCATION</u>	<u>SECTOR</u>	<u>MILE</u>
* M-56	Hwy. 61 South at "All Creatures Veterinary Hospital"	G	5.0
* M-57	Highway 61 North Behind the Welcome to Port Gibson sign	F	4.5
* M-58	Big Bayou Pierre Bridge Southwest End	E	5.0
* M-59	Off Levee at Winter Quarters Hunting Camp	N	5.1
M-60	Duplicate TLD		
M-61	Protected area fence by the vehicle entrance gate	P	Onsite
M-62	Protected area fence Northeast corner MP&L parking lot	N parking lot	"
M-63	Protected area fence middle MPL parking lot	N	"
M-64	Protected area fence Southeast corner MP&L parking	M	"
M-65	South protected area fence behind MP&L warehouse	L	"
M-66	South protected area fence across from cooling tower	K	"
M-67	South protected area fence West end North fence	J	"
M-68	East protected area fence across from chlorination tank	H	"
M-69	East protected area fence near electric Buss	G	"
M-70	North fence behind turbine bldg.	F	"
M-71	166' level on Unit 2 side of plant turbine bldg.	C	"
M-72	166' level turbine bldg Unit 2 side	B	"

* Technical Specification requirements

TABLE 1 (Cont'd)

TLD LOCATIONS

<u>TLD NO.</u>	<u>LOCATION</u>	<u>SECTOR</u>	<u>MILE</u>
M-73	Corner of fence outside control bldg.	P	"
M-74	Midway of North fence	P	"
M-75	Corner in fence in front of Maintenance Shop	A	"
M-76	Southeast corner SSW Basins	A	"
M-77	Protected area fence beside maintenance shop	R	"
M-78	Outside vault in Admin Bldg.	Q	"
M-79	Wall in Central Records	Q	"
M-80	Wall in Central Records Old library location	Q	"
M-81	Inside Admin Bldg., 2nd floor, northeast wall	A Q	"
M-82	Tech Support Area	Admin Q	Onsite
M-83	Tech Support Secretary	Q	"
M-84	Security Island	P	"
M-85	Rotating duplicate		
* M-86	Bechtel Gate North Site Boundary	B	0.5
* M-87	Intersection of Rodney Road & transmission line	J	4.5

* Technical Specification requirements

TABLE 1 (Cont'd)

MILK SAMPLES (CONTROL LOCATION)

Alcorn State University*	Located Southwest of GGNS. (Sector K Radius 10.5 miles)
Rosco Johnson farm	Located Southeast of GGNS. (Sector G Radius 9 miles)
Hazetta Warren farm	Located in Louisiana West Northwest of GGNS. (Sector N Radius 8.5 miles)

CISTERN WATER

1. Trimble Cistern *	Located east of GGNS at the Trimble Tenant House. (Sector E Radius .5 miles)
2. Willis Cistern*	Located at the C. E. Willis house East Northeast of GGNS across from the Shiloh Baptist Church. (Sector D Radius 6 miles)
3. Ark Cistern*	Located South Southeast of GGNS. (Sector H Radius 8.5 miles)

GROUND WATER

1. PGWELL*	PORT GIBSON WELL - Taken at Port Gibson City Water lift Station. (Sector G Radius 5.0 miles)
2. GCMPWELL	GRAND GULF MILITARY PARK - Taken from faucet at the Grand Gulf Military Park. (Sector A Radius 1.7 miles)
3. TRIMWELL*	TRIMBLE house faucet. (Sector E Radius 0.7 miles)
4. LAKE BRUIN	Taken from faucet at the bath house in Lake Bruin State Park, Louisiana. (Sector M Radius 9.9 miles)

* Technical Specification requirements

TABLE 1 (Cont'd)

SURFACE WATER

Upstream*	500-1000 meters upstream of the GGNS outfall to allow adequate mixing of the Mississippi and Big Black Rivers. (Sector Q)
Downstream*	1000 meters downstream of GGNS outfall, near the most northeastern radial well. (Sector P)
Discharge Basin*	West of GGNS, 0.5 miles, Sector P

VEGETATION

Broad Leaf Vegetation*	South of GGNS in the MP&L garden near the training center, or South Southwest in Glodjo garden, or areas adjacent to these gardens. (Sector J, 0.4 miles)
	Lake Claiborne Willis garden (Sector E, 3.0 miles)
	Nelson Truck Farm (Sector E, 4.5 miles)

FISH SAMPLES

Catfish*	Downstream of the discharge point in the Mississippi River.
	Upstream of Discharge Point uninfluenced by Plant Operations.

SEDIMENT SAMPLES*

Collected semiannually during the low water periods of the Tidal Basin - samples taken downstream of the outfall in the vicinity of the boat landing near Hamilton Lake outlet and in the Barge Slip.
(Sector N and Q, 2 miles)

* Technical Specification requirements

available within the 5 km range. A control sample is taken from the Alcorn State University Dairy and samples are available on occasion from two area farmers (Figure 3, Table 1). Dairy samples are taken on a semi-monthly basis as required by GGNS technical specifications. The raw milk is then divided and the samples are analyzed for Iodine-131 and gamma emitting radionuclides.

2.4 Water Samples

Water samples are collected in the vicinity of GGNS for the measurement of radioactivity in the waterborne exposure pathway. Samples are collected in clean, labelled 2.5-gallon containers. The containers are rinsed with the sample media prior to collecting the sample.

Cistern water is sampled monthly at two locations, one near the site (Trimble Cistern) and the other at a control location (Willis Cistern) (Figure 4, Table 1). Cistern water is analyzed for gross beta, Iodine-131, and gamma emitting radionuclides. In addition, a quarterly composite is analyzed for tritium.

Ground water is sampled at four locations. The locations fulfilling the Technical Specifications are the source nearest the site (Trimble Well), and the control (Port Gibson City Well). The other two locations are controls which provide GGNS with additional data (Figure 3, Table 1). Ground water is collected and analyzed quarterly for gamma emitting radionuclides and tritium.

Surface water samples from the Mississippi River are collected monthly at a point above the plant discharge and downstream (Figure 4, Table 1). They are analyzed monthly for gamma emitting nuclides and a composite is analyzed quarterly for tritium.

Another surface water sample is taken from the plant discharge basin. Samples are composited monthly from samples taken at hourly intervals with an automatic sampler. This sample is analyzed for gamma emitting nuclides monthly, and a composite is analyzed quarterly for tritium.

2.5 Broad Leaf Vegetation

Broad leaf vegetation samples are collected in the vicinity of GGNS for the purpose of measuring radioactivity via the ingestion exposure pathway. Three samples of broad leaf vegetation grown near the site boundary (Figure 4, Table 1) with the highest anticipated annual average ground-level D/Q are required when milk samples are not available within 5 km distant of the site boundary. The preferred source of broad leaf vegetation is green leafy vegetables which would be suitable for human consumption. If such vegetables are not available, samples of any vegetation with relatively broad leaves on which airborne radioactive material might be deposited are sampled. The raw samples are then analyzed for gamma emitting radionuclides.

2.6 Sediment Samples

Sediment samples are collected semiannually at the river shoreline where the plant effluent is discharged and downstream of this discharge in the vicinity of Hamilton Lake's discharge (Figure 4, Table 1). Approximately 1000 grams of sediment are taken in the shallow water near the shoreline from the top one inch layer of sediment. Any living organisms or foreign objects are discarded and the samples are placed in a sample bag with location and date noted. The samples are then analyzed for gamma emitting radionuclides including Cesium-137.

2.7 Fish Samples

Twice a year, fish are collected from each of two locations. The control fish sample is collected in the Mississippi River about 1000 yards upstream from the GGNS barge slip. The indicator sample is collected approximately 6000 feet downstream from the barge slip. A minimum of 1000 grams (wet weight) of eviscerated fish is collected from each location (Figure 4, Table 1) and analyzed for gamma emitting radionuclides.

2.8 Special Samples

Special samples are occasionally taken of sampling media or locations which are not part of the routine Environmental Surveillance Program. These include such items as fruits and vegetables. In addition, special duplicate samples are periodically taken for water, milk and vegetable sample media. These serve as a quality control check of the GGNS analysis contractor.

Samples of deer meat are obtained on an annual basis from a deer harvested on the GGNS site by members of the GGNS Bow Hunting Club. The meat is then analyzed for gamma emitting radionuclides particularly for Iron-59 and Zinc-65.

2.9 Annual Land Use Census

As required by (GGNS) Technical Specification 3.12.2, Mississippi Power & Light Company (MP&L) conducted an Annual Land Use Census of the 10 mile Emergency Planning Zone surrounding GGNS for 1982, documenting the changes in the uses of land in the unrestricted areas surrounding GGNS which would require modifications to the Environmental Surveillance Program or the Offsite Dose Calculation Manual (ODCM). The criteria of most importance during the census was to determine the locations of the nearest residents, whether or not the residents had a garden equal to or greater than 500 square feet in area and if the residents milked a cow or goat for human consumption. In order to obtain the most accurate information, a door-to-door survey was utilized in the 0-2 mile zone.

The nearest resident remained the same, as in the original survey outlined in the GGNS Final Environment Report, at 982 meters from the Station in the East sector. The nearest garden remained the same as that identified in Section 2.2.2.b of the ODCM at 1432 meters from the Station in the southwest sector. None of the residents within the 0-2 mile zone milked a cow or goat for human consumption.

Land use information from 2-10 miles from GGNS was derived from interviews with the Claiborne County, Mississippi, County Agricultural Agent and the Tensas Parish, Louisiana, Parish Agricultural Agent. Four significant changes in land use were identified. These changes were:

- o Two persons milked a cow for human consumption in the 2-10 mile zone: one at 13,629 meters in the southeast sector, and the other at approximately 11,265 meters in the west sector (Figure 3). Originally, no milking animals were present.
- o Soybean production in Mississippi showed about a 146% increase over that estimated during the original survey.
- o Commercial production of green leafy vegetables increased considerably in the 2-10 mile zone over previous levels.
- o Cattle production for human consumption inside the affected counties were nonexistent except for personal use.

None of these four changes in land use necessitated change in the calculations or information outlined in the ODCM.

The results of the Land Use Survey indicate that the agricultural uses of land in the 0-10 mile zone surrounding GGNS have remained basically the same as those reported in the GGNS Final Environmental Report. Although some changes were identified in the type of crops grown, those areas which were utilized for agricultural production in the GGNS Final Environmental Statement have remained as such.

In conclusion, the results of the GGNS 1982 Land Use Survey reflect no uses of land in the 0-10 mile zone which will require a change in the GGNS ODCM or the Environmental Surveillance Program.

Section 3
ANALYTICAL PROCEDURES & COUNTING METHODS

3.1 Analytical Program and Methodology

Samples are analyzed for the various radioactive components by standard radiochemical methods. These methods are equal to and in most cases identical with those of the USDOE (HASL Procedures Manual, HASL-300, Health and Safety Laboratory, U. S. Atomic Energy Commission, 376 Hudson Street, New York, New York 10014), or those of the U. S. Environmental Protection Agency (EPA). The analytical program is summarized in Table 2.

3.2 Analytical Detection Limits and Count Rate Errors

In environmental radiological analyses the dominant known uncertainty is usually the sample count rate. Error terms given in this report are based on this factor since all other analytical uncertainties are calculated by standard methods and are reported at the 95 percent (2σ) confidence level. Analytical data for samples for which concentrations are less than the Lower Limit of Detection (LLD) are preceded by the symbol "<". The sample types, analyses performed, and units of the measurements along with the corresponding LLD, are presented in Table 3.

3.3 Air Particulates

Gross beta concentrations are measured with low background gas flow (proportional and/or Geiger) counting systems with anti-coincidence background suppression after the short-lived naturally occurring radon and thoron daughters have decayed. The filters are counted long enough to ensure that the required sensitivity (LLD) is met. The routine LLD is 0.01 pCi/m^3 for gross beta based on about $300 \text{ m}^3/\text{week}$ of air volume.

Gamma isotopic analyses of the quarterly composite samples are performed with a Ge(Li) detector with a routine detection level of 0.01 pCi/m^3 .

3.4 Radioiodine

The charcoal cartridges used are of the TEDA - impregnated type. The radioiodine is extracted from the charcoal, chemically separated, and counted as AgI_3 using wide beta or low beta counters. The detection limit is 0.07 pCi/m^3 .

3.5 Cistern Water

Gross beta analysis of cistern water sample is performed by evaporation of a measured aliquot of the sample, digestion, planchetting of the processed sample, and radiometric assay by low-level beta counting. The LLD is 1 pCi/liter . Iodine- ^{131}I analysis is based on anion exchange removal of the ^{131}I from a known sample volume. The iodine is eluted from the resin with NaOCl which also oxidizes it to the iodate. The iodate is reduced to iodine with hydroxylamine in 3N nitric acid solution. The iodine is extracted into carbon tetra chloride, reduced to iodide with sodium bisulfite, extracted into water and precipitated as AgI . The sample is filtered, dried, weighed and beta counted. The detection limit is 1 pCi/liter .

TABLE 2
Analytical Program

<u>SAMPLE PARAMETER</u>	<u>FREQUENCY</u>	<u>ANALYSIS</u>
Air Particulates	Weekly	Gross Beta ⁽¹⁾
	Quarterly	Gamma Isotope
Airborne Iodine	Weekly	Iodine-131
Thermoluminescent Dosimetry (TLD)	Quarterly	Radiation Dose
Milk	Monthly ⁽²⁾	Iodine-131 Gamma Isotopic
Broad Leaf Vegetation	Monthly ⁽³⁾	Gamma Isotopic
Sediment	Semiannually	Gamma Isotopic
Ground Water	Quarterly	Gamma Isotopic
	Quarterly	Tritium
Cistern Water	Monthly	I-131, Gamma Isotopic
	Quarterly Composite	Tritium
Surface Water	Monthly ⁽⁴⁾	Gamma Isotopic
	Quarterly Composite	Tritium
Fish	Semiannually	Gamma Isotopic
Meat	Annually	Gamma Isotopic

(1) If gross beta activity of any filter is found to be greater than ten times the yearly mean of gross beta for the control (AS#3) then a gamma isotopic analysis is performed on the filter.

(2) Twice a month when animals are on pasture.

(3) Broad leaf vegetation sampling is performed monthly when available and when milk sampling is not performed within 5 km.

(4) The composite water sample is utilized for the gamma isotopic analysis of the discharge basin.

TABLE 3

Lower Limits of Detection (LLD)

<u>SAMPLE TYPE</u>	<u>ANALYSIS</u>	<u>LLD</u>	<u>UNITS</u>
Air Particulate	Gross Beta Gamma Isotopic	0.01	pCi/m ³
Airborne Iodine	I-131	0.07	pCi/m ³
Cistern Water	Gross Beta I-131 Gamma Isotopic Tritium	1 1 15 330	pCi/l pCi/l pCi/l
Surface Water	Gamma Isotopic Tritium	15 330	pCi/l pCi/l
Well Water	Gamma Isotopic Tritium	15 330	pCi/l pCi/l
Milk	I-131 Gamma Isotopic	1 15	pCi/l pCi/l
Sediment	Gamma Isotopic	150	pCi/kg
Fruits & Vegetables	Gamma Isotopic	80	pCi/kg
Fish & Meat	Gamma Isotopic	130	pCi/kg
TLD	Total Dose	1	mR/Qtr

Gamma isotopic analysis is performed by taking a measured aliquot of the preconcentrated sample and counting it in a standard geometry in a high resolution (GeLi) gamma spectrometer long enough to meet the sensitivity (LLD) of 15 pCi/liter.

Tritium analysis is performed on the quarterly composite of the samples collected monthly. The sample is isotopically enriched in tritium concentration prior to liquid scintillation counting. The isotopic enrichment is done by the classical method of Ostlund which involves alkaline electrolysis of a purified aliquot sample under controlled conditions of temperature and electrode current density.

3.6 Surface Water

The samples collected monthly are analyzed by gamma spectrometry as described in section 3.5 under cistern water. The quarterly composite sample of the monthly collections is analyzed for tritium by the electrolytic enrichment technique described in section 3.5 under cistern water.

3.7 Well Water

The samples collected quarterly are analyzed for gamma emitting radionuclides and tritium as described in section 3.5 under cistern water.

3.8 Milk Samples

I-131 analysis is performed on the milk samples collected monthly. The method used is same as given in section 3.5 under cistern water.

Gamma isotopic analysis is done as follows: A measured aliquot of the sample is evaporated and oven dried. The dried sample is pulverized and counted in a calibrated geometry in a high resolution Ge(Li) gamma spectrometer for a long enough period to achieve the required Lower Limit of Detection (LLD) of 15 pCi/liter.

3.9 Sediment Samples

The sediment sample is oven dried and then sieved (if required) to remove stones and/or other large pieces of material. An appropriate sized and weighed aliquot is then transferred into a standard geometry container and counted in a high resolution Ge(Li) gamma spectrometer for a long enough period to achieve the required Lower Limit of Detection (LLD) of 150 pCi/kg (dry).

3.10 Fruit & Vegetable Samples

Measured amounts of the oven-dried sample is transferred into a standard geometry container and counted in a high resolution Ge(Li) gamma spectrometer for a long enough period to meet required Lower Limits of Detection (LLD) of 80 pCi/kg (wet).

3.11 Fish and Meat

A measured amount of the oven-dried samples is transferred into a standard geometry container and counted in a high resolution Ge(Li) gamma spectrometer for a long enough time to meet the required Lower Limits of Detection (LLD) of 130 pCi/kg (wet).

3.12 Thermoluminescent Dosimeters (TLDs)

Environmental radiation doses are measured using badges comprised of five chips, sealed in plastic protective holders having a density of about 50 mg/cm². The TLD chips are 1/8" X 1/8" X 1/32" LiF (Thallium activated) known commercially as Harshaw TLD-100. The chips are all selected to provide uniform responses. Prior to installation, the chips are annealed by a standard cycle of 60 minutes at 400°C and immediate cooling to ambient temperature by placing the tray containing the annealed chips on an aluminum block.

After exposure the chips are read on an Eberline Instrument Corporation Model TLR-6 reader. The system employs a preheat cycle which removes low temperature peaks and integrates and digitizes only the light output in a selected temperature range.

The dose is calculated from the average light output for the five readings. Control badges are used to detect any unusual exposure to the badge which might occur during shipment. The Lower Limit of Detection (LLD) for environmental TLDs is 1 mrem/quarter.

Section 4
RESULTS AND DISCUSSION

Results and Discussions

4.1 Air Particulates and Radioiodine

Air particulate and radioiodine levels for the 1982 reporting period averaged 0.015 pci/m^3 for gross beta and less than the detectable level for radioiodine. These values are consistent with the baseline data collected during the GGNS Preoperational Radiological Environmental Surveillance Program from July, 1978, to June 15, 1982 (Tables 4-8). The only time period when gross beta values have indicated increased levels of measurable radiation was during the spring of 1981. These elevated values were attributable to the 25th Chinese nuclear test explosion of October, 1980.

The analysis of quarterly composited filters for gamma isotopes for the reporting period were nondetectable. Once again this is consistent with the preoperational data, with the exception of those samples collected following the Chinese nuclear test explosion.

4.2 Thermoluminescent Dosimetry (TLDs)

TLD badges collected during the 1982 reporting period averaged 18.6 mr/quarter. These values were consistent with the baseline results obtained from the GGNS Preoperational Radiological Environmental Surveillance Program (Table 4-8).

4.3 Milk Samples

The results of the Iodine-131 and gamma isotopic analysis, of control and data milk samples, were less than the Lower Limits of Detection (LLD) during the 1982 reporting period. The only exception to this was the August 1982 control sample at Alcorn State University in which Cesium-137 was detected at a level of 850 pci/l. It is MP&L's opinion that this was attributable to some type of cross contamination by the analysis contractor and was not a result of GGNS effluents. Our rationale for arriving at this conclusion is described below:

- o Alcorn State University (ASU) is a control location 10.5 miles from GGNS, opposite from the predominant wind direction.
- o The ASU milk samples for July, September, and October, 1982, showed nondetectable amounts of Cesium-137 both by MP&L's analysis contractor and the Mississippi Department of Radiological Health.
- o Activities at GGNS during this period were such that this level of radioactivity at Alcorn could not be attributable to GGNS.

Since the determination was made that the measured level of radioactivity was not the result of plant effluents, a special report as outlined in the GGNS Technical Specifications was not submitted.

4.4 Water Samples

Gamma isotopic and tritium concentrations for surface, well, and cistern water samples were nondetectable during the 1982 reporting period. Iodine-131 analysis of cistern water samples were nondetectable and gross beta analysis

averaged 5.0 pci/l. One gross beta result from the Trimble cistern was statistically higher than the average (December 7, 1982, 16 ± 2 pci/l). However, this appears to be the result of laboratory error since gross beta analysis of a duplicate sample collected at the same location and on the same day was 4 ± 1 pci/l.

4.5 Broad Leaf Vegetation

Broad leaf vegetation samples for the 1982 reporting period were nondetectable for gamma emitting radionuclides.. These results are consistent with the data obtained during the Preoperational Environmental Surveillance Program.

4.6 Sediment Samples

Gamma analysis of sediment samples during the 1982 reporting period were nondetectable except for Cesium-137 which was detected in concentrations of 0.25 pci/g and 0.33 pci/g at the Hamilton Lake outfall and GGNS barge slip, respectively. These results are consistent with preoperational data in which detectable levels of Cesium-137 were found in sediment samples in June 1979, June, 1980, and December 1981.

4.7 Fish Samples

The results of the analysis of fish obtained during the 1982 reporting period were less than the Lower Limits of Detection (LLD).

4.8 Special Samples

The results of all the analysis conducted on special samples during the 1982 reporting period were nondetectable.

The results of the analysis of meat obtained during the reporting period were nondetectable for gamma emitting radionuclides, Iron-59 and Zinc-65.

4.9 Exceptions to the Environmental Surveillance Program

4.9.1 A control cistern water sampling point (Ark Cistern) located in the SSE sector at 8.5 miles, (Figure 3), was discontinued in November, 1982. The resident utilizing the cistern rerouted the discharge from his swimming pool to the cistern which rendered the water no longer potable. An alternate control location (Willis Cistern) was identified in the ENE sector, sector D, at approximately 6 miles (Figure 3).

4.9.2 GGNS Technical Specifications require that a monthly composite sample utilizing one-hour sampling intervals be taken from the plant discharge basin (Figure 4). The equipment necessary for hourly composite sampling was not available on June 16, 1982; therefore, grab samples were taken at eight-hour intervals. A Design Change Package was implemented and an automatic composite sampling system capable of taking hourly samples was installed on February 7, 1983.

4.9.3 GGNS Technical Specifications require that a downstream sediment sample be taken semiannually. Sediment samples were taken in May, 1982. However, the semiannual sample for November, 1982, was not taken due to an

unusual winter rise in the level of the Mississippi River. The river remained out of its banks until February, 1983. In order to avoid this problem in the future, sediment sampling during the fall will be scheduled earlier in the fall.

4.9.4. The Plant Service Water System was shut down for the majority of December, 1982, to allow maintenance to be performed; therefore, there was no composite sample collected for the month of December, 1982.

4.9.5 GGNS technical specifications require the monthly Discharge Basin samples to be composited quarterly and analyzed for Tritium. Due to an oversight these quarterly composites were not compiled during the reporting period. The July and September samples have been discarded; therefore, the Tritium analyses for the third quarter will be conducted on the August sample alone. The fourth quarter samples have not been discarded. They will also be composited and analyzed for Tritium. The results of these analyses will be submitted in a follow-up letter.

Section 5
RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE PROGRAM SUMMARY

5.1 Program Results for 1982

The results of the Radiological Environmental Surveillance Program for 1982 are summarized in Table 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range	Location with Highest Annual Mean		Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range	
Background Radia- tion (TLD) (mR/Qtr) 0-2 miles	Gamma Dose 30	1.0	18.9 ($\frac{30}{30}$) (14.0-27.3)	Badge M-27, South border of GGNS Site Boundary (Sector M, 1 Mile)	23.4 (2/2) (19.4- 27.3)	0
3-6 Miles	Gamma 24 Dose	1.0	18.1 ($\frac{24}{24}$) (13.6-22.4)	Badge M-34, Point Pleasant, LA (Sector R, 7.5 miles)	20.4 (2/2) (18.3- 22.4)	0
Control (Badge M-14)	Gamma 2 Dose	1.0			20.6 (2/2) (18.9 - 22.2)	0
Population Centers	Gamma 14 Dose	1.0	18.7 ($\frac{14}{14}$) (14.6 - 24.0)	Badge M-07 Port Gibson, MS, City Barn (Sector G, 5.5 miles)	21.0 (2/2) (17.9 - 24.0)	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses. (f)

^c Nonroutine reported measurements are defined in Section 4.

5-2

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range	Location with Highest Annual Mean		Control Locations Mean(f) ^b Range	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range		
Air Particulates/ Airborne Iodine (pCi/m ³)	Gross B 134	0.01	0.01 (95/110) (0.01-0.03)	Sampler AS-1, Port Gibson, MS, City Barn, (Sector G, 5 miles)	0.02 (27/28) (0.01- 0.03)	0.01 (18/24) (0.01 - 0.02)	0
	I-131 136	0.07	LLD	--	--	LLD	0
	Gamma isotopic 10	0.01	LLD	--	--	LLD	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

5-3

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range ^b	Location with Highest Annual Mean		Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Control Locations Mean(f) ^b Range ^b	
Milk (pCi/l)						
Alcorn State Univ (Sector K, 10.5 miles)	I-131 10	1			LLD	0
	Gamma Isotopic 8	15			LLD	0
	Cs-137	15			850 (1/8)	1
Johnson Farm, Claiborne County, MS (Sector G, 9.0 miles)	I-131 4	1			LLD	0
	Gamma Isotopic 3	15			LLD	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses. (f)

^c Nonroutine reported measurements are defined in Section 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(\bar{f}) ^b Range ^b	Location with Highest Annual Mean		Control Locations Mean(\bar{f}) ^b Range ^b	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(\bar{f}) ^b Range ^b		
Milk (pCi/l) Warren Farm, Tensas Parish, LA (Sector N, 8.5 miles)	I-131 2	1				LLD	0
	Gamma Isotopic 3	15				LLD	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

5-5

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Clatborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(\bar{f}) ^b Range	Location with Highest Annual Mean		Control Mean(\bar{f}) ^b Range	Locations Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(\bar{f}) ^b Range		
Surface Water (pCi/l)							
Mississippi River Upstream	Gamma Isotopic 6	15				LLD	0
	Tritium 2	330				LLD	0
Mississippi River Downstream	Gamma Isotopic 6	15	LLD				0
	Tritium 2	330	LLD				0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(\bar{f}) ^b Range	Location with Highest Annual Mean		Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(\bar{f}) ^b Range	
Surface Water (pCi/l)						
Discharge Basin	Gamma Isotopic 6	15	LLD		--	0
	Cs-137	15	15 (1/6)		--	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses. (\bar{f})

^c Nonroutine reported measurements are defined in Section 4.

5-7

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(\bar{f}) ^b Range	Location with Highest Annual Mean		Control Locations Mean(\bar{f}) ^b Range	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(\bar{f}) ^b Range		
Ground Water (pCi/l)						--	
TRIMWELL (Sector E, 0.7 miles)	Gamma Isotopic 2 Tritium 2	15 330	LLD LLD				0 0
Port Gibson Well (Sector G, 5.0 miles)	Gamma Isotopic 2 Tritium 2	15 330	LLD LLD				0 0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range ^b	Location with Highest Annual Mean		Control Locations Mean(f) ^b Range ^b	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range ^b		
Cistern Water (pCi/l)							
Ark Cistern (Sector H, 8.5 miles)	Gross B 4	1				5.8 (4/4) (3.0 - 7.0)	0
	I-131 4	1				LLD	0
	Gamma Isotopic 4	15				LLD	0
	Tritium 1	330				LLD	0
Cistern Water (pCi/l)							
Trimble Cistern (Sector E, 0.5 miles)	Gross B 6	1	4.0 (6/6) (2.0 - 6.0)				0
	I-131 6	1	LLD				0
	Gamma Isotopic 6	15	LLD				0
	Tritium 2	330	LLD				0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

6-5

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range	Location with Highest Annual Mean		Control Mean(f) ^b Range	Locations Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range		
Cistern Water (pCi/l)							
Willis Cistern (Sector D, 6 miles)	Gross B 2	1				LLD	0
	I-131 2	1				LLD	0
	Gamma Isotopic 2	15				LLD	0
	Tritium 1	330				LLD	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range	Location with Highest Annual Mean		Control ^b Locations Mean(f) ^b Range	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range		
(Broadleaf) Vegetation (pCi/g wet)							
MPL Garden (Sector J, 0.4 miles)	Gamma 10 Isotopic	0.08	LLD				0
Control (Willis Farm) (Sector E, 3.0 miles)	Gamma Isotopic 2	0.08				LLD	0
Control (Nelson Farm) (Sector E, 4.0 miles)	Gamma Isotopic 2	0.08				LLD	0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

5-11

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range	Location with Highest Annual Mean		Control Mean(f) ^b Range	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range		
Sediment (pCi/g dry) (Hamilton Lake Outfall and Barge Slip)	Gamma Isotopic 2	0.15	LLD	Barge Slip (Sector Q, 2 miles)	LLD (1/1)	--	0
	Cs-137	0.18	0.29 (2/2)		0.33 (1/1)		0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range ^b	Location with Highest Annual Mean		Control Locations Mean(f) ^b Range ^b	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range ^b		
Fish (pCi/g wet)							
Mississippi River upstream	Gamma Isotopic 1	0.13				LLD	0
Mississippi River Downstream	Gamma Isotopic 1	0.13	LLD				0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

TABLE 4 RADIOLOGICAL SURVEILLANCE PROGRAM SUMMARY (1982)

Name of Facility: Grand Gulf Nuclear Station Docket No.: 50-416

Location of Facility: Claiborne, Mississippi Reporting Period: June 16, 1982 - December 31, 1982
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Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^a (LLD)	All Indicator Locations Mean(f) ^b Range ^b	Location with Highest Annual Mean		Control Locations Mean(f) ^b Range ^b	Number of Nonroutine Reported Measurements ^c
				Name Distance and Direction	Mean(f) ^b Range ^b		
Meat (pCi/g wet)	Gamma Isotopic (1)	0.13	LLD				0

^a Nominal Lower Limit of Detection (LLD) as defined in HASL-300 (Rev. 8/73), pp. D-08-01, 02, 03, and Tech Spec. Table 4.12.1-1

^b Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses.(f)

^c Nonroutine reported measurements are defined in Section 4.

Section 6
QUALITY DATA CONTROL

6.1 Quality Control Analyses Summary

The analyses conducted for quality control purposes on GCNS environmental samples are summarized in Table 5.

TABLE 5

1982 Quality Control Analyses Summary

The table below summarizes results of samples run for process quality control purposes during the subject year. These listings are in addition to such measurements as detector backgrounds, check source values, radiometric-gravimetric comparisons, system calibrations etc. Detailed listings of each measurement are maintained at the laboratory and are available for inspection if required.

Blank Samples

<u>Nuclide Analyzed</u>	<u>Number of Determinations</u>	<u>Number of Analyses Exceeding the LLD for that Analysis</u>
Gross Alpha	47	0
Gross Beta	37	0
Tritium	75	0
Sr-89-90	26	0
I-131	*	
Am-241	12	0
Pb-210	27	0
Po-210	2	0
Pu-239	37	0
Ra-226	44	0
Fe-55	3	0
Isotopic Uranium	38	0
Isotopic Thorium	17	0

* Blank I-131 analyses are performed with each batch of samples processed. All blank data were below the detection limit.

TABLE 5 (Cont'd)

Spiked Samples

<u>Nuclide Analyzed</u>	<u>Number of Det'ns</u>	<u>Within 2σ of known</u>	<u>Within 3σ of known</u>	<u>Differing from known by > 3σ</u>
Gross Alpha	47	47	-	-
Gross Beta	37	37	-	-
Tritium	75	75	-	-
Sr-89-90	26	26	-	-
Am-261	12	12	-	-
Pb-210	27	27	-	-
Po-210	2	2	-	-
Pu-239	37	37	-	-
Ra-226	44	44	-	-
Fe-55	3	3	-	-
Isotopic Uranium	38	38	-	-
Isotopic Thorium	17	17	-	-

Split Samples

<u>Nuclide Analyzed</u>	<u>Number of Det'ns</u>	<u>No. Agreeing Within 2σ</u>	<u>No. Agreeing Within 3σ</u>	<u>No. Differing by > 3σ</u>
Gross Alpha	17	17	-	-
Gross Beta	20	20	-	-
Tritium	20	20	-	-
Sr-89-90	7	7	-	-
I-131	2	2	-	-
Gamma Emitters	14	14	-	-
Pb-210	4	4	-	-
Po-210	2	2	-	-
Pu-239	3	3	-	-
Am-241	2	2	-	-
Isotopic Thorium	3	3	-	-
Isotopic Uranium	16	16	-	-
Ra-226	13	13	-	-

6.2 U. S. Environmental Protection Agency - Eberline Intercomparison Program

To gauge the accuracy of environmental analyses, Eberline Instrument Corporation participated in the Intercomparison Program in 1982, as in former years, the results of which are displayed in Table 6.

TABLE 6

1982 USEPA - Eberline Intercomparison Program

<u>Sample Type</u>	<u>Analysis</u>	<u>Value (EPA)</u>	<u>Value (EIC)</u>	<u>Units</u>
Air Filter	Alpha	25±11	27±2	pCi/Filter
Air Filter	Beta	52±8.7	58±2	pCi/Filter
Air Filter	Sr-90	16±2.6	24±3	pCi/Filter
Air Filter	Cs-137	19±8.7	32±7	pCi/Filter
Air Filter	Alpha	32±8	24±19	pCi/Sample
Air Filter	Beta	67±5	77±10	pCi/Sample
Air Filter	Sr-90	20±1.5	17±4	pCi/Sample
Air Filter	Cs-137	27±5	27±9	pCi/Sample
Food	Sr-89	38±5	15±4	pCi/kg
Food	Sr-90	23±1.5	21±2	pCi/kg
Food	Co-60	30±5	46±16	pCi/kg
Food	Cs-137	33±5	54±14	pCi/kg
Food	K-40	2730±137	2870±290	pCi/kg
Food	Ba-140	0	<114	pCi/kg
Water	Alpha	21±9.1	20±3	pCi/l
Water	Beta	23±8.7	15±2	pCi/l
Water	Alpha	24±10	22±2	pCi/l
Water	Beta	32±8.7	30±2	pCi/l
Water	Cr-51	34±8.7	44±25	pCi/l
Water	Co-60	22±8.7	24±3	pCi/l
Water	Zn-65	24±8.7	23±4	pCi/l
Water	Ru-106	0	<26	pCi/l
Water	Cs-134	21±8.7	20±2	pCi/l
Water	Cs-137	32±8.7	36±3	pCi/l
Water	Alpha	80±35	73±7	pCi/l
Water	Beta	111±8.7	107±6	pCi/l
Water	Co-60	0	<1	pCi/l
Water	Sr-89	21±8.7	25±4	pCi/l
Water	Sr-90	14.4±2.6	16±2	pCi/l
Water	Cs-134	12±8.7	10±2	pCi/l
Water	Cs-137	15±8.7	15±2	pCi/l
Water	Ra-226	12.7±3.3	11.7±3.5	pCi/l
Water	Ra-228	9.2±2.4	12.9±1.6	pCi/l
Water	Gross U	15±10	15±1	pCi/l
Water	Cr-51	0	<58	pCi/l
Water	Co-60	20±9	20±3	pCi/l
Water	Zn-65	15±9	16±4	pCi/l
Water	Ru-106	20±9	<25	pCi/l
Water	Cs-134	22±9	22±2	pCi/l
Water	Cs-137	23±9	27±2	pCi/l
Water	I-131	8.4±1.5	<75	pCi/l
Water	Uranium	35±6	26±6	pCi/l
Water	H-3	1820±590	1990±690	pCi/l
Water	Ra-226	10±2	11±3	pCi/l
Water	Ra-228	9±1	13±2	pCi/l

TABLE 6 (Cont'd)

<u>Sample Type</u>	<u>Analysis</u>	<u>Value (EPA)</u>	<u>Value (EIC)</u>	<u>Units</u>
Water	Pu-239	6.7±1.2	5.8±0.2	pCi/l
Water	Sr-89	21±8.7	17±4	pCi/l
Water	Sr-90	12±2.6	10±2	pCi/l
Water	H-3	2860±620	1890±600	pCi/l
Water	Alpha	16±5	16±3	pCi/l
Water	Beta	23±5	16±7	pCi/l
Water	H-3	1830±340	1760±510	pCi/l
Water	H-3	2890±380	2830±820	pCi/l
Water	Ra-226	13.4±2.0	13.6±4.0	pCi/l
Water	Ra-228	8.7±1.3	9.4±3.6	pCi/l
Water	I-131	4.4±0.7	5.5±1.8	pCi/l
Water	I-131	87±8.7	67±14	pCi/l
Water	Cr-51	23±5	<59	pCi/l
Water	Co-60	29±5	31±3	pCi/l
Water	Zn-65	26±5	29±10	pCi/l
Water	Ru-106	0	<25	pCi/l
Water	Cs-134	35±5	36±3	pCi/l
Water	Cs-137	25±5	28±3	pCi/l
Water	Ra-226	10.5±1.6	8.4±2.5	pCi/l
Water	Ra-228	11.0±1.7	17.7±14.7	pCi/l
Water	Uranium	30±6	24±4	pCi/l
Water	Pu-239	6.9±0.7	7.2±0.4	pCi/l
Water	Alpha	19±8.7	8±4	pCi/l
Water	Beta	24±8.7	24±5	pCi/l
Water	Alpha	55±24	27±13	pCi/l
Water	Beta	81±8.7	64±6	pCi/l
Water	Cs-134	1.8±8.7	<10	pCi/l
Water	Cs-137	20±8.7	16±7	pCi/l
Water	Ra-226	12.5±3.2	11.8±3.5	pCi/l
Water	Ra-228	3.6±0.9	3.4±1.9	pCi/l
Water	Gross Uranium	16±10	9±1	pCi/l
Milk	Sr-89	25±5	12±7	pCi/l
Milk	Sr-90	16±1.5	13±3	pCi/l
Milk	Co-60	30±5	51±9	pCi/l
Milk	Cs-137	28±5	39±19	pCi/l
Milk	Ba-140	0	<489	pCi/l
Milk	K	1500±75	1310±120	mg/l
Milk	I-131	5.4±0.8	6.7±3.1	pCi/l

6.3 Batelle Northwest - Eberline TLD Intercomparison Program

The results of the TLD Intercomparison Program conducted between Batelle Northwest Laboratories and Eberline Instrument Corporation for 1982 are summarized in Table 7.

TABLE 7

TLD Intercomparison Badges
Irradiated by Battelle Northwest Laboratories

1982

Badge	Total mR less transportation control					
	1st Qtr		2nd Qtr		3rd and 4th Qtr	
	Known	Measured	Known	Measured	Known	Measured
A	22	19.9±7.5	11	9.0±3.3	30	29±4
B	30	26.5±4.2	11	11.5±3.8	30	28±4
C	43	39.2±9.4	27	24.7±3.2	51	49±12
D	62	59.5±9.3	27	25.3±3.8	51	46±7
E	75	72.6±4.4	42	40.7±4.8	73	68±16
F	75	70.0±9.5	42	42.6±5.0	73	64±14
G	80	81.1±18.2	73	69±8	91	90±9
H	80	77.0±13.1	73	72±8	91	88±13
J	100	94.5±13.1	89	80±9	100	95±22
K	100	115.8±10.4	89	80±9	100	96±14

Section 7
SAMPLING AND ANALYSIS RESULTS FOR 1978-1982

7.1 Notes on Data Tables

- Wet Weight** A reporting unit used with organic tissue samples such as vegetation and animal samples in which the sample weight is taken to be the weight as received from the field with no moisture removed.
- Dry Weight** A reporting unit used with soil and sediment samples in which the sample weight is taken to be the weight of the sample after removal of moisture by drying in an oven at about 110°C for about 15 hours.
- pCi/m³** A reporting unit used with air particulate and radioiodine data which refers to the radioactivity content present (expressed in picocuries) the volume of air (expressed in cubic meters) passed through the filter and/or the charcoal trap. The volumes are not corrected to standard conditions.
- Gamma Emitters
or
Gamma Isotopic** Samples were analyzed by high resolution (GeLi) gamma spectrometry. The resulting spectrum is analyzed by a computer program which scans from about 50 to 200 KeV and lists the energy peaks of any radionuclides present in concentrations exceeding the sensitivity limits set for that particular analysis.
- Error Terms** Figures following "±" are error terms based on counting uncertainties at the 2 (95 percent confidence) level. Values preceded by the " " symbol were below the stated concentration at the 4.666 (99.99 percent confidence) level.
- Sensitivity** In general, all analyses meet the sensitivity requirements of the program as given in Table 3. For the few samples that do not (because of inadequate sample quantities, analytical interference, or similar problems, the sensitivity actually obtained in the analysis is listed.
- When all analyses of a particular type during the period resulted in concentrations below the sensitivity limits, a statement is made on the appropriate table rather than presenting a whole page of " " data. If all but one or two data points are below the sensitivity limits, the convention described above is followed.

7.2 Data for 1978 - 1982

The analytical results for the years 1978 through 1982 are presented in Tables 8 through 12, respectively.

TABLE 8
1978 Sampling and Analysis Results

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS
(Weekly Collections)

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/03/78	115	15±3	<7	130	19±3	<7	135	15±3	<7
07/10/78	140	10±2	<7	130	12±2	<7	135	11±2	<7
07/17/78	160	11±2	<7	130	12±2	<7	135	13±3	<7
07/24/78	160	12±3	<7	135	16±3	<7	135	11±2	<7
07/31/78	290	4±1	<7	290	3±1	<7	290	2±1	<7
08/07/78	280	7±1	<7	280	8±1	<7	280	5±1	<7
08/14/78	280	5±1	<7	285	3±1	<7	285	3±1	<7
08/21/78	290	3±1	(n)	285	3±1	<7	285	2±1	<7
08/28/78	295	8±1	<7	290	7±1	<7	290	8±1	<7
09/05/78	315	4±1	<7	320	2±1	<7	320	3±1	<7
09/11/78	245	8±2	<7	245	5±1	<7	245	5±1	<7
09/18/78	285	2±1	<7	285	2±1	<7	285	2±1	<7
09/25/78	285	3±1	<7	285	4±1	<7	285	3±1	<7
10/02/78	285	3±1	<7	285	3±1	<7	285	4±1	<7
10/09/78	285	4±1	<7	285	4±1	<7	285	3±1	<7
10/16/78	290	3±1	<7	290	3±1	<7	290	3±1	<7
10/23/78	280	4±1	<7	280	4±1	<7	280	4±1	<7
10/30/78	290	5±1	<7	290	5±1	<7	290	4±1	<7
11/06/78	285	3±1	<7	285	7±1	<7	285	6±1	<7
11/13/78	285	3±1	<7	285	3±1	<7	285	3±1	<7
11/20/78	285	2±1	<7	285	3±1	<7	290	5±1	<7
11/27/78	285	3±1	<7	290	4±1	<7	285	2±1	<7
12/04/78	285	3±1	<7	285	4±1	<7	285	3±1	<7
12/11/78	285	3±1	<7	285	4±1	<7	285	3±1	<7
12/18/78	285	5±1	<7	285	4±1	<7	285	3±1	<7
12/27/78	365	11±2	<7	285	4±1	<7	285	5±1	<7
				365	16±2	<7	365	15±2	<7

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AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS
(Weekly Collections)

Collection Date	A/S-4			A/S-5			A/S-6		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross B	I-131		Gross B	I-131		Gross B	I-131
07/03/78	140	17±3	<7	135	16±3	<7	130	17±3	<7
07/10/78	140	13±3	<7	135	11±2	<7	70	24±5	<7
07/17/78	150	14±3	<7	135	12±2	<7	130	11±2	<7
07/24/78	145	10±2	<7	140	14±3	<7	315	16±3	<7
07/31/78	280	3±1	<7	265	3±1	<7	280	3±1	<7
08/07/78	290	9±1	<7	280	8±1	<7	285	8±1	<7
08/14/78	285	4±1	<7	275	3±1	<7	285	4±1	<7
08/21/78	280	4±1	<7	285	3±1	<7	285	2±1	<7
08/28/78	290	8±1	<7	290	8±1	<7	320	7±1	<7
09/05/78	315	4±1	<7	315	2±1	<7	280	4±1	<7
09/11/78	245	7±2	<7	245	6±1	<7	245	5±1	<7
09/18/78	285	3±1	<7	285	1±1	<7	285	2±1	<7
09/25/78	285	5±1	<7	290	4±1	<7	290	4±1	<7
10/02/78	285	9±2	<7	285	4±1	<7	285	4±1	<7
10/09/78	285	4±1	<7	285	3±1	<7	285	5±1	<7
10/16/78	290	4±1	<7	290	4±1	<7	290	3±1	<7
10/23/78	280	3±1	<7	280	5±1	<7	280	4±1	<7
10/30/78	295	4±1	<7	295	5±1	<7	295	6±1	<7
11/06/78	280	5±1	<7	280	7±1	<7	280	8±1	<7
11/13/78	280	4±1	<7	280	3±1	<7	280	4±1	<7
11/20/78	280	5±1	<7	280	3±1	<7	280	4±1	<7
11/27/78	295	4±1	<7	295	3±1	<7	295	4±1	<7
12/04/78	280	5±1	<7	275	4±1	<7	280	4±1	<7
12/11/78	290	4±1	<7	290	3±1	<7	290	4±1	<7
12/18/78	280	5±1	<7	280	3±1	<7	280	5±1	<7
12/27/78	370	14±2	<7	355	11±2	<7	370	15±2	<7

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MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS
(Weekly Collections)

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/03/78	115	15±3	<7	170	19±3	<7	135	15±3	<7
07/10/78	140	10±2	<7	130	12±2	<7	135	11±2	<7
07/17/78	160	11±2	<7	130	12±2	<7	135	13±3	<7
07/24/78	160	12±3	<7	135	16±3	<7	135	11±2	<7
07/31/78	290	4±1	<7	290	3±1	<7	290	2±1	<7
08/07/78	280	7±1	<7	280	8±1	<7	280	5±1	<7
08/14/78	280	5±1	<7	285	3±1	<7	285	3±1	<7
08/21/78	290	3±1	(n)	285	3±1	<7	285	2±1	<7
08/28/78	295	8±1	<7	290	7±1	<7	290	8±1	<7
09/05/78	315	4±1	<7	320	2±1	<7	320	3±1	<7
09/11/78	245	8±2	<7	245	5±1	<7	245	5±1	<7
09/18/78	285	2±1	<7	285	2±1	<7	285	2±1	<7
09/25/78	285	3±1	<7	285	4±1	<7	285	3±1	<7
10/02/78	285	3±1	<7	285	3±1	<7	285	4±1	<7
10/09/78	285	4±1	<7	285	4±1	<7	285	3±1	<7
10/16/78	290	3±1	<7	290	3±1	<7	290	3±1	<7
10/23/78	280	4±1	<7	280	4±1	<7	280	4±1	<7
10/30/78	290	5±1	<7	290	5±1	<7	290	4±1	<7
11/06/78	285	3±1	<7	285	7±1	<7	285	6±1	<7
11/13/78	285	3±1	<7	285	3±1	<7	285	3±1	<7
11/20/78	285	2±1	<7	290	3±1	<7	290	5±1	<7
11/27/78	285	3±1	<7	285	4±1	<7	285	2±1	<7
12/04/78	285	3±1	<7	285	4±1	<7	285	3±1	<7
12/11/78	285	3±1	<7	285	4±1	<7	285	3±1	<7
12/18/78	285	5±1	<7	285	4±1	<7	285	5±1	<7
12/27/78	365	11±2	<7	365	14±2	<7	365	15±2	<7

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MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS
(Weekly Collections)

Collection Date	A/S-7			A/S-8			A/S-5		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross B	I-131		Gross B	I-131		Gross B	I-131
07/03/78	120	20±4	<7	150	14±3	<7	135	13±3	<7
07/10/78	120	15±3	<7	170	9±2	<7	150	9±2	<7
07/17/78	120	13±3	<7	165	9±2	<7	155	10±2	<7
07/24/78	125	16±3	<7	170	17±3	<7	140	12±3	<7
07/31/78	290	2±1	<7	290	2±1	<7	285	2±1	<7
08/07/78	285	8±1	<7	290	5±1	<7	285	7±1	<7
08/14/78	285	3±1	<7	285	4±1	<7	290	3±1	<7
08/21/78	280	2±1	<7	285	2±1	<7	280	3±1	<7
08/28/78	290	7±1	<7	275	4±1	<7	290	8±1	<7
09/05/78	315	3±1	<7	280	2±1	<7	315	3±1	<7
09/11/78	245	4±1	<7	245	4±1	<7	245	6±1	<7
09/18/78	285	2±1	<7	285	<1	<7	285	1±1	<7
09/25/78	290	3±1	<7	285	2±1	<7	290	3±1	<7
10/02/78	285	3±1	<7	280	2±1	<7	285	3±1	<7
10/09/78	285	4±1	<7	285	3±1	<7	285	3±1	<7
10/16/78	290	3±1	<7	290	2±1	<7	290	3±1	<7
10/23/78	280	5±1	<7	280	3±1	<7	285	5±1	<7
10/30/78	290	5±1	<7	295	5±1	<7	290	4±1	<7
11/06/78	280	7±1	<7	280	5±1	<7	280	6±1	<7
11/13/78	285	2±1	<7	285	2±1	<7	280	3±1	<7
11/20/78	280	4±1	<7	280	3±1	<7	280	3±1	<7
11/27/78	295	4±1	<7	295	2±1	<7	295	3±1	<7
12/04/78	280	4±1	<7	275	4±1	<7	280	4±1	<7
12/11/78	290	3±1	<7	290	4±1	<7	285	4±1	<7
12/18/78	160	6±1	<7	285	4±1	<7	285	4±1	<7
12/27/78	370	13±2	<7	370	11±2	<7	365	16±2	<7

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MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN AIR PARTICULATE SAMPLES
(Quarterly Analysis on Composite of Weekly Collections)

3rd Quarter			4th Quarter		
Collection Site	pCi/m ³		Collection Site	pCi/m ³	
	Ce-144	Other Gamma*		Ce-144	Other Gamma*
A/S 1	<.03	<.01	A/S 1	<0.02	<0.01
A/S 2	<.03	<.01	2	<0.02	<0.01
A/S 3	.03±.01	<.01	3	<0.02	<0.01
A/S 4	<.03	<.01	4	<0.02	<0.01
A/S 5	<.03	<.01	5	<0.02	<0.01
A/S 6	<.03	<.01	6	<0.02	<0.01
A/S 7	<.03	<.01	7	<0.02	<0.01
A/S 8	<.03	<.01	8	<0.02	<0.01
A/S 9	<.03	<.01	9	<0.02	<0.01

*See Introduction Page.

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MISSISSIPPI POWER AND LIGHT .
 RADIONUCLIDES IN SURFACE WATER SAMPLES
 (Monthly Collections)

GAMMA EMITTERS*

<u>Collection Period</u>	<u>pCi/l</u>	
	<u>MRUP 1N78</u>	<u>MRDOWN 2N78</u>
July N= 7	<15	<15
August N= 8	<15	<15
September N= 9	<15	<15
October N=10	<15	<15
November N=11	<15	<15
December N=12	<15	<15

TRITIUM CONCENTRATIONS IN SURFACE WATER SAMPLES

<u>Collection Period</u>	<u>TRITIUM</u>	
	<u>MRUP 1N78</u>	<u>MRDOWN 2N78</u>
09/12/78	250±130	240±140
10/11/78	450±130	410±130
12/16/78	400±100	200±100

MISSISSIPPI POWER AND LIGHT
RADIONUCLIDES IN WELL WATER SAMPLES
(Quarterly Collections)

Collection Period	Arcont 1		Trimwell 1N78		Pgwell 2N78		Hpwell 3N78		
	pCi/l		pCi/l		pCi/l		pCi/l		
	<u>Y Emitters*</u>	<u>Tritium</u>	<u>Y Emitters*</u>	<u>Tritium</u>	<u>Y Emitters*</u>	<u>Tritium</u>	<u>Y Emitters*</u>	<u>Tritium</u>	
July	<15	-	<15	-	<15	New wells beginning: August 1978		<15	-
August	Well deleted August, 1978		<15	1700±400	<15	450±180		<15	-
12/07/78			<15	<330	<15	<330		<15	470±90

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*See Introduction Page.

CELENA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1978

Date Annealed:	<u>3rd quarter</u>	<u>4th quarter</u>
Date Read:	05/20/78	09/21/78
	10/11/78	01/11/79

<u>Location:</u>	<u>mR/Quarter</u>	
M-00	4.7±0.7	4.4±0.8
M-01	14.3±2.6	16.9±2.6
M-02	missing	16.9±2.6
M-03	11.1±1.4	12.1±1.8
M-04	14.3±1.3	14.3±1.3
M-05	15.7±2.6	16.9±3.9
M-06	13.0±2.6	16.9±2.6
M-07	11.6±2.6	13.0±1.3
M-08	14.3±1.3	15.6±1.3
M-09	14.3±1.3	14.3±2.6
M-10	13.0±2.6	15.6±1.3
M-11	14.3±1.3	14.3±2.6
M-12	13.0±1.3	14.3±1.3
M-13	12.9±1.7	14.3±2.6
M-14	14.3±1.3	14.3±2.6
M-15	9.5±1.7	11.4±1.6
M-16	12.5±1.3	14.3±2.6
M-17	12.2±2.0	14.3±2.6
M-18	missing	12.9±1.3
M-19	13.0±1.3	missing
M-20	13.0±2.6	14.3±2.5
M-21	11.8±2.6	14.3±2.1
M-22	14.3±2.5	14.3±1.3
M-23	12.0±1.4	14.3±1.3
M-24	14.3±1.3	15.6±5.2
M-25	14.3±1.3	14.3±3.9
M-26	15.6±2.6	15.6±2.5
M-27	12.9±2.1	14.3±2.6
M-28	14.3±1.3	14.3±2.6
M-29	14.3±1.3	15.6±2.6
M-30	missing	14.3±3.9

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN MILK SAMPLES
(Monthly Collections)

<u>Collection Period</u>	<u>Collection Site</u>	<u>pCi/l</u>	
		<u>I-131</u>	<u>Gamma Emitters*</u>
July	Alcont 7-78-1A	<0.5	<15
August	Alcont 1-1878	<0.5	<15
September	Alcont 1-1978	<0.5	<15
October	Alcont 11078	<0.5	<15
November	Alcont 11178	<1	<15
December	Alcont 11278	<1	<15
December	Alcont 21278	<1	<15

MISSISSIPPI POWER AND LIGHT
 RADIOACTIVITY IN CISTERN WATER SAMPLES
 (Monthly Collections)

Collection Period	Ark Cist 1N78			Trim Cist 2N78		
	Gross Beta	pCi/l I-131	Gamma Emitters*	Gross Beta	pCi/l I-131	Gamma Emitters*
July N= 7	2±2	<1	<15	2±2	<1	<15
August N= 8	<3	<1	<15	10±2	<1	<15
September N= 9	5±2	<1	<15	5±2	<1	<15
October N=10	<2	<1	<15	<2	<1	<15
November N=11	3±1.	<1	<15	2±2	<1	<15
December N=12	4±1	<1	<15	6±2	<1	<15

TRITIUM CONCENTRATIONS IN CISTERN WATER SAMPLES
 (Quarterly Collections)

Collection Period	TRITIUM pCi/l	
	Ark Cist 1N78	Trim Cist 2N78
3rd Quarter N=9	<330	<330
4th Quarter	<320	<330

MISSISSIPPI POWER AND LIGHT
GAMMA EMITTERS* IN SEDIMENT SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>pCi/g dry Gamma Emitters*</u>
1-MR UP	10/26/78	<0.15
2-MR DOWN	10/26/78	<0.15
4-BRGSLP	10/27/78	<0.15

*See Introduction Page

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS* IN SOIL SAMPLES
(Collection once prior to Plant Operation)

Collection Site	Collection Date	pCi/g dry	
		Cs-137	Other Gamma*
1-1PG (T)	10/26/78	<0.15	<0.15
2-1PG (M)	10/26/78	<0.15	<0.15
3-1PG (B)	10/26/78	<0.15	<0.15
1-5HPO (T)	10/31/78	<0.15	<0.15
2-5HPO (M)	10/31/78	<0.15	<0.15
3-5HPO (B)	10/31/78	<0.15	<0.15
1-4GJOE (T)	10/29/78	0.43±0.09	<0.15
2-4GJOE (M)	10/29/78	0.30±0.10	<0.15
3-4GJOE (B)	10/29/78	0.30±0.10	<0.15
1-261n (T)	10/26/78	0.99±0.15	<0.15
2-261n (M)	10/26/78	0.83±0.12	<0.15
3-261n (B)	10/26/78	0.33±0.09	<0.15
1-361n (T)	10/26/78	0.58±0.09	<0.15
2-361n (M)	10/26/78	0.22±0.06	<0.15
3-361n (B)	10/26/78	0.31±0.06	<0.15
1-9GGMP (T)	10/27/78	0.26±0.06	<0.15
2-9GGMP (M)	10/27/78	0.11±0.04	<0.15
3-9GGMP (B)	10/27/78	<0.15	<0.15
1-7NET (T)	10/30/78	0.66±0.10	<0.15
2-7NET (M)	10/30/78	0.33±0.08	<0.15
3-7NET (B)	10/30/78	0.36±0.07	<0.15
1-8WR (T)	10/30/78	0.76±0.14	<0.15
2-8WR (M)	10/30/78	0.80±0.12	<0.15
3-8WR (B)	10/30/78	0.43±0.10	<0.15
1-6RS (T)	10/30/78	<0.15	<0.15
2-6RS (M)	10/30/78	<0.15	<0.15
3-6RS (B)	10/30/78	<0.15	<0.15

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS IN FISH SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Species</u>	<u>pCi/g (wet) Gamma Emitters*</u>
Hamilton Lake	10/03/78	Buffalo	<0.13
Hamilton Lake	10/03/78	White Bass	<0.13
Hamilton Lake	10/03/78	Fresh Water Drum	<0.13
Hamilton Lake	10/03/78	Catfish	<0.13
Hamilton Lake	10/03/78	White Crappie	<0.13

GAMMA EMITTERS IN MEAT SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g (wet)</u>	
			<u>Gamma Emitters*</u>	<u>Fe-59 Zn-65</u>
01	12/12/78	Deer	<0.13	<0.26
01	12/12/78	Rabbit	<0.13	<0.26

*See Introduction Page.

GAMMA EMITTERS* IN FRUIT & VEGETABLE SAMPLES
 (Collected at Harvest)

<u>Sample Type</u>	<u>Collection Date</u>	<u>γ Emitters dCi/g wet wt.</u>
Pecans	08/18/78	<0.08
Mustard Greens	11/22/78	<0.08
Turnip Greens	11/22/78	<0.08

*The spectrum is computer scanned from -20 to +2000 KeV. Specifically included are Ce-144, Ba-La-140, Co-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 9
1979 Sampling and Analysis Results

1.0 Introduction

This report summarizes data obtained on samples received through December, 1979 in the environmental radiological monitoring program for Grand Gulf Nuclear Station.

Where blank spaces appear following dates, work was not completed on these samples in time for inclusion in this report.

Data from analyses completed during the month were within the expected ranges and do not indicate the presence of radioactivity from the operation of nuclear power stations.

The spectrum is computer scanned from ~ 20 to ~ 2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ . Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

A summary of Quality Control data obtained during the month is presented in Section 3.0. Included in this section are data from all analytical programs, not only those associated with this program.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/02/79	532	1±1	<7	461	2±1	<7	433	1±1	<7
01/08/79	532	2±1	<7	456	3±1	<7	427	3±1	<7
01/15/79	617	4±1	<7	546	4±1	<7	492	4±1	<7
01/22/79	642	1±1	<7	532	1±1	<7	487	2±1	<7
01/29/79	665	2±1	<7	524	3±1	<7	487	3±1	<7
02/05/79	642	2±1	<7	538	3±1	<7	473	2±1	<7
02/12/79	603	2±1	<7	535	2±1	<7	461	2±1	<7
02/19/79	651	2±1	<7	518	2±1	<7	526	3±1	<7
02/26/79	690	1±1	<7	526	1±1	<7	526	2±1	<7
03/05/79	509	2±1	(a)	509	2±1	(a)	492	3±1	(a)
03/12/79	540	2±1		529	2±1		512	2±1	
03/19/79	478	2±1		477	2±1		478	2±1	
03/26/79	485	1±1		485	1±1		485	1±1	
04/02/79	463	2±1		467	2±1		466	2±1	
04/09/79	472	2±1		474	2±1		474	2±1	
04/16/79	483	2±1		482	2±1		482	2±1	
04/23/79	482	3±1		480	3±1		480	3±1	
04/30/79	463	1±1		467	2±1		467	1±1	
05/06/79	472	1±1		476	1±1		475	1±1	
05/14/79	470	2±1		465	<1		467	2±1	
05/21/79	478	3±1		476	2±1		475	3±1	
05/29/79	439	3±1		413	3±1		441	3±1	
06/05/79	190(b)	2±1		375	2±1		390	2±1	
06/25/79(c)	305	2±1		305	2±1		305	1±1	

(a) Discontinued until March 1980.

(b) Collected 06/04/79.

(c) Sampling stations closed for maintenance during weeks ending 06/12 and 06/19.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S- 1			A/S- 2			A/S- 3		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/02/79	345	2±1	(a)	325	1±1	(a)	325	2±1	(a)
07/09/79	330	1±1		315	1±1		340	1±1	
07/16/79	335	<1		355	<1		330	<1	
07/23/79	330	2±1		310	2±1		330	2±1	
07/30/79	330	1±1		325	1±1		325	1±1	
08/06/79	330	2±1		330	2±1		335	1±1	
08/13/79	330	2±1		335	1±1		335	2±1	
08/20/79	330	3±1		300	3±1		325	4±1	
08/27/79	335	1±1		60	4±3		330	1±1	
09/04/79	360	1±1		380	<1		380	1±1	
09/10/79	285	2±1		285	3±1		285	2±1	
09/17/79	335	2±1		310	2±1		335	1±1	
09/24/79	330	1±1		330	1±1		330	1±1	
10/01/79	310	2±1		285	2±1		335	1±1	
10/08/79	330	2±1		330	2±1		330	2±1	
10/15/79	65	10±3		330	<1		330	2±1	
10/22/79	310	2±1		330	2±1		330	2±1	
10/29/79	335	2±1		335	2±1		335	2±1	
11/05/79	330	1±1		330	1±1		330	1±1	
11/12/79	335	2±1		335	2±1		335	2±1	
11/19/79	330	3±1		330	2±1		330	2±1	
11/26/79	330	2±1		330	<1		330	1±1	
12/03/79	340	2±1		340	1±1		340	2±1	
12/10/79	330	2±1		330	1±1		330	1±1	
12/17/79	275	1±1		275	1±1		275	2±1	
12/26/79	430	2±1		430	1±1		430	1±1	
12/31/79	235	2±1		235	2±1		235	3±1	

(a) Discontinued until March 1980.

(b) Fuse blown, replaced.

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MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4			A/S-5			A/S-6		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/02/79	379	2±1	<7	402	1±1	<7	456	2±1	<7
01/08/79	131	11±1	<7	422	2±1	<7	461	3±1	<7
01/15/79	430	3±1	<7	481	3±1	<7	535	4±1	<7
01/22/79	971	1±1	<7	470	2±1	<7	518	2±1	<7
01/29/79	416	3±1	<7	498	2±1	<7	526	2±1	<7
02/05/79	405	4±1	<7	481	3±1	<7	526	3±1	<7
02/12/79	427	3±1	<7	475	2±1	<7	532	2±1	<7
02/19/79	393	4±1	<7	487	2±1	<7	501	3±1	<7
02/26/79	487	2±1	<7	473	1±1	<7	512	2±1	<7
03/05/79	Not Available (a)			489	3±1	(a)	523	3±1	(a)
03/12/79	342	3±1		815	1±1		529	2±1	
03/19/79	464	2±1		418	2±1		464	2±1	
03/26/79	486	1±1		473	1±1		486	1±1	
04/02/79	474	4±1		471	2±1		473	3±1	
04/09/79	463	2±1		463	1±1		464	2±1	
04/16/79	479	2±1		488	2±1		482	2±1	
04/23/79	482	4±1		470	3±1		482	3±1	
04/30/79	477	2±1		465	1±1		473	1±1	
05/06/79	457	2±1		469	1±1		461	1±1	
05/14/79	477	3±1		480	3±1		475	3±1	
05/21/79	474	<1		487	3±1		489	3±1	
05/29/79	898	1±1		461	2±1		504	2±1	
05/30/79	195	1±1		403	1±1		215(b)	2±1	
06/25/79	335	2±1		345	2±1		330	2±1	

(a) Discontinued until March 1980.

(b) Collected 06/04/79.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S- 4		A/S- 5			A/S- 6			
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/02/79	320	<1	(a)	325	1±1	(a)	330	2±1	(a)
07/09/79	330	1±1		345	1±1		330	1±1	
07/16/79	330	<1		330	<1		330	<1	
07/23/79	330	2±1		290	2±1		330	1±1	
07/30/79	325	1±1		330	1±1		330	1±1	
08/06/79	335	1±1		330	1±1		325	2±1	
08/13/79	325	2±1		330	2±1		340	2±1	
08/20/79	300	3±1		370	3±1		325	4±1	
08/27/79	345	1±1		340	1±1		340	1±1	
09/04/79	370	1±1		375	1±1		375	<1	
09/10/79	290	3±1		290	2±1		270	2±1	
09/17/79	320	1±1		320	1±1		320	2±1	
09/24/79	345	1±1		340	1±1		340	2±1	
10/01/79	320	2±1		335	1±1		310	2±1	
10/08/79	330	2±1		280	2±1		330	2±1	
10/15/79	330	2±1		330	2±1		330	1±1	
10/22/79	330	2±1		330	2±1		330	2±1	
10/29/79	350	2±1		335	2±1		330	1±1	
11/05/79	330	2±1		330	1±1		60(b)	3±2	
11/12/79	335	2±1		285	1±1		330	2±1	
11/19/79	325	2±1		305	1±1		325	2±1	
11/26/79	330	1±1		330	1±1		330	1±1	
12/03/79	340	2±1		340	2±1		340	1±1	
12/10/79	325	2±1		330	1±1		330	2±1	
12/17/79	275	1±1		275	1±1		275	1±1	
12/26/79	425	2±1		420	1±1		425	2±1	
12/31/79	240	2±1		240	2±1		240	3±1	

(a) Discontinued until March 1980.

(b) Fuse blown; replaced.

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MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7			A/S-8			A/S-9		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/02/79	422	1±1	<7	484	1±1	<7	464	1±1	<7
01/08/79	433	3±1	<7	470	2±1	<7	447	3±1	<7
01/15/79	498	4±1	<7	509	3±1	<7	543	4±1	<7
01/22/79	521	2±1	<7	558	2±1	<7	526	2±1	<7
01/29/79	439	2±1	<7	566	3±1	<7	532	2±1	<7
02/05/79	490	3±1	<7	569	2±1	<7	532	3±1	<7
02/12/79	495	2±1	<7	521	2±1	<7	535	2±1	<7
02/19/79	470	2±1	<7	558	2±1	<7	501	2±1	<7
02/26/79	487	1±1	<7	574	1±1	<7	518	2±1	<7
03/05/79	515	3±1	(a)	534	2±1	(a)	515	3±1	(a)
03/12/79	520	2±1		543	2±1		517	2±1	
03/19/79	470	2±1		461	2±1		471	2±1	
03/26/79	485	1±1		486	<1		486	1±1	
04/02/79	472	3±1		471	1±1		472	2±1	
04/09/79	464	2±1		461	1±1		465	2±1	
04/16/79	482	1±1		479	2±1		483	2±1	
04/23/79	482	3±1		482	2±1		482	3±1	
04/30/79	473	2±1		474	1±1		473	1±1	
05/06/79	462	1±1		454	1±1		462	1±1	
05/14/79	485	1±1		475	3±1		470	2±1	
05/21/79	477	2±1		488	<1		489	2±1	
05/29/79	427	3±1		487	1±1		416	3±1	
06/04/79	300	1±1		435 (b)	<1		340	1±1	
06/25/79	305	2±1		310	2±1		330	2±1	

(a) Discontinued until about 1980.

(b) Collected 05/31/79.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7			A/S-8			A/S-9		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/02/79	340	1±1	(a)	340	2±1	(a)	335	1±1	(a)
07/09/79	330	1±1		330	2±1		330	1±1	
07/16/79	335	1±1		330	1±1		330	1±1	
07/23/79	330	1±1		330	2±1		330	2±1	
07/30/79	330	1±1		330	1±1		330	1±1	
08/06/79	325	2±1		325	2±1		325	1±1	
08/13/79	349	3±1		335	2±1		340	2±1	
08/20/79	310	4±1		330	3±1		290	3±1	
08/27/79	340	1±1		340	1±1		330	1±1	
09/04/79	375	<1		370	1±1		375	1±1	
09/10/79	290	2±1		270	2±1		260	2±1	
09/17/79	320	2±1		320	2±1		310	2±1	
09/24/79	340	2±1		340	2±1		345	1±1	
10/01/79	335	2±1		320	2±1		310	1±1	
10/08/79	315	1±1		325	2±1		330	1±1	
10/15/79	330	2±1		330	2±1		330	2±1	
10/22/79	330	2±1		330	2±1		325	2±1	
10/29/79	335	1±1		335	2±1		335	2±1	
11/05/79	330	1±1		330	2±1		330	1±1	
11/12/79	360	2±1		330	2±1		285	2±1	
11/19/79	330	1±1		325	2±1		330	1±1	
11/26/79	330	2±1		330	2±1		330	1±1	
12/03/79	340	1±1		340	1±1		340	1±1	
12/10/79	330	2±1		330	1±1		330	1±1	
12/17/79	275	1±1		275	2±1		275	1±1	
12/26/79	425	2±1		395	2±1		395	1±1	
12/31/79	240	2±1		240	3±1		240	3±1	

(a) Discontinued until March 1980.

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MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN AIR PARTICULATE SAMPLES
(Quarterly Analysis on Composite of Weekly Collections)

<u>Collection Site</u>	<u>pCi/m³ Gamma Emitters</u>	<u>Collection Site</u>	<u>pCi/m³ Gamma Emitters</u>
	<u>1st Quarter</u>		<u>2nd Quarter</u>
AS-01	<0.01	AS-01	<0.01
AS-02	<0.01	AS-02	<0.01
AS-03	<0.01	AS-03	<0.01
AS-04	<0.01	AS-04	<0.01
AS-05	<0.01	AS-05	<0.01
AS-06	<0.01	AS-06	<0.01
AS-07	<0.01	AS-07	<0.01
AS-08	<0.01	AS-08	<0.01
AS-09	<0.01	AS-09	<0.01
	<u>3rd Quarter</u>		<u>4th Quarter</u>
AS-01	<0.01	AS-01	<0.01
AS-02	<0.01	AS-02	<0.01
AS-03	<0.01	AS-03	<0.01
AS-04	<0.01	AS-04	<0.01
AS-05	<0.01	AS-05	<0.01
AS-06	<0.01	AS-06	<0.01
AS-07	<0.01	AS-07	<0.01
AS-08	<0.01	AS-08	<0.01
AS-09	<0.01	AS-09	<0.01

MISSISSIPPI POWER AND LIGHT
 RADIONUCLIDES IN WELL WATER SAMPLES
 (Quarterly Collections)

Collection Period	pCi/l					
	TRIMWELL γ Emitters	IN79 Tritium	PGWELL γ Emitters	2N79 Tritium	MPWELL γ Emitters	3N79 Tritium
January	<15	<330	<15	<330	<15	<330
April	<15	<330	<15	<330	<15	310±110
July	<15	270±130	<15	360±160	<15	370±160
October	<15	210±140	<15	270±90	<15	460±90

SPECIAL COLLECTION WELL WATER
 Collected 07/17/79

	γ Emitters	pCi/l	
		Ra-226	K-40
South Well	<15	0.81±0.24	7.9
North Well	<15	0.84±0.25	8.8
Trim Well	<15	3.0 ±0.3	15.0

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN SURFACE WATER SAMPLES
(Monthly Collections)

GAMMA EMITTERS

<u>Collection Period</u>	<u>pCi/l</u>	
	<u>MRUP 1N79</u>	<u>MRDOWN 2N79</u>
01/11/79	<15	<15
02/14/79	<15	<15
03/07/79	<15	<15
04/25/79	<15	<15
05/09/79	<15	<15
06/11/79	<15	<15
07/18/79	<15	<15
08/09/79	<15	<15
09/05/79	<15	<15
10/05/79	<15	<15
11/02/79	<15	<15
12/07/79	<15	<15

TRITIUM CONCENTRATIONS IN SURFACE WATER SAMPLES
(Quarterly Collections)

TRITIUM

<u>Collection Period</u>	<u>pCi/l</u>	
	<u>MRUP 1N79</u>	<u>MRDOWN 2N79</u>
1st Quarter	<330	<330
2nd Quarter	<330	280±110
3rd Quarter	290±90	Lost in Processing
4th Quarter	<330	<330

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN CISTERN WATER SAMPLES
(Monthly Collections)

Collection Period	Ark Cist 1N79			Trim Cist 2N79		
	Gross Beta	pCi/l I-131	Gamma Emitters	Gross Beta	pCi/l I-131	Gamma Emitters
01/10/79 N=1	5±1	<1	<15	3±1	<1	<15
02/08/79 N=2	4±1	<1	<15	7±2	<1	<15
03/07/79 N=3	2±1	<1	<15	5±2	<1	<15
04/10/79 N=4	2±1	<1	<15	6±2	<1	<15
05/07/79 N=5	2±1	<1	<15	8±2	<1	<15
06/11/79 N=6	3±1	<1	<15	7±2	<1	<15
07/05/79 N=7	2±1	<1	<15	6±2	<1	<15
08/06/79 N=8	5±2	<1	<15	5±2	<1	<15
09/05/79 N=9	8±2	<1	<15	8±2	<1	<15
10/02/79 N=10	2±2	<1	<15	2±2	<1	<15
11/01/79 N=11	4±1	<1	<15	3±1	<1	<15
12/04/79 N=12	3±1	<1	<15	3±1	<1	<15

TRITIUM CONCENTRATIONS IN CISTERN WATER SAMPLES
(Quarterly Collections)

Collection Period	pCi/l	
	Ark Cist 1N79	Trim Cist 2N79
01/11/79	<330	<330
04/10/79	<330	<330
07/05/79	<330	<330
12/04/79	250±90	<330

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS in FRUIT and VEGETABLE SAMPLES
(Collected at Harvest)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g wet Gamma Emitters</u>
GRLV-01	05/09/79	Turnip + Mustard	<0.08
GRLV-02	06/18/79	Turnip Greens	<0.08
VEG-01	06/26/79	Radish	<0.08
GRLV-03	07/03/79	Turnip + Mustard	<0.08
VEG-02	07/06/79	Squash	<0.08
VEG-03	07/25/79	Cucumbers	<0.08
GRLV-04	08/01/79	Turnip + Mustard	<0.08
VEG-04	08/01/79	Corn	<0.08
GRLV-05	08/01/79	Turnips	<0.08
GRLV-06	08/01/79	Turnips	<0.08
VEG-05	08/01/79	Okra	<0.08
VEG-06	08/01/79	Okra	<0.08
FRUIT-01	09/07/79	Pears	<0.08
VEG-07	09/07/79	Okra	<0.08
FRUIT-02	09/07/79	Muscadino	<0.08
VEG-08	09/07/79	Butter Beans	<0.08
Fruit-03	10/03/79	Crabapple	<0.08
GRLV-09	10/03/79	Turnip Greens	<0.08
Foliage-01	10/08/79	Hay	<0.08
GRLV-10	11/01/79	Mustard Greens	<0.08
VEG-11	11/05/79	Soybeans	<0.08
GRLV-11	12/04/79	Mustard Greens	<0.08
GRLV-12	12/04/79	Turnip Greens	<0.08
VEG-12	12/04/79	Sweet Potatoes	<0.08
FRUIT	12/04/79	Persimmon	<0.08

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN MILK SAMPLES
(Monthly Collections)

<u>Collection Period</u>	<u>Collection Site</u>	<u>pCi/l</u>	
		<u>I-131</u>	<u>Gamma Emitters</u>
01/11/79	Alcont 1179	<1	<15
02/08/79	Alcont 1279	<1	<15
03/07/79	Alcont 1379	<1	<15
04/10/79	Alcont 1479	<1	<15
05/07/79	Alcont 5779	<1	<15
06/06/79	Alcont 6679	<2(a)	<15
07/05/79	Alcont 7579	<1	<15
08/07/79	Alcont 8779	<1	<15
09/05/79	Alcont 9579	<1	<15
10/03/79	Alcont 10379	<1	<15
11/01/79	Alcont 11179	<1	<15
12/05/79	Alcont 12579	<1	<15

GAMMA EMITTERS IN SEDIMENT SAMPLES
(Semiannual Collections)

<u>Collection Site #</u>	<u>Collection Date</u>	<u>pCi/g dry</u>	
		<u>Cs-137</u>	<u>Gamma Emitters</u>
Hamilton Outfall	06/27/79	0.12±0.05	<0.15
Barge Slip	06/27/79	0.32±0.04	<0.15
Hamilton	12/04/79	<0.15	<0.15
Barge Slip	12/04/79	<0.15	<0.15

(a) Lower sensitivity due to delay in shipment.

GAMMA EMITTERS IN FISH SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Species</u>	<u>pCi/g (wet) Gamma Emitters</u>
Lake Hamilton 01	06/29/79	Crappie	<0.13
Lake Hamilton 02	06/29/79	Buffalo	<0.13
Lake Hamilton 03	10/26/79	Crappie	<0.13
Lake Hamilton 04	10/26/79	Buffalo	<0.13

GAMMA EMITTERS IN MEAT SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g (wet) Gamma Emitters</u>
Buckner Farm 6km SE of GGNS	10/08/79	Hay(a)	<0.08
Buckner Farm 6km SE of GGNS	10/19/79	Deer 01-79	<0.13
22-80 47A NW Quadrant MCT site near MRT	12/21/79	Deer 02-79	<0.13
22-80 47A NW Quadrant MCT site near MRT	12/20/79	Rabbit 01-79	<0.13

(a) Beef and goat meat not available; hay used as substitute (duplicate sample for foliage).

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1979

	<u>1st quarter</u>	<u>2nd quarter</u>	<u>3rd quarter</u>	<u>4th quarter</u>
Date Annealed:	12/21/78	03/21/79	06/18/79	09/19/79
Date Read:	05/15/79	07/10/79	10/08/79	01/07/80
<u>Location:</u>	<u>mR/Quarter</u>			
M-00	5.8±1.6	4.9±1.2	4.8±0.5	5.8±0.7
M-01	15.6±1.3	16.9±1.3	14.3±1.3	18.2±2.6
M-02	14.3±1.3	15.6±1.3	12.6±1.3	16.9±1.3
M-03	11.8±1.2	12.1±2.0	11.1±1.4	14.3±1.3
M-04	14.3±2.6	15.6±1.3	missing	16.9±3.9
M-05	13.0±1.3	15.6±1.3	14.3±1.3	16.9±2.6
M-06	14.3±1.3	16.9±1.3	12.9±1.4	15.6±2.6
M-07	13.0±1.3	14.3±1.3	12.1±1.2	15.6±2.6
M-08	14.3±1.3	15.6±1.3	12.6±1.3	15.6±1.3
M-09	13.0±2.6	15.6±1.3	14.3±1.3	15.6±3.9
M-10	14.3±1.3	14.3±1.3	12.7±1.3	15.6±1.3
M-11	14.3±1.3	14.3±5.2	12.1±1.2	14.3±3.9
M-12	13.0±1.3	14.3±1.3	12.0±2.7	15.6±1.3
M-13	12.1±1.2	16.9±2.6	missing	14.3±2.6
M-14	12.9±1.7	13.0±2.6	12.1±2.1	15.6±1.3
M-15	20.8±1.3	missing	10.9±2.1	12.7±2.0
M-16	12.9±1.3	14.3±1.3	12.1±1.8	14.3±1.3
M-17	14.3±1.3	14.3±1.3	12.2±1.6	15.6±2.6
M-18	13.0±2.6	15.6±1.3	14.3±2.6	16.9±2.6
M-19	14.3±1.3	missing	9.9±2.6	missing
M-20	14.3±2.6	15.6±1.3	12.6±1.7	16.9±2.6
M-21	12.7±2.0	missing	13.0±1.3	missing
M-22	14.3±2.6	14.3±3.9	13.0±2.6	15.6±1.3
M-23	12.2±1.2	10.0±1.0	13.0±1.3	14.3±3.9
M-24	missing	missing	14.3±1.3	16.9±2.6
M-25	missing	missing	14.3±1.3	15.6±2.6
M-26	24.7±6.5	missing	14.3±2.6	16.9±3.9
M-27	26.0±3.9	missing	12.2±1.3	16.9±2.6
M-28	14.3±2.6	15.6±1.3	13.0±2.6	15.6±2.6
M-29	12.9±2.0	14.3±5.2	13.0±1.3	15.6±2.6
M-30	13.0±1.3	14.3±1.3	12.0±1.4	16.9±2.6
M-31	12.6±1.3	15.6±2.6	11.1±1.2	15.6±2.6
M-32	13.0±2.6	15.6±1.3	13.0±1.3	10.8±1.4

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Cistern Water	Ark Cist 4279	02/08/79	Gross Beta	4±1 pCi/l
Cistern Water	Trim Cist 4279	02/08/79	Gross Beta	8±2 pCi/l
Surface Water	GG Site 21579-1	02/14/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG Site 21579-2	02/14/79	Gamma Isotopic	<15 pCi/l
Milk	GG 1379	03/07/79	Gamma Isotopic	<15 pCi/l
Cistern Water	GG Cist 3379	03/07/79	Gross β	8±2 pCi/l
Cistern Water	GG Cist 3379	03/07/79	Gamma Isotopic	<15 pCi/l
Ground Water	GG Well	04/10/79	Gamma Isotopic	<15 pCi/l
Ground Water	GG Well	04/11/79	Gamma Isotopic	<15 pCi/l
Ground Water	GG Well	04/12/79	Gamma Isotopic	<15 pCi/l
Ground Water	GG Well	04/17/79	Tritium	<330 pCi/l
Ground Water	GG Well	04/18/79	Tritium	<330 pCi/l
Ground Water	GG Well	04/19/79	Tritium	<330 pCi/l
Milk	GG 1579	05/07/79	I-131	<1 pCi/l
Milk	GG 1579	05/07/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG 5979(1)	05/09/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG 5979(2)		Gamma Isotopic	<15 pCi/l
Surface Water	GG Site Up	06/11/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG Site Down	06/11/79	Gamma Isotopic	<15 pCi/l
Cistern Water	GG Cist 1	06/18/79	I-131	<1 pCi/l
Cistern Water	GG Cist 2	06/18/79	I-131	<1 pCi/l
Cistern Water	GG Cist	06/11/79	Gross β	2±1 pCi/l
Cistern Water	GG Cist	06/11/79	Gross β	6±1 pCi/l
Cistern Water	GG Cist 1	06/11/79	Gamma Isotopic	<15 pCi/l
Cistern Water	GG Cist 2	06/11/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG Site	08/09/79	Gamma Isotopic	<15 pCi/l
Cistern Water	Cist GG 9579	09/05/79	I-131	<1 pCi/l
Cistern Water	Cist GG 9579	09/05/79	I-131	<1 pCi/l
Cistern Water	Cist GG 9579	09/05/79	Gross β	18±2 pCi/l
Cistern Water	Cist GG 9579	09/05/79	Gross β	4±2 pCi/l
Milk	GG 9579	09/05/79	I-131	<1 pCi/l
Milk	GG 9579	09/05/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG MRUP 9579	09/05/79	Gamma Isotopic	<15 pCi/l
Surface Water	GG MRDOWN 9579	09/05/79	Lost in shipment	
Cistern Water	Arkcist GG 9579	09/05/79	Gamma Isotopic	<15 pCi/l
Cistern Water	Trimcist GG 9579	09/05/79	Gamma Isotopic	<15 pCi/l

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Well Water	Trimwell GG	10/02/79	Gamma Isotopic	<15 pCi/l
Well Water	PGwell GG	12/02/79	Gamma Isotopic	<15 pCi/l
Well Water	MPWell GG	10/02/79	Gamma Isotopic	<15 pCi/l
Fruit	GG	10/03/79	Gamma Isotopic	<0.08 pCi/g
Vegetables	GRLV GG	10/03/79	Gamma Isotopic	<0.08 pCi/g
Foliage	01-GG	10/08/79	Gamma Isotopic	<0.08 pCi/g
Fish - crappie	03-GG	10/26/79	Gamma Isotopic	<0.13 pCi/g
Fish - buffalo	04-GG	10/26/79	Gamma Isotopic	<0.13 pCi/g
Soybeans	Veg 11-GG	11/05/79	Gamma Isotopic	<0.08 pCi/g
Cistern Water	Arkcist GG	12/04/79	Gross β	2 \pm 1 pCi/l
Cistern Water	Trimcist GG	12/04/79	Gross β	3 \pm 1 pCi/l
Sediment	Hamilton GG	12/04/79	Gamma Isotopic	<0.13 pCi/g
Sediment	Barge Slip GG	12/04/79	Gamma Isotopic	<0.13 pCi/g
Milk	Alcont GG	12/05/79	I-131	<1 pCi/l
Surface Water	MRUP GG	12/07/79	Gamma Isotopic	<15 pCi/l
Surface Water	MRDOWN GG	12/07/79	Gamma Isotopic	<15 pCi/l

QUALITY CONTROL ANALYSES SUMMARY

DECEMBER 1979

The tables below summarize results of samples run for process quality control purposes during the subject month. These listings are in addition to such measurements as detector backgrounds, check source values, radiometric-gravimetric comparisons, system calibrations, etc. Detailed listings of each measurement are maintained at the laboratory and are available for inspection if required.

BLANK SAMPLES

<u>Nuclide Analyzed</u>	<u>Number of Determinations</u>	<u>Number of analyses exceeding the LLD for that analysis</u>
Gross Beta	17	0
Gross Alpha	14	0
Iodine-131	24	0
Strontium-89	1	0
Strontium-90	1	0
Gamma Emitters	5	0
Tritium H-3	4	0

SPLIT SAMPLES

<u>Nuclide Analyzed</u>	<u>Number of Det'ns</u>	<u>No. agreeing within 2σ</u>	<u>No. agreeing within 3σ</u>	<u>No. differing by > 3σ</u>
Gross Beta	6	6	0	0
Gross Alpha	1	1	0	0
Iodine-131	1	1	0	0
Strontium-89	7	7	0	0
Strontium-90	7	7	0	0
Gamma Emitters	3	3	0	0
Tritium H-3	6	6	0	0
Calcium-45	1	1	0	0

SPIKED SAMPLES

<u>Nuclide Analyzed</u>	<u>No. of Det'ns</u>	<u>Within 2σ of known</u>	<u>Within 3σ of known</u>	<u>differing from known by > 3σ</u>
Gross Beta	13	13	0	0
Strontium-90	6	6	0	0
Tritium H-3	2	2	0	0
Gamma Emitters	5	5	0	0

USDOE QUALITY ASSESSMENT PROGRAM

1979

<u>Sample Type</u>	<u>Nuclide</u>	<u>Known</u>	<u>Measured ±2σ error</u>	<u>Units</u>
Air	Co-57	0.116 E+03	0.131±0.013 E+03	pCi/filter
Air	Sr-90	0.135 E+02	0.155±0.025 E+02	pCi/filter
Air	Ru-106	0.174 E+03	0.167±0.020 E+03	pCi/filter
Air	Sb-125	0.749 E+03	0.823±0.082 E+03	pCi/filter
Air	Cs-134	0.985 E+02	0.947±0.095 E+02	pCi/filter
Air	Ca-45	0.134 E+03	0.230±0.023 E+03	pCi/filter
Soil	K-40	0.216 E+02	0.235±0.024 E+02	pCi/g
Soil	Sr-90	0.200 E+00	0.200±0.080 E+00	pCi/g
Soil	Cs-137	0.240 E+00	0.266±0.027 E+00	pCi/g
Tissue	K-40	0.840 E+01	0.900±0.090 E+01	pCi/g
Tissue	Sr-90	0.440 E-02	<0.200 E+00	pCi/g
Tissue	Cs-137	0.230 E-01	0.120±0.030 E-01	pCi/g
Vegetation	K-40	0.225 E+03	0.220±0.022 E+03	pCi/g
Vegetation	Sr-90	0.573 E+01	0.593±0.059 E+01	pCi/g
Vegetation	Cs-137	0.256 E+00	0.280±0.030 E+00	pCi/g
Water	H-3	0.124 E+02	0.130±0.013 E+02	pCi/ml
Water	Na-22	0.843 E+00	0.907±0.091 E+00	pCi/ml
Water	Mn-54	0.737 E+00	0.800±0.096 E+00	pCi/ml
Water	Co-60	0.871 E+00	0.970±0.097 E+00	pCi/ml
Water	Cs-137	0.980 E+00	0.117±0.012 E+01	pCi/ml

EPA INTERCOMPARISON RESULTS

1979

<u>Sample Type</u>	<u>Analysis</u>	<u>Agency Value</u>	<u>Control Limits (3σ, n=1)</u>	<u>MWF Measured ±2σ error</u>	<u>Units</u>
Air Filter	Gross α	5	15	3±1	pCi/filter
Air Filter	Gross β	18	15	20±2	pCi/filter
Air Filter	Sr-90	6	4.5	7±2	pCi/filter
Air Filter	Cs-137	6	15	9±1	pCi/filter
Water	Gross α	6	15	7±2	pCi/l
Water	Gross α	10	15	13±1	pCi/l
Water	Gross β	16	15	14±2	pCi/l
Water	Gross β	16	15	18±3	pCi/l
Water	H-3	1280	993	1230±300	pCi/l
Water	H-3	2270	1047	2300±200	pCi/l
Water	Sr-89	14	15	9±1	pCi/l
Water	Sr-90	6	4.5	6±1	pCi/l

TABLE 10
1980 Sampling and Analysis Results

Introduction

This report summarizes data obtained on samples received through the month reflected on the cover in the environmental radiological monitoring program for the Grand Gulf Nuclear Station of the Mississippi Power and Light Company.

Where blank spaces appear following dates, work was not completed on these samples in time for inclusion in this report.

Data from analyses completed during the month were within the expected ranges and do not indicate the presence of radioactivity from the operation of the nuclear power station.

The spectrum is computer scanned from -20 to -2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, and Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ . Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

A summary of Quality Control data obtained during the month is presented at the end of this report. Included in this section are data from all analytical programs, not only those associated with this program.

MISSISSIPPI POWER AND LIGHT

LISTING OF MISSED SAMPLES

1980

<u>Sample Type</u>	<u>Location</u>	<u>Expected Collection Date</u>	<u>Reason</u>
Milk on resin	Alcont	January	-
Air particulate	A/S-2	03/03	Off line-motor burned out
Air particulate	A/S-9	03/17	Broken fan belt
Air particulate	A/S-9	05/19,27	Burned out motor
Air particulate	A/S-8	05/27, 06/02 06/09	Fuse blown with only 3 hours recorded on timer
Air particulate	A/S-7	07/07, 21, 28	Burned out motor
Air particulate	A/S-5	07/14, 21, 28	Fuse blown
Air particulate	A/S-5	08/11/80	Burned out motor.
Air particulate	A/S-8	08/25, 09/02, 08, 15, 22	Burned out motor.
Air particulate	A/S-2	09/08,15,22	Power switch burned out.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/07/80	335	2±1	(a)	345	1±1	(a)	345	2±1	(a)
01/14/80	330	4±1		325	2±1		325	3±1	
01/21/80	270	2±1		335	1±1		335	1±1	
01/28/80	330	1±1		340	1±1		340	1±1	
02/04/80	305	2±1		300	1±1		300	2±1	
02/11/80	330	2±1		310	1±1		330	2±1	
02/18/80	335	1±1		60(b)	<5		330	1±1	
02/25/80	285	2±1		235	2±1		285	2±1	
03/03/80	285	1±1		(c)			285	2±1	
03/10/80	330	2±1		285	1±1		330	2±1	
03/17/80	335	2±1		370	1±1		325	2±1	
03/24/80	285	2±1		285	1±1		285	1±1	
03/31/80	330	1±1		330	1±1		330	1±1	
04/07/80	330	1±1		310	1±1		330	1±1	
04/14/80	335	1±1		335	1±1		335	1±1	
04/21/80	210	1±1		285	1±1		285	1±1	
04/28/80	385	1±1		385	<1		385	1±1	
05/05/80	285	2±1		285	5±1		285	2±1	
05/12/80	285	1±1		285	1±1		285	2±1	
05/19/80	285	<1		285	1±1		285	1±1	
05/27/80	325	2±1		325	3±1		325	2±1	
06/02/80	245	1±1		245	2±1		245	1±1	
06/09/80	290	2±1		290	2±1		290	2±1	
06/16/80	285	3±1		285	3±1		285	3±1	
06/23/80	285	1±1		285	2±1		285	1±1	
06/30/80	285	2±1		290	1±1		290	1±1	

- (c) See Listing of Missed Samples page.
 (b) Blown fuse.
 (a) Scheduled to resume collection in March 1981.

10-3

MISSISSIPPI POWER AND LIGHT
AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/07/80	285	1±1	(a)	280	2±1	(a)	280	2±1	(a)
07/14/80	285	2±1		285	3±1		275	2±1	
07/21/80	285	1±1		285	2±1		285	1±1	
07/28/80	285	1±1		285	1±1		285	1±1	
08/04/80	285	1±1		285	2±1		285	2±1	
08/11/80	285	<1		285	1±1		285	2±1	
08/18/80	285	1±1		285	1±1		285	2±1	
08/25/80	285	2±1		285	1±1		285	2±1	
09/02/80	380	1±1		380	1±1		380	1±1	
09/08/80	290	1±1		(b)			290	1±1	
09/15/80	280	1±1		(b)			285	3±1	
09/22/80	285	1±1		(b)			285	2±1	
09/29/80	285	3±1		245	1±1		285	2±1	
10/06/80	295	<1		295	1±1		295	1±1	
10/13/80	275	<1		275	2±1		275	1±1	
10/20/80	285	6±1		285	1±1		285	1±1	
10/27/80	285	2±1		285	2±1		285	2±1	
11/03/80	285	2±1		285	3±1		285	2±1	
11/10/80	285	4±1		285	5±1		285	14±1	
11/17/80	285	2±1		285	4±1		285	4±1	
11/24/80	285	2±1		285	4±1		285	4±1	
12/01/80	285	2±1		285	4±1		285	5±1	
12/08/80	285	5±1		285	7±1		285	8±1	
12/15/80	285	5±1		285	7±1		285	10±1	
12/22/80	285	6±2		285	7±2		285	10±2	
12/29/80	285	9±2		285	9±2		285	9±2	

(a) Scheduled to resume collection in March 1981.

4-01

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4			A/S-5			A/S-6		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/07/80	330	2±1	(a)	330	2±1	(a)	330	2±1	(a)
01/14/80	340	3±1		340	2±1		315	3±1	
01/21/80	335	1±1		335	1±1		335	2±1	
01/28/80	325	1±1		325	1±1		325	1±1	
02/04/80	320	2±1		320	1±1		320	2±1	
02/11/80	335	1±1		335	1±1		335	2±1	
02/18/80	305	1±1		330	1±1		285	2±1	
02/25/80	275	3±1		285	2±1		285	2±1	
03/03/80	285	2±1		285	1±1		285	1±1	
03/10/80	325	2±1		305	1±1		325	2±1	
03/17/80	340	2±1		335	1±1		340	2±1	
03/24/80	285	1±1		285	2±1		285	2±1	
03/31/80	330	1±1		330	1±1		325	1±1	
04/07/80	340	2±1		340	1±1		340	1±1	
04/14/80	330	1±1		335	1±1		330	1±1	
04/21/80	285	2±1		285	2±1		285	2±1	
04/28/80	385	1±1		385	1±1		385	1±1	
05/05/80	285	3±1		285	2±1		285	2±1	
05/12/80	285	2±1		285	2±1		285	2±1	
05/19/80	285	1±1		285	1±1		285	1±1	
05/27/80	325	2±1		325	2±1		325	1±1	
06/02/80	245	2±1		245	2±1		245	4±1	
06/09/80	290	2±1		290	3±1		290	2±1	
06/16/80	285	2±1		285	2±1		285	2±1	
06/23/80	285	1±1		285	1±1		285	1±1	
06/30/80	285	3±1		285	2±1		280	<1	

10-5

(a) Scheduled to resume collection in March 1981.

MISSISSIPPI POWER AND LIGHT
AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4		A/S-5			A/S-6			
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/07/80	280	2±1	(a)	215	2±1	(a)	285	2±1	(a)
07/14/80	285	2±1		(b)			290	2±1	
07/21/80	285	2±1		(b)			285	2±1	
07/28/80	290	1±1		(b)			290	1±1	
08/04/80	285	2±1		285	2±1		285	2±1	
08/11/80	285	1±1		(b)			280	1±1	
08/18/80	290	1±1		205	2±1		290	1±1	
08/25/80	285	2±1		285	2±1		285	1±1	
09/02/80	375	1±1		375	1±1		370	1±1	
09/08/80	285	1±1		285	1±1		290	1±1	
09/15/80	285	2±1		285	3±1		285	2±1	
09/22/80	285	1±1		285	2±1		285	1±1	
09/29/80	285	1±1		285	3±1		285	1±1	
10/06/80	295	1±1		295	1±1		295	<1	
10/13/80	275	2±1		275	2±1		275	1±1	
10/20/80	285	1±1		285	1±1		285	1±1	
10/27/80	285	2±1		285	2±1		285	3±1	
11/03/80	285	3±1		285	3±1		285	1±1	
11/10/80	290	5±1		290	6±1		290	6±1	
11/17/80	280	5±1		280	5±1		280	4±1	
11/24/80	285	3±1		285	4±1		285	4±1	
12/01/80	290	3±1		290	4±1		290	3±1	
12/08/80	280	8±1		280	8±1		280	5±1	
12/15/80	285	7±1		285	9±1		285	7±1	
12/22/80	285	9±2		285	8±2		285	7±2	
12/29/80	285	6±1		285	6±1		285	7±1	

(a) Scheduled to resume collection in March 1981.
(b) Listing of Missing Samples page.

MISSISSIPPI PC & AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7			A/S-8			A/S-9		
	Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³		Volume (m ³)	10 ⁻³ pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/07/80	330	2±1	(a)	330	2±1	(a)	330	1±1	(a)
01/14/80	315	3±1		340	4±1		335	2±1	
01/21/80	330	2±1		335	1±1		340	1±1	
01/28/80	190	<1		320	1±1		330	1±1	
02/04/80	320	1±1		320	2±1		320	1±1	
02/11/80	380	1±1		335	2±1		295	2±1	
02/18/80	335	1±1		330	1±1		355	1±1	
02/25/80	90(b)	3±1		285	3±1		290	3±1	
03/03/80	285	1±1		285	1±1		285	<5	
03/10/80	280	1±1		325	1±1		300	2±1	
03/17/80	340	2±1		340	2±1		(c)		
03/24/80	280	1±1		285	2±1		240	1±1	
03/31/80	330	1±1		325	1±1		330	1±1	
04/07/80	290	1±1		340	<1		340	2±1	
04/14/80	335	<1		330	1±1		335	1±1	
04/21/80	285	1±1		285	2±1		270	2±1	
04/28/80	385	<1		275	2±1		385	1±1	
05/05/80	290	1±1		285	3±1		285	2±1	
05/12/80	285	1±1		285	2±1		285	3±1	
05/19/80	285	<1		265	2±1		(c)		
05/27/80	325	1±1		(c)			(c)		
06/02/80	250	<1		(c)			170	1±1	
06/09/80	290	2±1		(c)			290	2±1	
06/16/80	285	2±1		170	3±1		285	2±1	
06/23/80	285	<1		285	1±1		285	2±1	
06/30/80	280	1±1		285	2±1		280	2±1	

(c) See Listing of Missed Samples page.
 (b) Blown fuse.
 (a) Scheduled to resume collection in March 1981.

10-7

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7		A/S-8			A/S-9			
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross B	I-131		Gross B	I-131		Gross B	I-131
07/07/80		(h)	(a)	280	2±1	(a)	285	2±1	(a)
07/14/80	130	<1		290	2±1		285	2±1	
07/21/80		(b)		280	1±1		285	1±1	
07/28/80		(b)		290	1±1		285	<1	
08/04/80	250	3±1		285	3±1		285	2±1	
08/11/80	285	1±1		280	2±1		280	2±1	
08/18/80	285	2±1		290	2±1		285	<1	
08/25/80	285	2±1			(b)		285	2±1	
09/02/80	370	1±1			(b)		370	1±1	
09/08/80	290	1±1			(b)		290	1±1	
09/15/80	285	3±1			(b)		285	<1	
09/22/80	285	2±1			(b)		285	1±1	
09/29/80	285	1±1		120	2±1		285	1±1	
10/06/80	295	1±1		295	<1		295	1±1	
10/13/80	275	1±1		275	1±1		275	1±1	
10/20/80	285	1±1		285	1±1		285	1±1	
10/27/80	285	2±1		285	2±1		285	2±1	
11/03/80	285	3±1		285	3±1		285	2±1	
11/10/80	285	5±1		285	5±1		285	5±1	
11/17/80	285	<1		280	7±1		285	4±1	
11/24/80	285	69±3(c)		285	5±1		285	4±1	
12/01/80	290	3±1		290	6±1		290	4±1	
12/08/80	280	6±1		280	9±1		280	7±1	
12/15/80	285	6±1		285	8±1		285	7±1	
12/22/80	285	7±2		275	8±2		285	9±2	
12/29/80	285	7±1		285	9±2		285	7±1	

(a) Scheduled to resume collection in March 1981.

(b) See Listing of Missed Samples page.

(c) Gamma Isotopic analysis: Ce-144=3±1; Zr-95=16±2; Nb-95=26±3; Ce-141=3±1; Other γ<1 10⁻² pCi/m³.

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN AIR PARTICULATE SAMPLES
(Quarterly Analysis on Composite of Weekly Collections)

<u>Collection Site</u>	<u>pCi/m³</u> <u>Gamma Emitters</u>	<u>Collection Site</u>	<u>pCi/m³</u> <u>Gamma Emitters</u>
	<u>1st Quarter</u>		<u>2nd Quarter</u>
AS-1	<0.01	AS-1	<0.01
AS-2	<0.01	AS-2	<0.01
AS-3	<0.01	AS-3	<0.01
AS-4	<0.01	AS-4	<0.01
AS-5	<0.01	AS-5	<0.01
AS-6	<0.01	AS-6	<0.01
AS-7	<0.01	AS-7	<0.01
AS-8	<0.01	AS-8	<0.01
AS-9	<0.01	AS-9	<0.01
	<u>3rd Quarter</u>		<u>4th Quarter</u>
AS-1	<0.01	AS-1	<0.01
AS-2	<0.01	AS-2	<0.01(a)
AS-3	<0.01	AS-3	<0.01
AS-4	<0.01	AS-4	<0.01
AS-5	<0.01	AS-5	<0.01
AS-6	<0.01	AS-6	<0.01
AS-7	<0.01	AS-7	<0.01
AS-8	<0.01	AS-8	<0.01
AS-9	<0.01	AS-9	<0.01

(a) Be-7 = 0.05±0.01
Ce-141 = 0.07±0.01 pCi/m³

MISSISSIPPI POWER AND LIGHT
 RADIONUCLIDES IN WELL WATER SAMPLES
 (Quarterly Collections)

Collection Period	pCi/l					
	TRIMWELL		PGWELL		MPWELL	
	<u>γ Emitters</u>	<u>Tritium</u>	<u>γ Emitters</u>	<u>Tritium</u>	<u>γ Emitters</u>	<u>Tritium</u>
1st Quarter	<15	<330	<15	<330	<15	<330
2nd Quarter	<15	<330	<15	<330	<15	<330
3rd Quarter	<15	<330	<15	<330	<15	<330
4th Quarter	<15	240±130	<15	330±150	<15	420±150

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN SURFACE WATER SAMPLES
(Monthly Collections)

GAMMA EMITTERS

Collection Period	pCi/l			
	MRUP	IN	MRDOWN	2N
January(a)	<15		<15	
February	<15		<15	
March	<15		<15	
April	<15		<15	
May	<15		<15	
June	<15		<15	
July	<15		<15	
August	<15		<15	
September	<15		<15	
October	<15		<15	
November	<15		<15	
December	<15		<15	

TRITIUM CONCENTRATIONS IN SURFACE WATER SAMPLES
(Quarterly Composites)

Collection Period	TRITIUM			
	pCi/l			
	MRUP	IN	MRDOWN	2N
1st quarter	<330		<330	
2nd quarter	<330		<330	
3rd quarter	<330		400±100	
4th quarter	<330		400±100	

(a) Special collection from MR Barge Slip to confirm MS State Board of Health results. EIC result = <15 pCi/l.

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN CISTERN WATER SAMPLES
(Monthly Collections)

Collection Period	Ark Cist 1N			Trim Cist 2N		
	Gross Beta	pCi/l I-131	Gamma Emitters	Gross Beta	pCi/l I-131	Gamma Emitters
January	2±1	<1	<15	3±1	<2(a)	<15
February	2±1	<1	<15	2±2	<1	<15
March	2±1	<1	<15	4±1	<1	<15
April	3±1	<1	<15	5±1	<1	<15
May	4±2	<1	<15	1±1	<1	<15
June	4±2	<1	<15	2±2	<1	<15
July	5±2	<1	<15	2±2	<1	<15
August	3±2	<1	<15	4±2	<1	<15
September	3±1	<1	<15	8±2	<1	<15
October	2±1	<1	<15	3±1	<1	<15
November	3±1	<1	<15	3±1	<1	<15
December	7±2	<1	<15	5±2	<1	<15

TRITIUM CONCENTRATIONS IN CISTERN WATER SAMPLES
(Quarterly Collections)

Collection Period	pCi/l	
	Ark Cist 1N	Trim Cist 2N
1st Quarter	<330	<330
2nd Quarter	<330	<330
3rd Quarter	<330	<330
4th Quarter	<330	780±140

(a) Lower sensitivity due to insufficient sample.

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN MILK SAMPLES
(Monthly Collections)

Collection Period	Collection Site	pCi/l	
		I-131	Gamma Emitters
January	Alcont	(a)	<15
February	Alcont	<1	<15
March	Alcont	<1	<15
April	Alcont	<1	<15
May	Alcont	<1.6(b)	<15
June	Alcont	<1	<15
July	Alcont	<1	<15
August	Alcont	<1	<15
September	Alcont	<1	<15
October	Alcont	<1	<15
November	Alcont	<1	<15
December	Alcont	<1	<15

GAMMA EMITTERS IN SEDIMENT SAMPLES
(Semiannual Collections)

Collection Site	Collection Date	pCi/g dry	
		Cs-137	Gamma Emitters
Lake Hamilton Outfall	06/05/80	<0.15	<0.15
Barge Slip	06/05/80	0.24±0.05	<0.15
Lake Hamilton Outfall	12/08/80	<0.15	<0.15
Barge Slip	12/08/80	<0.15	<0.15

(a) See Listing of Missing Samples page.

(b) Lower sensitivity due to low chemical recovery.

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS in FRUIT and VEGETABLE SAMPLES
(Collected at Harvest)

<u>Collection ID</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g wet Gamma Emitters</u>
GRLV-01	01/04/80	Turnips and mustard greens	<0.08
Foliage-01	01/07/80	Hay	<0.08
GRLV-02	02/06/80	Turnips and mustard greens	<0.08
GRLV-03	03/03/80	Mustard greens	<0.08
VEG-01	03/03/80	Turnip roots	<0.08
GRLV-04	04/03/80	Mustard greens	<0.08
GRLV-05	06/09/80	Mustard greens	<0.08
VEG-02	06/09/80	Irish Potatoes	<0.08
VEG-03	06/09/80	Onions	<0.08
VEG-04	07/08/80	Cucumbers	<0.08
GRLV-06	07/08/80	Mustard Greens	<0.08
GRLV-07	10/29/80	Mustard & turnip greens	<0.08
GRLV-08	11/05/80	Turnip greens	<0.08
GRLV-09	12/03/80	Turnip greens	<0.08

MISSISSIPPI POWER AND LIGHT
 GAMMA EMITTERS IN FISH SAMPLES
 (Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Species</u>	<u>pCi/g (wet) Gamma Emitters</u>
Hamilton Lake outfall	06/05/80	Catfish	<0.13
Hamilton Lake outfall	11/10/80	Catfish	<0.13

GAMMA EMITTERS IN MEAT SAMPLES
 (Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g (wet) Gamma Emitters</u>
Arnold Acres Farm	06/05/80	hay (a)	<0.08
01-SW Quadrant near Hamilton Lake	11/25/80	deer	<0.13

(a) Substitute for beef and goat meat.

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1980

	1st quarter	2nd quarter	3rd quarter	4th quarter
Date Annealed:	12/18/79	03/18/80	06/16/80	09/15/80
Date Read:	04/07/80	08/04/80	10/14/80	01/17/81
Location:	mR/Quarter			
N-00	6.5±1.3	9.1±1.3	20.4±1.3	5.2±1.3
M-01	19.5±2.6	18.2±2.6	28.6±5.2	11.7±2.6
M-02	16.9±3.9	18.2±5.2	27.3±1.3	14.3±1.3
M-03	14.3±1.3	14.3±3.9	22.1±3.9	11.7±1.3
M-04	16.9±3.9	16.9±5.2	28.6±3.9	14.3±2.6
M-05	16.9±2.6	18.2±5.2	29.9±3.9	11.7±2.6
M-06	18.2±1.3	18.2±3.9	27.3±2.6	13.0±1.3
M-07	18.2±3.9	15.6±2.6	27.3±3.9	13.0±2.6
M-08	16.9±2.6	16.9±1.3	missing	13.0±1.3
M-09	16.9±2.6	18.2±3.9	26.0±2.6	14.3±1.3
M-10	15.6±2.6	missing	29.0±3.9	13.0±1.3
M-11	14.3±2.6	15.6±1.3	23.4±2.6	13.0±1.3
M-12	15.6±3.9	16.9±3.9	26.0±1.3	13.0±1.3
M-13	15.6±2.6	16.9±3.9	missing	missing
M-14	14.3±1.3	16.9±1.3	27.3±2.6	missing
M-15	14.3±1.3	missing	missing	missing
M-16	15.6±1.3	16.9±3.9	24.7±2.6	14.3±1.3
M-17	15.6±2.6	16.2±2.6	26.0±5.2	13.0±1.3
M-18	16.9±1.3	18.2±1.3	26.0±1.3	14.3±1.3
M-19	15.6±2.6	13±6.5	23.4±2.6	13.0±2.6
M-20	15.6±2.6	15.6±1.3	26.0±2.6	13.0±1.3
M-21	16.9±2.6	13±2.6	26.0±2.6	14.3±2.6
M-22	15.6±1.3	16.9±3.9	28.6±3.9	13.0±1.3
M-23	16.9±3.9	15.6±2.6	missing	11.7±3.9
M-24	14.3±1.3	missing	27.3±2.6	14.3±3.9
M-25	missing	14.3±2.6	24.7±7.8	14.3±1.3
M-26(b)	missing	16.9±1.3	26.0±3.9	15.6±1.3
M-27	16.9±3.9	14.3±2.6	28.6±3.9	14.3±1.3
M-28	16.9±1.3	16.9±3.9	29.9±5.2	13.0±2.6
M-29	16.9±1.3	16.9±2.6	27.3±1.3	13.0±2.6
M-30	missing	14.3±1.3	24.7±1.3	missing
M-31	14.3±1.3	missing	24.7±1.3	13.0±2.6
M-32	14.3±2.6	15.6±3.9	27.3±3.9	missing
M-33(a)	-	16.9±2.6	27.3±3.9	13.0±2.6
M-34(a)	-	missing	29.9±5.2	15.6±1.3
M-35(a)	-	18.2±1.3	23.4±3.9	13.0±2.6
M-36(a)	-	16.9±3.9	24.7±3.9	13.0±1.3
M-37(a)	-	19.5±2.6	28.6±3.9	14.3±1.3
M-38(a)	-	19.5±9.1	28.6±6.5	13.0±3.9
M-39(a)	-	15.6±6.5	missing	11.7±1.3

(a) beginning with second quarter.

(b) In field for two quarters.

$$\frac{18}{149} = 12\% \text{ Missing}$$

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Hay	Foliage-01-GG	01/07/80	Gamma Isotopic	<0.08 pCi/g wet
Turnips and mustard greens	GRLVGG-02	03/06/80	Gamma Isotopic	<0.08 pCi/g wet
Milk	Alcont GG	03/04/80	I-131	<1 pCi/l
Cistern Water	Trimcist GG	03/04/80	Cs-134	24±5 pCi/l
			Cs-137	710±70 "
			Mn-54	19±3 "
			Other gamma	<15 "
	Arkcist GG	03/04/80	Cs-134	37±8 "
			Cs-137	700±70 "
			Mn-54	31±4 "
			Other gamma	<15 "
Surface water	MRUP GG	03/07/80	Gamma Isotopic	<15 "
	MRDOWN GG	03/07/80	Gamma Isotopic	<15 "
Vegetation	GRLV-04-GG	04/03/80	Gamma Isotopic	<0.08 pCi/g wet
Catfish	Lk Hamilton Outfall	06/05/80	Gamma Isotopic	<0.13 pCi/g wet
Cistern Water	Arkcist GG	06/03/80	Gross beta ,	2±2 pCi/l
	Trimcist GG	06/03/80	Gross beta	2±2 pCi/l
Milk	Alcont GG	06/03/80	I-131	<1 pCi/l
Surface water	MRUP GG	06/09/80	Gamma Isotopic	<15 pCi/l
	MRDOWN GG	06/09/80	Gamma Isotopic	<15 pCi/l
Vegetation	GRLV-05-GG	06/09/80	Gamma Isotopic	<0.08 pCi/g wet
	VEG-02-GG	06/09/80	Gamma Isotopic	<0.08 pCi/g wet
Milk	Alcont GG	09/04/80	I-131	<1 pCi/l
Surface water	MRVP GG	09/05/80	Gamma Isotopic	<15 pCi/l
	MRDOWN GG	09/05/80	Gamma Isotopic	<15 pCi/l
Cistern water	Trimcist GG	09/04/80	Gross beta	4±1 pCi/l
	Arkcist GG	09/04/80	Gross beta	4±1 pCi/l
Vegetation	GRLVGG 07	10/29/80	Gamma Isotopic	<0.08 pCi/g wet
Catfish	Hamilton Lake Outfall	11/10/80	Gamma Isotopic	<0.13 pCi/g wet
Deer meat	01-GG Hamilton Lake	11/25/80	Gamma Isotopic	<0.13 pCi/g wet

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Milk	Alcont GG	12/03/80	I-131	<1 pCi/l
Vegetation	GRLV GG 09	12/03/80	Gamma Isotopic	<0.08 pCi/g wet
Cistern water	Arkcist GG	12/03/80	Gross beta	9±2 pCi/l
	Trimcist GG	12/03/80	Gross beta	5±2 pCi/l
Surface water	MRUP GG	12/08/80	Gamma Isotopic	<15 pCi/l
	MRDOWN GG	12/08/80	Gamma Isotopic	<15 pCi/l
Sediment	Lake Hamilton Outfall GG	12/08/80	Gamma Isotopic	<0.15 pCi/g dry
	Barge Slip	12/08/80	Gamma Isotopic	<0.15 pCi/g dry

QUALITY CONTROL ANALYSES SUMMARY

1980

The tables below summarize results of samples run for process quality control purposes during the subject month. These listings are in addition to such measurements as detector backgrounds, check source values, radiometric-gravimetric comparisons, system calibrations, etc. Detailed listings of each measurement are maintained at the laboratory and are available for inspection if required.

BLANK SAMPLES

<u>Nuclide Analyzed</u>	<u>Number of Determinations</u>	<u>Number of analyses exceeding the LLD for that analysis</u>
Gross beta	68	0
Gross alpha	43	0
Strontium-89	49	0
Strontium-90	178	0
Iodine-131	152	0
Tritium	87	0
Gamma emitters	46	0

SPLIT SAMPLES

<u>Nuclide Analyzed</u>	<u>Number of Det's</u>	<u>No. agreeing within 2σ</u>	<u>No. agreeing within 3σ</u>	<u>No. differing by > 3σ</u>
Gross beta	99	94	5	0
Gross alpha	25	23	1	0
Strontium-89	48	48	0	0
Strontium-90	48	48	0	0
Tritium	134	134	0	0
Iodine-131	77	77	0	0
Gamma emitters	121	120	0	0
Calcium-45	2	2	1	0

SPIKED SAMPLES

<u>Nuclide Analyzed</u>	<u>No. of Det's</u>	<u>Within 2σ of known</u>	<u>Within 3σ of known</u>	<u>differing from known by > 3σ</u>
Gross beta	44	43	1	0
Strontium-89	23	23	2	0
Strontium-90	73	73	4	0
Tritium	52	51	1	0
Gamma emitters	29	29	0	0
Iodine-131	29	27	2	0

EPA INTERCOMPARISON RESULTS

1980

<u>Sample Type</u>	<u>Analysis</u>	<u>Agency Value</u>	<u>Control Limits (3σ, n=1)</u>	<u>MWF Measured ±2σ error</u>	<u>Units</u>
Water	I-131	53	15	49±5	pCi/l
Air Filter	Gross α	10	15	11±1	pCi/filter
Air Filter	Gross β	31	15	34±3	pCi/filter
Air Filter	Sr-90	10	5	6±1	pCi/filter
Air Filter	Cs-137	12	15	16±4	pCi/filter
Water	Gross α	21	15	26±3	pCi/l
Water	Gross β	49	15	50±5	pCi/l
Water	Sr-90	7	5	8±1	pCi/l
Water	Co-60	33	15	37±4	pCi/l
Water	Cs-134	56	15	58±6	pCi/l
Water	Cs-137	0	0	<5	pCi/l
Water	Gross α	12	15	13±1	pCi/l
Water	Gross β	27	15	29±3	pCi/l
Air Filter	Gross α	24	6	29±3	pCi/filter
Air Filter	Gross β	28	5	41±4	pCi/filter
Air Filter	Sr-90	8	2	9±1	pCi/filter
Air Filter	Cs-137	12	5	14±2	pCi/filter
Water	H-3	2040	1040	2260±230	pCi/l
Air Filter	Gross α	10	5	11±1	pCi/filter
Air Filter	Gross β	29	5	33±3	pCi/filter
Air Filter	Sr-90	9	1.5	10±1	pCi/filter
Air Filter	Cs-137	10	5	12±1	pCi/filter
Water	Gross α	30	8	30±3	pCi/l
Water	Gross β	45	5	45±5	pCi/l
Water	Sr-89	10	5	LT 5	pCi/l
Water	Sr-90	20	1.5	20±2	pCi/l
Water	H-3	1750	341	1600±160	pCi/l
Milk	Sr-89	10	5	LT 5	pCi/l
Milk	Sr-90	25	1.5	18±3	pCi/l
Milk	I-131	0.01	0.1	LT 5	pCi/l
Milk	Cs-137	40	5	43±4	pCi/l
Milk	Ba-140	0.01	0.1	LT 10	pCi/l
Milk	K	1600	80	2000±200	pCi/l
Water	Gross α	13	5	14±1	pCi/l
Water	Gross β	22	5	23±2	pCi/l
Air Filter	Gross α	15	5	18±2	pCi/filter
Air Filter	Gross β	41	5	50±5	pCi/filter
Air Filter	Sr-90	10	1.5	10±1	pCi/filter
Air Filter	Cs-137	20	5	23±2	pCi/filter
Water	I-131	44	5	35±4	pCi/l
Water	H-3	3400	360	3030±300	pCi/l
Water	Sr-89	5	5	LT 2	pCi/l
Water	Sr-90	12	1.5	12±1	pCi/l
Water	H-3	2000	345	2300±200	pCi/l
Water	Gross α	36	9	34±3	pCi/l
Water	Gross β	38	5	42±4	pCi/l
Water	H-3	1210	329	1100±100	pCi/l

EPA INTERCOMPARISON RESULTS

1980

(continued)

<u>Sample Type</u>	<u>Analysis</u>	<u>Agency Value</u>	<u>Control Limits (3σ, n=1)</u>	<u>MWF Measured $\pm 2\sigma$ error</u>	<u>Units</u>
Water	Sr-89	24	8.6	27 \pm 3	pCi/l
Water	Sr-90	15	2.6	14 \pm 1	pCi/l
Water	H-3	3200	625	3400 \pm 300	pCi/l
Water	Cr-51	86	8.6	<100	pCi/l
Water	Co-60	16	8.6	19 \pm 5	pCi/l
Water	Zn-65	25	8.6	40 \pm 10	pCi/l
Water	Ru-106	46	8.6	<50	pCi/l
Water	Cs-134	20	8.6	24 \pm 5	pCi/l
Water	Cs-137	12	8.6	15 \pm 3	pCi/l
Water	Gross α	32	8.0	31 \pm 3	pCi/l
Water	Gross β	21	5.0	22 \pm 2	pCi/l
Water	Gross α	16	8.6	21 \pm 2	pCi/l
Water	Gross β	13	8.6	19 \pm 3	pCi/l
Air filter	Gross α	24	10.0	25 \pm 3	pCi/filter
Air filter	Gross β	10	8.6	17 \pm 2	pCi/filter
Air filter	Sr-90	0	0.0	<1	pCi/filter
Air filter	Cs-137	10	8.6	10 \pm 1	pCi/filter

TLD Intercomparison Badges
Irradiated by Battelle Northwest Labs

1980

Badge	Total mR less transportation control							
	1st Qtr		2nd Qtr		3rd Qtr		4th Qtr	
	Known	Measured	Known	Measured	Known	Measured	Known	Measured
A	8	5±1	10	10.1±3.4	100	102.0±15.0	100	94±9
B	16	13±2	20	21.0±4.1	10	10.2±2.6	50	47±6
C	24	22±7	30	29.0±5.5	15	15.5±3.8	25	24±5
D	100	103±10	60	63.4±8.6	30	29.3±9.0	25	23±2
E	80	77±6	70	62.8±5.9	35	32.5±8.8	50	47±6
F	64	59±6	100	91.8±14.4	45	41.4±7.2	75	66±7
G	28	27±3	30	26.6±5.3	60	56.9±7.1	100	97±11
H	32	29±3	40	37.5±3.8	80	74.3±10.6	75	67±7
J	40	36±4	60	52.2±6.5	10	8.4±1.3	25	26±5
K	37	38±4	80	70.4±10.5	100	82.4±12.4	50	48±7

USDOE QUALITY ASSESSMENT PROGRAM

1980

<u>Sample Type</u>	<u>Nuclide</u>	<u>Known</u>	<u>Measured ±2σ error</u>	<u>Units</u>
Air (80-4)	Be-7	0.272 E+03	0.260±0.044 E+03	pCi/filter
Air (80-4)	Mn-54	0.720 E+02	0.645±0.095 E+02	pCi/filter
Air (80-4)	Sr-90	0.199 E+02	0.143±0.094 E+02	pCi/filter
Air (80-4)	Zr-95	0.720 E+02	0.605±0.094 E+02	pCi/filter
Air (80-4)	Sb-125	0.258 E+04	0.180±0.026 E+04	pCi/filter
Air (80-4)	Cs-137	0.257 E+03	0.230±0.034 E+03	pCi/filter
Air (80-4)	Ce-144	0.376 E+04	0.339±0.048 E+04	pCi/filter
Air (80-10)	Be-7	0.230 E+04	0.270±0.038 E+04	pCi/filter
Air (80-10)	Co-60	0.200 E+03	0.225±0.032 E+03	pCi/filter
Air (80-10)	Sr-90	0.107 E+02	0.105±0.016 E+02	pCi/filter
Air (80-10)	Cs-134	0.247 E+04	0.215±0.031 E+04	pCi/filter
Air (80-10)	Ce-141	0.404 E+03	0.475±0.068 E+03	pCi/filter
Air (80-10)	Ce-144	0.346 E+04	0.280±0.040 E+04	pCi/filter
Water (80-4)	H-3	0.103 E+02	0.097±0.017 E+02	pCi/ml
Water (80-4)	Na-22	0.107 E+01	0.095±0.014 E+01	pCi/ml
Water (80-4)	Cr-51	0.137 E+01	0.170±0.029 E+01	pCi/ml
Water (80-4)	Co-57	0.337 E 00	0.600±0.140 E 00	pCi/ml
Water (80-4)	Co-60	0.922 E 00	0.900±0.127 E 00	pCi/ml
Water (80-4)	Sr-89	0.240 E-01	0.267±0.172 E-01	pCi/ml
Water (80-4)	Cs-137	0.978 E 00	0.850±0.127 E 00	pCi/ml
Water (80-4)	U	0.283 E-01	0.200±0.173 E-01	ug/ml
Water (80-10)	H-3	0.149 E+02	0.133±0.017 E+02	pCi/ml
Water (80-10)	Co-60	0.197 E+01	0.207±0.036 E+01	pCi/ml
Water (80-10)	Sr-89	0.218 E 00	0.803±0.263 E-01	pCi/ml
Water (80-10)	Sr-90	0.216 E-01	0.230±0.069 E-01	pCi/ml
Water (80-10)	Cs-134	0.244 E+01	0.283±0.052 E+01	pCi/ml
Water (80-10)	Cs-137	0.226 E+01	0.263±0.045 E+01	pCi/ml
Soil (80-4)	K-40	0.770 E+01	1.100±0.341 E+01	pCi/g
Soil (80-4)	Sr-90	0.374 E 00	0.300±0.172 E 00	pCi/g
Soil (80-4)	Cs-137	0.680 E+01	0.507±0.087 E+01	pCi/g
Soil (80-10)	K-40	0.207 E+02	0.273±0.053 E+02	pCi/g
Soil (80-10)	Co-60	0.100 E 00	0.100±0.100 E 00	pCi/g
Soil (80-10)	Sr-90	0.460 E 00	0.333±0.172 E 00	pCi/g
Soil (80-10)	Cs-137	0.110 E+02	0.110±0.017 E+02	pCi/g
Tissue (80-4)	K-40	0.143 E+02	0.207±0.036 E+02	pCi/g
Tissue (80-4)	Co-60	0.386 E+01	0.373±0.056 E+01	pCi/g
Tissue (80-4)	Sr-90	0.182 E+02	0.180±0.034 E+02	pCi/g
Tissue (80-4)	Cs-137	0.122 E+02	0.103±0.018 E+02	pCi/g
Tissue (80-10)	K-40	0.170 E+01	0.550±0.143 E+01	pCi/g
Tissue (80-10)	Co-60	0.874 E+01	0.950±0.141 E+01	pCi/g
Tissue (80-10)	Sr-90	0.387 E+02	0.250±0.042 E+02	pCi/g
Tissue (80-10)	Cs-137	0.275 E+02	0.270±0.044 E+02	pCi/g

<u>Sample Type</u>	<u>Nuclide</u>	<u>Known</u>	<u>Measured ±2σ error</u>	<u>Units</u>
Vegetation (80-4)	K-40	0.317 E+02	0.457±0.083 E+02	pCi/g
Vegetation (80-4)	Sr-90	0.246 E+02	0.243±0.039 E+02	pCi/g
Vegetation (80-4)	Cs-137	0.171 E+02	0.147±0.025 E+02	pCi/g
Vegetation (80-10)	K-40	0.225 E+02	0.303±0.053 E+02	pCi/g
Vegetation (80-10)	Co-60	0.272 E+01	0.297±0.052 E+01	pCi/g
Vegetation (80-10)	Sr-90	0.138 E+02	0.133±0.030 E+02	pCi/g
Vegetation (80-10)	Cs-137	0.961 E+01	0.967±0.167 E+01	pCi/g

TABLE 11
1981 Sampling and Analysis Results

Introduction

This report summarizes data obtained on samples received during 1981 in the environmental radiological monitoring program for the Grand Gulf Nuclear Station of the Mississippi Power and Light Company.

Data from analyses completed during 1981 were within the expected ranges and do not indicate the presence of radioactivity from the operation of the nuclear power station.

The spectrum is computer scanned from ~ 20 to ~ 2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, and Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ . Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

A summary of Quality Control data obtained during the year is presented at the end of this report. Included in this section are data from all analytical programs, not only those associated with this program.

LISTING OF MISSED SAMPLES

<u>Sample Type</u>	<u>Location</u>	<u>Expected Collection Date</u>	<u>Reason</u>
Surface water	MRUP MRDOWN	January	Unattainable due to low water level
Air particulate	A/S 1	05/04, 11	Unit out of order
sediment	-	June	High river stages
Air particulate	A/S 3	07/06	Filter missing
Fruit	-	July	Not available
Vegetables	-	July	MP&L garden flooded
AP/CC	A/S 3	08/10-09/08	Unit out of order
Fruit	-	August	Not available
Vegetables	-	August-September	Not available
AP/CC	A/S 6	09/08	Unit down during power failure fuse blew at restart.
AP/CC	AS 2, AS 3	09/21	Filters & cartridges jarred from unit, time unknown.
CC	AS 8	09/21	Cartridge burst on removal from unit
AP/CC	AS 2	09/28-10/12	Unit out of order
AP/CC	AS 6	10/12	Fuse blown
Fruit/Vegetables	-	October-December	Not available
Surface Water	MRUP MRDOWN	October	Non-availability of boat
AP/CC	AS 3	12/07,14,21	Unit out of order
AP/CC	AS 2	12/14,21,28	Unit out of order

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-1		A/S-2		A/S-3	
	Volume (m ³)	10 ⁻³ pCi/m ³ Gross β	Volume (m ³)	10 ⁻³ pCi/m ³ Gross β	Volume (m ³)	10 ⁻³ pCi/m ³ Gross β
01/05/81	335	7±1	340	7±1	340	8±1
01/12/81	335	8±1	325	6±1	325	8±1
01/19/81	330	8±1	330	15±2	330	7±1
01/26/81	340	7±1	340	6±1	340	6±1
02/02/81	325	22±3	325	9±1	325	6±1
02/09/81	335	8±1	335	6±1	335	9±1
02/16/81	335	13±2	335	11±1	335	10±1
02/23/81	335	9±1	335	8±1	335	10±1
03/02/81	330	13±2	335	10±1	335	13±2
03/09/81	335	12±1	335	12±1	335	14±2
03/16/81	330	19±2	330	16±2	330	19±2
03/23/81	330	24±3	335	19±2	335	20±2
03/30/81	315	31±3	335	20±2	335	23±3
04/06/81	335	24±3	335	13±2	335	23±3
04/13/81	335	22±3	320	26±3	335	24±3
04/20/81	240(a)	15±2	330	17±2	330	18±2
04/27/81	290(b)	<1	335	13±2	330	16±2
05/04/81	(c)		325	16±2	335	19±2
05/11/81	(c)		335	19±2	335	17±2
05/18/81	320	14±2	335	15±2	325	16±2
05/26/81	380	20±2	380	15±2	380	15±2
06/01/81	285	9±2	285	10±2	285	11±2
06/08/81	335	4±1	335	3±1	335	4±1
06/15/81	330	6±1	330	6±1	330	4±1
06/22/81	335	8±1	335	8±1	335	8±1
06/29/81	330	9±2	330	7±1	330	8±2

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(a) Fuse-blown; end flow not known.
 (b) Fuse blown; calculation based on average volume.
 (c) See Listing of Missing Samples page.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross B	I-131		Gross B	I-131		Gross B	I-131
07/06/81	335	9±1	-	335	5±1	-			
07/13/81(b)	330	3±1	<7	330	3±1	<7	330	4±1	<7
07/20/81	335	4±1	<7	330	4±1	<7	335	3±1	<7
07/27/81	325	4±1	<7	330	5±1	<7	330	4±1	<7
08/03/81	335	3±1	<7	335	2±1	<7	335	2±1	<7
08/10/81	330	3±1	<7	330	4±1	<7		(a)	
08/17/81	335	4±1	<7	335	4±1	<7		(a)	
08/24/81	335	3±1	<7	335	2±1	<7		(a)	
08/31/81	335	2±1	<7	335	1±1	<7		(a)	
09/08/81	380	2±1	<7	380	2±1	<7		(a)	
09/14/81	285	2±1	<7	285	1±1	<7	285	1±1	<7
09/21/81	335	1±1	<7		(a)			(a)	
09/28/81	335	3±1	<7		(a)		335	2±1	<7
10/05/81	335	3±1	<7		(a)		335	1±1	<7
10/12/81	355	2±1	<7		(a)		330	2±1	<7
10/19/81	335	2±1	<7	335	<1	<7	335	2±1	<7
10/26/81	335	2±1	<7	335	<1	<7	335	1±1	<7
11/02/81	335	3±1	<7	335	2±1	<7	330	2±1	<7
11/09/81	330	3±1	<7	335	1±1	<7	330	2±1	<7
11/16/81	330	3±1	<7	330	2±1	<7	330	3±1	<7
11/23/81	335	2±1	<7	335	1±1	<7	335	1±1	<7
11/30/81	330	3±1	<7	285	1±1	<7	330	1±1	<7
12/07/81	335	2±1	<7	335	<1			(a)	
12/14/81	335	1±1	<7		(a)			(a)	
12/21/81	330	1±1	<7		(a)			(a)	
12/28/81	330	2±1	<7		(a)		330	2±1	<7

(a) See Listing of Missing Samples page.
 (b) Weekly Iodine cartridge collection resumed 07/13/81.

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MISSISSIPPI F I AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4		A/S-5		A/S-6	
	Volume (m ³)	10 ⁻³ pCi/m ³	Volume (m ³)	10 ⁻³ pCi/m ³	Volume (m ³)	10 ⁻³ pCi/m ³
		Gross β		Gross β		Gross β
01/05/81	330	6±1	330	7±1	335	5±1
01/12/81	340	6±1	340	5±1	335	6±1
01/19/81	325	7±1	325	6±1	325	5±1
01/26/81	340	7±1	340	5±1	340	6±1
02/02/81	325	16±2	370	11±2	325	11±1
02/09/81	340	7±1	340	8±1	335	11±1
02/16/81	335	11±1	335	11±1	335	11±1
02/23/81	335	9±1	335	9±1	335	13±2
03/02/81	335	11±1	335	13±2	335	10±1
03/09/81	335	11±1	335	11±1	335	11±1
03/16/81	330	21±2	330	16±2	330	20±2
03/23/81	320	21±2	325	19±2	325	18±2
03/30/81	335	17±2	335	23±3	335	24±3
04/06/81	335	16±2	335	28±3	335	21±3
04/13/81	335	18±2	335	2±1	335	20±2
04/20/81	330	16±2	330	16±2	330	16±2
04/27/81	335	14±2	335	12±1	335	11±1
05/04/81	325	16±2	325	16±2	325	15±2
05/11/81	330	16±2	330	15±2	330	16±2
05/18/81	295	20±2	335	15±2	335	16±2
05/26/81	380	15±2	380	14±2	380	16±2
06/01/81	285	10±2	285	8±2	285	10±2
06/08/81	310	4±1	310	4±1	310	4±1
06/15/81	330	5±1	330	4±1	330	5±1
06/22/81	330	5±1	330	9±1	335	8±1
06/29/81	330	7±1	330	8±2	330	8±2

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MISSISSIPPI POWER AND LIGHT
AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4			A/S-5			A/S-6		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross B	I-131		Gross B	I-131		Gross B	I-131
07/06/81	340	6±1	-	340	7±1	-	340	6±1	-
07/13/81 (a)	325	3±1	<7	325	3±1	<7	325	3±1	<7
07/20/81	340	3±1	<7	340	3±1	<7	340	3±1	<7
07/27/81	320	3±1	<7	320	3±1	<7	290(b)	<1	<7
08/03/81	310	2±1	<7	335	2±1	<7	335	2±1	<7
08/10/81	330	3±1	<7	330	2±1	<7	330	3±1	<7
08/17/81	335	4±1	<7	335	4±1	<7	335	3±1	<7
08/24/81	335	3±1	<7	335	2±1	<7	335	3±1	<7
08/31/81	330	2±1	<7	330	1±1	<7	330	2±1	<7
09/08/81	380	4±1	<7	380	1±1	<7	(c)		
09/14/81	285	3±1	<7	285	1±1	<7	285	2±1	<7
09/21/81	335	1±1	<7	335	1±1	<7	335	2±1	<7
09/28/81	340	4±1	<7	340	4±1	<7	340	3±1	<7
10/05/81	335	2±1	<7	335	1±1	<7	335	2±1	<7
10/12/81	330	2±1	<7	375	2±1	<7	330	2±1	<7
10/19/81	335	2±1	<7	340	1±1	<7	(c)		
10/26/81	330	1±1	<7	330	2±1	<7	330	2±1	<7
11/02/81	335	3±1	<7	335	2±1	<7	335	3±1	<7
11/09/81	330	2±1	<7	335	2±1	<7	330	2±1	<7
11/16/81	330	4±1	<7	100(d)	3±1	<7	330	4±1	<7
11/23/81	340	2±1	<7	340	2±1	<7	340	3±1	<7
11/30/81	330	2±1	<7	330	2±1	<7	330	2±1	<7
12/07/81	335	2±1	<7	335	1±1	<7	335	2±1	<7
12/14/81	335	3±1	<7	315	2±1	<7	335	2±1	<7
12/21/81	330	1±1	<7	330	2±1	<7	330	2±1	<7
12/28/81	335	1±1	<7	335	2±1	<7	335	3±1	<7

- (a) Weekly cartridge collection resumed 07/13/81.
- (b) fuse blown at 19.2 hours; calculation based on average volume.
- (c) See List of Missed Samples page.
- (d) Run time only 50 hours.

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MISSISSIPPI RIVER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7		A/S-8		A/S-9	
	Volume (m ³)	10^{-2} pCi/m ³ Gross β	Volume (m ³)	10^{-2} pCi/m ³ Gross β	Volume (m ³)	10^{-2} pCi/m ³ Gross β
01/05/81	335	5±1	335	7±1	335	7±1
01/12/81	335	7±1	335	7±1	335	7±1
01/19/81	325	7±1	325	7±1	325	9±1
01/26/81	340	7±1	340	7±1	340	9±1
02/02/81	325	11±1	325	16±2	325	13±2
02/09/81	335	8±1	335	9±1	335	14±2
02/16/81	335	10±1	335	13±2	335	13±2
02/23/81	335	9±1	335	10±1	335	12±1
03/02/81	335	11±1	335	10±1	335	14±2
03/09/81	335	11±1	335	18±2	335	14±2
03/16/81	330	22±3	330	24±3	330	24±3
03/23/81	325	18±2	325	22±3	325	19±2
03/30/81	335	13±2	335	18±2	335	25±3
04/06/81	335	18±2	335	20±2	335	26±3
04/13/81	335	25±3	335	26±3	335	20±2
04/20/81	330	15±2	330	14±2	330	18±2
04/27/81	335	16±2	335	14±2	335	7±1
05/04/81	325	17±2	325	17±2	325	13±2
05/11/81	330	15±2	330	16±2	330	8±1
05/18/81	335	15±2	325	17±2	335	9±2
05/26/81	380	12±2	365	17±2	375	13±2
06/01/81	285	10±2	275	10±2	285	9±2
06/08/81	310	3±1	300	3±1	310	3±1
06/15/81	330	5±1	320	4±1	330	5±1
06/22/81	335	8±1	325	8±1	335	5±1
06/29/81	330	9±2	330	8±2	330	9±2

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MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7			A/S-8			A/S-9		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/06/81	340	7±1	-	340	7±1	-	330	7±1	-
07/13/81(a)	325	4±1	<7	325	4±1	<7	330	4±1	<7
07/20/81	340	3±1	<7	340	1±1	<7	340	3±1	<7
07/27/81	320	3±1	<7	320	3±1	<7	325	4±1	<7
08/03/81	335	2±1	<7	335	3±1	<7	335	2±1	<7
08/10/81	330	2±1	<7	330	3±1	<7	330	3±1	<7
08/17/81	335	3±1	<7	335	3±1	<7	335	3±1	<7
08/24/81	335	2±1	<7	335	3±1	<7	335	2±1	<7
08/31/81	330	1±1	<7	330	1±1	<7	335	1±1	<7
09/08/81	380	2±1	<7	380	3±1	<7	380	2±1	<7
09/14/81	285	3±1	<7	285	2±1	<7	285	2±1	<7
09/21/81	335	1±1	<7	335	<1	(b)	335	1±1	<7
09/28/81	340	3±1	<7	290	3±1	<7	290	3±1	<7
10/05/81	310	2±1	<7	335	1±1	<7	330	1±1	<7
10/12/81	350	2±1	<7	330	2±1	<7	350	2±1	<7
10/19/81	335	2±1	<7	340	2±1	<7	335	1±1	<7
10/26/81	335	1±1	<7	330	1±1	<7	270	1±1	<7
11/02/81	335	2±1	<7	335	3±1	<7	170(c)	7±1	<7
11/09/81	330	2±1	<7	335	2±1	<7	330	1±1	<7
11/16/81	330	3±1	<7	330	3±1	<7	330	4±1	<7
11/23/81	340	3±1	<7	330	2±1	<7	340	3±1	<7
11/30/81	330	2±1	<7	330	2±1	<7	330	1±1	<7
12/07/81	335	2±1	<7	335	2±1	<7	330	2±1	<7
12/14/81	335	1±1	<7	335	2±1	<7	335	1±1	<7
12/21/81	330	2±1	<7	330	2±1	<7	330	2±1	<7
12/28/81	335	2±1	<7	335	2±1	<7	335	<1	<7

- (a) Weekly iodine cartridge collection resumed 07/13/81.
- (b) See List of Missed Samples page.
- (c) Unit tampered with over weekend.

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN AIR PARTICULATE SAMPLES
(Quarterly Analysis on Composite of Weekly Collections)

Collection Site	Ce-144	Bc-7	Zr-95	Nb-95	Ce-141	Ru-103	Other γ
<u>1st Quarter</u>							
A/S-1	0.05±0.01	0.17±0.04	0.06±0.01	0.10±0.01	0.02±0.01	0.04±0.01	<0.01
-2	0.1±0.10	0.2±0.10	0.1±0.10	0.1±0.10	<0.01	0.1±0.10	<0.01
-3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-5	<0.01	0.3±0.10	0.1±0.10	0.1±0.10	0.1±0.10	0.1±0.10	<0.01
-6	0.1±0.10	<0.10	0.1±0.10	0.1±0.10	0.1±0.10	<0.01	<0.01
-7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-8	0.04±0.01	0.19±0.05	0.08±0.01	0.09±0.01	0.01±0.01	0.01±0.01	<0.01
-9	0.03±0.01	0.12±0.03	0.07±0.01	0.06±0.01	0.02±0.01	0.05±0.01	<0.01
<u>2nd Quarter</u>							
A/S-1	0.08±0.02	<0.03	0.03±0.01	0.05±0.01	<0.01	<0.01	<0.01
-2	0.24±0.03	0.18±0.04	0.02±0.01	0.05±0.01	<0.01	<0.01	<0.01
-3	0.10±0.02	<0.03	0.04±0.01	0.05±0.01	<0.01	0.02±0.01	<0.01
-4	0.15±0.04	0.25±0.05	0.03±0.01	0.05±0.01	<0.01	0.01±0.01	<0.01
-5	0.07±0.02	0.14±0.03	0.02±0.01	0.05±0.01	<0.01	0.01±0.01	<0.01
-6	0.09±0.03	<0.03	0.02±0.01	0.04±0.01	<0.01	<0.01	<0.01
-7	0.06±0.03	0.15±0.04	0.02±0.01	0.04±0.01	0.08±0.03	0.01±0.01	<0.01
-8	0.13±0.02	<0.03	0.02±0.01	0.04±0.01	<0.01	0.01±0.01	<0.01
-9	0.08±0.02	<0.03	<0.01	0.03±0.01	<0.01	<0.01	<0.01

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN AIR PARTICULATE SAMPLES
(Quarterly Analysis on Composite of Weekly Collections)

Collection Site	Ce-144	Bc-7	Zr-95	Nb-95	Ce-141	Ru-103	Other γ
<u>3rd Quarter</u>							
A/S-1	0.08±0.01	0.12±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
-2	<0.01	<0.01	<0.01	0.02±0.01	<0.01	<0.01	<0.01
-3	<0.01	0.16±0.04	<0.01	0.02±0.01	<0.01	<0.01	<0.01
-4	<0.01	0.08±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
-5	<0.01	0.09±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
-6	<0.01	0.14±0.03	<0.01	0.01±0.01	<0.01	<0.01	<0.01
-7	<0.01	0.09±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
-8	<0.01	0.08±0.02	<0.01	0.02±0.01	<0.01	<0.01	<0.01
-9	<0.01	0.11±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
<u>4th Quarter</u>							
A/S-1	<0.01	0.07±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
-2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-3	<0.01	0.27±0.05	<0.01	<0.01	<0.01	<0.01	<0.01
-4	<0.01	0.16±0.03	<0.01	<0.01	<0.01	<0.01	<0.01
-5	<0.01	0.10±0.02	<0.01	<0.01	<0.01	<0.01	<0.01
-6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
-9	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN SURFACE WATER SAMPLES
(Monthly Collections)

GAMMA EMITTERS

<u>Collection Period</u>	<u>pCi/l</u>	
	<u>MRUP</u> <u>IN</u>	<u>MRDOWN</u> <u>2N</u>
January	(a)	(a)
February	<15	<15
March	<15	<15
April	<15	<15
May	<15	<15
June	<15	<15
July	<15	<15
August	<15	<15
September	<15	<15
October	(a)	(a)
November	<15	<15
December	<15	<15

TRITIUM CONCENTRATIONS IN SURFACE WATER SAMPLES
(Quarterly Composites)

<u>Collection Period</u>	<u>TRITIUM</u>	
	<u>MRUP</u> <u>IN</u>	<u>MRDOWN</u> <u>2N</u>
1st qtr.	<330	<330
2nd qtr.	<330	430±300
3rd qtr.	<330	<330
4th qtr.	330±130	320±120

(a) See Listing of Missing Samples page.

MISSISSIPPI POWER AND LIGHT
RADIONUCLIDES IN WELL WATER SAMPLES
(Quarterly Collections)

Collection Period	pCi/l					
	TRIMWELL		PGWELL		MPWELL	
	<u>γ Emitters</u>	<u>Tritium</u>	<u>γ Emitters</u>	<u>Tritium</u>	<u>γ Emitters</u>	<u>Tritium</u>
1st Qtr.	<15	<430(a)	<15	510±120	<15	<330
2nd Qtr.	<15	<330	<15	<330	<15	<330
3rd Qtr.	<15	<330	<15	<330	<15	230±110
4th Qtr.	<15		<15	320±140	<15	300±120

Collection Period	pCi/l	
	Lake Bruin State Park	
	<u>γ Emitters</u>	<u>Tritium</u>
2nd Quarter	<15	<330
3rd Quarter	<15	<330
4th Quarter	<15	230±140

(a) Insufficient sample for more sensitive analysis.

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN CISTERN WATER SAMPLES
(Monthly Collections)

Collection Period	Ark Cist 1N			Trim Cist 2N		
	pCi/l			pCi/l		
	Gross Beta	I-131	Gamma Emitters	Gross Beta	I-131	Gamma Emitters
January	4±1	<1	<15	7±2	<1	<15
February	4±1	<1	<15	6±2	<1	<15
March	6±2	<1	<15	4±2	<1	<15
April	5±2	<1	<15	4±2	<1	<15
May	7±2	<1	<15	4±2	<1	<15
June	5±2	<1	<15	4±2	<1	<15
July	3±1	<1	<15	<3(a)	<1	<15
August	6±2	<1	<15	5±1	<1	<15
September	5±2	<1	<15	6±2	<1	<15
October	6±2	<1	<15	2±1	<1	<15
November	3±1	<1	<15	5±2	<1	<15
December	5±2	<1	<15	4±1	<1	<15

TRITIUM CONCENTRATIONS IN CISTERN WATER SAMPLES
(Quarterly Collections)

Collection Period	pCi/l	
	Ark Cist 1N	Trim Cist 2N
1st qtr.	<330	<330
2nd qtr.	<330	<330
3rd qtr.	<330	<330
4th qtr.	230±120	<330

(a). Insufficient sample for more sensitive analysis.

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN MILK SAMPLES
(Monthly Collections)

<u>Collection Period</u>	<u>Collection Site</u>	<u>pCi/l</u>	
		<u>I-131</u>	<u>Gamma Emitters</u>
01/12/81	Alcont	<1	<15
02/03/81	Alcont	<1	<15
03/03/81	Alcont	<1	<15
04/07/81	Alcont	<1	<15
05/06/81	Alcont	<1	<15
06/03/81	Alcont	<1	<15
07/08/81	Alcont	<1	<15
08/04/81	Alcont	<1	<15
09/09/81	Alcont	<1	<15
10/07/81	Alcont	<1	<15
11/12/81	Alcont	<1	<15
12/03/81	Alcont	<1	<15

GAMMA EMITTERS IN SEDIMENT SAMPLES
(Semiannual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>pCi/g dry</u>	
		<u>Cs-137</u>	<u>Gamma Emitters</u>
	(a)		
Sed Ham 01	12/01/81	0.17±0.05	<0.15
Sed Bar 01	12/01/81	<0.15	<0.15

(a) See Listing Of Missing Samples page.

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS in FRUIT and VEGETABLE SAMPLES
(Collected at Harvest)

<u>Collection ID</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g wet Gamma Emitters</u>
GRLV01	01/09/81	Turnip roots	<0.08
GRLV02	02/03/81	Mustard greens	<0.08(a)
GRLV03	03/03/81	Mustard greens	<0.08
GRLV04	04/06/81	Collard greens	<0.08(b)
GRLV05	06/04/81	Mustard greens	<0.08(c)
Fruit-01	06/04/81	Wild plums	<0.08
Fruit-02	09/10/81	Muscadine Grapes	<0.08
Veg-01	10/05/81	Sweet potatoes	<0.08
GRLV-06	11/11/81	Turnip/Mustard Greens Mix	<0.08
GRLV-07	12/02/81	Turnip Greens/roots	<0.08
GRLV-08	12/02/81	Turnip/Mustard Greens Mix	<0.08

(a) Ce-144 = 0.20±0.02
 Be-7 = 0.14±0.05
 Zr-95 = 0.23±0.02
 Ce-141 = 0.19±0.02

(b) Ce-144 = <0.2

(c) Ce-144 = 0.56±0.21
 Be-7 = 0.96±0.22
 Nb-95 = 0.12±0.03
 Ce-141 = 0.13±0.07

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS IN FISH SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Species</u>	<u>pCi/g (wet) Gamma Emitters</u>
MR-Hamilton Lake Outfall	05/06/81	Catfish	<0.13
Fish-02 MR Downstream	11/23/81	Catfish	<0.13
Fish-03 Big Black River	11/23/81	Catfish	<0.13

GAMMA EMITTERS IN MEAT SAMPLES
(Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g (wet)</u>	
			<u>Gamma Emitters</u>	<u>Fe-59 Zn-65</u>
Deer-01 Bucksport Hunting Club	11/30/81	Deer	<0.08	<0.08

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION.

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1981

	1st quarter	2nd quarter	3rd quarter	4th quarter
Date Annealed:	12/15/80	05/19/81	06/17/81	09/16/81
Date Read:	04/07/81	07/15/81	10/21/81	01/19/82

Location:	mR/Quarter			
M-00	5.2±1.3	9.1±1.3	10.4±2.6	11.7±5.2
M-01	14.3±2.6	15.6±1.3	20.8±2.6	26.0±14.3
M-02	15.6±1.3	15.6±1.3	19.5±3.9	24.7±2.6
M-03	13.0±1.3	14.3±1.3	15.6±2.6	18.2±2.6
M-04	16.9±2.6	15.6±1.3	19.5±2.6	24.7±2.6
M-05	13.0±1.3	15.6±2.6	18.2±3.9	22.1±1.3
M-06	14.3±3.9	16.9±1.3	19.5±1.3	20.8±2.6
M-07	14.3±1.3	14.3±1.3	18.2±5.2	20.8±2.6
M-08	missing	15.6±2.6	19.5±6.5	22.1±3.9
M-09	14.3±1.3	14.3±1.3	missing	20.8±2.6
M-10	14.3±1.3	14.3±1.3	16.9±1.3	18.2±2.6
M-11	15.6±2.6	13.0±2.6	20.8±11.7	26.0±6.5
M-12	14.3±1.3	14.3±1.3	22.1±5.2	19.5±5.2
M-13	14.3±2.6	14.3±1.3	18.2±1.3	19.5±3.9
M-14	13.0±3.9	14.3±1.3	18.2±6.5	18.2±2.6
M-15	missing	missing	16.9±6.5	16.9±2.6
M-16	14.3±2.6	13.0±1.3	16.9±3.9	22.1±3.9
M-17	14.3±5.2	15.6±3.9	20.8±5.2	22.1±3.9
M-18	16.9±2.6	16.9±1.3	19.5±3.9	20.8±5.2
M-19	11.7±1.3	13.0±2.6	16.9±2.6	18.2±2.6
M-20	15.6±1.3	14.3±1.3	19.5±2.6	22.1±5.2
M-21	13.0±1.3	14.3±1.3	19.5±5.2	18.2±7.8
M-22	missing	14.3±1.3	19.5±3.9	19.5±2.6
M-23	13.0±2.6	13.0±5.2	19.5±6.5	16.9±3.9
M-24	11.7±1.3	11.7±1.3	16.9±3.9	missing
M-25	14.3±2.6	14.3±1.3	18.2±5.2	19.5±1.3
M-26	15.6±2.6	15.6±2.6	19.5±5.2	missing
M-27	14.3±2.6	15.6±1.3	19.5±3.9	20.8±2.6
M-28	14.3±1.3	13.0±1.3	20.8±2.6	20.8±2.6
M-29	14.3±1.3	14.3±1.3	19.5±2.6	22.1±3.9
M-30	11.7±1.3	14.3±2.6	23.4±3.9	19.5±3.9
M-31	13.0±1.3	13.0±1.3	26.0±5.2	19.5±3.9
M-32	13.0±2.6	13.0±1.3	23.4±1.3	19.5±3.9
M-33	13.0±1.3	11.7±1.3	23.4±3.9	16.9±1.3
M-34	13.0±1.3	14.3±1.3	26.0±2.6	19.5±2.6
M-35	14.3±1.3	11.7±1.3	23.4±5.2	18.2±2.6
M-36	11.7±2.6	10.4±1.3	23.4±3.9	18.2±5.2
M-37	13.0±1.3	11.7±1.3	19.5±3.9	19.5±2.6
M-38	13.0±2.6	missing	22.1±3.9	18.2±2.6
M-39	11.7±1.3	13.0±1.3	15.6±6.5	18.2±2.6

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1981

	<u>1st quarter</u>	<u>2nd quarter</u>	<u>3rd quarter</u>	<u>4th quarter</u>
Date Annealed:			06/17/81	09/16/81
Date Read:			10/21/81	01/19/82
<u>Location:</u>	<u>mR/Quarter</u>			
M-40	Badges increased effective		18.2±3.9	16.9±2.6
M-41	3 Qtr.		18.2±5.2	15.6±7.8
M-42			18.2±5.2	16.9±1.3
M-43			missing	18.2±1.3
M-44			15.6±2.6	14.3±2.6
M-45			15.6±7.8	18.2±3.9
M-46			16.9±2.6	18.2±5.2
M-47			18.2±5.2	18.2±2.6
M-48			19.5±5.2	19.5±5.2
M-49			15.6±3.9	18.2±3.9
M-50			missing	18.2±2.6
M-51			15.6±6.5	19.5±6.5
M-52			18.2±10.4	19.5±5.2
M-53			missing	15.6±1.3
M-54			18.2±6.5	16.9±3.9
M-55			20.8±3.9	22.1±7.8
M-56			19.5±5.2	19.5±2.6
M-57			missing	18.2±3.9
M-58			13.0±6.5	11.7±2.6
M-59			15.6±6.5	18.2±6.5

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Mustard greens	GRLV02GG	02/03/81	Gamma Isotopic	Be-7 = 0.42±0.04 Zr-95 = 0.25±0.03 Nb-95 = 0.15±0.02 Ce-141 = 0.21±0.02 Other gamma = <0.08
Cistern water	ArkCistGG	03/03/81	Gross Beta	6±2 pCi/l
	TrimCistGG	03/03/81	Gross Beta	3±2 pCi/l
Milk	AlcontGG	03/03/81	I-131	<1 pCi/l
Surface Water	MRUPGG	03/16/81	Gamma Isotopic	<15 pCi/l
	MRDOWNGG	03/16/81	Gamma Isotopic	<15 pCi/l
Collard greens	GRLV04GG	04/06/81	Gamma Isotopic	Ce-144 = 0.2±0.1 Ce-141 = 0.1±0.1 Other γ = <0.08
Cistern Water	ArkCist GG	06/02/81	Gross Beta	5±2 pCi/l
	TrimCist GG	06/02/81	Gross Beta	4±2 pCi/l
Turnip Greens	GRLV-05GG	06/04/81	Gamma Isotopic	Be-7 = 0.84±0.28 Other γ = <0.08
Wild plums	Fruit-01GG	06/04/81	Gamma Isotopic	<0.08 pCi/g
Surface Water	MRUPGG	06/18/81	Gamma Isotopic	<15 pCi/l
	MRDOWNGG	06/18/81	Gamma Isotopic	<15 pCi/l
Ground Water	MPwell GG	07/06/81	Gamma Isotopic	<15 pCi/l
	PGwell GG	07/06/81	Gamma Isotopic	<15 pCi/l
	Trimwell GG	07/06/81	Gamma Isotopic	<15 pCi/l
	Lake Bruin SP GG	07/24/81	Gamma Isotopic	<15 pCi/l
Cistern Water	ArkCistGG	09/09/81	Gross Beta	4±2 pCi/l
	TrimCistGG	09/09/81	Gross Beta	6±2 pCi/l
Milk	AlcontGG	09/09/81	Iodine-131	<1 pCi/l
Surface Water	MRUPGG	09/24/81	Gamma Isotopic	<15 pCi/l
	MRDOWNGG	09/24/81	Gamma Isotopic	<15 pCi/l

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Catfish	Fish-02 GG	11/23/81	Gamma Isotopic	<0.13 pCi/g wet
Animal	Deer-01 GG	11/30/81	Gamma Isotopic	<0.08 pCi/g wet
Sediment	Sed Ham-01 GG	12/01/81	Cs-137	0.23±0.04 pCi/g dry
	Sed Bar-01 GG	12/01/81	Other gamma Gamma Isotopic	<0.15 <0.15
Cistern Water	Ark Cist GG	12/01/81	Gamma Isotopic	<15 pCi/l
	Trim Cist GG	12/01/81	Gamma Isotopic	<15
Turnip Greens/ Roots	GRLV-07 GG	12/02/81	Gamma Isotopic	<0.08 pCi/g
Mustard Turnip/ Mix	GRLV-08 GG	12/02/81	Gamma Isotopic	<0.08
Milk	Alcont GG	12/03/81	I-131	<1 pCi/l
Surface Water	MRUPGG	12/11/81	Gamma Isotopic	<15 pCi/l
	MRDOWNGG	12/11/81	Gamma Isotopic	<15 pCi/l

ENVIRONMENTAL QUALITY CONTROL ANALYSES SUMMARY

1981

The tables below summarize results of samples run for process quality control purposes during the subject month. These listings are in addition to such measurements as detector backgrounds, check source values, radiometric-gravimetric comparisons, system calibrations, etc. Detailed listings of each measurement are maintained at the laboratory and are available for inspection if required.

BLANK SAMPLES

<u>Nuclide Analyzed</u>	<u>Number of Determinations</u>	<u>Number of analyses exceeding the LLD for that analysis</u>
Gross beta	46	1*
Gross alpha	47	0
Strontium-89	95	0
Strontium-90	95	0
Tritium	61	1*
Gamma emitter	64	0
Iodine-131	191	0
Calcium-45	3	0

SPLIT SAMPLES

<u>Nuclide Analyzed</u>	<u>Number of Det'n's</u>	<u>No. agreeing within 2σ</u>	<u>No. agreeing within 3σ</u>	<u>No. differing by > 3σ</u>
Gross beta	142	138	4	0
Gross alpha	39	38	1	0
Gamma emitters	126	122	4	0
Iodine-131	146	146	0	0
Strontium-89	38	38	0	0
Strontium-90	44	42	2	0
Tritium	89	89	0	0
Calcium-45	8	8	0	0
Uranium	71	71	0	0

SPIKED SAMPLES

<u>Nuclide Analyzed</u>	<u>No. of Det'n's</u>	<u>Within 2σ of known</u>	<u>Within 3σ of known</u>	<u>differing from known by > 3σ</u>
Gross beta	55	53	1	1*
Gamma emitters	44	43	1	0
Iodine-131	11	11	0	0
Strontium-89	18	18	0	0
Strontium-90	94	93	1	0
Tritium	45	44	1	0

* Corrective actions were taken to eliminate the problem.

EPA INTERCOMPARISON RESULTS

1981

<u>Month/Year</u>	<u>Sample Type</u>	<u>Analysis</u>	<u>Agency Value</u>	<u>Control Limits (3σ, n=3)</u>	<u>MWF Measured $\pm 2\sigma$ error*</u>	<u>Units</u>
December 1980	Water	Iodine-131	22	6	17 \pm 2	pCi/liter
December 1980	Water	Tritium	2240	604	2600 \pm 300	pCi/liter
December 1980	Air Filter	Gross Alpha	21	9.1	21 \pm 2	pCi/filter
December 1980	Air Filter	Gross Beta	19	8.7	28 \pm 3	pCi/filter
December 1980	Air Filter	Strontium-90	0	0	LT 1	pCi/filter
December 1980	Air Filter	Cesium-137	19	8.7	19 \pm 2	pCi/filter
January 1981	Water	Gross Alpha	9	8.7	10 \pm 1	pCi/liter
January 1981	Water	Gross Beta	44	8.7	43 \pm 4	pCi/liter
January 1981	Water	Strontium-89	16	8.7	LT 5	pCi/liter
January 1981	Water	Strontium-90	34	2.9	35 \pm 4	pCi/liter
January 1981	Milk	Strontium-89	0	0	LT 2	pCi/liter
January 1981	Milk	Strontium-90	20.2	2.6	14 \pm 1	pCi/liter
January 1981	Milk	Iodine-131	25.8	10.4	29 \pm 3	pCi/liter
January 1981	Milk	Cesium-137	43.5	8.7	47 \pm 5	pCi/liter
January 1981	Milk	Barium-140	0	0	LT 25	pCi/liter
January 1981	Milk	Potassium	1551	134	1350 \pm 140	pCi/liter
February 1981	Water	Tritium	1760	590	1680 \pm 170	pCi/liter
February 1981	Water	Chromium-51	0	0	LT 100	pCi/liter
February 1981	Water	Cobalt-60	25	8.7	29 \pm 5	pCi/liter
February 1981	Water	Zinc-65	85	8.7	92 \pm 9	pCi/liter
February 1981	Water	Ruthenium-106	0	0	LT 100	pCi/liter
February 1981	Water	Cesium-134	36	8.7	29 \pm 5	pCi/liter
February 1981	Water	Cesium-137	4	8.7	9 \pm 3	pCi/liter
March 1981	Water	Gross Beta	25	8.7	27 \pm 3	pCi/liter
March 1981	Water	Gross Alpha	25	10.4	20 \pm 2	pCi/liter
March 1981	Air Filter	Gross Alpha	30	13	30 \pm 3	pCi/filter
March 1981	Air Filter	Gross Beta	50	8.7	66 \pm 7	pCi/filter
March 1981	Air Filter	Strontium-90	18	2.6	17 \pm 4	pCi/filter
March 1981	Air Filter	Cesium-137	14	8.7	15 \pm 2	pCi/filter
April 1981	Water	Tritium	2710	615	3000 \pm 300	pCi/liter
April 1981	Water	Cesium-134	10	8.7	7 \pm 2	pCi/liter
April 1981	Water	Cesium-137	15	8.7	13 \pm 1	pCi/liter
April 1981	Water	Strontium-89	38	8.7	35 \pm 7	pCi/liter
April 1981	Water	Strontium-90	28	2.6	24 \pm 3	pCi/liter
April 1981	Water	Radium-226	15.0	4.0	13.2 \pm 1.3	pCi/liter
April 1981	Water	Radium-223	12.0	3.1	10 \pm 2	pCi/liter
April 1981	Water	Uranium	12	10	6 \pm 2	pCi/liter
May 1981	Water	Strontium-89	36	8.7	29 \pm 3	pCi/liter
May 1981	Water	Strontium-90	22	2.6	26 \pm 3	pCi/liter
May 1981	Water	Strontium-89				
May 1981	Water	Strontium-90				
May 1981	Water	Iodine-131				
May 1981	Water	Cesium-137				

*When analyses of a particular type result in concentrations below the detection limits, the term "LT" is used to indicate "Less Than" values for that measurement based on 3 σ (99.5%) confidence level.

EPA INTERCOMPARISON RESULTS

1981

Month/Year	Sample Type	Analysis	Agency Value	Control Limits (3σ, n=)	M/F Measured ±2σ error	Units	
May	1981	Water	Barium-140	0	0	LT 20	pCi/liter
May	1981	Water	Potassium	1559	135	1400±140	mg/liter
June	1981	Water	Chromium-51	0	0	LT 20	pCi/liter
June	1981	Water	Cobalt-60	17	8.7	16±2	pCi/liter
June	1981	Water	Zinc-65	0	0	LT 20	pCi/liter
June	1981	Water	Ruthenium-106	15	8.7	13±4	pCi/liter
June	1981	Water	Cesium-134	21	8.7	13±2	pCi/liter
June	1981	Water	Cesium-137	31	8.7	25±3	pCi/liter
June	1981	Water	Tritium	1950	596	2300±200	pCi/liter
June	1981	Water	Radium-226	6.7	1.7	5.9±0.4	pCi/liter
June	1981	Water	Radium-228	8.0	2.1	10.6±1.6	pCi/liter
June	1981	Air filter	Gross alpha	28	12	31±6	pCi/filter
June	1981	Air filter	Gross beta	54	8.7	74±8	pCi/filter
June	1981	Air filter	Strontium-90	19	2.6	21±5	pCi/filter
June	1981	Air filter	Cesium-137	16	8.7	15±2	pCi/filter
July	1981	Food	Strontium-89	44	8.7	38±4	pCi/kilogram
July	1981	Food	Strontium-90	31	2.8	28±3	pCi/kilogram
July	1981	Food	Iodine-131	82	14	75±8	pCi/kilogram
July	1981	Food	Cesium-137	45	8.7	40±4	pCi/kilogram
July	1981	Food	Barium-140	0	0	<25	pCi/kilogram
July	1981	Food	Potassium	2640	229	2267±227	mg/kilogram
July	1981	Milk	Strontium-89	25	8.7	13±3	pCi/liter
July	1981	Milk	Strontium-90	17	2.6	16±3	pCi/liter
July	1981	Milk	Iodine-131	0	0	<5	pCi/liter
July	1981	Milk	Cesium-137	31	8.7	35±12	pCi/liter
July	1981	Milk	Barium-140	0	0	<16	pCi/liter
July	1981	Milk	Potassium	1600	139	1463±305	mg/liter
August	1981	Water	Iodine-131	73	13	53±11	pCi/liter
August	1981	Water	Tritium	2630	613	2973±878	pCi/liter
August	1981	Water	Uranium	23	10	14±2	pCi/liter
September	1981	Water	Strontium-89	23	8.7	18±5	pCi/liter
September	1981	Water	Strontium-90	11	2.6	14±2	pCi/liter
September	1981	Urine	Tritium	2050	599	2166±624	pCi/liter
September	1981	Water	Radium-226	8.3	2.2	8.4±0.8	pCi/liter
September	1981	Water	Radium-228	11.7	3.0	4.6±3.7	pCi/liter
September	1981	Water	Gross alpha	33	4	32±14	pCi/liter
September	1981	Water	Gross beta	28	8.7	30±6	pCi/liter
September	1981	Air filter	Gross alpha	25	11	25±6	pCi/filter
September	1981	Air filter	Gross beta	52	8.7	71±7	pCi/filter
September	1981	Air filter	Strontium-90	16	2.6	18±2	pCi/filter
September	1981	Air filter	Cesium-137	19	8.7	20±2	pCi/filter

EPA INTERCOMPARISON RESULTS

1981

<u>Month/Year</u>	<u>Sample Type</u>	<u>Analysis</u>	<u>Agency Value</u>	<u>Control Limits (3σ, n=)</u>	<u>MWF Measured ±2σ error</u>	<u>Units</u>
October 1981	Water	Gross alpha	80	35	91±26	pCi/liter
October 1981	Water	Gross beta	96	8.7	112±11	pCi/liter
October 1981	Water	Cobalt-60	0	0	LT 5	pCi/liter
October 1981	Water	Strontium-89	21	8.7	13±6	pCi/liter
October 1981	Water	Strontium-90	14.4	2.6	14.6±2.0	pCi/liter
October 1981	Water	Cesium-134	12	2.6	14±2	pCi/liter
October 1981	Water	Cesium-137	15	8.7	20±14	pCi/liter
October 1981	Water	Radium-226	12.7	3.3	11.8±3.5	pCi/liter
October 1981	Water	Radium-228	9.2	2.4	8.3±5.1	pCi/liter
October 1981	Water	Gross Uranium	15	10	9±2	pCi/liter
October 1981	Milk	Strontium-89	23	8.7	24±8	pCi/liter
October 1981	Milk	Strontium-90	18	2.6	14±5	pCi/liter
October 1981	Milk	Iodine-131	52	10	58±11	pCi/liter
October 1981	Milk	Cesium-137	25	8.7	29±9	pCi/liter
October 1981	Milk	Barium-140	0	0	LT 16	pCi/liter
October 1981	Milk	Potassium	1530	133	1700±240	mg/liter
November 1981	Food	Strontium-89	38	8.7	41±6	pCi/kilogr.
November 1981	Food	Strontium-90	23	2.6	21±5	pCi/kilogr.
November 1981	Food	Cobalt-60	30	8.7	35±8	pCi/kilogr.
November 1981	Food	Cesium-137	33	8.7	32±8	pCi/kilogr.
November 1981	Food	Barium-140	0	0	LT 31	pCi/ki
November 1981	Food	Potassium	2730	236	2700±270	mg/kilogra
December 1981	Water	Tritium	2700	615	2950±127	pCi/liter

1981

EPA INTERCOMPARISON RESULTS

(Lab Performance Evaluation Study-EMSL-LV)

<u>Sample Type</u>	<u>Analysis</u>	<u>Agency Value</u>	<u>Control Limits (3σ, n=1)</u>	<u>MWF Measured $\pm 2\sigma$ error</u>	<u>Units</u>
Water	Gross alpha	39	10	39 \pm 4	pCi/liter
Water	Gross beta	60	5	70 \pm 7	pCi/liter
Water	Cobalt-60	12	5	LT20	pCi/liter
Water	Cesium-134	12	5	11 \pm 2	pCi/liter
Water	Cesium-137	20	5	20 \pm 2	pCi/liter
Water	Ruthenium-106	0	-	LT100	pCi/liter
Water	Zinc-65	0	-	LT20	pCi/liter
Water	Strontium-89	6	5	5 \pm 1	pCi/liter
Water	Strontium-90	0	-	LT 1	pCi/liter
Water	Radium-226	12.8	1.8	12.6 \pm 1.3	pCi/liter
Water	Uranium	5	6	4 \pm 2	pCi/liter

1981

TLD Intercomparison Badges
Irradiated by Battelle Northwest Labs

Badge	Total mR less transportation control							
	1st Qtr		2nd Qtr		3rd Qtr		4th Qtr	
	Known	Measured	Known	Measured	Known	Measured	Known	Measured
A	18.0	18.5±4.1	18.0	17.8±5.0	20.0	25.5±4.8	90.0	86.2±15.5
B	26.0	29.1±2.9	24.0	24.5±5.5	28.0	31.4±2.5	51.0	53.6±5.3
C	75.0	29.1±6.1	38.0	34.1±9.0	16.0	17.9±2.7	100.0	93.4±10.1
D	47.0	46.8±5.4	44.0	43.2±6.0	32.0	36.5±3.5	42.0	41.9±19.7
E	57.0	42.1±6.0	59.0	61.4±6.5	40.0	41.2±4.0	18.0	20.1±3.4
F	69.0	77.6±12.5	69.0	71.2±19.0	53.0	55.4±15.2	29.0	32.0±3.0
G	76.0	65.6±6.6	73.0	74.1±21.6	69.0	75.1±13.2	34.0	32.0±3.0
H	88.0	88.6±12.6	79.0	80.8±17.3	82.0	80.4±10.7	82.0	79.0±8.0
J	100.0	102±10	79.0	79.9±18.2	93.0	86.1±15.5	34.0	38.7±9.3
K	100.0	99±10	99.0	100.2±25.4	100.0	100.4±15.3	74.0	69.2±8.8

USDOE QUALITY ASSESSMENT PROGRAM

1981

<u>Sample Type</u>	<u>Nuclide</u>	<u>Known</u>	<u>Measured ±2σ error</u>	<u>Units</u>
Air (81-04)	Se-7	0.244 E+04	0.247±0.015 E+04	pCi/filter
Air (81-04)	Mn-54	0.117 E+03	0.093±0.006 E+03	pCi/filter
Air (81-04)	Sr-89	0.450 E+02	0.515±0.087 E+02	pCi/filter
Air (81-04)	Sr-90	0.630 E+01	<0.100 E+02	pCi/filter
Air (81-04)	Zr-95	0.122 E+03	0.828±0.048 E+02	pCi/filter
Air (81-04)	Sb-125	0.139 E+04	0.133±0.006 E+04	pCi/filter
Air (81-04)	Cs-134	0.190 E+04	0.133±0.007 E+04	pCi/filter
Air (81-04)	U	0.223 E+01	0.750±0.053 E+01	pCi/filter
Soil (81-04)	K-40	0.213 E+02	0.290±0.017 E+02	pCi/g
Soil (81-04)	Cs-137	0.200 E+00	0.250±0.070 E+00	pCi/g
Soil (81-04)	Ra-226	0.770 E+00	0.668±0.057 E+00	pCi/g
Tissue (81-04)	K-40	0.158 E+01	0.433±0.058 E+01	pCi/g
Tissue (81-04)	Sr-90	0.240 E+01	0.188±0.016 E+01	pCi/g
Tissue (81-04)	Ra-226	0.450 E+00	0.433±0.058 E+00	pCi/g
Tissue (81-04)	U	0.290 E-01	0.850±0.333 E-01	pCi/g
Vegetation (81-04)	K-40	0.224 E+03	0.277±0.018 E+03	pCi/g
Vegetation (81-04)	Sr-90	0.560 E+01	0.258±0.016 E+01	pCi/g
Vegetation (81-04)	Cs-137	0.230 E+00	0.200±0.058 E+00	pCi/g
Vegetation (81-04)	U	0.310 E+00	0.133±0.058 E+00	pCi/g
Water (81-04)	H-3	0.246 E+02	0.197±0.012 E+02	pCi/ml
Water (81-04)	Co-57	0.118 E+01	0.243±0.018 E+01	pCi/ml
Water (81-04)	Co-60	0.129 E+01	0.133±0.006 E+01	pCi/ml
Water (81-04)	Sr-90	0.440 E-01	0.405±0.063 E-01	pCi/ml
Water (81-04)	Cs-137	0.137 E+01	0.150±0.012 E+01	pCi/ml
Water (81-04)	Ce-141	0.527 E+01	0.193±0.012 E+01	pCi/ml
Water (81-04)	U	0.145 E-01	0.200±0.026 E-01	ug/ml
Water (81-04)	U	0.102 E-01	0.750±0.140 E-02	pCi/ml

TABLE 12
1982 Sampling and Analysis Results

INTRODUCTION

This report summarizes data obtained on samples received during the year 1982 for the radiological monitoring program for the Grand Gulf Nuclear Station of the Mississippi Power and Light Company.

Data from analyses completed during the month were within the expected ranges and do not indicate the presence of radioactivity from the operation of the nuclear power station.

The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54 and Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ . Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

A summary of Quality Control data obtained during the month is presented at the end of this report. Included in this section are data from all analytical programs, not only those associated with this program.

MISSISSIPPI POWER AND LIGHT

LISTING OF MISSED SAMPLES

1982

<u>Sample Type</u>	<u>Location</u>	<u>Expected Collection Date</u>	<u>Reason</u>
AP/CC	A/S-2	01/04-02/15	Sampling unit out of order
AP/CC	A/S-9	01/04-02/15	Sampling unit out of order
AP/CC	A/S-3	01/11	Missing at time of collection
AP/CC	A/S-11	02/15 03/01-29, 05/03	Sample unit out of order
AP	A/S-2	04/12	Missing at time of collection
AP/CC	A/S-6	04/12-06/21	Sampling unit out of order
AP/CC	A/S-2	06/21	Fuse blown
AP/CC	A/S-8	06/21	Sampling unit out of order
AP/CC	A/S-3	06/28-07/06	Sampling unit out of order
AP/CC	A/S-2	07/27	Sampling unit out of order
CC	A/S-9	07/27	Missing
AP	A/S-3	11/29	Missing

MISSISSIPPI PLANT AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-1			A/S-2			A/S-3		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/04/82	335	2±1	<7	(a)	-	-	345	1±1	<7
01/11/82	330	2±1	<7	(a)	-	-	(a)	-	-
01/18/82	335	2±1	<7	(a)	-	-	335	1±1	<7
01/25/82	330	1±1	<7	(a)	-	-	330	1±1	<7
02/01/82	335	1±1	<7	(a)	-	-	335	<1	<7
02/08/82	285	2±1	<7	(a)	-	-	285	2±1	<7
02/15/82	335	2±1	<7	(a)	-	-	335	1±1	<7
02/22/82	330	1±1	<7	330	1±1	<7	330	1±1	<7
03/01/82	330	1±1	<7	330	3±1	<7	285	1±1	<7
03/08/82	335	1±1	<7	310	<1	<7	285	<1	<7
03/15/82	285	1±1	<7	285	1±1	<7	285	1±1	<7
03/22/82	335	<1	<7	335	<1	<7	335	<1	<7
03/29/82	335	1±1	<7	335	<1	<7	330	<1	<7
04/05/82	330	1±1	<7	310	1±1	<7	330	<1	<7
04/12/82	335	1±1	<7	(a)	-	<7	335	1±1	<7
04/19/82	335	1±1	<7	285	1±1	<7	335	1±1	<7
04/26/82	330	1±1	<7	330	1±1	<7	330	1±1	<7
05/03/82	355	1±1	<7	305	<1	<7	330	<1	<7
05/10/82	335	1±1	<7	310	1±1	<7	335	1±1	<7
05/17/82	335	1±1	<7	335	1±1	<7	355	1±1	<7
05/24/82	330	2±1	<7	345	2±1	<7	330	1±1	<7
06/01/82	380	1±1	<7	325	1±1	<7	355	1±1	<7
06/07/82	285	1±1	<7	285	<1	<7	265	<1	<7
06/14/82	335	2±1	<7	335	1±1	<7	380	1±1	<7
06/21/82	335	2±1	<7	(a)	-	-	340	1±1	<7
06/28/82	330	1±1	<7	345	1±1	<7	(a)	-	-

(a) See Listing of Missed Samples.

12-3

MISSISSIPPI P. R AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4			A/S-5			A/S-6		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/04/82	330	1±1	<7	310	3±1	<7	330	2±1	<7
01/11/82	310	1±1	<7	305	1±1	<7	330	2±1	<7
01/18/82	335	2±1	<7	335	2±1	<7	335	2±1	<7
01/25/82	330	1±1	<7	330	1±1	<7	330	1±1	<7
02/01/82	335	<1	<7	335	1±1	<7	335	2±1	<7
02/08/82	285	2±1	<7	285	2±1	<7	285	1±1	<7
02/15/82	335	2±1	<7	335	2±1	<7	335	1±1	<7
02/22/82	330	2±1	<7	355	1±1	<7	330	1±1	<7
03/01/82	330	1±1	<7	330	1±1	<7	330	<1	<7
03/08/82	335	1±1	<7	285	<1	<7	335	1±1	<7
03/15/82	285	1±1	<7	285	1±1	<7	285	1±1	<7
03/22/82	335	<1	<7	135	<1	<7	335	<1	<7
03/29/82	330	1±1	<7	335	1±1	<7	335	1±1	<7
04/05/82	330	1±1	<7	330	1±1	<7	215	1±1	<7
04/12/82	335	1±1	<7	335	1±1	<7	(a)	-	-
04/19/82	335	1±1	<7	310	1±1	<7	(a)	-	-
04/26/82	330	1±1	<7	330	2±1	<7	(a)	-	-
05/03/82	335	1±1	<7	330	1±1	<7	(a)	-	-
05/10/82	335	1±1	<7	335	1±1	<7	(a)	-	-
05/17/82	335	1±1	<7	335	1±1	<7	(a)	-	-
05/24/82	325	2±1	<7	345	2±1	<7	(a)	-	-
06/01/82	380	1±1	<7	380	1±1	<7	(a)	-	-
06/07/82	285	1±1	<7	285	<1	<7	(a)	-	-
06/14/82	335	2±1	<7	335	2±1	<7	(a)	-	-
06/21/82	355	1±1	<7	355	2±1	<7	(a)	-	-
06/28/82	330	2±1	<7	330	2±1	<7	330	2±1	<7

(a) See Listing of Missed Samples page.

12-5

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-4			A/S-5			A/S-6		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/06/82	380	<1	<7	380	1±1	<7	380	1±1	<7
07/13/82	340	2±1	<7	340	2±1	<7	340	2±1	<7
07/19/82	280	1±1	<7	280	2±1	<7	280	1±1	<7
07/27/82	380	3±1	<7	380	2±1	<7	380	2±1	<7
08/03/82	335	1±1	<7	330	1±1	<7	330	2±1	<7
08/10/82	335	2±1	<7	335	1±1	<7	330	2±1	<7
08/16/82	285	1±1	<7	285	1±1	<7	285	1±1	<7
08/23/82	345	2±1	<7	325	1±1	<7	345	2±1	<7
08/30/82	315	3±1	<7	325	3±1	<7	325	2±1	<7
09/07/82	375	1±1	<7	375	1±1	<7	380	2±1	<7
09/13/82	290	1±1	<7	290	1±1	<7	385	1±1	<7
09/20/82	325	1±1	<7	325	<1	<7	230	2±1	<7
09/28/82	375	1±1	<7	375	1±1	<7	375	2±1	<7
10/04/82	295	2±1	<7	295	2±1	<7	295	1±1	<7
10/11/82	330	<1	<7	335	1±1	<7	335	1±1	<7
10/18/82	320	1±1	<7	325	2±1	<7	325	<1	<7
10/25/82	330	2±1	<7	330	1±1	<7	335	2±2	<7
11/01/82	335	1±1	<7	(a)	<4 *	<14 *	335	2±1	<7
11/08/82	330	<1	<7	335	1±1	<7	330	2±1	<7
11/15/82	335	4±1	<7	335	2±1	<7	335	2±1	<7
11/23/82	335	4±1	<7	335	1±1	<7	335	1±1	<7
11/29/82	330	<1	<7	305	1±1	<7	330	1±1	<7
12/06/82	340	1±1	<7	340	1±1	<7	335	1±1	<7
12/13/82	330	1±1	<7	330	1±1	<7	330	2±1	<7
12/21/82	375	1±1	<7	375	2±1	<7	375	2±1	<7
12/28/82	300	<1	<7	325	<1	<7	325	<1	<7

* Data in pCi/Sample. Sampler malfunction

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7			A/S-8			A/S-9		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
01/04/82	330	2±1	<7	330	<1	<7	(a)	-	-
01/11/82	330	1±1	<7	315	2±1	<7	(a)	-	-
01/18/82	335	2±1	<7	335	2±1	<7	(a)	-	-
01/25/82	330	1±1	<7	330	2±1	<7	(a)	-	-
02/01/82	335	2±1	<7	335	1±1	<7	(a)	-	-
02/08/82	285	2±1	<7	285	2±1	<7	(a)	-	-
02/15/82	335	1±1	<7	335	2±1	<7	(a)	-	-
02/22/82	330	<1	<7	330	1±1	<7	265	1±1	<7
03/01/82	330	1±1	<7	330	1±1	<7	310	1±1	<7
03/08/82	335	1±1	<7	310	<1	<7	310	1±1	<7
03/15/82	285	1±1	<7	285	2±1	<7	285	2±1	<7
03/22/82	295	<1	<7	335	<1	<7	335	<1	<7
03/29/82	335	1±1	<7	335	1±1	<7	335	1±1	<7
04/05/82	330	1±1	<7	330	1±1	<7	330	1±1	<7
04/12/82	335	1±1	<7	335	2±1	<7	335	1±1	<7
04/19/82	480	<1	<7	335	1±1	<7	335	1±1	<7
04/26/82	330	<1	<7	330	1±1	<7	330	1±1	<7
05/03/82	330	1±1	<7	330	1±1	<7	330	1±1	<7
05/10/82	330	<1	<7	335	3±1	<7	330	2±1	<7
05/17/82	335	<1	<7	335	2±1	<7	335	1±1	<7
05/24/82	275	1±1	<7	345	2±1	<7	345	2±1	<7
06/01/82	380	<1	<7	380	1±1	<7	380	1±1	<7
06/07/82	285	1±1	<7	285	<1	<7	285	<1	<7
06/14/82	335	<1	<7	335	2±1	<7	335	1±1	<7
06/21/82	330	1±1	<7	(a)	-	-	330	1±1	<7
06/28/82	330	1±1	<7	330	1±1	<7	330	1±1	<7

(a) See Listing of Missed Samples page.

12-7

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-7			A/S-8			A/S-9		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131		Gross β	I-131
07/06/82	355	<1	<7	375	2±1	<7	380	<1	<7
07/13/82	340	1±1	<7	340	2±1	<7	45	6±5	<7
07/19/82	280	2±1	<7	280	2±1	<7	280	1±1	<7
07/27/82	380	1±1	<7	380	2±1	<7	380	1±1	(a)
08/03/82	305	1±1	<7	330	1±1	<7	330	2±1	<7
08/10/82	310	1±1	<7	335	1±1	<7	335	2±1	<7
08/16/82	285	1±1	<7	285	1±1	<7	285	2±1	<7
08/23/82	345	1±1	<7	345	2±1	<7	345	2±1	<7
08/30/82	300	1±1	<7	325	3±1	<7	325	3±1	<7
09/07/82	325	1±1	<7	380	1±1	<7	380	1±1	<7
09/13/82	310	1±1	<7	290	1±1	<7	290	1±1	<7
09/20/82	335	<1	<7	325	2±1	<7	325	2±1	<7
09/28-29/82	395	1±1	<7	375	2±1	<7	375	2±1	<7
10/04/82	295	<1	<7	295	1±1	<7	295	2±1	<7
10/11/82	380	<1	<7	330	1±1	<7	330	1±1	<7
10/18/82	325	1±1	<7	325	1±1	<7	325	2±1	<7
10/25/82	320	1±1	<7	330	2±1	<7	335	2±1	<7
11/01/82	320	1±1	<7	335	2±1	<7	335	2±1	<7
11/08/82	305	<1	<7	330	1±1	<7	330	1±1	<7
11/15/82	370	1±1	<7	335	2±1	<7	335	1±1	<7
11/23/82	310	1±1	<7	335	1±1	<7	335	1±1	<7
11/29/82	330	1±1	<7	330	1±1	<7	330	1±1	<7
12/06/82	315	<1	<7	340	1±1	<7	335	<1	<7
12/13/82	330	<1	<7	330	1±1	<7	330	2±1	<7
12/21/82	375	1±1	<7	375	2±1	<7	375	2±1	<7
12/28/82	(b)	<3	<2	325	<1	<7	325	<1	<7

(a) See Listing of Missed Samples page.

(b) Data in pCi/sample. Sample volume was not available.

12-8

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-10			A/S-11		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131
New stations effective this date:						
01/25/82	240	2±1	<7	280	2±1	<7
02/01/82	325	2±1	<7	335	3±1	<7
02/08/82	285	2±1	<7	285	2±1	<7
02/15/82	335	2±1	<7	(a)	-	-
02/22/82	330	1±1	<7	275	1±1	<7
03/01/82	330	1±1	<7	(a)	-	-
03/08/82	335	2±1	<7	(a)	-	-
03/15/82	280	2±1	<7	(a)	-	-
03/22/82	335	1±1	<7	(a)	-	-
03/29/82	330	1±1	<7	(a)	-	-
04/05/82	330	2±1	<7	(a)	-	-
04/12/82	335	1±1	<7	(a)	-	-
04/19/82	335	1±1	<7	(a)	-	-
04/26/82	330	1±1	<7	(a)	-	-
05/03/82	330	1±1	<7	(a)	-	-
05/10/82	335	2±1	<7	330	1±1	<7
05/17/82	335	3±1	<7	335	1±1	<7
05/24/82	335	3±1	<7	330	2±1	<7
06/01/82	385	1±1	<7	285	2±1	<7
06/07/82	280	2±1	<7	280	1±1	<7
06/14/82	330	2±1	<7	330	2±1	<7
06/21/82	335	1±1	<7	330	1±1	<7
06/28/82	330	2±1	<7	330	1±1	<7

(a) See Listing of Missed Samples page.

MISSISSIPPI POWER AND LIGHT

AIRBORNE I-131 AND GROSS BETA CONCENTRATIONS IN AIR PARTICULATE FILTERS

Collection Date	A/S-10			A/S-11		
	Volume (m ³)	10 ⁻² pCi/m ³		Volume (m ³)	10 ⁻² pCi/m ³	
		Gross β	I-131		Gross β	I-131
07/06/82	380	2±1	<7	385	2±1	<7
07/13/82	320	3±1	<7	335	2±1	<7
07/19/82	285	2±1	<7	285	2±1	<7
07/27/82	380	2±1	<7	380	3±1	<7
08/03/82	330	2±1	<7	330	1±1	<7
08/10/82	330	2±1	<7	335	2±1	<7
08/17/82	325	1±1	<7	325	1±1	<7
08/23/82	(a)			(a)		
08/31/82	380	2±1	<7	380	2±1	<7
09/07/82	335	2±1	<7	335	2±1	<7
09/13/82	330	3±1	<7	330	2±1	<7
09/20/82	235	2±1	<7	235	2±1	<7
09/22/82	425	1±1	<7	490	2±1	<7
09/29/82	330	2±1	<7	330	2±1	<7
10/06/82	335	<1	<7	330	3±1	<7
10/21/82 *	715	2±1	<7	820	2±1	<7
10/27/82	285	3±1	<7	280	1±1	<7
11/03/82	330	1±1	<7	335	1±1	<7
11/10/82	330	4±1	<7	330	3±1	<7
11/17/82	335	3±1	<7	335	2±1	<7
11/24/82	270	<1	<7	330	<1	47
12/01/82	330	2±1	<7	325	1±1	<7
12/08/82	320	1±1	<7	335	<1	<7
12/14/82	275	2±1	<7	275	2±1	<7
12/22/82	385	4±1	<7	390	2±1	±7
12/28/82	280	1±1		280	1±1	

(a) To be reported with following week.

* Represents collection between 10/06/82 and 10/21/82

MISSISSIPPI POWER AND LIGHT

RADIONUCLIDES IN AIR PARTICULATE SAMPLES
(Quarterly Analysis on Composite of Weekly Collections)

<u>Collection Site</u>	<u>pCi/m³ Gamma Emitters</u>	<u>Collection Site</u>	<u>pCi/m³ Gamma Emitters</u>
	<u>1st Quarter</u>		<u>2nd Quarter</u>
A/S- 1	<0.01		<0.01
- 2	<0.01		<0.01
- 3	<0.01		<0.01
- 4	<0.01		<0.01
- 5	<0.01		<0.01
- 6	<0.01		<0.01
- 7	<0.01		<0.01
- 8	<0.01		<0.01
- 9	<0.01(a)		<0.01
-10	<0.01		<0.01
-11	<0.01		<0.01
	<u>3rd Quarter</u>		<u>4th Quarter</u>
A/S- 1	<0.01		<0.01
- 2	<0.01		<0.01
- 3	<0.01		<0.01
- 4	<0.01		<0.01
- 5	<0.01		<0.01
- 6	<0.01		<0.01
- 7	<0.01		<0.01
- 8	<0.01		<0.01
- 9	<0.01		<0.01
- 10	<0.01		<0.01
- 11	<0.01		<0.01

(a) Ce-141 = 0.03±0.02

MISSISSIPPI POWER AND LIGHT

RADIOACTIVITY IN CISTERN WATER SAMPLES
(Monthly Collections)

Collection Period	Ark Cist 1N			Trim Cist 2N		
	Gross Beta	pCi/l I-131	Gamma Emitters	Gross Beta	pCi/l I-131	Gamma Emitters
01/06/82	3±1	<1	<15	<1	<1	<15
02/03/82	3±1	<1	<15	2±1	<1	<15
03/03/82	3±2	<1	<15	5±2	<1	<15
04/06-07/82	1±1	<1	<15	<1	<1	<15
05/05/82	3±1	<1	<15	2±1	<2.1(a)	<15
06/03/82	5±1	<1	<15	3±1	<1	<15
07/08-09/82	7±3	<1	<15	4±3	<1	<15
08/05/82	3±1	<1	<15	2±1	<1	<15
09/03/82	6±2	<1	<15	5±3	<1	<15
10/05/82	7±1	<1	<15	6±2	<1	<15
11/01/82	(b)	-	-	3±1	<1	<15
12/07/82	(b)	-	-	16±2(c)	<1	<15

TRITIUM CONCENTRATIONS IN CISTERN WATER SAMPLES
(Quarterly Collections)

Collection Period	pCi/l	
	Ark Cist 1N	Trim Cist 2N
1st Quarter	<330	<330
2nd Quarter	<330	<330
3rd Quarter	<330	<330
4th Quarter	(b)	<330

(a) Lower sensitivity due to low chemical yield.

(b) Sample collection at Ark Cist was discontinued after October, 1982. This location was replaced by well Cist.

(c) Trim cist GG collected 12/07/82 Gross beta = 4±1 pCi/l

MISSISSIPPI POWER AND LIGHT
 RADIOACTIVITY IN CISTERN WATER SAMPLES
 (Monthly Collections)

<u>Collection Period</u>	<u>Well Cist (a) pCi/l</u>		
	<u>Gross Beta</u>	<u>I-131</u>	<u>Gamma Emitters</u>
11/11/82	1±1	<1	<15
12/07/82 (b)	1±1	<1	<15

<u>Collection Period</u>	<u>TRITIUM IN CISTERN WATER</u>	<u>(Quarterly Collections)</u>
	<u>pCi/l</u>	
	<u>Well Cist (a)</u>	
4th Quarter, 82	<330	

(a) Sample collection started in November, 1982. Replacement for Ark Cist collection.
 (b) Well Cist collected 12/07/82 Gross beta = 2±1 pCi/l

MISSISSIPPI POWER AND LIGHT
 RADIONUCLIDES IN SURFACE WATER SAMPLES
 (Monthly Collections)

GAMMA EMITTERS

<u>Collection Period</u>	<u>pCi/l</u>			
	<u>MRUP</u>	<u>1N</u>	<u>MRDOWN</u>	<u>2N</u>
01/21/82	<15		<15	
02/25/82	<15		<15	
03/18/82	<15		<15	
04/15/82	<15		<15	
05/20/82	<15		<15	
06/17/82	<15		<15	
07/28/82	<15		<15	
08/19/82	<15		<15	
09/16/82	<15		<15	
10/21/82	<15		<15	
11/22/82	<15		<15	
12/07/82 *	<15		<15	

TRITIUM CONCENTRATIONS IN SURFACE WATER SAMPLES
 (Quarterly Composites)

TRITIUM

<u>Collection Period</u>	<u>pCi/l</u>			
	<u>MRUP</u>	<u>1N</u>	<u>MRDOWN</u>	<u>2N</u>
1st Quarter	<330		<330	
2nd Quarter	<330		<330	
3rd Quarter**	<330		<330	
4th Quarter	<330		140±130	

* 12/08/82 MR UP GG and MR Down GG, Gamma Emitter <15 pCi/l

** 3rd quarter barge slip tritium <330 pCi/l

MISSISSIPPI POWER AND LIGHT
 RADIONUCLIDES IN WELL WATER SAMPLES
 (Quarterly Collections)

Collection Period	pCi/l			
	TRIMWELL		PGWELL	
	<u>γ Emitters</u>	<u>Tritium</u>	<u>γ Emitters</u>	<u>Tritium</u>
1st Quarter	<15	<330	<15	<330
2nd Quarter	<15	<330	<15	<330
3rd Quarter	<15	<330	<15	<330
4th Quarter	<15	<330	<15	<330

	pCi/l			
	MPWell		LAKE BRUIN STATE PARK	
	<u>γ Emitters</u>	<u>Tritium</u>	<u>γ Emitters</u>	<u>Tritium</u>
1st Quarter	<15	<330	<15	<330
2nd Quarter	<15	<330	<15	<330
3rd Quarter	<15	<330	<15	<330
4th Quarter	<15	<690(a)	<15	<330

GAMMA EMITTERS in MIXING BASIN OUTFALL SAMPLES
 (Monthly Composites)

Composite Period	pCi/l	
	<u>γ Emitters</u>	<u>Cs-137</u>
June	<15	15±7
July	<15	<15
August	<15	<15
September	<15	<15
October	<15	<15
November	<15	<15

(a) Insufficient sample for more sensitive analysis.

MISSISSIPPI POWER AND LIGHT
 RADIOACTIVITY IN MILK SAMPLES
 (Monthly Collections)

<u>Collection Period</u>	<u>Collection Site</u>	<u>pCi/l</u>	
		<u>I-131</u>	<u>Gamma Emitters</u>
01/06/82	Alcont	<1	<15
02/03/82	Alcont	<1	<15
03/03/82	Alcont	<1	<15
04/08/82	Alcont	<1	<15
05/05/82	Alcont	<1	<15
06/02/82	Alcont	<1	<15
07/08/82	Alcont	<1	<15
08/05/82	Alcont	<1	<15
09/02/82	Alcont	<1	<15 *
09/03/82	Alcont	<1	<15
10/05/82	Alcont G G	<1	(a)
10/05/82	Alcont	<1	<15
11/02/82	Alcont	<1	<15
11/16/82	Alcont	<1	<15
12/08/82	Alcont	<1	<15 (c)
12/08/82	Alcont G G	<1	(a)
12/20/82	Alcont	<1	<15

<u>Collection Period</u>	<u>Collection Site</u>	<u>pCi/l</u>	
		<u>I-131</u>	<u>Gamma Emitters</u>
10/05/82	Jonsn Milk	<1	<15
10/08/82	HAZTTA	(b)	<15
11/02/82	Jonsn Milk	<1	<15
11/03/82	HAZTTA Milk	<1	<15
12/04/82	HAZTTA	<1	<15
12/09/82	Jonsn Milk	<1	<15
12/09/82	Jonsn G G	<1	(a)

* Cs-137 = 850±85 pCi/l.

(a) Samples for I-131 only. No gamma spectral analysis requested.

(b) Insufficient sample for I-131 analysis.

(c) Alcont GG 11/16/82 Collection Gamma Emitters <15 pCi/l

MISSISSIPPI POWER AND LIGHT
GAMMA EMITTERS IN SEDIMENT SAMPLES
(Semiannual Collection)

<u>Collection Site</u>	<u>Collection Date</u>	<u>pCi/g dry</u>	
		<u>Cs-137</u>	<u>Gamma Emitters</u>
Ham 01	05/18/82	0.25±0.04	<0.15
Bar 01	05/18/82	0.33±0.07	<0.15

MISSISSIPPI POWER AND LIGHT

GAMMA EMITTERS in FRUIT and VEGETABLE SAMPLES
(Collected at Harvest)

<u>Collection ID</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g wet Gamma Emitters</u>
GRLV-01	01/06/82	Mustard Greens & Turnip Roots	<0.08
GRLV-02	05/17/82	Greenleafy	<0.08
GRLV-03	06/09/82	Cabbage	<0.08
Fruit-01	06/09/82	Plums	<0.08
GRLV-04GG	09/03/82	Mustard Greens	<0.08
GRLV-04	09/03/82	Mustard Greens	<0.08
GRLV-GG	11/04/82	Mustard Greens	<0.08
GRLV	11/04/82	Mustard Greens	<0.08
Willis Farm	11/08/82	Mustard Greens	<0.08
Willis Farm	11/08/82	Turnip Greens	<0.08
Nelson Farms	11/08/82	Mustard Greens	<0.08
Nelson Farm	11/08/82	Turnip Greens	<0.08
GRLV-VEG	11/12/82	Oak Leaves	<0.08
GRLV-VEG	11/12/82	Honey Suckle Leaves	<0.08
BRLEAF-VEG	12/07/82	Mustard Greens	<0.08
BRLEAF-VEG	12/07/82	Honey Suckle Leaves	<0.08
BRLEAF-VEG	12/07/82	Oak Leaves	<0.08
BRLEAF-VEG	12/10/82	Mustard Greens	<0.08

MISSISSIPPI POWER AND LIGHT
 GAMMA EMITTERS IN FISH SAMPLES
 (Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Species</u>	<u>pCi/g (wet) Gamma Emitters</u>
01 Mississippi River	05/13/82	Catfish	<0.13
02 Mississippi River	05/13/82	Catfish	<0.13
Upstream Miss. Riv	11/12/82	Blue Catfish	<0.13
Down stream Miss. R.	11/12/82	Blue Catfish	<0.13

GAMMA EMITTERS IN MEAT SAMPLES
 (Semi-Annual Collections)

<u>Collection Site</u>	<u>Collection Date</u>	<u>Sample Type</u>	<u>pCi/g (wet)</u>	
			<u>Gamma Emitters</u>	<u>Fe-59 Zn-65</u>
West of Gin Lake	11/04/82	Deer Meat	<0.13	<0.13

MISSISSIPPI POWER AND LIGHT

LIST OF ADDITIONAL SAMPLES

<u>Sample Type</u>	<u>Location</u>	<u>Date Collected</u>	<u>Analysis</u>	<u>Data</u>
Cistern Water	Ark Cist GG	09/03/82	Gamma Emitters	<15 pCi/l
Cistern Water	Trim Cist GG	09/03/82	Gamma Emitters	<15 pCi/l

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1982

	<u>1st quarter</u>	<u>2nd quarter</u>	<u>3rd quarter</u>	<u>4th quarter</u>
Date Annealed:	12/15/81	03/16/82	06/15/82	09/14/82
Date Read:	04/23/82	07/28/82	10/22/82	01/18/83
<u>Location:</u>	<u>mR/Quarter</u>			
M-00	9.1±1.3	7.8±1.3	9.5±2.2	11.6±1.2
M-01	19.5±2.6	15.6±1.3	17.5±2.5	22.5±2.7
M-02	22.1±5.2	15.6±2.6	19.9±2.9	23.7±3.2
M-03	16.9±1.3	11.7±3.9	18.4±2.4	20.8±2.1
M-04	20.8±2.6	15.6±2.6	20.7±3.0	23.6±5.5
M-05	16.9±3.9	13.0±1.3	16.3±3.1	20.8±2.1
M-06	19.5±5.2	15.6±2.6	18.5±1.9	23.7±4.3
M-07	19.5±6.5	15.6±2.6	17.9±1.8	24.0±4.8
M-08	6.5±2.6	15.6±1.3	21.1±4.5	Missing
M-09	3.9±2.6	14.3±1.3	14.6±1.5	18.9±1.9
M-10	18.2±3.9	14.3±2.6	16.3±2.2	21.3±3.4
M-11	20.8±3.9	15.6±5.2	17.2±2.3	22.0±2.2
M-12	22.1±2.6	15.6±2.6	20.2±2.0	23.6±2.9
M-13	20.8±3.9	14.3±1.3	17.3±2.1	21.2±2.1
M-14	22.1±5.2	15.6±3.9	18.9±1.9	22.2±2.4
M-15	16.9±2.6	11.7±1.3	12.6±4.3	19.1±2.2 *
M-16	20.8±2.6	14.3±2.6	16.8±2.7	21.8±2.2
M-17	19.5±1.3	13.0±3.9	17.4±3.9	22.2±2.2
M-18	19.5±3.9	16.9±1.3	17.6±3.0	22.9±2.3
M-19	19.5±5.2	13.0±2.6	17.0±1.7	21.5±2.2
M-20	20.8±5.2	15.6±2.6	Missing	22.9±2.3
M-21	20.8±2.6	15.6±1.3	18.2±2.4	22.4±3.2
M-22	20.8±6.5	14.3±2.6	17.7±3.1	22.6±4.9
M-23	19.5±6.5	13.0±1.3	17.4±1.9	18.9±2.8
M-24	16.9±11.7	11.7±1.3	16.1±2.2	19.1±3.4 *
M-25	20.8±1.3	16.9±2.6	20.3±2.0	25.8±3.2 *
M-26	19.5±3.9	14.3±1.3	17.7±1.8	22.6±2.7 *
M-27	26.0±7.8	15.6±2.6	19.4±3.0	27.3±3.1 *
M-28	24.7±5.2	15.6±3.9	16.5±4.6	22.5±2.3
M-29	19.5±5.2	15.6±3.9	18.8±4.9	23.6±3.4
M-30	18.2±5.2	13.0±3.9	15.0±3.5	19.1±2.4

* Date annealed 09/14/82, Date Read 02/10/83

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1982

Date Annealed:	<u>1st quarter</u>	<u>2nd quarter</u>	<u>3rd quarter</u>	<u>4th quarter</u>
Date Read:	12/15/81	03/16/82	06/15/82	09/14/82
	04/23/82	07/29/82	10/22/82	01/18/83
<u>Location:</u>	<u>mR/Quarter</u>			
M-31	20.8±6.5	15.6±2.6	15.7±5.3	21.8±2.2
M-32	20.8±1.3	13.0±2.6	15.5±1.7	22.0±2.5
M-33	30.8±3.9	15.6±2.6	16.7±1.7	19.8±2.0
M-34	20.8±3.9	16.9±1.3	18.3±1.9	22.4±2.2
M-35	22.1±5.2	13.0±2.6	17.3±3.5	Missing
M-36	19.5±2.6	13.0±2.6	16.1±1.6	20.4±3.5
M-37	20.8±3.9	18.2±3.9	17.3±1.7	20.1±2.0
M-38	missing	14.3±1.3	16.8±2.4	20.0±2.0
M-39	20.8±5.2	13.0±2.6	15.2±1.9	20.2±2.0
M-40	15.6±2.6	11.7±1.3	16.1±2.1	Missing
M-41	16.9±7.8	10.4±1.3	16.1±2.6	18.6±3.5 *
M-42	15.6±3.9	11.7±1.3	14.0±1.9	18.7±2.6 *
M-43	18.2±3.9	15.6±2.6	16.8±2.7	20.9±2.1
M-44	14.3±2.6	9.1±2.6	14.4±1.4	18.0±2.2
M-45	16.9±2.6	13.0±1.3	16.6±3.1	19.4±3.7
M-46	16.9±3.9	13.0±1.3	16.4±2.8	20.5±2.6
M-47	16.9±2.6	13.0±3.9	16.5±2.1	19.7±2.0
M-48	15.6±2.6	14.3±1.3	16.6±1.7	18.9±1.9
M-49	19.5±3.9	14.3±2.6	16.7±3.0	20.1±2.0
M-50	19.5±3.9	13.0±1.3	17.1±2.0	19.9±2.0
M-51	18.2±2.6	13.0±1.3	17.0±2.9	19.6±3.0
M-52	18.2±3.9	13.0±3.9	18.9±2.2	22.4±2.2
M-53	15.6±2.6	13.0±2.6	15.6±3.1	18.1±2.4
M-54	16.9±2.6	14.3±2.6	16.3±1.6	19.2±1.9
M-55	16.9±6.5	15.6±2.6	17.9±1.8	22.0±2.6
M-56	19.5±5.2	13.0±1.3	16.8±2.0	21.5±2.3
M-57	18.2±3.9	missing	20.4±2.0	Missing
M-58	15.6±5.2	11.7±2.6	13.6±1.5	17.3±1.7
M-59	19.5±3.9	11.7±1.3	14.4±4.3	Missing
M-60	19.5±2.6	14.3±5.2	19.6±3.8	19.9±2.2

* Date annealed 09/14/82, Date read 02/10/83

MISSISSIPPI POWER AND LIGHT

GAMMA RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

Date Annealed: 4th Quarter
 09/14/82
 Date Read: 01/18/83

<u>Location:</u>	<u>mR/Quarter</u>
M-61	15.8±2.4
M-62	17.4±4.6
M-63	17.0±1.7
M-64	16.0±3.3
M-65	17.7±2.9
M-66	18.9±3.8
M-67	19.7±4.3
M-68	17.9±1.8
M-69	16.7±1.7
M-70	16.1±2.2
M-71	14.5±1.5
M-72	13.2±3.2
M-73	18.2±2.4
M-74	19.4±1.9
M-75	15.3±2.6
M-76	19.3±2.5
M-77	16.1±1.3
M-78	18.1±1.8
M-79	20.3±2.0
M-80	24.9±2.5
M-81	27.9±3.1
M-82	24.7±3.1
M-83	24.9±3.0
M-84	16.0±3.6

MISSISSIPPI POWER AND LIGHT

SPECIAL SAMPLES

<u>Sample Type</u>	<u>Collection Site</u>	<u>Collection Date</u>	<u>Analysis</u>	<u>Data</u>
Milk	AlcontGG	03/03/82	I-131	<1 pCi/l
Cistern Water	ArkCistGG	03/04/82	Gamma Isotopic	<15 pCi/l
	TrimCistGG	03/04/82	Gamma Isotopic	<15 pCi/l
Surface Water	MR Up GG	03/18/82	Gamma Isotopic	<15 pCi/l
	MR Down GG	03/18/82	Gamma Isotopic	<15 pCi/l
Milk	Alcont	06/02/82	I-131	<1 pCi/l
Cistern Water	ArkCistGG	06/03/82	Gamma Isotopic	<15 pCi/l
	TrimCistGG	06/03/82	Gamma Isotopic	<15 pCi/l
Plums	Fruit-01GG	06/09/82	Gamma Isotopic	<0.08pi/g

QUALITY CONTROL DATA

The quality control data obtained during the year 1982 are summarized in the following pages. Corrective actions are taken by the quality control supervisor whenever necessary.

1982 USEPA - EBERLINE INTERCOMPARISON PROGRAM

<u>Sample Type</u>	<u>Analysis</u>	<u>Value (EPA)</u>	<u>Value (EIC)</u>	<u>Units</u>
Air Filter	Alpha	25±11	27±2	pCi/Filter
Air Filter	Beta	52±8.7	58±2	pCi/Filter
Air Filter	Sr-90	16±2.6	24±3	pCi/Filter
Air Filter	Cs-137	19±8.7	32±7	pCi/Filter
Air Filter	Alpha	32±8	24±19	pCi/Sample
Air Filter	Beta	67±5	77±10	pCi/Sample
Air Filter	Sr-90	20±1.5	17±4	pCi/Sample
Air Filter	Cs-137	27±5	27±9	pCi/Sample
Food	Sr-89	38±5	15±4	pCi/kg
Food	Sr-90	23±1.5	21±2	pCi/kg
Food	Co-60	30±5	46±16	pCi/kg
Food	Cs-137	33±5	54±14	pCi/kg
Food	K	2730±137	2870±290	pCi/kg
Food	Ba-140	0	<114	pCi/kg
Water	Alpha	21±9.1	20±3	pCi/l
Water	Beta	23±8.7	15±2	pCi/l
Water	Alpha	24±10	22±2	pCi/l
Water	Beta	32±8.7	30±2	pCi/l
Water	Cr-51	34±8.7	44±25	pCi/l
Water	Co-60	22±8.7	24±3	pCi/l
Water	Zn-65	24±8.7	23±4	pCi/l
Water	Ru-106	0	<26	pCi/l
Water	Cs-134	21±8.7	20±2	pCi/l
Water	Cs-137	32±8.7	36±3	pCi/l
Water	Alpha	80±35	73±7	pCi/l
Water	Beta	111±8.7	107±6	pCi/l
Water	Co-60	0	<1	pCi/l
Water	Sr-89	21±8.7	25±4	pCi/l
Water	Sr-90	14.4±2.6	16±2	pCi/l
Water	Cs-134	12±8.7	10±2	pCi/l
Water	Cs-137	15±8.7	15±2	pCi/l
Water	Ra-226	12.7±3.3	11.7±3.5	pCi/l
Water	Ra-228	9.2±2.4	12.9±1.6	pCi/l
Water	Gross U	15±10	15±1	pCi/l
Water	Cr-51	0	<58	pCi/l
Water	Co-60	20±9	20±3	pCi/l
Water	Zn-65	15±9	16±4	pCi/l
Water	Ru-106	20±9	<25	pCi/l
Water	Cs-134	22±9	22±2	pCi/l
Water	Cs-137	23±9	27±2	pCi/l
Water	I-131	8.4±1.5	<75	pCi/l
Water	Uranium	35±6	26±6	pCi/l
Water	H-3	1820±590	1990±690	pCi/l
Water	Ra-226	10±2	11±3	pCi/l
Water	Ra-228	9±1	13±2	pCi/l

<u>Sample Type</u>	<u>Analysis</u>	<u>Value (EPA)</u>	<u>Value (EIC)</u>	<u>Units</u>
Water	Pu-239	6.7±1.2	5.8±0.2	pCi/l
Water	Sr-89	21±8.7	17±4	pCi/l
Water	Sr-90	12±2.6	10±2	pCi/l
Water	H-3	2860±620	1890±600	pCi/l
Water	ALpha	16±5	16±3	pCi/l
Water	Beta	23±5	16±7	pCi/l
Water	H-3	1830±340	1760±510	pCi/l
Water	H-3	2890±380	2830±820	pCi/l
Water	Ra-226	13.4±2.0	13.6±4.0	pCi/l
Water	Ra-228	8.7±1.3	9.4±3.6	pCi/l
Water	I-131	4.4±0.7	5.5±1.8	pCi/l
Water	I-131	87±8.7	67±14	pCi/l
Water	Cr-51	23±5	<59	pCi/l
Water	Co-60	29±5	31±3	pCi/l
Water	Zn-65	26±5	29±10	pCi/l
Water	Ru-106	0	<25	pCi/l
Water	Cs-134	35±5	36±3	pCi/l
Water	Cs-137	25±5	28±3	pCi/l
Water	Ra-226	10.5±1.6	8.4±2.5	pCi/l
Water	Ra-228	11.0±1.7	17.7±14.7	pCi/l
Water	Uranium	30±6	24±4	pCi/l
Water	Pu-239	6.9±0.7	7.2±0.4	pCi/l
Water	Alpha	19±8.7	8±4	pCi/l
Water	Beta	24±8.7	24±5	pCi/l
Water	Alpha	55±24	27±13	pCi/l
Water	Beta	81±8.7	64±6	pCi/l
Water	Cs-134	1.8±8.7	<10	pCi/l
Water	Cs-137	20±8.7	16±7	pCi/l
Water	Ra-226	12.5±3.2	11.8±3.5	pCi/l
Water	Ra-228	3.6±0.9	3.4±1.9	pCi/l
Water	Gross Uranium	16±10	9±1	pCi/l
Milk	Sr-89	25±5	12±7	pCi/l
Milk	Sr-90	16±1.5	13±3	pCi/l
Milk	Co-60	30±5	51±9	pCi/l
Milk	Cs-137	28±5	39±19	pCi/l
Milk	Ba-140	0	<489	pCi/l
Milk	K	1500±75	1310±120	mg/l
Milk	I-131	5.4±0.8	6.7±3.1	pCi/l

USDOE QUALITY ASSESSMENT PROGRAM

1982

<u>Sample Type</u>	<u>Nuclide</u>	<u>Known</u>	<u>Measured $\pm 2\sigma$ error</u>	<u>Units</u>
Air (81-10)	Co-57	0.243 E+03	0.164 \pm 0.017 E+03	pCi/filter
Air (81-10)	Co-58	0.327 E+02	0.131 \pm 0.020 E+02	pCi/filter
Air (81-10)	Co-60	0.378 E+03	0.348 \pm 0.039 E+3	pCi/filter
Air (81-10)	Sr-90	0.990 E+01	0.910 \pm 0.600 E+01	pCi/filter
Air (81-10)	Sb-125	0.104 E+04	0.585 \pm 0.062 E+03	pCi/filter
Air (81-10)	Cs-137	0.175 E+03	0.124 \pm 0.013 E+03	pCi/filter
Soil (81-10)	K-40	0.200 E+02	0.260 \pm 0.030 E+02	pCi/g
Soil (81-10)	Cs-137	0.419 E+01	0.390 \pm 0.040 E+01	pCi/g
Water (81-10)	H-3	0.156 E+02	0.153 \pm 0.020 E+02	pCi/ml
Water (81-10)	Cr-51	0.692 E+01	0.730 \pm 0.100 E+01	pCi/ml
Water (81-10)	Mn-54	0.135 E+01	0.120 \pm 0.012 E+01	pCi/ml
Water (81-10)	Fe-59	0.181 E+01	0.140 \pm 0.014 E+01	pCi/ml
Water (81-10)	Sr-90	0.110 E+00	0.129 \pm 0.021 E+00	pCi/ml
Water (81-10)	Ce-144	0.113 E+02	0.227 \pm 0.030 E+02	pCi/ml
Vegetation (81-10)	K-40	0.296 E+02	0.455 \pm 0.050 E+02	pCi/g
Vegetation (81-10)	Sr-90	0.1333 E+02	0.137 \pm 0.014 E+02	pCi/g
Vegetation (81-10)	Cs-137	0.380 E+00	0.293 \pm 0.029 E+00	pCi/g
Vegetation (81-10)	U	0.430 E-01	0.450 \pm 0.130 E-01	ug/g

This program was discontinued by USDOE.

1982 Quality Control Analyses Summary

The tables below summarize results of samples run for process quality control purposes during the subject year. These listings are in addition to such measurements as detector backgrounds, check source values, radiometric-gravimetric comparisons, system calibrations etc. Detailed listings of each measurement are maintained at the laboratory and are available for inspection if required.

Blank Samples

<u>Nuclide Analyzed</u>	<u>Number of Determinations</u>	<u>Number of Analyses Exceeding the LLD for that Analysis</u>
Gross Alpha	47	0
Gross Beta	37	0
Tritium	75	0
Sr-89-90	26	0
I-131	*	0
Am-241	12	0
Pb-210	27	0
Po-210	2	0
Pu-239	37	0
Ra-226	44	0
Fe-55	3	0
Isotopic Uranium	38	0
Isotopic Thorium	17	0

* Blank I-131 analyses are performed with each batch of samples processed. All blank data were below the detection limit.

Spiked Samples

<u>Nuclide Analyzed</u>	<u>Number of Det'ns</u>	<u>Within 2σ of known</u>	<u>Within 3σ of known</u>	<u>Differing from known by > 3σ</u>
Gross Alpha	47	47	-	-
Gross Beta	37	37	-	-
Tritium	75	75	-	-
Sr-89-90	26	26	-	-
Am-261	12	12	-	-
Pb-210	27	27	-	-
Po-210	2	2	-	-
Pu-239	37	37	-	-
Ra-226	44	44	-	-
Fe-55	3	3	-	-
Isotopic Uranium	38	38	-	-
Isotopic Thorium	17	17	-	-

Split Samples

<u>Nuclide Analyzed</u>	<u>Number of Det'ns</u>	<u>No. Agreeing Within 2σ</u>	<u>No. Agreeing Within 3σ</u>	<u>No. Differing by > 3σ</u>
Gross Alpha	17	17	-	-
Gross Beta	20	20	-	-
Tritium	20	20	-	-
Sr-89-90	7	7	-	-
I-131	2	2	-	-
Gamma Emitters	14	14	-	-
Pb-210	4	4	-	-
Po-210	2	2	-	-
Pu-239	3	3	-	-
Am-241	2	2	-	-
Isotopic Thorium	3	3	-	-
Isotopic Uranium	16	16	-	-
Ra-226	13	13	-	-

TLD Intercomparison Badges
Irradiated by Battelle Northwest Labs

1982

Badge	Total mR less transportation control							
	1st Qtr		2nd Qtr		3rd Qtr		4th Qtr	
	Known	Measured	Known	Measured	Known	Measured	Known	Measured
A	22	19.9±7.5	11	9.0±3.3				
B	30	26.5±4.2	11	11.5±3.8				
C	43	39.2±9.4	27	24.7±3.2				
D	62	59.5±9.3	27	25.3±3.8				
E	75	72.6±4.4	42	40.7±4.8				
F	75	70.0±9.5	42	42.6±5.0				
G	80	81.1±18.2	73	69±8				
H	80	77.0±13.1	73	72±8				
J	100	94.5±13.1	89	80±9				
K	100	115.8±10.4	89	80±9				



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

April 29, 1983

JAMES P. McGAUGHY, JR.
VICE PRESIDENT

Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W., Suite 2900
Atlanta, Georgia 30303

Attention: Mr. J. P. O'Reilly, Regional Administrator

Dear Mr. O'Reilly:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-13
File: 0292/15322
Annual Radiological Environmental
Operating Report for 1982
AECM-83/0241

In accordance with Grand Gulf Nuclear Station's (GGNS) Unit 1 Technical Specifications, we are enclosing one copy of the Annual Radiological Environmental Operating Report for the period June 16, 1982, through December 31, 1982. This reporting period began the day we received the Low-Power Operating License for GGNS Unit 1, June 16, 1982.

Questions concerning the technical content of this report should be referred to Dr. L. R. McKay at (601) 969-2432.

Yours truly,

J.P. McGaughy
for J.P. McGaughy

JPM:swb
Attachments

cc: Mr. J. B. Richard (w/a)
Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
Mr. G. B. Taylor (w/o)

Mr. Richard C. DeYoung, Director (w/a)
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File (Plant) (w/a)
File (Project) [190] (w/a)