

GOS

ENVIRONMENTAL SAMPLING AND ANALYSIS PROGRAM

for

GRAND GULF NUCLEAR STATION
Mississippi Power and Light

This report contains complete data for the period
January 1980 - December 1980

EBERLINE INSTRUMENT CORPORATION

Midwest Facility

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THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

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 ⁻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
01/07/80	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.

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.

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
01/07/80	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	

(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 ⁻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	280	2 $\pm$ 1	(a)	215	2 $\pm$ 1	(a)	285	2 $\pm$ 1	(a)
07/14/80	285	2 $\pm$ 1		(b)			290	2 $\pm$ 1	
07/21/80	285	2 $\pm$ 1		(b)			285	2 $\pm$ 1	
07/28/80	290	1 $\pm$ 1		(b)			290	1 $\pm$ 1	
08/04/80	285	2 $\pm$ 1		285	2 $\pm$ 1		285	2 $\pm$ 1	
08/11/80	285	1 $\pm$ 1		(b)			280	1 $\pm$ 1	
08/18/80	290	1 $\pm$ 1		205	2 $\pm$ 1		290	1 $\pm$ 1	
08/25/80	285	2 $\pm$ 1		285	2 $\pm$ 1		285	1 $\pm$ 1	
09/02/80	375	1 $\pm$ 1		375	1 $\pm$ 1		370	1 $\pm$ 1	
09/09/80	285	1 $\pm$ 1		285	1 $\pm$ 1		290	1 $\pm$ 1	
09/15/80	285	2 $\pm$ 1		285	3 $\pm$ 1		285	2 $\pm$ 1	
09/22/80	285	1 $\pm$ 1		285	2 $\pm$ 1		285	1 $\pm$ 1	
09/29/80	285	1 $\pm$ 1		285	3 $\pm$ 1		285	1 $\pm$ 1	
10/06/80	295	1 $\pm$ 1		295	1 $\pm$ 1		295	<1	
10/13/80	275	2 $\pm$ 1		275	2 $\pm$ 1		275	1 $\pm$ 1	
10/20/80	285	1 $\pm$ 1		285	1 $\pm$ 1		285	1 $\pm$ 1	
10/27/80	285	2 $\pm$ 1		285	2 $\pm$ 1		285	3 $\pm$ 1	
11/03/80	285	3 $\pm$ 1		285	3 $\pm$ 1		235	1 $\pm$ 1	
11/10/80	290	5 $\pm$ 1		290	6 $\pm$ 1		290	6 $\pm$ 1	
11/17/80	280	5 $\pm$ 1		280	5 $\pm$ 1		280	4 $\pm$ 1	
11/24/80	285	3 $\pm$ 1		285	4 $\pm$ 1		285	4 $\pm$ 1	
12/01/80	290	3 $\pm$ 1		290	4 $\pm$ 1		290	3 $\pm$ 1	
12/08/80	280	8 $\pm$ 1		280	8 $\pm$ 1		280	5 $\pm$ 1	
12/15/80	285	7 $\pm$ 1		285	9 $\pm$ 1		285	7 $\pm$ 1	
12/22/80	285	9 $\pm$ 2		285	8 $\pm$ 2		285	7 $\pm$ 2	
12/29/80	285	6 $\pm$ 1		285	6 $\pm$ 1		285	7 $\pm$ 1	

(a) Scheduled to resume collection in March 1981.

(b) 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-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
01/07/80	330	2 $\pm$ 1	(a)	330	2 $\pm$ 1	(a)	330	1 $\pm$ 1	(a)
01/14/80	315	3 $\pm$ 1		340	4 $\pm$ 1		335	2 $\pm$ 1	
01/21/80	330	2 $\pm$ 1		335	1 $\pm$ 1		340	1 $\pm$ 1	
01/26/80	190	<1		320	1 $\pm$ 1		330	1 $\pm$ 1	
02/04/80	320	1 $\pm$ 1		320	2 $\pm$ 1		320	1 $\pm$ 1	
02/11/80	380	1 $\pm$ 1		335	2 $\pm$ 1		295	2 $\pm$ 1	
02/18/80	335	1 $\pm$ 1		330	1 $\pm$ 1		355	1 $\pm$ 1	
02/25/80	90(b)	3 $\pm$ 1		285	3 $\pm$ 1		290	3 $\pm$ 1	
03/03/80	285	1 $\pm$ 1		285	1 $\pm$ 1		285	<5	
03/10/80	280	1 $\pm$ 1		325	1 $\pm$ 1		300	2 $\pm$ 1	
03/17/80	340	2 $\pm$ 1		340	2 $\pm$ 1		(c)		
03/24/80	280	1 $\pm$ 1		285	2 $\pm$ 1		240	1 $\pm$ 1	
03/31/80	330	1 $\pm$ 1		325	1 $\pm$ 1		330	1 $\pm$ 1	
04/07/80	290	1 $\pm$ 1		340	<1		340	2 $\pm$ 1	
04/14/80	335	<1		330	1 $\pm$ 1		335	1 $\pm$ 1	
04/21/80	285	1 $\pm$ 1		285	2 $\pm$ 1		270	2 $\pm$ 1	
04/28/80	385	<1		275	2 $\pm$ 1		385	1 $\pm$ 1	
05/05/80	290	1 $\pm$ 1		285	3 $\pm$ 1		285	2 $\pm$ 1	
05/12/80	285	1 $\pm$ 1		285	2 $\pm$ 1		285	3 $\pm$ 1	
05/19/80	285	<1		265	2 $\pm$ 1		(c)		
05/27/80	325	1 $\pm$ 1		(c)			(c)		
06/02/80	250	<1		(c)			170	1 $\pm$ 1	
06/09/80	290	2 $\pm$ 1		(c)			290	2 $\pm$ 1	
06/16/80	285	2 $\pm$ 1		170	3 $\pm$ 1		285	2 $\pm$ 1	
06/23/80	285	<1		285	1 $\pm$ 1		285	2 $\pm$ 1	
06/30/80	280	1 $\pm$ 1		285	2 $\pm$ 1		280	2 $\pm$ 1	

(c) See Listing of Missed Samples page.

(b) Blown fuse.

(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-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
		(b)	(a)			(a)			(a)
07/07/80				280	2±1		285	2±1	
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					285	1±1	
10/06/80	275	1±1		120	2±1		295	1±1	
10/13/80	275	1±1		295	<1		275	1±1	
10/20/80	285	1±1		275	1±1		275	1±1	
10/27/80	285	2±1		285	1±1		285	1±1	
11/03/80	285	3±1		285	2±1		285	2±1	
11/10/80	285	5±1		285	3±1		285	2±1	
11/17/80	285	<1		285	5±1		285	5±1	
11/24/80	285	69±3(c)		280	7±1		285	4±1	
12/01/80	290	3±1		285	5±1		285	4±1	
12/08/80	280	6±1		290	6±1		290	4±1	
12/15/80	285	6±1		280	9±1		280	7±1	
12/22/80	285	7±2		285	8±1		285	7±1	
12/29/80	285	7±1		275	8±2		285	9±2	
				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 γ Emitters	Tritium	PGWELL γ Emitters	Tritium	MPWELL γ Emitters	Tritium
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

<u>Collection Period</u>	<u>pCi/l</u>	
	<u>MRUP</u> <u>1N</u>	<u>MRDOWN</u> <u>2N</u>
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)

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	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 pCi/l			Trim Cist 2N pCi/l		
	Gross Beta	I-131	Gamma Emitters	Gross Beta	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 RADIATION

AVERAGE mR/QTR. USING THERMOLUMINESCENT DOSIMETERS

1980

	<u>1st quarter</u>	<u>2nd quarter</u>	<u>3rd quarter</u>	<u>4th quarter</u>
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
<u>Location:</u>	<u>mR/Quarter</u>			
M-00	6.5±1.3	9.1±1.3	10.4±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	18.2±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.

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

SPECIAL SAMPLES

Sample Type	Collection Site	Collection Date	Analysis	Data
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 "
	Arkdist 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	Arkdist 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
	Arkdist 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
Beef 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	Arkdist 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

Sample Type	Analysis	Agency Value	Control Limits (3 σ , n=1)	MWF Measured $\pm 2\sigma$ error	Units
Water	I-131	53	15	49 $\pm$ 5	pCi/l
Air Filter	Gross α	10	15	11 $\pm$ 1	pCi/filter
Air Filter	Gross β	31	15	34 $\pm$ 3	pCi/filter
Air Filter	Sr-90	10	5	6 $\pm$ 1	pCi/filter
Air Filter	Cs-137	12	15	16 $\pm$ 4	pCi/filter
Water	Gross α	21	15	26 $\pm$ 3	pCi/l
Water	Gross β	49	15	50 $\pm$ 5	pCi/l
Water	Sr-90	7	5	8 $\pm$ 1	pCi/l
Water	Co-60	33	15	37 $\pm$ 4	pCi/l
Water	Cs-134	56	15	58 $\pm$ 6	pCi/l
Water	Cs-137	0	0	<5	pCi/l
Water	Gross α	12	15	13 $\pm$ 1	pCi/l
Water	Gross β	27	15	29 $\pm$ 3	pCi/l
Air Filter	Gross α	24	6	29 $\pm$ 3	pCi/filter
Air Filter	Gross β	28	5	41 $\pm$ 4	pCi/filter
Air Filter	Sr-90	8	2	9 $\pm$ 1	pCi/filter
Air Filter	Cs-137	12	5	14 $\pm$ 2	pCi/filter
Water	H-3	2040	1040	2260 $\pm$ 230	pCi/l
Air Filter	Gross α	10	5	11 $\pm$ 1	pCi/filter
Air Filter	Gross β	29	5	33 $\pm$ 3	pCi/filter
Air Filter	Sr-90	9	1.5	10 $\pm$ 1	pCi/filter
Air Filter	Cs-137	10	5	12 $\pm$ 1	pCi/filter
Water	Gross α	30	8	30 $\pm$ 3	pCi/l
Water	Gross β	45	5	45 $\pm$ 5	pCi/l
Water	Sr-89	10	5	LT 5	pCi/l
Water	Sr-90	20	1.5	20 $\pm$ 2	pCi/l
Water	H-3	1750	341	1600 $\pm$ 160	pCi/l
Milk	Sr-89	10	5	LT 5	pCi/l
Milk	Sr-90	25	1.5	18 $\pm$ 3	pCi/l
Milk	I-131	0.01	0.1	LT 5	pCi/l
Milk	Cs-137	40	5	43 $\pm$ 4	pCi/l
Milk	Ba-140	0.01	0.1	LT 10	pCi/l
Milk	K	1600	80	2000 $\pm$ 200	pCi/l
Water	Gross α	13	5	14 $\pm$ 1	pCi/l
Water	Gross β	22	5	23 $\pm$ 2	pCi/l
Air Filter	Gross α	15	5	18 $\pm$ 2	pCi/filter
Air Filter	Gross β	41	5	50 $\pm$ 5	pCi/filter
Air Filter	Sr-90	10	1.5	10 $\pm$ 1	pCi/filter
Air Filter	Cs-137	20	5	23 $\pm$ 2	pCi/filter
Water	I-131	44	5	35 $\pm$ 4	pCi/l
Water	H-3	3400	360	3030 $\pm$ 300	pCi/l
Water	Sr-89	5	5	LT 2	pCi/l
Water	Sr-90	12	1.5	12 $\pm$ 1	pCi/l
Water	H-3	2000	345	2300 $\pm$ 200	pCi/l
Water	Gross α	36	9	34 $\pm$ 3	pCi/l
Water	Gross β	38	5	42 $\pm$ 4	pCi/l
Water	H-3	1210	329	1100 $\pm$ 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	72.8±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)	Sh-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±0.013 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	0.374 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

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