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HEALTH

Division Of
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April 16, 1996

U.S. Nuclear Regulatory Commission
Public Document Room
Washington, D.C. 20555

Dear Sir:

Enclosed is Mississippi's 1995 Calendar Year report of environmental activities at the Grand Gulf Nuclear Station. These activities were conducted by the Division of Radiological Health, Mississippi State Department of Health, in accordance with Cooperative Agreement No. NRC-29-83-621.

The original is being sent to you and copies are being provided to the Division of Contracts and Property Management and the Office of Nuclear Reactor Regulations. Should you have any questions or comments regarding this report, please direct them to Bob Bell at (601) 354-6657.

Sincerely,

Bob Maff
for

Eddie S. Fuente, Director
Division of Radiological Health


ESF/dd
Enclosure


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REPORT TO THE NUCLEAR REGULATORY COMMISSION
ENVIRONMENTAL MONITORING AT GRAND GULF NUCLEAR STATION
CALENDAR YEAR 1995
NRC CONTRACT NUMBER NRC-29-83-621

ENVIRONMENTAL MONITORING AND EMERGENCY RESPONSE BRANCH
DIVISION OF RADIOLOGICAL HEALTH
MISSISSIPPI STATE DEPARTMENT OF HEALTH


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Abstract:

Under contract to the U.S. Nuclear Regulatory Commission (NRC), the Mississippi State Department of Health (MSDH), Division of Radiological Health (DRH) provides environmental radiological data to the NRC pertaining to the Grand Gulf Nuclear Station (GGNS), Claiborne County, Mississippi.

Detailed in this report are results for Calendar Year 1995 which represent the fifteenth year of this contract with the State of Mississippi.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

TABLE OF CONTENTS

	PAGE
I. AIR SAMPLING STATION DATA	
A. MSDH "Arnold Acres" & GGNS "Training Center"	
1. Particulate Gross Beta	2
2. Radioiodine	6
3. Quarterly Composite (Gamma Isotopic)	10
B. MSDH "Rad Health Bldg" & GGNS "Vicksburg"	
1. Particulate Gross Beta Control	11
2. Radioiodine Control	15
3. Quarterly Composite (Gamma Isotopic) Control	19
II. MISSISSIPPI RIVER WATER DATA	
A. Gamma Isotopic Analysis	20
B. Tritium	21
III. MISSISSIPPI RIVER SHORELINE SEDIMENT	
Gamma Isotopic Analysis	23
IV. ALCORN DAIRY MILK DATA	
A. Gamma Isotopic Analysis	24
B. Radioiodine	25
V. FISH "EDIBLE PORTIONS" DATA	
Gamma Isotopic Analysis	26
VI. VEGETABLE PRODUCTS DATA	
Gamma Isotopic Analysis	27
VII. LOWER LIMITS OF DETECTION	
A. MSDH	28
B. Licensee	29
VIII. EPA CROSS-CHECK RESULTS-1995	30

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta

These results are for particulate air samples duplicated by the MSDH and the Licensee which were analyzed for Gross Beta. The Licensee's sampler is located at the Old Training Center (TC) 0.3 miles south of the GGNS and designated as AS-5 (Indicator). The MSDH's comparable sampler is located at Arnold Acres (AA) 0.4 miles south of the GGNS. Specific lower limit of detection (LLD) requirements are listed on pages 28 (MSDH) and 29 (Licensee) for all categories.

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	12/28-01/03		<0.027 ^A
AA	12/28-01/03	0.046	
TC	01/03-01/10		0.023
AA	01/03-01/10	0.046	
TC	01/10-01/17		0.014
AA	01/10-01/17	0.027	
TC	01/17-01/24		<0.017 ^B
AA	01/17-01/24	0.034	
TC	01/24-01/31		0.010
AA	01/24-01/31	0.038	
TC	01/31-02/07		0.014
AA	01/31-02/07	0.047	
TC	02/07-02/14		0.013
AA	02/07-02/14	0.031	
TC	02/14-02/21		0.012
AA	02/14-02/21	0.028	
TC	02/21-02/28		0.010
AA	02/21-02/28	0.017	
TC	02/28-03/07		0.012 ^C
AA	02/28-03/07	0.004	
TC	03/07-03/14		0.020 ^D
AA	03/07-03/14	0.018	
TC	03/14-03/21		<0.080 ^E
AA	03/14-03/21	0.023	
TC	03/21-03/28		0.018 ^F
AA	03/21-03/28	0.035	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	03/28-04/04		0.016
AA	03/28-04/04	0.055	
TC	04/04-04/11		0.012
AA	04/04-04/11	0.019	
TC	04/11-04/18		0.011
AA	04/11-04/18	0.030	
TC	04/18-04/25		<0.010 ^G
AA	04/18-04/25	0.029	
TC	04/25-05/02		0.015
AA	04/25-05/02	0.037	
TC	05/02-05/09		0.011 ^H
AA	05/02-05/09	0.019	
TC	05/09-05/16		0.012
AA	05/09-05/16	0.027	
TC	05/16-05/23		0.014 ^I
AA	05/16-05/23	0.083	
TC	05/23-05/30		0.016 ^J
AA	05/23-05/30	0.035	
TC	05/30-06/06		0.012
AA	05/30-06/06	0.068	
TC	06/06-06/13		0.012
AA	06/06-06/13	0.056	
TC	06/13-06/20		0.017
AA	06/13-06/20	0.094	
TC	06/20-06/27		0.019
AA	06/20-06/27	0.092	
TC	06/27-07/05		0.013
AA	06/27-07/05	0.032	
TC	07/05-07/11		0.017
AA	07/05-07/11	0.093	
TC	07/11-07/18		0.017
AA	07/11-07/18	0.083	
TC	07/18-07/25		0.014
AA	07/18-07/25	0.063	
TC	07/25-08/01		0.011
AA	07/25-08/01	0.023	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	08/01-08/08		0.010
AA	08/01-08/08	0.054	
TC	08/08-08/15		0.016
AA	08/08-08/15	0.066	
TC	08/15-08/22		0.018
AA	08/15-08/22	0.018	
TC	08/22-08/29		0.024
AA	08/22-08/29	0.097	
TC	08/29-09/06		0.026
AA	08/29-09/06	0.091	
TC	09/06-09/12		0.032
AA	09/06-09/12	0.124	
TC	09/12-09/19		0.021
AA	09/12-09/19	0.023	
TC	09/19-09/26		0.022
AA	09/19-09/26	0.026	
TC	09/26-10/03		0.028 ^k
AA	09/26-10/03	0.029	
TC	10/03-10/10		0.013
AA	10/03-10/10	0.050	
TC	10/10-10/17		0.021
AA	10/10-10/17	0.081	
TC	10/17-10/24		0.017 ^l
AA	10/17-10/24	0.057	
TC	10/24-10/31		0.017
AA	10/24-10/31	0.034	
TC	10/31-11/07		0.014
AA	10/31-11/07	0.018	
TC	11/07-11/14		0.013
AA	11/07-11/14	0.040	
TC	11/14-11/21		0.026
AA	11/14-11/21	0.095	
TC	11/21-11/28		0.018
AA	11/21-11/28	0.058	
TC	11/28-12/05		0.020
AA	11/28-12/05	0.051	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	12/05-12/12		0.033
AA	12/05-12/12	0.054	
TC	12/12-12/19		0.012
AA	12/12-12/19	0.015	
TC	12/19-12/27		0.026
AA	12/19-12/27	0.037	

- A Mechanical failure at 16.25 hours run time.
- B Mechanical failure at 30.8 hours run time.
- C Blown fuse at 163.53 hours run time.
- D Breaker tripped at 134.22 hours run time.
- E Breaker tripped at 5.92 hours run time.
- F Breaker tripped at 121.92 hours run time.
- G Breaker tripped at 53.8 hours run time.
- H Breaker tripped at 25.21 hours run time.
- I Inclement weather tripped at 75.15 hours run time.
- J No flow at time of collection.
- K Mechanical failure at 61.75 hours run time.
- L Mechanical failure at 112.38 hours run time.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine

These results are for charcoal canister air samples duplicated by the MSDH and the Licensee which were analyzed for radioiodine. The Licensee's sampler is located at the Old Training Center (TC) 0.3 miles south of the GGNS and designated as AS-5 (Indicator). The MSDH's comparable sampler is located at Arnold Acres (AA) 0.4 miles south of the GGNS.

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	12/28-01/03		<0.020 ^A
AA	12/28-01/03	<0.07	
TC	01/03-01/10		<0.018
AA	01/03-01/10	<0.07	
TC	01/10-01/17		<0.015
AA	01/10-01/17	<0.07	
TC	01/17-01/24		<0.014 ^B
AA	01/17-01/24	<0.07	
TC	01/24-01/31		<0.013
AA	01/24-01/31	<0.07	
TC	01/31-02/07		<0.011
AA	01/31-02/07	<0.07	
TC	02/07-02/14		<0.014
AA	02/07-02/14	<0.07	
TC	02/14-02/21		<0.011
AA	02/14-02/21	<0.07	
TC	02/21-02/28		<0.016
AA	02/21-02/28	<0.07	
TC	02/28-03/07		<0.027 ^C
AA	02/28-03/07	<0.07	
TC	03/07-03/14		<0.017 ^D
AA	03/07-03/14	<0.07	
TC	03/14-03/21		<0.015 ^E
AA	03/14-03/21	<0.07	
TC	03/21-03/28		<0.019 ^F
AA	03/21-03/28	<0.07	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	03/28-04/04		<0.017
AA	03/28-04/04	<0.07	
TC	04/04-04/11		<0.021
AA	04/04-04/11	<0.07	
TC	04/11-04/18		<0.019
AA	04/11-04/18	<0.07	
TC	04/18-04/25		<0.049 ^G
AA	04/18-04/25	<0.07	
TC	04/25-05/02		<0.017
AA	04/25-05/02	<0.07	
TC	05/02-05/09		<0.046 ^H
AA	05/02-05/09	<0.07	
TC	05/09-05/16		<0.012
AA	05/09-05/16	<0.07	
TC	05/16-05/23		<0.042 ^I
AA	05/16-05/23	<0.07	
TC	05/23-05/30		<0.025 ^J
AA	05/23-05/30	<0.07	
TC	05/30-06/06		<0.023
AA	05/30-06/06	<0.07	
TC	06/06-06/13		<0.016
AA	06/06-06/13	<0.07	
TC	06/13-06/20		<0.018
AA	06/13-06/20	<0.07	
TC	06/20-06/27		<0.011
AA	06/20-06/27	<0.07	
TC	06/27-07/05		<0.022
AA	06/27-07/05	<0.07	
TC	07/05-07/11		<0.024
AA	07/05-07/11	<0.07	
TC	07/11-07/18		<0.013
AA	07/11-07/18	<0.07	
TC	07/18-07/25		<0.027
AA	07/18-07/25	<0.07	
TC	07/25-08/01		<0.019
AA	07/25-08/01	<0.07	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	08/01-08/08		<0.010
AA	08/01-08/08	<0.07	
TC	08/08-08/15		<0.029
AA	08/08-08/15	<0.07	
TC	08/15-08/22		<0.026
AA	08/15-08/22	<0.07	
TC	08/22-08/29		<0.018
AA	08/22-08/29	<0.07	
TC	08/29-09/06		<0.015
AA	08/29-09/06	<0.07	
TC	09/06-09/12		<0.035
AA	09/06-09/12	<0.07	
TC	09/12-09/19		<0.019
AA	09/12-09/19	<0.07	
TC	09/19-09/26		<0.012
AA	09/19-09/26	<0.07	
TC	09/26-10/03		<0.049 ^k
AA	09/26-10/03	<0.07	
TC	10/03-10/10		<0.020
AA	10/03-10/10	<0.07	
TC	10/10-10/17		<0.027
AA	10/10-10/17	<0.07	
TC	10/17-10/24		<0.017 ^l
AA	10/17-10/24	<0.07	
TC	10/24-10/31		<0.037
AA	10/24-10/31	<0.07	
TC	10/31-11/07		<0.016
AA	10/31-11/07	<0.07	
TC	11/07-11/14		<0.036
AA	11/07-11/14	<0.07	
TC	11/14-11/21		<0.021
AA	11/14-11/21	<0.07	
TC	11/21-11/28		<0.022
AA	11/21-11/28	<0.07	
TC	11/28-12/05		<0.016
AA	11/28-12/05	<0.07	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	12/05-12/12		<0.015
AA	12/05-12/12	<0.07	
TC	12/12-12/19		<0.017
AA	12/12-12/19	<0.07	
TC	12/19-12/27		<0.012
AA	12/19-12/27	<0.07	

- A Mechanical failure at 16.25 hours run time.
- B Mechanical failure at 30.8 hours run time.
- C Blown fuse at 163.53 hours run time.
- D Breaker tripped at 144.22 hours run time.
- E Breaker tripped at 5.92 hours run time.
- F Breaker tripped at 121.92 hours run time.
- G Breaker tripped at 53.8 hours run time.
- H Breaker tripped at 25.21 hours run time.
- I Inclement weather tripped at 75.15 hours run time.
- J No flow at time of collection.
- K Mechanical failure at 61.75 hours run time.
- L Mechanical failure at 112.38 hours run time.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Quarterly Composite (Gamma Isotopic)

These results are for particulate air samples, collected during a quarter, duplicated by the MSDH and the Licensee which were analyzed as a composite for gamma emitters. The Licensee's sampler is located at the Old Training Center (TC) 0.3 miles south of the GGNS and designated as AS-5 (Indicator). The MSDH's sampler is located at Arnold Acres (AA) 0.4 miles south of the GGNS.

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
TC	12/28-03/28		<0.01
AA	12/28-03/28	<0.01	
TC	03/28-06/27		<0.01
AA	03/28-06/27	<0.01	
TC	06/27-09/26		<0.01
AA	06/27-09/26	<0.01	
TC	09/26-12/27		<0.01
AA	09/26-12/27	<0.01	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta Control

These results are for particulate air samples taken from control locations by the MSDH and the Licensee which were analyzed for Gross Beta. The Licensee's sampler is located in Vicksburg (VB) 18 miles north of the GGNS and designated as AS-3 (Control). The MSDH's sampler is located behind the Radiological Health Building (RH) in Jackson, 51 miles east northeast of the GGNS.

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	12/28-01/03		0.026
RH	12/28-01/03	0.026	
VB	01/03-01/10		0.020
RH	01/03-01/10	0.025	
VB	01/10-01/17		0.015
RH	01/10-01/17	0.016	
VB	01/17-01/24		0.011
RH	01/17-01/24	0.003	
VB	01/24-01/31		0.012
RH	01/24-01/31	0.016	
VB	01/31-02/07		0.018
RH	01/31-02/07	0.027	
VB	02/07-02/14		0.015
RH	02/07-02/14	0.018	
VB	02/14-02/21		0.014
RH	02/14-02/21	0.015	
VB	02/21-02/28		0.009
RH	02/21-02/28	0.013	
VB	02/28-03/07		0.018
RH	02/28-03/07	0.016	
VB	03/07-03/14		0.017
RH	03/07-03/14	0.021	
VB	03/14-03/21		0.009
RH	03/14-03/21	0.016	
VB	03/21-03/28		0.018
RH	03/21-03/28	0.021	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta Control (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	03/28-04/04		0.016
RH	03/28-04/04	0.021	
VB	04/04-04/11		0.013
RH	04/04-04/11	0.013	
VB	04/11-04/18		0.016
RH	04/11-04/18	0.005	
VB	04/18-04/25		0.010
RH	04/18-04/25	0.020	
VB	04/25-05/02		0.021
RH	04/25-05/02	0.011	
VB	05/02-05/09		0.012 ^M
RH	05/02-05/09	0.008	
VB	05/09-05/16		0.014
RH	05/09-05/16	0.018	
VB	05/16-05/23		0.015
RH	05/16-05/23	0.026	
VB	05/23-05/30		0.017
RH	05/23-05/30	0.019	
VB	05/30-06/06		0.011
RH	05/30-06/06	0.049	
VB	06/06-06/13		0.019
RH	06/06-06/13	0.027	
VB	06/13-06/20		0.018
RH	06/13-06/20	0.034	
VB	06/20-06/27		0.013 ^N
RH	06/20-06/27	0.043	
VB	06/27-07/05		0.014
RH	06/27-07/05	0.027	
VB	07/05-07/11		0.016
RH	07/05-07/11	0.036	
VB	07/11-07/18		0.017
RH	07/11-07/18	0.036	
VB	07/18-07/25		0.015
RH	07/18-07/25	0.034	
VB	07/25-08/01		0.012
RH	07/25-08/01	0.021	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta Control (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	08/01-08/08		0.010
RH	08/01-08/08	0.024	
VB	08/08-08/15		0.015
RH	08/08-08/15	0.032	
VB	08/15-08/22		0.019
RH	08/15-08/22	0.033	
VB	08/22-08/29		0.023
RH	08/22-08/29	0.039	
VB	08/29-09/06		0.023
RH	08/29-09/06	0.008	
VB	09/06-09/12		0.028
RH	09/06-09/12	0.051	
VB	09/12-09/19		0.027
RH	09/12-09/19	0.029	
VB	09/19-09/26		0.021
RH	09/19-09/26	0.028	
VB	09/26-10/03		0.020
RH	09/26-10/03	0.034	
VB	10/03-10/10		0.015
RH	10/03-10/10	0.027	
VB	10/10-10/17		0.023
RH	10/10-10/17	0.047	
VB	10/17-10/24		0.017
RH	10/17-10/24	0.020	
VB	10/24-10/31		0.020
RH	10/24-10/31	0.026	
VB	10/31-11/07		0.014
RH	10/31-11/07	0.022	
VB	11/07-11/14		0.013
RH	11/07-11/14	0.022	
VB	11/14-11/21		0.025
RH	11/14-11/21	0.045	
VB	11/21-11/28		0.015 ⁰
RH	11/21-11/28	0.027	
VB	11/28-12/05		0.018
RH	11/28-12/05	0.011	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Particulate Gross Beta Control (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	12/05-12/12		0.032
RH	12/05-12/12	0.046	
VB	12/12-12/19		0.012
RH	12/12-12/19	0.013	
VB	12/19-12/27		0.023
RH	12/19-12/27	0.031	

M Inclement weather tripped at 166.5 hours run time.
N No flow at collection.
O Blown fuse at 165.67 hours run time.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine Control

These results are for charcoal canister air samples taken from control locations by the MSDH and the Licensee which were analyzed for radioiodine. The Licensee's sampler is located in Vicksburg (VB) 18 miles north of the GGNS and designated as AS-3 (Control). The MSDH's sampler is located behind the Radiological Health Building (RH) in Jackson, 51 miles east northeast of the GGNS.

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	12/28-01/03		<0.020
RH	12/28-01/03	<0.07	
VB	01/03-01/10		<0.018
RH	01/03-01/10	<0.07	
VB	01/10-01/17		<0.015
RH	01/10-01/17	<0.07	
VB	01/17-01/24		<0.014
RH	01/17-01/24	<0.07	
VB	01/24-01/31		<0.013
RH	01/24-01/31	<0.07	
VB	01/31-02/07		<0.011
RH	01/31-02/07	<0.07	
VB	02/07-02/14		<0.014
RH	02/07-02/14	<0.07	
VB	02/14-02/21		<0.011
RH	02/14-02/21	<0.07	
VB	02/21-02/28		<0.016
RH	02/21-02/28	<0.07	
VB	02/28-03/07		<0.027
RH	02/28-03/07	<0.07	
VB	03/07-03/14		<0.017
RH	03/07-03/14	<0.07	
VB	03/14-03/21		<0.015
RH	03/14-03/21	<0.07	
VB	03/21-03/28		<0.019
RH	03/21-03/28	<0.07	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine Control (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	03/28-04/04		<0.017
RH	03/28-04/04	<0.07	
VB	04/04-04/11		<0.021
RH	04/04-04/11	<0.07	
VB	04/11-04/18		<0.019
RH	04/11-04/18	<0.07	
VB	04/18-04/25		<0.049
RH	04/18-04/25	<0.07	
VB	04/25-05/02		<0.017
RH	04/25-05/02	<0.07	
VB	05/02-05/09		<0.046 ^M
RH	05/02-05/09	<0.07	
VB	05/09-05/16		<0.012
RH	05/09-05/16	<0.07	
VB	05/16-05/23		<0.042
RH	05/16-05/23	<0.07	
VB	05/23-05/30		<0.025
RH	05/23-05/30	<0.07	
VB	05/30-06/06		<0.023
RH	05/30-06/06	<0.07	
VB	06/06-06/13		<0.016
RH	06/06-06/13	<0.07	
VB	06/13-06/20		<0.018
RH	06/13-06/20	<0.07	
VB	06/20-06/27		<0.011 ^N
RH	06/20-06/27	<0.07	
VB	06/27-07/05		<0.022
RH	06/27-07/05	<0.07	
VB	07/05-07/11		<0.024
RH	07/05-07/11	<0.07	
VB	07/11-07/18		<0.013
RH	07/11-07/18	<0.07	
VB	07/18-07/25		<0.027
RH	07/18-07/25	<0.07	
VB	07/25-08/01		<0.019
RH	07/25-08/01	<0.07	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine Control (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	08/01-08/08		<0.010
RH	08/01-08/08	<0.07	
VB	08/08-08/15		<0.029
RH	08/08-08/15	<0.07	
VB	08/15-08/22		<0.026
RH	08/15-08/22	<0.07	
VB	08/22-08/29		<0.018
RH	08/22-08/29	<0.07	
VB	08/29-09/06		<0.015
RH	08/29-09/06	<0.07	
VB	09/06-09/12		<0.035
RH	09/06-09/12	<0.07	
VB	09/12-09/19		<0.019
RH	09/12-09/19	<0.07	
VB	09/19-09/26		<0.012
RH	09/19-09/26	<0.07	
VB	09/26-10/03		<0.049
RH	09/26-10/03	<0.07	
VB	10/03-10/10		<0.020
RH	10/03-10/10	<0.07	
VB	10/10-10/17		<0.027
RH	10/10-10/17	<0.07	
VB	10/17-10/24		<0.017
RH	10/17-10/24	<0.07	
VB	10/24-10/31		<0.037
RH	10/24-10/31	<0.07	
VB	10/31-11/07		<0.016
RH	10/31-11/07	<0.07	
VB	11/07-11/14		<0.036
RH	11/07-11/14	<0.07	
VB	11/14-11/21		<0.021
RH	11/14-11/21	<0.07	
VB	11/21-11/28		<0.022 ⁰
RH	11/21-11/28	<0.07	
VB	11/28-12/05		<0.016
RH	11/28-12/05	<0.07	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine Control (cont'd)

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	12/05-12/12		<0.015
RH	12/05-12/12	<0.07	
VE	12/12-12/19		<0.017
RH	12/12-12/19	<0.07	
VB	12/19-12/27		<0.012
RH	12/19-12/27	<0.07	

M Inclement weather tripped at 166.5 hours run time.
N No flow at collection.
O Blown fuse at 165.67 hours run time.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Quarterly Composite (Gamma Isotopic) Control

These results are for particulate air samples, collected during a quarter, taken from control locations by the MSDH and the Licensee which were analyzed as a composite for gross gamma emitters. The Licensee's sampler is located in Vicksburg (VB) 18 miles north of the GGNS and designated as AS-3 (Control). The MSDH's sampler is located behind the Radiological Health Building (RH) in Jackson, 51 miles east northeast of the GGNS.

Location	Date	MSDH (pCi/m ³)	Licensee (pCi/m ³)
VB	12/28-03/28		<0.01
RH	12/28-03/28	<0.01	
VB	03/28-06/27		<0.01
RH	03/28-06/27	<0.01	
VB	06/27-09/26		<0.01
RH	06/27-09/26	<0.01	
VB	09/26-12/27		<0.01
RH	09/26-12/27	<0.01	

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Gamma Isotopic Analysis

These results are for river water samples split with the Licensee and analyzed by Gamma Isotopic analysis. The Mississippi River Water Upstream (MRU) sample location is 2 miles north northwest of the GGNS (Control). The Mississippi River Water Downstream (MRD) sample location is 2 miles west southwest of the GGNS (Indicator).

Location	Date	MSDH (pCi/l)	Licensee (pCi/l)
MRU	01/03/95	<LLD	<LLD
MRU ^P	01/03/95	<LLD	<LLD
MRU	01/31/95	<LLD	<LLD
MRU	03/07/95	<LLD	<LLD
MRU ^P	03/07/95	<LLD	<LLD
MRU	04/04/95	<LLD	<LLD
MRU	05/02/95	<LLD	<LLD
MRU	06/06/95	<LLD	<LLD
MRU	07/03/95	<LLD	<LLD
MRU	08/01/95	<LLD	<LLD
MRU	09/06/95	<LLD	<LLD
MRU	10/03/95	<LLD	<LLD
MRU	11/01/95	<LLD	<LLD
MRU	12/05/95	<LLD	<LLD
MRD	01/03/95	<LLD	<LLD
MRD ^P	01/03/95	<LLD	<LLD
MRD	01/31/95	<LLD	<LLD
MRD	03/07/95	<LLD	<LLD
MRD ^P	03/07/95	<LLD	<LLD
MRD	04/04/95	<LLD	<LLD
MRD	05/02/95	<LLD	<LLD
MRD	06/06/95	<LLD	<LLD
MRD	07/03/95	<LLD	<LLD
MRD	08/01/95	<LLD	<LLD
MRD	09/06/95	<LLD	<LLD
MRD	10/03/95	<LLD	<LLD
MRD	11/01/95	<LLD	<LLD
MRD	12/05/95	<LLD	<LLD

P Duplicate sample for Licensee Quality Control program.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Tritium

These results are for river water samples split by the MSDH and the Licensee and analyzed for tritium using liquid scintillation analysis. The Mississippi River Water Upstream (MRU) sample location is 2 miles north northwest of the GGNS (Control). The Mississippi River Water Downstream (MRD) sample location is 2 miles west southwest of the GGNS (Indicator). The Licensee's LLD is computed individually for each sample and indicated by "<nnn" below. Licensee's results are a quarterly composite of the preceding three months. The MSDH tritium analyses are performed monthly.

Location	Date	MSDH (pCi/l)	Licensee (pCi/l)
MRU	01/03/95	<330	COMP
MRU ^p	01/03/95		COMP
MRU	01/31/95	<330	COMP
MRU	03/07/95	<330	<300
MRU ^p	03/07/95		<300
MRU	04/04/95	<330	COMP
MRU	05/02/95	<330	COMP
MRU	06/06/95	<330	<330
MRU	07/03/95	<330	COMP
MRU	08/01/95	<330	COMP
MRU	09/06/95	<330	<320
MRU	10/03/95	<330	COMP
MRU	11/01/95	<330	COMP
MRU	12/05/95	<330	<310
MRD	01/03/95	<330	COMP
MRD ^p	01/03/95		COMP
MRD	01/31/95	<330	COMP
MRD	03/07/95	<330	<300
MRD ^p	03/07/95		COMP
MRD	04/04/95	<330	COMP
MRD	05/02/95	<330	COMP
MRD	06/06/95	<330	<330
MRD	07/03/95	<330	COMP
MRD	08/01/95	<330	COMP
MRD	09/06/95	<330	<320

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Tritium (cont'd)

Location	Date	MSDH (pCi/l)	Licensee (pCi/l)
MRD	10/03/95	<330	COMP
MRD	11/01/95	<330	COMP
MRD	12/05/95	<330	<310

P Duplicate sample for Licensee Quality Control program.
COMP Composite sample, results below.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Gamma Isotopic Analysis

These results are for river sediment samples collected in duplicate and analyzed by Gamma Isotopic methods. The MSDH designates their control as the Mississippi River Upstream (MRU) and their indicator as the Mississippi River Downstream (MRD). The Licensee's designation for control is the Mississippi River Upstream, (SEDCONT) and indicator is Hamilton Lake (SEDHAM). The controls are both located approximately 2 miles north northwest of GGNS. The indicators are located approximately 2 miles west southwest of the GGNS.

Location	Date	MSDH (pCi/kg)	Licensee (pCi/kg)
MRU	06/06/95	<LLD	
SEDCONT	06/06/95		<LLD
SEDCONT ^P	06/06/95		<LLD
MRD	06/06/95	<LLD*	
SEDHAM	06/06/95		<LLD
SEDHAM ^P	06/06/95		<LLD
MRU	12/01/95	<LLD	
SEDCONT	12/01/95		<LLD
MRD	12/01/95	<LLD	
SEDHAM	12/01/95		<LLD

*The MSDH and Licensee both detected three radionuclides above their system LLD in barge slip sediment (06/06/95). This sample point is not normally reported, but included here to show the comparability of results for duplicate samples (not splits) processed by the two laboratories. Results reported in pCi/kg.

LAB	Mn-54	Co-58	Co-60	Cs-137
MSDH	232±18	<54.9	425±17	139±17
Licensee	276±21	42±15	473±25	126±19
Licensee ^P	271±17	36±12	487±22	122±13

P Duplicate sample for Licensee Quality Control program.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Gamma Isotopic Analysis

These results are for duplicate Alcorn Dairy milk samples which the MSDH and the Licensee analyzed by Gamma Isotopic methods. Alcorn Dairy is located eleven miles southwest of the GGNS. Samples are labeled RH for Radiological Health and GG for Licensee.

Sample	Date	MSDH (pCi/l)	Licensee (pCi/l)
RH	05/18/95	<LLD	
GG	05/18/95		<LLD
GG ^P	05/18/95		<LLD
RH	11/15/95	<LLD	
GG	11/15/95		<LLD

P Duplicate sample for Licensee Quality Control program.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Radioiodine

These results are for duplicate Alcorn Dairy milk samples which the MSDH and the Licensee analyzed for radioiodine by Gamma Isotopic methods. Alcorn Dairy is located eleven miles southwest of the GGNS. Samples are labeled RH for Radiological Health and GG for Licensee.

Sample	Date	MSDH (pCi/l)	Licensee (pCi/l)
RH	05/18/95	<LLD	
GG	05/18/95		<0.9
GG ^P	05/18/95		<0.6
RH	11/15/95	<LLD	
GG	11/15/95		<0.6

P Duplicate sample for Licensee Quality Control program.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Gamma Isotopic Analysis

These results are for edible fish samples taken from the Mississippi River Upstream (MRU) approximately 2 miles north northwest of the GGNS and the Mississippi River Downstream (MRD) approximately 2 miles west southwest of the GGNS. Each sample was analyzed by Gamma Isotopic methods.

Location	Date	MSDH (pCi/kg)	Licensee (pCi/kg)
MRU	05/12/95	<LLD	<LLD
MRD	05/12/95	<LLD	<LLD
MRU	11/27/95	<LLD	<LLD
MRU ^P	11/27/95		<LLD
MRD	11/27/95	<LLD	<LLD
MRD ^P	11/27/95		<LLD

P Duplicate sample for Licensee Quality Control Program.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Gamma Isotopic Analysis

These results are for vegetation samples taken from Sectors J, K, and R. These samples were analyzed by Gamma Isotopic methods.

Vegetable	Sector	Date	MSDH (pCi/kg)	Licensee (pCi/kg)
Kale	J	01/11/95	<LLD	<LLD
Kale	K	01/11/95	<LLD	<LLD
Collards	R	01/11/95	<LLD	<LLD
Swiss Chard	J	04/13/95	<LLD	<LLD
Kale	K	04/13/95	<LLD	<LLD
Swiss Chard	R	04/13/95	<LLD	<LLD
Turnips	H	07/12/95	<LLD	<LLD
Collards	J	07/12/95	<LLD	<LLD
Kale	K	07/12/95	<LLD	<LLD
Kale ^P	K	07/12/95		<LLD
Collards	H	10/16/95	<LLD	<LLD
Collards	J	10/16/95	<LLD	<LLD
Kale	K	10/16/95	<LLD	<LLD

P Duplicate sample for Licensee Quality Control program.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

MSDH Lower Limit of Detection (LLD)

The following are contractually specified detection capabilities for environmental sample analyses.

Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m ³)	Fish, Meat or Poultry (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta	4 ^Q	1.0E-02				
³ H	2000 1000 ^Q					
⁵⁴ Mn	15	1.0E-02	130		60	100
⁵⁹ Fe	30	2.0E-02	260		80	200
⁵⁸ Co	15	1.0E-02	130		50	100
⁶⁰ Co	15	1.0E-02	130		50	100
⁶⁵ Zn	30	2.0E-02	260		60	200
⁹⁵ Zr	30	2.0E-02			80	200
⁹⁵ Nb	15	2.0E-02			80	200
¹³¹ I	1 ^Q	7.0E-02		1	60	200
¹³⁴ Cs	15	5.0E-02	130	15	60	150
¹³⁷ Cs	18	6.0E-02	150	18	80	180
¹⁴⁰ Ba	60	2.0E-02		60	60	200
¹⁴⁰ La	15	2.0E-02	15	60	200	

Q LLD for drinking water.

GRAND GULF NUCLEAR STATION
CLAIBORNE COUNTY, MISSISSIPPI
CY 1995

Licensee Lower limit of Detection (LLD)

The following are maximum values of the Lower Limits of Detection for environmental sample analyses from the Offsite Dose Calculation Manual.

Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m ³)	Fish, Meat or Poultry (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta	4	1.0E-02				
³ H	3000 2000 ^Q					
⁵⁴ Mn	15		130			
⁵⁹ Fe	30		260			
⁵⁸ Co	15		130			
⁶⁰ Co	15		130			
⁶⁵ Zn	30		260			
⁹⁵ Zr	30					
⁹⁵ Nb	15					
¹³¹ I	1 ^Q	7.0E-02		1	60	
¹³⁴ Cs	15	5.0E-02	130	15	60	150
¹³⁷ Cs	18	6.0E-02	150	18	80	180
¹⁴⁰ Ba	60			60		
¹⁴⁰ La	15			15		

Q LLD for drinking water.

EPA Cross-Check Results--1995

All values reported in pCi/l unless otherwise indicated.

		Reported	Known
January	Strontium in Water		
	Strontium 89	20, 21, 21	20±8.7
	Strontium 90	15, 15, 15	15±8.7
	Gross Alpha/Beta in Water		
	Alpha	12, 12, 13	5±8.7
	Beta	6, 6, 7	5±8.7
February	Iodine in Water		
	Iodine	90, 90, 91	100±17.3
	Uranium and Radium in Water		
	Uranium	30.3, 30.3, 30.4	25.5±5.2
	Radium 226	19.8, 19.8, 19.8	19.1±5.0
	Radium 228	22.4, 22.4, 22.5	20.0±8.7
March	Tritium in Water		
	Tritium	7800, 7850, 7900	7435±1291
April	Performance Evaluation Intercomparison Study		
	Alpha	59.8, 59.9, 60.1	47.5±20.6
	Radium 226	15.5, 15.6, 15.6	14.9± 3.8
	Radium 228	16.7, 16.8, 16.8	15.8± 6.9
	Uranium	9.4, 9.4, 9.5	10± 5.2
	Beta	89.0, 89.0, 89.1	86.6±17.3
	Strontium 89	20, 20, 21	20±8.7
	Strontium 90	16, 16, 16	15±8.7
	Cesium 134	20, 20, 20	20±8.7
	Cesium 137	12, 12, 12	11±8.7
	Cobalt 60	30, 30, 30	29±8.7

EPA Cross-Check Results (cont'd)

	Reported	Known
June		
Radionuclides in Water		
Cobalt 60	40, 40, 40	40±8.7
Zinc 65	75, 75, 76	76±22.6
Barium 133	74, 75, 75	79±17.3
Cesium 134	44, 45, 45	50±8.7
Cesium 137	34, 34, 34	35±8.7
Uranium and Radium in Water		
Uranium	19.0, 19.1, 19.1	15.2±5.2
Radium 226	14.6, 14.6, 14.6	14.8±3.8
Radium 228	17.7, 17.7, 17.7	15.0±6.6
July		
Strontium in Water		
Strontium 89	20, 20, 21	20±8.7
Strontium 90	9, 10, 10	8±8.7
Gross Alpha/Beta in Water		
Alpha	20.1, 20.2, 20.3	27.5±12
Beta	16.1, 16.2, 16.3	19.4±8.7
August		
Tritium in Water		
Tritium	4891, 4894, 4918	4872±845
Air Filter		
Alpha	32, 32, 32	25±15.6*
Beta	129, 130, 130	86.6±17.3*
Strontium 90	27, 27, 28	30±8.7*
Cesium 137	30, 30, 30	25±8.7*
September		
Uranium and Radium in Water		
Uranium	34.6, 34.6, 34.7	30.5±5.2
Radium 226	24.3, 24.3, 24.4	24.8±6.4
Radium 228	20.7, 20.7, 20.8	20.0±8.7

EPA (cross-Check Results (cont'd)

		Reported	Known
	Radionuclides in Milk		
	Strontium 89	21, 21, 22	20± 8.7
	Strontium 90	15, 16, 16	15± 8.7
	Iodine 131	100, 100, 101	99±20.8
	Potassium	1656, 1656, 1656	1654±83**
	Cesium 137	49, 50, 50	50± 8.7
October	Iodine in Water		
	Iodine	155, 155, 155	148±26
	Performance Evaluation Intercomparison Study		
	Alpha	133, 133, 133	99.4±38.2
	Radium 226	24.7, 24.7, 24.7	24.8± 3.7
	Radium 228	22.8, 22.8, 22.9	20.7± 5.2
	Uranium	24.9, 24.9, 24.9	27± 5.2
	Beta	110.9, 111, 111	141.8±36.4
	Strontium 89	22, 22, 23	20± 8.7
	Strontium 90	10, 11, 11	10± 8.7
	Cobalt 60	46, 47, 48	49± 8.7
	Cesium 134	35, 35, 35	40± 8.7
	Cesium 137	29, 30, 30	30± 8.7
	Gross Alpha/Beta in Water		
	Alpha	46.8, 46.9, 47.0	51.2±22.2
	Beta	25.3, 25.4, 25.4	24.8± 8.7
November	Radionuclides in Water		
	Cobalt 60	57, 58, 58	60± 8.7
	Zinc 65	121, 122, 122	125±22.6
	Barium 133	91, 92, 92	99±17.3
	Cesium 134	35, 36, 36	40± 8.7
	Cesium 137	50, 50, 50	49± 8.7

* Values are reported as pCi/filter.

** Values are reported as mg/liter.