1444

WATER AND MUD ANALYSIS
Sr^{89} and Sr^{90} - 1959 -

This document has been approved for release to the public by:

Technical Information Officer — Date
Oak Ridge K-25 Site

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7314
managed by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

Daily monitoring of raw Clinch River Water

(Disintegrations/minute/100ml)

Month	Sr^{89} Ave.	Sr^{89} Max.	Sr^{90} Ave.	Sr^{90} Max.	Other Beta Ave.	Other Beta Max.	Total Beta Ave.	Total Beta Max.	# Samples	Sanitary CW-6 Water β
January	—	—	—	—	—	—	—	—	—	54
February	22% 3.3	7.3	35% 5.3	17.2	43% 6.6	15.3	15.0	34.4	26	44
March	20% 4.0	12.0	33% 6.5	19.3	47% 9.1	25.8	19.6	52.3	30	34
April	22% 8.1	16.1	35% 12.9	24.9	42% 15.5	30.0	36.6	59.5	30	42
May	21% 4.8	8.7	43% 9.8	20.3	36% 8.2	18.0	22.7	42.9	31	28
June	18% 8.7	34.6	50% 24.1	96.2	31% 15.1	82.0	48.0	206.9	29	31
July	12% 3.2	6.6	51% 13.7	27.8	37% 10.0	25.3	26.9	60.4	31	41
August	13% 2.5	5.0	37% 7.1	23.3	50% 9.8	26.4	19.4	53.3	31	20
September	19% 2.6	5.2	39% 5.4	12.0	42% 5.6	10.6	13.6	26.6	30	11
October	3.0	10.2	3.3	9.3						
November										
December										
CY 1959	40.2 / 4.47		105.7 / 11.74							
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
CY 1960										

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WORKSHEET

DAILY MONITORING OF RAW CLINCH RIVER WATER

K-1515 WATER TREATMENT PLANT -- ORGDP

MONTH October YEAR 1959

	BETA DISINTEGRATIONS/MINUTE/100ml				
DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL	
1	4.4	1.2	6.4	12.0	
2	2.8	1.3	7.0	11.1	
3	1.3	3.2	6.2	10.7	
4	1.7	3.2	6.4	11.3	
5	1.7	3.2	6.4	11.3	
6	2.8	2.5	14.0	19.3	
7	1.8	2.8	3.1	7.7	
8	1.3	1.4	3.1	5.8	
9	10.2	4.7	5.0	19.9	
10	9.0	4.9	9.3	23.2	
11	9.0	4.9	9.3	23.2	
12	9.0	4.9	9.3	23.2	
13	2.3	9.3	6.8	18.4	
14	1.6	3.6	2.6	7.8	
15	—	—	—	—	no sample
16	1.6	5.7	6.0	12.3	
17	1.9	2.9	27.0	31.8	
18	4.6	4.5	14.0	23.1	
19	4.6	4.5	14.0	23.1	
20	1.8	1.2	1.7	4.7	
21	0.0	1.3	3.8	5.1	
22	2.3	0.0	0.6	2.9	
23	0.7	1.5	1.5	3.7	
24	0.8	1.2	7.5	9.5	
25	0.7	4.4	3.5	8.6	
26	0.7	4.4	3.5	8.6	
27	,	,	,	,	
28	,	,	,	,	
29	,	,	,	,	
30	,	,	,	,	
31	,	,	,	,	
(26) TOTAL	7.86	92.7	,	,	
AVERAGE	0.30	3.3	,	,	

WORKSHEET

DAILY MONITORING OF RAW CLINCH RIVER WATER

K-1515 WATER TREATMENT PLANT -- ORGDP

MONTH SEPTEMBER YEAR 1959

	BETA DISINTEGRATIONS/MINUTE/100ml			
DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL
1	1.6	0.0	8.8	10.4
2	1.1	3.6	7.3	12.0
3	1.5	0.0	10.6	12.1
4	3.1	7.7	7.7	18.5
5	4.6	6.4	9.0	20.0
6	4.4	12.0	10.2	26.6
7	4.4	12.0	10.2	26.6
8	2.1	4.6	7.4	14.1
9	2.1	4.6	7.4	14.1
10	1.6	7.8	6.3	15.7
11	1.7	2.3	4.4	8.4
12	1.2	4.5	2.5	8.2
13	3.9	8.4	5.2	17.5
14	3.9	8.4	5.2	17.5
15	2.8	6.7	2.5	12.0
16	5.2	8.5	4.5	18.2
17	1.8	4.1	1.3	7.2
18	3.0	2.7	3.7	9.4
19	3.5	5.8	7.0	16.3
20	4.8	5.2	2.5	12.5
21	4.8	5.2	2.5	12.5
22	2.7	8.3	2.5	13.5
23	2.9	4.8	6.9	14.6
24	1.3	6.2	8.0	15.5
25	2.3	7.8	6.7	16.8
26	1.1	3.1	4.3	8.5
27	1.9	3.3	2.6	7.8
28	1.9	3.3	2.6	7.8
29	2.0	3.5	4.4	9.9
30	—	—	3.5	3.5
31				
TOTAL	79.2	160.8	167.7	407.7
AVERAGE	2.6	5.4	5.6	13.6
	19%	39%	42%	

WORKSHEET

DAILY MONITORING OF SAN FRANCISCO RIVER WATER

[illegible] WATER TREATMENT PLANT — [illegible]

MONTH August YEAR 1959

BETA DISINTEGRATIONS/MINUTE/100ml				
DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL
1	1.5	3.5	4.7	9.7
2	0.6	6.0	2.7	9.3
3	0.6	6.0	2.7	9.3
4	2.6	3.5	2.0	8.1
5	3.4	1.5	8.4	13.3
6	3.6	23.3	26.4	53.3
7	3.0	9.3	13.1	25.4
8	3.5	14.8	24.5	42.8
9	1.8	7.5	8.5	17.8
10	1.8	7.5	8.5	17.8
11	2.4	7.0	5.6	15.0
12	2.9	9.4	20.0	32.3
13	3.5	11.1	4.3	18.9
14	5.0	12.4	12.8	30.2
15	3.5	9.4	9.9	22.8
16	3.5	10.2	20.9	34.6
17	3.5	10.2	20.9	34.6
18	2.0	4.7	10.8	17.5
19	4.0	6.3	12.8	23.1
20	2.2	1.6	6.5	10.3
21	0.6	2.9	8.7	12.2
22	2.6	5.6	6.9	15.1
23	2.2	8.7	9.8	20.7
24	2.2	8.7	9.8	20.7
25	2.0	6.0	9.0	17.0
26	2.5	2.9	8.3	13.7
27	2.5	2.4	1.7	6.6
28	0.2	2.1	4.8	7.1
29	1.7	2.3	4.0	8.0
30	2.4	6.9	7.2	16.5
31	2.4	6.9	7.2	16.5
TOTAL	76.2	220.6	303.4	600.2
AVERAGE	2.5	7.1	9.8	19.4
	13%	37%	50%	

WORKSHEET

DAILY MONITORING OF PAW CLAUNCH RIVER WATER

K-1515 WATER TREATMENT PLANT — OREGON

MONTH July YEAR 1959

	BETA DISINTEGRATIONS/MINUTE/100ml			
DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL
1	3.2	11.9	6.8	21.9
2	2.0	7.4	5.4	14.8
3	2.1	10.2	5.4	17.7
4	2.1	10.2	5.4	17.7
5	3.0	6.5	10.6	20.1
6	3.0	6.5	10.6	20.1
7	4.2	9.8	6.3	20.3
8	5.6	24.0	8.7	38.3
9	2.0	9.3	6.3	17.6
10	3.5	4.1	6.7	14.3
11	3.2	5.9	7.4	16.5
12	0.0	10.5	13.2	23.7
13	0.0	10.5	13.2	23.7
14	1.9	7.2	7.7	16.8
15	3.7	23.4	7.2	34.3
16	3.7	19.6	11.3	34.6
17	3.7	17.9	14.5	36.1
18	5.1	25.1	20.5	50.7
19	4.9	31.0	24.5	60.4
20	4.9	31.0	24.5	60.4
21	6.6	27.8	25.3	59.7
22	1.9	8.1	7.9	17.9
23	1.9	9.7	10.0	21.6
24	2.5	6.0	4.7	13.2
25	2.6	6.5	5.2	14.3
26	2.8	15.5	8.5	26.8
27	2.8	15.5	8.5	26.8
28	3.5	9.1	7.6	20.2
29	3.9	12.0	4.5	20.4
30	3.0	11.0	3.1	17.1
31	4.6	20.0	10.0	34.6
TOTAL	99.9	423.2	311.5	832.6
AVERAGE	3.2	13.7	10.0	26.9

MONTH JUNE YEAR 1959

DATE	[illegible]	[illegible]	[illegible]	TOTAL	
1	5.3	4.9	3.3	13.5	
2	*	*	*	*	*no sample
3	5.0	11.4	5.3	21.7	
4	11.7	9.5	5.5	26.7	
5	5.3	12.5	6.9	24.7	
6	5.9	17.7	4.4	28.0	
7	5.9	17.7	4.4	28.0	
8	4.4	12.3	7.0	23.7	
9	5.1	15.8	12.8	33.7	
10	13.8	50.4	23.8	88.0	
11	3.5	16.8	8.0	28.3	
12	10.9	23.0	9.0	42.9	
13	9.9	21.9	17.2	49.0	
14	4.6	12.6	7.5	24.7	
15	4.6	12.6	7.5	24.7	
16	5.2	12.1	7.4	24.7	
17	34.6	40.6	42.1	117.3	
18	5.6	14.8	9.4	29.8	
19	9.4	21.9	14.6	45.9	
20	3.2	14.2	17.7	35.1	
21	5.3	20.7	6.5	32.5	
22	5.3	20.7	6.5	32.5	
23	28.7	96.2	82.0	206.9	
24	18.9	21.0	13.4	53.3	
25	8.8	24.0	2.5	35.3	
26	2.0	7.5	15.3	24.8	
27	4.6	8.0	16.9	29.5	
28	10.8	67.8	35.6	114.2	
29	10.8	67.8	35.6	114.2	
30	3.7	22.7	11.0	37.4	
31	———	———	———	———	
TOTAL	252.8	699.1	439.1	1391.0	
AVERAGE	8.1	24.0	15.1	48.0	
	1880	50.39%	31.6%		

MAY 1959

	7.5	19.4	16.0	42.9
	6.0	18.2	16.5	40.7
	7.2	15.7	15.3	38.2
	7.2	15.7	15.3	38.2
	8.7	20.3	12.7	41.7
	7.2	10.5	8.9	26.6
	4.1	7.8	5.9	17.8
	5.0	11.6	10.1	26.7
	3.6	11.8	13.6	29.0
	2.1	9.4	6.6	18.1
	2.1	9.4	6.6	18.1
12	3.2	10.0	7.9	21.1
13	2.3	8.8	8.9	20.0
	5.8	12.7	18.0	36.5
15	3.4	6.3	13.2	22.9
	5.7	7.2	6.5	19.4
17	5.3	7.6	3.6	16.5
	5.3	7.6	3.6	16.5
	3.2	5.7	6.2	15.1
20	6.6	13.4	8.5	28.5
	6.4	4.7	2.3	13.4
22	1.8	6.0	2.8	10.6
23	3.3	5.0	3.6	11.9
24	6.1	8.3	5.4	19.8
25	6.1	8.3	5.4	19.8
	3.4	11.6	7.0	22.0
	7.1	6.7	3.3	17.1
	2.4	9.4	3.6	15.4
29	2.2	4.7	6.4	13.3
30	2.2	4.7	6.4	13.3
	5.3	4.9	3.3	13.5
	147.8	303.4	253.4	704.6
	4.8	9.8	8.2	22.7
	21.0%	43.1%	35.9%	

WORKSHEET

DAILY MONITORING OF RAW CLINCH RIVER WATER

K-1515 WATER TREATMENT PLANT — ORGDP

MONTH April YEAR 1959

	BETA DISINTEGRATIONS/MINUTE/100ml			
DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL
1	5.7	8.4	9.3	23.4
2	9.2	12.7	18.9	40.8
3	11.4	22.6	22.5	56.5
4	10.9	21.9	26.7	59.5
5	11.7	16.8	17.9	46.4
6	11.7	16.8	17.9	46.4
7	16.1	18.3	18.5	52.9
8	7.1	11.4	10.4	28.9
9	5.5	3.8	6.7	16.0
10	7.7	5.6	8.4	21.7
11	5.3	8.1	21.6	35.0
12	4.9	8.6	22.9	36.4
13	4.9	8.6	22.9	36.4
14	6.5	8.3	30.0	44.8
15	5.8	6.4	11.0	23.2
16	5.9	8.4	10.0	24.3
17	6.6	13.6	17.0	37.2
18	8.6	16.8	26.0	51.4
19	14.2	19.1	17.0	50.3
20	14.2	19.1	17.0	50.3
21	8.9	24.9	17.8	51.6
22	7.5	15.0	18.3	40.8
23	4.9	8.3	9.6	22.8
24	6.2	5.9	6.5	18.6
25	6.2	5.9	9.3	21.4
26	5.9	14.1	7.9	27.9
27	5.9	14.1	7.9	27.9
28	5.3	10.6	10.6	26.5
29	6.6	12.6	10.7	29.9
30	11.9	20.5	14.9	47.3
31	—	—	—	—
TOTAL	243.2	387.2	466.1	1096.5
AVERAGE	8.1	12.9	15.5	36.6
	22%	35%	42%	

WORKSHEET

DAILY MONITORING OF RAW CLINCH RIVER WATER

K-1515 WATER TREATMENT PLANT — ORGDP

MONTH MARCH YEAR 1959

BETA DISINTEGRATIONS/MINUTE/100ml					
DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL	
1	2.9	0.9	2.6	6.4	
2	2.9	0.9	2.6	6.4	
3	2.4	6.0	3.8	12.2	
4	1.5	3.0	4.3	8.8	
5	1.1	4.8	4.9	10.8	
6	0.5	4.4	6.0	10.9	
7	0.8	3.0	5.4	9.2	
8	0.8	3.0	5.4	9.2	
9	0.8	3.0	5.4	9.2	
10	8.6	10.4	10.6	29.6	
11	4.5	6.9	12.3	23.7	
12	3.8	8.1	9.6	21.5	
13	2.4	7.3	14.9	24.6	
14	2.5	4.0	11.3	17.8	
15	2.5	4.0	11.3	17.8	
16	6.3	15.4	20.0	41.7	
17	7.2	19.3	25.8	52.3	
18	4.6	16.4	21.9	42.9	
19	4.6	7.1	8.8	20.5	
20	3.2	4.8	6.8	14.8	
21	3.1	6.0	9.1	18.2	
22	3.1	6.0	9.1	18.2	
23	6.9	8.8	6.8	22.5	
24	4.7	2.8	4.4	11.9	
25	4.7	3.4	8.5	16.6	
26	3.5	4.3	2.8	10.6	
27	—	—	—	—	Sample lost
28	4.3	6.1	9.3	19.7	
29	4.3	6.1	9.3	19.7	
30	12.0	11.8	14.3	38.1	
31	8.2	7.4	6.3	21.9	
TOTAL	118.7	195.4	273.6	587.7	
AVERAGE	4.0	6.5	9.1	19.6	
	209μ	339μ	477μ		

WORKSHEET

DAILY MONITORING OF RAW CLINCH RIVER WATER

K-1515 WATER TREATMENT PLANT — ORGDP

MONTH February YEAR 1959

BETA DISINTEGRATIONS/MINUTE/100ml

DATE	Sr^{89}	Sr^{90}	OTHER	TOTAL
1	—	—	—	—
2	—	—	—	—
3	3.9	6.1	3.1	13.1
4	3.0	2.7	—	5.7
5	2.6	2.0	1.5	6.1
6	2.7	2.6	2.6	7.9
7	2.2	3.4	5.7	11.3
8	2.2	3.4	5.7	11.3
9	2.2	3.4	5.7	11.3
10	3.7	2.7	2.6	9.0
11	2.0	2.5	3.2	7.7
12	2.4	1.8	2.1	6.3
13	3.3	5.1	7.7	16.1
14	6.3	7.3	15.3	28.9
15	6.3	7.3	15.3	28.9
16	6.3	7.3	15.3	28.9
17	1.9	4.0	6.6	12.5
18	4.4	6.8	4.4	15.6
19	1.9	2.9	4.0	8.8
20	7.3	17.2	9.9	34.4
21	3.1	10.5	12.1	25.7
22	3.1	10.5	12.1	25.7
23	1.8	6.2	7.4	15.4
24	1.8	6.2	7.4	15.4
25	2.1	5.8	4.1	12.0
26	3.7	1.9	3.1	8.7
27	3.5	7.6	5.6	16.7
28	2.9	0.9	2.6	6.4
29	—	—	—	—
30	—	—	—	—
31	—	—	—	—
TOTAL	86.6	138.1	165.1	389.8
AVERAGE	3.3	5.3	6.6	15.0
	220	359	439	

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P. OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Copy to Mr. A. F. Becher
File

Date November 3, 1959
Originating Dept. Utilities Operations
Answering letter date

Subject Monitoring of Clinch River Water for Beta Count

Results of monitoring Clinch River water for beta count during the period of October 13-26 are as follows:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
October 13	2.3	9.3	6.8
October 14	1.6	3.6	2.6
October 15	(No sample)		
October 16	1.6	5.7	6.0
October 17	1.9	2.9	27.0
October 18 and 19	4.6	4.5	14.0
October 20	1.8	1.2	1.7
October 21	0	1.3	3.8
October 22	2.3	0	0.6
October 23	0.7	1.5	1.5
October 24	0.8	1.2	7.5
October 25 and 26	0.7	4.4	3.5

W. C. Hartman

W. C. Hartman
Utilities Operations Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Date October 13, 1959
Originating Dept. Utilities Operations
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Monitoring of Clinch River Water for Beta Count

Results of monitoring Clinch River water for beta count are as follows:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
October 6	2.8	2.5	14.0
October 7	1.8	2.8	3.1
October 8	1.3	1.4	3.1
October 9	10.2	4.7	5.0
October 10, 11, and 12	9.0	4.9	9.3

W. C. Hartman

W. C. Hartman
Utilities Operations Department

gl

UCN-428 .
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P. OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Date October 6, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Monitoring of Clinch River Water for Beta Count

Results of monitoring Clinch River water for beta count are as follows:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
September 29	2.0	3.5	4.4
September 30	-	-	3.5
October 1	4.4	1.2	6.4
October 2	2.8	1.3	7.0
October 3	1.3	3.2	6.2
October 4 and 5	1.7	3.2	6.4

C. C. Fowlkes

C. C. Fowlkes
Utilities Department

CCF/gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Date October 2, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Clinch River Beta Count

Results of monitoring Clinch River water for beta count during the week of September 22 are as follows:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
September 22	2.7	8.3	2.5
September 23	2.9	4.8	6.9
September 24	1.3	6.2	8.0
September 25	2.3	7.8	6.7
September 26	1.1	3.1	4.3
September 27 and 28	1.9	3.3	2.6

W. C. Hartman

W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Date September 25, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the period of September 8 through September 21, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
September 8 and 9	2.1	4.6	7.4
September 10	1.6	7.8	6.3
September 11	1.7	2.3	4.4
September 12	1.2	4.5	2.5
September 13 and 14	3.9	8.4	5.2
September 15	2.8	6.7	2.5
September 16	5.2	8.5	4.5
September 17	1.8	4.1	1.3
September 18	3.0	2.7	3.7
September 19	3.5	5.8	7.0
September 20 and 21	4.8	5.2	2.5

W. C. Hartman

W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX-P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Date September 11, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the period of August 25 through September 7, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
August 25	2.0	6.0	9.0
August 26	2.5	2.9	8.3
August 27	2.5	2.4	1.7
August 28	0.2	2.1	4.8
August 29	1.7	2.3	4.0
August 30 and 31	2.4	6.9	7.2
September 1	1.6	0	8.8
September 2	1.1	3.6	7.3
September 3	1.5	0	10.6
September 4	3.1	7.7	7.7
September 5	4.6	6.4	9.0
September 6 and 7	4.4	12.0	10.2

W. C. Hartman
W. C. Hartman
Utilities Department

gl

UCN-428 .
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company
Location K-1001

Date August 27, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of August 18, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
August 18	2.0	4.7	10.8
August 19	4.0	6.3	12.8
August 20	2.2	1.6	6.5
August 21	0.6	2.9	8.7
August 22	2.6	5.6	6.9
August 23 and 24	2.2	8.7	9.8

W. C. Hartman

W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company UCNC ORGDP
Location K-1001

Copy to Mr. A. F. Becher
File

Date August 18, 1959

Originating Dept. Utilities

Answering letter date

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of August 11, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
August 11	2.4	7.0	5.6
August 12	2.9	9.4	20.0
August 13	3.5	11.1	4.3
August 14	5.0	12.4	12.8
August 15	3.5	9.4	9.9
August 16 and 17	3.5	10.2	20.9

W. C. Hartman

W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

8/12/59

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company UCNC ORGDP
Location K-1001

Date August 11, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of August 4, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
August 4	2.6	3.5	2.0
August 5	3.4	1.5	8.4
August 6	3.6	23.3	26.4
August 7	3.0	9.3	13.1
August 8	3.5	14.8	24.5
August 9 and 10	1.8	7.5	8.5

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1959

J. L. Gamble
J. L. Gamble
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE **INTERNAL CORRESPONDENCE**

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company UCNC ORGDP
Location K-1001

Date August 5, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of July 28, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
July 28	3.5	9.1	7.6
July 29	3.9	12.0	4.5
July 30	3.0	11.0	3.1
July 31	4.6	20.0	10.0
August 1	1.5	3.5	4.7
August 2 and 3	0.6	6.0	2.7

W. C. Hartman
W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company UCNC ORGDP
Location K-1001

Date July 29, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the weeks of July 14 and July 21, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
July 14	1.9	7.2	7.7
July 15	3.7	23.4	7.2
July 16	3.7	19.6	11.3
July 17	3.7	17.9	14.5
July 18	5.1	25.1	20.5
July 19 and 20	4.9	31.0	24.5
July 21	6.6	27.8	25.3
July 22	1.9	8.1	7.9
July 23	1.9	9.7	10.0
July 24	2.5	6.0	4.7
July 25	2.6	6.5	5.2
July 26 and 27	2.75	15.5	8.5

W. C. Hartman

W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY POST OFFICE BOX P. OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company ORGDP UCNC
Location K-1001

Date July 14, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of July 7, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
July 7	4.2	9.8	6.3
July 8	5.6	24.0	8.7
July 9	2.0	9.3	6.3
July 10	3.5	4.1	6.7
July 11	3.2	5.9	7.4
July 12 and 13	0	10.5	13.2

W. C. Hartman

W. C. Hartman
Utilities Department

gl

UCN-428
(1 1-59)

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company ORGDP UCNC
Location K-1001

Date July 7, 1959
Originating Dept. Utilities
Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of June 30, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
June 30	3.7	22.7	11.0
July 1	3.2	11.9	6.8
July 2	2.0	7.4	5.4
July 3 and 4	2.1	10.2	5.4
July 5 and 6	3.0	6.5	10.6

W. C. Hartman
Utilities Department

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UCN-428
(1 1-59)

S. Records file

UNION CARBIDE INTERNAL CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) Dr. H. F. Henry
Company UCNC ORGDP
Location K-1001

Date July 2, 1959

Originating Dept. Utilities

Answering letter date

Copy to Mr. A. F. Becher
File

Subject Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the period beginning June 2 and ending June 29, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
June 2	*	*	*
June 3	5.0	11.4	5.3
June 4	11.7	9.5	5.5
June 5	5.3	12.5	6.9
June 6 and 7	5.9	17.7	4.4
June 8	4.4	12.3	7.0
June 9	5.1	15.8	12.8
June 10	13.8	50.4	23.8
June 11	3.5	16.8	8.0
June 12	10.9	23.0	9.0
June 13	9.9	21.9	17.2
June 14 and 15	4.6	12.6	7.5
June 16	5.2	12.1	7.4
June 17	34.6	40.6	42.1
June 18	5.6	14.8	9.4
June 19	9.4	21.9	14.6
June 20	3.2	14.2	17.7
June 21 and 22	5.3	20.7	6.5
June 23	28.7	96.2	82.0
June 24	18.9	21.0	13.4
June 25	8.8	24.0	2.5
June 26	2.0	7.5	15.3
June 27	4.6	8.0	16.9
June 28 and 29	10.8	67.8	35.6

*No sample.

W. C. Hartman

W. C. Hartman
Utilities Department

Rhyne (file)

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry
K-1001

Plant: ORGDP

Date: June 3, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the period beginning May 12 and ending May 31, 1959, resulted in the following.

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
May 12	3.2	10.0	7.9
May 13	2.3	8.8	8.9
May 14	5.8	12.7	18.0
May 15	3.4	6.3	13.2
May 16	5.7	7.2	6.5
May 17 and 18	5.3	7.6	3.6
May 19	3.2	5.7	6.2
May 20	6.6	13.4	8.5
May 21	6.4	4.7	2.3
May 22	1.8	6.0	2.8
May 23	3.3	5.0	3.6
May 24 and 25	6.1	8.3	5.4
May 26	3.4	11.6	7.0
May 27	7.1	6.7	3.3
May 28	2.4	9.4	3.6
May 29 and 30	2.2	4.7	6.4
May 31 and June 1	5.3	4.9	3.3

W. C. Hartman

W. C. Hartman
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry

Plant: ORGDP

Date: May 12, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Count

Daily monitoring of raw Clinch River water for beta count during the week of May 5, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
May 5	8.7	20.3	12.7
May 6	7.2	10.5	8.9
May 7	4.1	7.8	5.9
May 8	5.0	11.6	10.1
May 9	3.6	11.8	13.6
May 10 and 11	2.1	9.4	6.6

W. C. Hartman

W. C. Hartman
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry

Plant: ORGDP

Date: May 5, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of April 28, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
April 28	5.3	10.6	10.6
April 29	6.6	12.6	10.7
April 30	11.9	20.5	14.9
May 1	7.5	19.4	16.0
May 2	6.0	18.2	16.5
May 3 and 4	7.2	15.7	15.3

C. C. Fowlkes

C. C. Fowlkes
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry

Plant: ORGDP

Date: May 1, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of April 21, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
April 21	8.9	24.9	17.8
April 22	7.5	15.0	18.3
April 23	4.9	8.3	9.6
April 24	6.2	5.9	6.5
April 25	6.5	5.6	9.3
April 26 and 27	5.9	14.1	7.9

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MAY 1959
AND
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W. C. Hartman
Utilities Department

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INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry

Plant: ORGDP

Date: April 21, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of April 14, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml			
	Sr^{89}	Sr^{90}	Other beta	
April 14	6.5	8.3	30.0	44.8
April 15	5.8	6.4	11.0	23.2
April 16	5.9	8.4	10.0	24.3
April 17	6.6	13.6	17.0	37.2
April 18	8.6	16.8	26.0	51.4
April 19 and 20	14.2	19.1	17.0	50.3
	47.6	72.6	111.0	231.2

W. C. Hartman

W. C. Hartman
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry

Plant: ORGDP

Date: April 17, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of April 7, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	SR^{89}	Sr^{90}	Other beta
April 7	16.1	18.3	18.5
April 8	7.1	11.4	10.4
April 9	5.5	3.8	6.7
April 10	7.7	5.6	8.4
April 11	5.3	8.1	21.6
April 12 and 13	4.9	8.6	22.9

W. C. Hartman

W. C. Hartman
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry
K-1001

Plant: ORGDP

Date: April 7, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of March 31, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml			
	Sr^{89}	Sr^{90}	Other beta	
March 31	8.2	7.4	6.3	
April 1	5.7	8.4	9.3	23.4
April 2	9.2	12.7	18.9	40.8
April 3	11.4	22.6	22.5	56.5
April 4	10.9	21.9	26.7	59.5
April 5 and 6	11.7	16.8	17.9	46.4
	47.1	82.8	101.3	226.6

W. C. Hartman

W. C. Hartman
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Dr. H. F. Henry
K-1001

Plant: ORGDP

Date: March 31, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of March 24, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
March 24	4.7	2.8	4.4
March 25	4.7	3.4	8.5
March 26	3.5	4.3	2.8
March 27	Sample lost		
March 28 and 29	4.3	6.1	9.3
March 30	12.0	11.8	14.3

W. C. Hartman

W. C. Hartman
Utilities Department

gl

This form for Inter-Company Correspondence only

Water + Mud

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. H. F. Henry
K-1001

Plant: ORGDP

Date: March 26, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count during the week of March 17, 1959, resulted in the following:

Date	Disintegrations/minute/100 ml			
	Sr^{89}	Sr^{90}	Other beta	
March 17	7.2	19.3	25.8	52.3
March 18	4.6	16.4	21.9	42.9
March 19	4.6	7.1	8.8	20.5
March 20	3.2	4.8	6.8	14.8
March 21 and 22	3.1	6.0	9.1	18.2
March 23	6.9	8.8	6.8	22.5

MAC = 30 μc/ml

W. C. Hartman

W. C. Hartman
Utilities Department

gl

File: Water & mud

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. H. F. Henry
K-1001

Plant: ORGDP

Date: March 17, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily Monitoring of Raw Clinch River for Beta Counts

Daily monitoring of raw Clinch River water for beta count resulted in the following:

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
2-28, 3-1, 3-2	2.9	0.9	3.6
March 3	2.4	6.0	3.8
March 4	1.5	3.0	4.3
March 5	1.1	4.8	4.9
March 6	0.5	4.4	6.0
March 7, 8, and 9	0.8	3.0	5.4
March 10	8.6	10.4	10.6
March 11	4.5	6.9	12.3
March 12	3.8	8.1	9.6
March 13	2.4	7.3	14.9
March 14 and 15	2.5	4.0	11.3
March 16	6.3	15.4	20.0

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MAR 13 1959
SAFETY AND
PHYSICS

W. C. Hartman

W. C. Hartman
Utilities Department

gl

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. H. F. Henry
K-1001

Plant: ORGDP

Date: March 3, 1959

Copies To: Mr. A. F. Becher
File

Subject: Daily monitoring of raw Clinch River water for beta counts

As discussed previously, we have started a daily monitoring program of the raw Clinch River water for Sr^{89}, Sr^{90}, and other beta. This transmittal gives the results obtained through last week-end. In the future, we will send the daily results to you once per week.

Date	Disintegrations/minute/100 ml		
	Sr^{89}	Sr^{90}	Other beta
2-3	3.9	6.1	3.1
2-4	3.0	2.7	-
2-5	2.6	2.0	1.5
2-6	2.7	2.6	2.6
2-7, 2-8, and 2-9	2.2	3.4	5.7
2-10	3.7	2.7	2.6
2-11	2.0	2.5	3.2
2-12	2.4	1.8	2.1
~~*2-12~~	~~2.3~~	~~2.7~~	~~3.0~~
2-13	3.3	5.1	7.7
2-14, 2-15, and 2-16	6.3	7.3	15.3
2-17	1.9	4.0	6.6
2-18	4.4	6.8	4.4
2-19	1.9	2.9	4.0
2-20	7.3	17.2	9.9
2-21, 2-22	3.1	10.5	12.1
2-23, 2-24	1.8	6.2	7.4
2-25	2.1	5.8	4.1
2-26	3.7	1.9	3.1
2-27	3.5	7.6	5.6
~~**2-27~~	~~2.4~~	~~6.8~~	~~5.1~~
2-28, 3-1, and 3-2	2.9	0.9	2.6

*Special grab sample obtained at K-901 to check efficiency of continuous samples.

**Special grab sample from sanitary water in K-1101 lab.

W. C. Hartman

W. C. Hartman
Utilities Department

WCH:CCF:gl

MEMO

AVOID ORAL INSTRUCTIONS

Date January 6, 1962

To Files

Re: Sr^{90} in Potable Water Supply

Discussed analytical methods with C. A. Kienberger. His proposal is as follows:

1. Will need about 3-5 liters of water sample to evaporate. Favors using present counting equipment; on this equipment he predicts:

   a. 30% counting geometry.

   b. ~ 20% precision for counting, recovery, etc.

Thus, at the USPHS MPC of 10 μμc/l or 1.0×10^{-12} c/l = 1.0×10^{-5} μc/l = $= 1.0 \times 10^{-8}$ μc/cc = 2.25 d/m/100 cc @ 30% geometry = 0.67 c/m/100 cc at 20% precision = 0.134 c/m/100 cc. However, he agrees that the Ru^{106} carry over at these values may give us a problem.

CN-486
235 3-59)

AFB:la
NoRC

Signed A. F. Becher

A. F. Becher

Sr Determination

Memorandum

To: Files
Subject: Quality Control for Sr^{90} Determinations in Water.

G. S. Petit, Uranium Measurements Department, Technical Division, ORGDP, indicates the following precision for current procedures used in determining Sr (beta) concentrations in water.

100 l of water was "spiked" to approximate Dept. of H, E & W (USPHS) recommended control limits (22.5 dis/min/l). The 100 l was concentrated to 1 liter, and divided into 16 aliquots. Results were: 21.0, 20.0, 22.0, 21.0, 21.4, 20.6, 21.0, 20.5, 20.9, 22.5, 22.7, 19.3, 22.2, 22.4, 19.0, 22.3. Thus, an average ($\bar{x}$) of 21.2 ± 0.6

this precision includes the separation, recovery, and counting efficiencies: 21.2 ± 12% @ 21.2 ± 2.5 dis/min/liter for single analysis.

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