

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT - 1982

GASEOUS EFFLUENTS - ELEVATED RELEASE

Nuclides Released	Unit	CONTINUOUS MODE		BATCH	MODE
		1 <sup>st</sup> QUARTER	2 <sup>nd</sup> QUARTER	1 <sup>st</sup> QUARTER	2 <sup>nd</sup> QUARTER
<b>1. FISSION GASES</b>					
Krypton - 85	Ci		1.737E-2	1.682E 0	4.901E 0
Krypton - 85m	Ci	3.818E-1	9.087E-1	5.463E-2	
Krypton - 87	Ci	1.971E-1	5.282E-1		
Krypton - 88	Ci	1.035E-1	5.011E-1		
Xenon - 133	Ci	1.872E+2	6.073E+1	1.784E+2	9.017E 0
Xenon - 135	Ci	2.214E 0	7.120E 0	1.494E 0	
Xenon - 135m	Ci				
Xenon - 138	Ci				
Xenon - 133m	Ci	1.823E-1	4.351E-1	1.120E 0	3.912E-3
Xenon - 131m	Ci	1.773E-1	2.919E-1	2.361E-1	4.037E-1
Argon - 41	Ci	3.493E-2	3.210E-1		
Total for period	Ci	1.905E+2	7.085E+1	1.830E+2	1.433E+1
<b>2. IODINES</b>					
Iodine - 131	Ci	2.639E-3	1.037E-3	3.771E-3	2.598E-5
Iodine - 133	Ci	1.854E-3	1.409E-3	8.907E-4	
Iodine - 135	Ci		4.536E-4	1.548E-4	
Iodine - 130	Ci			2.503E-5	
Total for period	Ci	4.493E-3	2.900E-3	4.842E-3	2.598E-5
<b>3. PARTICULATES</b>					
Strontium - 89	Ci	1.244E-6	1.918E-6		
Strontium - 90	Ci	7.567E-7			
Cesium - 134	Ci	1.588E-4	1.194E-4		
Cesium - 137	Ci	4.110E-4	2.246E-4		2.987E-8
Barium-lanthanum - 140	Ci				
Cobalt - 60	Ci	2.206E-4	7.218E-6	1.344E-6	
Cobalt - 58	Ci	1.359E-5	8.232E-6		
Total for Period	Ci	8.060E-4	3.614E-4	1.344E-6	2.987E-8

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EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1982

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Est. Total Error, %
<b>A. FISSION AND ACTIVATION GASES</b>				
1. Total release	Ci	3.735E+2	8.518E+1	13.1
2. Average release rate for period	μCi/Sec	4.803E+1	1.003E+1	
3. Percent of technical specification limit	%	2.326E-1	6.625E-2	
<b>B. IODINES</b>				
1. Total iodine - 131	Ci	6.410E-3	1.063E-3	4.7
2. Average release rate for period	μCi/Sec	8.243E-4	1.352E-4	
3. Percent of technical specification limit	%	1.484E-1	2.434E-2	
<b>C. PARTICULATES</b>				
1. Particulates with half-lives > 8 days	Ci	8.073E-4	3.614E-4	26.2
2. Average release rate for period	μCi/Sec	1.038E-4	4.597E-5	
3. Percent of technical specification limit	%	1.869E-2	8.275E-3	
4. Gross alpha radioactivity	Ci	<3.342E-5	<3.916E-5	
<b>D. TRITIUM</b>				
1. Total release	Ci	5.449E-1	5.946E-1	2.2
2. Average release rate for period	μCi/Sec	7.007E-2	7.563E-2	
3. Percent of technical specification limit	%	4.539E-1	5.235E-1	

TABLE 1  
 SUMMARY OF DOSES (in mrem) FROM ALL EFFLUENT  
 PATHWAYS IN ACCORDANCE WITH 40CFR190

January 1, 1982 to June 30, 1982

PATHWAY

(A)	<u>Liquid</u>	<u>Whole Body</u>	<u>Skin</u>	<u>Thyroid</u>	<u>G. I. Tract</u>	<u>Bone</u>
	Drinking Water	5.21E-4	-	4.43E-3	3.57E-4	4.61E-4
	Fish Consumption	1.79E-2	-	1.14E-3	3.33E-3	1.53E-2
	Shoreline Activities	4.55E-4	5.33E-4	-	-	-
	Swimming	6.31E-6	7.86E-6	-	-	-
	Boating	3.15E-6	3.93E-6	-	-	-
	TOTAL FOR LIQUIDS	1.89E-2	5.45E-4	5.56E-3	3.68E-3	1.57E-2
	POPULATION DOSE (man-rem)	11.8				
(B)	<u>Gaseous</u>					
	Air Submersion*	2.20E-3	2.70E-2			
	Inhalation*			5.40E-3		
	Adult Leafy Vegetable Consumption**			6.50E-3		
	TOTAL FOR GASEOUS	2.20E-3	2.70E-2	1.19E-2		
	POPULATION DOSE (man-rem)	1.67E-2				
(C)	TOTAL FROM THIS REPORT (Liquid and Gaseous)	2.11E-2	2.76E-2	1.75E-2	3.68E-3	1.57E-2

Infant Thyroid Doses

Milk Pathway\*\*\*  
 Inhalation\*\*

0.0  
 4.50E-3

\*Worst Sector Site-Boundary  
 \*\*Nearest Residence (.5 Miles South)  
 \*\*\*Nearest Cow Location (1.8 Miles ENE)

## FORM III

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1982

## LIQUID EFFLUENTS

Nuclides Released		BATCH	MODE	CONTINUOUS MODE	
		1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>
		Quarter	Quarter	Quarter	Quarter
Strontium - 89	Ci	1.503E-3	1.569E-4		—
Strontium - 90	Ci	1.408E-4	3.620E-5		—
Cesium - 134	Ci	6.647E-2	2.752E-2	5.138E-3	1.813E-2
Cesium - 137	Ci	6.554E-2	4.947E-2	2.175E-2	4.299E-2
Iodine - 131	Ci	3.495E-2	4.232E-2	1.010E-2	5.217E-3
Cobalt - 58	Ci	2.240E-1	1.506E-1	1.327E-2	2.760E-3
Cobalt - 60	Ci	6.514E-2	4.975E-2	9.791E-3	7.293E-4
Iron - 59	Ci	9.563E-5			
Zinc - 65	Ci	7.187E-4	4.961E-4		
Manganese - 54	Ci	5.753E-3	3.718E-3		
Chromium - 51	Ci	9.233E-3	2.013E-3	1.782E-3	
Zirconium-Niobium - 95	Ci	6.508E-3	2.075E-3	1.125E-4	
Molybdenum - 99	Ci				
Technetium - 99m	Ci				
Barium-Lanthanum - 140	Ci				
Cerium - 139	Ci	2.679E-4	2.847E-4		1.854E-5
Cesium - 136	Ci	1.450E-3	1.980E-3	6.460E-4	9.320E-5
Sodium - 24	Ci		3.643E-4		
Iodine - 133	Ci	1.217E-3	1.528E-3	3.473E-3	2.932E-3
Cobalt - 57	Ci	2.180E-4	1.850E-4		
Zirconium - 97	Ci	1.595E-4			
Silver - 110m	Ci	7.761E-3	1.501E-3		
Antimony - 124	Ci	1.110E-2	6.035E-3		
Iodine - 135	Ci				7.094E-4

## FORM IV

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1982

## LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	BATCH		CONTINUOUS		Est. Error
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	
<b>A. FISSION AND ACTIVATION PRODUCTS</b>						
1. Total Release (Not including Tritium, Alpha, Gases)	Ci	5.069E-1	3.400E-1	6.606E-2	7.358E-2	2.54
2. Average diluted concentration during period	µCi/ml	2.765E-8	3.269E-8	1.189E-10	8.091E-11	
3. Percent of applicable limit	%	7.184E-1	1.462E 0	7.071E-3	2.718E-3	
<b>B. TRITIUM</b>						
1. Total Release	Ci	5.125E+2	1.721E+2	6.604E-1	6.923E 0	0.35
2. Average diluted concentration during period	µCi/ml	2.796E-5	1.655E-5	1.189E-9	7.613E-9	
3. Percent of applicable limit	%	9.320E-1	5.516E-1	3.962E-5	2.538E-4	
<b>DISSOLVED AND ENTRAINED GASES</b>						
1. Total Release	Ci	1.543E 0	5.609E-1	3.531E-2	6.095E-2	12.40
2. Average diluted concentration during period	µCi/ml	8.418E-8	5.393E-8	6.355E-11	6.702E-11	
3. Percent of applicable limit	%	*	*	*	*	-
<b>D. GROSS ALPHA RADIOACTIVITY</b>						
1. Total Release	ci	<1.164E-3	<1.182E-3			
<b>E. VOLUME OF WASTE RELEASED</b>						
	Liters	2.624E+6	1.641E+6	1.407E+8	1.882E+8	2.00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>						
	Liters	1.833E+10	1.040E+10	5.556E+11	9.094E+11	3.48

\* No Applicable Limit

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<b>1. FISSION GASES</b>					
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Xenon - 135	Ci	2.214E 0	7.120E 0	1.494E 0	
Xenon - 135m	Ci				
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Xenon - 133m	Ci	1.823E-1	4.351E-1	1.120E 0	3.912E-3
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Total for period	Ci	1.905E+2	7.085E+1	1.830E+2	1.433E+1
<b>2. IODINES</b>					
Iodine - 131	Ci	2.639E-3	1.037E-3	3.771E-3	2.598E-5
Iodine - 133	Ci	1.854E-3	1.409E-3	8.907E-4	
Iodine - 135	Ci		4.536E-4	1.548E-4	
Iodine - 130	Ci			2.503E-5	
Total for period	Ci	4.493E-3	2.900E-3	4.842E-3	2.598E-5
<b>3. PARTICULATES</b>					
Strontium - 89	Ci	1.244E-6	1.918E-6		
Strontium - 90	Ci	7.567E-7			
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Cesium - 137	Ci	4.110E-4	2.246E-4		
Barium-lanthanum - 140	Ci				2.987E-8
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TABLE 1  
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 PATHWAYS IN ACCORDANCE WITH 40CFR190

January 1, 1982 to June 30, 1982

PATHWAY

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	Drinking Water	5.21E-4	-	4.43E-3	3.57E-4	4.61E-4
	Fish Consumption	1.79E-2	-	1.14E-3	3.33E-3	1.53E-2
	Shoreline Activities	4.55E-4	5.33E-4	-	-	-
	Swimming	6.31E-6	7.86E-6	-	-	-
	Boating	3.15E-6	3.93E-6	-	-	-
	TOTAL FOR LIQUIDS	1.89E-2	5.45E-4	5.56E-3	3.68E-3	1.57E-2
	POPULATION DOSE (man-rem)	11.8				
(B)	<u>Gaseous</u>					
	Air Submersion*	2.20E-3	2.70E-2			
	Inhalation*			5.40E-3		
	Adult Leafy Vegetable Consumption**			6.50E-3		
	TOTAL FOR GASEOUS	2.20E-3	2.70E-2	1.19E-2		
	POPULATION DOSE (man-rem)	1.67E-2				
(C)	TOTAL FROM THIS REPORT (Liquid and Gaseous)	2.11E-2	2.76E-2	1.75E-2	3.68E-3	1.57E-2

Infant Thyroid Doses

Milk Pathway\*\*\*

Inhalation\*\*

0.0  
4.50E-3

\*Worst Sector Site-Boundary  
 \*\*Nearest Residence (.5 Miles South)  
 \*\*\*Nearest Cow Location (1.8 Miles ENE)



## FORM III

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## LIQUID EFFLUENTS

Nuclides Released		BATCH	MODE	CONTINUOUS MODE	
		1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>
		Quarter	Quarter	Quarter	Quarter
Strontium - 89	Ci	1.503E-3	1.569E-4		—
Strontium - 90	Ci	1.408E-4	3.620E-5		—
Cesium - 134	Ci	3.647E-2	2.752E-2	5.138E-3	1.813E-2
Cesium - 137	Ci	6.554E-2	4.947E-2	7.175E-2	4.299E-2
Iodine - 131	Ci	3.495E-2	4.232E-2	1.010E-2	5.217E-3
Cobalt - 58	Ci	2.240E-1	1.506E-1	1.327E-2	2.760E-3
Cobalt - 60	Ci	6.514E-2	4.975E-2	9.791E-3	7.293E-4
Iron - 59	Ci	9.563E-5			
Zinc - 65	Ci	7.187E-4	4.961E-4		
Manganese - 54	Ci	5.753E-3	3.718E-3		
Chromium - 51	Ci	9.233E-3	2.013E-3	1.782E-3	
Zirconium-Niobium - 95	Ci	6.508E-3	2.075E-3	1.125E-4	
Molybdenum - 99	Ci				
Technetium - 99m	Ci				
Barium-Lanthanum - 140	Ci				
Cerium - 139	Ci	2.679E-4	2.847E-4		1.854E-5
Cesium - 136	Ci	1.450E-3	1.980E-3	6.460E-4	9.320E-5
Sodium - 24	Ci		3.643E-4		
Iodine - 133	Ci	1.217E-3	1.528E-3	3.473E-3	2.932E-3
Cobalt - 57	Ci	2.180E-4	1.850E-4		
Zirconium - 97	Ci	1.595E-4			
Silver - 110m	Ci	7.761E-3	1.501E-3		
Antimony - 124	Ci	1.110E-2	6.035E-3		
Iodine - 135	Ci				7.094E-4

## FORM IV

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT - 1982

## LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	BATCH		CONTINUOUS		Est. Error
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	
<b>A. FISSION AND ACTIVATION PRODUCTS</b>						
1. Total Release (Not including Tritium, Alpha, Gases)	ci	5.069E-1	3.400E-1	6.606E-2	7.358E-2	2.54
2. Average diluted concentration during period	µci/ml	2.765E-8	3.269E-8	1.189E-10	8.091E-11	
3. Percent of applicable limit	%	7.184E-1	1.462E 0	7.071E-3	2.718E-3	
<b>B. TRITIUM</b>						
1. Total Release	ci	5.125E+2	1.721E+2	6.604E-1	6.923E 0	0.35
2. Average diluted concentration during period	µci/ml	2.796E-5	1.655E-5	1.189E-9	7.613E-9	
3. Percent of applicable limit	%	9.320E-1	5.516E-1	3.962E-5	2.538E-4	
<b>DISSOLVED AND ENTRAINED GASES</b>						
1. Total Release	ci	1.543E 0	5.609E-1	3.531E-2	6.095E-2	12.40
2. Average diluted concentration during period	µci/ml	8.418E-8	5.393E-8	6.355E-11	6.702E-11	
3. Percent of applicable limit	%	*	*	*	*	-
<b>D. GROSS ALPHA RADIOACTIVITY</b>						
1. Total Release	ci	<1.164E-3	<1.182E-3			
<b>E. VOLUME OF WASTE RELEASED</b>						
	Liters	2.624E+6	1.641E+6	1.407E+8	1.882E+8	2.00
<b>F. VOLUME OF DILUTION WATER USED DURING PERIOD</b>						
	Liters	1.833E+10	1.040E+10	5.556E+11	9.094E+11	3.48

\* No Applicable Limit