

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. Gaseous Effluents Released - Summary Sheet

	Units	January	February	March	First Quarter
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1. Gross Radioactivity Releases

a. Total Release	Ci	2.2 E+1	1.8 E+1	1.7 E+1	5.7 E+1
b. Max. Release Rate	µCi/Hr.	4.7 E+5	9.4 E+4	3.5 E+5	4.7 E+5
c. % of Quarterly Limit (5mRy/10mR B) ¹	%	--	--	--	0.04 0.13

2. Iodine Releases

a. Total I-131, I-133	Ci	2.1 E-5	6.7 E-6	4.4 E-5	7.2 E-5
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3. Particulate Releases

a. Gross Radioactivity	Ci	2.2 E-4	1.9 E-4	3.0 E-4	7.1 E-4
b. Gross Alpha Radioactivity	Ci	2.1 E-5	2.6 E-5	1.5 E-4	2.1 E-4
c. Gross Particulate with Half Lives > 8 Days	Ci	2.2 E-4	8.3 E-5	4.0 E-5	3.4 E-4

4. Sum of I-131, I-133 & Particulate With Half Lives Greater Than 8 Days

a. Total	Ci	2.4 E-4	9.0 E-5	8.4 E-5	4.1 E-4
b. % of Quarterly Limit (7.5 mR Organ)	%	--	--	--	0.58

5. Tritium Releases

a. Total Release	Ci	8.5 E+1	7.5 E+1	2.6 E+1	1.9 E+2
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1 - Noble Gas Gamma/Beta

<LLD - No detectable activity above background

8808310003 880630
PDR ADOCK 05000295
R PDC

DE48
1/1

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

A. Gaseous Effluents Released - Isotopes

Isotopes Released	Units	January	February	March	First Quarter
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1. Gross Radioactivity Releases

Ar-41	Ci	2.3 E-2	8.6 E-3	5.6 E-3	3.7 E-2
Kr-85		1.7 E-1	<LLD	8.8 E-2	2.6 E-1
Kr-85M		<LLD	<LLD	<LLD	<LLD

Kr-87	Ci	<LLD	<LLD	<LLD	<LLD
Kr-88		<LLD	<LLD	<LLD	<LLD

Xe-131	Ci	<LLD	<LLD	<LLD	<LLD
Xe-131M		2.8 E-2	2.0 E-3	9.0 E-3	3.9 E-2
Xe-133		2.1 E+1	1.4 E+1	1.7 E+1	5.2 E+1
Xe-133M		4.2 E-3	4.4 E-3	1.7 E-3	1.0 E-2

Xe-135	Ci	6.2 E-1	3.9 E0	2.7 E-2	4.5 E0
Xe-135M		<LLD	<LLD	<LLD	<LLD
Xe-138		<LLD	<LLD	<LLD	<LLD

	Ci				

	Ci				

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

B. Gaseous Effluents Released - Isotopes (continued)

Isotopes Released	Units	January	February	March	First Quarter
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2. Iodine Releases

Na-24	Ci	<LLD	1.0 E-8	<LLD	1.0 E-8
Mn-54		<LLD	<LLD	<LLD	<LLD

Co-58	Ci	<LLD	<LLD	7.3 E-6	7.3 E-6
Co-60		8.0 E-8	2.2 E-7	2.8 E-5	2.8 E-5
Co-57		<LLD	<LLD	<LLD	<LLD

	Ci				
Br-82		4.0 E-6	5.8 E-6	5.9 E-7	1.0 E-5
Rb-88		<LLD	<LLD	<LLD	<LLD

	Ci				
Ru-105		<LLD	<LLD	<LLD	<LLD
Ag-110M		<LLD	<LLD	<LLD	<LLD

I-131	Ci	9.1 E-6	3.6 E-6	4.1 E-5	5.4 E-5
I-132		1.7 E-7	4.2 E-5	1.6 E-3	1.6 E-3
I-133		1.2 E-5	3.1 E-6	3.2 E-6	1.8 E-5
I-134		<LLD	<LLD	1.5 E-4	1.5 E-4
Cs-134		<LLD	<LLD	2.7 E-8	2.7 E-8

I-135	Ci	1.6 E-6	8.5 E-7	1.1 E-7	2.6 E-6
Cs-136		<LLD	<LLD	<LLD	<LLD
Cs-137		1.2 E-8	1.0 E-5	5.8 E-7	1.1 E-5
Cs-138		<LLD	<LLD	2.1 E-5	2.1 E-5

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

B. Gaseous Effluents Released - Isotopes (continued)

Isotopes Released	Units	January	February	March	First Quarter
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3. Particulate Releases

Na-24	Ci	3.0 E-7	2.8 E-7	2.3 E-7	8.1 E-7
Mn-54		<LLD	<LLD	<LLD	<LLD
Mn-56		<LLD	<LLD	<LLD	<LLD

Co-58	Ci	<LLD	<LLD	1.7 E-5	1.7 E-5
Co-60		6.6 E-8	6.7 E-7	2.2 E-5	2.3 E-5

Br-82	Ci	<LLD	<LLD	<LLD	<LLD
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Rb-88	Ci	1.8 E-4	8.0 E-5	<LLD	2.6 E-4
Sr-89 ¹		--	--	--	--
Sr-90 ¹		--	--	--	--

Sr-91	Ci	<LLD	<LLD	<LLD	<LLD
Sr-92		<LLD	<LLD	<LLD	<LLD
Nb-95		<LLD	<LLD	<LLD	<LLD

Mo-99	Ci	<LLD	<LLD	<LLD	<LLD
Tc-99M		<LLD	<LLD	<LLD	<LLD

<LLD - No detectable activity above background

1 - Data will be presented in an errata to the Semi-Annual Report

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

B. Gaseous Effluents Released - Isotopes (continued)

Isotopes Released	Units	January	February	March	First Quarter
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3. Particulate Releases (continued)

Ru-103	Ci	<LLD	<LLD	<LLD	<LLD
Ag-110M		<LLD	<LLD	<LLD	<LLD

Sb-122	Ci	<LLD	<LLD	<LLD	<LLD
I-131		4.4 E-9	3.6 E-8	4.5 E-9	4.5 E-8
I-132		<LLD	<LLD	<LLD	<LLD
Te-132		<LLD	<LLD	<LLD	<LLD

I-133	Ci	2.5 E-8	4.9 E-8	2.1 E-8	9.5 E-8
Cs-134		3.1 E-7	4.8 E-7	4.3 E-8	8.3 E-7
I-134		<LLD	<LLD	<LLD	<LLD
I-135		<LLD	1.2 E-8	<LLD	1.2 E-8

Cs-136	Ci	<LLD	<LLD	<LLD	<LLD
Cs-137		4.1 E-8	7.4 E-7	1.1 E-6	1.9 E-6
Cs-138		3.9 E-5	1.0 E-6	<LLD	4.0 E-5
Ba-139		<LLD	<LLD	<LLD	<LLD

Ba-140	Ci	<LLD	3.1 E-8	<LLD	3.1 E-8
La-140		<LLD	5.2 E-9	<LLD	5.2 E-9

W-187	Ci	<LLD	<LLD	<LLD	<LLD
Bi-214		<LLD	<LLD	<LLD	<LLD
Pb-214		<LLD	<LLD	<LLD	<LLD

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

UNIT 1

C. Liquid Effluents Released - Summary Sheet

	Units	January	February	March	First Quarter
1. Gross Radioactivity ¹					
a. Total Release	Ci	NO	NO	NO	NO
b. Avg. Concentration Released	µCi/ml	RELEASES	RELEASES	RELEASES	RELEASES
c. Max. Concentration Released	µCi/ml	THIS	THIS	THIS	THIS
d. % of Tech. Spec. Qtr. Limit (1.5mR/5mR) ²	%	MONTH	MONTH	MONTH	QUARTER
e. % of Tech. Spec. Yearly Limit (3mR/10mR) ²	%				
2. Tritium					
a. Total Release	Ci				
b. Avg. Concentration Released	µCi/ml				
3. Dissolved Noble Gases					
a. Total Release	Ci				
b. Avg. Concentration Released	µCi/ml				
4. Gross Alpha Radioactivity					
a. Total Release	Ci				
b. Avg. Concentration Released	µCi/ml				
5. Volume of Liquid Waste to Discharge	Liters				
6. Volume of Dilution Water	Liters	1.1 E+11	9.2 E+10	4.8 E+9	2.1 E+11

1 - Excludes Tritium, Alpha, and Dissolved Noble Gases

2 - Whole body/organ

<LLD - No detectable activity above background

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 1

U. Liquid Effluents Released - Isotopes

Isotopes Released	Units	January	February	March	First Quarter
Na-24	Ci	NO RELEASES THIS MONTH	NO RELEASES THIS MONTH	NO RELEASES THIS MONTH	NO RELEASES THIS QUARTER
Cr-51	Ci				
Mn-54					
Co-57					
Co-58					
Fe-59					
Co-60	Ci				
Kr-85	Ci				
Kr-88					
Rb-88					
Sr-89 ¹					
Sr-90 ¹					
Sr-92					
Nb-95	Ci				
Zr-95					
Tc-99M					

<LLD - No detectable activity above background

1 - Data will be presented in an errata to the Semi-Annual Report

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 1

D. Liquid Effluents Released - Isotopes (continued)

Isotopes Released	Units	January	February	March	First Quarter
	Ci				
Ru-105		NO	NO	NO	NO
Sn-113		RELEASES	RELEASES	RELEASES	RELEASES
		THIS	THIS	THIS	THIS
Ag-110M		MONTH	MONTH	MONTH	QUARTER
Sb-122	Ci				
Sb-124					
Sb-125					
I-131	Ci				
I-133					
Xe-133					
Xe-133M	Ci				
Cs-134					
I-134					
Xe-135					
Cs-136	Ci				
Cs-137					
Cs-138					
Iz-140	Ci				
W-187					

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

UNIT 2

C. Liquid Effluents Released - Summary Sheet

	Units	January	February	March	First Quarter
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1. Gross Radioactivity¹

a. Total Release	Ci	6.4 E-2	1.1 E-1	3.6 E-1	5.3 E-1
b. Avg. Concentration Released	μCi/ml	6.5 E-10	1.4 E-9	3.9 E-9	2.0 E-9
c. Max. Concentration Released	μCi/ml	9.9 E-9	1.3 E-8	8.2 E-8	8.2 E-8
d. % of Tech. Spec. Qtr. Limit (1.5mR/5mR) ²	%	--	--	--	0.02 0.01
e. % of Tech. Spec. Yearly Limit (3mR/10mR) ²	%	--	--	--	0.01 0.00

2. Tritium

a. Total Release	Ci	7.1 E+1	4.6 E+1	7.0 E+1	1.9 E+2
b. Avg. Concentration Released	μCi/ml	7.2 E-7	5.9 E-7	7.6 E-7	6.9 E-7

3. Dissolved Noble Gases

a. Total Release	Ci	1.6 E-1	8.0 E-2	1.2 E-1	3.6 E-1
b. Avg. Concentration Released	μCi/ml	1.6 E-9	1.0 E-9	1.3 E-9	1.3 E-9

4. Gross Alpha Radioactivity

a. Total Release	Ci	5.0 E-5	7.5 E-5	4.2 E-5	1.7 E-4
b. Avg. Concentration Released	μCi/ml	5.1 E-13	9.6 E-13	4.6 E-13	6.4 E-13

5.	Volume of Liquid Waste to Discharge	Liters	1.7 E+7	1.9 E+7	1.7 E+7	5.3 E+7
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6.	Volume of Dilution Water	Liters	1.1 E+11	1.1 E+11	1.1 E+11	3.3 E+11
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1 - Excludes Tritium, Alpha, and Dissolved Noble Gases

2 - Whole Body/Organ

<LLD - No detectable activity above background

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 2

D. Liquid Effluents Released - Isotopes

Isotopes Released	Units	January	February	March	First Quarter
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Na-24	Ci	8.4 E-4	<LLD	7.0 E-6	8.5 E-4
Ar-41		<LLD	<LLD	<LLD	<LLD

Cr-51	Ci	<LLD	<LLD	5.5 E-2	5.5 E-2
Mn-54		1.3 E-4	5.2 E-4	3.2 E-4	9.7 E-4
Co-57		<LLD	<LLD	1.3 E-4	1.3 E-4
Co-58		1.3 E-3	4.1 E-3	1.5 E-1	1.6 E-1
Fe-59		<LLD	5.4 E-6	1.6 E-2	1.6 E-2

Co-60	Ci	2.5 E-2	6.2 E-2	7.8 E-2	1.7 E-1

Kr-85	Ci	<LLD	<LLD	<LLD	<LLD
Kr-88		<LLD	<LLD	<LLD	<LLD
Sr-89 ¹		--	--	--	--

Sr-90 ¹	Ci	--	--	--	--
Sr-92		<LLD	<LLD	<LLD	<LLD

Nb-95	Ci	<LLD	<LLD	1.4 E-3	1.4 E-3
Zr-95		<LLD	<LLD	8.5 E-4	8.5 E-4
Mo-99		5.3 E-5	<LLD	<LLD	5.3 E-5
Tc-99M		2.0 E-4	5.7 E-5	3.3 E-5	2.9 E-4

<LLD - No detectable activity above background

1 - Data will be presented in an errata to the Semi-Annual Report

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 2

D. Liquid Effluents Released - Isotopes (continued)

Isotopes Released	Units	January	February	March	First Quarter
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Ru-103	Ci	<LLD	<LLD	1.7 E-3	1.7 E-3
Ru-105		<LLD	<LLD	<LLD	<LLD
Sn-113		<LLD	<LLD	2.4 E-3	2.4 E-3
Sn-117M		<LLD	<LLD	1.3 E-3	1.3 E-3
Ag-110M		5.6 E-3	2.0 E-2	2.0 E-3	2.8 E-2

Sb-122	Ci	<LLD	<LLD	<LLD	<LLD
Sb-124		2.8 E-4	<LLD	5.9 E-3	6.2 E-3
Sb-125		5.3 E-3	5.5 E-3	2.5 E-2	3.6 E-2
Te-132		<LLD	<LLD	1.8 E-3	1.8 E-3
Xe-131M		<LLD	<LLD	<LLD	<LLD

I-131	Ci	1.5 E-2	1.6 E-3	<LLD	1.7 E-2
I-132		<LLD	<LLD	3.5 E-3	3.5 E-3
I-133		4.0 E-3	1.0 E-4	<LLD	4.1 E-3
Xe-133		1.6 E-1	7.9 E-2	1.2 E-1	3.6 E-1

Xe-133M	Ci	8.6 E-4	<LLD	7.1 E-4	1.6 E-3
Cs-134		1.8 E-3	3.9 E-3	1.3 E-3	7.0 E-3
I-134		<LLD	<LLD	<LLD	<LLD
I-135		2.4 E-4	<LLD	<LLD	2.4 E-4
Xe-135		1.8 E-3	7.9 E-4	1.5 E-4	2.7 E-3

Cs-136	Ci	1.2 E-4	<LLD	<LLD	1.2 E-4
Cs-137		3.8 E-3	7.5 E-3	2.9 E-3	1.4 E-2
Cs-138		<LLD	<LLD	<LLD	<LLD

La-140	Ci	1.4 E-5	1.4 E-4	9.0 E-4	1.1 E-3
Pr-144		<LLD	<LLD	1.3 E-2	1.3 E-2
W-187		<LLD	<LLD	<LLD	<LLD

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. Gaseous Effluents Released - Summary Sheet

	Units	April	May	June	Second Quarter
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1. Gross Radioactivity Releases

a. Total Release	Ci	9.2 E+1	6.3 E+2	8.4 E+1	8.1 E+2
b. Max. Release Rate	μCi/Hr.	6.4 E+5	3.0 E+6	3.4 E+5	3.0 E+6
c. % of Quarterly Limit (5mRy/10mR B) ¹	%	--	--	--	0.64 2.14

2. Iodine Releases

a. Total I-131, I-133	Ci	1.1 E-5	2.4 E-5	7.2 E-5	1.1 E-4
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3. Particulate Releases

a. Gross Radioactivity	Ci	2.3 E-4	7.6 E-4	2.0 E-3	3.0 E-3
b. Gross Alpha ²	Ci	--	--	--	--
c. Gross Particulate with Half Lives > 8 Days	Ci	3.6 E-5	1.7 E-4	9.1 E-5	3.0 E-4

4. Sum of I-131, I-133 & Particulate With Half Lives Greater Than 8 Days

a. Total	Ci	4.7 E-5	1.9 E-4	1.6 E-4	4.0 E-4
b. % of Quarterly Limit (7.5 mR Organ)	%	--	--	--	0.38

5. Tritium Releases

a. Total Release	Ci	2.7 E+1	1.7 E+1	2.0 E+1	6.4 E+1
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1 - Noble Gas Gamma/Beta

2 - Data will be presented in an errata to the Semi-Annual Report

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

B. Gaseous Effluents Released - Isotopes

Isotopes Released	Units	April	May	June	Second Quarter
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1. Gross Radioactivity Releases

Ar-41	Ci	7.1 E-3	4.8 E-3	1.3 E-2	2.5 E-2
Kr-85		<LLD	3.8 E-2	<LLD	3.8 E-2
Kr-85M		<LLD	<LLD	<LLD	<LLD

Kr-87	Ci	<LLD	<LLD	<LLD	<LLD
Kr-88		<LLD	<LLD	<LLD	<LLD

Xe-131	Ci	<LLD	<LLD	<LLD	<LLD
Xe-131M		<LLD	5.0 E-3	<LLD	5.0 E-3
Xe-133		9.2 E+1	6.6 E+2	8.1 E+1	8.3 E+2
Xe-133M		<LLD	<LLD	5.5 E-3	5.5 E-3

Xe-135	Ci	1.7 E-2	2.7 E+1	2.7 E0	3.0 E+1
Xe-135M		<LLD	<LLD	<LLD	<LLD
Xe-138		<LLD	<LLD	<LLD	<LLD

	Ci				

	Ci				

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

B. Gaseous Effluents Released - Isotopes (continued)

Isotopes Released	Units	April	May	June	Second Quarter
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2. Iodine Releases

Na-24	Ci	2.8 E-9	1.2 E-8	1.0 E-8	2.5 E-8

Co-58	Ci	7.0 E-6	5.7 E-7	3.2 E-7	1.9 E-6
Co-60		2.8 E-5	9.2 E-7	4.2 E-9	2.9 E-5

	Ci				
Br-82		7.4 E-7	2.3 E-6	2.6 E-6	5.6 E-6
Rb-88		<LLD	<LLD	<LLD	<LLD

	Ci				

I-131	Ci	7.5 E-6	8.7 E-6	4.5 E-5	6.1 E-5
I-132		<LLD	2.0 E-7	8.9 E-7	1.1 E-6
I-133		3.4 E-6	1.5 E-5	2.7 E-5	4.5 E-5
I-134		<LLD	<LLD	<LLD	<LLD
Cs-134		2.1 E-7	1.6 E-8	<LLD	2.3 E-7

I-135	Ci	2.4 E-7	1.2 E-6	3.4 E-6	4.8 E-6
Cs-136		<LLD	<LLD	<LLD	<LLD
Cs-137		1.4 E-6	3.8 E-8	<LLD	1.4 E-6
Cs-138		<LLD	<LLD	<LLD	<LLD

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

Gaseous Effluents Released - Isotopes (continued)

Isotopes Released	Units	April	May	June	Second Quarter
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3. Particulate Releases

Na-24	Ci	7.7 E-7	1.2 E-6	1.1 E-6	3.1 E-6
Mn-54		<LLD	<LLD	8.0 E-9	8.0 E-9

Co-58	Ci	1.5 E-6	2.6 E-5	<LLD	2.8 E-5
Co-60		2.8 E-5	4.2 E-5	4.3 E-8	7.0 E-5

	Ci				
Br-82		<LLD	<LLD	<LLD	<LLD

Rb-88	Ci	5.5 E-6	9.5 E-5	7.4 E-5	1.7 E-4
Rb-89		<LLD	<LLD	<LLD	<LLD
Sr-89		--	--	--	*<LLD
Sr-90		--	--	--	*<LLD

Sr-91	Ci	<LLD	<LLD	<LLD	<LLD
Sr-92		<LLD	<LLD	<LLD	<LLD
Nb-95		<LLD	3.8 E-9	<LLD	3.8 E-9

	Ci				
Mo-99		<LLD	<LLD	7.2 E-9	7.2 E-9
Tc-99M		1.9 E-9	9.2 E-9	8.3 E-9	1.9 E-8

<LLD - No detectable activity above background

* - Errata Data to the Semi-Annual Report

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE

B. Gaseous Effluents Released - Isotopes (continued)

Isotopes Released	Units	April	May	June	Second Quarter
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3. Particulate Releases (continued)

Ru-103	Ci	<LLD	<LLD	<LLD	<LLD
Ag-110M		<LLD	2.1 E-8	<LLD	2.1 E-8

Sb-122	Ci	<LLD	<LLD	<LLD	<LLD
I-131		1.0 E-8	1.4 E-7	8.8 E-8	2.4 E-7
I-132		<LLD	5.5 E-8	4.0 E-8	9.5 E-8
Te-132		<LLD	<LLD	<LLD	<LLD

I-133	Ci	4.6 E-8	1.1 E-7	1.7 E-7	3.3 E-7
Cs-134		8.7 E-7	2.2 E-8	4.1 E-8	9.3 E-7
I-134		<LLD	<LLD	<LLD	<LLD
I-135		1.4 E-8	2.3 E-8	8.9 E-8	1.3 E-7

Cs-136	Ci	<LLD	<LLD	<LLD	<LLD
Cs-137		7.1 E-9	4.9 E-8	7.7 E-8	1.3 E-7
Cs-138		<LLD	6.6 E-6	1.7 E-5	2.4 E-5
Ba-139		<LLD	<LLD	<LLD	<LLD

Ba-140	Ci	<LLD	<LLD	<LLD	<LLD
La-140		<LLD	<LLD	1.5 E-8	1.5 E-8

W-187	Ci	<LLD	1.6 E-7	1.1 E-7	2.7 E-7
Bi-214		<LLD	<LLD	<LLD	<LLD
Pb-214		<LLD	<LLD	<LLD	<LLD

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS - SUMMARY OF ALL RELEASES

UNIT 1

C. Liquid Effluents Released - Summary Sheet

	Units	April	May	June	Second Quarter
1. Gross Radioactivity ¹					
a. Total Release	Ci	No	6.9 E-2	9.9 E-2	1.7 E-1
b. Avg. Concentration Released	μCi/ml	Releases	2.3 E-9	1.1 E-9	1.7 E-9
c. Max. Concentration Released	μCi/ml	This	1.3 E-8	1.4 E-8	1.4 E-8
d. % of Tech. Spec. Qtr. Limit (1.5mR/5mR) ²	%	Month	--	--	0.01 0.00
e. % c Tech. Spec. Yearly Limit (3mR/10mR) ²	%		--	--	0.00 0.00
2. Tritium					
a. Total Release	Ci		1.2 E+1	4.9 E+1	6.1 E+1
b. Avg. Concentration Released	μCi/ml		3.9 E-7	5.5 E-7	4.7 E-7
3. Dissolved Noble Gases					
a. Total Release	Ci		4.6 E-2	1.8 E-1	2.3 E-1
b. Avg. Concentration Released	μCi/ml		1.5 E-9	2.0 E-9	1.8 E-9
4. Gross Alpha Radioactivity					
a. Total Release	Ci		7.0 E-6	3.3 E-5	4.0 E-5
b. Avg. Concentration Released	μCi/ml		2.3 E-13	3.7 E-13	3.0 E-13
5. Volume of Liquid Waste to Discharge	Liters		6.9 E+5	1.1 E+7	1.2 E+7
6. Volume of Dilution Water	Liters	1.6 E+10	1.0 E+11	1.1 E+11	2.3 E+11

1 - Excludes Tritium, Alpha, and Dissolved Noble Gases

2 - Whole body/organ

<LLD - No detectable activity above background

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 1

Liquid Effluents Released - Isotopes

Isotopes Released	Units	April	May	June	Second Quarter
Na-24	Ci	No Releases This Month	1.7 E-5	6.2 E-6	2.3 E-5
Ar-41			<LLD	<LLD	<LLD
Cr-51	Ci		4.0 E-3	2.3 E-4	4.2 E-3
Mn-54			1.7 E-4	2.8 E-4	4.5 E-4
Co-57			<LLD	1.8 E-5	1.8 E-5
Co-58			3.1 E-2	2.1 E-2	5.2 E-2
Fe-59			1.2 E-4	<LLD	1.2 E-4
Co-60	Ci		2.0 E-2	4.5 E-2	6.5 E-2
Kr-85	Ci		<LLD	<LLD	<LLD
Kr-88			<LLD	<LLD	<LLD
Rb-88			<LLD	<LLD	<LLD
Sr-89			--	--	*<LLD
Sr-90	Ci		--	--	*<LLD
Sr-92			<LLD	<LLD	<LLD
Nb-95	Ci		8.8 E-4	3.0 E-5	9.1 E-4
Zr-95			5.8 E-4	<LLD	5.8 E-4
Mo-99			<LLD	<LLD	<LLD

<LLD - No detectable activity above background

1 - Data will be presented in errata to Semi-Annual Report

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 1

D. Liquid Effluents Released - Isotopes (continued)

Isotopes Released	Units	April	May	June	Second Quarter
Ru-103	Ci	No	2.7 E-5	6.2 E-6	3.3 E-5
Ru-105		Releases	<LLD	<LLD	<LLD
Sn-113		This	1.5 E-4	<LLD	1.5 E-4
Sn-117M		Month	<LLD	<LLD	<LLD
Ag-110M			1.3 E-3	9.5 E-3	1.1 E-2
Sb-122	Ci		<LLD	<LLD	<LLD
Sb-124			2.3 E-3	3.2 E-3	5.5 E-3
Sb-125			7.6 E-3	1.6 E-2	2.4 E-2
I-131	Ci		<LLD	2.1 E-4	2.1 E-4
I-132			<LLD	<LLD	<LLD
I-133			<LLD	<LLD	<LLD
Xe-133			4.6 E-2	1.8 E-1	2.3 E-1
Xe-133M	Ci		<LLD	5.4 E-4	5.4 E-4
Cs-134			2.8 E-4	6.4 E-4	9.2 E-4
I-134			<LLD	<LLD	<LLD
Xe-135			<LLD	4.7 E-4	4.7 E-4
Cs-136	Ci		<LLD	<LLD	<LLD
Cs-137			8.1 E-4	1.5 E-3	2.3 E-3
Cs-138			<LLD	<LLD	<LLD
La-140	Ci		<LLD	5.1 E-5	5.1 E-5
W-187			<LLD	<LLD	<LLD

<LLD - No detectable activity above background

ZION STATION

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

UNIT 2

C. Liquid Effluents Released - Summary Sheet

	Units	April	May	June	Second Quarter
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1. Gross Radioactivity¹

a. Total Release	Ci	3.5 E-1	4.7 E-1	1.1 E-1	9.3 E-1
b. Avg. Concentration Released	µCi/ml	4.1 E-9	5.1 E-9	1.2 E-9	3.5 E-9
c. Max. Concentration Released	µCi/ml	1.1 E-8	1.6 E-8	2.1 E-8	2.1 E-8
d. % of Tech. Spec. Qtr. Limit (1.5mR/5mR) ²	%	--			0.01 0.02
e. % of Tech. Spec. Yearly Limit (3mR/10mR) ²	%	--			0.02 0.01

2. Tritium

a. Total Release	Ci	9.2 E+1	3.5 E+1	4.3 E+1	1.7 E+2
b. Avg. Concentration Released	µCi/ml	1.2 E-6	3.8 E-7	4.5 E-7	6.8 E-7

3. Dissolved Noble Gases

a. Total Release	Ci	2.7 E-1	5.9 E-2	1.3 E-1	4.6 E-1
b. Avg. Concentration Released	µCi/ml	3.4 E-9	6.4 E-10	1.4 E-9	1.8 E-9

4. Gross Alpha Radioactivity

a. Total Release	Ci	2.3 E-4	7.2 E-5	2.7 E-5	3.3 E-4
b. Avg. Concentration Released	µCi/ml	2.9 E-12	7.8 E-13	2.8 E-13	1.3 E-12

5.	Volume of Liquid Waste to Discharge	Liters	1.8 E+7	1.2 E+7	2.0 E+6	3.2 E+7
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6.	Volume of Dilution Water	Liters	1.1 E+11	1.2 E+11	1.3 E+11	3.6 E+11
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1 - Excludes Tritium, Alpha, and Dissolved Noble Gases

2 - Whole Body/Organ

<LLD - No detectable activity above background

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 2

D. Liquid Effluents Released - Isotopes

Isotopes Released	Units	April	May	June	Second Quarter
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Na-24	Ci	<LLD	8.5 E-4	2.5 E-5	8.8 E-4

Cr-51	Ci	7.5 E-2	7.3 E-2	5.7 E-4	1.5 E-1
Mn-54		1.4 E-3	2.1 E-3	4.4 E-4	3.9 E-3
Co-57		1.0 E-4	2.1 E-4	<LLD	3.1 E-4
Co-58		1.3 E-1	1.8 E-1	1.5 E-2	3.3 E-1
Fe-59		3.1 E-3	2.2 E-3	3.2 E-5	5.3 E-3

Co-60	Ci	8.2 E-2	8.6 E-2	5.6 E-2	2.2 E-1

Kr-85	Ci	<LLD	<LLD	<LLD	<LLD
Kr-88		<LLD	5.4 E-6	<LLD	5.4 E-6
Sr-89 ^a		---	---	---	---

Sr-90 ^a	Ci	---	---	---	---
Sr-92		<LLD	<LLD	<LLD	<LLD

Nb-95	Ci	9.9 E-3	1.6 E-2	3.2 E-4	2.6 E-2
Zr-95		6.7 E-3	9.5 E-3	1.6 E-4	1.6 E-2

<LLD - No detectable activity above background

^a - Waiting for analysis results - Data will be presented in an errata to the Semi-Annual Report

ZION STATION
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1988
LIQUID EFFLUENTS
UNIT 2

D. Liquid Effluents Released - Isotopes

Isotopes Released	Units	April	May	June	Second Quarter
Ru-103	C1	6.5 E-4	6.6 E-4	<LLD	1.3 E-3
Ru-105		<LLD	<LLD	<LLD	<LLD
Sn-113		2.0 E-3	3.7 E-3	1.4 E-5	5.7 E-3
Sn-117M		8.1 E-5	6.8 E-5	<LLD	1. E-4
Ag-110M		2.1 E-2	1.5 E-2	1.3 E-2	4.9 E-2
Sb-122	C1	<LLD	<LLD	<LLD	<LLD
Sb-124		4.5 E-3	1.6 E-2	3.5 E-3	2.4 E-2
Sb-125		1.0 E-2	5.6 E-2	1.8 E-2	8.4 E-2
I-131	C1	<LLD	<LLD	2.5 E-4	2.5 E-4
I-132		<LLD	3.3 E-3	<LLD	3.3 E-3
I-133		<LLD	<LLD	<LLD	<LLD
Xe-133		2.7 E-1	5.9 E-2	1.3 E-1	4.6 E-1
Xe-133M	C1	2.2 E-3	1.7 E-4	6.2 E-4	3.0 E-3
Cs-134		1.0 E-3	6.5 E-4	7.9 E-4	2.4 E-3
I-134		1.4 E-3	<LLD	<LLD	1.4 E-3
Xe-135		1.3 E-3	2.5 E-5	6.7 E-5	1.4 E-3
Cs-136	C1	6.4 E-4	1.5 E-4	2.4 E-4	1.0 E-3
Cs-137		2.8 E-3	2.4 E-3	1.9 E-3	7.1 E-3
Cs-138		<LLD	<LLD	<LLD	<LLD
Ba-140		<LLD	<LLD	<LLD	<LLD
La-140	C1	7.5 E-6	<LLD	8.8 E-5	9.6 E-5
W-187		<LLD	<LLD	<LLD	<LLD

<LLD - No detectable activity above background



Commonwealth Edison

Zion Generating Station

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Telephone 312/746-2084

August 11, 1988

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: Zion Station Operating Report, NRC Dockets
50-295 and 50-304

To Whom it May Concern:

Enclosed is the Radioactive Effluent Report for January
through June, 1988 for Zion Nuclear Station.

A copy of this report will be furnished to the NRC
Resident Inspector.

Sincerely,

G. J. Pliml
Station Manager
Zion Station

Enclosure

GJP/BT/am

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