

ZION NUCLEAR POWER STATION  
 2010 RADIOACTIVE EFFLUENT RELEASE REPORT  
 UNIT 1 & 2 (DOCKET Numbers 50-295 & 50-304)

EXECUTIVE SUMMARY

A review of 2010 effluent data indicates that the activity released from the station was far below any regulatory limit. There was no noble gas released in 2010. This trend can be attributed to the shutdown of both units since late September 1997.

Airborne

	Dose to Maximally Exposed Receptor from Unit 1	Dose to Maximally Exposed Receptor from Unit 2
Gamma Air	0 mrad	0 mrad
Beta Air	0 mrad	0 mrad
Total Body	6.45E-05 mrem (Child)	6.45E-5 mrem (Child)
Skin	0 mrem	0 mrem
Organ	6.45E-05 mrem (Child Liver)	6.45E-05 mrem (Child Liver)

There was NO Aquatic release of radioactivity from Zion Station for 2010.

Aquatic

	Dose to Maximally Exposed Receptor (Any) from Unit 1	Dose to Maximally Exposed Receptor (Any) from Unit 2
Total Body	0 mrem	0 mrem
Organ	0 mrem	0 mrem

Attachment 2:

To the Zion Nuclear Power Station, Units 1 and 2, 2010 Radioactive Effluent Release Report.

The following identifies those actions committed to by *ZionSolutions* in this document. Any other actions discussed in this submittal represent intended or planned actions by *ZionSolutions*. They are described to the NRC for the NRC's information, and are not Regulatory Commitments.

Commitment:

None

**ZION STATION  
2010  
Unit 1  
10CFR20 Compliance Assessment**

1. 10CFR 20.1301 (a) (1) Compliance

Total Effective Dose Equivalent     6.45E-05 mrem/year

10 CFR 20.1301 (a) (1) limit        100 mrem/year

% of the limit                            0.000065

2. Compliance Summary     10CFR20

	1 <sup>st</sup> Qtr.	2 <sup>nd</sup> Qtr.	3 <sup>rd</sup> Qtr.	4 <sup>th</sup> Qtr	% of Limit
TEDE	1.61E-05	1.63E-05	1.62E-05	1.62E-05	0.000065

**ZION STATION  
2010  
Unit 2  
10CFR20 Compliance Assessment**

1. 10CFR 20.1301 (a) (1) Compliance

Total Effective Dose Equivalent	<u>6.45E-05 mrem/year</u>
10 CFR 20.1301 (a) (1) limit	<u>100 mrem/year</u>
% of the limit	<u>0.000065</u>

2. Compliance Summary 10CFR20

	1 <sup>st</sup> Qtr.	2 <sup>nd</sup> Qtr.	3 <sup>rd</sup> Qtr.	4 <sup>th</sup> Qtr	% of Limit
TEDE	1.61E-05	1.63E-05	1.62E-05	1.62E-05	0.000065

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

=== I&P DOSE LIMIT ANALYSIS ===== QUARTER 1 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 1 - Admin. Any Organ	CHILD	LIVER	3.21E-05	5.63E+00	5.71E-04
Qtr 1 - Admin. Total Body	CHILD	TBODY	3.21E-05	5.25E+00	6.12E-04

Qtr 1 - T.Spc. Any Organ CHILD LIVER 3.21E-05 7.50E+00 4.28E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

Qtr 1 - T.Spc. Total Body CHILD TBODY 3.21E-05 7.50E+00 4.28E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

=== NG DOSE LIMIT ANALYSIS ===== QUARTER 1 =====

Quartr - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
-----	-----	-----	-----
Qtr 1 - Admin. Gamma	0.00E+00	7.50E+00	0.00E+00
Qtr 1 - Admin. Beta	0.00E+00	7.50E+00	0.00E+00
Qtr 1 - T.Spc. Gamma	0.00E+00	7.50E+00	0.00E+00
Receptor: 5 Composite Crit. Receptor - IP			
Distance: 0.00 (meters)		Compass Point: NA	
Nuclide	Percentage		
-----	-----		
Qtr 1 - T.Spc. Beta	0.00E+00	7.50E+00	0.00E+00
Receptor: 5 Composite Crit. Receptor - IP			
Distance: 0.00 (meters)		Compass Point: NA	
Nuclide	Percentage		
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

=== I&P DOSE LIMIT ANALYSIS ===== QUARTER 2 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 2 - Admin. Any Organ	CHILD	LIVER	3.25E-05	5.63E+00	5.78E-04
Qtr 2 - Admin. Total Body	CHILD	TBODY	3.25E-05	5.25E+00	6.19E-04

Qtr 2 - T.Spc. Any Organ CHILD LIVER 3.25E-05 7.50E+00 4.33E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

Qtr 2 - T.Spc. Total Body CHILD TBODY 3.25E-05 7.50E+00 4.33E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010
Unit Range - From: 1 To: 2

=== NG DOSE LIMIT ANALYSIS ===== QUARTER 2 =====

Table with 4 columns: Quartr - Limit, Dose (mrad), Limit (mrad), Max % of Limit. Rows include Admin. Gamma, Admin. Beta, T.Spc. Gamma, and T.Spc. Beta. Includes receptor and distance information for each entry.



40CFR190 URANIUM FUEL CYCLE DOSE REPORT  
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 GASEOUS DOSE SUMMARY  
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Report for: 2010  
 Unit Range - From: 1 To: 2

=== I&P DOSE LIMIT ANALYSIS ===== QUARTER 3 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 3 - Admin. Any Organ	CHILD	LIVER	3.23E-05	5.63E+00	5.74E-04
Qtr 3 - Admin. Total Body	CHILD	TBODY	3.23E-05	5.25E+00	6.15E-04

Qtr 3 - T.Spc. Any Organ CHILD LIVER 3.23E-05 7.50E+00 4.31E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage

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 H-3 1.00E+02

Qtr 3 - T.Spc. Total Body CHILD TBODY 3.23E-05 7.50E+00 4.31E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage

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 H-3 1.00E+02

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010
Unit Range - From: 1 To: 2

=== NG DOSE LIMIT ANALYSIS ===== QUARTER 3 =====

Table with 4 columns: Quartr - Limit, Dose (mrad), Limit (mrad), Max % of Limit. Rows include Admin. Gamma, Admin. Beta, T.Spc. Gamma, and T.Spc. Beta. Includes receptor and distance information for each entry.

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010

Unit Range - From: 1 To: 2

=== I&P DOSE LIMIT ANALYSIS ===== QUARTER 4 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 4 - Admin. Any Organ	CHILD	LIVER	3.23E-05	5.63E+00	5.74E-04
Qtr 4 - Admin. Total Body	CHILD	TBODY	3.23E-05	5.25E+00	6.15E-04

Qtr 4 - T.Spc. Any Organ CHILD LIVER 3.23E-05 7.50E+00 4.31E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

Qtr 4 - T.Spc. Total Body CHILD TBODY 3.23E-05 7.50E+00 4.31E-04

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)

Nuclide	Percentage
H-3	1.00E+02

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

=== NG DOSE LIMIT ANALYSIS ===== QUARTER 4 =====

Quartr - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
Qtr 4 - Admin. Gamma	0.00E+00	7.50E+00	0.00E+00
Qtr 4 - Admin. Beta	0.00E+00	7.50E+00	0.00E+00
Qtr 4 - T.Spc. Gamma	0.00E+00	7.50E+00	0.00E+00
Receptor: 5 Composite Crit. Receptor - IP			
Distance: 0.00 (meters)		Compass Point: NA	
Nuclide	Percentage		
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Qtr 4 - T.Spc. Beta	0.00E+00	7.50E+00	0.00E+00
Receptor: 5 Composite Crit. Receptor - IP			
Distance: 0.00 (meters)		Compass Point: NA	
Nuclide	Percentage		
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

=== I&P DOSE LIMIT ANALYSIS ===== ANNUAL 2010 =====

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2010 - Admin. Any Organ	CHILD	LIVER	1.29E-04	1.13E+01	1.15E-03
2010 - Admin. Total Body	CHILD	TBODY	1.29E-04	1.05E+01	1.23E-03

2010 - T.Spc. Any Organ CHILD LIVER 1.29E-04 1.50E+01 8.62E-04  
 Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA  
 Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage  
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 H-3 1.00E+02

2010 - T.Spc. Total Body CHILD TBODY 1.29E-04 1.50E+01 8.62E-04  
 Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA  
 Critical Pathway: Vegetation (VEG)  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage  
 -----  
 H-3 1.00E+02

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

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 GASEOUS DOSE SUMMARY  
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Report for: 2010  
 Unit Range - From: 1 To: 2

=== NG DOSE LIMIT ANALYSIS =====		ANNUAL 2010		=====
Annual - Limit		Dose (mrad)	Limit (mrad)	Max % of Limit
2010 - Admin. Gamma		0.00E+00	1.50E+01	0.00E+00
2010 - Admin. Beta		0.00E+00	1.50E+01	0.00E+00
2010 - T.Spc. Gamma		0.00E+00	1.50E+01	0.00E+00
Receptor: 5	Composite Crit. Receptor - IP			
Distance:	0.00 (meters)			Compass Point: NA
Nuclide	Percentage			
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2010 - T.Spc. Beta		0.00E+00	1.50E+01	0.00E+00
Receptor: 5	Composite Crit. Receptor - IP			
Distance:	0.00 (meters)			Compass Point: NA
Nuclide	Percentage			
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

Report for: 2010
Unit Range - From: 1 To: 2

=== MAXIMUM DOSE ANALYSIS === ANNUAL 2010 ===

Dose Type Age Group Organ Dose (mrem)
Any Organ CHILD LIVER 1.29E-04
Liquid Receptor: NA
Gaseous Receptor: 5 Composite Crit. Receptor - IP
Distance: 0.00 (meters) Compass Point: NA

Liquid Dose: 0.00E+00 % of Total: 0.00E+00
Critical Pathway: Potable Water (PWtr)
Major Contributors ( 0% or greater to total)
Nuclide Percentage

Gaseous Dose: 1.29E-04 % of Total: 1.00E+02
Critical Pathway: Vegetation (VEG)
Major Contributors ( 0% or greater to total)
Nuclide Percentage
H-3 1.00E+02

=== MAXIMUM DOSE ANALYSIS === ANNUAL 2010 ===

Dose Type Age Group Organ Dose (mrem)
Total Body CHILD TBODY 1.29E-04
Liquid Receptor: NA
Gaseous Receptor: 5 Composite Crit. Receptor - IP
Distance: 0.00 (meters) Compass Point: NA

Liquid Dose: 0.00E+00 % of Total: 0.00E+00
Critical Pathway: Potable Water (PWtr)
Major Contributors ( 0% or greater to total)
Nuclide Percentage

Gaseous Dose: 1.29E-04 % of Total: 1.00E+02
Critical Pathway: Vegetation (VEG)
Major Contributors ( 0% or greater to total)
Nuclide Percentage
H-3 1.00E+02

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

==== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ===== QUARTER 1 =====  
 Agegrp Bone Liver Thyroid Kidney Lung GI-LLI Skin TB  
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==== SITE DOSE LIMIT ANALYSIS ===== QUARTER 1 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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Qtr 1 - Admin. Any Organ			0.00E+00	0.00E+00	0.00E+00
Qtr 1 - Admin. Total Body	ADULT	TBODY	0.00E+00	1.13E+00	0.00E+00

Qtr 1 - T.Spc. Any Organ			0.00E+00	3.75E+00	0.00E+00
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Critical Pathway:

Major Contributors ( 0% or greater to total)

Nuclide	Percentage
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Qtr 1 - T.Spc. Total Body	ADULT	TBODY	0.00E+00	1.50E+00	0.00E+00
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Critical Pathway: Potable Water (PWtr)

Major Contributors ( 0% or greater to total)

Nuclide	Percentage
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

==== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ===== QUARTER 2 =====  
 Agegrp Bone Liver Thyroid Kidney Lung GI-LLI Skin TB  
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==== SITE DOSE LIMIT ANALYSIS ===== QUARTER 2 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 2 - Admin. Any Organ			0.00E+00	5.00E+00	0.00E+00
Qtr 2 - Admin. Total Body	ADULT	TBODY	0.00E+00	1.13E+00	0.00E+00
Qtr 2 - T.Spc. Any Organ			0.00E+00	3.75E+00	0.00E+00
Critical Pathway:					
Major Contributors ( 0% or greater to total)					
Nuclide	Percentage				
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Qtr 2 - T.Spc. Total Body	ADULT	TBODY	0.00E+00	1.50E+00	0.00E+00
Critical Pathway: Potable Water (PWtr)					
Major Contributors ( 0% or greater to total)					
Nuclide	Percentage				
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

Liquid Receptor

=== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) === QUARTER 3 ===

Agegrp	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI	Skin	TB
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=== SITE DOSE LIMIT ANALYSIS === QUARTER 3 ===

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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Qtr 3 - Admin. Any Organ			0.00E+00	5.00E+00	0.00E+00
Qtr 3 - Admin. Total Body	ADULT	TBODY	0.00E+00	1.13E+00	0.00E+00

Qtr 3 - T.Spc. Any Organ			0.00E+00	3.75E+00	0.00E+00
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Critical Pathway:

Major Contributors ( 0% or greater to total)

Nuclide	Percentage
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Qtr 3 - T.Spc. Total Body	ADULT	TBODY	0.00E+00	1.50E+00	0.00E+00
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Critical Pathway: Potable Water (PWtr)

Major Contributors ( 0% or greater to total)

Nuclide	Percentage
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

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 LIQUID DOSE SUMMARY  
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Report for: 2010  
 Unit Range - From: 1 To: 2

==== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ===== QUARTER 4 =====  
 Agegrp Bone Liver Thyroid Kidney Lung GI-LLI Skin TB  
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==== SITE DOSE LIMIT ANALYSIS ===== QUARTER 4 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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Qtr 4 - Admin. Any Organ			0.00E+00	5.00E+00	0.00E+00
Qtr 4 - Admin. Total Body	ADULT	TBODY	0.00E+00	1.13E+00	0.00E+00

Qtr 4 - T.Spc. Any Organ			0.00E+00	3.75E+00	0.00E+00
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Critical Pathway:  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage  
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Qtr 4 - T.Spc. Total Body	ADULT	TBODY	0.00E+00	1.50E+00	0.00E+00
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Critical Pathway: Potable Water (PWtr)  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage  
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40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2010  
 Unit Range - From: 1 To: 2

==== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ===== ANNUAL 2010 =====  
 Agegrp Bone Liver Thyroid Kidney Lung GI-LLI Skin TB  
 Liquid Receptor

==== SITE DOSE LIMIT ANALYSIS ===== ANNUAL 2010 =====

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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2010 - Admin. Any Organ			0.00E+00	5.00E+00	0.00E+00
2010 - Admin. Total Body	ADULT	TBODY	0.00E+00	2.25E+00	0.00E+00

2010 - T.Spc. Any Organ			0.00E+00	7.50E+00	0.00E+00
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Critical Pathway:  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage

2010 - T.Spc. Total Body	ADULT	TBODY	0.00E+00	3.00E+00	0.00E+00
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Critical Pathway: Potable Water (PWtr)  
 Major Contributors ( 0% or greater to total)  
 Nuclide Percentage

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 1 (Docket Number 50-295)

Infant Receptor

Maximum Qtr. Dose (mrad, mrem)

Yearly Limit Total dose  
10CFR 50 (mrad, % of Yearly  
Appendix I mrem) Limit

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	NA	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0.00E+00
10.0 mrem	0.00E+00	0.00E+00
	NA	

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 1 (Docket Number 50-295)

Child Receptor

Maximum Qtr. Dose (mrad, mrem)

Yearly Limit Total dose % of  
10CFR 50 (mrad, Yearly  
Appendix I mrem) Limit

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	1.61E-05	1.63E-05	1.62E-05	1.62E-05
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	1.61E-05	1.63E-05	1.62E-05	1.62E-05
Critical Organ		liver	liver	liver	liver

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	6.45E-05	4.30E-04
15.0 mrem	0.00E+00	0
15.0 mrem	6.45E-05	4.30E-04
	liver	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0.00
10.0 mrem	0.00E+00	0.00
	NA	

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 1 (Docket Number 50-295)

Teen Receptor

Maximum Qtr. Dose (mrad, mrem)

Yearly Limit 10CFR 50 Appendix I (mrad, mrem) Total dose % of Yearly Limit

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	NA	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0.00
10.0 mrem	0.00E+00	0.00
	NA	

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 1 (Docket Number 50-295)

Adult Receptor

Yearly Limit 10CFR 50 Appendix I (mrad, mrem) Total dose (mrad, mrem) % of Yearly Limit

Maximum Qtr. Dose (mrad, mrem)

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	NA	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0
10.0 mrem	0.00E+00	0
	NA	



Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 2 (Docket Number 50-304)

Infant Receptor

Maximum Qtr. Dose (mrad, mrem)

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

Yearly Limit 10CFR 50 Appendix I (mrad, mrem) Total dose (mrad, mrem) % of Yearly Limit

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	NA	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0.00E+00
10.0 mrem	0.00E+00	0.00E+00
	NA	

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 2 (Docket Number 50-304)

Child Receptor

Maximum Qtr. Dose (mrad, mrem)

Yearly Limit Total dose % of  
10CFR 50 (mrad, Yearly  
Appendix I mrem) Limit

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	1.61E-05	1.63E-05	1.62E-05	1.62E-05
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	1.61E-05	1.63E-05	1.62E-05	1.62E-05
Critical Organ		liver	liver	liver	liver

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	6.45E-05	4.30E-04
15.0 mrem	0.00E+00	0
15.0 mrem	6.45E-05	4.30E-04
	liver	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0.00
10.0 mrem	0.00E+00	0.00
	NA	

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 2 (Docket Number 50-304)

Teen Receptor

Maximum Qtr. Dose (mrad, mrem)

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

Yearly Limit Total dose % of  
10CFR 50 (mrad, Yearly  
Appendix I mrem) Limit

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	NA	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0
10.0 mrem	0.00E+00	0
	NA	

Zion Nuclear Power Station  
Annual Radioactive Release Report for 2010  
Unit 2 (Docket Number 50-304)

Adult Receptor

Maximum Qtr. Dose (mrad, mrem)

Yearly Limit 10CFR 50 Appendix I (mrad, mrem) Total dose % of Yearly Limit

A. Airborne

	QTR Obj.	1st Qtr.	2nd Qtr.	3 Qtr.	4 Qtr.
Gamma Air	5.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beta Air	10.0 mrad	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Body	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	NA	

B. Aquatic

Total Body	1.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Internal Organ	5.0 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Critical Organ		NA	NA	NA	NA

3.0 mrem	0.00E+00	0
10.0 mrem	0.00E+00	0
	NA	

# Zion Nuclear Power Station Annual Effluent Release Report

## Gaseous Effluent Lower Limit of Detection

Isotope	uCi/cc
Alpha	1.00E-11
H-3	1.00E-06
Kr-85	1.00E-06
Mn-54	1.00E-11
Co-58	1.00E-11
Co-60	1.00E-11
ZN-65	1.00E-11
Sr-89	1.00E-11
Sr-90	1.00E-11
Mo-99	1.00E-11
Cs-134	1.00E-11
Cs-137	1.00E-11
Ce-141	1.00E-11
Ce-144	1.00E-11

## Liquid Effluents Lower Limit of Detection

### Entrained Gases

Isotope	LLD uCi/ml
Kr-85m	1.00E-05
Kr-85m	1.00E-05
Kr-87	1.00E-05
Kr-88	1.00E-05
Ar-41	1.00E-05
Xe-131m	1.00E-05
Xe-133m	1.00E-05
Xe-133	1.00E-05
Xe-135m	1.00E-05
Xe-135m	1.00E-05

### Principle Gamma Emitters

Isotope	LLD uCi/ml
Alpha	1.00E-07
H-3	1.00E-05
Sr-89	5.00E-08
Sr-90	5.00E-08
Fe-55	1.00E-06
Mn-54	5.00E-07
Co-58	5.00E-07
Co-60	5.00E-07
Zn-65	5.00E-07
Mo-99	5.00E-07
Cs-134	5.00E-07
Cs-137	5.00E-07
Ce-141	5.00E-07
Ce-144	5.00E-07

ZION NUCLEAR POWER STATION  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2010  
UNIT 1 & 2 (Docket Numbers 50-295 & 50-304)

ADDENDUM

1. Offsite Dose Calculation Manual (ODCM)

Changes to the ODCM are required by Zion Station Permanently Defueled Technical Specification 5.6.1. and ODCM Section 12.6.3 to be submitted as part of, or concurrent with, the Annual Radioactive Effluent Release Report.

A summary of changes made to the ODCM during 2010 and an entire copy of the ODCM, current as of December 31, 2010.

2. Gaseous and Liquid Waste Treatment Systems and Process Control Program

Zion Station ODCM Section 12.6.4 requires major changes to the Gaseous and Liquid Waste Treatment Systems to be reported in the Annual Radioactive Effluent Release Report.

The Waste Gas Hold-up System was permanently vented. In Zion's defueled configuration this system is no longer applicable.

In Zion's defueled configuration, the charcoal iodine removal system is no longer applicable.

Due to radioactive decay and no means of production, radioactive iodine is not a concern at Zion.

3. Limiting Conditions of Operation (LCOs)

Zion Station ODCM Section 12.7.2 requires explanation as to why the inoperability of liquid or gaseous monitoring instrumentation was not corrected within the time specified in the ODCM to be submitted with the Annual Radioactive Effluent Release Report.

None

4. Liquid Holdup Tanks and Gas Storage Tanks

Zion Station ODCM Section 12.7.2 requires a description of events leading to liquid holdup tanks or gas storage tanks exceeding technical specification limits to be included in the Annual Radioactive Effluent Release Report.

There was no activity present in any gas decay tanks during 2010. The Gas Decay Tanks have been abandoned in place.

No liquid holdup tanks exceeded the limits of Permanently Defueled Technical Specifications 5.6.3 during 2010.

ZION NUCLEAR POWER STATION  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2010

ADDENDUM

5. Estimates of Total Error

The following is an estimate of the total error associated with certain total values in the Annual Radioactive Effluent Release Report. The Total error is determined by calculating the square root of the sum of the squares of the individual errors.

a. Gaseous Effluents

Sampling Error	5%
Calibration Error	10%
Counting Statistics Error	17%
Sample Volume Error	10%
<hr/>	
Total Error	23%

b. Liquid Effluents

Sampling Error	5%
Calibration Error	10%
Counting Statistics Error	16%
Sample Volume Error	2%
<hr/>	
Total Error	20%

ZION NUCLEAR POWER STATION  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2010  
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste and 2. Estimate of major nuclide composition  
a. Spent resins, filter sludges, evaporator bottoms, etc.

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
A	0.00E+00	0.00E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
B	0.00E+00	0.00E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
C	0.00E+00	0.00E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
All	0.00E+00	0.00E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00



ZION NUCLEAR POWER STATION  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2010  
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste and 2. Estimate of major nuclide composition
  - b. Dry compressible waste, contaminated equipment, etc.

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
A	0.00E+00	0.00E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
B	0.00E+00	0.00E+00	0.00E+00%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
C	0.00E+00	0.00E+00	0.00E+00%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

Waste Class	Volume (m <sup>3</sup> )	Activity (Ci)	Estim. Error in Activity
All	0.00E+00	0.00E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	0.00E+00%	0.00E+00
C-14	0.00E+00%	0.00E+00
Cr-51	0.00E+00%	0.00E+00
Mn-54	0.00E+00%	0.00E+00
Fe-55	0.00E+00%	0.00E+00
Fe-59	0.00E+00%	0.00E+00
Co-57	0.00E+00%	0.00E+00
Co-58	0.00E+00%	0.00E+00
Co-60	0.00E+00%	0.00E+00
Ni-59	0.00E+00%	0.00E+00
Ni-63	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Zr-95	0.00E+00%	0.00E+00
Nb-95	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Ag-110m	0.00E+00%	0.00E+00
Sn-113	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	0.00E+00%	0.00E+00
Cs-134	0.00E+00%	0.00E+00
Cs-137	0.00E+00%	0.00E+00
Ce-144	0.00E+00%	0.00E+00
Pu-238	0.00E+00%	0.00E+00
Pu-239	0.00E+00%	0.00E+00
Pu-241	0.00E+00%	0.00E+00
Pu-242	0.00E+00%	0.00E+00
Am-241	0.00E+00%	0.00E+00
Cm-242	0.00E+00%	0.00E+00
Cm-243	0.00E+00%	0.00E+00
Zn-95	0.00E+00%	0.00E+00

ZION NUCLEAR POWER STATION  
ANNUAL RADIOACTIVE EFFLUENT REPORT FOR 2010  
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of transportation</u>	<u>Destination</u>
0	none	none

B. IRRADIATED FUEL SHIPMENTS

No irradiated fuel shipments were performed during 2010.

C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.

No irradiated material shipments were performed during 2010.

ZION NUCLEAR POWER STATION  
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2010  
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

Radioactive Waste Shipments for 2010

Shipment Date	Shipment Number	Media	Receiver	Waste Class	Container Type	Solidification Agent	Activity (Ci)	Volume (m <sup>3</sup> )	Volume (ft <sup>3</sup> )	
<b>1st Quarter:</b>										
<b>Sub totals:</b>		<b>0</b>					<b>0.0000000</b>	<b>0.000</b>	<b>0.00</b>	
<b>2nd Quarter:</b>										
<b>Sub totals:</b>		<b>0</b>					<b>0.0000000</b>	<b>0.000</b>	<b>0.00</b>	
<b>3rd Quarter:</b>										
<b>Sub totals:</b>		<b>0</b>					<b>0.0000000</b>	<b>0.000</b>	<b>0.00</b>	
<b>4th Quarter:</b>										
<b>Sub totals:</b>		<b>0</b>					<b>0.0000000</b>	<b>0.000</b>	<b>0.00</b>	
<b>Totals:</b>		<b>1</b>					<b>0.00E+00</b>	<b>0.000</b>	<b>0.00</b>	

	Class A	Class B	Class C
Number of Shipments	0	0	0
Activity (Ci)	0.00E+00	0.00E+00	0.00E+00
Volume (m <sup>3</sup> )	0.00E+00	0.00E+00	0.00E+00

Zion Nuclear Station

Period of Record: January - March 2010

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	1	5	3	0	11
NNE	0	5	11	3	1	0	20
NE	0	5	7	1	0	0	13
ENE	0	2	4	0	0	0	6
E	0	6	0	0	0	0	6
ESE	0	3	3	0	0	0	6
SE	0	4	3	0	0	0	7
SSE	0	0	1	0	0	0	1
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	1
WSW	0	3	1	0	0	0	4
W	0	2	3	0	0	0	5
WNW	0	5	5	0	0	0	10
NW	1	2	10	0	0	0	13
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	1	42	49	9	4	0	105

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	5	1	0	9
NNE	0	4	3	1	3	0	11
NE	0	1	0	1	0	0	2
ENE	0	1	1	0	0	0	2
E	2	3	1	0	0	0	6
ESE	0	2	1	0	0	0	3
SE	0	1	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	2	0	0	0	0	2
WSW	0	1	0	0	0	0	1
W	0	2	0	0	0	0	2
WNW	0	2	2	0	0	0	4
NW	0	2	10	0	0	0	12
NNW	0	1	1	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	2	22	22	7	4	0	57

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	6	4	1	0	11
NNE	0	4	7	2	1	0	14
NE	0	1	1	2	0	0	4
ENE	1	3	0	0	0	0	4
E	0	3	0	0	0	0	3
ESE	0	3	1	0	0	0	4
SE	0	3	0	0	0	0	3
SSE	0	1	6	1	0	0	8
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	1
WSW	0	1	1	0	0	0	2
W	0	4	2	0	0	0	6
WNW	0	4	3	0	0	0	7
NW	0	2	12	0	0	0	14
NNW	0	2	5	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	1	32	44	9	2	0	88

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	14	61	29	4	0	109
NNE	2	16	23	42	1	0	84
NE	0	4	21	19	0	0	44
ENE	1	8	14	7	0	0	30
E	2	14	7	6	1	0	30
ESE	5	18	7	8	0	0	38
SE	6	13	0	0	0	0	19
SSE	4	18	11	4	1	0	38
S	1	7	0	0	0	0	8
SSW	2	1	2	0	0	0	5
SW	3	6	30	5	0	0	44
WSW	11	27	28	6	0	0	72
W	5	30	16	7	0	0	58
WNW	1	45	31	2	0	0	79
NW	1	38	80	5	0	0	124
NNW	1	22	27	0	0	0	50
Variable	0	0	0	0	0	0	0
Total	46	281	358	140	7	0	832

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	16	20	13	0	0	49
NNE	6	12	16	1	0	0	35
NE	1	5	15	10	0	0	31
ENE	0	3	3	7	0	0	13
E	2	0	3	13	6	0	24
ESE	5	9	4	3	0	0	21
SE	4	13	9	1	0	0	27
SSE	6	16	15	5	1	0	43
S	7	10	5	0	0	0	22
SSW	11	10	12	2	0	0	35
SW	10	15	24	1	0	0	50
WSW	7	20	24	2	0	0	53
W	12	61	14	4	0	0	91
WNW	11	70	35	1	0	0	117
NW	10	63	54	5	0	0	132
NNW	1	18	28	3	0	0	50
Variable	0	0	0	0	0	0	0
Total	93	341	281	71	7	0	793

Hours of calm in this stability class: 2  
 Hours of missing wind measurements in this stability class: 17  
 Hours of missing stability measurements in all stability classes: 18



Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	0	0	0	0	4
NNE	0	2	0	0	0	0	2
NE	1	0	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	2	3	0	0	0	0	5
ESE	2	7	2	0	0	0	11
SE	1	4	2	0	0	0	7
SSE	1	0	1	2	0	0	4
S	1	3	7	0	0	0	11
SSW	5	0	0	0	0	0	5
SW	4	2	0	0	0	0	6
WSW	3	1	1	0	0	0	5
W	8	20	0	0	0	0	28
WNW	12	18	0	0	0	0	30
NW	9	20	1	0	0	0	30
NNW	2	2	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	53	85	14	2	0	0	154

Hours of calm in this stability class: 2  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	0	0	0	0	0	5
NNE	2	0	0	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	1	3	0	0	0	0	4
SE	1	1	0	0	0	0	2
SSE	0	3	7	1	0	0	11
S	1	4	5	0	0	0	10
SSW	3	0	0	0	0	0	3
SW	5	2	0	0	0	0	7
WSW	2	1	0	0	0	0	3
W	10	9	0	0	0	0	19
WNW	7	11	0	0	0	0	18
NW	2	2	0	0	0	0	4
NNW	2	0	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	41	36	12	1	0	0	90

Hours of calm in this stability class: 2  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	1	1	2	5	12
NNE	0	0	10	6	2	2	20
NE	0	4	6	2	1	0	13
ENE	0	0	3	1	0	0	4
E	0	3	1	0	0	0	4
ESE	0	3	1	0	0	0	4
SE	0	6	2	4	0	0	12
SSE	0	1	0	0	0	0	1
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	1	0	2	0	0	3
W	0	2	3	0	0	0	5
WNW	0	1	6	2	0	0	9
NW	0	5	5	7	0	0	17
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	30	38	25	5	7	105

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	1	3	3	7
NNE	0	1	3	5	1	3	13
NE	0	1	0	1	0	0	2
ENE	0	1	0	1	0	0	2
E	0	3	0	1	0	0	4
ESE	1	1	1	0	0	0	3
SE	0	1	1	0	0	0	2
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	1	0	0	0	1
W	0	1	2	0	0	0	3
WNW	0	1	2	0	0	0	3
NW	0	0	2	10	1	0	13
NNW	0	1	1	2	0	0	4
Variable	0	0	0	0	0	0	0
Total	1	11	13	21	5	6	57

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	2	1	4	11
NNE	0	1	1	8	1	2	13
NE	0	2	1	2	2	0	7
ENE	0	0	0	0	0	0	0
E	0	5	0	0	0	0	5
ESE	0	0	0	0	0	0	0
SE	0	2	4	2	0	0	8
SSE	0	0	3	4	0	0	7
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	2	1	0	0	3
W	0	2	2	2	0	0	6
WNW	0	0	1	1	0	0	2
NW	0	0	5	13	0	0	18
NNW	0	0	3	5	0	0	8
Variable	0	0	0	0	0	0	0
Total	0	13	25	40	4	6	88

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	17	34	23	12	87
NNE	1	4	8	32	26	29	100
NE	1	4	5	16	15	10	51
ENE	0	8	5	8	9	0	30
E	1	9	8	8	6	0	32
ESE	0	7	5	8	14	0	34
SE	2	13	7	1	0	0	23
SSE	1	10	17	2	5	0	35
S	0	4	7	2	0	0	13
SSW	1	3	0	1	0	0	5
SW	1	6	1	16	2	0	26
WSW	2	12	16	34	12	1	77
W	1	11	21	11	11	2	57
WNW	1	8	21	21	5	0	56
NW	0	1	39	78	18	1	137
NNW	0	2	29	32	6	0	69
Variable	0	0	0	0	0	0	0
Total	12	103	206	304	152	55	832

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	9	15	3	4	33
NNE	1	1	10	19	13	8	52
NE	0	7	5	14	9	6	41
ENE	1	3	3	7	8	0	22
E	1	2	1	2	10	4	20
ESE	0	3	2	6	3	7	21
SE	1	6	5	17	14	1	44
SSE	1	7	12	4	9	3	36
S	0	14	11	1	0	1	27
SSW	1	3	4	2	1	0	11
SW	1	7	13	30	6	0	57
WSW	3	4	10	13	6	0	36
W	2	12	43	17	16	1	91
WNW	0	4	27	38	11	0	80
NW	0	5	39	95	19	0	158
NNW	1	2	23	47	10	0	83
Variable	0	0	0	0	0	0	0
Total	14	81	217	327	138	35	812

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	5	15	0	0	21
NNE	0	2	2	1	0	0	5
NE	0	5	0	1	0	0	6
ENE	0	3	0	1	0	0	4
E	0	1	2	0	0	0	3
ESE	0	2	0	0	6	3	11
SE	1	2	1	1	4	3	12
SSE	1	0	4	3	2	1	11
S	0	2	2	1	4	0	9
SSW	1	4	1	2	2	0	10
SW	2	0	1	1	0	0	4
WSW	1	0	0	0	0	0	1
W	0	3	0	2	3	0	8
WNW	0	3	4	12	4	0	23
NW	1	1	2	8	0	0	12
NNW	0	4	5	6	1	0	16
Variable	0	0	0	0	0	0	0
Total	7	33	29	54	26	7	156

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18



Zion Nuclear Station

Period of Record: January - March 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	4	2	0	0	6
NNE	2	2	1	0	0	0	5
NE	0	2	0	0	0	0	2
ENE	0	1	0	0	0	0	1
E	0	2	0	0	0	0	2
ESE	2	2	0	2	1	2	9
SE	0	1	1	0	1	1	4
SSE	0	0	0	0	0	1	1
S	4	5	2	7	3	1	22
SSW	2	0	6	8	0	0	16
SW	1	0	1	3	1	0	6
WSW	1	0	0	0	1	0	2
W	0	0	0	0	0	0	0
WNW	0	0	1	4	2	0	7
NW	0	0	0	4	1	0	5
NNW	0	1	2	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	12	16	18	30	10	5	91

Hours of calm in this stability class: 1  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: April - June 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	8	0	0	0	0	8
NNE	2	7	0	0	0	0	9
NE	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	0	1	1	0	0	7	9
ESE	0	2	3	0	3	6	14
SE	0	2	1	0	1	0	4
SSE	0	3	1	2	7	1	14
S	0	5	12	10	5	2	34
SSW	1	2	5	10	1	0	19
SW	1	2	0	5	1	0	9
WSW	0	0	1	1	0	0	2
W	0	0	2	0	0	0	2
WNW	1	1	0	0	0	0	2
NW	0	0	2	0	0	0	2
NNW	0	0	0	3	0	0	3
Variable	0	0	0	0	0	0	0
Total	5	34	28	31	18	16	132

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	6	9	0	0	16
NNE	0	10	45	12	0	0	67
NE	0	10	22	2	0	0	34
ENE	0	13	5	0	0	0	18
E	0	9	1	0	0	0	10
ESE	0	9	0	0	0	0	9
SE	0	5	5	0	0	0	10
SSE	0	1	1	0	0	0	2
S	0	0	0	0	0	0	0
SSW	0	0	0	6	0	0	6
SW	0	1	8	5	0	0	14
WSW	0	4	16	10	0	0	30
W	0	2	11	17	0	0	30
WNW	0	0	17	3	0	0	20
NW	0	2	11	5	0	0	18
NNW	0	1	1	3	0	0	5
Variable	0	0	0	0	0	0	0
Total	0	68	149	72	0	0	289

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	8	2	0	0	11
NNE	0	6	7	1	0	0	14
NE	0	9	0	0	0	0	9
ENE	0	0	0	0	0	0	0
E	0	4	0	0	0	0	4
ESE	0	1	1	0	0	0	2
SE	0	6	2	0	0	0	8
SSE	0	0	3	0	0	0	3
S	0	0	1	0	0	0	1
SSW	0	0	2	0	0	0	2
SW	0	0	4	2	0	0	6
WSW	0	3	1	1	0	0	5
W	0	2	1	0	0	0	3
WNW	0	1	2	1	0	0	4
NW	1	1	5	0	0	0	7
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	1	34	37	8	0	0	80

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	4	3	0	0	8
NNE	0	11	7	0	0	0	18
NE	1	4	4	0	0	0	9
ENE	3	2	0	0	0	0	5
E	0	6	1	0	0	0	7
ESE	0	2	0	0	0	0	2
SE	0	2	0	0	0	0	2
SSE	0	7	8	0	0	0	15
S	0	1	1	0	0	0	2
SSW	0	2	0	3	0	0	5
SW	0	1	8	1	1	0	11
WSW	0	2	2	1	0	0	5
W	0	1	6	2	0	0	9
WNW	0	2	5	0	0	0	7
NW	0	1	7	1	0	0	9
NNW	1	1	0	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	5	46	53	12	1	0	117

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	31	57	46	6	0	142
NNE	3	45	31	1	0	0	80
NE	8	35	7	4	0	0	54
ENE	10	13	9	3	2	0	37
E	9	16	6	7	2	0	40
ESE	9	18	5	3	3	0	38
SE	4	17	10	2	0	0	33
SSE	3	30	37	1	0	0	71
S	1	12	3	1	2	0	19
SSW	1	9	11	19	1	0	41
SW	2	8	10	6	0	0	26
WSW	1	14	22	4	0	0	41
W	0	16	23	4	0	0	43
WNW	3	18	17	3	0	0	41
NW	3	7	24	1	0	0	35
NNW	1	9	3	3	0	0	16
Variable	0	0	0	0	0	0	0
Total	60	298	275	108	16	0	757

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	15	24	11	0	0	0	50
NNE	9	18	5	0	0	0	32
NE	7	11	5	1	0	0	24
ENE	16	7	9	1	2	0	35
E	6	10	3	8	0	0	27
ESE	3	10	4	1	0	0	18
SE	5	18	2	3	2	0	30
SSE	3	28	35	8	0	0	74
S	3	34	16	2	0	0	55
SSW	8	28	9	0	0	0	45
SW	3	17	4	0	0	0	24
WSW	1	21	4	0	0	0	26
W	2	25	0	0	0	0	27
WNW	9	23	2	0	0	0	34
NW	11	10	1	0	0	0	22
NNW	10	14	0	0	0	0	24
Variable	0	0	0	0	0	0	0
Total	111	298	110	24	4	0	547

Hours of calm in this stability class: 3  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	9	4	0	0	0	0	13
NNE	4	1	0	0	0	0	5
NE	7	5	2	0	0	0	14
ENE	2	3	2	3	0	0	10
E	4	3	2	1	0	0	10
ESE	3	6	5	0	0	0	14
SE	2	4	0	0	0	0	6
SSE	2	10	22	7	0	0	41
S	8	25	7	0	0	0	40
SSW	11	5	0	0	0	0	16
SW	6	2	0	0	0	0	8
WSW	9	4	2	0	0	0	15
W	5	6	0	0	0	0	11
WNW	9	11	0	0	0	0	20
NW	12	7	0	0	0	0	19
NNW	8	3	0	0	0	0	11
Variable	0	0	0	0	0	0	0
Total	101	99	42	11	0	0	253

Hours of calm in this stability class: 4  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2



Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	3	0	0	0	0	0	3
NE	2	0	0	1	0	0	3
ENE	0	1	2	3	0	0	6
E	3	1	3	0	0	0	7
ESE	2	2	3	1	0	0	8
SE	1	2	0	0	0	0	3
SSE	2	5	13	2	0	0	22
S	3	16	4	1	0	0	24
SSW	4	2	0	0	0	0	6
SW	4	7	0	0	0	0	11
WSW	8	0	0	0	0	0	8
W	8	2	0	0	0	0	10
WNW	8	5	0	0	0	0	13
NW	1	0	0	0	0	0	1
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	55	43	25	8	0	0	131

Hours of calm in this stability class: 1  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	2	5	4	12
NNE	0	1	25	31	12	0	69
NE	0	1	24	11	2	0	38
ENE	0	4	8	3	0	0	15
E	0	8	0	0	3	0	11
ESE	0	3	5	0	0	0	8
SE	0	0	9	2	0	0	11
SSE	0	0	2	0	0	0	2
S	0	0	0	0	0	0	0
SSW	0	0	0	0	4	0	4
SW	0	0	3	4	5	1	13
WSW	0	0	0	10	11	1	22
W	0	0	10	6	24	1	41
WNW	0	0	0	18	2	0	20
NW	0	0	3	6	10	0	19
NNW	0	0	0	1	3	0	4
Variable	0	0	0	0	0	0	0
Total	0	17	90	94	81	7	289

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	2	2	2	0	6
NNE	0	4	5	11	1	0	21
NE	0	3	2	0	0	0	5
ENE	0	1	1	0	0	0	2
E	0	0	1	0	0	0	1
ESE	0	3	1	1	0	0	5
SE	0	0	5	1	0	0	6
SSE	0	0	5	0	0	0	5
S	0	0	0	0	0	0	0
SSW	0	0	1	1	0	0	2
SW	0	0	1	2	1	2	6
WSW	0	0	0	1	1	0	2
W	0	2	3	2	0	0	7
WNW	0	1	0	2	0	1	4
NW	0	0	2	1	3	0	6
NNW	0	1	0	0	1	0	2
Variable	0	0	0	0	0	0	0
Total	0	15	29	24	9	3	80

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010

Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	1	4	1	9
NNE	0	3	6	5	1	0	15
NE	0	4	2	3	1	0	10
ENE	0	2	1	0	0	0	3
E	0	3	2	1	1	0	7
ESE	0	3	1	0	0	0	4
SE	0	1	4	1	0	0	6
SSE	0	0	8	1	0	0	9
S	0	0	1	2	1	0	4
SSW	0	0	0	1	2	1	4
SW	0	0	3	4	3	1	11
WSW	0	1	1	4	0	1	7
W	0	1	0	4	3	1	9
WNW	0	1	0	4	0	0	5
NW	0	1	1	5	4	0	11
NNW	0	2	0	0	1	0	3
Variable	0	0	0	0	0	0	0
Total	0	25	30	36	21	5	117

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010  
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	10	18	27	32	37	124
NNE	1	5	34	39	11	1	91
NE	1	10	21	10	1	4	47
ENE	3	11	11	4	5	4	38
E	2	17	6	5	4	6	40
ESE	1	8	14	12	0	8	43
SE	2	8	14	7	4	4	39
SSE	0	8	32	24	3	0	67
S	0	1	10	10	0	2	23
SSW	0	2	4	5	15	3	29
SW	0	0	9	10	13	4	36
WSW	1	1	5	18	8	2	35
W	0	1	6	29	12	2	50
WNW	0	2	5	22	8	2	39
NW	1	4	5	24	5	0	39
NNW	0	4	6	4	2	1	17
Variable	0	0	0	0	0	0	0
Total	12	92	200	250	123	80	757

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	7	9	25	4	0	47
NNE	3	13	11	12	1	0	40
NE	2	14	9	1	3	0	29
ENE	1	6	6	1	1	4	19
E	0	13	5	6	8	7	39
ESE	0	8	14	5	5	7	39
SE	0	7	11	7	3	5	33
SSE	0	5	18	30	11	5	69
S	0	2	13	16	11	3	45
SSW	0	3	6	24	3	1	37
SW	0	1	10	30	0	0	41
WSW	0	2	5	21	2	1	31
W	1	1	6	17	0	0	25
WNW	0	1	5	12	1	0	19
NW	0	0	7	18	2	0	27
NNW	1	3	4	2	0	0	10
Variable	0	0	0	0	0	0	0
Total	10	86	139	227	55	33	550

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: April - June 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	9	6	1	0	0	18
NNE	1	6	8	2	0	0	17
NE	1	5	2	0	1	0	9
ENE	1	1	5	1	1	1	10
E	1	3	4	3	0	4	15
ESE	0	3	2	1	2	6	14
SE	1	3	6	7	4	0	21
SSE	1	3	17	10	9	2	42
S	0	6	11	17	6	5	45
SSW	1	0	8	5	2	0	16
SW	0	1	1	3	1	0	6
WSW	0	0	3	4	2	0	9
W	1	2	2	0	2	0	7
WNW	2	1	0	4	0	0	7
NW	3	1	1	4	0	0	9
NNW	0	5	5	2	0	0	12
Variable	0	0	0	0	0	0	0
Total	15	49	81	64	30	18	257

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	18	1	0	0	24
NNE	0	15	16	0	0	0	31
NE	0	14	4	0	0	0	18
ENE	0	19	0	0	0	0	19
E	0	26	0	0	0	0	26
ESE	1	23	0	0	0	0	24
SE	0	14	2	0	0	0	16
SSE	0	5	7	0	0	0	12
S	0	2	1	0	0	0	3
SSW	0	1	8	3	0	0	12
SW	0	6	25	8	0	0	39
WSW	0	7	16	7	1	0	31
W	0	14	21	5	1	0	41
WNW	0	7	20	3	0	0	30
NW	0	6	11	0	0	0	17
NNW	0	4	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	1	168	149	27	2	0	347

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0



Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	1	0	0	0	5
NNE	0	4	1	0	0	0	5
NE	1	3	0	0	0	0	4
ENE	0	1	0	0	0	0	1
E	1	2	0	0	0	0	3
ESE	0	1	0	0	0	0	1
SE	0	7	1	0	0	0	8
SSE	0	7	11	0	0	0	18
S	0	3	2	0	0	0	5
SSW	0	0	4	0	0	0	4
SW	1	4	6	3	0	0	14
WSW	0	3	5	2	0	0	10
W	0	8	5	2	0	0	15
WNW	0	4	2	0	0	0	6
NW	0	2	3	0	0	0	5
NNW	0	1	1	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	3	54	42	8	0	0	107

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	8	3	1	0	0	12
NNE	0	4	3	0	0	0	7
NE	2	3	0	0	0	0	5
ENE	0	3	0	0	0	0	3
E	0	5	0	0	0	0	5
ESE	2	7	0	0	0	0	9
SE	1	10	3	0	0	0	14
SSE	0	9	8	2	0	0	19
S	0	6	1	0	0	0	7
SSW	0	2	4	2	0	0	8
SW	0	5	5	3	0	0	13
WSW	0	3	0	2	0	0	5
W	0	3	4	2	0	0	9
WNW	0	8	3	0	0	0	11
NW	0	1	3	0	0	0	4
NNW	0	2	2	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	5	79	39	12	0	0	135

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010

Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	32	17	0	0	0	54
NNE	2	10	1	0	0	0	13
NE	5	8	0	0	0	0	13
ENE	3	3	0	0	0	0	6
E	7	5	0	0	0	0	12
ESE	5	13	0	0	0	0	18
SE	8	16	5	0	0	0	29
SSE	2	27	48	5	0	0	82
S	6	35	8	0	0	0	49
SSW	1	22	12	13	1	0	49
SW	4	13	27	8	1	0	53
WSW	3	15	20	2	0	0	40
W	0	24	16	2	0	0	42
WNW	5	18	16	2	0	0	41
NW	3	13	6	0	0	0	22
NNW	3	17	6	0	0	0	26
Variable	0	1	0	0	0	0	1
Total	62	272	182	32	2	0	550

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	15	14	3	0	0	0	32
NNE	3	5	1	0	0	0	9
NE	12	11	0	0	0	0	23
ENE	3	6	0	0	0	0	9
E	5	7	0	0	0	0	12
ESE	3	9	0	0	0	0	12
SE	5	14	3	0	0	0	22
SSE	11	21	40	3	0	0	75
S	16	87	8	0	0	0	111
SSW	25	37	3	0	0	0	65
SW	19	18	4	0	0	0	41
WSW	18	23	3	0	0	0	44
W	9	30	0	0	0	0	39
WNW	12	18	0	0	0	0	30
NW	8	30	0	0	0	0	38
NNW	11	17	2	0	0	0	30
Variable	0	0	0	0	0	0	0
Total	175	347	67	3	0	0	592

Hours of calm in this stability class: 5  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010

Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	6	3	0	0	0	0	9
NNE	3	1	0	0	0	0	4
NE	3	5	0	0	0	0	8
ENE	1	3	0	0	0	0	4
E	1	3	2	0	0	0	6
ESE	2	3	1	0	0	0	6
SE	0	6	0	1	0	0	7
SSE	2	12	8	2	0	0	24
S	7	33	4	0	0	0	44
SSW	23	20	0	0	0	0	43
SW	18	10	0	0	0	0	28
WSW	34	9	0	0	0	0	43
W	16	26	0	0	0	0	42
WNW	13	4	0	0	0	0	17
NW	12	24	0	0	0	0	36
NNW	5	9	0	0	0	0	14
Variable	0	0	0	0	0	0	0
Total	146	171	15	3	0	0	335

Hours of calm in this stability class: 3  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	1	1	0	0	0	0	2
ESE	1	1	0	0	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	2	0	0	0	0	2
S	6	7	1	0	0	0	14
SSW	9	3	0	0	0	0	12
SW	10	2	0	0	0	0	12
WSW	22	5	0	0	0	0	27
W	25	8	0	0	0	0	33
WNW	9	4	0	0	0	0	13
NW	3	3	0	0	0	0	6
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	89	38	1	0	0	0	128

Hours of calm in this stability class: 6  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	8	8	2	0	18
NNE	0	3	23	8	0	0	34
NE	0	2	13	2	0	0	17
ENE	0	10	10	0	0	0	20
E	0	12	5	0	0	0	17
ESE	0	12	10	1	0	0	23
SE	0	9	16	6	0	0	31
SSE	0	0	6	2	0	0	8
S	0	0	0	1	0	0	1
SSW	0	0	2	4	3	0	9
SW	0	2	10	16	6	1	35
WSW	0	2	6	12	5	4	29
W	0	3	12	19	7	9	50
WNW	0	1	8	12	9	0	30
NW	0	0	12	8	1	0	21
NNW	0	0	3	1	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	56	144	100	33	14	347

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	2	0	0	0	4
NNE	0	3	3	0	0	0	6
NE	0	1	0	0	0	0	1
ENE	0	3	1	0	0	0	4
E	0	0	0	0	0	0	0
ESE	0	1	2	1	0	0	4
SE	0	3	3	1	0	0	7
SSE	0	2	12	5	0	0	19
S	0	0	2	2	0	0	4
SSW	0	0	1	2	0	0	3
SW	0	1	4	4	3	0	12
WSW	0	1	3	6	1	0	11
W	0	1	4	3	2	3	13
WNW	0	0	5	2	1	1	9
NW	0	1	3	2	0	0	6
NNW	0	1	2	0	1	0	4
Variable	0	0	0	0	0	0	0
Total	0	20	47	28	8	4	107

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 0



Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	5	0	1	10
NNE	0	2	4	2	0	0	8
NE	0	0	0	0	0	0	0
ENE	0	7	1	0	0	0	8
E	0	2	0	1	0	0	3
ESE	0	3	2	1	0	0	6
SE	0	9	3	5	1	0	18
SSE	0	3	8	6	0	0	17
S	0	3	3	3	0	0	9
SSW	0	0	1	3	1	0	5
SW	0	0	7	6	3	2	18
WSW	0	2	2	0	1	1	6
W	0	1	0	3	2	2	8
WNW	0	1	5	3	1	0	10
NW	0	0	2	4	0	0	6
NNW	0	0	2	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	34	43	43	9	6	135

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	19	29	2	0	53
NNE	0	4	8	3	0	0	15
NE	2	11	6	0	0	0	19
ENE	0	3	3	1	0	0	7
E	0	7	1	1	0	0	9
ESE	1	5	6	1	0	0	13
SE	1	13	15	7	1	0	37
SSE	3	3	41	24	6	0	77
S	0	3	23	15	2	0	43
SSW	1	2	13	12	8	7	43
SW	0	2	7	30	13	7	59
WSW	0	6	13	13	8	2	42
W	0	1	13	24	9	1	48
WNW	0	4	13	16	7	1	41
NW	0	0	11	10	2	1	24
NNW	1	4	6	7	1	0	19
Variable	0	0	0	0	0	0	0
Total	9	71	198	193	59	19	549

Hours of calm in this stability class: 1  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	5	17	12	1	0	36
NNE	1	9	13	5	2	0	30
NE	1	6	2	0	0	0	9
ENE	1	7	0	8	0	0	16
E	1	7	8	1	0	0	17
ESE	0	7	5	9	2	0	23
SE	1	6	9	10	1	1	28
SSE	0	10	16	35	13	1	75
S	2	7	27	43	7	0	86
SSW	1	5	19	33	1	0	59
SW	3	10	21	23	0	0	57
WSW	2	5	14	21	1	1	44
W	2	1	9	20	2	0	34
WNW	1	5	9	20	0	0	35
NW	1	4	6	14	0	0	25
NNW	1	0	8	14	0	0	23
Variable	0	0	0	0	0	0	0
Total	19	94	183	268	30	3	597

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	13	11	0	0	26
NNE	0	3	1	4	0	0	8
NE	0	6	6	0	0	0	12
ENE	1	1	2	4	1	0	9
E	0	1	2	5	3	0	11
ESE	1	0	1	1	0	1	4
SE	1	2	3	2	1	1	10
SSE	0	6	7	9	2	1	25
S	0	5	15	23	3	0	46
SSW	2	11	18	28	0	0	59
SW	3	4	5	17	0	0	29
WSW	2	4	6	13	0	0	25
W	1	1	2	18	2	0	24
WNW	0	1	7	13	0	0	21
NW	2	1	9	5	0	0	17
NNW	0	2	2	6	2	0	12
Variable	0	0	0	0	0	0	0
Total	13	50	99	159	14	3	338

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	2	1	5	0	0	10
NNE	4	3	3	0	0	0	10
NE	1	2	0	0	0	0	3
ENE	1	1	0	1	0	0	3
E	2	4	0	0	1	0	7
ESE	3	1	0	0	1	0	5
SE	1	1	0	0	0	0	2
SSE	2	2	1	1	1	0	7
S	0	4	4	5	2	0	15
SSW	2	5	5	10	0	0	22
SW	0	5	3	5	0	0	13
WSW	1	0	1	1	0	0	3
W	1	0	2	15	0	0	18
WNW	0	1	2	7	0	0	10
NW	0	0	2	1	0	0	3
NNW	1	2	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	21	33	24	51	5	0	134

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	5	0	4	0	9
NNE	0	5	26	0	0	0	31
NE	0	7	3	0	0	0	10
ENE	0	9	0	0	0	0	9
E	0	11	0	0	0	0	11
ESE	0	5	2	0	0	0	7
SE	0	2	0	0	0	0	2
SSE	0	3	3	0	0	0	6
S	0	0	1	0	0	0	1
SSW	0	0	7	4	0	0	11
SW	0	0	12	3	4	1	20
WSW	0	3	22	9	0	0	34
W	0	2	23	0	0	0	25
WNW	0	2	7	0	0	0	9
NW	0	2	6	0	0	0	8
NNW	0	0	4	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	51	121	16	8	1	197

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	2	0	0	6
NNE	0	1	1	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	0	1	0	0	0	0	1
ESE	0	2	0	0	0	0	2
SE	0	3	0	0	0	0	3
SSE	0	0	0	0	0	0	0
S	0	0	2	0	0	0	2
SSW	0	0	1	4	0	0	5
SW	0	0	3	2	0	1	6
WSW	0	0	11	3	0	0	14
W	0	3	7	0	0	0	10
WNW	0	0	6	0	0	0	6
NW	0	1	3	2	0	0	6
NNW	0	0	2	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	14	39	14	0	1	68

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	5	0	0	0	5
NNE	0	1	2	0	0	0	3
NE	0	3	0	0	0	0	3
ENE	0	1	0	0	0	0	1
E	0	3	0	0	0	0	3
ESE	0	1	1	1	0	0	3
SE	0	1	0	4	0	0	5
SSE	0	1	5	2	0	0	8
S	0	1	4	0	0	0	5
SSW	0	0	3	1	0	0	4
SW	0	1	6	3	4	1	15
WSW	0	3	6	2	1	0	12
W	0	5	9	2	0	0	16
WNW	0	3	12	0	0	0	15
NW	1	5	7	0	0	0	13
NNW	0	2	6	2	0	0	10
Variable	0	0	0	0	0	0	0
Total	1	31	66	17	5	1	121

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4



Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	9	30	17	3	1	61
NNE	0	5	16	3	0	0	24
NE	1	2	6	0	0	0	9
ENE	3	4	8	1	0	0	16
E	2	0	7	5	0	0	14
ESE	0	1	1	3	0	0	5
SE	2	3	8	9	3	0	25
SSE	0	3	23	48	15	1	90
S	2	14	23	10	1	0	50
SSW	5	14	25	9	0	0	53
SW	1	18	25	34	7	0	85
WSW	1	19	53	22	3	0	98
W	1	38	60	19	1	0	119
WNW	6	36	58	2	0	0	102
NW	3	31	27	11	0	0	72
NNW	1	32	39	4	16	0	92
Variable	0	0	0	0	0	0	0
Total	29	229	409	197	49	2	915

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 5  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	10	4	0	0	0	14
NNE	0	8	2	0	0	0	10
NE	2	2	0	0	0	0	4
ENE	0	3	1	0	0	0	4
E	1	0	2	0	0	0	3
ESE	2	4	1	0	0	0	7
SE	2	6	4	0	0	0	12
SSE	2	5	19	6	4	2	38
S	6	23	24	2	0	0	55
SSW	7	30	18	0	0	0	55
SW	1	20	7	1	0	0	29
WSW	3	16	7	0	0	0	26
W	6	23	5	0	0	0	34
WNW	7	66	28	0	0	0	101
NW	7	52	19	0	0	0	78
NNW	3	22	12	0	0	0	37
Variable	0	0	0	0	0	0	0
Total	49	290	153	9	4	2	507

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 1  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	4	0	0	0	0	5
NNE	1	0	0	0	0	0	1
NE	0	1	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	1	0	0	0	0	0	1
ESE	1	2	0	0	0	0	3
SE	1	2	0	0	0	0	3
SSE	1	7	10	0	0	0	18
S	8	14	5	0	0	0	27
SSW	6	17	1	0	0	0	24
SW	5	19	0	0	0	0	24
WSW	7	3	1	0	0	0	11
W	6	22	0	0	0	0	28
WNW	9	33	0	0	0	0	42
NW	4	21	0	0	0	0	25
NNW	1	5	0	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	53	150	17	0	0	0	220

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	2	0	0	0	0	0	2
SE	1	4	0	0	0	0	5
SSE	0	1	4	0	0	0	5
S	1	6	4	0	0	0	11
SSW	2	2	0	0	0	0	4
SW	5	5	0	0	0	0	10
WSW	12	12	0	0	0	0	24
W	20	68	0	0	0	0	88
WNW	4	8	0	0	0	0	12
NW	3	4	0	0	0	0	7
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	52	110	8	0	0	0	170

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	2	0	4	7
NNE	0	2	12	13	0	0	27
NE	0	1	12	2	0	0	15
ENE	0	1	5	0	0	0	6
E	0	3	8	0	0	0	11
ESE	0	6	3	0	0	0	9
SE	0	1	3	0	0	0	4
SSE	0	2	4	0	0	0	6
S	0	0	0	0	0	0	0
SSW	0	0	2	0	1	0	3
SW	0	0	5	8	3	2	18
WSW	0	0	4	15	10	3	32
W	0	0	14	18	5	0	37
WNW	0	0	4	2	0	0	6
NW	0	1	4	6	1	0	12
NNW	0	0	0	4	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	17	81	70	20	9	197

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	1	0	2	4
NNE	0	0	2	3	0	0	5
NE	0	0	0	0	0	0	0
ENE	0	1	0	0	0	0	1
E	0	2	0	0	0	0	2
ESE	0	1	0	0	0	0	1
SE	0	0	2	0	0	0	2
SSE	0	1	1	0	0	0	2
S	0	0	0	1	0	0	1
SSW	0	0	1	1	2	0	4
SW	0	0	0	3	3	1	7
WSW	0	0	1	5	2	0	8
W	0	1	5	9	2	0	17
WNW	0	0	0	3	1	0	4
NW	0	0	3	1	4	0	8
NNW	0	0	0	1	1	0	2
Variable	0	0	0	0	0	0	0
Total	0	7	15	28	15	3	68

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	3	1	0	7
NNE	0	0	1	2	0	0	3
NE	0	2	1	0	0	0	3
ENE	0	0	1	0	0	0	1
E	0	2	1	0	0	0	3
ESE	0	2	0	0	0	1	3
SE	0	0	1	0	0	4	5
SSE	0	1	2	3	0	0	6
S	0	0	1	2	1	0	4
SSW	0	0	2	4	1	0	7
SW	0	0	2	5	2	4	13
WSW	0	0	3	4	3	2	12
W	0	2	5	6	5	0	18
WNW	0	1	7	3	0	0	11
NW	1	0	5	7	2	0	15
NNW	0	3	1	5	1	0	10
Variable	0	0	0	0	0	0	0
Total	1	13	36	44	16	11	121

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	8	33	14	15	74
NNE	0	0	3	12	15	0	30
NE	0	1	3	6	1	0	11
ENE	0	2	4	5	0	0	11
E	0	4	5	6	3	1	19
ESE	0	0	2	1	3	0	6
SE	1	4	0	18	8	13	44
SSE	0	1	3	13	19	16	52
S	0	1	6	12	15	10	44
SSW	0	5	7	16	7	3	38
SW	0	3	14	23	30	14	84
WSW	0	1	9	30	34	5	79
W	0	2	31	40	52	13	138
WNW	1	5	18	47	8	0	79
NW	0	10	35	25	16	1	87
NNW	0	8	21	32	6	20	87
Variable	0	0	0	0	0	0	0
Total	3	50	169	319	231	111	883

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 37  
 Hours of missing stability measurements in all stability classes: 4



Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	8	19	1	0	29
NNE	0	6	5	4	3	0	18
NE	0	1	5	0	0	0	6
ENE	0	1	2	1	0	0	4
E	0	1	4	2	0	0	7
ESE	0	3	1	1	2	0	7
SE	0	1	1	4	1	0	7
SSE	1	1	3	5	8	10	28
S	1	1	5	19	23	1	50
SSW	0	1	10	29	2	0	42
SW	0	1	13	33	4	0	51
WSW	0	4	9	13	8	0	34
W	0	1	7	6	4	0	18
WNW	0	3	11	33	12	0	59
NW	0	1	10	66	16	0	93
NNW	0	1	8	42	2	0	53
Variable	0	0	0	0	0	0	0
Total	2	28	102	277	86	11	506

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 2  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	10	5	0	0	17
NNE	1	2	1	3	0	0	7
NE	1	1	3	0	0	0	5
ENE	0	1	1	0	0	0	2
E	1	0	0	0	0	0	1
ESE	1	2	0	0	0	0	3
SE	0	1	1	1	1	0	4
SSE	2	1	5	6	6	0	20
S	0	3	3	8	8	0	22
SSW	0	1	7	13	2	0	23
SW	2	1	9	14	4	0	30
WSW	0	0	6	7	1	0	14
W	3	3	4	1	2	0	13
WNW	0	0	0	8	0	0	8
NW	1	1	3	30	4	0	39
NNW	0	2	1	9	0	0	12
Variable	0	0	0	0	0	0	0
Total	12	21	54	105	28	0	220

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: October - December 2010  
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	1	4	0	0	7
NNE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	1	1	1	0	0	0	3
ESE	0	2	1	0	0	0	3
SE	0	3	0	0	0	0	3
SSE	2	1	1	3	1	0	8
S	0	2	8	5	5	0	20
SSW	0	1	7	4	2	0	14
SW	3	3	3	4	0	0	13
WSW	0	5	5	1	0	0	11
W	2	5	5	5	2	0	19
WNW	0	2	8	20	12	0	42
NW	1	2	10	6	3	0	22
NNW	0	0	4	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	10	29	54	52	25	0	170

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 4

## 2010 Summary of changes made to the ODCM

Attachment 3:

For the year 2010, the following changes were made to the Zion Station ODCM.

Offsite Dose Calculation Manual (ODCM)  
Summary of Changes for:  
Chapter 10, Revision 10  
Chapter 11, Revision 4  
Chapter 12, Revision 16 and 17

Page/Section	Change Summary
12-11/Table 12.2-3	Added additional clarification to the requirements of Surveillance 8, Surveillance 10, and Surveillance 11.
11-7/Figure 11-1	Change the legend symbol for "Air Sampling Location" from "σ" to "▲".
10-1/Section 10.1.2.1	Add "Fuel Building" to effluents being monitored by AB stack effluent monitors.
10-1/Section 10.1.2.2	Eliminated discussion of FB exhaust monitors ORT-PR30 A&B. Added the following statement: "The Fuel Building ventilation exhaust is monitored via the Auxiliary Building ventilation stack monitors."
12-10/Table 12.2-3	Eliminated discussion of FB exhaust monitors ORT-PR30 A&B.
12-12/Table 12.2-4	Eliminated discussion of FB exhaust monitors ORT-PR30 A&B.
12-24/Table 12.4-1	Eliminated discussion of Fuel Building Ventilation.