

Attachment 1:

Radioactive Effluent Release Report

Attachment 1:

ZION NUCLEAR POWER STATION
2011 RADIOACTIVE EFFLUENT RELEASE REPORT
UNIT 1 & 2 (DOCKET Numbers 50-295 & 50-304)

EXECUTIVE SUMMARY

A review of 2011 effluent data indicates that the activity released from the station was far below any regulatory limit. There was no noble gas released in 2011. 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	2.26E-04 mrem (Adult)	6.00E-5 mrem (Child)
Skin	0 mrem	0 mrem
Organ	6.32E-04 mrem (Infant Liver)	6.00E-05 mrem (Child Liver)

There was NO Aquatic release of radioactivity from Zion Station for 2011.

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

**ZION STATION
2011
Unit 1
10CFR20 Compliance Assessment**

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

Total Effective Dose Equivalent 9.03E-04 mrem/year

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

% of the limit 0.000903

2. Compliance Summary 10CFR20

	1 st Qtr.	2 nd Qtr.	3 rd Qtr.	4 th Qtr	% of Limit
TEDE	1.49E-05	1.51E-05	1.50E-05	8.58E-04	0.000903

**ZION STATION
2011
Unit 2
10CFR20 Compliance Assessment**

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

Total Effective Dose Equivalent	<u>6.00E-05 mrem/year</u>
10 CFR 20.1301 (a) (1) limit	<u>100 mrem/year</u>
% of the limit	<u>0.000060</u>

2. Compliance Summary 10CFR20

	1 st Qtr.	2 nd Qtr.	3 rd Qtr.	4 th Qtr	% of Limit
TEDE	1.49E-05	1.51E-05	1.50E-05	1.50E-05	0.000060

Zion Nuclear Power Station
Annual Radioactive Release Report for 2011
Unit 1 (Docket Number 50-295)

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	6.32E-04
Critical Organ		NA	NA	NA	LIVER

Yearly Limit Total dose
10CFR 50: (mrad, % of 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	6.32E-04	4.20E-03
	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	0.00E+00
10.0 mrem	0.00E+00	0.00E+00
	NA	

Zion Nuclear Power Station
Annual Radioactive Release Report for 2011
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	1.49E-05	1.51E-05	1.50E-05	0.00E+00
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	1.49E-05	1.51E-05	1.50E-05	0.00E+00
Critical Organ		LIVER	LIVER	LIVER	NA

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	4.50E-05	3.00E-04
15.0 mrem	0.00E+00	0
15.0 mrem	4.50E-05	3.00E-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 2011
Unit 1 (Docket Number 50-295)

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 10CFR 50 Appendix I
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	0.00
10.0 mrem	0.00E+00	0.00
	NA	

Zion Nuclear Power Station
Annual Radioactive Release Report for 2011
Unit 1 (Docket Number 50-295)

Adult Receptor

Yearly Limit 10CFR 50 Appendix I 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	2.26E-04
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	TBODY

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	2.26E-04	1.50E-03
15.0 mrem	0.00E+00	0
15.0 mrem	0.00E+00	0
	TBODY	

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 2011
 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 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
	0.00E+00	

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 2011
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	1.49E-05	1.51E-05	1.50E-05	1.50E-05
Skin	7.5 mrem	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	7.5 mrem	1.49E-05	1.51E-05	1.50E-05	1.50E-05
Critical Organ		LIVER	LIVER	LIVER	LIVER

10.0 mrad	0.00E+00	0
20.0 mrad	0.00E+00	0
15.0 mrem	6.00E-05	4.00E-04
15.0 mrem	0.00E+00	0
15.0 mrem	6.00E-05	4.00E-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 2011
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 2011
Unit 2 (Docket Number 50-304)

Adult 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	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	

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2011
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

==== SITE DOSE LIMIT ANALYSIS ===== QUARTER 1 =====

Table with 7 columns: Quartr - Limit, Age Group, Organ, Dose (mrem), Limit (mrem), Max % of Limit. Rows include Admin. Any Organ, Admin. Total Body, and T.Spc. Any Organ.

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

Table with 7 columns: Quartr - Limit, Age Group, Organ, Dose (mrem), Limit (mrem), Max % of Limit. Row includes T.Spc. Total Body.

Critical Pathway: Potable Water (PWtr)
Major Contributors (0% or greater to total)
Nuclide Percentage

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2011
 Unit Range - From: 1 To: 2

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

=== 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				

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				

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2011
 Unit Range - From: 1 To: 2

==== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ===== QUARTER 3 =====
 Agegrp Bone Liver Thyroid Kidney Lung GI-LLI Skin TB

==== SITE DOSE LIMIT ANALYSIS ===== QUARTER 3 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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

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

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

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2011
 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

==== SITE DOSE LIMIT ANALYSIS ===== QUARTER 4 =====

Quartr - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
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

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

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

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

LIQUID DOSE SUMMARY

Report for: 2011
Unit Range - From: 1 To: 2

Table with 9 columns: Agegrp, Bone, Liver, Thyroid, Kidney, Lung, GI-LLI, Skin, TB. Row: PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ANNUAL 2011

Table with 7 columns: Description, Age Group, Organ, Dose (mrem), Limit (mrem), Max % of Limit. Rows: Admin. Any Organ, Admin. Total Body, T.Spc. Any Organ

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

Table with 7 columns: Description, Age Group, Organ, Dose (mrem), Limit (mrem), Max % of Limit. Rows: T.Spc. Total Body, Critical Pathway: Potable Water (PWtr), Major Contributors (0% or greater to total), Nuclide Percentage

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2011
 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	2.98E-05	5.63E+00	5.30E-04	
Qtr 1 - Admin. Total Body	CHILD	TBODY	2.98E-05	5.25E+00	5.68E-04	
Qtr 1 - T.Spc. Any Organ	CHILD	LIVER	2.98E-05	7.50E+00	3.98E-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	2.98E-05	7.50E+00	3.98E-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: 2011
 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: 2011
 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	3.01E-05	5.63E+00	5.36E-04
Qtr 2 - Admin. Total Body	CHILD	TBODY	3.01E-05	5.25E+00	5.74E-04
Qtr 2 - T.Spc. Any Organ	CHILD	LIVER	3.01E-05	7.50E+00	4.02E-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	3.01E-05	7.50E+00	4.02E-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: 2011
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 with associated receptor and distance information.

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2011
 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	3.00E-05	5.63E+00	5.33E-04
Qtr 3 - Admin. Total Body	CHILD	TBODY	3.00E-05	5.25E+00	5.71E-04

Qtr 3 - T.Spc. Any Organ CHILD LIVER 3.00E-05 7.50E+00 4.00E-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 3 - T.Spc. Total Body CHILD TBODY 3.00E-05 7.50E+00 4.00E-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: 2011
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 with associated receptor and distance information.

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2011
 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	INFANT	LIVER	6.32E-04	5.63E+00	1.12E-02
Qtr 4 - Admin. Total Body	ADULT	TBODY	2.26E-04	5.25E+00	4.31E-03

Qtr 4 - T.Spc. Any Organ INFANT LIVER 6.32E-04 7.50E+00 8.42E-03
 Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Grs/Goat/Milk (GMILK)
 Major Contributors (0% or greater to total)
 Nuclide Percentage

 H-3 3.69E+00
 CO-60 1.71E+01
 CS-137 7.92E+01

Qtr 4 - T.Spc. Total Body ADULT TBODY 2.26E-04 7.50E+00 3.01E-03
 Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Ground Plane Deposition (GPD)
 Major Contributors (0% or greater to total)
 Nuclide Percentage

 H-3 8.05E+00
 CO-60 4.86E+01
 CS-137 4.33E+01

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2011
 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		
-----	-----		
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: 2011
 Unit Range - From: 1 To: 2

=== I&P DOSE LIMIT ANALYSIS ===== ANNUAL 2011 =====

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2011 - Admin. Any Organ	INFANT	LIVER	7.02E-04	1.13E+01	6.24E-03
2011 - Admin. Total Body	CHILD	TBODY	3.10E-04	1.05E+01	2.95E-03

2011 - T.Spc. Any Organ INFANT LIVER 7.02E-04 1.50E+01 4.68E-03

Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Grs/Goat/Milk (GMILK)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	1.33E+01
CO-60	1.54E+01
CS-137	7.13E+01

2011 - T.Spc. Total Body CHILD TBODY 3.10E-04 1.50E+01 2.07E-03

Receptor: 5 Composite Crit. Receptor - IP
 Distance: 0.00 (meters) Compass Point: NA
 Critical Pathway: Ground Plane Deposition (GPD)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	3.87E+01
CO-60	3.67E+01
CS-137	2.46E+01

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2011
Unit Range - From: 1 To: 2

Table with columns: Description, Dose (mrad), Limit (mrad), Max % of Limit. Rows include Admin. Gamma, Admin. Beta, T.Spc. Gamma, and T.Spc. Beta with associated receptor and distance information.

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

Report for: 2011
 Unit Range - From: 1 To: 2

=== MAXIMUM DOSE ANALYSIS ===== ANNUAL 2011 =====

Dose Type	Age Group	Organ	Dose (mrem)
Any Organ	INFANT	LIVER	7.02E-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: 7.02E-04 % of Total: 9.99E+01
 Critical Pathway: Grs/Goat/Milk (GMILK)
 Major Contributors (0% or greater to total)
 Nuclide Percentage

H-3	1.33E+01
CO-60	1.54E+01
CS-137	7.13E+01

=== MAXIMUM DOSE ANALYSIS ===== ANNUAL 2011 =====

Dose Type	Age Group	Organ	Dose (mrem)
Total Body	CHILD	TBODY	3.10E-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: 3.10E-04 % of Total: 1.00E+02
 Critical Pathway: Ground Plane Deposition (GPD)
 Major Contributors (0% or greater to total)
 Nuclide Percentage

H-3	3.87E+01
CO-60	3.67E+01

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

Nuclide

Percentage

CS-137

2.46E+01

Zion Nuclear Station

Period of Record: January - March 2011
 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	2	0	0	0	3
NNE	0	5	30	1	0	0	36
NE	0	5	10	4	0	0	19
ENE	0	8	5	0	0	0	13
E	0	10	15	0	0	0	25
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	0	1	0	0	0	0	1
S	0	0	2	0	0	0	2
SSW	0	0	0	5	0	0	5
SW	0	1	5	3	0	0	9
WSW	0	0	4	1	0	0	5
W	0	0	9	9	0	0	18
WNW	0	3	11	0	0	0	14
NW	0	0	1	0	0	0	1
NNW	0	0	3	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	34	98	23	0	0	155

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: January - March 2011
 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	3	3	0	0	0	6
NNE	0	4	6	0	0	0	10
NE	0	3	2	0	0	0	5
ENE	0	1	1	0	0	0	2
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	0	1	0	0	0	1
SSE	0	2	5	0	0	0	7
S	0	0	1	0	0	0	1
SSW	0	0	2	0	0	0	2
SW	0	1	4	1	0	0	6
WSW	0	4	4	2	1	0	11
W	0	1	4	2	0	0	7
WNW	0	2	7	0	0	0	9
NW	0	0	3	2	0	0	5
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	21	44	7	1	0	73

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: January - March 2011
 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	8	0	0	0	8
NNE	0	5	9	0	0	0	14
NE	0	5	2	1	5	0	13
ENE	0	4	1	3	4	0	12
E	0	1	1	1	0	0	3
ESE	0	0	1	0	0	0	1
SE	0	3	2	0	0	0	5
SSE	1	2	5	4	0	0	12
S	0	1	3	0	0	0	4
SSW	0	1	1	1	0	0	3
SW	0	4	8	4	0	0	16
WSW	0	5	7	4	0	0	16
W	0	8	5	1	0	0	14
WNW	0	3	12	0	0	0	15
NW	0	1	8	4	0	0	13
NNW	0	1	4	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	1	44	77	23	9	0	154

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 6
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: January - March 2011
 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	23	32	27	9	0	93
NNE	7	24	42	19	4	4	100
NE	4	21	27	15	7	8	82
ENE	2	9	21	25	25	1	83
E	3	1	13	21	3	0	41
ESE	2	10	10	5	0	0	27
SE	2	6	10	2	0	0	20
SSE	0	6	21	25	8	0	60
S	3	13	25	3	0	0	44
SSW	4	25	18	10	0	0	57
SW	3	35	39	32	0	0	109
WSW	4	38	34	21	0	0	97
W	5	37	34	26	0	0	102
WNW	4	50	53	2	0	0	109
NW	2	51	67	3	0	0	123
NNW	3	22	53	11	1	0	90
Variable	0	0	0	0	0	0	0
Total	50	371	499	247	57	13	1237

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 23
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: January - March 2011
 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	3	12	0	0	0	0	15
NNE	7	17	3	0	0	0	27
NE	1	7	0	1	0	0	9
ENE	3	1	2	0	0	0	6
E	1	2	1	0	0	0	4
ESE	2	2	1	0	0	0	5
SE	1	5	7	0	0	0	13
SSE	2	2	5	0	0	0	9
S	4	8	11	0	0	0	23
SSW	4	15	9	0	0	0	28
SW	8	14	7	3	0	0	32
WSW	7	26	18	6	0	0	57
W	7	26	18	1	0	0	52
WNW	8	39	23	0	0	0	70
NW	9	29	1	0	0	0	39
NNW	9	1	0	0	0	0	10
Variable	0	0	0	0	0	0	0
Total	76	206	106	11	0	0	399

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: January - March 2011

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	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	2	0	0	0	0	0	2
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	1	0	0	0	0	0	1
SSE	0	2	5	0	0	0	7
S	0	4	2	0	0	0	6
SSW	0	2	1	0	0	0	3
SW	5	1	0	0	0	0	6
WSW	6	5	0	0	0	0	11
W	7	4	0	0	0	0	11
WNW	6	8	0	0	0	0	14
NW	4	8	0	0	0	0	12
NNW	2	4	0	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	33	39	8	0	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: 4

Zion Nuclear Station

Period of Record: January - March 2011

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	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	2	2	1	0	0	0	5
S	1	7	1	0	0	0	9
SSW	1	0	0	0	0	0	1
SW	1	0	0	0	0	0	1
WSW	2	0	0	0	0	0	2
W	4	1	0	0	0	0	5
WNW	3	2	0	0	0	0	5
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	14	12	2	0	0	0	28

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: January - March 2011
 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	2	2	0	0	4
NNE	0	0	20	9	0	0	29
NE	0	0	12	9	2	0	23
ENE	0	2	8	2	0	0	12
E	0	3	17	3	0	0	23
ESE	0	0	6	0	0	0	6
SE	0	0	0	0	1	0	1
SSE	0	0	1	0	0	0	1
S	0	0	2	0	0	0	2
SSW	0	0	0	1	3	0	4
SW	0	1	1	4	4	0	10
WSW	0	0	0	2	2	0	4
W	0	0	3	4	2	7	16
WNW	0	0	8	6	0	0	14
NW	0	0	1	3	0	0	4
NNW	0	0	2	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	6	83	45	14	7	155

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: January - March 2011
 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	1	1	0	0	3
NNE	0	2	3	5	0	0	10
NE	0	3	2	2	0	0	7
ENE	0	1	1	1	0	0	3
E	0	0	1	0	0	0	1
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	1	3	1	0	0	5
S	0	0	4	0	0	0	4
SSW	0	0	2	0	0	0	2
SW	0	0	3	1	1	0	5
WSW	0	1	2	4	1	2	10
W	0	0	3	3	0	2	8
WNW	0	0	2	7	0	0	9
NW	0	0	1	1	3	0	5
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	9	29	27	5	4	74

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: January - March 2011
 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	5	2	0	0	7
NNE	0	0	8	3	0	0	11
NE	0	1	5	1	0	5	12
ENE	0	4	4	0	3	3	14
E	1	2	3	0	1	2	9
ESE	0	0	2	0	0	0	2
SE	0	0	2	1	2	0	5
SSE	0	1	2	3	1	0	7
S	0	0	6	0	1	0	7
SSW	0	0	1	2	0	0	3
SW	0	0	1	2	3	0	6
WSW	0	2	9	8	1	4	24
W	0	2	3	4	2	1	12
WNW	0	3	7	5	0	0	15
NW	0	0	3	7	4	0	14
NNW	0	1	2	4	1	0	8
Variable	0	0	0	0	0	0	0
Total	1	16	63	42	19	15	156

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

Zion Nuclear Station

Period of Record: January - March 2011
 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	8	11	14	15	20	68
NNE	1	14	22	32	11	15	95
NE	0	7	21	26	8	11	73
ENE	0	8	17	11	31	29	96
E	0	5	10	19	17	11	62
ESE	1	7	6	8	7	2	31
SE	1	2	9	10	12	1	35
SSE	1	5	3	13	13	8	43
S	0	2	13	24	11	3	53
SSW	0	8	23	6	10	1	48
SW	0	6	34	20	26	5	91
WSW	0	13	34	27	23	4	101
W	1	12	17	32	38	12	112
WNW	0	9	30	34	9	3	85
NW	0	8	33	64	17	0	122
NNW	0	8	20	54	9	5	96
Variable	0	0	0	0	0	0	0
Total	5	122	303	394	257	130	1211

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 49
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: January - March 2011

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	7	2	0	0	0	10
NNE	1	8	8	4	1	0	22
NE	0	6	7	3	0	0	16
ENE	0	4	8	2	1	1	16
E	0	2	5	0	2	0	9
ESE	0	0	6	2	2	0	10
SE	0	2	2	2	6	1	13
SSE	0	2	4	3	2	0	11
S	0	1	1	7	2	0	11
SSW	0	4	7	7	7	0	25
SW	0	4	11	10	0	2	27
WSW	0	2	8	17	13	3	43
W	1	4	13	33	14	2	67
WNW	0	3	13	14	9	0	39
NW	0	2	9	35	6	0	52
NNW	0	2	11	14	1	0	28
Variable	0	0	0	0	0	0	0
Total	3	53	115	153	66	9	399

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: January - March 2011
 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	1	1	9	0	0	0	11
NNE	2	3	5	1	0	0	11
NE	0	3	0	0	0	0	3
ENE	0	2	1	0	0	0	3
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	1	3	0	0	4
S	0	2	2	3	1	0	8
SSW	1	0	2	8	1	0	12
SW	0	1	0	0	0	0	1
WSW	1	0	1	2	0	0	4
W	0	2	2	2	0	0	6
WNW	0	2	2	1	0	0	5
NW	1	1	0	2	0	0	4
NNW	0	2	1	4	1	0	8
Variable	0	0	0	0	0	0	0
Total	6	19	26	26	3	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: 4

Zion Nuclear Station

Period of Record: January - March 2011
 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	1	1	0	0	0	0	2
NNE	1	1	0	0	0	0	2
NE	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0
E	1	0	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	1	1	1	0	3
S	0	0	2	2	1	0	5
SSW	0	2	2	3	1	0	8
SW	0	2	0	0	0	0	2
WSW	1	0	1	0	0	0	2
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	6	6	6	6	3	0	27

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: 4

Zion Nuclear Station

Period of Record: April - June 2011
 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	12	28	3	0	45
NNE	0	9	26	0	1	0	36
NE	0	13	3	0	0	0	16
ENE	0	3	7	0	0	0	10
E	0	7	0	2	0	0	9
ESE	0	2	0	0	0	0	2
SE	0	1	0	0	0	0	1
SSE	0	1	2	1	0	0	4
S	0	0	0	0	0	0	0
SSW	0	0	2	6	0	0	8
SW	0	0	8	9	0	0	17
WSW	0	0	8	17	0	0	25
W	0	0	25	17	0	0	42
WNW	0	3	23	2	0	0	28
NW	0	0	7	0	0	0	7
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	42	123	82	4	0	251

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	2	10	9	0	0	21
NNE	0	7	12	0	0	0	19
NE	1	2	1	0	0	0	4
ENE	0	2	0	1	0	0	3
E	0	1	0	0	0	0	1
ESE	1	2	0	0	0	0	3
SE	0	2	0	0	0	0	2
SSE	0	1	0	0	0	0	1
S	0	0	0	0	0	0	0
SSW	0	0	0	5	0	0	5
SW	0	0	2	3	0	0	5
WSW	0	0	6	2	0	0	8
W	0	0	4	2	0	0	6
WNW	0	0	6	0	0	0	6
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	2	19	41	22	0	0	84

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: 9

Zion Nuclear Station

Period of Record: April - June 2011
 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	4	11	11	2	0	28
NNE	1	10	15	1	0	0	27
NE	0	3	1	0	0	0	4
ENE	0	3	1	1	0	0	5
E	0	5	0	0	0	0	5
ESE	0	2	0	0	0	0	2
SE	0	2	0	0	0	0	2
SSE	0	2	4	0	0	0	6
S	0	0	0	0	0	0	0
SSW	0	0	5	3	1	0	9
SW	0	0	3	3	0	0	6
WSW	0	1	5	1	0	0	7
W	0	1	10	1	0	0	12
WNW	0	1	7	0	0	0	8
NW	0	1	1	0	0	0	2
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	1	36	63	21	3	0	124

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: 9

Zion Nuclear Station

Period of Record: April - June 2011
 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	29	100	52	54	2	239
NNE	3	55	28	13	0	0	99
NE	7	18	9	4	6	0	44
ENE	3	19	9	12	6	0	49
E	5	12	3	8	1	0	29
ESE	2	11	1	7	0	0	21
SE	2	18	6	5	1	0	32
SSE	0	19	27	5	1	0	52
S	1	6	4	0	0	0	11
SSW	2	2	15	9	1	0	29
SW	2	9	32	9	0	0	52
WSW	2	11	21	2	1	0	37
W	0	13	26	21	0	0	60
WNW	2	22	32	2	0	0	58
NW	4	12	7	2	0	0	25
NNW	1	14	5	2	0	0	22
Variable	0	0	0	0	0	0	0
Total	38	270	325	153	71	2	859

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	18	48	18	0	0	0	84
NNE	9	32	9	0	0	0	50
NE	13	11	3	0	0	0	27
ENE	6	7	6	3	1	0	23
E	7	11	3	1	0	0	22
ESE	7	7	3	0	0	0	17
SE	5	20	9	0	0	0	34
SSE	4	26	28	2	0	0	60
S	7	32	15	3	0	0	57
SSW	3	9	6	1	0	0	19
SW	5	14	7	0	0	0	26
WSW	3	18	4	0	0	0	25
W	4	26	5	0	0	0	35
WNW	7	8	0	0	0	0	15
NW	7	2	0	0	0	0	9
NNW	8	15	0	0	0	0	23
Variable	0	0	0	0	0	0	0
Total	113	286	116	10	1	0	526

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	5	0	0	0	0	11
NNE	8	6	1	0	0	0	15
NE	6	4	1	0	0	0	11
ENE	1	2	0	0	0	0	3
E	5	5	0	0	0	0	10
ESE	1	6	3	1	0	0	11
SE	2	8	4	0	0	0	14
SSE	3	6	19	3	0	0	31
S	5	21	5	2	0	0	33
SSW	5	2	1	0	0	0	8
SW	10	1	1	0	0	0	12
WSW	3	1	0	0	0	0	4
W	5	4	0	0	0	0	9
WNW	4	3	0	0	0	0	7
NW	3	2	0	0	0	0	5
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	71	76	35	6	0	0	188

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: 9

Zion Nuclear Station

Period of Record: April - June 2011
 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	1	0	0	0	0	3
NNE	0	2	0	0	0	0	2
NE	1	0	2	0	0	0	3
ENE	3	1	1	1	0	0	6
E	2	2	4	0	0	0	8
ESE	1	3	2	1	0	0	7
SE	1	1	1	0	0	0	3
SSE	3	7	12	1	0	0	23
S	4	19	4	0	0	0	27
SSW	6	3	0	0	0	0	9
SW	1	1	0	0	0	0	2
WSW	11	1	0	0	0	0	12
W	10	5	0	0	0	0	15
WNW	8	4	0	0	0	0	12
NW	2	0	0	0	0	0	2
NNW	2	0	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	57	50	26	3	0	0	136

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: 9

Zion Nuclear Station

Period of Record: April - June 2011
 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	1	1	1	6	4	13
NNE	0	0	19	19	13	7	58
NE	0	3	11	3	0	0	17
ENE	0	6	9	4	0	0	19
E	0	4	1	1	1	0	7
ESE	0	1	2	0	0	0	3
SE	0	0	1	1	0	0	2
SSE	0	0	1	0	2	0	3
S	0	0	0	0	1	0	1
SSW	0	0	0	0	5	0	5
SW	0	0	0	6	7	0	13
WSW	0	0	0	5	11	6	22
W	0	0	1	17	12	8	38
WNW	0	0	3	25	3	2	33
NW	0	0	2	13	1	0	16
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	15	52	95	62	27	251

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	1	5	5	3	14
NNE	0	2	9	10	1	0	22
NE	0	4	2	1	1	0	8
ENE	0	1	0	0	1	0	2
E	0	3	0	0	0	0	3
ESE	1	0	0	1	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	1	2	0	0	0	3
S	0	0	0	0	0	0	0
SSW	0	0	0	1	3	0	4
SW	0	0	0	1	3	0	4
WSW	0	0	0	2	4	0	6
W	0	0	1	3	4	1	9
WNW	0	0	0	4	0	0	4
NW	0	0	0	3	0	0	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	1	11	15	31	22	4	84

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	5	4	4	5	19
NNE	0	0	10	13	1	3	27
NE	0	1	7	2	0	0	10
ENE	0	1	3	1	0	1	6
E	0	1	3	0	0	0	4
ESE	0	3	3	1	0	0	7
SE	0	0	1	0	0	0	1
SSE	0	0	4	1	1	0	6
S	0	0	0	0	0	0	0
SSW	0	0	0	3	2	0	5
SW	0	0	1	2	6	1	10
WSW	0	0	1	4	0	0	5
W	0	0	0	7	4	0	11
WNW	0	0	1	8	0	0	9
NW	0	1	0	3	0	0	4
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	8	39	49	18	10	124

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	19	41	33	77	171
NNE	1	9	46	55	14	19	144
NE	2	13	13	16	3	3	50
ENE	0	11	12	12	10	15	60
E	0	12	3	2	5	1	23
ESE	1	7	10	3	11	6	38
SE	0	2	8	11	10	6	37
SSE	1	6	14	12	8	0	41
S	1	2	6	5	6	0	20
SSW	0	1	2	4	9	1	17
SW	1	1	7	29	18	2	58
WSW	1	0	1	13	6	3	24
W	0	0	6	25	24	4	59
WNW	0	0	17	38	9	3	67
NW	0	2	9	10	6	0	27
NNW	0	8	8	6	1	0	23
Variable	0	0	0	0	0	0	0
Total	8	75	181	282	173	140	859

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	5	13	15	0	0	35
NNE	1	5	24	27	0	0	57
NE	1	13	21	9	2	0	46
ENE	1	6	8	9	3	1	28
E	1	8	8	5	4	4	30
ESE	1	10	10	4	4	2	31
SE	2	9	17	11	8	6	53
SSE	1	7	17	20	14	2	61
S	0	2	9	20	9	2	42
SSW	0	4	3	13	4	1	25
SW	0	0	5	13	2	0	20
WSW	0	0	4	13	2	0	19
W	0	0	4	24	0	0	28
WNW	0	2	6	18	1	0	27
NW	0	1	8	5	0	0	14
NNW	0	1	6	2	0	0	9
Variable	1	0	0	0	0	0	1
Total	11	73	163	208	53	18	526

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: 9

Zion Nuclear Station

Period of Record: April - June 2011

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	3	0	0	0	5
NNE	0	8	6	0	0	0	14
NE	1	2	3	1	1	0	8
ENE	0	3	2	1	1	0	7
E	0	3	3	1	2	0	9
ESE	0	5	4	3	4	2	18
SE	0	3	9	0	5	1	18
SSE	0	4	8	8	8	7	35
S	0	5	6	14	6	2	33
SSW	0	1	4	8	0	0	13
SW	0	2	2	5	1	0	10
WSW	0	0	0	0	0	0	0
W	0	0	1	1	0	0	2
WNW	0	1	1	5	0	0	7
NW	0	2	1	1	0	0	4
NNW	0	2	3	2	0	0	7
Variable	0	0	0	0	0	0	0
Total	1	43	56	50	28	12	190

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: 9

Zion Nuclear Station

Period of Record: April - June 2011
 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	1	1	0	0	0	4
NNE	0	2	2	0	0	0	4
NE	1	0	1	0	2	1	5
ENE	1	0	0	0	0	0	1
E	0	0	1	0	0	3	4
ESE	0	2	1	0	1	6	10
SE	0	2	3	1	1	1	8
SSE	0	3	10	9	2	1	25
S	0	2	10	8	7	2	29
SSW	0	2	2	12	3	0	19
SW	0	2	5	4	0	0	11
WSW	1	3	2	0	0	0	6
W	0	0	2	0	0	0	2
WNW	0	0	1	0	0	0	1
NW	1	1	0	1	0	0	3
NNW	1	3	2	3	0	0	9
Variable	0	0	0	0	0	0	0
Total	7	23	43	38	16	14	141

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: 9

Zion Nuclear Station

Period of Record: July - September 2011
 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	3	24	18	0	0	45
NNE	1	27	40	4	0	0	72
NE	0	33	13	0	0	0	46
ENE	1	27	1	0	0	0	29
E	0	31	1	0	0	0	32
ESE	0	28	7	0	0	0	35
SE	0	20	2	0	0	0	22
SSE	0	7	14	2	0	0	23
S	0	0	4	2	0	0	6
SSW	1	2	4	0	0	0	7
SW	1	8	8	2	0	0	19
WSW	0	16	24	2	0	0	42
W	0	9	10	1	0	0	20
WNW	0	4	9	0	0	0	13
NW	0	7	9	0	0	0	16
NNW	0	4	2	1	0	0	7
Variable	0	0	0	0	0	0	0
Total	4	226	172	32	0	0	434

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: July - September 2011

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	1	4	3	4	0	0	12
NNE	0	4	2	0	0	0	6
NE	0	2	4	0	0	0	6
ENE	1	4	0	0	0	0	5
E	0	1	1	0	0	0	2
ESE	0	1	0	0	0	0	1
SE	0	2	0	0	0	0	2
SSE	0	5	6	3	0	0	14
S	0	1	2	0	1	0	4
SSW	0	1	0	1	0	0	2
SW	0	0	2	1	0	0	3
WSW	0	2	7	2	0	0	11
W	0	2	4	0	0	0	6
WNW	0	1	1	0	0	0	2
NW	1	4	2	0	0	0	7
NNW	0	1	3	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	3	35	37	11	1	0	87

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: July - September 2011
 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	4	6	4	0	0	14
NNE	1	8	1	0	0	0	10
NE	2	6	1	0	0	0	9
ENE	0	4	0	0	0	0	4
E	0	1	1	0	0	0	2
ESE	0	5	0	0	0	0	5
SE	0	4	2	0	0	0	6
SSE	0	9	9	5	0	0	23
S	0	3	2	0	0	0	5
SSW	0	4	1	1	0	0	6
SW	0	3	2	0	0	0	5
WSW	0	4	5	1	0	0	10
W	1	2	0	0	0	0	3
WNW	0	4	2	0	0	0	6
NW	1	6	2	0	0	0	9
NNW	1	2	6	1	0	0	10
Variable	0	0	0	0	0	0	0
Total	6	69	40	12	0	0	127

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: July - September 2011

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	6	15	18	7	0	0	46
NNE	3	22	10	1	0	0	36
NE	3	13	17	0	0	0	33
ENE	9	6	7	0	0	0	22
E	0	9	13	5	2	0	29
ESE	6	13	6	2	0	0	27
SE	2	29	16	5	0	0	52
SSE	6	24	34	22	1	0	87
S	1	15	4	2	0	0	22
SSW	3	15	9	3	0	0	30
SW	3	20	25	3	0	0	51
WSW	1	20	21	0	0	0	42
W	1	21	8	4	0	0	34
WNW	3	9	4	2	0	0	18
NW	3	17	3	5	0	0	28
NNW	3	21	23	6	0	0	53
Variable	0	0	0	0	0	0	0
Total	53	269	218	67	3	0	610

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: July - September 2011
 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	9	17	5	0	0	0	31
NNE	7	17	13	0	0	0	37
NE	4	8	1	0	0	0	13
ENE	1	3	0	0	0	0	4
E	5	4	1	0	0	0	10
ESE	6	11	1	0	0	0	18
SE	7	11	4	1	0	0	23
SSE	7	10	13	2	0	0	32
S	15	25	5	1	0	0	46
SSW	22	26	7	0	0	0	55
SW	8	21	9	0	0	0	38
WSW	3	27	4	0	0	0	34
W	9	29	0	0	0	0	38
WNW	6	30	2	0	0	0	38
NW	16	27	3	0	0	0	46
NNW	9	31	3	0	0	0	43
Variable	0	0	0	0	0	0	0
Total	134	297	71	4	0	0	506

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: 4

Zion Nuclear Station

Period of Record: July - September 2011
 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	4	1	0	0	0	0	5
NNE	1	1	0	0	0	0	2
NE	0	2	0	0	0	0	2
ENE	2	1	0	0	0	0	3
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	0	0	2	0	0	0	2
SSE	2	0	0	0	0	0	2
S	7	10	0	0	0	0	17
SSW	22	16	0	0	0	0	38
SW	22	10	0	0	0	0	32
WSW	20	17	0	0	0	0	37
W	17	9	0	0	0	0	26
WNW	16	17	0	0	0	0	33
NW	16	26	0	0	0	0	42
NNW	12	9	0	0	0	0	21
Variable	0	0	0	0	0	0	0
Total	145	119	2	0	0	0	266

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: July - September 2011
 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	0	1	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	2	0	0	0	0	0	2
SE	0	0	0	0	0	0	0
SSE	1	1	0	0	0	0	2
S	7	4	1	0	0	0	12
SSW	7	2	0	0	0	0	9
SW	12	3	0	0	0	0	15
WSW	37	5	0	0	0	0	42
W	24	21	0	0	0	0	45
WNW	6	29	0	0	0	0	35
NW	2	4	0	0	0	0	6
NNW	2	0	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	101	70	1	0	0	0	172

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: 4

Zion Nuclear Station

Period of Record: July - September 2011

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	4	2	8	11	1	26
NNE	1	4	26	34	13	1	79
NE	0	10	29	9	0	0	48
ENE	1	17	11	0	0	0	29
E	2	16	8	1	0	0	27
ESE	0	9	8	4	0	0	21
SE	0	10	26	4	0	0	40
SSE	0	4	14	3	1	0	22
S	0	0	2	5	1	0	8
SSW	0	0	2	1	1	0	4
SW	0	0	7	3	0	0	10
WSW	0	2	13	12	6	0	33
W	0	1	21	11	2	0	35
WNW	0	2	3	4	3	0	12
NW	1	0	11	10	0	0	22
NNW	0	1	3	1	1	0	6
Variable	0	0	0	0	0	0	0
Total	5	80	186	110	39	2	422

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 12
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: July - September 2011

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	5	0	9
NNE	0	3	3	2	0	0	8
NE	1	2	0	4	0	0	7
ENE	0	3	0	0	0	0	3
E	0	2	2	0	0	0	4
ESE	0	0	1	0	0	0	1
SE	0	2	1	0	0	0	3
SSE	0	3	3	2	1	0	9
S	0	0	2	3	0	1	6
SSW	0	0	0	0	1	0	1
SW	0	0	1	1	0	0	2
WSW	0	0	1	1	4	0	6
W	0	0	3	4	3	0	10
WNW	0	0	0	3	1	0	4
NW	1	1	4	1	0	0	7
NNW	0	0	2	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	2	16	25	24	15	1	83

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

Zion Nuclear Station

Period of Record: July - September 2011
 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	1	1	2	3	4	0	11
NNE	0	4	5	2	2	0	13
NE	0	4	3	1	0	0	8
ENE	0	0	2	0	0	0	2
E	0	2	0	0	0	0	2
ESE	0	2	3	1	0	0	6
SE	0	2	1	4	0	0	7
SSE	0	2	6	7	2	0	17
S	0	2	5	2	1	0	10
SSW	0	1	1	1	1	0	4
SW	0	1	4	1	0	0	6
WSW	0	1	0	2	3	0	6
W	0	0	5	2	0	0	7
WNW	1	1	1	0	0	0	3
NW	0	0	6	3	1	0	10
NNW	0	1	2	5	2	0	10
Variable	0	0	0	0	0	0	0
Total	2	24	46	34	16	0	122

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: July - September 2011

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	6	16	10	5	0	37
NNE	1	3	13	15	12	4	48
NE	1	9	7	12	9	1	39
ENE	1	7	6	5	0	0	19
E	0	4	5	11	3	5	28
ESE	0	8	7	9	3	1	28
SE	0	14	10	20	9	7	60
SSE	1	16	25	14	12	2	70
S	0	7	14	8	2	2	33
SSW	0	1	7	4	2	2	16
SW	1	2	10	20	8	0	41
WSW	0	2	14	18	12	0	46
W	0	3	12	20	3	1	39
WNW	0	3	7	4	1	4	19
NW	0	4	7	10	0	5	26
NNW	0	1	10	18	12	1	42
Variable	0	0	0	0	0	0	0
Total	5	90	170	198	93	35	591

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 19
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: July - September 2011
 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	4	28	10	1	0	43
NNE	1	7	11	18	8	0	45
NE	1	12	10	3	0	0	26
ENE	0	8	4	1	0	0	13
E	1	3	4	3	0	0	11
ESE	1	5	7	1	1	0	15
SE	2	5	9	6	0	1	23
SSE	0	12	11	7	6	0	36
S	0	15	17	14	1	1	48
SSW	1	3	10	16	0	0	30
SW	2	4	7	19	6	0	38
WSW	0	0	8	11	3	0	22
W	0	0	11	23	0	0	34
WNW	1	2	4	18	0	0	25
NW	0	0	15	17	5	0	37
NNW	0	4	11	15	1	0	31
Variable	0	0	0	0	0	0	0
Total	10	84	167	182	32	2	477

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 30
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: July - September 2011
 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	1	3	14	10	0	0	28
NNE	1	8	9	0	0	0	18
NE	1	7	3	0	0	0	11
ENE	0	4	1	0	0	0	5
E	2	7	0	0	0	0	9
ESE	0	2	1	0	0	0	3
SE	0	5	0	0	1	0	6
SSE	0	8	1	0	0	0	9
S	1	9	17	5	0	0	32
SSW	0	4	11	9	0	0	24
SW	0	3	8	7	0	0	18
WSW	0	5	9	11	0	0	25
W	0	1	3	10	2	0	16
WNW	1	0	2	8	0	0	11
NW	0	6	3	7	1	0	17
NNW	1	2	6	11	2	0	22
Variable	0	0	0	0	0	0	0
Total	8	74	88	78	6	0	254

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 12
 Hours of missing stability measurements in all stability classes: 4

Zion Nuclear Station

Period of Record: July - September 2011
 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	7	13	3	0	0	23
NNE	2	5	3	0	0	0	10
NE	0	0	1	0	0	0	1
ENE	0	0	1	0	0	0	1
E	1	5	0	0	0	0	6
ESE	0	2	0	0	0	0	2
SE	2	1	1	0	0	0	4
SSE	1	3	2	0	0	0	6
S	1	6	4	2	0	0	13
SSW	0	8	11	4	0	0	23
SW	0	7	8	9	0	0	24
WSW	1	2	4	7	0	0	14
W	1	2	6	2	0	0	11
WNW	0	2	1	1	0	0	4
NW	2	5	8	1	0	0	16
NNW	1	8	4	0	0	0	13
Variable	0	0	0	0	0	0	0
Total	12	63	67	29	0	0	171

Hours of calm in this stability class: 1
 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 2011

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	0	3	0	0	3
NNE	0	2	7	1	0	0	10
NE	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	0	1	1	0	0	0	2
ESE	0	7	0	0	0	0	7
SE	0	7	0	0	0	0	7
SSE	0	3	4	0	0	0	7
S	0	0	0	0	0	0	0
SSW	1	3	0	2	0	0	6
SW	0	1	3	0	0	0	4
WSW	0	3	8	1	0	0	12
W	0	2	7	12	0	0	21
WNW	0	3	4	5	0	0	12
NW	0	5	1	0	0	0	6
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	1	40	35	24	0	0	100

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: 27

Zion Nuclear Station

Period of Record: October - December 2011

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	1	0	0	0	2
NNE	0	0	1	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	0	0	1	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	5	0	0	0	0	5
SSE	0	2	3	0	0	0	5
S	0	0	1	1	0	0	2
SSW	0	0	2	5	2	0	9
SW	0	0	7	4	0	0	11
WSW	0	1	4	4	0	0	9
W	0	2	6	2	0	0	10
WNW	0	0	5	4	0	0	9
NW	0	1	0	0	0	0	1
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	14	32	20	2	0	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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	7	1	0	0	8
NNE	0	0	3	1	0	0	4
NE	1	1	0	0	0	0	2
ENE	0	4	0	0	0	0	4
E	0	1	2	0	0	0	3
ESE	0	4	2	0	0	0	6
SE	0	3	0	0	0	0	3
SSE	0	4	4	1	0	0	9
S	0	0	4	1	0	0	5
SSW	0	1	10	10	2	0	23
SW	0	4	19	7	0	0	30
WSW	0	5	3	0	0	0	8
W	0	5	5	3	0	0	13
WNW	0	3	7	2	0	0	12
NW	0	3	0	3	0	0	6
NNW	0	1	1	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	1	39	67	29	2	0	138

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	8	34	28	4	4	79
NNE	0	0	43	40	10	7	100
NE	0	0	23	18	7	0	48
ENE	3	2	12	6	0	0	23
E	1	1	14	12	0	0	28
ESE	2	3	9	1	0	0	15
SE	3	5	1	0	0	0	9
SSE	3	20	12	17	3	0	55
S	1	14	27	16	0	0	58
SSW	3	14	88	54	3	0	162
SW	9	28	54	24	1	0	116
WSW	8	42	22	10	0	0	82
W	6	41	34	19	0	0	100
WNW	6	30	31	11	0	0	78
NW	8	48	32	3	0	0	91
NNW	2	28	47	15	0	0	92
Variable	1	0	0	0	0	0	1
Total	57	284	483	274	28	11	1137

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	2	2	4	0	0	0	8
NNE	2	1	1	0	0	0	4
NE	1	0	1	0	0	0	2
ENE	0	0	1	0	0	0	1
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	2	6	0	0	0	0	8
SSE	8	9	8	3	0	0	28
S	12	35	22	0	0	0	69
SSW	5	48	27	1	0	0	81
SW	4	40	11	0	0	0	55
WSW	8	29	23	0	0	0	60
W	8	39	32	0	0	0	79
WNW	6	29	18	0	0	0	53
NW	7	13	1	0	0	0	21
NNW	0	4	1	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	69	255	150	4	0	0	478

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	3	0	0	0	0	0	3
NNE	2	0	0	0	0	0	2
NE	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0
E	2	0	0	0	0	0	2
ESE	0	0	3	0	0	0	3
SE	1	0	0	0	0	0	1
SSE	1	1	4	0	0	0	6
S	9	21	1	0	0	0	31
SSW	5	12	0	0	0	0	17
SW	12	11	0	0	0	0	23
WSW	7	13	0	0	0	0	20
W	3	19	0	0	0	0	22
WNW	3	1	0	0	0	0	4
NW	1	6	0	0	0	0	7
NNW	1	2	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	52	86	8	0	0	0	146

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	1	0	0	0	0	0	1
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	1	1	0	0	0	2
SE	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	2	7	0	0	0	0	9
SSW	8	4	0	0	0	0	12
SW	10	10	0	0	0	0	20
WSW	7	10	0	0	0	0	17
W	7	7	0	0	0	0	14
WNW	4	24	0	0	0	0	28
NW	0	5	0	0	0	0	5
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	41	69	1	0	0	0	111

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	0	0	0	0	0
NNE	0	0	4	3	5	0	12
NE	0	1	1	0	0	0	2
ENE	0	0	0	0	0	0	0
E	0	0	1	0	0	0	1
ESE	0	3	2	1	0	0	6
SE	0	1	6	1	0	0	8
SSE	0	2	4	1	0	0	7
S	0	1	0	1	0	0	2
SSW	0	0	1	0	2	0	3
SW	0	1	3	1	0	0	5
WSW	0	1	7	3	1	0	12
W	0	0	2	6	4	5	17
WNW	0	0	2	2	6	6	16
NW	0	2	5	0	0	0	7
NNW	0	0	2	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	12	40	19	18	11	100

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	0	0	1
NNE	0	0	1	1	0	0	2
NE	0	1	0	0	0	0	1
ENE	0	1	0	0	0	0	1
E	0	0	0	1	0	0	1
ESE	0	1	0	0	0	0	1
SE	0	1	3	0	0	0	4
SSE	0	2	1	2	0	0	5
S	0	0	0	1	1	0	2
SSW	0	0	0	3	0	3	6
SW	0	0	1	10	1	0	12
WSW	0	1	3	1	3	0	8
W	0	0	2	6	3	1	12
WNW	0	0	5	1	3	0	9
NW	0	0	1	0	1	0	2
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	7	18	27	12	4	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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	2	5	0	0	7
NNE	0	0	0	3	1	1	5
NE	0	1	1	0	0	0	2
ENE	0	1	3	0	0	0	4
E	0	1	2	0	0	0	3
ESE	0	2	2	1	0	0	5
SE	0	1	2	3	0	0	6
SSE	0	1	3	1	1	0	6
S	0	1	0	4	1	0	6
SSW	0	0	4	6	4	6	20
SW	0	3	6	15	6	0	30
WSW	0	0	5	4	2	0	11
W	0	1	4	3	1	2	11
WNW	0	3	4	4	1	2	14
NW	0	1	2	0	3	0	6
NNW	0	1	1	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	17	41	49	20	11	138

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	2	10	26	29	18	85
NNE	0	0	1	25	38	40	104
NE	1	0	1	17	15	16	50
ENE	0	1	6	10	5	0	22
E	0	3	5	10	11	0	29
ESE	0	4	0	8	1	0	13
SE	0	4	5	3	3	0	15
SSE	0	1	12	9	11	6	39
S	2	7	9	20	13	11	62
SSW	1	4	8	58	60	20	151
SW	1	10	25	49	35	1	121
WSW	0	16	28	14	16	1	75
W	2	10	29	29	22	7	99
WNW	1	8	15	31	15	8	78
NW	1	7	35	25	12	1	81
NNW	1	2	44	41	15	9	112
Variable	1	0	0	0	0	0	1
Total	11	79	233	375	301	138	1137

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	4	3	0	0	8
NNE	1	0	1	3	0	0	5
NE	0	2	0	0	1	0	3
ENE	0	0	1	1	0	0	2
E	0	2	0	0	0	0	2
ESE	2	0	0	0	1	0	3
SE	0	2	9	3	1	0	15
SSE	1	3	8	9	2	1	24
S	1	3	14	17	11	1	47
SSW	1	5	23	30	16	0	75
SW	1	4	26	34	3	0	68
WSW	1	3	12	22	9	0	47
W	0	2	12	53	13	0	80
WNW	0	4	12	19	17	0	52
NW	0	7	12	18	2	0	39
NNW	0	1	4	3	0	0	8
Variable	0	0	0	0	0	0	0
Total	8	39	138	215	76	2	478

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: 27

Zion Nuclear Station

Period of Record: October - December 2011
 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	0	3	5	0	0	8
NNE	0	0	1	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	1	3	1	0	0	5
ESE	1	1	2	0	2	1	7
SE	1	0	3	0	0	0	4
SSE	0	1	8	10	1	0	20
S	0	0	11	11	5	0	27
SSW	1	1	6	8	0	0	16
SW	0	3	7	10	0	0	20
WSW	0	2	0	7	1	0	10
W	0	1	0	11	0	0	12
WNW	0	1	3	8	1	0	13
NW	0	0	1	1	0	0	2
NNW	0	3	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	3	14	48	72	10	1	148

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: 27

Zion Nuclear Station

Period of Record: October - December 2011

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	4	6	6	0	0	16
NNE	0	6	0	0	0	0	6
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	1	0	0	1	0	0	2
ESE	0	0	0	1	2	0	3
SE	0	1	3	0	0	0	4
SSE	0	0	2	2	0	0	4
S	0	1	5	5	4	0	15
SSW	0	1	0	4	1	0	6
SW	0	0	0	13	1	0	14
WSW	0	2	2	3	3	0	10
W	0	0	1	6	2	0	9
WNW	0	2	1	0	0	0	3
NW	0	1	2	1	0	0	4
NNW	0	3	4	5	4	0	16
Variable	0	0	0	0	0	0	0
Total	1	21	26	47	17	0	112

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: 27

Attachment 2:

List of Regulatory Commitments

Attachment 2: List of Commitments to the Zion Nuclear Power Station, Units 1 and 2, 2011 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.

Commitments: None

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 ³)	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 ³)	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 ³)	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 ³)	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 2011
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 ³)	Activity (Ci)	Estim. Error in Activity
A	8.71E+02	6.51E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	2.20E-04	1.43E-03
C-14	1.13E-04	7.35E-04
Fe-55	3.68E-02	2.40E-01
Co-60	6.35E-01	4.14E+00
Ni-59	1.75E-03	1.14E-02
Ni-63	2.22E-01	1.45E+00
Zn-65	1.52E-03	9.88E-03
Sr-89	3.66E-04	2.38E-03
Sr-90	9.95E-04	6.48E-03
Nb-94	1.60E-03	1.04E-02
Tc-99	8.23E-04	5.36E-03
Sb-125	1.44E-03	9.35E-03
I-129	8.45E-05	5.50E-04
Cs-137	9.24E-02	6.02E-01
Ce-144	9.35E-04	6.09E-03
Pu-238	2.16E-04	1.41E-03
Pu-239	6.84E-05	4.46E-04
Pu-241	2.20E-03	1.43E-02
Pu-242	3.04E-06	1.98E-05
Am-241	5.95E-04	3.87E-03
Cm-242	7.27E-07	4.74E-06
Cm-243	2.52E-04	1.64E-03

Waste Class	Volume (m ³)	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
Fe-55	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
Zn-65	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Nb-94	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	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

Waste Class	Volume (m ³)	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
Fe-55	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
Zn-65	0.00E+00%	0.00E+00
Sr-89	0.00E+00%	0.00E+00
Sr-90	0.00E+00%	0.00E+00
Nb-94	0.00E+00%	0.00E+00
Tc-99	0.00E+00%	0.00E+00
Sb-125	0.00E+00%	0.00E+00
I-129	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

Waste Class	Volume (m ³)	Activity (Ci)	Estim. Error in Activity
All	8.71E+02	6.51E+00	2.50E+01%

Nuclide Name	Percent Abundance	Activity (Ci)
H-3	2.20E-04	1.43E-03
C-14	1.13E-04	7.35E-04
Cr-51	3.68E-02	2.40E-01
Mn-54	6.35E-01	4.14E+00
Fe-55	1.75E-03	1.14E-02
Fe-59	2.22E-01	1.45E+00
Co-57	1.52E-03	9.88E-03
Co-58	3.66E-04	2.38E-03
Co-60	9.95E-04	6.48E-03
Ni-59	1.60E-03	1.04E-02
Ni-63	8.23E-04	5.36E-03
Sr-89	1.44E-03	9.35E-03
Sr-90	8.45E-05	5.50E-04
Zr-95	9.24E-02	6.02E-01
Nb-95	9.35E-04	6.09E-03
Tc-99	2.16E-04	1.41E-03
Ag-110m	6.84E-05	4.46E-04
Sn-113	2.20E-03	1.43E-02
Sb-125	3.04E-06	1.98E-05
I-129	5.95E-04	3.87E-03
Cs-134	7.27E-07	4.74E-06
Cs-137	2.52E-04	1.64E-03

ZION NUCLEAR POWER STATION
ANNUAL RADIOACTIVE EFFLUENT REPORT FOR 2011
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

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

3. Solid Waste Disposition

Number of Shipments	Mode of transportation	Destination
23	Truck	Clive Disposal Facility (Bulk Waste Facility) Interstate 80, Exit 49, Clive UT 84029

B. IRRADIATED FUEL SHIPMENTS

No irradiated fuel shipments were performed during 2011.

C. IRRADIATED COMPONENTS, CONTROL RODS, ETC.

Number of Shipments	Mode of Transportation	Destination
1	Truck	Clive Disposal Facility (Bulk Waste Facility) Interstate 80, Exit 49, Clive UT 84029

ZION NUCLEAR POWER STATION
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2011
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

Radioactive Waste Shipments for 2011

Shipment Date	Shipment Number	Media	Receiver	Waste Class	Container Type	Solidification Agent	Activity (Ci)	Volume (m ³)	Volume (ft ³)
1st Quarter:									
Sub totals:	0						0.0000000	0.000	0.00
2nd Quarter:									
Sub totals:	0						0.0000000	0.000	0.00
3rd Quarter:									
Sub totals:	15	Solid	Disposal Site	A	Sealand/ Intermodal	N/A	0.0808241	665.600	23506.00
4th Quarter:									
Sub totals:	9	Solid	Disposal Site	A	Intermodal/ Metal Container	N/A	6.4322703	205.500	7257.00
Totals:	<u>24</u>						<u>6.51E+00</u>	<u>871.100</u>	<u>30763.00</u>

	Class A	Class B	Class C
Number of Shipments	24	0	0
Activity (Ci)	6.51E+00	0.00E+00	0.00E+00
Volume (m ³)	8.71E+02	0.00E+00	0.00E+00

ZION NUCLEAR POWER STATION
ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT FOR 2011
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 2011 and an entire copy of the ODCM, current as of December 31, 2011, and required to be submitted.

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.

There are no such occurrences

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.

The contents of the six gas decay tanks have been sampled and determined to have negligible activity. 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 2011.

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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%

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ADDENDUM

5. Estimates of Total Error

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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%

Attachment 3:

Summary of Changes to the ODCM

Attachment 3: Changes made to the ODCM in 2011

Zion Station 2011
 Offsite Dose Calculation Manual (ODCM)
 Summary of Changes for Chapter 12 Revision 20

Pages/Section	Change Summary
12-27/Table 12.4-1	Note 2 changed to specify when each building is considered unventilated.

Zion Station 2011
 Offsite Dose Calculation Manual (ODCM)
 Summary of Changes for Chapter 10 Revision 13
 and Chapter 12 Revision 21

Pages/Section	Change Summary
10-1/10.1.1	System Description is revised to describe the Unit 1 Ventilation stack as a release point from Unit 1 Containment.
10-1/10.1.2.1	Auxiliary Building Ventilation Stack Effluent Monitors is revised to reference only Unit 2 stack as an Aux Bldg effluent release point.
10-3/10.1.2.3	Containment Purge Effluent monitors is revised to describe the functions of radiation monitors 1RIA-PR49 and 2RIA-PR49A.
10-4/10.1.4	Allocation of Fuel Building Effluents to common release points is revised to describe the method of estimating noble gas releases from Unit 1 Ventilation stack.
10-10/Table 10-2	Table is revised to remove the Unit1 Aux Bldg Exhaust fans as that release path is permanently isolated.
12-9/Bases 12.2.2.C	Bases is revised to identify when the Ventilation stacks are considered available as a release path.
12-11, 12-12, 12-14, 12-15 and 12-26,12-27,12-28/ Tables 12.2-3, 12.2-4 and 12.4-1	Tables is revised to delineate between Containment and Aux Bldg Operability requirements.
12-27/Table12.4-1	Table is revised to define the Unventilated Containment.

Offsite Dose Calculation Manual (ODCM)
 Summary of Changes for Chapter 10, Revision 12
 And Chapter 12, Revision 19

Page/Section	Change Summary
10-1/10.1.1	Add system description information for the Containment Purge System operation and release point for Fuel Building ventilation.
10-1/10.1.2.1	Include Unit 1&2 Containments in monitored effluent path for AB vent stack monitors.
10-1/10.1.2.2	Deleted Fuel Building Effluent Monitor.
10-3/10.1.3.5	Removed reference for Fuel Building Exhaust Flows.
10-3/10.1.4	Removed reference for Common Release Points.
12-9/12.2.2.C	Added additional information for AB release stack availability for Fuel Building and Containments.
12-11/Table 12.2-3 notations	Added compensatory measures for an inoperable condition on ORT-AR13.
12-12,13/Surveillance 13	Added compensatory action for ORT-AR13 inoperable
12-14/12.2-4 Table	Added note 4 to ORT-AR22, removed daily channel check requirements for ORT-AR13, and changed source check requirement for ORT-AR13 from monthly to daily.
12-15/12.2-4 Notes	Removed daily from note 3.
12-27/12.4-1 Table	Added Unit 1 and 2 Containments to unventilated building release. Note 2 changed to specify when each building is considered unventilated.
12-28/12.4-1 Notes	Removed calculation for estimating release rate from AB and added requirement to estimate release rate from Fuel Building and Containments to note (i). Removed Fuel Building release rate estimate and added instructions to not require sampling of containments for noble gases and tritium to note (j).

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2011

Offsite Dose Calculation Manual (ODCM)
Summary of Changes for Chapter 10, Revision 11
And Chapter 12, Revision 18

Page/Section	Change Summary
10-2/Section 10.1.2.3	Removed the requirements of the Containment Particulate Monitors 1(2)RIA-PR40.
12-10/Table 12.2-3 Section 1.A.1 and 1.A.2	Changed the effective Particulate Monitor for Effluent Containment Purge or Vent from 1(2)RIA-PR40A to 1(2)RIA-PR49A. Changed the surveillance requirements from 6 ¹ , 7 ² to 11 and removed footnotes 1 and 2.
12-11/Surveillance 6 and 7	Deleted Surveillance 6 and Surveillance 7.
12-12/Table 12.2-4 Section 1.A.1 and 1.A.2	Changed the effective Particulate Monitor for Effluent Containment Purge or Vent from 1(2)RIA-PR40A to 1(2)RIA-PR49A.
12-24/Table 12.4-1 Section B	Added "Continuous Releases ⁽¹⁾ " to the Gaseous Release Type "Containment Vent or Purge" and changed the Sampling Method from "Grab (b)" to "Continuous (b)(h)"; changed Frequency from "Prior to Each Release" to "Weekly(c) and Daily(a)"; and changed Analysis from "Noble Gases Principal Gamma Emitters(d)" with an LLD of 1E-4 µCi/cc to "Particulate Principal Gamma Emitters(e)" with an LLD of 1E-11 µCi/cc.
12-24/Table 12.4-1 Section C	Added the frequency of "Daily(a)" to the "Continuous (b)(h)" sampling method.
12-26/Table 12.4-1 Table Notation (a)	Changed from "Deleted" to "The daily sampling requirement is applicable when 1(2)RIA-PR49A is inoperable AND decommissioning activities are in progress in the associated building (Containment and/or AB).

Attachment 4:

Zion Station ODCM