Date: 2-8-07
Begin: 10:31 EST
End: 10:55 EST

Operation of data logger ☑ OK ☐
Heater System Operational (Oct-Apr) ☑ YES ☐
Air Cond. System Operational (May-Sep) ☐ YES ☑ NA

A Readings (Taken at 10:41 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			18.7 °F	
100 ft.	18.4 mph	300 °		
150 ft.	24.6 mph	298 °	17.2 °F	-1.1 °F

B Readings (Taken at 10:45 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			18.6 °F	
100 ft.	25.3 mph	298 °		
150 ft.			17.8 °F	-0.8 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 10:42 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 10:57 EST)

Dry bulb: 19.5 °F

COMMENTS:

Technician: Jonathan [illegible]
MAU 4/3/07

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

March 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

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For Exelon Use Only

Reviewed By: DKW

Date: 5/10/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 22nd of March. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

In-house on the 6th, 3 wind speed sensors were calibrated and given new bearings.

No problems were encountered with the equipment during March, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through March is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
March 2007

Hours in Month = 744 Hours to date = 2160 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	743	99.9	1	0.3	2159	100.0	1	5.3
150Ft Wind Speed	743	99.9	1	0.1	2157	99.9	3	6.2
100Ft Wind Direction	743	99.9	1	0.5	2159	100.0	1	5.5
150Ft Wind Direction	743	99.9	1	0.4	2158	99.9	2	6.2
33Ft Temperature	743	99.9	1	0.0	2159	100.0	1	4.8
150Ft Temperature	743	99.9	1	0.0	2158	99.9	2	29.4
150Ft-33Ft Delta-T	743	99.9	1	0.0	2154	99.7	6	5.0
3Ft Precipitation	743	99.9	1	0.1	2138	99.0	22	7.5
A V E R A G E *		99.9				99.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	March	Year to Date
Three Mile Island A	0	0
All Exelon Sites	24	54

3. Data Recovery

The record of data recovery for the year through March is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
March 2007

Hours in Month = 744 Hours to date = 2160 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	743	99.9	1	0.0	2157	99.9	3	6.3
100Ft Wind Direction	743	99.9	1	0.0	2157	99.9	3	6.3
33Ft Temperature	743	99.9	1	99.9	2144	99.3	16	99.9
150Ft Temperature	743	99.9	1	0.0	2158	99.9	2	29.4
150Ft-33Ft Delta-T	743	99.9	1	99.9	2144	99.3	16	99.9
A V E R A G E *		99.9				99.7		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	March	Year to Date
Three Mile Island B	0	0
All Exelon Sites	24	54

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – March 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	150.00
Meteorological parts, materials & contractors services	$	272.18
Total for Month:	$	422.18
Year to Date Total:	$	715.98

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

TMI -A March 2007 744 Hours in Period

Parameter	Elev	Units	MEAN	MAX	MIN	Hours Missing	Hours Valid
AMBIENT TEMP . . .	33 FT	[F]	41.9	79.8	8.7	1	743
AMBIENT TEMP . . .	150 FT	[F]	42.2	80.3	12.2	1	743
WIND SPEED	100 FT	[MPH]	8.1	29.5	Calm	1	743
WIND SPEED	150 FT	[MPH]	8.8	33.0	Calm	1	743
DIFFERENTIAL TEMP	150 FT	[F]	0.4	8.1	-1.6	1	743
PRECIPITATION	2 FT	[IN]				1	743
TOTAL		3.21					
Max 24 Hour Total . . .		0.99					
Max 1 Hour Total		0.20					

TABLE PRODUCED 05/03/07 14:22:09

Three Mile Island B

Differential Temperature Distribution (degC/100m)

3/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	0
-2.5	GE	DT	LT	-2.0	18
-2.0	GE	DT	LT	-1.5	36
-1.5	GE	DT	LT	-1.0	94
-1.0	GE	DT	LT	-0.5	184
-0.5	GE	DT	LT	0.0	75
0.0	GE	DT	LT	0.5	72
0.5	GE	DT	LT	1.0	35
1.0	GE	DT	LT	1.5	36
1.5	GE	DT	LT	2.0	33
2.0	GE	DT	LT	2.5	31
2.5	GE	DT	LT	3.0	22
3.0	GE	DT	LT	3.5	9
3.5	GE	DT	LT	4.0	11
4.0	GE	DT	LT	4.5	13
4.5	GE	DT	LT	5.0	11
5.0	GE	DT	LT	5.5	11
5.5	GE	DT	LT	6.0	7
6.0	GE	DT	LT	6.5	9
6.5	GE	DT	LT	7.0	3
7.0	GE	DT	LT	7.5	4
7.5	GE	DT			29

NRC Stability Classes

Unstable	74
Neutral	258
Stable	411

TOTAL NO. HOURS 743

TABLE PRODUCED 05/03/07 14:22:36

TMI -B March 2007 744 Hours in Period

Parameter	Elev	Units	MEAN	MAX	MIN	Hours Missing	Hours Valid
AMBIENT TEMP . . .	33 FT	[F]	41.9	79.8	8.5	1	743
AMBIENT TEMP . . .	150 FT	[F]	42.3	80.5	12.3	1	743
WIND SPEED	100 FT	[MPH]	8.0	30.2	1.0	1	743
DIFFERENTIAL TEMP	150 FT	[F]	0.5	8.2	-1.6	1	743

TABLE PRODUCED 05/03/07 14:22:09

Three Mile Island B

Differential Temperature Distribution (degC/100m)

3/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	0
-2.5	GE	DT	LT	-2.0	18
-2.0	GE	DT	LT	-1.5	36
-1.5	GE	DT	LT	-1.0	94
-1.0	GE	DT	LT	-0.5	184
-0.5	GE	DT	LT	0.0	75
0.0	GE	DT	LT	0.5	72
0.5	GE	DT	LT	1.0	35
1.0	GE	DT	LT	1.5	36
1.5	GE	DT	LT	2.0	33
2.0	GE	DT	LT	2.5	31
2.5	GE	DT	LT	3.0	22
3.0	GE	DT	LT	3.5	9
3.5	GE	DT	LT	4.0	11
4.0	GE	DT	LT	4.5	13
4.5	GE	DT	LT	5.0	11
5.0	GE	DT	LT	5.5	11
5.5	GE	DT	LT	6.0	7
6.0	GE	DT	LT	6.5	9
6.5	GE	DT	LT	7.0	3
7.0	GE	DT	LT	7.5	4
7.5	GE	DT			29

NRC Stability Classes

Unstable	74
Neutral	258
Stable	411

TOTAL NO. HOURS 743

TABLE PRODUCED 05/03/07 14:22:36

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 3-28-07
Begin: 11:19 EST
End: 11:40 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ NA

A Readings (Taken at 11:21 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			59.4 °F	
100 ft.	10.6 mph	185 °		
150 ft.	10.8 mph	188 °	57.9 °F	-1.6 °F

B Readings (Taken at 11:23 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			59.1 °F	
100 ft.	10.2 mph	191 °		
150 ft.			58.0 °F	-1.1 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at 11:33 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 11:30 EST)

Dry bulb: 61.5 °F

COMMENTS:

Technician: Jonathan Stewart

MTC 4/13/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 3-6-07

☑ In-house work
☐ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind speed sensors

Work Performed / Action taken: Replaced bearings and calibrated 3 wind speed sensors SN#: MT-0080, MT-0040 and MT-0046

Measuring Test Equipment Used	
Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
3-6-07	JJS	3.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 3.0 reg — ot
Travel: — mi $ — tolls
Misc: —

MJC 4/13/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

April 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
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Reviewed By: [illegible]

Date: 6/11/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 10th of April. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 2nd, a calibration of the meteorological tower was performed. All Wind Speed sensors were changed during the calibration. The results of the calibration can be found in the logs, which are included at the end of this report.

On the 10th, the annual tower inspection was performed.

On the 23rd, a technician repaired the 33 ft. Bravo temperature card that was reading 40 degrees too low.

No problems were encountered with the equipment during April, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through March is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
April 2007

Hours in Month = 720 Hours to date = 2880 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	718	99.7	2	1.5	2877	99.9	3	4.3
150Ft Wind Speed	718	99.7	2	1.5	2875	99.8	5	5.0
100Ft Wind Direction	718	99.7	2	1.5	2877	99.9	3	4.5
150Ft Wind Direction	718	99.7	2	1.5	2876	99.9	4	5.1
33Ft Temperature	718	99.7	2	1.4	2877	99.9	3	4.0
150Ft Temperature	719	99.9	1	1.2	2877	99.9	3	22.3
150Ft-33Ft Delta-T	717	99.6	3	1.2	2871	99.7	9	4.1
3Ft Precipitation	718	99.7	2	1.5	2856	99.2	24	6.0
A V E R A G E *		99.7				99.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	April	Year to Date
Three Mile Island A	0	0
All Exelon Sites	4	58

3. Data Recovery

The record of data recovery for the year through March is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
April 2007

Hours in Month = 720 Hours to date = 2880 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	718	99.7	2	1.7	2875	99.8	5	5.2
100Ft Wind Direction	718	99.7	2	1.8	2875	99.8	5	5.2
33Ft Temperature	698	96.9	22	4.2	2842	98.7	38	76.0
150Ft Temperature	717	99.6	3	1.5	2875	99.8	5	22.4
150Ft-33Ft Delta-T	697	96.8	23	4.0	2841	98.6	39	75.9
A V E R A G E *		98.5				99.3		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	April	Year to Date
Three Mile Island B	0	0
All Exelon Sites	4	58

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – April 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	293.80
Meteorological parts, materials & contractors services	$	4.51
Total for Month:	$	298.31
Year to Date Total:	$	1014.29

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

TMI A April 2007 720 Hours in Period

Parameter	Elev	Units	MEAN	MAX	MIN	Hours Missing	Hours Valid
AMBIENT TEMP	33 FT	[F]	49.6	82.7	29.2	2	718
AMBIENT TEMP	150 FT	[F]	49.7	82.2	29.0	1	719
WIND SPEED	100 FT	[MPH]	9.6	30.1	Calm	2	718
WIND SPEED	150 FT	[MPH]	10.1	31.9	Calm	2	718
DIFFERENTIAL TEMP	150 FT	[F]	0.1	9.4	-2.5	3	717
PRECIPITATION	2 FT	[IN]				2	718
TOTAL		3.06					
Max 24 Hour Total		1.53					
Max 1 Hour Total		0.31					

TABLE PRODUCED 05/28/07 13:23:50

TMI -B April 2007 720 Hours in Period

Parameter	Elev	Units	MEAN	MAX	MIN	Hours Missing	Hours Valid
AMBIENT TEMP	33 FT	[F]	48.9	82.9	28.9	22	698
AMBIENT TEMP	150 FT	[F]	49.7	82.3	29.1	3	717
WIND SPEED	100 FT	[MPH]	9.3	30.4	Calm	2	718
DIFFERENTIAL TEMP	150 FT	[F]	0.2	9.7	-2.4	23	697

TABLE PRODUCED 05/28/07 13:23:50

Three Mile Island A

Differential Temperature Distribution (degC/100m)

4/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	1
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	2
-2.5	GE	DT	LT	-2.0	14
-2.0	GE	DT	LT	-1.5	39
-1.5	GE	DT	LT	-1.0	148
-1.0	GE	DT	LT	-0.5	239
-0.5	GE	DT	LT	0.0	70
0.0	GE	DT	LT	0.5	40
0.5	GE	DT	LT	1.0	33
1.0	GE	DT	LT	1.5	20
1.5	GE	DT	LT	2.0	11
2.0	GE	DT	LT	2.5	13
2.5	GE	DT	LT	3.0	11
3.0	GE	DT	LT	3.5	7
3.5	GE	DT	LT	4.0	4
4.0	GE	DT	LT	4.5	6
4.5	GE	DT	LT	5.0	9
5.0	GE	DT	LT	5.5	3
5.5	GE	DT	LT	6.0	3
6.0	GE	DT	LT	6.5	6
6.5	GE	DT	LT	7.0	3
7.0	GE	DT	LT	7.5	4
7.5	GE	DT			29

NRC Stability Classes

Unstable	93
Neutral	352
Stable	272

TOTAL NO. HOURS 717

TABLE PRODUCED 05/28/07 13:24:26

Three Mile Island B

Differential Temperature Distribution (degC/100m)

4/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	1
-3.5	GE	DT	LT	-3.0	1
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	11
-2.0	GE	DT	LT	-1.5	10
-1.5	GE	DT	LT	-1.0	64
-1.0	GE	DT	LT	-0.5	267
-0.5	GE	DT	LT	0.0	111
0.0	GE	DT	LT	0.5	69
0.5	GE	DT	LT	1.0	23
1.0	GE	DT	LT	1.5	26
1.5	GE	DT	LT	2.0	17
2.0	GE	DT	LT	2.5	10
2.5	GE	DT	LT	3.0	10
3.0	GE	DT	LT	3.5	8
3.5	GE	DT	LT	4.0	6
4.0	GE	DT	LT	4.5	6
4.5	GE	DT	LT	5.0	9
5.0	GE	DT	LT	5.5	6
5.5	GE	DT	LT	6.0	2
6.0	GE	DT	LT	6.5	5
6.5	GE	DT	LT	7.0	3
7.0	GE	DT	LT	7.5	4
7.5	GE	DT			27

NRC Stability Classes

Unstable	34
Neutral	321
Stable	342

TOTAL NO. HOURS 697

TABLE PRODUCED 05/28/07 13:24:26

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 4-10-07
Begin: 9:31 EST
End: 9:50 EST

Operation of data logger	☑ OK	☐
Heater System Operational (Oct-Apr)	☑ YES	☐
Air Cond. System Operational (May-Sep)	☐ YES	☑ NA

A Readings (Taken at 9:34 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			39.6 °F	
100 ft.	8.6 mph	289 °		
150 ft.	8.6 mph	306 °	38.6 °F	-1.0 °F

B Readings (Taken at 9:37 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			39.6 °F	
100 ft.	9.1 mph	305 °		
150 ft.			38.7 °F	-1.0 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 9:43 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:39 EST)

Dry bulb: 40.5 °F

COMMENTS:

Technician: Jonathan Stanzel

5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A: + 12.032 V	A: - 12.221 V
B: + 12.067 V	B: - 12.231 V

A Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond	Recorder
33 ft							
T ZERO	2.582 V	– V	32.3 °			2.571V ± 0.050V	
T SPAN	4.620 V	– V	89.4 °			4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.1 mph	82.0 mph	85.0 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000V	– V	540.0 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.244 V	4.261 V	85.2 mph	82.0 mph	85.0 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.999 V	– V	539.9 °	540 °	540.0 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.438 V	– V	0.05 °			1.429V ± 0.050V	
ΔT SPAN	5.009 V	– V	20.05 °			5.000V ± 0.050V	
T ZERO	2.575 V	– V	32.1 °			2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.1 °			4.643V ± 0.050V	

MLC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

A Signal Conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
33 ft							
T ZERO	2.582 V	– V	32.3 °	32.2 °	– °	2.571V ± 0.050V	
T SPAN	4.620 V	– V	89.4 °	89.2 °	– °	4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.0 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540.0 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.244 V	4.261 V	85.2 mph	82.0 mph	85.2 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.999 V	– V	539.9 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.438 V	– V	0.05 °	0.0 °	– °	1.429V ± 0.050V	
ΔT SPAN	5.009 V	– V	20.05 °	20.0 °	– °	5.000V ± 0.050V	
T ZERO	2.575 V	– V	32.1 °	32.0 °	– °	2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.1 °	89.0 °	– °	4.643V ± 0.050V	

MTC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

B Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft				
T ZERO	2.578 V	– V	32.2 °			2.571V ± 0.050V	
T SPAN	4.615 V	4.635 V	89.6 °			4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.245 V	– V	84.9 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.001 V	– V	-0.1 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	4.994 V	– V	539.4 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.433 V	– V	0.0 °			1.429V ± 0.050V	
ΔT SPAN	4.992 V	– V	20.6 °			5.000V ± 0.050V	
T ZERO	2.587 V	– V	32.2 °			2.571V ± 0.050V	
T SPAN	4.623 V	– V	89.5 °			4.643V ± 0.050V	

MTC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

B Signal conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
33 ft							
T ZERO	2.578 V	— V	32.2 °	32.1 °	— °	2.571V ± 0.050V	
T SPAN	4.615 V	4.635 V	89.6 °	89.1 °	89.6 °	4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.245 V	— V	84.9 mph	84.9 mph	— mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.001 V	— V	0.1 °	0.0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	4.994 V	— V	539.4 °	539.0 °	— °	5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
ΔT ZERO	1.433 V	— V	0.0 °	0.0 °	— °	1.429V ± 0.050V	
ΔT SPAN	4.992 V	— V	20.0 °	19.9 °	— °	5.000V ± 0.050V	
T ZERO	2.587 V	— V	32.2 °	32.4 °	— °	2.571V ± 0.050V	
T SPAN	4.623 V	— V	89.5 °	89.3 °	— °	4.643V ± 0.050V	

MAC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

TOWER MEASUREMENTS

☐ Ambient ☐ Ice Bath

Temperatures

	A 33 ft. Amb		B 33 ft Amb		A 150 ft Amb	
	AF	AL	AF	AL	AF	AL
Measured	72.75 °F	— °F	72.75 °F	— °F	73.00 °F	— °F
Recorded	72.70 °F	— °F	72.60 °F	— °F	72.90 °F	— °F
Difference	0.05 °F	— °F	0.15 °F	— °F	0.10 °F	— °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft Amb		A 150 ft ΔT		B 150 ft ΔT	
	AF	AL	AF	AL	AF	AL
Measured	73.00 °F	— °F	-0.55 °F	— °F	-0.05 °F	— °F
Recorded	73.00 °F	— °F	-0.50 °F	— °F	-0.10 °F	— °F
Difference	0.00 °F	— °F	0.05 °F	— °F	0.05 °F	— °F
Specification	±0.5°F		±0.25°F		±0.25°F	

Winds

	A 100 ft		B 100 ft		150 ft		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0mph ± 0.5mph
Forw. WD	343 °	— °	254 °	— °	250 °	— °	250° or 343° ± 5°
Revr. WD	160 °	— °	74 °	— °	73 °	— °	70°/430° or 163°/523° ± 5°

The 343° and 163°/523° specification is for the A 100 ft. wind direction only and the B 100 ft and 150 ft uses the 250° and 70°/430° specification for the wind direction.

Tracking/wear OK OK OK

Comments:

MJC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: In Out (Installed) Removed

Tower Condition	Good	Fair	Poor
Paint	☑	☐ ☐	
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT-0103
Digital multimeter - S/N - 86330011
Digital multimeter - S/N - —

Technicians: Jon Stranzl, Mike Marx, Jeff Daley

Comments:

100ft Alpha Wind Speed Sensor Removed (MT-0118)
Installed (MT-0006)
100ft Bravo Wind Speed Sensor Removed (MT-0079)
Installed (MT-0040)
150ft Wind Speed Sensor Removed (MT-0008)
Installed (MT-0080)

Signature: Jonathan Stranzl

MAC 5/14/07

System Response Check

Date: 4-2-07

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	20.0 ±0.4	108.0 ±2	-12.0 ±0.5	-2.4 ±0.1
As Found Response	20.0	108.0	-12.0	-2.4
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	60.0 ±0.4	324.0 ±2	44.0 ±0.5	8.8 ±0.1
As Found Response	60.0	323.8	44.0	8.8
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	80.0 ±0.4	432/72 ±2	72.0 ±0.5	14.4 ±0.1
As Found Response	80.0	431.9	72.0	14.4
As Left Response	—	—	—	—

MAC 5/14/07

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms may be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficiencies.

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Jonathan Stuart — 4-5-07

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MTC 5/14/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 4-23-07

☐ In-house work
☑ Field work

Site: TMT

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: 33ft Temperature on the Bravo system was reading 30 to 40 degrees too low.

Work Performed / Action taken: Arrived at the Met Tower I found the 33ft B Temp was reading 40 degrees too low. I found that the temperature card was making a bad connection with the card rack. I soldered the fins of the temp card and put back in the rack. The Temperature came back to normal. The 33ft Bravo Temp was back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☐ Yes ☑ No ☐ NA

Date	Technician	Reg Hours	OT Hours
4-23-07	JJS	4.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MTC 5/14/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

May 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

e-mail: mt@weathercommand.com
web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: [illegible]

Date: 7/10/07

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3	Data Recovery Summary	2
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5	Data Analysis	5
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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 10th of May. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 9th and 10th, a technician worked with plant personnel to install a new breaker. Power to the met tower was shut off and restored as requested. Data for all parameters (A and B) was lost for 24 hours due to the power outage.

On the 15th, the 33 ft. Bravo temperature was out. The signal conditioning card was re-seated to correct the problem.

In-house on the 22nd, 3 wind speed sensors were given new bearings and calibrated.

No other problems were encountered with the equipment during May, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through May is summarized in Table 1. Data loss was due to a power outage caused by the plant.

Table 1

Three Mile Island A
Data Recovery Summary
May 2007

Hours in Month = 744 Hours to date = 3624 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	720	96.8	24	5.9	3597	99.3	27	4.7
150Ft Wind Speed	720	96.8	24	6.0	3595	99.2	29	5.2
100Ft Wind Direction	720	96.8	24	5.9	3597	99.3	27	4.8
150Ft Wind Direction	720	96.8	24	6.5	3596	99.2	28	5.4
33Ft Temperature	720	96.8	24	5.9	3597	99.3	27	4.4
150Ft Temperature	720	96.8	24	5.9	3597	99.3	27	19.0
150Ft-33Ft Delta-T	720	96.8	24	5.9	3591	99.1	33	4.4
3Ft Precipitation	721	96.9	23	5.9	3577	98.7	47	6.0
A V E R A G E *		96.8				99.2		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	May	Year to Date
Three Mile Island A	8	8
All Exelon Sites	20	78

3. Data Recovery

The record of data recovery for the year through May is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
May 2007

Hours in Month = 744 Hours to date = 3624 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	720	96.8	24	6.2	3595	99.2	29	5.4
100Ft Wind Direction	720	96.8	24	5.9	3595	99.2	29	5.3
33Ft Temperature	658	88.4	86	13.2	3500	96.6	124	63.1
150Ft Temperature	720	96.8	24	5.9	3595	99.2	29	19.0
150Ft-33Ft Delta-T	658	88.4	86	13.2	3499	96.6	125	63.1
A V E R A G E *		93.4				98.2		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	May	Year to Date
Three Mile Island B	6	6
All Exelon Sites	20	78

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – May 2007

Three Mile Island

Description	Cost
Meteorological equipment maintenance	$ 1,178.80
Meteorological parts, materials & contractors services	$ 16.94
Total for Month:	$ 1,195.74
Year to Date Total:	$ 2,210.03

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Nuclear Statio May 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	65.0	90.0	41.0	24	720
150Ft Temperature (F)	64.8	89.1	42.7	24	720
100Ft Wind Speed (MPH)	6.2	17.4	1.3	24	720
150Ft Wind Speed (MPH)	6.7	18.8	Calm	24	720
150Ft-33Ft Delta-T (F)	-0.1	5.2	-1.8	24	720
150 - 100 FT Direction Shear (deg)	3.7	179.0	-128.0	25	719
100Ft Sigma Theta (deg)	22.3	50.0	5.0	123	621
150Ft Sigma Theta (deg)	20.5	50.0	5.0	109	635
2 FT Precipitation IN				0	721
Monthly Total	1.35				
Max 24 Hour Total	0.57				
Max 1 Hour Total	0.27				

There were 744 hours in May

Table prepared on 7/ 3/2007 at 9:36

Three Mile Island B System May 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	64.3	90.2	40.8	86	658
150Ft Temperature (F)	65.0	89.3	42.8	24	720
100Ft Wind Speed (MPH)	6.1	17.8	1.0	24	720
150Ft-33Ft Delta-T (F)	0.0	5.4	-1.7	86	658
100Ft Sigma Theta (deg)	22.1	50.0	5.0	124	620

There were 744 hours in May

Table prepared on 7/ 3/2007 at 9:36

Three Mile Island A

Differential Temperature Distribution (degC/100m)

5/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	2
-2.5	GE	DT	LT	-2.0	34
-2.0	GE	DT	LT	-1.5	92
-1.5	GE	DT	LT	-1.0	124
-1.0	GE	DT	LT	-0.5	153
-0.5	GE	DT	LT	0.0	66
0.0	GE	DT	LT	0.5	49
0.5	GE	DT	LT	1.0	27
1.0	GE	DT	LT	1.5	45
1.5	GE	DT	LT	2.0	18
2.0	GE	DT	LT	2.5	25
2.5	GE	DT	LT	3.0	28
3.0	GE	DT	LT	3.5	17
3.5	GE	DT	LT	4.0	14
4.0	GE	DT	LT	4.5	8
4.5	GE	DT	LT	5.0	9
5.0	GE	DT	LT	5.5	5
5.5	GE	DT	LT	6.0	1
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	1
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			1

NRC Stability Classes

Unstable	173
Neutral	232
Stable	315

TOTAL NO. HOURS 720

TABLE PRODUCED 07/03/07 09:37:14

Three Mile Island B

Differential Temperature Distribution (degC/100m)

5/2007

150-30 ft

		DT LT	-7.5	0
-7.5	GE	DT LT	-7.0	0
-7.0	GE	DT LT	-6.5	0
-6.5	GE	DT LT	-6.0	0
-6.0	GE	DT LT	-5.5	0
-5.5	GE	DT LT	-5.0	0
-5.0	GE	DT LT	-4.5	0
-4.5	GE	DT LT	-4.0	0
-4.0	GE	DT LT	-3.5	0
-3.5	GE	DT LT	-3.0	0
-3.0	GE	DT LT	-2.5	1
-2.5	GE	DT LT	-2.0	23
-2.0	GE	DT LT	-1.5	67
-1.5	GE	DT LT	-1.0	101
-1.0	GE	DT LT	-0.5	135
-0.5	GE	DT LT	0.0	76
0.0	GE	DT LT	0.5	56
0.5	GE	DT LT	1.0	28
1.0	GE	DT LT	1.5	45
1.5	GE	DT LT	2.0	16
2.0	GE	DT LT	2.5	26
2.5	GE	DT LT	3.0	16
3.0	GE	DT LT	3.5	22
3.5	GE	DT LT	4.0	14
4.0	GE	DT LT	4.5	13
4.5	GE	DT LT	5.0	8
5.0	GE	DT LT	5.5	4
5.5	GE	DT LT	6.0	3
6.0	GE	DT LT	6.5	1
6.5	GE	DT LT	7.0	1
7.0	GE	DT LT	7.5	1
7.5	GE	DT		1

NRC Stability Classes

Unstable	127
Neutral	200
Stable	331

TOTAL NO. HOURS 658

TABLE PRODUCED 07/03/07 09:37:14

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 5-10-07
Begin: 12:15 EST
End: 12:38 EST

Operation of data logger: ☑ OK ☐
Heater System Operational (Oct-Apr) ☐ YES ☑ NA
Air Cond. System Operational (May-Sep) ☑ YES ☐

A Readings (Taken at 12:17 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			78.7 °F	
100 ft.	6.6 mph	109 °		
150 ft.	8.0 mph	111 °	77.2 °F	-1.4 °F

B Readings (Taken at 12:19 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			78.8 °F	
100 ft.	10.1 mph	113 °		
150 ft.			77.3 °F	-1.5 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 12:25 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 12:31 EST)

Dry bulb: 81.0 °F

COMMENTS:

Technician: Jonathan Thomas
MTC 6/8/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 5-9-07
5-10-07

☐ In-house work
☑ Field work

Site: JMT

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Shut down the power at the Met-Tower while the plant puts a new breaker in, and then re-boot the power and check the Met Tower readings

Work Performed / Action taken: 5-9-07 Arrived at the Met Tower around 1400. Notified the control room that I was powering down the Met-Tower. Then I turned off the power.
5-10-07 Return at 0700 to re-started the Met-Tower. I found out that the plant was not ready and was asked to return at 1300 on 5-10-07. Returned at 1300 power was back. I turned the power on to the Met-Tower. All readings came back. I then confirmed with the control room. The Met Tower was back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☐ Yes ☐ No ☑ NA

Date	Technician	Reg Hours	OT Hours
5-9-07	JJS	4.0	—
5-10-07	JJS	6.0	—

☒ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 10.0 reg — ot
Travel: 450 mi $ 16.75 tolls
Misc: —

MTC 6/11/07

MTC 6/11/07

Murray & Trettel, Inc. 600 First Bank Drive, Suite A, Palatine, Illinois 60067 ☎ (847) 963-9000

Exelon Contract Number 80633

A1

☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: 3 wind speed sensor needed bearing replacement and calibration

Work Performed / Action taken: Replaced bearings and calibrated wind speed sensors SN# MT-0008, MT-0079, and MT-0118.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
5-22-07	JJS	3.0	—

☑ Meteorological

☐ Microtel

☐ Visibility monitor/fog warning signs

☐ Other

Billable

Labor: 3.0 reg — ot

Travel: — mi $ — tolls

Misc. —

MTC 6/11/07

JC.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

June 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

e-mail: mt@weathercommand.com
web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: LKW

Date: 8/13-07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 9th of June. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 8th, indications were lost at the met tower. A technician replaced damaged op-amps to restore operation.

On the 14th, the Alpha temperature system was reading incorrectly. The signal conditioning cards were re-seated to restore proper operation.

On the 20th, a lightning strike affected all parameters at the met tower. Op-amps as well as signal conditioning cards for the Alpha temperature system were damaged. The damaged equipment was replaced to restore proper operation.

No other problems were encountered with the equipment during June, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through June is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
June 2007

Hours in Month = 720 Hours to date = 4344 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	714	99.2	6	21.2	4311	99.2	33	7.4
150Ft Wind Speed	714	99.2	6	21.4	4309	99.2	35	7.9
100Ft Wind Direction	712	98.9	8	21.5	4309	99.2	35	7.6
150Ft Wind Direction	712	98.9	8	21.8	4308	99.2	36	8.1
33Ft Temperature	704	97.8	16	24.6	4301	99.0	43	7.7
150Ft Temperature	705	97.9	15	24.7	4302	99.0	42	19.9
150Ft-33Ft Delta-T	704	97.8	16	24.6	4295	98.9	49	7.8
3Ft Precipitation	703	97.6	17	21.8	4280	98.5	64	8.6
A V E R A G E *		98.5				99.1		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	June	Year to Date
Three Mile Island A	0	8
All Exelon Sites	13	91

3. Data Recovery

The record of data recovery for the year through June is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
June 2007

Hours in Month = 720 Hours to date = 4344 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	705	97.9	15	22.9	4300	99.0	44	8.3
100Ft Wind Direction	705	97.9	15	23.2	4300	99.0	44	8.
33Ft Temperature	699	97.1	21	21.4	4199	96.7	145	56.2
150Ft Temperature	705	97.9	15	22.2	4300	99.0	44	19.5
150Ft-33Ft Delta-T	699	97.1	21	21.4	4198	96.6	146	56.1
A V E R A G E *		96.7				98.1		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	June	Year to Date
Three Mile Island B	0	6
All Exelon Sites	13	91

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – June 2007

Three Mile Island

Description	Cost
Meteorological equipment maintenance	$ 1,143.90
Meteorological parts, materials & contractors services	$ 0.00
Total for Month:	$ 1,143.90
Year to Date Total:	$ 3,353.93

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha June 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	72.5	93.2	53.0	16	704
150Ft Temperature (F)	72.0	92.0	53.4	15	705
100Ft Wind Speed (MPH)	6.1	19.5	Calm	6	714
150Ft Wind Speed (MPH)	6.4	18.3	Calm	6	714
150Ft-33Ft Delta-T (F)	-0.5	2.8	-2.0	16	704
150 - 100 FT Direction Shear (deg)	4.0	128.0	-168.0	13	707
100Ft Sigma Theta (deg)	22.8	50.0	6.0	103	617
150Ft Sigma Theta (deg)	21.9	50.0	5.0	88	632
2 FT Precipitation IN				0	703
Monthly Total	2.30				
Max 24 Hour Total . . .	0.54				
Max 1 Hour Total . . .	0.50				

There were 720 hours in June

Table prepared on 7/19/2007 at 14:03

Three Mile Island Bravo June 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	72.3	93.2	52.9	21	699
150Ft Temperature (F)	72.0	92.1	53.5	15	705
100Ft Wind Speed (MPH)	5.9	17.0	Calm	15	705
150Ft-33Ft Delta-T (F)	-0.4	2.7	-2.0	21	699
100Ft Sigma Theta (deg)	22.5	50.0	6.0	106	614

There were 720 hours in June

Table prepared on 7/19/2007 at 14:03

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

6/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	7
-2.5	GE	DT	LT	-2.0	34
-2.0	GE	DT	LT	-1.5	122
-1.5	GE	DT	LT	-1.0	154
-1.0	GE	DT	LT	-0.5	153
-0.5	GE	DT	LT	0.0	64
0.0	GE	DT	LT	0.5	67
0.5	GE	DT	LT	1.0	30
1.0	GE	DT	LT	1.5	16
1.5	GE	DT	LT	2.0	10
2.0	GE	DT	LT	2.5	21
2.5	GE	DT	LT	3.0	15
3.0	GE	DT	LT	3.5	6
3.5	GE	DT	LT	4.0	0
4.0	GE	DT	LT	4.5	3
4.5	GE	DT	LT	5.0	0
5.0	GE	DT	LT	5.5	0
5.5	GE	DT	LT	6.0	0
6.0	GE	DT	LT	6.5	0
6.5	GE	DT	LT	7.0	0
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	216
Neutral	256
Stable	232

TOTAL NO. HOURS 704

TABLE PRODUCED 07/19/07 13:29:39

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

6/2007

	150-30 ft
DT LT -7.5	0
-7.5 GE DT LT -7.0	0
-7.0 GE DT LT -6.5	0
-6.5 GE DT LT -6.0	0
-6.0 GE DT LT -5.5	0
-5.5 GE DT LT -5.0	0
-5.0 GE DT LT -4.5	0
-4.5 GE DT LT -4.0	0
-4.0 GE DT LT -3.5	0
-3.5 GE DT LT -3.0	2
-3.0 GE DT LT -2.5	9
-2.5 GE DT LT -2.0	40
-2.0 GE DT LT -1.5	113
-1.5 GE DT LT -1.0	138
-1.0 GE DT LT -0.5	157
-0.5 GE DT LT 0.0	64
0.0 GE DT LT 0.5	69
0.5 GE DT LT 1.0	34
1.0 GE DT LT 1.5	14
1.5 GE DT LT 2.0	12
2.0 GE DT LT 2.5	23
2.5 GE DT LT 3.0	12
3.0 GE DT LT 3.5	8
3.5 GE DT LT 4.0	2
4.0 GE DT LT 4.5	2
4.5 GE DT LT 5.0	0
5.0 GE DT LT 5.5	0
5.5 GE DT LT 6.0	0
6.0 GE DT LT 6.5	0
6.5 GE DT LT 7.0	0
7.0 GE DT LT 7.5	0
7.5 GE DT	0

NRC Stability Classes

Unstable	217
Neutral	242
Stable	240

TOTAL NO. HOURS 699

TABLE PRODUCED 07/19/07 13:29:39

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 6-9-07
Begin: 8:56 EST
End: 9:12 EST

Operation of data logger	☑ OK	☐
Heater System Operational (Oct-Apr)	☐ YES	☑ NA
Air Cond. System Operational (May-Sep)	☑ YES	☐

A Readings (Taken at 8:57 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			74.1 °F	
100 ft.	10.6 mph	367 °		
150 ft.	11.1 mph	373 °	73.0 °F	-1.11 °F

B Readings (Taken at 8:59 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			74.0 °F	
100 ft.	12.1 mph	365 °		
150 ft.			72.9 °F	-1.03 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 9:09 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:06 EST)

Dry bulb 75.5 °F

COMMENTS:

Technician: Jonathan Stump
MTC 7/16/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 6-8-07
6-9-07

☐ In-house work
☑ Field work

Site: TMT

☐ Weekday
☑ Weekend / Holiday
Page 1 of 1

Reason for work / Nature of Problem: 6-8-07 MTC received a call from John Burris at Murray & Trettel informing him that Jeff Beaver from TMI called to inform us that TMI had lost the signal from the met tower.

Work Performed / Action taken: 6-8-07 MTC called Jeff Beaver to discuss the situation. MTC informed Mr. Beaver that he would contact a field technician and see when they could arrive to re-establish the met signal to the control room. MTC contacted Jon Strand from M&T's Limerick office. I, Jon Strand indicated that I could arrive at TMI by 9AM (the next morning 6-9-07) MTC then called Mr. Beaver to inform him that I was going to be there by 9AM

6-9-07 I Arrived at the Met Tower to discover 2 blown op amps. I replaced them and the met signal was back. I contact the control room to declare that the Met Tower was operational

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☐ Yes ☐ No ☑ NA

Date	Technician	Reg Hours	OT Hours
6-8-07	MTC	—	0.5
6-9-07	JJS	—	5.0

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: — reg 5.5 ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MTC 7/16/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 6-14-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday
Page 1 of 1

Reason for work / Nature of Problem: The 33ft and the 150ft Temperature went out. Also the 150ft Delta Temperature went out on the Alpha system..

Work Performed / Action taken: Arrived at the Met-Tower to find the signal cards for all three signals on the Alpha system to be reading 1.000 Volts. I popped all 3 cards out and re-seated them in sequential order. The 33ft, 150ft temp came back as well as the 150ft Delta temp. I called the control room to verify the 3 signals. Everything checked out and the Met-Tower was back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
6-14-07	JJS	4.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MTC 7/16/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 6-20-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Met-Tower recieved a lightning strike, knocking out the whole Met Tower.

Work Performed / Action taken: Arrived at the Met-Tower and found both Op amps to be blown. Replaced both Op Amps and then I determined that also the 33 Alpha Temp and the Alpha delta Temp cards were also blown. I replaced both cards, check the signal conditioning and the Met Tower was back in operation. I then called the Control Room to verify the Met-data. Everything was OK.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
6-20-07	JJS	5.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 5.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MLC 7/16/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 5th of July. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 6th, the control room lost signals from the met tower. A technician replaced op-amps that feed signals to the control room to fix the problem.

On the 26th, the 100 ft. Alpha wind direction was reading 80-90 degrees less than the 100 ft. Bravo wind direction. Upon inspection it was discovered that the vane was missing off of the 100 ft. Alpha wind direction sensor. The control room was switched over to the Bravo wind direction until the tower can be climbed for repair. The tower cannot be climbed due to Osprey nesting on the tower.

On the 30th, the met tower received a lightning strike. 2 op-amps and a Delta-T card were damaged. New op-amps and a spare Delta-T card were installed to bring the met tower back in service.

Data missing from the Bravo system was primarily due to lightning strikes during the month.

No other problems were encountered with the equipment during July, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through July is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
July 2007

Hours in Month = 744 Hours to date = 5088 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	716	96.2	28	3.8	5027	98.8	61	6.9
150Ft Wind Speed	743	99.9	1	0.3	5052	99.3	36	6.8
100Ft Wind Direction	698	93.8	46	30.8	5007	98.4	81	11.0
150Ft Wind Direction	743	99.9	1	0.7	5051	99.3	37	7.0
33Ft Temperature	727	97.7	17	2.2	5028	98.8	60	6.9
150Ft Temperature	727	97.7	17	2.2	5029	98.8	59	17.3
150Ft-33Ft Delta-T	727	97.7	17	2.2	5022	98.7	66	7.0
3Ft Precipitation	735	98.8	9	1.2	5015	98.6	73	7.5
A V E R A G E *		97.6				98.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	July	Year to Date
Three Mile Island A	3	11
All Exelon Sites	24	115

3. Data Recovery

The record of data recovery for the year through July is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
July 2007

Hours in Month = 744 Hours to date = 5088 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	716	96.2	28	4.3	5016	98.6	72	7.7
100Ft Wind Direction	698	93.8	46	6.9	4998	98.2	90	8.1
33Ft Temperature	679	91.3	65	8.6	4878	95.9	210	49.2
150Ft Temperature	700	94.1	44	5.8	5000	98.3	88	17.5
150Ft-33Ft Delta-T	675	90.7	69	9.1	4873	95.8	215	49.3
A V E R A G E *		93.2				97.4		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	July	Year to Date
Three Mile Island B	20	26
All Exelon Sites	24	115

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – July 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	687.60
Meteorological parts, materials & contractors services	$	470.80
Total for Month:	$	1,158.40
Year to Date Total:	$	4,512.33

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha July 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	74.8	93.8	53.6	17	727
150Ft Temperature (F)	74.3	92.6	56.2	17	727
100Ft Wind Speed (MPH)	5.8	17.1	Calm	28	716
150Ft Wind Speed (MPH)	6.2	19.0	Calm	1	743
150Ft-33Ft Delta-T (F)	-0.5	3.5	-2.0	17	727
150 - 100 FT Direction Shear (deg)	4.8	135.0	-96.0	53	691
100Ft Sigma Theta (deg)	21.9	50.0	2.0	141	603
150Ft Sigma Theta (deg)	21.4	50.0	3.0	105	639
2 FT Precipitation IN				0	735
Monthly Total	5.06				
Max 24 Hour Total	1.80				
Max 1 Hour Total	1.48				

There were 744 hours in July

Table prepared on 8/28/2007 at 10:53

Three Mile Island Bravo July 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	74.7	93.5	53.6	65	679
150Ft Temperature (F)	74.4	92.6	56.2	44	700
100Ft Wind Speed (MPH)	5.7	17.8	Calm	28	716
150Ft-33Ft Delta-T (F)	-0.4	3.5	-2.0	69	675
100Ft Sigma Theta (deg)	22.3	53.0	5.0	147	597

There were 744 hours in July

Table prepared on 8/28/2007 at 10:53

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

7/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	32
-2.5	GE	DT	LT	-2.0	89
-2.0	GE	DT	LT	-1.5	130
-1.5	GE	DT	LT	-1.0	119
-1.0	GE	DT	LT	-0.5	110
-0.5	GE	DT	LT	0.0	52
0.0	GE	DT	LT	0.5	49
0.5	GE	DT	LT	1.0	31
1.0	GE	DT	LT	1.5	21
1.5	GE	DT	LT	2.0	19
2.0	GE	DT	LT	2.5	30
2.5	GE	DT	LT	3.0	13
3.0	GE	DT	LT	3.5	12
3.5	GE	DT	LT	4.0	7
4.0	GE	DT	LT	4.5	6
4.5	GE	DT	LT	5.0	3
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	0
6.0	GE	DT	LT	6.5	0
6.5	GE	DT	LT	7.0	0
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	299
Neutral	183
Stable	245

TOTAL NO. HOURS 727

TABLE PRODUCED 08/28/07 10:46:36

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

7/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	27
-2.5	GE	DT	LT	-2.0	84
-2.0	GE	DT	LT	-1.5	119
-1.5	GE	DT	LT	-1.0	112
-1.0	GE	DT	LT	-0.5	89
-0.5	GE	DT	LT	0.0	54
0.0	GE	DT	LT	0.5	43
0.5	GE	DT	LT	1.0	30
1.0	GE	DT	LT	1.5	21
1.5	GE	DT	LT	2.0	19
2.0	GE	DT	LT	2.5	30
2.5	GE	DT	LT	3.0	14
3.0	GE	DT	LT	3.5	14
3.5	GE	DT	LT	4.0	7
4.0	GE	DT	LT	4.5	4
4.5	GE	DT	LT	5.0	4
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	0
6.0	GE	DT	LT	6.5	0
6.5	GE	DT	LT	7.0	0
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	274
Neutral	159
Stable	242

TOTAL NO. HOURS 675

TABLE PRODUCED 08/28/07 10:46:36

Exelon Contract Number 80633
I2
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 7-5-07
Begin: 10:12 EST
End: 10:31 EST

Operation of data logger ☑ OK ☐
Heater System Operational (Oct-Apr) ☐ YES ☑ NA
Air Cond. System Operational (May-Sep) ☑ YES ☐

A Readings (Taken at 10:13 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			76.7 °F	
100 ft.	4.0 mph	173 °		
150 ft.	5.1 mph	201 °	75.7 °F	-1.01 °F

B Readings (Taken at 10:15 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			76.7 °F	
100 ft.	4.8 mph	211 °		
150 ft.			75.7 °F	-1.05 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 10:23 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 10:21 EST)

Dry bulb: 77.5 °F

COMMENTS:

Technician: Jonathan Stacy

MMC 8/20/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 7 6 07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: The Control Rm is not getting signals from the Met Tower

Work Performed / Action taken: Had to replace 0.4 amps in control box. Had lost the control room signals. Then checked with control rm to make sure they were getting Met signals. I was asked to wait until after Meg's shift change meeting. Then he would call me back 1/2 hour so. Got the phone call and a channel check with control room. Verified all readings were good.

Measuring Test Equipment Used

Unit	S/N
Dmm	89880269

Work Completed? ☑ Yes ☐ No Calibrated? ☐ Yes ☐ No ☑ NA

Date	Technician	Reg Hours	OT Hours
7 6 07	MJM	8	2

☒ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 8 reg 2 ot
Travel: 340 mi s tolls
Misc:

MJC 9/7/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 7-26-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Upon reviewing the daily data, the 100ft Alpha wind direction was reading 80 to 90 degrees different from the Bravo wind direction.

Work Performed / Action taken: Arrived at the Met Tower and found the wind vane tail piece missing off the 100ft Alpha wind direction sensor. Could not climb tower to repair it due to the birds on the tower. I contacted the control room, to tell them that I was going to switch over to the Bravo wind direction at 900ft. I switched over to the Bravo direction and verified this with the control room. Will repair wind vane at a later date.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☐ Yes ☐ No ☑ NA

Date	Technician	Reg Hours	OT Hours
7-26-07	JSS	5.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 5.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc:

MJC 8/20/07

Exelon Contract Number 80633
A1
7/06

Equipment Maintenance Log

Reason for work / Nature of Problem: Met-Tower recieved a lightning strike knocking out the entire tower.

Work Performed / Action taken: Arrived at the Met Tower and determined that the op amps were blown out. I replaced both Op amps and the Met Tower was restored, all except the Alpha delta temperature. The Alpha ΔT card was new one and the Alpha ΔT came back. I performed a channel check with the control room and the Met Tower was back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
7-30-07	JJS	5.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 5.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc:

MMC 8/20/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

August 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

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For Exelon Use Only

Reviewed By: DLW

Date: 10/11/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 7th of August. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 20th, the Bravo system temperatures went out. The delta temp signal conditioning card was replaced to restore operability.

On the 26th, a lightning strike caused the met tower to fail. Both op-amps were damaged and had to be replaced to restore operation.

No other problems were encountered with the equipment during August, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through August is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
August 2007

Hours in Month = 744 Hours to date = 5832 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	743	99.9	1	1.9	5770	98.9	62	6.2
150Ft Wind Speed	744	100.0	0	0.5	5796	99.4	36	6.0
100Ft Wind Direction	743	99.9	1	99.7	5750	98.6	82	22.3
150Ft Wind Direction	744	100.0	0	0.5	5795	99.4	37	6.2
33Ft Temperature	732	98.4	12	1.6	5760	98.8	72	6.2
150Ft Temperature	744	100.0	0	0.0	5773	99.0	59	15.1
150Ft-33Ft Delta-T	732	98.4	12	1.6	5754	98.7	78	6.3
3Ft Precipitation	744	100.0	0	0.1	5759	98.7	73	6.6
A V E R A G E *		99.5				99.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	August	Year to Date
Three Mile Island A	0	11
All Exelon Sites	21	136

3. Data Recovery

The record of data recovery for the year through August is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
August 2007

Hours in Month = 744 Hours to date = 5832 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	743	99.9	1	2.7	5759	98.7	73	7.1
100Ft Wind Direction	743	99.9	1	0.7	5741	98.4	91	7.1
33Ft Temperature	678	91.1	66	8.9	5556	95.3	276	44.1
150Ft Temperature	732	98.4	12	1.6	5732	98.3	100	15.5
150Ft-33Ft Delta-T	669	89.9	75	10.1	5542	95.0	290	44.3
A V E R A G E *		95.8				97.1		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	August	Year to Date
Three Mile Island B	13	39
All Exelon Sites	21	136

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – August 2007

Three Mile Island

Description	Cost
Meteorological equipment maintenance	$ 1,477.50
Meteorological parts, materials & contractors services	$ 35.48
Total for Month:	$ 1,512.98
Year to Date Total:	$ 6,025.31

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha August 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	74.6	94.3	57.4	12	732
150Ft Temperature (F)	74.3	93.4	57.3	0	744
100Ft Wind Speed (MPH)	5.2	18.0	Calm	1	743
150Ft Wind Speed (MPH)	5.5	18.9	Calm	0	744
150Ft-33Ft Delta-T (F)	0.3	3.4	1.9	12	732
150 - 100 FT Direction Shear (deg)	2.4	132.0	-176.0	8	736
100Ft Sigma Theta (deg)	23.1	50.0	5.0	115	629
150Ft Sigma Theta (deg)	21.8	50.0	4.0	101	643
2 FT Precipitation IN					
Monthly Total	5.17			0	744
Max 24 Hour Total	1.71				
Max 1 Hour Total	0.66				

There were 744 hours in August

Table prepared on 9/27/2007 at 10:36

Three Mile Island Bravo August 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	75.3	94.0	57.4	66	678
150Ft Temperature (F)	74.3	93.4	57.2	12	732
100Ft Wind Speed (MPH)	5.1	18.4	Calm	1	743
150Ft-33Ft Delta-T (F)	-0.3	3.2	-1.9	75	669
100Ft Sigma Theta (deg)	23.1	50.0	5.0	115	629

There were 744 hours in August

Table prepared on 9/27/2007 at 10:36

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

8/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	6
-2.5	GE	DT	LT	-2.0	37
-2.0	GE	DT	LT	-1.5	125
-1.5	GE	DT	LT	-1.0	118
-1.0	GE	DT	LT	-0.5	129
-0.5	GE	DT	LT	0.0	76
0.0	GE	DT	LT	0.5	89
0.5	GE	DT	LT	1.0	33
1.0	GE	DT	LT	1.5	42
1.5	GE	DT	LT	2.0	20
2.0	GE	DT	LT	2.5	19
2.5	GE	DT	LT	3.0	19
3.0	GE	DT	LT	3.5	7
3.5	GE	DT	LT	4.0	5
4.0	GE	DT	LT	4.5	4
4.5	GE	DT	LT	5.0	2
5.0	GE	DT	LT	5.5	1
5.5	GE	DT	LT	6.0	0
6.0	GE	DT	LT	6.5	0
6.5	GE	DT	LT	7.0	0
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	207
Neutral	208
Stable	317

TOTAL NO. HOURS 732

TABLE PRODUCED 09/27/07 10:09:29

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

8/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	6
-2.5	GE	DT	LT	-2.0	47
-2.0	GE	DT	LT	-1.5	106
-1.5	GE	DT	LT	-1.0	118
-1.0	GE	DT	LT	-0.5	107
-0.5	GE	DT	LT	0.0	74
0.0	GE	DT	LT	0.5	68
0.5	GE	DT	LT	1.0	32
1.0	GE	DT	LT	1.5	41
1.5	GE	DT	LT	2.0	16
2.0	GE	DT	LT	2.5	24
2.5	GE	DT	LT	3.0	13
3.0	GE	DT	LT	3.5	6
3.5	GE	DT	LT	4.0	4
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	2
5.0	GE	DT	LT	5.5	0
5.5	GE	DT	LT	6.0	0
6.0	GE	DT	LT	6.5	0
6.5	GE	DT	LT	7.0	0
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	200
Neutral	184
Stable	285

TOTAL NO. HOURS 669

TABLE PRODUCED 09/27/07 10:09:29

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 8-7-07
Begin: 9:15 EST
End: 9:35 EST

Operation of data logger ☑ OK ☐
Heater System Operational (Oct-Apr) ☐ YES ☑ NA
Air Cond. System Operational (May-Sep) ☑ YES ☐

A Readings (Taken at 9:16 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			82.75 °F	
100 ft.	2.0 mph	361* °		
150 ft.	2.1 mph	400 °	81.72 °F	-1.01 °F

B Readings (Taken at 9:18 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			82.24 °F	
100 ft.	1.3 mph	411 °		
150 ft.			81.04 °F	-1.18 °F

Do Speed and Direction values agree with visual indications? ☐ Yes ☐ UTD ☑ 100ft A wind vane is broken

☑ Rain gauge check made at 9:24 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:30 EST)

Dry bulb: 84.0 °F

COMMENTS:

Site contact has been notified about the 100ft Alpha wind vane being broken. Will be replaced during next calibration.

Technician: Jonathan Strang

JMC 9/19/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 8-20-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: The Bravo temperatures and the Bravo delta temperature went out.

Work Performed / Action taken: Arrived at the Met Tower to find the 33 and 150 foot temperature cards and the delta temperature card on the Bravo system to be locked up around 1.000 Volt. After inspecting the cards, it was determined that the delta temp card was the problem. I replaced the delta temp card with a new one, and the temp readings came back. I double check the 33 & 150 ft temp readings and the delta temp and found them to be back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Date	Technician	Reg Hours	OT Hours
8-20-07	JJS	4.0	—

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc:

MAC 9/19/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s) 8-26-07

☐ In-house work
☑ Field work

Site: TMT

☐ Weekday
☑ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: The Met-Tower recieved a lightning strike blowing out both Op amps

Work Performed / Action taken: Arrived at the Met-Tower to find both Op amps to be blown. I replaced both Op amps and the Met-Tower was back in operation. I called the control room to confirm that the Met Tower was operational. The control room confirmed and the Met-Tower was back in service.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
8-26-07	JJS	—	5.0

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: — reg 5.0 ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MAC 9/19/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

September 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
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For Exelon Use Only

Reviewed By: dKW

Date: 3/5/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 12th of September. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report. Also on the 12th, a calibration of the meteorological tower was performed. A copy of the log is included in this report.

No problems were encountered with the equipment during September, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through September is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
September 2007

Hours in Month = 720 Hours to date = 6552 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	713	99.0	7	1.0	6483	98.9	69	5.7
150Ft Wind Speed	713	99.0	7	0.7	6509	99.3	43	5.4
100Ft Wind Direction	713	99.0	7	38.1	6463	98.6	89	24.0
150Ft Wind Direction	711	98.8	9	1.0	6506	99.3	46	5.6
33Ft Temperature	713	99.0	7	1.2	6473	98.8	79	5.7
150Ft Temperature	713	99.0	7	0.3	6486	99.0	66	13.5
150Ft-33Ft Delta-T	713	99.0	7	1.2	6467	98.7	85	5.7
3Ft Precipitation	713	99.0	7	0.3	6472	98.8	80	5.9
A V E R A G E *		99.0				99.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	September	Year to Date
Three Mile Island A	0	11
All Exelon Sites	42	178

3. Data Recovery

The record of data recovery for the year through September is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
September 2007

Hours in Month = 720 Hours to date = 6552 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	713	99.0	7	1.4	6472	98.8	80	6.4
100Ft Wind Direction	713	99.0	7	1.0	6454	98.5	98	6.5
33Ft Temperature	713	99.0	7	0.3	6269	95.7	283	39.3
150Ft Temperature	713	99.0	7	0.3	6445	98.4	107	13.8
150Ft-33Ft Delta-T	713	99.0	7	0.3	6255	95.5	297	39.4
A V E R A G E *		99.0				97.4		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	September	Year to Date
Three Mile Island B	0	39
All Exelon Sites	42	178

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – September 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	0.00
Meteorological parts, materials & contractors services	$	0.00
Total for Month:	$	0.00
Year to Date Total:	$	6,025.31

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha September 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	69.0	90.4	44.8	7	713
150Ft Temperature (F)	69.0	89.2	46.1	7	713
100Ft Wind Speed (MPH)	5.1	18.4	Calm	7	713
150Ft Wind Speed (MPH)	5.6	20.2	Calm	7	713
150Ft-33Ft Delta-T (F)	0.0	4.5	-1.9	7	713
150 - 100 FT Direction Shear (deg)	0.4	123.0	-154.0	15	705
100Ft Sigma Theta (deg)	22.1	50.0	6.0	147	573
150Ft Sigma Theta (deg)	20.9	50.0	4.0	130	590
2 FT Precipitation IN				7	713
Monthly Total	2.25				
Max 24 Hour Total . . .	0.76				
Max 1 Hour Total . . .	0.53				

There were 720 hours in September

Table prepared on 10/23/2007 at 10:13

Three Mile Island Bravo September 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	69.0	90.2	45.0	7	713
150Ft Temperature (F)	69.0	89.2	46.0	7	713
100Ft Wind Speed (MPH)	5.1	18.8	Calm	7	713
150Ft-33Ft Delta-T (F)	0.0	4.4	-1.8	7	713
100Ft Sigma Theta (deg)	22.1	50.0	6.0	149	571

There were 720 hours in September

Table prepared on 10/23/2007 at 10:13

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

9/2007

						150-30 ft
		DT	LT	-7.5		0
-7.5	GE	DT	LT	-7.0		0
-7.0	GE	DT	LT	-6.5		0
-6.5	GE	DT	LT	-6.0		0
-6.0	GE	DT	LT	-5.5		0
-5.5	GE	DT	LT	-5.0		0
-5.0	GE	DT	LT	-4.5		0
-4.5	GE	DT	LT	-4.0		0
-4.0	GE	DT	LT	-3.5		0
-3.5	GE	DT	LT	-3.0		0
-3.0	GE	DT	LT	-2.5		5
-2.5	GE	DT	LT	-2.0		23
-2.0	GE	DT	LT	-1.5		80
-1.5	GE	DT	LT	-1.0		123
-1.0	GE	DT	LT	-0.5		120
-0.5	GE	DT	LT	0.0		69
0.0	GE	DT	LT	0.5		61
0.5	GE	DT	LT	1.0		32
1.0	GE	DT	LT	1.5		28
1.5	GE	DT	LT	2.0		41
2.0	GE	DT	LT	2.5		37
2.5	GE	DT	LT	3.0		32
3.0	GE	DT	LT	3.5		33
3.5	GE	DT	LT	4.0		12
4.0	GE	DT	LT	4.5		5
4.5	GE	DT	LT	5.0		6
5.0	GE	DT	LT	5.5		4
5.5	GE	DT	LT	6.0		1
6.0	GE	DT	LT	6.5		0
6.5	GE	DT	LT	7.0		0
7.0	GE	DT	LT	7.5		1
7.5	GE	DT				0

NRC Stability Classes

Unstable	148
Neutral	203
Stable	362

TOTAL NO. HOURS 713

TABLE PRODUCED 10/23/07 12:29:18

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

9/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	28
-2.0	GE	DT	LT	-1.5	87
-1.5	GE	DT	LT	-1.0	117
-1.0	GE	DT	LT	-0.5	117
-0.5	GE	DT	LT	0.0	76
0.0	GE	DT	LT	0.5	61
0.5	GE	DT	LT	1.0	31
1.0	GE	DT	LT	1.5	36
1.5	GE	DT	LT	2.0	35
2.0	GE	DT	LT	2.5	43
2.5	GE	DT	LT	3.0	31
3.0	GE	DT	LT	3.5	23
3.5	GE	DT	LT	4.0	11
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	4
5.0	GE	DT	LT	5.5	5
5.5	GE	DT	LT	6.0	1
6.0	GE	DT	LT	6.5	0
6.5	GE	DT	LT	7.0	1
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	158
Neutral	192
Stable	363

TOTAL NO. HOURS 713

TABLE PRODUCED 10/23/07 12:29:18

Exelon Contract Number 80633
I2
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 9-12-07
Begin: 1:20 EST
End: 1:31 EST

Operation of data logger	☑ OK	☐
Heater System Operational (Oct-Apr)	☐ YES	☑ NA
Air Cond. System Operational (May-Sep)	☑ YES	☐

A Readings (Taken at 1:21 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			69.96 °F	
100 ft.	5.5 mph	324 °		
150 ft.	9.6 mph	311 °	68.82 °F	-1.01 °F

B Readings (Taken at 1:23 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			69.71 °F	
100 ft.	10.6 mph	322 °		
150 ft.			68.71 °F	-0.94 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 1:26 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at CAL EST)

Dry bulb: CAL °F

COMMENTS:

Technician: Jonathan Stumpf

MRC 10/11/07

Three Mile Island Meteorological Calibration

Date: 9-12-07

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A: + 12.033 V	A: - 12.230 V
B: + 12.069 V	B: - 12.231 V

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder			Specifications	
	AF	AL	AL EQUIV	AF	AL		Signal Cond.	Recorder
33 ft.								
Γ ZERO	2.567 V	— V	31.88 °				2.571V ± 0.050V	
Γ SPAN	4.640 V	— V	89.92 °				4.643V ± 0.050V	
100 ft.								
NS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph		0.000V ± 0.025V	AL EQUIV ± 1mph
NS SPAN	4.261 V	— V	85.2 mph	85.0 mph	— mph		4.262V ± 0.025V	AL EQUIV ± 1mph
ND ZERO	0.000 V	— V	0.0 °	0.0 °	— °		0.000V ± 0.100V	AL EQUIV ± 2.5°
ND SPAN	-4.996 V	— V	539.6 °	520.0 °	540.0 °		-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft.								
NS ZERO	0.000 V	— V	0.0 mph	0.0.5 mph	— mph		0.000V ± 0.025V	AL EQUIV ± 1mph
NS SPAN	4.338 V	4.262 V	85.2 mph	0.0.5 mph	— mph		4.262V ± 0.025V	AL EQUIV ± 1mph
ND ZERO	0.001 V	— V	-0.1 °	0.0.5 °	— °		0.000V ± 0.100V	AL EQUIV ± 2.5°
ND SPAN	5.000 V	— V	540.0 °	0.0.5 °	— °		-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.434 V	— V	0.03 °				1.429V ± 0.050V	
ΔT SPAN	5.008 V	— V	20.04 °				5.000V ± 0.050V	
Γ ZERO	2.575 V	— V	32.10 °				2.571V ± 0.050V	
Γ SPAN	4.612 V	— V	89.14 °				4.643V ± 0.050V	

MTC 10/1/07

Three Mile Island Meteorological Calibration

Date: 9-12-07

A Signal Conditioners and Data Logger:

	Signal Conditioner Voltage Out AF	Signal Conditioner Voltage Out AL	Signal Conditioner Voltage Out AL EQUIV	Data Logger AF	Data Logger AL	Specifications Signal Cond.	Specifications Data Logger
33 ft							
T ZERO	2.567 V	2.571 V	31.99 °	31.77 °	31.92 °	2.571V ± 0.050V	
T SPAN	4.640 V	— V	89.92 °	89.80 °	— °	4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.261 V	— V	85.2 mph	85.2 mph	— mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	— V	0.0 °	359.8 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.996 V	— V	539.6 °	180.0/540.0 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
WS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.338 V	4.262 V	85.2 mph	85.2 mph	— mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	-0.001 V	— V	-0.1 °	0.2 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	— V	180/540 °	179.7 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.434 V	— V	0.03 °	0.02 °	— °	1.429V ± 0.050V	
ΔT SPAN	5.008 V	— V	20.04 °	20.02 °	— °	5.000V ± 0.050V	
T ZERO	2.575 V	— V	32.10 °	32.06 °	— °	2.571V ± 0.050V	
T SPAN	4.612 V	— V	89.14 °	89.08 °	— °	4.643V ± 0.050V	

MAC 10/11/07

Three Mile Island Meteorological Calibration

Date: 9-12-07

B Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft				
T ZERO	2.578 V	— V	32.18 °			2.571V ± 0.050V	
T SPAN	4.633 V	— V	89.72 °			4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	— V	0.0 mph	1.0 mph	0.0 mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.328 V	4.262 V	85.2 mph	87.0 mph	85.0 mph	4.262V ± 0.025V	AL EQUIV ± .1mph
WD ZERO	0.000 V	— V	0.0 °	0.0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000V	— V	540.0 °	510.0 °	540.0 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.429 V	— V	0.00 °			1.429V ± 0.050V	
ΔT SPAN	5.000V	— V	20.00 °			5.000V ± 0.050V	
T ZERO	2.581 V	— V	32.26 °			2.571V ± 0.050V	
T SPAN	4.617 V	— V	89.27 °			4.643V ± 0.050V	

MAC 10/11/07

Three Mile Island Meteorological Calibration

Date: 9-12-07

B Signal conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
33 ft							
T ZERO	2.578 V	— V	32.18 °	32.13 °	— °	2.571V ± 0.050V	
T SPAN	4.633 V	— V	89.72 °	89.63 °	— °	4.643V ± 0.050V	
100 ft							
WS ZERO	0.000V	— V	0.0 mph	0.02 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.328 V	4.262 V	85.2 mph	85.3 mph	— mph	4.262V ± 0.025V	AL EQUIV ± .1mph
WD ZERO	0.000 V	— V	0/360.0°	359.9 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000V	— V	180/540.0°	179.8 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
ΔT ZERO	1.429 V	— V	0.00 °	0.00 °	— °	1.429V ± 0.050V	
ΔT SPAN	5.000 V	— V	20.00 °	19.99 °	— °	5.000V ± 0.050V	
T ZERO	2.581 V	— V	32.26 °	32.22 °	— °	2.571V ± 0.050V	
T SPAN	4.617 V	— V	89.27 °	89.22 °	— °	4.643V ± 0.050V	

MAC 10/11/06

Three Mile Island Meteorological Calibration

Date: 9-12-07

TOWER MEASUREMENTS

☐ Ambient ☑ Ice Bath

Temperatures

	A 33 ft. Amb.		B 33 ft. Amb.		A 150 ft. Amb.	
	AF	AL	AF	AL	AF	AL
Measured	69.00 °F	— °F	69.00 °F	— °F	68.30 °F	— °F
Recorded	69.13 °F	— °F	69.13 °F	— °F	68.55 °F	— °F
Difference	0.13 °F	— °F	0.13 °F	— °F	0.25 °F	— °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb.		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	68.30 °F	— °F	-1.25 °F	— °F	-1.25 °F	— °F
Recorded	68.44 °F	— °F	-1.20 °F	— °F	-1.22 °F	— °F
Difference	0.14 °F	— °F	0.05 °F	— °F	0.03 °F	— °F
Specification	±0.5°F		±0.25°F		±0.25°F	

0.18 JSS 9-12-07 | 0.18 JSS 9-12-07

Winds

	A 100 ft.		B 100 ft.		150 ft.		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0mph ± 0.5mph
Forw. WD	339 °	343 °	254 °	252 °	254 °	246 °	250° or 343° ± 5°
Revr. WD	518 °	166 °	434 °	431 °	74 °	68 °	70°/430° or 163°/523° ± 5°

The 343° and 163°/523° specification is for the A 100 ft. wind direction only and the B 100 ft and 150 ft uses the 250° and 70°/430° specification for the wind direction.

Tracking/wear: OK | OK | OK

Comments:

MRC 10/11/07

Three Mile Island Meteorological Calibration

Date: 9-12-07

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: (In) Out Installed Removed

Tower Condition	Good	Fair	Poor
Paint	☑	☐ ☐	
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT-0103
Digital multimeter - S/N - 86330011
Digital multimeter - S/N - —

Technicians: Andy Lotz, Mike Marx, Jon Stranzl

Comments:

100ft Alpha Wind Speed MT0006 (removed); MT0108 (Installed)
100ft Alpha Wind Direction MT0092 (removed); MT0078 (Installed)
100ft Bravo Wind Speed ~~MT0042~~ MT0040 (removed); MT0008 (Installed)
100ft Bravo Wind Direction MT0138 (removed); MT0070 (Installed)
150ft Wind Speed MT0080 (removed); MT0018 (Installed)
150ft Wind Direction MT0137 (removed); MT0091 (Installed)

- Replaced the 33ft Bravo temperature probe due to intermittent bad readings caused by a faulty wire in the temperature probe

Signature: Jonathan Stranzl

MAC 10/1/07

System Response Check

Date: 9-12-07

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33' ΔT
Expected Response	20.0 ±0.4	108.0 ±2	-12.00 ±0.5	-2.40 ±0.1
As Found Response	20.0	108.0	-12.00	-2.40
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33' ΔT
Expected Response	60.0 ±0.4	324.0 ±2	44.00 ±0.5	8.80 ±0.1
As Found Response	60.0	324.0	44.00	8.79
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33' ΔT
Expected Response	80.0 ±0.4	432.0/72.0 ±2	72.00 ±0.5	14.40 ±0.1
As Found Response	80.0	431.8	72.00	14.39
As Left Response	—	—	—	—

MAC 10/11/07

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms may be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficiencies.

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Jonathan Stang 9-12-07

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) Date

MRC 10/11/07

2C-109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

October 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

e-mail: mt@weathercommand.com
web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: DCW

Date: 12/10/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 2nd of October. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

In-house on the 4th, three wind speed sensors were calibrated and given new bearings.

In-house on the 16th, three wind direction sensors were calibrated and given new bearings.

On the 19th, a request was made for a technician to be present at the met tower for the addition of an alternate power source inside of the shelter. Upon arrival at the site, the technician was notified that the power source would not be added and his support would not be needed.

On the 22nd, the data logger was unreachable by modem. A technician investigated and found the power inside of the shelter to be off. The plant was contacted and power was restored. This allowed the data logger to function properly.

On the 25th, the rain gauge was not reporting precipitation. A technician cleaned out the rain gauge to restore proper operation.

No other problems were encountered with the equipment during October, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through October is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
October 2007

Hours in Month = 744 Hours to date = 7296 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	722	97.0	22	3.6	7205	98.8	91	5.5
150Ft Wind Speed	722	97.0	22	3.4	7231	99.1	65	5.2
100Ft Wind Direction	722	97.0	22	3.6	7185	98.5	111	21.9
150Ft Wind Direction	722	97.0	22	3.5	7228	99.1	68	5.4
33Ft Temperature	722	97.0	22	100.0	7195	98.6	101	15.3
150Ft Temperature	722	97.0	22	3.0	7208	98.8	88	12.4
150Ft-33Ft Delta-T	722	97.0	22	100.0	7189	98.5	107	15.3
3Ft Precipitation	686	92.2	58	8.1	7158	98.1	138	6.1
A V E R A G E *		97.0				98.8		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	October	Year to Date
Three Mile Island A	0	11
All Exelon Sites	22	197

3. Data Recovery

The record of data recovery for the year through October is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
October 2007

Hours in Month = 744 Hours to date = 7296 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	722	97.0	22	3.6	7194	98.6	102	6.2
100Ft Wind Direction	722	97.0	22	3.6	7176	98.4	120	6.0
33Ft Temperature	722	97.0	22	3.0	6991	95.8	305	35.6
150Ft Temperature	722	97.0	22	3.0	7167	98.2	129	12.7
150Ft-33Ft Delta-T	722	97.0	22	3.0	6977	95.6	319	35.7
A V E R A G E *		97.0				97.3		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	October	Year to Date
Three Mile Island B	0	39
All Exelon Sites	22	197

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – October 2007

Three Mile Island

Description	Cost
Meteorological equipment maintenance	$ 1,434.20
Meteorological parts, materials & contractors services	$ 192.50
Total for Month:	$ 1,626.70
Year to Date Total:	$ 7,652.01

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha October 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	62.2	89.5	35.2	22	722
150Ft Temperature (F)	62.0	88.4	36.0	22	722
100Ft Wind Speed (MPH)	5.8	21.6	Calm	22	722
150Ft Wind Speed (MPH)	6.2	23.9	Calm	22	722
150Ft-33Ft Delta-T (F)	-0.1	4.4	-2.5	22	722
150 - 100 FT Direction Shear (deg)	0.4	141.0	-70.0	30	714
100Ft Sigma Theta (deg)	21.5	50.0	6.0	136	608
150Ft Sigma Theta (deg)	20.3	50.0	6.0	128	616
2 FT Precipitation IN				58	686
Monthly Total	2.85				
Max 24 Hour Total	1.14				
Max 1 Hour Total	0.61				

There were 744 hours in October

Table prepared on 11/28/2007 at 10:00

Three Mile Island Bravo October 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	62.0	89.0	35.4	22	722
150Ft Temperature (F)	62.0	88.4	36.0	22	722
100Ft Wind Speed (MPH)	5.7	22.1	Calm	22	722
150Ft-33Ft Delta-T (F)	-0.1	4.2	-2.6	22	722
100Ft Sigma Theta (deg)	21.2	50.0	6.0	140	604

There were 744 hours in October

Table prepared on 11/28/2007 at 9:41

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

10/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	1
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	4
-2.5	GE	DT	LT	-2.0	28
-2.0	GE	DT	LT	-1.5	89
-1.5	GE	DT	LT	-1.0	138
-1.0	GE	DT	LT	-0.5	137
-0.5	GE	DT	LT	0.0	67
0.0	GE	DT	LT	0.5	55
0.5	GE	DT	LT	1.0	43
1.0	GE	DT	LT	1.5	38
1.5	GE	DT	LT	2.0	31
2.0	GE	DT	LT	2.5	37
2.5	GE	DT	LT	3.0	19
3.0	GE	DT	LT	3.5	10
3.5	GE	DT	LT	4.0	9
4.0	GE	DT	LT	4.5	2
4.5	GE	DT	LT	5.0	11
5.0	GE	DT	LT	5.5	0
5.5	GE	DT	LT	6.0	1
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	1
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	162
Neutral	235
Stable	325

TOTAL NO. HOURS 722

TABLE PRODUCED 11/28/07 10:00:03

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

10/2007

150-30 ft

		DT LT	-7.5	0
-7.5	GE	DT LT	-7.0	0
-7.0	GE	DT LT	-6.5	0
-6.5	GE	DT LT	-6.0	0
-6.0	GE	DT LT	-5.5	0
-5.5	GE	DT LT	-5.0	0
-5.0	GE	DT LT	-4.5	0
-4.5	GE	DT LT	-4.0	0
-4.0	GE	DT LT	-3.5	1
-3.5	GE	DT LT	-3.0	0
-3.0	GE	DT LT	-2.5	1
-2.5	GE	DT LT	-2.0	17
-2.0	GE	DT LT	-1.5	72
-1.5	GE	DT LT	-1.0	137
-1.0	GE	DT LT	-0.5	161
-0.5	GE	DT LT	0.0	75
0.0	GE	DT LT	0.5	58
0.5	GE	DT LT	1.0	41
1.0	GE	DT LT	1.5	33
1.5	GE	DT LT	2.0	32
2.0	GE	DT LT	2.5	40
2.5	GE	DT LT	3.0	18
3.0	GE	DT LT	3.5	16
3.5	GE	DT LT	4.0	6
4.0	GE	DT LT	4.5	5
4.5	GE	DT LT	5.0	6
5.0	GE	DT LT	5.5	0
5.5	GE	DT LT	6.0	1
6.0	GE	DT LT	6.5	1
6.5	GE	DT LT	7.0	1
7.0	GE	DT LT	7.5	0
7.5	GE	DT		0

NRC Stability Classes

Unstable	119
Neutral	270
Stable	333

TOTAL NO. HOURS 722

TABLE PRODUCED 11/27/07 12:32:14

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 10-2-07
Begin: 8:57 EST
End: 9:11 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ NA

A Readings (Taken at 8:57 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft			62.06 °F	
100 ft	2.6 mph	295 °		
150 ft	2.6 mph	259 °	60.80 °F	-1.22 °F

B Readings (Taken at 9:01 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft			62.20 °F	
100 ft	1.6 mph	302 °		
150 ft			61.16 °F	-1.05 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at 9:06 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:08 EST)

Dry bulb 62.5 °F

COMMENTS:

Technician: Jonathan Stanek
MTC 10/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-4-07

☑ In-house work
☐ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind speed sensors

Work Performed / Action taken: I replaced the bearings and calibrated wind speed sensor #s MT-0040, MT-0080, MT-0006. All 3 sensors calibrated OK.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-4-07	JJS	3.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 3.0 reg — ot
Travel: — mi $ — tolls
Misc: —

MAC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-16-07

☑ In-house work
☐ Field work

Site: TMT

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind direction sensors.

Work Performed / Action taken: I replaced the bearings and calibrated wind direction sensor #'s MT-0092, MT-0137, MT-0138. All 3 sensors calibrated OK.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-16-07	JJS	3.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 3.0 reg — ot
Travel: — mi $ — tolls
Misc: —

MAC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-19-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Report to Met-Tower and check instruments after the alternate power source was added.

Work Performed / Action taken: Drove almost to the plant, when I recieved a phone call stating that the overnight work was never done and my services were not needed to a later date.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☐ Yes ☑ No Calibrated? ☐ Yes ☐ No ☑ NA

Date	Technician	Reg Hours	OT Hours
10-19-07	SJS	3.0	—

☐ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 3.0 reg — ot
Travel: ~160 mi $ 6.50 tolls
Misc:

MJC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-22-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Could not contact the data logger at TMI.

Work Performed / Action taken: I was notified that the Met-Tower was to be powered down and then re-powered with an alternate power source due to the up-coming outtage. I recieved an email stating that the power was back. The data logger was not responding, so I went to the Met-Tower. Arriving at the Met. Tower, I found out that the power was not restored. I waited to the power was restored and then checked to make sure that all the instruments came back, and also checked the operation of the data logger. Everything checked out and was back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-22-07	JJS	8.0	1.5

☐ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☑ Other data logger

Billable
Labor: 8.0 reg 1.5 ot
Travel: 180 mi $ 6.50 tolls
Misc:

MTC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-25-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: The rain gauge was not counting precip when it should have counted precip.

Work Performed / Action taken: Arrived at the Met-Tower to find the rain gauge clogged due to numerous spider nests blocking the tipping cup. I cleaned out the gauge and the tested the operation of the rain gauge. Everything tested OK

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-25-07	JJS	4.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MTC 11/8/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

November 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
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For Exelon Use Only

Reviewed By: VKW

Date: 2/8/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 1st of November. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 13th, the precip gauge was reading high amounts of precipitation. Spider nests were removed from the gauge to restore proper operation.

No other problems were encountered with the equipment during November, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through November is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
November 2007

Hours in Month = 720 Hours to date = 8016 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	719	99.9	1	0.3	7924	98.9	92	5.0
150Ft Wind Speed	719	99.9	1	0.4	7950	99.2	66	4.8
100Ft Wind Direction	719	99.9	1	0.3	7904	98.6	112	20.0
150Ft Wind Direction	719	99.9	1	0.6	7947	99.1	69	5.0
33Ft Temperature	718	99.7	2	1.4	7913	98.7	103	14.0
150Ft Temperature	718	99.7	2	0.3	7926	98.9	90	11.3
150Ft-33Ft Delta-T	718	99.7	2	1.4	7907	98.6	109	14.1
3Ft Precipitation	699	97.1	21	3.1	7857	98.0	159	5.8
A V E R A G E *		99.8				98.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	November	Year to Date
Three Mile Island A	0	11
All Exelon Sites	18	215

3. Data Recovery

The record of data recovery for the year through November is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
November 2007

Hours in Month = 720 Hours to date = 8016 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	719	99.9	1	0.3	7913	98.7	103	5.6
100Ft Wind Direction	719	99.9	1	0.4	7895	98.5	121	5.7
33Ft Temperature	718	99.7	2	0.3	7709	96.2	307	32.4
150Ft Temperature	718	99.7	2	0.3	7885	98.4	131	11.6
150Ft-33Ft Delta-T	718	99.7	2	0.3	7695	96.0	321	32.5
A V E R A G E *		99.8				97.6		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	November	Year to Date
Three Mile Island B	0	39
All Exelon Sites	18	215

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – November 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	293.80
Meteorological parts, materials & contractors services	$	0.00
Total for Month:	$	293.80
Year to Date Total:	$	7,945.81

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha November 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	43.4	70.2	26.1	2	718
150Ft Temperature (F)	43.3	69.1	26.7	2	718
100Ft Wind Speed (MPH)	6.6	21.6	Calm	1	719
150Ft Wind Speed (MPH)	7.0	23.7	Calm	1	719
150Ft-33Ft Delta-T (F)	-0.2	6.8	-2.1	2	718
150 - 100 FT Direction Shear (deg)	-1.6	160.0	-142.0	3	717
100Ft Sigma Theta (deg)	20.1	50.0	5.0	101	619
150Ft Sigma Theta (deg)	19.0	50.0	4.0	80	640
2 FT Precipitation IN				21	699
Monthly Total	3.33				
Max 24 Hour Total	1.82				
Max 1 Hour Total	1.18				

There were 720 hours in November

Table prepared on 12/31/2007 at 15:16

Three Mile Island Bravo November 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	43.4	69.9	26.2	2	718
150Ft Temperature (F)	43.2	69.0	26.7	2	718
100Ft Wind Speed (MPH)	6.4	21.8	Calm	1	719
150Ft-33Ft Delta-T (F)	-0.2	6.8	-2.1	2	718
100Ft Sigma Theta (deg)	20.1	50.0	5.0	98	622

There were 720 hours in November

Table prepared on 12/31/2007 at 15:16

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

11/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	5
-2.5	GE	DT	LT	-2.0	13
-2.0	GE	DT	LT	-1.5	45
-1.5	GE	DT	LT	-1.0	193
-1.0	GE	DT	LT	-0.5	213
-0.5	GE	DT	LT	0.0	58
0.0	GE	DT	LT	0.5	61
0.5	GE	DT	LT	1.0	26
1.0	GE	DT	LT	1.5	15
1.5	GE	DT	LT	2.0	11
2.0	GE	DT	LT	2.5	16
2.5	GE	DT	LT	3.0	9
3.0	GE	DT	LT	3.5	3
3.5	GE	DT	LT	4.0	7
4.0	GE	DT	LT	4.5	4
4.5	GE	DT	LT	5.0	4
5.0	GE	DT	LT	5.5	8
5.5	GE	DT	LT	6.0	8
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	4
7.0	GE	DT	LT	7.5	3
7.5	GE	DT			9

NRC Stability Classes

Unstable	102
Neutral	369
Stable	247

TOTAL NO. HOURS 718

TABLE PRODUCED 12/31/07 15:15:31

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

11/2007

	150-30 ft
DT LT -7.5	0
-7.5 GE DT LT -7.0	0
-7.0 GE DT LT -6.5	0
-6.5 GE DT LT -6.0	0
-6.0 GE DT LT -5.5	0
-5.5 GE DT LT -5.0	0
-5.0 GE DT LT -4.5	0
-4.5 GE DT LT -4.0	0
-4.0 GE DT LT -3.5	0
-3.5 GE DT LT -3.0	2
-3.0 GE DT LT -2.5	4
-2.5 GE DT LT -2.0	12
-2.0 GE DT LT -1.5	50
-1.5 GE DT LT -1.0	223
-1.0 GE DT LT -0.5	195
-0.5 GE DT LT 0.0	52
0.0 GE DT LT 0.5	53
0.5 GE DT LT 1.0	28
1.0 GE DT LT 1.5	14
1.5 GE DT LT 2.0	9
2.0 GE DT LT 2.5	17
2.5 GE DT LT 3.0	8
3.0 GE DT LT 3.5	4
3.5 GE DT LT 4.0	7
4.0 GE DT LT 4.5	3
4.5 GE DT LT 5.0	7
5.0 GE DT LT 5.5	6
5.5 GE DT LT 6.0	7
6.0 GE DT LT 6.5	1
6.5 GE DT LT 7.0	5
7.0 GE DT LT 7.5	2
7.5 GE DT	9

NRC Stability Classes	
Unstable	126
Neutral	360
Stable	232
TOTAL NO. HOURS	718

TABLE PRODUCED 12/31/07 15:15:31

Exelon Contract Number 80633
I2
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 11-1-07
Begin: 9:19 EST
End: 9:40 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ NA

A Readings (Taken at 9:20 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			56.43 °F	
100 ft.	2.2 mph	312 °		
150 ft.	2.4 mph	303 °	55.62 °F	-0.76 °F

B Readings (Taken at 9:23 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			55.65 °F	
100 ft.	2.3 mph	320 °		
150 ft.			55.56 °F	-0.14 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at 9:29 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:33 EST)

Dry bulb: 57.0 °F

COMMENTS:

Technician: Jonathan Glass

MLC 12/20/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 11-13-07

☐ In-house work
☑ Field work

Site: Three Mile Island

☑ Weekday
☐ Weekend / Holiday
Page 1 of 1

Reason for work / Nature of Problem: The rain gauge was reading extremely high amounts of precip when there was not any precip.

Work Performed / Action taken: Arrived at the tower, and I opened up the rain gauge. I found spider nests again blocking the rain gauge, and also on the tipping cup, which was resting half way causing the reed switch to keep counting precip. I cleaned out the rain gauge and tested the operation. Everything was OK.

Measuring Test Equipment Used	
Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
11-13-07	JJS	4.0	

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc:

MTC 12/20/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

December 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
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For Exelon Use Only

Reviewed By: RLW

Date: 2/11/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 18th of December. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 18th, a calibration of the meteorological tower was performed. A copy of the log is included at the end of this report.

No problems were encountered with the equipment during December, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through December is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
December 2007

Hours in Month = 744 Hours to date = 8760 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	743	99.9	1	1.1	8667	98.9	93	4.7
150Ft Wind Speed	726	97.6	18	3.1	8676	99.0	84	4.6
100Ft Wind Direction	743	99.9	1	1.2	8647	98.7	113	18.4
150Ft Wind Direction	743	99.9	1	0.9	8690	99.2	70	4.6
33Ft Temperature	743	99.9	1	0.1	8656	98.8	104	12.9
150Ft Temperature	743	99.9	1	0.1	8669	99.0	91	10.4
150Ft-33Ft Delta-T	743	99.9	1	0.1	8650	98.7	110	12.9
3Ft Precipitation	742	99.7	2	0.4	8599	98.2	161	5.4
A V E R A G E *		99.5				98.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	December	Year to Date
Three Mile Island A	0	11
All Exelon Sites	41	256

3. Data Recovery

The record of data recovery for the year through December is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
December 2007

Hours in Month = 744 Hours to date = 8760 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	741	99.6	3	0.9	8654	98.8	106	5.2
100Ft Wind Direction	734	98.7	10	2.0	8629	98.5	131	5.3
33Ft Temperature	741	99.6	3	0.4	8450	96.5	310	29.7
150Ft Temperature	741	99.6	3	0.4	8626	98.5	134	10.7
150Ft-33Ft Delta-T	741	99.6	3	0.4	8436	96.3	324	29.8
A V E R A G E *		99.4				97.7		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	December	Year to Date
Three Mile Island B	0	39
All Exelon Sites	41	256

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – December 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	0.00
Meteorological parts, materials & contractors services	$	0.00
Total for Month:	$	0.00
Year to Date Total:	$	7,945.81

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha December 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	35.4	59.5	18.2	1	743
150Ft Temperature (F)	35.3	60.0	19.1	1	743
100Ft Wind Speed (MPH)	7.0	25.9	Calm	1	743
150Ft Wind Speed (MPH)	7.3	28.0	Calm	18	726
150Ft-33Ft Delta-T (F)	-0.1	5.3	-1.7	1	743
150 - 100 FT Direction Shear (deg)	-1.4	162.0	-94.0	10	734
100Ft Sigma Theta (deg)	18.8	50.0	5.0	83	661
150Ft Sigma Theta (deg)	18.0	50.0	4.0	69	675
2 FT Precipitation IN				2	742
Monthly Total	4.57				
Max 24 Hour Total . . .	1.16				
Max 1 Hour Total . . .	0.35				

There were 744 hours in December

Table prepared on 1/24/2008 at 11:16

Three Mile Island Bravo December 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	35.4	59.2	18.4	3	741
150Ft Temperature (F)	35.3	60.0	19.0	3	741
100Ft Wind Speed (MPH)	6.8	25.8	Calm	3	741
150Ft-33Ft Delta-T (F)	-0.2	5.1	-1.8	3	741
100Ft Sigma Theta (deg)	18.7	50.0	5.0	93	651

There were 744 hours in December

Table prepared on 1/24/2008 at 11:16

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

12/2007

150-30 ft

		DT LT	-7.5	0
-7.5	GE	DT LT	-7.0	0
-7.0	GE	DT LT	-6.5	0
-6.5	GE	DT LT	-6.0	0
-6.0	GE	DT LT	-5.5	0
-5.5	GE	DT LT	-5.0	0
-5.0	GE	DT LT	-4.5	0
-4.5	GE	DT LT	-4.0	0
-4.0	GE	DT LT	-3.5	0
-3.5	GE	DT LT	-3.0	0
-3.0	GE	DT LT	-2.5	1
-2.5	GE	DT LT	-2.0	2
-2.0	GE	DT LT	-1.5	15
-1.5	GE	DT LT	-1.0	147
-1.0	GE	DT LT	-0.5	255
-0.5	GE	DT LT	0.0	100
0.0	GE	DT LT	0.5	75
0.5	GE	DT LT	1.0	30
1.0	GE	DT LT	1.5	28
1.5	GE	DT LT	2.0	20
2.0	GE	DT LT	2.5	18
2.5	GE	DT LT	3.0	13
3.0	GE	DT LT	3.5	9
3.5	GE	DT LT	4.0	9
4.0	GE	DT LT	4.5	8
4.5	GE	DT LT	5.0	1
5.0	GE	DT LT	5.5	2
5.5	GE	DT LT	6.0	5
6.0	GE	DT LT	6.5	2
6.5	GE	DT LT	7.0	0
7.0	GE	DT LT	7.5	2
7.5	GE	DT		1

NRC Stability Classes

Unstable	40
Neutral	380
Stable	323

TOTAL NO. HOURS 743

TABLE PRODUCED 01/24/08 11:09:00

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

12/2007

	150-30 ft
DT LT -7.5	0
-7.5 GE DT LT -7.0	0
-7.0 GE DT LT -6.5	0
-6.5 GE DT LT -6.0	0
-6.0 GE DT LT -5.5	0
-5.5 GE DT LT -5.0	0
-5.0 GE DT LT -4.5	0
-4.5 GE DT LT -4.0	0
-4.0 GE DT LT -3.5	0
-3.5 GE DT LT -3.0	1
-3.0 GE DT LT -2.5	3
-2.5 GE DT LT -2.0	35
-2.0 GE DT LT -1.5	216
-1.5 GE DT LT -1.0	189
-1.0 GE DT LT -0.5	87
-0.5 GE DT LT 0.0	73
0.0 GE DT LT 0.5	26
0.5 GE DT LT 1.0	21
1.0 GE DT LT 1.5	21
1.5 GE DT LT 2.0	20
2.0 GE DT LT 2.5	9
2.5 GE DT LT 3.0	11
3.0 GE DT LT 3.5	8
3.5 GE DT LT 4.0	8
4.0 GE DT LT 4.5	2
4.5 GE DT LT 5.0	2
5.0 GE DT LT 5.5	4
5.5 GE DT LT 6.0	1
6.0 GE DT LT 6.5	2
6.5 GE DT LT 7.0	1
7.0 GE DT LT 7.5	1
7.5 GE DT	

NRC Stability Classes	
Unstable	84
Neutral	360
Stable	297
TOTAL NO. HOURS	741

TABLE PRODUCED 01/24/08 11:09:00

Exelon Contract Number 80633
12
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 12-18-07
Begin: 12:45 EST
End: 13:05 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ _____

A Readings (Taken at 12:45 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			34.5 °F	
100 ft.	5.4 mph	264 °		
150 ft.	6.0 mph	261 °	33.95 °F	-1.56 °F (@ 12:57)

B Readings (Taken at 12:50 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			34.62 °F	
100 ft.	5.7 mph	270 °		
150 ft.			33.81 °F	-1.89 °F (@ 12:57)

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at CAL EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at — EST)

Dry bulb: CAL °F

COMMENTS:

Technician: [signature]

1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A + 12.032 V	A - 12.233 V
B + 12.071 V	B - 12.230 V

A Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder			Specifications	
	AF	AL	AL EQUIV	AF	AL		Signal Cond.	Recorder
			33 ft					
T ZERO	2.580 V	— V	32.24 °				2.571V ± 0.050V	
T SPAN	4.645 V	— V	90.06 °				4.643V ± 0.050V	
			100 ft					
WS ZERO	0.000 V	— V	0.0 mph	0 mph	— mph		0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	— V	85.0 mph	85 mph	— mph		4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	— V	0 °	0 °	— °		0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	— V	540 °	540 °	°		-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft					
WS ZERO	0.000 V	— V	0 mph	0 mph	— mph		0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.193 V	4.262 V	85.24 mph	86 mph	85 mph		4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	-0.002 V	— V	-0.2 °	0 °	— °		0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.996 V	— V	539.6 °	540 °	540 °		-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.423 V	— V	-0.03 °				1.429V ± 0.050V	
ΔT SPAN	4.998 V	— V	1999 °				5.000V ± 0.050V	
T ZERO	2.576 V	— V	32.13 °				2.571V ± 0.050V	
T SPAN	4.611 V	— V	89.11 °				4.643V ± 0.050V	

MAC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

A Signal Conditioners and Data Logger:

	Signal Conditioner Voltage Out AF	Signal Conditioner Voltage Out AL	Signal Conditioner Voltage Out AL EQUIV	Data Logger AF	Data Logger AL	Specifications Signal Cond.	Specifications Data Logger
	2.580 TJS 12-18-07		33 ft				
T ZERO	2.580 V	– V	32.24 °	32.21 °	– °	2.571V ± 0.050V	
T SPAN	4.645 V	– V	90.06 °	89.97 °	– °	4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.0 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0 °	-0.1 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540 °	539.7 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
WS ZERO	0.000 V	– V	0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.193 V	4.262 V	85.24 mph	85.23 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	-0.002 V	– V	-0.2 °	0.1 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.996 V	– V	539.6 °	539.3 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.423 V	– V	-0.03 °	-0.04 °	– °	1.429V ± 0.050V	
ΔT SPAN	4.999 V	– V	19.99 °	19.97 °	– °	5.000V ± 0.050V	
T ZERO	2.576 V	– V	32.13 °	32.05 °	– °	2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.11 °	89.03 °	– °	4.643V ± 0.050V	

MAC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

B Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
	2.574 JJS 12-18-07		33 ft				
T ZERO	2.574 V	– V	32.07 °			2.571V ± 0.050V	
T SPAN	4.644 V	– V	90.03 °			4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0 mph	0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± .1mph
WS SPAN	4.186 V	4.264 V	85.28 mph	86 mph	85 mph	4.262V ± 0.025V	AL EQUIV ± .1mph
WD ZERO	-0.001 V	– V	0 °	0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540 °	540 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.429 V	– V	0.00 °			1.429V ± 0.050V	
ΔT SPAN	5.000 V	– V	20.0 °			5.000V ± 0.050V	
T ZERO	2.581 V	– V	32.3 °			2.571V ± 0.050V	
T SPAN	4.617 V	– V	89.25 °			4.643V ± 0.050V	

MAC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

B Signal conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
			33 ft				
T ZERO	2.574 v	– v	32.07 °	32.11 °	– °	2.571V ± 0.050V	
T SPAN	4.644 v	– v	90.03 °	89.98 °	– °	4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 v	– v	0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± .1mph
WS SPAN	4.186 v	4.264 v	85.28 mph	85.27 mph	– mph	4.262V ± 0.025V	AL EQUIV ± .1mph
WD ZERO	-0.001 v	– v	0 °	0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 v	– v	540 °	540 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.429 v	– v	0.00 °	0.00 °	– °	1.429V ± 0.050V	
ΔT SPAN	5.000 v	– v	20.00 °	19.99 °	– °	5.000V ± 0.050V	
T ZERO	2.581 v	– v	32.3 °	32.24 °	– °	2.571V ± 0.050V	
T SPAN	4.617 v	– v	89.25 °	89.17 °	– °	4.643V ± 0.050V	

MTC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

TOWER MEASUREMENTS

☑ Ambient ☐ Ice Bath

Temperatures

	A 33 ft. Amb.		B 33 ft. Amb.		A 150 ft. Amb.	
	AF	AL	AF	AL	AF	AL
Measured	34.75 °F	~~8/22/07~~ — °F	34.75 °F	— °F	35.0 °F	— °F
Recorded	34.5 °F	— °F	34.62 °F	— °F	34.9 °F	— °F
Difference	0.25 °F	— °F	0.25 °F	— °F	0.1 °F	— °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	35.0 °F	— °F	-1.69 °F	— °F	-2.12 °F	— °F
Recorded	34.7 °F	— °F	-1.63 °F	— °F	-2.13 °F	— °F
Difference	0.3 °F	— °F	0.06 °F	— °F	0.01 °F	— °F
Specification	±0.5°F		±0.18°F		±0.18°F	

Winds

	A 100 ft.		B 100 ft.		150 ft.		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0mph ± 0.45mph
Forw. WD	342 °	— °	254 °	— °	250 °	— °	250° or 343° ± 5°
Revr. WD	162 °	— °	71 °	— °	67 °	— °	70°/430° or 163°/523° ± 5°

The 343° and 163°/523° specification is for the A 100 ft. wind direction only and the B 100 ft and 150 ft uses the 250° and 70°/430° specification for the wind direction.

Tracking/wear: OK | OK | OK

Comments:

MT0108 removed from 'A' 100' WS (MT0118 installed)

MT0008 removed from 'B' 100' WS (MT0079 installed)

MT~~0018~~ 0018 removed from 150' WS (MT0007 installed) ASB 12-18-07

MRC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: In (Out) Installed Removed

Tower Condition	Good	Fair	Poor
Paint	☑	☐	☐
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT0103
Digital multimeter - S/N - 86330011
Digital multimeter - S/N - —

Technicians: Jon Stranzl, Andy Lotz

Comments:

Signature: Jonathan [illegible]

MTC 1/7/08

System Response Check

Date: 12-18-07

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	20.0 ±0.4	108.0 ±2	-12.00 ±0.5	-2.40 ±0.18
As Found Response	20.0	107.9	-12.00	-2.41
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	60.0 ±0.4	324.0 ±2	44.00 ±0.5	8.80 ±0.18
As Found Response	60.0	323.9	43.90	8.79
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	80.0 ±0.4	432.0/22.0 ±2	72.00 ±0.5	14.40 ±0.18
As Found Response	80.0	431.8	72.00	14.39
As Left Response	—	—	—	—

MAC 1/7/08

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms may be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficiencies.

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Jonathan Grant — 12-18-07

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MAC 1/7/08

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

January 2008

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

e-mail: mt@weathercommand.com
web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: JKW

Date: 3/11/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 8th of January. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

In-house on the 23rd, 3 wind speed sensors were calibrated and given new bearings.

No problems were encountered with the equipment during January, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through January is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
January 2008

Hours in Month = 744 Hours to date = 744 Hours in year = 8784

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	744	100.0	0	0.5	744	100.0	0	0.5
150Ft Wind Speed	744	100.0	0	0.1	744	100.0	0	0.1
100Ft Wind Direction	744	100.0	0	0.4	744	100.0	0	0.4
150Ft Wind Direction	744	100.0	0	0.1	744	100.0	0	0.1
33Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft-33Ft Delta-T	744	100.0	0	0.0	744	100.0	0	0.0
3Ft Precipitation	744	100.0	0	0.1	744	100.0	0	0.1
A V E R A G E *		100.0				100.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	January	Year to Date
Three Mile Island A	0	0
All Exelon Sites	0	0

3. Data Recovery

The record of data recovery for the year through January is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
January 2008

Hours in Month = 744 Hours to date = 744 Hours in year = 8784

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	744	100.0	0	0.3	744	100.0	0	0.3
100Ft Wind Direction	744	100.0	0	0.3	744	100.0	0	0.3
33Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft-33Ft Delta-T	744	100.0	0	0.1	744	100.0	0	0.1
A V E R A G E *		100.0				100.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	January	Year to Date
Three Mile Island B	0	0
All Exelon Sites	0	0

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – January 2008

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	150.00
Meteorological parts, materials & contractors services	$	406.71
Total for Month:	$	556.71
Year to Date Total:	$	556.71

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha January 2008

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	34.1	68.2	13.2	0	744
150Ft Temperature (F)	34.0	68.2	12.8	0	744
100Ft Wind Speed (MPH)	7.8	25.9	Calm	0	744
150Ft Wind Speed (MPH)	8.1	27.5	Calm	0	744
150Ft-33Ft Delta-T (F)	-0.1	10.0	-2.2	0	744
150 - 100 FT Direction Shear (deg)	-0.4	148.0	-144.0	3	741
100Ft Sigma Theta (deg)	18.5	50.0	6.0	88	656
150Ft Sigma Theta (deg)	17.5	50.0	5.0	70	674
2 FT Precipitation IN				0	744
Monthly Total	0.82				
Max 24 Hour Total	0.24				
Max 1 Hour Total	0.07				

There were 744 hours in January

Table prepared on 2/20/2008 at 10:38

Three Mile Island Bravo January 2008

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	34.0	68.0	13.3	0	744
150Ft Temperature (F)	34.0	68.1	12.7	0	744
100Ft Wind Speed (MPH)	7.5	26.2	Calm	0	744
150Ft-33Ft Delta-T (F)	-0.1	10.0	-2.2	0	744
100Ft Sigma Theta (deg)	18.4	50.0	5.0	88	656

There were 744 hours in January

Table prepared on 2/20/2008 at 10:38

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

1/2008

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	1
-3.0	GE	DT	LT	-2.5	0
-2.5	GE	DT	LT	-2.0	11
-2.0	GE	DT	LT	-1.5	38
-1.5	GE	DT	LT	-1.0	160
-1.0	GE	DT	LT	-0.5	248
-0.5	GE	DT	LT	0.0	80
0.0	GE	DT	LT	0.5	40
0.5	GE	DT	LT	1.0	26
1.0	GE	DT	LT	1.5	24
1.5	GE	DT	LT	2.0	20
2.0	GE	DT	LT	2.5	32
2.5	GE	DT	LT	3.0	12
3.0	GE	DT	LT	3.5	12
3.5	GE	DT	LT	4.0	3
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	7
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	6
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	2
7.0	GE	DT	LT	7.5	6
7.5	GE	DT			8

NRC Stability Classes

Unstable	89
Neutral	369
Stable	286

TOTAL NO. HOURS 744

TABLE PRODUCED 02/20/08 09:54:45

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

1/2008

					150-30 ft
		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	1
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	10
-2.0	GE	DT	LT	-1.5	40
-1.5	GE	DT	LT	-1.0	170
-1.0	GE	DT	LT	-0.5	231
-0.5	GE	DT	LT	0.0	81
0.0	GE	DT	LT	0.5	43
0.5	GE	DT	LT	1.0	23
1.0	GE	DT	LT	1.5	25
1.5	GE	DT	LT	2.0	22
2.0	GE	DT	LT	2.5	33
2.5	GE	DT	LT	3.0	14
3.0	GE	DT	LT	3.5	9
3.5	GE	DT	LT	4.0	4
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	7
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	6
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	2
7.0	GE	DT	LT	7.5	7
7.5	GE	DT			7

NRC Stability Classes	
Unstable	90
Neutral	363
Stable	291

TOTAL NO. HOURS 744

TABLE PRODUCED 02/20/08 09:54:45

Exelon Contract Number 80633
12
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 1-8-08
Begin: 12:36 EST
End: 12:55 EST

Operation of data logger	☑ OK	☐	
Heater System Operational (Oct-Apr)	☑ YES	☐	
Air Cond. System Operational (May-Sep)	☐ YES	☑	NA

A Readings (Taken at 12:37 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			63.15 °F	
100 ft.	8.6 mph	169 °		
150 ft.	9.6 mph	173 °	61.52 °F	-1.68 °F

B Readings (Taken at 12:40 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			63.30 °F	
100 ft.	9.6 mph	181 °		
150 ft.			61.46 °F	-1.90 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 12:44 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 12:50 EST)

Dry bulb: 64.50 °F

COMMENTS:

Technician: Jonathan Strand
MC 2/14/08

☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind speed sensors.

Work Performed / Action taken: I replaced the bearings and calibrated sensors MT-0008, MT-0018, and MT-0108. All 3 sensors calibrated OK

Measuring Test Equipment Used	
Unit	S/N

Work Completed? ☒ Yes ☐ No Calibrated? ☒ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
1-23-08	JJS	3.0	—

☒ Meteorological

☐ Microtel

☐ Visibility monitor/fog warning signs

☐ Other

Billable

Labor: 3.0 reg — ot

Travel: — mi $ — tolls

Misc: —

MAC 2/14/08

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

February 2008

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

e-mail: mt@weathercommand.com
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For Exelon Use Only

Reviewed By: [illegible]

Date: 4/14/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 14th of February. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 12th, an attempt to visit the met tower and perform the monthly site visit was made. Upon arrival, it was discovered that the lock had been changed. Site security had no knowledge of the lock change-out. Information for the lock combination was received on the 13th.

No problems were encountered with the equipment during February, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through February is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
February 2008

Hours in Month = 696 Hours to date = 1440 Hours in year = 8784

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	696	100.0	0	0.3	1440	100.0	0	0.4
150Ft Wind Speed	696	100.0	0	0.1	1440	100.0	0	0.1
100Ft Wind Direction	696	100.0	0	0.6	1440	100.0	0	0.5
150Ft Wind Direction	696	100.0	0	0.4	1440	100.0	0	0.3
33Ft Temperature	696	100.0	0	0.0	1440	100.0	0	0.0
150Ft Temperature	696	100.0	0	0.0	1440	100.0	0	0.0
150Ft-33Ft Delta-T	696	100.0	0	0.0	1440	100.0	0	0.0
3Ft Precipitation	692	99.4	4	0.7	1436	99.7	4	0.4
A V E R A G E *		100.0				100.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	February	Year to Date
Three Mile Island A	0	0
All Exelon Sites	18	18

3. Data Recovery

The record of data recovery for the year through February is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
February 2008

Hours in Month = 696 Hours to date = 1440 Hours in year = 8784

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	696	100.0	0	0.3	1440	100.0	0	0.3
100Ft Wind Direction	696	100.0	0	0.4	1440	100.0	0	0.3
33Ft Temperature	696	100.0	0	0.4	1440	100.0	0	0.2
150Ft Temperature	696	100.0	0	0.0	1440	100.0	0	0.0
150Ft-33Ft Delta-T	696	100.0	0	0.4	1440	100.0	0	0.3
A V E R A G E *		100.0				100.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	February	Year to Date
Three Mile Island B	0	0
All Exelon Sites	18	18

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – February 2008

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	298.30
Meteorological parts, materials & contractors services	$	874.50
Total for Month:	$	1,172.80
Year to Date Total:	$	1,729.51

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha February 2008

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	33.1	66.0	9.9	0	696
150Ft Temperature (F)	33.0	66.0	9.1	0	696
100Ft Wind Speed (MPH)	8.2	30.5	Calm	0	696
150Ft Wind Speed (MPH)	8.7	31.1	Calm	0	696
150Ft-33Ft Delta-T (F)	-0.2	9.9	-1.7	0	696
150 - 100 FT Direction Shear (deg)	-2.5	87.0	-134.0	3	693
100Ft Sigma Theta (deg)	18.2	50.0	5.0	75	621
150Ft Sigma Theta (deg)	17.6	50.0	5.0	56	640
2 FT Precipitation IN				4	692
Monthly Total	4.40				
Max 24 Hour Total	1.42				
Max 1 Hour Total	0.24				

There were 696 hours in February

Table prepared on 4/ 2/2008 at 15:07

Three Mile Island Bravo February 2008

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	33.1	65.8	10.0	0	696
150Ft Temperature (F)	32.9	66.0	9.0	0	696
100Ft Wind Speed (MPH)	8.1	28.5	Calm	0	696
150Ft-33Ft Delta-T (F)	-0.2	9.8	-1.6	0	696
100Ft Sigma Theta (deg)	18.1	50.0	4.0	73	623

There were 696 hours in February

Table prepared on 4/ 2/2008 at 15:07

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

2/2008

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	6
-2.0	GE	DT	LT	-1.5	32
-1.5	GE	DT	LT	-1.0	175
-1.0	GE	DT	LT	-0.5	194
-0.5	GE	DT	LT	0.0	71
0.0	GE	DT	LT	0.5	77
0.5	GE	DT	LT	1.0	29
1.0	GE	DT	LT	1.5	25
1.5	GE	DT	LT	2.0	21
2.0	GE	DT	LT	2.5	22
2.5	GE	DT	LT	3.0	9
3.0	GE	DT	LT	3.5	12
3.5	GE	DT	LT	4.0	7
4.0	GE	DT	LT	4.5	2
4.5	GE	DT	LT	5.0	5
5.0	GE	DT	LT	5.5	1
5.5	GE	DT	LT	6.0	1
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	0
7.0	GE	DT	LT	7.5	1
7.5	GE	DT			4

NRC Stability Classes	
Unstable	67
Neutral	341
Stable	288

TOTAL NO. HOURS 696

TABLE PRODUCED 04/04/08 09:16:13

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

2/2008

	150-30 ft
DT LT -7.5	0
-7.5 GE DT LT -7.0	0
-7.0 GE DT LT -6.5	0
-6.5 GE DT LT -6.0	0
-6.0 GE DT LT -5.5	0
-5.5 GE DT LT -5.0	0
-5.0 GE DT LT -4.5	0
-4.5 GE DT LT -4.0	0
-4.0 GE DT LT -3.5	0
-3.5 GE DT LT -3.0	0
-3.0 GE DT LT -2.5	0
-2.5 GE DT LT -2.0	5
-2.0 GE DT LT -1.5	38
-1.5 GE DT LT -1.0	194
-1.0 GE DT LT -0.5	174
-0.5 GE DT LT 0.0	69
0.0 GE DT LT 0.5	74
0.5 GE DT LT 1.0	29
1.0 GE DT LT 1.5	29
1.5 GE DT LT 2.0	15
2.0 GE DT LT 2.5	23
2.5 GE DT LT 3.0	13
3.0 GE DT LT 3.5	12
3.5 GE DT LT 4.0	6
4.0 GE DT LT 4.5	3
4.5 GE DT LT 5.0	4
5.0 GE DT LT 5.5	1
5.5 GE DT LT 6.0	1
6.0 GE DT LT 6.5	1
6.5 GE DT LT 7.0	0
7.0 GE DT LT 7.5	1
7.5 GE DT	4

NRC Stability Classes	
Unstable	84
Neutral	327
Stable	285

TOTAL NO. HOURS 696

TABLE PRODUCED 04/04/08 09:16:13

Exelon Contract Number 80633
I2
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 2-14-08
Begin: 12:00 EST
End: 12:21 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ N/A

A Readings (Taken at 12:01 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			30.81 °F	
100 ft.	14.6 mph	319 °		
150 ft.	15.4 mph	314 °	29.91 °F	-0.91 °F

B Readings (Taken at 12:04 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			30.84 °F	
100 ft.	13.2 mph	317 °		
150 ft.			30.00 °F	-0.82 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at 12:15 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 12:09 EST)

Dry bulb: 31.25 °F

COMMENTS:

Technician: Jonathan Stumpf

JMTC 3/10/08

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 2-12-08

☐ In-house work
☒ Field work

Site: TMI

☒ Weekday
☐ Weekend / Holiday
Page 1 of 1

Reason for work / Nature of Problem: Monthly site visit could not be done due to being unable to access the Met-tower

Work Performed / Action taken: Arrived at TMI to perform a monthly site visit. I got to the access gate and someone changed the key lock to a combination lock. I asked security if they had the combination, they did not. I notified the site contact about the change of locks. The site contact then tried to track down the combination, but was not sucessful. The next day I received the combination to the lock and will return to perform the monthly site visit.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☐ Yes ☒ No Calibrated? ☐ Yes ☐ No ☒ NA

Date	Technician	Reg Hours	OT Hours
2-12-08	JJS	4.0	—

☒ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MAC 3/10/08

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

All Stabilities

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	7	10	16	27	13	11	11	4	0	0	99
NNE	0	10	6	18	16	6	1	0	0	0	0	57
NE	0	10	13	6	18	14	2	0	0	0	0	63
ENE	0	10	14	6	11	14	3	0	0	0	0	58
E	1	16	13	8	18	16	8	3	0	0	0	83
ESE	0	5	22	12	20	22	17	4	2	0	0	104
SE	0	17	20	16	12	3	3	0	0	0	0	71
SSE	0	5	14	13	23	6	0	0	0	0	0	61
S	0	7	12	12	28	20	10	7	1	0	0	97
SSW	0	5	10	17	23	30	19	7	5	0	0	116
SW	0	9	11	16	22	23	18	5	4	0	0	108
WSW	0	13	17	15	34	27	5	5	8	0	0	124
W	0	9	12	13	60	53	48	33	32	8	3	271
WNW	0	11	17	12	25	36	48	73	129	33	11	395
NW	0	9	15	13	27	26	26	38	91	46	18	309
NNW	2	8	25	26	25	14	9	9	8	2	0	128
Tot	3	151	231	219	389	323	228	195	284	89	32	2144

Hours of Calm 10
Hours of Variable Direction 0
Hours of Valid Data 2154
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	1	0	0	0	0	0	1
ENE	0	0	0	0	2	2	0	0	0	0	0	4
E	0	0	0	0	1	0	0	0	0	0	0	1
ESE	0	0	0	1	3	4	4	0	0	0	0	12
SE	0	0	0	0	4	2	1	0	0	0	0	7
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	1	2	2	1	0	0	0	6
SSW	0	0	0	0	1	2	2	4	2	0	0	11
SW	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	1	0	0	0	0	0	1
W	0	0	0	0	0	1	1	0	1	0	0	3
WNW	0	0	0	0	0	1	3	2	2	0	0	8
NW	0	0	0	0	0	0	1	1	0	0	0	2
NNW	0	0	0	0	0	0	0	0	0	0	0	0
Tot	0	0	0	1	12	16	14	8	5	0	0	56

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 56
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	1	0	0	0	0	1
ESE	0	0	0	1	2	3	2	0	0	0	0	8
SE	0	0	0	1	1	0	0	0	0	0	0	2
SSE	0	0	0	1	0	0	0	0	0	0	0	1
S	0	0	1	0	2	1	1	1	0	0	0	6
SSW	0	0	0	0	1	3	5	0	1	0	0	10
SW	0	0	0	0	1	0	3	1	0	0	0	5
WSW	0	0	1	0	0	1	0	1	2	0	0	5
W	0	0	0	0	1	1	1	9	3	1	0	16
WNW	0	0	0	0	0	1	3	2	22	1	3	32
NW	0	0	0	0	1	0	0	3	10	9	4	27
NNW	0	0	0	4	0	0	0	0	0	0	0	4
Tot	0	0	2	7	9	12	16	17	38	11	7	119

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 119
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	2	0	0	0	1	0	0	0	4
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	1	0	1	2	0	0	0	0	0	4
ENE	0	0	0	0	1	2	0	0	0	0	0	3
E	0	1	0	1	2	2	0	0	0	0	0	6
ESE	0	0	1	0	2	1	0	1	2	0	0	7
SE	0	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	2	0	0	0	0	0	2
S	0	0	1	0	2	0	1	0	0	0	0	4
SSW	0	0	0	0	1	6	1	0	0	0	0	8
SW	0	0	0	0	0	0	1	0	0	0	0	1
WSW	0	0	1	0	1	1	1	0	0	0	0	4
W	0	0	0	0	1	0	2	1	2	0	0	6
WNW	0	0	1	0	0	0	2	4	13	5	2	27
NW	0	0	1	0	1	1	2	0	10	11	2	28
NNW	0	0	2	0	1	0	2	0	0	0	0	5
Tot	0	2	8	3	13	17	12	7	27	16	4	109

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 109
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	0	3	4	5	5	6	1	0	0	26
NNE	0	1	2	3	3	5	1	0	0	0	0	15
NE	0	1	3	1	8	9	2	0	0	0	0	24
ENE	0	4	5	4	3	5	2	0	0	0	0	23
E	0	2	6	2	11	7	7	2	0	0	0	37
ESE	0	1	11	4	10	11	7	3	0	0	0	47
SE	0	3	9	10	3	1	1	0	0	0	0	27
SSE	0	0	3	6	15	3	0	0	0	0	0	27
S	0	1	1	3	10	5	3	1	1	0	0	25
SSW	0	1	1	3	11	4	8	2	0	0	0	30
SW	0	3	2	7	5	11	8	1	4	0	0	41
WSW	0	3	4	6	9	12	3	3	1	0	0	41
W	0	1	3	7	28	32	37	22	25	7	3	165
WNW	0	3	7	4	9	19	31	60	86	27	6	252
NW	0	3	5	2	5	5	17	29	66	26	12	170
NNW	0	2	8	2	8	6	3	6	3	1	0	39
Tot	0	31	70	67	142	140	135	135	187	61	21	989

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 989
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	4	6	14	8	6	4	3	0	0	47
NNE	0	1	0	8	10	1	0	0	0	0	0	20
NE	0	2	1	2	7	0	0	0	0	0	0	12
ENE	0	2	1	1	5	5	1	0	0	0	0	15
E	1	6	5	3	4	7	0	1	0	0	0	27
ESE	0	1	4	5	3	3	4	0	0	0	0	20
SE	0	6	7	5	4	0	1	0	0	0	0	23
SSE	0	2	3	5	7	1	0	0	0	0	0	18
S	0	1	5	2	10	11	3	4	0	0	0	36
SSW	0	2	2	8	4	13	3	1	2	0	0	35
SW	0	5	1	6	12	8	4	3	0	0	0	39
WSW	0	2	2	5	19	9	1	0	5	0	0	43
W	0	0	4	4	26	19	6	1	1	0	0	61
WNW	0	2	4	6	12	13	9	5	6	0	0	57
NW	0	1	4	5	10	12	3	2	4	0	0	41
NNW	0	1	7	8	11	7	2	3	5	1	0	45
Tot	1	36	54	79	158	117	43	24	26	1	0	539

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 542
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	2	2	7	0	0	0	0	0	0	12
NNE	0	4	3	6	2	0	0	0	0	0	0	15
NE	0	3	4	1	2	0	0	0	0	0	0	10
ENE	0	1	5	1	0	0	0	0	0	0	0	7
E	0	4	1	2	0	0	0	0	0	0	0	7
ESE	0	1	3	1	0	0	0	0	0	0	0	5
SE	0	4	1	0	0	0	0	0	0	0	0	5
SSE	0	1	2	1	1	0	0	0	0	0	0	5
S	0	0	0	3	1	0	0	0	0	0	0	4
SSW	0	0	4	4	3	2	0	0	0	0	0	13
SW	0	0	4	2	4	4	2	0	0	0	0	16
WSW	0	7	7	2	3	2	0	1	0	0	0	22
W	0	5	3	0	4	0	1	0	0	0	0	13
WNW	0	3	3	1	3	1	0	0	0	0	0	11
NW	0	2	3	4	6	6	3	3	1	0	0	28
NNW	1	2	5	7	5	1	2	0	0	0	0	23
Tot	1	38	50	37	41	16	8	4	1	0	0	196

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 199
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	4	3	2	0	0	0	0	0	0	10
NNE	0	4	1	1	1	0	0	0	0	0	0	7
NE	0	4	4	2	0	0	0	0	0	0	0	10
ENE	0	3	3	0	0	0	0	0	0	0	0	6
E	0	3	1	0	0	0	0	0	0	0	0	4
ESE	0	2	3	0	0	0	0	0	0	0	0	5
SE	0	4	3	0	0	0	0	0	0	0	0	7
SSE	0	2	6	0	0	0	0	0	0	0	0	8
S	0	5	4	4	2	1	0	0	0	0	0	16
SSW	0	2	3	2	2	0	0	0	0	0	0	9
SW	0	1	4	1	0	0	0	0	0	0	0	6
WSW	0	1	2	2	2	1	0	0	0	0	0	8
W	0	3	2	2	0	0	0	0	0	0	0	7
WNW	0	3	2	1	1	1	0	0	0	0	0	8
NW	0	3	2	2	4	2	0	0	0	0	0	13
NNW	1	3	3	5	0	0	0	0	0	0	0	12
Tot	1	44	47	25	14	5	0	0	0	0	0	136

Hours of Calm 4
Hours of Variable Direction 0
Hours of Valid Data 140
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

All Stabilities

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	9	16	23	15	9	16	7	0	0	97
NNE	0	2	4	8	14	8	6	0	0	0	0	42
NE	0	4	14	6	16	13	6	1	0	0	0	60
ENE	0	8	9	10	13	13	7	0	0	0	0	60
E	0	10	9	6	15	12	12	2	0	0	0	66
ESE	1	10	20	10	20	21	15	7	2	0	0	106
SE	0	9	15	11	12	9	11	1	0	0	0	68
SSE	0	6	10	9	21	10	3	0	0	0	0	59
S	0	8	19	8	20	25	10	6	2	0	0	98
SSW	0	5	13	15	36	24	32	13	8	2	0	148
SW	0	13	7	15	23	19	24	11	2	1	0	115
WSW	0	11	12	15	35	10	3	5	2	0	0	93
W	0	12	15	25	71	55	36	21	18	3	0	256
WNW	0	7	17	8	32	40	61	61	135	50	11	422
NW	0	10	18	14	23	22	26	33	90	63	41	340
NNW	0	8	16	18	24	16	8	12	13	3	0	118
Tot	1	125	207	194	398	312	269	189	279	122	52	2148

Hours of Calm 6
Hours of Variable Direction 0
Hours of Valid Data 2154
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	1	0	0	0	0	1
ENE	0	0	0	0	2	2	0	0	0	0	0	4
E	0	0	0	0	1	0	0	0	0	0	0	1
ESE	0	0	0	0	2	2	4	0	0	0	0	8
SE	0	0	0	0	4	3	4	0	0	0	0	11
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	1	1	0	0	0	0	0	2
SSW	0	0	0	0	1	0	6	5	2	1	0	15
SW	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	1	1	1	0	1	0	0	4
WNW	0	0	0	0	0	1	3	2	2	0	0	8
NW	0	0	0	0	0	0	1	0	0	0	0	1
NNW	0	0	0	0	0	0	0	1	0	0	0	1
Tot	0	0	0	0	12	10	20	8	5	1	0	56

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 56
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	1	0	0	0	0	1
ENE	0	0	0	0	0	1	0	0	0	0	0	1
E	0	0	0	0	0	0	1	0	0	0	0	1
ESE	0	0	0	1	2	3	2	0	0	0	0	8
SE	0	0	0	0	0	1	0	0	0	0	0	1
SSE	0	0	0	0	1	0	0	0	0	0	0	1
S	0	0	0	1	1	1	0	0	0	0	0	3
SSW	0	0	0	1	1	2	7	2	1	0	0	14
SW	0	0	0	0	1	0	3	1	0	0	0	5
WSW	0	0	1	0	0	1	0	2	0	0	0	4
W	0	0	0	0	1	2	5	3	3	0	0	14
WNW	0	0	0	0	0	2	2	2	23	1	3	33
NW	0	0	0	0	1	0	0	1	12	7	7	28
NNW	0	0	0	4	0	0	0	0	0	1	0	5
Tot	0	0	1	7	8	13	21	11	39	9	10	119

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 119
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	2	0	0	0	1	0	0	0	4
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	2	2	0	0	0	0	0	4
ENE	0	0	1	0	1	1	1	0	0	0	0	4
E	0	1	0	1	0	2	0	0	0	0	0	4
ESE	0	0	0	0	3	1	0	1	2	0	0	7
SE	0	0	1	0	0	0	0	0	0	0	0	1
SSE	0	0	0	0	0	1	1	0	0	0	0	2
S	0	0	1	0	2	0	0	1	0	0	0	4
SSW	0	0	0	0	1	4	3	0	0	0	0	8
SW	0	0	0	0	0	0	0	1	0	0	0	1
WSW	0	1	0	0	2	1	0	0	0	0	0	4
W	0	0	0	1	0	0	3	0	0	0	0	4
WNW	0	0	1	0	0	0	1	2	13	7	0	24
NW	0	0	1	0	0	2	1	2	5	13	9	33
NNW	0	0	2	0	1	0	1	1	0	0	0	5
Tot	0	3	7	4	12	14	11	9	20	20	9	109

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 109
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	2	3	7	1	10	2	0	0	26
NNE	0	0	2	2	0	3	6	0	0	0	0	13
NE	0	1	2	1	2	10	4	1	0	0	0	21
ENE	0	4	4	6	4	3	4	0	0	0	0	25
E	0	0	3	2	10	7	6	2	0	0	0	30
ESE	0	3	9	4	11	11	7	5	0	0	0	50
SE	0	3	7	7	4	2	3	1	0	0	0	27
SSE	0	0	1	5	10	6	1	0	0	0	0	23
S	0	0	3	3	8	11	4	2	1	0	0	32
SSW	0	1	2	3	11	4	7	3	2	0	0	33
SW	0	3	2	6	4	8	10	4	2	0	0	39
WSW	0	1	5	7	11	1	3	0	2	0	0	30
W	0	3	5	13	33	38	20	15	13	3	0	143
WNW	0	0	5	3	11	16	43	46	92	41	8	265
NW	0	4	8	2	3	5	10	25	66	43	25	191
NNW	0	1	7	1	10	5	3	6	6	1	0	40
Tot	0	25	65	67	135	137	132	120	186	88	33	988

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 989
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	5	9	12	5	8	5	5	0	0	49
NNE	0	1	0	5	10	4	0	0	0	0	0	20
NE	0	1	2	3	7	1	0	0	0	0	0	14
ENE	0	2	0	1	5	6	2	0	0	0	0	16
E	0	4	1	0	4	3	5	0	0	0	0	17
ESE	0	4	5	4	1	4	2	1	0	0	0	21
SE	0	0	4	3	4	3	4	0	0	0	0	18
SSE	0	2	6	3	7	3	1	0	0	0	0	22
S	0	4	5	1	5	9	5	3	1	0	0	33
SSW	0	2	3	6	9	12	7	3	3	1	0	46
SW	0	3	0	3	13	10	7	4	0	1	0	41
WSW	0	2	1	4	18	4	0	3	0	0	0	32
W	0	1	2	8	29	14	6	2	1	0	0	63
WNW	0	1	5	2	14	20	9	9	5	1	0	66
NW	0	0	3	3	9	9	8	1	6	0	0	39
NNW	0	3	3	8	9	8	3	2	7	1	0	44
Tot	0	30	45	63	156	115	67	33	28	4	0	541

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 542
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	3	2	5	3	0	0	0	0	0	13
NNE	0	0	1	0	3	1	0	0	0	0	0	5
NE	0	2	8	2	4	0	0	0	0	0	0	16
ENE	0	2	0	1	1	0	0	0	0	0	0	4
E	0	1	4	3	0	0	0	0	0	0	0	8
ESE	1	2	3	1	1	0	0	0	0	0	0	8
SE	0	3	1	0	0	0	0	0	0	0	0	4
SSE	0	4	0	0	1	0	0	0	0	0	0	5
S	0	1	5	1	1	1	0	0	0	0	0	9
SSW	0	0	3	2	6	1	2	0	0	0	0	14
SW	0	3	1	3	5	1	4	1	0	0	0	18
WSW	0	3	3	3	2	2	0	0	0	0	0	13
W	0	2	6	0	6	0	0	1	0	0	0	15
WNW	0	5	4	0	4	1	2	0	0	0	0	16
NW	0	5	3	5	7	4	5	4	1	0	0	34
NNW	0	1	1	3	4	3	1	2	0	0	0	15
Tot	1	34	46	26	50	17	14	8	1	0	0	197

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 199
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jan - Mar for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	1	1	3	0	0	0	0	0	0	5
NNE	0	1	1	1	1	0	0	0	0	0	0	4
NE	0	0	2	0	1	0	0	0	0	0	0	3
ENE	0	0	4	2	0	0	0	0	0	0	0	6
E	0	4	1	0	0	0	0	0	0	0	0	5
ESE	0	1	3	0	0	0	0	0	0	0	0	4
SE	0	3	2	1	0	0	0	0	0	0	0	6
SSE	0	0	3	1	2	0	0	0	0	0	0	6
S	0	3	5	2	2	2	1	0	0	0	0	15
SSW	0	2	5	3	7	1	0	0	0	0	0	18
SW	0	4	4	3	0	0	0	0	0	0	0	11
WSW	0	4	2	1	2	1	0	0	0	0	0	10
W	0	6	2	3	1	0	1	0	0	0	0	13
WNW	0	1	2	3	3	0	1	0	0	0	0	10
NW	0	1	3	4	3	2	1	0	0	0	0	14
NNW	0	3	3	2	0	0	0	0	0	0	0	8
Tot	0	33	43	27	25	6	4	0	0	0	0	138

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 140
Hours of Missing Data . . . 6
Hours in Period 2160

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

All Stabilities

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	9	14	8	42	12	10	11	4	1	0	111
NNE	0	5	8	9	17	13	2	2	0	0	0	56
NE	0	7	10	13	16	6	3	2	1	0	0	58
ENE	0	4	9	6	20	14	7	1	0	0	0	61
E	0	16	15	14	31	34	16	8	2	1	0	137
ESE	0	10	15	17	17	17	21	11	14	1	0	123
SE	0	7	13	15	8	4	13	3	2	0	0	65
SSE	0	6	10	14	15	9	3	0	0	0	0	57
S	0	7	11	12	33	21	2	0	0	0	0	86
SSW	0	5	17	18	51	29	11	7	10	0	0	148
SW	0	16	20	32	38	14	12	6	2	0	0	140
WSW	0	15	30	23	25	15	13	4	4	0	0	129
W	0	20	35	19	33	35	22	24	31	3	0	222
WNW	0	24	28	25	36	44	44	24	26	17	7	275
NW	0	20	38	22	22	30	30	29	48	11	7	257
NNW	0	13	25	16	47	25	22	25	26	8	6	213
Tot	0	184	298	263	451	322	231	157	170	42	20	2138

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 2141
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	1	1	0	0	0	1	0	0	3
NNE	0	0	0	0	1	0	0	0	0	0	0	1
NE	0	0	1	0	0	0	2	1	1	0	0	5
ENE	0	0	0	0	1	2	1	1	0	0	0	5
E	0	1	1	0	6	6	0	0	0	0	0	14
ESE	0	0	1	0	4	6	2	3	1	0	0	17
SE	0	1	1	1	0	0	1	0	1	0	0	5
SSE	0	0	0	0	1	2	0	0	0	0	0	3
S	0	0	0	1	1	4	1	0	0	0	0	7
SSW	0	0	2	0	9	10	3	1	0	0	0	25
SW	0	0	1	4	9	3	2	0	0	0	0	19
WSW	0	0	1	4	1	2	2	0	0	0	0	10
W	0	0	3	3	0	1	1	0	0	0	0	8
WNW	0	1	2	2	1	1	2	0	0	0	0	9
NW	0	0	3	4	0	3	4	1	0	0	1	16
NNW	0	0	0	2	1	0	0	0	1	0	1	5
Tot	0	3	16	22	36	40	21	7	5	0	2	152

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 152
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	1	0	0	0	0	2	0	0	0	3
NNE	0	1	0	0	0	0	0	0	0	0	0	1
NE	0	0	0	1	2	0	0	1	0	0	0	4
ENE	0	0	0	1	2	3	1	0	0	0	0	7
E	0	0	0	1	2	0	0	1	0	0	0	4
ESE	0	0	1	0	2	1	3	0	0	0	0	7
SE	0	1	0	1	0	0	3	0	0	0	0	5
SSE	0	0	0	1	0	0	2	0	0	0	0	3
S	0	0	0	2	2	5	0	0	0	0	0	9
SSW	0	0	2	2	5	4	0	1	3	0	0	17
SW	0	0	2	5	7	1	2	0	1	0	0	18
WSW	0	1	7	2	3	1	0	0	0	0	0	14
W	0	1	2	2	0	2	0	2	13	1	0	23
WNW	0	0	4	2	4	6	3	2	6	1	0	28
NW	0	0	7	3	1	3	5	7	12	0	0	38
NNW	0	0	3	0	1	3	4	4	3	0	0	18
Tot	0	4	29	23	31	29	23	20	38	2	0	199

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 199
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	1	1	0	0	0	2
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	1	4	0	0	0	0	0	0	5
ENE	0	0	0	0	1	1	0	0	0	0	0	2
E	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	0	1	3	0	2	0	1	0	0	7
SE	0	0	0	0	1	0	1	0	0	0	0	2
SSE	0	0	0	0	1	3	0	0	0	0	0	4
S	0	0	1	0	0	1	0	0	0	0	0	2
SSW	0	0	0	0	5	0	1	0	1	0	0	7
SW	0	0	2	2	1	2	0	2	0	0	0	9
WSW	0	0	0	0	0	0	0	0	2	0	0	2
W	0	0	1	1	2	1	3	7	5	0	0	20
WNW	0	0	3	2	1	6	3	5	3	2	0	25
NW	0	0	6	1	2	2	1	9	7	0	0	28
NNW	0	0	0	0	2	1	0	5	4	1	0	13
Tot	0	0	13	8	24	19	12	29	23	3	0	131

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 131
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	3	3	11	3	6	6	3	1	0	37
NNE	0	0	3	4	5	8	1	1	0	0	0	22
NE	0	0	4	3	7	5	1	0	0	0	0	20
ENE	0	1	4	4	9	6	5	0	0	0	0	29
E	0	2	3	2	9	16	8	3	0	0	0	43
ESE	0	0	3	6	2	7	10	6	10	1	0	45
SE	0	0	3	3	3	4	8	3	1	0	0	25
SSE	0	0	2	7	10	4	1	0	0	0	0	24
S	0	0	3	3	18	8	0	0	0	0	0	32
SSW	0	0	3	5	18	8	3	1	6	0	0	44
SW	0	0	5	11	11	5	3	1	1	0	0	37
WSW	0	4	7	7	9	9	10	3	2	0	0	51
W	0	2	13	5	13	16	14	15	11	2	0	91
WNW	0	3	7	8	19	23	31	14	17	9	5	136
NW	0	7	5	6	11	15	17	9	25	10	2	107
NNW	0	3	10	2	15	12	13	14	16	7	5	97
Tot	0	23	78	79	170	149	131	76	92	30	12	840

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 840
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	4	1	25	8	3	2	0	0	0	45
NNE	0	2	1	4	9	5	1	1	0	0	0	23
NE	0	3	3	6	3	0	0	0	0	0	0	15
ENE	0	1	1	1	5	2	0	0	0	0	0	10
E	0	3	4	6	13	10	7	4	2	1	0	50
ESE	0	4	5	7	6	3	4	2	2	0	0	33
SE	0	4	1	8	4	0	0	0	0	0	0	17
SSE	0	4	5	3	2	0	0	0	0	0	0	14
S	0	2	3	5	9	2	1	0	0	0	0	22
SSW	0	1	5	10	8	7	4	4	0	0	0	39
SW	0	6	5	9	10	2	5	3	0	0	0	40
WSW	0	1	11	6	9	2	1	1	0	0	0	31
W	0	5	9	7	11	12	4	0	2	0	0	50
WNW	0	8	6	8	9	6	5	3	0	5	1	51
NW	0	4	6	5	7	7	3	3	4	1	4	44
NNW	0	6	4	3	15	7	4	2	2	0	0	43
Tot	0	56	73	89	145	73	42	25	12	7	5	527

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 527
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	4	2	5	1	0	0	0	0	0	15
NNE	0	1	1	1	1	0	0	0	0	0	0	4
NE	0	4	2	2	0	1	0	0	0	0	0	9
ENE	0	1	3	0	2	0	0	0	0	0	0	6
E	0	8	6	4	0	0	1	0	0	0	0	19
ESE	0	5	3	1	0	0	0	0	0	0	0	9
SE	0	1	8	2	0	0	0	0	0	0	0	11
SSE	0	2	2	2	1	0	0	0	0	0	0	7
S	0	4	2	1	2	0	0	0	0	0	0	9
SSW	0	1	4	1	3	0	0	0	0	0	0	9
SW	0	6	3	0	0	1	0	0	0	0	0	10
WSW	0	5	3	2	3	1	0	0	0	0	0	14
W	0	11	6	1	4	2	0	0	0	0	0	24
WNW	0	11	4	0	1	2	0	0	0	0	1	19
NW	0	4	6	1	1	0	0	0	0	0	0	12
NNW	0	2	3	5	8	2	1	0	0	0	0	21
Tot	0	69	60	25	31	10	2	0	0	0	1	198

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 200
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	2	1	0	0	0	0	0	0	0	6
NNE	0	1	3	0	1	0	0	0	0	0	0	5
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	1	1	0	0	0	0	0	0	0	0	2
E	0	2	1	1	0	0	0	0	0	0	0	4
ESE	0	1	2	2	0	0	0	0	0	0	0	5
SE	0	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	1	1	0	0	0	0	0	0	0	2
S	0	1	2	0	1	1	0	0	0	0	0	5
SSW	0	3	1	0	3	0	0	0	0	0	0	7
SW	0	4	2	1	0	0	0	0	0	0	0	7
WSW	0	4	1	2	0	0	0	0	0	0	0	7
W	0	1	1	0	3	1	0	0	0	0	0	6
WNW	0	1	2	3	1	0	0	0	0	0	0	7
NW	0	5	5	2	0	0	0	0	0	0	0	12
NNW	0	2	5	4	5	0	0	0	0	0	0	16
Tot	0	29	29	17	14	2	0	0	0	0	0	91

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 92
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

All Stabilities

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	11	11	12	27	18	10	13	12	1	0	115
NNE	0	3	9	3	16	14	8	0	2	0	0	55
NE	0	1	6	10	21	7	3	2	3	0	0	53
ENE	0	4	3	5	16	12	8	3	0	0	0	51
E	0	4	7	10	18	32	11	11	3	0	0	96
ESE	0	8	14	12	20	25	22	12	10	3	0	126
SE	0	10	15	12	9	6	8	10	9	0	0	79
SSE	0	5	7	8	13	8	5	7	0	0	0	53
S	0	5	9	11	24	23	14	0	0	0	0	86
SSW	0	6	21	25	47	26	19	7	8	4	0	163
SW	0	12	24	26	46	21	9	7	6	1	0	152
WSW	0	26	33	23	18	16	4	1	0	0	0	121
W	0	22	35	25	37	41	26	25	16	0	0	227
WNW	0	25	21	18	27	45	40	23	31	12	14	256
NW	0	17	34	18	37	22	40	25	59	10	13	275
NNW	0	7	25	16	51	30	21	25	34	9	10	228
Tot	0	166	274	234	427	346	248	171	193	40	37	2136

Hours of Calm 5
Hours of Variable Direction 0
Hours of Valid Data 2141
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	2	1	0	0	0	1	0	0	4
NNE	0	0	0	0	1	0	0	0	0	0	0	1
NE	0	0	1	0	0	0	1	1	2	0	0	5
ENE	0	0	0	0	1	1	0	2	0	0	0	4
E	0	0	1	0	2	7	0	0	0	0	0	10
ESE	0	2	0	0	6	7	2	1	1	0	0	19
SE	0	0	2	1	1	0	0	2	2	0	0	8
SSE	0	0	0	0	0	2	1	0	0	0	0	3
S	0	0	0	1	0	1	4	0	0	0	0	6
SSW	0	0	2	0	7	7	6	1	0	0	0	23
SW	0	0	3	2	10	2	2	0	1	0	0	20
WSW	0	0	5	2	3	2	0	0	0	0	0	12
W	0	1	3	2	0	3	0	0	0	0	0	9
WNW	0	0	4	0	1	1	0	0	0	0	0	6
NW	0	0	3	3	0	2	6	2	0	0	1	17
NNW	0	0	0	1	2	0	0	0	1	0	1	5
Tot	0	3	24	14	35	35	22	9	8	0	2	152

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 152
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	1	0	0	1	0	1	2	0	0	5
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	1	1	1	2	0	0	0	1	0	0	6
ENE	0	0	0	1	2	2	2	0	0	0	0	7
E	0	0	0	1	2	0	0	1	0	0	0	4
ESE	0	0	1	0	2	0	2	1	0	0	0	6
SE	0	0	0	1	0	0	3	1	0	0	0	5
SSE	0	1	0	0	0	0	0	2	0	0	0	3
S	0	0	0	2	1	2	3	0	0	0	0	8
SSW	0	0	2	3	6	6	0	0	2	1	0	20
SW	0	0	2	5	6	1	2	0	2	0	0	18
WSW	0	3	5	2	2	0	0	0	0	0	0	12
W	0	1	4	2	1	1	2	9	5	0	0	25
WNW	0	0	4	1	2	4	4	1	4	1	0	21
NW	0	1	5	2	3	3	3	3	16	2	0	38
NNW	0	0	3	1	1	2	2	6	6	0	0	21
Tot	0	7	28	22	30	22	23	25	38	4	0	199

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 199
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	1	1	0	0	0	2
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	1	3	0	0	0	0	0	0	4
ENE	0	0	0	0	2	1	0	0	0	0	0	3
E	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	0	1	3	0	2	0	1	0	0	7
SE	0	0	0	0	0	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	2	1	0	0	0	3
S	0	0	1	0	0	2	1	0	0	0	0	4
SSW	0	0	0	0	3	1	1	0	1	0	0	6
SW	0	0	2	1	1	2	0	1	0	0	0	7
WSW	0	0	0	1	0	1	0	1	0	0	0	3
W	0	0	2	0	1	1	6	7	3	0	0	20
WNW	0	0	4	0	2	3	4	4	3	1	0	21
NW	0	1	5	1	1	4	2	7	10	1	0	32
NNW	0	0	1	0	2	1	0	2	8	1	0	15
Tot	0	1	15	5	19	19	19	24	26	3	0	131

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 131
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	3	2	14	3	4	8	8	1	0	45
NNE	0	1	3	0	7	4	5	0	1	0	0	21
NE	0	0	3	3	6	6	1	1	0	0	0	20
ENE	0	1	3	2	5	7	5	1	0	0	0	24
E	0	1	2	5	6	13	4	4	1	0	0	36
ESE	0	0	4	2	2	13	12	5	7	1	0	46
SE	0	0	3	5	3	3	4	7	7	0	0	32
SSE	0	1	0	4	5	4	2	4	0	0	0	20
S	0	0	4	2	12	11	5	0	0	0	0	34
SSW	0	0	3	6	16	5	6	2	2	3	0	43
SW	0	2	5	9	11	10	4	1	1	1	0	44
WSW	0	6	8	6	8	11	2	0	0	0	0	41
W	0	4	11	8	15	22	18	7	8	0	0	93
WNW	0	8	3	6	11	25	25	16	21	9	9	133
NW	0	6	2	4	17	8	22	10	27	6	7	109
NNW	0	2	11	2	13	9	14	16	15	8	9	99
Tot	0	34	68	66	151	154	133	82	98	29	25	840

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 840
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	4	3	2	10	11	5	3	1	0	0	39
NNE	0	0	4	0	5	9	3	0	1	0	0	22
NE	0	0	1	3	8	1	0	0	0	0	0	13
ENE	0	1	0	2	4	1	1	0	0	0	0	9
E	0	1	2	2	5	10	7	6	2	0	0	35
ESE	0	1	2	6	6	5	4	4	1	2	0	31
SE	0	6	6	4	4	2	1	0	0	0	0	23
SSE	0	2	2	2	8	2	0	0	0	0	0	16
S	0	2	2	3	5	5	1	0	0	0	0	18
SSW	0	1	4	11	11	4	5	4	3	0	0	43
SW	0	4	5	6	15	5	1	5	2	0	0	43
WSW	0	7	8	9	4	2	2	0	0	0	0	32
W	0	8	9	8	12	11	0	2	0	0	0	50
WNW	0	8	5	5	7	11	6	2	3	1	5	53
NW	0	2	8	3	7	5	6	3	6	1	4	45
NNW	0	2	6	4	17	16	4	0	4	0	0	53
Tot	0	49	67	70	128	100	46	29	23	4	9	525

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 527
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	2	5	2	3	0	0	0	0	0	15
NNE	0	2	1	1	1	1	0	0	0	0	0	6
NE	0	0	0	1	2	0	1	0	0	0	0	4
ENE	0	1	0	0	2	0	0	0	0	0	0	3
E	0	2	1	1	2	0	0	0	0	0	0	6
ESE	0	4	4	3	0	0	0	1	0	0	0	12
SE	0	2	3	0	1	0	0	0	0	0	0	6
SSE	0	1	5	2	0	0	0	0	0	0	0	8
S	0	1	2	3	3	2	0	0	0	0	0	11
SSW	0	5	6	3	2	2	0	0	0	0	0	18
SW	0	5	5	2	1	1	0	0	0	0	0	14
WSW	0	7	5	1	1	0	0	0	0	0	0	14
W	0	8	5	3	4	2	0	0	0	0	0	22
WNW	0	8	1	2	2	1	1	0	0	0	0	15
NW	0	5	7	3	2	0	1	0	0	0	1	19
NNW	0	3	3	4	11	2	1	1	0	0	0	25
Tot	0	57	50	34	36	14	4	2	0	0	1	198

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 200
Hours of Missing Data 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	2	1	0	0	0	0	0	0	0	5
NNE	0	0	1	2	2	0	0	0	0	0	0	5
NE	0	0	0	1	0	0	0	0	0	0	0	1
ENE	0	1	0	0	0	0	0	0	0	0	0	1
E	0	0	1	1	0	0	0	0	0	0	0	2
ESE	0	1	3	0	1	0	0	0	0	0	0	5
SE	0	2	1	1	0	0	0	0	0	0	0	4
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	2	0	0	3	0	0	0	0	0	0	5
SSW	0	0	4	2	2	1	1	0	0	0	0	10
SW	0	1	2	1	2	0	0	0	0	0	0	6
WSW	0	3	2	2	0	0	0	0	0	0	0	7
W	0	0	1	2	4	1	0	0	0	0	0	8
WNW	0	1	0	4	2	0	0	0	0	0	0	7
NW	0	2	4	2	7	0	0	0	0	0	0	15
NNW	0	0	1	4	5	0	0	0	0	0	0	10
Tot	0	15	22	23	28	2	1	0	0	0	0	91

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 92
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

All Stabilities

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	15	14	21	52	30	14	4	1	0	0	151
NNE	0	12	10	11	27	12	1	0	0	0	0	73
NE	0	10	14	11	5	4	2	0	0	0	0	46
ENE	0	18	11	14	28	3	1	0	0	0	0	75
E	1	20	36	16	29	20	4	1	0	0	0	127
ESE	0	23	36	18	36	19	7	0	0	0	0	139
SE	0	13	24	17	25	12	8	1	0	0	0	100
SSE	0	20	15	28	36	12	1	0	0	0	0	112
S	0	13	13	18	41	17	9	6	0	0	0	117
SSW	2	15	16	25	50	39	8	2	0	0	0	157
SW	1	17	30	30	69	15	4	2	1	0	0	169
WSW	0	30	32	31	21	14	10	3	1	0	0	142
W	0	41	29	19	29	17	6	3	0	0	0	144
WNW	0	34	28	17	26	31	19	8	6	0	0	169
NW	0	22	32	22	22	31	25	11	24	1	0	190
NNW	0	13	36	38	34	32	28	23	13	0	0	217
Tot	4	316	376	336	530	308	147	64	46	1	0	2128

Hours of Calm 15
Hours of Variable Direction 0
Hours of Valid Data 2143
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	1	5	5	2	2	0	0	0	15
NNE	0	0	0	1	7	4	1	0	0	0	0	13
NE	0	0	1	0	0	1	1	0	0	0	0	3
ENE	0	0	0	1	0	0	0	0	0	0	0	1
E	0	0	0	0	5	4	0	0	0	0	0	9
ESE	0	0	0	1	11	8	5	0	0	0	0	25
SE	0	0	0	0	4	5	7	1	0	0	0	17
SSE	0	0	0	1	5	5	0	0	0	0	0	11
S	0	0	1	0	3	4	0	1	0	0	0	9
SSW	0	0	0	1	15	20	4	2	0	0	0	42
SW	0	0	3	7	21	5	2	0	0	0	0	38
WSW	0	0	4	4	1	1	3	1	0	0	0	14
W	0	0	2	3	0	3	1	0	0	0	0	9
WNW	0	2	3	1	5	6	1	1	0	0	0	19
NW	0	0	7	7	8	5	1	1	1	0	0	30
NNW	0	0	3	3	4	6	13	7	3	0	0	39
Tot	0	2	24	31	94	82	41	16	4	0	0	294

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 294
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	6	3	2	1	0	0	0	12
NNE	0	0	0	0	0	1	0	0	0	0	0	1
NE	0	0	1	1	0	0	0	0	0	0	0	2
ENE	0	0	0	1	1	0	0	0	0	0	0	2
E	0	0	1	1	2	1	0	0	0	0	0	5
ESE	0	0	0	0	2	1	1	0	0	0	0	4
SE	0	0	0	0	7	0	1	0	0	0	0	8
SSE	0	0	1	1	2	6	0	0	0	0	0	10
S	0	0	0	0	1	4	2	3	0	0	0	10
SSW	0	0	1	6	10	6	1	0	0	0	0	24
SW	0	0	1	4	15	3	1	0	1	0	0	25
WSW	0	0	6	3	0	6	1	1	0	0	0	17
W	0	1	0	0	5	7	2	1	0	0	0	16
WNW	0	1	3	2	3	10	4	1	0	0	0	24
NW	0	2	3	5	5	10	8	3	2	0	0	38
NNW	0	0	1	5	2	3	7	9	5	0	0	32
Tot	0	4	18	29	61	61	30	19	8	0	0	230

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 230
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	1	0	3	6	3	0	0	0	0	14
NNE	0	0	0	0	1	0	0	0	0	0	0	1
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	1	0	1	0	0	0	0	0	0	2
E	0	1	0	0	2	0	0	0	0	0	0	3
ESE	0	0	1	0	3	1	1	0	0	0	0	6
SE	0	0	0	2	0	0	0	0	0	0	0	2
SSE	0	0	1	0	1	0	0	0	0	0	0	2
S	0	0	1	0	1	1	1	2	0	0	0	6
SSW	0	1	0	0	1	1	0	0	0	0	0	3
SW	0	1	2	1	4	0	0	0	0	0	0	8
WSW	0	1	3	2	0	0	0	1	0	0	0	7
W	0	1	2	2	2	1	0	1	0	0	0	9
WNW	0	2	1	1	1	2	2	0	3	0	0	12
NW	0	1	2	1	2	3	7	3	7	0	0	26
NNW	0	1	2	1	3	3	2	5	3	0	0	20
Tot	0	10	17	10	25	18	16	12	13	0	0	121

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 121
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	6	3	4	5	10	4	1	0	0	0	33
NNE	0	1	4	3	6	3	0	0	0	0	0	17
NE	0	1	4	4	3	1	0	0	0	0	0	13
ENE	0	5	2	5	5	1	1	0	0	0	0	19
E	0	3	10	6	9	4	0	1	0	0	0	33
ESE	0	1	15	6	9	5	0	0	0	0	0	36
SE	0	2	5	5	9	4	0	0	0	0	0	25
SSE	0	0	1	14	22	1	1	0	0	0	0	39
S	0	0	0	5	30	6	4	0	0	0	0	45
SSW	0	0	2	12	17	8	2	0	0	0	0	41
SW	0	2	7	8	21	2	0	2	0	0	0	42
WSW	0	3	5	9	11	4	6	0	0	0	0	38
W	0	2	9	5	15	6	1	1	0	0	0	39
WNW	0	6	6	5	8	7	11	5	3	0	0	51
NW	0	2	6	6	1	10	9	4	14	1	0	53
NNW	0	2	10	8	8	12	4	2	2	0	0	48
Tot	0	36	89	105	179	84	43	16	19	1	0	572

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 575
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	6	5	14	30	6	3	0	1	0	0	65
NNE	0	6	4	7	11	4	0	0	0	0	0	32
NE	0	6	7	5	1	2	1	0	0	0	0	22
ENE	0	6	6	3	21	2	0	0	0	0	0	38
E	0	9	11	7	10	11	4	0	0	0	0	52
ESE	0	12	11	4	6	4	0	0	0	0	0	37
SE	0	3	12	8	5	3	0	0	0	0	0	31
SSE	0	9	7	7	4	0	0	0	0	0	0	27
S	0	3	4	13	6	2	2	0	0	0	0	30
SSW	1	2	6	6	7	4	1	0	0	0	0	27
SW	0	4	9	9	6	5	1	0	0	0	0	34
WSW	0	7	5	12	9	1	0	0	1	0	0	35
W	0	15	7	4	7	0	2	0	0	0	0	35
WNW	0	5	10	7	7	5	0	1	0	0	0	35
NW	0	5	7	3	6	2	0	0	0	0	0	23
NNW	0	7	15	12	13	8	1	0	0	0	0	56
Tot	1	105	126	121	149	59	15	1	2	0	0	579

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 582
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	4	1	3	0	0	0	0	0	0	10
NNE	0	4	2	0	1	0	0	0	0	0	0	7
NE	0	3	1	1	1	0	0	0	0	0	0	6
ENE	0	6	1	4	0	0	0	0	0	0	0	11
E	1	7	12	2	1	0	0	0	0	0	0	23
ESE	0	10	7	6	4	0	0	0	0	0	0	27
SE	0	8	4	2	0	0	0	0	0	0	0	14
SSE	0	9	4	5	2	0	0	0	0	0	0	20
S	0	9	6	0	0	0	0	0	0	0	0	15
SSW	1	11	6	0	0	0	0	0	0	0	0	18
SW	1	9	8	1	2	0	0	0	0	0	0	21
WSW	0	19	8	1	0	2	0	0	0	0	0	30
W	0	21	7	4	0	0	0	0	0	0	0	32
WNW	0	17	5	1	2	1	1	0	0	0	0	27
NW	0	11	5	0	0	1	0	0	0	0	0	17
NNW	0	3	4	7	4	0	1	0	0	0	0	19
Tot	3	149	84	35	20	4	2	0	0	0	0	297

Hours of Calm 9
Hours of Variable Direction 0
Hours of Valid Data 306
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	1	1	0	0	0	0	0	0	0	2
NNE	0	1	0	0	1	0	0	0	0	0	0	2
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	1	1	0	0	0	0	0	0	0	0	2
E	0	0	2	0	0	0	0	0	0	0	0	2
ESE	0	0	2	1	1	0	0	0	0	0	0	4
SE	0	0	3	0	0	0	0	0	0	0	0	3
SSE	0	2	1	0	0	0	0	0	0	0	0	3
S	0	1	1	0	0	0	0	0	0	0	0	2
SSW	0	1	1	0	0	0	0	0	0	0	0	2
SW	0	1	0	0	0	0	0	0	0	0	0	1
WSW	0	0	1	0	0	0	0	0	0	0	0	1
W	0	1	2	1	0	0	0	0	0	0	0	4
WNW	0	1	0	0	0	0	0	0	0	0	0	1
NW	0	1	2	0	0	0	0	0	0	0	0	3
NNW	0	0	1	2	0	0	0	0	0	0	0	3
Tot	0	10	18	5	2	0	0	0	0	0	0	35

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 35
Hours of Missing Data . . . 65
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

All Stabilities

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	10	10	8	27	28	19	7	2	1	0	112
NNE	0	10	6	10	17	6	4	2	0	0	0	55
NE	0	8	10	7	17	5	1	0	0	0	0	48
ENE	0	7	8	8	23	14	1	0	0	0	0	61
E	1	16	15	13	28	27	6	3	0	0	0	109
ESE	0	22	19	17	28	21	6	0	0	0	0	113
SE	0	9	22	15	24	14	13	5	0	0	0	102
SSE	0	7	12	16	34	22	10	0	0	0	0	101
S	0	20	18	9	56	25	15	7	5	0	0	155
SSW	1	11	25	27	64	39	20	8	0	0	0	195
SW	0	33	45	28	45	23	4	1	2	0	0	181
WSW	1	40	34	24	23	12	6	0	1	0	0	141
W	2	33	32	18	38	13	5	2	0	0	0	143
WNW	0	38	23	15	25	32	23	11	9	1	0	177
NW	0	23	35	30	30	19	29	17	28	4	0	215
NNW	0	14	30	41	48	44	29	30	15	1	0	252
Tot	5	301	344	286	527	344	191	93	62	7	0	2160

Hours of Calm 10
Hours of Variable Direction 0
Hours of Valid Data 2170
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	5	5	5	2	1	0	0	18
NNE	0	0	0	0	4	0	0	1	0	0	0	5
NE	0	0	0	1	2	2	0	0	0	0	0	5
ENE	0	0	0	0	1	3	0	0	0	0	0	4
E	0	0	0	1	4	4	1	0	0	0	0	10
ESE	0	0	0	0	9	8	4	0	0	0	0	21
SE	0	0	0	0	7	3	9	2	0	0	0	21
SSE	0	0	0	1	2	4	5	0	0	0	0	12
S	0	0	1	0	1	4	2	0	0	0	0	8
SSW	0	0	1	3	17	15	11	4	0	0	0	51
SW	0	0	3	4	19	4	1	0	0	0	0	31
WSW	0	1	4	4	1	3	3	0	0	0	0	16
W	0	1	3	0	1	4	0	0	0	0	0	9
WNW	0	0	3	2	3	6	1	1	0	0	0	16
NW	0	3	3	7	7	3	4	1	2	0	0	30
NNW	0	0	4	4	3	3	9	10	5	0	0	38
Tot	0	5	22	27	86	71	55	21	8	0	0	295

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 295
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	1	3	4	1	2	1	0	0	12
NNE	0	0	0	0	1	0	1	0	0	0	0	2
NE	0	0	1	0	1	0	0	0	0	0	0	2
ENE	0	0	0	1	0	1	0	0	0	0	0	2
E	0	0	1	1	2	1	0	0	0	0	0	5
ESE	0	0	0	0	1	1	0	0	0	0	0	2
SE	0	0	1	0	4	4	0	2	0	0	0	11
SSE	0	0	0	0	1	2	5	0	0	0	0	8
S	0	0	0	1	4	1	4	1	3	0	0	14
SSW	0	0	2	4	15	8	1	1	0	0	0	31
SW	0	0	3	2	7	3	2	0	1	0	0	18
WSW	0	1	5	1	4	2	0	0	0	0	0	13
W	0	0	0	0	10	1	3	1	0	0	0	15
WNW	0	3	4	2	4	9	5	2	0	0	0	29
NW	0	0	4	3	6	8	8	5	4	1	0	39
NNW	0	0	1	3	2	4	5	10	5	1	0	31
Tot	0	4	22	19	65	49	35	24	14	2	0	234

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 234
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	1	0	1	4	5	0	0	0	0	12
NNE	0	0	0	1	0	0	0	0	0	0	0	1
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	1	0	0	1	0	0	0	0	0	0	2
E	0	1	0	0	3	0	0	0	0	0	0	4
ESE	0	0	1	0	3	1	0	0	0	0	0	5
SE	0	0	0	2	0	0	1	0	0	0	0	3
SSE	0	0	1	0	1	0	0	0	0	0	0	2
S	0	1	1	0	1	0	1	1	2	0	0	7
SSW	0	0	0	0	1	2	0	0	0	0	0	3
SW	0	1	4	1	2	1	0	0	0	0	0	9
WSW	0	1	3	2	0	0	1	0	0	0	0	7
W	0	3	2	1	1	1	1	0	0	0	0	9
WNW	0	1	0	1	1	2	5	0	3	0	0	13
NW	0	1	1	1	3	2	5	6	6	2	0	27
NNW	0	1	2	1	1	5	2	5	4	0	0	21
Tot	0	12	16	10	19	18	21	12	15	2	0	125

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 125
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	3	3	2	4	4	3	0	0	0	22
NNE	0	4	4	3	4	1	2	0	0	0	0	18
NE	0	2	5	2	5	1	1	0	0	0	0	16
ENE	0	2	1	4	4	1	1	0	0	0	0	13
E	0	3	7	6	8	9	0	1	0	0	0	34
ESE	0	5	7	10	9	5	2	0	0	0	0	38
SE	0	0	6	6	5	1	3	1	0	0	0	22
SSE	0	1	4	3	18	13	0	0	0	0	0	39
S	0	1	0	3	28	17	7	3	0	0	0	59
SSW	0	0	2	6	19	10	5	3	0	0	0	45
SW	0	4	14	11	11	5	0	1	1	0	0	47
WSW	0	4	5	8	8	7	2	0	0	0	0	34
W	0	2	9	7	16	4	0	1	0	0	0	39
WNW	0	7	4	5	7	9	10	7	6	1	0	56
NW	0	1	6	5	4	5	9	5	16	1	0	52
NNW	0	4	11	7	7	17	9	4	1	0	0	60
Tot	0	43	88	89	155	109	55	29	24	2	0	594

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 594
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	2	4	15	11	4	0	0	1	0	40
NNE	0	3	2	4	7	5	1	1	0	0	0	23
NE	0	3	3	3	8	2	0	0	0	0	0	19
ENE	0	3	6	3	13	9	0	0	0	0	0	34
E	1	4	4	3	9	13	5	2	0	0	0	41
ESE	0	7	7	5	3	5	0	0	0	0	0	27
SE	0	6	10	6	5	6	0	0	0	0	0	33
SSE	0	2	5	10	9	3	0	0	0	0	0	29
S	0	7	10	3	18	3	1	2	0	0	0	44
SSW	1	4	5	6	11	4	3	0	0	0	0	34
SW	0	11	7	7	5	9	1	0	0	0	0	40
WSW	0	9	7	8	8	0	0	0	1	0	0	33
W	1	10	11	6	7	3	1	0	0	0	0	39
WNW	0	11	6	5	8	4	1	1	0	0	0	36
NW	0	7	10	8	9	0	2	0	0	0	0	36
NNW	0	6	7	15	25	15	4	1	0	0	0	73
Tot	3	96	102	96	160	92	23	7	1	1	0	581

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 583
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	3	0	1	0	0	0	0	0	0	6
NNE	0	3	0	1	1	0	0	0	0	0	0	5
NE	0	3	0	1	1	0	0	0	0	0	0	5
ENE	0	1	1	0	3	0	0	0	0	0	0	5
E	0	6	2	2	2	0	0	0	0	0	0	12
ESE	0	8	3	2	2	1	0	0	0	0	0	16
SE	0	3	4	1	3	0	0	0	0	0	0	11
SSE	0	4	1	2	3	0	0	0	0	0	0	10
S	0	10	5	2	4	0	0	0	0	0	0	21
SSW	0	7	13	5	1	0	0	0	0	0	0	26
SW	0	16	12	3	1	1	0	0	0	0	0	33
WSW	1	24	8	1	2	0	0	0	0	0	0	36
W	1	16	7	3	2	0	0	0	0	0	0	29
WNW	0	16	5	0	2	2	1	0	0	0	0	26
NW	0	11	10	6	0	1	1	0	0	0	0	29
NNW	0	3	5	9	9	0	0	0	0	0	0	26
Tot	2	133	79	38	37	5	2	0	0	0	0	296

Hours of Calm 8
Hours of Variable Direction 0
Hours of Valid Data 304
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Jul - Sep for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	1	0	0	0	0	0	0	0	0	2
NNE	0	0	0	1	0	0	0	0	0	0	0	1
NE	0	0	1	0	0	0	0	0	0	0	0	1
ENE	0	0	0	0	1	0	0	0	0	0	0	1
E	0	2	1	0	0	0	0	0	0	0	0	3
ESE	0	2	1	0	1	0	0	0	0	0	0	4
SE	0	0	1	0	0	0	0	0	0	0	0	1
SSE	0	0	1	0	0	0	0	0	0	0	0	1
S	0	1	1	0	0	0	0	0	0	0	0	2
SSW	0	0	2	3	0	0	0	0	0	0	0	5
SW	0	1	2	0	0	0	0	0	0	0	0	3
WSW	0	0	2	0	0	0	0	0	0	0	0	2
W	0	1	0	1	1	0	0	0	0	0	0	3
WNW	0	0	1	0	0	0	0	0	0	0	0	1
NW	0	0	1	0	1	0	0	0	0	0	0	2
NNW	0	0	0	2	1	0	0	0	0	0	0	3
Tot	0	8	15	7	5	0	0	0	0	0	0	35

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 35
Hours of Missing Data . . . 38
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

All Stabilities

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	14	15	22	30	13	1	0	0	0	0	95
NNE	0	10	14	13	15	6	0	0	0	0	0	58
NE	0	7	21	28	13	3	0	0	0	0	0	72
ENE	0	16	20	22	36	11	0	0	0	0	0	105
E	0	20	27	20	46	44	8	2	0	0	0	167
ESE	0	15	30	20	18	19	23	3	0	0	0	128
SE	0	16	32	11	13	15	9	0	0	0	0	96
SSE	0	16	26	14	27	8	0	1	1	0	0	93
S	0	14	20	9	24	23	9	4	7	0	0	110
SSW	0	20	30	19	26	17	8	6	9	0	0	135
SW	0	20	25	18	37	10	7	1	2	2	0	122
WSW	1	30	21	31	29	20	13	6	2	0	0	153
W	0	21	20	14	47	21	27	20	22	12	1	205
WNW	0	19	15	16	22	30	25	40	51	17	7	242
NW	0	15	21	21	16	33	33	25	57	8	0	229
NNW	0	21	34	31	23	18	16	5	12	0	0	160
Tot	1	274	371	309	422	291	179	113	163	39	8	2170

Hours of Calm 13
Hours of Variable Direction 0
Hours of Valid Data 2183
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	1	0	0	0	0	0	0	1
NNE	0	0	0	0	0	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	1	1	0	0	0	0	0	2
E	0	0	0	0	4	2	0	0	0	0	0	6
ESE	0	0	0	0	0	1	0	0	0	0	0	1
SE	0	0	0	0	0	1	1	0	0	0	0	2
SSE	0	0	0	1	4	1	0	0	0	0	0	6
S	0	0	0	0	0	1	1	1	0	0	0	3
SSW	0	0	1	1	3	3	7	1	1	0	0	17
SW	0	0	0	1	6	6	1	0	0	0	0	14
WSW	0	0	0	3	2	2	0	0	0	0	0	7
W	0	0	1	0	2	1	2	0	1	0	0	7
WNW	0	0	0	0	1	0	0	1	0	0	0	2
NW	0	0	2	2	2	3	0	0	3	1	0	13
NNW	0	1	0	1	4	1	1	0	0	0	0	8
Tot	0	1	4	9	30	24	13	3	5	1	0	90

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 90
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	1	1	0	0	0	0	0	2
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	2	0	0	1	1	1	0	0	0	5
SE	0	0	0	1	1	1	1	0	0	0	0	4
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	2	1	5	1	0	0	0	0	9
SSW	0	0	0	1	3	2	0	2	4	0	0	12
SW	0	0	0	2	4	0	0	0	1	0	0	7
WSW	0	1	1	1	2	0	1	3	0	0	0	9
W	0	0	0	0	2	3	2	0	0	1	0	8
WNW	0	0	0	0	1	3	1	0	2	0	0	7
NW	0	0	3	2	0	3	4	5	13	2	0	32
NNW	0	1	3	0	0	1	0	2	8	0	0	15
Tot	0	2	9	9	16	24	11	13	28	3	0	115

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 115
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	1	0	0	0	0	1
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	1	0	2	0	0	0	0	0	3
E	0	0	2	0	0	2	1	0	0	0	0	5
ESE	0	0	0	0	3	0	4	1	0	0	0	8
SE	0	0	0	0	1	0	0	0	0	0	0	1
SSE	0	0	0	2	0	3	0	0	0	0	0	5
S	0	0	1	0	1	2	1	1	1	0	0	7
SSW	0	0	0	2	2	0	0	1	2	0	0	7
SW	0	0	0	1	1	0	0	0	1	0	0	3
WSW	0	0	2	0	2	0	3	0	0	0	0	7
W	0	0	1	0	0	1	1	0	3	1	0	7
WNW	0	0	0	0	3	2	1	4	3	3	0	16
NW	0	0	1	1	0	3	2	1	12	3	0	23
NNW	0	0	1	1	0	0	2	0	2	0	0	6
Tot	0	0	8	8	13	15	16	8	24	7	0	99

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 99
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	4	5	8	8	4	0	0	0	0	0	29
NNE	0	1	6	7	7	4	0	0	0	0	0	25
NE	0	4	9	18	7	1	0	0	0	0	0	39
ENE	0	3	11	11	25	5	0	0	0	0	0	55
E	0	4	10	10	25	36	5	2	0	0	0	92
ESE	0	2	5	12	10	13	14	1	0	0	0	57
SE	0	6	6	5	7	12	6	0	0	0	0	42
SSE	0	2	12	8	17	4	0	0	0	0	0	43
S	0	3	4	5	16	12	5	2	3	0	0	50
SSW	0	5	12	7	9	7	1	2	1	0	0	44
SW	0	4	11	4	13	1	4	1	0	0	0	38
WSW	0	3	5	11	10	12	8	3	2	0	0	54
W	0	3	6	3	22	12	16	16	17	8	0	103
WNW	0	6	2	2	8	20	21	28	40	14	7	148
NW	0	5	8	8	7	18	26	13	23	2	0	110
NNW	0	8	12	7	4	6	12	2	2	0	0	53
Tot	0	63	124	126	195	167	118	70	88	24	7	982

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 984
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	6	8	10	18	8	0	0	0	0	0	50
NNE	0	6	7	6	8	1	0	0	0	0	0	28
NE	0	1	6	7	5	0	0	0	0	0	0	19
ENE	0	5	6	6	9	3	0	0	0	0	0	29
E	0	9	12	8	15	2	2	0	0	0	0	48
ESE	0	5	11	6	4	4	4	0	0	0	0	34
SE	0	4	14	4	4	1	1	0	0	0	0	28
SSE	0	2	7	2	5	0	0	1	1	0	0	18
S	0	4	8	1	4	2	1	0	3	0	0	23
SSW	0	5	8	5	7	4	0	0	1	0	0	30
SW	0	8	7	5	8	3	1	0	0	2	0	34
WSW	0	8	7	9	7	4	1	0	0	0	0	36
W	0	10	8	8	19	2	6	3	1	2	1	60
WNW	0	7	6	11	5	4	2	6	6	0	0	47
NW	0	6	5	7	7	4	1	6	5	0	0	41
NNW	0	7	14	15	15	9	1	1	0	0	0	62
Tot	0	93	134	110	140	51	20	17	17	4	1	587

Hours of Calm 9
Hours of Variable Direction 0
Hours of Valid Data 596
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	1	2	0	0	0	0	0	0	0	6
NNE	0	3	1	0	0	0	0	0	0	0	0	4
NE	0	1	4	2	1	0	0	0	0	0	0	8
ENE	0	6	3	2	1	0	0	0	0	0	0	12
E	0	5	3	2	0	0	0	0	0	0	0	10
ESE	0	7	10	2	0	0	0	0	0	0	0	19
SE	0	4	9	1	0	0	0	0	0	0	0	14
SSE	0	9	6	1	0	0	0	0	0	0	0	16
S	0	5	4	1	0	1	0	0	0	0	0	11
SSW	0	9	5	2	1	1	0	0	0	0	0	18
SW	0	7	4	4	5	0	1	0	0	0	0	21
WSW	1	12	6	7	4	1	0	0	0	0	0	31
W	0	5	3	3	2	2	0	1	0	0	0	16
WNW	0	5	5	2	3	1	0	1	0	0	0	17
NW	0	3	1	0	0	1	0	0	1	0	0	6
NNW	0	3	2	4	0	1	0	0	0	0	0	10
Tot	1	87	67	35	17	8	1	2	1	0	0	219

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 221
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	1	2	2	0	0	0	0	0	0	6
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	1	2	1	0	0	0	0	0	0	0	4
ENE	0	2	0	2	0	0	0	0	0	0	0	4
E	0	2	0	0	1	0	0	0	0	0	0	3
ESE	0	1	2	0	1	0	0	0	0	0	0	4
SE	0	2	3	0	0	0	0	0	0	0	0	5
SSE	0	3	1	0	1	0	0	0	0	0	0	5
S	0	2	3	0	2	0	0	0	0	0	0	7
SSW	0	1	4	1	1	0	0	0	0	0	0	7
SW	0	1	3	1	0	0	0	0	0	0	0	5
WSW	0	6	0	0	2	1	0	0	0	0	0	9
W	0	3	1	0	0	0	0	0	0	0	0	4
WNW	0	1	2	1	1	0	0	0	0	0	0	5
NW	0	1	1	1	0	1	0	0	0	0	0	4
NNW	0	1	2	3	0	0	0	0	0	0	0	6
Tot	0	28	25	12	11	2	0	0	0	0	0	78

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 78
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

All Stabilities

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	18	14	14	24	13	2	0	0	0	0	85
NNE	0	13	12	11	19	8	1	0	0	0	0	64
NE	0	8	14	14	29	7	0	0	0	0	0	72
ENE	0	11	17	12	40	19	1	0	0	0	0	100
E	0	11	33	16	39	44	12	2	0	0	0	157
ESE	0	19	19	18	21	16	20	8	0	0	0	121
SE	0	16	15	10	14	13	13	2	0	0	0	83
SSE	0	19	21	16	24	15	9	1	1	1	0	107
S	0	16	8	15	19	24	18	9	8	1	0	118
SSW	0	21	33	21	31	21	4	6	8	5	0	150
SW	0	27	18	13	42	10	12	3	3	2	0	130
WSW	1	38	21	29	33	23	6	2	0	0	0	153
W	1	27	14	12	39	30	33	20	21	8	0	205
WNW	0	7	13	11	20	33	28	43	58	23	11	247
NW	0	17	21	17	27	25	23	20	62	10	1	223
NNW	0	20	24	25	24	20	14	7	7	0	0	141
Tot	2	288	297	254	445	321	196	123	168	50	12	2156

Hours of Calm 10
Hours of Variable Direction 0
Hours of Valid Data 2166
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	0	1	0	0	0	0	0	0	2
NNE	0	0	0	0	0	1	0	0	0	0	0	1
NE	0	0	0	0	1	0	0	0	0	0	0	1
ENE	0	0	0	0	0	1	0	0	0	0	0	1
E	0	0	0	0	5	1	0	0	0	0	0	6
ESE	0	0	0	0	0	1	0	0	0	0	0	1
SE	0	0	0	0	0	0	2	0	0	0	0	2
SSE	0	0	0	0	5	0	1	0	0	0	0	6
S	0	0	0	0	0	2	2	1	0	0	0	5
SSW	0	0	2	0	5	2	2	4	1	1	0	17
SW	0	0	1	0	7	3	3	0	0	0	0	14
WSW	0	0	0	2	3	1	0	0	0	0	0	6
W	0	1	0	1	0	2	1	0	1	0	0	6
WNW	0	1	1	1	2	0	0	1	0	0	0	6
NW	0	0	0	2	0	3	1	0	3	1	0	10
NNW	0	0	0	1	4	0	0	1	0	0	0	6
Tot	0	3	4	7	33	17	12	7	5	2	0	90

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 90
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	1	0	1	1	1	0	0	0	0	4
ESE	0	0	1	0	0	1	0	2	0	0	0	4
SE	0	0	0	1	0	2	1	0	0	0	0	4
SSE	0	0	0	1	0	0	1	0	0	0	0	2
S	0	0	0	1	0	1	4	1	0	0	0	7
SSW	0	0	0	1	2	3	0	1	3	2	0	12
SW	0	0	0	1	5	0	0	0	1	0	0	7
WSW	0	2	0	2	3	1	3	0	0	0	0	11
W	0	1	0	0	1	3	1	0	1	1	0	8
WNW	0	0	0	1	1	2	3	1	1	1	0	10
NW	0	1	3	0	1	1	3	4	17	3	0	33
NNW	0	1	1	0	1	1	0	2	4	0	0	10
Tot	0	5	6	8	15	19	17	11	27	7	0	115

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 115
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	1	0	0	0	0	0	1
ENE	0	0	0	1	0	1	0	0	0	0	0	2
E	0	0	1	0	0	2	1	0	0	0	0	4
ESE	0	0	1	0	3	0	4	1	0	0	0	9
SE	0	0	0	0	1	0	0	0	0	0	0	1
SSE	0	0	0	0	2	1	3	0	0	0	0	6
S	0	0	1	0	0	0	3	0	2	0	0	6
SSW	0	0	0	2	3	0	0	0	2	1	0	8
SW	0	0	1	0	1	0	0	0	1	0	0	3
WSW	0	0	1	1	0	3	0	0	0	0	0	5
W	0	1	0	0	0	1	1	1	4	0	0	8
WNW	0	0	0	0	2	4	1	2	4	4	1	18
NW	0	0	0	1	1	1	3	2	13	1	1	23
NNW	0	0	2	0	0	0	1	0	1	0	0	4
Tot	0	1	7	5	13	14	17	6	27	6	2	98

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 98
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	6	6	9	6	3	1	0	0	0	0	31
NNE	0	1	3	9	7	5	1	0	0	0	0	26
NE	0	4	6	6	19	3	0	0	0	0	0	38
ENE	0	4	10	6	26	11	1	0	0	0	0	58
E	0	3	12	5	24	36	10	2	0	0	0	92
ESE	0	6	5	9	9	11	12	4	0	0	0	56
SE	0	5	5	1	8	7	10	1	0	0	0	37
SSE	0	6	9	4	10	13	3	1	0	0	0	46
S	0	2	2	4	10	15	8	6	4	0	0	51
SSW	0	6	14	6	10	10	1	1	2	0	0	50
SW	0	3	5	5	12	4	3	3	1	0	0	36
WSW	0	11	4	9	8	15	3	2	0	0	0	52
W	0	7	2	2	23	19	23	17	11	7	0	111
WNW	0	3	3	3	5	13	18	34	45	17	10	151
NW	0	3	10	7	8	14	14	13	21	5	0	95
NNW	0	9	7	6	4	5	9	4	1	0	0	45
Tot	0	79	103	91	189	184	117	88	85	29	10	975

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 976
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	5	8	3	15	9	1	0	0	0	0	41
NNE	0	3	5	2	10	2	0	0	0	0	0	22
NE	0	4	6	8	7	1	0	0	0	0	0	26
ENE	0	4	5	2	9	6	0	0	0	0	0	26
E	0	3	9	9	7	4	0	0	0	0	0	32
ESE	0	8	8	9	6	3	4	1	0	0	0	39
SE	0	6	3	5	4	4	0	1	0	0	0	23
SSE	0	5	6	5	3	1	1	0	1	1	0	23
S	0	7	2	6	7	3	0	1	2	1	0	29
SSW	0	8	8	6	8	4	1	0	0	1	0	36
SW	0	10	4	4	10	2	5	0	0	2	0	37
WSW	1	13	10	5	9	2	0	0	0	0	0	40
W	0	8	6	6	14	4	6	1	4	0	0	49
WNW	0	1	4	4	8	9	5	5	8	1	0	45
NW	0	9	8	5	13	5	2	1	7	0	0	50
NNW	0	6	13	14	14	14	4	0	1	0	0	66
Tot	1	100	105	93	144	73	29	10	23	6	0	584

Hours of Calm 4
Hours of Variable Direction 0
Hours of Valid Data 588
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	5	0	1	1	0	0	0	0	0	0	7
NNE	0	9	3	0	2	0	0	0	0	0	0	14
NE	0	0	0	0	1	0	0	0	0	0	0	1
ENE	0	2	1	2	3	0	0	0	0	0	0	8
E	0	5	6	2	2	0	0	0	0	0	0	15
ESE	0	4	3	0	2	0	0	0	0	0	0	9
SE	0	5	5	3	1	0	0	0	0	0	0	14
SSE	0	7	5	4	2	0	0	0	0	0	0	18
S	0	6	2	3	1	0	1	0	0	0	0	13
SSW	0	6	6	5	3	1	0	0	0	0	0	21
SW	0	10	5	1	5	0	1	0	0	0	0	22
WSW	0	12	4	9	9	1	0	0	0	0	0	35
W	1	6	1	2	1	1	1	1	0	0	0	14
WNW	0	1	5	2	2	4	0	0	0	0	0	14
NW	0	3	0	2	2	1	0	0	1	0	0	9
NNW	0	2	0	1	1	0	0	0	0	0	0	4
Tot	1	83	46	37	38	8	3	1	1	0	0	218

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 221
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	1	1	0	0	0	0	0	0	3
NNE	0	0	1	0	0	0	0	0	0	0	0	1
NE	0	0	2	0	1	0	0	0	0	0	0	3
ENE	0	1	1	1	2	0	0	0	0	0	0	5
E	0	0	4	0	0	0	0	0	0	0	0	4
ESE	0	1	1	0	1	0	0	0	0	0	0	3
SE	0	0	2	0	0	0	0	0	0	0	0	2
SSE	0	1	1	2	2	0	0	0	0	0	0	6
S	0	1	1	1	1	3	0	0	0	0	0	7
SSW	0	1	3	1	0	1	0	0	0	0	0	6
SW	0	4	2	2	2	1	0	0	0	0	0	11
WSW	0	0	2	1	1	0	0	0	0	0	0	4
W	0	3	5	1	0	0	0	0	0	0	0	9
WNW	0	1	0	0	0	1	1	0	0	0	0	3
NW	0	1	0	0	2	0	0	0	0	0	0	3
NNW	0	2	1	3	0	0	0	0	0	0	0	6
Tot	0	17	26	13	13	6	1	0	0	0	0	76

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 78
Hours of Missing Data . . . 42
Hours in Period 2208

Summary Report of TMI License Renewal Application Review Questions for: Environmental Audit

Request No: ENV-71 **Topic:** Air Quality and Meteorology

Source: ENV **Requested by:** Lopas, Sarah **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: NRC would like a list of all emission sources, emission calculators, and emission inventory reports.

Date Received: 3/19/2008 **Response Date:**

Response: The last five years of Air Emission reports have been provided.

List Attachments Provided:

Annual Air Emission Report - 2007 (5532-2008-006)
Data for 2002 to 2006

2H. 100

AmerGen

AmerGen Energy Company, LLC
Three Mile Island Unit 1
Route 441 South, P.O. Box 480
Middletown, PA 17057

Telephone: 717-948-8000

An Exelon Company

February 26, 2007
5532-2007-012

Mr. Frederick J. Heagy
Harrisburg District Supervisor
Air Quality Program
PA Department of Environmental Protection
909 Elmerton Avenue
Harrisburg, PA 17110-8200

SUBJECT: ANNUAL AIR EMISSION REPORT - 2006 CALENDAR YEAR
SYNTHETIC MINOR OPERATING PERMIT NO. 22-05029
THREE MILE ISLAND UNIT 1 (TMI UNIT 1)

Dear Mr. Heagy:

Please find attached a simplified 2006 annual emission report covering NOx, SOx, CO, PM and VOC air emissions from stationary combustion units located at TMI Unit 1. This simplified report is similar in format and content to the previously submitted annual reports. The enclosed annual report meets the reporting requirements of Permit 22-05029, Section C.IV., Item No. 10; Section C.V., Item No. 13; Section C.VII., Item No. 15; Section E., *Group 1*, V., Item No. 007; and Section E., *Group 2*, IV., Item No. 003. The 2006 annual emission report as summarized in Table 1 demonstrates compliance with the facility air emission limitations listed in Permit Section C.I., Item No. 006.

Table 1
TMI Unit 1 2006 Air Emission Summary

Air Pollutant	Permit Annual Facility Emissions Limitations	Calculated Facility Annual Emissions
NOx	100 tons	4.8 tons
SOx	100 tons	1.4 tons
CO	100 tons	1.1 tons
PM	100 tons	0.3 tons
VOC	50 tons	0.1 tons

The following attachments are submitted for the 2006 annual emission report:

- 2006 Annual Emission Report - Report includes the monthly NOx, SOx, CO, PM and VOC emission summary for the regulated stationary combustion equipment and the monthly run times for the major equipment.

- Attachment I - Stationary Combustion Unit Description (includes equipment power ratings and source fuel oil characteristics).

- Attachment II - AP-42 Air Emission Factor Calculations/Derivations.

In accordance with Section E., *Group 1*, III., Item No. 4, of the permit related to the Auxiliary Boilers A and B, the sulfur content of fuel oil is routinely determined by sampling and analysis. The testing results for fuel oil used in the TMI Unit 1 Auxiliary Boilers had an average sulfur content of 0.08 % sulfur (by weight). Section E., *Group 1*, I., Item No. 3 restricts the sulfur content of fuel oil combusted in the Auxiliary Boilers to less than 0.5 % sulfur (by weight).

Should the Department have questions concerning the attached 2006 Annual Air Emission Report or require additional information, please contact Scott Cogley, Environmental Chemist, at (717) 948-8881 or e-mail at *scott.cogley@exeloncorp.com.*

Sincerely,

T. J. Dougherty
Plant Manager

TJD/src

Attachments

2006 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month		STATIONARY COMBUSTION UNITS - AIR EMISSION SOURCES								
		Aux Blr A B1A	Aux Blr B B1B	EG-Y-1A Y1A	EG-Y-1B Y1B	EG-Y-4 Y4	EG-Y-2 Y2	EG-Y-3A/3B Y3A & Y3B	FS-P-1/P-3 FSP1 & 3	Totals
January	Fuel Oil (gallons)	89	219	327	326	600	20	30	30	1,641
	NOx (tons)	0.001	0.003	0.073	0.073	0.134	0.006	0.009	0.009	0.309
	SOx (tons)	0.001	0.002	0.002	0.002	0.004	0.000	0.001	0.001	0.013
	CO (tons)	0.000	0.001	0.019	0.019	0.036	0.001	0.002	0.002	0.081
	PM (tons)	0.000	0.000	0.002	0.002	0.004	0.000	0.001	0.001	0.011
	VOC (tons)	0.000	0.000	0.002	0.002	0.004	0.001	0.001	0.001	0.010
February	Fuel Oil (gallons)	0	0	317	279	0	10	10	50	666
	NOx (tons)	0.000	0.000	0.071	0.062	0.000	0.003	0.003	0.015	0.155
	SOx (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
	CO (tons)	0.000	0.000	0.019	0.017	0.000	0.001	0.001	0.003	0.040
	PM (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
March	Fuel Oil (gallons)	172	191	374	373	0	0	10	50	1,170
	NOx (tons)	0.002	0.002	0.084	0.084	0.000	0.000	0.003	0.015	0.190
	SOx (tons)	0.001	0.002	0.003	0.003	0.000	0.000	0.000	0.001	0.009
	CO (tons)	0.000	0.000	0.022	0.022	0.000	0.000	0.001	0.003	0.049
	PM (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.001	0.007
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
April	Fuel Oil (gallons)	56	83	977	325	300	10	10	60	1,821
	NOx (tons)	0.001	0.001	0.219	0.073	0.066	0.003	0.003	0.019	0.384
	SOx (tons)	0.000	0.001	0.007	0.002	0.002	0.000	0.000	0.001	0.014
	CO (tons)	0.000	0.000	0.058	0.019	0.017	0.001	0.001	0.004	0.101
	PM (tons)	0.000	0.000	0.007	0.002	0.002	0.000	0.000	0.001	0.013
	VOC (tons)	0.000	0.000	0.006	0.002	0.002	0.000	0.000	0.002	0.012
May	Fuel Oil (gallons)	0	0	553	298	0	10	10	50	921
	NOx (tons)	0.000	0.000	0.124	0.067	0.000	0.003	0.003	0.015	0.212
	SOx (tons)	0.000	0.000	0.004	0.002	0.000	0.000	0.000	0.001	0.007
	CO (tons)	0.000	0.000	0.033	0.018	0.000	0.001	0.001	0.003	0.055
	PM (tons)	0.000	0.000	0.004	0.002	0.000	0.000	0.000	0.001	0.007
	VOC (tons)	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.001	0.007
June	Fuel Oil (gallons)	0	0	802	293	0	0	10	140	1,245
	NOx (tons)	0.000	0.000	0.180	0.066	0.000	0.000	0.003	0.043	0.292
	SOx (tons)	0.000	0.000	0.006	0.002	0.000	0.000	0.000	0.003	0.011
	CO (tons)	0.000	0.000	0.048	0.017	0.000	0.000	0.001	0.009	0.075
	PM (tons)	0.000	0.000	0.006	0.002	0.000	0.000	0.000	0.003	0.011
	VOC (tons)	0.000	0.000	0.005	0.002	0.000	0.000	0.000	0.004	0.011

2006 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month		STATIONARY COMBUSTION UNITS - AIR EMISSION SOURCES								
		Aux Blr A B1A	Aux Blr B B1B	EG-Y-1A Y1A	EG-Y-1B Y1B	EG-Y-4 Y4	EG-Y-2 Y2	EG-Y-3A/3B Y3A & Y3B	FS-P-1/P-3 FSP1 & 3	Totals
July	Fuel Oil (gallons)	29	76	0	360	200	10	10	30	715
	NOx (tons)	0.000	0.001	0.000	0.081	0.044	0.003	0.003	0.009	0.141
	SOx (tons)	0.000	0.001	0.000	0.003	0.001	0.000	0.000	0.001	0.006
	CO (tons)	0.000	0.000	0.000	0.021	0.012	0.001	0.001	0.002	0.037
	PM (tons)	0.000	0.000	0.000	0.003	0.001	0.000	0.000	0.001	0.005
	VOC (tons)	0.000	0.000	0.000	0.002	0.001	0.000	0.000	0.001	0.005
August	Fuel Oil (gallons)	0	0	320	290	0	10	10	30	660
	NOx (tons)	0.000	0.000	0.072	0.065	0.000	0.003	0.003	0.009	0.152
	SOx (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.005
	CO (tons)	0.000	0.000	0.019	0.017	0.000	0.001	0.001	0.002	0.040
	PM (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.005
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.005
September	Fuel Oil (gallons)	0	98	376	354	0	10	20	30	888
	NOx (tons)	0.000	0.001	0.084	0.079	0.000	0.003	0.006	0.009	0.183
	SOx (tons)	0.000	0.001	0.003	0.002	0.000	0.000	0.000	0.001	0.007
	CO (tons)	0.000	0.000	0.022	0.021	0.000	0.001	0.001	0.002	0.048
	PM (tons)	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.001	0.007
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.001	0.001	0.006
October	Fuel Oil (gallons)	95	127	338	256	300	40	10	260	1,426
	NOx (tons)	0.001	0.002	0.076	0.057	0.066	0.012	0.003	0.060	0.297
	SOx (tons)	0.001	0.001	0.002	0.002	0.002	0.001	0.000	0.005	0.014
	CO (tons)	0.000	0.000	0.020	0.015	0.017	0.003	0.001	0.017	0.074
	PM (tons)	0.000	0.000	0.002	0.002	0.002	0.001	0.000	0.006	0.013
	VOC (tons)	0.000	0.000	0.002	0.002	0.002	0.001	0.000	0.007	0.013
November	Fuel Oil (gallons)	53,025	52,227	310	355	0	10	20	90	106,037
	NOx (tons)	0.636	0.627	0.069	0.078	0.000	0.003	0.006	0.028	1.447
	SOx (tons)	0.431	0.425	0.002	0.002	0.000	0.000	0.000	0.002	0.863
	CO (tons)	0.133	0.131	0.018	0.021	0.000	0.001	0.001	0.006	0.310
	PM (tons)	0.053	0.052	0.002	0.002	0.000	0.000	0.000	0.002	0.112
	VOC (tons)	0.007	0.007	0.002	0.002	0.000	0.000	0.001	0.002	0.020
December	Fuel Oil (gallons)	25,131	30,008	322	374	700	10	10	50	56,605
	NOx (tons)	0.302	0.360	0.072	0.082	0.153	0.003	0.003	0.015	0.991
	SOx (tons)	0.204	0.244	0.002	0.003	0.005	0.000	0.000	0.001	0.460
	CO (tons)	0.063	0.075	0.019	0.022	0.041	0.001	0.001	0.003	0.224
	PM (tons)	0.025	0.030	0.002	0.003	0.005	0.000	0.000	0.001	0.066
	VOC (tons)	0.003	0.004	0.002	0.002	0.004	0.000	0.000	0.001	0.017

2006 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month		STATIONARY COMBUSTION UNITS - AIR EMISSION SOURCES								
		Aux Blr A B1A	Aux Blr B B1B	EG-Y-1A Y1A	EG-Y-1B Y1B	EG-Y-4 Y4	EG-Y-2 Y2	EG-Y-3A/3B Y3A & Y3B	FS-P-1/P-3 FSP1 & 3	Totals
ANNUAL TOTALS	*Fuel Oil* (gallons)	78,597	83,029	5,016	3,883	2,100	140	160	870	173,795
	NOx (tons)	0.943	0.996	1.124	0.866	0.463	0.043	0.049	0.269	4.754
	SOx (tons)	0.639	0.675	0.035	0.027	0.015	0.003	0.003	0.018	1.416
	CO (tons)	0.196	0.208	0.298	0.230	0.123	0.009	0.011	0.058	1.133
	PM (tons)	0.079	0.083	0.035	0.027	0.014	0.003	0.003	0.019	0.264
	VOC (tons)	0.010	0.010	0.032	0.024	0.013	0.004	0.004	0.022	0.119

2006 ANNUAL SUMMARY TOTAL FUEL OIL CONSUMED and AIR EMISSIONS		
Fuel Oil	173,795	gallons
NOx Emissions	4.754	tons
SOx Emissions	1.416	tons
CO Emissions	1.133	tons
PM Emssions	0.264	tons
VOC Emissions	0.119	tons

2006 ANNUAL EMISSION REPORT
Three Mile Island Unit 1
Synthetic Minor Air Permit No. 22-05029

Month	Major Air Emission Source Run Times (hours)				
	Auxiliary Boiler (B1A)	Auxiliary Boiler (B1B)	Emergency Diesel (Y1A)	Emergency Diesel (Y1B)	Emergency Diesel (Y4)
January	0.7	1.1	1.9	1.6	2.6
February	0.0	0.0	1.7	1.7	0.0
March	0.3	0.9	2.0	2.1	0.0
April	1.0	0.4	6.4	1.6	2.0
May	0.0	0.0	3.4	1.8	0.0
June	0.0	0.0	4.2	1.6	0.0
July	0.2	0.4	0.0	1.7	2.1
August	0.0	0.0	1.9	1.7	0.0
September	0.0	0.8	2.0	1.9	0.0
October	0.8	0.6	1.8	1.6	1.5
November	82.9	75.4	1.9	2.5	0.0
December	24.8	37.1	1.8	1.9	3.8
Totals	110.7	116.7	29.0	21.7	12.0

Run times for the Auxiliary Boilers are included in the Annual Emission Report as required by Section E., *Group 2*, V., Item No. 7. Run times for the large Emergency Diesels are reported in the Annual Emission Report as an option. Run times for the small Diesel Engines (Y2,Y3A, Y3B, FSP1 and FSP3) are available upon request.

ATTACHMENT I
2006 ANNUAL AIR EMISSION REPORT
STATIONARY COMBUSTION UNIT DESCRIPTIONS
Three Mile Island Unit 1

SOURCE IDENTIFICATION NUMBER	COMBUSTION UNIT DESCRIPTION	FUEL OIL CHARACTERISTICS (% S; BTUs/gallon)	COMBUSTION UNIT POWER RATING (h.p.; BTUs/hr)
B1A	TMI-1 Auxiliary Steam Boiler "A"	TMI-1 Fuel Oil System 0.1 % S 140,000 BTUs/gal	168,000,000 BTU/hr Heat Input
B1B	TMI-1 Auxiliary Steam Boiler "B"	TMI-1 Fuel Oil System 0.1 % S 140,000 BTUs/gal	168,000,000 BTU/hr Heat Input
Y1A	TMI-1 Station Emergency Power Generator "A"	TMI-1 Fuel Oil System 0.1 % S 140,000 BTUs/gal	4,182 h.p.
Y1B	TMI-1 Station Emergency Power Generator "B"	TMI-1 Fuel Oil System 0.1 % S 140,000 BTUs/gal	4,182 h.p.
Y4	TMI-1 Station Blackout Emergency Generator	Local Delivery from Vendor; 0.1 % S 140,000 BTUs/gal	4,182 h.p.
Y2	TMI-1 Station Security System Uninterruptible Power Generator	TMI-1 Fuel Oil System 0.1% S 140,000 BTUs/gal	214 h.p.
Y3A	TMI-1 Substation Emergency Power Generator "A"	Local Delivery from Vendor; 0.2 % S 140,000 BTUs/gal	166 h.p.
Y3B	TMI-1 Substation Emergency Power Generator "B"	Local Delivery from Vendor; 0.2 % S 140,000 BTUs/gal	166 h.p.
FSP1	TMI-1 Fire Pump Diesel (TMI-1 Circulating Water Pump House)	Local Delivery from Vendor; 0.1 % S; 140,000 BTUs/gal	380 h.p.
FSP3	TMI-1 Fire Pump Diesel (TMI-1 Screen Intake Structure)	Local Delivery from Vendor; 0.1 % S 140,000 BTUs/gal	380 h.p.

ATTACHMENT II
2006 ANNUAL AIR EMISSION REPORT
AP- 42 AIR EMISSION FACTOR CALCULATIONS/DERIVATIONS
Three Mile Island Unit 1

Source Identification Nos. Y1A, Y1B and Y-4 (Large Diesel Engines)

NOx Tons NOx = (x gallons fuel oil) x 3.2 lbs NOx/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

CO Tons CO = (x gallons fuel oil) x 0.85 lbs CO/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

PM Tons PM = (x gallons fuel oil) x 0.1 lbs PM/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

VOC Tons VOC = (x gallons fuel oil) x 0.09 lbs VOC/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

SOx Tons SOx = (x gallons fuel oil) x 0.10 lbs SOx/10^6 BTUs (AP- 42 Table 3.4-1 Factor)* x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

* Where, AP–42 Air Emission Factor SOx = 1.01 x S lbs SOx/10^6 BTUs = 1.01 x 0.1 = 0.10 lbs SOx/10^6 BTUs [S = % sulfur in fuel oil, therefore S = 0.1 (fuel oil ≈ 0.1 % sulfur based on testing)].

Source Identification Nos. B1A and B1B (Auxiliary Boilers)

NOx Tons NOx = (x gallons fuel oil) x 24 lbs/1000 gals (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

CO Tons CO = (x gallons fuel oil) x 5 lbs/1000 gals (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

PM Tons PM = (x gallons fuel oil) x 2 lbs/1000 gals (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

VOC Tons VOC = (x gallons fuel oil) x 0.252 lbs/1000 gals (AP- 42 Table 1.3-3 Factor) x 1 ton/2000 lbs

SOx Tons SOx = (x gallons fuel oil) x 16.27 lbs SOx/1000 gallons (AP- 42 Table 1.3-1 Factor)* x 1 ton/2000 lbs

* Where, AP–42 Air Emission Factor = SOx = $SO_2 + SO_3$ /1000 gallons = (157 x S) + (5.7 x S) = (157 x 0.1) + (5.7 x 0.1) = 16.27 lbs SOx /1000 gallons [S = % sulfur in fuel oil, therefore S = 0.1 (fuel oil ≈ 0.1 % sulfur based on testing)].

Note: The gallons of fuel oil consumed by individual combustion units were determined by in-line fuel oil metering (Emergency Diesels - Y1A and Y1B and Auxiliary Boilers - B1A and B1B); storage tank level measurements (Emergency Diesel - Y4); and equipment run times/manufacturer's fuel consumption rates (Y2, Y3A, Y3B, FSP1 and FSP3).

References: USEPA Manual AP- 42, Fifth Edition, Volume 1, Chapter 1.0, External Combustion Sources (Supplement E, 09/98) and Chapter 3.0, Stationary Internal Combustion Sources (Supplement B, 10/96). Confirmed the most recent revision dates of applicable sections via USEPA TNN CHIEF, Clearinghouse for Inventories and Emission Factors (CHIEF), on February 19, 2007.

ATTACHMENT II
2006 ANNUAL AIR EMISSION REPORT
AP- 42 AIR EMISSION FACTOR CALCULATIONS/DERIVATIONS
Three Mile Island Unit 1

Source Identification Nos. EG-Y-2, EG-Y-3A & 3B, FS-P-1 and FS-P-3 (Small Diesel Engines)

NOx Tons NOx = (x gallons fuel oil) x 4.41 lbs NOx/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

CO Tons CO = (x gallons fuel oil) x 0.95 lbs CO/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

PM Tons PM = (x gallons fuel oil) x 0.31 lbs PM/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

VOC Tons VOC = (x gallons fuel oil) x 0.36 lbs VOC/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

SOx Tons SOx = (x gallons fuel oil) x 0.29 lbs SOx/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

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Note: The gallons of fuel oil consumed by individual combustion units were determined by in-line fuel oil metering (Emergency Diesels - Y1A and Y1B and Auxiliary Boilers - B1A and B1B); storage tank level measurements (Emergency Diesel - Y4); and equipment run times/manufacturer's fuel consumption rates (Y2, Y3A, Y3B, FSP1 and FSP3).

References: USEPA Manual AP- 42, Fifth Edition, Volume 1, Chapter 1.0, External Combustion Sources (Supplement E, 09/98) and Chapter 3.0, Stationary Internal Combustion Sources (Supplement B, 10/96). Confirmed the most recent revision dates of applicable sections via USEPA TNN CHIEF, Clearinghouse for Inventories and Emission Factors (CHIEF), on February 19, 2007.

Attachment 2
Example Verification Completion Form
Page 1 of 1

Verification Documentation

Correspondence/Letter number: 5532-2007-012 Origination Date: 02/15/2007

Agency/External Stakeholder: PADEP Submittal Due Date: (FEB 28, 2007 REGULATORY)

Recipient of Correspondence: FHEAGY - AIR PROGRAM SUPERVISOR
(name and title if known)

Purpose of Submittal: 2006 ANNUAL AIR EMISSIONS REPORT - PERMIT NO. 22-05029

Originating Office: ☐ Cantera ☐ Kennett Square ☑ Site TMI Unit 1
(specify)

Preparer: S.R. Cogley (print) SRC (sign) 02/20/2007 (date)

Peer Reviewer: x L. MACDONALD (print) (CORP. AIR STAFF) *REVIEW PER PER E-MAIL - SRC * (sign) 02/20/2007 02/20/2007 (date)

Certified Mail Return Receipt Requested: ☑ Yes ☐ No

Approvals (check box if applicable)

	Applicable	Date Review Needed	Signature of Reviewer	Date of Review
Site Departments				
Chemistry CBAKER	☑		[signature]	2/21/07
Operations	☐			
Engineering	☐			
Regulatory Assurance	☐			
Other: _____ (specify)	☐			
Corporate				
SME/FAM	☐			
Site Management				
Plant Manager TSD	☑	2/20/07	☐ Report Signed and Approved	
Site Vice President	☐			

LETTER SIGNED BUT NEEDS MINOR REVISION

Attach additional page for comments.

Sub Group Name / QA	Rec ID / Exceptions	Record Description	Retention	Requirement	Comments
Environmental QA No	2H.100 Exception:	Air Emissions Records; includes Air Pollution Control, Hazardous Air Pollutants, Protection of Stratospheric Ozone, Title V and State Operating Permits, Permits by Rule, and Fleet and Mobile Services.	5 Yrs	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.
Environmental QA No	2H.101 Exception:	Lead Management (Outdoor Shooting Range Documentation)	Life of Range + 10 Yrs	EPA-902-B-01-001	
Environmental QA No	2H.102 Exception:	No Longer Used - Meteorological joint frequency distribution data to support environmental effluent monitoring measurements	LIP + 10 Yrs	ANI 80-1A; X (5)	Record type now included in 2C.109
Environmental QA No	2H.103 Exception:	Water Resource Management (Discharges and NPDES, Pretreatment, Storage, Sewage and Sludge)	5 Yrs	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.
Environmental QA Yes	2H.104 Exception:	Off-site environmental monitoring survey records	LP	NQA-1, Appendix 17A-1; 3.6	
Environmental QA No	2H.105 Exception:	No Longer Used - State Sewage Sludge Land Application Certification Statement			Record type now included in 2H.103
Environmental QA No	2H.106 Exception:	Spill Prevention Control and Countermeasures (SPCC) plan, inspections, tests, etc.	10 Yrs	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.
Environmental QA No	2H.107 Exception:	Storage Tank Management, Above and Underground installation, system operating, integrity testing, inspection, maintenance and major repairs.	LP	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.
Environmental QA No	2H.108 Exception:	Toxic Substances Act Requirements Records - Non PCB	5 Years	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.
Environmental QA No	2H.109 Exception:	Toxic Substances Act Requirements Records - PCB	LP	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.
Environmental QA No	2H.110 Exception:	Hazardous waste treatment, storage and disposal facility records	LP	Exelon Environmental Record Retention Schedule.	Consult Exelon Environmental Record Retention Schedule for listing of records.

AmerGen Energy Company, LLC
Three Mile Island Unit 1
Route 441 South, P.O. Box 480
Middletown, PA 17057

Telephone: 717-948-8000

AmerGen
An Exelon Company

2H.100

February 15, 2008
5532-2008-006

Mr. Frederick J. Heagy
Harrisburg District Supervisor
Air Quality Program
PA Department of Environmental Protection
909 Elmerton Avenue
Harrisburg, PA 17110-8200

Dear Mr. Heagy:

SUBJECT: ANNUAL AIR EMISSION REPORT - 2007 CALENDAR YEAR
SYNTHETIC MINOR OPERATING PERMIT NO. 22-05029
THREE MILE ISLAND UNTI 1

Please find attached a simplified 2007 annual emission report covering NOx, SOx, CO, PM and VOC air emissions from stationary combustion units located TMI Unit 1. This simplified report is similar in format and content to the previously submitted annual reports. The enclosed annual report meets the reporting requirements of Permit 22-05029, Section C.IV., Item No. 10; Section C.V., Item No. 13; Section C.VII., Item No. 15; Section E., *Group 1*, V., Item No. 007; and Section E., *Group 2*, IV., Item No. 003. The 2007 annual emission report as summarized in Table 1 demonstrates compliance with the facility air emission limitations listed in Permit Section C.I., Item No. 006.

Table 1
TMI Unit 1 2007 Air Emissions Summary

Air Pollutant	Permit Annual Facility Emissions Limitations	Calculated Facility Annual Emissions
NOx	100 tons	7.1 tons
SOx	100 tons	1.5 tons
CO	100 tons	1.6 tons
PM	100 tons	0.4 tons
VOC	50 tons	0.2 tons

The following attachments are submitted for the 2007 annual emission report:

- 2007 Annual Emissions Report - Report includes the monthly NOx, SOx, CO, PM and VOC emissions summary for the regulated stationary combustion equipment and the monthly run times for the major equipment.

- Attachment I - Stationary Combustion Unit Description (includes equipment power ratings and source fuel oil characteristics).

- Attachment II - AP-42 Air Emission Factor Calculations/Derivations

In accordance with Section E., *Group 1*, III., Item No. 4, of the permit related to the Auxiliary Boilers A and B, the sulfur content of fuel oil is routinely determined by sampling and analysis. The testing results for fuel oil used in the TMI Unit 1 Auxiliary Boilers had an average sulfur content of 0.05 % sulfur (by weight). Section E., *Group 1*, I., Item No. 3 restricts the sulfur content of fuel oil combusted in the Auxiliary Boilers to less than 0.5 % sulfur (by weight).

Two temporary diesel-driven air compressors were used at TMI Unit 1 during October and November 2007 to support work associated with the TMI Unit 1 maintenance and refueling outage. Air emissions from the equipment were estimated to assess impact on the facility air emission limitations. The calculated air emissions from the temporary equipment had no significant impact on meeting the 2007 facility air emission limitations. The calculated air emissions are as follows: NOx = 1.5 tons, SOx < 0.1 tons, CO = 0.3 tons, PM < 0.1 tons and VOC < 0.1 tons. The estimated air emissions from the temporary equipment are not included in Table 1 or the other attachments covering the permitted stationary sources.

Should the Department have questions concerning the attached 2007 annual emission report or require additional information, please contact Scott Cogley, Environmental Chemist, at (717) 948-8881 or e-mail at *scott.cogley@exeloncorp.com.*

Sincerely,

T. J. Dougherty
Plant Manager

TJD/src

Attachments

2007 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month		STATIONARY COMBUSTION UNITS - AIR EMISSION SOURCES								
		Aux Blr A B1A	Aux Blr B B1B	EG-Y-1A Y1A	EG-Y-1B Y1B	EG-Y-4 Y4	EG-Y-2 Y2	EG-Y-3A/3B Y3A & Y3B	FS-P-1/P-3 FSP1 & 3	Totals
January	Fuel Oil (gallons)	55	45	556	306	600	30	10	80	1,682
	NOx (tons)	0.001	0.001	0.125	0.069	0.134	0.009	0.003	0.025	0.366
	SOx (tons)	0.000	0.000	0.005	0.003	0.005	0.001	0.000	0.002	0.015
	CO (tons)	0.000	0.000	0.033	0.018	0.036	0.002	0.001	0.005	0.095
	PM (tons)	0.000	0.000	0.004	0.002	0.004	0.001	0.000	0.002	0.013
	VOC (tons)	0.000	0.000	0.004	0.002	0.004	0.001	0.000	0.002	0.012
February	Fuel Oil (gallons)	0	0	380	375	0	20	10	80	865
	NOx (tons)	0.000	0.000	0.085	0.084	0.000	0.006	0.003	0.025	0.203
	SOx (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.002	0.008
	CO (tons)	0.000	0.000	0.023	0.022	0.000	0.001	0.001	0.005	0.052
	PM (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.002	0.008
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.001	0.000	0.002	0.008
March	Fuel Oil (gallons)	0	0	319	292	0	10	20	60	701
	NOx (tons)	0.000	0.000	0.071	0.065	0.000	0.003	0.006	0.019	0.165
	SOx (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
	CO (tons)	0.000	0.000	0.019	0.017	0.000	0.001	0.001	0.004	0.042
	PM (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.001	0.002	0.006
April	Fuel Oil (gallons)	78	83	357	1520	300	20	20	70	2,448
	NOx (tons)	0.001	0.001	0.080	0.340	0.067	0.006	0.006	0.022	0.524
	SOx (tons)	0.000	0.000	0.003	0.013	0.003	0.000	0.000	0.001	0.021
	CO (tons)	0.000	0.000	0.021	0.090	0.018	0.001	0.001	0.005	0.137
	PM (tons)	0.000	0.000	0.002	0.011	0.002	0.000	0.000	0.002	0.018
	VOC (tons)	0.000	0.000	0.002	0.010	0.002	0.001	0.001	0.002	0.017
May	Fuel Oil (gallons)	0	0	363	288	0	10	10	60	731
	NOx (tons)	0.000	0.000	0.081	0.065	0.000	0.003	0.003	0.019	0.171
	SOx (tons)	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.001	0.007
	CO (tons)	0.000	0.000	0.022	0.017	0.000	0.001	0.001	0.004	0.044
	PM (tons)	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.001	0.006
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.002	0.006
June	Fuel Oil (gallons)	0	0	305	359	0	0	0	130	794
	NOx (tons)	0.000	0.000	0.068	0.080	0.000	0.000	0.000	0.040	0.189
	SOx (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.003	0.008
	CO (tons)	0.000	0.000	0.018	0.021	0.000	0.000	0.000	0.009	0.048
	PM (tons)	0.000	0.000	0.002	0.003	0.000	0.000	0.000	0.003	0.007
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.003	0.007

2007 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month		STATIONARY COMBUSTION UNITS - AIR EMISSION SOURCES								
		Aux Blr A B1A	Aux Blr B B1B	EG-Y-1A Y1A	EG-Y-1B Y1B	EG-Y-4 Y4	EG-Y-2 Y2	EG-Y-3A/3B Y3A & Y3B	FS-P-1/P-3 FSP1 & 3	Totals
July	Fuel Oil (gallons)	968	70	263	410	200	30	30	50	2,021
	NOx (tons)	0.012	0.001	0.059	0.092	0.045	0.009	0.009	0.015	0.242
	SOx (tons)	0.004	0.000	0.002	0.003	0.002	0.001	0.001	0.001	0.014
	CO (tons)	0.002	0.000	0.016	0.024	0.012	0.002	0.002	0.003	0.062
	PM (tons)	0.001	0.000	0.002	0.003	0.001	0.001	0.001	0.001	0.010
	VOC (tons)	0.000	0.000	0.002	0.003	0.001	0.001	0.001	0.001	0.008
August	Fuel Oil (gallons)	256	0	329	305	0	10	10	50	960
	NOx (tons)	0.003	0.000	0.074	0.068	0.000	0.003	0.003	0.015	0.167
	SOx (tons)	0.001	0.000	0.003	0.003	0.000	0.000	0.000	0.001	0.008
	CO (tons)	0.001	0.000	0.020	0.018	0.000	0.001	0.001	0.003	0.043
	PM (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
	VOC (tons)	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.006
September	Fuel Oil (gallons)	0	98	398	399	0	10	10	60	975
	NOx (tons)	0.000	0.001	0.089	0.089	0.000	0.003	0.003	0.019	0.204
	SOx (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.001	0.009
	CO (tons)	0.000	0.000	0.024	0.024	0.000	0.001	0.001	0.004	0.053
	PM (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.001	0.007
	VOC (tons)	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.002	0.007
October	Fuel Oil (gallons)	17,075	17,194	723	756	300	40	10	170	36,268
	NOx (tons)	0.205	0.206	0.162	0.169	0.067	0.012	0.003	0.052	0.878
	SOx (tons)	0.069	0.070	0.006	0.006	0.003	0.001	0.000	0.003	0.159
	CO (tons)	0.043	0.043	0.043	0.045	0.018	0.003	0.001	0.011	0.206
	PM (tons)	0.017	0.017	0.005	0.005	0.002	0.001	0.000	0.004	0.051
	VOC (tons)	0.002	0.002	0.005	0.005	0.002	0.001	0.000	0.004	0.021
November	Fuel Oil (gallons)	142,888	147,172	328	347	0	10	10	70	290,825
	NOx (tons)	1.715	1.766	0.073	0.078	0.000	0.003	0.003	0.022	3.660
	SOx (tons)	0.582	0.599	0.003	0.003	0.000	0.000	0.000	0.001	1.188
	CO (tons)	0.357	0.368	0.020	0.021	0.000	0.001	0.001	0.005	0.771
	PM (tons)	0.143	0.147	0.002	0.002	0.000	0.000	0.000	0.002	0.297
	VOC (tons)	0.018	0.019	0.002	0.002	0.000	0.000	0.000	0.002	0.043
December	Fuel Oil (gallons)	0	0	322	291	700	10	10	30	1,363
	NOx (tons)	0.000	0.000	0.072	0.065	0.157	0.003	0.003	0.009	0.310
	SOx (tons)	0.000	0.000	0.003	0.002	0.006	0.000	0.000	0.001	0.012
	CO (tons)	0.000	0.000	0.019	0.017	0.042	0.001	0.001	0.002	0.081
	PM (tons)	0.000	0.000	0.002	0.002	0.005	0.000	0.000	0.001	0.010
	VOC (tons)	0.000	0.000	0.002	0.002	0.004	0.000	0.000	0.001	0.010

2007 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month		STATIONARY COMBUSTION UNITS - AIR EMISSION SOURCES								
		Aux Blr A B1A	Aux Blr B B1B	EG-Y-1A Y1A	EG-Y-1B Y1B	EG-Y-4 Y4	EG-Y-2 Y2	EG-Y-3A/3B Y3A & Y3B	FS-P-1/P-3 FSP1 & 3	Totals
ANNUAL TOTALS	Fuel Oil (gallons)	161,320	164,662	4,643	5,648	2,100	200	150	910	339,633
	NOx (tons)	1.936	1.976	1.040	1.265	0.470	0.062	0.046	0.281	7.076
	SOx (tons)	0.657	0.670	0.038	0.047	0.018	0.004	0.003	0.018	1.454
	CO (tons)	0.403	0.412	0.276	0.336	0.125	0.013	0.010	0.061	1.636
	PM (tons)	0.161	0.165	0.033	0.040	0.015	0.004	0.003	0.020	0.440
	VOC (tons)	0.020	0.021	0.029	0.036	0.013	0.005	0.004	0.023	0.151

2007 ANNUAL SUMMARY TOTAL FUEL OIL CONSUMED and AIR EMISSIONS		
Fuel Oil	339,633	gallons
NOx Emissions	7.076	tons
SOx Emissions	1.454	tons
CO Emissions	1.636	tons
PM Emssions	0.440	tons
VOC Emissions	0.151	tons

2007 ANNUAL EMISSION REPORT

Three Mile Island Unit 1

Synthetic Minor Air Permit No. 22-05029

Month	Major Air Emission Source Run Times (hours)				
	Auxiliary Boiler (B1A)	Auxiliary Boiler (B1B)	Emergency Diesel (Y1A)	Emergency Diesel (Y1B)	Emergency Diesel (Y4)
January	0.2	0.2	5.2	1.8	1.7
February	0.0	0.0	2.0	2.0	0.0
March	0.0	0.0	1.8	1.6	0.0
April	0.5	0.6	1.8	9.3	0.0
May	0.0	0.0	1.7	1.7	2.1
June	0.0	0.0	1.8	1.7	0.0
July	0.4	0.3	1.7	2.6	1.8
August	1.9	0.0	1.6	1.7	0.0
September	0.0	0.6	2.0	1.9	0.0
October	33.0	25.7	4.0	4.7	0.6
November	282.0	251.6	2.3	1.7	1.8
December	0.0	0.0	1.3	2.4	0.0
Totals	318.0	279.0	27.2	33.1	8.0

Run times for the Auxiliary Boilers are included in the Annual Emission Report as required by Section E., *Group 1*, V., Item No. 007. Run times for the large Emergency Diesels are reported in the Annual Emission Report as an option. Run times for the small Diesel Engines (Y2,Y3A, Y3B, FSP1 and FSP3) are available upon request.

ATTACHMENT 1
2007 ANNUAL AIR EMISSION REPORT
STATIONARY COMBUSTION UNIT DESCRIPTIONS
Three Mile Island Unit 1

SOURCE IDENTIFICATION NUMBER	COMBUSTION UNIT DESCRIPTION	FUEL OIL CHARACTERISTICS (% S; BTUs/gallon)	COMBUSTION UNIT POWER RATING (h.p.; BTUs/hr)
B1A	TMI-1 Auxiliary Steam Boiler "A"	TMI-1 Fuel Oil System 0.05 % S 140,000 BTUs/gal	168,000,000 BTU/hr Heat Input
B1B	TMI-1 Auxiliary Steam Boiler "B"	TMI-1 Fuel Oil System 0.05 % S 140,000 BTUs/gal	168,000,000 BTU/hr Heat Input
Y1A	TMI-1 Station Emergency Power Generator "A"	TMI-1 Fuel Oil System 0.12 % S 140,000 BTUs/gal	4,182 h.p.
Y1B	TMI-1 Station Emergency Power Generator "B"	TMI-1 Fuel Oil System 0.12 % S 140,000 BTUs/gal	4,182 h.p.
Y4	TMI-1 Station Blackout Emergency Generator	Local Delivery from Vendor; 0.13 % S 140,000 BTUs/gal	4,182 h.p.
Y2	TMI-1 Station Security System Uninterruptible Power Generator	TMI-1 Fuel Oil System 0.12 % S 140,000 BTUs/gal	214 h.p.
Y3A	TMI-1 Substation Emergency Power Generator "A"	Local Delivery from Vendor; 0.2 % S 140,000 BTUs/gal	166 h.p.
Y3B	TMI-1 Substation Emergency Power Generator "B"	Local Delivery from Vendor; 0.2 % S 140,000 BTUs/gal	166 h.p.
FSP1	TMI-1 Fire Pump Diesel (TMI-1 Circulating Water Pump House)	Local Delivery from Vendor; 0.13 % S; 140,000 BTUs/gal	380 h.p.
FSP3	TMI-1 Fire Pump Diesel (TMI-1 Screen Intake Structure)	Local Delivery from Vendor; 0.12 % S 140,000 BTUs/gal	380 h.p.

ATTACHMENT II
2007 ANNUAL AIR EMISSION REPORT
AP- 42 AIR EMISSION FACTOR CALCULATIONS/DERIVATIONS
Three Mile Island Unit 1

Source Identification Nos. Y1A, Y1B and Y-4 (Large Diesel Engines)

NOx Tons NOx = (x gallons fuel oil) x 3.2 lbs NOx/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

CO Tons CO = (x gallons fuel oil) x 0.85 lbs CO/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

PM Tons PM = (x gallons fuel oil) x 0.1 lbs PM/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

VOC Tons VOC = (x gallons fuel oil) x 0.09 lbs VOC/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

SOx Tons SOx = (x gallons fuel oil) x 0.12 lbs SOx/10^6 BTUs (AP- 42 Table 3.4-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

Where, AP–42 Air Emission Factor = 1.01 x S [S = % sulfur in fuel oil, therefore S = 0.12 (fuel oil ≈ 0.12 % sulfur based on testing)] / 10^6 BTUs = 1.01 x 0.12 = 0.12 lbs SOx/10^6 BTUs.

Source Identification Nos. B1A and B1B (Auxiliary Boilers)

NOx Tons NOx = (x gallons fuel oil) x 24 lbs/1000 gals (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

CO Tons CO = (x gallons fuel oil) x 5 lbs/1000 gals (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

PM Tons PM = (x gallons fuel oil) x 2 lbs/1000 gals (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

VOC Tons VOC = (x gallons fuel oil) x 0.252 lbs/1000 gals (AP- 42 Table 1.3-3 Factor) x 1 ton/2000 lbs

SOx Tons SOx = (x gallons fuel oil) x 8.14 lbs SOx/1000 gallons (AP- 42 Table 1.3-1 Factor) x 1 ton/2000 lbs

Where, AP–42 Air Emission Factor = SOx = SO_2 + SO_3/1000 gallons = (157 x S) + (5.7 x S) = (157 x 0.05) + (5.7 x 0.05) = 8.14 lbs SOx /1000 gallons [S = % sulfur in fuel oil, therefore S = 0.1 (fuel oil ≈ 0.1 % sulfur based on testing)].

Note: The gallons of fuel oil consumed by individual combustion units were determined by in-line fuel oil metering (Emergency Diesels - Y1A and Y1B and Auxiliary Boilers - B1A and B1B); storage tank level measurements (Emergency Diesel - Y4); and equipment run times/manufacturer's fuel consumption rates (Y2, Y3A, Y3B, FSP1 and FSP3).

References: USEPA Manual AP- 42, Fifth Edition, Volume 1, Chapter 1.0, External Combustion Sources (Supplement E, 09/98) and Chapter 3.0, Stationary Internal Combustion Sources (Supplement B, 10/96). Confirmed the most recent revision dates of applicable sections via USEPA TNN CHIEF, Clearinghouse for Inventories and Emission Factors (CHIEF), on February 5, 2008.

ATTACHMENT II
2007 ANNUAL AIR EMISSION REPORT
AP- 42 AIR EMISSION FACTOR CALCULATIONS/DERIVATIONS
Three Mile Island Unit 1

Source Identification Nos. EG-Y-2, EG-Y-3A & 3B, FS-P-1 and FS-P-3 (Small Diesel Engines)

NOx Tons NOx = (x gallons fuel oil) x 4.41 lbs NOx/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

CO Tons CO = (x gallons fuel oil) x 0.95 lbs CO/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

PM Tons PM = (x gallons fuel oil) x 0.31 lbs PM/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

VOC Tons VOC = (x gallons fuel oil) x 0.36 lbs VOC/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

SOx Tons SOx = (x gallons fuel oil) x 0.29 lbs SOx/10^6 BTUs (AP- 42 Table 3.3-1 Factor) x 140,000 BTUs/1 gal (typical fuel oil) x 1 ton/2000 lbs

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Note: The gallons of fuel oil consumed by individual combustion units were determined by in-line fuel oil metering (Emergency Diesels - Y1A and Y1B and Auxiliary Boilers - B1A and B1B); storage tank level measurements (Emergency Diesel - Y4); and equipment run times/manufacturer's fuel consumption rates (Y2, Y3A, Y3B, FSP1 and FSP3).

References: USEPA Manual AP- 42, Fifth Edition, Volume 1, Chapter 1.0, External Combustion Sources (Supplement E, 09/98) and Chapter 3.0, Stationary Internal Combustion Sources (Supplement B, 10/96). Confirmed the most recent revision dates of applicable sections via USEPA TNN CHIEF, Clearinghouse for Inventories and Emission Factors (CHIEF), on February 5, 2008.

Request No: ENV-72 **Topic:** Air Quality and Meteorology

Source: ENV **Requested by:** Lopas, Sarah **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: NRC would like copies of air permits (the past 5 years at minimum).

Date Received: 3/19/2008 **Response Date:**

Response: Copy of the current Air Permit No. 22-05029

List Attachments Provided:

Air Permit # 22-05029, 2001 -- 2006

Air Permit #22-05029, 2006

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office

Air Quality Program

State Only Permit # 22-05029

AMERGEN ENERGY COMPANY, LLC

Londonderry Township, Dauphin County

Issue Date: December 22, 2006

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AIR QUALITY PROGRAM

STATE ONLY OPERATING PERMIT

Issue Date: December 22, 2006 Effective Date: January 1, 2007
Expiration Date: December 31, 2011

In accordance with the provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and 25 Pa. Code Chapter 127, the Owner, [and Operator if noted] (hereinafter referred to as permittee) identified below is authorized by the Department of Environmental Protection (Department) to operate the air emission source(s) more fully described in this permit. This Facility is subject to all terms and conditions specified in this permit. Nothing in this permit relieves the permittee from its obligations to comply with all applicable Federal, State and Local laws and regulations.

The regulatory or statutory authority for each permit condition is set forth in brackets. All terms and conditions in this permit are federally enforceable unless otherwise designated.

State Only Permit No: 22-05029
Synthetic Minor
Federal Tax Id - Plant Code: 23-2921417-1

Owner Information

Name: AMERGEN ENERGY CO LLC
Mailing Address: PO BOX 480
ROUTE 441 S
MIDDLETOWN, PA 17057

Plant Information

Plant: AMERGEN ENERGY CO LL/THREE MILE ISLAND NUCLEAR STA
Location: 22 Dauphin County 22920 Londonderry Township
SIC Code: 4911 Trans. & Utilities - Electric Services

Responsible Official

Name: THOMAS J DOUGHERTY
Title: PLANT MANAGER, TMI-1
Phone: (717) 948 - 8881

Permit Contact Person

Name: SCOTT R COGLEY
Title: ENVIRONMENTAL CHEMIST
Phone: (717) 948 - 8881

[Signature] _____
LEIF ERICSON, SOUTHCENTRAL REGION AIR PROGRAM MANAGER

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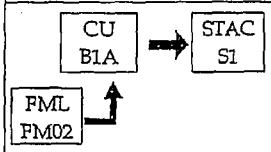
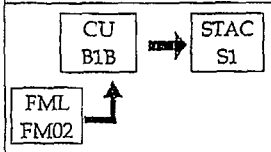
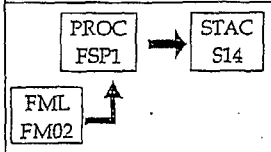
SECTION A Site Inventory List

Source ID	Source Name	Capacity/Throughput		Fuel/Material
B1A	AUXILIARY BOILER A	168.000	MMBTU/HR	
		2,420.000	Gal/HR	#2 OIL
B1B	AUXILIARY BOILER B	168.000	MMBTU/HR	
		2,420.000	Gal/HR	#2 OIL
FSP1	FIRE PUMP DIESEL	19.000	Gal/HR	#2 OIL
FSP3	FIRE PUMP DIESEL	19.000	Gal/HR	#2 OIL
T11	GASOLINE TANK, 10,000 GAL	500.000	Gal/HR	GASOLINE
Y1A	EMERGENCY DIESEL GENERATOR 1A	230.000	Gal/HR	#2 OIL
Y1B	EMERGENCY DIESEL GENERATOR 1B	230.000	Gal/HR	#2 OIL
Y2	SECURITY UNINT. POWER GEN.	11.000	Gal/HR	#2 OIL
Y3A	SUBSTN. EM. POWER GEN.	10.000	Gal/HR	#2 OIL
Y3B	SUBSTN. EM. POWER GEN.	10.000	Gal/HR	#2 OIL
Y4	STATION BLACKOUT DIESEL GEN.	230.000	Gal/HR	#2 OIL
FM02	#2 OIL			
S1	STACK, AUX.BOILERS 1A/1B			
S11	STACK, SECURITY GEN.			
S12	STACK, SUBSTN. EM. GEN.			
S13	STACK, SUBSTN. EM. GEN.			
S14	STACK, FIRE PUMP			
S15	STACK, FIRE PUMP			
S2	STACK, EMERGENCY DI. GEN.			
S3	STACK, EMERGENCY DI. GEN.			
S4	STACK, STN. BLACKOUT GEN.			

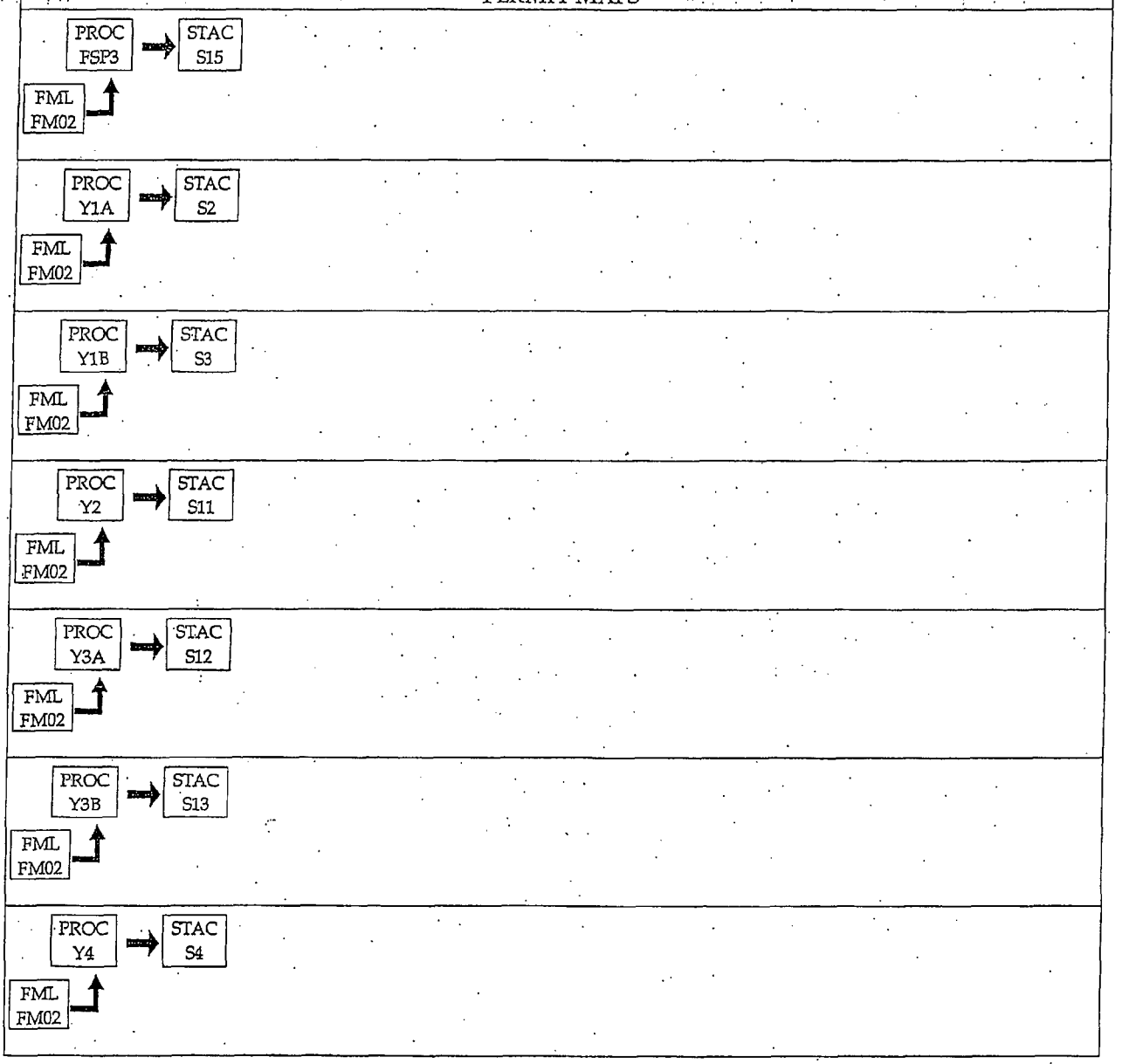
PERMIT MAPS







PERMIT MAPS


PROC FSP3
STAC S15
FML FM02
PROC Y1A
STAC S2
FML FM02
PROC Y1B
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STAC S11
FML FM02
PROC Y3A
STAC S12
FML FM02
PROC Y3B
STAC S13
FML FM02
PROC Y4
STAC S4
FML FM02

SECTION B. General State Only Requirements

#001 [25 Pa. Code § 121.1]

Definitions.

Words and terms that are not otherwise defined in this permit shall have the meanings set forth in Section 3 of the Air Pollution Control Act (35 P.S. § 4003) and in 25 Pa. Code § 121.1.

#002 [25 Pa. Code § 127.446]

Operating Permit Duration.

(a) This operating permit is issued for a fixed term of five (5) years and shall expire on the date specified on Page 1 of this permit.

(b) The terms and conditions of the expired permit shall automatically continue pending issuance of a new operating permit, provided the permittee has submitted a timely and complete application and paid applicable fees required under 25 Pa. Code Chapter 127, Subchapter I and the Department is unable, through no fault of the permittee, to issue or deny a new permit before the expiration of the previous permit.

#003 [25 Pa. Code §§ 127.412, 127.413, 127.414, 127.446 & 127.703(b)&(c)]

Permit Renewal.

(a) The permittee shall submit a timely and complete application for renewal of the operating permit to the appropriate Regional Air Program Manager. The application for renewal of the operating permit shall be submitted at least six (6) months and not more than 18 months before the expiration date of this permit.

(b) The application for permit renewal shall include the current permit number, a description of any permit revisions that occurred during the permit term, and any applicable requirements that were promulgated and not incorporated into the permit during the permit term. An application is complete if it contains sufficient information to begin processing the application, has the applicable sections completed and has been signed by a responsible official.

(c) The permittee shall submit with the renewal application a fee for the processing of the application and an additional annual administrative fee as specified in 25 Pa. Code § 127.703(b) and (c). The fees shall be made payable to "The Commonwealth of Pennsylvania - Clean Air Fund" and shall be for the amount specified in the following schedule specified in 25 Pa. Code § 127.703(b) and (c).

(1) Three hundred dollars for applications filed during the 2000-2004 calendar years.

(2) Three hundred seventy-five dollars for applications filed for the calendar years beginning in 2005.

(d) The renewal application shall also include submission of proof that the local municipality and county, in which the facility is located, have been notified in accordance with 25 Pa. Code § 127.413.

(e) The application for renewal of the operating permit shall also include submission of supplemental compliance review forms in accordance with the requirements of 25 Pa. Code § 127.412(b) and § 127.412(j).

(f) The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information as necessary to address any requirements that become applicable to the source after the permittee submits a complete application, but prior to the date the Department takes action on the permit application.

#004 [25 Pa. Code § 127.703]

Operating Permit Fees under Subchapter I.

(a) The permittee shall pay fees according to the following schedule specified in 25 Pa. Code § 127.703(b):

(1) Three hundred dollars for applications filed during the 2000-2004 calendar years.

(2) Three hundred seventy-five dollars for applications filed for the calendar years beginning in 2005.

This fee schedule shall apply to the processing of an application for an operating permit as well as the extension, modification, revision, renewal, and re-issuance of each operating permit or part thereof.

(b) The permittee shall pay an annual operating permit administrative fee according to the fee schedule established in 25 Pa. Code § 127.703(c).

(1) Two hundred fifty dollars for applications filed during the 1995-1999 calendar years.

(2) Three hundred dollars for applications filed during the 2000-2004 calendar years.

(3) Three hundred seventy-five dollars for applications filed during the years beginning in 2005.

(c) The applicable fees shall be made payable to "The Commonwealth of Pennsylvania - Clean Air Fund".

#005 [25 Pa. Code §§ 127.450 (a)(4) and 127.464]

Transfer of Operating Permits.

(a) This operating permit may not be transferred to another person, except in cases of transfer-of-ownership that are documented and approved by the Department.

(b) In accordance with 25 Pa. Code § 127.450(a)(4), a change in ownership of the source shall be treated as an administrative amendment if the Department determines that no other change in the permit is required and a written agreement has been submitted to the Department identifying the specific date of the transfer of permit responsibility, coverage and liability between the current and the new permittee and a compliance review form has been submitted to, and the permit transfer has been approved by, the Department.

(c) This operating permit is valid only for those specific sources and the specific source locations described in this permit.

#006 [25 Pa. Code § 127.441 and 35 P.S. § 4008]

Inspection and Entry.

(a) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Department or authorized representatives of the Department to perform the following:

(1) Enter at reasonable times upon the permittee's premises where a source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;

(3) Inspect at reasonable times, any facilities, equipment including monitoring and air pollution control equipment, practices, or operations regulated or required under this permit;

(4) Sample or monitor, at reasonable times, any substances or parameters, for the purpose of assuring compliance with the permit or applicable requirements as authorized by the Clean Air Act, the Air Pollution Control Act, or the regulations promulgated under the Acts.

(b) Pursuant to 35 P.S. § 4008, no person shall hinder, obstruct, prevent or interfere with the Department or its personnel in the performance of any duty authorized under the Air Pollution Control Act or regulations adopted thereunder including denying the Department access to a source at this facility. Refusal of entry or access may constitute grounds for permit revocation and assessment of criminal and/or civil penalties.

(c) Nothing in this permit condition shall limit the ability of the EPA to inspect or enter the premises of the permittee in accordance with Section 114 or other applicable provisions of the Clean Air Act.

SECTION B General State Only Requirements

#007 [25 Pa. Code §§ 127.441 & 127.444]

Compliance Requirements.

(a) The permittee shall comply with the conditions of this operating permit. Noncompliance with this permit constitutes a violation of the Clean Air Act and the Air Pollution Control Act and is grounds for one or more of the following:

(1) Enforcement action

(2) Permit termination, revocation and reissuance or modification

(3) Denial of a permit renewal application

(b) A person may not cause or permit the operation of a source which is subject to 25 Pa. Code Article III unless the source(s) and air cleaning devices identified in the application for the plan approval and operating permit and the plan approval issued for the source is operated and maintained in accordance with specifications in the applications and the conditions in the plan approval and operating permit issued by the Department. A person may not cause or permit the operation of an air contamination source subject to 25 Pa. Code Chapter 127 in a manner inconsistent with good operating practices.

(c) For purposes of Sub-condition (b) of this permit condition, the specifications in applications for plan approvals and operating permits are the physical configurations and engineering design details which the Department determines are essential for the permittee's compliance with the applicable requirements in this State-Only permit. Nothing in this sub-condition shall be construed to create an independent affirmative duty upon the permittee to obtain a predetermination from the Department for physical configuration or engineering design detail changes made by the permittee.

#008 [25 Pa. Code § 127.441]

Need to Halt or Reduce Activity Not a Defense.

It shall not be a defense for the permittee in an enforcement action that it was necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

#009 [25 Pa. Code §§ 127.442(a) & 127.461]

Duty to Provide Information.

(a) The permittee shall submit reports to the Department containing information the Department may prescribe relative to the operation and maintenance of each source at the facility.

(b) The permittee shall furnish to the Department, in writing, information that the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Department copies of records that the permittee is required to maintain in accordance with this permit.

#010 [25 Pa. Code § 127.461]

Revising an Operating Permit for Cause.

This operating permit may be terminated, modified, suspended or revoked and reissued if one or more of the following applies:

(1) The permittee constructs or operates the source subject to the operating permit so that it is in violation of the Air Pollution Control Act, the Clean Air Act, the regulations thereunder, a plan approval, a permit or in a manner that causes air pollution.

(2) The permittee fails to properly or adequately maintain or repair an air pollution control device or equipment attached to or otherwise made a part of the source.

SECTION B. General State Only Requirements

(3) The permittee has failed to submit a report required by the operating permit or an applicable regulation.

(4) The EPA determines that the permit is not in compliance with the Clean Air Act or the regulations thereunder.

#011 [25 Pa. Code §§ 127.450 & 127.462]

Operating Permit Modifications

(a) The permittee is authorized to make administrative amendments, minor operating permit modifications and significant operating permit modifications, under this permit, as outlined below:

(b) Administrative Amendments. The permittee shall make administrative operating permit amendments (as defined in 25 Pa. Code § 127.450(a)), according to procedures specified in § 127.450 unless precluded by the Clean Air Act or its regulations.

(c) Minor Operating Permit Modifications. The permittee shall make minor operating permit modifications (as defined 25 Pa. Code § 121.1) in accordance with 25 Pa. Code § 127.462.

(d) Permit modifications which do not qualify as minor permit modifications under 25 Pa. Code § 127.541 will be treated as a significant operating permit revision subject to the public notification procedures in §§ 127.424 and 127.425.

#012 [25 Pa. Code § 127.441]

Severability Clause.

The provisions of this permit are severable, and if any provision of this permit is determined by a court of competent jurisdiction to be invalid or unenforceable, such a determination will not affect the remaining provisions of this permit.

#013 [25 Pa. Code § 127.449]

De Minimis Emission Increases.

(a) This permit authorizes de minimis emission increases in accordance with 25 Pa. Code § 127.449 so long as the permittee provides the Department with seven (7) days prior written notice before commencing any de minimis emissions increase. The written notice shall:

(1) Identify and describe the pollutants that will be emitted as a result of the de minimis emissions increase.

(2) Provide emission rates expressed in tons per year and in terms necessary to establish compliance consistent with any applicable requirement.

(b) The Department may disapprove or condition de minimis emission increases at any time.

(c) Except as provided below in (d), the permittee is authorized to make de minimis emission increases (expressed in tons per year) up to the following amounts without the need for a plan approval or prior issuance of a permit modification:

(1) Four tons of carbon monoxide from a single source during the term of the permit and 20 tons of carbon monoxide at the facility during the term of the permit.

(2) One ton of NOx from a single source during the term of the permit and 5 tons of NOx at the facility during the term of the permit.

(3) One and six-tenths tons of the oxides of sulfur from a single source during the term of the permit and 8.0 tons of oxides of sulfur at the facility during the term of the permit.

(4) Six-tenths of a ton of PM10 from a single source during the term of the permit and 3.0 tons of PM10 at the facility during the term of the permit. This shall include emissions of a pollutant regulated under Section 112 of the Clean Air

Act unless precluded by the Clean Air Act, the regulations thereunder or 25 Pa. Code Article III.

(5) One ton of VOCs from a single source during the term of the permit and 5.0 tons of VOCs at the facility during the term of the permit. This shall include emissions of a pollutant regulated under Section 112 of the Clean Air Act unless precluded by the Clean Air Act, the regulations thereunder or 25 Pa. Code Article III.

(6) Other sources and classes of sources determined to be of minor significance by the Department.

(d) In accordance with § 127.14, the permittee is authorized to install the following minor sources without the need for a plan approval or permit modification:

(1) Air conditioning or ventilation systems not designed to remove pollutants generated or released from other sources.

(2) Combustion units rated at 2,500,000 or less Btu per hour of heat input.

(3) Combustion units with a rated capacity of less than 10,000,000 Btu per hour heat input fueled by natural gas supplied by a public utility or by commercial fuel oils which are No. 2 or lighter, viscosity less than or equal to 5.82 c St, and which meet the sulfur content requirements of 25 Pa. Code §123.22 (relating to combustion units). For purposes of this permit, commercial fuel oil shall be virgin oil which has no reprocessed, recycled or waste material added.

(4) Space heaters which heat by direct heat transfer.

(5) Laboratory equipment used exclusively for chemical or physical analysis.

(6) Other sources and classes of sources determined to be of minor significance by the Department.

(e) This permit does not authorize de minimis emission increases if the emissions increase would cause one or more of the following:

(1) Increase the emissions of a pollutant regulated under Section 112 of the Clean Air Act except as authorized in Subparagraphs (c)(4) and (5) of this permit condition.

(2) Subject the facility to the prevention of significant deterioration requirements in 25 Pa. Code Chapter 127, Subchapter D and/or the new source review requirements in Subchapter E.

(3) Violate any applicable requirement of this permit, the Air Pollution Control Act, the Clean Air Act, or the regulations promulgated under either of the acts.

(f) Emissions authorized under this permit condition shall be included in the monitoring, recordkeeping and reporting requirements of this permit.

(g) Except for de minimis emission increases, installation of minor sources made pursuant to this permit condition and Plan Approval Exemptions under 25 Pa. Code § 127.14 (relating to exemptions), the permittee is prohibited from making changes or engaging in activities that are not specifically authorized under this permit without first applying for a plan approval. In accordance with § 127.14(b), a plan approval is not required for the construction, modification, reactivation, or installation of the sources creating the de minimis emissions increase.

(h) The permittee may not meet de minimis emission threshold levels by offsetting emission increases or decreases at the same source.

#014 [25 Pa. Code § 127.3]

Operational Flexibility.

The permittee is authorized to make changes within the facility in accordance with the regulatory provisions outlined

in 25 Pa. Code § 127.3 (relating to operational flexibility) to implement the operational flexibility requirements provisions authorized under Section 6.1(i) of the Air Pollution Control Act and the operational flexibility terms and conditions of this permit. The provisions in 25 Pa. Code Chapter 127 which implement the operational flexibility requirements include the following:

(1) Section 127.14 (relating to exemptions)

(2) Section 127.447 (relating to alternative operating scenarios)

(3) Section 127.448 (relating to emissions trading at facilities with Federally enforceable emissions caps)

(4) Section 127.449 (relating to de minimis emission increases)

(5) Section 127.450 (relating to administrative operating permit amendments)

(6) Section 127.462 (relating to minor operating permit modifications)

(7) Subchapter H (relating to general plan approvals and general operating permits)

#015 [25 Pa. Code § 127.11]

Reactivation

(a) The permittee may not reactivate a source that has been out of operation or production for at least one year unless the reactivation is conducted in accordance with a plan approval granted by the Department or in accordance with reactivation and maintenance plans developed and approved by the Department in accordance with 25 Pa. Code § 127.11a(a).

(b) A source which has been out of operation or production for more than five (5) years but less than 10 years may be reactivated and will not be considered a new source if the permittee satisifies the conditions specified in 25 Pa. Code § 127.11a(b).

#016 [25 Pa. Code § 127.36]

Health Risk-based Emission Standards and Operating Practice Requirements.

(a) When needed to protect public health, welfare and the environment from emissions of hazardous air pollutants from new and existing sources, the permittee shall comply with the health risk-based emission standards or operating practice requirements imposed by the Department, except as precluded by §§ 6.6(d)(2) and (3) of the Air Pollution Control Act [35 P.S. § 4006.6(d)(2) and (3)].

(b) A person challenging a performance or emission standard established by the Department has the burden to demonstrate that performance or emission standard does not meet the requirements of Section 112 of the Clean Air Act.

#017 [25 Pa. Code § 121.9]

Circumvention.

No person may permit the use of a device, stack height which exceeds good engineering practice stack height, dispersion technique or other technique which, without resulting in reduction of the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise be in violation of 25 Pa. Code Article III, except that with prior approval of the Department, the device or technique may be used for control of malodors.

#018 [25 Pa. Code §§ 127.402(d) & 127.442]

Reporting Requirements.

(a) The permittee shall comply with the applicable reporting requirements of the Clean Air Act, the regulations thereunder, the Air Pollution Control Act and 25 Pa. Code Article III including Chapters 127, 135 and 139.

(b) The permittee shall submit reports to the Department containing information the Department may prescribe relative to the operation and maintenance of any air contamination source.

(c) Reports, test data, monitoring data, notifications and requests for renewal of the permit shall be submitted to the:

Regional Air Program Manager
PA Department of Environmental Protection
(At the address given in the permit transmittal letter, or otherwise notified)

(d) Any records or information including applications, forms, or reports submitted pursuant to this permit condition shall contain a certification by a responsible official as to truth, accuracy and completeness. The certifications submitted under this permit shall require a responsible official of the facility to certify that based on information and belief formed after reasonable inquiry, the statements and information in the documents are true, accurate and complete.

(e) Any records, reports or information submitted to the Department shall be available to the public except for such records, reports or information which meet the confidentiality requirements of § 4013.2 of the Air Pollution Control Act and §§ 112(d) and 114(c) of the Clean Air Act. The permittee may not request a claim of confidentiality for any emissions data generated for the facility.

#019 [25 Pa. Code §§ 127.441(c) & 135.5]

Sampling, Testing and Monitoring Procedures.

(a) The permittee shall comply with the monitoring, recordkeeping or reporting requirements of 25 Pa. Code Chapter 139 and the other applicable requirements of 25 Pa. Code Article III and additional requirements related to monitoring, reporting and recordkeeping required by the Clean Air Act and the regulations thereunder including the Compliance Assurance Monitoring requirements of 40 CFR Part 64, where applicable.

(b) Unless alternative methodology is required by the Clean Air Act and regulations adopted thereunder, sampling, testing and monitoring required by or used by the permittee to demonstrate compliance with any applicable regulation or permit condition shall be conducted in accordance with the requirements of 25 Pa. Code Chapter 139.

#020 [25 Pa. Code §§ 127.441(c) and 135.5]

Recordkeeping.

(a) The permittee shall maintain and make available, upon request by the Department, the following records of monitored information:

(1) The date, place (as defined in the permit) and time of sampling or measurements.

(2) The dates the analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of the analyses.

(6) The operating conditions as existing at the time of sampling or measurement.

(b) The permittee shall retain records of any required monitoring data and supporting information for at least five (5) years from the date of the monitoring, sample, measurement, report or application. Supporting information includes the calibration data and maintenance records and original strip-chart recordings for continuous monitoring instrumentation, and copies of reports required by the permit.

(c) The permittee shall maintain and make available to the Department upon request, records including computerized

records that may be necessary to comply with the reporting, recordkeeping and emission statement requirements in 25 Pa. Code Chapter 135 (relating to reporting of sources). In accordance with 25 Pa. Code Chapter 135, § 135.5, such records may include records of production, fuel usage, maintenance of production or pollution control equipment or other information determined by the Department to be necessary for identification and quantification of potential and actual air contaminant emissions.

#021 [25 Pa. Code § 127.441(a)]

Property Rights.

This permit does not convey any property rights of any sort, or any exclusive privileges.

#022 [25 Pa. Code § 127.447]

Alternative Operating Scenarios.

The permittee is authorized to make changes at the facility to implement alternative operating scenarios identified in this permit in accordance with 25 Pa. Code § 127.447.

SECTION C. Site Level Requirements

I. RESTRICTIONS.

Emission Restriction(s).

001 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions
No person shall permit the emission into the outdoor atmosphere of any fugitive air contaminant from a source other than the following:

(a) Construction or demolition of building or structure.

(b) Grading, paving and maintenance of roads and streets.

(c) Use of roads and streets. Emissions from material in or on trucks, railroad cars and other vehicular equipment are not considered as emissions from use of roads and streets.

(d) Clearing of land.

(e) Stockpiling of material.

(f) Sources and classes of sources other than those identified above, for which the operator has obtained a determination from the Department, in accordance with 25 Pa. Code §123.1 (b), that fugitive emissions from the source, after appropriate control, meet the following requirements:

(1) The emissions are of minor significance with respect to causing air pollution.

(2) The emissions are not preventing or interfering with the attainment or maintenance of any ambient air standard.

002 [25 Pa. Code §123.2]
Fugitive particulate matter
No person shall emit particulate matter into the outdoor atmosphere from a source specified in Condition #001 if the emissions are visible at the point the emissions pass outside the persons property.

003 [25 Pa. Code §123.31]
Limitations
No person shall permit the emission into the outdoor atmosphere of any malodorous air contaminants from any source in such a manner that the malodors are detectable outside the property of the person on whose land the source is being operated.

004 [25 Pa. Code §123.41]
Limitations
No person shall permit the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is either of the following:

(a) Equal to or greater than 20 percent for a period or periods aggregating more than three minutes in any one hour.

(b) Equal to or greater than 60 percent at any time.

005 [25 Pa. Code §123.42]
Exceptions
The emission limitation of 25 Pa. Code §123.41 shall not apply when:

(a) The presence of uncombined water is the only reason for failure of the emission to meet the limitation.

(b) The emission results from the operation of equipment used solely to train and test persons in observing the opacity of visible emissions.

(c) The emission results from sources specified in Section C, Condition #001.

006 [25 Pa. Code §127.441]
Operating permit terms and conditions.
The permittee shall limit the facility emissions of the following pollutants at less than the quantity listed, based on a 12-month rolling total:

(a) NOx - 100 tons

(b) SOx - 100 tons

(c) CO - 100 tons

(d) PM - 100 tons

(e) VOC - 50 tons

(f) Hazardous air pollutants (HAPs) - 25 tons combined

(g) Any single HAP - 10 tons

II. TESTING REQUIREMENTS.

007 [25 Pa. Code §127.441]
Operating permit terms and conditions.
The Department reserves the right to require exhaust stack testing of sources as necessary during the permit term to verify emissions for purposes including permit condition violations, emission fees or malfunctioning.

III. MONITORING REQUIREMENTS.

008 [25 Pa. Code §123.43]
Measuring techniques
Visible air contaminants may be measured using either of the following:

(a) A device approved by the Department and maintained to provide accurate opacity measurement.

(b) Observers, trained and certified, to measure plume opacity with the naked eye or with the aid of any devices approved by the Department.

009 [25 Pa. Code §127.441]
Operating permit terms and conditions.
The permittee shall conduct a weekly inspection around the periphery of the auxiliary boiler steam plant and the emergency & station-blackout diesel generators listed in Section D of this permit during daylight hours when the boilers and diesel generators are in production to detect fugitive visible emissions, visible emissions and malodorous emissions as follows:

(a) The presence of fugitive visible emissions beyond the plant property boundaries, as stated in Section C, Condition #002.

(b) The presence of malodorous air contaminants beyond the plant property boundaries as stated in Section C, Condition #003.

(c) Visible emissions in excess of the limits stated in Section C, Condition #004. Visible emissions may be measured according to the methods specified in Section C, Condition #008, or alternately, plant personnel who observe such emissions may report the incidence of visible emissions to the Department within two hours of each incident and make arrangements for a certified observer to verify the visible emissions.

IV. RECORDKEEPING REQUIREMENTS.

010 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall maintain and record monthly NOx, SOx and CO emissions emitted from the facility to demonstrate compliance with Section C, Condition #006.

011 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall maintain a logbook for recording status of malodorous air contaminants, visible emissions and fugitive visible emission exceedences. The logbook shall also include the name of the facility representative, and the date and time the monitoring was conducted and wind direction.

V. REPORTING REQUIREMENTS.

012 [25 Pa. Code §127.442]

Reporting requirements.

The permittee shall report malfunctions which occur at the facility to the Department. A malfunction is defined as any sudden, infrequent and not reasonably preventable failure of air pollution control equipment process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. Malfunctions shall be reported as follows:

(a) Malfunction which occur at the facility and which pose an imminent danger to the public health, safety, welfare and environment, shall be immediately reported to the Department by telephone. The telephone report of such malfunctions shall occur no later than two hours after discovery of the incident. The permittee shall submit a written report of instances of such malfunctions to the Department within three (3) days of the telephone report.

(b) Unless otherwise required by this permit, any other malfunction that is not subject to the reporting requirements of Condition #012 (a) above, shall be reported to the Department, in writing, within five (5) days of discovery of the malfunction.

013 [25 Pa. Code §135.3]

Reporting

An annual report containing information for all sources listed in this operating permit, new sources which were first operated during preceding year and sources modified during the same period shall be submitted to the Harrisburg District Supervisor. The report for January 1 through December 31 is due no later than March 1 of the following year.

VI. WORK PRACTICE REQUIREMENTS.

014 [25 Pa. Code §123.1]

Prohibition of certain fugitive emissions

The permittee shall take all reasonable actions to prevent particulate matter from a source identified in condition #001 from becoming airborne, as per §§123.1 (c). These actions shall include, but are not limited to, the following:

(a) Use, where possible, of water or chemicals for control of dust in the demolition of buildings or structures, construction operations, the grading of roads, or the clearing of land.

(b) Application of asphalt, oil, water or suitable chemicals on dirt roads, material stockpiles and other surfaces which may give rise to airborne dusts.

(c) Paving and maintenance of roadways. (d) Prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means.

VII. ADDITIONAL REQUIREMENTS.

015 [25 Pa. Code §127.441]

Operating permit terms and conditions.

[Additional authority for this permit condition is derived from RACT operating permit 22-2002]

NOx emissions from Source IDs. B1A, B1B, Y1A, Y1B and Y4 shall be based on fuel usage on each source measured by separate flow meters (fuel usage for the Y4 may be based on tank level measurement). NOx emissions from the rest of the sources may be estimated from operating hours, manufacturers' recommended fuel consumption (gallon per hour or gram per hp-hr), kilowatt hours and the day tank level measurement, as installed.

016 [25 Pa. Code §129.14]

Open burning operations

(a) No person shall conduct open burning of materials in such a manner that:

(1) The emissions are visible, at any time, at the point such emissions pass outside the property of the person on whose land the open burning is being conducted.

(2) Malodorous air contaminants from the open burning are detectable outside the property of the person on whose land the open burning is being conducted.

(3) The emissions interfere with the reasonable enjoyment of life and property.

(4) The emissions cause damage to vegetation or property.

(5) The emissions are or may be deleterious to human or animal health.

(b) Exceptions. The requirements of Subsection (a) do not apply where the open burning operations result from:

(1) A fire set to prevent or abate a fire hazard, when approved by the Department and set by or under the supervision of a public official.

(2) Any fire set for the purpose of instructing personnel in fire fighting, when approved by the Department.

(3) A fire set for the prevention and control of disease or pests, when approved by the Department.

(4) A fire set solely for recreational or ceremonial purposes.

(5) A fire set solely for cooking food.

(c) This permit does not constitute authorization to burn solid waste pursuant to Section 610 (3) of the Solid Waste Management Act, 35 P.S. Section 6018.610 (3), or any other provision of the Solid Waste Management Act.

VIII. COMPLIANCE CERTIFICATION.

No additional compliance certifications exist except as provided in other sections of this permit including Section B (relating to State Only General Requirements).

IX. COMPLIANCE SCHEDULE.

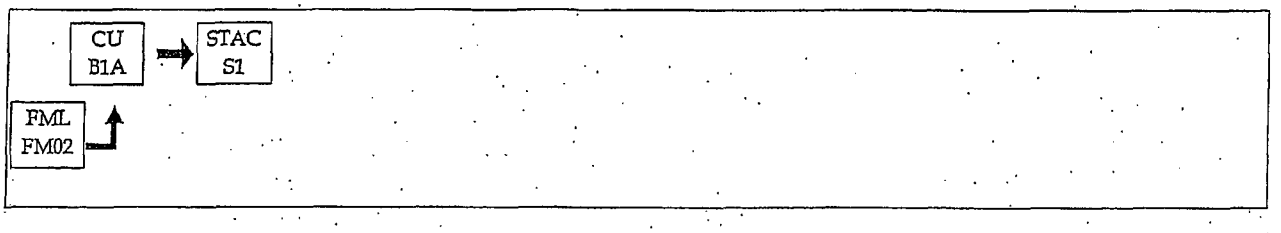
No compliance milestones exist.

SECTION D. Source Level Requirements

Source ID: B1A Source Name: AUXILIARY BOILER A

Source Capacity/Throughput: 168.000 MMBTU/HR
2,420.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 1



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

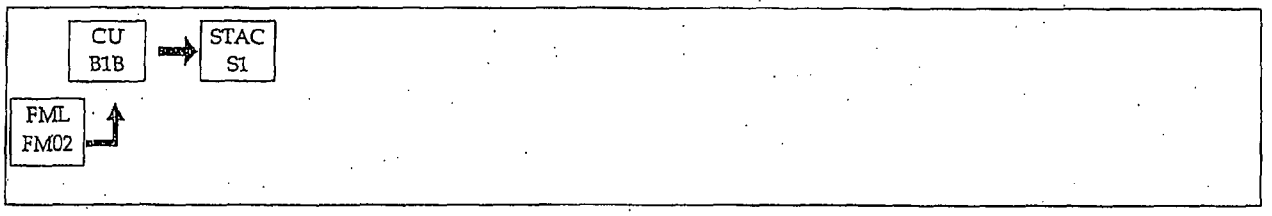
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: B1B Source Name: AUXILIARY BOILER B

Source Capacity/Throughput: 168.000 MMBTU/HR
2,420.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 1



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

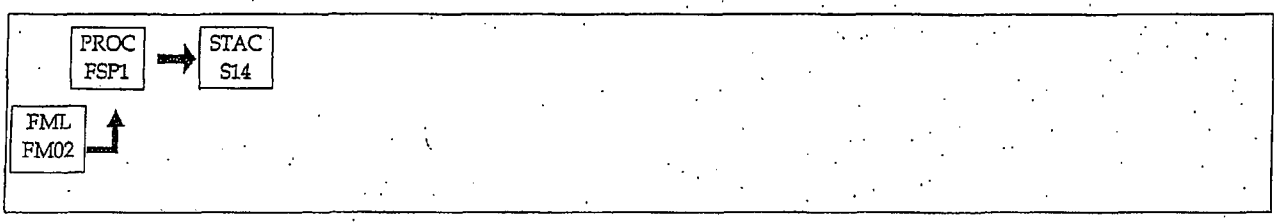
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: FSP1 Source Name: FIRE PUMP DIESEL

Source Capacity/Throughput: 19.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 3



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

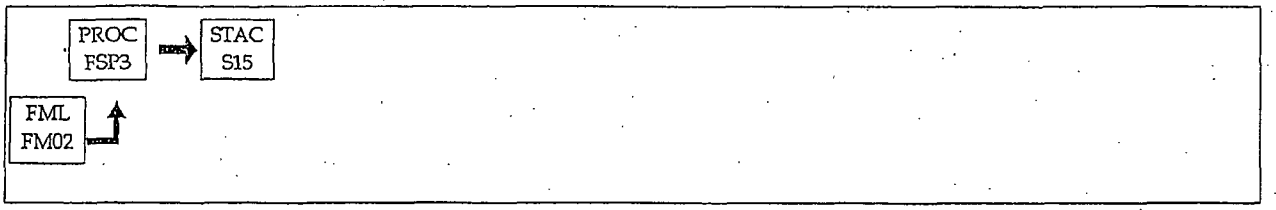
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: FSP3 Source Name: FIRE PUMP DIESEL

Source Capacity/Throughput: 19.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 3



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: T11 Source Name: GASOLINE TANK, 10,000 GAL

Source Capacity/Throughput: 500.000 Gal/HR GASOLINE

I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

001 [25 Pa. Code §129.57]

Storage tanks less than or equal to 40,000 gallons capacity containing VOCs

Gasoline Tank T11 shall have a pressure relief valve which is maintained in good operating condition and which is set to release at no less than 0.7 psig (4.8 kilopascals) of pressure or 0.3 psig (2.1 kilopascals) of vacuum or the highest possible pressure and vacuum in accordance with state or local fire codes or the National Fire Prevention Association guidelines or other national consensus standards acceptable to the Department.

VII. ADDITIONAL REQUIREMENTS.

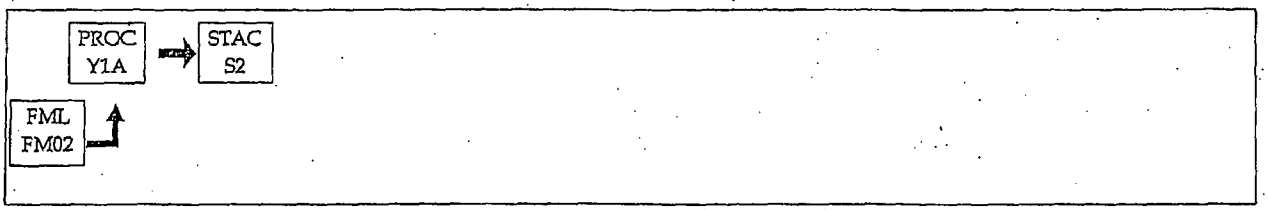
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

SECTION D. Source Level Requirements

Source ID: Y1A Source Name: EMERGENCY DIESEL GENERATOR 1A

Source Capacity/Throughput: 230.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 2



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

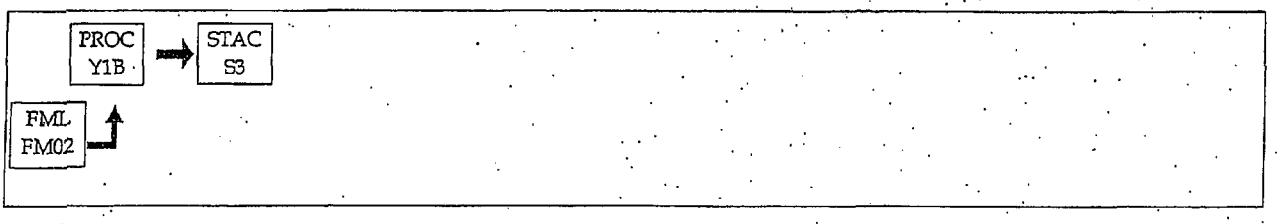
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: Y1B Source Name: EMERGENCY DIESEL GENERATOR 1B

Source Capacity/Throughput: 230.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 2



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

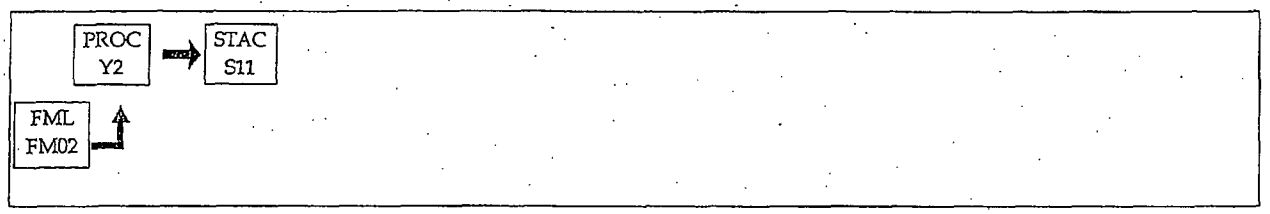
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: Y2 Source Name: SECURITY UNINT. POWER GEN.

Source Capacity/Throughput: 11.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 3



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

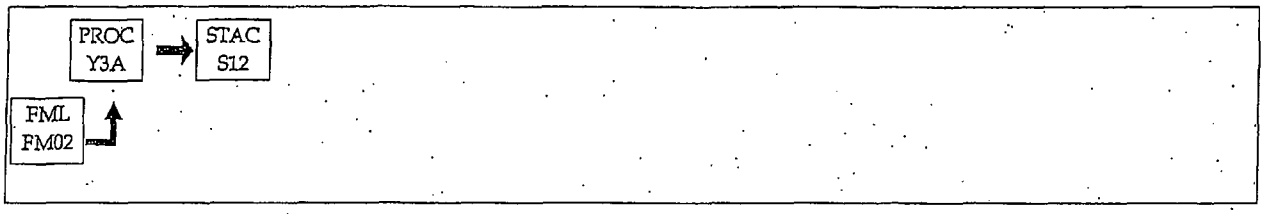
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: Y3A Source Name: SUBSTN. EM. POWER GEN.

Source Capacity/Throughput: 10.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 3



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

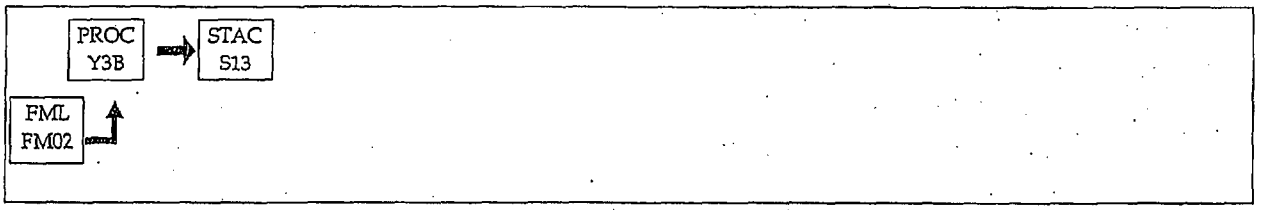
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: Y3B Source Name: SUBSTN. EM. POWER GEN.

Source Capacity/Throughput: 10.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 3



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

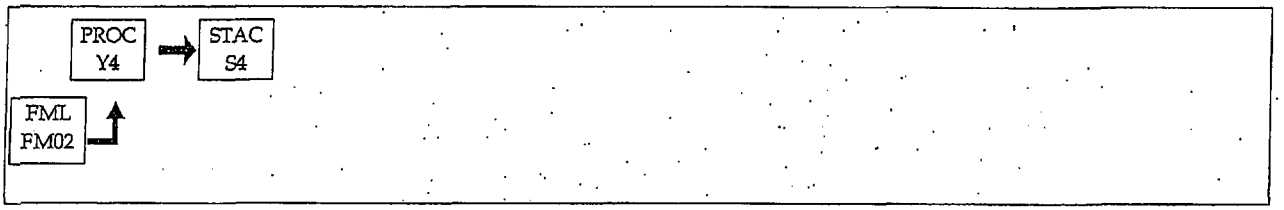
No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: Y4 Source Name: STATION BLACKOUT DIESEL GEN.

Source Capacity/Throughput: 230.000 Gal/HR #2 OIL

Conditions for this source occur in the following groups: 2



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION E. Source Group Restrictions

Group Name: 1

Group Description: boilers

Sources included in this group:

ID	Name
B1A	AUXILIARY BOILER A
B1B	AUXILIARY BOILER B

I. RESTRICTIONS.

Emission Restriction(s).

001 [25 Pa. Code §123.11]

Combustion units

No person shall permit the emission into the outdoor atmosphere of particulate matters from each of the boilers in excess of the rate determined by the following formula, as per §123.11(a)(2).

A = 3.6 E-0.56 (Note: 3.6 times E raised to the power -0.56)

Where:

A = Allowable emissions in pounds per million btus of heat input, and

E = Heat Input to the Boiler in million of btu per hour, when E is equal to or greater than 50 but less than 600.

002 [25 Pa. Code §123.22]

Combustion units

No person shall permit the emission into the outdoor atmosphere of sulfur oxides, expressed as SO2, from each of the boilers, in excess of 4 pounds per million btu heat input over any one hour period, as per §123.22(a)(1).

003 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall limit the sulfur content in the #2 Oil combusted in the Boilers to 0.5 percent, weight basis.

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

III. MONITORING REQUIREMENTS.

004 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall monitor sulfur content of #2 oil by conducting fuel analysis or as per the fuel supplier's certification for each shipment of oil, or one sample per day per vendor.

IV. RECORDKEEPING REQUIREMENTS.

005 [25 Pa. Code §127.441]

Operating permit terms and conditions.

[Additional authority for this permit condition is derived from RACT operating permit 22-2002]

For each source listed above, separate monthly records of fuel consumption and operating hours shall maintained for each calendar year (January 1 through December 31).

006 [25 Pa. Code §127.441]

Operating permit terms and conditions.

(a) The permittee shall maintain comprehensive and accurate record of the following:

(1) Boiler operating hours both on a monthly and calendar year basis.

(2) Amount of fuel consumed both on a monthly and calendar year basis for each boiler and facility.

(3) Fuel analysis including the heating value in btu/lb.

(4) Sulfur content of fuel as stated above Condition #004.

(b) The permittee shall maintain a logbook, and keep a record of annual adjustment and maintainence.

(c) The record shall be made available to the Department representative upon request.

V. REPORTING REQUIREMENTS.

007 [25 Pa. Code §127.441]

Operating permit terms and conditions.

In conjunction with Section C, Site Level Condition #010, the permittee shall submit the following annual report to the Harrisburg District Supervisor, Southcentral Regional Office, by March 1 of the following year:

(a) Annual record of #2 Oil usage in each boiler.

(b) Annual record of the boilers operating hours.

(c) Annual NOx, SOx, VOC and particulate matter emissions.

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

VII. ADDITIONAL REQUIREMENTS.

008 [25 Pa. Code §127.441]

Operating permit terms and conditions.

NOx emissions from the Sources listed in Section E, Group 1 may be calculated using the emissions factors listed in AP-42.

009 [25 Pa. Code §127.441]

Operating permit terms and conditions.

Emission restrictions listed above Conditions #001 and #002 may not apply during the start-up and shut down, subject to maximum one hour at a time during each start-up and each shut down.

SECTION E. Source Group Restrictions.

Group Name: 2

Group Description: large diesel engine-generators

Sources included in this group:

ID	Name
Y1A	EMERGENCY DIESEL GENERATOR 1A
Y1B	EMERGENCY DIESEL GENERATOR 1B
Y4	STATION BLACKOUT DIESEL GEN.

I. RESTRICTIONS.

Emission Restriction(s).

001 [25 Pa. Code §123.13]

Processes

No person shall permit the emission into the outdoor atmosphere of particulate matter from each of the emergency diesel generators in a manner that the concentration of particulate matter in the effluent gas exceeds 0.04 grain per dry standard cubic foot, as per §123.13(c)(1)(i).

002 [25 Pa. Code §123.21]

General

No person shall permit the emission into the outdoor atmosphere of sulfur oxides from each of the emergency diesel generators in a manner that the concentration of sulfur oxides, expressed as SO2, in the effluent gas exceeds 500 parts per million, by volume, dry basis, as per §123.21(b).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

003 [25 Pa. Code §127.441]

Operating permit terms and conditions.

[Additional authority for this permit condition is derived from RACT operating permit 22-2002]

For each source listed above, separate monthly records of fuel consumption, operating hours and kilowatt hours generated shall be maintained for each calendar year (January 1 through December 31).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

VII. ADDITIONAL REQUIREMENTS.

004 [25 Pa. Code §127.441]

Operating permit terms and conditions.

NOx emissions from the sources listed in Section E, Group 2 may be calculated using the emissions factors listed in AP-42.

SECTION E. Source Group Restrictions.

005 [25 Pa. Code §127.441]

Operating permit terms and conditions.

Emission restrictions listed above Conditions #001 and #002 may not apply during the start-up and shut down, subject to maximum one hour at a time during each start-up and each shut down associated with equipment production runs. Subject to notification to and approval by the Department, a waiver may be applied to required equipment operability and post-maintenance testing.

SECTION E. Source Group Restrictions.

Group Name: 3

Group Description: misc. diesel engine primemovers, gen./pump/comp.

Sources included in this group:

ID	Name
FSP1	FIRE PUMP DIESEL
FSP3	FIRE PUMP DIESEL
Y2	SECURITY UNINT. POWER GEN.
Y3A	SUBSTN. EM. POWER GEN.
Y3B	SUBSTN. EM. POWER GEN.

I. RESTRICTIONS.

Emission Restriction(s).

001 [25 Pa. Code §123.13]

Processes

No person shall permit the emission into the outdoor atmosphere of particulate matter from a source, at any time, in a manner that the concentration of particulate matter in the effluent gas exceeds 0.04 grain per dry standard cubic foot, as per §123.13(c)(1)(i).

002 [25 Pa. Code §123.21]

General

No person shall permit the emission into the outdoor atmosphere of sulfur oxides from each of the sources listed above in a manner that the concentration of sulfur oxides, expressed as SO2, in the effluent gas exceeds 500 parts per million, by volume, dry basis, as per §123.21(b).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

003 [25 Pa. Code §127.441]

Operating permit terms and conditions.

[Additional authority for this permit condition is derived from RACT operating permit 22-2002]

The monthly record of fuel usage may be grouped together and maintained for each calendar year (January 1 through december 31).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

004 [25 Pa. Code §129.93]

Presumptive RACT emission limitations

Sources listed in Section E, Group 3 are subject to presumptive RACT, the presumptive emission limitations are the maintenance and operation of each one of the sources in accordance with the manufacturer's specifications.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

SECTION F. Alternative Operation Requirements

No Alternative Operations exist for this State Only facility.

SECTION C. Emission Restriction Summary

No emission restrictions listed in this section of the permit.

SECTION H. Miscellaneous

#001 This permit incorporates the conditions and operating requirements of the RACT Operating Permit number 22-2002.

#002 The following sources do not require any work practice standards or testing, monitoring, recordkeeping and reporting requirements:

(a) Three air compressors, engine driven, fired with #2 Oil, each engine of capacity less than 20 hp.

(b) Turbine Plant: vents and condenser off-gas.

(c) Turbine oil vapor extractor, and 15,000 gal turbine lubricating oil storage tank.

(d) Storage Tanks for water, and various water /waste water treatment chemical storage tanks of capacity range from less than 1,000 gal to 12,750 gal each.

(e) Water and wastewater treatment system.

(PTE = Potential Total Emissions)

(f) Source IDs C1A and C1B: Two natural draft cooling towers for the power plant water, with PTE of 7.4 tons of PM10 each. Also two mechanical draft industrial Cooling Towers, Source IDs C1 and C2, with PTE of 2.1 tons of PM10 each.

(g) The following #2 Oil storage tanks, aboveground (ast) except as noted for underground tanks (ust):

Tank ID	Capacity
FO-T-2	200,000 gal for Auxiliary Boilers and Emergency Diesel Generators.
FO-T-1	50,000 gal for Auxiliary Boilers and Emergency Diesel Generators.
DF-T-1	30,000 gal ust, for emergency diesels
DF-T-8	25,000 gal for Station Blackout Diesel Generator.
DF-T-12	4,000 gal ust, for transportation vehicles
DF-T-3	1,000 gal ust, for security UPS emergency generator
FO-T-3&4	350 gal for fire pumps
FO-T-5	285 gal for fire training.
DF-T-2 A/B	550 gal day tanks for diesel engines.
DF-T-4	100 gal day tank for diesel engine.
DF-T5 A/B	275 gal day tank for diesel engine.

****** End of Report ******

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

April 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
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For Exelon Use Only

Reviewed By: DKW

Date: 6/11/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 10th of April. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 2nd, a calibration of the meteorological tower was performed. All Wind Speed sensors were changed during the calibration. The results of the calibration can be found in the logs, which are included at the end of this report.

On the 10th, the annual tower inspection was performed.

On the 23rd, a technician repaired the 33 ft. Bravo temperature card that was reading 40 degrees too low.

No problems were encountered with the equipment during April, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through March is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
April 2007

Hours in Month = 720 Hours to date = 2880 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	718	99.7	2	1.5	2877	99.9	3	4.3
150Ft Wind Speed	718	99.7	2	1.5	2875	99.8	5	5.0
100Ft Wind Direction	718	99.7	2	1.5	2877	99.9	3	4.5
150Ft Wind Direction	718	99.7	2	1.5	2876	99.9	4	5.1
33Ft Temperature	718	99.7	2	1.4	2877	99.9	3	4.0
150Ft Temperature	719	99.9	1	1.2	2877	99.9	3	22.3
150Ft-33Ft Delta-T	717	99.6	3	1.2	2871	99.7	9	4.1
3Ft Precipitation	718	99.7	2	1.5	2856	99.2	24	6.0
A V E R A G E *		99.7				99.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	April	Year to Date
Three Mile Island A	0	0
All Exelon Sites	4	58

3. Data Recovery

The record of data recovery for the year through March is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
April 2007

Hours in Month = 720 Hours to date = 2880 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	718	99.7	2	1.7	2875	99.8	5	5.2
100Ft Wind Direction	718	99.7	2	1.8	2875	99.8	5	5.2
33Ft Temperature	698	96.9	22	4.2	2842	98.7	38	76.0
150Ft Temperature	717	99.6	3	1.5	2875	99.8	5	22.4
150Ft-33Ft Delta-T	697	96.8	23	4.0	2841	98.6	39	75.9
A V E R A G E *		98.5				99.3		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	April	Year to Date
Three Mile Island B	0	0
All Exelon Sites	4	58

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – April 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	293.80
Meteorological parts, materials & contractors services	$	4.51
Total for Month:	$	298.31
Year to Date Total:	$	1014.29

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

TMI -A April 2007 720 Hours in Period

Parameter	Elev	Units	MEAN	MAX	MIN	Hours Missing	Hours Valid
AMBIENT TEMP . . .	33 FT	[F]	49.6	82.7	29.2	2	718
AMBIENT TEMP . . .	150 FT	[F]	49.7	82.2	29.0	1	719
WIND SPEED	100 FT	[MPH]	9.6	30.1	Calm	2	718
WIND SPEED	150 FT	[MPH]	10.1	31.9	Calm	2	718
DIFFERENTIAL TEMP	150 FT	[F]	0.1	9.4	-2.5	3	717
PRECIPITATION	2 FT	[IN]				2	718
TOTAL		3.06					
Max 24 Hour Total . . .		1.53					
Max 1 Hour Total		0.31					

TABLE PRODUCED 05/28/07 13:23:50

TMI -B April 2007 720 Hours in Period

Parameter	Elev	Units	MEAN	MAX	MIN	Hours Missing	Hours Valid
AMBIENT TEMP . . .	33 FT	[F]	48.9	82.9	28.9	22	698
AMBIENT TEMP . . .	150 FT	[F]	49.7	82.3	29.1	3	717
WIND SPEED	100 FT	[MPH]	9.3	30.4	Calm	2	718
DIFFERENTIAL TEMP	150 FT	[F]	0.2	9.7	-2.4	23	697

TABLE PRODUCED 05/28/07 13:23:50

Three Mile Island A

Differential Temperature Distribution (degC/100m)

4/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	1
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	2
-2.5	GE	DT	LT	-2.0	14
-2.0	GE	DT	LT	-1.5	39
-1.5	GE	DT	LT	-1.0	148
-1.0	GE	DT	LT	-0.5	239
-0.5	GE	DT	LT	0.0	70
0.0	GE	DT	LT	0.5	40
0.5	GE	DT	LT	1.0	33
1.0	GE	DT	LT	1.5	20
1.5	GE	DT	LT	2.0	11
2.0	GE	DT	LT	2.5	13
2.5	GE	DT	LT	3.0	11
3.0	GE	DT	LT	3.5	7
3.5	GE	DT	LT	4.0	4
4.0	GE	DT	LT	4.5	6
4.5	GE	DT	LT	5.0	9
5.0	GE	DT	LT	5.5	3
5.5	GE	DT	LT	6.0	3
6.0	GE	DT	LT	6.5	6
6.5	GE	DT	LT	7.0	3
7.0	GE	DT	LT	7.5	4
7.5	GE	DT			29

NRC Stability Classes	
Unstable	93
Neutral	352
Stable	272

TOTAL NO. HOURS 717

TABLE PRODUCED 05/28/07 13:24:26

Three Mile Island B

Differential Temperature Distribution (degC/100m)

4/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	1
-3.5	GE	DT	LT	-3.0	1
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	11
-2.0	GE	DT	LT	-1.5	10
-1.5	GE	DT	LT	-1.0	64
-1.0	GE	DT	LT	-0.5	267
-0.5	GE	DT	LT	0.0	111
0.0	GE	DT	LT	0.5	69
0.5	GE	DT	LT	1.0	23
1.0	GE	DT	LT	1.5	26
1.5	GE	DT	LT	2.0	17
2.0	GE	DT	LT	2.5	10
2.5	GE	DT	LT	3.0	10
3.0	GE	DT	LT	3.5	8
3.5	GE	DT	LT	4.0	5
4.0	GE	DT	LT	4.5	6
4.5	GE	DT	LT	5.0	9
5.0	GE	DT	LT	5.5	6
5.5	GE	DT	LT	6.0	2
6.0	GE	DT	LT	6.5	5
6.5	GE	DT	LT	7.0	3
7.0	GE	DT	LT	7.5	4
7.5	GE	DT			27

NRC Stability Classes

Unstable	34
Neutral	321
Stable	342

TOTAL NO. HOURS 697

TABLE PRODUCED 05/28/07 13:24:26

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 4-10-07
Begin: 9:31 EST
End: 9:50 EST

Operation of data logger	☑ OK	☐
Heater System Operational (Oct-Apr)	☑ YES	☐
Air Cond. System Operational (May-Sep)	☐ YES	☑ NA

A Readings (Taken at 9:34 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			39.6 °F	
100 ft.	8.6 mph	289 °		
150 ft.	8.6 mph	306 °	38.6 °F	-1.0 °F

B Readings (Taken at 9:37 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			39.6 °F	
100 ft.	9.1 mph	305 °		
150 ft.			38.7 °F	-1.0 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 9:43 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:39 EST)

Dry bulb: 40.5 °F

COMMENTS:

Technician: Jonathan Stang 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

POWER SUPPLIES

+12.000V ± 0.250V
A: + 12.032 V
B: + 12.067 V

-12.000V ± 0.250V
A: - 12.221 V
B: - 12.231 V

A Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
33 ft							
T ZERO	2.582 V	– V	32.3 °			2.571V ± 0.050V	
T SPAN	4.620 V	– V	89.4 °			4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.1 mph	82.0 mph	85.0 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000V	– V	540.0 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.244 V	4.261 V	85.2 mph	82.0 mph	85.0 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.999 V	– V	539.9 °	540.0 °	540.0 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.438 V	– V	0.05 °			1.429V ± 0.050V	
ΔT SPAN	5.009 V	– V	20.05 °			5.000V ± 0.050V	
T ZERO	2.575 V	– V	32.1 °			2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.1 °			4.643V ± 0.050V	

MLC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

A Signal Conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
33 ft							
T ZERO	2.582 V	– V	32.3 °	32.2 °	– °	2.571V ± 0.050V	
T SPAN	4.620 V	– V	89.4 °	89.2 °	– °	4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.0 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540.0 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.244 V	4.261 V	85.2 mph	82.0 mph	85.2 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0.0 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.999 V	– V	539.9 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.438 V	– V	0.05 °	0.0 °	– °	1.429V ± 0.050V	
ΔT SPAN	5.009 V	– V	20.05 °	20.0 °	– °	5.000V ± 0.050V	
T ZERO	2.575 V	– V	32.1 °	32.0 °	– °	2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.1 °	89.0 °	– °	4.643V ± 0.050V	

MTC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

B Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond	Recorder
			33 ft				
T ZERO	2.578 V	– V	32.2 °			2.571V ± 0.050V	
T SPAN	4.615 V	4.635 V	89.6 °			4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.245 V	– V	84.9 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.001 V	– V	-0.1 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	4.994 V	– V	539.4 °	540.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.433 V	– V	0.0 °			1.429V ± 0.050V	
ΔT SPAN	4.992 V	– V	20.0 °			5.000V ± 0.050V	
T ZERO	2.587 V	– V	32.2 °			2.571V ± 0.050V	
T SPAN	4.623 V	– V	89.5 °			4.643V ± 0.050V	

MAC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

B Signal conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
33 ft							
T ZERO	2.578 V	— V	32.2 °	32.1 °	— °	2.571V ± 0.050V	
T SPAN	4.615 V	4.635 V	89.6 °	89.1 °	89.6 °	4.643V ± 0.050V	
100 ft							
WS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.245 V	— V	84.9 mph	84.9 mph	— mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	-0.001 V	— V	-0.1 °	0.0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	4.994 V	— V	539.4 °	539.0 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
150 ft							
ΔT ZERO	1.433 V	— V	0.0 °	0.0 °	— °	1.429V ± 0.050V	
ΔT SPAN	4.992 V	— V	20.0 °	19.9 °	— °	5.000V ± 0.050V	
T ZERO	2.587 V	— V	32.2 °	32.4 °	— °	2.571V ± 0.050V	
T SPAN	4.623 V	— V	89.5 °	89.3 °	— °	4.643V ± 0.050V	

MAC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

TOWER MEASUREMENTS

☐ Ambient ☐ Ice Bath

Temperatures

	A 33 ft. Amb		B 33 ft. Amb		A 150 ft. Amb	
	AF	AL	AF	AL	AF	AL
Measured	72.75 °F	— °F	72.75 °F	— °F	73.00 °F	— °F
Recorded	72.70 °F	— °F	72.60 °F	— °F	72.90 °F	— °F
Difference	0.05 °F	— °F	0.15 °F	— °F	0.10 °F	— °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	73.00 °F	— °F	-0.55 °F	— °F	-0.05 °F	— °F
Recorded	73.00 °F	— °F	-0.50 °F	— °F	-0.10 °F	— °F
Difference	0.00 °F	— °F	0.05 °F	— °F	0.05 °F	— °F
Specification	±0.5°F		±0.25°F		±0.25°F	

Winds

	A 100 ft		B 100 ft		150 ft		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0mph ± 0.5mph
Forw. WD	343 °	— °	254 °	— °	250 °	— °	250° or 343° ± 5°
Revr. WD	160 °	— °	74 °	— °	73 °	— °	70°/430° or 163°/523° ± 5°

The 343° and 163°/523° specification is for the A 100 ft. wind direction only and the B 100 ft and 150 ft uses the 250° and 70°/430° specification for the wind direction

Tracking/wear	OK	OK	OK

Comments:

MTC 5/14/07

Three Mile Island Meteorological Calibration

Date: 4-2-07

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: In Out (Installed) Removed

Tower Condition	Good	Fair	Poor
Paint	☑	☐	☐
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT-0103
Digital multimeter - S/N - 86330011
Digital multimeter - S/N - —

Technicians: Jon Stranzl, Mike Marx, Jeff Daley

Comments:

100ft Alpha Wind Speed Sensor Removed (MT-0118)
Installed (MT-0006)
100ft Bravo Wind Speed Sensor Removed (MT-0079)
Installed (MT-0040)
150ft Wind Speed Sensor Removed (MT-0008)
Installed (MT-0080)

Signature: Jonathan Stranzl

JMC 5/14/07

System Response Check

Date: 4-2-07

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	20.0 ±0.4	108.0 ±2	-12.0 ±0.5	-2.4 ±0.1
As Found Response	20.0	108.0	-12.0	-2.4
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	60.0 ±0.4	324.0 ±2	44.0 ±0.5	8.8 ±0.1
As Found Response	60.0	323.8	44.0	8.8
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	80.0 ±0.4	432/72 ±2	72.0 ±0.5	14.4 ±0.1
As Found Response	80.0	431.9	72.0	14.4
As Left Response	—	—	—	—

MAC 5/14/07

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms may be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-121.1. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficiencies.

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Jonathan Stanz — 4-5-07

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MTC 5/14/07

Exelon Contract Number 80633
A1
7/06
R-24

Equipment Maintenance Log

Date(s): 4-25-07

☐ In-house work
☑ Field work

Site: TMT

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: 33ft Temperature on the Bravo system was reading 30 to 40 degrees too low

Work Performed / Action taken: Arrived at the Met-Tower I found the 33ft B Temp was reading 40 degrees too low. I found that the temperature card was making a bad connection with the card rack. I soldered the fins of the temp card and put back in the rack. The Temperature came back to normal. The 33ft Bravo Temp was back in operation

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☐ Yes ☑ No ☐ NA

Date	Technician	Reg Hours	OT Hours
4-23-07	JJS	4.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor 4.0 reg — ot
Travel 180 mi s 6.50 tolls
Misc —

MC 5/14/07

2C-109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

October 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

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web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: KW

Date: 12/10/07

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 2nd of October. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

In-house on the 4th, three wind speed sensors were calibrated and given new bearings.

In-house on the 16th, three wind direction sensors were calibrated and given new bearings.

On the 19th, a request was made for a technician to be present at the met tower for the addition of an alternate power source inside of the shelter. Upon arrival at the site, the technician was notified that the power source would not be added and his support would not be needed.

On the 22nd, the data logger was unreachable by modem. A technician investigated and found the power inside of the shelter to be off. The plant was contacted and power was restored. This allowed the data logger to function properly.

On the 25th, the rain gauge was not reporting precipitation. A technician cleaned out the rain gauge to restore proper operation.

No other problems were encountered with the equipment during October, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through October is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
October 2007

Hours in Month = 744 Hours to date = 7296 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	722	97.0	22	3.6	7205	98.8	91	5.5
150Ft Wind Speed	722	97.0	22	3.4	7231	99.1	65	5.2
100Ft Wind Direction	722	97.0	22	3.6	7185	98.5	111	21.9
150Ft Wind Direction	722	97.0	22	3.5	7228	99.1	68	5.4
33Ft Temperature	722	97.0	22	100.0	7195	98.6	101	15.3
150Ft Temperature	722	97.0	22	3.0	7208	98.8	88	12.4
150Ft-33Ft Delta-T	722	97.0	22	100.0	7189	98.5	107	15.3
3Ft Precipitation	686	92.2	58	8.1	7158	98.1	138	6.1
A V E R A G E *		97.0				98.8		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	October	Year to Date
Three Mile Island A	0	11
All Exelon Sites	22	197

3. Data Recovery

The record of data recovery for the year through October is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
October 2007

Hours in Month = 744 Hours to date = 7296 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	722	97.0	22	3.6	7194	98.6	102	6.2
100Ft Wind Direction	722	97.0	22	3.6	7176	98.4	120	6.0
33Ft Temperature	722	97.0	22	3.0	6991	95.8	305	35.6
150Ft Temperature	722	97.0	22	3.0	7167	98.2	129	12.7
150Ft-33Ft Delta-T	722	97.0	22	3.0	6977	95.6	319	35.7
A V E R A G E *		97.0				97.3		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	October	Year to Date
Three Mile Island B	0	39
All Exelon Sites	22	197

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – October 2007

Three Mile Island

Description	Cost
Meteorological equipment maintenance	$ 1,434.20
Meteorological parts, materials & contractors services	$ 192.50
Total for Month:	$ 1,626.70
Year to Date Total:	$ 7,652.01

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha October 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	62.2	89.5	35.2	22	722
150Ft Temperature (F)	62.0	88.4	36.0	22	722
100Ft Wind Speed (MPH)	5.8	21.6	Calm	22	722
150Ft Wind Speed (MPH)	6.2	23.9	Calm	22	722
150Ft-33Ft Delta-T (F)	-0.1	4.4	-2.5	22	722
150 - 100 FT Direction Shear (deg)	0.4	141.0	-70.0	30	714
100Ft Sigma Theta (deg)	21.5	50.0	6.0	136	608
150Ft Sigma Theta (deg)	20.3	50.0	6.0	128	616
2 FT Precipitation IN				58	686
Monthly Total	2.85				
Max 24 Hour Total	1.14				
Max 1 Hour Total	0.61				

There were 744 hours in October

Table prepared on 11/28/2007 at 10:00

Three Mile Island Bravo October 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	62.0	89.0	35.4	22	722
150Ft Temperature (F)	62.0	88.4	36.0	22	722
100Ft Wind Speed (MPH)	5.7	22.1	Calm	22	722
150Ft-33Ft Delta-T (F)	-0.1	4.2	-2.6	22	722
100Ft Sigma Theta (deg)	21.2	50.0	6.0	140	604

There were 744 hours in October

Table prepared on 11/28/2007 at 9:41

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

10/2007

150-30 ft

		DT	LT	-7.5		0
-7.5	GE	DT	LT	-7.0		0
-7.0	GE	DT	LT	-6.5		0
-6.5	GE	DT	LT	-6.0		0
-6.0	GE	DT	LT	-5.5		0
-5.5	GE	DT	LT	-5.0		0
-5.0	GE	DT	LT	-4.5		0
-4.5	GE	DT	LT	-4.0		0
-4.0	GE	DT	LT	-3.5		1
-3.5	GE	DT	LT	-3.0		0
-3.0	GE	DT	LT	-2.5		4
-2.5	GE	DT	LT	-2.0		28
-2.0	GE	DT	LT	-1.5		89
-1.5	GE	DT	LT	-1.0		138
-1.0	GE	DT	LT	-0.5		137
-0.5	GE	DT	LT	0.0		67
0.0	GE	DT	LT	0.5		55
0.5	GE	DT	LT	1.0		43
1.0	GE	DT	LT	1.5		38
1.5	GE	DT	LT	2.0		31
2.0	GE	DT	LT	2.5		37
2.5	GE	DT	LT	3.0		19
3.0	GE	DT	LT	3.5		10
3.5	GE	DT	LT	4.0		9
4.0	GE	DT	LT	4.5		2
4.5	GE	DT	LT	5.0		11
5.0	GE	DT	LT	5.5		0
5.5	GE	DT	LT	6.0		1
6.0	GE	DT	LT	6.5		1
6.5	GE	DT	LT	7.0		1
7.0	GE	DT	LT	7.5		0
7.5	GE	DT				0

NRC Stability Classes

Unstable	162
Neutral	235
Stable	325

TOTAL NO. HOURS 722

TABLE PRODUCED 11/28/07 10:00:03

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

10/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	1
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	17
-2.0	GE	DT	LT	-1.5	72
-1.5	GE	DT	LT	-1.0	137
-1.0	GE	DT	LT	-0.5	161
-0.5	GE	DT	LT	0.0	75
0.0	GE	DT	LT	0.5	58
0.5	GE	DT	LT	1.0	41
1.0	GE	DT	LT	1.5	33
1.5	GE	DT	LT	2.0	32
2.0	GE	DT	LT	2.5	40
2.5	GE	DT	LT	3.0	18
3.0	GE	DT	LT	3.5	16
3.5	GE	DT	LT	4.0	6
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	6
5.0	GE	DT	LT	5.5	0
5.5	GE	DT	LT	6.0	1
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	1
7.0	GE	DT	LT	7.5	0
7.5	GE	DT			0

NRC Stability Classes

Unstable	119
Neutral	270
Stable	333

TOTAL NO. HOURS 722

TABLE PRODUCED 11/27/07 12:32:14

Exelon Contract Number 80633
12
7/06
R-24

Three Mile Island Site
Routine Site Visitation Log

Date: 10-2-07
Begin: 8:57 EST
End: 9:11 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ NA

A Readings (Taken at 8:57 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft			62.06 °F	
100 ft	2.6 mph	295 °		
150 ft	2.6 mph	259 °	60.80 °F	-1.22 °F

B Readings (Taken at 9:01 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft			62.20 °F	
100 ft	1.6 mph	302 °		
150 ft			61.16 °F	-1.05 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at 9:06 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:08 EST)

Dry bulb: 62.5 °F

COMMENTS:

Technician: Jonathan Stanzl

MTC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-4-07

☑ In-house work
☐ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind speed sensors

Work Performed / Action taken: I replaced the bearings and calibrated wind speed sensor #'s MT-0040, MT-0080, MT-0006. All 3 sensors calibrated OK.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-4-07	JJS	3.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 3.0 reg — ot
Travel: — mi $ — tolls
Misc: —

MMC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-16-07

☑ In-house work
☐ Field work

Site: TMT

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind direction sensors.

Work Performed / Action taken: I replaced the bearings and calibrated wind direction sensor #'s MT-0092, MT-0137, MT-0138. All 3 sensors calibrated OK.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-16-07	JJS	3.0	—

☑ Meteorological
☐ Microtel
☑ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 3.0 reg — ot
Travel: — mi $ — tolls
Misc: —

MAC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-19-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Report to Met-Tower and check instruments after the alternate power source was added.

Work Performed / Action taken: Drove almost to the plant, when I recieved a phone call stating that the overnight work was never done and my services were not needed to a later date.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☐ Yes ☑ No Calibrated? ☐ Yes ☐ No ☑ NA

Date	Technician	Reg Hours	OT Hours
10-19-07	JSS	3.0	—

☐ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor 3.0 reg — ot
Travel 160 mi $ 6.50 tolls
Misc. —

MJC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-22-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: Could not contact the data logger at TMI.

Work Performed / Action taken: I was notified that the Met Tower was to be powered down and then re-powered with an alternate power source due to the up-coming outtage. I recieved an email stating that the power was back. The data logger was not responding, so I went to the Met-Tower. Arriving at the Met Tower, I found out that the power was not restored. I waited to the power was restored and then checked to make sure that all the instruments came back, and also checked the operation of the data logger. Everything checked out and was back in operation.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
10-22-07	JSS	8.0	1.5

☐ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☑ Other data logger

Billable
Labor 8.0 reg 1.5 ot
Travel 180 mi $ 6.50 tolls
Misc.

MTC 11/8/07

Exelon Contract Number 80633
A1
7/07
R-25

Equipment Maintenance Log

Date(s): 10-25-07

☐ In-house work
☑ Field work

Site: TMI

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: The rain gauge was not counting precip when it should have counted precip.

Work Performed / Action taken: Arrived at the Met-Tower to find the rain gauge clogged due to numerous spider nests blocking the tipping up. I cleaned out the gauge and the tested the operation of the rain gauge. Everything tested OK.

Measuring Test Equipment Used

Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg.Hours	OT Hours
10-25-07	JJS	4.0	—

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MC 11/8/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

November 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
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web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: VKW

Date: 2/8/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 1st of November. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 13th, the precip gauge was reading high amounts of precipitation. Spider nests were removed from the gauge to restore proper operation.

No other problems were encountered with the equipment during November, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through November is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
November 2007

Hours in Month = 720 Hours to date = 8016 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	719	99.9	1	0.3	7924	98.9	92	5.0
150Ft Wind Speed	719	99.9	1	0.4	7950	99.2	66	4.8
100Ft Wind Direction	719	99.9	1	0.3	7904	98.6	112	20.0
150Ft Wind Direction	719	99.9	1	0.6	7947	99.1	69	5.0
33Ft Temperature	718	99.7	2	1.4	7913	98.7	103	14.0
150Ft Temperature	718	99.7	2	0.3	7926	98.9	90	11.3
150Ft-33Ft Delta-T	718	99.7	2	1.4	7907	98.6	109	14.1
3Ft Precipitation	699	97.1	21	3.1	7857	98.0	159	5.8
A V E R A G E *		99.8				98.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	November	Year to Date
Three Mile Island A	0	11
All Exelon Sites	18	215

3. Data Recovery

The record of data recovery for the year through November is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
November 2007

Hours in Month = 720 Hours to date = 8016 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	719	99.9	1	0.3	7913	98.7	103	5.6
100Ft Wind Direction	719	99.9	1	0.4	7895	98.5	121	5.7
33Ft Temperature	718	99.7	2	0.3	7709	96.2	307	32.4
150Ft Temperature	718	99.7	2	0.3	7885	98.4	131	11.6
150Ft-33Ft Delta-T	718	99.7	2	0.3	7695	96.0	321	32.5
A V E R A G E *		99.8				97.6		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	November	Year to Date
Three Mile Island B	0	39
All Exelon Sites	18	215

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – November 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	293.80
Meteorological parts, materials & contractors services	$	0.00
Total for Month:	$	293.80
Year to Date Total:	$	7,945.81

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha November 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	43.4	70.2	26.1	2	718
150Ft Temperature (F)	43.3	69.1	26.7	2	718
100Ft Wind Speed (MPH)	6.6	21.6	Calm	1	719
150Ft Wind Speed (MPH)	7.0	23.7	Calm	1	719
150Ft-33Ft Delta-T (F)	-0.2	6.8	-2.1	2	718
150 - 100 FT Direction Shear (deg)	-1.6	160.0	-142.0	3	717
100Ft Sigma Theta (deg)	20.1	50.0	5.0	101	619
150Ft Sigma Theta (deg)	19.0	50.0	4.0	80	640
2 FT Precipitation IN				21	699
Monthly Total	3.33				
Max 24 Hour Total	1.82				
Max 1 Hour Total	1.18				

There were 720 hours in November

Table prepared on 12/31/2007 at 15:16

Three Mile Island Bravo November 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	43.4	69.9	26.2	2	718
150Ft Temperature (F)	43.2	69.0	26.7	2	718
100Ft Wind Speed (MPH)	6.4	21.8	Calm	1	719
150Ft-33Ft Delta-T (F)	-0.2	6.8	-2.1	2	718
100Ft Sigma Theta (deg)	20.1	50.0	5.0	98	622

There were 720 hours in November

Table prepared on 12/31/2007 at 15:16

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

11/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	5
-2.5	GE	DT	LT	-2.0	13
-2.0	GE	DT	LT	-1.5	45
-1.5	GE	DT	LT	-1.0	193
-1.0	GE	DT	LT	-0.5	213
-0.5	GE	DT	LT	0.0	58
0.0	GE	DT	LT	0.5	61
0.5	GE	DT	LT	1.0	26
1.0	GE	DT	LT	1.5	15
1.5	GE	DT	LT	2.0	11
2.0	GE	DT	LT	2.5	16
2.5	GE	DT	LT	3.0	9
3.0	GE	DT	LT	3.5	3
3.5	GE	DT	LT	4.0	7
4.0	GE	DT	LT	4.5	4
4.5	GE	DT	LT	5.0	4
5.0	GE	DT	LT	5.5	8
5.5	GE	DT	LT	6.0	8
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	4
7.0	GE	DT	LT	7.5	3
7.5	GE	DT			9

NRC Stability Classes

Unstable	102
Neutral	369
Stable	247

TOTAL NO. HOURS 718

TABLE PRODUCED 12/31/07 15:15:31

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

11/2007

					150-30 ft
		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	2
-3.0	GE	DT	LT	-2.5	4
-2.5	GE	DT	LT	-2.0	12
-2.0	GE	DT	LT	-1.5	50
-1.5	GE	DT	LT	-1.0	223
-1.0	GE	DT	LT	-0.5	195
-0.5	GE	DT	LT	0.0	52
0.0	GE	DT	LT	0.5	53
0.5	GE	DT	LT	1.0	28
1.0	GE	DT	LT	1.5	14
1.5	GE	DT	LT	2.0	9
2.0	GE	DT	LT	2.5	17
2.5	GE	DT	LT	3.0	8
3.0	GE	DT	LT	3.5	4
3.5	GE	DT	LT	4.0	7
4.0	GE	DT	LT	4.5	3
4.5	GE	DT	LT	5.0	7
5.0	GE	DT	LT	5.5	6
5.5	GE	DT	LT	6.0	7
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	5
7.0	GE	DT	LT	7.5	2
7.5	GE	DT			9

NRC Stability Classes	
Unstable	126
Neutral	360
Stable	232

TOTAL NO. HOURS 718

TABLE PRODUCED 12/31/07 15:15:31

Exelon Contract Number 80633
I2
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 11-1-07
Begin: 9:19 EST
End: 9:40 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ NA

A Readings (Taken at 9:20 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			56.43 °F	
100 ft.	2.2 mph	312 °		
150 ft.	2.4 mph	303 °	55.62 °F	-0.76 °F

B Readings (Taken at 9:23 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			55.65 °F	
100 ft.	2.3 mph	320 °		
150 ft.			55.56 °F	-0.14 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at 9:29 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 9:33 EST)

Dry bulb: 57.0 °F

COMMENTS:

Technician: Jonathan Glenn

MAC 12/20/07

Exelon Contract Number 80633

A1
7/07
R-25

Equipment Maintenance Log

Date(s): 11-13-07

☐ In-house work
☑ Field work

Site: Three Mile Island

☑ Weekday
☐ Weekend / Holiday

Page 1 of 1

Reason for work / Nature of Problem: The rain gauge was reading extremely high amounts of precip when there was not any precip.

Work Performed / Action taken: Arrived at the tower, and I opened up the rain gauge. I found spider nests again blocking the rain gauge, and also on the tipping cups, which was resting half way causing the reed switch to keep counting precip. I cleaned out the rain gauge and tested the operation. Everything was OK.

Measuring Test Equipment Used	
Unit	S/N

Work Completed? ☑ Yes ☐ No Calibrated? ☑ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
11-13-07	JJS	4.0	

☑ Meteorological
☐ Microtel
☐ Visibility monitor/fog warning signs
☐ Other

Billable
Labor: 4.0 reg — ot
Travel: 180 mi $ 6.50 tolls
Misc: —

MTC 12/20/07

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

December 2007

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
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web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: RLW

Date: 2/11/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 18th of December. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

On the 18th, a calibration of the meteorological tower was performed. A copy of the log is included at the end of this report.

No problems were encountered with the equipment during December, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through December is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
December 2007

Hours in Month = 744 Hours to date = 8760 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	743	99.9	1	1.1	8667	98.9	93	4.7
150Ft Wind Speed	726	97.6	18	3.1	8676	99.0	84	4.6
100Ft Wind Direction	743	99.9	1	1.2	8647	98.7	113	18.4
150Ft Wind Direction	743	99.9	1	0.9	8690	99.2	70	4.6
33Ft Temperature	743	99.9	1	0.1	8656	98.8	104	12.9
150Ft Temperature	743	99.9	1	0.1	8669	99.0	91	10.4
150Ft-33Ft Delta-T	743	99.9	1	0.1	8650	98.7	110	12.9
3Ft Precipitation	742	99.7	2	0.4	8599	98.2	161	5.4
A V E R A G E *		99.5				98.9		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	December	Year to Date
Three Mile Island A	0	11
All Exelon Sites	41	256

3. Data Recovery

The record of data recovery for the year through December is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
December 2007

Hours in Month = 744 Hours to date = 8760 Hours in year = 8760

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	741	99.6	3	0.9	8654	98.8	106	5.2
100Ft Wind Direction	734	98.7	10	2.0	8629	98.5	131	5.3
33Ft Temperature	741	99.6	3	0.4	8450	96.5	310	29.7
150Ft Temperature	741	99.6	3	0.4	8626	98.5	134	10.7
150Ft-33Ft Delta-T	741	99.6	3	0.4	8436	96.3	324	29.8
A V E R A G E *		99.4				97.7		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	December	Year to Date
Three Mile Island B	0	39
All Exelon Sites	41	256

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – December 2007

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	0.00
Meteorological parts, materials & contractors services	$	0.00
Total for Month:	$	0.00
Year to Date Total:	$	7,945.81

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

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Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

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Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha December 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	35.4	59.5	18.2	1	743
150Ft Temperature (F)	35.3	60.0	19.1	1	743
100Ft Wind Speed (MPH)	7.0	25.9	Calm	1	743
150Ft Wind Speed (MPH)	7.3	28.0	Calm	18	726
150Ft-33Ft Delta-T (F)	-0.1	5.3	-1.7	1	743
150 - 100 FT Direction Shear (deg)	-1.4	162.0	-94.0	10	734
100Ft Sigma Theta (deg)	18.8	50.0	5.0	83	661
150Ft Sigma Theta (deg)	18.0	50.0	4.0	69	675
2 FT Precipitation IN				2	742
Monthly Total	4.57				
Max 24 Hour Total . . .	1.16				
Max 1 Hour Total . . .	0.35				

There were 744 hours in December

Table prepared on 1/24/2008 at 11:16

Three Mile Island Bravo December 2007

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	35.4	59.2	18.4	3	741
150Ft Temperature (F)	35.3	60.0	19.0	3	741
100Ft Wind Speed (MPH)	6.8	25.8	Calm	3	741
150Ft-33Ft Delta-T (F)	-0.2	5.1	-1.8	3	741
100Ft Sigma Theta (deg)	18.7	50.0	5.0	93	651

There were 744 hours in December

Table prepared on 1/24/2008 at 11:16

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

12/2007

150-30 ft

		DT LT	-7.5	0
-7.5	GE	DT LT	-7.0	0
-7.0	GE	DT LT	-6.5	0
-6.5	GE	DT LT	-6.0	0
-6.0	GE	DT LT	-5.5	0
-5.5	GE	DT LT	-5.0	0
-5.0	GE	DT LT	-4.5	0
-4.5	GE	DT LT	-4.0	0
-4.0	GE	DT LT	-3.5	0
-3.5	GE	DT LT	-3.0	0
-3.0	GE	DT LT	-2.5	1
-2.5	GE	DT LT	-2.0	2
-2.0	GE	DT LT	-1.5	15
-1.5	GE	DT LT	-1.0	147
-1.0	GE	DT LT	-0.5	255
-0.5	GE	DT LT	0.0	100
0.0	GE	DT LT	0.5	75
0.5	GE	DT LT	1.0	30
1.0	GE	DT LT	1.5	28
1.5	GE	DT LT	2.0	20
2.0	GE	DT LT	2.5	18
2.5	GE	DT LT	3.0	13
3.0	GE	DT LT	3.5	9
3.5	GE	DT LT	4.0	9
4.0	GE	DT LT	4.5	8
4.5	GE	DT LT	5.0	1
5.0	GE	DT LT	5.5	2
5.5	GE	DT LT	6.0	5
6.0	GE	DT LT	6.5	2
6.5	GE	DT LT	7.0	0
7.0	GE	DT LT	7.5	2
7.5	GE	DT		1

NRC Stability Classes	
Unstable	40
Neutral	380
Stable	323

TOTAL NO. HOURS 743

TABLE PRODUCED 01/24/08 11:09:00

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

12/2007

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	0
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	3
-2.0	GE	DT	LT	-1.5	35
-1.5	GE	DT	LT	-1.0	216
-1.0	GE	DT	LT	-0.5	189
-0.5	GE	DT	LT	0.0	87
0.0	GE	DT	LT	0.5	73
0.5	GE	DT	LT	1.0	26
1.0	GE	DT	LT	1.5	21
1.5	GE	DT	LT	2.0	21
2.0	GE	DT	LT	2.5	20
2.5	GE	DT	LT	3.0	9
3.0	GE	DT	LT	3.5	11
3.5	GE	DT	LT	4.0	8
4.0	GE	DT	LT	4.5	8
4.5	GE	DT	LT	5.0	2
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	4
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	2
7.0	GE	DT	LT	7.5	1
7.5	GE	DT			1

NRC Stability Classes	
Unstable	84
Neutral	360
Stable	297

TOTAL NO. HOURS 741

TABLE PRODUCED 01/24/08 11:09:00

Exelon Contract Number 80633
12
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 12-18-07
Begin: 12:45 EST
End: 13:05 EST

Operation of data logger ☑ OK ☐ _____
Heater System Operational (Oct-Apr) ☑ YES ☐ _____
Air Cond. System Operational (May-Sep) ☐ YES ☑ _____

A Readings (Taken at 12:45 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			34.5 °F	
100 ft.	5.4 mph	264 °		
150 ft.	6.0 mph	261 °	33.95 °F	-1.56 °F (@ 12:57)

B Readings (Taken at 12:50 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			34.62 °F	
100 ft.	5.7 mph	270 °		
150 ft.			33.81 °F	-1.89 °F (@ 12:57)

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐ _____

☑ Rain gauge check made at CAL EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at — EST)

Dry bulb: CAL °F

COMMENTS:

Technician: [signature]

MTC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A + 12.032 V	A - 12.233 V
B + 12.071 V	B - 12.230 V

A Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond	Recorder
			33 ft				
T ZERO	2.580 V	– V	32.24 °			2.571V ± 0.050V	
T SPAN	4.645 V	– V	90.06 °			4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0.0 mph	0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.0 mph	85 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0 °	0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540 °	540 °	___ °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
WS ZERO	0.000 V	– V	0 mph	0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.193 V	4.262 V	85.24 mph	86 mph	85 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	-0.002 V	– V	-0.2 °	0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.996 V	– V	539.6 °	540 °	540 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.423 V	– V	-0.02 °			1.429V ± 0.050V	
ΔT SPAN	4.998 V	– V	19.99 °			5.000V ± 0.050V	
T ZERO	2.576 V	– V	32.13 °			2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.11 °			4.643V ± 0.050V	

MAC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

A Signal Conditioners and Data Logger:

	Signal Conditioner Voltage Out AF	Signal Conditioner Voltage Out AL	Signal Conditioner Voltage Out AL EQUIV	Data Logger AF	Data Logger AL	Specifications Signal Cond.	Specifications Data Logger
	2.580 TTS 12-18-07		33 ft				
T ZERO	2.580 V	– V	32.24 °	32.21 °	– °	2.571V ± 0.050V	
T SPAN	4.645 V	– V	90.06 °	89.97 °	– °	4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.0 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.000 V	– V	0 °	-0.1 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540 °	539.7 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
WS ZERO	0.000 V	– V	0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.193 V	4.262 V	85.24 mph	85.23 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	-0.002 V	– V	-0.2 °	0.1 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-4.996 V	– V	539.6 °	539.3 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.423 V	– V	-0.03 °	-0.04 °	– °	1.429V ± 0.050V	
ΔT SPAN	4.993 V	– V	19.99 °	19.97 °	– °	5.000V ± 0.050V	
T ZERO	2.576 V	– V	32.13 °	32.05 °	– °	2.571V ± 0.050V	
T SPAN	4.611 V	– V	89.11 °	89.03 °	– °	4.643V ± 0.050V	

MAC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

B Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
	2.574 JJS 12-18-07		33 ft				
T ZERO	2.574 V	– V	32.07 °			2.571V ± 0.050V	
T SPAN	4.644 V	– V	90.03 °			4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 V	– V	0 mph	0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± .1mph
WS SPAN	4.186 V	4.264 V	85.28 mph	86 mph	85 mph	4.262V ± 0.025V	AL EQUIV ± .1mph
WD ZERO	-0.001 V	– V	0 °	0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 V	– V	540 °	540 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.429 V	– V	0.00 °			1.429V ± 0.050V	
ΔT SPAN	5.000 V	– V	20.0 °			5.000V ± 0.050V	
T ZERO	2.581 V	– V	32.3 °			2.571V ± 0.050V	
T SPAN	4.617 V	– V	89.25 °			4.643V ± 0.050V	

MAC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

B Signal conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond	Data Logger
			33 ft				
T ZERO	2.574 v	– v	32.07 °	32.11 °	– °	2.571V ± 0.050V	
T SPAN	4.644 v	– v	90.03 °	89.98 °	– °	4.643V ± 0.050V	
			100 ft				
WS ZERO	0.000 v	– v	0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± .1mph
WS SPAN	4.186 v	4.264 v	85.28 mph	85.27 mph	– mph	4.262V ± 0.025V	AL EQUIV ± .1mph
WD ZERO	-0.001 v	– v	0 °	0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	-5.000 v	– v	540 °	540 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft				
ΔT ZERO	1.429 v	– v	0.00 °	0.00 °	– °	1.429V ± 0.050V	
ΔT SPAN	5.000 v	– v	20.00 °	19.99 °	– °	5.000V ± 0.050V	
T ZERO	2.581 v	– v	32.3 °	32.24 °	– °	2.571V ± 0.050V	
T SPAN	4.617 v	– v	89.25 °	89.17 °	– °	4.643V ± 0.050V	

[illegible] 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

TOWER MEASUREMENTS

☑ Ambient ☐ Ice Bath

Temperatures

	A 33 ft. Amb.		B 33 ft. Amb.		A 150 ft. Amb.	
	AF	AL	AF	AL	AF	AL
Measured	34.75 °F	12-18-07 — °F	34.75 °F	— °F	35.0 °F	— °F
Recorded	34.5 °F	— °F	34.62 °F	— °F	34.9 °F	— °F
Difference	0.25 °F	— °F	0.25 °F	— °F	0.1 °F	— °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb.		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	35.0 °F	— °F	-1.69 °F	— °F	-2.12 °F	— °F
Recorded	34.7 °F	— °F	-1.63 °F	— °F	-2.13 °F	— °F
Difference	0.3 °F	— °F	0.06 °F	— °F	0.01 °F	— °F
Specification	±0.5°F		±0.18°F		±0.18°F	

Winds

	A 100 ft.		B 100 ft.		150 ft.		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0mph ± 0.45mph
Forw. WD	342 °	— °	254 °	— °	250 °	— °	250° or 343° ± 5°
Revr. WD	162 °	— °	71 °	— °	67 °	— °	70°/430° or 163°/523° ± 5°

The 343° and 163°/523° specification is for the A 100 ft. wind direction only and the B 100 ft and 150 ft uses the 250° and 70°/430° specification for the wind direction.

Tracking/wear: OK | OK | OK

Comments:

MT0108 removed from 'A' 100' WS (MT0118 installed)

MT0008 removed from 'B' 100' WS (MT0079 installed)

MT~~0018~~ 0018 AJ 12-18-07 removed from 150' WS (MT0007 installed)

MRC 1/7/08

Three Mile Island Meteorological Calibration

Date: 12-18-07

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: In (Out) Installed Removed

Tower Condition	Good	Fair	Poor
Paint	☑	☐	☐
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT0103
Digital multimeter - S/N - 86330011
Digital multimeter - S/N - —

Technicians: Jon Stranzl, Andy Lotz

Comments:

Signature: Jonathan [illegible]

MC 1/7/08

System Response Check

Date: 12-18-07

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33' ΔT
Expected Response	20.0 ±0.4	108.0 ±2	-12.00 ±0.5	-2.40 ±0.18
As Found Response	20.0	107.9	-12.00	-2.41
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33' ΔT
Expected Response	60.0 ±0.4	324.0 ±2	44.00 ±0.5	8.80 ±0.18
As Found Response	60.0	323.9	43.90	8.79
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33' ΔT
Expected Response	80.0 ±0.4	432.0/22.0 ±2	72.00 ±0.5	14.40 ±0.18
As Found Response	80.0	431.8	72.00	14.39
As Left Response	—	—	—	—

MAC 1/7/08

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms may be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met; record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficiencies.

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Jonathan Wram — 12-18-07

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MAC 1/1/08

2C.109

Monthly Report

on the

Meteorological Monitoring Program

at the

Three Mile Island Nuclear Station

January 2008

prepared for

Exelon Nuclear
Warrenville, Illinois 60555

by

Murray and Trettel, Incorporated
600 First Bank Drive, Suite A
Palatine, Illinois 60067
(847) 963-9000

e-mail: mt@weathercommand.com
web: http://www.weathercommand.com

For Exelon Use Only

Reviewed By: KW

Date: 3/11/08

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1. Three Mile Island Station Action Items

Pending Action Items	Problem	Recommended Solution	Date*

*date Exelon was notified of problem or date of Monthly Report where problem was first reported

2. Equipment Maintenance at Three Mile Island

A regular scheduled visit to inspect the equipment was made on the 8th of January. The Routine Site Visitation Log, a record of existing onsite conditions, was completed during the visit. A copy of this log is included in this report.

In-house on the 23rd, 3 wind speed sensors were calibrated and given new bearings.

No problems were encountered with the equipment during January, and at the end of the month, there were no problems evident at the site.

3. Data Recovery

The record of data recovery for the year through January is summarized in Table 1.

Table 1

Three Mile Island A
Data Recovery Summary
January 2008

Hours in Month = 744 Hours to date = 744 Hours in year = 8784

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	744	100.0	0	0.5	744	100.0	0	0.5
150Ft Wind Speed	744	100.0	0	0.1	744	100.0	0	0.1
100Ft Wind Direction	744	100.0	0	0.4	744	100.0	0	0.4
150Ft Wind Direction	744	100.0	0	0.1	744	100.0	0	0.1
33Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft-33Ft Delta-T	744	100.0	0	0.0	744	100.0	0	0.0
3Ft Precipitation	744	100.0	0	0.1	744	100.0	0	0.1
A V E R A G E *		100.0				100.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	January	Year to Date
Three Mile Island A	0	0
All Exelon Sites	0	0

3. Data Recovery

The record of data recovery for the year through January is summarized in Table 1.

Table 1

Three Mile Island B
Data Recovery Summary
January 2008

Hours in Month = 744 Hours to date = 744 Hours in year = 8784

Measurement	This Month Valid Hrs	This Month Valid %	This Month Lost Hrs	This Month Edits %	Year to Date Valid Hrs	Year to Date Valid %	Year to Date Lost Hrs	Year to Date Edits %
100Ft Wind Speed	744	100.0	0	0.3	744	100.0	0	0.3
100Ft Wind Direction	744	100.0	0	0.3	744	100.0	0	0.3
33Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft Temperature	744	100.0	0	0.0	744	100.0	0	0.0
150Ft-33Ft Delta-T	744	100.0	0	0.1	744	100.0	0	0.1
A V E R A G E *		100.0				100.0		

* average of priority parameters (all except precipitation)

Data Recovery Scores Summary

	January	Year to Date
Three Mile Island B	0	0
All Exelon Sites	0	0

4. Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement – January 2008

Three Mile Island

Description		Cost
Meteorological equipment maintenance	$	150.00
Meteorological parts, materials & contractors services	$	406.71
Total for Month:	$	556.71
Year to Date Total:	$	556.71

5. Data Analysis (Data Reduction and Processing)

The Zeno 3200 was routinely interrogated to obtain hourly average data of wind speed, wind direction, ambient temperature, and differential temperature. Wind sigma (standard deviation of wind direction) and precipitation data were also obtained. A professional meteorologist then reviewed the data, calibration findings, maintenance reports, computerized quality control checks, and other information and determined which data were valid. Only valid data were retained in the data base.

6. Computer Processing

Computer programs were run to generate summary tables of the hourly averages of the meteorological data as well as other statistics based on the monthly data record.

A table of means and extremes of the measurements recorded during the month is included in this report. Wind direction shears (variance of wind direction between levels) are also included in the table.

7. Annual Report Preparation

Joint frequency stability wind rose tables of hourly data are generated quarterly and will be included in the annual report. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes.

Three Mile Island Alpha January 2008

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	34.1	68.2	13.2	0	744
150Ft Temperature (F)	34.0	68.2	12.8	0	744
100Ft Wind Speed (MPH)	7.8	25.9	Calm	0	744
150Ft Wind Speed (MPH)	8.1	27.5	Calm	0	744
150Ft-33Ft Delta-T (F)	-0.1	10.0	-2.2	0	744
150 - 100 FT Direction Shear (deg)	-0.4	148.0	-144.0	3	741
100Ft Sigma Theta (deg)	18.5	50.0	6.0	88	656
150Ft Sigma Theta (deg)	17.5	50.0	5.0	70	674
2 FT Precipitation IN				0	744
Monthly Total	0.82				
Max 24 Hour Total . . .	0.24				
Max 1 Hour Total . . .	0.07				

There were 744 hours in January

Table prepared on 2/20/2008 at 10:38

Three Mile Island Bravo January 2008

Parameter	Mean	Max	Min	Miss Hrs	Valid Hrs
33Ft Temperature (F)	34.0	68.0	13.3	0	744
150Ft Temperature (F)	34.0	68.1	12.7	0	744
100Ft Wind Speed (MPH)	7.5	26.2	Calm	0	744
150Ft-33Ft Delta-T (F)	-0.1	10.0	-2.2	0	744
100Ft Sigma Theta (deg)	18.4	50.0	5.0	88	656

There were 744 hours in January

Table prepared on 2/20/2008 at 10:38

Three Mile Island Alpha

Differential Temperature Distribution (degC/100m)

1/2008

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	1
-3.0	GE	DT	LT	-2.5	0
-2.5	GE	DT	LT	-2.0	11
-2.0	GE	DT	LT	-1.5	38
-1.5	GE	DT	LT	-1.0	160
-1.0	GE	DT	LT	-0.5	248
-0.5	GE	DT	LT	0.0	80
0.0	GE	DT	LT	0.5	40
0.5	GE	DT	LT	1.0	26
1.0	GE	DT	LT	1.5	24
1.5	GE	DT	LT	2.0	20
2.0	GE	DT	LT	2.5	32
2.5	GE	DT	LT	3.0	12
3.0	GE	DT	LT	3.5	12
3.5	GE	DT	LT	4.0	3
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	7
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	6
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	2
7.0	GE	DT	LT	7.5	6
7.5	GE	DT			8

NRC Stability Classes	
Unstable	89
Neutral	369
Stable	286

TOTAL NO. HOURS 744

TABLE PRODUCED 02/20/08 09:54:45

Three Mile Island Bravo

Differential Temperature Distribution (degC/100m)

1/2008

150-30 ft

		DT	LT	-7.5	0
-7.5	GE	DT	LT	-7.0	0
-7.0	GE	DT	LT	-6.5	0
-6.5	GE	DT	LT	-6.0	0
-6.0	GE	DT	LT	-5.5	0
-5.5	GE	DT	LT	-5.0	0
-5.0	GE	DT	LT	-4.5	0
-4.5	GE	DT	LT	-4.0	0
-4.0	GE	DT	LT	-3.5	0
-3.5	GE	DT	LT	-3.0	1
-3.0	GE	DT	LT	-2.5	1
-2.5	GE	DT	LT	-2.0	10
-2.0	GE	DT	LT	-1.5	40
-1.5	GE	DT	LT	-1.0	170
-1.0	GE	DT	LT	-0.5	231
-0.5	GE	DT	LT	0.0	81
0.0	GE	DT	LT	0.5	43
0.5	GE	DT	LT	1.0	23
1.0	GE	DT	LT	1.5	25
1.5	GE	DT	LT	2.0	22
2.0	GE	DT	LT	2.5	33
2.5	GE	DT	LT	3.0	14
3.0	GE	DT	LT	3.5	9
3.5	GE	DT	LT	4.0	4
4.0	GE	DT	LT	4.5	5
4.5	GE	DT	LT	5.0	7
5.0	GE	DT	LT	5.5	2
5.5	GE	DT	LT	6.0	6
6.0	GE	DT	LT	6.5	1
6.5	GE	DT	LT	7.0	2
7.0	GE	DT	LT	7.5	7
7.5	GE	DT			7

NRC Stability Classes	
Unstable	90
Neutral	363
Stable	291

TOTAL NO. HOURS 744

TABLE PRODUCED 02/20/08 09:54:45

Exelon Contract Number 80633
I2
7/07
R-25

Three Mile Island Site
Routine Site Visitation Log

Date: 1-8-08
Begin: 12:36 EST
End: 12:55 EST

Operation of data logger	☑ OK	☐
Heater System Operational (Oct-Apr)	☑ YES	☐
Air Cond. System Operational (May-Sep)	☐ YES	☑ NA

A Readings (Taken at 12:37 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			63.15 °F	
100 ft.	8.6 mph	169 °		
150 ft.	9.6 mph	173 °	61.52 °F	-1.68 °F

B Readings (Taken at 12:40 EST)

	SPEED	DIRECTION	TEMP	ΔT
33 ft.			63.30 °F	
100 ft.	9.6 mph	181 °		
150 ft.			61.46 °F	-1.90 °F

Do Speed and Direction values agree with visual indications? ☑ Yes ☐ UTD ☐

☑ Rain gauge check made at 12:44 EST ☐ No rain gauge check made due to precipitation

Psychrometer Measurement Reading (Taken at 12:50 EST)

Dry bulb: 64.50 °F

COMMENTS:

Technician: Jonathan Strauf
MC 2/14/08

☐ Weekend / Holiday

Reason for work / Nature of Problem: Bearing replacement and calibration of 3 wind speed sensors.

Work Performed / Action taken: I replaced the bearings and calibrated sensors MT-0008; MT-0018; and MT-0108. All 3 sensors calibrated OK

Measuring Test Equipment Used	
Unit	S/N

Work Completed? ☒ Yes ☐ No Calibrated? ☒ Yes ☐ No ☐ NA

Date	Technician	Reg Hours	OT Hours
1-23-08	JJS	3.0	—

☒ Meteorological

☐ Microtel

☐ Visibility monitor/fog warning signs

☐ Other

Billable

Labor: 3.0 reg — ot

Travel: — mi $ — tolls

Misc: —

MAC 2/14/08

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

All Stabilities

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	9	14	8	42	12	10	11	4	1	0	111
NNE	0	5	8	9	17	13	2	2	0	0	0	56
NE	0	7	10	13	16	6	3	2	1	0	0	58
ENE	0	4	9	6	20	14	7	1	0	0	0	61
E	0	16	15	14	31	34	16	8	2	1	0	137
ESE	0	10	15	17	17	17	21	11	14	1	0	123
SE	0	7	13	15	8	4	13	3	2	0	0	65
SSE	0	6	10	14	15	9	3	0	0	0	0	57
S	0	7	11	12	33	21	2	0	0	0	0	86
SSW	0	5	17	18	51	29	11	7	10	0	0	148
SW	0	16	20	32	38	14	12	6	2	0	0	140
WSW	0	15	30	23	25	15	13	4	4	0	0	129
W	0	20	35	19	33	35	22	24	31	3	0	222
WNW	0	24	28	25	36	44	44	24	26	17	7	275
NW	0	20	38	22	22	30	30	29	48	11	7	257
NNW	0	13	25	16	47	25	22	25	26	8	6	213
Tot	0	184	298	263	451	322	231	157	170	42	20	2138

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 2141
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	1	1	0	0	0	1	0	0	3
NNE	0	0	0	0	1	0	0	0	0	0	0	1
NE	0	0	1	0	0	0	2	1	1	0	0	5
ENE	0	0	0	0	1	2	1	1	0	0	0	5
E	0	1	1	0	6	6	0	0	0	0	0	14
ESE	0	0	1	0	4	6	2	3	1	0	0	17
SE	0	1	1	1	0	0	1	0	1	0	0	5
SSE	0	0	0	0	1	2	0	0	0	0	0	3
S	0	0	0	1	1	4	1	0	0	0	0	7
SSW	0	0	2	0	9	10	3	1	0	0	0	25
SW	0	0	1	4	9	3	2	0	0	0	0	19
WSW	0	0	1	4	1	2	2	0	0	0	0	10
W	0	0	3	3	0	1	1	0	0	0	0	8
WNW	0	1	2	2	1	1	2	0	0	0	0	9
NW	0	0	3	4	0	3	4	1	0	0	1	16
NNW	0	0	0	2	1	0	0	0	1	0	1	5
Tot	0	3	16	22	36	40	21	7	5	0	2	152

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 152
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	1	0	0	0	0	2	0	0	0	3
NNE	0	1	0	0	0	0	0	0	0	0	0	1
NE	0	0	0	1	2	0	0	1	0	0	0	4
ENE	0	0	0	1	2	3	1	0	0	0	0	7
E	0	0	0	1	2	0	0	1	0	0	0	4
ESE	0	0	1	0	2	1	3	0	0	0	0	7
SE	0	1	0	1	0	0	3	0	0	0	0	5
SSE	0	0	0	1	0	0	2	0	0	0	0	3
S	0	0	0	2	2	5	0	0	0	0	0	9
SSW	0	0	2	2	5	4	0	1	3	0	0	17
SW	0	0	2	5	7	1	2	0	1	0	0	18
WSW	0	1	7	2	3	1	0	0	0	0	0	14
W	0	1	2	2	0	2	0	2	13	1	0	23
WNW	0	0	4	2	4	6	3	2	6	1	0	28
NW	0	0	7	3	1	3	5	7	12	0	0	38
NNW	0	0	3	0	1	3	4	4	3	0	0	18
Tot	0	4	29	23	31	29	23	20	38	2	0	199

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 199
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	1	1	0	0	0	2
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	1	4	0	0	0	0	0	0	5
ENE	0	0	0	0	1	1	0	0	0	0	0	2
E	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	0	1	3	0	2	0	1	0	0	7
SE	0	0	0	0	1	0	1	0	0	0	0	2
SSE	0	0	0	0	1	3	0	0	0	0	0	4
S	0	0	1	0	0	1	0	0	0	0	0	2
SSW	0	0	0	0	5	0	1	0	1	0	0	7
SW	0	0	2	2	1	2	0	2	0	0	0	9
WSW	0	0	0	0	0	0	0	0	2	0	0	2
W	0	0	1	1	2	1	3	7	5	0	0	20
WNW	0	0	3	2	1	6	3	5	3	2	0	25
NW	0	0	6	1	2	2	1	9	7	0	0	28
NNW	0	0	0	0	2	1	0	5	4	1	0	13
Tot	0	0	13	8	24	19	12	29	23	3	0	131

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 131
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	3	3	11	3	6	6	3	1	0	37
NNE	0	0	3	4	5	8	1	1	0	0	0	22
NE	0	0	4	3	7	5	1	0	0	0	0	20
ENE	0	1	4	4	9	6	5	0	0	0	0	29
E	0	2	3	2	9	16	8	3	0	0	0	43
ESE	0	0	3	6	2	7	10	6	10	1	0	45
SE	0	0	3	3	3	4	8	3	1	0	0	25
SSE	0	0	2	7	10	4	1	0	0	0	0	24
S	0	0	3	3	18	8	0	0	0	0	0	32
SSW	0	0	3	5	18	8	3	1	6	0	0	44
SW	0	0	5	11	11	5	3	1	1	0	0	37
WSW	0	4	7	7	9	9	10	3	2	0	0	51
W	0	2	13	5	13	16	14	15	11	2	0	91
WNW	0	3	7	8	19	23	31	14	17	9	5	136
NW	0	7	5	6	11	15	17	9	25	10	2	107
NNW	0	3	10	2	15	12	13	14	16	7	5	97
Tot	0	23	78	79	170	149	131	76	92	30	12	840

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 840
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	4	1	25	8	3	2	0	0	0	45
NNE	0	2	1	4	9	5	1	1	0	0	0	23
NE	0	3	3	6	3	0	0	0	0	0	0	15
ENE	0	1	1	1	5	2	0	0	0	0	0	10
E	0	3	4	6	13	10	7	4	2	1	0	50
ESE	0	4	5	7	6	3	4	2	2	0	0	33
SE	0	4	1	8	4	0	0	0	0	0	0	17
SSE	0	4	5	3	2	0	0	0	0	0	0	14
S	0	2	3	5	9	2	1	0	0	0	0	22
SSW	0	1	5	10	8	7	4	4	0	0	0	39
SW	0	6	5	9	10	2	5	3	0	0	0	40
WSW	0	1	11	6	9	2	1	1	0	0	0	31
W	0	5	9	7	11	12	4	0	2	0	0	50
WNW	0	8	6	8	9	6	5	3	0	5	1	51
NW	0	4	6	5	7	7	3	3	4	1	4	44
NNW	0	6	4	3	15	7	4	2	2	0	0	43
Tot	0	56	73	89	145	73	42	25	12	7	5	527

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 527
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	4	2	5	1	0	0	0	0	0	15
NNE	0	1	1	1	1	0	0	0	0	0	0	4
NE	0	4	2	2	0	1	0	0	0	0	0	9
ENE	0	1	3	0	2	0	0	0	0	0	0	6
E	0	8	6	4	0	0	1	0	0	0	0	19
ESE	0	5	3	1	0	0	0	0	0	0	0	9
SE	0	1	8	2	0	0	0	0	0	0	0	11
SSE	0	2	2	2	1	0	0	0	0	0	0	7
S	0	4	2	1	2	0	0	0	0	0	0	9
SSW	0	1	4	1	3	0	0	0	0	0	0	9
SW	0	6	3	0	0	1	0	0	0	0	0	10
WSW	0	5	3	2	3	1	0	0	0	0	0	14
W	0	11	6	1	4	2	0	0	0	0	0	24
WNW	0	11	4	0	1	2	0	0	0	0	1	19
NW	0	4	6	1	1	0	0	0	0	0	0	12
NNW	0	2	3	5	8	2	1	0	0	0	0	21
Tot	0	69	60	25	31	10	2	0	0	0	1	198

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 200
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	2	1	0	0	0	0	0	0	0	6
NNE	0	1	3	0	1	0	0	0	0	0	0	5
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	1	1	0	0	0	0	0	0	0	0	2
E	0	2	1	1	0	0	0	0	0	0	0	4
ESE	0	1	2	2	0	0	0	0	0	0	0	5
SE	0	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	1	1	0	0	0	0	0	0	0	2
S	0	1	2	0	1	1	0	0	0	0	0	5
SSW	0	3	1	0	3	0	0	0	0	0	0	7
SW	0	4	2	1	0	0	0	0	0	0	0	7
WSW	0	4	1	2	0	0	0	0	0	0	0	7
W	0	1	1	0	3	1	0	0	0	0	0	6
WNW	0	1	2	3	1	0	0	0	0	0	0	7
NW	0	5	5	2	0	0	0	0	0	0	0	12
NNW	0	2	5	4	5	0	0	0	0	0	0	16
Tot	0	29	29	17	14	2	0	0	0	0	0	91

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 92
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

All Stabilities

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	11	11	12	27	18	10	13	12	1	0	115
NNE	0	3	9	3	16	14	8	0	2	0	0	55
NE	0	1	6	10	21	7	3	2	3	0	0	53
ENE	0	4	3	5	16	12	8	3	0	0	0	51
E	0	4	7	10	18	32	11	11	3	0	0	96
ESE	0	8	14	12	20	25	22	12	10	3	0	126
SE	0	10	15	12	9	6	8	10	9	0	0	79
SSE	0	5	7	8	13	8	5	7	0	0	0	53
S	0	5	9	11	24	23	14	0	0	0	0	86
SSW	0	6	21	25	47	26	19	7	8	4	0	163
SW	0	12	24	26	46	21	9	7	6	1	0	152
WSW	0	26	33	23	18	16	4	1	0	0	0	121
W	0	22	35	25	37	41	26	25	16	0	0	227
WNW	0	25	21	18	27	45	40	23	31	12	14	256
NW	0	17	34	18	37	22	40	25	59	10	13	275
NNW	0	7	25	16	51	30	21	25	34	9	10	228
Tot	0	166	274	234	427	346	248	171	193	40	37	2136

Hours of Calm 5
Hours of Variable Direction 0
Hours of Valid Data 2141
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	2	1	0	0	0	1	0	0	4
NNE	0	0	0	0	1	0	0	0	0	0	0	1
NE	0	0	1	0	0	0	1	1	2	0	0	5
ENE	0	0	0	0	1	1	0	2	0	0	0	4
E	0	0	1	0	2	7	0	0	0	0	0	10
ESE	0	2	0	0	6	7	2	1	1	0	0	19
SE	0	0	2	1	1	0	0	2	2	0	0	8
SSE	0	0	0	0	0	2	1	0	0	0	0	3
S	0	0	0	1	0	1	4	0	0	0	0	6
SSW	0	0	2	0	7	7	6	1	0	0	0	23
SW	0	0	3	2	10	2	2	0	1	0	0	20
WSW	0	0	5	2	3	2	0	0	0	0	0	12
W	0	1	3	2	0	3	0	0	0	0	0	9
WNW	0	0	4	0	1	1	0	0	0	0	0	6
NW	0	0	3	3	0	2	6	2	0	0	1	17
NNW	0	0	0	1	2	0	0	0	1	0	1	5
Tot	0	3	24	14	35	35	22	9	8	0	2	152

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 152
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	1	0	0	1	0	1	2	0	0	5
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	1	1	1	2	0	0	0	1	0	0	6
ENE	0	0	0	1	2	2	2	0	0	0	0	7
E	0	0	0	1	2	0	0	1	0	0	0	4
ESE	0	0	1	0	2	0	2	1	0	0	0	6
SE	0	0	0	1	0	0	3	1	0	0	0	5
SSE	0	1	0	0	0	0	0	2	0	0	0	3
S	0	0	0	2	1	2	3	0	0	0	0	8
SSW	0	0	2	3	6	6	0	0	2	1	0	20
SW	0	0	2	5	6	1	2	0	2	0	0	18
WSW	0	3	5	2	2	0	0	0	0	0	0	12
W	0	1	4	2	1	1	2	9	5	0	0	25
WNW	0	0	4	1	2	4	4	1	4	1	0	21
NW	0	1	5	2	3	3	3	3	16	2	0	38
NNW	0	0	3	1	1	2	2	6	6	0	0	21
Tot	0	7	28	22	30	22	23	25	38	4	0	199

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 199
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	1	1	0	0	0	2
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	1	3	0	0	0	0	0	0	4
ENE	0	0	0	0	2	1	0	0	0	0	0	3
E	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	0	1	3	0	2	0	1	0	0	7
SE	0	0	0	0	0	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	2	1	0	0	0	3
S	0	0	1	0	0	2	1	0	0	0	0	4
SSW	0	0	0	0	3	1	1	0	1	0	0	6
SW	0	0	2	1	1	2	0	1	0	0	0	7
WSW	0	0	0	1	0	1	0	1	0	0	0	3
W	0	0	2	0	1	1	6	7	3	0	0	20
WNW	0	0	4	0	2	3	4	4	3	1	0	21
NW	0	1	5	1	1	4	2	7	10	1	0	32
NNW	0	0	1	0	2	1	0	2	8	1	0	15
Tot	0	1	15	5	19	19	19	24	26	3	0	131

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 131
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	3	2	14	3	4	8	8	1	0	45
NNE	0	1	3	0	7	4	5	0	1	0	0	21
NE	0	0	3	3	6	6	1	1	0	0	0	20
ENE	0	1	3	2	5	7	5	1	0	0	0	24
E	0	1	2	5	6	13	4	4	1	0	0	36
ESE	0	0	4	2	2	13	12	5	7	1	0	46
SE	0	0	3	5	3	3	4	7	7	0	0	32
SSE	0	1	0	4	5	4	2	4	0	0	0	20
S	0	0	4	2	12	11	5	0	0	0	0	34
SSW	0	0	3	6	16	5	6	2	2	3	0	43
SW	0	2	5	9	11	10	4	1	1	1	0	44
WSW	0	6	8	6	8	11	2	0	0	0	0	41
W	0	4	11	8	15	22	18	7	8	0	0	93
WNW	0	8	3	6	11	25	25	16	21	9	9	133
NW	0	6	2	4	17	8	22	10	27	6	7	109
NNW	0	2	11	2	13	9	14	16	15	8	9	99
Tot	0	34	68	66	151	154	133	82	98	29	25	840

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 840
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	4	3	2	10	11	5	3	1	0	0	39
NNE	0	0	4	0	5	9	3	0	1	0	0	22
NE	0	0	1	3	8	1	0	0	0	0	0	13
ENE	0	1	0	2	4	1	1	0	0	0	0	9
E	0	1	2	2	5	10	7	6	2	0	0	35
ESE	0	1	2	6	6	5	4	4	1	2	0	31
SE	0	6	6	4	4	2	1	0	0	0	0	23
SSE	0	2	2	2	8	2	0	0	0	0	0	16
S	0	2	2	3	5	5	1	0	0	0	0	18
SSW	0	1	4	11	11	4	5	4	3	0	0	43
SW	0	4	5	6	15	5	1	5	2	0	0	43
WSW	0	7	8	9	4	2	2	0	0	0	0	32
W	0	8	9	8	12	11	0	2	0	0	0	50
WNW	0	8	5	5	7	11	6	2	3	1	5	53
NW	0	2	8	3	7	5	6	3	6	1	4	45
NNW	0	2	6	4	17	16	4	0	4	0	0	53
Tot	0	49	67	70	128	100	46	29	23	4	9	525

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 527
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	2	5	2	3	0	0	0	0	0	15
NNE	0	2	1	1	1	1	0	0	0	0	0	6
NE	0	0	0	1	2	0	1	0	0	0	0	4
ENE	0	1	0	0	2	0	0	0	0	0	0	3
E	0	2	1	1	2	0	0	0	0	0	0	6
ESE	0	4	4	3	0	0	0	1	0	0	0	12
SE	0	2	3	0	1	0	0	0	0	0	0	6
SSE	0	1	5	2	0	0	0	0	0	0	0	8
S	0	1	2	3	3	2	0	0	0	0	0	11
SSW	0	5	6	3	2	2	0	0	0	0	0	18
SW	0	5	5	2	1	1	0	0	0	0	0	14
WSW	0	7	5	1	1	0	0	0	0	0	0	14
W	0	8	5	3	4	2	0	0	0	0	0	22
WNW	0	8	1	2	2	1	1	0	0	0	0	15
NW	0	5	7	3	2	0	1	0	0	0	1	19
NNW	0	3	3	4	11	2	1	1	0	0	0	25
Tot	0	57	50	34	36	14	4	2	0	0	1	198

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 200
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Apr - Jun for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	2	2	1	0	0	0	0	0	0	0	5
NNE	0	0	1	2	2	0	0	0	0	0	0	5
NE	0	0	0	1	0	0	0	0	0	0	0	1
ENE	0	1	0	0	0	0	0	0	0	0	0	1
E	0	0	1	1	0	0	0	0	0	0	0	2
ESE	0	1	3	0	1	0	0	0	0	0	0	5
SE	0	2	1	1	0	0	0	0	0	0	0	4
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	2	0	0	3	0	0	0	0	0	0	5
SSW	0	0	4	2	2	1	1	0	0	0	0	10
SW	0	1	2	1	2	0	0	0	0	0	0	6
WSW	0	3	2	2	0	0	0	0	0	0	0	7
W	0	0	1	2	4	1	0	0	0	0	0	8
WNW	0	1	0	4	2	0	0	0	0	0	0	7
NW	0	2	4	2	7	0	0	0	0	0	0	15
NNW	0	0	1	4	5	0	0	0	0	0	0	10
Tot	0	15	22	23	28	2	1	0	0	0	0	91

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 92
Hours of Missing Data . . . 43
Hours in Period 2184

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

All Stabilities

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	14	15	22	30	13	1	0	0	0	0	95
NNE	0	10	14	13	15	6	0	0	0	0	0	58
NE	0	7	21	28	13	3	0	0	0	0	0	72
ENE	0	16	20	22	36	11	0	0	0	0	0	105
E	0	20	27	20	46	44	8	2	0	0	0	167
ESE	0	15	30	20	18	19	23	3	0	0	0	128
SE	0	16	32	11	13	15	9	0	0	0	0	96
SSE	0	16	26	14	27	8	0	1	1	0	0	93
S	0	14	20	9	24	23	9	4	7	0	0	110
SSW	0	20	30	19	26	17	8	6	9	0	0	135
SW	0	20	25	18	37	10	7	1	2	2	0	122
WSW	1	30	21	31	29	20	13	6	2	0	0	153
W	0	21	20	14	47	21	27	20	22	12	1	205
WNW	0	19	15	16	22	30	25	40	51	17	7	242
NW	0	15	21	21	16	33	33	25	57	8	0	229
NNW	0	21	34	31	23	18	16	5	12	0	0	160
Tot	1	274	371	309	422	291	179	113	163	39	8	2170

Hours of Calm 13
Hours of Variable Direction 0
Hours of Valid Data 2183
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	1	0	0	0	0	0	0	1
NNE	0	0	0	0	0	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	1	1	0	0	0	0	0	2
E	0	0	0	0	4	2	0	0	0	0	0	6
ESE	0	0	0	0	0	1	0	0	0	0	0	1
SE	0	0	0	0	0	1	1	0	0	0	0	2
SSE	0	0	0	1	4	1	0	0	0	0	0	6
S	0	0	0	0	0	1	1	1	0	0	0	3
SSW	0	0	1	1	3	3	7	1	1	0	0	17
SW	0	0	0	1	6	6	1	0	0	0	0	14
WSW	0	0	0	3	2	2	0	0	0	0	0	7
W	0	0	1	0	2	1	2	0	1	0	0	7
WNW	0	0	0	0	1	0	0	1	0	0	0	2
NW	0	0	2	2	2	3	0	0	3	1	0	13
NNW	0	1	0	1	4	1	1	0	0	0	0	8
Tot	0	1	4	9	30	24	13	3	5	1	0	90

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 90
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	1	1	0	0	0	0	0	2
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	2	0	0	1	1	1	0	0	0	5
SE	0	0	0	1	1	1	1	0	0	0	0	4
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	2	1	5	1	0	0	0	0	9
SSW	0	0	0	1	3	2	0	2	4	0	0	12
SW	0	0	0	2	4	0	0	0	1	0	0	7
WSW	0	1	1	1	2	0	1	3	0	0	0	9
W	0	0	0	0	2	3	2	0	0	1	0	8
WNW	0	0	0	0	1	3	1	0	2	0	0	7
NW	0	0	3	2	0	3	4	5	13	2	0	32
NNW	0	1	3	0	0	1	0	2	8	0	0	15
Tot	0	2	9	9	16	24	11	13	28	3	0	115

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 115
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	1	0	0	0	0	1
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	1	0	2	0	0	0	0	0	3
E	0	0	2	0	0	2	1	0	0	0	0	5
ESE	0	0	0	0	3	0	4	1	0	0	0	8
SE	0	0	0	0	1	0	0	0	0	0	0	1
SSE	0	0	0	2	0	3	0	0	0	0	0	5
S	0	0	1	0	1	2	1	1	1	0	0	7
SSW	0	0	0	2	2	0	0	1	2	0	0	7
SW	0	0	0	1	1	0	0	0	1	0	0	3
WSW	0	0	2	0	2	0	3	0	0	0	0	7
W	0	0	1	0	0	1	1	0	3	1	0	7
WNW	0	0	0	0	3	2	1	4	3	3	0	16
NW	0	0	1	1	0	3	2	1	12	3	0	23
NNW	0	0	1	1	0	0	2	0	2	0	0	6
Tot	0	0	8	8	13	15	16	8	24	7	0	99

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 99
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	4	5	8	8	4	0	0	0	0	0	29
NNE	0	1	6	7	7	4	0	0	0	0	0	25
NE	0	4	9	18	7	1	0	0	0	0	0	39
ENE	0	3	11	11	25	5	0	0	0	0	0	55
E	0	4	10	10	25	36	5	2	0	0	0	92
ESE	0	2	5	12	10	13	14	1	0	0	0	57
SE	0	6	6	5	7	12	6	0	0	0	0	42
SSE	0	2	12	8	17	4	0	0	0	0	0	43
S	0	3	4	5	16	12	5	2	3	0	0	50
SSW	0	5	12	7	9	7	1	2	1	0	0	44
SW	0	4	11	4	13	1	4	1	0	0	0	38
WSW	0	3	5	11	10	12	8	3	2	0	0	54
W	0	3	6	3	22	12	16	16	17	8	0	103
WNW	0	6	2	2	8	20	21	28	40	14	7	148
NW	0	5	8	8	7	18	26	13	23	2	0	110
NNW	0	8	12	7	4	6	12	2	2	0	0	53
Tot	0	63	124	126	195	167	118	70	88	24	7	982

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 984
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	6	8	10	18	8	0	0	0	0	0	50
NNE	0	6	7	6	8	1	0	0	0	0	0	28
NE	0	1	6	7	5	0	0	0	0	0	0	19
ENE	0	5	6	6	9	3	0	0	0	0	0	29
E	0	9	12	8	15	2	2	0	0	0	0	48
ESE	0	5	11	6	4	4	4	0	0	0	0	34
SE	0	4	14	4	4	1	1	0	0	0	0	28
SSE	0	2	7	2	5	0	0	1	1	0	0	18
S	0	4	8	1	4	2	1	0	3	0	0	23
SSW	0	5	8	5	7	4	0	0	1	0	0	30
SW	0	8	7	5	8	3	1	0	0	2	0	34
WSW	0	8	7	9	7	4	1	0	0	0	0	36
W	0	10	8	8	19	2	6	3	1	2	1	60
WNW	0	7	6	11	5	4	2	6	6	0	0	47
NW	0	6	5	7	7	4	1	6	5	0	0	41
NNW	0	7	14	15	15	9	1	1	0	0	0	62
Tot	0	93	134	110	140	51	20	17	17	4	1	587

Hours of Calm 9
Hours of Variable Direction 0
Hours of Valid Data 596
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	3	1	2	0	0	0	0	0	0	0	6
NNE	0	3	1	0	0	0	0	0	0	0	0	4
NE	0	1	4	2	1	0	0	0	0	0	0	8
ENE	0	6	3	2	1	0	0	0	0	0	0	12
E	0	5	3	2	0	0	0	0	0	0	0	10
ESE	0	7	10	2	0	0	0	0	0	0	0	19
SE	0	4	9	1	0	0	0	0	0	0	0	14
SSE	0	9	6	1	0	0	0	0	0	0	0	16
S	0	5	4	1	0	1	0	0	0	0	0	11
SSW	0	9	5	2	1	1	0	0	0	0	0	18
SW	0	7	4	4	5	0	1	0	0	0	0	21
WSW	1	12	6	7	4	1	0	0	0	0	0	31
W	0	5	3	3	2	2	0	1	0	0	0	16
WNW	0	5	5	2	3	1	0	1	0	0	0	17
NW	0	3	1	0	0	1	0	0	1	0	0	6
NNW	0	3	2	4	0	1	0	0	0	0	0	10
Tot	1	87	67	35	17	8	1	2	1	0	0	219

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 221
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 100ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	1	2	2	0	0	0	0	0	0	6
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	1	2	1	0	0	0	0	0	0	0	4
ENE	0	2	0	2	0	0	0	0	0	0	0	4
E	0	2	0	0	1	0	0	0	0	0	0	3
ESE	0	1	2	0	1	0	0	0	0	0	0	4
SE	0	2	3	0	0	0	0	0	0	0	0	5
SSE	0	3	1	0	1	0	0	0	0	0	0	5
S	0	2	3	0	2	0	0	0	0	0	0	7
SSW	0	1	4	1	1	0	0	0	0	0	0	7
SW	0	1	3	1	0	0	0	0	0	0	0	5
WSW	0	6	0	0	2	1	0	0	0	0	0	9
W	0	3	1	0	0	0	0	0	0	0	0	4
WNW	0	1	2	1	1	0	0	0	0	0	0	5
NW	0	1	1	1	0	1	0	0	0	0	0	4
NNW	0	1	2	3	0	0	0	0	0	0	0	6
Tot	0	28	25	12	11	2	0	0	0	0	0	78

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 78
Hours of Missing Data . . . 25
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

All Stabilities

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	18	14	14	24	13	2	0	0	0	0	85
NNE	0	13	12	11	19	8	1	0	0	0	0	64
NE	0	8	14	14	29	7	0	0	0	0	0	72
ENE	0	11	17	12	40	19	1	0	0	0	0	100
E	0	11	33	16	39	44	12	2	0	0	0	157
ESE	0	19	19	18	21	16	20	8	0	0	0	121
SE	0	16	15	10	14	13	13	2	0	0	0	83
SSE	0	19	21	16	24	15	9	1	1	1	0	107
S	0	16	8	15	19	24	18	9	8	1	0	118
SSW	0	21	33	21	31	21	4	6	8	5	0	150
SW	0	27	18	13	42	10	12	3	3	2	0	130
WSW	1	38	21	29	33	23	6	2	0	0	0	153
W	1	27	14	12	39	30	33	20	21	8	0	205
WNW	0	7	13	11	20	33	28	43	58	23	11	247
NW	0	17	21	17	27	25	23	20	62	10	1	223
NNW	0	20	24	25	24	20	14	7	7	0	0	141
Tot	2	288	297	254	445	321	196	123	168	50	12	2156

Hours of Calm 10
Hours of Variable Direction 0
Hours of Valid Data 2166
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class A Extremely Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	0	1	0	0	0	0	0	0	2
NNE	0	0	0	0	0	1	0	0	0	0	0	1
NE	0	0	0	0	1	0	0	0	0	0	0	1
ENE	0	0	0	0	0	1	0	0	0	0	0	1
E	0	0	0	0	5	1	0	0	0	0	0	6
ESE	0	0	0	0	0	1	0	0	0	0	0	1
SE	0	0	0	0	0	0	2	0	0	0	0	2
SSE	0	0	0	0	5	0	1	0	0	0	0	6
S	0	0	0	0	0	2	2	1	0	0	0	5
SSW	0	0	2	0	5	2	2	4	1	1	0	17
SW	0	0	1	0	7	3	3	0	0	0	0	14
WSW	0	0	0	2	3	1	0	0	0	0	0	6
W	0	1	0	1	0	2	1	0	1	0	0	6
WNW	0	1	1	1	2	0	0	1	0	0	0	6
NW	0	0	0	2	0	3	1	0	3	1	0	10
NNW	0	0	0	1	4	0	0	1	0	0	0	6
Tot	0	3	4	7	33	17	12	7	5	2	0	90

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 90
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class B Moderately Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	2	0	0	0	0	0	2
ENE	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	1	0	1	1	1	0	0	0	0	4
ESE	0	0	1	0	0	1	0	2	0	0	0	4
SE	0	0	0	1	0	2	1	0	0	0	0	4
SSE	0	0	0	1	0	0	1	0	0	0	0	2
S	0	0	0	1	0	1	4	1	0	0	0	7
SSW	0	0	0	1	2	3	0	1	3	2	0	12
SW	0	0	0	1	5	0	0	0	1	0	0	7
WSW	0	2	0	2	3	1	3	0	0	0	0	11
W	0	1	0	0	1	3	1	0	1	1	0	8
WNW	0	0	0	1	1	2	3	1	1	1	0	10
NW	0	1	3	0	1	1	3	4	17	3	0	33
NNW	0	1	1	0	1	1	0	2	4	0	0	10
Tot	0	5	6	8	15	19	17	11	27	7	0	115

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 115
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class C Slightly Unstable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	1	0	0	0	0	0	1
ENE	0	0	0	1	0	1	0	0	0	0	0	2
E	0	0	1	0	0	2	1	0	0	0	0	4
ESE	0	0	1	0	3	0	4	1	0	0	0	9
SE	0	0	0	0	1	0	0	0	0	0	0	1
SSE	0	0	0	0	2	1	3	0	0	0	0	6
S	0	0	1	0	0	0	3	0	2	0	0	6
SSW	0	0	0	2	3	0	0	0	2	1	0	8
SW	0	0	1	0	1	0	0	0	1	0	0	3
WSW	0	0	1	1	0	3	0	0	0	0	0	5
W	0	1	0	0	0	1	1	1	4	0	0	8
WNW	0	0	0	0	2	4	1	2	4	4	1	18
NW	0	0	0	1	1	1	3	2	13	1	1	23
NNW	0	0	2	0	0	0	1	0	1	0	0	4
Tot	0	1	7	5	13	14	17	6	27	6	2	98

Hours of Calm 0
Hours of Variable Direction 0
Hours of Valid Data 98
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class D Neutral based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	6	6	9	6	3	1	0	0	0	0	31
NNE	0	1	3	9	7	5	1	0	0	0	0	26
NE	0	4	6	6	19	3	0	0	0	0	0	38
ENE	0	4	10	6	26	11	1	0	0	0	0	58
E	0	3	12	5	24	36	10	2	0	0	0	92
ESE	0	6	5	9	9	11	12	4	0	0	0	56
SE	0	5	5	1	8	7	10	1	0	0	0	37
SSE	0	6	9	4	10	13	3	1	0	0	0	46
S	0	2	2	4	10	15	8	6	4	0	0	51
SSW	0	6	14	6	10	10	1	1	2	0	0	50
SW	0	3	5	5	12	4	3	3	1	0	0	36
WSW	0	11	4	9	8	15	3	2	0	0	0	52
W	0	7	2	2	23	19	23	17	11	7	0	111
WNW	0	3	3	3	5	13	18	34	45	17	10	151
NW	0	3	10	7	8	14	14	13	21	5	0	95
NNW	0	9	7	6	4	5	9	4	1	0	0	45
Tot	0	79	103	91	189	184	117	88	85	29	10	975

Hours of Calm 1
Hours of Variable Direction 0
Hours of Valid Data 976
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class E Slightly Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	5	8	3	15	9	1	0	0	0	0	41
NNE	0	3	5	2	10	2	0	0	0	0	0	22
NE	0	4	6	8	7	1	0	0	0	0	0	26
ENE	0	4	5	2	9	6	0	0	0	0	0	26
E	0	3	9	9	7	4	0	0	0	0	0	32
ESE	0	8	8	9	6	3	4	1	0	0	0	39
SE	0	6	3	5	4	4	0	1	0	0	0	23
SSE	0	5	6	5	3	1	1	0	1	1	0	23
S	0	7	2	6	7	3	0	1	2	1	0	29
SSW	0	8	8	6	8	4	1	0	0	1	0	36
SW	0	10	4	4	10	2	5	0	0	2	0	37
WSW	1	13	10	5	9	2	0	0	0	0	0	40
W	0	8	6	6	14	4	6	1	4	0	0	49
WNW	0	1	4	4	8	9	5	5	8	1	0	45
NW	0	9	8	5	13	5	2	1	7	0	0	50
NNW	0	6	13	14	14	14	4	0	1	0	0	66
Tot	1	100	105	93	144	73	29	10	23	6	0	584

Hours of Calm 4
Hours of Variable Direction 0
Hours of Valid Data 588
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class F Moderately Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	5	0	1	1	0	0	0	0	0	0	7
NNE	0	9	3	0	2	0	0	0	0	0	0	14
NE	0	0	0	0	1	0	0	0	0	0	0	1
ENE	0	2	1	2	3	0	0	0	0	0	0	8
E	0	5	6	2	2	0	0	0	0	0	0	15
ESE	0	4	3	0	2	0	0	0	0	0	0	9
SE	0	5	5	3	1	0	0	0	0	0	0	14
SSE	0	7	5	4	2	0	0	0	0	0	0	18
S	0	6	2	3	1	0	1	0	0	0	0	13
SSW	0	6	6	5	3	1	0	0	0	0	0	21
SW	0	10	5	1	5	0	1	0	0	0	0	22
WSW	0	12	4	9	9	1	0	0	0	0	0	35
W	1	6	1	2	1	1	1	1	0	0	0	14
WNW	0	1	5	2	2	4	0	0	0	0	0	14
NW	0	3	0	2	2	1	0	0	1	0	0	9
NNW	0	2	0	1	1	0	0	0	0	0	0	4
Tot	1	83	46	37	38	8	3	1	1	0	0	218

Hours of Calm 3
Hours of Variable Direction 0
Hours of Valid Data 221
Hours of Missing Data . . . 42
Hours in Period 2208

Joint Frequency Distribution

Site:: Three Mile Island

Period:: Months Oct - Dec for years 2007 - 2007

Stability Class G Extremely Stable based on Lapse Rate

Elevations:: Winds 150ft Stability 150ft

Wind Direction Sector	Wind Speed Range (m/s) <0.50	0.5-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-8.0	8.1-10.0	>10.00	Total
N	0	1	0	1	1	0	0	0	0	0	0	3
NNE	0	0	1	0	0	0	0	0	0	0	0	1
NE	0	0	2	0	1	0	0	0	0	0	0	3
ENE	0	1	1	1	2	0	0	0	0	0	0	5
E	0	0	4	0	0	0	0	0	0	0	0	4
ESE	0	1	1	0	1	0	0	0	0	0	0	3
SE	0	0	2	0	0	0	0	0	0	0	0	2
SSE	0	1	1	2	2	0	0	0	0	0	0	6
S	0	1	1	1	1	3	0	0	0	0	0	7
SSW	0	1	3	1	0	1	0	0	0	0	0	6
SW	0	4	2	2	2	1	0	0	0	0	0	11
WSW	0	0	2	1	1	0	0	0	0	0	0	4
W	0	3	5	1	0	0	0	0	0	0	0	9
WNW	0	1	0	0	0	1	1	0	0	0	0	3
NW	0	1	0	0	2	0	0	0	0	0	0	3
NNW	0	2	1	3	0	0	0	0	0	0	0	6
Tot	0	17	26	13	13	6	1	0	0	0	0	76

Hours of Calm 2
Hours of Variable Direction 0
Hours of Valid Data 78
Hours of Missing Data . . . 42
Hours in Period 2208

Request No: ENV-75 **Topic:** Air Quality and Meteorology

Source: ENV **Requested by:** Lopas, Sarah **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: NRC would like to see copies of any related documents that would support the conclusion made in ER Section 4.11, pages 4-21 and 4-22, that "The amount of pollutants emitted from construction vehicles and equipment and construction worker commute traffic would be small compared to total vehicular emissions in the region," and " These emissions would be small compared to regulatory thresholds and a conformity determination for this project pursuant to the Clean Air Act would not be required."

Date Received: 3/19/2008 **Response Date:**

Response: The Excel Workbook contains tables that demonstrate that emissions from the TMI-1 Steam Generator Replacement project will be small compared to total county vehicular emissions and that regulatory thresholds triggering a conformity determination pursuant to the Clean Air Act would not be exceeded.

List Attachments Provided:

TMI Refurbishment Emissions.xls

Figure 1 - Peak Daily and Annual Emissions from Construction Activities

Construction Phase

Peak Daily Emissions

	Daily Emissions (lbs/day)			
	NOx	VOC	SOx	PM-2.5
Construction Equipment	148.40	13.01	4.14	10.12
Commuter Vehicles	20.04	6.88	0.60	1.01
Total	**168.44**	**19.88**	**4.74**	**11.13**
Dauphin County SIP budget [a]	92400	50800	NA [b]	NA [b]
Percentage	0.1823%	0.0391%		

[a] Source: State Implementation Plan Revision: Maintenance Plan and Base Year Inventory Harrisburg-Lebanon-Carlisle Eight-Hour Ozone Nonattainment Area, March 2007.

[b] There are currently no SIP budgets for PM2.5 or its precursors.

Annual Emissions

	Annual Emissions (tons/yr)			
	NOx	VOC	SOx	PM-2.5
Construction Equipment	18.11	1.69	0.50	1.34
Commuter Vehicles	3.16	1.08	0.09	0.16
Total	**21.27**	**2.78**	**0.59**	**1.50**
2001 Total Dauphin County Emissions	13,426	13,695	4,078	2,493
Percentage of 2001 Emissions	0.16%	0.02%	0.01%	0.06%
Threshold level	100	50	100	100
Percentage of Threshold Level	21.27%	5.55%	0.59%	1.50%

Outage Phase

Peak Daily Emissions

	Daily Emissions (lbs/day)			
	NOx	VOC	SOx	PM-2.5
Construction Equipment	217.53	27.64	5.42	22.60
Commuter Vehicles	115.75	101.88	0.30	4.15
Total	**333.28**	**129.52**	**5.72**	**26.75**
Dauphin County SIP budget [a]	92400	50800	NA [b]	NA [b]
Percentage	0.3607%	0.2550%		

[a] Source: State Implementation Plan Revision: Maintenance Plan and Base Year Inventory Harrisburg-Lebanon-Carlisle Eight-Hour Ozone Nonattainment Area, March 2007.

[b] There are currently no SIP budgets for PM2.5 or its precursors.

Annual Emissions

	Annual Emissions (tons/yr)			
	NOx	VOC	SOx	PM-2.5
Construction Equipment	4.29	0.48	0.11	0.39
Commuter Vehicles	4.05	3.57	0.01	0.15
Total	**8.34**	**4.04**	**0.12**	**0.53**
2001 Dauphin County Emissions	13,426	13,695	4,078	2,493
Percentage of 2001 Emissions	0.06%	0.03%	0.00%	0.02%
Threshold level	100	50	100	100
Percentage of Threshold Level	8.34%	8.09%	0.12%	0.53%

For ozone, the threshold emissions levels are 100 tpy for NOx and 50 tpy for VOC. For PM2.5, the threshold emissions levels are 100 tpy for direct PM2.5 and 100 tpy for for each of the PM2.5 precursors, NOx and SO2. (71 FR 40420)

Figure 2 - Construction Phase Equipment Emissions

Annual Emissions

						Emission Factor (lbs/1000 gals)				Annual Emissions (tons/yr)			
	Ave units	Ave hr/day/unit	gal/hr	Ave Operating days/yr	Total Fuel use (gal/yr)	NOx	VOC	SOx	PM-2.5	NOx	VOC	SOx	PM-2.5
Crane	2	6	4	315	15120	270.1	15.65	7.1	11.74	2.04	0.12	0.05	0.09
Bulldozer	1	6	5.5	180	5940	270.1	15.65	7.1	11.74	0.80	0.05	0.02	0.03
Excavator-Trencher	1	6	2	180	2160	270.1	15.65	7.1	11.74	0.29	0.02	0.01	0.01
Excavator-Scraper	1	6	9	180	9720	270.1	15.65	7.1	11.74	1.31	0.08	0.03	0.06
Excavator-Grader	1	6	5	180	5400	270.1	15.65	7.1	11.74	0.73	0.04	0.02	0.03
Excavator-Backhoe/Loader	1	6	2.5	180	2700	270.1	15.65	7.1	11.74	0.36	0.02	0.01	0.02
Excavator-Loader	1	6	2.5	180	2700	270.1	15.65	7.1	11.74	0.36	0.02	0.01	0.02
Roller	1	6	10	180	10800	270.1	15.65	7.1	11.74	1.46	0.08	0.04	0.06
Water Truck	1	6	3.13	180	3380.4	170.68	15.33	7.1	9.59	0.29	0.03	0.01	0.02
Fuel Truck	1	6	3.13	315	5915.7	170.68	15.33	7.1	9.59	0.50	0.05	0.02	0.03
Forklift	4	6	2.5	315	18900	270.1	15.65	7.1	11.74	2.55	0.15	0.07	0.11
Dump Truck	2	6	3.13	180	6760.8	170.68	15.33	7.1	9.59	0.58	0.05	0.02	0.03
Service Truck - 1 Ton	2	6	1.56	315	5896.8	74.4	5.57	7.1	4.83	0.22	0.02	0.02	0.01
Concrete Pumper truck	1	6	3.13	30	563.4	170.68	15.33	7.1	9.59	0.05	0.00	0.00	0.00
Pickup truck	2	6	0.78	315	2948.4	74.4	5.57	7.1	4.83	0.11	0.01	0.01	0.01
Welder	4	6	1.27	315	9601.2	313.05	46.96	7.1	39.13	1.50	0.23	0.03	0.19
Compactor	1	6	0.25	180	270	313.05	46.96	7.1	39.13	0.04	0.01	0.00	0.01
Pump	4	6	1.27	315	9601.2	313.05	46.96	7.1	39.13	1.50	0.23	0.03	0.19
Air compressor	3	6	1.27	315	7200.9	313.05	46.96	7.1	39.13	1.13	0.17	0.03	0.14
Generator	6	6	1.27	315	14401.8	313.05	46.96	7.1	39.13	2.25	0.34	0.05	0.28
Concrete Vibrator	2	6	0.25	30	90	313.05	46.96	7.1	39.13	0.01	0.00	0.00	0.00
total										18.11	1.69	0.50	1.34

PM10 emission factors used as surrogate for PM2.5

For heavy Diesel construction equipment, emission factors based on equipment meeting EPA 1996 off-road Diesel standards and use of CARB low-sulfur fuel. For trucks, depending on size of truck, emissions factors from EPA's MOBILE6 for heavy-heavy duty or medium duty Diesel trucks, fleet average for calendar year 2000. For portable equipment, emission factors based on EPA's "Non-road Engine and Vehicle Emission Study Report", 11/91, Table 2-07, for generator sets, welders, pumps, and air compressors less than 50 hp.

Figure 2 - Construction Phase Equipment Emissions

Peak Daily Emissions

	Ave units	Ave hr/day/unit	gal/hr	Total Fuel use (gal/day)	Emission Factor (lbs/1000 gals) NOx	VOC	SOx	PM-2.5	Peak Emissions (lbs/day) NOx	VOC	SOx	PM-2.5
Crane	2	6	4	48	270.1	15.65	7.1	11.74	12.96	0.75	0.34	0.56
Bulldozer	1	6	5.5	33	270.1	15.65	7.1	11.74	8.91	0.52	0.23	0.39
Excavator-Trencher	1	6	2	12	270.1	15.65	7.1	11.74	3.24	0.19	0.09	0.14
Excavator-Scraper	1	6	9	54	270.1	15.65	7.1	11.74	14.59	0.85	0.38	0.63
Excavator-Grader	1	6	5	30	270.1	15.65	7.1	11.74	8.10	0.47	0.21	0.35
Excavator-Backhoe/Loader	1	6	2.5	15	270.1	15.65	7.1	11.74	4.05	0.23	0.11	0.18
Excavator-Loader	1	6	2.5	15	270.1	15.65	7.1	11.74	4.05	0.23	0.11	0.18
Roller	1	6	10	60	270.1	15.65	7.1	11.74	16.21	0.94	0.43	0.70
Water Truck	1	6	3.13	18.78	170.68	15.33	7.1	9.59	3.21	0.29	0.13	0.18
Fuel Truck	1	6	3.13	18.78	170.68	15.33	7.1	9.59	3.21	0.29	0.13	0.18
Forklift	4	6	2.5	60	270.1	15.65	7.1	11.74	16.21	0.94	0.43	0.70
Dump Truck	2	6	3.13	37.56	170.68	15.33	7.1	9.59	6.41	0.58	0.27	0.36
Service Truck - 1 Ton	2	6	1.56	18.72	74.4	5.57	7.1	4.83	1.39	0.10	0.13	0.09
Concrete Pumper truck	1	6	3.13	18.78	170.68	15.33	7.1	9.59	3.21	0.29	0.13	0.18
Pickup truck	2	6	0.78	9.36	74.4	5.57	7.1	4.83	0.70	0.05	0.07	0.05
Welder	4	6	1.27	30.48	313.05	46.96	7.1	39.13	9.54	1.43	0.22	1.19
Compactor	1	6	0.25	1.5	313.05	46.96	7.1	39.13	0.47	0.07	0.01	0.06
Pump	4	6	1.27	30.48	313.05	46.96	7.1	39.13	9.54	1.43	0.22	1.19
Air compressor	3	6	1.27	22.86	313.05	46.96	7.1	39.13	7.16	1.07	0.16	0.89
Generator	6	6	1.27	45.72	313.05	46.96	7.1	39.13	14.31	2.15	0.32	1.79
Concrete Vibrator	2	6	0.25	3	313.05	46.96	7.1	39.13	0.94	0.14	0.02	0.12
total									148.40	13.01	4.14	10.12

Figure 3 - SGR Outage Equipment Emissions

Annual Emissions

						Emission Factor (lbs/1000 gals)				Annual Emissions (tons/yr)			
	Ave units	Ave hr/day/unit	gal/hr	Ave Operating days/yr	Total Fuel use (gal/yr)	NOx	VOC	SOx	PM-2.5	NOx	VOC	SOx	PM-2.5
Crane	4	8	4	70	8960	270.1	15.65	7.1	11.74	1.21	0.07	0.03	0.05
Fuel Truck	1	4	3.13	70	876.4	170.68	15.33	7.1	9.59	0.07	0.01	0.00	0.00
Forklift	4	4	2.5	70	2800	270.1	15.65	7.1	11.74	0.38	0.02	0.01	0.02
Dump Truck	2	4	3.13	70	1752.8	170.68	15.33	7.1	9.59	0.15	0.01	0.01	0.01
Service Truck - 1 Ton	2	4	1.56	70	873.6	74.4	5.57	7.1	4.83	0.03	0.00	0.00	0.00
Concrete Pumper truck	1	10	3.13	5	156.5	170.68	15.33	7.1	9.59	0.01	0.00	0.00	0.00
Pickup truck	2	4	0.78	70	436.8	74.4	5.57	7.1	4.83	0.02	0.00	0.00	0.00
Welder	4	12	1.27	70	4267.2	313.05	46.96	7.1	39.13	0.67	0.10	0.02	0.08
Hydrodemolition Pump	12	20	1.27	5	1524	313.05	46.96	7.1	39.13	0.24	0.04	0.01	0.03
Air compressor	3	12	1.27	70	3200.4	313.05	46.96	7.1	39.13	0.50	0.08	0.01	0.06
Generator	6	12	1.27	70	6400.8	313.05	46.96	7.1	39.13	1.00	0.15	0.02	0.13
Concrete Vibrator	2	10	0.25	5	25	313.05	46.96	7.1	39.13	0.00	0.00	0.00	0.00
total										4.29	0.48	0.11	0.39

PM10 emission factors used as surrogate for PM2.5

For heavy Diesel construction equipment, emission factors based on equipment meeting EPA 1996 off-road Diesel standards and use of CARB low-sulfur fuel. For trucks, depending on size of truck, emissions factors from EPA's MOBILE6 for heavy-heavy duty or medium duty Diesel trucks, fleet average for calendar year 2000. For portable equipment, emission factors based on EPA's "Non-road Engine and Vehicle Emission Study Report", 11/91, Table 2-07, for generator sets, welders, pumps, and air compressors less than 50 hp.

Figure 3 - SGR Outage Equipment Emissions

Peak Daily Emissions

	Ave units	Ave hr/day/unit	gal/hr	Total Fuel use (gal/day)	Emission Factor (lbs/1000 gals) NOx	VOC	SOx	PM-2.5	Peak Emissions (lbs/day) NOx	VOC	SOx	PM-2.5
Crane	4	8	4	128	270.1	15.65	7.1	11.74	34.57	2.00	0.91	1.50
Fuel Truck	1	4	3.13	12.52	170.68	15.33	7.1	9.59	2.14	0.19	0.09	0.12
Forklift	4	4	2.5	40	270.1	15.65	7.1	11.74	10.80	0.63	0.28	0.47
Dump Truck	2	4	3.13	25.04	170.68	15.33	7.1	9.59	4.27	0.38	0.18	0.24
Service Truck - 1 Ton	2	4	1.56	12.48	74.4	5.57	7.1	4.83	0.93	0.07	0.09	0.06
Concrete Pumper truck	1	10	3.13	31.3	170.68	15.33	7.1	9.59	5.34	0.48	0.22	0.30
Pickup truck	2	4	0.78	6.24	74.4	5.57	7.1	4.83	0.46	0.03	0.04	0.03
Welder	4	12	1.27	60.96	313.05	46.96	7.1	39.13	19.08	2.86	0.43	2.39
Hydrodemolition Pump	12	20	1.27	304.8	313.05	46.96	7.1	39.13	95.42	14.31	2.16	11.93
Air compressor	3	12	1.27	45.72	313.05	46.96	7.1	39.13	14.31	2.15	0.32	1.79
Generator	6	12	1.27	91.44	313.05	46.96	7.1	39.13	28.63	4.29	0.65	3.58
Concrete Vibrator	2	10	0.25	5	313.05	46.96	7.1	39.13	1.57	0.23	0.04	0.20
total									217.53	27.64	5.42	22.60

Figure 4 - Commuter Vehicle Emissions

Delivery Vehicles	Deliveries per day	Ave. round trip miles	vehicle miles per day	Emission Factors (lbs/VMT) NOx	VOC	SOx	PM-2.5	Daily Emissions (lbs/day) NOx	VOC	SOx	PM-2.5
OSG storage const.	10	50	500	0.028	0.0025	0.0012	0.0016	14.00	1.25	0.60	0.80
SGR Outage	5	50	250	0.028	0.0025	0.0012	0.0016	7.00	0.63	0.30	0.40

Worker Vehicles	number of workers	Ave. vehicle occupancy	Ave. round trip miles	vehicle miles per day	Emission Factors (lbs/VMT) NOx	VOC	SOx	PM-2.5	Daily Emissions (lbs/day) NOx	VOC	SOx	PM-2.5
OSG storage const.	50	1.2	50	2083.3	0.0029	0.0027	0	0.0001	6.04	5.63	0.00	0.21
SGR outage	900	1.2	50	37500.0	0.0029	0.0027	0	0.0001	108.75	101.25	0.00	3.75

Total Emissions

	Daily Emissions (lbs/day) NOx	VOC	SOx	PM-2.5	Annual Emissions (ton/yr) NOx	VOC	SOx	PM-2.5
OSG storage	20.04	6.88	0.60	1.01	3.16	1.08	0.09	0.16
SGR	115.75	101.88	0.30	4.15	4.05	3.57	0.01	0.15

Notes
(1) For Delivery Trucks From EPA's MOBILE6, heavy-heavy duty Diesel trucks, fleet average for calendar year 2000.
(2) For Worker Travel From EPA's MOBILE6, average of light duty automobiles and light duty trucks, fleet average for calendar year 2000.
Calander Year 2000 emission factors are conservative since
(3) PM-10 emission factor used as a surrogate for PM2.5

Figure 5 - Dauphin County Emissions

2001 Dauphin County, Pennsylvania Emissions

	Area Source Emissions (tpy)	Point Source Emissions (tpy)	Total Emissions (tpy)
PM-2.5	2,329	164	2,493
SO2	3,351	727	4,078
NOx	12,241	1,185	13,426
VOC	13,327	368	13,695

Source: EPA AirData Website. http://www.epa.gov/air/data/reports.html

Request No: ENV-76 **Topic:** Air Quality and Meteorology

Source: ENV **Requested by:** Lopas, Sarah **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: NRC would like a description of burned diesel oil and lube oil disposal and /or re-use, and any incinerators on site.

Date Received: 3/19/2008 **Response Date:**

Response: TMI does not incinerate any waste oils onsite.

No. 2 fuel oil is burned in the following emission sources:

- Auxiliary Boilers - start-up, shut-down and testing.
- Emergency Diesel Generators - testing or emergency.
- Fire Pump Diesels - testing and fire pump use.
- Transportation - heavy equipment, vehicles, temporary power.

Detailed air emission data, including fuel oil use, are provided in response to Question 71.

Request No: ENV-79 **Topic:** OTSG Replacement Project

Source: ENV **Requested by:** Sarah Lopas **Assigned to:** Mark Sweigart **Status:** Accepted by NRC

Information Request: For low level radwaste generated during the OTSG replacement project, what are the plans for the disposal of the waste. (will it be handled by normal plant processes or disposed of in another manner)?

Date Received: 4/28/2008 **Response Date:**

Response: A majority of the used materials generated during the OTSG replacement project will be DAW/metals and will be transported in 20' cargo containers to Energy Solutions in Oak Ridge, Tennessee. Energy Solutions will perform volume reduction on these materials and package them for disposal as Class A low-level waste in a licensed disposal facility located in Utah (Envirocare of Utah).
By benchmarking the steam generator replacement projects at other plants, the TMI 1 OTSG replacement team has identified certain other used materials that would be considered Class B if disposed. These used materials will be packaged and stored in the OTSG storage facility, which has been sized and designed to safely accommodate them.

Request No: ENV-80 **Topic:** OTSG Outage Peak Manpower

Source: ENV **Requested by:** Sarah Lopas **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: What will be the peak total staffing onsite during the OTSG replacement outage (include all personnel, regardless of whether they will be working on the OTSG replacement project)?

Date Received: 4/28/2008 **Response Date:**

Response: There are 702 permanent employees assigned to TMI, including personnel working in Business Services Company (BSC) Information Technology (IT), Supply, Nuclear Oversight (NOS), Post Defueling Monitored Storage (PDMS), and Security. During the past two TMI refueling outages, an average of approximately 1,490 supplemental workers have been onsite. During the upcoming T1R18 outage, during which both refueling and OTSG replacement will occur, the estimated number of supplemental workers participating in refueling will be 160 fewer than average (i.e. approximately 1,330) because no OTSG inspections will be taking place. The OTSG replacement project estimates its staff will be approximately 900. Hence, the total staffing onsite during T1R18 is estimated to be approximately 2,932, which is the sum of permanent plant staff (702), refueling staff (1,330), and OTSG replacement project staff (900). However, because T1R18 is still 17 months away, no histograms have yet been created, and the scope of the outage is not yet fully defined.

Request No: ENV-81 **Topic:** OTSG

Source: ENV **Requested by:** Sarah Lopas **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: When was the fish ladder put into service.

Date Received: 4/28/2008 **Response Date:**

Response: On June 1, 2000, the York Haven Power Company hosted the dedication of the new serpentine vertical-slot fish ladder at York Haven Dam.

Request No: ENV-83 **Topic:** Aquatic Resources Int.

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: What is the total water usage projected for the hydro-demolition during the OTSG Replacement project, and what amount of water will be lost during the project (i.e., not returned to the river)?

Date Received: 4/29/2008 **Response Date:**

Response: The projected total volume of water to be drawn from the Susquehanna River for the hydro-demolition process associated with the OTSG Replacement Project is 1.2 million gallons. An existing plant system will be used for this withdrawal, which will occur over a period of 5 to 6 days. The average daily withdrawal rate is expected to be between 200,000 and 240,000 gallons per day. Nearly all of the withdrawn water will be returned to the river. A minimal amount will be lost due to spray. However, based on consultation with the demolition subcontractor (American Hydro), no noticeable difference is expected between the supply flow to the hydro-demolition equipment and the return flow into the post-processing tanks.

Request No: ENV-84 **Topic:** Aquatic Resources Int.

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: Please provide more information on the routeand associated impacts for transport of the new steam generator to TMI-1. Specifically, will dredging be required at Port Deposit? How many, if any, bridges will need to be reinforced?

Date Received: 4/29/2008 **Response Date:**

Response: The final route for transporting the replacement steam generators to the TMI-1 site has not been selected. A vendor is performing a detailed study of the alternatives, which will be the basis for a final decision. Until the study is complete and an evaluation has been made of the existing infrastructure along the preferred route, the number and types of road improvements that will be required remain unknown. Notwithstanding, if the selected transportation route passes through Port Deposit, Maryland, the currently planned method for offloading the replacement steam generators is not expected to require dredging, based on results of bathymetry conducted at Port Deposit two years ago.

Request No: ENV-91 **Topic:** Aquatic Resources Int.

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: How much is dredged from the intake and discharge structures

Date Received: 4/29/2008 **Response Date:**

Response: Approximately 1,000 cu yds of material per year are dredged from the intake and discharge structures.

Request No: ENV-94 **Topic:** Aquatic Resources Int.

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: It is believed that subaquatic vegetation data were once collected to support the TMI REMP program. Why does AmerGen not collect such data now?

Date Received: 4/29/2008 **Response Date:**

Response: TMI REMP reports from 1990 through today (approximately 18 years) contain no record of subaquatic vegetation data having been sampled for radionuclides. The aquatic monitoring that TMI has done and continues to do in accordance with regulatory guidance is surface water, drinking water, fish and aquatic sediment. TMI performs vegetation sampling as part of its terrestrial monitoring, but does not perform subaquatic vegetation sampling.

Summary Report of TMI License Renewal Application Review Questions for: Environmental Audit

Request No: ENV-95 **Topic:** Aquatic Resources Int.

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: How deep are the borrow pits on the south end of Three Mile Island? What is the relative size of the borrow pits in comparison with the undeveloped section at the south end of the Island?

Date Received: 4/29/2008 **Response Date:**

Response: The depth of the borrow pits varies between 5 and 15 feet below grade. Using GIS information from the National Wetlands Inventory, the area of the borrow pits has been caluculated to be 17.3 acres. In comparison, the undeveloped section at the south end of the Island occupies approximately 173 acres.

Request No: ENV-97 **Topic:** Herbicide and Pesticides

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: Please provide a list of herbicides and pesticides used on the TMI plant site.

Asked By: Nathan Goodman

Date Received: 4/29/2008 **Response Date:**

Response: A list of herbicides and pesticides used on the TMI plant site was provided in response to Question #7 (Terrestrial Review) on the Site Audit Needs List. The list is repeated below for convenience.

Pesticides used on site:
- Contrac Blox (.005% Bromadiolone)
- Western Pet Services
- S&S Wildlife
- Suspend
- Delta Dust (.05% Deltamethrine)
- MaxForce Roach Bait (.01 Fipronil)

Herbicides used on site:
- Karmex
- Oust
- Tordon
- Accord
- Clean-Cut
- Journey
- Habitat.

Request No: ENV-98 **Topic:** Thermal Discharge

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: With what frequency does the cooling water discharge temperature reach 100 degrees F?

Asked By Andy Carerra

Date Received: 4/29/2008 **Response Date:**

Response: Based on the Discharge Monitoring reports for 2003 through 2007, which are being provided in response to Site Audit Needs Question #46, the following information has been compiled.

SUMMARY:

2003 -- No Max Daily 24-hr Ave Discharge Temp exceeded 100 degrees F
2004 -- No Max Daily 24-hr Ave Discharge Temp exceeded 100 degrees F
2005 -- No Max Daily 24-hr Ave Discharge Temp exceeded 100 degrees F
2006 -- Max Daily 24-hr Ave Discharge Temp exceeded 100 degrees F on one day during August (100.4 degrees F)
2007 -- Max Daily 24-hr Ave Discharge Temp exceeded 100 degrees F on one day during August (100.8 degrees F) and one day during September (100.1 degrees F)

Request No: ENV-99 **Topic:** Steam Generator

Source: ENV **Requested by:** Andy Carerra **Assigned to:** Nancy Ranek **Status:** Open

Information Request: Please specify how the original steam generators will be classified during storage (i.e. waste, contaminated equipment, etc.), and provide the rationale for this classification.

Asked By: Andy Carerra

Date Received: 4/29/2008 **Response Date:**

Response: The original TMI-1 steam generators will be classified during storage as contaminated equipment. NRC Generic Letter 81-38 ["Storage of Low-Level Radioactive Wastes at Power Reactor Sites" (November 10, 1981)] addressed on-site storage of low level waste (LLW) generated as a result of normal operations and maintenance at power reactor sites. It did not specifically include or exclude components such as steam generators. In response to utility questions, the NRC issued SECY 81-383 ["Storage of Low-Level Radioactive Wastes at Power Reactor Sites" (June 1981)] in which it clarified that replaced components, such as steam generators, are not considered LLW, but rather are contaminated pieces of equipment, which may be stored until decommissioning. A later NRC memo reiterated that GL 81-38 was not meant to include components generated as a result of non-routine maintenance. Most steam generators that have been replaced are in fact stored on-site with implicit NRC approval (see table below).

Benchmark of Steam Generator Storage

ON-SITE STORAGE		OFF-SITE DISPOSAL
Surry 1&2	Turkey Point 3&4	Millstone 2
HB Robinson 2	Point Beach 1	Salem
DC Cook 2	Palisades	St. Lucie 1
Indian Point 2&3	North Anna 1&2	Prairie Island
Summer	McGuire 1&2	
Catawba 1	Oconee 1,2&3	
Byron	Braidwood	
ANO 1&2	Calvert Cliffs	
Calloway	Beaver Valley	

Request No: ENV-100 **Topic:** Terrestrial Ecology

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: Please provide a list of downstream water users within approximately 5 miles of TMI-1, including the distance to the users.

Scott Cogley will provide.

Date Received: 4/30/2008 **Response Date:**

Response: Distance from Reactor Bldg. Center Line to York Haven Power Plant. is 2.92 miles, 15,395 feet .
Distance from Reactor Bldg. Center Line to Brunner Island is 4.3 miles, 22,645 feet.

Summary Report of TMI License Renewal Application Review Questions for: Environmental Audit

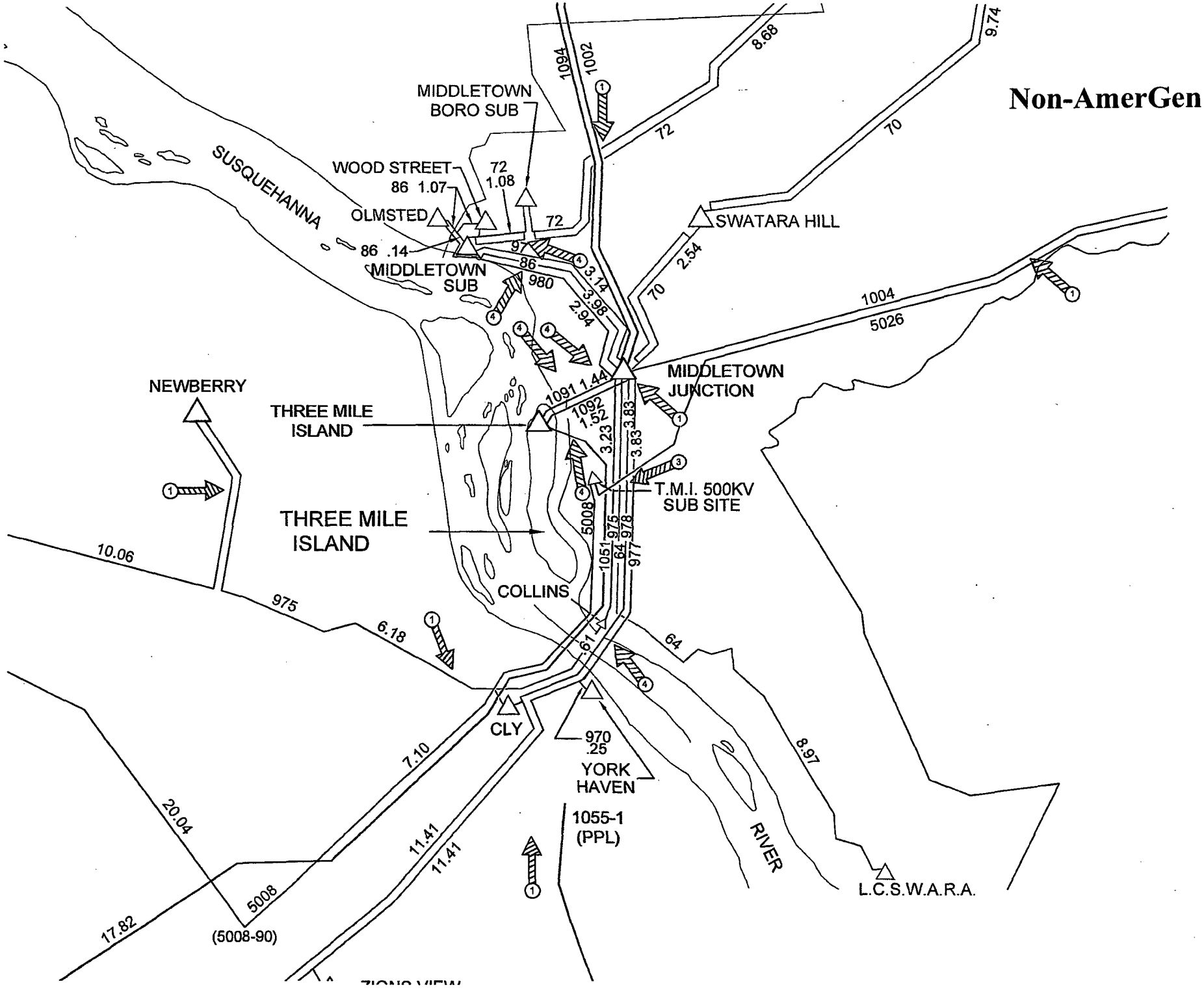
Request No: ENV-101 **Topic:** T-Lines

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: Request for a copy of the t-line map by circuit, and a list of pesticides and herbicides for in-scope transmission lines?

Date Received: 4/30/2008 **Response Date:**

Response: A list of pesticides and herbicides for in-scope transmission lines has been provided in response to Question 7 (Terrestrial Review) on the Site Audit Needs List.
A map of the t-lines by circuit is being provided.


Non-AmerGen
MIDDLETOWN BORO SUB
SUSQUEHANNA
WOOD STREET
86 1.07
72 1.08
OLMSTED
86 .14
MIDDLETOWN SUB
72
97
86
980
3.14
3.98
2.94
1094
1002
8.68
9.74
72
70
SWATARA HILL
2.54
70
1004
5026
MIDDLETOWN JUNCTION
1091 1.44
1092 1.52
3.23
3.83
3.83
T.M.I. 500KV SUB SITE
5008
1051
975
64
978
977
NEWBERRY
THREE MILE ISLAND
THREE MILE ISLAND
10.06
975
6.18
COLLINS
61
64
CLY
970 .25
YORK HAVEN
7.10
8.97
20.04
11.41
11.41
1055-1 (PPL)
RIVER
L.C.S.W.A.R.A.
17.82
5008
(5008-90)

Request No: ENV-102 **Topic:** Microbilogical Organisms

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Open

Information Request: Identify any major heat load sources 1 to 2 miles upstream on the Susquehanna River.

Asked By: Andy Carerra

Date Received: 4/30/2008 **Response Date:**

Response: The Environmental Protection Agency Envirofacts database contains information on facilities that have been issued permits to discharge waste water. The database identifies no major dischargers within 2 miles upstream of TMI-1. The minor dischargers appear to have no discharge thermal component. A site was identified in Middletown, Pennsylvania that was at one time a Metropolitan Edison generating facility (Crawford Station), but it is currently inactive.

Request No: ENV-103 **Topic:** Archeological & Historical Resources

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: For the historical structures and foundations associated with the former tobacco farm located on the eastern side of Three Mile Island south of the Red Hill Dam, please file a Historical Resource Survey Form and a Pennsylvania Archaeological Site Survey (PASS) Form in the near future.

Date Received: 4/30/2008 **Response Date:**

Response: A Historical Resource Survey Form and a Pennsylvania Archaeological Site Survey (PASS) Form have been filed with the Pennsylvania Historical & Museum Commission. Copies of the completed forms are being provided.

Summary Report of TMI License Renewal Application Review Questions for: Environmental Audit

Request No: ENV-106 **Topic:** Archeological & Historical Resources Tour

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: Please provide any information that AmerGen has on the old graystone small building near railroad tracks at the construction entrance

Asked By: Doug

Date Received: 4/30/2008 **Response Date:**

Response: AmerGen has no documented information on the small old graystone building near the railroad tracks at the construction entrance. A brief inspection suggests that it is less than 50 years old and not located on property owned by AmerGen.

Request No: ENV-109 **Topic:** Terretrial Resources

Source: ENV **Requested by:** **Assigned to:** Nancy Ranek **Status:** Accepted by NRC

Information Request: What organization would have the authority to impose mitigation requirements for thermophilic organisms?

Andy Carerra

Date Received: 4/30/2008 **Response Date:**

Response: The Pennsylvania Department of Environmental Protection (DEP) regulates TMI-1 discharges. If the thermal component of the TMI-1 discharge were shown to enhance the presence of thermophilic organisms and thereby create an unacceptable risk to public health, the DEP would have the authority to impose mitigation measures on TMI-1.

Environmental Evaluation Form

Preparer:	Mark Ceraldi	Organization:	SGT

Proposed Activity:

In support of the Three Mile Island – Unit 1 Steam Generator Replacement (SGR) Project, ECR TM 06-00687 provides the design and implementation instructions for the Steam Generating Team (SGT) to permanently construct an Original Steam Generator Storage Facility (OSGSF) outside of the Protected Area and within the site Owner Controlled Area. Specifically, the OSGSF will be located at the intersection of Independence Rd. and Constitution Dr., immediately west of Bldg #71, Outage tool Storage, immediately across Constitution Drive from the existing South Administration Building. The OSGSF will be designed as a non-safety related structure to be used to provide secure storage until site decommissioning of the two (2) Once-Thru Steam Generators (OTSGs) and portions of RCS hot leg piping that will be removed and replaced during the TMI-1 Steam Generator Replacement (SGR) Project. Until its occupancy by these contaminated components, the OSGSF will also serve as a secure weather-proof building to support staging and preparation of the Replacement Steam Generators (Enhanced OTSGs (EOTSGs)). The OSGSF is designed for these purposes by employing the following features to provide:

1. Design of the OSGSF as a Class III (i.e. non-safety related) structure in accordance with the International Building Code (IBC), 2003. As directed by the IBC, for the special wind region where the OSGSF will be constructed, the building will be designed for Exposure C and a wind speed of 85 mph.
2. An enclosed footprint area and an eave height as required to accommodate and facilitate offloading of the OTSGs onto their designated supports, and the offloading and storage of the RCS hot leg piping. The OSGSF will also be designed to support offloading and rigging of the EOTSGs within the facility for staging and performing certain onsite preparations. Movements of the steam generators into and out of the OSGSF will be accomplished through an open side to the building facing Constitution Drive. Closure of this opening following offload of the OTSGs is by means of pre-cast concrete panels that will be sealed to minimize airflow through the panel joints. No welding will be required to attach the panels to the OSGSF as they will fit into keys built into the ends of the walls of the OSGSF. It is intended to use the OSGSF as a staging and preparation facility for the EOTSGs.
3. Design of a reinforced concrete floor capable of supporting the loads anticipated during facility construction and offloading and storage of the OTSGs and RCS hot leg piping. The floor slab is elevated so that surface water will drain away from the building. An appropriate sealer will be applied to the floor.
4. Adequate storage supports and foundations for the OTSGs, which will be designed to store the OTSGs above the site design flood level of 309'. RCS hot leg piping will be placed on separate storage structures within the OSGSF per ECR TM 06-00759, *RCS Piping and Temporary Supports*, such that this contaminated piping will be stored above the site design flood level of 309'.
5. Unrestricted personnel access to the outside of the building and restricted personnel access to the building interior for periodic Exelon surveillance. The OSGSF is designed to provide adequate clearance between the stored components and any wall surfaces to permit personnel to visually inspect these areas if needed.
6. A locking access control entrance door located behind a concrete labyrinth designed to provide shielding. The OSGSF is not designed for occupation in any way except for the capability to perform inspections. Accordingly, the interior of the OSGSF is neither required to meet the emergency egress requirements of Building Officials and Code Administrators (BOCA) National Building Code, 1999, nor is the OSGSF required to have installed ventilation systems. Similarly for the purpose of long term storage of the OTSGs and RCS hot leg piping, which requires no occupancy of the facility by personnel, the OSGSF is not designed for any water, wastewater, or telephone services.
7. A building concrete shielding design that meets the radiological requirements of 40 CFR 190, 10 CFR 20 and plant license requirements, and that will provide adequate shielding to limit the contact dose rate to 0.2 mR/hour on the exterior wall surface of the building.
8. A watertight roof membrane or equivalent roofing system. The facility design and construction shall preclude moisture intrusion through construction joints, through the roof membrane, or through wall closures.
9. A floor sump with an external access radiological- and weather-shielded sampling point with the capability to be sealed closed. By means of the sloped concrete floor, this sump will serve as a common collection point for any liquids within the facility. The sampling point may be used to sample any inventory that collects within the sump, as well as to remove such

inventory without requiring entry into the OSFSF. Except for this sampling point that is capable of being sealed closed during conditions of non-use, the sump does not communicate with outside areas.

10. The OSGSF design will incorporate an outside electrical panel, with a permanent connection to an electrical power source, to provide 120/240 volt AC power to service permanent lighting and convenience receptacles that will be provided within the facility.

Note that the OSGSF will be used solely for storing the two (2) OTSGs and portions of RCS hot leg piping that will be removed and replaced during the TMI-1 SGR. As a result, fire detection capability within the facility is not required due to the limited presence of combustible materials resulting from storage of these components. For its use as a staging and preparation facility for the EOTSGs, the OSGSF will be provided with necessary temporary fire protection measures commensurate with EOTSG staging and preparation activities.

1. Will the proposed change increase environmental impacts from noise levels at the site boundary or generation of regulated air pollutants (e.g., dusts, vapors, asbestos, etc.) hazardous waste, solid waste, or wastewater?

Yes _____ No __X__

Explain:

Noise

It is expected that the operation of diesel-operated construction equipment and the process of constructing the OSGSF will themselves result in some noise level increase. These effects are, however, typical of an industrial site such as TMI, and do not present any significant detrimental environmental impact.

Air Emissions

The TMI station air emissions are controlled under Air Permit No. 22-05029. The use of temporary diesel powered construction equipment is covered under the permit and there are no special monitoring requirements for the equipment. However the following general requirements apply to the construction activity: 1) There shall be no visible fugitive air emissions (e.g., dust, particulate matter) generated that will cross the plant property boundary, AND 2) There shall be no emissions to the outside air that is equal to or greater than 20% opacity for 3 minutes in any one hour, or greater than 60% opacity at any time. Open burning at the OSGSF construction site will be prohibited.

Wastewater Generation

Some wastewater will be created by washout of concrete trucks involved in constructing the OSGSF. A concrete waste management detail has been written in order to prevent or reduce the discharge of pollutants to stormwater from concrete waste by performing onsite washout in a designated area and appropriately training employees and subcontractors. Hazardous waste is not produced from the construction of the OSGSF.

Solid Waste Generation

Solid wastes (e.g., construction consumables, etc.) which result during OSGSF construction will be disposed of in accordance with site procedures. Supplemental sanitary facilities required for construction workers at the site location of the OSGSF will be provided by vendor-contracted sanitary services by Exelon (e.g., Porta-johns and/or holding tanks).

Use of the OSGSF as a Storage Facility

During its normal operation to store the OTSGs and sections of RCS hot leg piping removed during the SGR Project, the OSGSF design and construction features together function to preclude any release of radiological materials to the environment. For off-normal conditions of fire, tornado, seismic event, flood, Design of the OSGSF for use in storing the OTSGs and portions of removed RCS hot leg piping meets the NRC guidance for onsite interim storage of contaminated components removed from the plant that is contained in NRC Inspection Procedure 50001, Steam Generator Replacement Inspection (9/6/00) and in Generic Letter 81-38, Storage of Low Level Radioactive Wastes at Power Reactor Sites. In accordance with this NRC guidance, the facility design and operation should assure that radiological consequences of design basis events (fire, tornado, seismic event, flood) should not exceed a small fraction of 10 CFR 100 Reactor Site Criteria accident dose (i.e., 10 percent), which is addressed in the 10 CFR 50.59 Screening performed for ECR TM 06-00687 that utilized dose release information provided by Calculation RAF-07-004, "SGRP Radiological Consequences of a Steam Generator Drop Accident for TMI."

2. Will the proposed change increase the potential to release any chemical (e.g., gas, oil, PCB, hydraulic fluid, anti-freeze, etc) to the environment or introduce new chemicals to the Site?
Yes _____ No __X__

Explain:

Construction of the OSGSF will not employ any chemical not already approved for TMI site use. During its long-term use for storing the OTSGs and portions of RCS hot leg piping that were removed and replaced during the TMI-1 SGR, the OSGSF will not be used to store chemicals of any sort. For its temporary use as a staging and preparation facility for the EOTSGs, any storage/use of chemicals will comply with TMI site requirements that will be detailed in a construction-specific plan that assures the compliance of these activities with AmerGen Procedure 1203-44, Hazardous Releases, and the Preparedness, Prevention and Contingency (PPC) Plan described in the following paragraph.

As part of preparation of ECR TM 06-00687, information regarding the OSGSF in relation to the PPC Plan was provided to TMI Chemistry to assist them in the ongoing rewrite of the existing site PPC Plan (AmerGen Procedure 6510-ADM-4520.02) that is being converted into a new Exelon PPC Plan (Exelon Procedure EN-TM-406-0001).

It is not expected that construction of the OSGSF will require the use of any chemical not already approved for TMI site use. Should any new chemicals be required, these will be approved in accordance with Exelon Procedure EN-MA-501, Controlled Materials and Hazard Communication Program. Quantities of chemicals used will be coordinated with the station CMP. During the long-term use of the OSGSF for storing the OTSGs and portions of RCS hot leg riser piping that were removed and replaced during the TMI-1 SGR, the facility will not be used to store chemicals of any sort. For its temporary use as a staging and preparation facility for the EOTSGs, any storage of chemicals will comply with TMI site requirements.

Use of diesel-operated equipment (e.g., cranes, trucks, etc.) in constructing the OSGSF presents the possibility of leakage of small amounts of petroleum products from the operation of such equipment. This is, however, mitigated to an acceptable level by proper maintenance and frequent inspection of this equipment throughout onsite use. Further, as a responsible operator of such equipment, SGT will have in place contingency response plans to deal environmentally with any unanticipated leakage.

3. Will the proposed change disturb land, streams or wetlands or modify stormwater drainage systems that would change site stormwater runoff or increase the sediment loading of stormwater runoff?
Yes __X__ No _____

Explain:

The OSGSF site is located entirely on previously disturbed land. Construction of the OSGSF will require excavation of the structure's foundation, and these activities will be controlled by means appropriate to limit any potential soil erosion. Grading of the area of the OSGSF construction will route rainfall to an acceptable water runoff pattern. All graded areas will be stabilized to control erosion by designing shallow slopes to greatest extent possible and by means of soil stabilization such as seeding, sod, stone, rip-rap, and retaining walls. These implementation features are incorporated in the Erosion and Sedimentation Control Plan prepared for ECR TM 06-00687.

With regard to historical preservation, investigations of the site designated for building the OSGSF indicate that this area is previously disturbed land, and this fact diminishes the possibility that items of an historical nature could still be present. Nevertheless, the SGR Project is committed to stopping any excavation work upon discovery of artifacts that may have historical value until an historical evaluation can be performed.

Regarding soil excavated to construct the OSGSF, it is not expected that any hazardous material will be discovered. The disposition of excavated soil will be at the direction of TMI in accordance with site requirements for the same.

4. Will the proposed change affect the existing capability to control, treat, or monitor release to the environment?
Yes _____ No __X__

Explain:

The OSGSF produces no releases to the environment during its normal operation. During its normal operation to store the OTSGs and sections of RCS hot leg piping removed during the SGR Project, the OSGSF design and construction features together function to preclude any release of radiological materials to the environment. For off-normal conditions of fire, tornado,

seismic event, flood, Design of the OSGSF for use in storing the OTSGs and portions of removed RCS hot leg piping meets the NRC guidance for onsite interim storage of contaminated components removed from the plant that is contained in NRC Inspection Procedure 50001, Steam Generator Replacement Inspection (9/6/00) and in Generic Letter 81-38, Storage of Low Level Radioactive Wastes at Power Reactor Sites. In accordance with this NRC guidance, the facility design and operation should assure that radiological consequences of design basis events (fire, tornado, seismic event, flood) should not exceed a small fraction of 10 CFR 100 Reactor Site Criteria accident dose (i.e., 10 percent), which is addressed in the 10 CFR 50.59 Screening performed for ECR TM 06-00687 that utilized dose release information provided by Calculation RAF-07-004, "SGRP Radiological Consequences of a Steam Generator Drop Accident for TMI."

5. Will the proposed change result in a physical or chemical change in the characteristics of discharges, effluents, emissions, or withdrawals?
Yes _____ No __X__

Explain:

The OSGSF produces no discharge, effluent, or emission streams. During its normal operation to store the OTSGs and sections of RCS hot leg piping removed during the SGR Project, the OSGSF design and construction features together function to preclude any release of radiological materials to the environment. For off-normal conditions of fire, tornado, seismic event, flood, Design of the OSGSF for use in storing the OTSGs and portions of removed RCS hot leg piping meets the NRC guidance for onsite interim storage of contaminated components removed from the plant that is contained in NRC Inspection Procedure 50001, Steam Generator Replacement Inspection (9/6/00) and in Generic Letter 81-38, Storage of Low Level Radioactive Wastes at Power Reactor Sites. In accordance with this NRC guidance, the facility design and operation should assure that radiological consequences of design basis events (fire, tornado, seismic event, flood) should not exceed a small fraction of 10 CFR 100 Reactor Site Criteria accident dose (i.e., 10 percent), which is addressed in the 10 CFR 50.59 Screening performed for ECR TM 06-00687 that utilized dose release information provided by Calculation RAF-07-004, "SGRP Radiological Consequences of a Steam Generator Drop Accident for TMI."

6. Will the proposed change result in permanent or temporary storage (for re-use, disposal, or offsite transfer) of a hazardous or regulated chemical or waste outside of established handling facilities: or reduce the margin of control or containment (i.e., increase the potential of a release to the environment?)
Yes __X__ No _____

Explain:

As described in ECR TM 06-00687, the OSGSF provides for the secure storage until site decommissioning of the OTSGs removed in performing the TMI-1 SGR Project, along with sections of RCS hot leg piping that will be removed and replaced during the SGR outage. The OSGSF is designed to meet the NRC guidelines for onsite facilities used in storing large contaminated components which are removed as a result of a steam generator replacement. The building concrete shielding design meets the radiological requirements of 40 CFR 190, 10 CFR 20 and plant license requirements, and will provide adequate shielding to limit the contact dose rate to 0.2 mR/hour on the exterior wall surface of the building.

7. Will the proposed change result in an alteration to a plant system or component, (e.g., wastewater treatment operation, air emission filter, etc.) regulated by an environmental permit, surface water use or discharge permit, etc.) or require a modification to an environmental permit?
Yes _____ No __X__

Explain:

Construction and operation of the OSGSF does not modify any existing environmental permit. A site soil erosion plan and permit are, however, required when disturbing 5,000 square feet or more soil. In addition, construction of the OSGSF will require a building permit.

8. Will the proposed change alter the drinking water treatment system or cause the drinking water distribution system to be opened?
Yes _____ No __X__
Explain:

For its use in storing the OTSGs and sections of removed RCS hot leg piping, the OSGSF is not designed for human

occupancy, and therefore neither provides nor interfaces with any site drinking water systems. During its potential as an area for storing the EOTSGs and performing preps of these components, drinking water to workers will be provided by Exelon using local vendor-contracted drinking water services.

9. Will the proposed change be consistent with the Facility Operating License, Appendix B "Environmental Protection Plan / Environmental Technical Specification" and / or the Final Environmental Statement by the NRC?
Yes __X__ No _____

Explain:

TMI reviews regarding the Facility Operating License, Appendix B "Environmental Protection Plan / Environmental Technical Specification" and / or the Final Environmental Statement by the NRC are performed against the requirements of ongoing permits and approvals under non-NRC jurisdiction (e.g. PADEP, UESPA, county, local, ACOE, etc). Refer to the Review and Comment Sections below.

10. Does the proposed activity affect a significant environmental aspect?
Yes _____ No __X__

Explain:

No significant environmental aspect is identified in constructing and operating the OSGSF.

11. Does the proposed activity modify an existing environmental permit?
Yes _____ No __X__

Explain:

Construction and operation of the OSGSF does not modify any existing environmental permit. A site soil erosion plan and permit are, however, required when disturbing 5,000 square feet or more soil. In addition, construction of the OSGSF will require a building permit.

12. Does the proposed activity involve a change to Environmental Technical Specifications?
Yes _____ No __X__

Explain:

TMI reviews regarding the Environmental Technical Specifications are performed against the requirements of ongoing permits and approvals under non-NRC jurisdiction (e.g. PADEP, UESPA, county, local, ACOE, etc). Refer to the Review and Comment Sections below

13. Does the proposed activity involve an environmental impact different than analyzed in the Final Environmental Statement?
Yes _____ No __X__

Explain:

TMI reviews regarding the Final Environmental Statement are performed against the requirements of ongoing permits and approvals under non-NRC jurisdiction (e.g. PADEP, UESPA, county, local, ACOE, etc). Refer to the Review and Comment Sections below.

14. Does the proposed activity require NRC approval in accordance with 10 CFR 50.59?
Yes _____ No __X__

Explain:

The 10 CFR 50.59 Applicability Determination and 10 CFR 50.59 Screening which were prepared for ECR TM 06-00687 (see ECR TM 06-00687, Attachments 2B and 2C) conclude that no 10 CFR 50.59 Evaluation is required to construct and operate the OSGSF, and that these activities may be implemented without prior NRC approval.

Technical review of the following documents was performed:

1. ECR TM 06-00687, Original Steam Generator Storage Facility (including Attachments 2A, 2B, and 2C for 10 CFR 50.59 Reviews)
2. NRC Inspection Procedure 50001, Steam Generator Replacement Inspection, issued September 6, 2000
3. U.S. NRC Generic Letter 81-38, Storage of Low Level Radioactive Wastes at Power Reactor Sites, dated November 10, 1981
4. Code of Federal Regulations, Title 10, Part 20, Standards for Protection Against Radiation, 2008
5. Code of Federal Regulations, Title 40, Part 190, Environmental Radiation Protection Standards for Nuclear Power Operations, 2008
6. Code of Federal Regulations, Title 10, Part 100, Reactor Site Criteria, 2008
7. Calculation RAF-07-004, SGRP Radiological Consequences of a Steam Generator Drop Accident for TMI, Revision 0
8. TMI Air Permit No. 22-050290
9. Exelon Procedure EN-MA-501, Controlled Materials and Hazard Communication Program, Revision 4
10. AmerGen Procedure 6510-ADM-4520.02, Preparedness, Prevention and Contingency (PPC) Plan for Management and Prevention of Pollutant Releases to the Environment, Revision 1
11. Exelon Procedure EN-TM-406-0001, Preparedness, Prevention and Contingency (PPC) Plan for Management and Prevention of Pollutant Releases to the Environment (Procedure Being Prepared)
12. AmerGen Procedure 1203.44, Hazardous Releases, Revision 42

Review:

Preparer[s]		Date	
Peer Reviewer[s]		Date	

Comments:

Exelon SM
Nuclear

Environmental Review Checklist

Station/Unit TMI-1	Doc. No. ECR TM 06-00687	Rev. No. 0

Description of Proposed Change:

In support of the Three Mile Island – Unit 1 Steam Generator Replacement (SGR) Project, ECR TM 06-00687 provides the design and implementation instructions for the Steam Generating Team (SGT) to permanently construct an Original Steam Generator Storage Facility (OSGSF) outside of the Protected Area and within the site Owner Controlled Area. Specifically, the OSGSF will be located at the intersection of Independence Rd. and Constitution Dr., immediately west of Bldg #71, Outage tool Storage, immediately across Constitution Drive from the existing South Administration Building. The OSGSF will be designed as a non-safety related structure to be used to provide secure storage until site decommissioning of the two (2) Once-Thru Steam Generators (OTSGs) and portions of RCS hot leg piping that will be removed and replaced during the TMI-1 Steam Generator Replacement (SGR) Project. Until its occupancy by these contaminated components, the OSGSF will also serve as a secure weather-proof building to support staging and preparation of the Replacement Steam Generators (Enhanced OTSGs (EOTSGs)). The OSGSF is designed for these purposes by employing the following features to provide:

1. Design of the OSGSF as a Class III (i.e. non-safety related) structure in accordance with the International Building Code (IBC), 2003. As directed by the IBC, for the special wind region where the OSGSF will be constructed, the building will be designed for Exposure C and a wind speed of 85 mph.
2. An enclosed footprint area and an eave height as required to accommodate and facilitate offloading of the OTSGs onto their designated supports, and the offloading and storage of the RCS hot leg piping. The OSGSF will also be designed to support offloading and rigging of the EOTSGs within the facility for staging and performing certain onsite preparations. Movements of the steam generators into and out of the OSGSF will be accomplished through an open side to the building facing Constitution Drive. Closure of this opening following offload of the OTSGs is by means of pre-cast concrete panels that will be sealed to minimize airflow through the panel joints. No welding will be required to attach the panels to the OSGSF as they will fit into keys built into the ends of the walls of the OSGSF. It is intended to use the OSGSF as a staging and preparation facility for the EOTSGs.
3. Design of a reinforced concrete floor capable of supporting the loads anticipated during facility construction and offloading and storage of the OTSGs and RCS hot leg piping. The floor slab is elevated so that surface water will drain away from the building. An appropriate sealer will be applied to the floor.
4. Adequate storage supports and foundations for the OTSGs, which will be designed to store the OTSGs above the site design flood level of 309'. RCS hot leg piping will be placed on separate storage structures within the OSGSF per ECR TM 06-00759, *RCS Piping and Temporary Supports*, such that this contaminated piping will be stored above the site design flood level of 309'.
5. Unrestricted personnel access to the outside of the building and restricted personnel access to the building interior for periodic Exelon surveillance. The OSGSF is designed to provide adequate clearance between the stored components and any wall surfaces to permit personnel to visually inspect these areas if needed.
6. A locking access control entrance door located behind a concrete labyrinth designed to provide shielding. The OSGSF is not designed for occupation in any way except for the capability to perform inspections. Accordingly, the interior of the OSGSF is neither required to meet the emergency egress requirements of Building Officials and Code Administrators (BOCA) National Building Code, 1999, nor is the OSGSF required to have installed ventilation systems. Similarly for the purpose of long term storage of the OTSGs and RCS hot leg piping, which requires no occupancy of the facility by personnel, the OSGSF is not designed for any water, wastewater, or telephone services.
7. A building concrete shielding design that meets the radiological requirements of 40 CFR 190, 10 CFR 20 and plant license requirements, and that will provide adequate shielding to limit the contact dose rate to 0.2 mR/hour on the exterior wall surface of the building.
8. A watertight roof membrane or equivalent roofing system. The facility design and construction shall preclude moisture intrusion through construction joints, through the roof membrane, or through wall closures.

9. A floor sump with an external access radiological- and weather-shielded sampling point with the capability to be sealed closed. By means of the sloped concrete floor, this sump will serve as a common collection point for any liquids within the facility. The sampling point may be used to sample any inventory that collects within the sump, as well as to remove such inventory without requiring entry into the OSFSF. Except for this sampling point that is capable of being sealed closed during conditions of non-use, the sump does not communicate with outside areas.

10. The OSGSF design will incorporate an outside electrical panel, with a permanent connection to an electrical power source, to provide 120/240 volt AC power to service permanent lighting and convenience receptacles that will be provided within the facility.

Note that the OSGSF will be used solely for storing the two (2) OTSGs and portions of RCS hot leg piping that will be removed and replaced during the TMI-1 SGR. As a result, fire detection capability within the facility is not required due to the limited presence of combustible materials resulting from storage of these components. For its use as a staging and preparation facility for the EOTSGs, the OSGSF will be provided with necessary temporary fire protection measures commensurate with EOTSG staging and preparation activities.

Note: Where referenced, each of the following questions concerns only environmental impacts that are non-radiological and non-incidental. Yes responses require project review by Environmental staff.

1. Will the proposed change increase environmental impacts from noise levels at the site boundary or generation of regulated air pollutants (e.g. dusts, vapors, asbestos, etc), hazardous waste, solid waste, or wastewater?	☐ Yes ☒ No
2. Will the proposed change increase the potential to release any chemical (e.g., gas, oil, PCB, hydraulic fluid, anti-freeze, etc.) to the environment or introduce new chemicals to the Site?	☐ Yes ☒ No
3. Will the proposed change disturb land, streams or wetlands or modify stormwater drainage systems that would change site stormwater runoff or increase the sediment loading of stormwater runoff?	☒ Yes ☐ No
4. Will the proposed change affect the existing capability to control, treat, or monitor releases to the environment?	☐ Yes ☒ No
5. Will the proposed change result in a physical or chemical change in the characteristics of discharges, effluents, emissions, or withdrawals?	☐ Yes ☒ No
6. Will the proposed change result in permanent or temporary storage (for re-use, disposal, or offsite transfer) of a hazardous or regulated chemical or waste outside of established handling facilities; or reduce the margin of control or containment (i.e., increase the potential of a release to the environment)?	☐ Yes ☒ No
7. Will the proposed change result in an alteration to a plant system or component, (e.g. wastewater treatment operation, air emission filter, etc.) regulated by an environmental permit (e.g., NPDES permit, air emission permit, groundwater use or discharge permit, surface water use or discharge permit, etc.) or require a modification to an environmental permit?	☐ Yes ☒ No
8. Will the proposed change alter the drinking water treatment system or cause the drinking water distribution system to be opened?	☐ Yes ☒ No
9. Will the proposed change be consistent with the Facility Operating License, Appendix B "Environmental Protection Plan/Environmental Technical Specifications" and/or the Final Environmental Statement by the NRC?	☒ Yes ☐ No ☐ N/A

Prepared By:

Print Name: Mark Ceraldi Signature: _____ Date: _____

Comments:

Clarifications deemed necessary to understanding the above responses are provided below:

Item 3:

The OSGSF site is located entirely on previously disturbed land. Construction of the OSGSF will require excavation of the structure's foundation, and these activities will be controlled by means appropriate to limit any potential soil erosion. Grading of the area of the OSGSF construction will route rainfall to an acceptable water runoff pattern. All graded areas will be stabilized to control erosion by designing shallow slopes to greatest extent possible and by means of soil stabilization such as seeding, sod, stone, rip-rap, and retaining walls. These implementation features are incorporated in the Erosion and Sedimentation Control Plan prepared for ECR TM 06-00687.

Item 9:

TMI reviews regarding the Facility Operating License, Appendix B "Environmental Protection Plan / Environmental Technical Specification" and / or the Final Environmental Statement by the NRC are performed against the requirements of ongoing permits and approvals under non-NRC jurisdiction (e.g. PADEP, UESPA, county, local, ACOE, etc). Refer to the Environmental Evaluation performed in Attachment 17B of ECR TM 06-00687.

As a result of the "YES" answer to Item 3, an Environmental Evaluation is performed that is presented in Attachment 17B of ECR TM 06-00687.

Request No: ENV-114 **Topic:**

Source: ENV **Requested by:** Sarah Lopas **Assigned to:** Scott Cogley **Status:**

Information Request: Please provide a copy of the SRBC Letter Approving Applicant's Surface Water Use Calculation Method.

Date Received: 5/6/2008 **Response Date:**

Response: The following documents are being provided to demonstrate SRBC approval of the methodology used to calculate surface water use at TMI:

1. Excel Workbook containing the 2007 TMI Water Use and Water Withdrawal calculations (SRBC Annual Report - 2007 Surface Water Consumptive Use (full text version work sheets).xls) Tab "A" of this workbook contains the following notation "Cooling Tower Modeling Results - Reference Feb 25, 1994, Method approved by SRBC".

2. Annual Surface Water Report - Calendar Year 2007, SRBC Project Docket No. 19950302. February 2008. This report is representative of surface water use reports submitted to the SRBC annually since TMI-1 was purchased by AmerGen in 1998.

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

Get Col B (MWth summary) from Mark Fauber

For JAN thru DEC sheets, change dates and get col M from S Cogley (Monthly Ops reports)

Copy and paste Col B into Jan thru Dec sheets

Everything else is fixed or calculated

DATE	Core Power MWth	Daily Average Power
******	******	******
01-Jan-07	2568	100.0%
02-Jan-07	2568	100.0%
03-Jan-07	2568	100.0%
04-Jan-07	2568	100.0%
05-Jan-07	2568	100.0%
06-Jan-07	2568	100.0%
07-Jan-07	2568	100.0%
08-Jan-07	2568	100.0%
09-Jan-07	2568	100.0%
10-Jan-07	2568	100.0%
11-Jan-07	2568	100.0%
12-Jan-07	2568	100.0%
13-Jan-07	2568	100.0%
14-Jan-07	2568	100.0%
15-Jan-07	2568	100.0%
16-Jan-07	2568	100.0%
17-Jan-07	2568	100.0%
18-Jan-07	2568	100.0%
19-Jan-07	2568	100.0%
20-Jan-07	2568	100.0%
21-Jan-07	2568	100.0%
22-Jan-07	2568	100.0%
23-Jan-07	2568	100.0%
24-Jan-07	2568	100.0%
25-Jan-07	2568	100.0%
26-Jan-07	2568	100.0%
27-Jan-07	2568	100.0%
28-Jan-07	2568	100.0%
29-Jan-07	2568	100.0%
30-Jan-07	2568	100.0%
31-Jan-07	2568	100.0%
01-Feb-07	2568	100.0%
02-Feb-07	2568	100.0%
03-Feb-07	2568	100.0%
04-Feb-07	2568	100.0%
05-Feb-07	2568	100.0%
06-Feb-07	2568	100.0%
07-Feb-07	2568	100.0%
08-Feb-07	2568	100.0%
09-Feb-07	2568	100.0%
10-Feb-07	2568	100.0%
11-Feb-07	2568	100.0%
12-Feb-07	2568	100.0%
13-Feb-07	2568	100.0%
14-Feb-07	2568	100.0%
15-Feb-07	2568	100.0%
16-Feb-07	2568	100.0%
17-Feb-07	2568	100.0%
18-Feb-07	2568	100.0%
19-Feb-07	2568	100.0%
20-Feb-07	2568	100.0%
21-Feb-07	2568	100.0%
22-Feb-07	2568	100.0%
23-Feb-07	2568	100.0%
24-Feb-07	2568	100.0%
25-Feb-07	2568	100.0%
26-Feb-07	2568	100.0%
27-Feb-07	2568	100.0%

Cooling Tower Modeling Results - Reference Feb 25, 1994, Method approved by SRBC

Change for 2001. MDCT not operated in 2001, therefore there is zero evaporative losses for MDCT.

NDCT Evaporation Rate (cfs)

Month	
Jan	19.1
Feb	20.0
Mar	20.1
Apr	20.9
May	21.8
Jun	23.0
Jul	23.0
Aug	24.5
Sep	22.3
Oct	21.8
Nov	20.3
Dec	18.7
AVERAGE:	21.3

Print the four SRBC Sheets for report

Email spreadsheet to Todd Hitz at SRBC

thitz@srbc.net

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

Get Col B (MWth summary) from Mark Fauber

For JAN thru DEC sheets, change dates and get col M from S Cogley (Monthly Ops reports)

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Everything else is fixed or calculated

DATE	Core Power MWth	Daily Average Power
******	******	******
28-Feb-07	2568	100.0%
01-Mar-07	2568	100.0%
02-Mar-07	2568	100.0%
03-Mar-07	2568	100.0%
04-Mar-07	2568	100.0%
05-Mar-07	2568	100.0%
06-Mar-07	2568	100.0%
07-Mar-07	2568	100.0%
08-Mar-07	2568	100.0%
09-Mar-07	2568	100.0%
10-Mar-07	2568	100.0%
11-Mar-07	2568	100.0%
12-Mar-07	2568	100.0%
13-Mar-07	2568	100.0%
14-Mar-07	2568	100.0%
15-Mar-07	2568	100.0%
16-Mar-07	2568	100.0%
17-Mar-07	2568	100.0%
18-Mar-07	2311	90.0%
19-Mar-07	2568	100.0%
20-Mar-07	2568	100.0%
21-Mar-07	2568	100.0%
22-Mar-07	2568	100.0%
23-Mar-07	2568	100.0%
24-Mar-07	2568	100.0%
25-Mar-07	2568	100.0%
26-Mar-07	2568	100.0%
27-Mar-07	2568	100.0%
28-Mar-07	2568	100.0%
29-Mar-07	2568	100.0%
30-Mar-07	2568	100.0%
31-Mar-07	2568	100.0%
01-Apr-07	2568	100.0%
02-Apr-07	2568	100.0%
03-Apr-07	2568	100.0%
04-Apr-07	2568	100.0%
05-Apr-07	2568	100.0%
06-Apr-07	2568	100.0%
07-Apr-07	2568	100.0%
08-Apr-07	2568	100.0%
09-Apr-07	2568	100.0%
10-Apr-07	2568	100.0%
11-Apr-07	2568	100.0%
12-Apr-07	2568	100.0%
13-Apr-07	2568	100.0%
14-Apr-07	2568	100.0%
15-Apr-07	2568	100.0%
16-Apr-07	2568	100.0%
17-Apr-07	2568	100.0%
18-Apr-07	2568	100.0%
19-Apr-07	2568	100.0%
20-Apr-07	2568	100.0%
21-Apr-07	2568	100.0%
22-Apr-07	2568	100.0%
23-Apr-07	2568	100.0%
24-Apr-07	2568	100.0%
25-Apr-07	2568	100.0%
26-Apr-07	2568	100.0%

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

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DATE	Core Power MWth	Daily Average Power
******	******	******
27-Apr-07	2568	100.0%
28-Apr-07	2568	100.0%
29-Apr-07	2568	100.0%
30-Apr-07	2568	100.0%
01-May-07	2568	100.0%
02-May-07	2568	100.0%
03-May-07	2568	100.0%
04-May-07	2568	100.0%
05-May-07	2568	100.0%
06-May-07	2568	100.0%
07-May-07	2568	100.0%
08-May-07	2568	100.0%
09-May-07	2568	100.0%
10-May-07	2568	100.0%
11-May-07	2568	100.0%
12-May-07	2568	100.0%
13-May-07	2568	100.0%
14-May-07	2568	100.0%
15-May-07	2568	100.0%
16-May-07	2568	100.0%
17-May-07	2568	100.0%
18-May-07	2568	100.0%
19-May-07	2568	100.0%
20-May-07	2568	100.0%
21-May-07	2568	100.0%
22-May-07	2568	100.0%
23-May-07	2568	100.0%
24-May-07	2568	100.0%
25-May-07	2568	100.0%
26-May-07	2568	100.0%
27-May-07	2568	100.0%
28-May-07	2568	100.0%
29-May-07	2568	100.0%
30-May-07	2568	100.0%
31-May-07	2568	100.0%
01-Jun-07	2568	100.0%
02-Jun-07	2568	100.0%
03-Jun-07	2568	100.0%
04-Jun-07	2568	100.0%
05-Jun-07	2568	100.0%
06-Jun-07	2568	100.0%
07-Jun-07	2568	100.0%
08-Jun-07	2568	100.0%
09-Jun-07	2568	100.0%
10-Jun-07	2568	100.0%
11-Jun-07	2568	100.0%
12-Jun-07	2568	100.0%
13-Jun-07	2568	100.0%
14-Jun-07	2568	100.0%
15-Jun-07	2568	100.0%
16-Jun-07	2568	100.0%
17-Jun-07	2311	90.0%
18-Jun-07	2568	100.0%
19-Jun-07	2568	100.0%
20-Jun-07	2568	100.0%
21-Jun-07	2568	100.0%
22-Jun-07	2568	100.0%
23-Jun-07	2568	100.0%

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

Get Col B (MWth summary) from Mark Fauber

For JAN thru DEC sheets, change dates and get col M from S Cogley (Monthly Ops reports)

Copy and paste Col B into Jan thru Dec sheets

Everything else is fixed or calculated

DATE	Core Power MWth	Daily Average Power
******	******	******
24-Jun-07	2568	100.0%
25-Jun-07	2568	100.0%
26-Jun-07	2568	100.0%
27-Jun-07	2568	100.0%
28-Jun-07	2568	100.0%
29-Jun-07	2568	100.0%
30-Jun-07	2568	100.0%
01-Jul-07	2568	100.0%
02-Jul-07	2568	100.0%
03-Jul-07	2568	100.0%
04-Jul-07	2568	100.0%
05-Jul-07	2568	100.0%
06-Jul-07	2568	100.0%
07-Jul-07	2568	100.0%
08-Jul-07	2568	100.0%
09-Jul-07	2568	100.0%
10-Jul-07	2568	100.0%
11-Jul-07	2568	100.0%
12-Jul-07	2568	100.0%
13-Jul-07	2568	100.0%
14-Jul-07	2568	100.0%
15-Jul-07	2568	100.0%
16-Jul-07	2568	100.0%
17-Jul-07	2568	100.0%
18-Jul-07	2568	100.0%
19-Jul-07	2568	100.0%
20-Jul-07	2568	100.0%
21-Jul-07	2568	100.0%
22-Jul-07	2568	100.0%
23-Jul-07	2568	100.0%
24-Jul-07	2568	100.0%
25-Jul-07	2568	100.0%
26-Jul-07	2568	100.0%
27-Jul-07	2568	100.0%
28-Jul-07	2568	100.0%
29-Jul-07	2568	100.0%
30-Jul-07	2568	100.0%
31-Jul-07	2568	100.0%
01-Aug-07	2568	100.0%
02-Aug-07	2568	100.0%
03-Aug-07	2568	100.0%
04-Aug-07	2568	100.0%
05-Aug-07	2568	100.0%
06-Aug-07	2568	100.0%
07-Aug-07	2568	100.0%
08-Aug-07	2568	100.0%
09-Aug-07	2568	100.0%
10-Aug-07	2568	100.0%
11-Aug-07	2568	100.0%
12-Aug-07	2568	100.0%
13-Aug-07	2568	100.0%
14-Aug-07	2568	100.0%
15-Aug-07	2568	100.0%
16-Aug-07	2568	100.0%
17-Aug-07	2568	100.0%
18-Aug-07	2568	100.0%
19-Aug-07	2568	100.0%
20-Aug-07	2568	100.0%

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

Get Col B (MWth summary) from Mark Fauber

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Copy and paste Col B into Jan thru Dec sheets

Everything else is fixed or calculated

DATE	Core Power MWth	Daily Average Power
******	******	******
21-Aug-07	2568	100.0%
22-Aug-07	2568	100.0%
23-Aug-07	2568	100.0%
24-Aug-07	2568	100.0%
25-Aug-07	2568	100.0%
26-Aug-07	2568	100.0%
27-Aug-07	2568	100.0%
28-Aug-07	2568	100.0%
29-Aug-07	2568	100.0%
30-Aug-07	2568	100.0%
31-Aug-07	2568	100.0%
01-Sep-07	2568	100.0%
02-Sep-07	2568	100.0%
03-Sep-07	2568	100.0%
04-Sep-07	2568	100.0%
05-Sep-07	2568	100.0%
06-Sep-07	2568	100.0%
07-Sep-07	2568	100.0%
08-Sep-07	2568	100.0%
09-Sep-07	2568	100.0%
10-Sep-07	2568	100.0%
11-Sep-07	2568	100.0%
12-Sep-07	2568	100.0%
13-Sep-07	2568	100.0%
14-Sep-07	2568	100.0%
15-Sep-07	2568	100.0%
16-Sep-07	2568	100.0%
17-Sep-07	2568	100.0%
18-Sep-07	2568	100.0%
19-Sep-07	2568	100.0%
20-Sep-07	2568	100.0%
21-Sep-07	2568	100.0%
22-Sep-07	2568	100.0%
23-Sep-07	2311	90.0%
24-Sep-07	2568	100.0%
25-Sep-07	2568	100.0%
26-Sep-07	2568	100.0%
27-Sep-07	2568	100.0%
28-Sep-07	2568	100.0%
29-Sep-07	2568	100.0%
30-Sep-07	2568	100.0%
01-Oct-07	2568	100.0%
02-Oct-07	2568	100.0%
03-Oct-07	2568	100.0%
04-Oct-07	2568	100.0%
05-Oct-07	2568	100.0%
06-Oct-07	2568	100.0%
07-Oct-07	2568	100.0%
08-Oct-07	2568	100.0%
09-Oct-07	2568	100.0%
10-Oct-07	2568	100.0%
11-Oct-07	2568	100.0%
12-Oct-07	2540	98.9%
13-Oct-07	2504	97.5%
14-Oct-07	2483	96.7%
15-Oct-07	2463	95.9%
16-Oct-07	2406	93.7%
17-Oct-07	2373	92.4%

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

Get Col B (MWth summary) from Mark Fauber

For JAN thru DEC sheets, change dates and get col M from S Cogley (Monthly Ops reports)

Copy and paste Col B into Jan thru Dec sheets

Everything else is fixed or calculated

DATE	Core Power MWth	Daily Average Power
******	******	******
18-Oct-07	2324	90.5%
19-Oct-07	2329	90.7%
20-Oct-07	2319	90.3%
21-Oct-07	552	21.5%
22-Oct-07	0	0.0%
23-Oct-07	0	0.0%
24-Oct-07	0	0.0%
25-Oct-07	0	0.0%
26-Oct-07	0	0.0%
27-Oct-07	0	0.0%
28-Oct-07	0	0.0%
29-Oct-07	0	0.0%
30-Oct-07	0	0.0%
31-Oct-07	0	0.0%
01-Nov-07	0	0.0%
02-Nov-07	0	0.0%
03-Nov-07	0	0.0%
04-Nov-07	0	0.0%
05-Nov-07	0	0.0%
06-Nov-07	0	0.0%
07-Nov-07	0	0.0%
08-Nov-07	0	0.0%
09-Nov-07	0	0.0%
10-Nov-07	0	0.0%
11-Nov-07	0	0.0%
12-Nov-07	0	0.0%
13-Nov-07	0	0.0%
14-Nov-07	0	0.0%
15-Nov-07	0	0.0%
16-Nov-07	0	0.0%
17-Nov-07	0	0.0%
18-Nov-07	0	0.0%
19-Nov-07	0	0.0%
20-Nov-07	0	0.0%
21-Nov-07	847	33.0%
22-Nov-07	2029	79.0%
23-Nov-07	2568	100.0%
24-Nov-07	2568	100.0%
25-Nov-07	2568	100.0%
26-Nov-07	2568	100.0%
27-Nov-07	2568	100.0%
28-Nov-07	2568	100.0%
29-Nov-07	2568	100.0%
30-Nov-07	2363	92.0%
01-Dec-07	2293	89.3%
02-Dec-07	1798	70.0%
03-Dec-07	2568	100.0%
04-Dec-07	2568	100.0%
05-Dec-07	2568	100.0%
06-Dec-07	2568	100.0%
07-Dec-07	2568	100.0%
08-Dec-07	2568	100.0%
09-Dec-07	2568	100.0%
10-Dec-07	2568	100.0%
11-Dec-07	2568	100.0%
12-Dec-07	2568	100.0%
13-Dec-07	2568	100.0%
14-Dec-07	2568	100.0%

TMI-1 All Months **2007** (Calculation Data Source: Bob Masoero, Engineer at TMI-1)

Get Col B (MWth summary) from Mark Fauber

For JAN thru DEC sheets, change dates and get col M from S Cogley (Monthly Ops reports)

Copy and paste Col B into Jan thru Dec sheets

Everything else is fixed or calculated

DATE	Core Power MWth	Daily Average Power
******	******	******
15-Dec-07	2568	100.0%
16-Dec-07	2568	100.0%
17-Dec-07	2568	100.0%
18-Dec-07	2568	100.0%
19-Dec-07	2568	100.0%
20-Dec-07	2568	100.0%
21-Dec-07	2568	100.0%
22-Dec-07	2568	100.0%
23-Dec-07	2568	100.0%
24-Dec-07	2568	100.0%
25-Dec-07	2568	100.0%
26-Dec-07	2568	100.0%
27-Dec-07	2568	100.0%
28-Dec-07	2568	100.0%
29-Dec-07	2568	100.0%
30-Dec-07	2568	100.0%
31-Dec-07	2568	100.0%
Average:	2336	91.0%
Total:	852612	

TMI-1 JANUARY 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	23	19.3	42.3	27,339,336	15.0	1.547	12,473,976
02-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	22	19.3	41.3	26,693,016	14.1	1.547	12,473,976
03-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	21	19.3	40.3	26,046,696	13.8	1.547	12,473,976
04-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	23	19.3	42.3	27,339,336	14.7	1.547	12,473,976
05-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	22	19.3	41.3	26,693,016	14.0	1.547	12,473,976
06-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	21	19.3	40.3	26,046,696	13.3	1.547	12,473,976
07-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	23	19.3	42.3	27,339,336	14.6	1.547	12,473,976
08-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	28	19.3	47.3	30,570,936	17.8	1.547	12,473,976
09-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	16.3	1.547	12,473,976
10-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	26	19.3	45.3	29,278,296	16.7	1.547	12,473,976
11-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	27	19.3	46.3	29,924,616	17.3	1.547	12,473,976
12-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	26	19.3	45.3	29,278,296	16.9	1.547	12,473,976
13-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.2	1.547	12,473,976
14-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.4	1.547	12,473,976
15-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.2	1.547	12,473,976
16-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.3	1.547	12,473,976
17-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	16.0	1.547	12,473,976
18-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	26	19.3	45.3	29,278,296	16.5	1.547	12,473,976
19-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.3	1.547	12,473,976
20-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	21	19.3	40.3	26,046,696	13.8	1.547	12,473,976
21-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.3	1.547	12,473,976
22-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.7	1.547	12,473,976
23-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.2	1.547	12,473,976
24-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	16.3	1.547	12,473,976
25-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	16.2	1.547	12,473,976
26-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	15.9	1.547	12,473,976
27-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	16.2	1.547	12,473,976
28-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	25	19.3	44.3	28,631,976	15.9	1.547	12,473,976
29-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.3	1.547	12,473,976
30-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	24	19.3	43.3	27,985,656	15.2	1.547	12,473,976
31-Jan-07	2568	2568	1.0000	19.1	19.1	0.0	0.2	23	19.3	42.3	27,339,336	14.8	1.547	12,473,976
											SUM:	479.20		386,693,256

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 FEBRUARY 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	14.3	1.547	13,055,664
02-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	24	20.2	44.2	28,567,344	15.6	1.547	13,055,664
03-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	20	20.2	40.2	25,982,064	12.9	1.547	13,055,664
04-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	19	20.2	39.2	25,335,744	12.6	1.547	13,055,664
05-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	20	20.2	40.2	25,982,064	12.9	1.547	13,055,664
06-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	20	20.2	40.2	25,982,064	13.2	1.547	13,055,664
07-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	13.9	1.547	13,055,664
08-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	21	20.2	41.2	26,628,384	13.7	1.547	13,055,664
09-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	21	20.2	41.2	26,628,384	13.7	1.547	13,055,664
10-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	14.3	1.547	13,055,664
11-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	23	20.2	43.2	27,921,024	14.7	1.547	13,055,664
12-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	14.2	1.547	13,055,664
13-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	23	20.2	43.2	27,921,024	14.8	1.547	13,055,664
14-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	14.3	1.547	13,055,664
15-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	21	20.2	41.2	26,628,384	13.6	1.547	13,055,664
16-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	21	20.2	41.2	26,628,384	13.4	1.547	13,055,664
17-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	20	20.2	40.2	25,982,064	12.7	1.547	13,055,664
18-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	13.9	1.547	13,055,664
19-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	23	20.2	43.2	27,921,024	14.9	1.547	13,055,664
20-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	23	20.2	43.2	27,921,024	15.0	1.547	13,055,664
21-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	23	20.2	43.2	27,921,024	15.0	1.547	13,055,664
22-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	23	20.2	43.2	27,921,024	15.0	1.547	13,055,664
23-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	14.0	1.547	13,055,664
24-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	21	20.2	41.2	26,628,384	13.6	1.547	13,055,664
25-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	21	20.2	41.2	26,628,384	13.3	1.547	13,055,664
26-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	22	20.2	42.2	27,274,704	13.9	1.547	13,055,664
27-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	20	20.2	40.2	25,982,064	13.0	1.547	13,055,664
28-Feb-07	2568	2568	1.0000	20.0	20.0	0.0	0.2	20	20.2	40.2	25,982,064	12.7	1.547	13,055,664
											Total:	389.10		365,558,592

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 MARCH 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	21	20.3	41.3	26,693,016	13.4	1.547	13,120,296
02-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	20	20.3	40.3	26,046,696	13.1	1.547	13,120,296
03-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	23	20.3	43.3	27,985,656	15.0	1.547	13,120,296
04-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	22	20.3	42.3	27,339,336	14.4	1.547	13,120,296
05-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	28	20.3	48.3	31,217,256	18.0	1.547	13,120,296
06-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	35	20.3	55.3	35,741,496	22.6	1.547	13,120,296
07-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	21	20.3	41.3	26,693,016	13.4	1.547	13,120,296
08-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	18	20.3	38.3	24,754,056	11.7	1.547	13,120,296
09-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	17	20.3	37.3	24,107,736	11.3	1.547	13,120,296
10-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	15	20.3	35.3	22,815,096	9.7	1.547	13,120,296
11-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	26	20.3	46.3	29,924,616	16.7	1.547	13,120,296
12-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	38	20.3	58.3	37,680,456	24.6	1.547	13,120,296
13-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	36	20.3	56.3	36,387,816	23.5	1.547	13,120,296
14-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	34	20.3	54.3	35,095,176	22.1	1.547	13,120,296
15-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	35	20.3	55.3	35,741,496	22.7	1.547	13,120,296
16-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	40	20.3	60.3	38,973,096	25.6	1.547	13,120,296
17-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	26	20.3	46.3	29,924,616	17.1	1.547	13,120,296
18-Mar-07	2311	2568	0.8999	20.1	18.1	0.0	0.2	24	18.3	42.3	27,339,336	15.5	1.547	11,827,656
19-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	23	20.3	43.3	27,985,656	15.0	1.547	13,120,296
20-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	22	20.3	42.3	27,339,336	13.9	1.547	13,120,296
21-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	22	20.3	42.3	27,339,336	14.1	1.547	13,120,296
22-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	24	20.3	44.3	28,631,976	15.6	1.547	13,120,296
23-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	24	20.3	44.3	28,631,976	15.5	1.547	13,120,296
24-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	26	20.3	46.3	29,924,616	17.1	1.547	13,120,296
25-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	30	20.3	50.3	32,509,896	19.1	1.547	13,120,296
26-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	32	20.3	52.3	33,802,536	20.4	1.547	13,120,296
27-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	30	20.3	50.3	32,509,896	19.1	1.547	13,120,296
28-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	29	20.3	49.3	31,863,576	18.8	1.547	13,120,296
29-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	31	20.3	51.3	33,156,216	20.2	1.547	13,120,296
30-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	30	20.3	50.3	32,509,896	19.6	1.547	13,120,296
31-Mar-07	2568	2568	1.0000	20.1	20.1	0.0	0.2	30	20.3	50.3	32,509,896	19.6	1.547	13,120,296
											Total:	538.40		405,436,536

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 APRIL 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	30	21.1	51.1	33,026,952	19.1	1.547	13,637,352
02-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	29	21.1	50.1	32,380,632	19.0	1.547	13,637,352
03-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.4	1.547	13,637,352
04-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	17.1	1.547	13,637,352
05-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.7	1.547	13,637,352
06-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.7	1.547	13,637,352
07-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.9	1.547	13,637,352
08-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	25	21.1	46.1	29,795,352	16.0	1.547	13,637,352
09-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	25	21.1	46.1	29,795,352	16.0	1.547	13,637,352
10-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.7	1.547	13,637,352
11-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.4	1.547	13,637,352
12-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	17.1	1.547	13,637,352
13-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.5	1.547	13,637,352
14-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	25	21.1	46.1	29,795,352	16.2	1.547	13,637,352
15-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.5	1.547	13,637,352
16-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.8	1.547	13,637,352
17-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	28	21.1	49.1	31,734,312	17.9	1.547	13,637,352
18-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	28	21.1	49.1	31,734,312	18.3	1.547	13,637,352
19-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	28	21.1	49.1	31,734,312	17.8	1.547	13,637,352
20-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.9	1.547	13,637,352
21-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	17.1	1.547	13,637,352
22-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.2	1.547	13,637,352
23-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	17.1	1.547	13,637,352
24-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	26	21.1	47.1	30,441,672	16.8	1.547	13,637,352
25-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	28	21.1	49.1	31,734,312	18.0	1.547	13,637,352
26-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	28	21.1	49.1	31,734,312	18.4	1.547	13,637,352
27-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	29	21.1	50.1	32,380,632	18.5	1.547	13,637,352
28-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.7	1.547	13,637,352
29-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	27	21.1	48.1	31,087,992	17.4	1.547	13,637,352
30-Apr-07	2568	2568	1.0000	20.9	20.9	0.0	0.2	25	21.1	46.1	29,795,352	16.2	1.547	13,637,352
											Total:	519.40		409,120,560

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 MAY 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporatio (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	18.0	1.547	14,219,040
02-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	26	22.0	48.0	31,023,360	16.8	1.547	14,219,040
03-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.2	1.547	14,219,040
04-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.3	1.547	14,219,040
05-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	17.8	1.547	14,219,040
06-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	18.4	1.547	14,219,040
07-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	29	22.0	51.0	32,962,320	18.8	1.547	14,219,040
08-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	29	22.0	51.0	32,962,320	18.9	1.547	14,219,040
09-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	18.4	1.547	14,219,040
10-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	26	22.0	48.0	31,023,360	17.0	1.547	14,219,040
11-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	26	22.0	48.0	31,023,360	16.7	1.547	14,219,040
12-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.2	1.547	14,219,040
13-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	26	22.0	48.0	31,023,360	17.0	1.547	14,219,040
14-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.2	1.547	14,219,040
15-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	18.1	1.547	14,219,040
16-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	25	22.0	47.0	30,377,040	16.1	1.547	14,219,040
17-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	26	22.0	48.0	31,023,360	16.9	1.547	14,219,040
18-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.5	1.547	14,219,040
19-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.7	1.547	14,219,040
20-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	26	22.0	48.0	31,023,360	17.1	1.547	14,219,040
21-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.4	1.547	14,219,040
22-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	17.8	1.547	14,219,040
23-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	28	22.0	50.0	32,316,000	18.1	1.547	14,219,040
24-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.4	1.547	14,219,040
25-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	27	22.0	49.0	31,669,680	17.5	1.547	14,219,040
26-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	25	22.0	47.0	30,377,040	16.4	1.547	14,219,040
27-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	25	22.0	47.0	30,377,040	16.3	1.547	14,219,040
28-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	25	22.0	47.0	30,377,040	16.4	1.547	14,219,040
29-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	25	22.0	47.0	30,377,040	16.0	1.547	14,219,040
30-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	24	22.0	46.0	29,730,720	15.6	1.547	14,219,040
31-May-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	24	22.0	46.0	29,730,720	15.7	1.547	14,219,040
											Total:	534.70		440,790,240

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 JUNE 2007
*

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
******	******	******	******	******	******	******	******	******	******	******	******	******	******	******
01-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	29	23.2	52.2	33,737,904	18.5	1.547	14,994,624
02-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	30	23.2	53.2	34,384,224	19.6	1.547	14,994,624
03-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	34	23.2	57.2	36,969,504	21.7	1.547	14,994,624
04-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	34	23.2	57.2	36,969,504	21.9	1.547	14,994,624
05-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	34	23.2	57.2	36,969,504	21.8	1.547	14,994,624
06-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	34	23.2	57.2	36,969,504	22.0	1.547	14,994,624
07-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	35	23.2	58.2	37,615,824	22.3	1.547	14,994,624
08-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.2	1.547	14,994,624
09-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.9	1.547	14,994,624
10-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.5	1.547	14,994,624
11-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.9	1.547	14,994,624
12-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	35	23.2	58.2	37,615,824	22.7	1.547	14,994,624
13-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	34	23.2	57.2	36,969,504	21.8	1.547	14,994,624
14-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	35	23.2	58.2	37,615,824	22.6	1.547	14,994,624
15-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	35	23.2	58.2	37,615,824	22.5	1.547	14,994,624
16-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.6	1.547	14,994,624
17-Jun-07	2311	2568	0.8999	23.0	20.7	0.0	0.2	33	20.9	53.9	34,836,648	21.3	1.547	13,508,088
18-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.6	1.547	14,994,624
19-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	21.0	1.547	14,994,624
20-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	35	23.2	58.2	37,615,824	22.3	1.547	14,994,624
21-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.7	1.547	14,994,624
22-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.8	1.547	14,994,624
23-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.3	1.547	14,994,624
24-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.3	1.547	14,994,624
25-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.1	1.547	14,994,624
26-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	21.0	1.547	14,994,624
27-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.8	1.547	14,994,624
28-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.6	1.547	14,994,624
29-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	21.0	1.547	14,994,624
30-Jun-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	21.0	1.547	14,994,624
											Total:	638.30		448,352,184

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 JULY 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	21.0	1.547	14,994,624
02-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.3	1.547	14,994,624
03-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.5	1.547	14,994,624
04-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	35	23.2	58.2	37,615,824	22.4	1.547	14,994,624
05-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.5	1.547	14,994,624
06-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.6	1.547	14,994,624
07-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.4	1.547	14,994,624
08-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.1	1.547	14,994,624
09-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	29	23.2	52.2	33,737,904	19.0	1.547	14,994,624
10-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	19.9	1.547	14,994,624
11-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	36	23.2	59.2	38,262,144	23.4	1.547	14,994,624
12-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.5	1.547	14,994,624
13-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.2	1.547	14,994,624
14-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.3	1.547	14,994,624
15-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	30	23.2	53.2	34,384,224	19.7	1.547	14,994,624
16-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.1	1.547	14,994,624
17-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.0	1.547	14,994,624
18-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.3	1.547	14,994,624
19-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.3	1.547	14,994,624
20-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.0	1.547	14,994,624
21-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.5	1.547	14,994,624
22-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.3	1.547	14,994,624
23-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.8	1.547	14,994,624
24-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	33	23.2	56.2	36,323,184	21.2	1.547	14,994,624
25-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.4	1.547	14,994,624
26-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.6	1.547	14,994,624
27-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.8	1.547	14,994,624
28-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.4	1.547	14,994,624
29-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.5	1.547	14,994,624
30-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	32	23.2	55.2	35,676,864	20.9	1.547	14,994,624
31-Jul-07	2568	2568	1.0000	23.0	23.0	0.0	0.2	31	23.2	54.2	35,030,544	20.2	1.547	14,994,624
						0.0								
											Total:	640.10		464,833,344

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 AUGUST 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporatior (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	* (8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	19.9	1.547	15,964,104
02-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.0	1.547	15,964,104
03-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	33	24.7	57.7	37,292,664	21.6	1.547	15,964,104
04-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	35	24.7	59.7	38,585,304	22.4	1.547	15,964,104
05-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	30	24.7	54.7	35,353,704	19.5	1.547	15,964,104
06-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.2	1.547	15,964,104
07-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	30	24.7	54.7	35,353,704	19.3	1.547	15,964,104
08-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	29	24.7	53.7	34,707,384	18.9	1.547	15,964,104
09-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	33	24.7	57.7	37,292,664	21.2	1.547	15,964,104
10-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.3	1.547	15,964,104
11-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	32	24.7	56.7	36,646,344	20.6	1.547	15,964,104
12-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.1	1.547	15,964,104
13-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	30	24.7	54.7	35,353,704	19.5	1.547	15,964,104
14-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	19.9	1.547	15,964,104
15-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.2	1.547	15,964,104
16-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	32	24.7	56.7	36,646,344	20.6	1.547	15,964,104
17-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	30	24.7	54.7	35,353,704	19.1	1.547	15,964,104
18-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.1	1.547	15,964,104
19-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	33	24.7	57.7	37,292,664	21.1	1.547	15,964,104
20-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	34	24.7	58.7	37,938,984	21.8	1.547	15,964,104
21-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	35	24.7	59.7	38,585,304	22.3	1.547	15,964,104
22-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	34	24.7	58.7	37,938,984	22.2	1.547	15,964,104
23-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	33	24.7	57.7	37,292,664	21.5	1.547	15,964,104
24-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	30	24.7	54.7	35,353,704	19.5	1.547	15,964,104
25-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	31	24.7	55.7	36,000,024	20.0	1.547	15,964,104
26-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	32	24.7	56.7	36,646,344	20.5	1.547	15,964,104
27-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	33	24.7	57.7	37,292,664	21.5	1.547	15,964,104
28-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	33	24.7	57.7	37,292,664	21.1	1.547	15,964,104
29-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	32	24.7	56.7	36,646,344	20.8	1.547	15,964,104
30-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	32	24.7	56.7	36,646,344	20.4	1.547	15,964,104
31-Aug-07	2568	2568	1.0000	24.5	24.5	0.0	0.2	32	24.7	56.7	36,646,344	20.4	1.547	15,964,104
												======		======
											Total:	636.50		494,887,224

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 SEPTEMBER 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	33	22.5	55.5	35,870,760	21.4	1.547	14,542,200
02-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.8	1.547	14,542,200
03-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.6	1.547	14,542,200
04-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.7	1.547	14,542,200
05-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	31	22.5	53.5	34,578,120	20.2	1.547	14,542,200
06-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.7	1.547	14,542,200
07-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	30	22.5	52.5	33,931,800	19.7	1.547	14,542,200
08-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	31	22.5	53.5	34,578,120	19.8	1.547	14,542,200
09-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	23	22.5	45.5	29,407,560	15.1	1.547	14,542,200
10-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	26	22.5	48.5	31,346,520	16.8	1.547	14,542,200
11-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	21	22.5	43.5	28,114,920	13.6	1.547	14,542,200
12-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.8	1.547	14,542,200
13-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	38	22.5	60.5	39,102,360	24.4	1.547	14,542,200
14-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	33	22.5	55.5	35,870,760	21.2	1.547	14,542,200
15-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.7	1.547	14,542,200
16-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	35	22.5	57.5	37,163,400	22.4	1.547	14,542,200
17-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	33	22.5	55.5	35,870,760	21.4	1.547	14,542,200
18-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	33	22.5	55.5	35,870,760	21.3	1.547	14,542,200
19-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.6	1.547	14,542,200
20-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	21.0	1.547	14,542,200
21-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	31	22.5	53.5	34,578,120	20.3	1.547	14,542,200
22-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.6	1.547	14,542,200
23-Sep-07	2311	2568	0.8999	22.3	20.1	0.0	0.2	31	20.3	51.3	33,156,216	20.0	1.547	13,120,296
24-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	21.0	1.547	14,542,200
25-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	34	22.5	56.5	36,517,080	21.7	1.547	14,542,200
26-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.8	1.547	14,542,200
27-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	32	22.5	54.5	35,224,440	20.6	1.547	14,542,200
28-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	34	22.5	56.5	36,517,080	22.2	1.547	14,542,200
29-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	33	22.5	55.5	35,870,760	21.2	1.547	14,542,200
30-Sep-07	2568	2568	1.0000	22.3	22.3	0.0	0.2	34	22.5	56.5	36,517,080	21.7	1.547	14,542,200
												======		======
											Total:	613.30		434,844,096

CALCULATIONS:

(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 OCTOBER 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	33	22.0	55.0	35,547,600	21.4	1.547	14,219,040
02-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	33	22.0	55.0	35,547,600	21.6	1.547	14,219,040
03-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	33	22.0	55.0	35,547,600	21.3	1.547	14,219,040
04-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	32	22.0	54.0	34,901,280	21.0	1.547	14,219,040
05-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	33	22.0	55.0	35,547,600	21.2	1.547	14,219,040
06-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	32	22.0	54.0	34,901,280	21.0	1.547	14,219,040
07-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	32	22.0	54.0	34,901,280	20.4	1.547	14,219,040
08-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	32	22.0	54.0	34,901,280	20.7	1.547	14,219,040
09-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	31	22.0	53.0	34,254,960	20.2	1.547	14,219,040
10-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	32	22.0	54.0	34,901,280	20.8	1.547	14,219,040
11-Oct-07	2568	2568	1.0000	21.8	21.8	0.0	0.2	34	22.0	56.0	36,193,920	22.1	1.547	14,219,040
12-Oct-07	2540	2568	0.9891	21.8	21.6	0.0	0.2	34	21.8	55.8	36,064,656	22.0	1.547	14,089,776
13-Oct-07	2504	2568	0.9751	21.8	21.3	0.0	0.2	36	21.5	57.5	37,163,400	23.2	1.547	13,895,880
14-Oct-07	2483	2568	0.9669	21.8	21.1	0.0	0.2	33	21.3	54.3	35,095,176	21.3	1.547	13,766,616
15-Oct-07	2463	2568	0.9591	21.8	20.9	0.0	0.2	28	21.1	49.1	31,734,312	18.3	1.547	13,637,352
16-Oct-07	2406	2568	0.9369	21.8	20.4	0.0	0.2	42	20.6	62.6	40,459,632	27.1	1.547	13,314,192
17-Oct-07	2373	2568	0.9241	21.8	20.1	0.0	0.2	41	20.3	61.3	39,619,416	26.6	1.547	13,120,296
18-Oct-07	2324	2568	0.9050	21.8	19.7	0.0	0.2	42	19.9	61.9	40,007,208	27.1	1.547	12,861,768
19-Oct-07	2329	2568	0.9069	21.8	19.8	0.0	0.2	41	20.0	61.0	39,425,520	26.7	1.547	12,926,400
20-Oct-07	2319	2568	0.9030	21.8	19.7	0.0	0.2	35	19.9	54.9	35,482,968	22.4	1.547	12,861,768
21-Oct-07	552	2568	0.2150	21.8	4.7	0.0	0.2	28	4.9	32.9	21,263,928	18.1	1.547	3,166,968
22-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	55	0.2	55.2	35,676,864	35.5	1.547	129,264
23-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	64	0.2	64.2	41,493,744	41.4	1.547	129,264
24-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	28	0.2	28.2	18,226,224	18.0	1.547	129,264
25-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	28	0.2	28.2	18,226,224	18.4	1.547	129,264
26-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	28	0.2	28.2	18,226,224	18.1	1.547	129,264
27-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	44	0.2	44.2	28,567,344	28.4	1.547	129,264
28-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	65	0.2	65.2	42,140,064	41.7	1.547	129,264
29-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	51	0.2	51.2	33,091,584	33.0	1.547	129,264
30-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	50	0.2	50.2	32,445,264	32.3	1.547	129,264
31-Oct-07	0	2568	0.0000	21.8	0.0	0.0	0.2	50	0.2	50.2	32,445,264	32.1	1.547	129,264
											Total:	763.40		281,343,096

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 NOVEMBER 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	32	0.2	32.2	20,811,504	20.9	1.547	129,264
02-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	21	0.2	21.2	13,701,984	13.4	1.547	129,264
03-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	12	0.2	12.2	7,885,104	7.6	1.547	129,264
04-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	20	0.2	20.2	13,055,664	12.9	1.547	129,264
05-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	27	0.2	27.2	17,579,904	17.4	1.547	129,264
06-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	33	0.2	33.2	21,457,824	21.5	1.547	129,264
07-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	48	0.2	48.2	31,152,624	31.0	1.547	129,264
08-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	49	0.2	49.2	31,798,944	31.5	1.547	129,264
09-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	47	0.2	47.2	30,506,304	30.6	1.547	129,264
10-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	47	0.2	47.2	30,506,304	30.4	1.547	129,264
11-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	46	0.2	46.2	29,859,984	29.6	1.547	129,264
12-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	45	0.2	45.2	29,213,664	29.3	1.547	129,264
13-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	45	0.2	45.2	29,213,664	29.4	1.547	129,264
14-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	48	0.2	48.2	31,152,624	31.1	1.547	129,264
15-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	47	0.2	47.2	30,506,304	30.6	1.547	129,264
16-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	39	0.2	39.2	25,335,744	25.0	1.547	129,264
17-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	31	0.2	31.2	20,165,184	20.3	1.547	129,264
18-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	42	0.2	42.2	27,274,704	27.2	1.547	129,264
19-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	38	0.2	38.2	24,689,424	24.5	1.547	129,264
20-Nov-07	0	2568	0.0000	20.3	0.0	0.0	0.2	32	0.2	32.2	20,811,504	20.8	1.547	129,264
21-Nov-07	847	2568	0.3298	20.3	6.7	0.0	0.2	34	6.9	40.9	26,434,488	21.9	1.547	4,459,608
22-Nov-07	2029	2568	0.7901	20.3	16.0	0.0	0.2	23	16.2	39.2	25,335,744	14.8	1.547	10,470,384
23-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	24	20.5	44.5	28,761,240	15.3	1.547	13,249,560
24-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	24	20.5	44.5	28,761,240	15.7	1.547	13,249,560
25-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	21	20.5	41.5	26,822,280	13.4	1.547	13,249,560
26-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	22	20.5	42.5	27,468,600	14.5	1.547	13,249,560
27-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	21	20.5	41.5	26,822,280	13.6	1.547	13,249,560
28-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	22	20.5	42.5	27,468,600	14.5	1.547	13,249,560
29-Nov-07	2568	2568	1.0000	20.3	20.3	0.0	0.2	23	20.5	43.5	28,114,920	14.9	1.547	13,249,560
30-Nov-07	2363	2568	0.9202	20.3	18.7	0.0	0.2	27	18.9	45.9	29,666,088	17.4	1.547	12,215,448
											Total:	641.00		122,477,640

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

TMI-1 DECEMBER 2007

Date	(1) Daily Average Power (mWt)	(2) Thermal Rating Power (mWt)	(3) Daily T.C.F.	(4) NDCT Loss at 100% T.C.F. (cfs)	(5) NDCT Loss at Daily T.C.F. (cfs)	(6) MDCT Loss (cfs)	(7) In-stream Evaporation (cfs)	(8) Daily Discharge (cfs)	(9) Daily C.U. (cfs)	(10) Daily Withdrawal (cfs)	(10A) Daily Withdrawal (Gals/day)	(8A) Daily Discharge (MGD)	(8B) Conversion Factor MGD to cfs	(9A) Daily C.U. (gals/day)
01-Dec-07	2293	2568	0.8929	18.7	16.7	0.0	0.2	29	16.9	45.9	29,666,088	18.8	1.547	10,922,808
02-Dec-07	1798	2568	0.7002	18.7	13.1	0.0	0.2	25	13.3	38.3	24,754,056	16.1	1.547	8,596,056
03-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	25	18.9	43.9	28,373,448	16.0	1.547	12,215,448
04-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.5	1.547	12,215,448
05-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	16.7	1.547	12,215,448
06-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	27	18.9	45.9	29,666,088	17.4	1.547	12,215,448
07-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.3	1.547	12,215,448
08-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	20	18.9	38.9	25,141,848	12.7	1.547	12,215,448
09-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	22	18.9	40.9	26,434,488	14.2	1.547	12,215,448
10-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	14.9	1.547	12,215,448
11-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	25	18.9	43.9	28,373,448	16.1	1.547	12,215,448
12-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	15.1	1.547	12,215,448
13-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	25	18.9	43.9	28,373,448	16.1	1.547	12,215,448
14-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	17.1	1.547	12,215,448
15-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	16.8	1.547	12,215,448
16-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	17.0	1.547	12,215,448
17-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	16.6	1.547	12,215,448
18-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	17.0	1.547	12,215,448
19-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	22	18.9	40.9	26,434,488	13.9	1.547	12,215,448
20-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.7	1.547	12,215,448
21-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	22	18.9	40.9	26,434,488	14.4	1.547	12,215,448
22-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	14.6	1.547	12,215,448
23-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	14.6	1.547	12,215,448
24-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	14.8	1.547	12,215,448
25-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.7	1.547	12,215,448
26-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	26	18.9	44.9	29,019,768	16.6	1.547	12,215,448
27-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.5	1.547	12,215,448
28-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	15.0	1.547	12,215,448
29-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	23	18.9	41.9	27,080,808	14.6	1.547	12,215,448
30-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.4	1.547	12,215,448
31-Dec-07	2568	2568	1.0000	18.7	18.7	0.0	0.2	24	18.9	42.9	27,727,128	15.3	1.547	12,215,448
											Total:	485.50		373,766,856

CALCULATIONS:
(3) = (1) / (2)
(5) = (3) X (4)
(9) = (5) + (6) + (7)
(10) = (8) + (9)

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 1st Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date:

Mon./Day Jan.	Type of Consumptive Use		Total CU (gallons)	Mon./Day Feb.	Type of Consumptive Use		Total CU (gallons)	Mon./Day Mar.	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	12,473,976		12,473,976	1	13,055,664		13,055,664	1	13,120,296		13,120,296
2	12,473,976		12,473,976	2	13,055,664		13,055,664	2	13,120,296		13,120,296
3	12,473,976		12,473,976	3	13,055,664		13,055,664	3	13,120,296		13,120,296
4	12,473,976		12,473,976	4	13,055,664		13,055,664	4	13,120,296		13,120,296
5	12,473,976		12,473,976	5	13,055,664		13,055,664	5	13,120,296		13,120,296
6	12,473,976		12,473,976	6	13,055,664		13,055,664	6	13,120,296		13,120,296
7	12,473,976		12,473,976	7	13,055,664		13,055,664	7	13,120,296		13,120,296
8	12,473,976		12,473,976	8	13,055,664		13,055,664	8	13,120,296		13,120,296
9	12,473,976		12,473,976	9	13,055,664		13,055,664	9	13,120,296		13,120,296
10	12,473,976		12,473,976	10	13,055,664		13,055,664	10	13,120,296		13,120,296
11	12,473,976		12,473,976	11	13,055,664		13,055,664	11	13,120,296		13,120,296
12	12,473,976		12,473,976	12	13,055,664		13,055,664	12	13,120,296		13,120,296
13	12,473,976		12,473,976	13	13,055,664		13,055,664	13	13,120,296		13,120,296
14	12,473,976		12,473,976	14	13,055,664		13,055,664	14	13,120,296		13,120,296
15	12,473,976		12,473,976	15	13,055,664		13,055,664	15	13,120,296		13,120,296
16	12,473,976		12,473,976	16	13,055,664		13,055,664	16	13,120,296		13,120,296
17	12,473,976		12,473,976	17	13,055,664		13,055,664	17	13,120,296		13,120,296
18	12,473,976		12,473,976	18	13,055,664		13,055,664	18	11,827,656		11,827,656
19	12,473,976		12,473,976	19	13,055,664		13,055,664	19	13,120,296		13,120,296
20	12,473,976		12,473,976	20	13,055,664		13,055,664	20	13,120,296		13,120,296
21	12,473,976		12,473,976	21	13,055,664		13,055,664	21	13,120,296		13,120,296
22	12,473,976		12,473,976	22	13,055,664		13,055,664	22	13,120,296		13,120,296
23	12,473,976		12,473,976	23	13,055,664		13,055,664	23	13,120,296		13,120,296
24	12,473,976		12,473,976	24	13,055,664		13,055,664	24	13,120,296		13,120,296
25	12,473,976		12,473,976	25	13,055,664		13,055,664	25	13,120,296		13,120,296
26	12,473,976		12,473,976	26	13,055,664		13,055,664	26	13,120,296		13,120,296
27	12,473,976		12,473,976	27	13,055,664		13,055,664	27	13,120,296		13,120,296
28	12,473,976		12,473,976	28	13,055,664		13,055,664	28	13,120,296		13,120,296
29	12,473,976		12,473,976	29				29	13,120,296		13,120,296
30	12,473,976		12,473,976	30				30	13,120,296		13,120,296
31	12,473,976		12,473,976	31				31	13,120,296		13,120,296
Totals:	386,693,256		386,693,256		365,558,592		365,558,592		405,436,536		405,436,536

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 2nd Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date:

Mon./ Day Apr.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day May	Type of Consumptive Use		Total CU (gallons)	Mon./ Day June	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	13,637,352		13,637,352	1	14,219,040		14,219,040	1	14,994,624		14,994,624
2	13,637,352		13,637,352	2	14,219,040		14,219,040	2	14,994,624		14,994,624
3	13,637,352		13,637,352	3	14,219,040		14,219,040	3	14,994,624		14,994,624
4	13,637,352		13,637,352	4	14,219,040		14,219,040	4	14,994,624		14,994,624
5	13,637,352		13,637,352	5	14,219,040		14,219,040	5	14,994,624		14,994,624
6	13,637,352		13,637,352	6	14,219,040		14,219,040	6	14,994,624		14,994,624
7	13,637,352		13,637,352	7	14,219,040		14,219,040	7	14,994,624		14,994,624
8	13,637,352		13,637,352	8	14,219,040		14,219,040	8	14,994,624		14,994,624
9	13,637,352		13,637,352	9	14,219,040		14,219,040	9	14,994,624		14,994,624
10	13,637,352		13,637,352	10	14,219,040		14,219,040	10	14,994,624		14,994,624
11	13,637,352		13,637,352	11	14,219,040		14,219,040	11	14,994,624		14,994,624
12	13,637,352		13,637,352	12	14,219,040		14,219,040	12	14,994,624		14,994,624
13	13,637,352		13,637,352	13	14,219,040		14,219,040	13	14,994,624		14,994,624
14	13,637,352		13,637,352	14	14,219,040		14,219,040	14	14,994,624		14,994,624
15	13,637,352		13,637,352	15	14,219,040		14,219,040	15	14,994,624		14,994,624
16	13,637,352		13,637,352	16	14,219,040		14,219,040	16	14,994,624		14,994,624
17	13,637,352		13,637,352	17	14,219,040		14,219,040	17	13,508,088		13,508,088
18	13,637,352		13,637,352	18	14,219,040		14,219,040	18	14,994,624		14,994,624
19	13,637,352		13,637,352	19	14,219,040		14,219,040	19	14,994,624		14,994,624
20	13,637,352		13,637,352	20	14,219,040		14,219,040	20	14,994,624		14,994,624
21	13,637,352		13,637,352	21	14,219,040		14,219,040	21	14,994,624		14,994,624
22	13,637,352		13,637,352	22	14,219,040		14,219,040	22	14,994,624		14,994,624
23	13,637,352		13,637,352	23	14,219,040		14,219,040	23	14,994,624		14,994,624
24	13,637,352		13,637,352	24	14,219,040		14,219,040	24	14,994,624		14,994,624
25	13,637,352		13,637,352	25	14,219,040		14,219,040	25	14,994,624		14,994,624
26	13,637,352		13,637,352	26	14,219,040		14,219,040	26	14,994,624		14,994,624
27	13,637,352		13,637,352	27	14,219,040		14,219,040	27	14,994,624		14,994,624
28	13,637,352		13,637,352	28	14,219,040		14,219,040	28	14,994,624		14,994,624
29	13,637,352		13,637,352	29	14,219,040		14,219,040	29	14,994,624		14,994,624
30	13,637,352		13,637,352	30	14,219,040		14,219,040	30	14,994,624		14,994,624
31				31	14,219,040		14,219,040	31			
Totals:	409,120,560		409,120,560		440,790,240		440,790,240		448,352,184		448,352,184

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 3rd Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date:

Mon./ Day July	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Aug.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Sep.	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	14,994,624		14,994,624	1	15,964,104		15,964,104	1	14,542,200		14,542,200
2	14,994,624		14,994,624	2	15,964,104		15,964,104	2	14,542,200		14,542,200
3	14,994,624		14,994,624	3	15,964,104		15,964,104	3	14,542,200		14,542,200
4	14,994,624		14,994,624	4	15,964,104		15,964,104	4	14,542,200		14,542,200
5	14,994,624		14,994,624	5	15,964,104		15,964,104	5	14,542,200		14,542,200
6	14,994,624		14,994,624	6	15,964,104		15,964,104	6	14,542,200		14,542,200
7	14,994,624		14,994,624	7	15,964,104		15,964,104	7	14,542,200		14,542,200
8	14,994,624		14,994,624	8	15,964,104		15,964,104	8	14,542,200		14,542,200
9	14,994,624		14,994,624	9	15,964,104		15,964,104	9	14,542,200		14,542,200
10	14,994,624		14,994,624	10	15,964,104		15,964,104	10	14,542,200		14,542,200
11	14,994,624		14,994,624	11	15,964,104		15,964,104	11	14,542,200		14,542,200
12	14,994,624		14,994,624	12	15,964,104		15,964,104	12	14,542,200		14,542,200
13	14,994,624		14,994,624	13	15,964,104		15,964,104	13	14,542,200		14,542,200
14	14,994,624		14,994,624	14	15,964,104		15,964,104	14	14,542,200		14,542,200
15	14,994,624		14,994,624	15	15,964,104		15,964,104	15	14,542,200		14,542,200
16	14,994,624		14,994,624	16	15,964,104		15,964,104	16	14,542,200		14,542,200
17	14,994,624		14,994,624	17	15,964,104		15,964,104	17	14,542,200		14,542,200
18	14,994,624		14,994,624	18	15,964,104		15,964,104	18	14,542,200		14,542,200
19	14,994,624		14,994,624	19	15,964,104		15,964,104	19	14,542,200		14,542,200
20	14,994,624		14,994,624	20	15,964,104		15,964,104	20	14,542,200		14,542,200
21	14,994,624		14,994,624	21	15,964,104		15,964,104	21	14,542,200		14,542,200
22	14,994,624		14,994,624	22	15,964,104		15,964,104	22	14,542,200		14,542,200
23	14,994,624		14,994,624	23	15,964,104		15,964,104	23	13,120,296		13,120,296
24	14,994,624		14,994,624	24	15,964,104		15,964,104	24	14,542,200		14,542,200
25	14,994,624		14,994,624	25	15,964,104		15,964,104	25	14,542,200		14,542,200
26	14,994,624		14,994,624	26	15,964,104		15,964,104	26	14,542,200		14,542,200
27	14,994,624		14,994,624	27	15,964,104		15,964,104	27	14,542,200		14,542,200
28	14,994,624		14,994,624	28	15,964,104		15,964,104	28	14,542,200		14,542,200
29	14,994,624		14,994,624	29	15,964,104		15,964,104	29	14,542,200		14,542,200
30	14,994,624		14,994,624	30	15,964,104		15,964,104	30	14,542,200		14,542,200
31	14,994,624		14,994,624	31	15,964,104		15,964,104	31			
Totals:	464,833,344		464,833,344		494,887,224		494,887,224		434,844,096		434,844,096

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 4th Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date:

Mon./ Day Oct.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Nov.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Dec.	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	14,219,040		14,219,040	1	129,264		129,264	1	10,922,808		10,922,808
2	14,219,040		14,219,040	2	129,264		129,264	2	8,596,056		8,596,056
3	14,219,040		14,219,040	3	129,264		129,264	3	12,215,448		12,215,448
4	14,219,040		14,219,040	4	129,264		129,264	4	12,215,448		12,215,448
5	14,219,040		14,219,040	5	129,264		129,264	5	12,215,448		12,215,448
6	14,219,040		14,219,040	6	129,264		129,264	6	12,215,448		12,215,448
7	14,219,040		14,219,040	7	129,264		129,264	7	12,215,448		12,215,448
8	14,219,040		14,219,040	8	129,264		129,264	8	12,215,448		12,215,448
9	14,219,040		14,219,040	9	129,264		129,264	9	12,215,448		12,215,448
10	14,219,040		14,219,040	10	129,264		129,264	10	12,215,448		12,215,448
11	14,219,040		14,219,040	11	129,264		129,264	11	12,215,448		12,215,448
12	14,089,776		14,089,776	12	129,264		129,264	12	12,215,448		12,215,448
13	13,895,880		13,895,880	13	129,264		129,264	13	12,215,448		12,215,448
14	13,766,616		13,766,616	14	129,264		129,264	14	12,215,448		12,215,448
15	13,637,352		13,637,352	15	129,264		129,264	15	12,215,448		12,215,448
16	13,314,192		13,314,192	16	129,264		129,264	16	12,215,448		12,215,448
17	13,120,296		13,120,296	17	129,264		129,264	17	12,215,448		12,215,448
18	12,861,768		12,861,768	18	129,264		129,264	18	12,215,448		12,215,448
19	12,926,400		12,926,400	19	129,264		129,264	19	12,215,448		12,215,448
20	12,861,768		12,861,768	20	129,264		129,264	20	12,215,448		12,215,448
21	3,166,968		3,166,968	21	4,459,608		4,459,608	21	12,215,448		12,215,448
22	129,264		129,264	22	10,470,384		10,470,384	22	12,215,448		12,215,448
23	129,264		129,264	23	13,249,560		13,249,560	23	12,215,448		12,215,448
24	129,264		129,264	24	13,249,560		13,249,560	24	12,215,448		12,215,448
25	129,264		129,264	25	13,249,560		13,249,560	25	12,215,448		12,215,448
26	129,264		129,264	26	13,249,560		13,249,560	26	12,215,448		12,215,448
27	129,264		129,264	27	13,249,560		13,249,560	27	12,215,448		12,215,448
28	129,264		129,264	28	13,249,560		13,249,560	28	12,215,448		12,215,448
29	129,264		129,264	29	13,249,560		13,249,560	29	12,215,448		12,215,448
30	129,264		129,264	30	12,215,448		12,215,448	30	12,215,448		12,215,448
31	129,264		129,264	31				31	12,215,448		12,215,448
Totals:	281,343,096		281,343,096		122,477,640		122,477,640		373,766,856		373,766,856

RECORD OF DAILY SURFACE WATER WITHDRAWAL (gallons)

Project Name: Three Mile Island Nuclear Generating Station

Source Name: Susquehanna River

Report Period: 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date:

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	27,339,336	27,274,704	26,693,016	33,026,952	32,316,000	33,737,904	35,676,864	36,000,024	35,870,760	35,547,600	20,811,504	29,666,088
2	26,693,016	28,567,344	26,046,696	32,380,632	31,023,360	34,384,224	36,323,184	36,000,024	35,224,440	35,547,600	13,701,984	24,754,056
3	26,046,696	25,982,064	27,985,656	31,087,992	31,669,680	36,969,504	36,323,184	37,292,664	35,224,440	35,547,600	7,885,104	28,373,448
4	27,339,336	25,335,744	27,339,336	30,441,672	31,669,680	36,969,504	37,615,824	38,585,304	35,224,440	34,901,280	13,055,664	27,727,128
5	26,693,016	25,982,064	31,217,256	30,441,672	32,316,000	36,969,504	36,323,184	35,353,704	34,578,120	35,547,600	17,579,904	29,019,768
6	26,046,696	25,982,064	35,741,496	30,441,672	32,316,000	36,969,504	35,676,864	36,000,024	35,224,440	34,901,280	21,457,824	29,666,088
7	27,339,336	27,274,704	26,693,016	30,441,672	32,962,320	37,615,824	35,676,864	35,353,704	33,931,800	34,901,280	31,152,624	27,727,128
8	30,570,936	26,628,384	24,754,056	29,795,352	32,962,320	36,323,184	35,030,544	34,707,384	34,578,120	34,901,280	31,798,944	25,141,848
9	28,631,976	26,628,384	24,107,736	29,795,352	32,316,000	35,676,864	33,737,904	37,292,664	29,407,560	34,254,960	30,506,304	26,434,488
10	29,278,296	27,274,704	22,815,096	31,087,992	31,023,360	36,323,184	35,030,544	36,000,024	31,346,520	34,901,280	30,506,304	27,080,808
11	29,924,616	27,921,024	29,924,616	31,087,992	31,023,360	35,676,864	38,262,144	36,646,344	28,114,920	36,193,920	29,859,984	28,373,448
12	29,278,296	27,274,704	37,680,456	30,441,672	31,669,680	37,615,824	36,323,184	36,000,024	35,224,440	36,064,656	29,213,664	27,080,808
13	27,985,656	27,921,024	36,387,816	30,441,672	31,023,360	36,969,504	35,030,544	35,353,704	39,102,360	37,163,400	29,213,664	28,373,448
14	27,985,656	27,274,704	35,095,176	29,795,352	31,669,680	37,615,824	35,030,544	36,000,024	35,870,760	35,095,176	31,152,624	29,019,768
15	27,985,656	26,628,384	35,741,496	31,087,992	32,316,000	37,615,824	34,384,224	36,000,024	35,224,440	31,734,312	30,506,304	29,019,768
16	27,985,656	26,628,384	38,973,096	30,441,672	30,377,040	36,323,184	35,030,544	36,646,344	37,163,400	40,459,632	25,335,744	29,019,768
17	28,631,976	25,982,064	29,924,616	31,734,312	31,023,360	34,836,648	35,030,544	35,353,704	35,870,760	39,619,416	20,165,184	29,019,768
18	29,278,296	27,274,704	27,339,336	31,734,312	31,669,680	35,676,864	35,030,544	36,000,024	35,870,760	40,007,208	27,274,704	29,019,768
19	27,985,656	27,921,024	27,985,656	31,734,312	31,669,680	35,676,864	35,030,544	37,292,664	35,224,440	39,425,520	24,689,424	26,434,488
20	26,046,696	27,921,024	27,339,336	30,441,672	31,023,360	37,615,824	35,030,544	37,938,984	35,224,440	35,482,968	20,811,504	27,727,128
21	27,985,656	27,921,024	27,339,336	30,441,672	31,669,680	35,676,864	35,676,864	38,585,304	34,578,120	21,263,928	26,434,488	26,434,488
22	27,985,656	27,921,024	28,631,976	31,087,992	32,316,000	35,676,864	35,030,544	37,938,984	35,224,440	35,676,864	25,335,744	27,080,808
23	27,985,656	27,274,704	28,631,976	30,441,672	32,316,000	36,323,184	35,676,864	37,292,664	33,156,216	41,493,744	28,761,240	27,080,808
24	28,631,976	26,628,384	29,924,616	30,441,672	31,669,680	36,323,184	36,323,184	35,353,704	35,224,440	18,226,224	28,761,240	27,080,808
25	28,631,976	26,628,384	32,509,896	31,734,312	31,669,680	36,323,184	35,676,864	36,000,024	36,517,080	18,226,224	26,822,280	27,727,128
26	28,631,976	27,274,704	33,802,536	31,734,312	30,377,040	35,676,864	35,676,864	36,646,344	35,224,440	18,226,224	27,468,600	29,019,768
27	28,631,976	25,982,064	32,509,896	32,380,632	30,377,040	35,676,864	35,676,864	37,292,664	35,224,440	28,567,344	26,822,280	27,727,128
28	28,631,976	25,982,064	31,863,576	31,087,992	30,377,040	35,676,864	35,676,864	37,292,664	36,517,080	42,140,064	27,468,600	27,080,808
29	27,985,656		33,156,216	31,087,992	30,377,040	35,676,864	35,676,864	36,646,344	35,870,760	33,091,584	28,114,920	27,080,808
30	27,985,656		32,509,896	29,795,352	29,730,720	35,676,864	35,676,864	36,646,344	36,517,080	32,445,264	29,666,088	27,727,128
31	27,339,336		32,509,896		29,730,720		35,030,544	36,646,344		32,445,264		27,727,128
Totals:	869,494,296	755,289,552	943,174,776	928,115,520	974,650,560	1,086,270,024	1,103,397,504	1,132,158,744	1,047,555,456	1,044,000,696	762,334,440	860,445,816

RECORD OF DAILY SURFACE WATER WITHDRAWAL (gallons)

Project Name: Three Mile Island Nuclear Generating Station

Source Name: Susquehanna River

Report Period: 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date:

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	27,339,336	27,274,704	26,693,016	33,026,952	32,316,000	33,737,904	35,676,864	36,000,024	35,870,760	35,547,600	20,811,504	29,666,088
2	26,693,016	28,567,344	26,046,696	32,380,632	31,023,360	34,384,224	36,323,184	36,000,024	35,224,440	35,547,600	13,701,984	24,754,056
3	26,046,696	25,982,064	27,985,656	31,087,992	31,669,680	36,969,504	36,323,184	37,292,664	35,224,440	35,547,600	7,885,104	28,373,448
4	27,339,336	25,335,744	27,339,336	30,441,672	31,669,680	36,969,504	37,615,824	38,585,304	35,224,440	34,901,280	13,055,664	27,727,128
5	26,693,016	25,982,064	31,217,256	30,441,672	32,316,000	36,969,504	36,323,184	35,353,704	34,578,120	35,547,600	17,579,904	29,019,768
6	26,046,696	25,982,064	35,741,496	30,441,672	32,316,000	36,969,504	35,676,864	36,000,024	35,224,440	34,901,280	21,457,824	29,666,088
7	27,339,336	27,274,704	26,693,016	30,441,672	32,962,320	37,615,824	35,676,864	35,353,704	33,931,800	34,901,280	31,152,624	27,727,128
8	30,570,936	26,628,384	24,754,056	29,795,352	32,962,320	36,323,184	35,030,544	34,707,384	34,578,120	34,901,280	31,798,944	25,141,848
9	28,631,976	26,628,384	24,107,736	29,795,352	32,316,000	35,676,864	33,737,904	37,292,664	29,407,560	34,254,960	30,506,304	26,434,488
10	29,278,296	27,274,704	22,815,096	31,087,992	31,023,360	36,323,184	35,030,544	36,000,024	31,346,520	34,901,280	30,506,304	27,080,808
11	29,924,616	27,921,024	29,924,616	31,087,992	31,023,360	35,676,864	38,262,144	36,646,344	28,114,920	36,193,920	29,859,984	28,373,448
12	29,278,296	27,274,704	37,680,456	30,441,672	31,669,680	37,615,824	36,323,184	36,000,024	35,224,440	36,064,656	29,213,664	27,080,808
13	27,985,656	27,921,024	36,387,816	30,441,672	31,023,360	36,969,504	35,030,544	35,353,704	39,102,360	37,163,400	29,213,664	28,373,448
14	27,985,656	27,274,704	35,095,176	29,795,352	31,669,680	37,615,824	35,030,544	36,000,024	35,870,760	35,095,176	31,152,624	29,019,768
15	27,985,656	26,628,384	35,741,496	31,087,992	32,316,000	37,615,824	34,384,224	36,000,024	35,224,440	31,734,312	30,506,304	29,019,768
16	27,985,656	26,628,384	38,973,096	30,441,672	30,377,040	36,323,184	35,030,544	36,646,344	37,163,400	40,459,632	25,335,744	29,019,768
17	28,631,976	25,982,064	29,924,616	31,734,312	31,023,360	34,836,648	35,030,544	35,353,704	35,870,760	39,619,416	20,165,184	29,019,768
18	29,278,296	27,274,704	27,339,336	31,734,312	31,669,680	35,676,864	35,030,544	36,000,024	35,870,760	40,007,208	27,274,704	29,019,768
19	27,985,656	27,921,024	27,985,656	31,734,312	31,669,680	35,676,864	35,030,544	37,292,664	35,224,440	39,425,520	24,689,424	26,434,488
20	26,046,696	27,921,024	27,339,336	30,441,672	31,023,360	37,615,824	35,030,544	37,938,984	35,224,440	35,482,968	20,811,504	27,727,128
21	27,985,656	27,921,024	27,339,336	30,441,672	31,669,680	35,676,864	35,676,864	38,585,304	34,578,120	21,263,928	26,434,488	26,434,488
22	27,985,656	27,921,024	28,631,976	31,087,992	32,316,000	35,676,864	35,030,544	37,938,984	35,224,440	35,676,864	25,335,744	27,080,808
23	27,985,656	27,274,704	28,631,976	30,441,672	32,316,000	36,323,184	35,676,864	37,292,664	33,156,216	41,493,744	28,761,240	27,080,808
24	28,631,976	26,628,384	29,924,616	30,441,672	31,669,680	36,323,184	36,323,184	35,353,704	35,224,440	18,226,224	28,761,240	27,080,808
25	28,631,976	26,628,384	32,509,896	31,734,312	31,669,680	36,323,184	35,676,864	36,000,024	36,517,080	18,226,224	26,822,280	27,727,128
26	28,631,976	27,274,704	33,802,536	31,734,312	30,377,040	35,676,864	35,676,864	36,646,344	35,224,440	18,226,224	27,468,600	29,019,768
27	28,631,976	25,982,064	32,509,896	32,380,632	30,377,040	35,676,864	35,676,864	37,292,664	35,224,440	28,567,344	26,822,280	27,727,128
28	28,631,976	25,982,064	31,863,576	31,087,992	30,377,040	35,676,864	35,676,864	37,292,664	36,517,080	42,140,064	27,468,600	27,080,808
29	27,985,656		33,156,216	31,087,992	30,377,040	35,676,864	35,676,864	36,646,344	35,870,760	33,091,584	28,114,920	27,080,808
30	27,985,656		32,509,896	29,795,352	29,730,720	35,676,864	35,676,864	36,646,344	36,517,080	32,445,264	29,666,088	27,727,128
31	27,339,336		32,509,896		29,730,720		35,030,544	36,646,344		32,445,264		27,727,128
Totals:	869,494,296	755,289,552	943,174,776	928,115,520	974,650,560	1,086,270,024	1,103,397,504	1,132,158,744	1,047,555,456	1,044,000,696	762,334,440	860,445,816

Total Yearly Withdrawal (gals)	11,506,887,384
Average Daily Withdrawal (cfs)	48.8

Total Yearly Consumptive Use (gals)	4,628,103,624
Average Daily Consumptive Use (cfs)	19.6

Total Annual Discharge (gals)	6,878,783,760
Average Daily Discharge (cfs)	29.2
Average Daily Discharge (MGD)	18.8

AmerGen Energy Company, LLC
Three Mile Island Unit 1
Route 441 South, P.O. Box 480
Middletown, PA 17057

Telephone: 717-948-8000

AmerGen
An Exelon Company

2H.103

February 22, 2008

5532-2008-007

Mr. Eric R. Roof
Director, Compliance Program
Susquehanna River Basin Commission
1721 North Front Street
Harrisburg, PA 17102-2391

Dear Mr. Roof:

SUBJECT: ANNUAL SURFACE WATER REPORT - CALENDAR YEAR 2007
SRBC PROJECT DOCKET NO. 19950302
THREE MILE ISLAND UNIT 1 (TMI Unit 1)

Pursuant to the referenced Susquehanna River Basin Commission (SRBC) project approval docket, please find attached a completed 2007 Annual Surface Water Report. The 2007 report is submitted on the standard report forms as required by the Commission. As requested, the completed report forms will be submitted via e-mail to Mr. Todd Hitz as Excel spreadsheets. The 2007 Annual Surface Water Report consists of the following completed forms:

- Record of Daily Surface Water Withdrawal - 2007 (1 page)
- Record of Total Daily Consumptive Water Use - 1st, 2nd, 3rd & 4th Quarters 2007 (4 pages)

Should the Commission have questions concerning this report or require additional information please contact Scott R. Cogley, Environmental Chemist, at (717) 948-8881 or e-mail at *scott.cogley@exeloncorp.com*.

Sincerely,

T. J. Dougherty
Plant Manager

TJD/src

Attachments

RECORD OF DAILY SURFACE WATER WITHDRAWAL (gallons)

Project Name: Three Mile Island Nuclear Generating Station

Source Name: Susquehanna River

Report Period: 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date: 02/18/08

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	27,339,336	27,274,704	26,693,016	33,026,952	32,316,000	33,737,904	35,676,864	36,000,024	35,870,760	35,547,600	20,811,504	29,666,088
2	26,693,016	28,567,344	26,046,696	32,380,632	31,023,360	34,384,224	36,323,184	36,000,024	35,224,440	35,547,600	13,701,984	24,754,056
3	26,046,696	25,982,064	27,985,656	31,087,992	31,669,680	36,969,504	36,323,184	37,292,664	35,224,440	35,547,600	7,885,104	28,373,448
4	27,339,336	25,335,744	27,339,336	30,441,672	31,669,680	36,969,504	37,615,824	38,585,304	35,224,440	34,901,280	13,055,664	27,727,128
5	26,693,016	25,982,064	31,217,256	30,441,672	32,316,000	36,969,504	36,323,184	35,353,704	34,578,120	35,547,600	17,579,904	29,019,768
6	26,046,696	25,982,064	35,741,496	30,441,672	32,316,000	36,969,504	35,676,864	36,000,024	35,224,440	34,901,280	21,457,824	29,666,088
7	27,339,336	27,274,704	26,693,016	30,441,672	32,962,320	37,615,824	35,676,864	35,353,704	33,931,800	34,901,280	31,152,624	27,727,128
8	30,570,936	26,628,384	24,754,056	29,795,352	32,962,320	36,323,184	35,030,544	34,707,384	34,578,120	34,901,280	31,798,944	25,141,848
9	28,631,976	26,628,384	24,107,736	29,795,352	32,316,000	35,676,864	33,737,904	37,292,664	29,407,560	34,254,960	30,506,304	26,434,488
10	29,278,296	27,274,704	22,815,096	31,087,992	31,023,360	36,323,184	35,030,544	36,000,024	31,346,520	34,901,280	30,506,304	27,080,808
11	29,924,616	27,921,024	29,924,616	31,087,992	31,023,360	35,676,864	38,262,144	36,646,344	28,114,920	36,193,920	29,859,984	28,373,448
12	29,278,296	27,274,704	37,680,456	30,441,672	31,669,680	37,615,824	36,323,184	36,000,024	35,224,440	36,064,656	29,213,664	27,080,808
13	27,985,656	27,921,024	36,387,816	30,441,672	31,023,360	36,969,504	35,030,544	35,353,704	39,102,360	37,163,400	29,213,664	28,373,448
14	27,985,656	27,274,704	35,095,176	29,795,352	31,669,680	37,615,824	35,030,544	36,000,024	35,870,760	35,095,176	31,152,624	29,019,768
15	27,985,656	26,628,384	35,741,496	31,087,992	32,316,000	37,615,824	34,384,224	36,000,024	35,224,440	31,734,312	30,506,304	29,019,768
16	27,985,656	26,628,384	38,973,096	30,441,672	30,377,040	36,323,184	35,030,544	36,646,344	37,163,400	40,459,632	25,335,744	29,019,768
17	28,631,976	25,982,064	29,924,616	31,734,312	31,023,360	34,836,648	35,030,544	35,353,704	35,870,760	39,619,416	20,165,184	29,019,768
18	29,278,296	27,274,704	27,339,336	31,734,312	31,669,680	35,676,864	35,030,544	36,000,024	35,870,760	40,007,208	27,274,704	29,019,768
19	27,985,656	27,921,024	27,985,656	31,734,312	31,669,680	35,676,864	35,030,544	37,292,664	35,224,440	39,425,520	24,689,424	26,434,488
20	26,046,696	27,921,024	27,339,336	30,441,672	31,023,360	37,615,824	35,030,544	37,938,984	35,224,440	35,482,968	20,811,504	27,727,128
21	27,985,656	27,921,024	27,339,336	30,441,672	31,669,680	35,676,864	35,676,864	38,585,304	34,578,120	21,263,928	26,434,488	26,434,488
22	27,985,656	27,921,024	28,631,976	31,087,992	32,316,000	35,676,864	35,030,544	37,938,984	35,224,440	35,676,864	25,335,744	27,080,808
23	27,985,656	27,274,704	28,631,976	30,441,672	32,316,000	36,323,184	35,676,864	37,292,664	33,156,216	41,493,744	28,761,240	27,080,808
24	28,631,976	26,628,384	29,924,616	30,441,672	31,669,680	36,323,184	36,323,184	35,353,704	35,224,440	18,226,224	28,761,240	27,080,808
25	28,631,976	26,628,384	32,509,896	31,734,312	31,669,680	36,323,184	35,676,864	36,000,024	36,517,080	18,226,224	26,822,280	27,727,128
26	28,631,976	27,274,704	33,802,536	31,734,312	30,377,040	35,676,864	35,676,864	36,646,344	35,224,440	18,226,224	27,468,600	29,019,768
27	28,631,976	25,982,064	32,509,896	32,380,632	30,377,040	35,676,864	35,676,864	37,292,664	35,224,440	28,567,344	26,822,280	27,727,128
28	28,631,976	25,982,064	31,863,576	31,087,992	30,377,040	35,676,864	35,676,864	37,292,664	36,517,080	42,140,064	27,468,600	27,080,808
29	27,985,656		33,156,216	31,087,992	30,377,040	35,676,864	35,676,864	36,646,344	35,870,760	33,091,584	28,114,920	27,080,808
30	27,985,656		32,509,896	29,795,352	29,730,720	35,676,864	35,676,864	36,646,344	36,517,080	32,445,264	29,666,088	27,727,128
31	27,339,336		32,509,896		29,730,720		35,030,544	36,646,344		32,445,264		27,727,128
Totals:	869,494,296	755,289,552	943,174,776	928,115,520	974,650,560	1,086,270,024	1,103,397,504	1,132,158,744	1,047,555,456	1,044,000,696	762,334,440	860,445,816

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 1st Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date: 02/18/08

Mon./ Day Jan.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Feb.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Mar.	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	12,473,976		12,473,976	1	13,055,664		13,055,664	1	13,120,296		13,120,296
2	12,473,976		12,473,976	2	13,055,664		13,055,664	2	13,120,296		13,120,296
3	12,473,976		12,473,976	3	13,055,664		13,055,664	3	13,120,296		13,120,296
4	12,473,976		12,473,976	4	13,055,664		13,055,664	4	13,120,296		13,120,296
5	12,473,976		12,473,976	5	13,055,664		13,055,664	5	13,120,296		13,120,296
6	12,473,976		12,473,976	6	13,055,664		13,055,664	6	13,120,296		13,120,296
7	12,473,976		12,473,976	7	13,055,664		13,055,664	7	13,120,296		13,120,296
8	12,473,976		12,473,976	8	13,055,664		13,055,664	8	13,120,296		13,120,296
9	12,473,976		12,473,976	9	13,055,664		13,055,664	9	13,120,296		13,120,296
10	12,473,976		12,473,976	10	13,055,664		13,055,664	10	13,120,296		13,120,296
11	12,473,976		12,473,976	11	13,055,664		13,055,664	11	13,120,296		13,120,296
12	12,473,976		12,473,976	12	13,055,664		13,055,664	12	13,120,296		13,120,296
13	12,473,976		12,473,976	13	13,055,664		13,055,664	13	13,120,296		13,120,296
14	12,473,976		12,473,976	14	13,055,664		13,055,664	14	13,120,296		13,120,296
15	12,473,976		12,473,976	15	13,055,664		13,055,664	15	13,120,296		13,120,296
16	12,473,976		12,473,976	16	13,055,664		13,055,664	16	13,120,296		13,120,296
17	12,473,976		12,473,976	17	13,055,664		13,055,664	17	13,120,296		13,120,296
18	12,473,976		12,473,976	18	13,055,664		13,055,664	18	11,827,656		11,827,656
19	12,473,976		12,473,976	19	13,055,664		13,055,664	19	13,120,296		13,120,296
20	12,473,976		12,473,976	20	13,055,664		13,055,664	20	13,120,296		13,120,296
21	12,473,976		12,473,976	21	13,055,664		13,055,664	21	13,120,296		13,120,296
22	12,473,976		12,473,976	22	13,055,664		13,055,664	22	13,120,296		13,120,296
23	12,473,976		12,473,976	23	13,055,664		13,055,664	23	13,120,296		13,120,296
24	12,473,976		12,473,976	24	13,055,664		13,055,664	24	13,120,296		13,120,296
25	12,473,976		12,473,976	25	13,055,664		13,055,664	25	13,120,296		13,120,296
26	12,473,976		12,473,976	26	13,055,664		13,055,664	26	13,120,296		13,120,296
27	12,473,976		12,473,976	27	13,055,664		13,055,664	27	13,120,296		13,120,296
28	12,473,976		12,473,976	28	13,055,664		13,055,664	28	13,120,296		13,120,296
29	12,473,976		12,473,976	29				29	13,120,296		13,120,296
30	12,473,976		12,473,976	30				30	13,120,296		13,120,296
31	12,473,976		12,473,976	31				31	13,120,296		13,120,296
Totals:	386,693,256		386,693,256		365,558,592		365,558,592		405,436,536		405,436,536

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 2nd Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date: 02/18/08

Mon./ Day Apr.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day May	Type of Consumptive Use		Total CU (gallons)	Mon./ Day June	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	13,637,352		13,637,352	1	14,219,040		14,219,040	1	14,994,624		14,994,624
2	13,637,352		13,637,352	2	14,219,040		14,219,040	2	14,994,624		14,994,624
3	13,637,352		13,637,352	3	14,219,040		14,219,040	3	14,994,624		14,994,624
4	13,637,352		13,637,352	4	14,219,040		14,219,040	4	14,994,624		14,994,624
5	13,637,352		13,637,352	5	14,219,040		14,219,040	5	14,994,624		14,994,624
6	13,637,352		13,637,352	6	14,219,040		14,219,040	6	14,994,624		14,994,624
7	13,637,352		13,637,352	7	14,219,040		14,219,040	7	14,994,624		14,994,624
8	13,637,352		13,637,352	8	14,219,040		14,219,040	8	14,994,624		14,994,624
9	13,637,352		13,637,352	9	14,219,040		14,219,040	9	14,994,624		14,994,624
10	13,637,352		13,637,352	10	14,219,040		14,219,040	10	14,994,624		14,994,624
11	13,637,352		13,637,352	11	14,219,040		14,219,040	11	14,994,624		14,994,624
12	13,637,352		13,637,352	12	14,219,040		14,219,040	12	14,994,624		14,994,624
13	13,637,352		13,637,352	13	14,219,040		14,219,040	13	14,994,624		14,994,624
14	13,637,352		13,637,352	14	14,219,040		14,219,040	14	14,994,624		14,994,624
15	13,637,352		13,637,352	15	14,219,040		14,219,040	15	14,994,624		14,994,624
16	13,637,352		13,637,352	16	14,219,040		14,219,040	16	14,994,624		14,994,624
17	13,637,352		13,637,352	17	14,219,040		14,219,040	17	13,508,088		13,508,088
18	13,637,352		13,637,352	18	14,219,040		14,219,040	18	14,994,624		14,994,624
19	13,637,352		13,637,352	19	14,219,040		14,219,040	19	14,994,624		14,994,624
20	13,637,352		13,637,352	20	14,219,040		14,219,040	20	14,994,624		14,994,624
21	13,637,352		13,637,352	21	14,219,040		14,219,040	21	14,994,624		14,994,624
22	13,637,352		13,637,352	22	14,219,040		14,219,040	22	14,994,624		14,994,624
23	13,637,352		13,637,352	23	14,219,040		14,219,040	23	14,994,624		14,994,624
24	13,637,352		13,637,352	24	14,219,040		14,219,040	24	14,994,624		14,994,624
25	13,637,352		13,637,352	25	14,219,040		14,219,040	25	14,994,624		14,994,624
26	13,637,352		13,637,352	26	14,219,040		14,219,040	26	14,994,624		14,994,624
27	13,637,352		13,637,352	27	14,219,040		14,219,040	27	14,994,624		14,994,624
28	13,637,352		13,637,352	28	14,219,040		14,219,040	28	14,994,624		14,994,624
29	13,637,352		13,637,352	29	14,219,040		14,219,040	29	14,994,624		14,994,624
30	13,637,352		13,637,352	30	14,219,040		14,219,040	30	14,994,624		14,994,624
31				31	14,219,040		14,219,040	31			
Totals:	409,120,560		409,120,560		440,790,240		440,790,240		448,352,184		448,352,184

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 3rd Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date: AR 02/18/08

Mon./ Day July	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Aug.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Sep.	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	14,994,624		14,994,624	1	15,964,104		15,964,104	1	14,542,200		14,542,200
2	14,994,624		14,994,624	2	15,964,104		15,964,104	2	14,542,200		14,542,200
3	14,994,624		14,994,624	3	15,964,104		15,964,104	3	14,542,200		14,542,200
4	14,994,624		14,994,624	4	15,964,104		15,964,104	4	14,542,200		14,542,200
5	14,994,624		14,994,624	5	15,964,104		15,964,104	5	14,542,200		14,542,200
6	14,994,624		14,994,624	6	15,964,104		15,964,104	6	14,542,200		14,542,200
7	14,994,624		14,994,624	7	15,964,104		15,964,104	7	14,542,200		14,542,200
8	14,994,624		14,994,624	8	15,964,104		15,964,104	8	14,542,200		14,542,200
9	14,994,624		14,994,624	9	15,964,104		15,964,104	9	14,542,200		14,542,200
10	14,994,624		14,994,624	10	15,964,104		15,964,104	10	14,542,200		14,542,200
11	14,994,624		14,994,624	11	15,964,104		15,964,104	11	14,542,200		14,542,200
12	14,994,624		14,994,624	12	15,964,104		15,964,104	12	14,542,200		14,542,200
13	14,994,624		14,994,624	13	15,964,104		15,964,104	13	14,542,200		14,542,200
14	14,994,624		14,994,624	14	15,964,104		15,964,104	14	14,542,200		14,542,200
15	14,994,624		14,994,624	15	15,964,104		15,964,104	15	14,542,200		14,542,200
16	14,994,624		14,994,624	16	15,964,104		15,964,104	16	14,542,200		14,542,200
17	14,994,624		14,994,624	17	15,964,104		15,964,104	17	14,542,200		14,542,200
18	14,994,624		14,994,624	18	15,964,104		15,964,104	18	14,542,200		14,542,200
19	14,994,624		14,994,624	19	15,964,104		15,964,104	19	14,542,200		14,542,200
20	14,994,624		14,994,624	20	15,964,104		15,964,104	20	14,542,200		14,542,200
21	14,994,624		14,994,624	21	15,964,104		15,964,104	21	14,542,200		14,542,200
22	14,994,624		14,994,624	22	15,964,104		15,964,104	22	14,542,200		14,542,200
23	14,994,624		14,994,624	23	15,964,104		15,964,104	23	13,120,296		13,120,296
24	14,994,624		14,994,624	24	15,964,104		15,964,104	24	14,542,200		14,542,200
25	14,994,624		14,994,624	25	15,964,104		15,964,104	25	14,542,200		14,542,200
26	14,994,624		14,994,624	26	15,964,104		15,964,104	26	14,542,200		14,542,200
27	14,994,624		14,994,624	27	15,964,104		15,964,104	27	14,542,200		14,542,200
28	14,994,624		14,994,624	28	15,964,104		15,964,104	28	14,542,200		14,542,200
29	14,994,624		14,994,624	29	15,964,104		15,964,104	29	14,542,200		14,542,200
30	14,994,624		14,994,624	30	15,964,104		15,964,104	30	14,542,200		14,542,200
31	14,994,624		14,994,624	31	15,964,104		15,964,104	31			
Totals:	464,833,344		464,833,344		494,887,224		494,887,224		434,844,096		434,844,096

RECORD OF TOTAL DAILY CONSUMPTIVE WATER USE

Project Name: **Three Mile Island Nuclear Generating Station**

Name(s) of Source(s): Susquehanna River

Report Period: 4th Quarter, 2007 Prepared By: S. R. Cogley, Environmental Chemist Signature & Date: DR 02/18/08

Mon./ Day Oct.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Nov.	Type of Consumptive Use		Total CU (gallons)	Mon./ Day Dec.	Type of Consumptive Use		Total CU (gallons)
	Cooling Towers	N/A			Cooling Towers	N/A			Cooling Towers	N/A	
	Gallons	Gallons			Gallons	Gallons			Gallons	Gallons	
1	14,219,040		14,219,040	1	129,264		129,264	1	10,922,808		10,922,808
2	14,219,040		14,219,040	2	129,264		129,264	2	8,596,056		8,596,056
3	14,219,040		14,219,040	3	129,264		129,264	3	12,215,448		12,215,448
4	14,219,040		14,219,040	4	129,264		129,264	4	12,215,448		12,215,448
5	14,219,040		14,219,040	5	129,264		129,264	5	12,215,448		12,215,448
6	14,219,040		14,219,040	6	129,264		129,264	6	12,215,448		12,215,448
7	14,219,040		14,219,040	7	129,264		129,264	7	12,215,448		12,215,448
8	14,219,040		14,219,040	8	129,264		129,264	8	12,215,448		12,215,448
9	14,219,040		14,219,040	9	129,264		129,264	9	12,215,448		12,215,448
10	14,219,040		14,219,040	10	129,264		129,264	10	12,215,448		12,215,448
11	14,219,040		14,219,040	11	129,264		129,264	11	12,215,448		12,215,448
12	14,089,776		14,089,776	12	129,264		129,264	12	12,215,448		12,215,448
13	13,895,880		13,895,880	13	129,264		129,264	13	12,215,448		12,215,448
14	13,766,616		13,766,616	14	129,264		129,264	14	12,215,448		12,215,448
15	13,637,352		13,637,352	15	129,264		129,264	15	12,215,448		12,215,448
16	13,314,192		13,314,192	16	129,264		129,264	16	12,215,448		12,215,448
17	13,120,296		13,120,296	17	129,264		129,264	17	12,215,448		12,215,448
18	12,861,768		12,861,768	18	129,264		129,264	18	12,215,448		12,215,448
19	12,926,400		12,926,400	19	129,264		129,264	19	12,215,448		12,215,448
20	12,861,768		12,861,768	20	129,264		129,264	20	12,215,448		12,215,448
21	3,166,968		3,166,968	21	4,459,608		4,459,608	21	12,215,448		12,215,448
22	129,264		129,264	22	10,470,384		10,470,384	22	12,215,448		12,215,448
23	129,264		129,264	23	13,249,560		13,249,560	23	12,215,448		12,215,448
24	129,264		129,264	24	13,249,560		13,249,560	24	12,215,448		12,215,448
25	129,264		129,264	25	13,249,560		13,249,560	25	12,215,448		12,215,448
26	129,264		129,264	26	13,249,560		13,249,560	26	12,215,448		12,215,448
27	129,264		129,264	27	13,249,560		13,249,560	27	12,215,448		12,215,448
28	129,264		129,264	28	13,249,560		13,249,560	28	12,215,448		12,215,448
29	129,264		129,264	29	13,249,560		13,249,560	29	12,215,448		12,215,448
30	129,264		129,264	30	12,215,448		12,215,448	30	12,215,448		12,215,448
31	129,264		129,264	31				31	12,215,448		12,215,448
Totals:	281,343,096		281,343,096		122,477,640		122,477,640		373,766,856		373,766,856

ADDITIONAL DOCUMENTS #1

For documentation of SRBC approval for method of calculating surface water withdrawal from the Susquehanna River, see the response to question ENV-114.

Non-AmerGen

WILDLIFE HABITAT COUNCIL℠

SITE ASSESSMENT AND WILDLIFE MANAGEMENT OPPORTUNITIES REPORT FOR EXELON CORPORATION'S THREE MILE ISLAND GENERATING STATION

Report submitted to:

THREE MILE ISLAND GENERATING STATION
EXELON CORPORATION
Londonderry Township, Pennsylvania

Report submitted by:

WILDLIFE HABITAT COUNCIL
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OCTOBER 2005

This report was prepared by:

SUE WOLINSKY, WHC BIOLOGIST
ADAM GUNDLACH, RESEARCH ASSISTANT

With further assistance from the staff of the Wildlife Habitat Council

The Wildlife Habitat Council (WHC) commends Exelon Corporation for its commitment to improving habitat for wildlife through the initiation of a wildlife habitat enhancement program at the THREE MILE ISLAND GENERATING STATION.

We thank Jim Bolte for his hospitality during WHC's site visit.

The **WILDLIFE HABITAT COUNCIL (WHC)** is an independent, nonprofit assemblage of corporations, conservation organizations, and individuals dedicated to protecting and enhancing wildlife habitat.

Created in 1988 and based in the greater Washington DC area, WHC strives to promote responsible environmental stewardship within the corporate management culture through the provision of expertise and resources to companies concerned with the protection of wildlife habitat on private landholdings. Over 2 million acres of private land is currently managed for wildlife through WHC-assisted projects in North America and around the world.

WHC also works to broaden understanding of wildlife values through the incorporation of environmental education, volunteer participation, and community outreach programs.

NONDISCLOSURE STATEMENT

This document contains confidential and proprietary information. WHC will not distribute this report to others without express written consent from Exelon Corporation. We also recommend that discretion be used when distributing this document to others.

This report is intended solely as a guidance tool for implementing wildlife habitat enhancement programs on corporate sites. WHC therefore cannot assume responsibility for local, state, and federal regulatory programs and authorizations. WHC strongly recommends that site managers consult with state and federal experts with regard to regulatory requirements in the region prior to implementing any activity in a regulated habitat. WHC can assist with the identification of appropriate regulatory contacts, if necessary.

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EXECUTIVE SUMMARY

The Wildlife Habitat Council's (WHC) *Wildlife at Work*SM program focuses on involving company employees, community members, conservation organizations, and government agencies in the long-term, active management of company property to improve wildlife habitat and raise environmental awareness. Corporations like Exelon Corporation and other private landowners play a significant role in species conservation. It has recently been estimated that traditional reserves such as parks, wildlife refuges, and other designated natural areas will, at best, secure roughly five percent of the world's species. Creation of wildlife habitat in and around areas that also feature economic activities can promote biodiversity conservation at local, regional, and even global scales.

Exelon Corporation recently joined the Wildlife Habitat Council as a one-year member in March 2005, further exemplifying Exelon Corporation's commitment to investigating and improving wildlife habitat conditions through the implementation of enhancement projects designed to enrich pre-existing habitat and establish new habitat on the company's corporate landholdings. The following excerpt is taken directly from the Exelon Corporation web site: "Exelon understands that being a business leader involves more than being a reliable provider of energy services. It also means being an important part of the communities we serve and working to sustain our environment. We recognize the importance of balancing the need for reliable energy with our responsibility to ensure that the quality of our environment is preserved. We have partnered with many environmental stakeholders to create and support environmental preservation initiatives, we are committed to using technology to more effectively utilize our limited natural resources and to minimize the production of waste, we continuously seek to improve our work practices to further ensure the integrity of the environment, and we are pursuing how we can create value for our shareholders through environmental performance in order to ensure economic growth and environmental sustainability for future generations." The Three Mile Island Generating Station is the fourth site to begin participation in WHC programs.

Induction into the *Wildlife at Work* program will enable the Wildlife Habitat Council to assist employees at the Three Mile Island Generating Station in their efforts to improve wildlife habitat at the site. Furthermore, partnership with WHC provides Exelon Corporation with an opportunity to demonstrate responsible corporate environmental stewardship by formulating and implementing a balanced and operative wildlife management program.

To assist in the development of a biodiversity assessment and wildlife habitat management plan, representatives from the Three Mile Island Generating Station invited a WHC biologist to visit the site on August 18, 2005. This report, Site Assessment and Wildlife Management Opportunities for Exelon Corporation's Three Mile Island Generating Station, was created with information compiled from the site visit, discussions with employees, and independent research. It is intended to present and outline historical and current information pertaining to the ecological communities at the Three Mile Island Generating Station, focusing on a review of critical habitats and species on site, while outlining opportunities for future enhancement recommendations that are designed to augment food, water, cover, and space resources – the four basic components species require from their habitat. The Wildlife Team may choose to implement some or all of these projects and is furthermore encouraged to explore additional habitat enhancement opportunities. Projects suggested for the Three Mile Island Station Wildlife Team members to consider in the future include:

- Identifying and managing any invasive, exotic species on site,
- Enhancing riparian buffer habitats for native wildlife species, especially migratory birds
- Erecting and monitoring nest boxes for cavity nesting avian and mammal species,
- Erecting additional perches on site for nesting osprey, peregrine falcons, and other birds of prey,
- Conducting surveys and necessary enhancements for native amphibian and reptile species that may utilize seasonal wetlands on site,
- Considering establishing native grassland and wildflower meadows just outside the gates, in old field habitats on site,
- Continuing efforts to improve habitat for fish and other aquatic organisms, and including more intensive monitoring and evaluation of efforts to improve the overall health of the Susquehanna River.

The Three Mile Island Generating Station will be eligible to apply for Habitat Program Certification with WHC once habitat enhancements have been implemented and monitored for at least one year. WHC's *Corporate Wildlife Habitat Certification/International Accreditation* program is designed to recognize exceptional corporate wildlife habitat programs and supply third-party credibility for environmental stewardship. As WHC certification review procedures are rigorous, the Three Mile Island Generating Station Wildlife Team is advised to keep textual and photographic documentation of site habitat enhancement projects and public outreach programs in order to increase the site's prospects for certification.

Wildlife habitat enhancement, employee participation, and public outreach are the primary objectives of the *Wildlife at Work* program. WHC is confident that employees at the Three Mile Island Generating Station can achieve these goals through the development of a wildlife habitat management plan and the implementation of the proposed enhancement projects.

The staff of the Wildlife Habitat Council commends employees at the Three Mile Island Generating Station for their demonstrated commitment to protecting biodiversity and improving site wildlife habitat through the implementation of a team-designed wildlife management plan and anticipates the formation of a sustained association with site participants. Please contact Sue Wolinsky or WHC staff with inquiries regarding the wildlife

management plan, additional habitat enhancement opportunities, and WHC certification procedures.

1. OVERVIEW

WHC requires a site visit by a staff wildlife biologist prior to recommending a habitat management plan. The purpose of the site visit is to accurately assess the current habitat conditions of the site and to subsequently determine which habitat enhancement projects would be most appropriate for these particular conditions in accordance with management objectives. Therefore, it is standard procedure during the site visit that the visiting WHC biologist meets with company personnel to ascertain the objectives of the site's wildlife program and to present initial habitat enhancement opportunities. This overview contains the proceedings of the site visit, as well as a detailed site description and review of local area history. **Figure 1** provides a black and white aerial photograph of the island, which clearly outlines the facilities and development at Three Mile Island.

FIGURE 1. OVERVIEW OF THREE MILE ISLAND GENERATING STATION

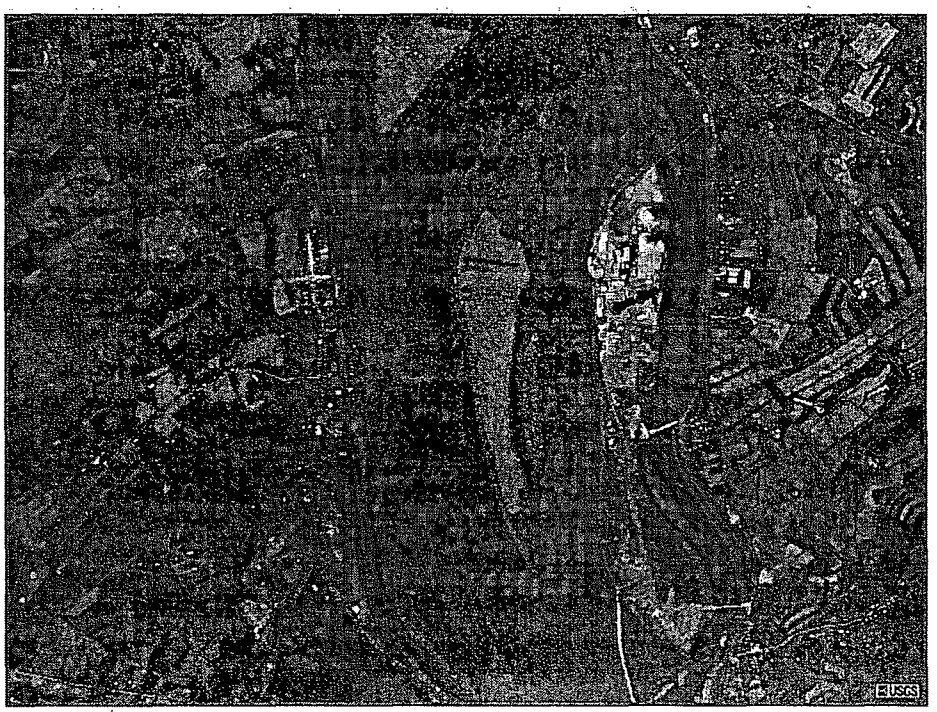


Photo courtesy of USGS.

1.1 SITE VISIT

On August 18, 2005, WHC's Certification Program Manager/Wildlife Biologist, Sue Wolinsky met with Exelon Corporation representative Jim Bolte to discuss site biodiversity and wildlife habitat opportunities at the Three Mile Island Generating Station. Ms. Wolinsky and Mr. Bolte met in a lot adjacent to the entrance bridge just outside the Three Mile Island Generating Station in order to discuss the agenda of the site tour. The two then drove on site in order to meet with two Three Mile Island Generating Station representatives. After initial introductions, the group met in the facility dining area in order to review site maps and discuss areas of potential habitat on site. The site manager relayed that a majority of the site's undeveloped acreage is on the southern end of the island, away from operational facilities.

In addition, the site representatives reported that osprey and peregrine falcons have been noted nesting on site in the past. Osprey were regularly constructing nests on towers, however, site representatives work with local officials and Wildlife Services to move the nests, and erect nesting platforms for returning individuals. Employees regularly monitor platform and tower nesting activity, although the platform has not yet been used. Site representatives reported that peregrine falcons fledge young annually from the site, and employees have placed cavities on site for the use of these birds, which are also monitored. In addition, employees had previously placed wood duck boxes and an osprey platform on the southern end of the island. Following initial discussions about the site and ongoing habitat enhancement programs, the group went on a comprehensive tour of the island.

1.2 SITE DESCRIPTION

Exelon Corporation's Three Mile Island Generating Station is located in the Susquehanna River, on approximately 382 acres in Dauphin County, Pennsylvania. The facility, which is licensed to operate until 2014, is adjacent to the city of Middletown, and is within Londonderry Township, and is approximately twelve miles south of Harrisburg, Pennsylvania. Regular site operations employ approximately 520 employees, not including full time contractors. According to the site's web page, the station and employees support a variety of educational, charitable and community-

based events, including the Middletown Music Festival, Conoy Township Youth Athletic Association, Children's Miracle Network, Hershey Girls Softball, several area fire companies and emergency services departments, and the American Red Cross.

The plant's has two reactors, one that is not owned by Exelon Corporation, the infamous Unit 2, which suffered a partial meltdown in 1979, and the reactor that is owned by Exelon Corporation, Unit 1. Exelon Corporation owns all of the land surrounding the Unit 2 reactor, as well as some adjacent island property, although the exact acreage of ownership was not precisely known during the time of the visit. Unit 1 lies just north of Unit 2, which is non-operational. The Nuclear license for Unit 2 is held by the General Public Utilities Corporation, which is owned by First Energy Nuclear Company.

The site tour started just outside the cafeteria and office complex area, where the group viewed a basin that is used for dredge storage. The basin holds spoil that is removed from the intake canal, which is dredged every two to three years. The group then passed the intake structure, which is on the west side of the island. In addition, the group viewed old equipment storage areas, an administration building and an area near the gate that is the construction site of a new security checkpoint. The perimeter of the facility property is fenced, and the group's main focus was to view the undeveloped portions of the island, which are at the southern end of the site, outside of the fenced perimeter. The central portion of the island, where some operational facilities are located, is slightly above the site's ten-year floodplain, however, a majority of the southern portion of the island, where the undeveloped portions of the site are, are within the zone that would be inundated during a ten year storm event. Water levels surrounding the site, and within the island's wetlands, vary seasonally.

Outside of the gates, areas consisted mainly of open field habitat with foxtail grasses, which are bordered by tree and shrub bufferlands. Species noted in the area included blackberry, basswood, sycamore, sweetgum and locust trees. Another spoils area is adjacent to this open field and wooded buffer portion of the property. The group advanced on foot through this area, taking note of borrow pits, a wet meadow, and tree and shrub habitats, by way of an old road. The area receives little landscaping and/or regular maintenance, although roads are maintained and used

mainly during scheduled outages. The group proceeded to the south side access bridge, which offered a view of the islands shoreline, which is rocky in many places and mostly well vegetated.

PHOTO 1. SHORELINE / RIPARIAN BUFFER HABITAT AT THREE MILE ISLAND

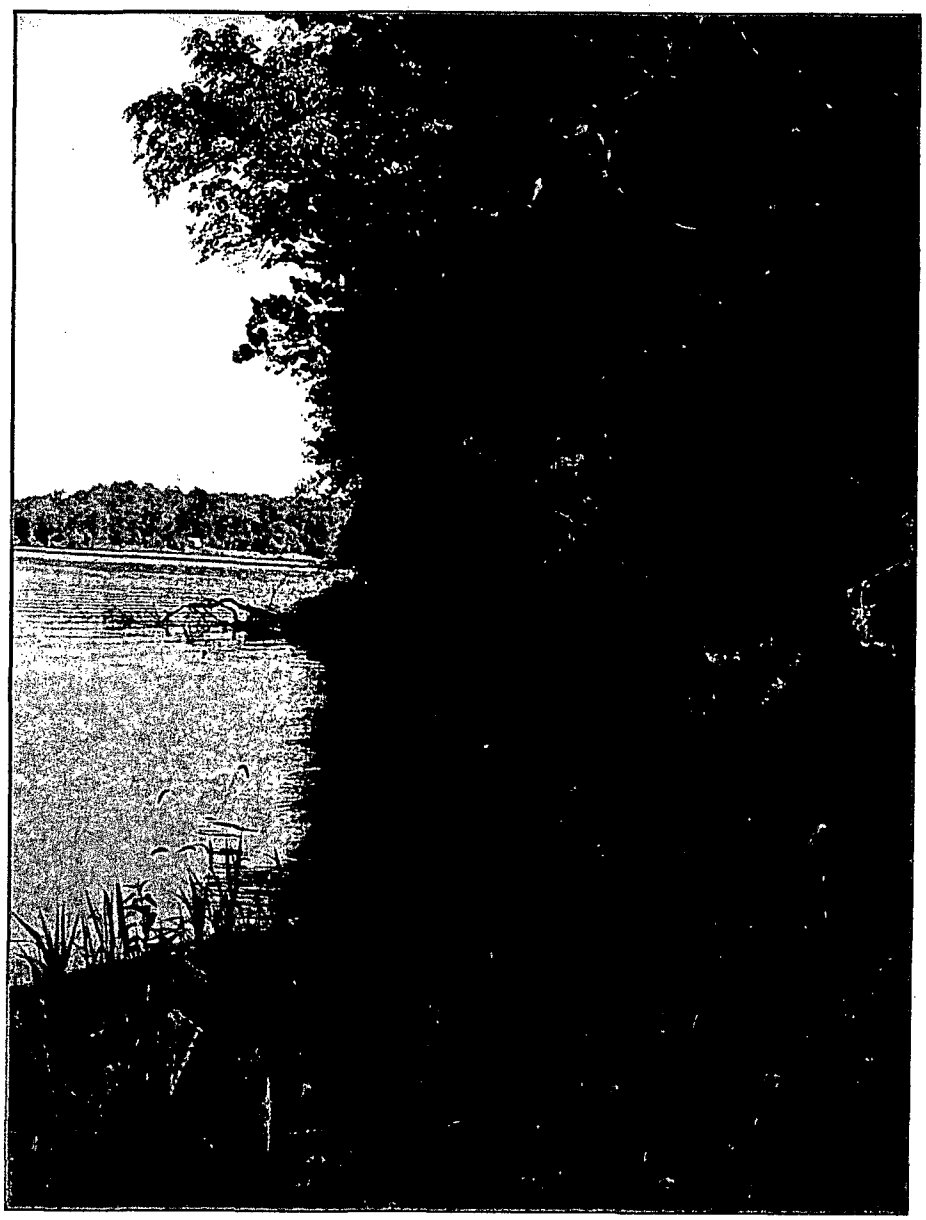


Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

The tour also included additional views of hardwood mixed forest buffers, platforms in old field habitats, a former boat launch area and other portions of the west side of the island. The group

continued along gravel roads and on perimeter roads, all of which featured a combination of old field habitat, which has been left to the processes of natural succession, and woodland buffer areas that feature a diversity of trees and shrubs. There is a fish ladder monitoring facility behind a fence on one side of the island, which is typically staffed by state employees during the spawning season. The group also reviewed an old landfill that currently serves as meadow habitat and lies adjacent to the operating towers. Following a tour of the habitats on site and an outside view of the reactors and towers, the group met with a Pennsylvania Department of the Environment employee in front of the site, where he regularly monitors the activity of nesting osprey and/or peregrine falcons. After a quick view of the nesting spot on top of the tower, which can be seen in **Photo 2**, the group concluded the site tour and assessment meeting.

PHOTO 2. OSPREY NEST ON TOWER AT THREE MILE ISLAND

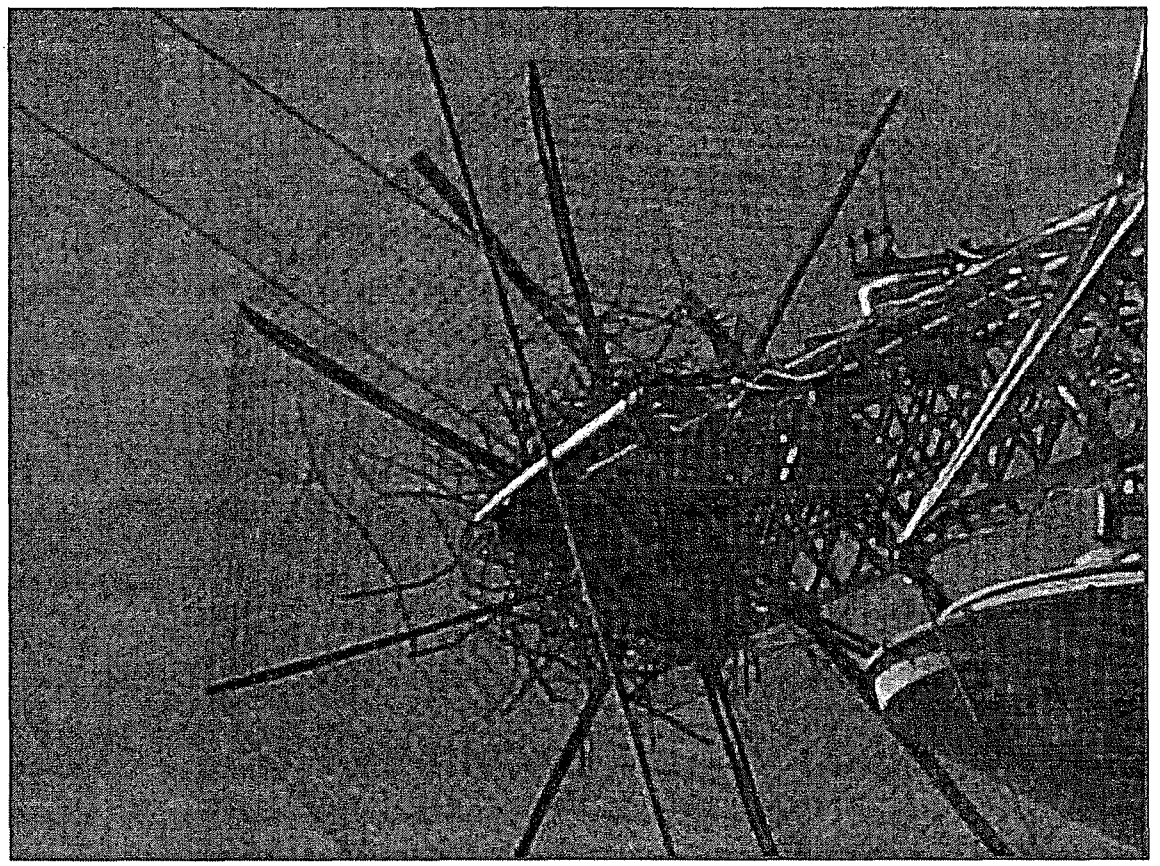


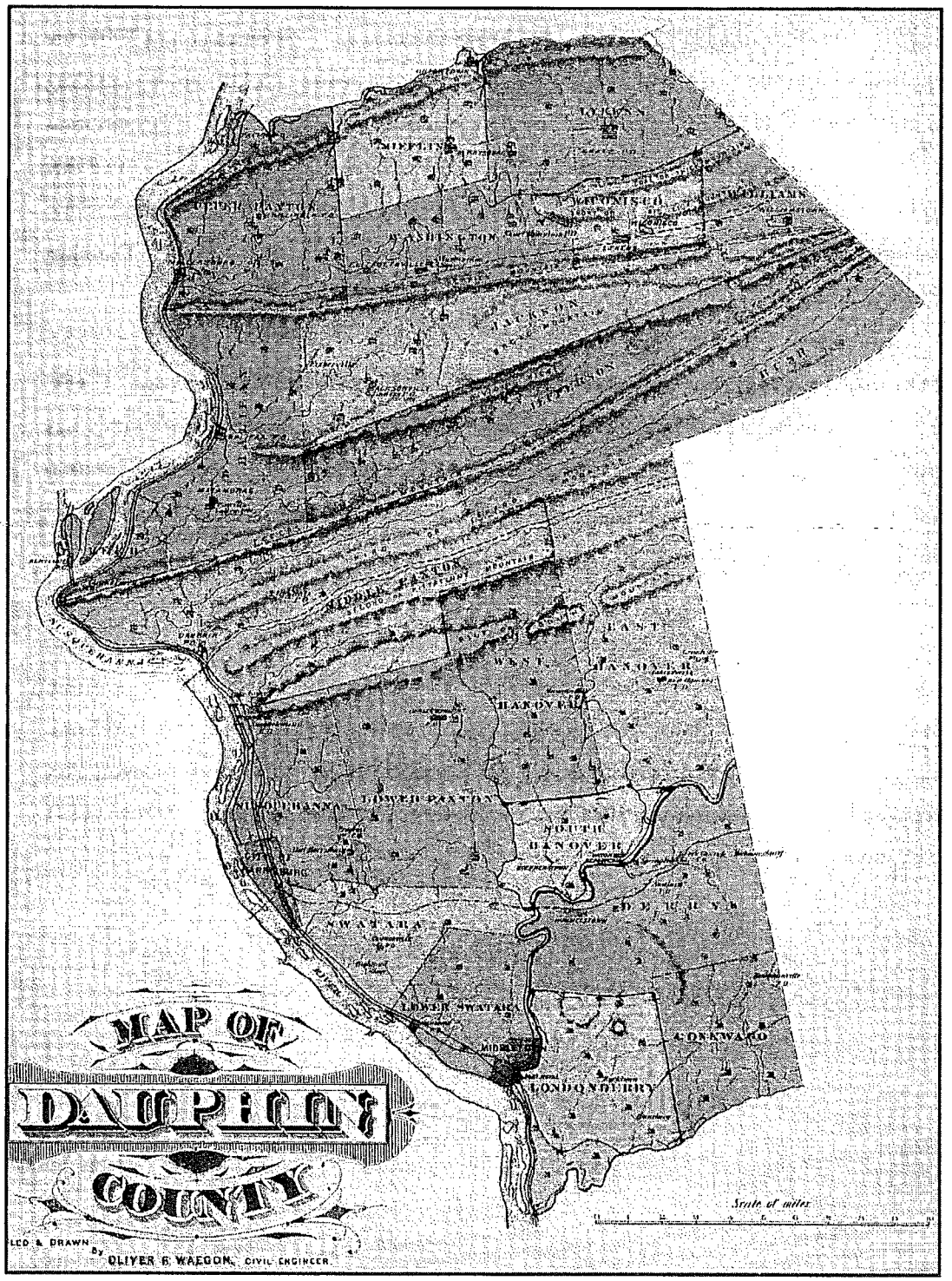
Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

1.3 SITE HISTORY AND COMMUNITY BACKGROUND

The Exelon Corporation Three Mile Island Generating Station is in Londonderry Township, which lies in the southwestern corner of Dauphin County, Pennsylvania. Dauphin County, which is in south-central Pennsylvania, is bordered in the north by Northumberland County, in the northeast by Schuylkill County, in the east by Lebanon County, in the southeast by Lancaster County, in the southwest by York and Cumberland Counties, and in the west by Perry County. The areas immediately surrounding the site can be described as rural, agricultural, old-field, and residential. In addition, the island lies just west of State Highway 441.

Londonderry Township, which is one of 23 townships within Dauphin County, estimated a total population of approximately 5,224 people, or roughly 1,517 families, in 2000, according to information available from the U.S. Census Bureau. This township, one of Pennsylvania's 1,548 recognized townships, was officially formed in the 1800's. The total area of the township encompasses an estimated 22.8 square miles of terrestrial land, and 4.1 square miles of water resources. The total area of the township is about 15.23 percent water. **Figure 2** provides a historical map of the townships within Dauphin County, with Londonderry being shaded in green at the southwestern corner of the map, bordering the Susquehanna River.

FIGURE 2. HISTORICAL MAP OF TOWNSHIPS WITHIN DAUPHIN COUNTY, PA

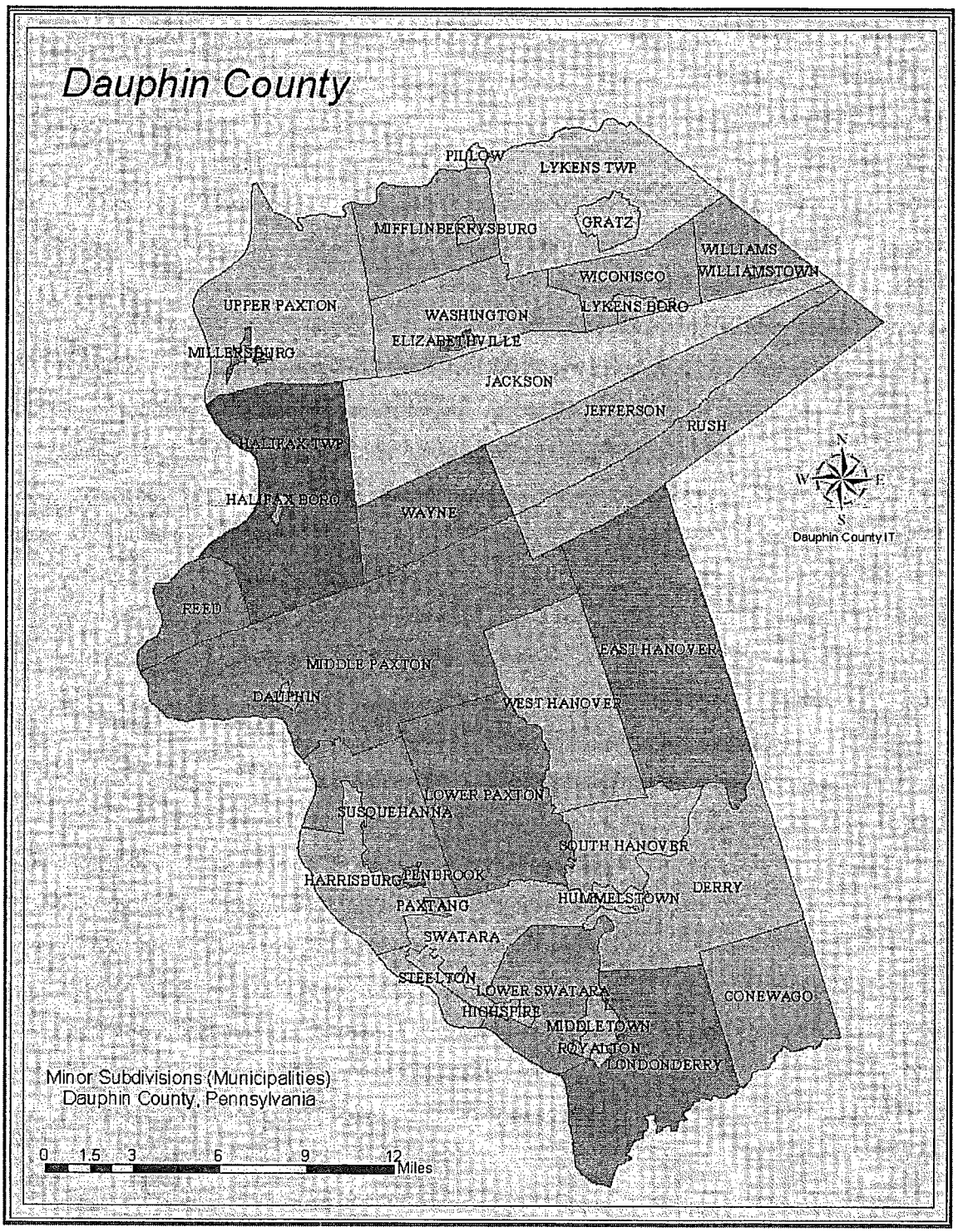


Map courtesy of USGS.

Dauphin County is one of 67 counties in Pennsylvania, and occupies approximately 558 square miles with 5.78 percent, or roughly 32 square miles, being classified as open water. As of 2000, the county reported a population of about 251,798 people, or approximately 66,119 families residing in the county fulltime. The County was reportedly created in 1785 from part of neighboring Lancaster County. According to the Dauphin County official web page, the county was named this in order to honor Dauphin, "the eldest son of the King of France, who had come to the aid of the American colonies during the American Revolution." **Figure 3** provides a map of Dauphin County, Pennsylvania.

The counties major water bodies and river systems include Mahantango Creek, Powell Creek, Stony Creek, Clark Creek, Swatara Creek and the Susquehanna River. In addition, the county has eight environmentally sensitive riverine habitats along with seven important breeding, nesting and/or spawning grounds. There are also reportedly three plants and animals listed on the threatened and endangered species list that can be found residing in Dauphin County. Economically sensitive areas in the county include four drinking water intakes, 17 industrial water intakes and one historical site. Major roadways in the county include Interstate 81, U.S. Route 22, Interstate 83, U.S. Route 322, Interstate 283, Interstate 76 and Pennsylvania's Route 283. There are also five Facility Response Plans (FRP) for oil facilities, eleven National Pollution Discharge Elimination System (NPDES) permitted facilities, five Resource Conservation and Recovery Act (RCRA) regulated facilities and thirteen sites that are listed on the Toxic Release Inventory (TRI) within the county.

FIGURE 3. CURRENT MAP OF DAUPHIN COUNTY, DELINEATING TOWNSHIPS



Map courtesy of USGS.

In his book about Three Mile Island, Samuel Walker reports that Unit 1 was initially planned to be constructed adjacent to the Oyster Creek Generating Station, which was then owned by New Jersey Central Power and is now also owned by Exelon Corporation, however, concerns over labor problems prompted investors to build the facility at Three Mile Island along with Unit 2. Three Mile Island, the largest island in the Susquehanna, was permitted for construction of the generating stations in 1968, with Unit 1 becoming operational in 1974 and Unit 2 coming on line in 1978. At the time the plants were constructed, the areas surrounding the island were described as largely rural, with a mix of agriculture and light industry. In addition, located along the river, between Three Mile Island and Harrisburg, was Bethlehem Steel Corporation's Pennsylvania Steel Technologies mill operations in Steelton. However, the International Steel Group purchased Bethlehem Steel Corporation's assets in 2003, creating one of North America's largest integrated steel producers; this group currently operates the Steelton facility. Parks and areas of significance within the area surrounding Three Mile Island include State-managed areas such as Boyd Big Tree Preserve Conservation Area and Joseph E. Ibberson Conservation Area, county-managed parks such as Wildwood Lake Sanctuary, Wiconisco Creek Recreation and Natural Area, Fort Hunter Mansion and Park, and lykens Glen Park. There are also several city parks in neighboring Harrisburg, and the Federally-maintained Appalachian Trail passes through part of the county.

Boyd Big Tree Preserve Conservation Area is one of Pennsylvania's newest state parks, having been donated to the State by Mr. Boyd in 1999. This donated portion of the conservation area exceeded 900 acres, and the state purchased an additional 80 acres of woodlands, expanding the area, in 2002. The acreage is managed by the Pennsylvania Bureau of State Parks for the purpose of preserving open space, conserving natural resources, and providing recreational and educational opportunities to the general public. This area, located off Fishing Creek Valley Road in Middle Paxton and Lower Paxton Townships, provides habitat for a number of species, including game species such as black bear, white-tailed deer, rabbit, turkey, grouse and squirrel. In addition, there are eastern bluebird boxes located around the main parking lot. The area is dominated by large, second growth forests of oak, hickory and beech trees. Managers have also planted a number of blight-resistant American chestnut trees in a field adjacent to the entrance. In addition, the trails and ridges atop Blue Mountain provide a place to view the annual hawk migration that occurs

between October and December in this area. This conservation area also features over ten miles of trails, and an active environmental education and interpretation program.

The Joseph E. Ibberson Conservation Area, the other local state-managed conservation area near Three Mile Island, consists of approximately 350 acres on Peters Mountain, near Matamoras, Pennsylvania. This conservation area was donated to the state in 1962, creating the state's first conservation area in the Pennsylvania Bureau of State Parks. This conservation area consists of hardwood forests that remain largely unfragmented, providing critical habitat for a variety of forest-dependant and associated species. In addition, this conservation area, like most in Pennsylvania, is open to hunting, and provides ideal habitat for a variety of game species. Trails in this park link to the section of the Appalachian Trail that runs through the county. Common species in the park, as reported by the PA Department of Conservation and Natural Resources (DCNR), include red, black and scarlet oaks, white and Virginia pine, tuliptree, eastern hemlock, basswood, black walnut, black locust, wild cherry, sassafras, beech and birch trees. This conservation area also features a wide variety of environmental education opportunities and interpretive programs.

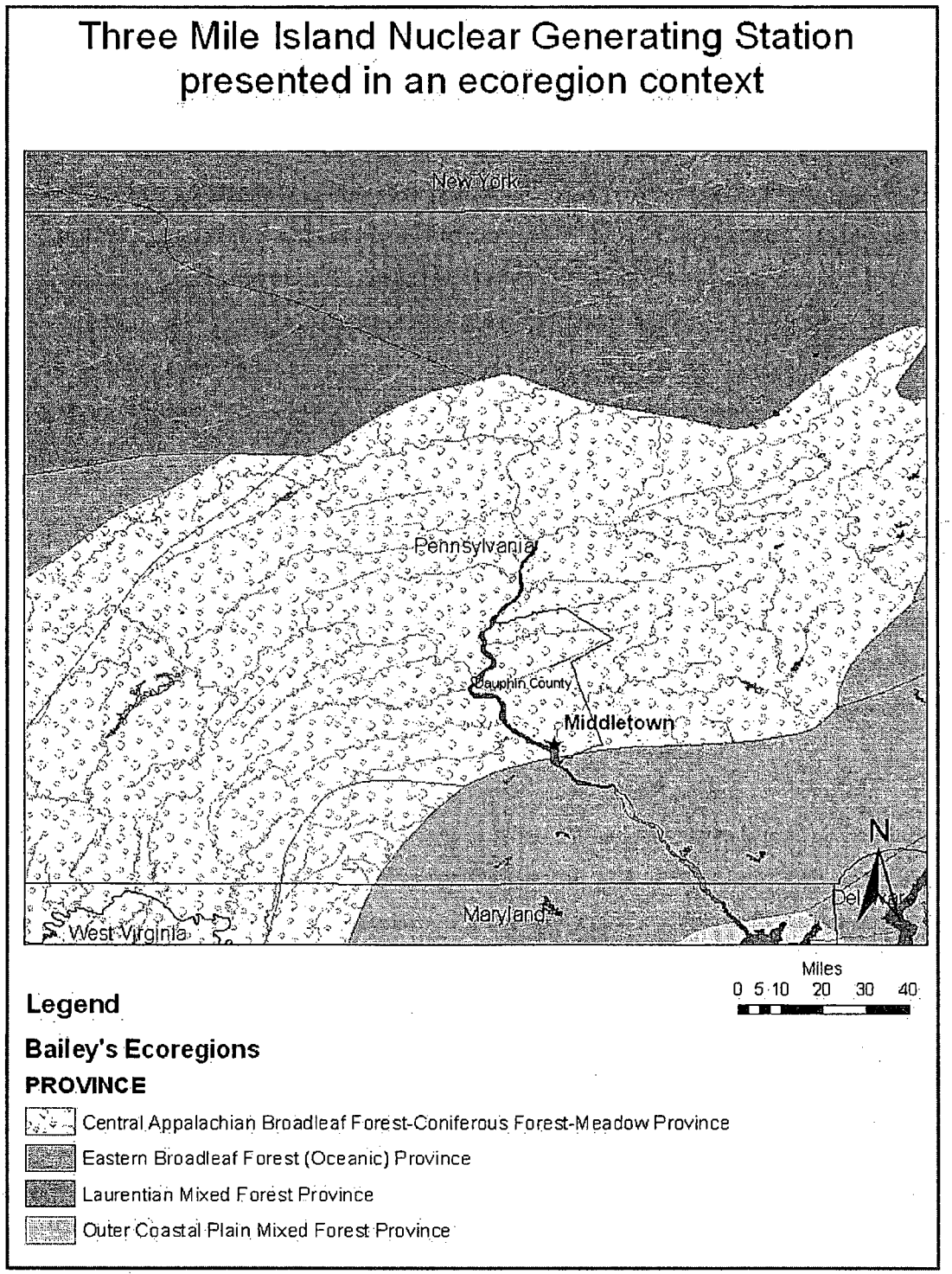
PHOTO 3. YOUNG SASSAFRAS, A COMMON TREE IN PA FORESTS

Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

2. BIODIVERSITY ASSESSMENT OF THE THREE MILE ISLAND GENERATING STATION

Preservation of natural biodiversity has long been a global priority, and WHC supports Exelon Corporation's desire to understand site biodiversity and create an effective wildlife habitat management and biodiversity protection plan. Biodiversity is defined in general as the number and variety of living organisms; including genetic diversity, species diversity, and ecological diversity, and is often assessed through documenting the species composition and defining characteristics of a habitat. **Figure 4** depicts the Tree Mile Island Generating Station's location in an ecoregional-context.

FIGURE 4. MAP DEPICTING RANGE OF ECOREGION AT THE THREE MILE ISLAND



Map courtesy of Josiane Bonneau, WHC Wildlife Biologist.

2.1.1 Description of Ecoregion

Exelon Corporation's Three Mile Island Generating Station lies within what scientific analyses and conservation assessments published by Island Press in the *Terrestrial Ecoregions of North America: A Conservation Assessment*, identify as the Appalachian-Blue Ridge Forest Ecoregion, just northwest of the Northeastern Coastal Forests Ecoregion. This ecoregion stretches north from northeastern Alabama and Georgia, through eastern Tennessee, western North Carolina, Virginia and Maryland, and into central Pennsylvania. In addition to the aforementioned classification, the United States Department of Agriculture's (USDA) Forest Service adopted their own policy and subsequent classification of ecosystem types in the publication *Ecoregions of the United States*, which was compiled by Robert G. Bailey and revised in March 1995; which classifies land based on forest cover types, grasslands and other data from ongoing research programs. For USDA Forest Service purposes, the Three Mile Island Generating Station lies within the Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow Province, just north of the Eastern Broadleaf Forest (Oceanic) Province, which characterizes the habitat of the nearby Peach Bottom Atomic Power Generating Station. A list of wildlife species common in this ecoregion, and in the transitional ecosystems that occupy this particular area, is provided in **Appendix II** of this report, although partial species lists are provided throughout the subsections of **Section 2**.

The Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow Province includes areas that are classified as Appalachian Highlands, and includes an extent of approximately 68,100 square miles. The Province, as defined and described by Bailey's publication, "is composed of subdued low mountains of crystalline rocks and open low mountains with valleys underlain by folded string and weak strata." Relief is described as high, with the highest elevations being the farthest south at Mount Mitchell, North Carolina's tallest peak of 6,684 feet.

Vegetation types and densities in the Province rely heavily on elevation changes throughout the region. Valleys in the southern portion of the range are typically inhabited by a mix of oak-pine dominated forests that closely resemble the forests of the coastal plains. Above this zone in elevation Appalachian oak forests dominated by white and black oaks are common. Farther up in elevation are more mature northeastern hardwood forests, which include birch, beech, maple, elm,

tuliptree, hemlock, pines, and basswood. American chestnuts, decimated by blight from an introduced fungus, were also common in this region. In addition, spruce-fir forests and meadows are on the high peaks of the Allegheny and Great Smokey Mountains. The distribution and density of vegetation through this Province depends ultimately on soils and elevation characteristics at the local level.

The ecoregion, coupled with the adjacent Eastern Broadleaf Forest Province, has relatively high species richness. Species richness throughout the region is further accentuated due to the presence of several regionally unique ecosystems, which are a function of elevation and soil condition. According to information available through the Island Press and World Wildlife Foundation, "a number of plants, invertebrates, salamanders, crayfish, freshwater mussels and fish are restricted to single watersheds or peaks due to millions of years of isolation and favorable conditions." There are over 158 tree species throughout the Province, placing the Appalachian-Blue Ridge Forests among the nation's most florally diverse ecoregions. The southern limit of many northern forest mammals occurs within this Province. There are over 225 terrestrial invertebrates within the ecoregion. In addition, the province has a high diversity and abundance of amphibians; there are over 30 different species of salamander living in the southern Appalachians, more than in any other part of North America. Breeding birds in the region are dominated by a variety of neo-tropical migratory species, which rely on varying stages of natural forest succession that characterize the area.

Unfortunately, scientists have reported that over 80 percent of the habitat throughout this ecoregion has been altered by development. The areas most heavily impacted by this development have been unique lowland and valley habitats, as many low-lying sites in the region were converted for agricultural purposes. Increases in urban and suburban development have also altered many of the lower lying portions of this ecoregion. Conversion of land to agricultural use is less common in areas of higher elevation, although many of the region's ridge top locations have been, and still are, actively logged. Only a few blocks and patches of unlogged forest habitat remain, although there are larger forested blocks in the Great Smoky Mountains. In addition, second growth forests that have recovered, or are protected, from logging provide habitat opportunities for native species in the region, though they often lack the structural and species diversity of the forests that characterize the region. One example of managed re-growth forests can bee seen in the acreage

that comprises the Shenandoah National Park, which is in northwestern Virginia. Native shrubs and wildflowers that characterize the understory common in the forested regions of this Province have suffered the greatest losses of diversity, with few areas remaining that represent the original diversity in the region. Many of the remaining blocks of intact habitat exist as managed, public lands. Government agencies, corporations, absentee owners, and one percent of local landowners control over 50 percent of the land in this ecoregion. For example, representative habitats can be found in the Great Smoky Mountains National Park in western North Carolina and eastern Tennessee, Shenandoah National Park in Virginia, Thomas Jefferson National Forest in western Virginia, the Allegheny Mountains in central Pennsylvania and Pisgah National Forest in western North Carolina.

The major threats to habitats in the region include increases in logging, mineral exploration and extraction, conversion of lands for agricultural and development reasons, fire suppression, air pollution and acid rain, overpopulations of white-tailed deer, and the introduction and spread of non-native, invasive, exotic species throughout the ecoregion. Increases in the demand for forest products are expected in the coming years; however, pressures on habitat may be offset by public interest in national forests and in increased abandonment of agricultural lands. Mineral exploration and extraction, particularly with the mining of coal, has continued in the region, and will put additional pressure on habitat in the future. Urban and suburban development is also expected to continue and increase throughout the region. Furthermore, white-tailed deer have become increasingly populous throughout the ecoregion due to the reduction and extirpation of large predators, and problems associated with increased deer browse are expected to continue. The introduced species that pose the greatest risk to diversity in the ecoregion include the gypsy moth, spruce budworm, and hemlock and balsam wooly agelgids. These introduced pests are altering both forestland and overall habitat compositions throughout the ecoregion.

In order to safeguard the health of the diversity of species throughout this ecoregion, large blocks of representative forestland must be identified and protected. In addition, linkages must be made between the existing fragments of representative habitats to ensure future survival of a variety of species. In addition, there is an overwhelming need for white-tailed deer control programs to be

more intensively integrated into local management practices in order to protect the forests understory vegetation.

One example of regional restoration work can be found when examining the native species restoration programs that Exelon Corporation participates in along the Susquehanna River and Conowingo Pool. According to information available from the Susquehanna River Basin Commission, "American shad were once a thriving and vital resource in the Susquehanna River Basin. During their peak in the 1800s, they numbered up to several hundred thousand fish each year." American shad are an anadromous fish that begin life in the river and its many tributaries, and then migrate to spend their adult lives in the Atlantic Ocean. They then return to the rivers and streams in which they originated in order to spawn. Over time, the effects of water pollution and physical stream barriers impeded this natural migration process. In 2004 the Susquehanna River Basin Commission, an organization that has monitored and assessed the conditions of the river and tributaries in the basin since being established in the early 1970s, designed a program called the *Susquehanna Shad School: Connecting Students and Shad* "to educate teachers and students on the importance of restoring American shad and other migratory species to the Susquehanna River Basin."

Partners in the restoration program include the Commission, Maryland Department of Natural Resources, Maryland State Department of Education, Maryland Sea Grant Extension Program, U.S. Fish and Wildlife Service, the organization American Rivers and Exelon Corporation and one of its subsidiaries, Susquehanna Electric Company. As part of the program, students at two Maryland schools, North Harford High School and Perryville Middle School, will raise American shad in classroom aquariums from eggs to the fry stage. Then the juvenile shad will be released into local waterways, including Deer Creek. Additionally, as part of the program, students will study the shad lifecycle, tour fish passage operations and a spawning tank at the Conowingo Hydroelectric Dam, as well as visit a dam on Deer Creek that has been deemed fit for removal and learn about the benefits of dam removal to the shad lifecycle.

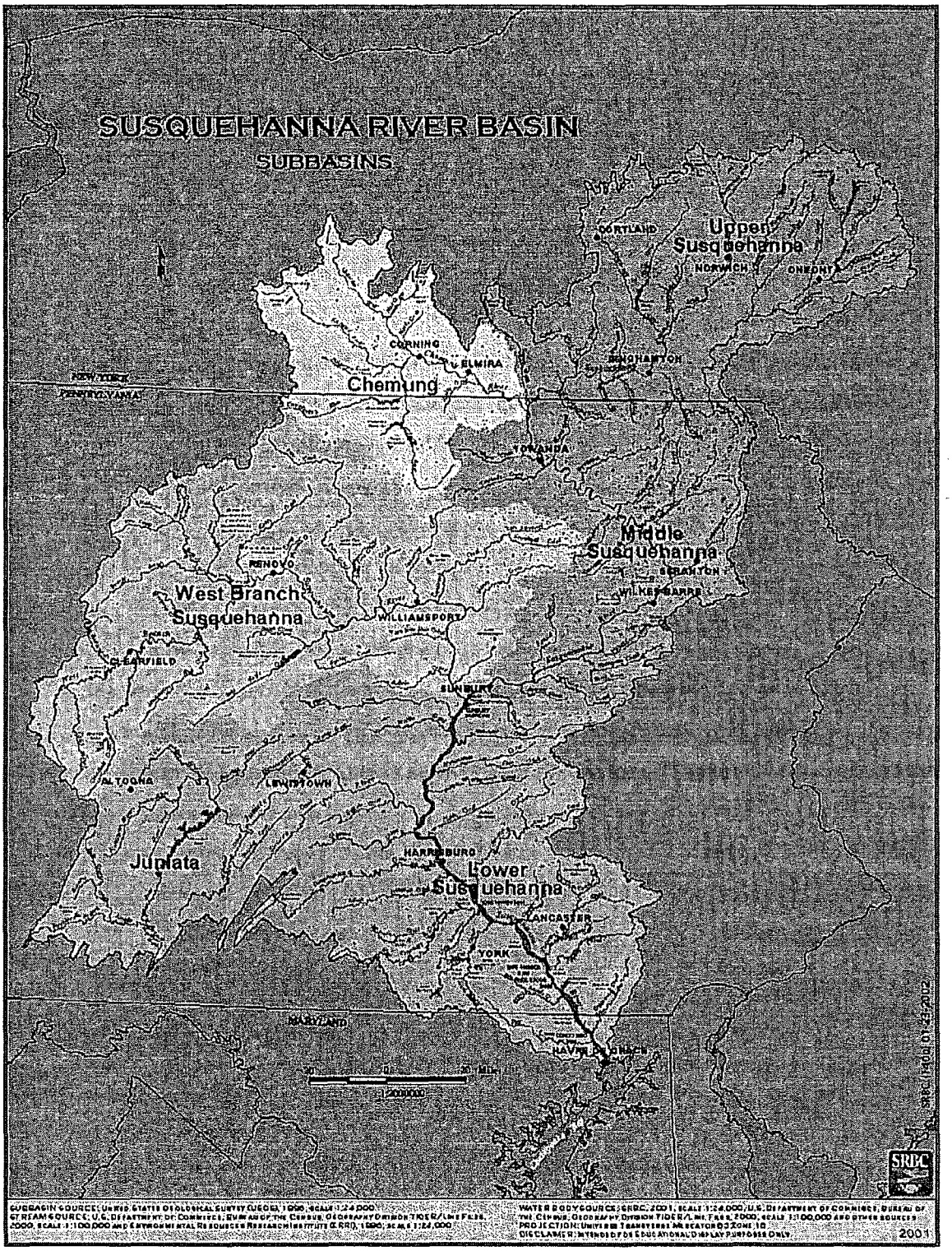
According to information from Exelon Corporation employees, the Conowingo Station has operated a fish lift to assist migratory species in their journeys upstream since the 1970s. "In 2003, Exelon celebrated the one-millionth American shad safely delivered into the Conowingo Pond

since the fish lifts went into operation." A second fish lift was constructed at the dam in 1991 in or to accommodate a greater number of fish. Over 200 schoolchildren from the Susquehanna River Basin Commission's Shad School visited the Conowingo facility, which is located on the river and runs between Cecil and Harford Counties in Maryland, over four days during the spring of 2005.

2.1.2 Watershed Description

Besides being located within the Appalachian-Blue Ridge Forest Ecoregion and Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow Province, Exelon Corporation's Three Mile Island Generating Station is situated within the Susquehanna River Watershed. The Susquehanna River, which is the nation's 16th largest river, has a 27,500 square miles drainage basin that covers half the land area of Pennsylvania as well as portions of New York and Maryland. Forests cover approximately 67 percent of this land area, which comprises 43 percent of the Chesapeake Bay's drainage area. The Susquehanna provides approximately 90 percent of the freshwater flow to the upper half of the Bay, and nearly half of the freshwater content overall. Furthermore, due in part to the numerous hydroelectric dams that populate its shores, the Susquehanna is the longest commercially non-navigable rivers in North America. The drainage basin contains nearly 40,000 miles of interconnected rivers and streams. More than four million people live in the drainage basin, resulting in the loss of 450 million gallons of water each day from the basin due to consumptive water uses (water withdrawn from the basin that is not returned). That number is projected, according to information from the Susquehanna River Basin Commission, to over 645 million gallons a day by 2010.

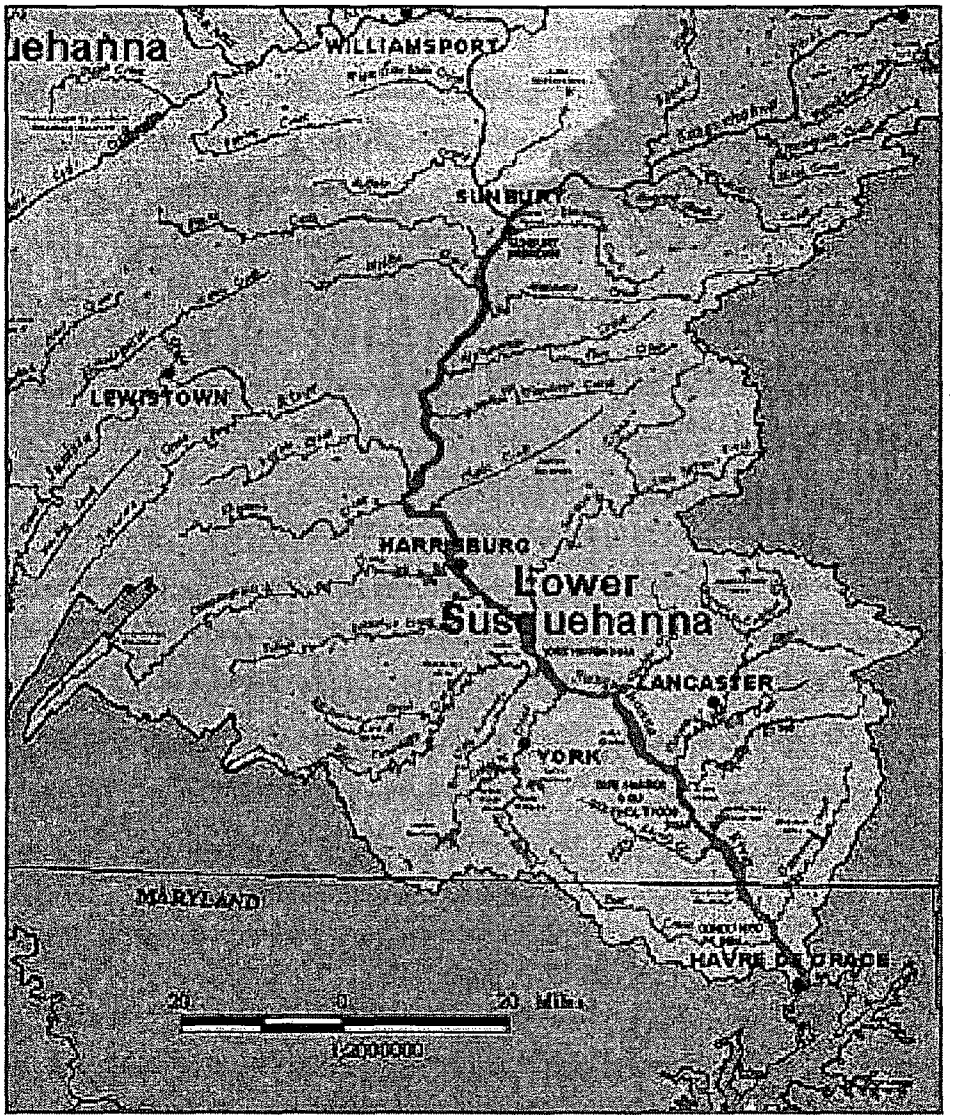
FIGURE 5. SUSQUEHANNA RIVER BASIN AND SUB-BASINS MAP



The Susquehanna River is one of the most flood-prone rivers in the nation, and reportedly experiences a major flood event on average every 20 years. In fact, it was a major flooding event of the Susquehanna River over 10,000 years ago that rising sea levels hit the River, creating the Chesapeake Bay. The river, which is almost one mile wide in Harrisburg and flows at an average rate of about 20 miles a day during normal conditions, flows 444 miles from headwaters in Otsego Lake, near Cooperstown, New York. The river flows through portions of three states before dispersing into the Chesapeake Bay in Havre De Grace, Maryland. The normal flow at the rivers discharge is approximately 18 million gallons per minute.

The Three Mile Island Generating Station is located in the Lower Susquehanna Sub-basin (LSS), the southernmost of six sub-basins that make up the watershed. **Figure 6** provides a map outlining the Lower Susquehanna River Sub-basin. The LSS has a drainage area of 5,809 square miles and connects directly to the Chesapeake Bay, which receives 50 percent of its freshwater inflow from the Susquehanna River. The LSS is the most heavily developed of the six sub-basins, with a population of around 2.2 million people. With hydroelectric dams located at both ends of Conowingo pool, 89 percent of water use in the sub-basin is directed for power generation. The northern portion of the sub-basin contains ridges that tend southwest to northeast throughout the rolling hills and broad valleys characteristic of the central part of the sub-basin. Fertile limestone-type soils in the region have led to some of the most productive and intensively managed agriculture lands in the watershed. Of all six of the sub-basins in the Susquehanna River Basin, the Lower Susquehanna Sub-basin is the most developed. Consequently, water quality of the Susquehanna River is impaired by agricultural runoff, acid mine drainage, industrial waste, and other sources that introduce pollutants such as metals, nutrients, and dissolved solids into the water table.

FIGURE 6. LOWER SUSQUEHANNA SUB-BASIN MAP



Map courtesy of the SRBC.

Protection of the Susquehanna River watershed has been a priority and concern to many citizens of Pennsylvania, New York and Maryland, including statewide and regional agencies, municipalities and local associations. The U.S. Army Corps of Engineers has been charged with the development of a comprehensive plan to incorporate interests and initiatives in the Lower Susquehanna River Basin. Phase I of studies required to develop the plan were initiated in 2000, and focuses on all or part of Perry, Dauphin, Lebanon, Cumberland, Franklin, Adams, York and

Lancaster counties. Phase I of the study has been completed and is in the reporting stage; Phase II involves the development of an appropriate present-day and possible future management plans that are based on data gathered from the previous studies. The Susquehanna River Basin Commission's Strategic Plan, which was put forth by the Division of Watershed Assessment and Protection for 2005 to 2010, states that based on the overall mission of the Commission and mandates of the Susquehanna River Basin Compact, the of monitoring and assessing of water resources in the basin, restoring basin water resources, protecting and promoting sound water quality efforts, managing relevant data, coordinating efforts and building partnerships, and developing staff diversity and capability to implement measures, are the main six goals for the existing five-year plan.

In addition, the DCNR's Pennsylvania Rivers Conservation Program has been developed "to conserve and enhance river resources through preparation and accomplishment of locally initiated plans" that will provide technical and financial assistance to encourage watershed conservation programs. Information for this and other potential partner agencies and organizations is provided in **Appendix III.** Exelon Corporation's expressed goals of identifying site biodiversity and wildlife habitat enhancement potential at the Three Mile Island Generating Station will also serve to assist in augmenting overall watershed and ecoregion health, resulting in countless employee and overall community benefits.

2.1.3 Climatic Conditions

The Appalachian-Blue Ridge Forest Ecoregion and Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow Province lies within what scientists have termed the Humid Temperate Domain. The Humid Temperate Domain includes areas of the middle latitudes, between 30 to 60 degrees north. Climatic conditions of the domain are influenced by both tropical and polar air masses. Strong annual, continental climate cycles of temperature and precipitation result in pronounced seasons throughout the domain, including a distinctive winter season that tropical climates lack. The Humid Temperate Domain is split into six divisions based on the varying influence of winter frost: warm continental, hot continental, subtropical, marine, prairie, and Mediterranean. The Three Mile Island Generating facility is located in the hot continental division and borders hot continental regime mountains.

Average annual temperatures in this region reportedly range from below 50° Fahrenheit in the north and at higher elevations, to over 60° Fahrenheit in more southerly portions of the ecoregion. Precipitation in the province generally measures between 35 inches to over 80 inches in the highest mountain peaks, with there typically being regular, measurable precipitation year-round. Snowfall in Pennsylvania is regularly over 24 inches, and this figure increases southward along the ridge tops to a regular accumulation of over 30 inches in the Great Smoky Mountains. Southeast and southward facing slopes are generally warmer and drier than northwest and north-facing slopes.

2.1.4 Soil Conditions

There are eleven major soil groups recognized in the world soil classification system that are characterized, described and mapped based on the presence or absence of distinctive horizons, or layers, commonly present in the soil for any given location. Alfisols, ultisols and inceptisols are the two predominant soil orders common in the Appalachian-Blue Ridge Forest Ecoregion and Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow Province. Alfisols are predominant beneath deciduous forests within the Humid Temperate Domain. In addition, alfisols reportedly make up approximately 13.4 percent of the land area within the United States and are most often found within croplands and forests in the region. Alfisols are common throughout the Midwest, in Ohio, Indiana, Wisconsin, Minnesota, and Michigan; however, they are also found in a narrow belt east of the Mississippi River, where they formed in loess, or silt. Alfisols are generally described as moderately weathered, with a medium to high base of soil saturation. Ultisols, characterized by the presence of an argillic or kandic horizon, are most extensive in warm, humid climates. Most of the ultisols in the United States had coniferous and/or hardwood forest vegetation at the time of settlement. Inceptisols are considered a more complex soil order, and have several varying diagnostic horizons. However, unlike ultisols, inceptisols do not have an argillic or kandic horizon. Inceptisols generally range from poorly drained to excessively drained, and often occur in proximity to mountain ranges. In addition to being located along the divisions of these major soil types, according to old soil surveys, Dauphin County bedrock materials are of the Triassic Age, Gettysburg Formation. This formation is underlain by red shales, silty mudstone and gray shales.

2.1.5 Ecological Communities Described On Site

The Appalachian-Blue Ridge Forest Ecoregion and Central Appalachian Broadleaf Forest – Coniferous Forest – Meadow Province supports diverse forestland, riparian, grassland and wetland habitats. Furthermore, the USDA places most of Pennsylvania within Plant Hardiness Zone Five. The USDA's Plant Hardiness Zones are determined based on each area's average minimum winter temperature. Zone Five reportedly has average minimum winter temperatures between -20° Fahrenheit and -10° Fahrenheit. The American Horticultural Society (AHS) has also developed a system to identify plant hardiness and therefore planting recommendations based on the determination of heat zones within the nation. Heat zones are calculated based on the average number of days the temperature exceeds 86° Fahrenheit each year. This system places Pennsylvania in AHS Heat Zone Six, meaning that there are typically an average of between 45 and 60 days each year that exceed 86° Fahrenheit. Knowing both of these zone numbers, for USDA Plant hardiness and AHS Heat Zone, can assist planners when determining what type of plant species will most readily adapt and thrive on site. While it is important to understand and consider area temperatures and soil condition, the diversity of vegetative communities will also depend on precipitation amounts, which vary regionally.

Native wildlife species that are associated with the ecoregion include mammals such as white-tailed deer, black bear, bobcat, gray fox, raccoon, fox squirrel, eastern chipmunk, white-footed mouse, pine vole, shorttail shrew, and cotton mouse. There are reportedly over 400 species of birds documented in the State of Pennsylvania, including 186 species of migratory breeding birds. Year round residents include wild turkey, ruffed grouse, bobwhite quail and mourning dove. The most abundant breeding birds include northern cardinal, tufted titmouse, wood thrush, summer tanager, red-eyed vireo, blue-gray gnatcatcher, and Carolina wren. Reptiles characteristic of the region include box turtle, common garter snake, and timber rattlesnake.

PHOTO 4. EASTERN BOX TURTLE

Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

2.1.5.1 Forested Riparian Buffer Habitats

Riparian areas are the transition zones between a creek, stream, or river and an upland, and are crucial to maintaining overall creek, stream, or river health. A well-vegetated stream bank will act as a buffer between the river and upland areas, decreasing both the velocity of floodwater, downstream flooding and peaks, and surface run-off. Wet-soil plants including grasses, shrubs, wildflowers, and trees act as vegetative buffer strips around water bodies. Plants function to stabilize the soil banks, allowing for less erosion and consequently, less water turbidity. Fast-growing species such as willows are especially effective for erosion control, and can have high wildlife value. Deep-rooting grasses contribute to the root mat and absorb nutrients; warm-season grasses in particular have very deep root systems that extend three to twelve feet below the surface. Additionally, vegetation slows overland runoff, buffering surface water pollution.

Riparian buffer areas are also important for both in-stream and terrestrial wildlife communities. A high-quality stream bank provides valuable habitat for a distinct community of species including a

wide variety of birds and mammals, as well as salamanders, frogs, and turtles, many of which are declining at alarming rates. The overhanging trees create shade, lowering the stream temperature and raising the oxygen content for a variety of fishes and aquatic organisms. The resulting leaf litter adds nutrients and cover for macroinvertebrates such as caddis flies and mayflies. The leaf litter also acts as a sink for phosphorus, and helps decrease the toxicity from metals and pesticides. The riparian buffer habitat at the Three Mile Island Generating Station lies along the entire perimeter of the island, although most valuable forested riparian habitats are located primarily along the southern perimeter of the island.

Stream and river-side forests are highly productive, diverse ecosystems that provide habitat for a diversity of species while providing numerous valuable services. The riparian forests on Three Mile Island include birch, sycamore, silver maple and alder. In addition, there are a variety of trees, shrubs and wildflowers present along the river shoreline, surrounding the Three Mile Island's perimeter.

Whenever possible, a 50-foot buffer of trees and shrubs should be maintained along the perimeter of the island in order to improve suitability for wildlife and overall water quality. In addition, cover can be created for fish and other aquatic wildlife by placing brush piles, rock piles and basking logs along the shoreline and in ponded areas surrounding the island. Underwater brush piles and rock piles can provide escape cover for fish while also providing breeding areas for amphibians and, depending on the depth of the water, perching areas for foraging birds. Basking logs will also provide breeding areas for amphibians while providing cover for small fish. The same structures placed in upland areas will provide escape cover and breeding sites for terrestrial wildlife. In addition, in the State of Pennsylvania, cost share assistance may be available to properly manage and enhance forested riparian corridors and wetlands on site.

2.1.5.2 Seasonal Wetland Habitats

In Pennsylvania, wetlands cover less than two percent of the total land area. Over the past 200 years, development and agricultural expansion has lead to a loss, or the degradation of, over half of the wetland habitats in Pennsylvania. Wetlands have several values, including the ability to prevent floods and manage stormwater. They provide support to groundwater systems, assist in

the removal, transformation, and detention of various environmental pollutants, provide critical habitat to a variety of resident and migratory wildlife species, and wetlands often serve to connect various ecosystems. Even wetlands smaller than one acre in size have the ability to support an abundance of wildlife, particularly waterfowl, amphibian, and fish species. Wetland ecosystems also provide humans with educational and recreational opportunities, open space, and aesthetic enjoyment. Wetland communities identified at the Three Mile Island Generating Station include riparian forest buffers, which are described in the previous section, and seasonally wet areas.

Seasonally wet portions of the site, also termed ephemeral or vernal pools, are located in the southwestern portion of the island and in the commonly wet areas of the meadow, which served as a spoil-storage area. Vernal pools are depressions in the earth that fill with water in the spring or rainy season and dry out by summer's end (making them distinct from ponds, which remain full). These wetlands, referred to by some as ephemeral wetlands, are critical habitat for many aquatic macroinvertebrates, such as mosquito-controlling dragonflies, and amphibians. These species thrive in this environment largely because vernal pools are unable to support fish, which feed on the eggs and larvae of amphibians and invertebrates. Seasonally wet areas have, however, become a vanishing natural feature due to land development, thus contributing to the alarming decline of frog and salamander populations. WHC suggest that the managers at Three Mile Island monitor and protect the seasonal wetlands on site, adding basking structures and hibernacula as necessary.

2.1.5.3 Woodland Habitats

There are several portions of the Three Mile Island Generating Station property that feature tree and shrub habitats. Patches of woodland habitats help to provide habitat for a number of southeastern Pennsylvania's native wildlife species, especially when linked to existing conservation and natural areas. The wildlife species attracted to small segments of forest, tree and shrub thickets and scrubby woodland edge habitats have specific food, cover and vegetative species composition requirements that are different that those of large-tract forestland habitats, and different than those of grassland and wetland dependent species. In addition, these habitat "islands' of woods also provide habitat for migratory species when effectively linked to other forested corridors and stream courses.

As recently as 1992, over half of Pennsylvania was dominated by forested landscapes, including about 16 million acres of commercially productive forests. According to the USDA Forest Service, in 1992, "no other state has a greater volume of select hardwood species, including white ash, red and white oak, black cherry and hard maple." Because of commercial pressure and increased development and subsequent habitat fragmentation, Pennsylvania forests, and the wildlife species that rely on them, have become increasingly threatened. Forests provide habitat opportunities for a diversity of species while stabilizing soils and improving soil structure, improving air quality and filtering stormwater runoff. In addition, another critical resource in Pennsylvania, recreational fish and game species, including freshwater fish, white-tailed deer, wild turkey and ruffed grouse, are sustained by the food and cover resources that forests offer. In addition to forested habitats, forested edge habitats that display a myriad of tree, shrub grass and wildflower species also provide benefits to wildlife.

The most pervasive problem facing Pennsylvania forestland is fragmentation, and other threats include the spread of non-native, invasive species and the lack of reforestation of cleared acreage. There are two different types of fragmentation that effect the species that rely on these complex habitats; the type of fragmentation that occurs from the clearing of forests for agricultural or land development purposes, and the fragmentation of habitats through the construction of roads, rights-of-way and other such infrastructure that limits resources for wildlife. Such effects are especially detrimental to large mammals that have an extensive range. However, research indicates that forest coverage in the state has increased in this century, compared with previous clearing practices. Studies from the Pennsylvania Department of Conservation and Natural Resources (DCNR) also indicate that populations of black bear and bobcat have increased in recent years. While this shows a certain measure of success in wildlife management methods, research also indicates that other more critically sensitive species, such as the wood thrush, are declining in number due to a lack of habitat availability. Wood thrushes are reportedly declining at a rate of about 3 percent annually in Pennsylvania. Scarlet tanagers, another forest habitat bird with selective habitat requirements, are reportedly decreasing at a rate of about one percent annually. For tanagers, conservation of continuous forest cover or large patches of forest near each other is key to continued nesting and breeding success. Forest patches of over 100 acres are considered to be especially significant.

In addition, avian species like eastern towhee and woodcock are in the decline due to the loss of shrub, thicket and scrub habitats and brushy wetland border habitats. According to the DCNR, "Pennsylvania is one of the most important states in the northeastern region in supporting large populations of forest species, including some that are undergoing region-wide declines." The Pennsylvania Bureau of Forestry, in cooperation with the PA DCNR and USDA, directs the Pennsylvania forest stewardship plan and incentive program, which is made possible through the Farm Bill. This program provides forest stewardship "information, education and technical assistance to encourage, assist and recognize private forest landowners who keep their lands and natural resources productive and healthy."

To participate in the program, interested land managers are encouraged to contact state Bureau of Forestry representatives to initiate a partnership. Practices encouraged through stewardship incentive programs include stewardship plan development, reforestation, forest improvement, soil and water resource protection and improvement, riparian and wetland protection and improvement, fisheries habitat enhancement, overall wildlife habitat enhancement and forest recreation enhancement. The following techniques have been approved for technical assistance and cost-share practices under the program, with relation to improvement of wildlife habitat; planting permanent cover with high wildlife value, creating forest openings, controlling undesirable plant species, thinning forested areas, establishing and improving water resources, constructing artificial cavities, next boxes, rooting platforms or poles, creating snags, installing tree shelters, fertilizing, fencing and establishing, protecting or improving endangered or threatened species and their habitats. Contact information for the Pennsylvania Bureau of Forestry is provided in **Appendix III**.

TABLE 1. NATIVE TREES AND SHRUBS AND THEIR WILDLIFE VALUES

Common Name	Height/ Width	Conditions	Wildlife Value
Shadblow serviceberry	6-20'/10'	Moist, forest edge or border plant.	Fruit used by songbirds, leaf by browsers.
Red chokeberry	6-10'/3-5'	Many soil types, sun to part shade.	Red berries eaten by a variety of songbirds.
Black chokeberry	6-10'/3-5'	Many soil types, good for borders.	Black berries eaten by a variety of birds.
Common sweetshrub	6-9'/6-12'	Many soil types, deep, shade or sun.	Highly used by insects.
Summersweet clethra	3-8'/4-6'	Moist to wet soil, full sun to shade.	Limited values.
Red osier dogwood	7-9'/10'	Many soil types, establish cuttings.	High value for mammals and songbirds.
Vernal witchhazel	6-10'	Moist soil, full sun to part shade.	High value for squirrels.
Inkberry	6-8'/8-10'	Moist acidic soils, good for borders.	Berries used by a variety of wildlife.
Winterberry	6-10'	Moist, organic soils.	Used extensively by songbirds.
Virginia sweetspire	3-5'/6-8'	Moist well-fertilized soil, sun-shade.	Fruit used by some songbirds.
Mountain laurel	7-15'	Moist, well-drained soil, sun-shade.	Evergreen, used by mammals and birds.
Sweetbay magolia	10-20'	Wet, acidic soils.	Foliage used by birds, seeds eaten by some.
Northern bayberry	5-12'	Adaptable to many soil conditions.	Fruit eaten by a variety of birds.
Bush cinquefoil	1-4'/2-4'	Full sun, fertile, moist soils.	Limited value, may be used by insects.
Carolina rhododendron	3-6'	Moist, well-drained soils, part shade.	Limited browse by deer /songbird cover
Rosebay rhododendron	4-10'	Moist, well-drained soils, part shade.	Limited browse by deer /songbird cover
Sweet azalea	8-20'	Many soil types, flowers late spring.	Minimal value to insects.
Flame azalea	4-8'/10-15'	Many soil types, flowers May–June.	Minimal value to insects.
Piedmont azalea	3-6'	Many soil types, flower early spring.	Minimal value to insects.
Plumleaf azalea	8-10'	Many soil types, flowers summer.	Minimal value to insects.
Swamp azalea	1-8'/3-8'	Wet soils, flowers late spring.	Minimal value to insects.
Fragrant sumac	2-6'/6-10'	Many soil types, fast cover.	Important for mammals and birds.

Common Name	Height/ Width	Conditions	Wildlife Value
Highbush blueberry	6-12'/8-12'	Moist, well-drained soil, sun-shade.	Used heavily by grouse /songbirds.
Mapleleaf viburnum	4-6'/3-4'	Range of soil and light conditions.	Used by birds, squirrel and deer.
Arrowwood virburnum	6-8'/6-15'	Well-drained soils, good hedge.	Used by birds, squirrel and deer.
Nannyberry	9-18'/6-10'	Wide range of conditions.	Used by birds, squirrel and deer.
Blackhaw viburnum	9-15'/8-12'	Many soil types, sun or shade.	Used by birds, squirrel and deer.
American cranberry	8-12'	Well-drained, moist soils.	Used by birds, squirrel and deer.
Eastern redbud	20-30'/25-25'	Moist, well-drained soils, sun.	Limited wildlife value.
White fringetree	12-10'	Moist, fertile soils, full sun.	Limited wildlife value.
Flowering dogwood	20'/15-20'	Well-drained soil, full sun to shade.	Important food for songbirds.
Franklin tree	10-20'/6-15'	Moist, acidic well-drained soils.	Limited wildlife value.
Carolina silverbell	30-40'/25-25'	Rich, moist, well-drained acid soils.	Limited value, seeds used by some birds.
Common witchhazel	15-20'	Moist soil, sun to partial shade.	Limited wildlife value.
American holly	15-30'/18-25'	Moist, well-drained soil, sun-shade.	Food/cover used extensively by songbirds.
Sourwood	25-30'/20'	Peat, moist, acidic, well-drained soils.	Limited wildlife value.
Mountain ash	10-30'/10-15'	Adaptable to many soil types.	Fruit valuable winter food for songbirds.
Mountain stewartia	10-15'	Moist, acidic soil, full sun to shade.	Limited wildlife value.
Red maple	40-60'	Slightly acidic, moist soil.	Flowers and buds food for mammals/birds
Silver maple	50-70'/40-50'	Tolerant of many soil types.	Flowers and buds food for mammals/birds
Sugar maple	60-70'/20-40'	Shade tolerant, moist soils.	Flowers and buds food for mammals/birds
Sweet birch	40-55'/35-45'	Deep, rich, acid, moist soils.	Foliage used by browsers, birds.
River birch	40-70'/40-60'	Moist soil conditions.	Foliage used by browsers, birds.
Shagbark hickory	60-80'/40-60'	Woodland border tree, varied soils.	Important food source for mammals and several kinds of birds.
Common hackberry	40-60'	Rich, moist soil; will tolerate dry.	Fruit important, especially for winter birds.
Persimmon	35-60'/20-35'	Rich, moist soil; will tolerate dry.	Fruit used by mammals and songbirds.
American beech	50-70'	Moist soil, full sun to part shade.	Nuts eaten by birds and mammals.

Common Name	Height/ Width	Conditions	Wildlife Value
White ash	50-80'	Deep, well-drained soil; full sun.	Moderate value to songbirds and waterfowl.
Green ash	50-60'/25-30'	Range of soil conditions.	Moderate value to songbirds and waterfowl.
Common honeylocust	30-70'	Rich, moist bottomlands.	Limited wildlife value.
Black walnut	50-75'	Rich, moist soils; often bottomlands.	Nuts eaten by mammals, woodpeckers.
Eastern redcedar	40-50'/8-20'	Deep, moist soil; windbreak/hedge.	Seeds eaten by birds, foliage used for nests.
American sweeetgum	60-75'/20-35'	Deep, moist, acidic soils.	Winged seeds eaten by songbirds.
Tuliptree	70-90'/30-50'	Full sun, well-drained soil.	Purple finch and cardinal primary users.
Black gum	30-50'/20-30'	Moist, acidic soil full sun, part shade.	Fruit very high value to songbirds.
White spruce	40-60'/10-30'	Moist, loam soil, full sun, part shade.	Used by browsers, rabbits, nuthatches etc.
White pine	50-80'/20-40'	Adaptable to range of soil types.	Needles for nesting, seeds for many birds.
Sycamore	75-150'	Deep, moist, rich soils.	Purple finch, goldfinch and squirrels use.
White oak	100'/50-80'	Moist, well0-drained soils.	Very high wildlife values for many species.
Pin oak	60-70'/25-40'	Adaptable to many soil types.	Very high wildlife values for many species.
Willow oak	40-60'/30-40'	Moist soils, adaptable.	Very high wildlife values for many species.
Red oak	60-75'/40-50'	Prefers loamy, well-drained soil.	Very high wildlife values for many species.
American linden	60-80'/30'-40'	Deep, moist soil, full sun part shade.	Limited wildlife value.
Eastern hemlock	40-70'/25-35'	Moist, well-drained soils.	Excellent cover source, birds eat seeds.

2.1.5.4 Early Successional Grassland, Meadow and Old-Field Habitats

Grasslands, meadows and old-field habitats are common throughout much of southeastern and central Pennsylvania, and can be found in areas formerly used for agricultural production, in expansive fields that are routinely mowed or burned, and exist in patches of transitional ecosystems that, if left undisturbed, progress into thicket, shrub-scrubland and woodland habitats.

If left to follow the course of succession without the controlling forces of fire, mowing or other disturbance, it will take a meadow habitat approximately 150 years to progress into a mature forest. Grassland and meadow habitats in this region evolved as a result of routine intentional and accidental fires, which were common throughout the ecoregion. During springtime, the dominant meadow and grassland species in Pennsylvania are cool season grasses such as Timothy, fescue, orchardgrass, rye and bluegrass. These grasses are not native to the area, and have been historically planted by farmers and homeowners for a variety of reasons such as animal forage, aesthetics and for immediate erosion control. Cool season grasses are most prolific between April and June, and begin to die back in late June and early July.

Following the dieback of these non-natives, native warm season grasses and wildflowers are permitted to grow when present in the seed bank. Native warm season grasses such as Indian grass, broom sedge, switchgrass and bluestems dominate the landscape between July and late October. In addition, these bunch-forming grasses remain standing, providing cover resources, through the winter. Their deep-penetrating root systems, sometimes in excess of five feet, have immense soil holding capabilities. In addition, native warm season grasses increase soil fertility overtime due to their ability to regenerate root systems and contribute humus to the soil. Beside grasses, native wildflowers of varying heights, colors and densities experience active growing and blooming periods throughout the summer and fall seasons as well. Wildflowers common to southeastern Pennsylvania, and the Three Mile Island Generating site, include black-eyed Susan, goldenrod, sunflower and aster.

In addition to being beneficial to soil structure and aesthetically pleasing, native warm season grass and wildflower habitats provide significant wildlife benefits. Warm season grasses provide optimal habitat for grassland birds, especially when compared to the cover offered by cool season grasses. Many cool season grasses are sod forming, and therefore limit the ability of wildlife species to seek cover and food resources. Grassland nesting birds will utilize grassland, meadow and field habitats that offer native warm season grasses in the springtime for nesting and brood rearing activities. Young birds depend on the insect-attracting abilities of native grasses and wildflowers for food; during autumn, a diversity of wildlife rely on the seeds generated by these natives. During winter months, resident wildlife populations seek food and shelter in the cover offered by natives. In addition to food and cover benefits for native avian and small mammal species, these habitats

provide necessary habitat requirements for a diversity of pollinators, including butterflies and bees. Wildlife species that rely on grassland and meadow habitats in southeastern Pennsylvania include northern bobwhite quail, bobolink, eastern meadowlark, many sparrows, bats and other small mammals, and a variety of butterflies and moths.

WHC recommends that the Three Mile Island Generating Station manage old-field, grassland edge and meadow habitats for native warm season grasses and wildflower species in order to provide maximum benefits for local wildlife species. Grassland and meadow habitats are transitional ecosystems, and in order to maintain them for wildlife benefits, managers must exert control over the landscape to prevent succession. Non-native, cool season grasses could be controlled by mowing fields and meadows in late June to early July, which will remove the dying grasses and provide growing space and resources required for native grasses and wildflowers. Mowing should only be conducted once to twice during the year; mowing more than twice a year will encourage the further establishment of cool season grasses. Mowing should be done in early summer, fallowing the nesting season, because a springtime mowing is detrimental to the nesting and rearing activities of native birds, while fall mowing does not allow vegetation enough time to regenerate and provide maximum value in the following season, and winter mowing decimates critical winter cover resources. Grasslands should be mowed to a height of six to eight inches during the growing season, and if additional mowing is required, to a height of four to six inches during the dormant season.

TABLE 2. NATIVE PLANTS FOR GRASSLAND AND FIELD HABITATS

Common Name	Height	Bloom Period and Color	Wildlife Values
Wild columbine	1 to 3'	Apr-June / red and yellow	Pollinators, hummingbirds
Swamp milkweed	2 to 4'	July-Aug / rose	Important butterfly plant
Common milkweed	2 to 6'	July-Aug / pink and red	Important butterfly plant
Butterfly milkweed	1 to 3'	May-Sept / orange	Important butterfly plant
New England aster	2 to 6'	Aug-Oct / purple	Important butterfly plant
Turtlehead	1 to 3'	Jul-Sept / white	Pollinators, hummingbirds
Joe-pye weed	3 to6'	Aug-Sept / purple	Pollinators, other insects
White snakeroot	2 to 3'	Jul-Oct / white	Pollinators, other insects
Sunflower	4 to 6'	Jul-Sept / yellow	Birds, pollinators, insects
Oxeye sunflower	1 to 5'	Jul-Sept / yellow	Important butterfly plant
Cardinal flower	2 to 5'	Jul-Sept / scarlet	Butterfly and hummingbird
Great blue lobelia	1 to 3'	Jul-Oct / blue	Pollinators, hummingbirds
Partridge berry	<1'	Jun-Jul / white	Evergreen, edible berries

Common Name	Height	Bloom Period and Color	Wildlife Values
Bee balm	2 to 5'	Jul-Aug / red	Important pollinator plant
Phlox	1 to 5'	May-Oct / purple, pink, blue	Important pollinator plant
May apple	1 to 2'	May / white	Ground cover, edible fruit
Solomon's seal	1 to 3'	Apr-Jun / yellow	Edible, blue berries, birds
Black eyed-Susan	2 to 3'	May-Sept / yellow, orange	Long bloom, insects
Golden ragwort	1 to 2'	May-Jul / yellow	Wetland plant, insects
Goldenrod	2 to 6'	Jul-Nov / yellow	Pollinators, other insects
New York ironweed	3 to 6'	Jul-Sept / purple, blue	Pollinators, other insects
Golden Alexanders	1 to 2'	Apr-Jun / gold	Pollinators, other insects
Big bluestem	3 to 5'	Jun-Sept	Clump forming, winter cover
Lurid sedge	1 to 2'	Jun-Oct	Wetland plant, seeds eaten
Bottlebrush grass	2 to 4'	Jun-Aug	Shade-tolerant native grass
Riverbank wild rye	3 to 5'	Jul-Sept	Stream side native grass
Virginia wild rye	2 to 4'	Jul-Sept	Grass tolerant of many soils
Switchgrass	3 to 6'	Aug-Sept	Erosion control benefits
Little bluestem	2 to 4'	Jul-Sept	Important winter cover
Indian grass	3 to 6'	Aug-Sept	Clump forming grass

2.1.6 Species to Consider Before Formulating Management Plans

2.1.6.1 Identify and Manage Non-Native, Exotic, Invasive and Nuisance Species

Invasive plant species are one of the greatest threats to the world's biodiversity, and the issue of controlling them has become a priority for the scientific community. Several federal acts, such as the Federal Noxious Weed Act of 1974 and the Alien Species Prevention and Enforcement Act of 1992, have been passed to direct the control of invasives. In 1999, President Clinton signed Executive Order 13112 to address the challenge that invasive species present to the nation's environment and economy, and to create an Invasive Species Council.

While native species are those that have naturally and historically been found in a particular locale, Executive Order 13112 defines invasive species as those species not native, or exotic, to a particular ecosystem that, upon introduction, are "likely to cause economic or environmental harm or harm to human health". Species are introduced in a variety of ways to areas in which they do not historically occur. Some have been introduced intentionally for ornamental or commercial use; others have been accidentally brought from foreign countries because they were mistaken for native plants that are similar in appearance. The vast majority of plant species introduced from

other regions of the world do not become established outside their native ecosystem simply because the conditions they require and find in their native environments are not found in their new locations. The few species that do manage to survive, however, can aggressively invade and threaten native ecosystems.

Exotic invasive species can spread quickly due to a combination of two major factors. First, they possess a suite of life history traits that allow them to spread rapidly. Invasive plants can be prolific seed producers, and they may develop extensive underground seed banks and root systems so that they can spread vegetatively. They are often successful in areas with poor soil quality, and are thus able to outcompete native species that are more "selective". The second factor is that exotic species are, by definition, colonizers from elsewhere. Often, these plants spread to new areas of the world, but their primary competitors, predators, and diseases from their native ecosystems do not follow them, making their establishment and success all the more likely.

As their populations grow out of control, they can have devastating ecological and economic impacts. The natural and economic damage caused by encroachment of invasive species can be matched only by that resultant from floods, hurricanes, earthquakes, mudslides and wildfires. Invasive species often come to dominate local ecosystems, reducing diversity and crowding out native species. When a plant community is dominated by one species, the diversity of food sources decreases and thus native birds, mammals, and other animals can suffer. Furthermore, less diverse communities are more susceptible to environmental stresses and are less resilient to disturbance than healthy, native ecosystems that contain a wide variety of vegetation.

Two techniques can be employed to mitigate the problems associated with exotic invasive plants: prevention and eradication. Unfortunately, preventing spread is often difficult. The seeds of invasive plants frequently migrate to new areas via roadways, in seed mixtures, or are carried by the birds and mammals that consume them. Eradication often requires repeated action and monitoring to achieve success, but can be accomplished if the problem is addressed while populations are still manageable. **Table 3** provides a list of common invasive species in Pennsylvania according to the Pennsylvania Department of Conservation and Natural Resources.

TABLE 3. INVASIVE PLANT SPECIES IN PENNSYLVANIA

THREAT LEVEL	COMMON NAME	SCIENTIFIC NAME
Moderate	Goutweed	*Aegopodium podagraria*
	Fiveleaf akebia	*Akebia quinata*
	Porcelain-berry	*Ampelopsis brevipedunculata*
	Japanese barberry	*Berberis thunbergii*
	European barberry	*Berberis vulgaris*
	Cheatgrass	*Bromus tectorum*
	Russian olive	*Elaegnus angustifolia*
	Dame's rocket	*Hesperis matronalis*
Moderate	Border privet	*Ligustrum obtusifolium*
	Common privet	*Ligustrum vulgare*
	Bell's honeysuckle	*Lonicera morrowii* ssp. *tatarica*
	Eurasian water-milfoil	*Myriophyllum spicatum*
	Star-of-Bethlehem	*Omithogallum nutans*
	Wild parsnip	*Pastinaca sativa*
	Beefsteak plant	*Perilla frutescens*
	Reed canary grass	*Phalaris arundinacea*
	Lesser celandine	*Ranunculus ficaria*
	Common buckthorn	*Rhamnus catharticus*
	Glossy buckthorn	*Rhamnus trangula*
	Wineberry	*Rubus phoenicolasius*
	Siberian elm	*Ulmus pumila*
Serious	Norway maple	*Acer platanoides*
	Tree-of-heaven	*Ailanthus altissima*
	Garlic mustard	*Alliaria petiolata*
	Musk thistle	*Carduus nutans*
	Oriental bittersweet	*Celastrus orbiculatus*
	Canada thistle	*Cirsium arvense*
	Bull thistle	*Cirsium vulgare*
	Jimsonweed	*Datura stramonium*
	Autumn olive	*Elaeagnus umbellate*
	Goatsrue	*Galega officinalis*
	Giant hogweed	*Heracleum mantegazzianum*
	Japanese honeysuckle	*Lonicera japonica*
	Amur honeysuckle	*Lonicera maackii*
	Morrow's honeysuckle	*Lonicera morrowii*
	Standish honeysuckle	*Lonicera standishii*
	Tartarian honeysuckle	*Lonicera tartarica*
	Purple loosestrife	*Lythrum salicaria virgatum*
	Japanese stilt grass	*Microstegium viminem*
	Common reed	*Phragmites australis*
	Japanese knotweed	*Polygonum cuspidatum*
	Mile-a-minute vine	*Polygonum perfoliatum*
	Kudzu	*Pueraria lobata*

THREAT LEVEL	COMMON NAME	SCIENTIFIC NAME
Serious	Multiflora rose Shattercane Johnson grass	*Rosa multiflora* *Sorghum bicolor* ssp. *Drummondii* *Sorghum halepense*
Threats in Southeast PA	Maiden grass Water chestnut Winged euonymus Japanese spiraea Guelder rose Sycamore maple Empress tree Callery pear	*Miscanthus sinensis* *Trapa natans* *Euonymus alatus* *Spiraea japonica* *Viburnum opulus* var. *opulus* *Acer pseudoplatanus* *Paulownia tomentosa* *Pyrus calleryana*

2.1.6.1.1 General Management Options for Controlling Invasive Species

When designing an invasive species management plan, it is important to consider options that will both fit with current landscape management practices as well as minimize the impact of invasive plants. Any attempts to control vegetation must be based on the major forces that control vegetative forces in the area, such as available light, water, inorganic nutrients, and growing space. Therefore, a successful management plan will include a strategy for increasing the amount of available space and resources for desirable, native plants while limiting the space invasives can take over. There are several different types of management strategies to consider when formulating an invasive species management plan; these methods include physical controls and manual removal, chemical controls, biological controls, and integrated methods that combine various control methods. Those integrated programs that utilize a coordinated effort to control and eradicate invasives are typically more effective than using one method in an attempt to achieve total control.

2.1.6.1.1.1 Physical Control Methods

Physical methods of control and removal include manual pulling and digging of individual invasives, using heavy equipment to destroy or remove individuals, mowing, as well as cutting and clipping. The individual, manual removal of individual invasive species can be effective, but is generally only realistic to employ when dealing with small, isolated areas of infestation. Furthermore, there are few cases where removing individual plants by pulling and digging will ultimately control the growth of an invasive. In addition to hand pulling, other physical removal methods, such as pulling with a tractor, can be effective in removing individual tree and mature

shrub species. The most important objective when employing physical removal methods to remove individual invasives species is to remove as much of the root structure as possible, as remaining material may allow the individual invasive to re-establish. Therefore, the degree of measurable success in invasives control, when using the pulling or digging method, will depend on the thoroughness of individual plant removal.

Other physical control methods, such as cutting and mowing, can also be effective in limiting the growing space and resources available to invasive plants. These methods impose limited success in controlling invasives because the act of cutting and/or mowing will effectively remove the food-producing portion of individual plants, thereby limiting their ability to take over an area. However, because root and stem portions of the plant remain, invasives will likely resprout and continue to spread with time. Therefore, cutting and mowing are most effective as control techniques when coupled with selectively applied chemical controls.

Cutting may be more effective because managers can selectively target invasive plants, while mowing will reduce the growing ability of all plants in an area. Cutting is reportedly most effective when attempting to control invasives in moderately to heavily wooded areas. This is because the surrounding woodland vegetation will assist control efforts by reducing the amount of resources available to the cut invasive. The cut plant will therefore need to rely on resources stored in the roots for repair and refoliation efforts, significantly weakening the plants ability to effectively spread for a period of time. Cutting is reportedly less effective in controlling invasives in open areas and edge habitats, where repeated cutting would be required to obtain minimal controls. Cutting is most effective when performed in late fall and winter months. When including cutting as part of an invasive species management plan, managers are advised to plan on re-evaluating cut areas annually to assess the need for repeated control efforts.

Mowing is less selective, and will effectively put all plants in an area on an equal basis to compete for sunlight, water and other essential resources. The effectiveness of mowing is difficult to assess because individual plant species have differing growth rates and responses to disturbance. Therefore, mowing will favor those species that are most prolific in refoliating and spreading quickly, which includes many invasive plants. Mowing can be an effective control, particularly when coupled with chemical controls, in open areas where manual plant removal is not an option.

Initial treatment with mowing may require the individual, manual removal of those species that are too large to mow. Mowing should be conducted on a regular basis and the growth rates and spread of invasives should be closely monitored.

Fire can also be used in conjunction with other physical and biological controls of invasives. Whenever possible, prescribed fire should be considered as a component of an invasive species management plan. Throughout the evolution of the southeastern Pennsylvania landscape, fire has played an important role in the establishment and distribution of native vegetation. Therefore, one of the benefits of using fire as a control technique is that it gives a distinct advantage to the native grasses, trees, and shrubs that have evolved in the region. Drawbacks of using prescribed fires to manage invasive species include a perceived lack of acceptance among citizens and local governments; however, many local fire departments and county and stat extension services are prepared and willing to assist with such control options. In addition, public education regarding the importance of fire as a natural management tool and concerning the planned burn strategy can help in alleviating opposition. In order to be effective, prescribed burns must be executed only when specific weather and plant fuel conditions are met, and should only be carried out by trained professionals.

2.1.6.1.1.2 Chemical Controls

Chemical controls of invasive plants include the selective use of herbicides that are designed to effectively kill weed species. However, it is important to note that most herbicides will also negatively impact desirable, non-target vegetation, and should be used and applied in a responsible and selective manner. The long-term, exclusive use of herbicides is not generally considered to be an effective control technique for most invasive plants for several important reasons. Firstly, coupled with the exclusive use of herbicides is a short-term, "once and over" attitude that simply does not fit with a long-term management plan, which is essential for successful invasive species removal and control. In addition, the inherent, toxic nature of herbicides can impair an individual's ability to successfully deliver a required amount of chemical to the correct area of a plant during the appropriate time in its growing cycle, without posing a potential risk to neighboring vegetation and wildlife resources. However, when safely administered and monitored,

and used in conjunction with other physical or biological control methods, herbicides can be an essential component to an invasive species management plan.

To safely administer herbicides in an infested area, it is recommended that personnel first remove as much of the aboveground plant material as possible before applying chemicals, unless the targeted species dictates a foliar application. To control small invasive trees, shrubs, and vines, first cut stems and after about two weeks, apply an herbicide with glyphosate directly to the re-sprouting stems and/or stumps and monitor plants in the weeks to come. To eradicate individual, mature trees, cut the tree in the fall or winter and apply herbicide, such as RoundUp® or Garlon®, directly to the fresh cut stump. For control of invasive vegetation in larger, open areas, moderate infestations may be controlled through use of a broadleaf herbicide, such as Banvel® or 2-4-D®. Severe large-scale infestations may require mowing coupled with herbicide application followed with plowing and discing and an additional herbicide application. If this intensive method is required to remove invasive plants, it will be important to quickly establish desirable, native plants following the last discing of the site in order to reduce the likelihood that invasives will successfully reestablish.

2.1.6.1.1.3 Biological Controls

Biological controls involve the use of other living organisms to control invasive species, such as planting and interseeding native plants, or introducing biological control agents, such as insect pests, in an effort to control and manage invasive species for the long-term. For example, the planting of trees and shrubs to further vegetate wooded areas may help to effectively limit the availability of resources to invasive species in the area. In addition, the interseeding of meadows and fields with native grasses and wildflowers can help to out-compete the establishment and further spread of invasive vegetation. It is likely that this method, coupled with long term monitoring, cutting and mowing, can severely limit the impact of a moderate invasive species invasion over a few years time.

Furthermore, the immediate establishment of native plants immediately after physical or chemical removal methods will significantly reduce the ability of an invasive species to resprout. Evergreen trees are reportedly especially effective in producing fast shade to reduce the ability of invasive plants to reestablish, particularly when planted along south and westward facing forest edges

where invasive species are often most prolific. Planting additional evergreen tree and shrub species will also serve to diversify wildlife habitats on site. Following the addition of trees and shrubs to the landscape, managers should continue to mow invasive undergrowth regularly for several years, until the new plants are well established. Other biological control measures include the use of pest populations to control invasive species. These methods often rely on other invasive or genetically engineered pest species that are known to selectively target the non-desirable invasive. Much of the technology surrounding this method is used for the control of invasive and nuisance species that plague large-scale agricultural production.

2.1.6.2 Avian Habitat Management Considerations

According to information available from the Pennsylvania DCNR and the Pennsylvania Ornithological Records Committee, the official state bird list includes 394 wild bird species, including 186 residential species and other winter residents, transients and occasional visitors. Throughout the nation many historically common avian species have experienced significant declines. One native species has become extinct, the passenger pigeon, while five of the state's native species are presumed to have been extirpated from the state, including the greater prairie chicken, piping plover, olive sided flycatcher, Bewick's wren and Bachman's sparrow. Historically, over hunting has lead to the endangerment and near extinction of several species, including wild turkey, which have rebounded remarkably since nearing extirpation from the state in the 19th century.

In Pennsylvania, the Ornithological Technical Committee is responsible for proposing and maintaining the list of endanger and threatened birds, birds that are candidates for future listing, as well as the list of exotic birds. For more information about Pennsylvania's endangered and threatened avian populations and the regulations surrounding them, please refer to **Section 2.3**. Pennsylvania lists five known nesting, exotic bird species: rock dove, European starling, house sparrow, mute swan and ring necked pheasant. The first three on the list are considered to be "abundant and widespread pests," while exotic mute swans have been introduced for ornamental and aesthetic reasons and pheasant was intentionally introduced for gaming purposes. Starlings and house sparrows are especially offensive because they compete with native birds for limited nesting and cavity space and often prey on eggs and nestlings. Mute swans are known for causing

extensive destruction to wetland ecosystems and to the native wading and nesting birds that they displace.

In Pennsylvania, the largest issue responsible for the decline of bird populations is extensive habitat loss and fragmentation, particularly within wetland habitats. According to research published by the Pennsylvania Biological Survey, since 1790, the state has lost 56 percent of all wetlands, leading to significant decreases in the abundance and diversity of wetland birds throughout the state. Emergent wetlands, such as marshes, bogs, are of particular importance to both migratory and resident avian species as foraging habitat. Species of special concern in the region include black-crowned night heron, bald eagle, yellow-bellied flycatcher, which all rely on a mix of forested and wetland habitats. Black-crowned night herons nest in trees on islands along lowland, bottomland streams and rivers. Bald eagles, which have been spotted on adjacent properties, prefer large-scale rivers and forested habitat with isolated tree cover and available snags. For more information n bald eagle habitat preservation and enhancement possibilities, see **section 2.1.6.2.3.1.**

2.1.6.2.1 Wetland Bird Habitat Enhancement and Conservation Options

> "Wetland birds provide us with some of nature's most wonderful sights, from vast flocks wheeling overhead to newly hatched chicks drying in the sun. Apart from their beauty and recreational and economic importance, these birds are excellent indicators of water quality and measures of biodiversity." – Milton W. Weller *Wetland Birds*

Wetland habitat use is widespread among various types of wildlife, with some species exclusively utilizing wet areas and others preferring to frequent wetlands for water resources, feeding and/or nesting activities. There is a wide range of wetland adaptations present in each of the various wetland bird species that frequent areas adjacent to and likely within the Three Mile Island Generating Station property. For example, wetland bird species have developed specialized bills, feet, legs, feathers, nesting and roosting strategies and dietary requirements that allow them to thrive in aquatic or semi-aquatic environments. It should be noted however that there is considerable variation between wetland bird species. For example, many birds that are typically associated with wetlands, such as sandhill cranes, have also adapted to spend a great amount of

their lives in dry upland areas even though their bill, leg and foot structures indicate that they are primarily a wetland species. In addition, several birds that are not considered to be wetland birds, including many species of blackbird, typically nest and feed in wetland areas if they are available. **Table 4** provides a list of various wetland-dependant bird species common in Pennsylvania.

TABLE 4. BIRD SPECIES IN PENNSYLVANIA THAT ARE ASSOCIATED WITH WETLANDS

TYPE OF BIRD	COMMON NAME	SCIENTIFIC NAME
Cormorant (Phalacrocoracidae)	Double-crested cormorant	*Phalacrocorax auritus*
Diving duck (Aythyinae)	Lesser scaup	*Aythya affinis*
	Redhead	*Aythya americana*
	Ring-necked duck	*Aythya collaris*
	Greater scaup	*Aythya marila*
	Canvasback	*Aythya valisineria*
	Bufflehead	*Bucephala albeola*
	Common goldeneye	*Bucephala clangula*
	Oldsquaw	*Clangula hyemalis*
	White-winged scoter	*Melanitta fusca*
	Black scoter	*Melanitta nigra*
	Surf scoter	*Melanitta perspicillata*
Marsh duck (Anatinae)	American black duck	*Anas rubripes*
	American wigeon	*Anas Americana*
	Blue-winged teal	*Anas discors*
	Gadwall	*Anas strepera*
	Mallard	*Anas Platyrhynchos*
	Northern pintail	*Anas acuta*
	Northern shoveler	*Anas clypeata*
	Wood duck	*Aix sponsa*
Goose (Anserinae)	White-fronted goose	*Anser erythropus*
	Brant goose	*Branta bernicla*
	Canada goose	*Branta canadensis*
	Snow goose	*Chen caerulescens*
Grebe (Podicipedidae)	Horned grebe	*Podiceps auritus*
	Red-necked grebe	*Podiceps grisegena*
	Eared grebe	*Podiceps nigricollis*
	Pied-billed grebe	*Podilymbus podiceps*
Loon (Gaviidae)	Common loon	*Gavia immer*
	Red-throated loon	*Gavia stellata*
Merganser (Merginae)	Common merganser	*Mergus merganser*
	Hooded merganser	*Mergus cucullatus*
	Red-breasted merganser	*Mergus serrator*
Stifftail (Oxyurinae)	Ruddy duck	*Oxyura jamaicensis*
Swan (Cygninae)	Mute swan	*Cygnus olor*

TYPE OF BIRD	COMMON NAME	SCIENTIFIC NAME
Swan (Cygninae)	Tundra swan	*Cygnus columbianus*
Heron/Bittern (Ardeidae)	American bittern	*Botaurus lentiginosus*
	Black-crowned night heron	*Nycticorax nycticoras*
	Cattle egret	*Bubulcus ibis*
	Great blue heron	*Ardea herodias*
	Great egret	*Ardea alba*
	Green-backed heron	*Butorides striatus*
	Least bittern	*Ixobrychus exilis*
	Little blue heron	*Egretta caerulea*
	Snowy egret	*Egretta thula*
	Yellow-crowned night heron	*Nyctanassa violacea*
Plover (Charadriidae)	American golden plover	*Pluvialis dominica*
	Black-bellied plover	*Pluvialis squatarola*
	Killdeer	*Charadrius vociferous*
	Semipalmated plover	*Charadrius semipalmatus*
Rail (Rallidae)	American coot	*Fulica Americana*
	Common moorhen	*Gallinula chloropus*
	Sora	*Porzana Carolina*
	Virginia rail	*Rallus limicola*
Sandpiper (Scolopacidae)	American woodcock	*Scolopax minor*
	Baird's sandpiper	*Calidris bairdii*
	Buff-breasted sandpiper	*Tryngites subruficollis*
	Common snipe	*Gallinago gallinago*
	Dunlin	*Calidris alpina*
	Greater yellowlegs	*Tringa melanoleuca*
	Least sandpiper	*Calidris minutilla*
	Lesser yellowlegs	*Tringa flavipes*
	Pectoral sandpiper	*Caladris melanotos*
	Ruddy turnstone	*Arenaria interpres*
	Sanderling	*Calidris alba*
	Semipalmated sandpiper	*Calidris pusilla*
	Short-billed dowitcher	*Limnodromus griseus*
	Solitary sandpiper	*Tringa solitaria*
	Spotted sandpiper	*Actitis macularia*
	Stilt sandpiper	*Calidris himantopus*
	Upland sandpiper	*Bartramia longicauda*
	Western sandpiper	*Calidris mauri*
	White-rumped sandpiper	*Calidris fuscicollis*

The Three Mile Island Generating Station has the potential to support a diversity of wetland and terrestrial avian species that may include, osprey, cormorants, rails, coots, ducks, geese, egrets and herons. Several factors must be managed to ensure adequate habitat availability for these magnificent birds. Habitat needs for all birds include water for drinking and bathing, protective

cover, food, and shielded space for nesting activities. Each bird has adapted to thrive in optimal conditions regarding water quality, temperature, salinity, the availability of food, and the accessibility of resting and nesting spaces that are free of predators. It is particularly important to maintain the integrity of any isolated island habitats that are available adjacent to the Three Mile Island Generating Station, as they provide predator-protection to the many wetland birds, such as ducks, geese, egrets and herons. The following sections discuss some of the specific requirements of the wetland birds common in the region.

2.1.6.2.1.1 Herons

Most of the 65 species in the heron family (Ardeidae) are associated with water and have extensive adaptations that allow them to thrive in wet environments. The heron family, which includes egrets and bitterns, has ancient origins that reportedly date to over 55 million years ago. Other close avian relatives to herons and egrets include storks, ibises, spoonbills and flamingos. Herons are large wading birds that typically have prominent, straight and pointed bills, long legs and lengthy, graceful necks. Herons typically feed on fish, frogs, snakes, crayfish, insects, small mammals and invertebrates and swallow their prey whole. Certain adaptations allow a heron to be successful in wetland environments, including their long legs that allow them to wade in the water while remaining above the surface, long flexible toes that are adapted for walking on soft ground, and a long muscular neck that allows the heron to reach prey with lightning fast speed and efficiency. Herons also have areas of feathers whose tips continually disintegrate into a fine powder. This power is distributed through regular preening (feather smoothing and trimming activities) and it absorbs and removes oils and dirt, keeping plumage clean and dry. Herons may nest alone or in groups, often termed rookeries. Herons may nest in colonies with other herons, egrets, ibises, anhingas, cormorants and pelicans. In addition, different species nest on the ground while others prefer nests high in the trees. In both cases, isolated, protected areas are highly desired. While few predators will attack a full-grown adult heron, predators include fox, mink, raptors and raccoons and some birds and snakes will rob eggs from unguarded nests.

When several different kinds of bird species nest and feed in a shared space, concurrent breeding adaptations often occur among different species. For example, great blue herons will wade in deeper waters searching for large fish while egrets hunt smaller fish found closer to shore and

cattle egrets will forage on the dry ground for grasshoppers and insects. For this reason it is important to maintain a diversity of water depths and vegetation zones in order to support nesting bird colonies. Federal and state laws regarding avian conservation protect Herons and other wetland birds; however, all remain threatened by the loss of quality habitat. WHC suggests inventorying bird species at the site during breeding and nesting seasons and evaluating the diversity of vegetation, water depths and prey in order to maintain optimal conditions for wetland birds at the Three Mile Island Generating Station.

2.1.6.2.1.1..1 Great Blue Heron

The great blue heron is the largest of the dark herons and can reach over 38 inches long with a wingspan of 70 inches. Great blue herons nest throughout most of North America and winter in the south on in northern South America. This great blue heron is a year-round resident that has become increasingly common in southeastern Pennsylvania. The great blue heron often nests in colonies of other herons and wading birds such as egrets. Great blue herons are wading birds that exploit a variety of wetland and even upland habitats and their statewide distribution is heavily dependent upon the availability of suitable habitat. Their diets include fish, insects, amphibians, snakes, small birds and rodents, although both seem to prefer feeding on large fish. These herons hunt in both saltwater and freshwater environments by taking slow and deliberate steps through shallow water, or standing in wait, with their heads hunched and beaks poised for catching prey.

PHOTO 5. GREAT BLUE HERON IN GRASSLAND HABITAT

Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

During the nesting season, herons often prefer to forage in shallow grass flats in open water or along shorelines. Great blue herons typically construct nests of sticks and twigs that may be lined with moss or leaves, on sturdy platforms or on tree limbs and joints. Nest size is approximately 20 to 48 inches in diameter. Often the male begins nest construction in order to attract a mate; once attracted, the female completes the nest with sticks and twigs provided by the male. Great blue heron nesting may take place anytime between September and May. These birds typically have clutches of between two and six pale blue to green eggs, although four eggs is considered normal, that take about 28 days to incubate. Great blue heron fledglings, which are fed and cared for by both parents, are prepared to leave the nest after approximately three weeks. **Table 5** provides information concerning great blue herons preferred roosting and foraging requirements.

TABLE 5. GREAT BLUE HERON HABITAT PREFERENCES

EXAMPLES OF PREFERRED PREY	PREFERRED ROOSTING AND SHELTER TREES
Bluegill	American sycamore
Yellow perch	Black willow
Bullfrog	Common cattail
Creek chub	White oak
Meadow vole	Sweetgum
Five-lined skink	Tuliptree
Northern water snake	Pickerelweed
Wood frog	Common reed
Channel catfish	Marsh bulrush
Largemouth bass	
Eastern lamp mussel	
Crayfish	
Eastern mosquitofish	

2.1.6.2.1.1..2 Great Egret

Egrets, which are diverse members of the heron family that are a common site throughout the Susquehanna River Basin, include snowy egrets, cattle egrets and great egrets. The word *egret* comes from the word *aigrette,* which is a French word referring to the downy, white breeding plumes of six species of white heron. These plumes were especially popular for decorating elegant hats during the late nineteenth and early twentieth centuries. The demand for the feathers was so high that at one point the feathers from four birds would be worth twice the same weight in gold. This, coupled with the long felt effects of DDT, contributed to a serious decline in egret populations until strict conservation measures were enforced. Because egrets are in the same family as the dark herons discussed above, it is not surprising that they share a great deal of the same characteristics and adaptations.

PHOTO 6. GREAT EGRET

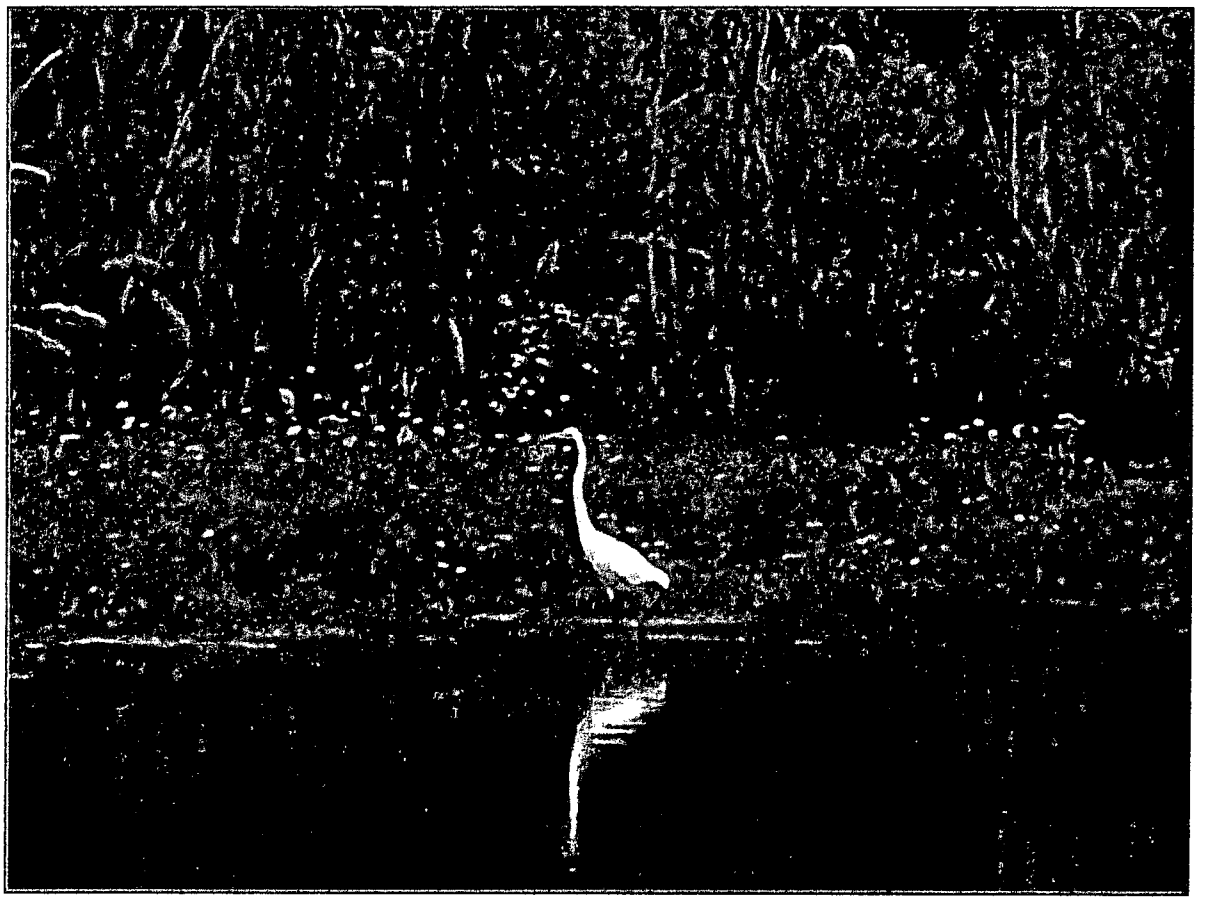


Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

The great egret, distinguishable from the snowy egret and the great white heron buy its black feet and legs, (whereas the snowy egret has yellow feet and the great white heron has yellow legs and feet) has a North American habitat range that stretches from as far north as southern Canada and regions south of a line that extends from North Carolina through central California and down to South America. Great egrets are reportedly the most common, and largest, of the four white herons that regularly occur in Pennsylvania, however, they are endangered within the state. Adult great egrets, which are typically larger than adult cattle and snowy egrets, range in height from 32 to 40 inches and may have a wingspan of about 55 inches. They have entirely white plumage and a long yellow bill. Great egrets prefer shallow water habitats but may also frequent dry uplands adjacent to wetlands. They are social birds and typically nest in colonies that may include other

heron, ibises and anhingas. Their diets consist mainly of fish and other aquatic organisms; however, if fish are not available they may hunt in upland areas for amphibians, reptiles and small mammals. The great egret may also inhabit deeper water habitats that offer ample food resources.

Great egrets typically begin nesting in southeast Pennsylvania during mid spring, and typically construct nests in the joints of tree branches or on platforms that occur about ten feet above the ground or water. While that is the average height of nest construction, individual nests may be constructed within a range of five to over 40- feet above the ground or water. Great egrets normally lay between three and four light blue or green eggs, although they may lay as many as six eggs that require about a month to incubate. Young great egrets are prepared to leave the nest after about two months.

2.1.6.2.2 *Considerations for Forest-Dwelling and Cavity-Nesting Birds*

In Pennsylvania, birds associated with deciduous forest habitats and shrub lands are considered to be in relatively stable populations, as least when compared to the practices of massive deforestation that were common in the 19th Century. However, birds associated with conifer forests and associated peat and swamplands have suffered serious declines. There have been some efforts towards the recovery of bird species common in conifer and peatland habitat types, although they have not been as successful as those undertaken in deciduous habitat areas. However, ongoing forest management practices will likely continue to favor species of early successional forests rather than those sensitive species that require more mature, old growth forests.

Changes in land management objectives will continue to shape the landscape, and therefore influence avian species populations and the diversity that each habitat can support. Exelon's Three Mile Island Generating Station can help preserve, protect and enhance avian species and the resources that they depend on in a variety of ways, including through the placement of artificial nesting structures, roosting platforms, perches and poles, establishment of native vegetation with high wildlife values, improvement of water resources on site and through continued education regarding avian species habitat requirements and individual importance. If employees at the Three Mile Island Generating Station opt to establish and monitor nest boxes at the site, WHC

encourages them to participate in Pennsylvania's Cavity Nester Survey and Colonial Bird Registry programs.

TABLE 6. EXAMPLES OF CAVITY NESTING BIRDS OF PENNSYLVANIA

COMMON NAME	SCIENTIFIC NAME
Northern saw-whet owl	*Aegolius acadicus*
Wood duck	*Aix sponsa*
Tufted titmouse	*Baeolophus bicolor*
Turkey vulture	*Cathartes aura*
Brown creeper	*Certhia Americana*
Chimney swift	*Chaetura pelagica*
Northern flicker	*Colaptes auratus*
Pileated woodpecker	*Dryocopus pileatus*
American kestrel	*Falco sparverius*
Hooded merganser	*Lophodytes cucullatus*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Great crested flycatcher	*Myiarchus crinitus*
Eastern screech owl	*Otus asio*
Black-capped chickadee	*Parus atricapillus*
Carolina chickadee	*Parus carolinensis*
Downy woodpecker	*Picoides pubescens*
Hairy woodpecker	*Picoides villosus*
Purple martin	*Progne subis*
Prothonotary warbler	*Protonotaria citrea*
Eastern bluebird	*Sialia sialis*
Red-breasted nuthatch	*Sitta canadensis*
White-breasted nuthatch	*Sitta carolinensis*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Barred owl	*Strix varia*
Tree swallow	*Tachycineta bicolor*
Bewick's wren	*Thryomanes bewickii*
Carolina wren	*Thryothorus ludovicianus*
House wren	*Troglodytes aedon*
Winter wren	*Troglodytes troglodytes*
Barn owl	*Tyto alba*

2.1.6.2.2.1 Potential Wood Duck Management Options

A favorite among bird watchers, wood ducks (*Aix sponsa*) are found throughout the eastern half of the United States, as well as along the Pacific coast and in southern Canada. While their numbers are now increasing due to habitat protection and restoration activities, unregulated hunting and the loss of their preferred woodland and wetland habitat decimated wood duck populations in the early 1900s.

WHC recommends that the Three Mile Island Generating Station wildlife team consider erecting wood duck nesting boxes in the wooded riparian areas on site in the future. Nest boxes should be placed at least 600 feet apart and out of the direct sight of other wood duck boxes, as seeing another wood duck entering or leaving a nest may stimulate a female wood duck to lay eggs in the other female's already full nest. Consequently, some of the eggs may fail to hatch, or worse, the incubating female may abandon the nest altogether. Boxes should be mounted 12 to 20 feet above ground and 30 to 150 feet from the shoreline. Installing conical predator guards 6 to 12 inches from the bottom of each duck box will help prevent predation.

Wood duck boxes should be monitored once a month during the breeding season, to document any evidence of predation and presence of nestlings. Boxes may remain out during the winter season to provide winter cover sites for other animals, but should be cleaned out prior to the start of the nesting season. More information on wood ducks, how to build wood duck nest boxes, and predator guards can be found in the *Wood Duck* leaflet in **Appendix V** of this report.

2.1.6.2.2.2 Potential Eastern Bluebird Management Options

The distinctive eastern bluebird (*Sialia sialis*) is a common species of the eastern United States. Bluebird nests are typically built in natural cavities, but competitive pressure from aggressive avian species, including non-native English house sparrows and European starlings, has reduced nest site availability. Habitat destruction, particularly the removal of snags has also negatively impacted bluebird populations. The Three Mile Island Generating Station can participate in restoring local eastern bluebird populations by constructing nest boxes on site. The placement and maintenance of bluebird boxes is a relatively simple, hands-on project that contributes to the conservation of a native species and improves the aesthetic merit of the site.

Boxes should be placed in open areas with nearby trees and shrubs, but away from densely vegetated areas and buildings in order to deter starlings and house sparrows. Nearby shrubs, isolated trees, and telephone lines are required to provide perching structures, and the presence of these elements must be taken into account when choosing suitable locations. Boxes should be in place by early to mid-March to facilitate detection by individuals seeking potential nesting sites.

Individual bird boxes should be installed four to five feet above the ground on a wooden or metal post, in a location that receives plenty of sunlight. Boxes should be spaced at least 100 yards apart, as nesting bluebirds tend to be highly territorial. The outside of the nest box surface may be painted or stained, but a light color is recommended. Bluebird boxes should be well-ventilated, water-tight, provide drainage holes, and be easy to clean and monitor. Perches should not be attached to nest boxes, as they may attract competitors and predators. WHC recommends installing predator guards to protect bluebirds, eggs, and young from potential nest raiders such as raccoons, snakes, and feral cats. For more information on bluebirds and construction of nest boxes, refer to the *Eastern Bluebird* leaflet in **Appendix V**.

2.1.6.2.3 Raptor Habitat Management Options

"Raptor" is a general term that refers to birds of prey. In general, raptors are fairly large, possess strong beaks and talons, and have sharp hearing and eyesight. These birds are often at the top of the food chain in ecological systems, and because of their value state and federal laws protect raptors. Raptors, or birds of prey, include hawks, eagles, falcons, harriers, kites, accipiters and buteos. Although many raptor species have shown decline, in large part due to their tendency to accumulate biotoxins, which result in egg thinning and severe reductions in reproductive success, efforts to conserve viable raptor habitat and the banning of certain chemicals have allowed some raptor species to begin to recover.

The State of Pennsylvania is very well known for the annual hawk flights that take place throughout the region, and for the efforts of the Hawk Migration Association and Hawk Mountain, which is a world leader in the pursuit of raptor inventories, monitoring, education and conservation efforts. In addition, knowledge about bald eagles, osprey and loggerhead shrikes has greatly increased in recent years due to the establishment of funding sources for research and

restoration projects. A list of native Pennsylvania birds of prey is provided in **Table X**, and should be consulted when developing considerations for potential target species in habitat enhancement efforts on site. Representatives at the Three Mile Island Generating Station can conserve habitat for raptors by protecting early successional, wooded and wetland habitats on site; furthermore, placing artificial nesting structures and brush piles may lead to habitat enhancements for raptors. Please contact WHC for more information about raptor habitat enhancements.

TABLE 7. COMMON BIRDS OF PREY IN PENNSYLVANIA

TYPE	COMMON NAME	SCIENTIFIC NAME
Falcon (Falconidae)	American kestrel Merlin	*Falco sparverius* *Falco columbarius*
Hawk/Eagle (Accipitridae)	Broad-winged hawk Cooper's hawk Golden eagle Northern goshawk Northern harrier Red-shouldered hawk Red-tailed hawk Rough-legged hawk Sharp-shinned hawk	*Buteo platypterus* *Accipiter cooperii* *Aquila chrysaetos* *Accipiter gentiles* *Circus cyaneus* *Buteo lineatus* *Buteo jamaicensis* *Buteo lagopus* *Accipiter striatus*
Osprey (Pandionidae)	Osprey	*Pandion haliaetus*
Owl (Tytonidae)	Barn owl	*Tyto alba*
Owl (Strigidae)	Northern saw-whet owl Short-eared owl Long-eared owl Snowy owl Great horned owl Eastern screech owl Barred owl	*Aegolius acadicus* *Asio flammeus* *Asio otus* *Bubo scandiacus* *Bubo virginianus* *Otus asio* *Strix varia*
Vulture (Cathartidae)	Black vulture Turkey vulture	*Coragyps atratus* *Cathartes aura*

2.1.6.2.3.1 Potential Bald Eagle Habitat Management Tips

Bald eagles require mature tall trees for nesting and roosting. The forested areas and riparian and creek-side corridor habitats at the Three Mile Island Generating Station offers areas of mature trees as well as populations of younger trees, offering a diversity of habitat for a variety of avian species. If the Three Mile Island Generating Station wildlife team manages the buffer areas now with bald eagles in mind, they may attract the birds in the future. Several areas along the Susquehanna River provide regular nesting and foraging habitat for bald eagles and other raptors. **Figure 7** provides a map outlining the location of reported bald eagle nesting and roosting areas in Pennsylvania.

PHOTO 7 BALD EAGLE

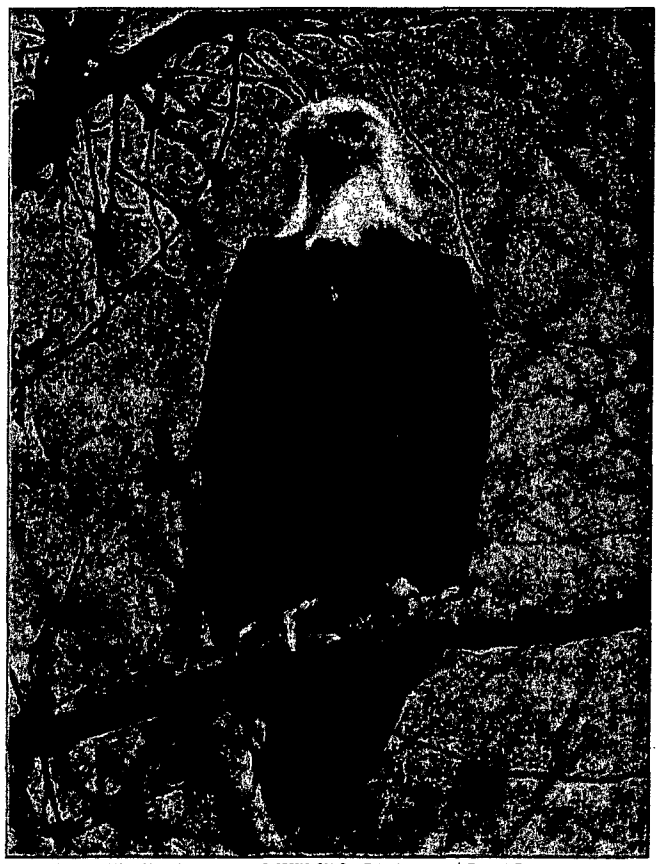
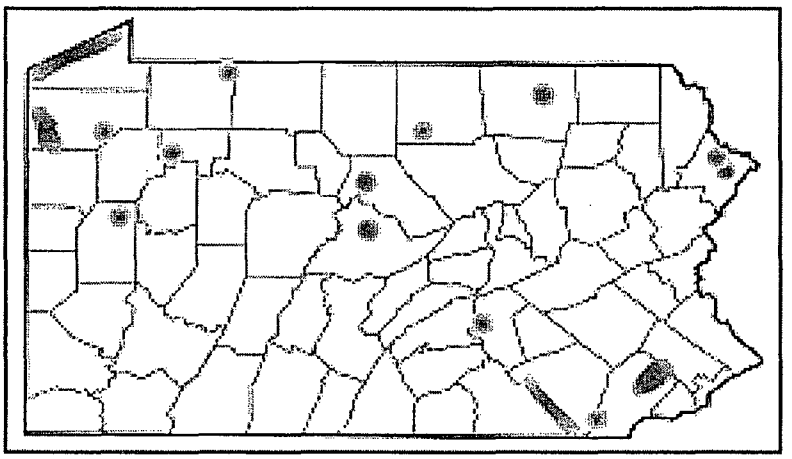


Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

FIGURE 7. BALD EAGLE DISTRIBUTION WITHIN PENNSYLVANIA



Map courtesy of PA DCNR.

The preservation of old pines is critical in order to provide quality nesting and roosting sites for bald eagles. By allowing trees to grow to maturity and leaving very tall trees (supercanopy or overstory trees) in the buffer area, employees and volunteers at Three Mile Island Generating Station will be creating ideal future roosting sites for bald eagles and other birds of prey. Suitable perches include slash pine, oak, or any tall snag within 50 feet of the shoreline. Snags are used by bald eagles for perching, but these birds do prefer overhead cover at the nesting site. Ideally, these perches should have large, open branches that hang over the water and there should be a minimum of two to three snags or dead trees within ¼ mile of a nest. The Three Mile Island Generating Station wildlife team can keep these requirements in mind when making management decisions in the buffer area. These decisions would include identifying potential mature-canopy trees and developing a plan to enhance and preserve them. In order to provide beneficial habitat for bald eagles, such as canopy oaks and white pines, the team can plan to remove surrounding weed trees or species with poor health or growth patterns. This thinning and selective cutting process reduces competition for resources within that area of the woodlot for the larger trees, thereby allowing the oaks and pines greater growth rates. Over the long term, this strategy would provide the canopy trees that in turn attract bald eagles.

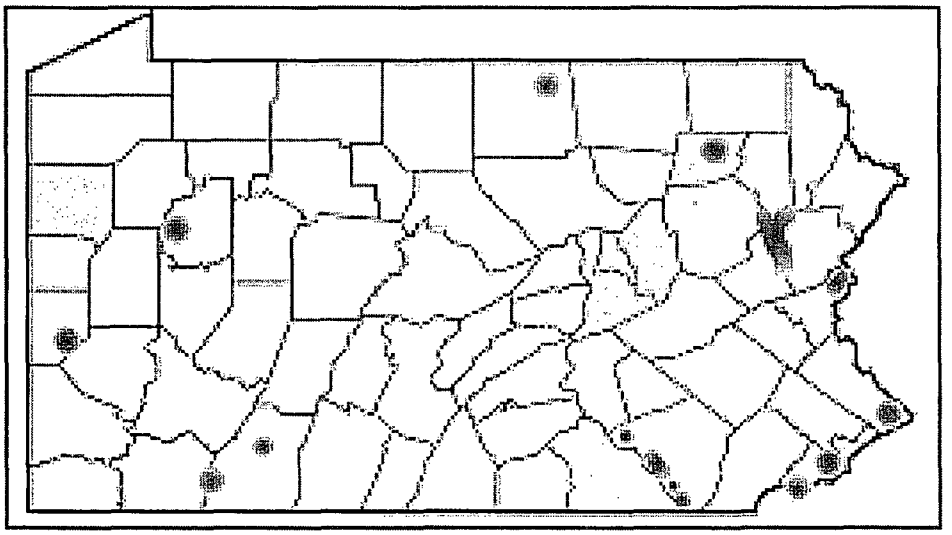
2.1.6.2.3.2 Potential Osprey Habitat Management Tips

Osprey typically prey on fish and, accordingly, often construct nests in snags or other structures along rivers, lakes, ponds and seacoasts. At one time, their reproduction was suppressed by chemical interference, but osprey populations are increasing, as they continue to return to areas of former occupation, thanks in large part to the banning of DDT in 1973. **Figure 8** provides a map of reported osprey sightings within Pennsylvania. WHC recommends employees and volunteers at the Three Mile Island Generating Station attempt to attract breeding pairs of osprey to the site by erecting nesting platforms along the riverbank. Platforms could be placed on a pole in a relatively undisturbed location within sight of water resources. They should also be the highest structure in the immediate area, with respect to any surrounding vegetation. Osprey will nest at many different heights; therefore, if there are no tall trees to compete with the platform height, place platforms approximately 20 feet above the ground prove to be the most successful. When erected above water, platforms should be over 15 feet high. Approaches to the platform nest should be unobstructed so the osprey can land easily.

PHOTO 8. OSPREY NEST

Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

FIGURE 8. OSPREY DISTRIBUTION WITHIN PENNSYLVANIA



Map courtesy of PA DCNR.

The platform can be constructed from turkey wire and 2" x 4" boards. The platform and pole must be very sturdy as osprey return and add to their nests every year, eventually creating nests that can weigh hundreds of pounds. The lower three or four feet of the post should be buried in the ground, and additional braces may be required for stability. A few sticks should be placed on the platform as a "starter nest" to encourage ospreys to nest there. For additional information regarding the habitat requirements and management of osprey and an illustration of nest platform design consult the *Osprey Habitat Management* leaflet in **Appendix V** of this report. In addition, ospreys will benefit from raptor perches, which can be erected within the Three Mile Island Generating Station site as well. Ospreys will use them to scan for prey and to assist in reaching a high dive speed for attack.

2.1.6.2.3.3 Potential Peregrine Falcon Management Tips

The peregrine falcon historically has one of the largest ranges of any bird species; however, its vulnerability to the pesticide DDT resulted in a rapid population decline beginning in the 1940s and its listing as an endangered species in 1978. The combination of recovery efforts and a ban on DDT has since allowed populations to rebound, and the species was delisted from its endangered status in 1999. The presence of peregrine falcons in the areas within and around the Three Mile Island Generating Station indicates that the wildlife team may be able to encourage additional nesting opportunities by providing nest boxes.

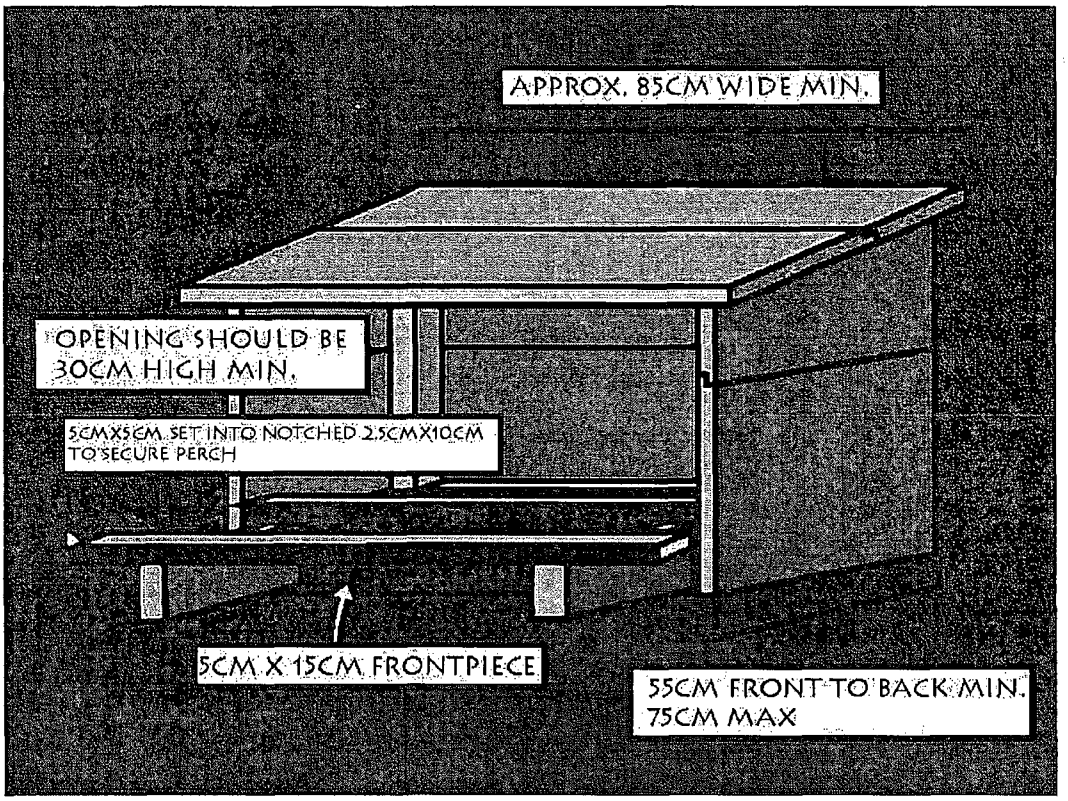
While nest boxes for peregrine falcons do not guarantee nesting success, a number of encouraging stories have emerged from their placement. Anheuser-Busch, for example, placed a nest box at its site in Manitowoc, Wisconsin. Although it took eight years before the birds began arriving at the site, peregrine falcons have nested and successfully fledged young every year since 1998.

The Three Mile Island wildlife team can design a nest box patterned after that shown in **Figure 9**. While peregrines often create nests by scraping out a shallow depression, with no added nest materials, boxes offer the advantage of shielding them from predators as well as the elements. When making boxes, it is important to drill small holes into the bottom to facilitate drainage. The

wildlife team should also fill the nest box with three to four inches of small, rounded pea gravel for nesting substrate.

Peregrine nesting patterns seem to habitually follow the 'migratory corridor', reflecting the geographical preference of migrating songbirds, their main prey item. These sites are often in great demand by nesting birds, for the obvious reason that nesting success is increased where prey is more abundant, and are often the subject of ardent competition. In undeveloped areas, preferred sites include ledges on cliffs and rocky outcrops, usually at an elevation of 15 to 60 meters, with a southerly exposure, some vegetation present on the ledge, and a protective overhang above. However, these are relatively generic qualifications, and individuals can vary greatly in their choice of nesting sites (referred to as eyries).

FIGURE 9. PEREGRINE FALCON NEST BOX DIAGRAM



Peregrines have been known, for instance, to nest in abandoned tree nests or cavities, on natural cliffs, as well as on building ledges and bridges in urban environments. Even height preference is variable: one female peregrine in Detroit nested on a ledge on the fifth floor of an office building, while an eyrie in Toronto was located on the 33rd floor.

If it is known where peregrine falcons have attempted to nest at the Three Mile Island Generating Station property in the past, the wildlife team may choose to put nest boxes in those locations or at least use these spots as a guide for determining general nest site preferences. Human activity must be restricted within a 300-foot radius around the nest site during the nesting season in order to minimize disturbances and promote nesting success. It is also a good idea to place nest boxes back from streets as fledglings can fall to the ground when first learning to fly and could land in traffic. Please contact WHC for additional information about potential peregrine habitat enhancements.

2.1.6.3 Bat Habitat Management Options

Despite the many misconceptions people have about them, bats are actually a unique group of mammals that play a vital role in natural ecosystems. There are over 1,100 different kinds of bats throughout the world, amounting to approximately ¼ of all mammal species. Many people have the mistaken idea that contact with a bat will result in a person contracting rabies. In fact, research indicates that the incidence of rabies is only about 0.5 percent in bat populations. Bats will not usually bite unless threatened, and since most of those bats that do contract rabies exhibit the paralytic form of the virus, a rabid bat is unlikely to attack humans. They are important in seed dispersal and pollination of both wild and agricultural plants, and are a major predator of night-flying insects, including mosquitoes; approximately 70 percent of all bats are considered to be insectivorous. A single bat can eat up to 1,000 or more insects in an hour, potentially reducing the need for pesticides and lowering the risk of insect-borne diseases such as West Nile Virus. There are over 1,000 bat species throughout the world, yet only eleven species live in Pennsylvania for all or part of the year. All of them are insect eaters and feed on mosquitoes, as well as many crop damaging corn border and cutworm moths. Therefore, Pennsylvania bats generally hibernate or migrate when insect populations begin to dwindle. Bats common in the region are generally small,

only two to four inches in length with average wingspans of up to twelve inches and often weigh less than one ounce.

In spite of their beneficial and relatively innocuous nature, over half of the bat species in America are considered to be endangered or in rapid decline. Pesticide use, habitat destruction, and disturbance of colonies during hibernation and breeding are among the biggest threats to these populations. Placing and monitoring artificial roosting structures are steps that the Three Mile Island Generating Station can take to support bat populations and to help slow or even reverse, their downward population trend.

TABLE 8. BATS COMMON IN PENNSYLVANIA

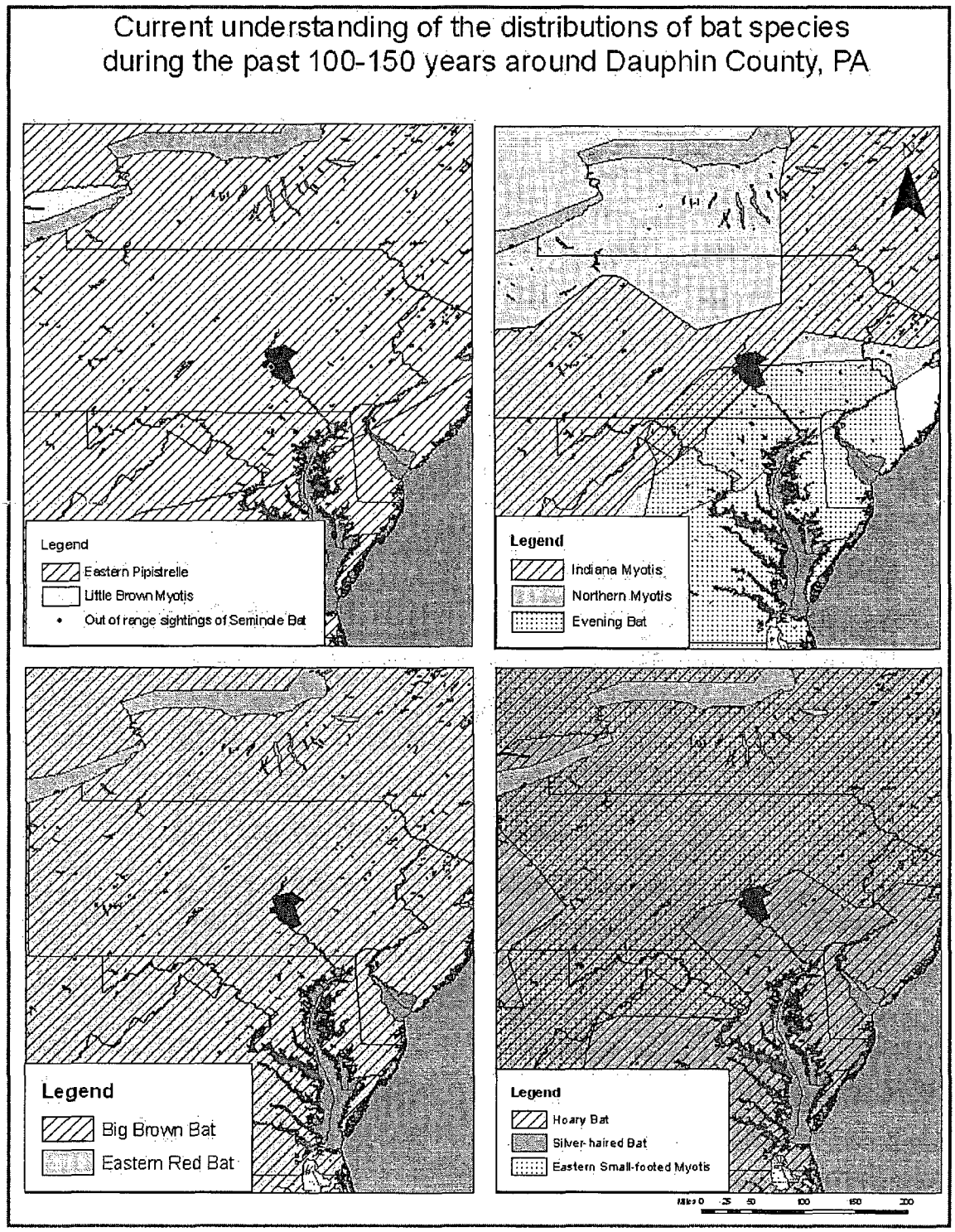
COMMON NAME	SCIENTIFIC NAME
**Big brown bat	*Eptesicus fuscus*
**Little brown bat	*Myotis lucifugus*
Indiana bat	*Myotis sodalis*
Hoary bat	*Lasiurus cinereus*
Silver-haired bat	*Lasionycteris noctivagans*
Northern long ear bat	*Myotis septentrionalis*
Red bat	*Lasiurus borealis*
Small footed bat	*Myotis leibii*
Eastern pipistrelle	*Pipistrellus subflavus*
*Seminole bat	*Lasiurus semionoles*
*Evening bat	*Nycticeius humeralis*

* Species has been documented in Pennsylvania, but is not considered a regular resident.
**Species have been documented using bat houses.

Boxes may be used for establishment of nursery colonies during the summer months, for roosting or for hibernating. Once a location is established, bat populations will generally return to the same bat box every year. The bats can be monitored by looking up into the box during the day with a flashlight to count the number of occupants, and by counting the number of bats that emerge in the evening. To count pups, wait until the adults have emerged in the evening, and then use a flashlight to attempt to count the pups remaining. Each breeding female usually has one pup per year. The pups are born hairless and unable to fly, and are dependent on the mother for protection and milk. The mother will leave the pup alone in the colony at night to feed, but will return to nurse. The young will begin to leave the colony for short flights when six to eight weeks old, usually in late July.

Although bats are not usually aggressive, they should never be handled. Occasionally young may fall from the roost, or adults may be injured when hit by cars. While less than half of one percent of the population carries the rabies virus, as noted above, any downed bat should be treated as a potential carrier. To capture an injured bat, wear gloves, place a coffee can over the bat, and then slide a piece of cardboard under the can. An obvious juvenile can then be placed back in the box as long as the person does not come into direct contact with the bat. For injured or ill bats, contact the health department or a local wildlife rehabilitator. If there are any issues with this, WHC and the other partners can be contacted for help. **Figure 10** provides a map of the distribution of bats that are common in the area.

FIGURE 10. BAT SPECIES DISTRIBUTION AROUND DAUPHIN COUNTY



Maps courtesy of Josiane Bonneau, WHC Wildlife Biologist.

2.1.6.4 Pollinator Habitat Management Options

The steady decrease in native pollinators is of great concern within the scientific community because of their important role in propagating both agricultural and wild plant species; while some plants are pollinated by the wind or self- pollinated, most flowering plants require a pollinator in order to set fruit and seed. Butterflies and hummingbirds are both important groups of pollinators, but bees are the group responsible for pollinating the greatest number and diversity of native plants. On a typical foraging trip, a bee may visit hundreds of flowers, pollinating each of them inadvertently while drinking nectar. Native bees are fundamentally responsible for maintaining the vigor of natural plant communities and the wildlife that depend on them. **Photo 10** and **Photo 11** provide an example of two butterflies common in the area, the great spangled fritillary and the southern dogface.

PHOTO 10. GREAT SPANGLED FRITILLARY

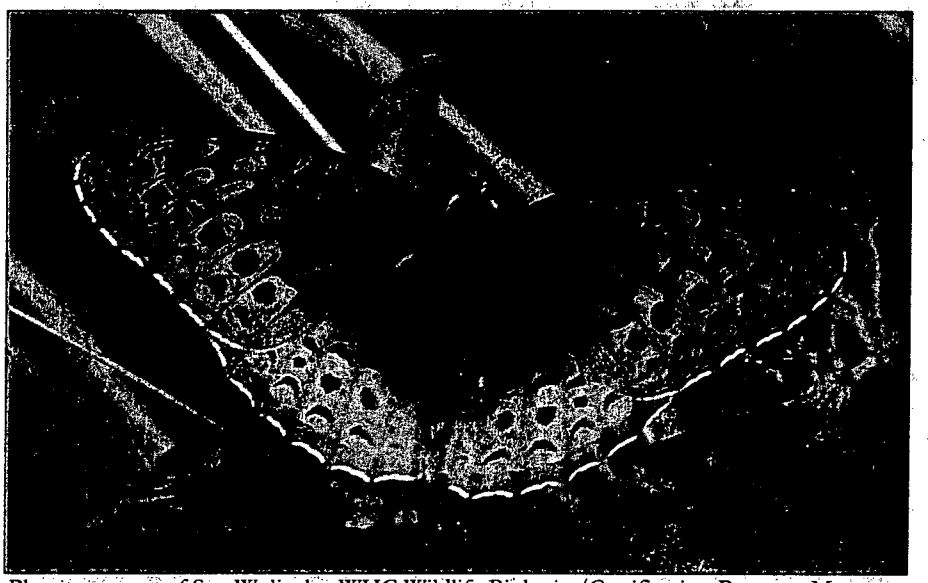


Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

PHOTO 11. APPALACHIAN BROWN

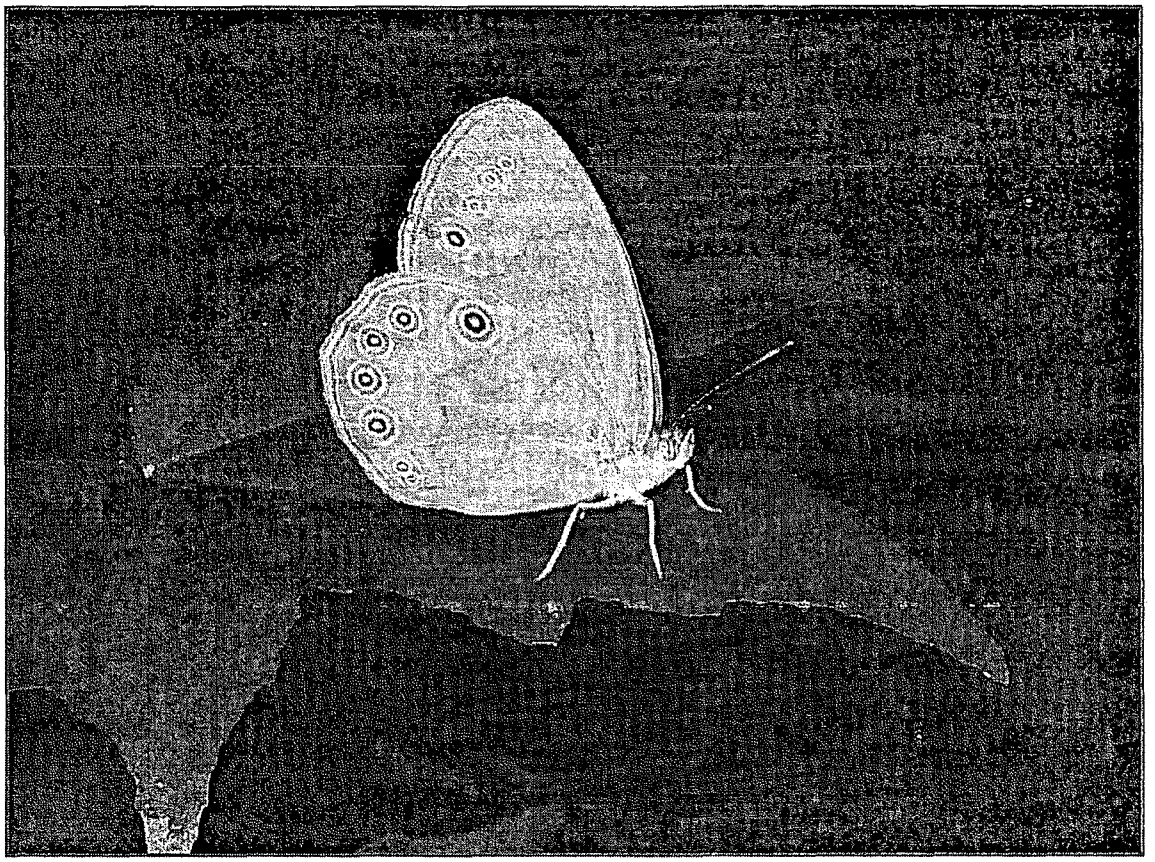


Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

Loss of nesting habitat and nectar sources, combined with widespread pesticide use has lead to a decline in bees and other pollinators that has caused alarm amongst the scientific community. The drastic decline in domestic honeybees in the last few years due to the mite parasitism has lead to further cause for concern in protecting native bee populations. There are over 3500 species of bees native to North America and over 50 different species of butterfly and moth have been identified in Dauphin County alone.

TABLE 9. BUTTERFLIES OF DAUPHIN COUNTY

COMMON NAME	SCIENTIFIC NAME
Common roadside skipper	*Amblyscirtes vialis*
Delaware skipper	*Anatrytone logan*
Least skipper	*Ancyloxypha numitor*
Falcate orangetip	*Anthocharis midea*
Hackberry emperor	*Asterocampa celtis*
Tawny emperor	*Asterocampa clyton*
Sachem	*Atalopedes campestris*
Pipevine swallowtail	*Battus philenor*
Meadow fritillary	*Boloria bellona*
Silver-bordered fritillary	*Boloria selene*
Brown elfin	*Callophrys augustinus*
Juniper hairstreak	*Callophrys gryneus*
Frosted elfin	*Callophrys irus*
Eastern pine elfin	*Callophrys niphon*
Spring azure	*Celastrina ladon*
Summer azure	*Celastrina neglecta*
Appalachian azure	*Celastrina neglecta-major*
Common wood nymph	*Cercyonis pegala*
Silvery checkerspot	*Chlosyne nycteis*
Orange sulphur	*Colias eurytheme*
Clouded sulphur	*Colias philodice*
Monarch	*Danaus plexippus*
Northern pearly eye	*Enodia anthedon*
Silver spotted skipper	*Epargyreus clarus*
Sleepy duskywing	*Erynnis brizo*
Horace's duskywing	*Erynnis horatius*
Dreamy duskywing	*Erynnis icelus*
Juvenal's duskywing	*Erynnis juvenalis*
Mottled duskywing	*Erynnis martialis*
Baltimore	*Eupphydryas phaeton*
Variegated fritillary	*Euptoieta Claudia*
Sleepy orange	*Eurema nicippe*
Zebra swallowtail	*Eurytides Marcellus*
Eastern tailed blue	*Everes comyntas*
Harvester	*Feniseca tarquinius*
Leonard's skipper	*Hesperia leonardes*
Indian skipper	*Hesperia sassacus*
Common buckeye	*Junonia coenia*
Viceroy	*Limenitis archippus*
Red spotted purple	*Limenitis arthemis*
American copper	*Lycaena phlaeas*
Little wood satyr	*Megisto cymela*
Mourning cloak	*Nymphalis antiopa*

COMMON NAME	SCIENTIFIC NAME
Compton tortoiseshell	*Nymphalis vaualbum*
Ocola skipper	*Panoquina ocola*
Eastern tiger swallowtail	*Papilio glaucus*
Black swallowtail	*Papilio polyxenes*
Spicebush swallowtail	*Papilio Troilus*
White hairstreak	*Parrhasius m-album*
Common sootywing	*Pholisora catullus*
Tawny crescent	*Phyciodes batesii*
Pearl crescent	*Phyciodes tharos*
Cabbage white	*Pieris rapae*
West Virginia white	*Pieris virginiensis*
Hobomok skipper	*Poanes hobomonk*
Long dash	*Polites mystic*
Peck's skipper	*Polites peckius*
Tawny edged skipper	*Polites themistocles*
Eastern comma	*Polygonia comma*
Question mark	*Polygonia interrogationis*
Gray comma	*Polygonia progne*
Little glassywing	*Pompeius verna*
Checkered white	*Pontia protodice*
Grizzled skipper	*Pyrgus centaureae*
Common checkered skipper	*Pyrgus communis*
Banded hairstreak	*Satyrium calanus*
Striped hairstreak	*Satyrium liparops*
Appalachian brown	*Satyrodes Appalachia*
Aphrodite fritillary	*Speyeria aphrodite*
Great spangled fritillary	*Speyeria cybele*
Atlantis fritillary	*Speyeria idalia*
Regal fritillary	*Speyeria idalia*
Gray hairstreak	*Strymon melinus*
Southern cloudywing	*Thorybes bathyllus*
Northern cloudywing	*Thorybes pylades*
European skipper	*Thymelicus lineola*
Red admiral	*Vanessa atalanta*
Painted lady	*Vanessa carduii*
American lady	*Vanessa virginiensis*
Northern broken dash	*Wallengrenia egeremet*

The majority of North American bees are solitary and should not to be confused with honeybees, which nest in colonies and were introduced into the U.S. The distinction between native, solitary bees and introduced, social bees is important for public awareness of bee conservation because only social bees swarm to protect their hive; native pollen bees on the other hand rarely ever sting and when they do, the sting tends to be mild. Native bees can generally be categorized as either

soil dwellers or wood dwellers. Among the soil dwelling bees are the bumble, sweat, digger, squash, alkali, and polyester bees. Wood dwelling bees include orchard mason, horn-faced, leafcutter, and carpenter bees. In their natural habitat, wood-dwelling bees will excavate their nests in the soft central pith of stems and twigs, abandoned beetle borrows, or in dead standing trees. Soil dwelling bees dig their nests in bare soil or construct domed nests out of mud. Please refer to the Pollinator Friendly Practices section of this report for more information on how WHC can assist the Three Mile Island Generating Station in establishing, maintaining and enhancing pollinator habitats on site.

TABLE 10. BUTTERFLIES OF DAUPHIN COUNTY AND POTENTIAL FOOD SOURCES

COMMON NAME	CATERPILLAR HOSTS	ADULT FOOD
Common roadside skipper	Wild oats, bentgrass, bluegrass	Verbena, selfheal
Delaware skipper	Big bluestem, switchgrass	Milkweed, pickerelweed, thistle
Least skipper	Marsh millet, rice cutgrass	Swamp verbena, white clover
Falcate orangetip	Rock cress, winter cress	Flower of mustard and violet
Hackberry emperor	Hackberries, sugarberry	Sap, rotted fruit, dung, carrion
Tawny emperor	Trees of elm family	Sap, rotted fruit, dung, carrion
Sachem	Goosegrass, crabgrass, grasses	Milkweeds, buttonbush, dogbane
Pipevine swallowtail	*Aristolochia* species	Thistle, bergamot, lilac, phlox
Meadow fritillary	Northern white, blue violets	Black eyed Susan, ox-eye daisy
Silver-bordered fritillary	Violets	Goldenrod, black-eyed Susan
Brown elfin	Huckleberry, Labrador tea	Blueberry, spicebush, plum
Juniper hairstreak	Red cedar, Utah juniper	Winter cress, dogbane, carrot
Frosted elfin	Pea, wild indigo, lupine	Flower nectar
Eastern pine elfin	Scrub pine, Jack pine	Blueberry, chickweed, clover
Spring azure	Dogwood, New Jersey tea	Dogbane, blackberry, milkweed
Summer azure	Racemose dogwood, NJ tea	Flower nectar
Appalachian azure	Bugbane	Flower nectar
Common wood nymph	Purpletop, other grasses	Rotting fruit, flower nectar
Silvery checkerspot	Black-eyed Susan, sunflowers	Red clover, milkweed, dogbane
Orange sulphur	Alfalfa, white clover	Dandelion, milkweed, goldenrod
Clouded sulphur	Alfalfa, white clover	Flower nectar
Monarch	Milkweeds	Milkweed, dogbane, lilac
Northern pearly eye	Plumegrass, bottlebrush grass	Sap, dung, carrion, fungi
Silver spotted skipper	Black and honey locust	Blue, red, pink flower nectar
Sleepy duskywing	Scrub oak, shrubby oaks	Azalea, blueberry, blackberry
Horace's duskywing	Red and white oak, willow	Dogbane, buttonbush
Dreamy duskywing	Willow, poplar, aspen	Blueberry, lupine, winter cress
Juvenal's duskywing	Tree and shrub oaks	Winter cress, dandelion, plum
Mottled duskywing	Lilac, redroot, NJ tea	houstonia, gromwell, vervain
Baltimore	False foxglove, turtlehead	Milkweed, viburnum, wild rose

COMMON NAME	CATERPILLAR HOSTS	ADULT FOOD
Variegated fritillary	Maypops, may apple, violet	Milkweed, red clover, sunflower
Sleepy orange	*Cassia* species in the pea family	Shepherd's needle
Zebra swallowtail	*Asimina* (pawpaw)	Blueberry, blackberry, lilac
Harvester	Insects on ash, beech, alders	Aphid honeydew
Eastern tailed blue	Alfalfa, wild pea, bush clover	Winter cress, cinquefoils, asters
Leonard's skipper	Little bluestem, blue grama	Blazing star, thistles, asters
Indian skipper	Little bluestem, panic grass	Blackberry, phlox, bugloss
Common buckeye	Snapdragon, toadflax	Aster, chicory, knapweed
Viceroy	Willow, poplar, cottonwood	Dung, fungi, goldenrod, thistle
Red spotted purple	Wild cherry, aspen, poplar	Sap, rotting fruit, dung, privet
American copper	Sheep sorrel, curled dock	Buttercup, white clover, yarrow
Little wood satyr	Orchard and centipede grasses	Sap, aphid honeydew
Mourning cloak	Willows, American elm	Oak sap, rotting fruit
Compton tortoiseshell	Aspen, cottonwood, birch	Sap, rotting fruit, nectar
Ocola skipper	Rice, sugarcane, trompetilla	Lantana, milkweed, buttonbush
Eastern tiger swallowtail	Cottonwood, tuliptree, ash	Wild cherry, lilac
Black swallowtail	Wild carrot, celery and dill	Red clover, milkweed, thistle
Spicebush swallowtail	Spicebush, sassafras tree	Jewelweed, thistle, azalea
White hairstreak	Live oak, other oaks	Viburnum, sumac, sourwood
Common sootywing	Lambsquarters, amaranths	Dogbane, white clover, oxalis
Tawny crescent	Wavyleaved aster, true asters	Flower nectar
Pearl crescent	Smooth-leaved true asters	Dogbane, shepherd's needle,
Cabbage white	Mustard and caper family	Mustards, dandelion, red clover
West Virginia white	Mustard family	Toothwort, spring beauty, violet
Hobomok skipper	Panic grass, bluegrasses	Milkweed, henbit, blackberry
Long dash	Bluegrasses	Milkweed, selfheal, laurel
Peck's skipper	Rice cutgrass, bluegrass	red clover, purple vetch, thistles
Tawny edged skipper	Panic grass, slender crabgrass	Alfalfa, dogbane, coneflower
Eastern comma	Elm and nettle families	Rotting fruit, tree sap
Question mark	Elms, hackberry, nettles	Rotting fruit, sap, dung, fungi
Gray comma	Gooseberry, azalea	Sap, rarely flower nectar
Little glassywing	Purpletop	Dogbane, milkweed, joe-pye weed
Checkered white	Mustard and caper family	Mustards, alfalfa, spiraea
Grizzled skipper	Wild strawberry, rose family	Blueberry, wild strawberry
Common checkered skipper	Mallow family species	Shepherd's needles, fleabane,
Banded hairstreak	Oak, walnut, hickory	Dogbane, milkweed, NJ Tea
Striped hairstreak	Plum, hornbeam, oak, willow	Goldenrod, meadowsweet
Appalachian brown	Giant sedge, sedges	Sap, non-floral resources
Aphrodite fritillary	Various violet species	Milkweed, viper's bugloss
Great spangled fritillary	Various violet species	Milkweed, thistle, ironweed
Atlantis fritillary	Violets	Mint, mountain laurel,
Regal fritillary	Violets, bird's foot violet	Milkweed, thistle, red clover
Gray hairstreak	Pea and mallow families	Dogbane, milkweed, mint
Southern cloudywing	Bush clover, clover, fuzzybean	Dogbane, selfheal, thistle
Northern cloudywing	Beggar's ticks, bushclover,	Dogbane, selfheal, thistles
European skipper	Timothy, other grasses	Hawkweed, thistle, oxeye daisy

COMMON NAME	CATERPILLAR HOSTS	ADULT FOOD
Red admiral	Nettle family	Tree sap, rotting fruit, aster
Painted lady	Thistle, hollyhock, mallow	Red clover, buttonbush, privet
American lady	Sunflower family	Dogbane, aster, goldenrod
Northern broken dash	Panic grasses	Red clover, sweet pepperbush

2.1.6.5 Herptile Habitat Management Options

"Herptile" is jargon that is typically employed to collectively refer to both amphibian and reptile groups. These two groups are often lumped together when discussing habitat because it is largely accepted that reptiles evolved from amphibians. Both reptiles and amphibians are cold-blooded animals that lay eggs; however, there are also several important differences between the two groups, and between individual species of each group. Amphibians generally inhabit damp or wet environments such as marches, swamps, bogs, pods and larger water bodies. This is because two of the stages of amphibian metamorphoses, the egg stage and the tadpole stage, require aqueous environments. The major groupings of amphibian species include frogs and toad, and salamanders. Frogs and toads are commonly confused with one and other; however, toads generally have shorter legs that frogs and their movements are described as hopping rather than the leaping common among frogs. In addition, toads generally do not live in as close proximity to water resources as frogs typically do, although both require aquatic environments for successful reproduction. Salamanders, the other common type of amphibian, are generally recognizable because of their long, slender bodies and presence of four legs, making them easily distinguishable from toads and frogs. There are 38 species and subspecies of amphibians found in Pennsylvania. Representing nine families and 16 genera, they are only a part of the some 3,000 species of amphibians in the world.

FIGURE 11. TURTLES USING BASKING LOG

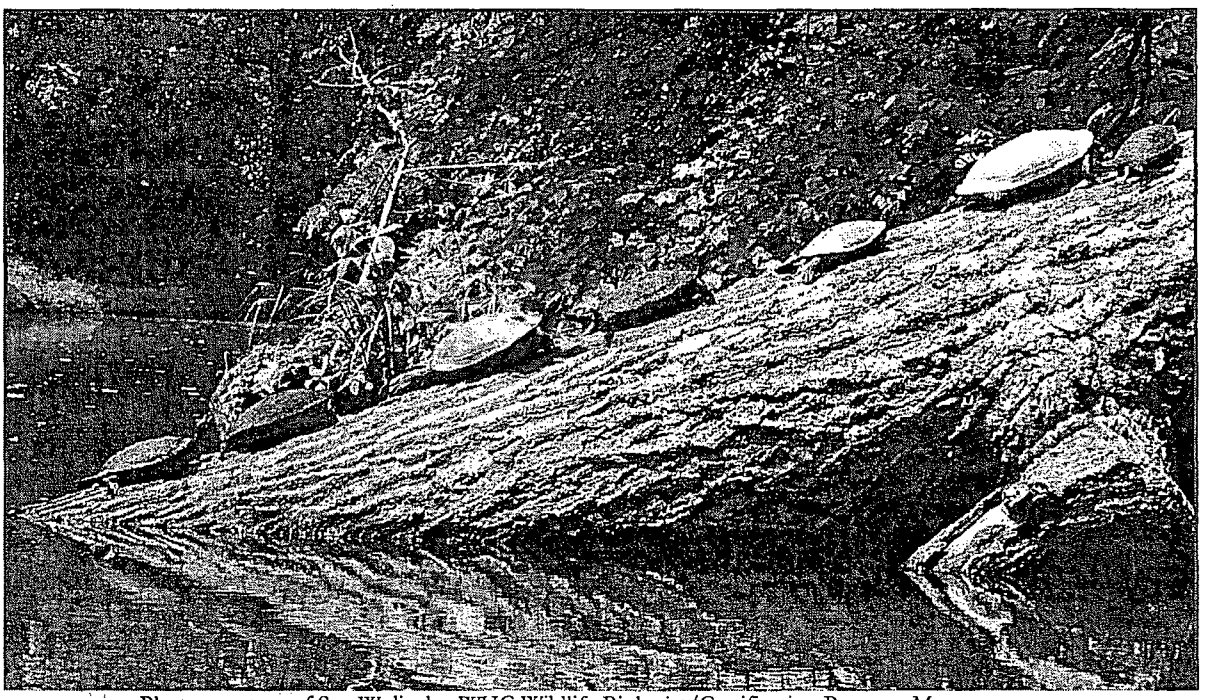


Photo courtesy of Sue Wolinsky, WHC Wildlife Biologist/Certification Program Manager.

Reptiles, the other component of the term "herptile," are often separated into four main categories for study: crocodiles, lizards, snakes and turtles. Reptile development and overall lifecycles are very different than those common among amphibians; reptiles generally spend their lives in terrestrial environments and young do not go through an extended metamorphosis, rather they are born as miniature versions of adults. The crocodile category of reptiles includes the American alligator; while the "lizard" classification includes iguanas, geckos, skinks and chameleons. Snakes, which are further described as legless reptiles that live in the ground, trees or water, include earth snakes, common garter snakes, and copperheads. Turtle, which are the only reptile species with an external shell, include bog turtles, bog turtles, painted turtles, map turtles and stinkpots. Now only a remnant of a formerly large group, reptile's today number just about 6,000 species worldwide, much less than during the time when reptiles dominated life on this planet. Of the major groups of reptiles worldwide, only turtles, lizards and snakes are represented in Pennsylvania. In Pennsylvania, there are 38 different reptiles, which are divided among eight families and 28 genera.

The lack of vernal pools and other appropriate terrestrial and aquatic reptile and amphibian habitat resources across the country, which is due to the encroachment of developments and the conversion of acreage to agricultural and residential lands, is partly responsible for the alarming decrease of reptiles, frogs and salamanders worldwide. Amphibians and reptiles have been declining in increasing numbers throughout the last century. An ongoing monitoring project can help the Three Mile Island Generating Station Wildlife Team to determine the status of amphibian and reptile populations at the site, and the quality of habitat resources available for these sensitive species, while also contributing to important regional and national monitoring efforts, such as the compilation of research through the National Wildlife Federation and USGS sponsored Frogwatch USA program. Frogwatch USA relies on volunteers to collect information regarding amphibian populations in neighborhoods across the nation. Monitoring activities such as this will not only benefit amphibians and reptiles, but they can present an opportunity for community outreach as well. Frogs and toads can be most readily identified through their calls, taking into consideration overall size, color and markings. Reptiles are often easier to identify based on habitat types and other identifiable characteristics. **Table 11** provides a list of the reptile and amphibian species that are native to Pennsylvania.

TABLE 11. PENNSYLVANIA NATIVE REPTILE AND AMPHIBIAN SPECIES

TYPE	COMMON NAME	SCIENTIFIC NAME
Amphibian	Jefferson salamander	*Ambystoma jeffersonianum*
	Spotted salamander	*Ambystoma maculatum*
	Marbled salamander	*Ambystoma opacum*
	Tiger salamander	*Ambystoma tigrinum*
	Hellbender	*Cryptobranchus alleganiensis*
	Green salamander	*Aneides aeneus*
	Dusky salamander	*Desmognathus fuscus*
	Seal salamander	*Desmognathus monticola*
	Mountain dusky salamander	*Desmognathus ochrophaeus*
	Two lined salamander	*Eurycea bislineata*
	Longtail salamander	*Eurycea longicauda*
	Spring salamander	*Gyrinophilus porphyriticus*
	Four-toed salamander	*Hemidactylium scutatum*
	Redback salamander	*Plethodon cinereus*
	Slimy salamander	*Plethodon glutinosus*
	Valley and ridge salamander	*Plethodon hoffmani*
	Wehrle's salamander	*Plethodon wehrlei*
	Northern ravine salamander	*Plethodon electromorphus*

TYPE	COMMON NAME	SCIENTIFIC NAME
Amphibian	Mud salamander	*Pseudotriton montanus*
	Red salamander	*Pseudotriton ruber*
	Mudpuppy	*Necturus maculosus*
	Eastern newt	*Notophthalmus viridescens*
	American toad	*Bufo americanus*
	Fowler's toad	*Bufo fowleri*
	Northern cricket frog	*Acris crepitans*
	Gray treefrog	*Hyla versicolor*
	Mountain chorus frog	*Pseudacris brachyphona*
	Striped chorus frog	*Pseudacris triseriata*
	New Jersey chorus frog	*Pseudacris triseriata kalmi*
	Spring peeper	*Hyla crucifer*
	Eastern spadefoot	*Scaphiopus holbrookii*
	Bullfrog	*Rana catesbeiana*
	Green frog	*Rana clamitans*
	Pickerel frog	*Rana palustris*
	Northern leopard frog	*Rana pipens*
	Wood frog	*Rana sylvatica*
	Coastal plain leopard frog	*Rana sphenocephala*
Reptile	Snapping turtle	*Chelydra serpentina*
	Northern painted turtle	*Chrysemys picta*
	Spotted turtle	*Clemmys guttata*
	Wood turtle	*Glyptemys insculpta*
	Bog turtle	*Glyptemys muhlenbergii*
	Blanding's turtle	*Emys blandingii*
	Map turtle	*Graptemys geographica*
	Redbelly turtle	*Pseudemys rubriventris*
	Eastern box turtle	*Terrapene carolina*
	Eastern mud turtle	*Kinosternon subrubrum*
	Stinkpot	*Sternotherus odoratus*
	Smooth softshell	*Apalone mutica*
	Spiny softshell	*Apalone spinifera*
	Eastern fence lizard	*Sceloporus undulates*
	Coal skink	*Eumeces anthracinus*
	Five-lined skink	*Eumeces fasciatus*
	Broadhead skink	*Eumeces laticeps*
	Worm snake	*Carphophis amoenus*
	Kirtland's snake	*Clonophis kirtlandii*
	Black racer	*Coluber constrictor*
	Ringneck snake	*Diadophis punctatus*
	Rat snake	*Elaphe obsolete*
	Eastern hognose	*Heterodon platirhinos*
	Common kingsnake	*Lampropeltis getula*
	Milk snake	*Lampropeltis triangulum*
	Northern water snake	*Nerodia sipedon*

TYPE	COMMON NAME	SCIENTIFIC NAME
Reptile	Rough green snake	*Opheodrys aestivus*
	Queen snake	*Regina septemvittata*
	Brown snake	*Storeria dekayi*
	Redbelly snake	*Storeris occipitomaculata*
	Shorthead garter snake	*Thamnophis brachystoms*
	Eastern ribbon snake	*Thamnophis sauritus*
	Common garter snake	*Thamnophis sirtalis*
	Smooth earth snake	*Virginia valeriae*
	Mountain earth snake	*Virginia valeriae pulchra*
	Smooth green snake	*Liochlorophis vernalis*
	Copperhead	*Agkistrodon contortrix*
	Timber rattlesnake	*Crotalus horridus*
	Eastern massasauga	*Sistrurus catenatus catenatus*

2.1.6.5.1 Spotted Turtle

Among the smallest of turtles, the spotted turtle (Clemmys guttata) is named for the distinctive yellow spots scattered over its dark colored carapace, the upper half of the shell. Occasionally, they will be found lacking spots on the shell, however, the always present yellow and orange spots on the head and limbs will aid in identification. As they are sexually dimorphic, a difference in form among sexes of the same species, male spotted turtles have tan chins and brown eyes, while females have yellow chins and orange eyes. These freshwater turtles also have a broad and smooth shell, generally ranging from three to five inches in length.

PHOTO 11. SPOTTED TURTLE

Photo courtesy of John Mosesso Jr., National Biological Information Infrastructure

Although spotted turtles occupy a wide variety of habitats across their range, they are most frequently found residing in shallow, well vegetated wetlands, mainly vernal pools, swamps, streams and drainage ditches. They are reliant on these aquatic habitats for foraging, aestivation, basking, courtship, and in winter, hibernation. As diurnal reptiles, active only during the day, spotted turtles will often retreat to low-lying areas at night to seek cover or burrow into soft mud. During early spring, typically March through May, spotted turtles will occupy open, wet areas in ponds or wooded marshes, but will migrate to more vegetative areas for early summer. Throughout the hottest summer months, mid-July until mid August, the turtles will aestivate, remain inactive, by burrowing in soft substrate or under vegetation. Again in the winter, typically near October, spotted turtles will undergo a similar period of inactivity, hibernation. During hibernation, turtles will lower their metabolism to a very low rate in order to conserve energy through these cold winter months.

Shortly after emerging from hibernation in early March, spotted turtles begin displaying courtship behaviors such as anxiously chasing a female. Once the quest is complete, the male and female will mate in the water. Then, in mid-June the female will travel, often a lengthy distance, to a suitable nesting site of sandy sod or tufts of grass to dig her nest. The female will alternate her hind feet to dig a shallow, flask-shaped nest approximately two inches deep. Typically spotted turtles lay three to seven soft, white, oval-shaped eggs. The eggs will then incubate in the nest for approximately 60 to 80 days, however, depending on weather condition, may over-winter in the nest and emerge in the spring.

2.2 PLANTS AND WILDLIFE IDENTIFIED AT THE THREE MILE ISLAND GENERATING STATION

Table 12 lists some of the wildlife species that have been observed at the Three Mile Island Generating Station. Comprised of species directly observed by the visiting WHC biologist as well as those identified previously by site and contract employees, the list is intended to be used as a foundation for the development of a comprehensive inventory of plants and animals at the site. To facilitate the development of a species inventory, a sample list of species characteristic to the ecoregion in which the Three Mile Island Generating Station is situated is provided alphabetically by scientific name in **Appendix II** of this report.

TABLE 12. PLANTS AND ANIMALS IDENTIFIED AT THE THREE MILE ISLAND GENERATING STATION

TYPE	COMMON NAME	SCIENTIFIC NAME
Plants	Silver maple	*Acer saccharinum*
	Foxtail	*Alopecurus* spp.
	Common milkweed	*Asclepias syriaca*
	Birch	*Betula* spp.
	Alder	*Alnus* spp.
	White oak	*Quercus alba*
	Northern red oak	*Quercus rubra*
	Yarrow	*Achiella* spp.
	Black locust	*Robinia pseudoacacia*
	Post oak	*Quercus stellata*
	Rice cutgrasss	*Leersia oryzoides*
	Dodder	*Cuscuta* spp.
	Burdock	*Trifolium lappaceum*
	Blackberry	*Rubus* spp.
	Raspberry	*Rubus* spp.
	Goldenrod	*Oligoneuron rigidum*
	American holly	*Ilex opaca*
	Eelgrass	*Vallisneria* spp.
	Laurel	*Kalmia* spp.
	Virginia creeper	*Parthenocissus quinquefolia*
	Eastern red cedar	*Juniperus virginiana*
	Sweetgum	*Liquidambar styraciflua*
	Tuliptree	*Liriodendron tulipifera*
	Common reed	*Phragmites autralis*
	Pokeweed	*Phytolacca Americana*
	American sycamore	*Platanus occidentalis*
	Oaks	*Quercus* spp.
	Blackberry	*Rubus* spp.
	Willow	*Salix* spp.
	Basswood	*Tilia americana*
	American elm	*Ulmus Americana*
Mammals	Red fox	*Vulpes vulpes*
	Striped skunk	*Memphitis memphitis*
	White-tailed deer	*Odcoileus virginianus*
	Raccoon	*Procyon lotor*
	Gray squirrel	*Sciurus carolinensis*
Birds	Red-winged blackbird	*Agelaius phoeniceus*

TYPE	COMMON NAME	SCIENTIFIC NAME
Birds	Ring billed gull	*Larus delawarensis*
	Mallard	*Anas platyrhynchos*
	Great blue heron	*Ardea herodias*
	Canada goose	*Branta Canadensis*
	Turkey vulture	*Cathrtes aura*
	Rock dove	*Columba livia*
	Peregrine falcon	*Falco peregrinus*
	Barn swallow	*Hirundo rustica*
	Mockingbird	*Mimus polyglottos*
	Osprey	*Pandion heliaetus*
	Ring-necked pheasant*	*Phasianus colchicus*
	Eastern bluebird	*Sialia sialis*
	Tree swallow	*Tachycineta bicolor*
	Mourning dove	*Zenaida macroura*
Fish	American shad	*Alosa sapidissima*
	Sunfish	*Enneacanthus* or *Lepomis* spp.
	Carp	*Cyprinus carpio*
	Smallmouth bass	*Micropterus dolomieu*
	Largemouth bass	*Micropterus salmoides*
	Striped bass	*Morone saxatilis*
Insect	Cabbage white	*Pieris rapae*
	Eastern tiger swallowtail	*Papilio glaucus*

2.3 THREATENED AND ENDANGERED SPECIES

Including invertebrates and plants, there are approximately 740 species that have been listed as endangered or threatened within the state of Pennsylvania. One example of animals that were once common in Pennsylvania that have gone extinct is the passenger pigeon. Of the total number of endangered and threatened species designated in the state, 382 are vascular plants, 282 are invertebrates, 43 are fish, five are reptiles, five are amphibians, 16 are avian species, and nine are mammals. The two most common causes of the species decline that ultimately leads to state and federally listing species are habitat degradation and habitat loss. **Table 13** provides a summary of the types of species that are considered to be threatened and endangered in Pennsylvania while **Table 14** lists Pennsylvania State listed threatened and/or endangered species that may have populations within Dauphin County. More information is available about these species, and the

federal and state programs designed to protect them, on the Pennsylvania DCNR web site: http://www.dcnr.state.pa.us/wrcf/contents.aspx

TABLE 13. SUMMARY OF THREATENED AND ENDANGERED SPECIES IN PENNSYLVANIA

TYPE	ENDANGERED	THREATENED	TOTAL NUMBER
Fish	28	15	43
Reptile	4	1	5
Amphibian	4	1	5
Bird	13	3	16
Mammal	5	4	9
Invertebrate*			282
Plants	283	99	382
Total			**740**

* No designation is given regarding the status of invertebrate species of special concern

The Pennsylvania DCNR is the governing agency within the state charged with the power to designate endangered and threatened species, and subsequently with providing advisement regarding the management, protection and conservation of these species.

TABLE 14. THREATENED, ENDANGERED, AND SPECIES OF SPECIAL CONCERN IN PA

TYPE	COMMON NAME	SCIENTIFIC NAME	STATUS
Fish	Shortnose sturgeon	*Acipenser brevitostrum*	State Endangered
	Atlantic sturgeon	*Acipenser oxyrhynchus*	State Endangered
	Skipjack herring	*Alosa chrysochloris*	State Threatened
	Hickory shad	*Alosa mediocris*	State Endangered
	Black bullhead	*Amerius melas*	State Endangered
	Longnose sucker	*Catostomus catostomus*	State Endangered
	Cisco	*Coregonus artedi*	State Endangered
	Banded sunfish	*Enneacanthus obesus*	State Endangered
	Gravel chub	*Erimystax x-punctatus*	State Endangered
	Bluebreast darter	*Etheostoma camurum*	State Threatened
	Iowa darter	*Etheostoma exile*	State Endangered
	Spotted darter	*Etheostoma maculatum*	State Threatened
	Eastern sand darter	*Etheostoma pellucida*	State Endangered
	Tippecanoe darter	*Etheostoma Tippecanoe*	State Threatened
	Threespot stickleback	*Gasterosteus aculeatus*	State Endangered
	Goldeye	*Hiodon alosoides*	State Threatened
	Mooneye	*Hiodon tergisus*	State Threatened
	Northern brook lamprey	*Ichthyomyzon fossor*	State Endangered
	Northern brook lamprey	*Ichthyomyzon fossor*	State Endangered

TYPE	COMMON NAME	SCIENTIFIC NAME	STATUS
Fish	Mountain brook lamprey	*Ichthyomyzon greeleyi*	State Threatened
	Smallmouth buffalo	*Ictiobus bubalus*	State Threatened
	Bigmouth buffalo	*Ictiobus cyprinellus*	State Endangered
	Spotted gar	*Lepisosteus oculatus*	State Endangered
	Warmouth	*Lepomis gulosus*	State Endangered
	Longear sunfish	*Lepomis megalotis*	State Endangered
	Burbot	*Lota lota*	State Endangered
	Redfin shiner	*Lythrurus umbratilis*	State Endangered
	Silver chub	*Macrhybopsis storeriana*	State Endangered
	Spotted sucker	*Minytrema melanops*	State Threatened
	Bridle shiner	*Notropis bifrenatus*	State Endangered
	River shiner	*Notropis blennius*	State Endangered
	Ghost shiner	*Notropis buchanani*	State Endangered
	Ironcolor shiner	*Notropis chalybaeus*	State Endangered
	Bigmouth shiner	*Notropis dorsallis*	State Threatened
	Blackchin shiner	*Notropis heterodon*	State Endangered
	Mountain madtom	*Noturus eleutherus*	State Endangered
	Tadpole madtom	*Noturus gyrinus*	State Endangered
	Brindled madtom	*Noturus miurus*	State Threatened
	Northern madtom	*Noturus stigmosus*	State Endangered
	Channel darter	*Percina copelandii*	State Threatened
	Gilt darter	*Percina evides*	State Threatened
	Longhead darter	*Percina macroephalia*	State Threatened
	Southern redbelly dace	*Phoxinus erythrogaster*	State Threatened
Reptile/Amphibian	Green salamander	*Aneides aeneus*	State Threatened
	Red-bellied turtle	*Pseudemys rubriventris*	State Threatened
	Rough green snake	*Opheodrys aestivua*	State Threatened
	**Bog turtle	*Clemmys muhlenbergii*	State Endangered
	Massasauga rattlesnake	*Sistrurus catenatus*	State Endangered
	Kirtland's snake	*Clonophis kitlandii*	State Endangered
	New Jersey chorus frog	*Pseudacris triseriata kalmi*	State Endangered
	Coastal plain leopard frog	*Rana utricularia*	State Endangered
	Eastern mud salamander	*Pseudotrion m. montaus*	State Endangered
Invertebrate	*Northern riffleshell mussel	*Epioblasma torulosa rangiana*	State Endangered
	Clubshell mussel	*Pleurobema clava*	State Endangered
	*Dwarf wedgemussel	*Alasmidonta heterodon*	State Endangered
	*Northern riffleshell	*Epioblasma torulosa rangiana*	Special Concern
	Regal Fritillary	*Speyeria idalia*	Special Concern
Bird	American bittern	*Botaurus lentiginosus*	State Endangered
	**Bald eagle	*Haliaeetus leucocephalus*	State Endangered
	Black tern	*Chlidonias niger*	State Endangered
	Great egret	*Casmerodius albus*	State Endangered
	King rail	*Rallus elegans*	State Endangered

TYPE	COMMON NAME	SCIENTIFIC NAME	STATUS
Bird	Least bittern	*Ixobrychus exilis*	State Endangered
	Loggerhead shrike	*Lanius ludovicianus*	State Endangered
	Osprey	*Pandion haliaetus*	State Threatened
	Peregrine falcon	*Falco peregrinus*	State Endangered
	Sedge wren	*Cistothorus platensis*	State Threatened
	Short-eared owl	*Asio flammeus*	State Endangered
	Upland sandpiper	*Bartramia longicauda*	State Threatened
	Yellow-bellied flycatcher	*Empidonax flaviventris*	State Threatened
	Yellow-crowned night heron	*Nyctanassa violacea*	State Endangered
	Common tern	*Sterna hirundo*	State Endangered
	Dicksissel	*Spiza Americana*	State Threatened
Mammal	*Delmarva fox squirrel	*Sciurus niger cinereus*	State Endangered
	Allegheny woodrat	*Neotoma magister*	State Threatened
	*Indiana bat	*Myotis sodalist*	State Endangered
	Least shrew	*Cryptotis parva*	State Endangered
	Small footed bat	*Myotis leibii*	State Threatened
	West Virginia shrew	*Sorex Palustris Punctulatus*	State Threatened
Plant (partial listing)	Box huckleberry	*Gaylussacia brachycera*	State Endangered
	Canby's mountain lover	*Paxistima canbyi*	State Endangered
	Eared false foxglove	*Tomanthera auriculata*	State Endangered
	Glade spurge	*Euphorbia purpurea*	State Endangered
	Hispid gromwell	*Lithospermum caroliniense*	State Endangered
	Jacob's ladder	*Polemonium van bruntiae*	State Endangered
	Jeweled shooting star	*Dodecatheon amethystinum fassett*	State Endangered
	Large flowered marshillia	*Marshallia grandiflora*	State Endangered
	Northeastern bulrush	*Scirpus ancistrochaetus Schuyler*	State Endangered
	Serpentine aster	*Aster depauperatus Fern.*	State Endangered
	Shale-barren evening primrose	*Oenothera argillicola Mackenzie*	State Endangered
	Showy lady's slipper	*Cypripedium reginae Walt.*	State Endangered
	Small whorled pogonia	*Isotria medeoloides Raf.*	State Endangered
	Spreading globeflower	*Trollius laxus Salisb. Ssp. Laxus*	State Endangered
	Swamp pink	*Arethusa bulbosa*	State Endangered
	Tall larkspur	*Delphinium exaltatum*	State Endangered
	Variable sedge	*Carex polymorpha Muhl.*	State Endangered
	White monkshood	*Aconitum reclinatum Gray*	State Endangered

*Species is also listed federally as Endangered
** Species is also listed as federally Threatened

2.3.1 Identify Endangered, Threatened, and Candidate Species

Corporations play a fundamental role in determining the fate of America's endangered species. One study, conducted by the Association for Biodiversity Information (now NatureServe) and The Nature Conservancy in 1993, found that half of the species listed under the Endangered Species Act (ESA) have 80 percent or more of their habitat on private lands. Exelon Corporation's Three Mile Island Generating Station facility may provide habitat that supports state and/or federal listed species, although none have been documented.

According to research compiled by the PA Department of Conservation and Natural Resources regarding the distribution of state listed threatened and endangered species, there may potentially be at least three state listed threatened and/or endangered species in Dauphin County. The list includes the bald eagle, which is federally threatened particularly with regard to wintering habitat, and both osprey and peregrine falcons, which are known to inhabit areas on and adjacent to Three Mile Island. **Table 15** lists the state listed threatened and endangered species, and their habitat requirements, that occur in Dauphin County. In addition, there are additional state threatened and/or endangered species that occur in neighboring counties, and may find suitable habitat in proximity to the Three Mile Island Generating Station location. These species, which occur in neighboring counties, include reptile species such as the bog turtle, red-bellied turtle, and rough green snakes, and insects such as the regal fritillary.

TABLE 15. DAUPHIN COUNTY POTENTIAL OCCURRENCES OF STATE LISTED THREATENED AND ENDANGERED SPECIES

COMMON NAME	SCIENTIFIC NAME	HABITAT TYPE
Bald eagle	*Haliaeetus leucocephalus*	Along river and stream corridors with mature forest.
Osprey	*Pandion halialaetus*	Around open water habitats.
Peregrine falcon	*Falco peregrinus*	High cliffs overlooking river systems.

2.3.2 Develop Agreements for Listed or Candidate Species if Identified On Site

Many private landowners are concerned that identifying endangered or threatened species on their property will result in heavy land use restrictions being imposed upon them, and therefore avoid

managing their property in ways that would enhance habitat and benefit these species. Protecting species is not, in fact, a punishment. Several programs, such as Safe Harbor and Candidate Conservation Agreements, have been specifically developed to address landowner concerns.

2.3.2.1 Safe Harbor Agreements

Safe Harbor Agreements are voluntary agreements between the US Fish and Wildlife Service (U.S. FWS) and private landowners specifying management actions that will result in a "net conservation benefit" for the covered endangered or threatened species. Such benefits may include reducing habitat fragmentation, increasing population numbers, or establishing buffers for protected areas. Prior to entering into a Safe Harbor Agreement, U.S. FWS will determine a baseline for population levels or habitat, which conditions must not fall below. Any non-federal landowner can request the development of a Safe Harbor Agreement, and agreements do not impose significant restrictions in land use or future activity.

As an incentive for complying with Safe Harbor Agreements, U.S. FWS will issue an "enhancement of survival" permit that allows the landowner, at the end of the agreement's term, to use the land in any otherwise legal way as long as baseline conditions are maintained. Under section 10(a)(1)(A) of the Endangered Species Act (ESA), U.S. FWS will also authorize landowners to "take" (incidentally harm) individuals or modify habitat in order to return the land to the baseline conditions at the end of the agreement. Before entering into a Safe Harbor Agreement, the US Fish and Wildlife Service must be assured that the endangered or threatened wildlife species covered by the agreement will receive a measurable benefit from management practices imposed. For example, the U.S. FWS looks for projects that demonstrate some of the following benefits; reductions in habitat fragmentation; maintenance, restoration or enhancement of existing habitat areas; increases in habitat connectivity; reductions in the effects of catastrophic events, such as floods; the creation or enhancement of buffers that border protected areas; and areas dedicated to the development of new wildlife management techniques.

2.3.2.2 Candidate Conservation Agreements with Assurances

These formal agreements essentially serve as an effort to prevent species from actually becoming endangered or threatened, thereby eliminating the need for future ESA protection as well as the

costs and restrictions to landowners resulting from that status. Candidate Conservation Agreements for the Three Mile Island Generating Station would be made between the U.S. FWS and Exelon Corporation. The U.S. FWS would provide technical assistance in developing the agreements, which would outline specific actions that Exelon Corporation is voluntarily willing to commit to that which will eliminate or reduce the threats to candidate and proposed species. These actions must, however, contribute significantly to removing the need to list the species.

As with Safe Harbor Agreements, landowners that commit to Candidate Conservation Agreements are provided assurances that no additional restrictions will be imposed above those outlined in the agreement. Section 10(a)(1)(A) of the ESA allows landowners complying with Candidate Conservation Agreements to incidentally take individuals or alter habitat in order to return the land to the conditions outlined in the agreement, provided that the overall goal of precluding the need to list species is adhered to. The U.S. FWS can provide further information on these programs. Contact information is provided in **Appendix III**.

3. USING WHC'S TEAM KIT TO DEVELOP A COMPREHENSIVE HABITAT ENHANCEMENT PROGRAM

The Three Mile Island Generating Station may wish to purchase a WHC Team Kit to assist with the development of a comprehensive, employee-based habitat enhancement program. Information regarding volunteer recruitment tools, outreach ideas, guidance on writing a wildlife management plan, and WHC programs such as the *Corporate Wildlife Habitat Certification/International Accreditation Program* are included with the WHC Team Kit.

3.1 BUILD A WILDLIFE TEAM

Creating a Wildlife Team is an important part of a successful habitat enhancement program. Employee participation increases interest and enthusiasm among workers and strengthens extended commitment to the enhancement program through the expansion of a sense of

involvement, connection, and proprietary pride. The development of a site Wildlife Team is also an effective tool for promoting environmental awareness through active contribution.

WHC recommends that the Wildlife Team be structured with one team leader and several subcommittees for specific projects. Subcommittees can be created based on the individual interests of Wildlife Team members. A team structure in which subcommittee leaders communicate with the team leader facilitates information transfer between team members, team leaders, and site management. The *Wildlife at Work* Team Kit provides Three Mile Island Generating Station employees with information and materials that can be used to establish a Wildlife Team.

3.2 CONDUCT A WILDLIFE INVENTORY

Conducting a thorough inventory of the plants and animals present at the site should be a priority of the emerging Wildlife Team, as an initial inventory will help the Three Mile Island Generating Station Wildlife Team members to become familiar with some of the plants, animals, and various habitats found at the site. A fundamental understanding of the natural characteristics of the site will, in turn, facilitate decision-making regarding the implementation process of projects described in this report and increase the confidence of participant employees. Furthermore, conducting a preliminary inventory will provide baseline data useful for comparison with ensuing data, thereby providing the Wildlife Team with a benchmark from which project success can be evaluated. Such information is also invaluable in shaping the future track of the site habitat enhancement program as a whole, and is essential for the development of environmental outreach and education programs.

The wildlife inventory should be a methodical and ongoing process. Essentially, the goal of the inventory is to identify as many plants and animals as possible, using seasonal inventories conducted in the spring (April), summer (July), and fall (September) to provide a relatively comprehensive list of resident and transitory (including migratory) species. As mentioned, **Appendix II** provides a list of characteristic species associated with the predominant ecoregion of

the site locale. This list is not intended to be definitive, but rather it should be used as an indicator of the types of species that participants in the site inventory may encounter.

Resources the Three Mile Island Generating Station Wildlife Team may find useful in conducting a site inventory include knowledgeable employees, local natural resource professionals, and conservation organizations. The Wildlife Team or WHC can contact outside organizations, such as the Natural Resources Conservation Service (NRCS), for possible assistance with inventories. Contact information for organizations that may provide assistance is included in **Appendix III** of this report. Ensure that external experts assisting in species inventories understand the importance of providing educational experiences for employees new to wildlife identification concepts. Additional information on conducting a site inventory is included in the *Site Inventory* leaflet in **Appendix V.**

3.3 WRITE THE SITE WILDLIFE HABITAT MANAGEMENT AND BIODIVERSITY PROTECTION PLAN

The probability of success for any habitat enhancement program is largely dependent on the formation of a comprehensive strategy; as such, the development of a wildlife habitat management and biodiversity protection plan (in conjunction with the site inventory) should be the most fundamental task of the Three Mile Island Generating Station Wildlife Team. The wildlife habitat management plan outlines the goals of the wildlife habitat program, describes projects to achieve these goals, makes provisions for monitoring projects, and presents implementation and review schedules. WHC recommends that the wildlife management and biodiversity protection plan be holistic in scope by encompassing the entirety of the site. Although the primary goal of the wildlife habitat program is to enhance wildlife habitat, WHC further recommends that additional goals, such as the implementation of an education component or achieving WHC certification, as well as all projects associated with each goal, be included in the wildlife management and biodiversity protection plan.

WHC recommends that the Wildlife Team begin by identifying site habitat and biodiversity program objectives and setting target dates for achievements. In addition, the team should outline how program success will be measured and how performance will be assessed. Habitat projects

should be prioritized and clearly defined before beginning projects. In addition, Three Mile Island Generating Station employees should work to involve community volunteers and knowledgeable professionals in the management and biodiversity plan development and implementation phases.

3.4 IMPLEMENT THE FIRST TEAM PROJECT

Implementing the first team project is especially important for building a solid volunteer program. Simple projects with high visibility, such as establishing artificial nesting structures and a monitoring schedule, are ideal first projects for the Three Mile Island Generating Station Wildlife Team. The first year of the program at the Three Mile Island Generating Station should be geared toward projects that provide learning experiences for Wildlife Team members, generate additional enthusiasm and volunteerism, and demonstrate to the community and non-participant employees that Exelon Corporation is committed to enhancing wildlife habitat at its facility. WHC recommends undertaking more complex and intensive habitat management projects after the team gains experience and greater support from the site management and community.

4. RECOMMENDED WILDLIFE HABITAT ENHANCEMENT PROJECTS

The individual habitat enhancement projects recommended in this section are provided as a resource for developing the wildlife management plan and were chosen based upon the criteria of ease of implementation, high visibility, and relative likelihood of success. The Wildlife Team may choose to implement some or all of these projects and is furthermore encouraged to explore additional habitat enhancement opportunities. Projects suggested for the Three Mile Island Generating Station Wildlife Team members to consider in the future include:

- Identifying and managing any invasive, exotic species on site,
- Enhancing riparian buffer habitats for native wildlife species, especially migratory birds
- Erecting and monitoring nest boxes for cavity nesting avian and mammal species,
- Erecting additional perches on site for nesting osprey, peregrine falcons, and other birds of prey,
- Conducting surveys and necessary enhancements for native amphibian and reptile species that may utilize seasonal wetlands on site,
- Considering establishing native grassland and wildflower meadows just outside the gates, in old field habitats on site,
- Continuing efforts to improve habitat for fish and other aquatic organisms, and including more intensive monitoring and evaluation of efforts to improve the overall health of the Susquehanna River.

As the wildlife program develops and interest among employees – participant and non-participant alike - increases, WHC recommends that the Three Mile Island Generating Station pursue additional projects to maintain momentum and continue expanding the program, thereby producing additional opportunities for wildlife habitat enhancement on the site facility, which in turn will further generate exposure and attention to the program. WHC encourages employee and managers associated with the Three Mile Island Generating Station to give these initiatives careful consideration as they arise.

In addition to unforeseen opportunities for employees to contribute positively to wildlife conservation within wildlife management areas, WHC recommends exploring additional areas of

the site that can be restored or enhanced to provide habitat. Please contact WHC for additional information concerning project recommendations.

5. RAISING ENVIRONMENTAL AWARENESS AMONG EMPLOYEES AND MEMBERS OF THE LOCAL COMMUNITY

An important aspect of a wildlife program is the benefit it provides, through active participation and environmental education, to employees, their families, and to members of the local community. As such, a wildlife program initially based on employee participation that is expanded to engage community organizations for assistance in program implementation holds great potential for the inclusion of public outreach and environmental education components. WHC recommends the following activities for consideration when developing and fostering relationships with the local community and using site enhancement projects as a tool for furthering environmental and conservation education, awareness, and outreach efforts.

- Create a nature trail to highlight habitat areas and wildlife viewing places.
- Establish a *Corporate Lands for Learning* program.
- Hold an employee and program volunteer wildlife photography contest.
- Create a Wildlife Team newsletter to inform employee and the community about the program.
- Work with local scouting and school groups as much as possible when planning, designing and implementing enhancement projects.

6. WHC'S CORPORATE HABITAT CERTIFICATION/INTERNATIONAL ACCREDITATION PROGRAM

WHC's *Corporate Wildlife Habitat Certification/International Accreditation Program* is designed to provide recognition to corporate entities for the successful implementation of substantial wildlife habitat management programs. Sites that demonstrate a long-term commitment to managing habitat for wildlife are bestowed with WHC certification in recognition of such efforts. Awardees are also distinguished through the publication of habitat enhancement program descriptions on WHC's web site, and through the dissemination of site-approved press releases to local and national news sources. Sites certified by WHC also receive an award plaque and are honored at WHC's annual symposium.

The Three Mile Island Generating Station could be eligible to apply for WHC certification in 2007 if site habitat enhancement projects are implemented prior to July 31, 2006. Habitat enhancement projects must be implemented, documented, monitored, and maintained for a minimum of one year prior to eligibility. Furthermore, WHC requires the submission of appropriate documentation relating to habitat enhancement projects conducted on-site in order for the site to be considered for certification. Additional factors, such as employee participation in the program and community outreach activities, are also reviewed and greatly reinforce the application. Overall, the Three Mile Island Generating Station wildlife management program is judged for WHC certification on the basis of a demonstrated commitment to responsible corporate environmental stewardship. A panel of independent wildlife biologists will review submitted documentation to determine if the program meets the criteria of WHC certification.

As outlined on the certification application form included in **Appendix IV** of this report, the following items should be included for submission:

- An inventory of the animal and plant species found on the site;
- The Wildlife Team's wildlife habitat management plan;

- The Wildlife Team's activities log, showing when meetings were held, when projects were implemented, and what management techniques were used; and

- Documentation of maintenance and monitoring activities to demonstrate that the program is ongoing. (Documentation should include before-and-after photographs, number and species of any plants used, success of nest boxes, dates of projects, and records of those involved.)

WHC requires certified sites to apply for re-certification two years after initial certification, and every two or three years thereafter. The re-certification process allows WHC to ensure that the site is committed to the responsible management of its natural features indefinitely, as well as to review the site's efforts, provide recommendations for continued habitat enhancement, and for the recognition of new projects.

For further information about the certification process and associated awards, contact WHC's Certification Coordinator, Nick Meade, by phone at (301) 588-8994 or by e-mail at nmeade@wildlifehc.org. Additional information can be found in **Appendix IV** of this report.

7. ADDITIONAL OPPORTUNITIES FOR PROGRAM DEVELOPMENT

The success of the Three Mile Island Generating Station *Wildlife at Work* program depends in large part upon the levels of expertise, labor, and funding available for projects. Thus the potential for success of the site's *Wildlife at Work* program will be significantly increased through the formation of partnerships with an assortment of specialized organizations that may assist in the provision of such factors. Collaborations with local, regional, and national organizations, including non-profits, community groups, schools, youth groups, private landowners, and government agencies, may prove beneficial for the realization of program implementation.

Effective programs for the Wildlife Team to meet conservation and environmental education objectives through partnerships include:

- The **Corporate Campaign for Migratory Bird Conservation**
- The **North American Bird Conservation Initiative (NABCI)**
- The **North American Pollinator Protection Campaign**
- WHC's ***Corporate Lands for Learning* (*CLL*) Program**
- The U.S. Fish and Wildlife Service's **Joint Ventures Program**
- The **Five-Star Restoration Program**

7.1 PARTNERSHIP DEVELOPMENT

The survival of many species, in particular those with extended ranges or that exhibit migratory behavior, depends on coordinated conservation efforts among a number of stakeholder entities. As a result, functional collaboration among various groups is becoming increasingly common as a way of dealing with environmental issues. Such stakeholder affiliations address pressing conservation issues on a landscape scale while allowing individual partner groups to continue working at the local level. As such, individual site programs such as that instituted at the Three Mile Island Generating Station are generally more effective when partnered with organizations working for conservation at broader scales.

7.2 THE CORPORATE CAMPAIGN FOR MIGRATORY BIRD CONSERVATION

The Corporate Campaign for Migratory Bird Conservation is a new program developed by the Wildlife Habitat Council. The fundamental goal of this program is to increase migratory bird populations through habitat expansion by means of engaging corporations and other private landowners in conservation activities. Four major bird plans - North American Waterfowl Management Plan, Partners in Flight, Waterbird Conservation Plan, and the U.S. Shorebird Conservation Plan - will serve as guides for habitat management activities in order to combine local efforts and maximize international effects.

7.2.1 Why Focus on Birds?

Birds perform a variety of functions vital to maintaining ecosystem vitality, including roles in seed dispersal, pest control, pollination, and furthermore are an important link in the trophic (food) chain. Moreover, bird populations serve as highly visible indicators of habitat quality; the presence or absence of an assemblage of bird species can be used to gauge overall ecosystem health. When management activities create, restore, or maintain indigenous habitat types for birds, many other species benefit as well.

7.2.2 Why Should Corporations Participate?

Corporations are in a unique position to greatly impact bird conservation due to the nature, size, and location of their facilities. Involvement with the Corporate Campaign for Migratory Bird Conservation gives corporations an opportunity to demonstrate concern for their communities and the environment. The program will also provide participating sites with scientific guidance from WHC as well as state and federal agencies, including Joint Ventures. Expert advice will reduce the number of economic pitfalls that can accompany new environmental projects and facilitate consultation and cooperation with stakeholders. Corporations are given the opportunity to build and strengthen community relations by creating wildlife habitat and providing environmental education at their sites. Moreover, they will be able to expand efforts at their sites across the region, country, continent, and eventually the Western Hemisphere by working with local Joint Venture initiatives (see below).

7.3 THE NORTH AMERICAN BIRD CONSERVATION INITIATIVE

Many migratory bird species of North America must cross international political boundaries during their bi-annual journey. As such, countries with incongruent environmental, biological, and conservation legislation and practices must therefore formulate a standard medium with which to facilitate cooperation for attaining the common goal of bird conservation in order to overcome such disparities in national conservation regulations and programs.

The North American Bird Conservation Initiative (NABCI) was formed to facilitate coordination and cooperation among Canada, the United States, and Mexico in order to address the conservation of migratory bird species that span the continent. Formally,

> "...NABCI is a statement of principles and approaches shared by individuals, organizations, agencies, and programs working for the conservation of birds and their habitats in Canada, the United States, and Mexico."
>
> - NABCI website.

NABCI is not a regulatory instrument, but rather acts as a forum designed to facilitate the flow of ideas and information among concerned organizations and to provide a mechanism for the dissemination of information to a non-specialized audience.

7.4 NORTH AMERICAN POLLINATOR PROTECTION CAMPAIGN

According to the eighty partners working together in the North American Pollinator Protection Campaign (NAPPC), pollinating species such as native and managed bees, beetles, butterflies, moths, bats, and birds ensure productive harvests and seed set for many important food, oil, and fiber crops throughout the world. In the U.S alone, the USDA estimates that pollinators are responsible for providing reproduction services to $40 billion worth of agricultural products each year.

Pollinators are also essential for maintaining healthy, natural ecosystems by pollinating native plants important to many species of insects, wildlife, and fish. For example, approximately 25 percent of all songbirds include fruit or seeds as a major part of their diet, while other animals eat the leaves, roots, nuts, pollen, and/or nectar of pollinated plants. Additionally, many species of

birds, mammals, and fish rely on the adult or larval forms of pollinators as an important source of protein.

Unfortunately, pollinator populations are rapidly declining worldwide. The USDA Council on Sustainable Development and other agencies recognize that the continuing decline of pollinator populations is becoming "...a significant conservation and sustainability issue", and the National Academy of Sciences has recently begun a study, spearheaded by NAPPC, to determine the status of pollinators in North America.

According to NAPPC, the major threat to most pollinators is the destruction and fragmentation of habitat, in addition to the misuse of pesticides and introduced diseases. Pollinator habitat has been, in many areas, degraded to small, isolated patches that oftentimes are dominated by invasive plants and grass that serves little ecological purpose. This has led to a loss of wildflowers required for nectar and pollen, in addition to a lack of nesting sites and host plants so important for ensuring the reproduction of pollinating species. The extensive use and misuse of pesticides also severely impacts both pollinators and their habitats, decimating many beneficial insects and contaminating soil and water for wildlife, fish, and humans. With so much at stake, WHC calls its corporate partners to action to help conserve this diverse and valuable group of species known as pollinators.

The Pollinator Friendly Practices (PFP) guidelines were developed in 2002 by WHC and NAPPC partners, The Xerces Society for Invertebrate Conservation and the Coevolution Institute. Adopted by NAPPC, PFPs are used in support of existing land management practices in schools, private industries, public spaces, agricultural plots, forests, and home landscapes. The guidelines augment existing land use incentives and are to be used by organizations in promoting pollinator-friendly land use practices. WHC is the first organization to promote the PFPs, offering an opportunity for formal recognition, through the "NAPPC WHC Pollinator Protection Award," for institutions implementing pollinator-friendly activities. The award is granted annually to the one certified WHC site that best implements PFP guidelines through specific land management practices that both promote pollinator populations and habitats, and provide outreach education to surrounding communities.

The NAPPC Pollinator Friendly Practices guidelines consider six different areas of land use management: Foraging Habitat, Reproduction, Shelter, Invasive/Exotic Species, Chemical Use, and Monitoring. For each topic, there is a central question to be addressed, followed by a detailed approach to the subject. The complete guidelines, as well as a program registration form, are included in **Appendix IV**. For more information, please contact Marcia Maslonek, WHC Director of Biodiversity and Technical Programs, at (412) 777-2464.

7.5 CORPORATE LANDS FOR LEARNING (CLL)

The Wildlife Habitat Council and the National Environmental Education and Training Foundation (NEETF) co-developed the *Corporate Lands for Learning* (*CLL*) program to facilitate the coordination of corporate resources with local schools to form functional partnerships based on the foundation of environmental education and outreach. The goal of the program is to maximize the use of human and natural resources of the corporate site to benefit the educational needs of the local schools. An environmental education program would allow students from the local community to use the Three Mile Island Generating Station as an outdoor classroom for practical and applied experience in environmental issues. *CLL* offers the opportunity to create a nationally recognized environmental education partnership between corporations and the communities in which they exist.

The first steps in initiating an environmental education program are to evaluate the needs of the local community and the resources available at the site. Site representatives then meet with representative individuals from local schools and environmental education groups in the community to identify constraints and opportunities. Following these two steps, WHC will provide the site with a report that outlines the types of activities possible, recommendations for implementation, an overview of state mandates, and a suggested curriculum that can be accomplished on the site to meet these mandates. WHC will then develop and deliver a two-day training workshop designed to teach and train employees, educators, and others how to build partnerships and use the provided educational programs and curriculum.

The Three Mile Island Generating Station can apply for WHC *Corporate Lands for Learning* Certification in addition to *Corporate Habitat Certification* following the addition of an environmental education component to the wildlife management program. To be eligible for CLL certification, the site must provide:

- A detailed education program description and curriculum.
- Evidence demonstrating that the site hosted a minimum of 8 program days per year.
- Three letters of reference from teachers or community members.

For more information regarding WHC's *Corporate Lands for Learning* program and CLL certification, contact Thelma Redick, WHC Education and Outreach Program Manager, at (724) 695-8844 (thelma.redick@verizon.net) or refer to the included CLL brochure and **Appendix IV** of this report.

7.6 U.S. FISH AND WILDLIFE SERVICE'S JOINT VENTURES

U.S. Fish and Wildlife Service's Joint Ventures are non-regulatory, voluntary public/private partnerships "...composed of individuals; corporations; conservation organizations; and local, state, and provincial agencies drawn together by common conservation objectives." (U.S. Fish and Wildlife Service). The U.S. Fish and Wildlife Service is involved with NABCI and is incorporating international conservation ideas into their Joint Ventures programs. These regional partnerships are part of a larger Bird Conservation Initiative, components of which include the North American Waterfowl Management Plan, Partners in Flight, the Western Hemispheric Shorebird Reserve Network, and others. Joint Ventures implement the goals of the North American Waterfowl Plan by developing and funding hands-on conservation projects for the benefit of obligate and facultative wetland species.

Many regional Joint Ventures have broadened their efforts to include more than just wetland creation, restoration, and conservation and waterfowl that breed in or migrate through wetland habitats. Joint Venture projects may consider maintaining or enhancing the quality of wetland vegetation, other wetland wildlife (including invertebrates, migratory songbirds, amphibians, and mammals), and associated upland habitats and wildlife species. These projects not only improve

wildlife habitat but also enhance natural resource quality, such as reducing soil erosion and flood potential and filtering pollutants in ground water.

7.6.1 Additional Information and Assistance

More information about the Corporate Campaign for Migratory Birds, regional Joint Ventures, Management Boards, projects, goals, and corporate benefits can be found on-line at www.wildlifehc.org/managementtools/waterfowl.cfm or by contacting David Wesley, WHC Migratory Bird Coordinator, at dwesley@montana.com.

7.7 FIVE-STAR RESTORATION PROGRAM

The Three Mile Island Generating Station can further demonstrate its commitment to watershed protection by participating in the Five-Star Restoration Program. The Five-Star challenge grant program – a partnership between WHC, the U.S. Environmental Protection Agency, the National Fish and Wildlife Federation, the National Association of Counties, and the National Oceanic and Atmospheric Administration – focuses on community-based watershed restoration projects. Each year, approximately $500,000 is given in grant awards to 70 projects, which are typically matched five-fold by the partners in each project. Since the program's inception in 1998, 70 miles of stream buffers have been planted, 7,000 acres of wetlands have been restored and over 10,000 volunteers have participated. Five-Star is a unique opportunity that allows corporations to reach out to their communities and involve local governments, non-profit organizations, small businesses and a wide range of citizen groups. Each organization contributes cash or services and becomes a "partner" who makes a permanent commitment to maintain the restored or enhanced waterway.

WHC is pleased to promote corporate participation in Five-Star, and we spotlight their work on the WHC web site, in our quarterly newsletters, and at our annual Symposium. So far, 19 WHC members have been involved with Five-Star by organizing their own projects on corporate land or making in-kind and cash donations to support projects in their neighborhoods. Further information about the Five-Star Restoration Program can be found on-line at http://www.wildlifehc.org/fivestar.

8. SUMMARY-CONCLUSIONS

WHC has developed the information and recommendations in this report to best describe and supplement existing habitat types in correlation with Exelon Corporation goals: habitat enhancement, employee and community involvement, and public recognition of environmental commitment.

There are several important factors to keep in mind during the development of the wildlife program. First, employee involvement is crucial and can lead to increased morale, productivity, and improved environmental performance. Positive changes to the natural setting where employees work often leads to an improvement in worker morale. Most importantly, by implementing productive habitat enhancement projects at the facility, the Three Mile Island Generating Station will help protect biodiversity: Increasing site biodiversity should be the overall goal of the wildlife programs initiated at the two facilities. With this in mind, WHC has recommended several enhancement projects for various areas of the site, including:

- Identifying and managing any invasive, exotic species on site,
- Enhancing riparian buffer habitats for native wildlife species, especially migratory birds
- Erecting and monitoring nest boxes for cavity nesting avian and mammal species,
- Erecting additional perches on site for nesting osprey, peregrine falcons, and other birds of prey,
- Conducting surveys and necessary enhancements for native amphibian and reptile species that may utilize seasonal wetlands on site,
- Considering establishing native grassland and wildflower meadows just outside the gates, in old field habitats on site,
- Continuing efforts to improve habitat for fish and other aquatic organisms, and including more intensive monitoring and evaluation of efforts to improve the overall health of the Susquehanna River.

WHC can provide technical assistance regarding project implementation, maintenance, and recommendations for future projects throughout the formulation and development stages of the Three Mile Island Generating Station wildlife habitat enhancement programs. WHC staff is also

available to participate in team meetings, species inventories, special events, and strategic planning of the program.

WHC is pleased to have been given the opportunity to assist employees at the Three Mile Island Generating Station in the development and implementation of a long-term wildlife habitat management program and encourages Exelon Corporation to continue its leadership in this pursuit.

APPENDIX I

INFORMATION SOURCES

These resources provide additional information about the habitat enhancement projects discussed in this report. Information can also be obtained from the Natural Resources Conservation Service (NRCS), your state Department of Environmental Quality (DEQ). General resources are listed first, followed by a selection of recommended field guides.

Internet Resources

USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, Louisiana.

NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life. Version 4.0 (http://www.natureserve.org/explorer). NatureServe, Arlington, Virginia.

General Habitat Enhancement Resources

Adams, George. 1994. *Birdscaping Your Garden: A Practical Guide to Backyard Birds and the Plants That Attract Them.* Rodale Press, Emmaus, Pennsylvania. 208pp.

Benyus, Janine, M. 1989. *The Field Guide to Wildlife Habitats of the Western United States.* Simon & Schuster Inc. New York, New York. 336 pp.

Biebighauser, Thomas R. 2003. *A Guide to Creating Vernal Ponds.* USDA Forest Service. 33pp.

Bookhout, Theodore A., ed. 1994. *Research and Management Techniques for Wildlife and Habitat.* 5th ed. Wildlife Society, Bethesda, Maryland. 740pp.

Cowardin, Lewis M., Virginia Carter, Francis Golet and Edward LaRoe. 1979. *Classification of Wetland and Deepwater Habitats of the United States.* U.S. Fish and Wildlife Service FWS-OBS-79/31. 103pp.

Decker, Daniel J. and John W. Kelly. 1988. *Enhancement of Wildlife Habitat on Private Lands.*

Dennis, John V. 1988. *The Wildlife Gardener.* Alfred A. Knopf, New York, New York. 293pp.

Ehrlich, Paul R., David S. Dobkin and Darryl Wheye. 1988. *The Birder's Handbook: A Field Guide to the Natural History of North American Birds.* Simon & Schuster Inc. New York, New York. 784pp.

Ellefson, Connie, Tom Stephens and Doug Welsh. 1992. *Xeriscape Gardening: Water Conservation for the American Landscape.* Macmillan Publishing Company, New York, New York. 323pp.

Ellis, Barbara W. and Fern Marshall Bradley, eds. 1992. *The Organic Gardener's Handbook of Natural Insect and Disease Control.* Rodale Press, Emmaus, Pennsylvania. 534pp.

Flink, Charles A., Peter Lagerwey, Diana Balmori and Robert M. Searns. 1993. *Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-use Trails.* Edited by Karen-Lee Ryan. Island Press, Washington, D.C. 213pp.

Grimm, William Carey. 1993. *The Illustrated Book of Wildflowers and Shrubs.* Stackpole Books, Harrisburg, Pennsylvania. 637pp.

Hammer, Donald A. 1992. *Creating Freshwater Wetlands.* Lewis Publishers, Inc., Chelsea, Michigan. 298pp.

Harker, Donald, Gary Libby, Kay Harker, Sherri Evans and Marc Evans. 1999. *Landscape Restoration Handbook.* 2nd ed. Lewis Publishers, Ann Arbor, Michigan. 145pp.

Henderson, Carrol L. 1987. *Landscaping for Wildlife.* Minnesota Dept. of Natural Resources, St. Paul, Minnesota. 110pp.

Henderson, Carrol L. 1992. *Woodworking for Wildlife: Homes for Birds and Mammals.* 2nd ed. Minnesota Department of Natural Resources, St. Paul, Minnesota. 111pp.

Henry, Peggy. 1995. *Gardening to Attract Birds and Butterflies.* Avon Books, New York, New York. 79pp.

Hotchkiss, Neil. 1972. *Common Marsh, Underwater and Floating-leaved Plants of the United States and Canada.* General Publishing Co., Ltd. Toronto, Ontario. 124pp.

Hygnstrom, Scott, Robert Timm and Gary Larson. 1994. *Prevention and Control of Wildlife Damage.* Vol. 1-2, Texas.

Jones, Samuel B. and Leonard E. Foote. 1990. *Gardening with Native Wildflowers.* Timber Press, Portland, Oregon. 195pp.

Kusler, Jon A. and Mary E. Kentula, eds. 1990. *Wetland Creation and Restoration.* Island Press, Washington D.C. 594pp.

Lee, David S., Carter S. Gilbert, Charles H. Hocutt, Robert E. Jenkins, Don E. McAllister and Jay R. Stauffer, Jr. 1980. *Atlas of North American Freshwater Fishes.* North Carolina State Museum of Natural History., North Carolina. 867pp.

Lincoln, Roger, Geoff Boxshall and Paul Clark. 1998. *A Dictionary of Ecology, Evolution and Systematics, 2nd ed.* Cambridge University Press, Cambridge, UK. 361pp.

Magee, Dennis W. 1981. *Freshwater Wetlands: A Guide to Common Indicator Plants of the Northeast.* The University of Massachusetts Press, Amherst, Massachusetts. 245 pp.

Martin, Laura C. 1986. *The Wildflower Meadow Book: A Gardener's Guide.* East Woods Press, Charlotte, North Carolina. 303 pp.

McComas, Steve. 1993. *Lake Smarts: The First Lake Maintenance Handbook.* Edited by Rachel Reeder. Terrene Institute, Alexandria, Virginia. 215pp.

Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA NRCS. 1995. *Northeast wetland flora: Field office guide to plant species.* Northeast National Technical Center, Chester, PA.

Packard, Stephen and Cornella F. Mutel. 1997. *The Tallgrass Restoration Handbook for Prairies, Savannas, and Woodlands.* Island Press, Washington, D.C. 463pp.

Parrow, Martin R. and Anthony J. Davy, eds. 2002. *Handbook of Ecological Restoration, Volume 1: Principles of Restoration.* Cambridge University Press, Cambridge, UK. 444pp.

Parrow, Martin R. and Anthony J. Davy, eds. 2002. *Handbook of Ecological Restoration, Volume 2: Restoration in Practice.* Cambridge University Press, Cambridge, UK. 599pp.

Payne, Neil F. 1992. *Techniques for Wildlife Habitat Management of Wetlands.* Mcgraw-Hill, Inc., New York, New York. 549pp.

Payne, Neil F. and Fred C. Bryant. 1994. *Techniques for Wildlife Habitat Management of Uplands.* McGraw-Hill, Inc., New York, New York. 840pp.

Proudman, Robert D. and Reuben Rajala. 1981. *Trail Building and Maintenance.* 2nd ed. Appalachian Mountain Club. 300pp.

Randall, John M. and Janet Marinelli, eds. 1996. *Invasive Plants: Weeds of the Global Garden.* Brooklyn Botanic Garden, Inc., Brooklyn, New York. 111pp.

Rodiek, Jon E. and E.G. Bolen., eds. 1991. *Wildlife and Habitats in Managed Landscapes.* Island Press, Washington, DC. 201pp.

Russo, Monica and Robert Dewire. 1976. *The Complete Book of Birdhouses and Feeders.* Drake Publishers, New York, New York.

Schenk, Marcus. 1990. *Butterflies, How to Identify and Attract Them to Your Garden.* Rodale Press, Inc., U.S.A. 160pp.

Sibley, David Allen. 2001. *The Sibley Guide to Bird Life and Behavior.* Alfred A. Knopf, New York, New York. 607pp.

Sibley, David Allen. 2000. *The Sibley Guide to Birds.* Alfred A. Knopf, New York, New York. 544pp.

Stokes, Donald and Lilian. 1990. *The Complete Birdhouse Book: The Easy Guide to Attracting Nesting Birds.* Little, Brown and Company, New York, New York. 95pp.

Stokes, Donald and Lilian. 1989. *The Hummingbird Book: The Complete Guide to Attracting, Identifying, and Enjoying Hummingbirds.* Little, Brown and Company, Boston, Massachusetts. 87pp.

Tacha, Thomas C. and Clait E. Braun, eds. 1994. *Migratory Shore and Upland Game Bird Management in North America.* Allen Press, Lawrence, Kansas. 223pp.

Terres, John K. 1956. *The Audubon Society Encyclopedia of North American Birds.* Wings Books, Avenel, New Jersey. 1109pp.

Three Mile Island: A Nuclear Crisis in Historical Perspective
by J Samuel Walker
Provided by University of California Press through the Google Print Publisher Program

Treepeople, Andy and Katie Lipkis. 1990. *The Simple Act of Planting a Tree.* Jeremy P. Tarcher, Inc., Los Angeles, California. 236pp.

U.S.D.A. Forest Service. 1984. *Standard Specification for Construction of Trails.* EM-7720-102. U.S.D.A., Forest Service, Washington, DC. 105pp.

USDA, NRCS. 2005. *The PLANTS Database*, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Whitson, Tom D., ed., Larry C. Burrill, Steven A. Dewey. David W. Cudney, B.E. Nelson, Richard D. Lee and Robert Parker. 1996. *Weeds of the West.* 5th ed. Pioneer of Jackson Hole, Jackson, Wyoming. 630pp.

Xerces Society, The. 1990. *Butterfly Gardening: Creating Summer Magic in your Garden.* Sierra Club Books, San Francisco, California. 192pp.

Recommended Field Guides

Boyd, Howard P. 1991. *A Field Guide to the Pine Barrens of New Jersey.* Plexus Publishing, Inc., Bedford, New Jersey. 423pp.

Bull, John. 2000. *The Audubon Society Field Guide to North American Birds: Eastern Region.* Revised ed. Alfred A. Knopf, New York, New York. 800pp.

Burr, Brooks M., Lawrence M. Page, and Tory Peterson. 1998. *A Field Guide to Freshwater Fishes: North America North of Mexico* (Peterson Field Guides). Houghton Mifflin Company, Boston, Massachusetts. 541pp.

Burt, William H. 1998. *A Peterson Field Guide to the Mammals of North America North of Mexico.* Houghton Mifflin Company, Boston, Massachusetts. 367pp.

Capula, Massimo. 1989. *Simon & Schuster's Guide to Reptiles and Amphibians of the World.* Edited by John L. Behler. Simon & Schuster Inc., New York, New York. 256pp.

Clark, William S. and Brian K. Wheeler. 2001. *A Peterson Field Guide to Hawks of North America.* 2nd ed. Houghton Mifflin Company, Boston, Massachusetts. 328pp.

Conant, Roger and Joseph Collins. 1998. *A Field Guide to Reptiles and Amphibians of Eastern and Central North America.* 4th ed. Houghton Mifflin Company, Boston, Massachusetts. 634pp.

Covell, Charles V., Jr. 1984. *A Peterson Field Guide to Moths of Eastern North America.* Edited by Roger Tory Peterson. Houghton Mifflin Company, Boston, Massachusetts. 496pp.

Harrison, Hal H. 1998. *A Peterson Field Guide to the Birds' Nests: The United States East of the Mississippi River.* Houghton Mifflin Company, Boston, Massachusetts. 288pp.

Kricher, John C. 1998. *A Peterson Field Guide to Eastern Forests.* Houghton Mifflin Company, Boston, Massachusetts. 506pp.

Little, Elbert L. Jr. 1980. *The Audubon Society Field Guide to North American Trees: Eastern Region.* Chanticleer Press, New York, New York. 716pp.

McKenney, Margaret, and Roger Tory Peterson. 1998. *A Peterson Field Guide to Wildflowers: Northeastern and Northcentral North America.* Houghton Mifflin Company, Boston, Massachusetts. 448pp.

Murie, Olaus J. 1998. *A Peterson Field Guide to Animal Tracks.* Houghton Mifflin Company, Boston, Massachusetts. 400pp.

Newcomb, Lawrence. 1989. *Newcomb's Wildflower Guide.* Little, Brown and Company, Boston, Massachusetts. 490 pp.

Opler, Paul A. and Vichai Malikul. 1998. *A Peterson Field Guide to Eastern Butterflies.* Houghton Mifflin Company, Boston, Massachusetts. 503pp.

Peterson, Roger Tory. 2002. *A Peterson Field Guide to the Birds of Eastern and Central North America.* 5th ed. Houghton Mifflin Company, Boston, Massachusetts. 450pp.

Petrides, George A. 1998. *A Field Guide to Eastern Trees.* 2nd ed. Houghton Mifflin Company, New York, New York. 441pp.

Redington, Charles B. 1994. *Redington Field Guides: Plants in Wetlands.* Kendall/Hunt Publishing Co., Dubuque, Iowa. 394pp.

Silberhorn, Gene M. 1999. *Common Plants of the Mid-Atlantic Coast: A Field Guide.* Revised ed. The Johns Hopkins University Press, Baltimore, Maryland. 295pp.

Theiret, John W., William A. Neiring, and Nancy C. Olmstead. 2001. *National Audubon Society Field Guide to North American Wildflowers: Eastern Region.* Alfred A Knopf, Inc., New York, New York. 896pp.

White, Richard E., and Donald J. Borror. 1998. *A Peterson Field Guide to Insects: America North of Mexico.* Houghton Mifflin Company, Boston, Massachusetts. 448pp.

Williamson, Sheri L. 2002. *A Peterson Field Guide to the Hummingbirds of North American.* Houghton Mifflin Company, Boston, Massachusetts. 275pp.

APPENDIX II

The term 'ecoregion' may be loosely defined as a unit of land or water, usually relatively large in extent, which exhibits a distinguishing assemblage of distinct and often discrete natural communities and species. The list of species contained in this table is offered to provide the site Wildlife Team with a representation of plant and animal species indicative of the ecoregion that is prevalent for the site location, and therefore to provide a sampling of species that may be encountered when compiling the site species inventory. Please note that this list is not meant to be definitive.

TYPE	COMMON NAME	SCIENTIFIC NAME
Mammals	Coyote	*Canis latrans*
	American beaver	*Castor canadensis*
	Big brown bat	*Eptesicus fuscus*
	Northern flying squirrel	*Glaucomys sabrinus*
	Snowshoe hare	*Lepus americanus*
	Northern river otter	*Lutra canadensis*
	Bobcat	*Lynx rufus*
	Striped skunk	*Mephitis mephitis*
	White-tailed deer	*Odocoileus virginianus*
	Red fox	*Vulpes vulpes*
Birds	Sharp-shinned hawk	*Accipiter striatus*
	Spotted sandpiper	*Actitis macularia*
	Northern saw-whet owl	*Aegolius acadicus*
	Wood duck	*Aix sponsa*
	Northern pintail	*Anas acuta*
	Mallard	*Anas platyrhynchos*
	Golden eagle	*Aquila chrysaetos*
	Ruby-throated hummingbird	*Archilochus colubris*
	Great egret	*Ardea alba*
	Great blue heron	*Ardea herodias*
	Canvasback	Aythya valisineria
	Canada goose	*Branta canadensis*
	Sanderling	*Calidris alba*
	Belted kingfisher	*Ceryle alcyon*
	Black tern	*Chlidonias niger*
	Northern harrier	Circus cyaneus
	Northern flicker	*Colaptes auratus*
	Northern bobwhite	*Colinus virginianus*
	Rock pigeon	*Columba livia*

TYPE	COMMON NAME	SCIENTIFIC NAME
	Blue jay	*Cyanocitta cristata*
	Tundra swan	*Cygnus columbianus*
	Peregrine falcon	*Falco peregrinus*
	American kestrel	*Falco sparverius*
	Wilson's snipe	*Gallinago delicata*
	Common loon	*Gavia immer*
	Bald eagle	*Haliaeetus leucocephalus*
	Herring gull	*Larus argentatus*
	Hooded merganser	*Lophodytes cucullatus*
	Red-bellied woodpecker	*Melanerpes carolinus*
	Wild turkey	*Meleagris gallopavo*
	Osprey	*Pandion haliaetus*
	Double-crested cormorant	*Phalacrocorax auritus*
	Ringed-necked pheasant	*Phasianus colchicus*
	American golden-plover	Pluvialis dominica
	Black-capped chickadee	*Poecile atricapilla*
	Eastern bluebird	*Sialia sialis*
	Tree swallow	*Tachycineta bicolor*
	American robin	*Turdus migratorius*
	Canada warbler	*Wilsonia canadensis*
Amphibians & Reptiles	Northern cricket frog	*Acris crepitans*
	Spotted salamander	*Ambystoma maculatum*
	American toad	*Bufo americanus*
	Snapping turtle	*Chelydra serpentina*
	Painted turtle	*Chrysemys picta*
	Eastern rat snake	*Elaphe obsoleta*
	Five-lined skink	*Eumeces fasciatus*
	Gray treefrog	*Hyla versicolor*
	Milk snake	*Lampropeltis triangulum*
	Mudpuppy	*Necturus maculosus*
	Common water snake	*Nerodia sipedon sipedon*
	Eastern newt	*Notophthalmus viridescens*
	Lesser siren	*Siren intermedia*
	Eastern massasauga	*Sistrurus catenatus catenatus*
Butterflies	Tawny emperor	*Asterocampa clyton*
	Io moth	*Automeris io*
	Meadow fritillary	*Boloria bellona*
	Monarch	*Danaus plexippus*
	Silver-spotted skipper	*Epargyreus clarus*
	Eastern tailed-blue	*Everes comyntas*
	Giant swallowtail	*Papilio cresphontes*
	Cabbage white	*Pieris rapae*

TYPE	COMMON NAME	SCIENTIFIC NAME
	Striped hairstreak	*Satyrium liparops*
	Northern cloudywing	*Thorybes pylades*
Wildflowers	Yarrow	*Achillea millefolium*
	Sweetflag	*Acorus calamus*
	Bishop's goutweed	*Aegopodium podagraria*
	Pale mountain dandelion	*Agoseris glauca*
	Corncockle	*Agrostemma githago*
	Pigweed	*Amaranthus retroflexus*
	Common ragweed	*Ambrosia artemisiifolia*
	Pearly everlasting	*Anaphalis margaritacea*
	Indian-hemp	*Apocynum cannabinum*
	American spikenard	*Aralia racemosa*
	Common burdock	*Arctium minus*
	Dutchman's pipe	*Aristolochia macrophylla*
	Heartleaf arnica	*Arnica cordifolia*
	Dusty miller	*Artemisia stelleriana*
	Mugwort	*Artemisia vulgaris*
	Common milkweed	*Asclepias syriaca*
	Blue wild indigo	*Baptisia australis*
	Tickseed sunflower	*Bidens aristosa*
	Noding bur marigold	*Bidens cernua*
	Field mustard	*Brassica rapa*
	Hummock sedge	*Carex stricta*
	Indian paintbrush	*Castilleja coccinea*
	Blue cohosh	*Caulophyllum thalictroides*
	American bittersweet	*Celastrus scandens*
	Spotted knapweed	*Centaurea biebersteinii*
	Yellow star thistle	*Centaurea solstitialis*
	Chicory	*Cichorium intybus*
	Poison hemlock	*Conium maculatum*
	Horseweed	*Conyza canadensis*
	Garden coreopsis	*Coreopsis tinctoria*
	Flixweed	*Descurainia sophia*
	Flat-topped white aster	*Doellingeria umbellata*
	Pale purple coneflower	*Echinacea pallida*
	Storksbill	*Erodium cicutarium*
	Rattlesnake master	*Eryngium yuccifolium*
	Trumpetweed	*Eupatorium fistulosum*
	Late boneset	*Eupatorium serotinum*
	Sweet fennel	*Foeniculum vulgare*
	Wild strawberry	*Fragaria virginiana*
	Sneezeweed	*Helenium autumnale*
	Cow parsnip	*Heracleum maximum*

TYPE	COMMON NAME	SCIENTIFIC NAME
	Water pennywort	*Hydrocotyle americana*
	Orange jewelweed	*Impatiens capensis*
	American water-willow	*Justicia americana*
	Oxeye daisy	*Leucanthemum vulgare*
	Honesty	*Lunaria annua*
	Whorled loosestrife	*Lysimachia quadrifolia*
	Common moonseed	*Menispermum canadense*
	Tall bluebells	*Mertensia paniculata*
	Wall lettuce	*Mycelis muralis*
	True forget-me-not	*Myosotis scorpioides*
	Common evening-primrose	*Oenothera biennis*
	Devil's tongue	*Opuntia humifusa*
	Sweet Cicely	*Osmorhiza claytonii*
	Wild ginseng	*Panax quinquefolius*
	Downy phlox	*Phlox pilosa*
	Common plantain	*Plantago major*
	Saltmarsh fleabane	*Pluchea odorata*
	May-apple	*Podophyllum peltatum*
	Swamp smartweed	*Polygonum hydropiperoides*
	Common buttercup	*Ranunculus acris*
	Black-eyed Susan	*Rudbeckia triloba*
	Fringe-leaf wild petunia	*Ruellia humilis*
	Slender glasswort	*Salicornia maritima*
	Northern pitcher plant	*Sarracenia purpurea*
	Starry Campion	*Silene stellata*
	Canada goldenrod	*Solidago canadensis*
	Wood poppy	*Stylophorum diphyllum*
	Skunk cabbage	*Symplocarpus foetidus*
	Yellow goatsbeard	*Tragopogon dubius*
	Red clover	*Trifolium pratense*
	Coltsfoot	*Tussilago farfara*
	Stinging nettle	*Urtica dioica*
	Blue vervain	*Verbena hastata*
	Tall ironweed	*Vernonia gigantea*
	Periwinkle	*Vinca minor*
	Sand violet	*Viola affinis*
	White mule's-ear	*Xanthium strumarium*
	Adam's needle	*Yucca filamentosa*
	Meadow zizia	*Zizia aptera*
Trees	Balsam fir	*Abies balsamea*
	Black maple	*Acer nigrum*
	Horse-chestnut	*Aesculus hippocastanum*
	Bog rosemary	*Andromeda polifolia*

Type	Common Name	Scientific Name
	Wormwood	*Artemisia ludoviciana*
	Common pawpaw	*Asimina triloba*
	Common barberry	*Berberis vulgaris*
	Paper birch	*Betula papyrifera*
	American chestnut	*Castanea dentata*
	Gray dogwood	*Cornus racemosa*
	American hazelnut	*Corylus americana*
	Pear hawthorn	*Crataegus calpodendron*
	Northern bush honeysuckle	*Diervilla lonicera*
	Autumn olive	*Elaeagnus umbellata*
	Glossy buckthorn	*Frangula alnus*
	White ash	*Fraxinus americana*
	Common juniper	*Juniperus communis*
	Eastern red cedar	*Juniperus virginiana*
	Tamarack	*Larix laricina*
	Sweet crabapple	*Malus coronaria*
	Black chokeberry	*Photinia melanocarpa*
	Atlantic ninebark	*Physocarpus opulifolius*
	White spruce	*Picea glauca*
	Jack pine	*Pinus banksiana*
	American sycamore	*Platanus occidentalis*
	Eastern cottonwood	*Populus deltoides*
	American plum	*Prunus americana*
	Sweet cherry	*Prunus avium*
	Northern pin oak	*Quercus ellipsoidalis*
	Smooth sumac	*Rhus glabra*
	Prickly rose	*Rosa acicularis*
	Highbush blackberry	*Rubus allegheniensis*
	Wild red raspberry	*Rubus idaeus*
	Pussy willow	*Salix discolor*
	Sassafras	*Sassafras albidum*
	Meadowsweet	*Spiraea alba*
	Common snowberry	*Symphoricarpos albus*
	Canada yew	*Taxus canadensis*
	Eastern hemlock	*Tsuga canadensis*
	Slippery elm	*Ulmus rubra*
	Moosewood viburnum	*Viburnum edule*

APPENDIX III
CONTACT INFORMATION

FEDERAL GOVERNMENT RESOURCES

Natural Resource Conservation Service (NRCS)
Natural Resources Conservation Service
Attn: Conservation Communications Staff
P.O. Box 2890
Washington, DC 20013

NRCS PA Offices
York County Field Office
District Conservationist
William Clifton
Phone: 717-755-2966, ext 104
Email: william.clifton@pa.usda.gov

NRCS PA Offices
York County Field Office
Natural Resource Specialist
Jennifer Cook
Phone: 717-755-2966, ext 105
Email: jennifer.cook@pa.usda.gov

NRCS PA Offices
York County Field Office
Biologist
James Gillis
Phone: 717-755-2966, ext 108
Email: james.gillis@pa.usda.gov

Environmental Protection Agency (EPA)
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
(202) 272-0167

EPA Region 3 (DC, DE, MD, PA, VA, WV)
Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029
http://www.epa.gov/region03/
Phone: (215) 814-5000
Fax: (215) 814-5103
Toll free: (800) 438-2474
Email: r3public@epa.gov

US Fish and Wildlife Service (USFWS)
U.S. Fish and Wildlife Service
1849 C Street, NW
Washington, DC 20242
1-800-344-WILD

USFWS
Notheast Region (Region 5)
300 Westgate Center Drive
Hadley, MA 01035-9589
Switchboard: (413) 253-8200
Fax: (413) 253-8308
Contact us at northeast@fws.gov

USFWS Ecological Services PA Field Office
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4855
Phone: 814-234-4090

US Geological Survey (USGS)
1-888-275-8747
USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192, USA
703-648-4000

USGS PA Field Office
Pennsylvannia Water Science Center
dc_pa@usgs.gov
215 Limekiln Road
New Cumberland, PA 17070
Phone: (717) 730-6900
Fax: (717) 730-6997

USGS PA Field Office
National Spatial Data Infrastructure Partnership Office (Liason for: PA)
U.S. Geological Survey
Pennsylvania Geological Survey
3240 Schoolhouse Road
Middletown, PA 17057-3534
Phone: (717) 702-2027

USGS PA Field Office
USGS Pennsylvania Cooperative Fish and Wildlife Research Unit
Email: 1-coopunit@lists.psu.edu
113 Merkle Building
Pennsylvania State University
University Park, PA 16802
Phone: 814-865-4511
Fax: 814-863-4710

US Forest Service
USDA Forest Service
1400 Independence Ave., SW
Washington, D.C. 20250-0003
(202) 205-8333

US Forest Service, Region 9 Offices
626 East Wisconsin Ave.
Milwaukee, WI 53202
Phone: (414) 297-3600
FAX: (414) 297-3808
TTY: (414) 297-3507

Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

US Army Corps of Engineers
North Atlantic Division
302 General Lee Avenue
Brooklyn, New York 11252
Phone: 718 765-7018
Fax: 718 765-7170

STATE GOVERNMENT RESOURCES

PA Department of Agriculture
Region 6
PO Box 5184
Harrisburg, PA 17110-0184
717-346-3223
FAX: 717-346-3229

PA Department of Conservation
Rachel Carson State Office Building
PO Box 8767
400 Market Street
Harrisburg, PA 17105-8767

PA Department of Environmental Protection
Address: 150 Roosevelt Ave.
York, PA 17404
Phone: (717) 771-4481
Fax: (717) 845-3496

PA Fish and Boat Commission
1601 Elmerton Avenue
P.O. Box 67000
Harrisburg, PA 17106-7000
717-705-7800

PA Forestry Bureau
6th Floor, Rachel Carson State Office Building
P.O. Box 8552
Harrisburg, PA 17105-8552
Fax: 717-783-5109

Susquehanna River Basin Commission
1721 North Front Street
Harrisburg, PA 17102
Phone: (717) 238-0423
Fax: (717) 238-2436
Email: srbc@srbc.net
Web site: http://www.srbc.net/

ORGANIZATION AND ACADEMIC RESOURCES

Hawk Mountain Sanctuary Association
1700 Hawk Mountain Road
Kempton, PA 19529
Phone:610-756-6961
Fax: 610-756-4468
Email: info@hawkmountain.org
Web site: http://www.hawkmountain.org/default.shtml

Ducks Unlimited
Mid-Atlantic Field Office
34 Defense St., Suite 200
Annapolis, MD 21401
Phone: 1-800-45DUCKS
Web site: http://www.ducks.org/conservation/Projects/GreatLakesAtlantic/ChesapeakeBAy/index.asp

National Wild Turkey Federation
Post Office Box 530
Edgefield, SC 29824-0530
Phone: 1-800-THE-NWTF
Web site: http://www.nwtf.org/

Bat Conservation International
Bat Conservation International
P.O. Box 162603
Austin, TX 78716
Phone: (512) 327-9721
Fax: (512) 327-9724
Web site: http://www.batcon.org/home/default.asp

Cornell Lab of Ornithology
Attn: Communications
159 Sapsucker Woods Rd.
Ithaca, NY 14850
Phone: 1-800-843-2473
Email: cornellbirds@cornell.edu
Web site: http://www.birds.cornell.edu/

North American Pollinator Protection Campaign
c/o Coevolution Institute
423 Washington St, 5th Fl
San Francisco, CA 94111-2339
Phone: (415) 362-1137
Fax: (415) 362-3070
Web site: http://www.nappc.org/

Boy Scouts of America
2139 White St
York, PA
Phone: (717) 843-0901

Boy Scouts of America
450 Boy Scout Rd
New Oxford, PA
Phone: (717) 624-8125

Girl Scouts of the USA
Girl Scouts of the USA
420 Fifth Avenue
New York, New York 10018-2798
Phone: 1-(800) GSUSA 4 U [(800) 478-7248] or (212) 852-8000
Web site: http://www.girlscouts.org/

PA Chapter of the Nature Conservancy
15 East Ridge Pike
Suite 500
Conshohocken, PA 19428
Phone: (610) 834-1323
or (800) 75-NATURE
Fax: (610) 834-6533
E-mail: pa_chapter@tnc.org

PA Environmental Defense Foundation
James Barr, Executive Director
RR 5 Box 354 Muncy PA, 17756-8660
Email: jimpedf@prolog.net

PA Environmental Council
130 Locust Street
Suite 200
Harrisburg, PA 17101
Phone: (717) 230-8044
Fax: (717) 230-8045
Web site: http://www.pecpa.org/

Pennsylvania Environmental Network
P.O. Box 92
Fombell, PA 16123
E-Mail: pen@envirolink.org
Website: http://www.penweb.org

PA Resources Council
Philadelphia Office
3606 Providence Rd.
Newtown Square, PA 19073
Phone: 610-353-1555
Web site: http://www.prc.org/

PA Association of Wildlife Rehabilitators
Web site: http://pawr.com/

Wildlife Rescue of PA
P.O. Box 71
Friendsville, PA 18818
Phone: 570)553-2499
Email: director@wildliferescue-pa.com
Web site: http://www.wildliferescue-pa.com/

York College
York, PA 17405-7199
Phone: 717) 846-7788
Web site: http://www.ycp.edu/

Pennsylvania State University-York
1031 Edgecomb Avenue
York, PA 17403-3398
Phone: 717-771-4000
Web site: http://www.yk.psu.edu/contactus.htm

York Technical Institute
1405 Williams Rd.
York, PA 17402
Phone: 1-800-227-9675
Web site: http://www.yti.edu/

Millersville University
PO Box 1002
1 South George St
Millersville, PA 17551
Phone: 717-872-3011
Web site: http://muweb.millersville.edu/index.php

Harrisburg Area Community College
One HACC Drive
Harrisburg, PA 17110-2999
Phone: (717) 780-2300
or (800) ABC-HACC
Email: pr@hacc.edu

Web site: http://www.hacc.edu/

NATIVE PLANT RESOURCES

North Creek Nurseries, Inc.
R.R. #2, Box 33
Landenburg, PA 19350
Phone: 610-255-4762

Natural Landscapes
345 North Jennersville Road
West Grove, PA 19380
Phone: 610-869-3788

Temple University/Ambler Nursery
580 Meetinghouse Road
Ambler, PA 19002-3994
Phone: 212-283-1330

Pinelands Nursery
R.R. 1, Box 12
Island Road
Columbus, NJ 08022
Phone: 609-291-9486

Sylva Native Nursery and Seed Company
R.D. #2, Box 1033
New Freedom, PA 17349
Phone: 717-227-9486

Ocotoraro Wetland Native Plant Nurseries
PO Box 24
Oxford, PA 19363
Phone: 610-932-2072

Shemin Nurseries
100 Green Tree Road
PO Box 649
Oaks, PA 19456
Phone: 610-666-0595

Musser Forests
Route 119 North, Box 340
Indiana, PA 15701
Phone: 412-465-5686
Moon Nurseries
Box 482

Quarry Road
Yardley, PA 19067
Phone: 215-968-6141

Buddies Nursery
PO Box 14
Birdsboro, PA 19508
Phone: 610-582-2410

Hansen Nursery
PO Box 8
Sassamsville, PA 19472
Phone: 215-754-7843

Brandywine Conservancy
Box 141
Chadds Ford, PA 19317
Phone: 610-388-2700

Prairie Nursery
PO Box 306
Westfield, WI 53964
Phone: 608-296-3679

Applewood Seed Company
5380 Vivian Street
Arvado, CO 80002
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Annual Report
on the
Meteorological Monitoring Program
at the
Three Mile Island Generating Station
2006

prepared for

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1. Introduction

The purpose of the meteorological program being conducted at the Three Mile Island Station site is to provide information sufficient to assess the local weather conditions and to determine the degree of atmospheric dispersion of airborne radioactive effluent from the station.

On the Alpha system. wind speed and direction are measured at 100 ft. and 150 ft. Ambient temperature is measured at 33 ft. Differential temperature, referenced to 33 ft., is measured at 150 ft.

On the Bravo system, wind speed and direction are measured at 100 ft. Ambient temperature is measured at 33 ft. Differential temperature, referenced to 33 ft., is measured at 150 ft.

Joint frequency stability wind rose tables of wind direction, wind speed, and stability are routinely tabulated from hourly measurements. The quarterly and annual tables are included in this report.

Descriptions of the instruments and recorders are given in Section 3 (Data Acquisition) of this report. Data reduction and processing are described in Section 4 (Data Analysis). The results are given in Section 5 of this report.

2. Summary

The Three Mile Island Station meteorological monitoring program produced 34,794 hours of valid data out of a possible 35,040 parameter hours during 2006 (365 days x 24 hours/day x 4 measured priority parameters), which represents an overall data recovery rate of 99.3%. Priority parameters are 100 ft. wind speed, 100 ft. wind direction, 33 ft. temperature and 150-33 ft. differential temperature.

The stability wind rose tables included in this report have been generated using the 100 ft. wind data with the 150-35 ft. differential temperature data.

3. Data Acquisition

Wind speed is measured with Met One model 50.1 sensors and wind direction is measured with Met One model 50.2 sensors. The wind speed sensors have a starting speed of 0.75 mph (0.33 mps), a range of 0 to 100 mph (0 to 44.7 mps), and a system accuracy of ±1%. The wind direction sensors have a threshold speed of 0.93 mph (0.42 mps), a range of 0 to 540°, and a system accuracy of ±5°.

Ambient and differential temperatures are measured with Met One model 1596602 sensors. Ambient temperature is measured within the range of -40 to 100°F (-40 to 37.78°C) with an accuracy of ±0.5°F (+0.3°C). Differential temperature is measured within the range of -8 to 20°F (-4.48 to 11.1°C) with an accuracy of ±0.25°F (±0.14°C).

Instrument types and locations are summarized in Table 1.

Table 1

Instrument Locations

Alpha

Measurement	Sensor Type	Location	Elevation
Wind Speed	Met One 50.1	Tower	150 ft.
Wind Direction	Met One 50.2	Tower	150 ft.
Differential Temperature	Met One 1596602	Tower	150 ft.
Wind Speed	Met One 50.1	Tower	100 ft.
Wind Direction	Met One 50.2	Tower	100 ft.
Ambient Temperature	Met One 1596602	Tower	33 ft.
Precipitation	Qualimetrics 6011-A	Ground	6 ft.

Bravo

Measurement	Sensor Type	Location	Elevation
Differential Temperature	Met One 1596602	Tower	150 ft.
Wind Speed	Met One 50.1	Tower	100 ft.
Wind Direction	Met One 50.2	Tower	100 ft.
Ambient Temperature	Met One 1596602	Tower	33 ft.

4. Data Analysis

The meteorological data are collected via email sent by the Three Mile Island Chemistry Department. Data are sampled once per hour. The data are then stored in the meteorological data base and listings of the data are generated. The data listings are examined by qualified personnel and any apparent problems are brought to the attention of the Project Manager or Environmental Meteorologist and the Instrument Maintenance staff.

Hourly values of wind speed, wind direction, ambient temperature, differential temperature, are obtained through measurements taken at the site.

The data base files are edited approximately once a week. Invalid data are deleted from the data base.

When an hourly value is missing or invalid, the numeral 999 is entered into the computer data file in the appropriate location. When the wind direction changes substantially relative to its short term fluctuations, the numeral 888 can be entered into the wind sigma location to indicate shifting winds. When the wind blows with velocities near the sensing threshold of the instrument, the numeral 777 can be entered into the wind direction, wind speed, and wind sigma locations to indicate light and variable winds.

A professional meteorologist reviews the data, calibration findings, equipment maintenance reports, and other information and determines which data are valid. Only the valid data are retained in the data base.

Joint frequency stability wind rose tables of hourly data measured at the site are generated. These tables indicate the prevailing wind direction, wind speed, and stability classes measured during the period of observation as well as the joint frequencies of occurrence of the wind direction, wind speed, and stability classes. Wind direction, wind speed, and stability classes are given in Tables 3, 4, and 5.

Table 3

Wind Direction Classes

IF	348.75°	<	WD	≤	11.25°	THEN	Class is	N
IF	11.25°	<	WD	≤	33.75°	THEN	Class is	NNE
IF	33.75°	<	WD	≤	56.25°	THEN	Class is	NE
IF	56.25°	<	WD	≤	78.75°	THEN	Class is	ENE
IF	78.75°	<	WD	≤	101.25°	THEN	Class is	E
IF	101.25°	<	WD	≤	123.75°	THEN	Class is	ESE
IF	123.75°	<	WD	≤	146.25°	THEN	Class is	SE
IF	146.25°	<	WD	≤	168.75°	THEN	Class is	SSE
IF	168.75°	<	WD	≤	191.25°	THEN	Class is	S
IF	191.25°	<	WD	≤	213.75°	THEN	Class is	SSW
IF	213.75°	<	WD	≤	236.25°	THEN	Class is	SW
IF	236.25°	<	WD	≤	258.75°	THEN	Class is	WSW
IF	258.75°	<	WD	≤	281.25°	THEN	Class is	W
IF	281.25°	<	WD	≤	303.75°	THEN	Class is	WNW
IF	303.75°	<	WD	≤	326.25°	THEN	Class is	NW
IF	326.25°	<	WD	≤	348.75°	THEN	Class is	NNW

Table 4

Wind Speed Classes

IF	0.0 mph	<	WS	≤	0.7 mph	THEN	Class is	1
IF	0.7 mph	<	WS	≤	3.5 mph	THEN	Class is	2
IF	3.5 mph	<	WS	≤	7.5 mph	THEN	Class is	3
IF	7.5 mph	<	WS	≤	12.5 mph	THEN	Class is	4
IF	12.5 mph	<	WS	≤	18.5 mph	THEN	Class is	5
IF	18.5 mph	<	WS	≤	24.5 mph	THEN	Class is	6
IF	24.5 mph	<	WS			THEN	Class is	7

Table 5

Atmospheric Stability Classes

Class	Differential Temperature Interval (in °C/100m) [1]	Differential Temperature Interval (in °F over the 150-33 ft. interval) [2]
Extremely Unstable	$\Delta T \leq -1.9$	$\Delta T \leq -1.2$
Moderately Unstable	$-1.9 < \Delta T \leq -1.7$	$-1.2 < \Delta T \leq -1.1$
Slightly Unstable	$-1.7 < \Delta T \leq -1.5$	$-1.1 < \Delta T \leq -1.0$
Neutral	$-1.5 < \Delta T \leq -0.5$	$-1.0 < \Delta T \leq -0.3$
Slightly Stable	$-0.5 < \Delta T \leq 1.5$	$-0.3 < \Delta T \leq 1.0$
Moderately Stable	$1.5 < \Delta T \leq 4.0$	$1.0 < \Delta T \leq 2.6$
Extremely Stable	$4.0 < \Delta T$	$2.6 < \Delta T$

[1] from ANSI/ANS 2.5
[2] ANSI/ANS 2.5 intervals scaled for instrument heights on the Three Mile Island meteorological tower

5. Results

5.1 Instrument Maintenance

The maintenance program followed during 2006 was composed of routinely scheduled visits and equipment repairs. Routine site visits were made to inspect the sensing and recording systems for proper operation. In addition, routine maintenance and calibration checks of all tower-mounted and ground level equipment were performed every 4 months. A description of the calibration and field procedures is found in the Murray and Trettel, Inc. "P1009 Procedures Manual" (July 2006).

In July, a lightning strike blew the op-amps for both the Alpha and Bravo systems. The op-amps were replaced to bring the tower back in service.

In November, guy wire anchors and guy wires were replaced at the meteorological tower.

In December, a data logger was installed.

No other significant problems were encountered with the equipment, ~~and at the end of the year, the tower maintenance was the only problem evident at the site.~~ Delete

There were no tower maintenance issues at the end of the year. Everything was taken care of in November.

5.2 Data Recovery

The record of data recovery for the year is summarized in Table 6.

Table 6

Three Mile Island Site

Data Recovery Summary

2006

Measurement	Elevation	Recovered Hours	Recovered Percent	Lost Hours	Percent Changed
Wind Speed	100 ft.	8729	99.6	31	5.8
Wind Speed	150 ft.	0	0.0	8760	0.0
Wind Direction	100 ft.	8635	98.6	125	6.9
Wind Direction	150 ft.	0	0.0	8760	0.0
Ambient Temperature	33 ft.	8716	99.5	44	2.3
Ambient Temperature		0	0.0	8760	0.0
Differential Temperature	150-33 ft.	8714	99.5	46	2.2
Precipitation	10 ft.	0	0.0	8760	0.0
AVERAGE*			99.3		

* average of priority parameters (all except precipitation)

5.3 Summary of Billings for Equipment Repairs, Replacement Parts, and Other Work not Included in Fixed-Cost Maintenance Agreement - **2006**

Description - Three Mile Island	Cost
January	
Meteorological equipment maintenance	$ 200.00
February	
Meteorological parts, materials, and contractor services	12.99
March	
Meteorological parts, materials, and contractor services	1320.00
April	
Meteorological parts, materials, and contractor services	6.75
X/Q, D/Q Calculations	900.00
May	
-none-	0.00
June	
Meteorological parts, materials, and contractors services	387.70
Site Parts Inventory	500.00
July	
Meteorological equipment maintenance	289.10
Meteorological parts, materials, and contractors services	114.74
August	
-none-	
September	
Meteorological parts, materials, and contractor services	198.64
October	
Meteorological equipment maintenance	1628.20
November	
Meteorological equipment maintenance	1528.20
Meteorological parts, materials, & contractors services	61.06
December	
Meteorological parts, materials, & contractors services	57.67
Annual Total:	**$ 7,205.05**

5.4 Stability Wind Rose Data

The quarterly and annual stability wind roses are given in Tables 7 through 11. Wind speed classes have been altered to reflect the wind sensor threshold.

For the year, winds measured at 100 ft. most frequently came from the Northwest (16.55%) and fell into the 3.6-7.5 mph wind speed class (40.56%). Wind speeds greater than 24.5 mph were measured 0.36% of the time.

Stability based on the 150-33 ft. differential temperature most frequently fell into the neutral classification (37.28%).

Three Mile Island Nuclear Statio
100 ft. Wind Speed and Direction

January-March, 2006
150Ft-33Ft Delta-T (F)

Number of Observations = 2075
Values are Percent Occurrence

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
C SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
A N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
L SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
M MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.10	0.10	0.00	0.24	0.24							
MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.10	0.10	0.00	0.05	0.29		0.29						
1 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.05	0.24			0.24					
- N	0.24	0.14	0.14	0.10	0.24	0.29	0.10	0.29	0.34	0.24	0.34	0.19	0.29	0.19	0.24	0.14	3.52				3.52				
3 SS	0.29	0.19	0.10	0.05	0.19	0.29	0.14	0.48	0.29	0.24	0.43	0.43	0.48	0.48	0.34	0.48	4.92					4.92			
MS	0.24	0.05	0.00	0.00	0.05	0.05	0.19	0.05	0.10	0.58	0.39	0.19	0.43	0.29	0.58	0.43	3.61						3.61		
ES	0.14	0.14	0.00	0.24	0.10	0.24	0.10	0.34	0.39	0.72	0.67	0.29	0.05	0.19	0.10	0.00	3.71							3.71	
																									16.53
EU	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.24	0.10	0.14	0.24	0.48	1.54	1.54							
MU	0.05	0.00	0.00	0.14	0.00	0.10	0.10	0.05	0.05	0.05	0.14	0.10	0.05	0.00	0.14	0.29	1.25		1.25						
4 SU	0.14	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.05	0.14	0.19	0.10	0.77			0.77					
- N	0.58	0.92	0.87	0.39	0.63	1.30	0.87	0.53	1.11	0.92	1.06	1.16	1.83	1.45	1.06	1.11	15.76				15.76				
7 SS	0.72	0.34	0.10	0.19	0.24	0.29	0.48	0.29	0.34	0.48	0.58	0.43	1.01	0.43	0.63	0.58	7.13					7.13			
MS	0.19	0.00	0.00	0.05	0.05	0.05	0.10	0.10	0.24	0.29	0.34	0.14	0.34	0.14	0.19	0.19	2.41						2.41		
ES	0.05	0.00	0.00	0.10	0.00	0.00	0.05	0.14	0.19	0.39	0.39	0.29	0.10	0.05	0.00	0.05	1.78							1.78	
																									30.65
EU	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.39	0.29	0.00	0.14	0.29	0.19	0.29	1.69	1.69							
MU	0.05	0.00	0.00	0.00	0.00	0.10	0.05	0.00	0.00	0.14	0.29	0.10	0.24	0.14	0.87	0.24	2.22		2.22						
8 SU	0.05	0.00	0.00	0.00	0.05	0.10	0.00	0.00	0.00	0.05	0.14	0.05	0.19	0.39	0.63	0.48	2.12			2.12					
- N	0.87	0.19	0.05	0.05	0.58	0.82	0.39	0.14	0.29	0.63	0.53	1.11	2.07	3.13	4.19	2.07	17.11				17.11				
1 SS	0.05	0.10	0.14	0.00	0.29	0.77	0.43	0.14	0.14	0.63	0.29	0.19	0.19	0.67	0.24	0.39	4.67					4.67			
2 MS	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.10	0.24						0.24		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05							0.05	
																									28.10
EU	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.10	0.19	0.39	0.39							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.19	0.39	1.45	0.34	2.41		2.41						
3 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.10	1.16	0.24	1.59			1.59					
- N	0.14	0.00	0.00	0.00	0.05	0.10	0.00	0.00	0.00	0.24	0.14	0.39	1.49	2.89	5.20	0.87	11.52				11.52				
1 SS	0.00	0.00	0.00	0.00	0.00	0.24	0.05	0.10	0.19	0.48	0.00	0.10	0.34	0.10	0.39	0.29	2.27					2.27			
8 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									18.17

Three Mile Island Nuclear Statio — January-March, 2005
100 ft. Wind Speed and Direction — 150Ft-33Ft Delta-T (F)

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.10	0.19	0.34	0.34							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.43	0.43	0.05	1.16		1.16						
9 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.10	0.53	0.05	0.77			0.77					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.87	1.69	0.05	2.80				2.80				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.24					0.24			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									5.30
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
G MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.34	0.63		0.63						
T SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.14	0.19			0.19					
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.10	0.34				0.34				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.10					0.10			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									1.25
TOT	4.05	2.12	1.40	1.35	2.46	4.72	3.04	2.75	3.81	6.84	6.22	5.54	10.27	13.20	21.88	10.36	100.00	4.19	7.95	5.69	51.04	19.33	6.27	5.54	100.00

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-
0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.10	0.53	0.39	0.24	0.24	0.53	0.72	1.16	4.19	Extremely Unstable
0.10	0.00	0.00	0.14	0.00	0.19	0.14	0.05	0.05	0.24	0.43	0.24	0.82	1.06	3.18	1.30	7.95	Moderately Unstable
0.19	0.05	0.00	0.00	0.05	0.10	0.00	0.05	0.05	0.19	0.19	0.14	0.29	0.72	2.60	1.06	5.69	Slightly Unstable
1.83	1.25	1.06	0.53	1.49	2.51	1.35	0.96	1.73	2.02	2.07	2.84	5.88	8.53	12.63	4.34	51.04	Neutral
1.06	0.63	0.34	0.24	0.72	1.59	1.11	1.01	0.96	1.83	1.30	1.16	2.07	1.69	1.88	1.73	19.33	Slightly Stable
0.43	0.05	0.00	0.10	0.10	0.10	0.29	0.14	0.34	0.92	0.77	0.34	0.77	0.43	0.77	0.72	6.27	Moderately Stable
0.19	0.14	0.00	0.34	0.10	0.24	0.14	0.48	0.58	1.11	1.06	0.58	0.19	0.24	0.10	0.05	5.54	Extremely Stable

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C A L M
0.92	0.53	0.24	0.39	0.58	0.87	0.53	1.20	1.16	1.78	1.88	1.20	1.35	1.35	1.40	1.16	16.53	< 3.5 mph
1.88	1.30	0.96	0.87	0.92	1.73	1.59	1.16	1.98	2.27	2.55	2.36	3.47	2.36	2.46	2.80	30.65	3.6 - 7.5 mph
1.06	0.29	0.19	0.10	0.92	1.78	0.87	0.29	0.48	1.88	1.59	1.45	2.89	4.63	6.12	3.57	28.10	7.6 - 12.5 mph
0.19	0.00	0.00	0.00	0.05	0.34	0.05	0.10	0.19	0.87	0.14	0.53	2.02	3.47	8.29	1.93	18.17	12.6 - 18.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.48	1.40	2.99	0.34	5.30	18.6 - 24.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.63	0.58	1.25	> 24.5 mph

Three Mile Island Nuclear Statio
100 ft. Wind Speed and Direction

April-June, 2006
150Ft-33Ft Delta-T (F)

Number of Observations = 2119
Values are Percent Occurrence

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
C SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
A N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
L SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
M MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
EU	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.42	0.24	0.85	0.52	2.31	2.31							
MU	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.14	0.14	0.24	0.09	0.94		0.94						
1 SU	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.05	0.05	0.09	0.05	0.09	0.09	0.09	0.66			0.66					
- N	0.19	0.19	0.14	0.05	0.09	0.09	0.05	0.05	0.24	0.28	0.28	0.28	0.61	0.28	0.71	0.42	3.96				3.96				
3 SS	0.36	0.24	0.38	0.09	0.14	0.19	0.24	0.33	0.19	0.38	0.33	0.71	0.76	1.09	0.99	0.94	7.36					7.36			
MS	0.19	0.19	0.28	0.00	0.19	0.24	0.14	0.33	0.47	0.47	0.52	0.99	0.76	0.57	0.61	0.33	6.28						6.28		
ES	0.05	0.00	0.00	0.00	0.09	0.19	0.14	0.14	0.14	0.24	0.42	0.14	0.52	0.09	0.14	0.28	2.60							2.60	
																									24.12
EU	0.66	0.14	0.14	0.09	0.09	0.00	0.05	0.09	0.00	0.28	0.57	0.19	0.38	0.61	1.65	1.75	6.70	6.70							
MU	0.19	0.05	0.14	0.19	0.05	0.00	0.00	0.09	0.09	0.14	0.42	0.28	0.14	0.28	0.76	0.38	3.21		3.21						
4 SU	0.24	0.05	0.05	0.00	0.14	0.00	0.05	0.09	0.09	0.09	0.00	0.00	0.05	0.24	0.24	0.33	1.65			1.65					
- N	0.94	0.33	0.28	0.28	0.57	0.61	0.42	0.42	0.66	0.66	0.94	1.42	0.80	1.42	1.27	1.46	12.51				12.51				
7 SS	2.55	0.57	0.42	0.47	0.94	0.61	0.57	0.47	1.27	0.80	0.66	0.71	1.04	0.94	1.18	1.18	14.39					14.39			
MS	0.38	0.00	0.00	0.14	0.09	0.05	0.14	0.09	0.19	0.38	0.42	0.24	0.38	0.05	0.33	0.85	3.73						3.73		
ES	0.05	0.00	0.00	0.05	0.00	0.05	0.05	0.05	0.05	0.33	0.14	0.05	0.05	0.00	0.05	0.14	1.04							1.04	
																									43.23
EU	0.00	0.00	0.00	0.14	0.14	0.05	0.05	0.00	0.05	0.28	0.05	0.09	0.14	0.42	0.99	0.47	2.88	2.88							
MU	0.24	0.05	0.00	0.00	0.05	0.05	0.09	0.05	0.00	0.14	0.14	0.05	0.24	0.24	0.94	0.47	2.74		2.74						
8 SU	0.14	0.00	0.00	0.00	0.09	0.14	0.09	0.00	0.05	0.00	0.14	0.00	0.09	0.28	0.28	0.33	1.65			1.65					
- N	0.94	0.05	0.05	0.09	1.37	0.99	0.28	0.24	0.42	0.28	0.24	0.33	0.85	1.98	2.97	1.42	12.51				12.51				
1 SS	0.71	0.14	0.00	0.09	0.52	0.28	0.14	0.05	0.24	0.42	0.09	0.00	0.09	0.47	0.33	0.38	3.96					3.96			
2 MS	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.05	0.19						0.19		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									23.93
EU	0.05	0.00	0.00	0.00	0.14	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.57	0.09	1.09	1.09							
1 MU	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.09	0.24	0.52	0.19	1.18		1.18						
3 SU	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.09	0.24	0.52	0.19	1.18			1.18					
- N	0.14	0.00	0.00	0.00	0.05	0.19	0.24	0.00	0.05	0.00	0.05	0.00	0.19	1.09	1.32	0.57	3.87				3.87				
1 SS	0.05	0.00	0.00	0.00	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.05	0.00	0.24	0.09	0.14	0.71					0.71			
8 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									8.02

Three Mile Island Nuclear Statio — April-June, 2006
100 ft. Wind Speed and Direction — 150Ft-33Ft Delta-T (F)

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.09	0.09							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05		0.05						
9 SU	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.09			0.09					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.14	0.00	0.24				0.24				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.14					0.14			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.61
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
G MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
T SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.09				0.09				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.09
TOT	8.40	1.98	1.93	1.70	4.77	4.11	3.11	2.50	4.25	5.33	5.66	5.71	7.93	11.33	18.12	13.17	100.00	13.07	8.12	5.24	33.18	26.57	10.19	3.63	100.00

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-
0.76	0.14	0.19	0.24	0.38	0.24	0.09	0.09	0.05	0.57	0.71	0.38	0.94	1.32	4.15	2.83	13.07	Extremely Unstable
0.61	0.09	0.14	0.19	0.09	0.09	0.19	0.14	0.09	0.38	0.61	0.33	0.61	0.90	2.50	1.13	8.12	Moderately Unstable
0.42	0.05	0.05	0.00	0.24	0.24	0.28	0.09	0.19	0.14	0.19	0.09	0.28	0.85	1.18	0.94	5.24	Slightly Unstable
2.22	0.57	0.47	0.42	2.08	1.89	0.99	0.71	1.37	1.23	1.51	2.03	2.50	4.81	6.47	3.92	33.18	Neutral
3.68	0.94	0.80	0.66	1.60	1.13	1.09	0.85	1.70	1.60	1.09	1.46	1.89	2.74	2.64	2.69	26.57	Slightly Stable
0.61	0.19	0.28	0.14	0.28	0.28	0.28	0.42	0.66	0.85	0.99	1.23	1.13	0.61	0.99	1.23	10.19	Moderately Stable
0.09	0.00	0.00	0.05	0.09	0.24	0.19	0.19	0.19	0.57	0.57	0.19	0.57	0.09	0.19	0.42	3.63	Extremely Stable

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C A L M
1.09	0.61	0.85	0.14	0.52	0.71	0.61	0.85	1.09	1.51	1.75	2.31	3.26	2.50	3.63	2.69	24.12	< 3.5 mph
5.00	1.13	1.04	1.23	1.69	1.32	1.27	1.32	2.36	2.69	3.16	2.88	2.83	3.54	5.47	6.09	43.23	3.6 - 7.5 mph
2.08	0.24	0.05	0.33	2.17	1.51	0.66	0.33	0.76	1.13	0.71	0.47	1.42	3.40	5.57	3.11	23.93	7.6 - 12.5 mph
0.24	0.00	0.00	0.00	0.19	0.52	0.52	0.00	0.05	0.00	0.05	0.05	0.38	1.84	3.02	1.18	8.02	12.6 - 18.5 mph
0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.38	0.05	0.61	18.6 - 24.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.09	> 24.5 mph

Three Mile Island Nuclear Statio
100 ft. Wind Speed and Direction

July-September, 2006
150Ft-33Ft Delta-T (F)

Number of Observations = 2065
Values are Percent Occurrence

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
C SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
A N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
L SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
M MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
EU	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.10	0.48	0.44	0.24	0.82	0.44	2.95	2.95							
MU	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.05	0.10	0.19	0.19	0.15	0.39	0.15	1.31		1.31						
1 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.15	0.19	0.15	0.10	0.00	0.63			0.63					
- N	0.24	0.24	0.05	0.15	0.19	0.05	0.15	0.29	0.15	0.34	0.48	0.48	0.48	0.34	0.44	0.63	4.70				4.70				
3 SS	0.44	0.29	0.19	0.29	0.29	0.53	0.63	0.39	0.82	0.48	1.16	1.07	1.74	0.58	0.77	1.02	10.70					10.70			
MS	0.39	0.05	0.15	0.29	0.48	0.53	0.58	0.53	0.34	0.39	0.87	1.07	1.50	0.92	0.82	0.58	9.49						9.49		
ES	0.05	0.00	0.05	0.00	0.00	0.00	0.05	0.05	0.05	0.00	0.10	0.10	0.10	0.24	0.05	0.05	0.87							0.87	
																									30.65
EU	0.92	0.10	0.19	0.05	0.19	0.15	0.15	0.19	0.15	0.73	1.40	0.53	0.68	1.02	2.37	1.99	10.80	10.80							
MU	0.15	0.15	0.00	0.19	0.24	0.00	0.15	0.00	0.05	0.24	0.39	0.29	0.10	0.19	0.29	0.53	2.95		2.95						
4 SU	0.00	0.00	0.00	0.00	0.19	0.05	0.00	0.10	0.00	0.05	0.29	0.24	0.05	0.19	0.29	0.24	1.69			1.69					
- N	1.31	0.53	0.82	0.97	0.77	0.73	0.39	0.92	0.97	0.92	1.16	1.02	1.21	1.69	1.45	0.87	15.74				15.74				
7 SS	1.65	1.60	0.87	0.92	1.26	0.73	0.24	0.63	0.92	1.65	1.31	1.60	2.08	1.45	0.58	1.65	19.13					19.13			
MS	0.58	0.15	0.10	0.15	0.19	0.15	0.10	0.15	0.10	0.29	0.19	0.15	0.34	0.15	0.15	0.87	3.78						3.78		
ES	0.00	0.00	0.00	0.05	0.10	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.05	0.05	0.34							0.34	
																									54.43
EU	0.29	0.05	0.00	0.00	0.05	0.19	0.10	0.00	0.15	0.73	0.48	0.10	0.15	0.29	0.63	0.82	4.02	4.02							
MU	0.05	0.00	0.00	0.10	0.05	0.15	0.00	0.05	0.00	0.15	0.05	0.10	0.19	0.19	0.44	0.34	1.84		1.84						
8 SU	0.05	0.00	0.00	0.05	0.10	0.15	0.05	0.05	0.05	0.05	0.00	0.00	0.05	0.00	0.05	0.15	0.77			0.77					
- N	0.00	0.00	0.00	0.05	0.63	0.48	0.15	0.05	0.39	0.48	0.39	0.15	0.29	0.68	0.87	0.44	5.04				5.04				
1 SS	0.05	0.15	0.48	0.10	0.24	0.00	0.00	0.00	0.15	0.29	0.10	0.29	0.05	0.05	0.34	0.19	2.47					2.47			
2 MS	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.10						0.10		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									14.24
EU	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.29	0.29							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.10		0.10						
3 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.19	0.00	0.29				0.29				
1 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
8 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.68

Three Mile Island Nuclear Statio — July-September. 2006
100 ft. Wind Speed and Direction — 150Ft-33Ft Delta-T (F)

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
9 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
G MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
T SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
TOT	6.34	3.34	2.91	3.39	5.04	3.87	2.71	3.39	4.36	7.12	8.57	7.99	9.98	8.62	11.38	10.99	100.00	18.06	6.20	3.10	25.76	32.30	13.37	1.21	100.00

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-
1.40	0.19	0.19	0.05	0.24	0.34	0.24	0.19	0.29	1.69	1.99	1.11	1.26	1.55	4.07	3.24	18.06	Extremely Unstable
0.19	0.15	0.00	0.29	0.34	0.15	0.15	0.05	0.10	0.44	0.53	0.58	0.48	0.58	1.16	1.02	6.20	Moderately Unstable
0.05	0.00	0.00	0.05	0.29	0.19	0.05	0.15	0.10	0.10	0.29	0.39	0.29	0.34	0.44	0.39	3.10	Slightly Unstable
1.55	0.77	0.87	1.16	1.60	1.26	0.68	1.26	1.50	1.74	2.03	1.65	2.08	2.71	2.95	1.94	25.76	Neutral
2.13	2.03	1.55	1.31	1.79	1.26	0.87	1.02	1.89	2.42	2.57	2.95	3.87	2.08	1.69	2.86	32.30	Slightly Stable
0.97	0.19	0.24	0.48	0.68	0.68	0.68	0.68	0.44	0.68	1.07	1.21	1.84	1.11	0.97	1.45	13.37	Moderately Stable
0.05	0.00	0.05	0.05	0.10	0.00	0.05	0.05	0.05	0.05	0.10	0.10	0.15	0.24	0.10	0.10	1.21	Extremely Stable

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C A L M
1.26	0.63	0.44	0.73	1.02	1.11	1.40	1.26	1.45	1.50	2.81	3.54	4.65	2.62	3.39	2.86	30.65	< 3.5 mph
4.60	2.52	1.99	2.32	2.95	1.79	1.02	1.99	2.18	3.92	4.75	3.83	4.50	4.70	5.18	6.20	54.43	3.6 - 7.5 mph
0.44	0.19	0.48	0.34	1.07	0.97	0.29	0.15	0.73	1.69	1.02	0.63	0.73	1.26	2.32	1.94	14.24	7.6 - 12.5 mph
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.48	0.00	0.68	12.6 - 18.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.6 - 24.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	> 24.5 mph

Three Mile Island Nuclear Statio — October-December. 2006
100 ft. Wind Speed and Direction — 150Ft-33Ft Delta-T (F)

Number of Observations = 2033
Values are Percent Occurrence

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
C SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
A N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
L SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
M MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.10	0.15	0.15	0.10	0.05	0.64	0.64							
MU	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.05	0.00	0.10	0.20	0.05	0.54		0.54						
1 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.00	0.00	0.00	0.00	0.15			0.15					
- N	0.30	0.10	0.39	0.10	0.00	0.25	0.10	0.15	0.15	0.34	0.39	0.15	0.25	0.25	0.54	0.30	3.74				3.74				
3 SS	0.64	0.10	0.10	0.15	0.30	0.25	0.10	0.44	0.30	0.30	0.89	0.79	0.59	0.84	0.93	0.93	7.62					7.62			
MS	0.20	0.25	0.15	0.15	0.30	0.20	0.49	0.34	0.30	0.74	1.23	0.84	0.54	0.69	0.59	0.54	7.53						7.53		
ES	0.10	0.20	0.00	0.10	0.00	0.39	0.05	0.15	0.34	0.59	0.49	0.44	0.64	0.20	0.20	0.25	4.13							4.13	
																									24.35
EU	0.15	0.05	0.10	0.00	0.05	0.00	0.00	0.00	0.15	0.39	0.30	0.00	0.00	0.15	0.25	0.30	1.87	1.87							
MU	0.00	0.05	0.00	0.00	0.10	0.05	0.00	0.00	0.00	0.10	0.15	0.05	0.00	0.05	0.15	0.05	0.74		0.74						
4 SU	0.00	0.05	0.05	0.00	0.00	0.05	0.05	0.00	0.00	0.15	0.05	0.00	0.00	0.05	0.15	0.10	0.69			0.69					
- N	0.93	0.54	0.74	0.05	0.69	0.34	0.49	0.49	0.49	0.64	0.79	0.79	1.33	1.23	0.69	0.84	11.07				11.07				
7 SS	0.59	0.79	0.54	1.33	0.89	0.34	0.25	0.44	0.79	0.84	1.33	1.13	1.38	0.89	0.98	1.28	13.77					13.77			
MS	0.25	0.15	0.15	0.05	0.25	0.15	0.05	0.10	0.15	0.34	0.20	0.34	0.44	0.34	0.15	0.54	3.64						3.64		
ES	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.25	0.39	0.05	0.54	0.30	0.10	0.20	0.00	2.02							2.02	
																									33.79
EU	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.25	0.05	0.10	0.54	0.54	0.00	1.97	1.97							
MU	0.00	0.00	0.05	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.20	0.05	0.05	0.30	0.15	0.15	1.03		1.03						
8 SU	0.00	0.00	0.10	0.00	0.00	0.15	0.20	0.00	0.05	0.10	0.05	0.00	0.00	0.20	0.34	0.30	1.48			1.48					
- N	0.69	0.10	0.30	0.05	0.25	2.61	0.10	0.00	0.74	0.49	0.74	0.30	1.77	4.08	2.95	1.13	16.28				16.28				
1 SS	0.05	0.00	0.10	0.20	0.64	0.64	0.15	0.15	0.93	0.74	0.20	0.20	0.64	0.20	1.82	0.25	6.89					6.89			
2 MS	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.05	0.05	0.05	0.10	0.39						0.39		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05							0.05	
																									28.09
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.15	0.05	0.00	0.20	0.05	0.15	0.00	0.69	0.69							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.44	0.54	0.10	1.28		1.28						
3 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.00	0.00	0.10	0.64	0.10	0.05	1.03			1.03					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.30	0.00	0.05	0.44	1.28	3.05	1.77	0.59	7.58				7.58				
1 SS	0.00	0.00	0.00	0.00	0.00	0.10	0.15	0.05	0.44	0.00	0.00	0.00	0.05	0.10	0.74	0.15	1.77					1.77			
8 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									12.35

Three Mile Island Nuclear Statio — October-December, 2006
100 ft. Wind Speed and Direction — 150Ft-33Ft Delta-T (F)

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.10	0.00	0.15		0.15						
9 SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.20	0.00	0.30			0.30					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.20	0.10	0.10	0.00	0.54				0.54				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.10	0.05	0.00	0.25					0.25			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.10						0.10		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									1.33
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
G MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
T SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05					0.05			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05						0.05		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.10
TOT	3.98	2.36	2.75	2.21	3.54	5.66	2.26	2.46	5.90	5.84	7.62	6.39	10.38	14.90	14.71	8.02	100.00	5.16	3.74	3.64	39.20	30.35	11.71	6.20	100.00

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-
0.25	0.05	0.10	0.00	0.05	0.00	0.00	0.00	0.30	0.93	0.64	0.15	0.44	0.89	1.03	0.34	5.16	Extremely Unstable
0.00	0.05	0.05	0.05	0.10	0.15	0.00	0.00	0.05	0.10	0.39	0.15	0.30	0.89	1.13	0.34	3.74	Moderately Unstable
0.00	0.05	0.15	0.00	0.00	0.20	0.25	0.00	0.15	0.30	0.20	0.05	0.15	0.93	0.79	0.44	3.64	Slightly Unstable
1.92	0.74	1.43	0.20	0.93	3.20	0.74	0.69	1.82	1.48	1.97	1.67	4.82	8.71	6.05	2.85	39.20	Neutral
1.28	0.89	0.74	1.67	1.82	1.33	0.64	1.08	2.51	1.92	2.41	2.16	2.66	2.12	4.53	2.61	30.35	Slightly Stable
0.44	0.39	0.30	0.20	0.59	0.34	0.54	0.49	0.49	1.08	1.48	1.23	1.08	1.08	0.79	1.18	11.71	Moderately Stable
0.10	0.20	0.00	0.10	0.05	0.44	0.10	0.20	0.59	1.03	0.54	0.98	0.93	0.30	0.39	0.25	6.20	Extremely Stable

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C A L M
1.23	0.64	0.64	0.54	0.59	1.08	0.74	1.08	1.18	1.97	3.20	2.41	2.16	2.21	2.56	2.12	24.35	< 3.5 mph
1.92	1.62	1.57	1.43	2.02	0.98	0.89	1.08	1.82	2.85	2.85	2.85	3.44	2.80	2.56	3.10	33.79	3.6 - 7.5 mph
0.84	0.10	0.54	0.25	0.93	3.49	0.44	0.15	1.77	1.77	1.48	0.59	2.61	5.36	5.85	1.92	28.09	7.6 - 12.5 mph
0.00	0.00	0.00	0.00	0.00	0.10	0.20	0.10	0.93	0.20	0.10	0.44	1.82	4.28	3.30	0.89	12.35	12.6 - 18.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.10	0.34	0.25	0.44	0.00	1.33	18.6 - 24.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.10	> 24.5 mph

Three Mile Island Nuclear Statio
100 ft. Wind Speed and Direction

January-December, 2006
150Ft-33Ft Delta-T (F)

Number of Observations = 8292
Values are Percent Occurrence

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	EU	MU	SU	N	SS	MS	ES	TOTAL
	WIND DIRECTION CLASSES																	STABILITY CLASSES							
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00						
C SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00					
A N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00				
L SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00			
M MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.00
EU	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.07	0.17	0.25	0.18	0.47	0.25	1.54	1.54							
MU	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.04	0.05	0.07	0.11	0.12	0.21	0.08	0.77		0.77						
1 SU	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.01	0.04	0.08	0.06	0.06	0.06	0.04	0.42			0.42					
- N	0.24	0.17	0.18	0.10	0.13	0.17	0.10	0.19	0.22	0.30	0.37	0.28	0.41	0.27	0.48	0.37	3.98				3.98				
3 SS	0.43	0.21	0.19	0.14	0.23	0.31	0.28	0.41	0.40	0.35	0.70	0.75	0.89	0.75	0.76	0.84	7.65					7.65			
MS	0.25	0.13	0.14	0.11	0.25	0.25	0.35	0.31	0.30	0.54	0.75	0.77	0.81	0.62	0.65	0.47	6.72						6.72		
ES	0.08	0.08	0.01	0.08	0.05	0.21	0.08	0.17	0.23	0.39	0.42	0.24	0.33	0.18	0.12	0.14	2.82							2.82	
																									23.90
EU	0.47	0.07	0.11	0.04	0.08	0.04	0.05	0.08	0.08	0.36	0.58	0.24	0.29	0.48	1.13	1.13	5.25	5.25							
MU	0.10	0.06	0.04	0.13	0.10	0.04	0.06	0.04	0.05	0.13	0.28	0.18	0.07	0.13	0.34	0.31	2.05		2.05						
4 SU	0.10	0.04	0.02	0.00	0.08	0.02	0.02	0.05	0.02	0.10	0.08	0.06	0.04	0.16	0.22	0.19	1.21			1.21					
- N	0.94	0.58	0.68	0.42	0.66	0.75	0.54	0.59	0.81	0.78	0.99	1.10	1.29	1.45	1.12	1.07	13.77				13.77				
7 SS	1.39	0.82	0.48	0.72	0.83	0.49	0.39	0.46	0.83	0.94	0.96	0.96	1.37	0.93	0.84	1.17	13.60					13.60			
MS	0.35	0.07	0.06	0.10	0.14	0.10	0.10	0.11	0.17	0.33	0.29	0.22	0.37	0.17	0.21	0.62	3.39						3.39		
ES	0.02	0.00	0.00	0.05	0.04	0.02	0.04	0.06	0.12	0.29	0.14	0.22	0.12	0.04	0.07	0.06	1.29							1.29	
																									40.56
EU	0.11	0.01	0.00	0.04	0.05	0.06	0.04	0.00	0.06	0.45	0.27	0.06	0.13	0.39	0.59	0.40	2.64	2.64							
MU	0.08	0.01	0.01	0.02	0.02	0.10	0.04	0.02	0.00	0.11	0.17	0.07	0.18	0.22	0.60	0.30	1.97		1.97						
8 SU	0.06	0.00	0.02	0.01	0.06	0.13	0.08	0.01	0.04	0.05	0.08	0.01	0.08	0.22	0.33	0.31	1.51			1.51					
- N	0.63	0.08	0.10	0.06	0.71	1.22	0.23	0.11	0.46	0.47	0.47	0.47	1.24	2.46	2.75	1.27	12.72				12.72				
1 SS	0.22	0.10	0.18	0.10	0.42	0.42	0.18	0.08	0.36	0.52	0.17	0.17	0.24	0.35	0.68	0.30	4.49					4.49			
2 MS	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.04	0.00	0.01	0.02	0.02	0.05	0.23						0.23		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.02							0.02	
																									23.58
EU	0.04	0.00	0.00	0.00	0.04	0.05	0.00	0.00	0.02	0.05	0.01	0.00	0.05	0.02	0.27	0.07	0.62	0.62							
1 MU	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.12	0.28	0.64	0.16	1.24		1.24						
3 SU	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.02	0.02	0.00	0.01	0.05	0.24	0.45	0.12	0.95			0.95					
- N	0.07	0.00	0.00	0.00	0.02	0.07	0.07	0.01	0.08	0.06	0.06	0.21	0.76	1.75	2.12	0.51	5.80				5.80				
1 SS	0.01	0.00	0.00	0.00	0.00	0.10	0.07	0.04	0.16	0.12	0.00	0.04	0.10	0.11	0.30	0.14	1.18					1.18			
8 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									9.79

Three Mile Island Nuclear Statio — January-December, 2006
100 ft. Wind Speed and Direction — 150Ft-33Ft Delta-T (F)

SPEED CLASS	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	STABILITY CLASSES EU	MU	SU	N	SS	MS	ES	TOTAL
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.05	0.11	0.11							
1 MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.11	0.14	0.01	0.34		0.34						
9 SU	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.04	0.19	0.01	0.29			0.29					
- N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.11	0.25	0.48	0.01	0.89				0.89				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.02	0.08	0.01	0.16					0.16			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02						0.02		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									1.81
EU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
G MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.16		0.16						
T SU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.05			0.05					
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04	0.11				0.11				
2 SS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.04					0.04			
4 MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01						0.01		
ES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							0.00	
																									0.36
TOT	5.72	2.45	2.24	2.16	3.96	4.58	2.79	2.77	4.57	6.52	7.01	6.40	9.62	12.00	16.55	10.66	100.00	10.15	6.52	4.43	37.28	27.11	10.37	4.14	100.00

Wind Direction by Stability

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-STABILITY CLASSES-
0.66	0.10	0.12	0.07	0.17	0.14	0.08	0.08	0.18	0.93	0.93	0.47	0.72	1.07	2.51	1.91	10.15	Extremely Unstable
0.23	0.07	0.05	0.17	0.13	0.14	0.12	0.06	0.07	0.29	0.49	0.33	0.55	0.86	2.00	0.95	6.52	Moderately Unstable
0.17	0.04	0.05	0.01	0.14	0.18	0.14	0.07	0.12	0.18	0.22	0.17	0.25	0.71	1.25	0.71	4.43	Slightly Unstable
1.88	0.83	0.95	0.58	1.53	2.21	0.94	0.90	1.60	1.62	1.89	2.05	3.81	6.17	7.03	3.27	37.28	Neutral
2.05	1.12	0.95	0.96	1.48	1.33	0.93	0.99	1.76	1.94	1.83	1.93	2.62	2.16	2.68	2.47	27.11	Slightly Stable
0.62	0.21	0.21	0.23	0.41	0.35	0.45	0.43	0.48	0.88	1.07	1.00	1.21	0.81	0.88	1.15	10.37	Moderately Stable
0.11	0.08	0.01	0.13	0.08	0.23	0.12	0.23	0.35	0.69	0.57	0.46	0.46	0.22	0.19	0.21	4.14	Extremely Stable

Wind Direction by Wind Speed

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL	-WIND SPEED CLASSES-
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C A L M
1.12	0.60	0.54	0.45	0.68	0.94	0.82	1.10	1.22	1.69	2.40	2.36	2.86	2.17	2.75	2.21	23.90	< 3.5 mph
3.36	1.64	1.39	1.46	1.94	1.46	1.19	1.39	2.09	2.93	3.33	2.98	3.56	3.35	3.93	4.56	40.56	3.6 - 7.5 mph
1.11	0.21	0.31	0.25	1.28	1.93	0.57	0.23	0.93	1.62	1.19	0.78	1.91	3.65	4.97	2.64	23.58	7.6 - 12.5 mph
0.12	0.00	0.00	0.00	0.06	0.24	0.19	0.05	0.29	0.27	0.07	0.25	1.07	2.40	3.77	1.00	9.79	12.6 - 18.5 mph
0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.05	0.01	0.01	0.02	0.22	0.42	0.95	0.10	1.81	18.6 - 24.5 mph
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.17	0.16	0.36	> 24.5 mph

5.5 Precipitation

~~data comes~~

Precipitation ~~is currently~~ not collected through the process computer.
is currently OK

Table 12

Precipitation Totals (Inches) - 2006
Three Mile Island Site

Month	Total	Maximum 24-hour	Maximum 1-hour
January	N/A	N/A	N/A
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

TOTAL: N/A

APPENDIX

Three Mile Island Meteorological Calibration

Date: 1-12-06

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A: + 12.247 V	A: - 12.228 V
B: + 12.067 V	B: - 12.235 V

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft.				
ZERO	2.583 V	— V	32.3 °	— °	— °	2.571V ± 0.050V	
SPAN	4.620 V	— V	89.4 °	— °	— °	4.643V ± 0.050V	
			100 ft.				
VS ZERO	0.000 V	— V	0 mph	0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.252 V	— V	85.04 mph	84 mph	85 mph	4.262V ± 0.025V	AL EQUIV ±.1mph
VD ZERO	0.000 V	— V	0 °	0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	-4.999 V	— V	538.92 °	540 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
VS ZERO	0.000 V	— V	0 mph	2 mph	0 mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.244 V	— V	84.88 mph	86 mph	85 mph	4.262V ± 0.025V	AL EQUIV ± 1mph
VD ZERO	-0.002 V	0.000 V	0 °	0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	-4.991 V	-5.000 V	540 °	540 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
T ZERO	1.436 V	— V	0.04 °	— °	— °	1.429V ± 0.050V	
T SPAN	5.008 V	— V	20.05 °	— °	— °	5.000V ± 0.050V	
ZERO	2.575 V	— V	32.1 °	— °	— °	2.571V ± 0.050V	
SPAN	4.611 V	— V	89.1 °	— °	— °	4.643V ± 0.050V	

MAC 2/21/06

Three Mile Island Meteorological Calibration

Date: 1-12-06

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft.				
ZERO	2.586 V	— V	32.41 °	— °	— °	2.571V ± 0.050V	
SPAN	4.619 V	— V	89.33 °	— °	— °	4.643V ± 0.050V	
			100 ft.				
VS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.239 V	4.263 V	85.26 mph	84 mph	85 mph	4.262V ± 0.025V	AL EQUIV ±.1mph
VD ZERO	0.000 V	— V	0 °	0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	-4.992 V	— V	539.1 °	530 °	540 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
T ZERO	1.431 V	— V	0.01 °	— °	— °	1.429V ± 0.050V	
T SPAN	4.991 V	— V	19.95 °	— °	— °	5.000V ± 0.050V	
ZERO	2.579 V	— V	32.21 °	— °	— °	2.571V ± 0.050V	
SPAN	4.615 V	— V	89.22 °	— °	— °	4.643V ± 0.050V	

MTC 2/21/06

Date: 1-12-06

TOWER MEASUREMENTS

[X] Ambient [ ] Ice Bath

Temperatures

	A 33 ft. Amb.		B 33 ft. Amb.		A 150 ft. Amb.	
	AF	AL	AF	AL	AF	AL
Measured	56.25 °F	– °F	56.25 °F	– °F	59.0 °F	– °F
Recorded	56.50 °F	– °F	56.30 °F	– °F	58.8 °F	– °F
Difference	0.25 °F	– °F	0.05 °F	– °F	0.2 °F	– °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb.		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	59.0 °F	– °F	80.0 °F	– °F	0.13 °F	– °F
Recorded	59.05 °F	– °F	0.0 °F	– °F	0.2 °F	– °F
Difference	0.05 °F	– °F	0.0 °F	– °F	0.07 °F	– °F
Specification	±0.5°F		±0.25°F		±0.25°F	

Winds

	A 100 ft.		B 100 ft.		150 ft.		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.5mph ± 0.5mph
Forw. WD	252 °	– °	252 °	– °	249 °	– °	250° ± 5°
Revr. WD	73 °	– °	429 °	– °	68 °	– °	70°/430° ± 5°
Tracking/wear	OK		OK		OK		

Comments:

100' A WS: MT0044 removed MT0007 Installed

100' B WS: 1228 removed MT0043 Installed

150' WS: MT0045 removed MT0077 Installed

MTC 2/21/06

Three Mile Island Meteorological Calibration

Date: 1-12-06

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: In (Out) Installed Removed

Tower Condition	Good	Fair	Poor
Paint	☑	☐ ☐	
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - 1
Digital multimeter - S/N - 90150039
Digital multimeter - S/N - 87930008
89880269

Technicians: Mike Marx, Jon Stranzl, Andy Lotz

Comments:

Signature: Andy Lotz

MTC 2/21/06

System Response Check

Date: 1-12-06

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	20.0 ±0.4	108 ±2	-12.0 ±0.5	-2.4 ±0.1
As Found Response	20.0	108.0	-12.0	-2.40
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	50.0 ±0.4	270 ±2	30.0 ±0.5	6.0 ±0.1
As Found Response	50.0	270.2	30.1	6.01
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	85.0 ±0.4	459 ±2	79.0 ±0.5	15.8 ±0.1
As Found Response	85.0	459.2	79.1	15.81
As Left Response	—	—	—	—

MTC 2/21/06

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. (Steve Acker x8183)) that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms n be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficienci

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Andy [illegible] — 1-12-06

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MTC 2/21/06

Three Mile Island Meteorological Calibration

Date: 9-26-06

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A: + 12.030 V	A: - 12.206 V
B: + 12.065 V	B: - 12.237 V

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft.				
ZERO	2.583 V	— V	32.32 °	N/A °	— °	2.571V ± 0.050V	
SPAN	4.619 V	— V	89.33	N/A °	— °	4.643V ± 0.050V	
			100 ft.				
VS ZERO	0.001 V	— V	0.02 mph	1 mph	0 mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.258 V	— V	85.16 mph	86 mph	85 mph	4.262V ± 0.025V	AL EQUIV ±.1mph
VD ZERO	0.000 V	— V	0 °	2 °	0 °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	-5.000 V	— V	540 °	7540 °	540 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
VS ZERO	0.000 V	— V	0 mph	0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.255 V	— V	85.1 mph	85 mph	— mph	4.262V ± 0.025V	AL EQUIV ± 1mph
VD ZERO	-0.002 V	— V	-0.2 °	0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	-5.002 V	— V	540.2 °	540 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
T ZERO	1.432 V	— V	0.02 °	N/A °	— °	1.429V ± 0.050V	
T SPAN	5.004 V	— V	20.02 °	N/A °	— °	5.000V ± 0.050V	
ZERO	2.573 V	— V	32.04 °	N/A °	— °	2.571V ± 0.050V	
SPAN	4.609 V	— V	89.05 °	N/A °	— °	4.643V ± 0.050V	

JMC 10/17/06

Three Mile Island Meteorological Calibration

Date: 9-26-06

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft.				
ZERO	2.585 V	— V	32.38 °	N/A °	— °	2.571V ± 0.050V	
SPAN	4.620 V	— V	89.36 °	N/A °	— °	4.643V ± 0.050V	
			100 ft.				
VS ZERO	0.000 V	— V	0 mph	0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.359 V	4.262 V	85.24 mph	85 mph	— mph	4.262V ± 0.025V	AL EQUIV ±.1mph
VD ZERO	0.000 V	— V	0 °	0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	4.993 V	— V	539.2 °	530 °	540 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
T ZERO	1.429 V	— V	0.00 °	N/A °	— °	1.429V ± 0.050V	
T SPAN	4.988 V	— V	19.93 °	N/A °	— °	5.000V ± 0.050V	
ZERO	2.579 V	— V	32.21 °	N/A °	— °	2.571V ± 0.050V	
SPAN	4.615 V	— V	89.22 °	N/A °	— °	4.643V ± 0.050V	

MMC 10/17/06

Three Mile Island Meteorological Calibration

Date: 9-26-06

TOWER MEASUREMENTS

☑ Ambient ☐ Ice Bath

Temperatures

	A 33 ft. Amb.		B 33 ft. Amb.		A 150 ft. Amb.	
	AF	AL	AF	AL	AF A52	AL
Measured	63.0 °F	– °F	63.0 °F	– °F	63.875 °F	– °F
Recorded	63.25 °F	– °F	62.8 °F	– °F	63.75 58 °F	– °F
Difference	0.25 °F	– °F	0.2 °F	– °F	0.17 °F	– °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb.		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	63.5 °F	– °F	-1.07 °F	– °F	-1.57 °F	– °F
Recorded	63.6 °F	– °F	-1.07 °F	– °F	-1.43 °F	– °F
Difference	0.1 °F	– °F	0.0 °F	– °F	0.14 °F	– °F
Specification	±0.5°F		±0.25°F		±0.25°F	

Winds

	A 100 ft.		B 100 ft.		150 ft.		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.4 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.5mph ± 0.5mph
Forw. WD	255 °	248 °	249 °	253 °	251 °	253 °	250° ± 5°
Revr. WD	76 °	69 °	429 °	429 °	430 °	431 °	70°/430° ± 5°
Tracking/wear	OK		OK		OK		

Comments:

MT0040 installed @ 100'A ws (MT0007 removed) 100'A wn MT0092 installed (S/N ~~399~~ 394 removed

MT0046 installed @ 100'B WS (MT0043 removed) 100'B wn MT0038 installed (S/N 396 removed

MT0080 installed @ 150' WS (MT0077 removed) 150' wn MT0137 installed (S/N 395 rem

MAC 10/17/06

Three Mile Island Meteorological Calibration

Date: 9-26-06

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: (In) Out Installed Removed

Tower Condition	Good	Fair	Poor
Paint	☐	☐	☑
Guy wire tension	☐	☐	☑
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT0103
Digital multimeter - S/N - 90150039
Digital multimeter - S/N -

Technicians: Mike Marx, Andy Lotz, Jon Stranzl

Comments:

Signature: Jonathan Shay

JMC 10/17/06

System Response Check

Date: 9-26-06

Site: TMI
ystem: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	20 ±0.4	108 ±2	-12 ±0.5	-2.4 ±0.1
As Found Response	20.0	108.0	-12.0	-2.4
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	60 ±0.4	324 ±2	44 ±0.5	8.8 ±0.1
As Found Response	60.0	324.1	44.0	8.8
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	80 ±0.4	72/432 ±2	72 ±0.5	14.4 ±0.1
As Found Response	80.0	431.8	71.9	14.39
As Left Response	—	—	—	—

MAC 10/17/06

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms n be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficienci

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Andrew J. [illegible] — 9-26-06

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MMC 10/17/06

Three Mile Island Meteorological Calibration

Date: 12-4-06/12-5-06

POWER SUPPLIES

+12.000V ± 0.250V	-12.000V ± 0.250V
A: + 12.032 V	A: - 12.214 V
B: + 12.069 V	B: - 12.235 V

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft.				
Γ ZERO	2.582 V	— V	32.3 °			2.571V ± 0.050V	
Γ SPAN	4.620V	— V	89.4 °			4.643V ± 0.050V	
			100 ft.				
NS ZERO	0.000 V	333 12-5-06 X — V	0.0 mph	1.0 mph	0.0 mph	0.000V ± 0.025V	AL EQUIV ± 1mph
NS SPAN	4.252 V	— V	85.0 mph	85.0 mph	— mph	4.262V ± 0.025V	AL EQUIV ±.1mph
ND ZERO	0.000 V	— V	0.0 °	0.0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
ND SPAN	4.999 V	— V	539.9 °	530.0 °	540.0 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
NS ZERO	0.000 V	— V	0.0 mph	0.0 mph	— mph	0.000V ± 0.025V	AL EQUIV ± 1mph
NS SPAN	4.210 V	4.262 V	85.25 mph	85.0 mph	— mph	4.262V ± 0.025V	AL EQUIV ± 1mph
ND ZERO	0.001 V	— V	-0.1 °	0.0 °	— °	0.000V ± 0.100V	AL EQUIV ± 2.5°
ND SPAN	4.999 V	— V	539.9 °	540.0 °	— °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
ΔT ZERO	1.434 V	— V	0.0 °			1.429V ± 0.050V	
ΔT SPAN	5.005 V	— V	20.0 °			5.000V ± 0.050V	
T ZERO	2.575 V	— V	32.1 °			2.571V ± 0.050V	
T SPAN	4.612 V	— V	89.1 °			4.643V ± 0.050V	

MTC 1/3/07

Three Mile Island Meteorological Calibration

Date: 12-4-06/12-5-05

Signal Conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
			33 ft.				
T ZERO	2.582 V	– V	32.3 °	32.2 °	– °	2.571V ± 0.050V	
T SPAN	4.620 V	– V	89.4 °	89.3 °	– °	4.643V ± 0.050V	
			100 ft.				
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.252 V	– V	85.0 mph	85.0 mph	– mph	4.262V ± 0.025V	AL EQUIV ±.1mph
WD ZERO	0.000 V	– V	0.0 °	360.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	4.999 V	– V	539.9 °	180.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
WS ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
WS SPAN	4.210 V	4.262 V	85.25 mph	85.2 mph	– mph	4.262V ± 0.025V	AL EQUIV ± 1mph
WD ZERO	0.001 V	– V	-0.1 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
WD SPAN	4.999 V	– V	539.9 °	180.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
AT ZERO	1.434 V	– V	0.0 °	0.0 °	– °	1.429V ± 0.050V	
AT SPAN	5.005 V	– V	20.0 °	20.0 °	– °	5.000V ± 0.050V	
T ZERO	2.575 V	– V	32.1 °	32.0 °	– °	2.571V ± 0.050V	
T SPAN	4.612 V	– V	89.1 °	89.0 °	– °	4.643V ± 0.050V	

MTC 1/3/07

Three Mile Island Meteorological Calibration

Date: 12-5-06

Signal conditioners and Recorder:

	Signal Conditioner Voltage Out			Recorder		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Recorder
			33 ft.				
ZERO	2.586 V	– V	32.4 °			2.571V ± 0.050V	
SPAN	4.621 V	– V	89.4 °			4.643V ± 0.050V	
			100 ft.				
VS ZERO	0.000 V	– V	0.0 mph	1.0 mph	0.0 mph	0.000V ± 0.025V	AL EQUIV ± 1mph
VS SPAN	4.216 V	4.262 V	85.25 mph	86.0 mph	85.0 mph	4.262V ± 0.025V	AL EQUIV ±.1mph
VD ZERO	0.001 V	– V	-0.1 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
VD SPAN	4.993 V	– V	539.3 °	>540 °	540.0 °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
T ZERO	1.431 V	– V	0.0 °			1.429V ± 0.050V	
T SPAN	4.989 V	– V	19.9 °			5.000V ± 0.050V	
ZERO	2.580 V	– V	32.2 °			2.571V ± 0.050V	
SPAN	4.616 V	– V	89.3 °			4.643V ± 0.050V	

MTC 1/3/07

Three Mile Island Meteorological Calibration

Date: 12-5-06

Signal conditioners and Data Logger:

	Signal Conditioner Voltage Out			Data Logger		Specifications	
	AF	AL	AL EQUIV	AF	AL	Signal Cond.	Data Logger
			33 ft.				
Γ ZERO	2.586 V	– V	32.4 °	32.4 °	– °	2.571V ± 0.050V	
Γ SPAN	4.621 V	– V	89.4 °	89.3 °	– °	4.643V ± 0.050V	
			100 ft.				
/S ZERO	0.000 V	– V	0.0 mph	0.0 mph	– mph	0.000V ± 0.025V	AL EQUIV ± 1mph
/S SPAN	4.216 V	4.262 V	85.25 mph	85.2 mph	– mph	4.262V ± 0.025V	AL EQUIV ±.1mph
/D ZERO	0.001 V	– V	-0.1 °	0.0 °	– °	0.000V ± 0.100V	AL EQUIV ± 2.5°
/D SPAN	4.993 V	– V	539.3 °	179.0 °	– °	-5.000V ± 0.100V	AL EQUIV ± 2.5°
			150 ft.				
ΔT ZERO	1.431 V	– V	0.0 °	0.0 °	– °	1.429V ± 0.050V	
ΔT SPAN	4.989 V	– V	19.9 °	19.9 °	– °	5.000V ± 0.050V	
Γ ZERO	2.580 V	– V	32.2 °	32.4 °	– °	2.571V ± 0.050V	
Γ SPAN	4.616 V	– V	89.3 °	89.3 °	– °	4.643V ± 0.050V	

MRC 1/3/07

Three Mile Island Meteorological Calibration

Date: 12-5-06

TOWER MEASUREMENTS

☑ Ambient ☐ Ice Bath

Temperatures

	A 33 ft. Amb.		B 33 ft. Amb.		A 150 ft. Amb.	
	AF	AL	AF	AL	AF	AL
Measured	32.50 °F	– °F	32.50 °F	– °F	32.9 °F	– °F
Recorded	32.50 °F	– °F	32.30 °F	– °F	32.9 °F	– °F
Difference	0.00 °F	– °F	0.20 °F	– °F	0.00 °F	– °F
Specification	±0.5°F		±0.5°F		±0.5°F	

	B 150 ft. Amb.		A 150 ft. ΔT		B 150 ft. ΔT	
	AF	AL	AF	AL	AF	AL
Measured	32.9 °F	– °F	-1.25 °F	– °F	-1.25 °F	– °F
Recorded	32.8 °F	– °F	-1.20 °F	– °F	-1.30 °F	– °F
Difference	0.10 °F	– °F	0.05 °F	– °F	0.05 °F	– °F
Specification	±0.5°F		±0.25°F		±0.25°F	

Winds

	* A 100 ft.		B 100 ft.		150 ft.		
	AF	AL	AF	AL	AF	AL	*Specification*
WS stall	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.0 mph	0.5mph ± 0.5mph **
Forw. WD	160 °	– °	252 °	– °	252 °	– °	250° ± 5°
Revr. WD	341 °	– °	73 °	– °	72 °	– °	70°/430° ± 5°
Tracking/wear	OK		OK		OK		

Comments: * Siting for the 100ft Alpha wind direction will be changed to 163° and 343° ± 5°

** specifications on the wind speed stalls will be changed to 0.0mph ± 0.5mph

MTC 1/3/07

Three Mile Island Meteorological Calibration

Date: 12-5-06

	33 ft.	150 ft.
Aspirators:	OK	OK

Operation of Rain Gauge: OK

Debris screen: In Out Installed (Removed)

Tower Condition	Good	Fair	Poor
Paint	☑	☐	☐
Guy wire tension	☑	☐	☐
Shelter condition	☑	☐	☐

Note:
AF = As Found
AL = As Left
— = no change (AF=AL)

FS = Full Scale

Calibration Instruments:
Psychrometer - S/N - MT-0103
Digital multimeter - S/N - R052157
Digital multimeter - S/N - R054232

Technicians: Jon Stranzl, Mike Marx

Comments:

100ft wind speed (Alpha system) MT-0040 (removed)
MT-0118 (installed)
100ft wind speed (Bravo system) MT-0047 (removed)
MT-0079 (installed)
150ft. wind speed MT-0080 (removed)
MT-0008 (installed)

Signature: Jonathan Stranzl

MRC 1/3/07

System Response Check

Date: 12-5-06

Site: TMI
System: Process Computer – A0992-A0995

Low Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	20.0 ±0.4	108.0 ±2	-12.0 ±0.5	-2.4 ±0.1
As Found Response	20.0	107.0	-12.0	-2.4
As Left Response	—	—	—	—

Mid Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	60.0 ±0.4	324.0 ±2	44.0 ±0.5	8.8 ±0.1
As Found Response	60.0	323.9	44.0	8.8
As Left Response	—	—	—	—

Full Scale Check	A0992 100' WS	A0993 100' WD	A0994 33' T	A0995 150-33'ΔT
Expected Response	80.0 ±0.4	432/72 ±2	72.0 ±0.5	14.4 ±0.1
As Found Response	80.0	431.8	72.0	14.4
As Left Response	—	—	—	—

MTC 1/3/07

Checklist – Murray & Trettel Met. Tower Calibration for TMI

(Initial all steps upon completion)

Prerequisites

✓ 1) Notify the Chemistry Rep. that M&T personnel are arriving on-site and instruct to take the work order to "in-prog".

✓ 2) After going the Gate 20, ensure the gate is locked to maintain Site access control.

✓ 3) Contact Control Room Supervisor to inform that the Met Tower Calibration will commence and the tower is OOS. (x8071) Tell the Control Room that sporadic alarms may be received throughout the evolution.

✓ 4) Ensure the proper PPE is available and in good condition (Fall Protection equipment, etc).

✓ 5) The Site representative will perform a pre-job brief using HU-AA-1211. Brief shall include discussion of appropriate safety precautions including, fall protection, use of gloves, hard hats, safety glasses.

Procedure

✓ 1) Perform calibration of the 'A' sensors and record the data IAW M&T procedure P1009

✓ 2) Perform calibration of the 'B' sensors and record the data IAW M&T procedure P1009

Returning the Met Tower to service

✓ 1) Ensure the Control Room indications are selected to the 'A' Processor Rack.

✓ 2) Ensure all processor switches are in the "OP" mode and the red "OPS" light is off. The wind direction light may be on depending on the actual wind direction, this is acceptable.

✓ 3) Compare parameter values for two different 15 minute averages on the computer (15 minute average obtained by clicking on "Options" then on AV).

✓ 4) Verify all acceptance criteria has been met, record discrepancies and comments on the data sheets. Notify the Chemistry contact for any OOS equipment or deficiencies.

✓ 5) Review the data sheets for completeness.

✓ 6) IF all required acceptance criteria are met, notify the Control Room Supervisor that the met tower is returned to service.

✓ 7) Ensure the heating & ventilation system is operating, turn off the shack light and lock the shack door. Ensure Gate 20 is locked.

✓ 8) Notify the Chemistry Rep. that the work order may be closed out in PIMS.

Jonathan Murray — 12/5/06

All acceptance criteria are met and tower is ready for return to service. (M&T Rep) — Date

MAC 1/3/07