POWERTECH (USA) INC.

APPENDIX 3.6-A

Support Information for Newcastle, Wyoming Meteorological Monitoring Site

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APPENDIX 3.6-A: SUPPORT INFORMATION FOR NEWCASTLE, WYOMING METEOROLOGICAL MONITORING SITE

IML Air Science (IML), in Sheridan, Wyoming, operates a meteorological station in Newcastle, Wyoming, which has generated more than 9 years (2002 to present) of hourly meteorological data. Newcastle is approximately 30 miles north-northwest of the Dewey-Burdock project site and provides a better comparison to the Dewey-Burdock permit area than the Chadron site in terms of elevation, surrounding topography and proximity to the southwestern flank of the Black Hills.

The meteorological station at Newcastle is used to supplement the ambient air quality compliance demonstration. The station meets the requirements of Ambient Air Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987). Table 1 identifies the instruments and associated specifications at this station. Figures 1 through 8 summarize the historical meteorological data for the Newcastle station.

Table 1: Newcastle MET Station Equipment List (IML, 2011)

Newcastle Met Station					
Parameter	**Instrument**	**Range**	**Accuracy**	**Threshold**	**Instrument Height**
Wind Speed	RM Young 05305 Wind Monitor AQ	0 to 112 mph	±0.4 mph or 1% of reading	0.9 mph	10 meters
Wind Direction	RM Young 05305 Wind Monitor AQ	0 to 360º	±3º	1.0 mph	10 meters
Temperature	Fenwal Electronics 107 Temperature Probe	-25º to 50º C	±0.2º C @ 0 - 60º C, ±0.4º C @ -35º C	--	2 meters
Precipitation	Met One Tipping Bucket	0 to 12 inches	±0.5% @ 0.5 in/hr rate	0.01 inch	1 meter
Barometric Pressure	Campbell Scientific - 105	600 – 1060 millibar	±0.5 mb @ 20º C	--	2 meters
Relative Humidity	CS 500-L Temp/RH probe	0 – 100% -40º to 60ºC	±3% RH 10% to 90%	--	2 meters
Data Logger	CS CR510	--	--	--	--

The specifications in Table 1 meet or exceed the requirements set forth in NRC Regulatory Guide 3.63, Section C3. All instruments are audited for accuracy on a semi-annual basis. Sample audit records are included as Tables 2 through 5 at the end of this appendix. Data recovery for all parameters at Newcastle exceeded 96% for both long-term (2002 through August 2011) and concurrent-year (7/18/2007 to 7/17/2008) periods.

References:

EPA (U.S. Environmental Protection Agency), 1987, Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007, May 1987.

IML Air Science, 2011, hourly average data from the Wyoming Refining Company Meteorological Monitoring Station, Newcastle, Wyoming, 2002 - 2011.

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Figure 1

Wyoming Refining

Meteorological Data Summary

1/1/2002 - 8/31/2011

Hourly Data

	Average/Total	Max	Min
Wind Speed (mph)	6.8	31.2	0.0
Sigma-Theta (°)	19.4	86.1	0.0
Temperature (F)	47.2	101.1	-18.5
Relative Humidity (%)	58.5	100.0	6.7
Bar. Pressure (in Hg)	25.6	26.2	24.8
Solar Radiation (w/m^2)	185.4	1,031.0	

Predominant wind direction was from the NE sector,
accounting for 16.6% of the possible winds

Data Recovery

Parameter	Possible (hours)	Reported (hours)	Recovery
Wind Speed	84720	81975	96.76%
Wind Direction	84720	81975	96.76%
Sigma-Theta	84720	81975	96.76%
Temperature	30419	30391	99.91%
Relative Humidity	30419	30391	99.91%
Bar. Pressure	30419	30389	99.90%
Solar Radiation	30419	30391	99.91%

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Figure 2

Wyoming Refining

Meteorological Data Summary

7/18/2007 - 7/17/2008

Hourly Data

	Average/Total	Max	Min
Wind Speed (mph)	7.0	27.9	0.2
Sigma-Theta (°)	19.6	83.2	5.5
Temperature (F)	51.9	93.5	12.4
Relative Humidity (%)	55.3	100.0	8.7
Bar. Pressure (in Hg)	25.6	26.0	25.0
Solar Radiation (w/m^2)	246.8	984.0	

Predominant wind direction was from the NE sector,
accounting for 20.7% of the possible winds

Data Recovery

Parameter	Possible (hours)	Reported (hours)	Recovery
Wind Speed	8784	8475	96.48%
Wind Direction	8784	8475	96.48%
Sigma-Theta	8784	8475	96.48%
Temperature	3059	3058	99.97%
Relative Humidity	3059	3058	99.97%
Bar. Pressure	3059	3058	99.97%
Solar Radiation	3059	3058	99.97%

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Figure 3

10-YR Wind Frequency Distribution
Newcastle, Wyoming
1/1/2002 Hr. 1 to 8/31/2011 Hr. 24

RELATIVE FREQUENCY (% of Recorded Winds) TABLE

mph

Wind Direction	0.0- 4.0	4.0- 7.4	7.4-12.1	12.1-19.0	19.0-25.8	25.8-100.0	Row Total
0.0 deg.(North)	1.6	1.4	1.1	0.5	0.1	0.0	4.7
22.5 deg.	4.3	3.5	0.6	0.2	0.0	0.0	8.7
45.0 deg.	7.0	9.0	0.4	0.1	0.0	0.0	16.6
67.5 deg.	3.6	3.1	0.4	0.1	0.0	0.0	7.1
90.0 deg.	1.7	2.2	1.0	0.3	0.0	0.0	5.3
112.5 deg.	1.2	2.0	2.2	0.8	0.1		6.2
135.0 deg.	0.9	1.5	1.7	1.1	0.1		5.3
157.5 deg.	1.0	1.6	1.6	0.7	0.0		5.0
180.0 deg.	1.2	2.2	1.2	0.3	0.0		4.9
202.5 deg.	1.1	1.6	0.5	0.1	0.0		3.4
225.0 deg.	0.9	1.2	0.4	0.2	0.0		2.7
247.5 deg.	0.8	1.4	0.8	0.2	0.0		3.2
270.0 deg.	0.7	1.4	1.2	0.3	0.0		3.7
292.5 deg.	0.7	1.5	2.3	1.0	0.1	0.0	5.6
315.0 deg.	0.7	1.8	3.8	3.3	0.6	0.0	10.2
337.5 deg.	1.0	1.7	2.5	1.9	0.2	0.0	7.3
	28.5	37.1	21.8	11.2	1.4	0.1	100.0

0 mph (0.8%) INVALID READINGS 2745

NUMBER OF POSSIBLE READINGS 84720 VALID READINGS 81975 DATA CAPTURE 96.76%

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Figure 4

1-YR Wind Frequency Distribution
Newcastle, Wyoming
7/18/2007 Hr. 1 to 7/17/2008 Hr. 24

RELATIVE FREQUENCY (% of Recorded Winds) TABLE

mph

Wind Direction	0.0- 4.0	4.0- 7.4	7.4-12.1	12.1-19.0	19.0-25.8	25.8-100.0	Row Total
0.0 deg.(North)	1.7	1.3	0.5	0.4	0.0		3.9
22.5 deg.	4.6	2.5	0.5	0.1			7.6
45.0 deg.	7.6	12.5	0.5	0.1	0.0	0.0	20.7
67.5 deg.	2.0	2.7	0.4	0.2	0.0	0.0	5.3
90.0 deg.	1.5	2.2	0.7	0.4	0.1	0.0	4.8
112.5 deg.	1.0	2.3	2.5	1.1	0.1		6.9
135.0 deg.	0.9	1.4	1.5	1.1	0.0		4.9
157.5 deg.	0.8	1.5	1.3	0.7	0.0		4.4
180.0 deg.	1.2	2.1	1.6	0.3			5.1
202.5 deg.	1.0	1.5	0.5	0.1	0.0		3.2
225.0 deg.	0.8	1.4	0.3	0.3	0.0		2.8
247.5 deg.	0.8	1.5	0.6	0.2	0.0		3.1
270.0 deg.	0.5	1.7	1.4	0.3			3.9
292.5 deg.	0.5	1.4	1.8	1.1	0.0		4.8
315.0 deg.	0.6	1.5	4.8	4.5	0.6		11.9
337.5 deg.	1.0	1.7	2.0	1.7	0.2		6.6
	26.5	39.0	20.7	12.6	1.3	0.1	100.0

0 mph (0.3%) INVALID READINGS 309

NUMBER OF POSSIBLE READINGS 8784 VALID READINGS 8475 DATA CAPTURE 96.48%

Figure 5

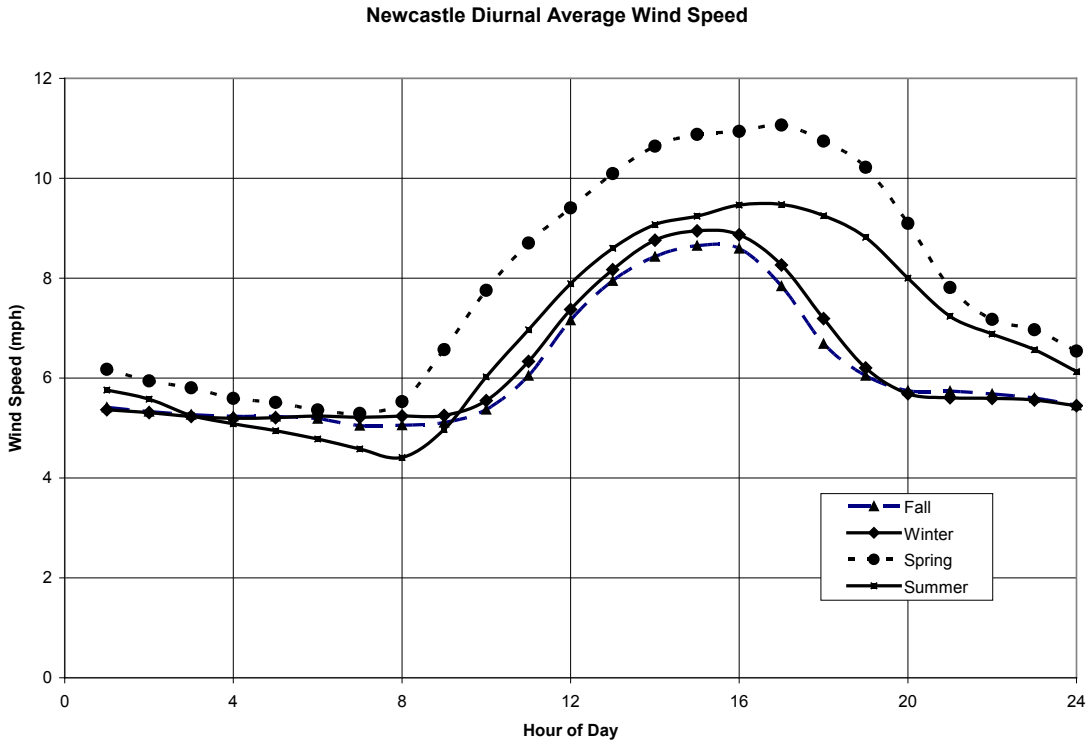

Figure 6

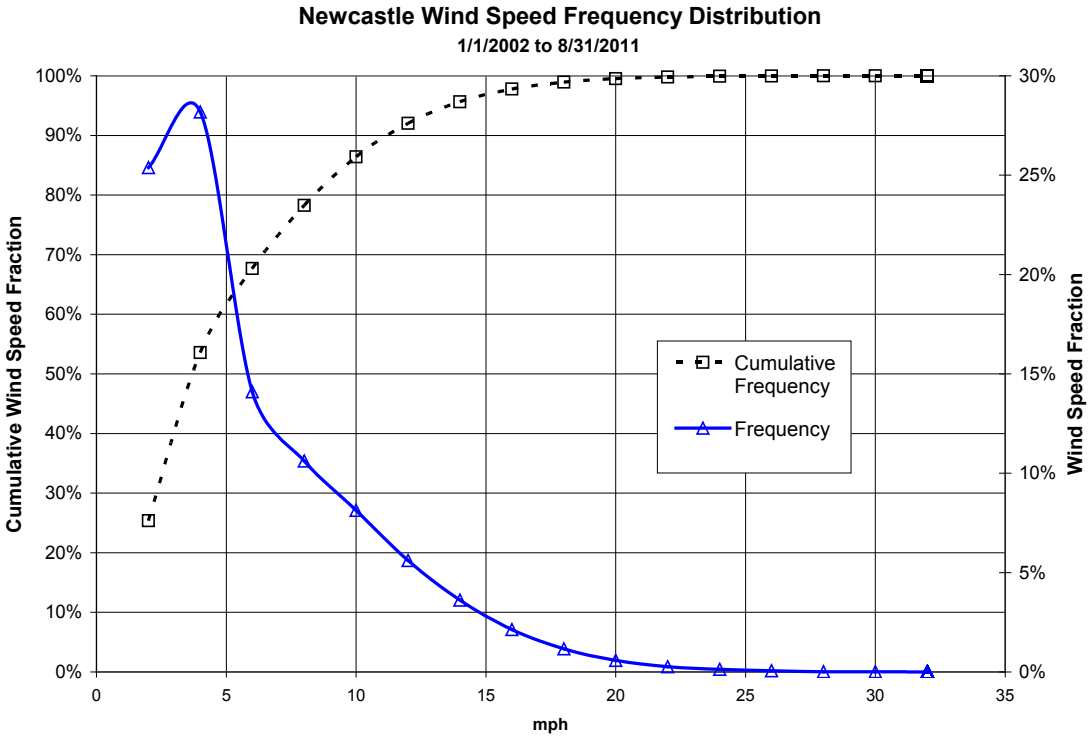

Figure 7

Newcastle Wind Data Summary

1/1/2002 - 8/31/2011

Hourly Data

		Average	Max	Min
Wind Speed (mph)		6.84	31.23	-
Sigma Theta (º)		19.39	86.10	0.00
Wind Direction				
	N	6.71	29.40	-
	NNE	4.60	28.19	0.06
	NE	4.38	27.31	0.03
	ENE	4.35	26.96	-
	E	5.89	27.87	0.04
	ESE	7.75	25.11	0.02
	SE	8.51	23.96	0.19
	SSE	7.69	25.66	0.13
	S	6.38	22.48	0.11
	SSW	5.55	23.26	0.00
	SW	5.90	25.23	0.03
	WSW	6.41	25.18	0.02
	W	7.11	25.77	0.12
	WNW	8.93	27.69	0.04
	NW	11.05	31.23	0.07
	NNW	9.55	29.93	0.06

Predominant wind direction was from the NE sector, accounting for 16.6% of the winds, the average wind direction was 31°.

Data Recovery

		Possible (hours)	Reported (hours)	Recovery
Wind Speed		84720	81975	96.76%
Sigma Theta		84720	81975	96.76%
Wind Direction		84720	81975	96.76%

Figure 8

Stability Class	Wind Direction	Wind Speed (mph) - One Year (Calm = 1.22%)						Row Total
		< 3	4 - 7	8 - 12	13 - 18	19 - 24	> 24	
A	N	0.001298	0.001098					0.002396
	NNE	0.002686	0.001073					0.003759
	NE	0.003297	0.001500					0.004797
	ENE	0.002838	0.001464					0.004302
	E	0.002826	0.001586					0.004412
	ESE	0.002673	0.002733					0.005406
	SE	0.002788	0.003879					0.006667
	SSE	0.003373	0.006319					0.009692
	S	0.003908	0.011101					0.015009
	SSW	0.004531	0.010003					0.014534
	SW	0.003602	0.008869					0.012471
	WSW	0.003106	0.007502					0.010608
	W	0.002202	0.005099					0.007301
	WNW	0.001336	0.003074					0.004411
	NW	0.000993	0.002611					0.003603
	NNW	0.000815	0.001781					0.002596
B	N	0.000127	0.000573	0.001134				0.001835
	NNE	0.000700	0.000561	0.000403				0.001664
	NE	0.001209	0.000878	0.000256				0.002344
	ENE	0.001146	0.000647	0.000232				0.002024
	E	0.000815	0.001500	0.000342				0.002657
	ESE	0.000586	0.002147	0.000695				0.003428
	SE	0.000471	0.002830	0.001439				0.004741
	SSE	0.000356	0.003306	0.003879				0.007542
	S	0.000675	0.004221	0.005148				0.010043
	SSW	0.000586	0.002501	0.002769				0.005855
	SW	0.000496	0.002013	0.002489				0.004998
	WSW	0.000267	0.002269	0.004343				0.006879
	W	0.000331	0.001891	0.004343				0.006565
	WNW	0.000216	0.001171	0.004538				0.005925
	NW	0.000140	0.001122	0.004038				0.005300
	NNW	0.000255	0.000842	0.002586				0.003682
C	N	0.000204	0.000403	0.002830	0.001391			0.004827
	NNE	0.000789	0.001122	0.001134	0.000427			0.003473
	NE	0.001897	0.002245	0.000671	0.000281			0.005093
	ENE	0.001260	0.001781	0.000781	0.000146			0.003968
	E	0.000573	0.002110	0.000988	0.000354			0.004025
	ESE	0.000344	0.002781	0.003733	0.001171			0.008029
	SE	0.000242	0.002135	0.005489	0.002623			0.010489
	SSE	0.000382	0.001793	0.007722	0.002818			0.012715
	S	0.000509	0.003099	0.006026	0.001403			0.011037
	SSW	0.000522	0.001354	0.001891	0.000622			0.004389
	SW	0.000127	0.000586	0.001147	0.000586			0.002445
	WSW	0.000165	0.001013	0.003062	0.000647			0.004886
	W	0.000153	0.001269	0.005807	0.001134			0.008363
	WNW	0.000115	0.000842	0.010308	0.004074			0.015339
	NW	0.000076	0.000927	0.012821	0.008527			0.022351
	NNW	0.000064	0.000744	0.008112	0.005014			0.013934

Figure 8 (continued)

Stability Class	Wind Direction	Wind Speed (mph) - One Year						Row Total
		< 3	4 - 7	8 - 12	13 - 18	19 - 24	> 24	
D	N	0.001311	0.006258	0.007246	0.004916	0.000549	0.000134	0.020414
	NNE	0.005562	0.026215	0.004782	0.002428	0.000207	0.000049	0.039243
	NE	0.011214	0.074706	0.003623	0.001598	0.000085	0.000024	0.091250
	ENE	0.004862	0.020689	0.003599	0.000769	0.000122	0.000024	0.030065
	E	0.001769	0.011260	0.010259	0.002867	0.000220	0.000073	0.026448
	ESE	0.000853	0.007551	0.018408	0.008917	0.000598	0.000037	0.036364
	SE	0.000356	0.003477	0.009478	0.010015	0.001195		0.024522
	SSE	0.000420	0.002403	0.005355	0.005929	0.000293	0.000024	0.014424
	S	0.000586	0.002598	0.002696	0.002062	0.000134		0.008076
	SSW	0.000356	0.001330	0.001805	0.001000	0.000134		0.004626
	SW	0.000140	0.000220	0.000756	0.001598	0.000293	0.000012	0.003019
	WSW	0.000153	0.000915	0.001927	0.001720	0.000232	0.000012	0.004959
	W	0.000267	0.002232	0.003440	0.002171	0.000378	0.000012	0.008502
	WNW	0.000255	0.003525	0.008490	0.007563	0.001549	0.000268	0.021651
	NW	0.000191	0.005306	0.019225	0.027484	0.007453	0.000903	0.060563
	NNW	0.000471	0.006258	0.013443	0.016383	0.002867	0.000244	0.039666
E	N	0.002011	0.003489	0.000317				0.005817
	NNE	0.006313	0.009869	0.000293				0.016475
	NE	0.009623	0.024154	0.000281				0.034057
	ENE	0.004149	0.009222	0.000256				0.013628
	E	0.001286	0.004026	0.000354				0.005665
	ESE	0.000827	0.002598	0.000232				0.003657
	SE	0.000573	0.001415	0.000159				0.002146
	SSE	0.000458	0.001110	0.000207				0.001776
	S	0.000611	0.000756	0.000146				0.001514
	SSW	0.000191	0.000488	0.000134				0.000813
	SW	0.000140	0.000244	0.000037				0.000421
	WSW	0.000140	0.000549	0.000098				0.000787
	W	0.000255	0.001061	0.000207				0.001523
	WNW	0.000356	0.002159	0.000317				0.002833
	NW	0.000573	0.002659	0.000415				0.003647
	NNW	0.001031	0.003281	0.000378				0.004691
F	N	0.007637	0.004428					0.012065
	NNE	0.014612	0.008442					0.023054
	NE	0.016636	0.012955					0.029591
	ENE	0.009865	0.007575					0.017440
	E	0.004595	0.004599					0.009194
	ESE	0.003157	0.002391					0.005548
	SE	0.002393	0.001818					0.004211
	SSE	0.002342	0.001256					0.003599
	S	0.002049	0.001232					0.003281
	SSW	0.002367	0.001220					0.003587
	SW	0.001960	0.001537					0.003497
	WSW	0.002138	0.001671					0.003810
	W	0.001986	0.002110					0.004096
	WNW	0.002838	0.003111					0.005949
	NW	0.003144	0.003562					0.006706
	NNW	0.004519	0.003806					0.008325

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Table 2: Newcastle MET Station Audit 1st Quarter 2007

METEOROLOGICAL STATION AUDIT SUMMARY

Met Station: Wyoming Refining, Newcastle
Audit Date: 15-Mar-07
Audit Performed by: B. Kelly, C. Medill - IML Air Science

Sensor	Mfr./Model	Reference Device
Wind Speed (WS):	RM Young Wind Monitor AQ	quartz referenced drive motor
Wind Direction (WD):	RM Young Wind Monitor AQ	transit, compass
Temperature (T):	Fenwal 107	digital thermistor
Data acquisition system (DAS):	Campbell Scientific CR510	N/A

Audit Results

	Reference	DAS Value	|Difference|	Specification	
WS (mph)	0.00	0.00	0.00	0.56	(1)
	3.44	3.44	0.00	0.56	(1)
	9.16	9.16	0.00	0.56	(1)
	34.35	34.35	0.00	1.72	(1)
	91.60	91.60	0.00	4.58	(1)
WS start torque (gm-cm)	t<0.2	N/A	N/A	1.0	(3)
WD (degrees)	0	1.5	1	5	(1)
	90	89.9	0	5	(1)
	180	179.2	1	5	(1)
	270	268.7	1	5	(1)
Temperature (°F)	71.6	71.6	0.0	1.8	(1)
ice water bath	32.3	32.1	0.2	1.8	(1)
warm water bath	130.7	129.3	1.4	1.8	(1)

BOLD difference values exceed performance specifications
(1)= Performance specification listed in facilities' Quality Assurance Project Plan
(2)= Performance specification listed In EPA Quality Assurance Manual for Air Pollution Measurement Systems, Vol. IV, 1996
(3)= Manufacturer's Specifications

Notes, Recommendations

System off-line @ 0905
System on-line @ 1015
Replaced anemometer with new Wind Monitor AQ

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Table 3: Newcastle MET Station Audit 3rd Quarter 2007

METEOROLOGICAL STATION AUDIT SUMMARY

Met Station: Wyoming Refining, Newcastle
Audit Date: 13-Sep-07
Audit Performed by: B. Kelly, C. Medill - IML Air Science

Sensor	Mfr./Model	Reference Device
Wind Speed (WS):	RM Young Wind Monitor AQ	quartz referenced drive motor
Wind Direction (WD):	RM Young Wind Monitor AQ	transit, compass
Temperature (T):	Fenwal 107	digital thermistor
Data acquisition system (DAS):	Campbell Scientific CR510	N/A

Audit Results

	Reference	DAS Value	|Difference|	Specification	
WS (mph)	0.00	0.00	0.00	0.56	(1)
	3.44	3.44	0.00	0.56	(1)
	9.16	9.16	0.00	0.56	(1)
	34.35	34.35	0.00	1.72	(1)
	91.60	91.60	0.00	4.58	(1)
WS start torque (gm-cm)	t<0.2	N/A	N/A	1.0	(3)
WD (degrees)	0	0.1	0	5	(1)
	90	89.9	0	5	(1)
	180	180.8	1	5	(1)
	270	268.1	2	5	(1)
Temperature (°F)	84.6	84.5	0.0	0.9	(1)
ice water bath	32.2	32.0	0.1	0.9	(1)
warm water bath	127.9	126.8	1.1	0.9	(1)

BOLD difference values exceed performance specifications
(1)= Performance specification listed in facilities' Quality Assurance Project Plan
(2)= Performance specification listed In EPA Quality Assurance Manual for Air Pollution Measurement Systems, Vol. IV, 1996
(3)= Manufacturer's Specifications

Notes, Recommendations

System off-line @ 0834
System on-line @ 0850

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Table 4: Newcastle MET Station Audit 1st Quarter 2008

METEOROLOGICAL STATION AUDIT SUMMARY

Met Station: Wyoming Refining — Audit Date: 12-Mar-08

Audit Performed By: S. Hansen, C. Medill, IML-Air Science

Sensor	Mfr./Model	Serial Number	Reference Device	Serial/ID Number
Vert. Wind Speed 10m:	RM Young Wind Monitor AQ	NA	quartz referenced drive motor	CA02423
Wind Speed (WS):	RM Young Wind Monitor AQ	WM75308	quartz referenced drive motor	IML0853 & IML0858
Wind Direction (WD):	RM Young Wind Monitor AQ	WM75308	transit, compass	Brunton 5080393535
Temperature @ 2 Meters:	RM Young 41342, power aspirated	TS13799	digital thermistor	IML0987
Temperature @ 10 Meters:	RM Young 41342, power aspirated	TS13880	digital thermistor	IML0987
Relative Humidity:	Vaisala HMP50	C4240028	digital psychrometer	Thermo-Hygro 22087796
Barometric Pressure:	Vaisala PTB101B	C4240018	digital barometer	IML0968
Solar Radiation:	LI-COR LI200X	PY57681	Li-Cor	PY54289
Data acquisition system:	CSI CR1000 datalogger	13147	N/A	N/A

Audit Results

		Reference RPM	Reference MPH	DAS Value	|Difference|	Specification	
WS (mph)		0	0.00	0.00	0.00	below threshold	
		300	3.44	3.44	0.00	0.56	(2)
		800	9.16	9.16	0.00	0.56	(2)
		3000	34.35	34.35	0.00	1.72	(2)
		8000	91.60	91.60	0.00	4.58	(2)

		Reference	DAS Value	|Difference|	Specification	
WS start torque (gm-cm)		<.1	N/A	N/A	1.0	(3)
WD (degrees)		0.0	0.3	0.3	5.0	(2)
		90.0	90.4	0.4	5.0	(2)
		180.0	180.2	0.2	5.0	(2)
		270.0	269.8	0.2	5.0	(2)
Temp. (°C): Upper Sensor		49.22	49.36	0.14	0.5	(2)
		5.09	5.34	0.25	0.5	(2)
		18.13	18.16	0.03	0.5	(2)
Temp. (°C): Lower Sensor		49.22	49.33	0.11	0.5	(2)
		5.09	5.39	0.30	0.5	(2)
		18.13	18.10	0.03	0.5	(2)

		Upper Sensor	Lower Sensor	|Difference|	Specification	
Delta T. (°C)		49.36	49.33	0.03	0.10	(2)
		5.34	5.39	0.05	0.10	(2)
		18.16	18.10	0.06	0.10	(2)

		Reference	DAS Value	|Difference|	Specification	
Relative Humidity (%)		32.0	29.6	2.4	7.0	(2)
Solar Radiation (W/m^2)	uncovered	NA	123.8	NA	5.0%	(4)
	covered	NA	0.0	NA	5.0%	(4)
Barometric Pressure ("Hg)		25.51	25.47	0.04	0.09	(2)

		Reference RPM	Reference cm/s	DAS Value	|Difference|	Specification	
Vert WS 10 meters (cm/s)		0	0.00	0.00	0.00	below threshold	
(CW)		20	-100.00	-99.63	0.37	25.00	(2)
	U:	60	-300.00	-302.30	2.30	35.00	(2)
		100	-1000.00	-1001.30	1.30	70.00	(2)
		500	-2500.00	-2499.30	0.70	145.00	(2)

		RPM	cm/s	DAS Value	|Difference|	Specification	
Vert WS 10 meters (cm/s)		0	0.00	0.00	0.00	below threshold	
(CCW)		20	100.00	98.41	1.59	25.00	(2)
	U:	60	300.00	300.90	0.90	35.00	(2)
		100	1000.00	1001.10	1.10	70.00	(2)
		500	2500.00	2497.30	2.70	145.00	(2)

BOLD difference values exceed performance specifications

(1)= Performance specification listed in facilities' Quality Assurance Project Plan

(2)= EPA Quality Assurance Manual for Air Pollution Measurement Systems, Vol. IV, 1989

(3)= Manufacturer's Specifications

(4)= EPA On-Site Meteorological Program Guidance for Regulatory Modeling Applications

Notes, Recommendations

Datalogger taken off line @ 0852 MST -- returned on-line 1352 MST.
Complettion of AERMOD and solar equipement installation.

POWERTECH (USA) INC.

Table 5: Newcastle MET Station Audit 3rd Quarter 2008

METEOROLOGICAL STATION AUDIT SUMMARY

Met Station: Wyoming Refining
Audit Performed By: C. Medill - IML Air Science

Audit Date: 27-Aug-08

Sensor	Mfr./Model	Serial Number	Reference Device	Serial/ID Number
Vert. Wind Speed 10m:	RM Young Wind Monitor AQ	NA	quartz referenced drive motor	CA02423
Wind Speed (WS):	RM Young Wind Monitor AQ	WM75308	quartz referenced drive motor	IML0853 & IML0858
Wind Direction (WD):	RM Young Wind Monitor AQ	WM75308	transit, compass	Brunton 5080393535
Temperature @ 2 Meters:	Fenwall 107	NA	digital thermistor	IML0987
Relative Humidity:	Vaisala HMP50	C4240028	digital psychrometer	Thermo-Hygro 22087796
Barometric Pressure:	Vaisala PTB101B	C4240018	digital barometer	IML0968
Solar Radiation:	LI-COR LI200X	PY57681	Li-Cor	PY54289
Data acquisition system:	CSI CR1000 datalogger	13147	N/A	N/A

Audit Results

		RPM	MPH	DAS Value	|Difference|	Specification	
WS (mph)		0	0.00	0.00	0.00	below threshold	
		300	3.44	3.44	0.00	0.56	(2)
		800	9.16	9.16	0.00	0.56	(2)
		3000	34.35	34.35	0.00	1.72	(2)
		8000	91.60	91.60	0.00	4.58	(2)
			Reference	DAS Value	|Difference|	Specification	
WS start torque (gm-cm)			<.1	N/A	N/A	1.0	(3)
WD (degrees)			0.0	0.1	0.1	5.0	(2)
			90.0	89.4	0.6	5.0	(2)
			180.0	179.6	0.4	5.0	(2)
			270.0	270.0	0.0	5.0	(2)
			Reference	DAS Value	|Difference|	Specification	
Temp. (°F):			0.93	0.87	0.06	0.5	(2)
			23.28	23.32	0.04	0.5	(2)
			45.41	45.29	0.12	0.5	(2)
			Reference	DAS Value	|Difference|	Specification	
Relative Humidity (%)			27.0	26.9	0.1	7.0	(2)
Barometric Pressure ("Hg)			25.56	25.58	0.02	0.09	(2)
		Reference RPM	Reference cm/s	DAS Value	|Difference|	Specification	
Vert WS 10 meters (cm/s)		0	0.00	0.00	0.00	below threshold	
(CW)		20	100.00	100.80	0.80	25.00	(2)
	U:	60	300.00	300.10	0.10	35.00	(2)
		100	1000.00	1001.00	1.00	70.00	(2)
		500	2500.00	2500.00	0.00	145.00	(2)
		RPM	cm/s	DAS Value	|Difference|	Specification	
Vert WS 10 meters (cm/s)		0	0.00	0.00	0.00	below threshold	
(CCW)		20	100.00	100.80	0.80	25.00	(2)
	U:	60	300.00	295.30	4.70	35.00	(2)
		100	1000.00	999.10	0.90	70.00	(2)
		500	2500.00	2503.00	3.00	145.00	(2)

BOLD difference values exceed performance specifications

(1)= Performance specification listed in facilities' Quality Assurance Project Plan
(2)= EPA Quality Assurance Manual for Air Pollution Measurement Systems, Vol. IV, 1989
(3)= Manufacturer's Specifications
(4)= EPA On-Site Meteorological Program Guidance for Regulatory Modeling Applications

Notes, Recommendations

Datalogger taken off line @ 0826 MST -- returned on-line 1027 MST.