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JUN 23 2010

L-2010-131
10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555-0001

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to 5/28/2010 Request for Additional Information (RAI) Regarding Alternative Source Term (AST) License Amendment Request (LAR) 196
(TAC NOS. ME1624 and ME1625)

References:

(1) W. Jefferson (FPL) to U.S. Nuclear Regulatory Commission (L-2009-133), "License Amendment Request 196: Alternative Source Term and Conforming Amendment," Accession No. ML092050277, June 25, 2009.

(2) J. Paige (NRC) to M. Nazar, "Turkey Point Units 3 and 4 – Request for Additional Information Regarding Request to Adopt Alternate Source Term (TAC Nos. ME1624 and ME1625)," Accession No. ML100700446, March 24, 2010

(3) M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-065), "Response to Request for Additional Information (RAI) Regarding Alternative Source Term (AST) License Amendment Request (LAR) 196 (TAC Nos. ME1624 and ME1625)," Accession No. ML101090027, April 14, 2010.

(4) M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-083), "Supplement to License Amendment Request (LAR) 196 and 3/24/2010 Request for Additional Information (RAI) Regarding Alternative Source Term (AST)," Accession No. ML101450028, May 21, 2010

(5) Email from J. Paige (NRC) to S. Franzone (FPL), Follow-up Requests for Additional Information Re: Turkey Point, Unit 3 and 4 AST LAR, Accession No. ML101480750, May 28, 2010.

By letter L-2009-133 dated June 25, 2009 [Reference 1], Florida Power and Light (FPL) requested to amend Facility Operating Licenses DPR-31 and DPR-41 and revise the Turkey Point Units 3 and 4 Technical Specifications (TS). The proposed amendments revise the TS to adopt the alternative source term (AST) as allowed in 10 CFR 50.67.

Additional information was requested by the NRC staff by letter dated March 24, 2010 [Reference 2]. FPL provided its initial RAI response on April 14, 2010 [Reference 3] and followed it with a supplemental response on May 21, 2010 [Reference 4]. On May 28, 2010, FPL received an email from the NRC containing six additional RAIs related to the quality of the meteorological data [Reference 5]. During a public meeting at NRC headquarters in Rockville, MD on June 7, 2010, the NRC noted that an AST proposed change to TS 3/4.7.5 Surveillance Requirement (SR) 4.7.5.c.2a regarding the control room filter test acceptance criteria might conflict with Regulatory Guide (RG) 1.52

A001
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recommendations. The attachment to this letter provides the FPL response to both the six RAIs and this question from the NRC staff.

In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the State Designee of Florida.

This submittal does not alter the significant hazards consideration or the environmental assessment previously submitted by FPL letter L-2009-133 [Reference 1].

This letter contains no new commitments and no revisions to existing commitments.

Should you have any questions regarding this submittal, please contact Mr. Robert J. Tomonto, Licensing Manager, at (305) 246-7327.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on June 23, 2010.

Very truly yours,

Paul W. Nevoin
For!

Michael Kiley
Site Vice President
Turkey Point Nuclear Plant

Attachment

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, Turkey Point Nuclear Plant
USNRC Resident Inspector, Turkey Point Nuclear Plant
Mr. W. A. Passetti, Florida Department of Health

Attachment

Response to 5/28/2010 Request for Additional Information (RAI) Regarding Alternative Source Term (AST) License Amendment Request (LAR) 196

Response to Request for Additional Information

The following information is provided by Florida Power & Light (FPL) in response to the Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI). This information was requested to support License Amendment Request (LAR) 196, "Alternative Source Term (AST) and Conforming Amendment," submitted by FPL letter L-2009-133 on June 25, 2009 [Reference 1].

On March 24, 2010, FPL received a letter from the NRC Project Manager (PM) containing twenty RAIs from the Accident Dose Branch and the Containment and Ventilation Branch on AST LAR 196 [Reference 2]. On April 14, 2010, FPL provided its response [Reference 3] to these RAIs. On April 27, 2010, a telephone conference call was held between FPL, NRC PM, and several NRC technical reviewers to discuss the response. Several issues developed during the call related to the quality of the meteorological data and resulted in six follow-up questions from the NRC Accident Dose Branch regarding the quality of the meteorological data supporting the AST LAR. On May 12, 2010 another telephone conference call was held between FPL, NRC PM, and NRC technical reviewers to discuss the follow-up questions on the quality of the meteorological data for years 2003-2007. On May 21, 2010, FPL provided supplemental response addressing proposed changes to TS Table 4.4-4 on RCS Specific Activity and TS 3/4.7.5 on Control Room Emergency Ventilation System (CREVS) [Reference 4].

On May 28, 2010, FPL received an email from the NRC PM containing these six RAIs on the quality of the meteorological data supporting the AST LAR [Reference 5]. On June 7, 2010, a public meeting was held at the NRC headquarters in Rockville, MD in which issues regarding the quality of the meteorological data and the proposed CREVS TS change were discussed. In that meeting, the NRC noted that LAR 196 had proposed a change to TS 3/4.7.5 Surveillance Requirement (SR) 4.7.5.c.2 to reduce the methyl iodide penetration criteria from 2.5% to 1.25% in order to increase the credited efficiency of the control room filter from 95% to 97.5% for elemental iodines and organic iodides. The NRC further noted that the proposed TS change was outside the recommended limits for filter efficiencies specified in Regulatory Guide (RG) 1.52, Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered Safety Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants [Reference 6]. Accordingly, FPL is retracting this proposed SR change. On June 11, 2010, FPL transmitted revised meteorological data sets for years 2005-2009 in support of AST LAR 196 [Reference 7].

As the time interval of the meteorological data set supporting AST LAR 196 has been changed, FPL's response to the six RAIs is provided here for years 2005-2009 only.

1. ***Please provide a detailed description of the technical review of the 2003 through 2007 hourly meteorological data. What was the process and what specific criteria were used to determine the validity of the data? At what time intervals and at what levels of expertise were each review performed?***

   Review of the meteorological data for 2003 through 2007 used in support of the original LAR 196 submittal identified several instances where the data quality was less than what was expected. As stated in FPL's April 14, 2010 RAI response, the original AST submittal provided five years of meteorological data for which the most recent five year period had

been chosen to be most representative of current conditions. Since the original submittal, the 2008 and 2009 data sets have become available and have been determined to be of higher quality than the earlier 2003 and 2004 data sets. Accordingly, FPL has revised its selection of the five year period for supporting meteorological data from 2003-2007 to 2005-2009. The revised hourly meteorological data for 2005-2009 was transmitted to the NRC by letter on June 11, 2010 after completing independent quality reviews of the data to assure that it provided a technically accurate representation of the meteorological conditions at the site.

The plant utilizes two towers to monitor meteorological conditions. The Land Utilization (LU) 10 meter meteorological (MET) tower is located just south of the plant and collects 10 meter data including temperature, wind speed, wind direction, and sigma theta values. This data is used primarily to supply plant meteorological conditions to support Emergency Plan requirements. The South Dade (SD) 60 meter MET tower is located some 5.5 miles south-southwest of the plant and collects similar data at both 10 meter and 60 meter elevations. The data for the two elevations allows for characterization of both lower and upper meteorological conditions and for calculation of vertical temperature differences that provide the preferred means for determining atmospheric stability classes since they are effective indicators of worst-case stability conditions. This information is used primarily in the plant's radiological dose consequence analyses.

The designated site meteorological services contractor, Meteorological Solutions, Inc. (MSI), reviews raw meteorological data that is forwarded periodically from the LU department. The hourly meteorological data then undergoes a series of programmatic quality data checks that flag invalid field contents, e.g., missing or out of range values, anomalous trends including persistent values or repeated sequences, and incomplete field strings. Based on diagnostic results, MSI's experience, and with the knowledge of LU management, MSI may make selected substitutions of good data for invalid or missing data in order to increase the data recovery rates to levels recommended by RG 1.23, Meteorological Monitoring Programs for Nuclear Power Plants. Such substitutions have included using LU 10 meter MET tower data for corresponding SD 10 meter MET tower data or using one SD channel of temperature data for another, i.e., cross-channel substitutions (B for A, A for B) at the same elevation, or using either LU or SD 10 meter wind direction data for SD 60 meter wind direction. The results are then formatted into listings that form the basis for the monthly, quarterly, and annual site meteorological reports.

Conversion of the hourly meteorological data for 2005-2009 supplied by the site into ARCON96 hourly card image input or into PAVAN card image input involved a quality comparison of the raw meteorological data and MSI processed meteorological reports. The comparison conducted by Numerical Application, Inc. (NAI) identified situations where invalid data might need to be replaced by "missing" or flagged as invalid (fields of nines per RIS 2006-04). Where such situations occurred, specifically for such items as zero wind speed that might be a valid calm wind speed, or might be an indication of invalid or missing reading, the reading was flagged for tracking purposes. Spot checking of the data was also carried out by plotting extracted information to identify anomalies, field validation via Excel spreadsheets, conditional highlighting of potential issues in spreadsheets. Differences, substitutions, or any anomalies were flagged in this manner such that either data resolution or

elimination from the final reformatted data files could be accomplished. The MSI provided comparative data and justification for certain substitutions, e.g., using LU or SD 10 meter wind direction for invalid SD 60 meter wind direction, or using LU 10 meter wind directions and/or wind speeds for South Dade MET tower 10 meter wind directions and wind speeds. These data substitutions and their proposed justifications were evaluated for validity.

Applicable guidance was taken from the NRC Regulatory Issues Summary RIS-2006-004 on ensuring the quality of meteorological data files used for accident dose assessment. Its guidance included assuring invalid data was indicated by fields of nines, e.g., 9999, and wind directions were indicated in the range from 1° to 360°. RIS recommendations on wind speed bins for the determination of Joint Frequency Distributions (JFD's) were also followed.

In the initial AST submittal, the JFD distributions based on the reported stability class were used as PAVAN input for calculation of the offsite (EAB and LPZ) X/Q values. The stability class is a derived value based on vertical temperature differences (60 meter minus 10 meter) as specified in RG 1.23. The stability class was previously calculated based on these substituted data sets using either the vertical temperature difference (ΔT) from a single channel (A_{60}-A_{10} or B_{60}-B_{10}) or from a combination (A_{60}-B_{10} or B_{60}-A_{10}) of two channels. Channel A was nominally the "preferred" channel to retrieve stability class inputs. For the newly generated data sets, NAI independently calculated hourly stability class values, based on a consistent paired channel (A-A or B-B) process, to assure that no cross-channel biases could be introduced. Also, NAI decided to preferentially choose Channel A at all times, unless Channel A was bad. When Channel A was bad (either 10 meter or 60 meter instrument, or both), Channel B was used if both 10 and 60 meter Channel B readings were valid. If neither channel is available on a consistent channel basis, 9999 was used to indicate bad or missing stability data.

NAI used applicable regulatory guidance such as NUREG-0917 on screening meteorological data for anomalies and potentially problematic persistent patterns and the METD_QA module to screen the hourly meteorological data for such items as:

1. Inconsistency between expected stability class and time of day (day or night)
2. Inconsistency between wind speeds and expected stability classes for those speeds
3. Inconsistent delta-T comparison to auto-convective lapse rate
4. Inconsistent stability classes detected during periods of precipitation
5. Large changes in stability class from one hourly period to the next
6. Persistence of wind direction, wind speed or stability class for longer than 8 or 12 consecutive hours (changed by NAI to screen for periods greater than 24 hrs)
7. Out of range wind speeds, or those that are identical between upper and lower sensors
8. Reports maximums, minimums, and other statistics for selected parameters

NAI implemented this module from the ORNL RSICC code distribution center and added functionality which allowed the module to process information from the MSI processed files, formatted monthly reported met data, and pre-formatted ARCON96 data file formats.

The process described above including selected substitutions identified in RAI #3 below has resulted in data recovery rates in excess of the 90% criterion specified in RG 1.23 except for the first six months of 2005 when the SD 60 meter Channel A Temperature values were flagged as invalid resulting in a yearly recovery rate of only 46.6%. However, the recovery rate for the SD 60 meter Channel A Temperature is 86.72% when averaged over the five year period 2005-2009. See Table 1-1 below for a summary of yearly recovery rates for measured key meteorological parameters.

Table 1-1

Turkey Point – Met Data Recovery Percentages – After MSI and NAI Screening

After Substitution of 2005, 2007 & 2009 10M Wind Direction into 60M Wind Directions

Year	Hours	Stability	10M WS	60M WS	10M Dir	60M Dir	10M A T	10M B T	60M A T	60M B T
2005	8760	94.79%	99.79%	90.89%	99.09%	99.79%	94.53%	96.64%	46.60%	94.77%
2006	8760	99.75%	100.00%	100.00%	100.00%	100.00%	98.54%	95.70%	98.39%	95.53%
2007	8760	99.76%	99.84%	94.24%	97.24%	97.24%	91.54%	99.77%	91.52%	99.75%
2008	8784	99.75%	99.80%	100.00%	100.00%	100.00%	98.82%	99.00%	98.75%	98.96%
2009	8760	99.97%	100.00%	100.00%	100.00%	100.00%	98.32%	99.98%	98.30%	99.95%
All	43824	98.80%	99.89%	97.03%	99.27%	99.41%	96.35%	98.22%	86.72%	97.79%

2. ***Were sigma theta wind measurements used to determine the atmospheric stability category for any of the data used in the ARCON96 or PAVAN computer assessments?***

   No sigma theta wind measurements were used to determine the atmospheric stability category for any of the data used in the ARCON96 or PAVAN computer assessments for 2005-2009.

3. ***Page 12 of the enclosure to the April 14, 2010 response states that in some cases, substitutions were made when there was a considerable amount of invalid data from the primary measurement trains. Were substitutions made for infrequent random occurrences of a few hours duration? Does the discussion at the top of page 13 summarize all of the substitutions? Were the temperature difference data in the computer input files for 2003, the second half of 2004, the second half of 2005, the last three quarters of 2006, and 2007, other than August through October, inclusive, essentially all measured only on the primary tower?***

NAI reviewed each of the MSI implemented substitutions in 2005-2009 for accurate data transfer from the source files as well as for justifications for making the substitutions. The following general decision-making guidelines were applied to these substitutions.

- **Use Channel A ΔT unless only Channel B ΔT is available.**

  The MSI supplied data frequently switched between Channel A and B use for determining stability class. The NAI QA data consistently used Channel A 10 meter and 60 meter temperature measurements, when they were available. If either or both Channel A temperature readings were missing, only then was Channel B used (if, of course, the values were present and valid). The NAI QA data does not contain any mixed Channel A and B based stability class results.

- **Invalid data marked with Fields of Nines**

  Consistent with the guidance in RIS 2006-04, invalid data was be marked with appropriate 9999 filled fields. Blank, "MISG," "N/A," and "-" fields were replaced, as well as values that were out of range (negative values, for instance).

- **Treatment of Zero or Very Low Wind Speeds**

  Although MSI generally assigned missing or invalid tags to zero or very low wind speeds; such readings in the raw data files were examined for the possibility that such readings were legitimate "calm" conditions, and not an indication of stuck or malfunctioning wind speed instrumentation. Each occurrence was therefore identified and dispositioned.

- **Resolution of Persistence Reporting from METD_QA Program Module**

  The METD_QA program module identified potentially problematic persistence of wind direction, speed, or stability class. Any cases identified by METD_QA lasting longer than 24 hours were examined to determine if the persistence represents actual met data/site conditions, or potentially results from stuck or malfunctioning instrumentation.

- **Resolution of "Stability Class Jumps" Identified by METD_QA Program module.**

  The METD_QA program module also identified potentially problematic jumps of 2 or more stability classes in consecutive hourly readings. Any cases identified by METD_QA were examined to determine if the stability class jump represented actual met data/site conditions, or potentially resulted from invalid readings or other instrumentation problems.

- **Visual Examination of Plotted Met Data for Anomalous Trends**

  The Excel spreadsheets which capture and process the meteorological data were used to plot selected data fields, and the plots were examined for potential impact of retaining or rejecting the responsible met data readings. This process was subjective but could identify trends that strictly digital screening might miss.

See the attached Data Substitution Summary that provides a detailed accounting of all data substitutions applied to the Turkey Point SD MET Tower "Raw" data that were generated by either MSI or NAI.

4. ***Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," states that vertical temperature difference accuracy should be within ±0.1 °C (±0.18 °F). Were each pair of temperature sensors used to make measurements of temperature difference as a function of height calibrated jointly as a pair? This would include pairing of one temperature sensor with another temperature sensor of another pair, if one sensor of a set pair was unavailable.***

The meteorological temperature instrumentation is calibrated and replaced on a six month interval using approved plant procedures. The temperature instrumentation (2 @10m and 2 @ 60m) is calibrated in a series of sequential and overlapping tests. The temperature elements (thermistors) are initially verified for range and accuracy with an acceptance criterion of ±0.9°F in a Measurement & Test Equipment (M&TE) dry well calibrator. The temperature elements are then installed in the tower and the ambient temperature loop instrumentation, from the tower to a CR1000 data logger, is procedurally verified to be within ±0.9°F of the M&TE readings using a handheld digital M&TE thermometer. The in-situ data taken (5 data points) is averaged and compared to the averaged M&TE readings. Another verification of the ambient and differential temperature data is performed utilizing an electronic check between the data logger, the plant ERDADS computer, and the control room recorder. A final loop integrity check is performed and documented.

A review of the as-found/as-left meteorological ambient temperature loop data taken for 2005-2009 was performed (see Tables 4-1 & 4-2 below). The temperature data for June 2005 was not retrievable. The as-found data for December 2005 and June 2009 for the 10m temperatures were determined to be slightly low and out of the 0.9 °F tolerance. The remaining as-found and all of the as-left data for this period were within ±0.9°F.

The differential temperature data is digitally calculated by comparison of the ambient temperatures within the data logger at the meteorological tower. The data is calculated from paired temperature elements (60m-10m), A-A and B-B, and digitally transmitted to the ERDADS computer. A review of the differential temperature data was performed using the as-found/as-left data from the ambient temperature calibrations and calculating the respective temperature differentials (see Tables/Figures below). For December 2005, the differential temperature readings were uncharacteristically high due to the out-of-tolerance ambient temperature as-found data for that calibration date. It was noted that approximately 50% of the as-found/as-left data fell within the ±0.18°F criteria specified in Regulatory Guide (RG) 1.23, Rev 1, Meteorological Monitoring Programs for Nuclear Power Plants [Reference 12] while approximately 90% of the data fell within ±0.54°F.

Table 4-1
Comparison of As-Found Differential Temperatures Between A and B Temperature Probes

As Found (Averages)

Date	M&TE 60m	Temp 60A	Normalized Temp A @ 60m Temp A - M&TE	Temp 60B	Normalized Temp B @ 60m Temp B - M&TE	M&TE 10m	Temp 10A	Normalized Temp A @ 10m Temp A - M&TE	Temp 10B	Normalized Temp B @ 10m Temp B - M&TE	Normalized ΔTemp A A60m - A10m	Normalized ΔTemp B B60m - B10m
Dec-05	77.02	76.79	-0.23	76.75	-0.27	79.52	78.33	-1.19	78.45	-1.07	0.96	0.8
Jun-06	80.04	80.06	0.02	80	-0.04	85.74	85.72	-0.02	85.57	-0.17	0.04	0.13
Dec-06	76.12	76.73	0.61	75.57	-0.55	77.22	77.53	0.31	76.76	-0.46	0.3	-0.09
Jun-07	85.3	84.98	-0.32	85.15	-0.15	88.39	88.22	-0.17	88.23	-0.16	-0.15	0.01
Dec-07	66.96	67.27	0.31	67.42	0.46	76.26	76.5	0.24	76.65	0.39	0.07	0.07
Jun-08	83.04	83.33	0.29	83.23	0.19	85.3	85.55	0.25	85.9	0.6	0.04	-0.41
Dec-08	62.02	61.92	-0.1	61.83	-0.19	64.58	64.24	-0.34	64.07	-0.51	0.24	0.32
Jun-09	81.2	80.58	-0.62	80.82	-0.38	80.78	79.84	-0.94	80.26	-0.52	0.32	0.14
Dec-09	79.82	79.58	-0.24	79.64	-0.18	80.12	79.27	-0.85	79.54	-0.58	0.61	0.4

Figure 4-1

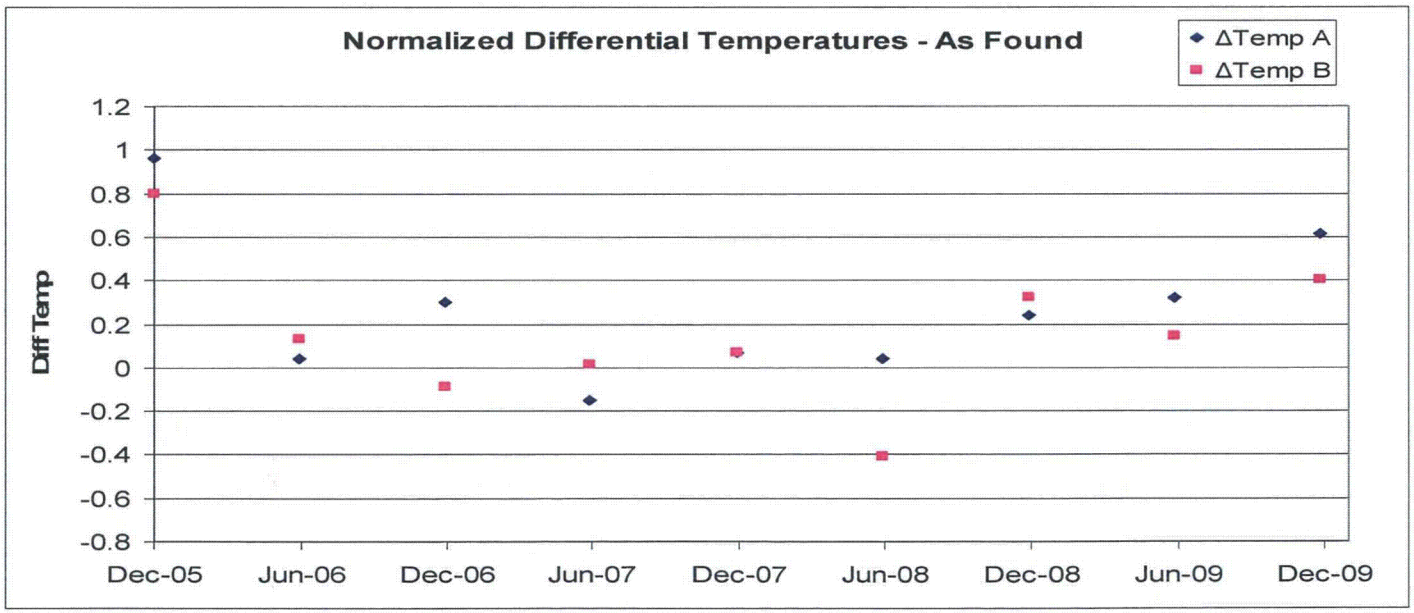


Table 4-2
Comparison of As-Left Differential Temperatures Between A and B Temperature Probes

As Left (Averages)

Date	M&TE 60m	Temp 60A	Normalized Temp A @ 60m Temp A - M&TE	Temp 60B	Normalized Temp B @ 60m Temp B - M&TE	M&TE 10m	Temp 10A	Normalized Temp A @ 10m Temp A - M&TE	Temp 10B	Normalized Temp B @ 10m Temp B - M&TE	Normalized ΔTemp A A60m - A10m	Normalized ΔTemp B B60m - B10m
Dec-05	78.02	77.85	-0.17	77.94	-0.08	80.38	80.53	0.15	80.68	0.3	-0.32	-0.38
Jun-06	82.42	81.98	-0.44	82.09	-0.33	84.32	84.06	-0.26	83.93	-0.39	-0.18	0.06
Dec-06	77.34	76.84	-0.5	77.06	-0.28	77.04	76.3	-0.74	76.22	-0.82	0.24	0.54
Jun-07	86.31	86.22	-0.09	86.26	-0.05	87.69	87.46	-0.23	87.77	0.08	0.14	-0.13
Dec-07	69.12	69.08	-0.04	69.49	0.37	75.02	75.72	0.7	75.56	0.54	-0.74	-0.17
Jun-08	83.17	83.35	0.18	83.11	-0.06	84.51	84.61	0.1	84.57	0.06	0.08	-0.12
Dec-08	63.64	63.67	0.03	63.48	-0.16	63.5	63.38	-0.12	63.18	-0.32	0.15	0.16
Jun-09	82.4	81.52	-0.88	81.7	-0.7	81.82	81.5	-0.32	81.4	-0.42	-0.56	-0.28
Dec-09	79.64	79.08	-0.56	78.97	-0.67	81.3	81.03	-0.27	81.14	-0.16	-0.29	-0.51

Figure 4-2

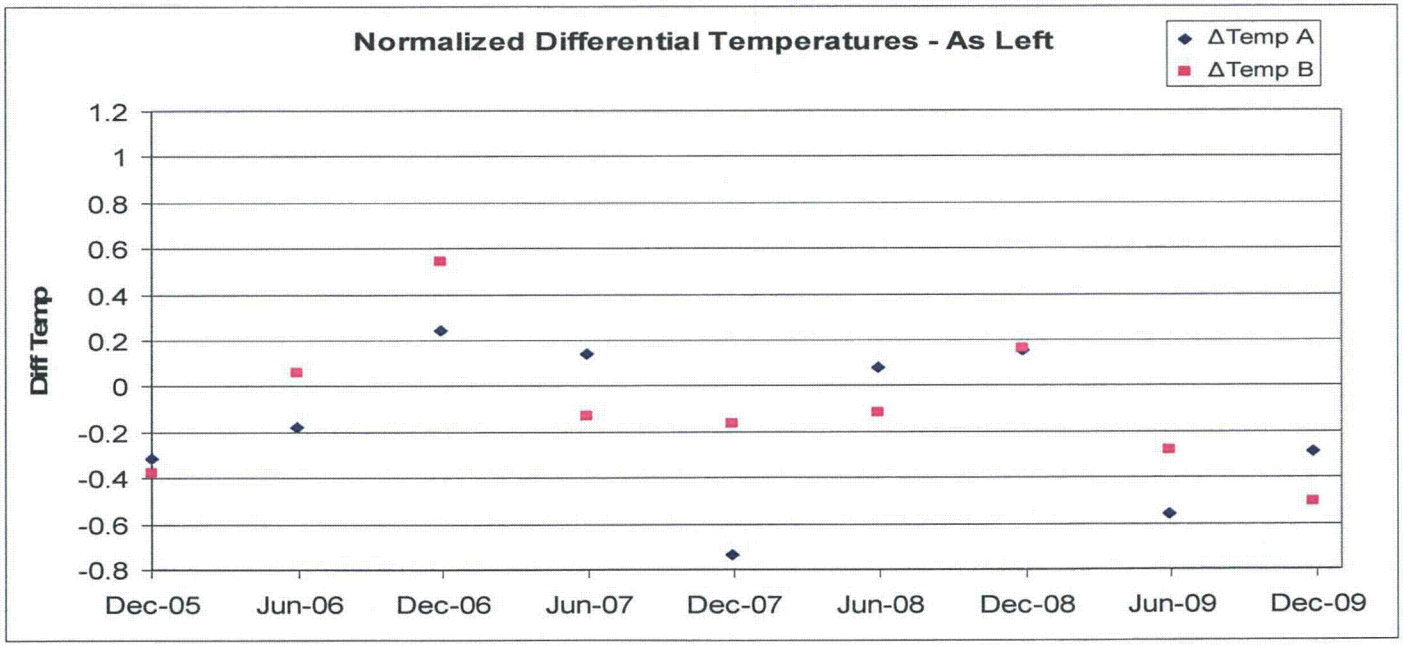


Table 4-3
As-Found to As-Left Normalized Differential Temperatures for A Temperature Probes with Mean Values

ΔTempA (°F)			
	AL Δtemp	AF Δtemp	Mean
12/10/04 to 6/28/05	0.28	NA	**
6/28/ 05 to 12/9/05	NA	0.96	**
12/9/05 to 6/9/06	-0.32	0.04	-0.140
6/9/06 to 12/13/06	-0.18	0.30	0.060
12/13/06 to 7/13/07	0.24	-0.15	0.045
7/13/07 to 12/5/07	0.14	0.07	0.105
12/5/07 to 6/18/08	-0.74	0.04	-0.350
6/18/08 to 12/2/08	0.08	0.24	0.160
12/2/08 to 6/23/09	0.15	0.32	0.235
6/23/09 to 12/9/09	-0.56	0.61	0.025
12/9/09 to 6/10	-0.29	TBD	
**ΔTempA Mean is 0.0175			

Figure 4-3

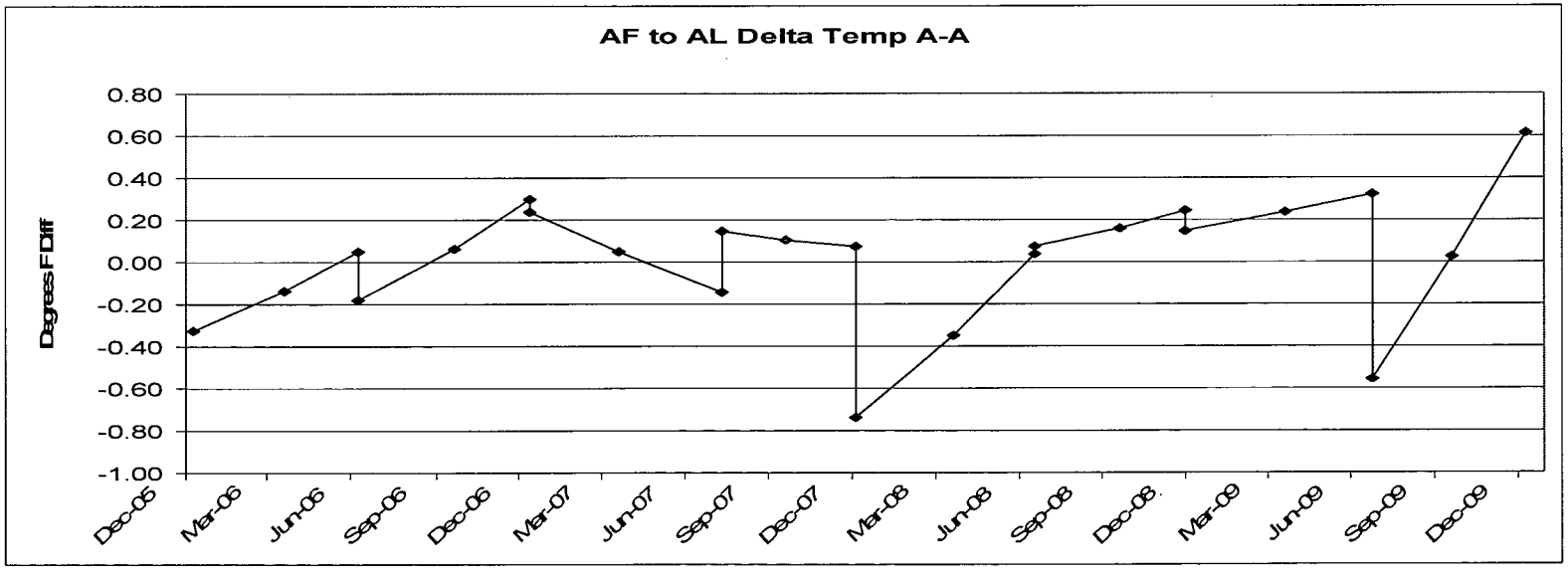
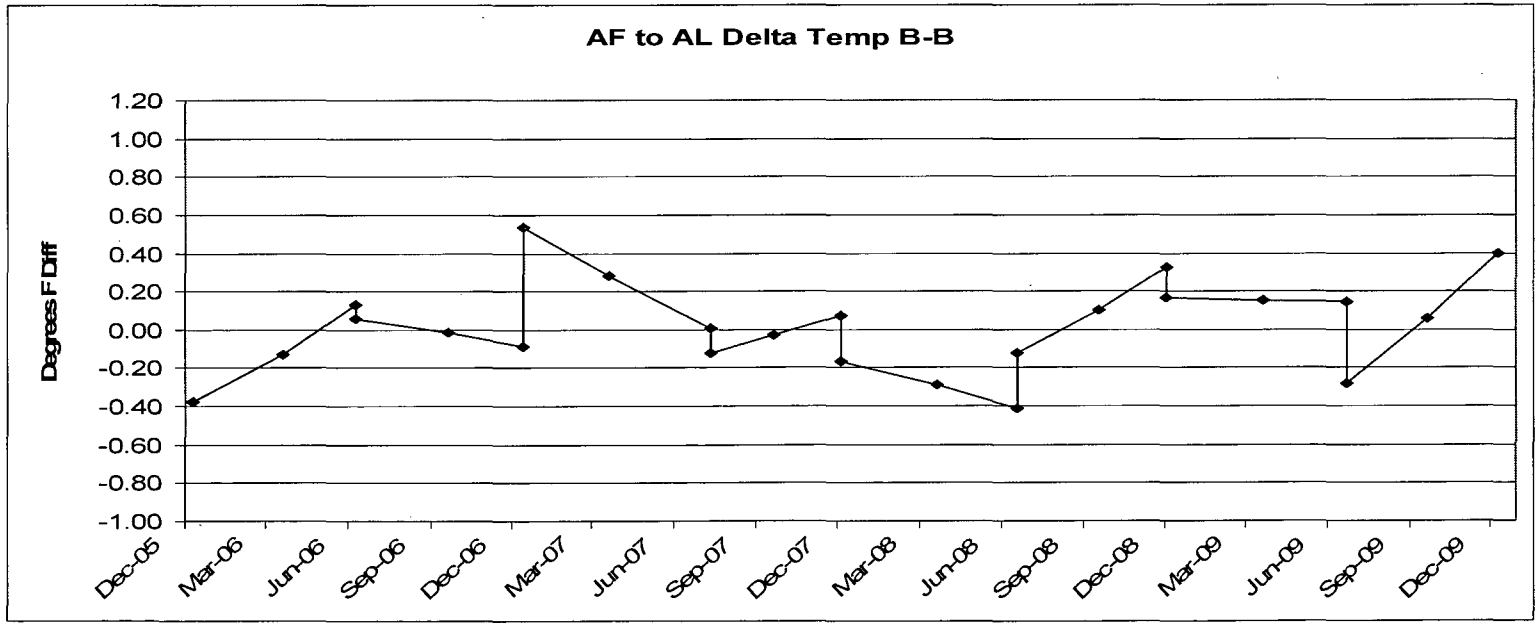


Table 4-4
As-Found to As-Left Normalized Differential Temperatures for B Temperature Probes with Mean Values

ΔTempB (°F)			
	AL Δtemp	AF Δtemp	Mean
12/10/04 to 6/28/05	0.77	NA	**
6/28/ 05 to 12/9/05	NA	0.80	**
12/9/05 to 6/9/06	-0.38	0.13	-0.125
6/9/06 to 12/13/06	0.06	-0.09	-0.015
12/13/06 to 7/13/07	0.54	0.01	0.275
7/13/07 to 12/5/07	-0.13	0.07	-0.030
12/5/07 to 6/18/08	-0.17	-0.41	-0.290
6/18/08 to 12/2/08	-0.12	0.32	0.100
12/2/08 to 6/23/09	0.16	0.14	0.150
6/23/09 to 12/9/09	-0.28	0.40	0.060
12/9/09 to 6/10	-0.51	TBD	
**ΔTempB Mean is 0.015625			

Figure 4-4



As shown in Tables/Figures 4-1 and 4-2 above, meteorological tower ambient temperature instrument accuracies are generally within the ±0.9°F of M&TE as specified in RG 1.23. However, the instrument accuracies for the vertical temperature differences are often outside of the ±0.18°F specified in RG 1.23. The vertical ΔT measurement is important as it is the preferred method for determining the Pasquill stability classes at nuclear power plants for licensing purposes because it is an effective indicator for the worst-case stability conditions. The stability class is an indication of atmospheric stability or the amount of turbulent mixing in the atmosphere and its effect on effluent dispersion.

As shown above, the as-found and as-left temperature readings for both channels at both elevations are "normalized" against their corresponding M&TE readings (Temp – M&TE). The vertical temperature difference (ΔT) for each channel is then calculated by subtracting the normalized channel temperature at 10 meters from the normalized channel temperature at 60 meters (T_{60}-T_{10}). The resulting ΔT values are the as-left and as-found normalized ΔT values for each channel that define the instrument accuracies between the calibrations, i.e., beginning with the as-left values and ending with the as-found values over the six month calibration interval. During this period, the instruments will experience some drift which, for purposes of this discussion, has been assumed to be linear in its behavior. Thus, as shown in Tables/Figures 4-3 and 4-4 above, a six month representative ΔT value can be derived by taking the average of the beginning and end ΔT values for each temperature channel. When the ΔT is within the ±0.18°F specified in RG 1.23, no adjustment to the meteorological data would be considered necessary. However, since the ΔT values have been observed to be outside of this accepted range, the averaged ΔT value for each channel will be applied as a bias or correction factor to the hourly meteorological data. The effects of this correction will be small shifts in the calculated stability classes for the hourly meteorological data and result in small changes to the calculated atmospheric dispersion factors (X/Qs). When the resultant biased X/Q values exceed the unbiased X/Qs, the more conservative value will be used. This technical approach will assure conservative radiological dose consequences for the analyzed design basis accidents.

5. ***With regard to the discussion on page 13, provide further clarification of the bases for the differences in the reported hourly atmospheric stability categories when comparing the 2005 through 2006 data provided in support of the current LAR and the data that were provided for the Turkey Point combined operating license application (COLA). Why are the atmospheric stability categories provided in support of the current LAR more appropriate for use in the current LAR than the atmospheric stability categories in the Turkey Point COLA data base?***

The quality review of the PTN meteorological data for 2005-2009 is discussed in response to RAI #1 above. As stated in the RAI #11 response on page 13 of Reference 3, meteorological data sets for years 2003-2007 that was submitted to support AST LAR 196 on July 21, 2009 [Reference 9] used the seven wind speed categories (bins) provided in the PTN quarterly meteorological reports while the meteorological data sets for 2002, 2005, and 2006 that was submitted to support the COLA on August 7, 2009 [Reference 10] used thirteen wind speed

bins more in keeping with NRC Regulatory Issues Summary (RIS) 2006-04, "Experience with Implementation of Alternative Source Terms," recommendations [Reference 11]. As stated in the RAI #17 response on page 20 of Reference 3, FPL recognized that RIS 2006-04 recommends a larger number of wind speed categories than was used in developing the joint frequency distributions for input to PAVAN for the original AST submittal. Thus, consistent with RIS recommendations, joint frequency distributions were "rebinned" into the thirteen wind speed categories suggested in the RIS, i.e., calm, 0.5, 0.75, 1.0, 1.25, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0, and 10.0 meters/second (mps), plus one more for wind speeds > 10 mps. This is the maximum number of groups that can be accommodated by ARCON96. The revised meteorological data set for 2005-2009 submitted to support AST LAR 196 on June 11, 2010 [Reference 7] reflects this approach and yields comparable results with the COLA data.

6. ***NRC staff notes that there appears to be several lengthy cases when data from the primary measurement system were either flagged as invalid or NRC judges that the data appear to be anomalous. What corrective actions were implemented to upgrade the meteorological measurement program to ensure that problems were promptly identified and fixed to minimize the occurrence of subsequent problems? At what intervals were calibrations performed for each instrument train? Were calibration findings used in any way to modify or determine the validity of data collected since the prior calibration? Were meteorological data measurements at the Turkey Point site either prior to 2003 or after 2007 made primarily on the primary tower with few data substitutions, particularly with regard to use of instruments jointly paired in either Train A or Train B of the temperature difference measurements?***

Quality verification and correction of the meteorological data sets for 2005-2009 is discussed in FPL's attached response to RAI #1. Condition Report (CR) 2010-11408 was initiated to document a persistent history of problems with the meteorological tower temperature sensors and their adverse impact on the quality of the meteorological data. The CR also identified concerns regarding the adequacy of maintenance and oversight of the meteorological tower equipment, program, and data. CR 2010-11412 was initiated to document the need for an aggregate review of all performance issues associated with the meteorological towers. CR 2010-14752 was initiated to document that the calibration process used for the SD 60 meter meteorological tower temperature sensors does not fully meet the guidance given in RG 1.23; specifically, it does not meet the vertical differential temperature acceptance criterion of $\pm 0.18^{\circ}F$. CR 2010-14755 was initiated to document inconsistent application of the meteorological data substitution rules that has resulted in numerous issues with the development of FPL responses to regulatory questions regarding the quality of the meteorological data. A representative list of CRs generated to document problems with the meteorological equipment since mid 2004 has been compiled and is shown below.

Meteorological Records 2004-2010

CR Number	Description
2004	
2004-00393	NRC Inspection revealed suspect adverse data collection
2004-02468	PM Semiannual calibrations
2004-02628	Trespassers located @ 60M Tower
2004-03157	10 m tower WS and WD failed
2004-03245	Missed PM Semiannual Calibrations
2004-03295	PM Reset Semiannual Calibrations
2004-07718	High Wind Tower Flatlined
2004-07724	10 m tower WS failed low
2004-07725	10 m tower WS failed low
2005	
2005-05330	I&C to support Land U with records
2005-16903	SWD-1-103-004 affects both towers during Calibrations
2005-17023	Administrative back up files to Land U for Met Towers
2005-29519	60 meter indications failed
2005-29592	Back up battery @ 10m tower failed
2005-30276	60 m tower WS, WD delta failed
2005-35063	Miscalculations for Delta Temp
2005-35163	Generator Voltage bad @ 10 met tower
2005-35509	Failed power transformer for data logger
2006	
2006-00727	List of CR's to NRC found blank for Met Towers
2006-01576	Wind Sensor out high wind Land U Tower
2006-02938	New FAA requirements for 60m Tower
2006-03841	Confusion between barometric readings @ tower & control room
2006-04003	10 m tower WS sensor failed
2006-05172	10 m tower WS sensor needed calibration
2006-06800	Line power loss @ SD Tower caused erratic control room readings
2006-14643	10m tower transmitter card failed
2006-15553	10 m tower indication failure
2006-33298	South Dade Met Tower temperature problems continue to degrade
2006-33417	New FCC Registration requires painting & lighting

2007	
2007-09137	10 m tower equipment accidentally de-energized
2007-20093	PM Semiannual Calibrations
2007-23783	60 m tower WD failed
2007-23920	SD Met tower wind direction not responding
2007-24125	60m tower sensors out of service
2007-30096	SD Met tower indications flatlining
2007-30404	Temp Sensor 10m reading low
2007-32212	60 m tower Temp A low
2007-32453	10 m tower WD in alarm
2007-35025	Data availability problem on ERDADS
2007-39943	PC/M for Met Towers ERDADS
2007-41006	10 m tower wind direction failed low.
2008	
2008-00002	10 m tower indication failure
2008-03350	2 error traps found during NRC RP Inspection
2008-04646	Met tower data limited
2008-04759	PM Semiannual Calibrations
2008-05678	10 m tower Temp B sensor reading low
2008-09408	RCO readings indicate met tower reading bad
2008-12527	60 m tower Sensors
2008-18778	Issue during Semiannual Calibration
2008-19437	U-3 Met Tower data indications are bad
2008-37481	Needed major revision to DCS for Met Towers
2009	
2009-11083	Met tower DCS ink status offline
2009-16423	Semiannual Calibration parts issue
2009-18977	Fall protection for climbing towers
2009-34961	AC/back up unit no working @ 60 m tower
2010	
2010-02138	Vegetation height @ Met towers
2010-06944	HD sensor missing @ Land U tower
2010-11408	Poor performance of temp sensors and inadequate program support
2010-11412	An aggregate review of Met Tower/ ownership
2010-14752	Calibration program for SD Met Tower doesn't fully meet RG 1.23.
2010-14755	Met data substitution rules not consistently applied

In response to these CRs, a System Engineer has now been assigned responsibility for oversight of the meteorological equipment performance and for monitoring the output meteorological data. The meteorological tower data loggers and radio communications equipment at the site and at both the South Dade (SD) and Land Utilization (LU) towers were upgraded in May 2007 to assure compatibility with the Distributed Control System (DCS). The installed wind direction and wind speed instrumentation for both towers are currently being refurbished or replaced. FPL acknowledges that further improvements in equipment, procedures, programs, and processes will be required to achieve performance objectives that are recommended in RG 1.23.

The Land Utilization (LU) 10 meter meteorological (MET) tower is located just south of the plant and collects 10 meter data including temperature, wind speed, wind direction, and sigma theta values. This data is used primarily to supply plant meteorological conditions to support Emergency Plan requirements. The South Dade (SD) 60 meter MET tower is located some 5.5 miles south-southwest of the plant and collects similar data at both 10 meter and 60 meter elevations. The data for the two elevations allows for characterization of both lower and upper meteorological conditions and for calculation of vertical temperature differences that provide the preferred means for determining atmospheric stability classes since they are effective indicators of worst-case stability conditions. This information is used primarily in the plant's radiological dose consequence analyses.

Calibration and replacement of the temperature sensors for both meteorological towers is performed every six months. See response to RAI #4 above for a detailed discussion of the calibration process, its findings and use in the determination of the validity of the data collected. See the attached response to RAI #3 for discussion of data substitutions.

TS 3/4.7.5.4.c

On June 7, 2010, a public meeting was held at the NRC headquarters in Rockville, MD in which issues regarding the quality of the meteorological data and the proposed CREVS TS change were discussed. In that meeting, the NRC noted that LAR 196 had proposed a change to TS 3/4.7.5 Surveillance Requirement (SR) 4.7.5.c.2 to reduce the methyl iodide penetration criteria from 2.5% to 1.25% in order to increase the credited efficiency of the control room filter from 95% to 97.5% for elemental iodines and organic iodides. The NRC further noted that the proposed TS change was outside the recommended limits for filter efficiencies specified in Regulatory Guide (RG) 1.52, Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered Safety Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants [Reference 6]. FPL has reviewed the RG 1.52 recommended acceptance criterion for methyl iodide penetration for activated carbon filters with 2 inches total bed depths and the maximum assigned credit for activated carbon (filter) decontamination efficiencies. As PTN's control room charcoal beds are 2 inches in depth, FPL has concluded that the proposed decrease in the penetration criteria and associated increase in filter efficiency for elemental iodine and organic iodide removal is not supported by the RG.

Accordingly, FPL is retracting the SR 4.7.5.c.2 change proposed on June 25, 2009 in the AST LAR 196 [Reference 1]. The affected pages of the TS (page 3/4 7-17) and TS Bases (page 100) were later modified with the proposed CREVS TS submittal [Reference 4] on May 21, 2010. The attached TS and TS Bases pages thus reflect the later changes without the changes to the methyl iodide penetration criteria.

To partially offset this effective decrease in the control room filter efficiencies for elemental iodines and organic iodides from 97.5% to 95% in the dose calculations, FPL will be increasing the credited control room filter efficiency for particulate from 97.5% to 99%. In addition, FPL will be reducing the amount of unfiltered air inleakage to the Control Room from 115 scfm to 100 scfm in order to preclude any encroachment on the AST LAR 196 indicated margin to the regulatory dose limits.

References

1. W. Jefferson (FPL) to U.S. Nuclear Regulatory Commission (L-2009-133), "License Amendment Request 196: Alternative Source Term and Conforming Amendment," Accession No. ML092050277, June 25, 2009.

2. J. Paige (NRC) to M. Nazar (FPL), "Turkey Point Units 3 and 4 – Request for Additional Information Regarding Request to Adopt the Alternate Source Term (TAC Nos. ME1624 and ME1625)," Accession No. ML100700446, March 24, 2010

3. M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-065), "Response to Request for Additional Information (RAI) Regarding Alternative Source Term (AST) License Amendment Request (LAR) 196 (TAC Nos. ME1624 and ME1625)," Accession No. ML101090027, April 14, 2010

4. M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-083), "Supplement to License Amendment Request (LAR) 196 and 3/24/2010 Request for Additional Information (RAI) Regarding Alternative Source Term (AST)," Accession No. ML101450028, May 21, 2010

5. Email from J. Paige (NRC) to S. Franzone (FPL), Follow-up Requests for Additional Information Re: Turkey Point, Unit 3 and 4 AST LAR, Accession No. ML101480750, May 28, 2010

6. Regulatory Guide 1.52, Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants, Rev 3, June 2001

7. M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-121), "Revised Meteorological Data for 2005-2009 Supporting Alternative Source Term and Conforming License Amendment Request 196," June 11, 2010

8. Regulatory Guide 1.23, Rev 1, Meteorological Monitoring Programs for Nuclear Power Plants, March 2007

9. W. Jefferson (FPL) to U.S. Nuclear Regulatory Commission (L-2009-163), "Transmittal of Meteorological Data CD Supporting Alternative Source Term and Conforming License Amendment Request 196 – Supplemental Information," Accession No. ML100680718, July 21, 2009.

10. M. Gettler (FPL) to U.S. Nuclear Regulatory Commission (L-2009-146), "Supplemental Meteorological Data in Support of Application for Combined License," Accession No. ML092250585, August 7, 2009

11. NRC Regulatory Issues Summary 2006-04, "Experience with Implementation of Alternative Source Terms," March 7, 2006

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

1) Verifying that the air cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of greater than or equal to 99% DOP and halogenated hydrocarbon removal at a system flow rate of 1000 cfm ±10%.

2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, and analyzed per ASTM D3803 - 1989 AT 30°C and 95% relative humidity, meets the methyl iodide penetration criteria of less than 2.5% or the charcoal be replaced with charcoal that meets or exceeds the stated performance requirement, and

3) Verifying by a visual inspection the absence of foreign materials and gasket deterioration.

d. At least once per 12 months by verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge while operating the system at a flow rate of 1000 cfm ±10%;

e. At least once per 18 months by verifying that on a Containment Phase "A" Isolation test signal the system automatically switches into the recirculation mode of operation.

f. Perform system flow balancing within 12 hours following CREVS component maintenance affecting system performance, e.g., filter replacement, fan or damper adjustment.

Procedure No.:	Procedure Title:	Page:
		100
0-ADM-536	Technical Specification Bases Control Program	Approval Date: 1/19/10

ATTACHMENT 1
(Page 89 of 112)

TECHNICAL SPECIFICATION BASES

3/4.7.5 (Cont'd)

~~The Control Room Emergency Ventilation System is considered to be OPERABLE (Ref: JPN-PTN-SENP-92-017) when 1) Three air handling units (AHUs) (one of each of the three air conditioning units) are operable, 2) Two condensing units (two out of three available condensers) are operable, 3) One recirculation filter unit is operable, 4) Two recirculation fans operable, and 5) Associated dampers are operable. The reason three AHUs are required is that in the event of a single failure, only two AHUs would be available to supply air to the suction of the recirculation filter and fan. This is the configuration tested to support Technical Specification operability for flow through the emergency charcoal filter. Taking one AHU out of service renders the system incapable of operating in accordance with the tested configuration assuming an accident and a single failure (i.e., only one air handling unit available instead of the two assumed by the analysis). Any one of the three condensing (air conditioning) units is capable of maintaining the control room equipment within its environmental limits for temperature and humidity. Thus, one condensing unit can be taken out of service without impacting the ability of the Control Room Emergency Ventilation System to accomplish its intended function under single failure conditions.~~ Add Insert 1 next page**

System components are not subject to rapid deterioration, having lifetimes of many years, even under continuous flow conditions. Visual inspection and operating tests provide assurance of system reliability and will ensure early detection of conditions which could cause the system to fail or operate improperly. The filters performance tests prove that filters have been properly installed, that no deterioration or damage has occurred, and that all components and subsystems operate properly. The in-situ tests are performed in accordance with the methodology and intent of ANSI N510 (1975) and provide assurance that filter performance has not deteriorated below returned specification values due to aging, contamination, or other effects. Charcoal samples are tested using ASTM D3803-1989 in accordance with Generic Letter 99-02. The test conditions (30°C and 95% relative humidity) are as specified in the Generic Letter. Table 1 of the ASTM standard provides the tolerances that must be met during the test for each test parameter. The specified methyl iodide penetration value is based on the assumptions used in the LOCA Analysis.

3/4.7.6 Snubbers

All snubbers are required OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads.

The visual inspection frequency is based upon maintaining a constant level of snubber protection to each safety-related system during an earthquake or severe transient. Therefore, the required inspection interval varies inversely with the observed snubber failures and is determined by the number of inoperable snubbers found during an inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

W2003:DPS/ln/cls/cls

**Insert 1 is associated with proposed CREVS TS change submitted on May 21, 2010 [L-2010-083] Accession No. ML101450028 and is not provide here.

Data Substitution Summary

NAI reviewed the Turkey Point and MSI supplied data files for 2005-2009 meteorological data. A number of issues were identified; some were one time only events, and some were recurring events that needed to be resolved as a group. The following listing provides the items that required resolution:

One Time Items

1) June 24, 2009 (JD 175): The 09:00 WD10 value of "20" appeared to be an invalid, stuck reading, but this value was transferred to the MSI file.
   NAI recommended that this value be replaced by 9999 or with valid Land Use tower data. - Accepted by FPL.
2) 2007, Julian Dates 1-85: Resolve why TA10 and TB10 were set identically equal to each other in Raw data file.
   Substitution was identified by MSI in other documentation (RAI Response to NRC). Review by NAI documented in table below.

Recurring Items

1) Use of B-Channel delta-T for stability class: In a large number of cases in all years, the stability class reported in the ASCII, text formatted NRC daily and monthly reports appear to have been calculated using B-channel delta-T's instead of A-Channel delta-T's, when both channels appear to be valid. In some cases, the ASCII, text formatted NRC daily and monthly reports appear to have incorrect, zero values, which don't match the MSI file.
   NAI recommends that stability classes be recalculated from delta-T values, using a documented and consistent set of rules governing:
   a. Use B-Channel only if A-Channel delta-T is missing or clearly questionable.
   b. Don't mix 10M A and 60M B channels, or vice-versa, unless clear evidence of suitability of valid substitution has been provided and reviewed. Fill stability with 9999 if a valid pair (A-channel or B-channel) is not available. - Accepted by FPL.

2) Treatment of zero value wind speeds: In a number of cases, MSI replaced zero value wind speeds with 9999 (invalid or missing flag) and substituted 360 degrees for direction, instead of allowing the zero wind speed and direction to be detected as "calms" for downstream processing in X/Q computer codes.
   NAI recommended that zero wind speed values be reported as zeros, and not replaced by 9999 flags, unless other reasons confirm instrument failures
   a. examine prior and subsequent speeds for speed trends.
   b. consider persistence, other conditions (60M winds, stability, precipitation)
   c. log, for documentation purposes, instances of "failed instrument" determinations. - Accepted by FPL.

3) Resolution of persistence reports from METD_QA: This NAI version of the NRC developed program reports persistence of wind directions and stability classes for more than 24 hours (NAI version – the NRC version used 8 to 12 hours).

   NAI recommended that each instance should be examined to determine if stuck sensors, or faulty stability class determinations have lead to this flag. The "Action" column of the tabular reports that follow can capture these determinations. - Accepted by FPL.

4) Resolution of "stability class jumps" identified by METD_QA:

   NAI recommended that a simple review of other conditions around the time of the identified jump should be documented in the Action column of the following tabular reports. - Accepted by FPL. Suggestions from Shaw meteorologist regarding contributing factors was noted for use in these determinations.

5) Met Data Plot Review: Plots have been constructed for various Met Data parameters. If anomalous trends or step changes are identified, they should be reviewed for impact on final data files used for determination of X/Q's.

   NAI recommended that supplied plots (or others, as requested or as needed) be reviewed and determinations of impact (or lack thereof) be listed in the Action column of the following tabular reports. - Accepted by FPL.

2005 - MSI/TP Identified Substitutions/Flagged Entries in Yellow Highlight

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
All		Stability	Consistency	Use of B channel delta-T only when Channel A is missing or invalid. If both channels are invalid, then set stability to missing.	NAI will re-calculate Stability class for each hourly reading in 2005, and use this value instead of the ASCII, text based report results provided by MSI.
1-180		TA60	Bad Sensor	TB60 was substituted for TA60 from Jan. 1 until time of temperature sensor change out. NAI will resolve this differently than MSI. NAI will force A channel to "bad" and use B channel if good, or fill 999's if B also bad.	NAI confirms that the "RAW" data file contains identical values for TA60 and TB60 from JD 1 through JD 180 (June 29, 2005, 12:00). NAI reviewed 2005 data plotted from MSI QA File spreadsheets as well as raw data files.
3	1600	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR ENE FOR PREVIOUS 31 HOUR PERIOD
14	200	WDIR: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR SE FOR PREVIOUS 24 HOUR PERIOD
14	300	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR SE FOR PREVIOUS 25 HOUR PERIOD

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
15	1100-1600	Stability	Unknown	To be resolved by use of NAI calculated A-Channel stability, unless A-Channel is bad. Additional instances of this screening issue will not be listed, but will be resolved in a similar manner.	Monthly reports show Stability Class =5, while NAI calculates Stability Class 1. Reports show Delta-t to be zero, while MSIQA File shows ~-3.3°F/50M
15	1100-1400	Autoconvective Lapse Rate	Unknown	The lapse rate is the rate of cooling of ascending air. The dry air adiabatic lapse rate is -1°C/100M, while the saturated air lapse rate is only about 0.55°C/100M since condensation will begin to occur, which reduced the amount of temperature change. An autoconvective lapse rate is defined to be more than 3.4°C/100M, which represents a condition where the cooling rate is such that the density of air increases with elevation. Such a condition usually only occurs at low levels, over surfaces which are easily and intensely heated. NAI accepts these lapse rates as high, but within the expectations for conditions in South Florida.	METD_QA Identified: LAPSE RATE 1100 -3.6 1200 -3.6 1300 -3.8 1400 -3.9 EXCEEDS AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M
16	0900-1000	Autoconvective Lapse Rate	Unknown	See Julian Date 15. NAI accepts these lapse rates as high, but within the expectations for conditions in South Florida.	METD_QA Identified: LAPSE RATE 0900 -3.9 1000 -4.2 EXCEEDS SATURATED AIR AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
16	2100	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
21	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
27	0900	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
60	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
63	1000-1200	Autoconvective Lapse Rate	Unknown	See Julian date 15. NAI accepts these lapse rates as high, but within the expectations for conditions in South Florida.	METD_QA Identified: LAPSE RATE 1000 -3.7 1100 -4.1 1200 -3.7 EXCEEDS SATURATED AIR AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M
65	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM G TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
68	2100-2200	Autoconvective Lapse Rate	Unknown	See Julian date 15. NAI accepts these lapse rates as high, but within the expectations for conditions in South Florida. After a fairly sunny day, a rain event overnight reduced upper air temperatures.	METD_QA Identified: LAPSE RATE 2100 -3.7 EXCEEDS SATURATED AIR AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M
69	0200-0600	Autoconvective Lapse Rate	Unknown	See Julian date 15. NAI accepts these lapse rates as high, but within the expectations for conditions in South Florida. After a fairly sunny day, a rain event overnight reduced upper air temperatures.	METD_QA Identified: LAPSE RATE 0200 -3.8 0300 -4.2 0400 -4.1 0500 -4.0 0600 -3.8 EXCEEDS SATURATED AIR AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M
73	0900	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
74	0900	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
88	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
89	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
98 To 129	0800 1200	Wind Direction, 60m	Missing or invalid 60m data	60m wind direction data will be replaced by 10m wind direction data for the same dates and times.	MSI-provided graphs indicate 60m wind direction corresponds reasonably well with 10m wind direction.
111	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
113	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
122	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
123	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
125	0800	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
143	0600-1000	Autoconvective Lapse Rate	Unknown	See Julian date 15. NAI accepts these lapse rates as high but within the expectations for conditions in South Florida Significant solar radiation heating of the ground level drove low level temperatures from the low 70's to the mid-upper 80's over two to three hours..	METD_QA Identified: LAPSE RATE 0600 -4.4 0700 -5.4 0800 -6.9 0900 -6.4 1000 -3.6 EXCEEDS SATURATED AIR AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M
151	0800-0900	Stability	Unknown	OK.	METD_QA IDENTIFIED: 0800:STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD 0900:STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable Both A and B channels show this temperature change.
168	0700-1300	Stability	Unknown	OK.	METD_QA IDENTIFIED: 0700:STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD 1300:STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable Both A and B channels show this temperature change.
170	1300	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
200	0	WDIR: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR E FOR PREVIOUS 28 HOUR PERIOD
218 To 224	1700 To 1700	Wind Direction, 60m	Missing or invalid 60m data	60m wind direction data will be replaced by 10m wind direction data for the same dates and times.	MSI-provided graphs indicate 60m wind direction corresponds reasonably well with 10m wind direction.
238	0	WSPD: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 25.1M/SEC
238	100	WSPD: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 26.4M/SEC
238	200	WSPD: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 27.0M/SEC
264	0900	Stability	Unknown	Data was reviewed, and normal variations of temperatures were occurring during this time on both A and B channels. NAI sees no problems with this data.	METD_QA Identified: STABILITY CLASS E LASTED FOR PREVIOUS 39 HOUR PERIOD

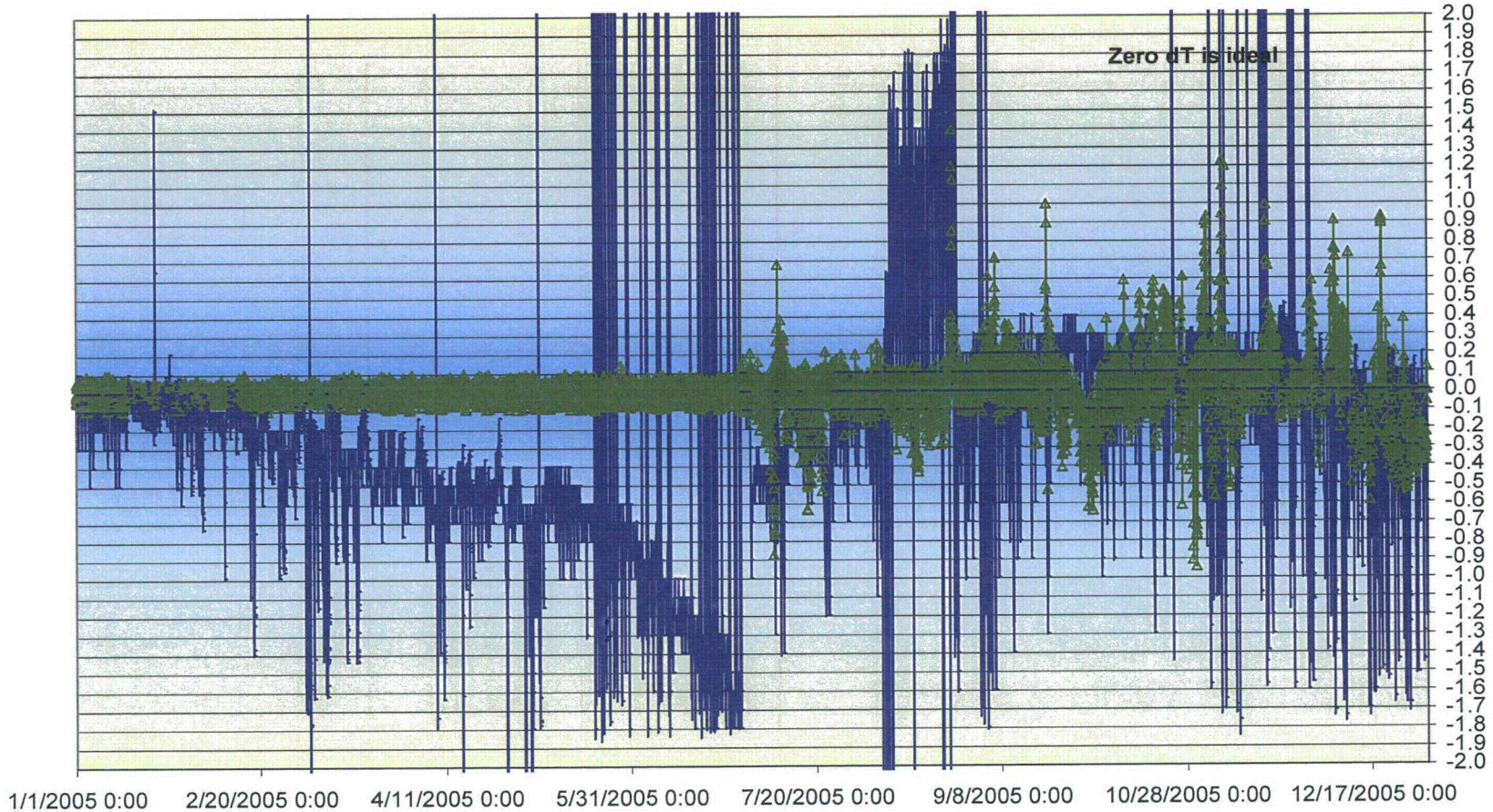
Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
297	300	WSPD: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 25.6M/SEC
297	400	WSPD: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 30.0M/SEC
297	500	WSPD: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 25.1M/SEC
297	600	WSPD: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 28.9M/SEC
297	700	WSPD: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind speed were occurring during this time, and wind speeds were elevated at both the 10M and 60M sensors. NAI sees no problems with this data.	METD_QA Identified: WIND SPEED OF 28.7M/SEC

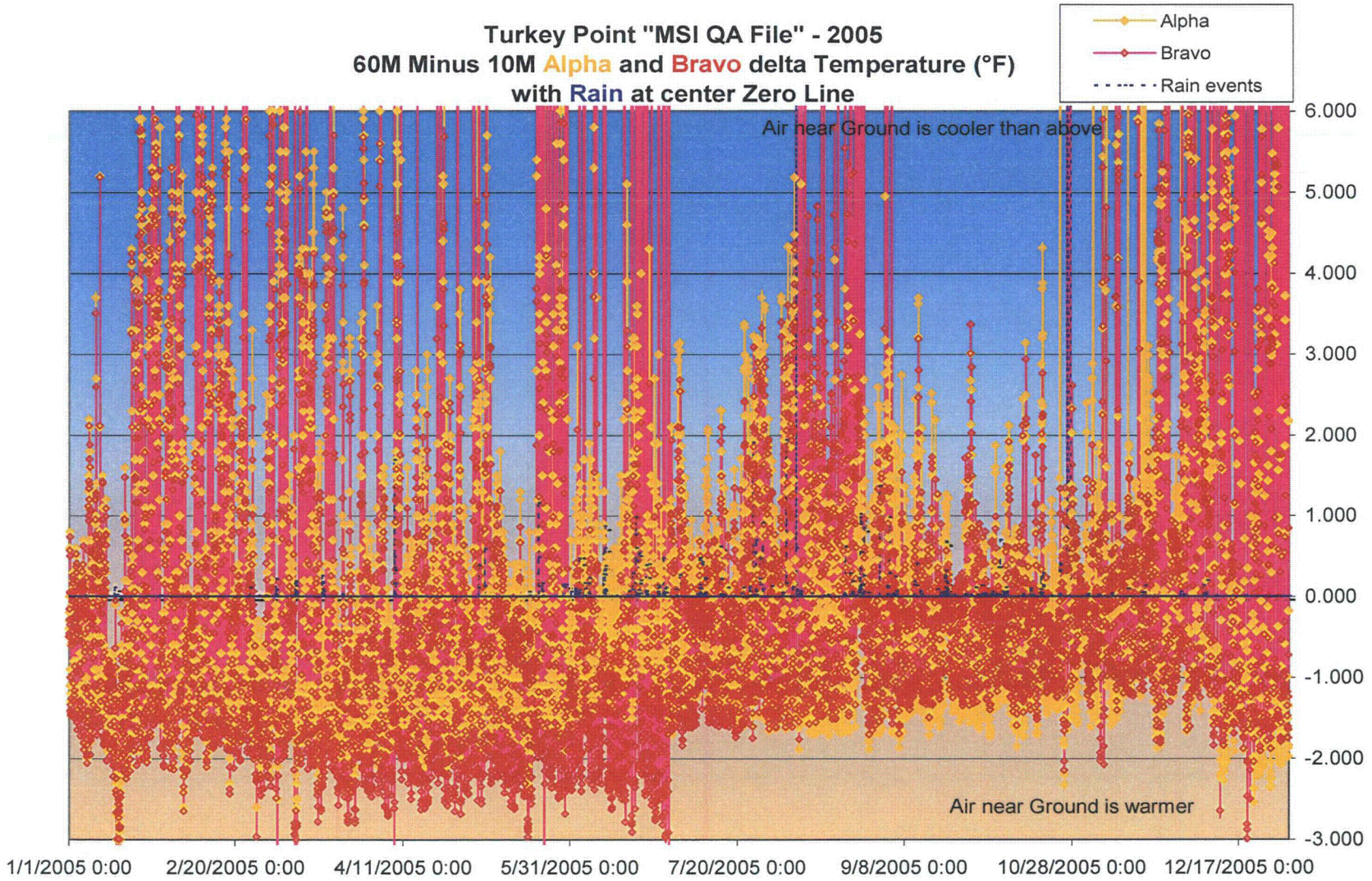
Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
304	800	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NE FOR PREVIOUS 44 HOUR PERIOD
308	1400	WDIR: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NE FOR PREVIOUS 29 HOUR PERIOD
308	1400	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NE FOR PREVIOUS 29 HOUR PERIOD
336	200	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NNW FOR PREVIOUS 27 HOUR PERIOD
336	400	WDIR: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NNW FOR PREVIOUS 29 HOUR PERIOD

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
343-344 344 344 345 346 349 350 351 352	2000-0200 1900 2200 1900 0300-0500, 1900 1900-2000, 2300 0400 2200-2300 0300,2000, 2200	WSPD: HEIGHT= 10.0 M	Choice of treatment of 0.0 wind speed value	MSI substituted 9999's (indicating bad reading or failed sensor) for 0.0 "raw data" wind speed. NAI will resolve this differently than MSI for the following time periods. NAI review of the raw data and review of the corresponding Land Use data indicates very low wind speeds are reasonable. 343-346 Likely Calm, not missing 349-352 Likely Calm, not missing	NAI cannot confirm that this "bad data" flag application is appropriate. Wind speeds of 0.0mph are valid readings for calms, and would be counted for input to ARCON96, along with other JFD data.
356	0	WDIR: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NNW FOR PREVIOUS 32 HOUR PERIOD
356	1000	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA Identified: WIND FROM SECTOR NNW FOR PREVIOUS 37 HOUR PERIOD
356	0900	Stability	Unknown	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2005	Time	Parameter	Reason	Action	NAI Review
357 357-358 358 358-359 361-362 364 364-365	1800 2200-0000 0200-0500, 0700-0800 1800-0600 1700-0300, 2100 0400,0700 1900-0700	WSPD: HEIGHT= 10.0 M	Choice of treatment of 0.0 wind speed value	MSI substituted 9999's (indicating bad reading or failed sensor) for 0.0 "raw data" wind speed. NAI will resolve this differently than MSI for the following time periods. NAI review of the raw data, and review of the corresponding Land Use data indicates very low wind speeds are reasonable. 357-359 Likely Calm, not missing 361-362 Likely Calm, not missing 364 Likely Calm, not missing 365-365 Likely Calm, not missing	NAI cannot confirm that this "bad data" flag application is appropriate. Wind speeds of 0.0mph are valid readings for calms, and would be counted for input to ARCON96, along with other JFD data.
1Q05-2Q05		10M Temperature – A-B Delta-T	Unknown	NAI review of this plot, plus the plot on next page (60M – 10M Alpha vs. Bravo Delta Temperature) indicates that the trend in 10M A-B delta-T is likely due to drift in the Bravo channel (see yellow/Alpha line in second plot – no trend; while pink/Bravo line gets a step "correction" at end of 2Q2005), so the NAI implementation of A-Delta-T based stability calculations will eliminate any problems the drifting B channel might have introduced. No further investigation needed.	NAI Identified: See accompanying plot that shows significant trend in 10M Temp A-B Delta-T. This trend may affect choice of A or B channel for determining Stability.

Turkey Point "MSI QA File" - 2005
Alpha minus Bravo dT (°F) @ 60 Meters
and
Alpha minus Bravo dT (°F) @ 10 Meters




Turkey Point "MSI QA File" - 2005
60M Minus 10M Alpha and Bravo delta Temperature (°F)
with Rain at center Zero Line
Alpha
Bravo
Rain events
Air near Ground is cooler than above
Air near Ground is warmer
6.000
5.000
4.000
3.000
2.000
1.000
0.000
-1.000
-2.000
-3.000
1/1/2005 0:00
2/20/2005 0:00
4/11/2005 0:00
5/31/2005 0:00
7/20/2005 0:00
9/8/2005 0:00
10/28/2005 0:00
12/17/2005 0:00

2006 - MSI/TP Identified Substitutions/Flagged Entries in Yellow Highlight

Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
All		Stability	Brevity	Use of B channel delta-T only where Channel A is 9999	For 2006, NAI will not flag routine use of B-Channel Delta-T when A-Channel is bad or missing, unless some other reason flags the substitution.
1 2 3 4 7 13 15 16 24	Various	WSPD: HEIGHT= 10.0 M	Choice of treatment of 0.0 wind speed value. Raw data files appear to report 0.5 (starting speed of instrument) when wind speed is below 0.5 mph.	NAI will resolve this differently than MSI for the following time periods. NAI review of the raw data and review of the corresponding Land Use data indicates very low wind speeds are valid and reasonable. 001-004 Likely Calm, not missing 007 Likely Calm, not missing 013 Likely Calm, not missing 015 Likely Calm, not missing 016 Likely Calm, not missing 024 Likely Calm, not missing	NAI cannot confirm that this "bad data" flag application is appropriate. Wind speeds of 0.0mph are valid readings for calms, and would be counted for input to ARCON96, along with other JFD data.
7	1000	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
16	1000	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM G TO C OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
48	1000	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
62	1000	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
63	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
65	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
66	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
69	1800 1800	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR SE FOR PREVIOUS 39 HOUR PERIOD WIND FROM SECTOR SE FOR PREVIOUS 28 HOUR PERIOD
74	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM G TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
77	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
78	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
91	200	WDIR: HEIGHT= 10.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR E FOR PREVIOUS 32 HOUR PERIOD
92	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
93	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM G TO C OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
94	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
95	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
95	0100-2400	TA10, DTA	Unknown	TB10 substituted, DTA recalculated. NAI will resolve this differently than MSI. NAI will set TA10 and A delta-T to missing.	NAI cannot confirm TA10 was bad. Both the "RAW" data file and the "MSI QA" files already have equal TA10 and TB10 values. Also, mixing A and B channels to get valid delta-T's should be avoided unless absolutely necessary.
99	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
100	1300	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly. Rainfall followed in next hour.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
108	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
108-109		TA10, DTA	Unknown	TB10 substituted, DTA recalculated. NAI will resolve this differently than MSI. NAI will set TA10 and A delta-T to missing.	NAI cannot confirm TA10 was bad. Both the "RAW" data file and the "MSI QA" files already have equal TA10 and TB10 values. Also, mixing A and B channels to get valid delta-T's should be avoided unless absolutely necessary.
109	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

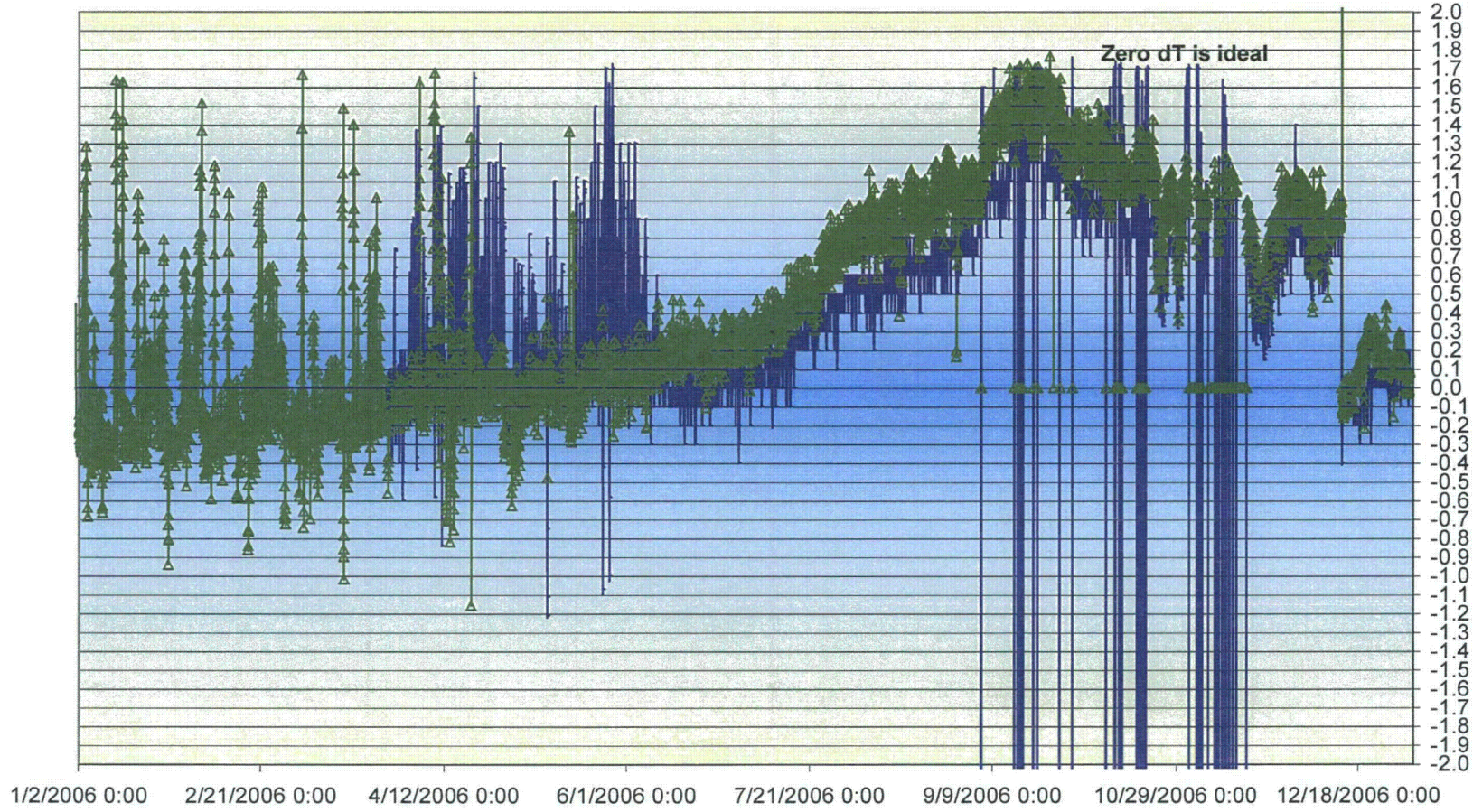
Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
110	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
112	1200 1200	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR SE FOR PREVIOUS 25 HOUR PERIOD WIND FROM SECTOR SE FOR PREVIOUS 25 HOUR PERIOD
115	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
1117	1200-1300	Autoconvective Lapse Rate	Unknown	See 2005 Julian date 15. NAI accepts these lapse rates as high but within the expectations for conditions in South Florida Significant solar radiation heating of the ground level drove low level temperatures from the low 70's to the mid-upper 80's over two to three hours.	METD_QA Identified: LAPSE RATE 0900 -4.1 1000 -4.1 EXCEEDS AUTOCONVECTIVE LAPSE RATE OF -3.4°C/100M
124	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
126	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

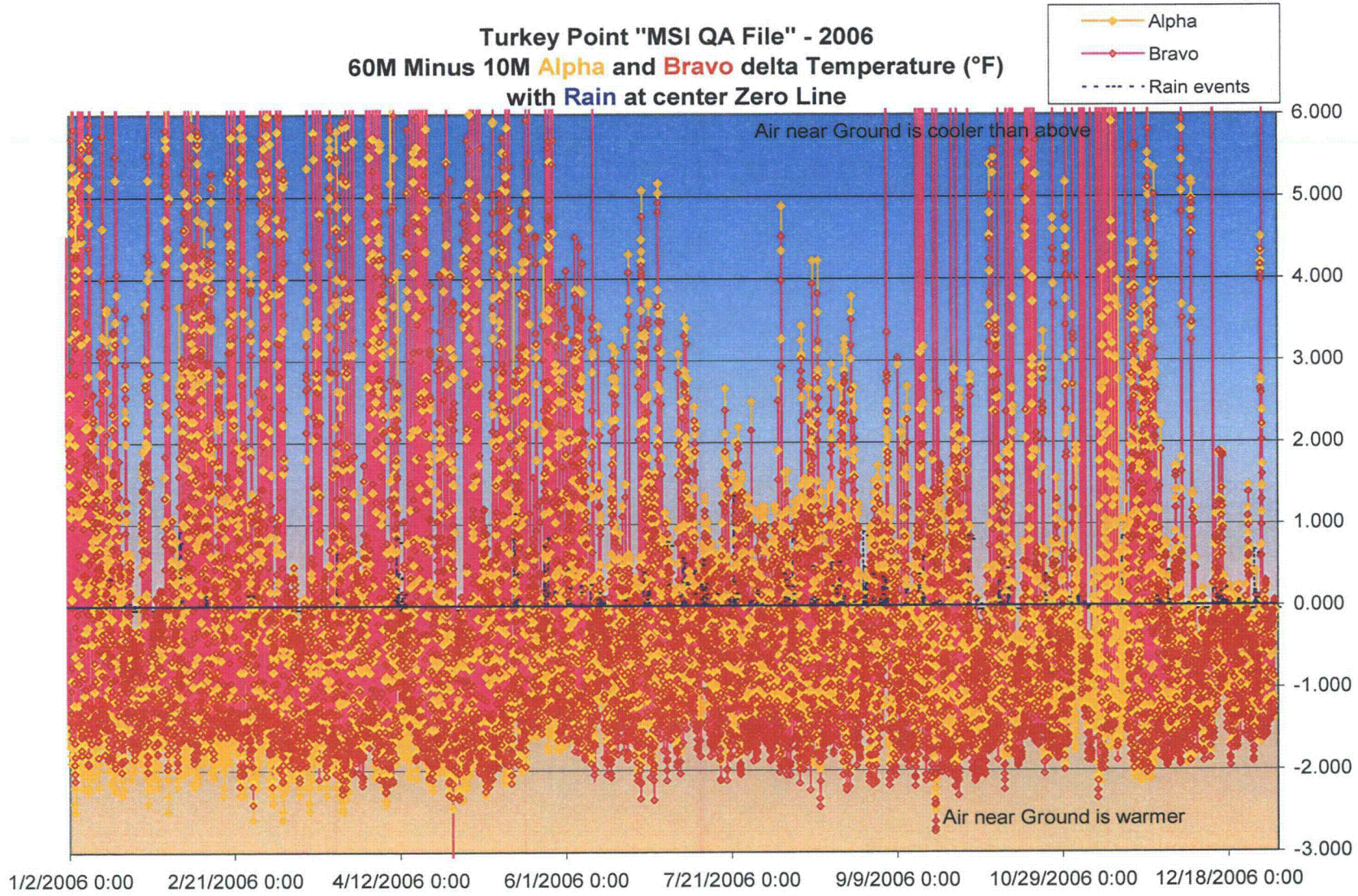
Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
140	0700	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
136-137		TA10, DTA	Unknown	TB10 substituted, DTA recalculated. NAI will resolve this differently than MSI. NAI will set TA10 and A delta-T to missing.	NAI cannot confirm TA10 was bad. Both the "RAW" data file and the "MSI QA" files already have equal TA10 and TB10 values. Also, mixing A and B channels to get valid delta-T's should be avoided unless absolutely necessary.
149	0700	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
150	0700	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
151	0700	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
235	1500	Stability	Unknown Immediately following a rain event. Wind speeds and directions changed markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
244	1300	Stability	Unknown Both channels of delta-T transition from positive to negative. Wind speeds and directions change markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
277	400 400	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 27 HOUR PERIOD WIND FROM SECTOR ENE FOR PREVIOUS 27 HOUR PERIOD
296	0800	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
308	1800 1800	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR NE FOR PREVIOUS 32 HOUR PERIOD WIND FROM SECTOR NE FOR PREVIOUS 32 HOUR PERIOD
309	600	Stability	Unknown	"Normal" variations in data readings do not indicate any instrument problems. NAI sees no problems with this data.	METD_QA IDENTIFIED: STABILITY CLASS D LASTED FOR PREVIOUS 28 HOUR PERIOD NAI Comment – Data looks reasonable.
310	1700 900	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 42 HOUR PERIOD WIND FROM SECTOR ENE FOR PREVIOUS 34 HOUR PERIOD

Julian Date 2006	Time	Parameter	Reason	Action	NAI Review
344	2200	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 25 HOUR PERIOD
346	2100 2000	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 46 HOUR PERIOD WIND FROM SECTOR ENE FOR PREVIOUS 42 HOUR PERIOD
364	100	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 37 HOUR PERIOD
Q3-2006		A-B Delta-T @ 60M & 10M	Unknown	NAI review of this plot indicates that the trend in 10M A-B delta-tracks a similar trend in 60M A-B delta T, so any impact will be offset. This is confirmed by review of the plot on next page (60M – 10M Alpha vs. Bravo Delta Temperature) which shows no bias or trend in TA60M-10M or TB60M-TB10M. No further investigation needed.	NAI Comment: Review plot below for clear trend in A-B delta-T during the third quarter.

Turkey Point "MSI QA File" - 2006
Alpha minus Bravo dT (°F) @ 60 Meters
and
Alpha minus Bravo dT (°F) @ 10 Meters




Turkey Point "MSI QA File" - 2006
60M Minus 10M Alpha and Bravo delta Temperature (°F)
with Rain at center Zero Line
Alpha
Bravo
Rain events
Air near Ground is cooler than above
Air near Ground is warmer
6.000
5.000
4.000
3.000
2.000
1.000
0.000
-1.000
-2.000
-3.000
1/2/2006 0:00
2/21/2006 0:00
4/12/2006 0:00
6/1/2006 0:00
7/21/2006 0:00
9/9/2006 0:00
10/29/2006 0:00
12/18/2006 0:00

2007– Substitutions Made by MSI/TP in Yellow Highlight

Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
All		Stability	Consistency	Use of B channel delta-T only when Channel A is missing or invalid. If both channels are invalid, then set stability to missing.	NAI will re-calculate Stability class for each hourly reading in 2007, and use this value instead of the ASCII, text based report results provided by MSI.
1-31 31-59 60-90 91-120 121-152 153-181 182-212 213-243 244-273 274-304 305-334 335-365	1900-0800 2000-0800 2000-0700 2000-0400 2100-0400 2100-0400 2100-0400 2000-0400 2000-0500 2000-0700 1900-0700 1900-0700	Solar Radiation	>zero at night	Set to zero	NAI concurs and confirms. NAI also notes that certain other calendar years contain negative values for Solar Radiation (see, for instance, Julian Date 325, November 21, 2006 at 01:00). The automated NAI spreadsheet "valid data screening" will follow this same practice, and set negative values to zero.
Various	Various	Sigma Theta	LWS<3.5 mph	Set to missing	Sigma Theta not used for AST X/Q calculations, so these data corrections were not checked.
37	0000	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA IDENTIFIED: STABILITY CLASS D LASTED FOR PREVIOUS 40 HOUR PERIOD NAI Comment – Data looks reasonable.
44	1300	Stability	Unknown Both channels of delta-T transition from near zero to very negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
53	0900	Stability	Unknown Both channels of delta-T transition from positive to negative. Solar radiation increases markedly.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM E TO A OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.

Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
81	400 400	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 37 HOUR PERIOD WIND FROM SECTOR ENE FOR PREVIOUS 37 HOUR PERIOD
86	1900 1900	WDIR: HEIGHT= 10.0M WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR ENE FOR PREVIOUS 50 HOUR PERIOD WIND FROM SECTOR ENE FOR PREVIOUS 50 HOUR PERIOD
100	2400	UWS,UWD,LWD, Sigma Theta	Essentially Constant	Set to Missing	NAI concurs that the identified values are essentially constant (bad or stuck sensor reading) and that the substitution for 9999 (missing has been made.
101-109	100-2400	UWS,UWD,LWD, Sigma Theta	Essentially Constant	Set to Missing	NAI concurs that the identified values are essentially constant (bad or stuck sensor reading) and that the substitution for 9999 (missing has been made.
110	100-1100	UWS,UWD,LWD, Sigma Theta	Essentially Constant	Set to Missing	NAI concurs that the identified values are essentially constant (bad or stuck sensor reading) and that the substitution for 9999 (missing has been made.
121	1100-1700	All Winds All Temperatures	System Change Out	Set to Missing	NAI has no information about the availability of this data, but can confirm that the QA file has 9999 filed fields for wind directions, speeds, and stability.
124	1100-1700	All Winds All Temperatures	System Change Out	Set to Missing	NAI has no information about the availability of this data, but can confirm that the QA file has 9999 filed fields for wind directions, speeds, and stability.

Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
126	2100-2400	UWD	Essentially Constant	Set equal to 10m WD data	NAI concurs that the raw data shows UWD to be essentially constant, and the 999 field was inserted into the QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data.
127-181	100-2400	UWD	Essentially Constant	Set equal to 10m WD data	NAI concurs that the raw data shows UWD to be essentially constant, and the 999 field was inserted into the QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data.
182	1400	Stability	Unknown Over one-half inch rainfall this hour.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
182-193	100-2400	UWD	Essentially Constant	Set equal to 10m WD data	NAI concurs that the raw data shows UWD to be essentially constant, and the 999 field was inserted into the QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data.

Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
194	100-1100 1000 1100 1400	UWD TB60 & dT-B TA60 & dT-A All Temperatures	Essentially Constant Delta-T>1.8°F Delta-T>1.8°F Delta-T>1.8°F	UWD set equal to 10m WD data. Temperatures and differential temperatures set to Missing	NAI concurs that the raw data shows UWD to be essentially constant, and the 999 field was inserted into the QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data. NAI confirms that temperature values have been set to missing.
217	0600	UWS, UWD	UWS=0.5	Set to zero NAI believes that this is a valid calm wind speed indication, based on a on a case-by-case examination of wind speed and direction trends. NAI will resolve this differently than MSI.	NAI cannot confirm this substitution. The raw data shows upper wind speed as 0.24 mph, and upper wind direction = 187.1°. The MSI substitution of zero was over-ridden and became 9999 (invalid or missing with a 360° direction).
218	1600-2400	UWD & UWS; LWD	UWD & UWS =0 ; LWD constant	UWS set to missing; 10M WS WD and Sigma Theta from Land Use 10M tower substituted for 10M data. UWD set equal to LWD.	NAI concurs that the raw data shows UWD, UWS = 0, and LWD to be essentially constant after 0700 on JD 219, and that the 999 field was inserted into the QA file for these entries. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data.

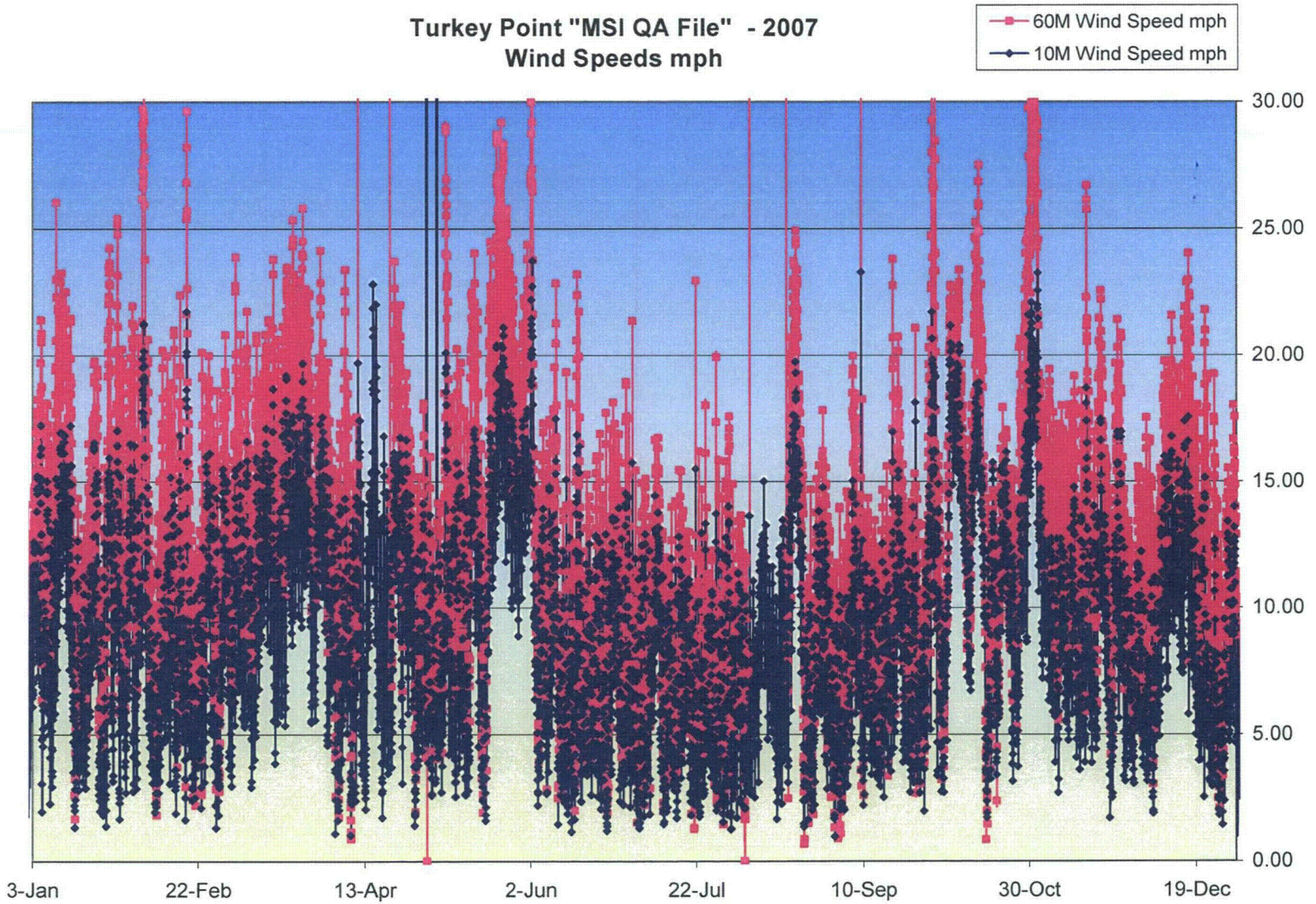
Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
219-228	100-2400	UWD & UWS; LWD	Essentially Constant	UWS set to missing; 10M WS WD and Sigma Theta from Land Use 10M tower substituted for 10M data. UWD set equal to LWD.	NAI concurs that the raw data shows UWD, UWS = 0, and LWD to be essentially constant, and that the 999 field was inserted into the QA file for these entries. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data.
229	100-1400	UWD & UWS; LWD	Essentially Constant	UWS set to missing; 10M WS WD and Sigma Theta from Land Use 10M tower substituted for 10M data. UWD set equal to LWD.	NAI concurs that the raw data shows UWD, UWS = 0, and LWD to be essentially constant until about 1400, and that the 999 field was inserted into the QA file for these entries. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data.
233	1600	WDIR: HEIGHT= 60.0M	Unknown	Data was reviewed, and normal variations of wind direction were occurring during this time, and wind speeds were very consistent, but slightly variable. NAI sees no problems with this data.	METD_QA IDENTIFIED: WIND FROM SECTOR E FOR PREVIOUS 45 HOUR PERIOD

Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
245	1500	Stability	Unknown Over one-half inch rainfall fell in previous hour.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM B TO F OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
247	1400	Stability	Unknown Over one-quarter inch rainfall fell in previous hour, trace this hour.	OK.	METD_QA IDENTIFIED: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI Comment – Data looks reasonable.
267	1200-2400	UWD, LWD	Essentially Constant	10M WS WD and Sigma Theta from Land Use 10M tower substituted for 10m data. UWD set equal to LWD.	NAI concurs that the raw data shows UWD to be essentially constant, and that alternative values were inserted. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file.
	1200-2400	TA10	Essentially Constant	Set to Missing	Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data. NAI confirms accurate substitution of 10m WD data into 60m WD based on MSI-provided graphs that indicate 60m WD corresponds reasonably well with 10m WD. NAI confirms that Channel TA10 was bad (30 to 40 degrees, when TB10 was reading near 80 degrees) and MSI QA file values set to missing.

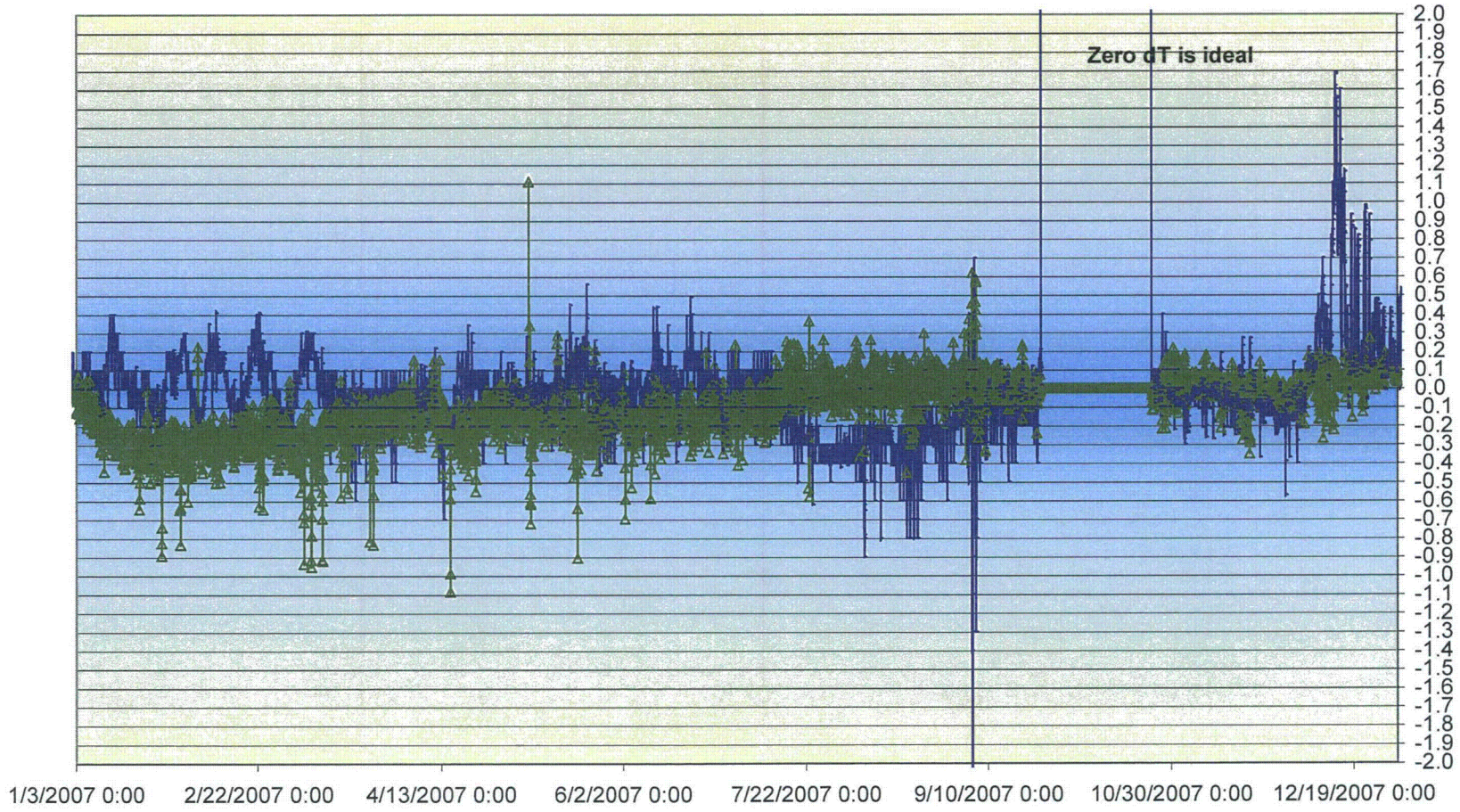
Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
268-273	100-2400	UWD, LWD	Essentially Constant	10M WS WD and Sigma Theta from Land Use 10M tower substituted. UWD set equal to LWD.	NAI concurs that the raw data shows UWD to be essentially constant, and that alternative values were inserted. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file.
		TA10	Essentially Constant	Set to Missing	Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data. NAI confirms that Channel TA10 was bad (30 to 40 degrees, when TB10 was reading near 80 degrees) and MSI QA file values set to missing.
283	0200	Stability	Unknown	"Normal" variations in data readings do not indicate any instrument problems. NAI sees no problems with this data.	METD_QA IDENTIFIED: STABILITY CLASS D LASTED FOR PREVIOUS 34 HOUR PERIOD NAI Comment – Data looks reasonable.

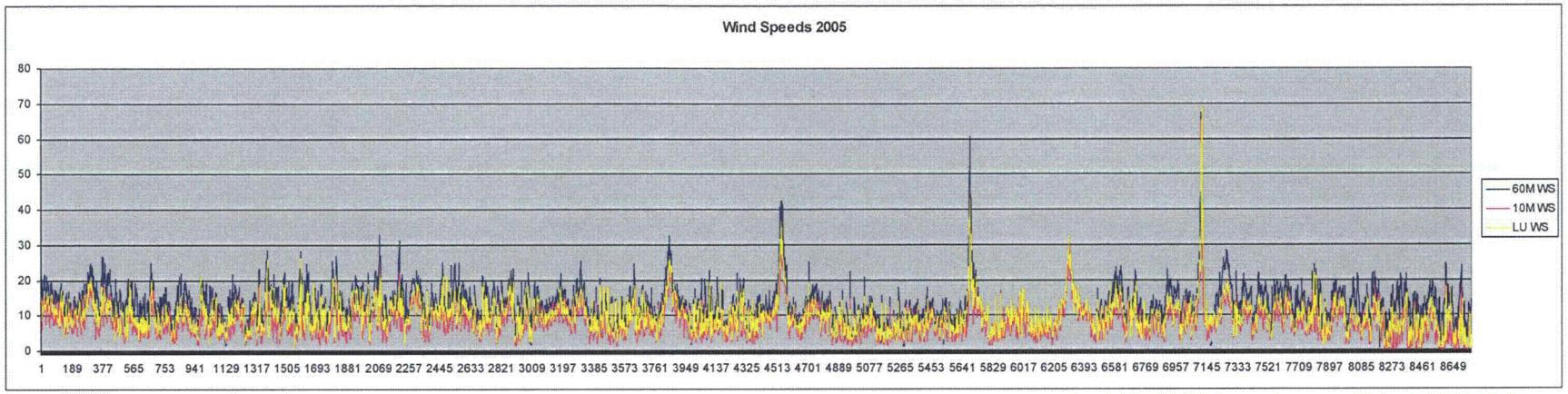
Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
274-296	100-2400	UWD, LWD	Essentially Constant	10M WS WD and Sigma Theta from Land Use 10M tower substituted. UWD set equal to LWD.	NAI concurs that the raw data shows UWD to be essentially constant, and that alternative values were inserted. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file.
		TA10	Obviously erroneous	Set to Missing	Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data. NAI confirms that Channel TA10 was bad (30 to 40 degrees, when TB10 was reading near 80 degrees) and MSI QA file values set to missing.
297	100-1300	UWD, LWD	Essentially Constant	10M WS WD and Sigma Theta from Land Use 10M tower substituted. UWD set equal to LWD.	NAI concurs that the raw data shows UWD to be essentially constant, and that alternative values were inserted. NAI confirms accurate substitution from LU 10M WS, WD & sigma theta into MSI QA file.
	100-1500	TA10	Obviously erroneous	Set to Missing	Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 999 field was replaced with 10m wind direction data. NAI confirms that Channel TA10 was bad (30 to 40 degrees, when TB10 was reading near 80 degrees) and MSI QA file values set to missing.

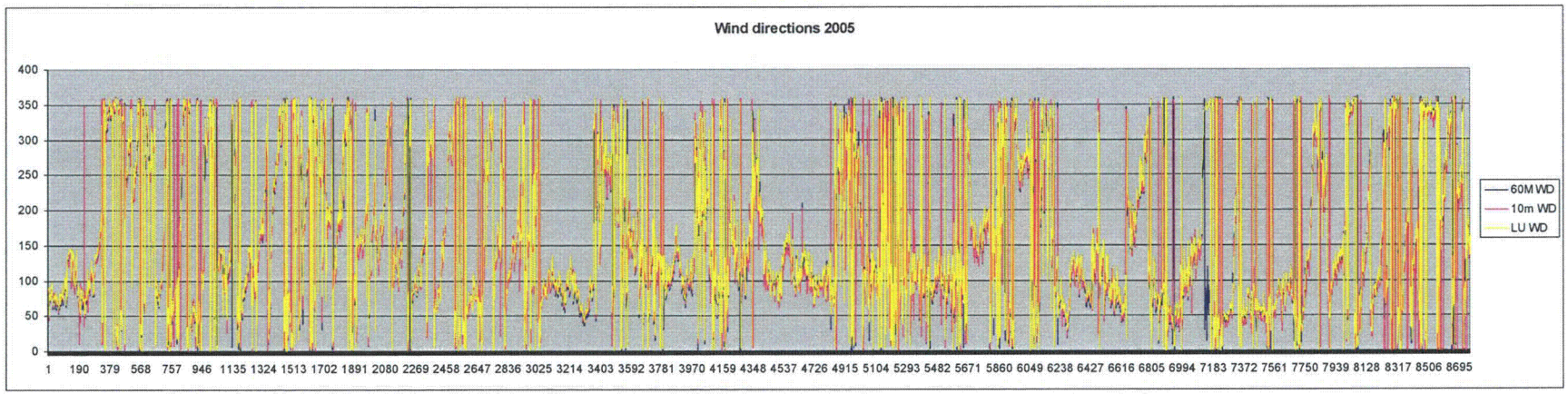
Julian Date 2007	Time	Parameter	Reason	Action	NAI Review
297	1400-1500	TA10, TB10	Obviously erroneous	Set to Missing	NAI concurs that TA10 & TB10 @1300 are bad, and that TB10 @1400 is 5 degrees different that valid prior and following readings. TA10 @ 1400 appears good, but can be conservatively set to missing.
306	1900	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA IDENTIFIED: STABILITY CLASS D LASTED FOR PREVIOUS 40 HOUR PERIOD NAI Comment – Data looks reasonable.


Turkey Point "MSI QA File" - 2007
Wind Speeds mph
60M Wind Speed mph
10M Wind Speed mph
30.00
25.00
20.00
15.00
10.00
5.00
0.00
3-Jan
22-Feb
13-Apr
2-Jun
22-Jul
10-Sep
30-Oct
19-Dec

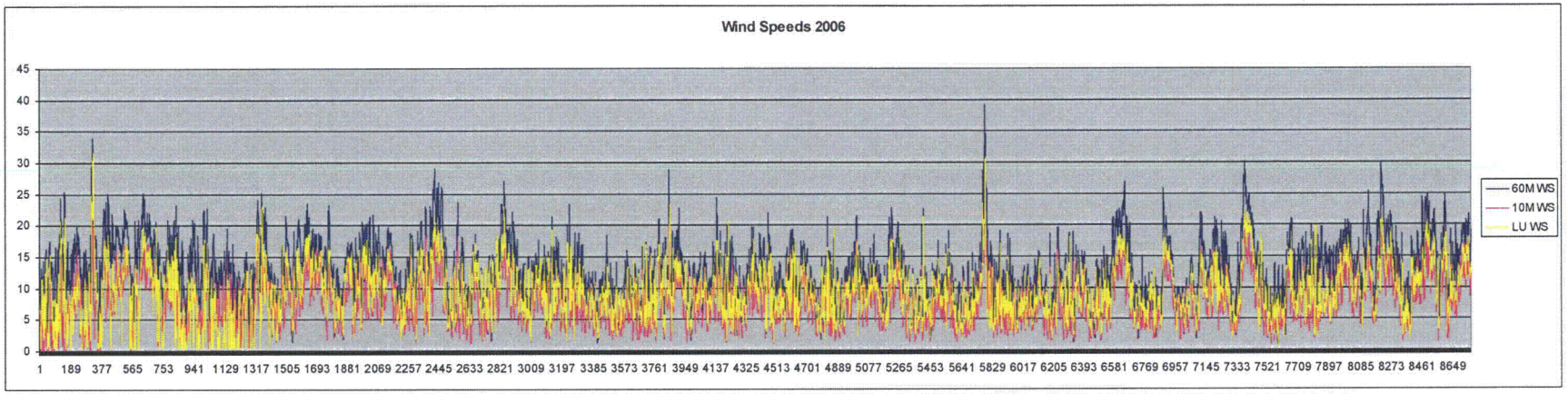
Turkey Point "MSI QA File" - 2007
Alpha minus Bravo dT (°F) @ 60 Meters
and
Alpha minus Bravo dT (°F) @ 10 Meters

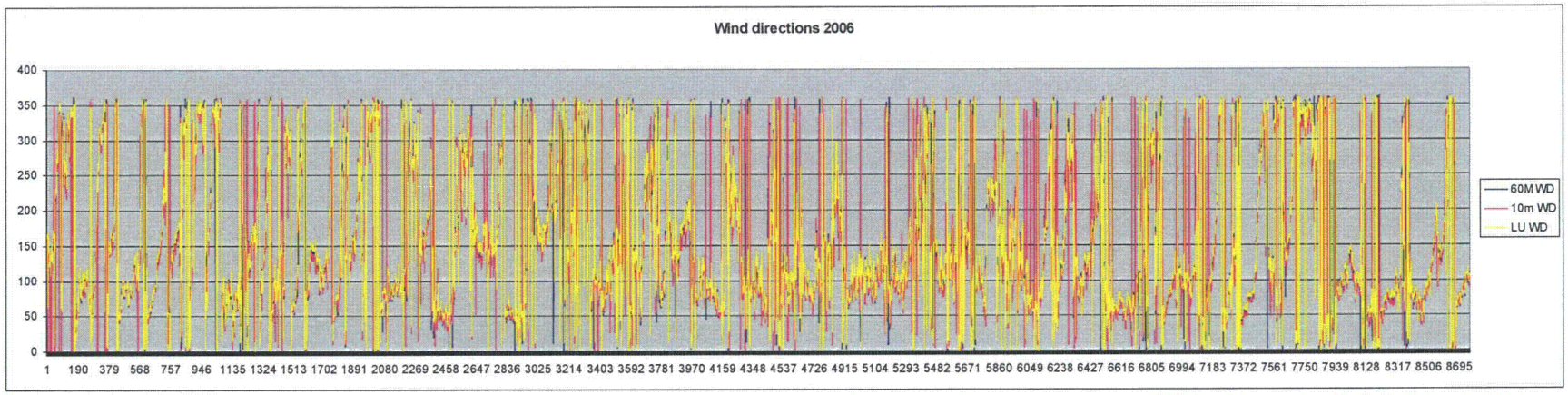




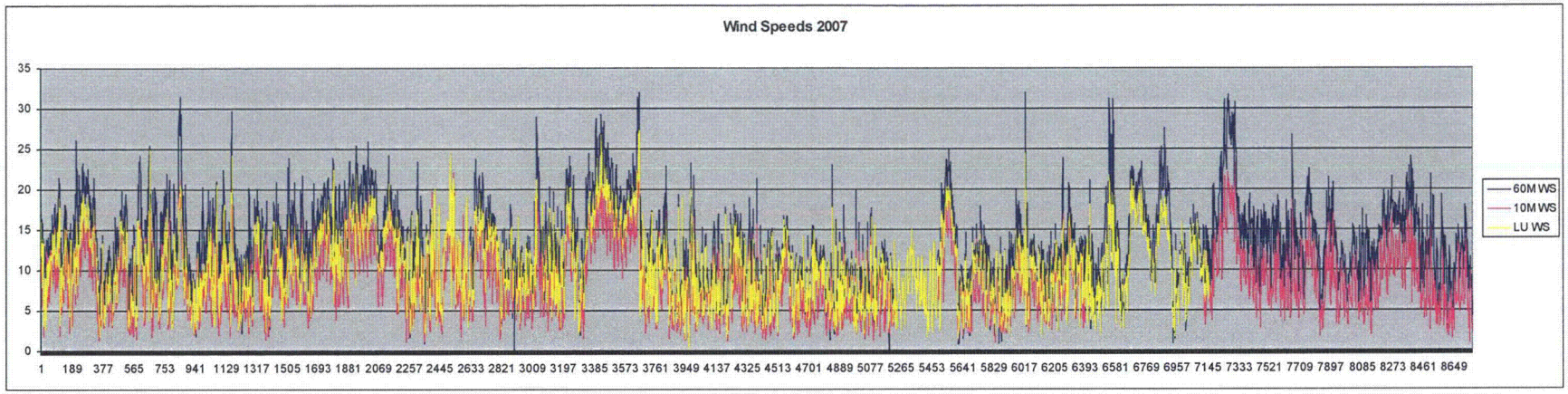


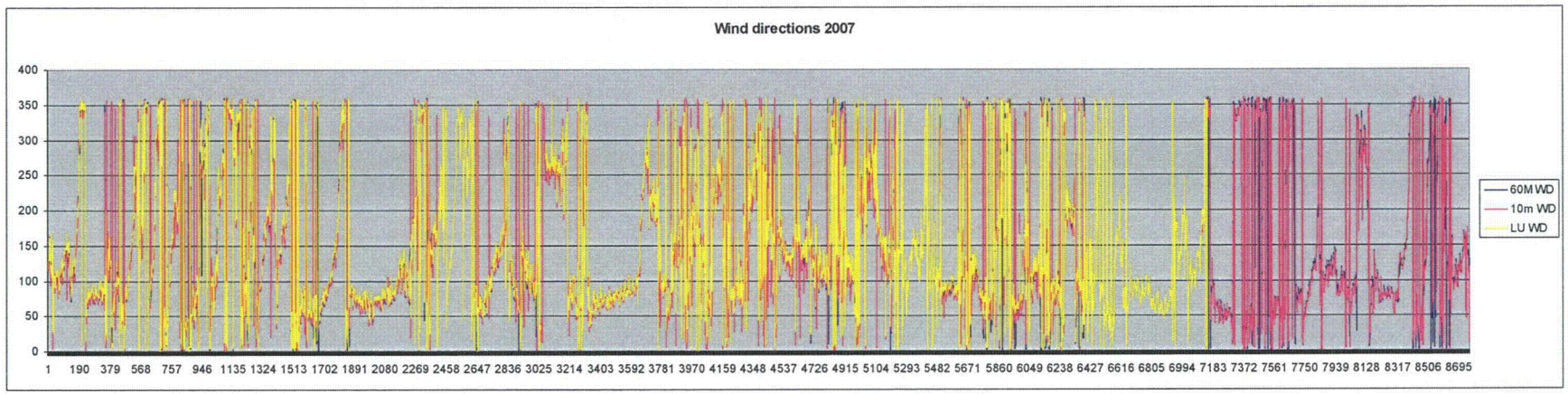
10M WS/60M WS			10WD/60M WD	
Correl	0.854146		Correl	0.823948
Slope	1.034228		Slope	0.804531
Intercept	4.082811		Intercept	26.27945
10M WS/LU WS			10WD/LUWD	
Correl	0.865296		Correl	0.692074
Slope	0.874367		Slope	0.712917
Intercept	-0.02998		Intercept	52.9332



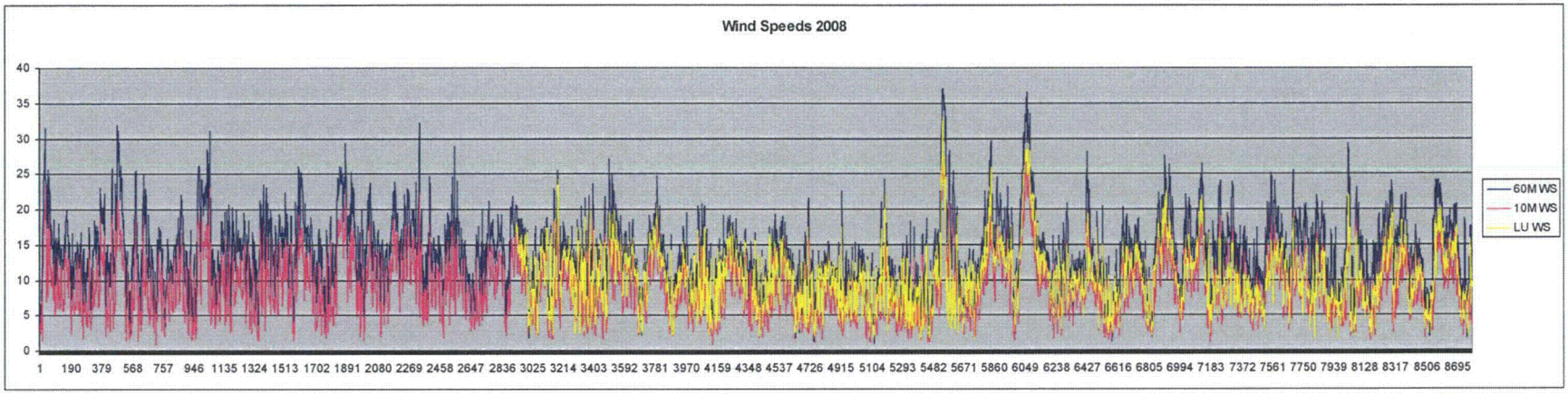


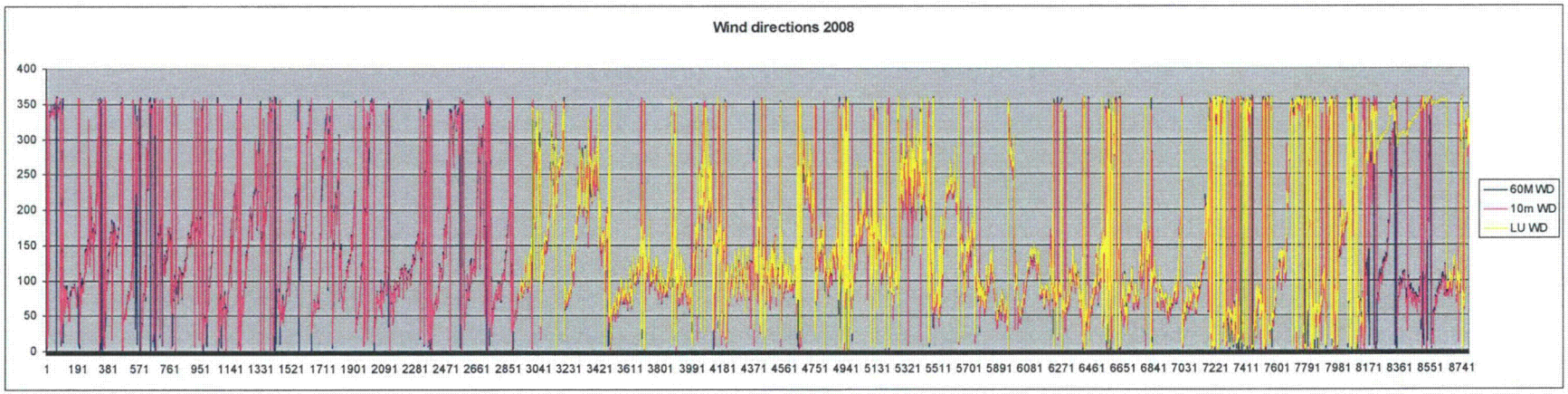
10M WS/60M WS			10WD/60M WD	
Correl	0.850453		Correl	0.769478
Slope	1.085187		Slope	0.732094
Intercept	3.558924		Intercept	33.56544
10M WS/LU WS			10WD/LUWD	
Correl	0.777552		Correl	0.663662
Slope	0.714162		Slope	0.697111
Intercept	1.571708		Intercept	55.01789





10M WS/60M WS			10WD/60M WD	
Correl	0.904966		Correl	0.760873
Slope	1.158538		Slope	0.718593
Intercept	2.637326		Intercept	30.13175
10M WS/LU WS			10WD/LUWD	
Correl	0.858052		Correl	0.690195
Slope	0.822128		Slope	0.729199
Intercept	0.432733		Intercept	48.8508





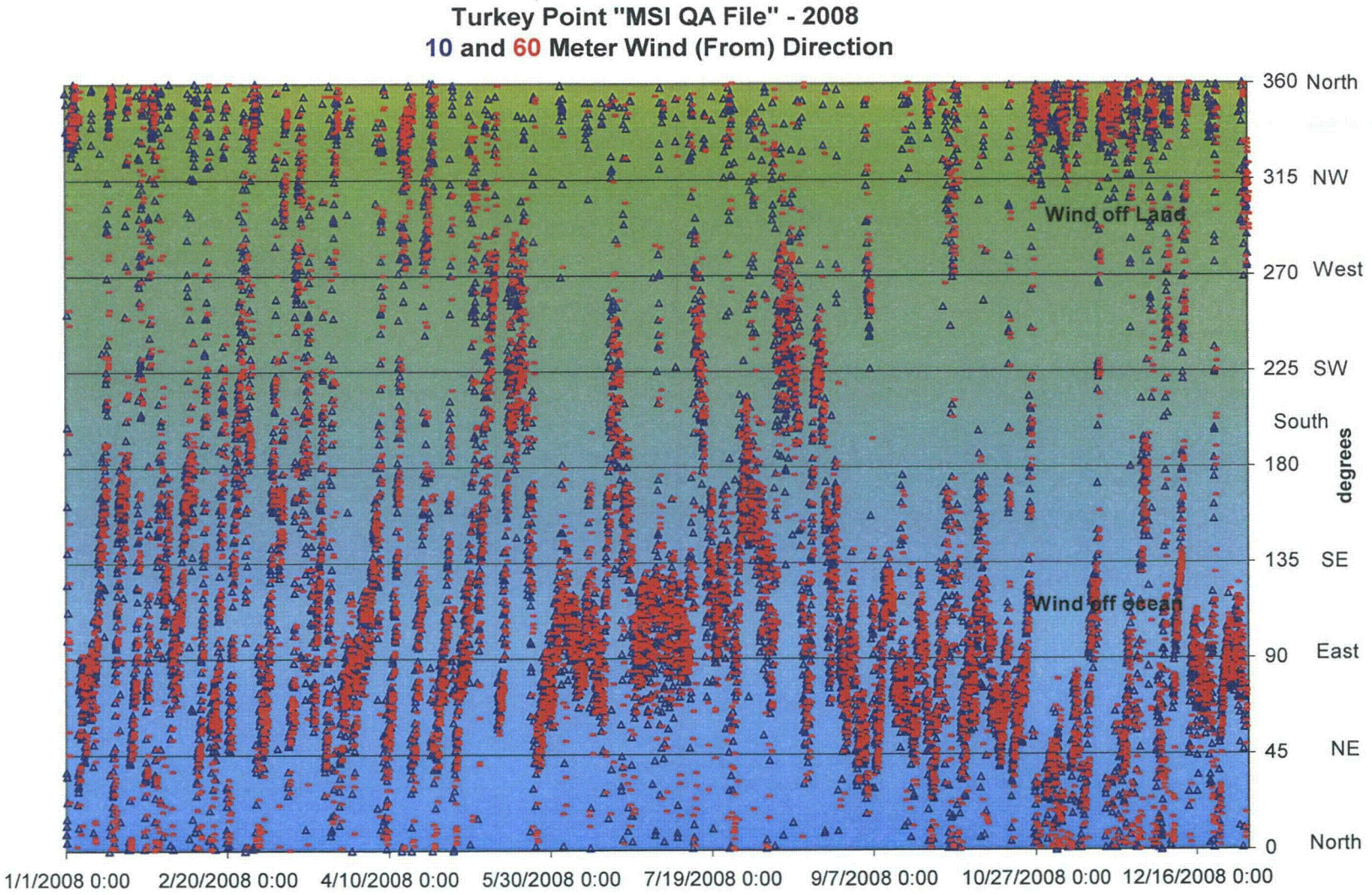
10M WS/60M WS			10WD/60M WD	
Correl	0.905236		Correl	0.763324
Slope	1.130455		Slope	0.71852
Intercept	2.946583		Intercept	32.36286
10M WS/LU WS			10WD/LUWD	
Correl	0.878725		Correl	0.543727
Slope	0.855341		Slope	0.528162
Intercept	0.445252		Intercept	65.68353

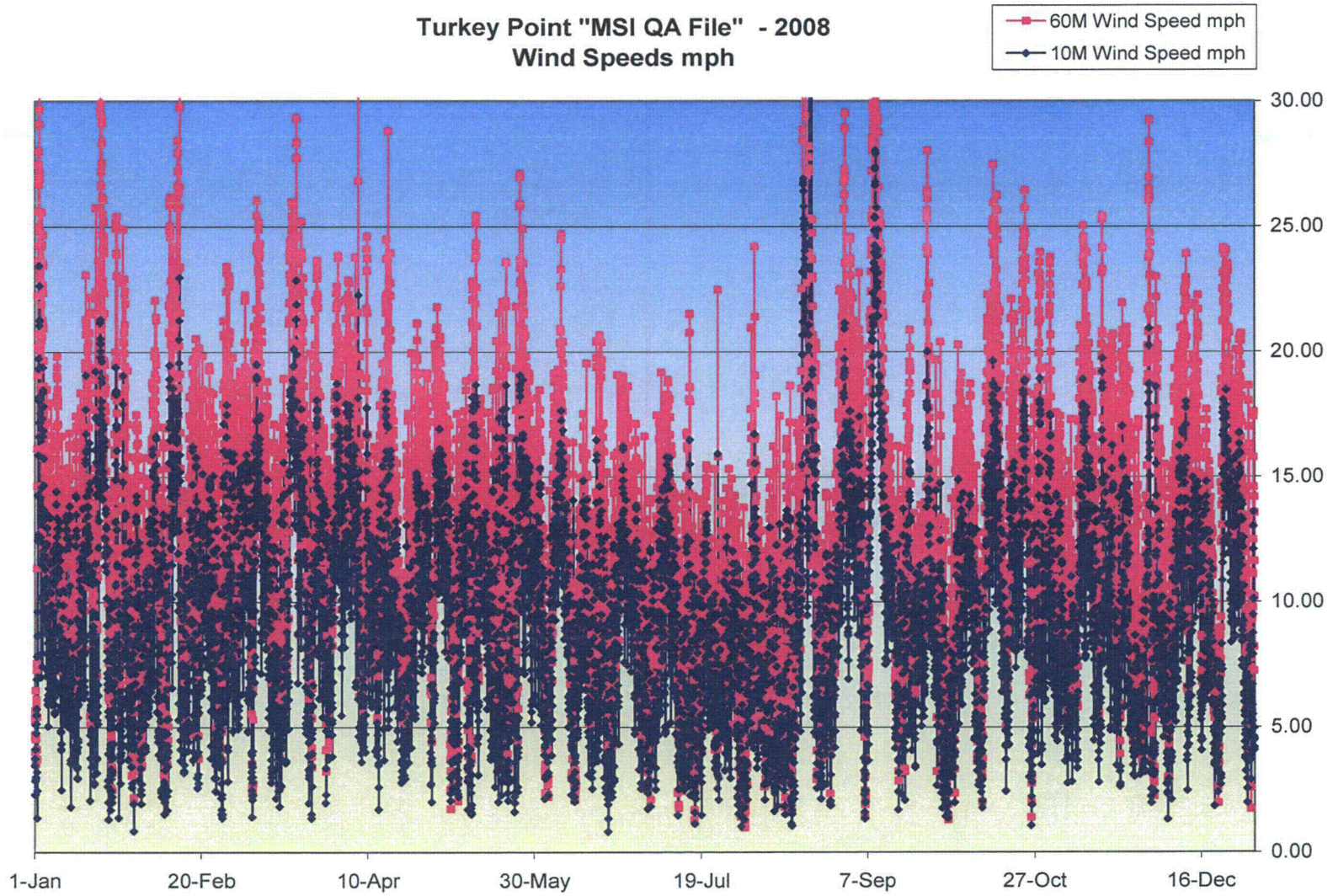
2008

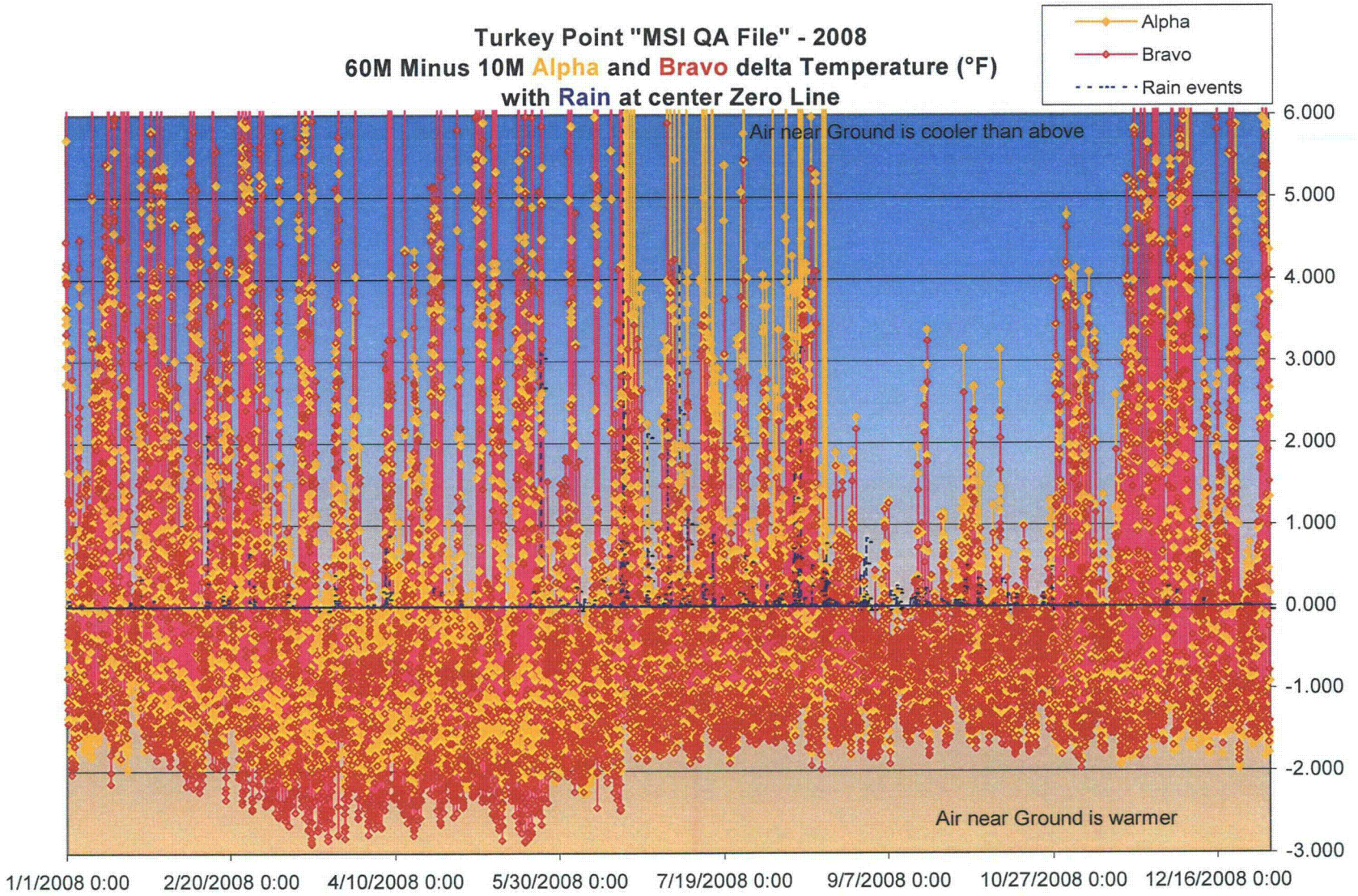
2008 – No Substitutions Made by MSI/TP

Julian Date 2008	Time	Parameter	Reason	Action	NAI Review
2	1800 2200	UWD LWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: **UWD:** WIND FROM SECTOR NNW FOR PREVIOUS 24 HOUR PERIOD **LWD:** WIND FROM SECTOR NNW FOR PREVIOUS 29 HOUR PERIOD
8	1100 1100	UWD LWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: **UWD:** WIND FROM SECTOR E FOR PREVIOUS 35 HOUR PERIOD **LWD:** WIND FROM SECTOR E FOR PREVIOUS 28 HOUR PERIOD
135	1200	UWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: WIND FROM SECTOR ENE FOR PREVIOUS 24 HOUR PERIOD
145	1400	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI comment – Large amount of precipitation this hour (78.7 mm) and continued for 1 more hour. Probably OK
233	1600 LWD	UWD LWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: **UWD:** WIND FROM SECTOR SW FOR PREVIOUS 24 HOUR PERIOD **LWD:** WIND FROM SECTOR SW FOR PREVIOUS 24 HOUR PERIOD
253	1100	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS D LASTED FOR PREVIOUS 44 HOUR PERIOD

Julian Date 2008	Time	Parameter	Reason	Action	NAI Review
255	0500	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS D LASTED FOR PREVIOUS 30 HOUR PERIOD
272	1000	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS E LASTED FOR PREVIOUS 35 HOUR PERIOD
288	1600	UWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: WIND FROM SECTOR ENE FOR PREVIOUS 25 HOUR PERIOD
291	0700	UWD LWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: **UWD:** WIND FROM SECTOR ENE FOR PREVIOUS 24 HOUR PERIOD **LWD:** WIND FROM SECTOR ENE FOR PREVIOUS 24 HOUR PERIOD
360	0200 0500	UWD LWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: **UWD:** WIND FROM SECTOR E FOR PREVIOUS 30 HOUR PERIOD **LWD:** WIND FROM SECTOR E FOR PREVIOUS 24 HOUR PERIOD
361	2300	UWD	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: WIND FROM SECTOR E FOR PREVIOUS 24 HOUR PERIOD


Turkey Point "MSI QA File" - 2008
10 and 60 Meter Wind (From) Direction
360 North
315 NW
270 West
225 SW
South
180
degrees
135 SE
90 East
45 NE
0 North
Wind off Land
Wind off ocean
1/1/2008 0:00
2/20/2008 0:00
4/10/2008 0:00
5/30/2008 0:00
7/19/2008 0:00
9/7/2008 0:00
10/27/2008 0:00
12/16/2008 0:00


Turkey Point "MSI QA File" - 2008
Wind Speeds mph
60M Wind Speed mph
10M Wind Speed mph
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1-Jan
20-Feb
10-Apr
30-May
19-Jul
7-Sep
27-Oct
16-Dec


Turkey Point "MSI QA File" - 2008
60M Minus 10M Alpha and Bravo delta Temperature (°F)
with Rain at center Zero Line
Alpha
Bravo
Rain events
Air near Ground is cooler than above
Air near Ground is warmer
6.000
5.000
4.000
3.000
2.000
1.000
0.000
-1.000
-2.000
-3.000
1/1/2008 0:00
2/20/2008 0:00
4/10/2008 0:00
5/30/2008 0:00
7/19/2008 0:00
9/7/2008 0:00
10/27/2008 0:00
12/16/2008 0:00

2009 – MSI/TP Identified Substitutions/Flagged Entries in Yellow Highlight

Julian Date 2009	Time	Parameter	Reason	Action	NAI Review
9	0900	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program Identified: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD
25	1000	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program Identified: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD
27	2300	WD10	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program identified: WIND FROM SECTOR E FOR PREVIOUS 28 HOUR PERIOD
57	0600	W60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program identified: WIND FROM SECTOR ENE FOR PREVIOUS 25 HOUR PERIOD
58	0300	W10	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program identified: WIND FROM SECTOR ENE FOR PREVIOUS 31 HOUR PERIOD
59	0100	W60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program identified: WIND FROM SECTOR E FOR PREVIOUS 24 HOUR PERIOD
84	0900	W60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK	METD_QA program identified: WIND FROM SECTOR E FOR PREVIOUS 25 HOUR PERIOD

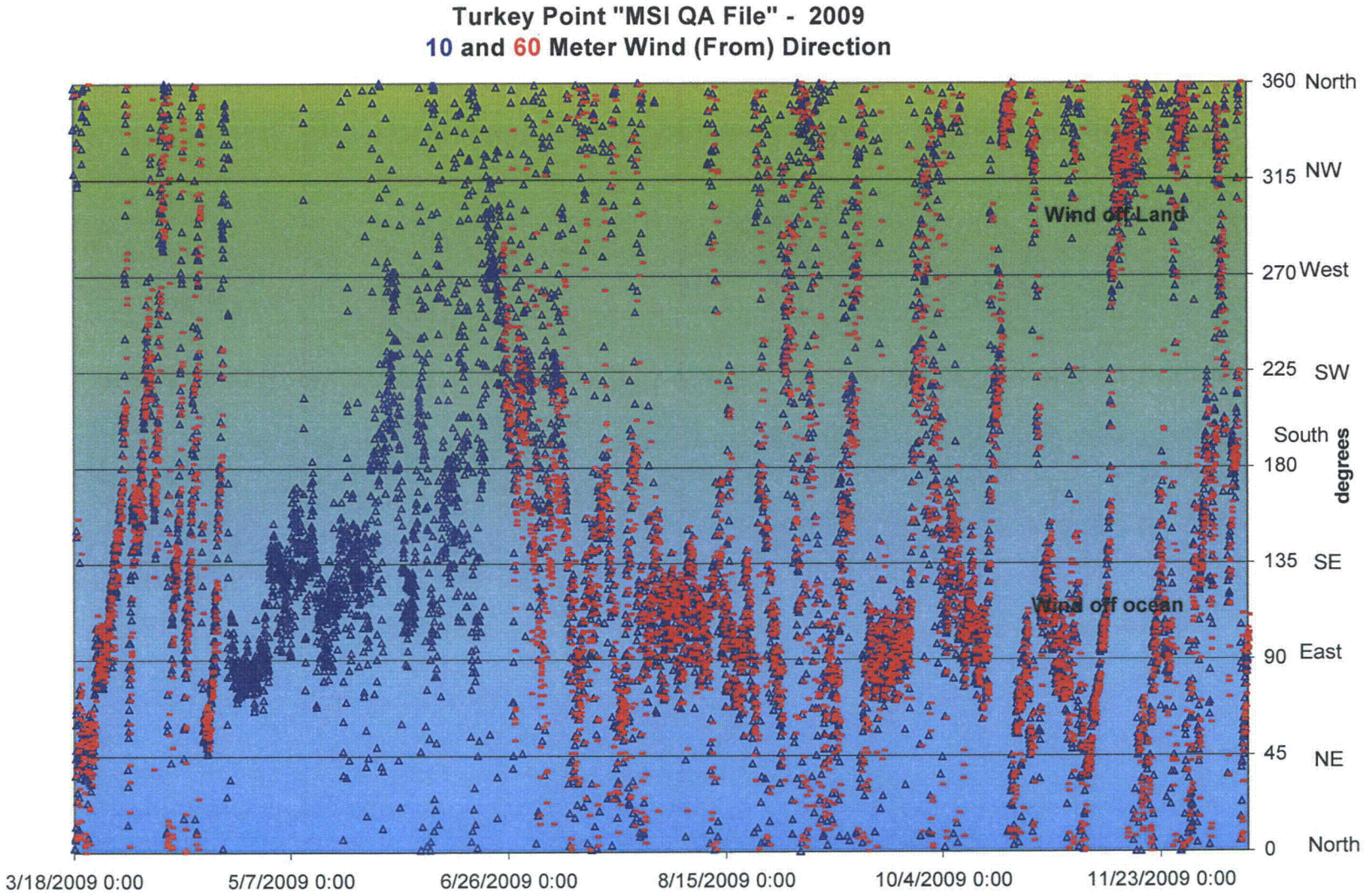
Julian Date 2009	Time	Parameter	Reason	Action	NAI Review
111	800-2400	WD10, Sigma10	Essentially constant	10M tower WD and sigma theta substituted for 10M data from 60M tower. NAI confirms accurate transfer from LU tower to WD10 values.	Sigma Theta 10 not checked. "RAW Data" file Wdv_10M contains essentially constant values, which is consistent with a stuck instrument reading. NAI concurs that the primary tower data is bad. See Chart below for graphical depiction of the "MSI QA" data file. The blue data points clustered around the May 7, 2009 X-axis label are the substituted Land Use tower data points. They show an abrupt change from a daily swing from off ocean to off land to a predominantly off ocean pattern. The same pattern shows up around early August in the South Dade data, so this may not be an indication of "inappropriate substitution of Land Use Data," but this pattern should be reviewed by MSI.
111	800-2400	WD60	Essentially constant	Set equal to 10M WD data	NAI verified WD60 abrupt change from 275 degrees to 25 degrees, where the reading stuck. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 60m data was replaced with 10m wind direction data.

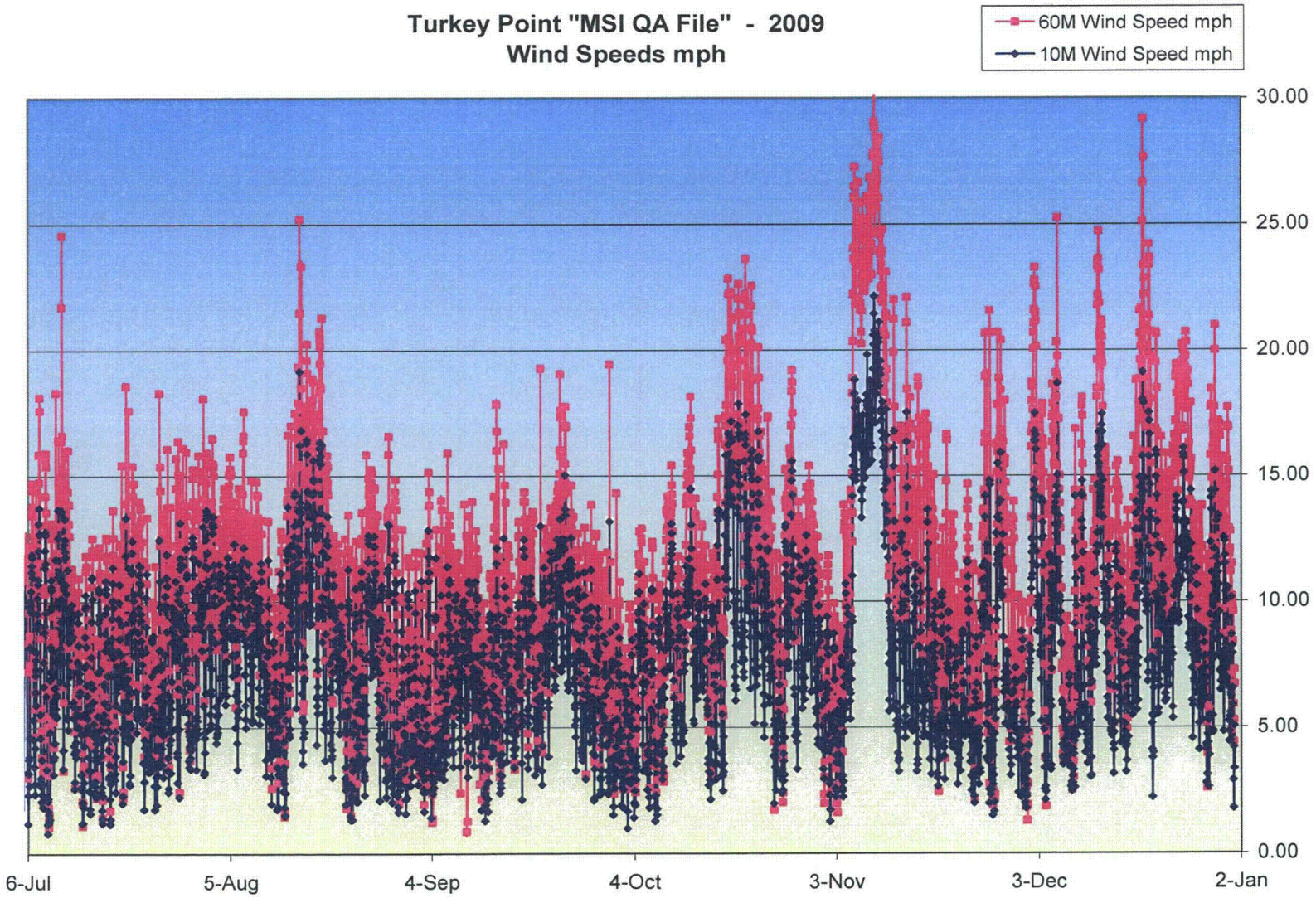
Julian Date 2009	Time	Parameter	Reason	Action	NAI Review
139-140		A-dT & B-dT	Shift in trend	NAI Investigation/Action: Investigation indicated that the shift in trend was due to calibration activities (PTN-OFSI-10-001 data sheet). There was a noticeable delta between the as-found difference between A channel 10M instrument and the standard, relative to the B-Channel as-found difference. Maintenance activities changed the as-left condition, leading to the identified shift in trend. B-Channel was also affected, but to a lesser degree. The impacts of these changes will be adequately addressed by the sensitivity study which considers the likely impact of these kinds of biases on overall X/Q results. No other changes are needed to be applied to the QA data results to address this shift.	NAI Identified: The plots of 60M minus 10M delta T for A and B channels shows an offset/shift around May 18/May 20. A-channel temperature sensor was out of service for a couple of 8 hour periods on these days, and when returned to service, both A and B channel delta-T's seemed to be offset from prior trends. See Plot below.
112-174	100-2400	WD10, Sigma10	Essentially constant	10M tower WD and sigma theta substituted for 10M data from 60M tower. NAI confirms accurate transfer from LU tower to WD10 values.	Sigma Theta 10 not checked. "RAW Data" file Wdv_10M contains essentially constant values, which is consistent with a stuck instrument reading. NAI concurs that the primary tower data is bad. NAI concurs with action.
112-174	100-2400	WD60	Essentially constant	Set equal to 10M WD	NAI verified WD60 continues to be about 25 degrees, where the reading stuck. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 60m data was replaced with 10m wind direction data.

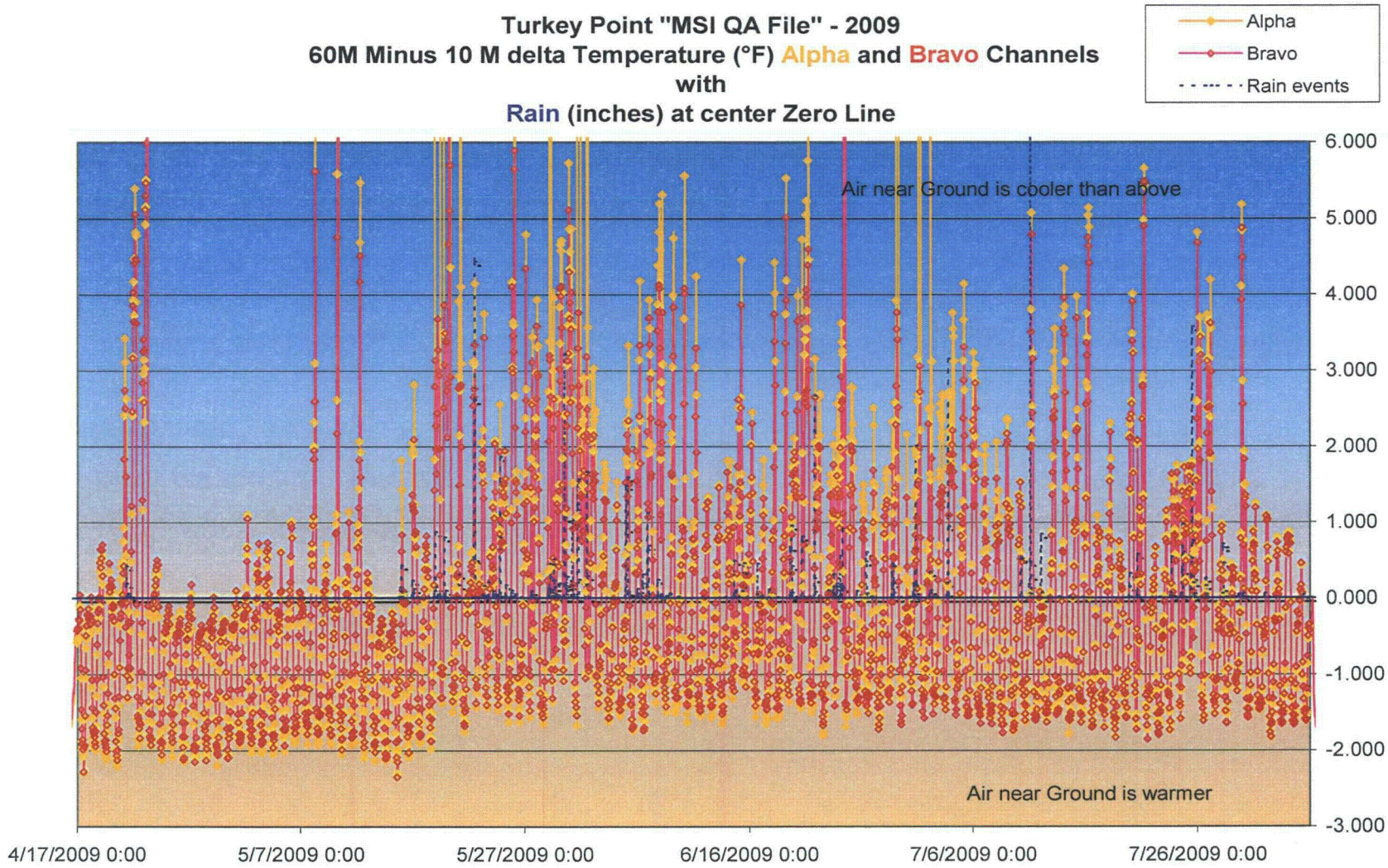
Julian Date 2009	Time	Parameter	Reason	Action	NAI Review
151	1500	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI comment – Large amount of precipitation this hour (30.5 mm) and continued for 2 more hours.
175	100-1100	WD10, Sigma10	Essentially constant	10M tower WD and sigma theta substituted for 10M data from 60M tower. NAI confirms accurate transfer from LU tower to WD10 values. NAI substituted 0900 WD10 value of 237 degrees from LU 10M data to over-write the invalid "20" value in the South Dade tower data.	Sigma Theta 10 not checked. "RAW Data" file Wdv_10M contains essentially constant values, which is consistent with a stuck instrument reading. For almost all of this range of data, NAI concurs that the primary tower data is bad. NAI concurs with action. .One additional note: Regarding the WD10 values for JD 175 (June 24, 2009): the 10:00 (258.4) and 11:00 (253.2) appear to be valid in the South Dade Raw Data file, and these appear to have been transferred to the "MSI QA" file. The South Dade 09:00 WD10 value of "20" appears to be an invalid, stuck reading, but this value was transferred to the "MSI QA file."
175	100-1100	WD60	Essentially constant	Set equal to 10M WD	NAI verified WD60 continues to be about 25 degrees, where the reading stuck. Based on MSI-provided graphs that indicate 60m wind direction corresponds reasonably well with 10m wind direction, the 60M data was replaced with 10m wind direction data.

Julian Date 2009	Time	Parameter	Reason	Action	NAI Review
201	1300	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS JUMPED FROM A TO E OVER ONE HOUR PERIOD NAI comment – Significant precipitation this hour.
245	0800	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program Identified: STABILITY CLASS JUMPED FROM F TO B OVER ONE HOUR PERIOD NAI comment – Significant precipitation (83.8mm) 3 hours later.
310	2000	W10	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: WIND FROM SECTOR NE FOR PREVIOUS 34 HOUR PERIOD
310	2000	W60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: WIND FROM SECTOR NE FOR PREVIOUS 34 HOUR PERIOD
312	0900	W10	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: WIND FROM SECTOR ENE FOR PREVIOUS 37 HOUR PERIOD
312	0900	W60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: WIND FROM SECTOR ENE FOR PREVIOUS 37 HOUR PERIOD
344	0700	W60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: WIND FROM SECTOR S FOR PREVIOUS 28 HOUR PERIOD
353	0800	Stability	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: STABILITY CLASS E LASTED FOR PREVIOUS 40 HOUR PERIOD

Julian Date 2009	Time	Parameter	Reason	Action	NAI Review
355	1000	WD60	Unknown "Normal" variations in data readings do not indicate any instrument problems	OK.	METD_QA program identified: WIND FROM SECTOR N FOR PREVIOUS 28 HOUR PERIOD


Turkey Point "MSI QA File" - 2009
10 and 60 Meter Wind (From) Direction
360 North
315 NW
270 West
225 SW
South
180
degrees
135 SE
90 East
45 NE
0 North
Wind off Land
Wind off ocean
3/18/2009 0:00
5/7/2009 0:00
6/26/2009 0:00
8/15/2009 0:00
10/4/2009 0:00
11/23/2009 0:00


Turkey Point "MSI QA File" - 2009
Wind Speeds mph
60M Wind Speed mph
10M Wind Speed mph
30.00
25.00
20.00
15.00
10.00
5.00
0.00
6-Jul
5-Aug
4-Sep
4-Oct
3-Nov
3-Dec
2-Jan


Turkey Point "MSI QA File" - 2009
60M Minus 10 M delta Temperature (°F) Alpha and Bravo Channels
with
Rain (inches) at center Zero Line
Alpha
Bravo
Rain events
Air near Ground is cooler than above
Air near Ground is warmer
6.000
5.000
4.000
3.000
2.000
1.000
0.000
-1.000
-2.000
-3.000
4/17/2009 0:00
5/7/2009 0:00
5/27/2009 0:00
6/16/2009 0:00
7/6/2009 0:00
7/26/2009 0:00