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August 23, 1993

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Reference: (C05196), J. Owens to J. B. Landers, dated June 22, 1993.

Dear Mr. Owens:

Merrimack Station
On-Site Meteorological Monitoring Program

Public Service Company of New Hampshire (PSNH), hereby submits the final On-site Meteorological Monitoring Program for its Merrimack Station. The draft document has been amended to include your comments found in Reference 1.

If you have any questions, please call Mr. John Leavitt, Environmental Services, at 665-4634.

Very truly yours,

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

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Enclosure

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PROTOCOL

FOR ON-SITE METEOROLOGICAL MONITORING PROGRAM

AT

MERRIMACK GENERATING STATION

BOW, NEW HAMPSHIRE

PREPARED FOR:

US EPA - REGION I

PREPARED BY:

NORTHEAST UTILITIES
SERVICE COMPANY

Prepared [illegible signature] 8-19-93

Reviewed Paul M. Jacobson 8/19/93

SUBMITTED BY:

PUBLIC SERVICE COMPANY
OF NEW HAMPSHIRE

REVISED AUGUST 20, 1993

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1.0 INTRODUCTION

This monitoring protocol describes the on-site meteorological monitoring program which is proposed for the Public Service Company of New Hampshire (PSNH) Merrimack Generating Station at Bow, NH. Merrimack Station consists of two coal-fired electric generating units, both powered by B&W cyclone furnaces. Unit #1 is a 113 MW facility with a 225 foot stack, while Unit #2 is a 320 MW facility with a 317 foot stack. The station is located within the Merrimack River valley and is a complex terrain modeling situation.

On-site meteorological monitoring is being undertaken in support of additional air quality modeling planned for Merrimack Station. This results from a request from the United States Environmental Protection Agency - Region I under Section 114 of the Clean Air Act that PSNH demonstrate through dispersion modeling that the National Ambient Air Quality Standard (NAAQS) for sulfur dioxide is not violated as a result of the emissions from Merrimack Station.

Several screening modeling analyses have been performed to date, and their results indicate that more detailed modeling should be undertaken. More information about the past and planned modeling is presented in Section 3.0.

2.0 SOURCE ENVIRONMENT DESCRIPTION

2.1 Introduction

Merrimack Station is located on River Road, in the town of Bow, Merrimack County, NH on the west bank of the Merrimack River. The site is approximately 9 km southeast of Concord, NH and 16 km north of Manchester, NH. Latitude is approximately 43° 08′ 29" North, and longitude approximately 71° 28′ 09" West. The Concord Municipal Airport, site of a National Weather Service Office, is approximately 7 km to the north-northwest.

2.2 Topography and Land Use

Merrimack Station is located within the Merrimack River valley, which in that section is characterized by a nearly flat, open plain on the west side of the river. This plain is some 500-800 meters in width, and the station is located near the widest point of this, on the west bank of the river at an elevation of 207 feet above mean sea level (msl). Hills rise moderately to the west beyond the edge of this plain, and to the east beginning just beyond the river's east bank.

This is a complex terrain site, with terrain rising above the top of the Unit #1 stack (432 ft msl) across the river at a distance of about 1.1 km to the east and at 2.0 km to the southwest and 2.6 km to the west-northwest. Terrain continues to rise away from the river, reaching the height of the Unit #2 stack (524 ft msl) at approximately 2.7 km to the north-northeast, 2.9 km to the southwest, 3.6 km to the west-northwest and 4.3 km to the southeast. Within 5 km, terrain rises to over 650 feet msl in two quadrants and within 10 km terrain reaches 900-1000 feet on either side of the valley. Some 13 km to the east-northeast, Fort Mtn. rises to 1413 feet.

For this site, rural dispersion coefficients are applicable. Within a 10-15 km radius, industrial and commercial development is sparse and located primarily in the immediate Concord area at a distance of more than 6-7 km from the site. Population is also sparse, with the only significant community within 5 km being Suncook, population 5,214 (1990 census), whose center is approximately 2 km to the southeast. Most land within the river valley is either open or lightly forested. On either side of the river valley, forest cover predominates.

Close to the station, within 1-2 km on the west side of the river, the flat plain is vegetated primarily with grasses, with some low scrub (generally less than 5 m in height) beyond about 500 m. Beyond the plain, extending westward nearly to NH route 3A at a distance of about 1.7 km, extensive sand and gravel pits extend in both north and south directions along the valley. Across the river to the east within 1-2 km, the land is open or lightly forested. Residences are mostly along or near US route 3. Pembroke Academy is also located here about 1.1 km east-northeast of the site.

2.3 Climatology

The site and its environs lie within the southern interior NH climatological region. Most of the climatology of the site should be well represented by data from the National Weather Service (NWS) office at the Concord Municipal Airport, which is located 7 km to the north-northwest. The area is about 35 miles inland to the west-northwest of the NH seacoast, and its climate is subject to relatively little marine influence. Summers are hot and winters cold with annual extremes of temperature typically ranging from about 95° to -20 °F. The 36.53 inches of normal annual precipitation is distributed quite evenly among the twelve months. Annual snowfall averages about 66 inches and freezing precipitation is more frequent here than in many areas of New England. An episode of heavy icing occurs every few years. Thunderstorms occur on an average of 20 days per year, and heavy fog with visibility less than 1/4 mile develops on 50 days per year.

Southern interior NH is influenced by the prevailing westerlies, with regular frontal passages and air mass changes. These events are often more frequent and bring sharper changes in the weather during the autumn, winter and spring, but do occur throughout the year. Consequently, wind direction may be expected to shift periodically during all seasons, although the prevailing wind direction is from the northwest during all months of the year. The location of the airport within the Merrimack valley is responsible for a fairly large percentage of calm wind hours in the airport data, cautiously estimated at perhaps 15% of the total hours, and these are heavily concentrated during the period from late evening until just after sunrise. The mean wind speed at the airport, at approximately the 12 meter level, averages 6.7 mph (3.0 m/s) for the year, with monthly mean wind speeds varying from a maximum of 8.2 mph (3.7 m/s) for March to a minimum of 5.4 mph (2.4 m/s) for August.

Despite the proximity of the site to the airport, local topography and exposure may be expected to produce differences in wind direction and wind speed under certain conditions. As indicated previously, Merrimack Station is located on the west bank of the Merrimack River at a surface elevation of 207 feet msl, with hills rising gradually from the east bank of the river and from the edge of the plain less than 1 km to the west. Merrimack Station is located near a bend in the river valley. The valley is oriented northwest-southeast for about 5 km to the northwest of the site, and oriented north-south for about 8 km to the south. In contrast, the airport is located about 1.5 km east of the river, between the Merrimack River and its tributary, the Soucook River, at 342 feet msl. In this area the valley broadens and the low hills defining the sides of the valley are some 5-6 km apart. For these reasons, valley channelling of the wind should produce differences in wind direction and speed between the airport and the site under certain meteorological regimes.

Furthermore, given the relatively high incidence of calm winds in the airport data at the 12 m anemometer height, on-site data observed near stack-top should significantly reduce the incidence of calm and low wind speeds and show a reduction in valley channelling effects. These on-site stack-top observations should better represent plume transport.

The proximity of the airport to the site should make airport cloud cover observations highly representative for the site, should these data be used for purposes of stability class determination.

3.0 AIR QUALITY MODELING, PAST AND PLANNED

Within a short time of the EPA request of PSNH to demonstrate compliance under Section 114 of the Clean Air Act, PSNH undertook screening modeling with ISCST and the Valley model option of Complex-I. The results of these analyses indicated that on-site meteorological data collection would be required to support further modeling. This was established in a meeting on June 19, 1992 at EPA Region I offices in Boston, MA at which Northeast Utilities Service Company (NUSCO), PSNH, and New Hampshire Air Resources Division (NHARD) representatives discussed future meteorological monitoring and dispersion modeling plans with Mr. Ian Cohen and Mr. Brian Hennessey of the Region I staff.

Subsequently, PSNH performed additional complex terrain screening modeling using CTSCREEN to determine whether the proposed meteorological monitoring should support an advanced complex terrain model in addition to the ISCST2 modeling planned for simple terrain. The results of modeling using CTSCREEN to investigate 21 hills extending out about 13km from the station indicated that further modeling with CTDMPLUS would be advisable.

The proposed on-site meteorological monitoring program is intended to collect one year of valid meteorological data and includes the necessary data for meteorological input to both ISCST2 and CTDMPLUS. The system will consist of a 100 meter meteorological tower, which is in place but not yet instrumented, supplemented by a Doppler Acoustic Sounder (SODAR).

Modeling with ISCST2 will be supported by meteorological observations of unit vector wind direction, scalar wind speed and ambient air temperature from the 325' level of the tower (approximately the height of the Unit 2 stack) with stability class determination made using sigma-E (as estimated by sigma-w / scalar mean wind speed) from the 10 meter level as referenced in EPA On-Site Meteorological Program Guidance for Regulatory Modeling Applications EPA-450/4-87-013, revised February 1993, p. 6-21, method 2. Alternatively, 10 meter sigma-theta data will be available to support method 3, and, with the acceptance of cloud cover and ceiling height data from the Concord NWS observations as representative of the site, method 4 will be supported also. Mixing height data will be imported from NWS rawinsonde data from Portland, ME. Modeling with ISCST2 will be performed for simple terrain receptors.

Modeling with the CTDMPLUS model will be supported by tower observations of ambient temperature, unit vector wind direction, scalar mean wind speed, sigma-theta and sigma-w at the 10 meter and approximately 69 meter and 99 meter levels, supplemented by solar radiation at the 1 meter level, and additional ambient temperature observations at the 2 meter and approximately 38 meter levels. Additionally the SODAR will supply unit vector wind direction and scalar mean wind speed data from nine 50 meter range gates centered on the 100 meter to 500 meter levels. Plume height calculations indicate that 500 meter data will fully represent plume transport under most combinations of meteorological conditions. To complete the calculation of nighttime net radiation, the use of Concord NWS cloud cover and ceiling height data is proposed. Modeling with CTDMPLUS will be performed for complex terrain receptors.

4.0 SAMPLING PROGRAM DESCRIPTION

4.1 Introduction

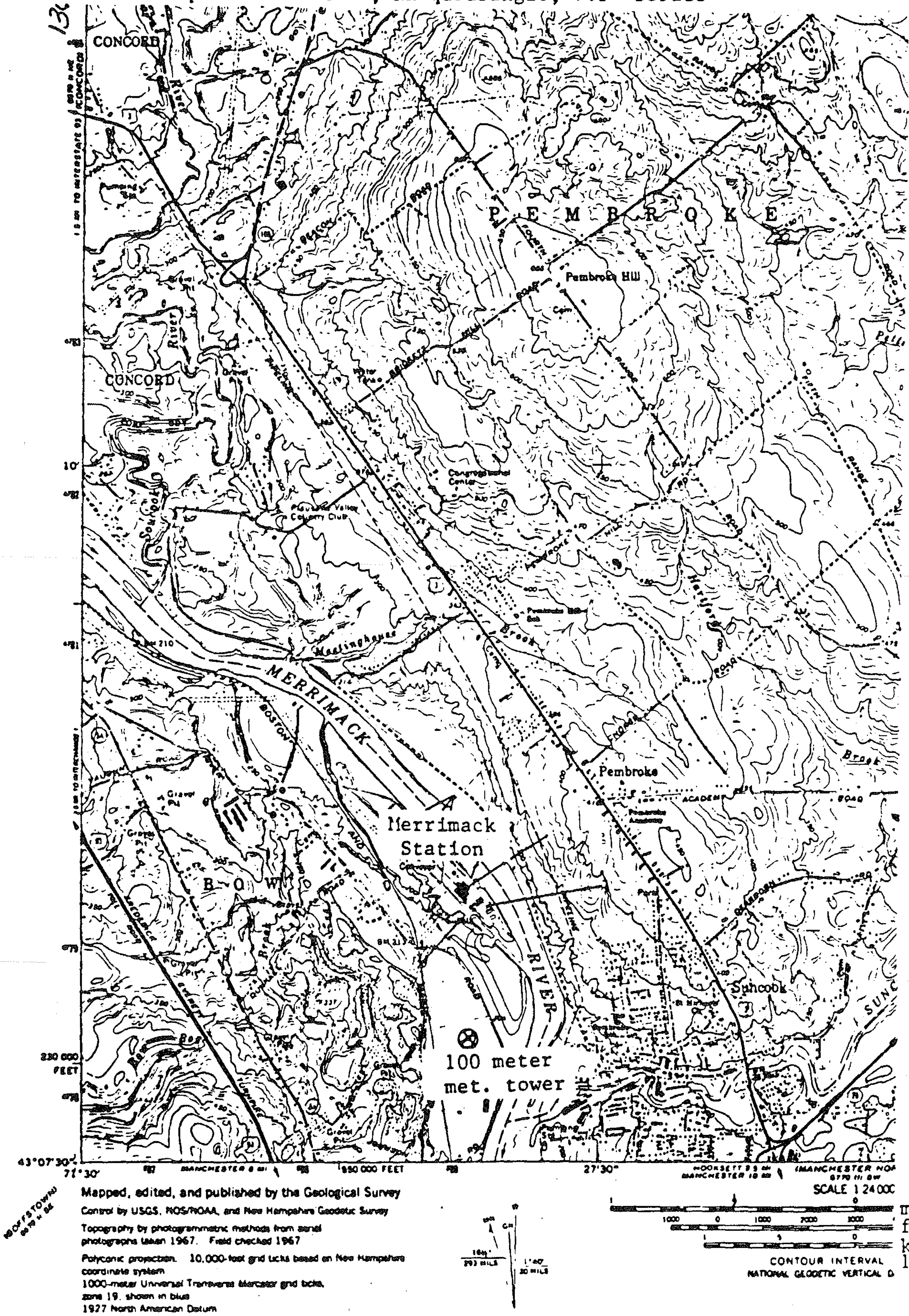
In preparation for meteorological data collection at Merrimack Station, PSNH constructed a 100 meter meteorological tower and adjacent equipment shelter in the summer of 1992. Upon approval of the monitoring proposed program, the tower will be instrumented and will be supplemented by a Doppler Acoustic Sounder to acquire plume height data to support CTDMPLUS. Consideration had originally been given to a 150 meter meteorological tower, but upon application to the Federal Aviation Administration (FAA), a height restriction was placed at 403 feet (123 m) because of aviation glide slope minimum requirements in the proximity of the Concord Municipal Airport.

4.2 Monitor Location

The site selected for the tower is approximately 950 m (3100 ft) south (bearing 178° true) from the plant. This location is about 100 m west of River Road, at an elevation of 207 feet msl, the same as the station. Latitude is approximately 43° 07′ 57″ North, and longitude approximately 71° 28′ 07″ West. The USGS Suncook, NH quadrangle (7.5′ series) topographic map

Figure 1

Excerpt from Suncook, NH quadrangle, 7.5' series



is excerpted in Figure 1 detailing the location of the plant, the meteorological tower and immediately surrounding terrain. A site for the SODAR has not been firmly selected, but it is expected that this would be sited within about 100 m of the tower, subject only to whatever minimum separation would be required to avoid interference from the tower and guys.

4.3 Monitoring Site Description

The site is on the flat, open plain described in section 2.2, and is about midway between the river and the rise of the gravel bluffs to the west. Placement of the tower closer to the river is limited by the cooling water canals between River Road and the river, while the guy radius dictates the distance west of the road.

There are no obstructions in the immediate area, with the only structure in the vicinity being the equipment shelter (3 m high) some 30 m from the tower. Vegetation is either grass or low brush (less than 2 m in height) for 300 m or more from southwest through north to southeast, and for 100 m in the quadrant from southeast to southwest. Low scrub (generally less than 5 m in height) extends out to the 300 m distance in this quadrant.

The closest obstructions are the bluffs to the southwest through northwest, which at the closest point begin to rise about 300 m to the west. The tops of the bluffs are below the 350 foot contour (approximately the 140 foot level of the tower). At the 225 foot level (432 ft msl), the height of the Unit #1 stack, the nearest terrain obstructions are over 1 km distant on either side of the valley.

5.0 MONITORING SYSTEM DESCRIPTION

5.1 Equipment Description

5.1.1 Equipment Shelter

The equipment shelter is an Etko 8′ x 8′ x 16′ climate controlled mobile equipment shelter. The shelter is located approximately 30 meters from the base of the tower.

5.1.2 Meteorological Tower

The meteorological tower is a 100 meter Rohn Model 65 open lattice, triangular frame tower. For instrument access, it is equipped with a Norton Air Space Devices safety rail. The tower has been painted and lighted to FAA specifications. The tower base and guying cables have been installed to the manufacturer's specifications.

5.1.3 Monitor Heights

Full tower instrumentation (consisting of wind direction, wind speed, ambient temperature, and vertical wind speed) is proposed for three levels, and ambient temperature sensors are to be added at two additional levels. A pyranometer for solar radiation measurements is to be ground mounted (approx. 1 m height) near the tower base. The tower instrumentation levels proposed are 325 feet (99 m) or as close to tower top as practicable, 225 feet (69 m), and 33 feet (10 m) with the additional temperature sensors at 125 feet (38 m) and 6.5 feet (2 m). The levels were chosen such that the two upper levels might represent the two stack heights, 317 feet for Unit #2 and 225 feet for Unit #1. Please note from section 3.2 that the tower base elevation, 207 feet, is the same as stack base elevation. The 33 foot, or 10 m, level represents standard surface level, while the 125 foot and 6.5 foot (2 m) levels were selected for temperature monitoring only in order to further define the lapse rate.

An eight foot retractable instrument mounting boom has been installed at each of the upper levels, oriented with its direction of extension toward due west, with the instrumentation at an offset distance greater than twice the tower diagonal width.

5.1.4 Sensor Descriptions and Performance

5.1.4.1 Specification Guidance

All sensors will be selected to provide conformance with the specifications detailed in the EPA On-site Meteorological Program Guidance for Regulatory Modeling Applications (EPA-450/4-87-013), revised February 1993, and the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV (EPA/600/4-90/003), revised August 1989.

5.1.4.2 Wind Direction

The proposed wind direction sensor is a Climatronics Model F-460. The wind direction sensor or transducer consists of a counterbalanced, lightweight vane and a precision, low-torque potentiometer which yields a voltage output proportional to the wind direction. The manufacturer's specifications for this sensor are as follows: accuracy +/- 2°, threshold 0.5 mph (0.22 m/s), distance constant 2.95 ft (0.9 m), damping ratio 0.4 at 10° initial angle of attack and operating range 0° to 360°. Each sensor will be equipped with a 20 watt external thermostatically controlled heater.

5.1.4.3 Horizontal Wind Speed

The proposed horizontal wind speed sensor is a Climatrontics Model F-460. The sensor or transducer is of the interrupted light beam ("light chopping") three cup rotating anemometer type. The manufacturer's specifications for this sensor are as follows: starting speed threshold 0.5 mph (0.22 m/s), accuracy +/- 0.15 mph (0.07 m/s) or 1.0% of true air speed, whichever is greater, and distance constant 5 ft (1.5 m) of air (maximum). Each sensor will be equipped with a 20 watt external thermostatically controlled heater.

5.1.4.4 Temperature

The proposed temperature sensor is a Climatronics Part #100826 or equivalent. Each temperature sensor will be a platinum, 4-wire, 100 ohm (at 0 °C) resistance temperature detector (RTD). The manufacturer's specifications for this sensor are as follows: full range accuracy +/- 0.18 °F (0.1 °C), range -58° to 122 °F (-50° to 50 °C), time constant 5.5 sec, and linearity of +/- 0.09 °F (0.05 °C) included in accuracy. Each sensor will be mounted in a Climatronics Model TS-10 motor-aspirated solar radiation shield. The manufacturer's specifications for the radiation shield are as follows: under radiation intensities of 1100 watts/m^2 (1.6 cal/cm^2/min), measurement errors will not exceed 0.2 °F (0.1 °C) with an aspiration velocity of 10 ft/sec (3 m/s) at sensor location.

5.1.4.5 Solar Radiation

The proposed solar radiation sensor is an Eppley Model 8-48 pyranometer or equivalent. The "black and white" pyranometer will be mounted at ground level to measure solar radiation. The detector in this pyranometer is a differential thermopile with the hot-junction receivers blackened and the cold-junction receivers whitened. Built-in temperature compensation with thermistor circuitry is used to free the instrument from the effects of ambient temperature. Manufacturer's specifications for this instrument are as follows: sensitivity 11 microvolts/ watt/ m^2 (approximate), temperature dependence +/- 1.5% constancy from -4° to 104 °F (-20° to 40 °C), linearity +/- 1% from 0 to 1400 watts/ m^2 and response time 5 seconds.

5.1.4.6 Vertical Wind Speed

The proposed vertical wind speed sensors are Climatronics Model 27103 vertical component anemometers with Model 101284-G0 polystyrene propellor and Model 27106C prop extension, or equivalent. For the Model 27103, the propeller drives a miniature d.c. generator which produces a d.c. output voltage directly proportional to wind speed.

System specifications shall be a threshold speed of 0.25 m/s or less, accuracy of +/- 0.3 m/s, a distance constant less than 1.0 m and output that determines upward or downward wind movement by the generator signal polarity. These sensors will also be equipped with thermostatically controlled heaters.

The above system achieves these with a starting threshold of 0.2 m/s and accuracy of +/- 0.2 m/s. However, we have reservations about the survivability of the polystyrene propellor. According to the vendor "the polystyrene propellors may not survive well in some of the common environments to which meteorological instrumentation is commonly exposed." NUSCO has sought more robust instrumentation which will meet EPA performance standards, but to date has been unsuccessful. However, daily review of the output data should identify any propellor failure and prompt timely replacement, with the consequent data loss kept to a minimum.

5.1.4.7 Signal Processing and Tower Data Collection

All tower sensors will be connected to a Climatronics IMP-860 datalogger system via 18-gauge fully insulated and shielded cable. This system interfaces directly with sensor inputs, converting the signals to digital values which are stored in the internal memory or expansion solid-state storage module. Accuracy shall be 0.2% of full scale range or better for all inputs, over an ambient temperature operating range of -25 to +50 °C. Sampling rates as frequent as 1/sec may be selected.

Measurement resolution shall be at least 0.10 m/s for wind speed and 0.02 °C for temperature.

5.1.5 Doppler Acoustic Sounder (SODAR)

The actual selection of a Doppler Acoustic Sounder remains dependent upon the procurement process. However, to ensure the acquisition of valid meteorological inputs to represent plume transport for CTDMPLUS, we propose selection of a system which will provide data to a height of 500 meters in layers of 50 meters or less thickness. The lowest level of the SODAR data shall overlap with the uppermost level of the tower instrumentation. Installation and operation will be in conformance with the EPA On-site Meteorological Program Guidance for Regulatory Modeling Applications (EPA-450/4-87-013) and the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, revised August 1989 (EPA/600/4-90/003).

5.2. Data Processing and Telemetry

Data processing for the tower data will be performed on-site by the datalogger. Wind speed data, both horizontal and vertical, will be collected as the scalar mean speed for the hourly averaging period; the vector wind speed required for CTDMPLUS will be calculated from the scalar wind speed and sigma-theta as described in the User's Guide to CTDMPLUS, Volume 1 (EPA/600/8-89/041). Wind direction will be computed as a unit vector quantity for the hourly period. The standard deviation of the horizontal wind direction fluctuations, sigma-theta, will be computed and archived separately for 15-minute and hourly averaging periods, awaiting the EPA on-site meteorology workgroup determination of which averaging period should become the basis for CTDMPLUS input values. Likewise, the standard deviation of the vertical wind speed, sigma-w, will be computed for hourly averaging periods. Ambient temperatures and solar radiation will also be collected as hourly averages. All means and variances will be based upon a minimum of 360 samples per averaging period.

Data processing of SODAR data is typically performed within the SODAR system and is not subject to user control. Where opportunity may exist to choose data processing options, this will be done in accordance with the On-site Meteorological Program Guidance for Regulatory Modeling Applications (EPA-450/4-87-013), revised February 1993, Section 9.

Values of sigma-theta and sigma-w from SODAR data are considered less reliable than from tower instrumentation and will not be computed. The values of sigma-theta and sigma-w from the uppermost level of the tower will be used to represent conditions above the 100 meter level.

Data stored within the datalogger memory and the SODAR data processer will be telemetered periodically via telephone or microwave link to the corporate computer system where the data management function will be performed.

5.3 Monitoring System Operation and Maintenance

Operation of the monitoring site will include periodic site visits and maintenance and calibration schedules designed to achieve a valid data recovery rate in excess of 90 percent. A weekly visual check of all tower sensors, audio check of SODAR operation and manual check of system function will be performed. A quarterly preventive maintenance schedule will be initiated which will specify the calibration requirements of all tower instruments. Wind sensors will be replaced with recalibrated sensors (wind tunnel calibrated). Wind direction sensors will be replaced with recalibrated sensors. All temperature and delta temperature sensors will be ice point verified and adjusted if needed. Annually, all wind direction north reference alignments will be verified.

SODAR system calibration and maintenance will be performed in conformance with the On-site Meteorological Program Guidance for Regulatory Modeling Applications (EPA-450/4-87-013), revised February 1993, Section 9, and the manufacturer's recommendations.

All of the above calibrations and checks are fully covered and governed by in-place procedures. Documentation of all end-of-period and beginning-of-period calibrations, adjustments and checks will be maintained by NUSCO.

For meteorological tower data, the 90 percent recovery shall be defined according to the "regulatory completeness" requirement as described in the On-site Meteorological Program Guidance for Regulatory Modeling Applications (EPA-450/4-87-013), revised February 1993, Section 5, p. 5-7. For SODAR data, it is recognized that data capture to full operating height above the surface is limited by certain meteorological conditions including heavy precipitation and high winds. EPA guidance documents do not rigorously define the data capture requirements for SODAR. PSNH proposes to specify the capture of valid joint wind direction and speed data from at least one level with 90 percent completeness, while reporting capture rates for each SODAR level to EPA Region I and NHARD after the first month of data collection and on a quarterly basis thereafter. These reports shall include the capture rates for valid joint wind direction and speed data for each SODAR level for the period since the previous report, and shall be submitted within 30 days following the end of the period.

6.0 QUALITY ASSURANCE PROGRAMS

6.1 Tower Instrumentation

The tower instrumentation quality assurance program will be conducted in conformance with the requirements of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV (EPA/600/4-90/003), revised August 1989, and existing NUSCO procedures. Procedures are in place which specify equipment purchase, technician training requirements, equipment calibrations and checks, test equipment calibrations, traceability of equipment and instrument calibrations to the National Institute of Standards and Technology (NIST) and program administrative requirements. Annually, an internal audit of all procedural requirements will be performed by the NUSCO Environmental Auditing Group. Copies of any of the procedures referenced will be forwarded upon request.

6.2 SODAR System

In proposing a quality assurance program for the SODAR, PSNH recognizes the fundamental difference in system function between a tower instrumentation system and a SODAR system. On a tower, each sensor functions with considerable independence from every other sensor while SODAR processes a continuous stream of backscattered sound (representing the full operating range of the system) in discrete time slices which represent the various data levels. Consequently, the performance of the system at one level has a strong correlation with system performance at other levels.

PSNH will perform periodic comparison of the 99 meter wind speed and wind direction data from the tower instrumentation with the wind speed and wind direction from the SODAR for the layer centered on the 100 meter height. These comparisons will cover all hours for a 30 day period and will be submitted on the same schedule as the SODAR data capture reports, after the first month of data collection and on a quarterly basis thereafter, within 30 days after the end of the period of comparison. In addition, the vertical and time continuity of the data will be reviewed periodically by the NUSCO meteorological staff to ensure integrity of the data above the comparison level and over time.

These comparisons will include frequency distributions of wind direction sector and wind speed category for both the 99 meter tower data and the 100 meter SODAR data. In addition, values of delta-theta (the difference between the wind direction from the tower and corresponding SODAR data for the same time period) and delta-u (the difference between the wind speed from the tower and corresponding SODAR data for the same time period) will be generated, with the means of these values calculated for various wind speed, wind direction and stability categories and for the complete dataset for the comparison period.

As acceptance criteria for these comparisons have not been established, PSNH will confer with EPA Region I and NHARD after the first data comparison report has been submitted to establish evaluation criteria and confirm SODAR performance. Should acceptable SODAR system performance not be established and maintained through the evaluation of these comparison reports, PSNH agrees to perform a SODAR system performance audit using a tethersonde.

6.3 Data Management

Data recovered from the on-site data collection systems will be inspected each business day by an environmental professional trained in meteorological data management. This ensures the timely dispatch of maintenance personnel in the event a sensor, processing system or telecommunication system malfunction is suspected. The complete dataset will be reviewed for validity on a periodic basis to ensure the removal of any invalid data prior to archiving. All data periods invalidated and the reasons for their invalidation will be documented. The data management process will also subject to a NUSCO internal environmental audit annually.