New Hampshire DAR and U.S. EPA
Joint Comments:

DRAFT

A. Quality Assurance Report for Merrimack Generating Station

(1) The quality assurance report submitted by R.G. Chevalier on 11 April 1994 describes startup (January 1994) SODAR and tower data of a quality acceptable for input to CTDM+.

(2) However, PSNH should assess and report on the quality of the data collected at the termination of its monitoring program, as well as on the data collected over the whole 1-year monitoring period. PSNH might submit the final quality assurance report when it proposes a final draft dispersion modeling protocol.

(3) This concerns the data substitution scheme submitted by R.G.Chevalier on 30 September 1994 as a result of loss of tower and SODAR data from a July lightning strike. Except with respect to missing temperature profiles, PSNH's substitution plan seems acceptable. However, CTDM+ is very sensitive to the temperature profile input, and p. 2-15 of the user's guide recommends an approach significantly different from PSNH' plan to use Concord Airport surface temperatures at all tower levels. PSNH's protocol should offer a more detailed justification of the plan to use an isothermal profile for the hours in July when tower data were lost.

B. Proposed Modeling Protocol for Merrimack Generating Station

(1) Page 7 of the protocol lists a 12 m. anemometer height, but Concord's LCD site summary reports 20 ft. PSNH should determine the correct height and use it for any modeling that requires this input.

(2) Page 10, section 4.2, should state that PSNH will use BPIP (i.e., EPA's Building Profile Input Program) or equivalent to determine direction-specific building dimension inputs. PSNH may use third party software to estimate these inputs but EPA will use BPIP to resolve any questions on the proper dimensions to use.

(3) The first sentence of page 11's second paragraph suggests using ISCST2 for all receptors below the lower stack height and CTDM+ for all higher receptors. Notwithstanding the reasons p.11 lists, this aspect of the protocol departs from recommendations in the Guideline on Air Quality Models (GAQM). Instead, PSNH should calculate source contribution at receptors between the higher and lower stacks with whichever model is appropriate for the stack/receptor pair at hand: with ISCST2 if the source's stack top is below receptor height; and with CTDM+ if not (because the receptor would be considered

complex terrain). A switch in CTDM+ zeroes out source contributions on below stack height terrain and should help PSNH combine source contributions from the two models.

Agree DTB 1-5-96

(4) Page 13 should have specified what averaging time to use for the σ_θ input to CTDM+. Since CTDM+ uses this parameter to calculate stable and neutral stability horizontal plume spread for hourly concentration estimates, PSNH should input 60-minute σ_θs.

(5) To omit receptors on plant property from the impact analysis, as page 14 proposes, physical barriers must be present which will prevent public access. Otherwise, on-premises receptors are considered to represent ambient air, and should be modeled.

(6) If a proposal to increase stack height is a likely outcome of modeling the power plant, PSNH should include much more detail on how it will establish that downwash actually occurs. EPA's regulations require that sources use either field or fluid modeling studies to establish that existing sources really do downwash and may take credit for the better dispersion modeled with stack height increases. Page 15 should detail how PSNH intends to proceed.

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The company may also wish to consider a third option under which fluid modeling would justify modifying inputs to the downwash algorithm in ISCST2. Changes to the input data could lower modeled impacts and avoid the need to construct new or modified stacks. For some details PSNH should look for Joseph A. Tikvart's memo of 28 July 1994 to Richard L. Daye: "Fluid Modeling Protocol Muscatine Iowa Area" in the Model Clearinghouse section of the SCRAM bulletin board. A memo of 25 July 1994 memo to Brenda Johnson and Douglas Neely "Wind Tunnel Modeling Demonstration to Determine Equivalent Building Dimensions for the Cape Industries Facility, Wilmington, North Carolina" has more. Contact Air Resources Division or Region I EPA for any background materials that are not available on SCRAM. This option however is usually best suited for complex building configuration such as lattice-type structures, multiple building areas, etc.

(7) A 1986 baseline date applies in the AQCR where Merrimack Station is located. If the power plant increases emissions over baseline actual emissions, PSNH should assess increment consumption in addition to modeling for compliance with NAAQS. If there was no emission increase but PSNH proposes a configuration change, available increment may be expanded. Although there is no regulatory requirement to do so, modeling for increment expansion by PSNH would facilitate the review of PSD permit applications submitted by other sources in the area.

(8) If as the protocol proposes no other sources in the area are modeled, monitoring data must be combined with modeled impacts in PSNH's NAAQS impacts analysis. Therefore, the protocol should include a table of monitored SO_2 levels which will be used with the modeling analyses on the 3-hour, 24-hour, and annual averaging times. It should also identify the monitoring records reviewed for this purpose, explain how the tabulated values were derived from the data, and describe how they will be combined with modeled impacts.

(9) Regarding Section 5.1 on page 17:

a) PSNH plans to collect on-site data sufficient to determine Pasquill-Gifford stability using the SRDT method which EPA proposed in the 28 November 1994 Federal Register. Although PSNH plans to use σ_ϕ to determine stability as EPA's modeling guideline currently recommends, we believe the new method better and suggest that PSNH consider using it to determine P-G stability class for input to ISCST2.

b) Section 5.1 appears to contradict page 13's statement on the priority scheme for the selecting a mixing height input.

c) MPRM, not RAMMET, should be used to preprocess on-site meteorological data for input to ISCST2.

(10) Page 19 of the protocol should propose seasonal values of roughness length and Bowen ratio as CTDM+ requires inputs for these parameters.

(11) The discussion of background on page 21 should define Merrimack Station's significant impact area, at least as a first cut. It should also present:

a) An inventory of other sources in and around the SIA that may interact with the power plant.

b) A list of inventoried sources which will not be modelled and explanation why.

c) A list of background values to be used with modelled impacts from the power plant and interacting sources, description as to how the background data were derived and how they will be used in the NAAQS impact analyses.

(12) Page 21 of the protocol should present the 50%, 75%, and 100% load source parameters which will be considered in selecting a design value scenario. Parameters of particular interest include stack base elevation exit diameter, and height; 50%, 75%, and 100% stack gas exit volumetric flows, temperatures, and emissions; and ISCST2 building input dimensions. Base case configuration source data must be derived from equipment design data or current federally enforceable emission limitations and operating parameters.