5.2 How is an Appendix E correlation curve derived ?

Appendix E correlation curves are derived from emission test results. Appendix E requires an initial four-load NO_x emission rate test to be performed for each type of fuel combusted in the unit, except for emergency fuel, for which the testing is optional. The testing is performed using EPA Reference Methods 7E and 3A.27 The emission testing is done at four evenly-spaced load points, ranging from the minimum to the maximum unit operating load. Three test runs are performed at each load level. For existing units, two years of historical data are used to establish the minimum and maximum operating loads. For new units, five-year projections of the minimum and maximum loads are used.

During each Appendix E test run, the unit heat input rate is determined using the fuel GCV and readings from a fuel flowmeter that meets the requirements of Part 75, Appendix D. Also, certain parameters must be monitored during each test run. For boilers, excess oxygen is monitored, and it must either be set at a normal level or at a conservatively high level. For turbines and diesel or dual-fuel reciprocating engines, at least four parameters indicative of the unit's NO_x formation characteristics are monitored and acceptable ranges for each parameter are established during testing. If a turbine uses water injection to control NO_x emissions, the water-to-fuel ratio must be one of the monitored parameters.

The NO_x emission rate and heat input rate data are averaged at each load level. Then, a correlation curve of NO_x emission rate (lb/mmBtu) versus heat input rate (mmBtu/hr) is

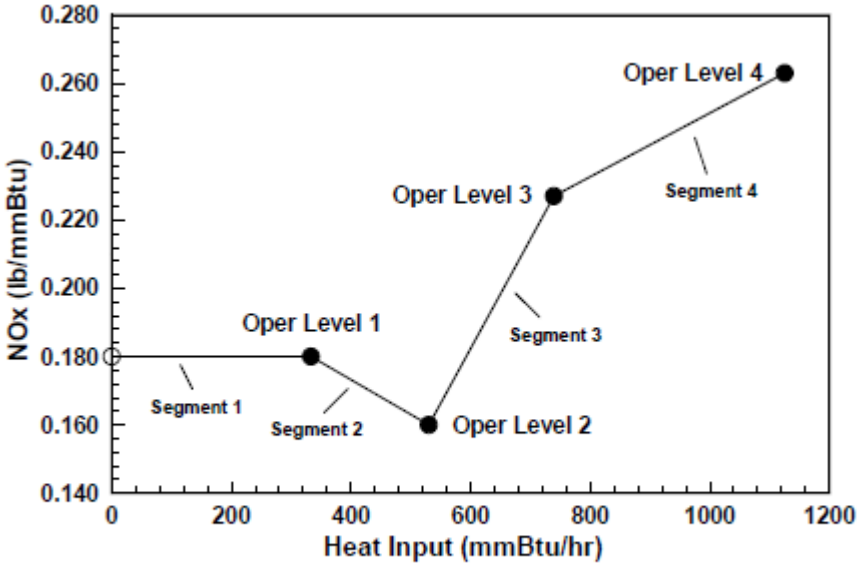

Figure 2: Typical Appendix E Correlation Curve

constructed and the curve segments are programmed into the data acquisition and handling system (DAHS). A typical Appendix E correlation curve is shown in Figure 2, above.