

HUNTER-BARNES



Anheuser-Busch
ONE OF THE ANHEUSER-BUSCH COMPANIES

CERTIFIED MAIL 7007 0710 0003 3391 5431/ RETURN RECEIPT REQUESTED

October 12, 2012

Mr. Richard Robinson, P.E. Manager
Air Pollution Source Permitting Section
Ed Ball Building
Environmental Quality Division
214 North Hogan Street, 5th Floor
Jacksonville, FL 32202

RB, 10/26/12



Re: Changes to Anheuser Busch Jacksonville Brewery Permit – Incorporate Turbine Capacity Vs Temperature Chart into Title V Permit
Title V Air Permit No.: 0310006-012-AV

Dear Mr. Robinson:

The Anheuser Busch - Jacksonville Brewery is requesting an additional change to the Title V Application submitted on 10/10/2012. Attached is a copy of DARM-OGG-07, Guidance on Rate of Operation during Compliance Testing for Combustion Turbines, Dated March 1, 2000 and the Turbine Capacity vs Temperature Chart for Emissions Unit 027 operated by the facility.

Based on the DARM-OGG-07 Guidance Letter, the Jacksonville Facility would like to incorporate the above mentioned Chart into the Title V Permit.

If you have any questions, please contact Neshan Small at (904) 751-8031.

Steven J. Foppe
General Manager



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

DARM-OGG-07

SUBJECT: Guidance on Rate of Operation during Compliance
Testing for Combustion Turbines

DATE : March 1, 2000

This memo is to provide guidance on determining the rate of operation during compliance testing for combustion turbines (CTs).

The mass throughput rate of combustion turbines is inversely proportional to temperature and humidity measured at the CT inlet as a result of the changing air densities encountered. Inlet air temperature is the predominant factor; therefore, higher temperatures will result in a lower heat input rate (MMBtu/hr) and vice versa. The temperature is referenced to the CT inlet temperature rather than ambient temperature, as some CTs are equipped with inlet air conditioning systems (e.g., chillers or evaporative coolers) to maintain optimum operating temperature. Inlet air temperature and ambient temperature are equivalent in cases where no conditioning systems are used. Variations of heat input (capacity) are to be expected due to the range of ambient temperatures and humidities encountered in Florida. Over the usual operating ranges, the CT operating curve (capacity vs. inlet air temperature) is essentially a straight line.

The determination of the rate of CT operation during compliance testing is illustrated in the following example. The heat input limit is often referenced to 59°F, and in this example, corresponds to 750 MMBtu/hr (Point A). On the date that compliance testing is conducted, the average ambient (or conditioned) air temperature during the test period is determined to be 80°F. According to the attached curve, the maximum design heat input rate achievable is 700 MMBtu/hr (Point B). The CT has successfully achieved 90 percent of its maximum permitted capacity for this temperature if it is determined to be operating at 630 MMBtu/hr or more (Point C). In this example, the dashed line represents 90 percent of the maximum heat input value achievable over a range of inlet air temperatures. Heat input may vary depending on CT characteristics; therefore, manufacturer's curves for correction to other temperatures shall be provided to the Department, if a source intends to use the curves for compliance purposes. At the request of a permittee, the following conditions may be incorporated into the construction and corresponding operating permits:

1. An owner or operator may use manufacturer's curves or tables in determining the maximum heat input or fuel usage rate for compliance testing. These curves or tables relate compressor inlet conditions to heat input or fuel usage rate and are part of the permit. The data shall have a resolution of 1% of the maximum heat input or fuel usage rate. Inlet condition monitoring shall

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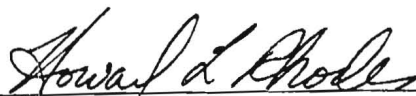
Guidance on Rate of Operation

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include compressor inlet temperature with optional monitoring of inlet pressure and/or moisture levels when these parameters are also used to correct heat input or fuel usage rate.

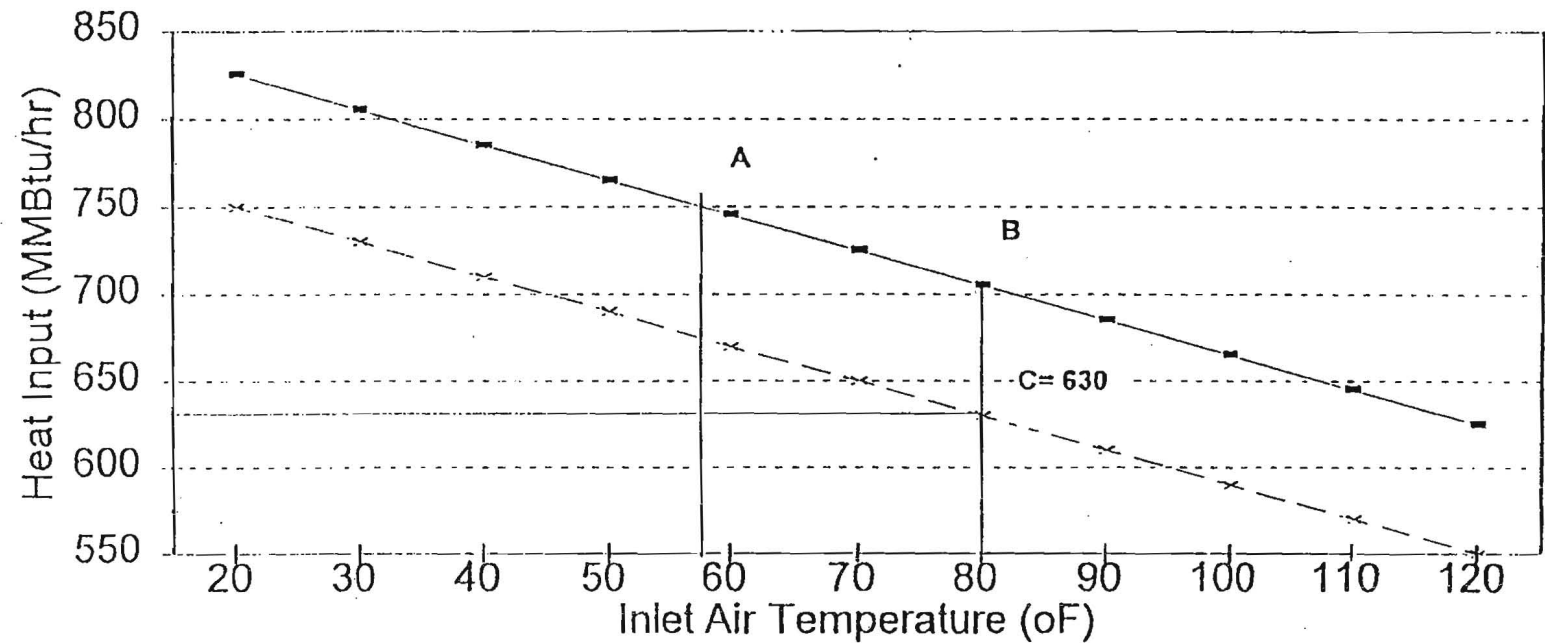
2. Compliance testing of emissions shall be conducted with the combustion turbine operating at capacity. Capacity is defined as 90-100 percent of the manufacturer's rated heat input achievable for the average compressor inlet conditions during the test. If it is impracticable to test at capacity, then combustion turbines may be tested at less than capacity. In such cases, the entire curve or table shall be adjusted downwards by the increment which reflects the reduced rate of operation at which compliance was demonstrated. This increment is equal to the difference between the manufacturer's heat input or fuel usage value and 110 percent of the value reached during the test. In this case, the data and calculations necessary to demonstrate the heat input or fuel usage rate correction shall be submitted to the Department with the compliance test report.

3. To demonstrate compliance with 40 CFR 60.330 federal New Source Performance Standard (NSPS) Subpart GG - Standards of Performance for Stationary Gas Turbines, an initial test shall be conducted at four load points and corrected to International Standards Organization (ISO) conditions for comparison to the NSPS allowable. Subsequent annual compliance tests conducted to establish compliance with NO_x limits that are more stringent than the NSPS standard shall not require an ISO correction or testing at four load points; rather, the testing shall be conducted at capacity, as defined above. However, when the Department has reason to believe that NO_x emissions exceed an applicable NO_x standard (based on emissions data from CEMS or stack testing, or based on fuel quality) the Department may require that the company conduct emissions testing at four loads as required in Subpart GG.



Howard L. Rhodes, Director
Division of Air Resources Management

COMBUSTION TURBINE OPERATING CURVE
FUEL HEAT INPUT vs. INLET AIR TEMPERATURE



--x-- 90% of Maximum Operating Level --x-- Maximum Operating Capacity

Temp	Heat Input	Power Output (kW)
0	116.09	10.732
20	110.94	10.221
40	105.71	9.672
60	99.75	8.975
80	92.76	8.077
100	85.79	7.138

NG = 939.2 BTU/Scf (LHV)

