

Brian Lusher

From: Mark_Strehlow@URSCorp.com
Sent: Tuesday, October 13, 2009 7:30 AM
To: Brian Lusher
Cc: jon.sacks@mirant.com; Anne_Connell@URSCorp.com
Subject: MLGS - Responses to BAAQMD Requests on MLGS as Amended

Brian:

Applicant's responses to your recent telephone requests regarding Marsh Landing Generating Station (ATC #18404 as amended) are attached. Applicant will agree to reductions in several key permit limits as detailed in the responses.

We understand that with receipt of this information BAAQMD can and will issue the Preliminary Determination of Compliance (PDOC). We stress that it is very important to the MLGS permitting schedule for BAAQMD to act quickly. Please let me know if there is anything we can do to assist BAAQMD that will result in the release of the MLGS PDOC within a few weeks or sooner if possible. Thanks,

Mark Strehlow
Sr. Project Manager
510 874 3055 direct
510 874 3268 fax

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Marsh Landing Generating Station
ATC # 18404
Responses to BAAQMD Requests on MLGS as amended.

Request 1. Document turbine emissions during startup with vendor information.

Siemens provided estimated mass emissions during a turbine start (see attachment 1) that are based on a limited number of field test data points as well as some test bed / test rig data but are not guaranteed. Siemens typically recommends that applicants consider adding some margin to these estimated emission rates when requesting permit limits. The Applicant has evaluated that recommendation and feels sufficient margin is included through the use of the assumptions made regarding a turbine startup hour. The worst-case startup hour assumes a complete turbine start, a complete shutdown, a second complete start and the balance of that hour at full load.

In addition, because the estimated start time is about 11 minutes which is quite a bit shorter than an hour, a representative SCR supplier, Mitsubishi, was contacted who confirmed that the SCR will be capable of achieving the required NO_x reduction at the end of the startup (at time = about 11 minutes) (Correspondence containing this confirmation is expected soon and will be provided to BAAQMD when received) which supports the use of the normal SCR-controlled emissions rate when calculating NO_x emissions for the balance of the startup hour.

The Applicant will accept the resulting limit of 45.1 lb/hr of NO_x at as a permit condition (see Revised Table 7-8). The Applicant will also accept the 30 minute start and 15 minute shutdown duration times as not to exceed limits in the permit, because these times include some margin on top of the manufacturers' time estimates shown in Attachment 1. The environment will be protected because the emissions during the startup hour will be regulated by the emission limit and will be independent of actual startup duration.

Request 2. Review Fuel Gas Preheater NO_x emission concentration

Please note that the potential to emit for each Fuel Gas Preheater as proposed in the amended ATC is only 0.131 tpy of NO_x (See Amendment to ATC, Revised Table 7.1-17) which was based on a NO_x emission concentration of about 25 ppm (by volume, dry basis, at 3 percent O₂). The Applicant accepts that the NO_x emission limit from the fuel gas preheaters can be lowered to 15 ppm (by volume, dry basis, at 3 percent O₂). This reflects a revision to the type of heater equipment originally proposed. A more expensive heater type will be included than was originally proposed.

Discussions with heater vendors indicate that: "It is doubtful that dew point heater emissions of 25 ppm (or less) NO_x at 3% O₂ can be accomplished with water bath type heaters; the lower limit for this type of heater is 60 ppm NO_x, per the Heatec representative. The base cost for these units is estimated to be \$380,000 per heater. Dew point heaters, 15 ppm NO_x at 3% O₂ require helical coil type heaters equipped with low NO_x burners. The base cost of these units is estimated to be \$500,000 per heater."

Request 3. Justify 9 lb/hr PM10 turbine emission rate compared to 7.5 lb/hr for combined cycle turbines of the same size.

Each simple cycle turbine will include a dilution air fan to moderate the turbine exhaust gas temperature to facilitate operation of the air pollution control equipment. This fan will add up to 2.1 million pounds per hour of ambient air to the gas turbine exhaust stream (See the table included in ATC Figure 2-2). Combined cycle units do not include dilution air; instead achieving a corresponding temperature reduction in the turbine exhaust stream by removing heat via the HRSG. The ambient air introduced by the dilution air fan contains PM10 which will pass through the system unchanged and be included in the PM10 potentially measured in the turbine exhaust stack. The MLGS PM10 emission limit must therefore include both the PM10 from the turbine and the additional PM10 from the ambient air introduced by the dilution air fan. The amount of PM10 introduced by the dilution air fan is estimated to be up to 1.3 pounds per hour or higher.

The estimated amount is based on ambient air measurement of 87.1 ug/m³ for the representative 24-hr PM10 background (See ATC Revised Table 7-9 for all background concentrations) and a 1-hr average to 24-hr average ratio of 9:1 (based on SO₂ values of 241.1/27.0 ug/m³ for the 1-hour and 24-hour average, respectively) as a surrogate. The potential ratio for PM10 could be even higher than a number derived using SO₂ as a surrogate because short-term PM10 levels could be influenced by wind gusts.

Request 4. Review tuning emissions

Estimated emissions during periodic burner tuning have been reviewed by Siemens who have agreed to the following limits:

NO_x: 640 pounds for 8 hrs (80 pounds per hour)

Siemens provided the following discussion "80 lbs/hr is ~ 9 ppm from the engine. While tuning, the simple cycle SCR is most probably in operation and hence the stack levels will be less than 80 lbs/hr. Assuming some worst case scenario of engine exhaust NO_x increasing to 15 ppm, the SCR should be able to control NO_x to < 9 ppm"

CO: 3,600 lbs in 8 hours (450 lbs/hour)

VOC: 240 lbs in 8 hours (30 lbs/hour)

Request 5. Potential modifications to the HRA for startup

Regarding the HRA, URS is currently trying to determine if what was submitted in the AFC is satisfactory to CEC staff.