

Kathleen Truesdell

From: Jim McLucas <jim.mclucas@radback.com>
Sent: Wednesday, October 20, 2010 11:45 AM
To: Kathleen Truesdell
Cc: Greg Darvin
Subject: OGS - Tuning Emissions

Kathleen –

Per your request, we're furnishing more information to justify the need for a condition to allow higher emissions during tuning of the gas turbine. Because of the extremely low emissions rates at which the Oakley Generation Station (OGS) will operating, the ability to adequately tune the gas turbines from time to time will be vitally important.

Question: A number of existing combined cycle power plants do not have a condition allowing higher emissions during tuning. Why is a tuning condition required for the OGS?

CCGS Response: One possible reason that the older combined cycle power plants do not have a "tuning" condition is that it wasn't a consideration at the time the plant was permitted. During the energy crisis in California, many new combined cycle plants were constructed. Some of the owners and developers of these projects did not have similar plants operating and were thus unaware of the need for condition that allowed higher emissions during tuning events. Several of these plants have since had their permits amended to include a tuning condition (e.g. Los Medanos Energy Center and Delta Energy Center). Others have been able to perform their tuning during a cold start, taking advantage of the higher allowable emissions rates. In addition, this is one of the first large scale combined-cycle power plants that is not triggering the requirements of PSD. In order to meet the demanding lower emission thresholds, tuning activities may occasionally be required to ensure compliance with all limits.

Question: Why can't the OGS tune during a cold start?

CCGS Response: A cold start is defined as a start following more than 72 hours of downtime. While tuning during cold starts may be feasible for older combined cycle plants which do not have permits that explicitly address tuning, it is not feasible for the OGS. A number of the older combined cycle plants have much longer durations and much higher allowable emissions totals for cold starts (see Startup-Shutdown Emissions Comparison sent 10/13/2010). For instance, other plants have cold start durations of 3 to 6 hours, whereas, the cold start duration proposed for the OGS is only 1-1/2 hours. It is estimated that tuning will require 4 to 8 hours, thus 1-1/2 hours would not be sufficient. Additionally, combustion conditions are appropriate for tuning over only a portion of a cold startup event, further reducing the time available. Similarly, cold start NOx emissions for the older plants are 2.3 to 8.1 times that of the OGS and cold start CO emissions for the older plants are 2.8 to 27.1 times that of the OGS. In order for the OGS to be able to tune during a cold start, both the durations and total emissions for a cold start would need to be increased significantly. Since tuning events would occur once or twice a year and cold starts could occur much more frequently, it does not seem rational to increase cold start durations and emissions simply to accommodate tuning. In addition to the above technical reason, from a financial perspective, it is not practical to require that the plant be down for 72 hours prior to tuning the gas turbines. The associated loss of revenue associated with 3 days of unnecessary downtime would be significant.

Question: Why does the Oakley Generating Station need two tuning events per year?

To a large extent, tuning will be performed automatically during normal operation. Manual tuning events, where the emissions will likely exceed the normal operating emissions, are expected to occur annually. We are requesting that the BAAQMD allow up to two tuning events per year so that we have the opportunity to re-tune in the event that certain

indicators present information that emissions drift may occur. This will allow OGS to maintain better emission rates throughout the year.

I hope this information helps.

Thanks!

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