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July 30, 2019

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission
1516 9th Street
Sacramento, CA 95814

Subject: Alamitos Energy Center (13-AFC-01C)
Response to Data Request 1

Dear Mr. Douglas;

Attached is Alamitos Energy Center response to California Energy Commission Data Request 1 received on July 25, 2019 concerning Auxiliary boiler commissioning.

Sincerely,

Jeff Miller
Compliance Manager
AES Alamitos Energy Center

cc: Stephen O'Kane/AES Alamitos Energy Center
Ron Rodrique/AES Alamitos Energy Center

Commissioning Data Requests

for the

Alamitos Energy Center
Long Beach, California
(13-AFC-01C)

July 2019

Submitted to the:
California Energy Commission

Submitted by:
AES Alamitos Energy, LLC

With Technical Assistance by:

Contents

Introduction

AES Alamitos Energy, LLC (the Project Owner) submitted a petition (Transaction Number [TN] 228908) to the California Energy Commission (CEC) for post-Certification license modification for the Alamitos Energy Center (AEC) (13-AFC-01C). The petition requested changes to the AEC auxiliary boiler commissioning hours, minor changes to the selective catalytic reduction Conditions of Certification (CoC), and an increase in the minimum auxiliary boiler ammonia injection rate. On July 25, 2019, CEC Staff submitted an Air Quality Data Request for additional information required to complete their analysis of this petition. The remainder of this document is the Project Owner's response to the July 25, 2019 Data Request.

JACOBS

Air Quality

Technical Area: Air Quality
Author: Nancy Fletcher

AES Alamitos Energy, LLC (AES) submitted a PTA for the AEC Project to incorporate changes to the auxiliary boiler and auxiliary boiler selective catalytic reduction (SCR) conditions of certification (TN# 228908, dated July 5, 2019). AES is requesting the Energy Commission to approve the following:

- Increase the total number of auxiliary boiler commissioning hours from 30 to 100.
- Minor changes to permit conditions affecting the auxiliary boiler commissioning.
- Increase the minimum ammonia injection rate for the auxiliary boiler.

AES submitted applications to the South Coast Air Quality Management District (SCAQMD) on 5/11/2018 and 6/6/2019 to incorporate these changes to the SCAQMD issued permits. The SCAQMD processed the proposed changes as administrative and minor permit changes. The SCAQMD issued the revised Title V permit on July 10, 2019.

Staff has reviewed the submitted PTA and SCAQMD permit evaluation. Staff requests additional information to complete the air quality analysis.

EQUIPMENT COMMISSIONING OVERLAP: BACKGROUND

The AEC license includes Air Quality Staff Condition of Certification **AQ-SC9**, requiring the auxiliary boiler to complete commissioning activities prior to commissioning the combined-cycle gas turbine Power Block 1 (CCGT). The AEC Final Staff Analysis (FSA) states the condition is needed since auxiliary boiler commissioning overlap with CCGT commissioning was not included as a modeling scenario.

Commissioning modeling and emission assumptions were explained in the responses from AES to staff in the licensing data requests (Air Quality 105-136). See specifically data requests AQ 117, 128, 129, and 130). The AES responses to these data requests includes the following statements:

"The auxiliary boiler commissioning process includes first burner light-off, conditioning, establishing the air/fuel ratio curve, and establishing the SCR ammonia injection curve. The auxiliary boiler commissioning will occur over 5 days and will require up to 6 fired hours per day. The auxiliary boiler commissioning emissions will be the same as the auxiliary boiler cold startup emissions, presented in Table DR117-1 below."

"The operating assumptions used to assess modeled short-term impacts from the auxiliary boiler were those for steady-state operation. This does not coincide with the worst- case impacts for the auxiliary boiler, but rather for the facility as a whole. The worst-case short-term modeled impacts for the facility occur when the CCGTs are in startup mode, and the auxiliary boiler is running at steady- state. Startup of the auxiliary boiler will occur prior to the startup of the CCGTs."

The SCAQMD auxiliary boiler evaluation for the current AES proposal describes the auxiliary boiler commissioning as occurring in two phases. The first phase is prior to the connection to the CCGT. The second phase would occur during the commissioning of the CCGT. The evaluation states it is unclear if the emissions from the auxiliary boiler would be fully abated during the CCGT commissioning.

Staff recognizes commissioning of the CCGT and auxiliary boiler are short-term operations, both the auxiliary boiler and CCGT will not be in continuous operations during the commissioning process, and the previously modeled commissioning scenario for the turbines conservatively assumes both turbines are undergoing commissioning activities with unabated emissions.

DATA REQUESTS

1. Please quantify the auxiliary boiler emission rates during the combined cycle commissioning period. Would the auxiliary boiler operating scenarios result in emission rates above the previously modeled rates at the same time the turbines are firing in elevated commissioning emission rates?

Response: The auxiliary boiler commissioning (defined as fuel combustion) emissions will occur prior to the first fire of the combined cycle gas turbines (CCGT). As such, the auxiliary boiler emission rates during the combined cycle commissioning period will be the normal operating emission rates set forth in the following CoCs:

- AQ-A3 – Emission limits of 39.55 pounds of carbon monoxide (CO) per million standard cubic feet of natural gas (lb/mmscf); 6.67 lb/mmscf of volatile organic compounds (VOC); 7.42 lb/mmscf of particulate matter with aerodynamic diameter less than or equal to 10 microns (PM10); and 2.08 lb/mmscf of sulfur dioxide (SO_2)

- AQ-A11 – Nitrogen oxides (NOx) emission limit of 5 parts per million by volume (1-hour average), dry basis, corrected to 3 percent oxygen (ppmvdc)

- AQ-A14 – CO emission limit of 50 ppmvdc (1-hour average)

In addition, the initial CCGT commissioning events that resulted in the highest air quality impacts (Full Speed No Load and steam blows) are completed with the heat recovery steam generators (HRSG) disconnected from the steam turbine/condenser in order for debris to be removed from the steam piping. As described in Supplemental AFC Appendix Table 5.1B.1, these events are anticipated to last approximately 168 hours. The auxiliary boiler will not be operated when the HRSG are not connected to the steam turbine/condenser.

The auxiliary boiler will begin operation after the CCGT Dry Low NOx combustor tuning and selective catalytic reduction (SCR) commissioning events have been completed. Simultaneous operation of the auxiliary boiler and CCGT will occur when the auxiliary boiler's SCR is fully operational and the CCGT's SCR and oxidation catalysts are functioning (but perhaps not optimized to comply with the operational emission limits).

2. If elevated emission rates from the auxiliary boiler are expected during the same hour as turbine commissioning activities, please provide a brief explanation of how the modeled commissioning scenario would still represent maximum commissioning impacts of the CCGT.

Response: As stated above, the auxiliary boiler will be commissioned prior to the first fire of the CCGT. Therefore, no elevated auxiliary boiler emissions will occur during the same hours as CCGT commissioning.

3. Please describe any best management practices or measures AES would employ to minimize emissions during the commissioning of the CCGT.

Response: The Project Owner will minimize the operation of the CCGT and auxiliary boiler to the extent feasible to minimize environmental impacts and costs while conducting necessary commissioning activities. As commissioning of generating assets requires significant scheduling with third parties and regulatory agencies (Southern California Edison, California Independent System Operator, California Public Utility Commission, etc.), CCGT operations will be well defined and conducted to minimize emissions during the commissioning of the CCGT.