Compliance Assurance Monitoring (CAM) Plan Evaluation
(40 CFR Part 64)

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INTRODUCTION:
This application was submitted on February 21, 2012 for Compliance Assurance Monitoring (CAM) plan under 40 CFR Part 64. The facility, Ameresco Chiquita Energy, LLC, is a Title V facility for which initial Title V permit was issued on June 5, 2007. This CAM plan is submitted for the LFG fueled enclosed flare (PC 458542) and two LFG fueled combustion turbines (PCs 458539 and 458540) to control a specific pollutant- Non-Methane Hydrocarbons (NMHC). Permitted LFG flaring system treats the exhaust generated during media regeneration (by purging with heated air) of the LFG treatment system (A/N 461086).

The CAM rule became effective November 21, 1997, however requirements of the plan were delayed while Title V program being implemented.

APPLICABILITY & REQUIREMENTS:
CAM rule (40 CFR Part 64) covers emission units that are evaluated on a pollutant by pollutant basis for equipment that meet the definition of pollutant specific emission units (PSUEs). The rule applies to each PSUE if the unit is located at a major source that is required to obtain a Part 70 or 71 (Title V) permit. The CAM plan requirements are;

- Describe the indicators to be monitored
- Describe ranges or the process to set indicator ranges
- Describe the performance criteria for the monitoring, including specifications for obtaining representative data, verification procedures to confirm monitoring operational status, QA/QC procedures and monitoring frequency.
- Provide a justification for the use of parameters, ranges, and monitoring approach.
- Provide emissions test data, if necessary
- Provide an implementation plan for installing, testing, and operating the monitoring.

EVALUATION:

When LFG is used, as fuel, for gas turbines, NMHC in LFG fuel is also destroyed at high combustion temperature. Since the proposed gas turbines' manufacturer and model # is same as for the gas turbines' permits issued for LACSD, Calabasas LF (ID 42514), and gas turbine operating conditions for Ameresco is assumed identical to that of the LACSD, Calabasas gas turbines. As a result, permit conditions for the SGP gas turbines are amended to comply with 40 CFR 64 that are taken from the LACSD Calabasas CAM plan evaluation (A/N 526755, ID 42514).

The exhaust generated during media regeneration, to remove adsorbed Siloxane (s) and impurities from the LFG treatment system (A/N 461086), is treated by the flare. The flare is expected to have 98% NMOC DRE at minimum 1500 deg. F.

LFG Flare: (A/N 458542)

John-Zinc, Ultra low emission, 12.4 MMBTU/Hr rating (400 scfm @ 506 BTU/SCF)
Regeneration gas (mainly heated air with Siloxane and impurities removed) combusted in flare
Temperature to be measured at least 0.6 seconds downstream of the flare burner
Minimum operating temperature = 1500 deg. F
NMOC destruction efficiency = 98% @ 1500 deg F.
NMOC emission limit = 21 lbs/day as Methane.

MONITORING & PERFORMANCE:

Indicator: When the flare is in operation continuous temperature monitoring in the exhaust stack and temperature recorder must be in operation.
Temperature shall be measured at a location above the flame zone, at least 0.6 second downstream of the burner and not less than 5 feet from the top of the stack.
Temperature monitor shall have an accuracy of +/- 1% of the temperature being measured.
Installation, replacement and preventative maintenance for the temperature monitors shall be in accordance with manufacturer's specifications.
There shall be multiple monitors installed on each flare. When a thermocouple malfunctions or is non-functional, it shall be replaced.

Range: Minimum temperature of 1500 deg F is required. Temperature shall be recorded in degrees Fahrenheit. The data collected by an electronic data recorder shall record at least every 15 minutes.
Excursion can be defined as any three-hour period of operation during which avg. combustion temperature is greater than 28 deg C (50 deg. F) below the minimum combustion temperature specified for the flare.
Upon detecting any excursion from the acceptable range of readings, the permittee shall investigate the excursion and take corrective action to minimize excessive emissions and prevent recurrence of the excursion as expeditiously as practicable.

Frequency: Continuous temperature monitoring and recording. Valid hour of data must have measured values for at least three 15-minute monitoring periods within the hour.
[Minimum 4 times per hr if post-control emissions are ≥ MST; or
Minimum 1 time per day if post-control emissions are < MST].

All exceedances shall be reported semi-annually that includes summary of information, at a minimum – number, duration and cause, and corrective actions taken.

Same requirements apply for the monitor downtime incidences.

Monitoring Operation & Maintenance:

The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR Part 64.7

Recordkeeping & Reporting:

The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR Part 64.9

Performance Test:

Flare shall be tested annually to show compliance with the NMOC daily emission rate (offset limit), flare operating temperature, deg. F, TNMOC concentration (exhaust) in ppmv at 3% O2, as hexane or demonstrate 98wt% DRE.

April 13-15, 2001 source test has indicated compliance with DRE (99.31%) and TNMOC = 1.45 ppmv, hexane, @ 3% O2. Exhaust temperature was determined 1453 deg F (min. 1500 deg F required). This temperature is below the limit, however,-3.5% of limit and may be considered compliance with allowable 10% margin of error.

Quality Improvement Plan:

If the District or EPA determine that a Quality Improvement Plan (QIP) is required under 40 CFR Part 64.7 (d)(2), the permittee shall develop and implement the QIP in accordance with 40 CFR Part 64.8.

LFG flow rate Monitoring:

The flare LFG flow rate shall be measured using a velocity averaging flow meter (annubar- type, Verabar) installed in the LFG fuel supply line.

LFG flow rate shall be continuously monitored and flow rate data shall be stored electronically in a Data Acquisition system (DAS) and data used to calculate total LFG use for the day.

On an annual basis a five-point calibration shall be performed on the differential pressure transmitter. Annubar shall be physically inspected for wear, corrosion and plugging.

The flow meter shall have an accuracy of +/- 1%.

LFG flow rate data to be used to determine daily fuel use and ROG (NMOC) emission to be calculated using LFG TNMOC concentration (analyzed monthly) and annually verified NMOC destruction efficiency (source tests).

Permit condition for the LFG flare, A/N 458542, is amended (at TV renewal) with the following;

THE OPERATOR SHALL OPERATE AND MAINTAIN THIS EQUIPMENT ACCORDING TO THE FOLLOWING REQUIREMENTS:

THE EXHAUST TEMPERATURE SHALL BE MAINTAINED AT A MINIMUM OF 1,500 DEGREES FAHRENHEIT WHENEVER THE EQUIPMENT IT SERVES IS IN OPERATION.

CONTINUOUS EXHAUST TEMPERATURE MONITORING AND RECORDING SYSTEM SHALL BE PURSUANT TO THE OPERATION AND MAINTENANCE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.7. SUCH A SYSTEM SHALL HAVE AN ACCURACY OF WITHIN ± 1% OF THE TEMPERATURE BEING MONITORED AND SHALL BE INSPECTED, MAINTAINED, AND

CALIBRATED ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS USING AN APPLICABLE AQMD OR EPA APPROVED METHOD.

FOR THE PURPOSE OF THIS CONDITION, A DEVIATION SHALL BE DEFINED AS WHEN A TEMPERATURE OF LESS THAN 1,500 DEGREES FAHRENHEIT OCCURS DURING NORMAL OPERATION. THE OPERATOR SHALL REVIEW THE RECORDS OF TEMPERATURE ON A DAILY BASIS TO DETERMINE IF A DEVIATION OCCURS OR SHALL INSTALL AN ALARM SYSTEM TO ALERT THE OPERATOR WHEN A DEVIATION OCCURS.

SEMI-ANNUAL REPORTING SPECIFIED IN CONDITION NO. 23 IN SECTION K, WHENEVER A DEVIATION OCCURS IN WHICH THE TEMPERATURE OF THE FLARE FALLS BELOW 1,500 DEGREES FAHRENHEIT, THE OPERATOR SHALL TAKE NECESSARY CORRECTIVE ACTIONS AS EXPEDITIOUSLY AS PRACTICABLE IN ACCORDANCE WITH GOOD AIR POLLUTION CONTROL PRACTICES FOR MINIMIZING EMISSIONS. RECORDS OF THE DURATION AND CAUSE (INCLUDING UNKNOWN CAUSE, IF APPLICABLE) OF THE DEVIATION AND THE CORRECTIVE ACTIONS TAKEN SHALL BE INCLUDED IN THE SEMI-ANNUAL REPORTING.

ALL DEVIATIONS SHALL BE REPORTED TO THE AQMD ON A SEMI-ANNUAL BASIS PURSUANT TO THE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.9 AND CONDITION NOS. 22 AND 23 IN SECTION K OF THIS PERMIT.

THE OPERATOR SHALL SUBMIT AN APPLICATION WITH A QUALITY IMPROVEMENT PLAN (QIP) IN ACCORDANCE WITH 40 CFR PART 64.8 TO THE AQMD IF AN ACCUMULATION OF DEVIATIONS EXCEEDS 5 PERCENT DURATION OF THIS EQUIPMENT'S TOTAL OPERATING TIME FOR ANY SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT. THE REQUIRED QIP SHALL BE SUBMITTED TO THE AQMD WITHIN 90 CALENDAR DAYS AFTER THE DUE DATE FOR THE SEMI-ANNUAL MONITORING REPORT.

THE OPERATOR SHALL KEEP ADEQUATE RECORDS IN A FORMAT THAT IS ACCEPTABLE TO THE AQMD TO DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS SPECIFIED IN THIS CONDITION AND 40 CFR PART 64.9 FOR A MINIMUM OF FIVE YEARS. [40CFR PART 64]

Gas Turbines: **(A/Ns 458539 and 458540)**

Table 1 Monitoring Approach for the CAM Plan for Gas Turbines

I	Indicator	Exit of the turbine /inlet to recuperator temperature measurement
II	Measurement Approach	Continuous Temperature Indicator and Recorder
III	Indicator Range and Corresponding Permit Condition (underlined)	Exhaust temperature 1151≤° F , ≥ 1201° F, as proposed per S/T data Cond#
IV	Performance Criteria	
	A. Specifications/ Data Representativeness	Temperatures measured with thermocouples installed prior to inlet to recuperator (exit of GT combustion chamber) with minimum accuracy of +/- 1% and recorded with a temperature monitor.
	B. Verification of Operational Status	The temperature data will be reviewed daily by facility personnel.
	C. QA/QC Practices and Criteria	The temperature monitor will be calibrated and maintained per manufacturer specifications.
	D. Monitoring Frequency	Continuous.
	E. Data Collection Procedures	Temperature data will be calculated and stored electronically.
	F. Averaging Period	1 hour (facility proposed every 3 hrs, block avg.)

The following conditions are added to the gas turbine permits for CAM compliance.

14 A CONTINUOUS COMBUSTION TEMPERATURE MONITORING AND RECORDING SYSTEM SHALL BE MAINTAINED, TO DETERMINE EXHAUST TEMPERATURE OF LAST POWER TURBINE (T7) AND CALCULATE THE COMBUSTION CHAMBER TEMPERATURE (TPZ) PER MANUFACTURER'S RECOMMENDATIONS, PURSUANT TO THE OPERATION AND MAINTENANCE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.7. SUCH A SYSTEM SHALL HAVE AN ACCURACY OF WITHIN ± 1% OF THE TEMPERATURE BEING MONITORED AND SHALL BE INSPECTED, MAINTAINED, AND CALIBRATED ON AN ANNUAL BASIS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS USING AN APPLICABLE SCAQMD OR EPA APPROVED METHOD.
[40 CFR 64]

15. THE COMBUSTION CHAMBER TEMPERATURE OF LAST POWER TURBINE (T7) SHALL BE RECORDED AT LEAST EVERY 15 MINUTES, AND THE HOURLY AVERAGE SHALL BE COMPUTED FROM SUCH DATA POINTS. THE OPERATOR SHALL REVIEW THE RECORDS OF TEMPERATURE ON A DAILY BASIS TO DETERMINE IF A DEVIATION OCCURRED OR SHALL INSTALL AN ALARM SYSTEM TO ALERT THE OPERATOR WHEN A DEVIATION OCCURS.
[40 CFR 64]

16. ALL DEVIATIONS SHALL BE REPORTED TO THE SCAQMD ON A SEMI-ANNUAL BASIS PURSUANT TO THE REQUIREMENTS SPECIFIED IN 40 CFR PART 64.9 AND CONDITION NOS. 22 AND 23 IN SECTION K OF THIS PERMIT. FOR THE PURPOSE OF THIS CONDITION, A DEVIATION SHALL BE DEFINED AS WHEN THE LAST POWER TURBINE (T7) TEMPERATURE IS LESS THAN 1100 DEGREES FAHRENHEIT OR GREATER THAN 1300 DEGREES FAHRENHEIT, OR AS OTHERWISE APPROVED BY SCAQMD, OCCURS AVERAGED OVER ONE HOUR DURING OPERATION EXCEPT DURING START UP AND SHUTDOWN EVENTS LASTING FOR A MAXIMUM OF ONE HOUR. MULTIPLE START UP AND SHUTDOWN EVENTS CAN OCCUR CONSECUTIVELY.
[40 CFR 64]

17. FOR EACH SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K, WHENEVER A DEVIATION OCCURS FROM THE TEMPERATURE, THE OPERATOR SHALL TAKE IMMEDIATE CORRECTIVE ACTION, AND KEEP RECORDS OF THE DURATION AND CAUSE (INCLUDING UNKNOWN CAUSE, IF APPLICABLE) OF THE DEVIATION AND THE CORRECTIVE ACTION TAKEN.
[40 CFR 64]

18. A SEMI-ANNUAL MONITORING REPORT SHALL BE SUBMITTED TO SCAQMD, WHICH SHALL INCLUDE BUT MAY NOT BE LIMITED TO THE TOTAL OPERATING TIME OF THIS EQUIPMENT AND THE TOTAL ACCUMULATED DURATION OF ALL DEVIATIONS FOR EACH SEMI-ANNUAL REPORTING PERIOD.
[40 CFR 64]

19. THE OWNER OR OPERATOR SHALL SUBMIT AN APPLICATION WITH A QUALITY IMPROVEMENT PLAN (QIP) IN ACCORDANCE WITH 40 CFR PART 64.8 TO THE SCAQMD IF AN ACCUMULATION OF DEVIATIONS EXCEEDS 5% DURATION OF THIS EQUIPMENT'S TOTAL OPERATING TIME FOR ANY SEMI-ANNUAL REPORTING PERIOD SPECIFIED IN CONDITION NO. 23 IN SECTION K OF THIS PERMIT. THE REQUIRED QIP SHALL BE SUBMITTED TO THE SCAQMD WITHIN 90 CALENDAR DAYS AFTER THE DUE DATE OF THE SEMI-ANNUAL MONITORING REPORT.
[40 CFR 64]

Rules:

Proposed CAM plan for TNMOC control using enclosed flare and gas turbines is expected to comply with the Applicable requirements of the,

40CFR Part 64
Rule 1303 (b) (2)-Emission offsets.

RECOMMENDATION:

It is recommended that a CAM plan be issued for NMHC control equipment, LFG flare and gas turbines, with proposed conditions for 40 CFR 64 compliance.