

DOCKETED

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Section 3

AQ-10 (HTF Ullage Vessels' Carbon Absorption System)

This system shall be operated at all times with the carbon adsorption system as follows:

- a. The carbon adsorption system shall provide 98% control efficiency of VOC emissions vented from the HTF ullage system.
- b. The project owner shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval prior to start up.
- c. This equipment shall be properly maintained and kept in good operating condition at all times.
- d. This equipment must be in use and operating properly at all times the HTF ullage system is venting.
- e. Total emissions of VOC to the atmosphere shall not exceed 1.5 lbs/day and 540 lbs/year calculated based on the most recent monitoring results.
- f. During operation, the project owner shall monitor VOC measured at outlet from the carbon beds. Sampling is to be performed on a weekly basis. Samples shall be analyzed pursuant to U.S.EPA Test Method 25 – Gaseous Non-Methane Organic Emissions. Initial test shall be submitted to the District within 180 days after startup.
- g. FID shall be considered invalid if not calibrated on the day of required use.
- h. The project owner shall maintain current and on-site for the duration of the project a log of the weekly test results, which shall be provided to District personnel upon request, with date and time the monitoring was conducted.
- i. Prior to January 31 of each new year, the project owner of this unit shall submit to the District a summary report of all VOC emissions (as hexane).

Verification: The project owner shall submit information demonstrating compliance with the substantive and recordkeeping provisions of this condition in the Annual Compliance Report.

Unit 1

4.0 RESULTS

The results show that the unit was operating below permitted levels for all species where limits are given in the permit. The results of the tests are presented in the following tables.

**TABLE 4-1
SOUTH VENT VOC RESULTS**

Run	Total Hydrocarbons, ppm as Methane from Continuous FID	Methane + Ethane, ppm from Tedlar Bag [†]	Total Non-methane/ethane Hydrocarbons, ppm as Methane	Stack Flow, wscfm (average of Pre- & Post-)	Total Non-Methane/Ethane Hydrocarbons, lb/ as Methane	Hours/day	Total Non-Methane/Ethane Hydrocarbons, lb/day as Methane
1-HC-1-S	373.12	348.00	25.12	1,303.8	0.08162	16.0	1.31
2-HC-1-S	375.49	352.60	22.89	1,302.6	0.07429	16.0	1.19
3-HC-1-S	358.53	322.40	36.13	1,290.1	0.11614	16.0	1.86
Average	369.05	341.00	28.05	1,298.9	0.09069	16.0	1.45
Limit						Limit	1.5

**TABLE 4-2
NORTH VENT VOC RESULTS**

Run	Total Hydrocarbons, ppm as Methane from Continuous FID	Methane + Ethane, ppm from Tedlar Bag [†]	Total Non-methane/ethane Hydrocarbons, ppm as Methane	Stack Flow, wscfm (average of Pre- & Post-)	Total Non-Methane/Ethane Hydrocarbons, lb/ as Methane	Hours/day	Total Non-Methane/Ethane Hydrocarbons, lb/day as Methane
4-HC-1-N	214.88	187.20	27.68	1,216.8	0.08390	16.0	1.34
5-HC-1-N	399.81	405.00	0.00	1,216.0	0.00000	16.0	0.00
6-HC-1-N	391.43	327.00	64.43	1,216.3	0.19525	16.0	3.12
Average	335.37	306.40	30.70	1,216.4	0.09305	16.0	1.49
Limit						Limit	1.5

Unit 2

The results show that the unit was operating below permitted levels for all species where limits are given in the permit. The results of the tests are presented in the following tables.

**TABLE 4-1
SOUTH VENT VOC RESULTS**

Run	Total Hydrocarbons, ppm as Methane from Continuous FID	Methane + Ethane, ppm from Tedlar Bag*	Total Non-methane/ethane Hydrocarbons, ppm as Methane	Stack Flow, wscfm (average of Pre- & Post-)	Total Non-Methane/Ethane Hydrocarbons, lb/l as Methane	Hours/day	Total Non-Methane/Ethane Hydrocarbons, lb/day as Methane
i-HC-2-S	705.54	833.30	0.00	1,444.2	0.00000	24.0	0.00
i-HC-2-S	420.85	495.10	0.00	1,447.8	0.00000	24.0	0.00
i-HC-2-S	318.70	331.80	0.00	1,454.5	0.00000	24.0	0.00
Average	481.70	553.33	0.00	1,448.8	0.00000	24.0	0.00
Limit						Limit	1.5

**TABLE 4-2
NORTH VENT VOC RESULTS**

Run	Total Hydrocarbons, ppm as Methane from Continuous FID	Methane + Ethane, ppm from Tedlar Bag*	Total Non-methane/ethane Hydrocarbons, ppm as Methane	Stack Flow, wscfm (average of Pre- & Post-)	Total Non-Methane/Ethane Hydrocarbons, lb/l as Methane	Hours/day	Total Non-Methane/Ethane Hydrocarbons, lb/day as Methane
i-HC-2-N	147.75	141.40	6.35	1,412.1	0.02234	24.0	0.54
i-HC-2-N	305.75	318.90	0.00	1,392.8	0.00000	24.0	0.00
i-HC-2-N	399.43	397.80	1.63	1,381.8	0.00560	24.0	0.13
Average	284.31	288.03	2.66	1,395.6	0.00931	24.0	0.22
Limit						Limit	1.5

Section 4

AQ-12 (HTF Ullage/Expansion Tanks)

The project owner shall establish an inspection and maintenance program to determine repair, and log leaks in HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request.

- a. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating day.
- b. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.
- c. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, may be changed from quarterly to annual when two percent or less of the components within a component type are found to leak during an inspection for five consecutive quarters.
- d. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, shall be increased to quarterly when more than two percent of the components within a component type are found to leak during any inspection or report.
- e. If any evidence of a potential leak is found the indication of the potential leak shall be eliminated within 7 calendar days of detection.
- f. VOC leaks greater than 10,000-ppmv shall be repaired within 24-hours of detection.
- g. After a repair, the component shall be re-inspected for leaks as soon as practicable, but no later than 30 days after the date on which the component is repaired and placed in service.
- h. The project owner shall maintain a log of all VOC leaks exceeding 10,000-ppmv, including location, component type, date of leak detection, emission level (ppmv), method of leak detection, date of and repair, date and emission level of re-inspection after leak is repaired.

- i. The project owner shall maintain records of the total number of components inspected, and the total number and percentage of leaking components found, by component types made.
- j. The project owner shall maintain record of the amount of HTF replaced on a monthly basis for a period of 5 years.

Verification: The inspection, monitoring, and maintenance plan for the vent release shall be submitted to the CPM for review at least 30 days before taking delivery of the HTF. As part of the Annual Compliance Report, the project owner shall provide the quantity of used HTF fluid removed from the system and the amount of new HTF fluid added to the system each year.

Year	2016	2017	2018
Total	1155	220	550
Date Ordered			
5/16/2016	6		
10/5/2016	8		
12/15/2016	7		
7/17/2017		4	
9/14/2018			10

A total of 275 gallons was placed in the HTF lube system for a seal leak. The HTF received were in 55 gallon drums in the year 2018. We utilized 5 barrels and have 5 on standby for future use if needed.

Section 5

AQ-15 – (HTF Ullage/Expansion Tanks)

The project owner shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit.

Verification: Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-16 (HTF Ullage/Expansion Tanks)

Emissions from this equipment may not exceed the following emission limits, based on a calendar day summary:

- a. VOC as CH₄ – 1.5 lb/day, verified by compliance test.
- b. Benzene – 0.6 lb/day, verified by compliance test.

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

UNIT 1 ULLAGE VENT

**TABLE 1-1 RESULTS
SUMMARY
MARCH 8, 2018**

Parameter	South Vent	North Vent	Limit
Total Non-Methane/Ethane Hydrocarbons, lb/day as Methane	1.45	1.49	1.5
Benzene, lb/day	0.00436	0.00229	0.6

UNIT 2 ULLAGE VENT

**TABLE 1-1 RESULTS
SUMMARY
MARCH 7, 2018**

Parameter	South Vent	North Vent	Limit
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Total Non-Methane/Ethane Hydrocarbons, lb/day as Methane	0.00	0.22	1.5
Benzene, lb/day	< 0.00042	< 0.00038	0.6

Section 6

Original AQ-20 (Cooling Towers)

The drift rate shall not exceed 0.0005 percent with a maximum circulation rate of 9450 gallons per minute. The maximum hourly PM10 emission rate shall not exceed 2.36 pounds per hour, as calculated per the written District-approved protocol.

Amended AQ-20 (Cooling Towers)

The drift rate shall not exceed 0.0005 percent with a maximum circulation rate of 3450 gallons per minute. The maximum hourly PM10 emission rate shall not exceed .043 pounds per hour, as calculated per the written District approved protocol.

Genesis Solar PM10 Data Unit 1

Genesis Solar PM10 Data

Date	Cooling Tower TDS (ppmw)	Cooling Tower Flow (gpm)	Cooling Tower Flow Rate (klbm/hr)	Cooling Tower PM10 (lbm/hr)
01/05/18	465	3366	1685	0.004
01/12/18	482	3359	1681	0.004
01/19/18	489	3355	1679	0.004
01/26/18	473	3277	1640	0.004
02/02/18	486	3330	1666	0.004
02/09/18	390	3308	1655	0.003
02/16/18	480	3288	1645	0.004
02/23/18	472	3339	1671	0.004
03/02/18	484	3339	1671	0.004
03/09/18	454	3359	1681	0.004
03/16/18	485	3347	1675	0.004

03/23/18	464	3341	1672	0.004
03/30/18	475	3337	1670	0.004
04/06/18	480	3290	1647	0.004
04/13/18	486	3349	1676	0.004
04/20/18	383	3328	1666	0.003
04/27/18	490	3309	1656	0.004
05/04/18	483	3321	1662	0.004
05/11/18	483	3321	1662	0.004
05/18/18	459	3309	1656	0.004
05/25/18	484	3309	1656	0.004
06/01/18	493	3298	1650	0.004
06/08/18	493	3295	1649	0.004
06/15/18	496	3240	1621	0.004
06/22/18	499	3298	1651	0.004
06/29/18	513	3297	1650	0.004
07/06/18	514	3299	1651	0.004
07/13/18	509	3296	1649	0.004
07/20/18	511	3285	1644	0.004
07/27/18	511	3285	1644	0.004
08/03/18	510	3285	1644	0.004
08/10/18	542	3271	1637	0.004
08/17/18	598	3259	1631	0.005
08/24/18	529	3248	1625	0.004
08/31/18	513	3250	1626	0.004
09/07/18	512	3243	1623	0.004
09/14/18	520	3238	1620	0.004
09/21/18	520	3234	1618	0.004
09/28/18	515	3231	1617	0.004

10/05/18	521	3237	1620	0.004
10/12/18	510	3237	1620	0.004
10/19/18	498	2979	1491	0.004
10/26/18	504	3295	1649	0.004
11/02/18	507	3289	1646	0.004
11/09/18	497	3293	1648	0.004
11/16/18	492	3307	1655	0.004
11/23/18	490	3314	1658	0.004
11/30/18	490	3309	1656	0.004
12/07/18	530	3334	1668	0.004
12/14/18	233	2614	1308	0.002
12/21/18	432	3341	1672	0.004
12/28/18	518	3322	1662	0.004

Genesis Solar PM10 Data Unit 2

Date	Cooling Tower TDS (ppmw)	Cooling Tower Flow (gpm)	Cooling Tower Flow Rate (klbm/hr)	Cooling Tower PM10 (lbm/hr)
12/29/17				
01/05/18	497	3312	1657	0.004
01/12/18	492	3309	1656	0.004
01/19/18	499	3300	1651	0.004
01/26/18	493	3256	1629	0.004
02/02/18	497	3300	1651	0.004
02/09/18	491	3294	1648	0.004
02/16/18	496	3297	1650	0.004
02/23/18	482	3323	1663	0.004
03/02/18	489	3313	1658	0.004
03/09/18	480	3302	1652	0.004
03/16/18	492	3307	1655	0.004
03/23/18	490	3268	1635	0.004
03/30/18	500	3294	1648	0.004
04/06/18	495	3231	1617	0.004
04/13/18	493	3237	1620	0.004
04/20/18	490	3236	1619	0.004
04/27/18	496	3214	1608	0.004
05/04/18	492	3203	1603	0.004
05/11/18	500	3200	1601	0.004
05/18/18	499	3195	1599	0.004
05/25/18	432	2929	1466	0.003
06/01/18	332	3239	1621	0.003
06/08/18	507	3222	1612	0.004
06/15/18	506	3215	1609	0.004
06/22/18	513	3247	1625	0.004
06/29/18	529	3245	1624	0.004
07/06/18	534	3243	1623	0.004
07/13/18	520	3243	1623	0.004
07/20/18	517	3245	1624	0.004
07/27/18	515	3238	1620	0.004
08/03/18	525	3237	1620	0.004
08/10/18	542	3238	1621	0.004
08/17/18	502	3237	1620	0.004

Genesis Solar PM10 Data Unit 2

Date	Cooling Tower TDS (ppmw)	Cooling Tower Flow (gpm)	Cooling Tower Flow Rate (klbm/hr)	Cooling Tower PM10 (lbm/hr)
08/24/18	542	3234	1618	0.004
08/31/18	533	3231	1617	0.004
09/07/18	533	3231	1617	0.004
09/14/18	541	3228	1616	0.004
09/21/18	536	3226	1615	0.004
09/28/18	534	3226	1615	0.004
10/05/18	561	3234	1618	0.005
10/12/18	532	3230	1616	0.004
10/19/18	523	3237	1620	0.004
10/26/18	513	3240	1621	0.004
11/02/18	519	3240	1621	0.004
11/09/18	520	3248	1625	0.004
11/16/18	509	3253	1628	0.004
11/23/18	511	3251	1627	0.004
11/30/18	506	3253	1628	0.004
12/07/18	353	2380	1191	0.002
12/14/18	509	3240	1621	0.004
12/21/18	509	3271	1637	0.004
12/28/18	502	3247	1625	0.004