VALERO
BENICIA REFINERY
3400 East Second Street • Benicia, California 94510-1005 • Telephone (707) 745-7011 • Facsimile (707) 745-7514

June 30, 2005

Valero Benicia Refinery
Plant No. B2626
EPA Comments on Draft Revision 2

Mr. Steve Hill
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Hill:

Thank you and your staff for taking the time to meet with us on June 8, 2005 regarding EPA's May 24, 2005 comments on the draft Revision 2 Title V permits dated April 2005. During the meeting, Valero agreed to provide site specific information to address EPA's comments on 40 CFR 63, Subpart CC applicability to flares and to further address EPA's and Valero's comments on the Electrostatic Precipitator (ESP) particulate monitoring conditions (Condition No. 22156). The remainder of this letter addresses these subjects.

Subpart CC Applicability Determinations for Flares

EPA's May 24, 2005 comments: *"...This rationale is that the flares at the Bay Area refineries are not within the definition of "miscellaneous process vent" because these flares only combust non-routine, episodic releases. In general, EPA agrees with this analysis. Such emissions are excluded from the definition of "miscellaneous process vent" per Section 63.641. Therefore, if a flare only combusts episodic, non-routine releases, it will never be used to control "miscellaneous process vents" and will never be subject to the requirements for flares in Section 63.644(a)(2).*

However, EPA notes that the monitoring data provided on BAAQMD's website for some of these flares...indicate that these flares may be combusting routinely released gases. For instance, Shell's OPS Central Flare operated every day from January 1, 2005 to January 31, 2005... The other flares mentioned have operated between 45 and 69 percent of the time during the same period. The data suggest that these flares may be used for more than episodic, non-routine releases. The applicability determination in the statements of basis for at least these flares at Shell, Tesoro, and Valero would greatly benefit from a discussion of why the apparently routine use of these flares is still considered non-routine and episodic by the District in evaluating the applicability of Subpart CC."

The flare control provisions of miscellaneous process vents in Subpart CC never apply to Valero's flares.

The Subpart CC flare requirements are contained in 40 CFR 63.644, the monitoring provisions for Group 1 miscellaneous process vents. At the Valero Benicia Refinery the only Group 1 miscellaneous process vent subject to 40 CFR 63.644 is the Coker flue gas vent. This vents to the crude unit (CO) furnaces and then to the ESPs and Main Stack. This vent is not subject to 40 CFR 63.644(a)(2) because it does not vent to the flare. The correct applicability is documented in Table IV-A5 of the Title V permit.

Other refinery gaseous streams are not "miscellaneous process vents" as defined in 40 CFR 63.641. These streams are routed either directly to the fuel gas system or indirectly via the flare gas recovery compressors to the fuel gas system. Therefore, for normal operation or routine use, the streams are not miscellaneous process vents as defined because miscellaneous process vents do not include gaseous streams routed to a fuel gas system.

When the capacity of the flare gas recovery compressors is exceeded (or if neither compressor is operating) and flaring occurs, the streams are also not "miscellaneous process vents" as defined in 40 CFR 63.641. This is an episodic or nonroutine event because it occurs during startup, shutdown, malfunction, maintenance, depressuring, and catalyst transfer operations. For instance, listed below is a partial summary of reasons that the flare load was greater than zero during the month of January (records for the cause of flaring activities less than 1 MMSCFD are not required to be kept, so Valero was not able to compile a complete list of reasons). The reason it was nonroutine as defined in Subpart CC is shown in parentheses.

January 2, 2005 – flare gas recovery compressor tripped (shutdown)
January 14, 2005 – power outage (shutdown/malfunction)
January 29 – 30, 2005 – CFHF feed filter clearing (maintenance)

ESP Particulate Monitoring - EPA comments

The EPA has expressed interest in requiring refineries to develop a correlation between ESP voltage and current to predict particulate grain loading of flue gas. In discussion with BAAQMD, Valero has asserted that no mathematically significant correlation exists between these variables. Consequently, a parametric monitor based on a flawed correlation would not provide a sound basis for monitoring compliance. Valero asserts that many other process and operating variables combined have a far greater effect on the particulate grain loading of the flue gas.

In most refinery settings, ESPs are part of a complex equipment system. At Valero Benicia Refinery, Coker and FCCU flue gases are combined and combusted in the crude unit (CO) furnaces. Ammonia is injected for NOx control and flue gas conditioning to improve ESP particulate recovery. The flue gases leaving the CO furnaces are combined in common ductwork leading to five parallel ESPs. Downstream of the ESPs, the flue gas is recombined into common ductwork and is discharged via the main stack. The Opacity CEM is located on the main stack and measures the combined stream.

The attached graphs compare 3-minute data for ESP voltage and current with opacity for the time period March 15, 2005 through May 31, 2005. In the graphs, opacity is used as a proxy for grain loading and over 37,000 discrete data points for opacity, and 370,000 discrete data points for voltage are reflected. *(Note: each ESP has two fields with two voltage readings, resulting in 20 values for the system. This amount of data exceeded the graphing capability of Excel. A simplifying step was taken by showing the average voltage across all ESPs for the purposes of this discussion. Examining the individual voltages shows even more voltage variation during periods of nearly constant opacity, which more dramatically proves the point that no correlation exists.)*

The graphs demonstrate that during periods of relatively constant electrical performance, opacity spikes can and do occur. Conversely, during periods of relatively constant opacity, considerable voltage or current variations occur. These data would be characterized as "shotgun" in terms of their statistical significance, and no meaningful correlation exists.

ESP performance is dependant on many variables besides voltage and current: flue gas velocity, FCCU and Coker cyclone efficiency, process unit air rates, ammonia injection optimization, CO furnace firing rates, sootblowing and other operating variables. These process variables can have a far greater, and immediate, impact on the particulate recovery efficiency than voltage and current. For example, a sudden change in Coker air rate can cause a puff of coke fines to enter the flue gas line and momentarily overload the ESPs. Thus actual grain loading and opacity would be high without a corresponding change in ESP voltage.

Therefore, no meaningful parametric monitoring option exists using voltage and current as a proxy for particulate grain loading.

ESP Particulate Monitoring - Valero comments

As discussed above, ESP performance is dependant upon many variables. Refineries cannot "turn a knob" across all the interrelated and complex operating variables to operate at the regulatory limit of 0.15 grains/dscf in order to examine whether a predictive and reliable relationship to opacity exists. Opacity monitoring via CEM and periodic source testing for particulate grain loading are the only available meaningful methods for demonstrating compliance. Therefore, Valero requests permit Condition No. 22156 be deleted from the draft Revision 2 Title V permit.

If you have further questions on this information, please contact me at (707) 745-7807 or Mr. Don Cuffel at (707) 745-7545.

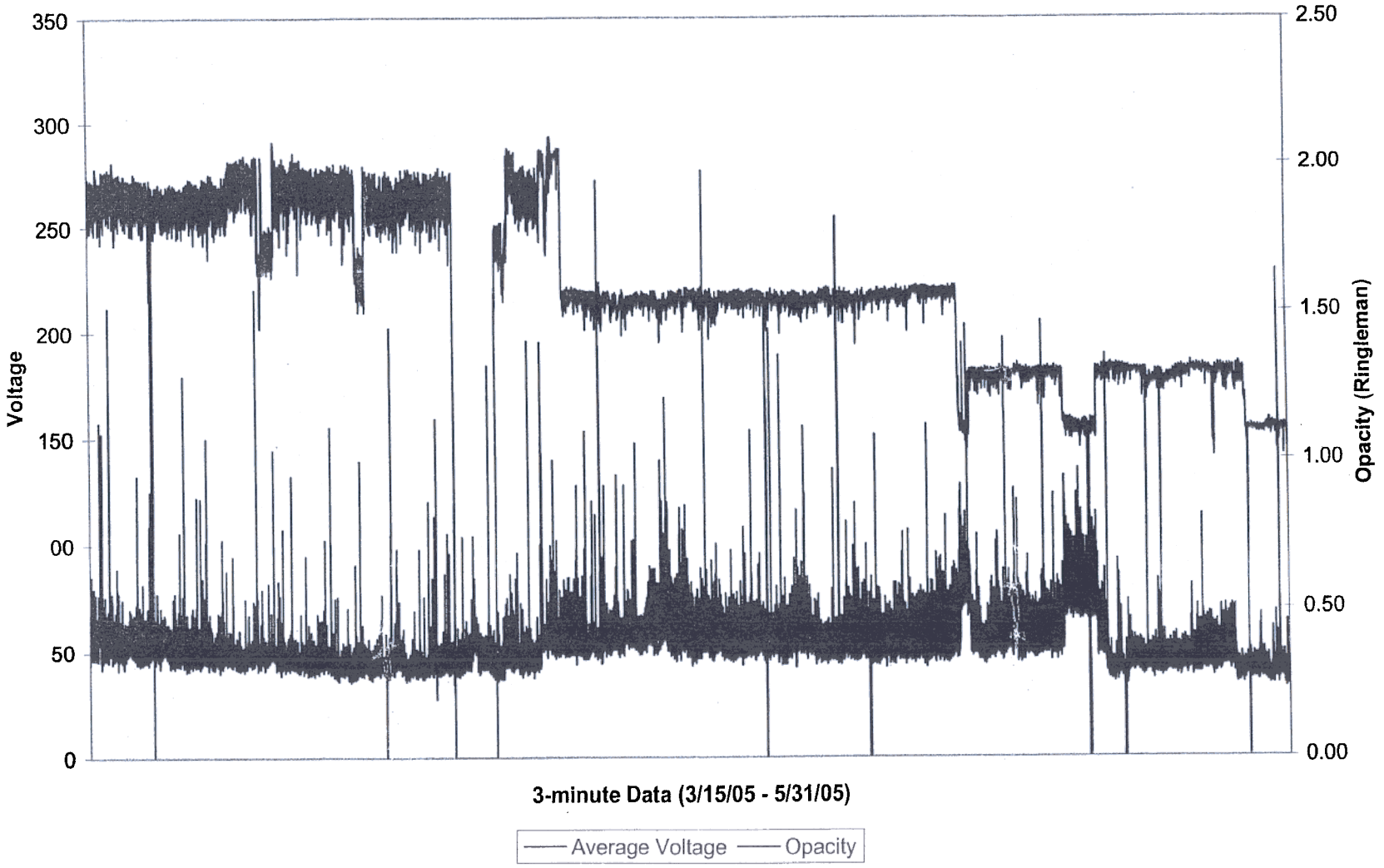
Sincerely,

K Sky Bellanca

K. Sky Bellanca
Sr. Environmental Engineer

cc: Mr. Art Valla, BAAQMD

Opacity vs. ESP Voltage



Opacity vs. ESP Amps