August 18, 2017

Ms. Susan Nakamura
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Ms. Nakamura,

In response to the August 2 SCAQMD HF Working Group meeting, Valero submits the following comments.

Valero appreciated the presentations made by the emerging alkylation technology providers (CB&I and Chevron). Unfortunately, the list of criteria for new technology presentations we submitted to the District was not relayed to the presenters ahead of time; consequently, the formal presentations did not address critical topics that are necessary to consider in any evaluation of emerging technologies. Nevertheless, when we had the opportunity to question the new technology presenters, their responses provided a clear picture that neither of these technologies are commercially proven for application at either southern California refinery.

Regarding the request made at the August 2nd meeting for a review of potential additional mitigation systems, Valero agrees that this topic should be explored in depth at future Working Group meetings. It is telling, however, that such additional mitigation systems have been characterized prematurely as merely "interim measures." It appears that the District has overlooked whether additional mitigation measures may be sufficient to accomplish the risk reduction goals purported to be the reason for the proposed rulemaking before even hearing what alternative measures are available and what degree of mitigation may be afforded by one or more of these measures.

Further, it is clear from the staff presentation posted on the Working Group webpage on July 28 that the District has prematurely and arbitrarily determined that HF should be banned in the South Coast. Valero concurs with the statements made in the letter submitted by Torrance Refining Company on August 1 that this conclusion has been made in the absence of adequate presentation and review of the facts involved with the use of modified HF. This current direction is at odds with the District's previous conclusions, made in the context of inducing Valero to spend hundreds of millions of dollars on the current Alky ReVAP design, which were based on a thorough and detailed review of the proposed project and potential alternatives under the California Environmental Quality Act (CEQA). In the 2004 Environmental Impact Review for that project, the District concluded that "Use of this modified process *meets the SCAQMD's*

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objectives with respect to elimination of concentrated HF."[1] (emphasis added) Specifically, the District found that

> The unique physical properties of the additive substantially reduce the volatility of the acid at ambient conditions. This reduction in volatility proportionately reduces the amount of HF that can vaporize and subsequently disperse off-site from a given liquid release quantity. The modified HF catalyst reduces acid vapor pressure sufficiently to suppress the usual flash atomization process of hydrofluoric acid, causing most of the acid to fall to the ground as an easily controlled liquid and reduces the potential for off-site consequences of an accidental HF release.[2]

Since the District made these findings in 2004, nothing has occurred to undermine or contradict these conclusions. The only thing that has changed is that the Wilmington Refinery now has a nine-year operational record to confirm that it can and does operate safely and successfully with the current Alky ReVAP design.

Moreover, it appears that the District has reached its current conclusion without any consideration of the potentially devastating impacts to fuel supply in California, Arizona, and Nevada, nor of jobs in Southern California, nor of the local, regional, or state economy. Again, this direction appears to be at odds with the District's previous analysis. In the 2004 EIR, the District considered the same alternatives that are being discussed now: conversion to sulfuric acid alkylation or conversion to an emerging but commercially unproven alkylation technology. Both were rejected as infeasible, with the District specifically rejecting conversion to sulfuric acid alkylation as infeasible on the basis that shutting down the Wilmington Refinery for a year during decommissioning of the existing alkylation unit and construction of a new unit would lead to potential spot shortages and adverse economic effects in the region.[3] Although the fact that the District has already indicated its intent to ban HF raises a question whether the District will give meaningful consideration to the information presented, we concur with the statements made at the end of the meeting that accurate replacement costs and schedules, resulting business interruption impacts, and consumer/market implications must be reviewed through the Working Group prior to advancing any proposed rule. To this end, we reiterate our request that the California Energy Commission presentation on Transportation Fuel Issues given at the July 6, 2017 IEPR Commissioner Workshop be presented to the Working Group and that members be provided an opportunity to ask questions.

Finally, at the end of the August 2 meeting the TRAA distributed a "Citizen Rebuttal to Valero" handout. Valero agrees with the Citizen's request that the District should respond to Valero's letter describing our unsuccessful effort to validate Glyn Jenkins's claim that a UK refinery successfully converted from HF alkylation to sulfuric acid alkylation technology. Enclosed please find a fact sheet detailing our unsuccessful efforts to identify a UK refinery matching the description given by Jenkins Valero maintains that it is

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[1] *Ultramar Inc. – Valero Wilmington Refinery Alkylation Improvement Project Final Environmental Impact Report*, December 2004 (SCH No. 20030536) at 2-1.

[2] *Ibid.* at 2-7.

[3] *Ibid.* at 6-3.

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completely inappropriate for the District to refer to, much less publish, unsubstantiated claims of this nature and to rely on them to draw conclusions about the feasibility of requiring existing HF alkylation units to convert to alternative alkylation technologies.

Although we are deeply disturbed by the District's apparent direction in this matter, Valero remains willing to participate in good faith in the Working Group process. We look forward to continuing our discussions, and we would urge the District to consider all evidence and weigh relevant factors before proceeding with a proposal that may have devastating unintended consequences.

Sincerely,

Mark Phair
Vice President and General Manager

Enclosure: Glyn Jenkins April 1st Presentation Review and Analysis of Data Presented

cc: Dr. Philip Fine, Deputy Executive Officer
Mr. Mike Krause, Planning & Rule Manager

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Analysis to Validate Claims a Refinery Had Converted From Using an Existing HF Alkylation Unit to Sulfuric Alkylation and Solid Bed Catalyst Alkylation Units

Public presentation by South Coast Air Quality Management District's (SCAQMD) expert consultant, Glyn Jenkins of Bastleford Engineering and Consultancy, Milford Haven, Wales, UK[1]

Purpose

During a SCAQMD "Refinery Committee Investigative Hearing" on April 1, 2017 Mr. Jenkins claimed an unnamed UK refinery had successfully converted from using an existing HF alkylation unit to a Sulfuric alkylation unit and a Solid bed catalyst unit. Mr. Jenkins cited confidentiality in refusing to name the refinery, while providing the following details on Slide 7, 8, and 13:

- Refinery commissioned = 1920 (expanded in 1950, 1960, 1970, and 2000)
- Refinery is still in operation
- The site is a combined refining and chemicals facility
- Operating capacity = 260,000 bpd
- HF unit commissioned = 1976 (no prior alkylation unit)
- HF unit shut down = 1996
- Sulfuric Acid Alkylation unit started up = 2000
- Solid Bed Catalyst Alkylation started up = 2003

Research and Analysis Overview

UK refinery profiles were consolidated in the table below to identify the unnamed refinery and validate the claim:

UK Refinery	UK Location	Refinery Capacity	Refinery Commissioned	HF Unit Commissioned	HF Unit Status	Alkylation Unit Commissioned	Direct Refinery Contact
Refinery Detail, Per Bastelford		**260 MBD**	**1920**	**1976**	**Shutdown**	**2000-2003**	
ExxonMobil	Fawley	250	1924	NO HF ALKY	NO HF ALKY	NO	NOT OUR SITE
Petroineos	Grangemouth	210	1924		SHUTDOWN	NO	NOT OUR SITE
Phillips 66	Humber		1966		OPERATING		
Total	Lindsey		1968		OPERATING		
Valero	Pembroke	270	1964		OPERATING	NO	NOT OUR SITE
Essar	Stanlow		1924	1989	OPERATING	NO	
Murco	Milford Haven	SHUTDOWN	1973				NOT OUR SITE
BP/PetroPlus	Coryton	SHUTDOWN					
AB Nynas	Eastham	27		NO HF ALKY	NO HF ALKY		
AB Nynas	Dundee	SHUTDOWN		NO HF ALKY	NO HF ALKY		

= Refinery Detail Does Not Match

BLANK CELL = Indicates Information Has Not Been Obtained or Confirmed

Sources: *Oil and Gas Journal, Direct Company Contact, and Public Information*

[1] Bastleford Engineering and Consultancy, Electrical Reliability, Transition from HF to Other Alkylation Technologies – A UK Example & Review of Form 500-N Deviation, Emergencies and Breakdowns Submittals

Conclusion

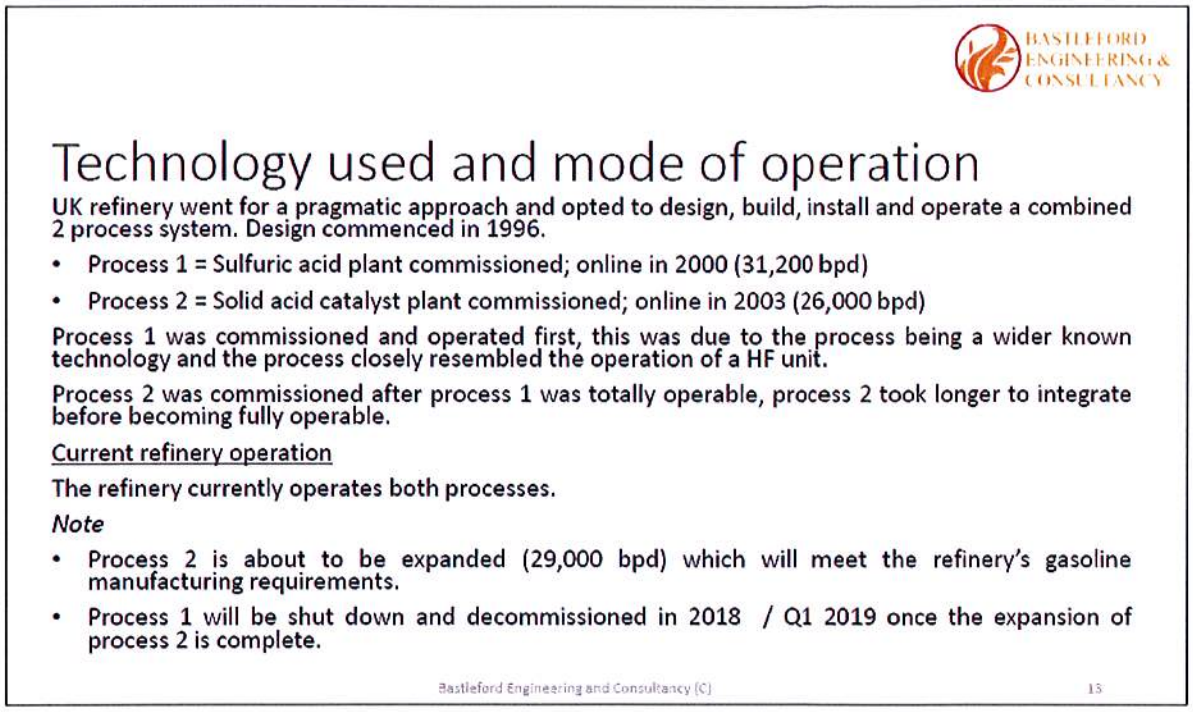
- No operating or shut down UK refinery matches the profile provided by Mr, Jenkins.
- The Grangemouth Refinery in Scotland is the only UK refinery that has shut down an HF Alkylation unit, so this is most likely the refinery cited by Mr. Jenkins.
- Multiple Grangemouth refinery employees, who were employed during the years Mr. Jenkins claims that the Grangemouth HF Alkylation unit was shut down and replaced with a 26,000 barrel per day Solid Acid Alkylation unit, have refuted the claim in detail.

- Additional sources that confirmed they were unable to validate Mr. Jenkin's claim include:
    - Grangemouth Refinery representatives of the current co-owner
    - Alkylation licensors - HF (Honeywell/UOP), Sulfuric (Stratco), and Solid Acid Catalyst (CB&I)*
    - Petroleum Industry Associations - UK (UKPIA) and US (API)
    - Credible Technical Consultants - With expertise in refinery alkylation
    - Multiple Refining Companies – Who currently operate in the UK

*CBI, the only company in the world that operates a solid acid catalyst alkylation unit, confirmed at AQMD Working Group Meeting #4 there are "no" other solid acid alkylation units operating in the world.

Reference to Mr. Jenkins Presentation

Slide 13 details the following unnamed refinery's Alkylation unit history:



BASTLEFORD ENGINEERING & CONSULTANCY

Technology used and mode of operation

UK refinery went for a pragmatic approach and opted to design, build, install and operate a combined 2 process system. Design commenced in 1996.

- Process 1 = Sulfuric acid plant commissioned; online in 2000 (31,200 bpd)
- Process 2 = Solid acid catalyst plant commissioned; online in 2003 (26,000 bpd)

Process 1 was commissioned and operated first, this was due to the process being a wider known technology and the process closely resembled the operation of a HF unit.

Process 2 was commissioned after process 1 was totally operable, process 2 took longer to integrate before becoming fully operable.

Current refinery operation

The refinery currently operates both processes.

Note

- Process 2 is about to be expanded (29,000 bpd) which will meet the refinery's gasoline manufacturing requirements.
- Process 1 will be shut down and decommissioned in 2018 / Q1 2019 once the expansion of process 2 is complete.