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Randall L. Sawyer
Hazardous Materials Program Director
Contra Costa Health Services
4333 Pacheco Boulevard
Martinez, CA 94553-2229

RE: Seventh Update to the 30-Day Report for the CWS Level 3 Event of August 6, 2012

Dear Mr. Sawyer:

In accordance with the December 14, 2004 Contra Costa Health Services (“CCHS”) Hazardous Materials Incident Notification Policy, Chevron U.S.A. Inc. (“CUSA”) is providing an update to the 30-Day Report for the Community Warning System (“CWS”) Level 3 Event that occurred at the Richmond Refinery on August 6, 2012. The attached “Update to 30-Day Follow-Up Notification Report Form” updates sections IX and X to reflect that CUSA has now completed its investigation into the August 6 CWS Level 3 Event and is submitting its report summarizing the investigation results to the CCHS. This letter provides a brief summary of the investigation report findings and recommendations, as well as an update on the actions CUSA is taking to prevent a similar incident in the future.

Incident Investigation

CUSA’s investigation was conducted by a team that included external scientific and engineering experts, members of the United Steelworkers Union, and CUSA’s technical experts. The team gathered and reviewed historic information and data, interviewed relevant personnel, visually inspected the damaged portions of the No. 4 Crude Unit (“Crude Unit”) where the incident occurred, collected samples, and observed testing of the failed pipe section performed by Anamet Inc. (“Anamet”), a testing laboratory.

Based on this investigation, the report concludes a failure occurred in a five-foot long piping component of the 8” carbon steel atmospheric gas-oil pipe line from the atmospheric distillation tower (known as the “4-sidecut”) in the Crude Unit, resulting in a hydrocarbon leak. Subsequently, a fire erupted in the area of the failure. Consistent with the metallurgy evaluation report on the failed piping component prepared by Anamet, our investigation found that the five-foot carbon steel component where the leak occurred failed due to thinning caused by sulfidation corrosion, which was accelerated by the low-silicon content of the failed component. Individual

carbon steel piping components with low-silicon can, and here did, corrode at an accelerated rate not readily detectable by multiple corrosion monitoring locations.

Causal Factors, Additional Considerations, and Recommendations

CUSA's investigation team identified four "causal factors"¹ of the August 6 incident:

- The response and assessment after discovery of the leak did not recognize the risk of piping rupture and the possibility of auto-ignition.
- A measurement performed in 2002 showed one-third wall loss in the failed pipe component just downstream of a corrosion monitoring location ("CML"). This information was only captured as a comment in the inspection management software tool and not elsewhere in the inspection management system. Documenting wall thickness information in a comment without adding it to the inspection management software database limited the ability for future decision-makers to utilize the data.
- Relevant information regarding carbon steel sulfidation corrosion – including the understanding that components with low-silicon are especially susceptible to sulfidation corrosion and the recommendation to perform 100% component-by-component inspection – was not transferred to the Refinery inspection management system. The 2009 Reliability Opportunity Identification/Intensive Process Review ("ROI/IPR") did not identify the need for 100% component-by-component inspection or the replacement of the 4-sidecut piping.
- Inspection during the 2011 Turnaround did not include every component in the 4-sidecut piping circuit because the recommendation to identify and inspect every component was not built into the inspection plans for the Crude Unit. A 100% component-by-component inspection would have required the inspection of the pipe component that failed in August 2012, which could have alerted the Refinery to the component's accelerated metal loss.

To address these causal factors, the investigation team made the following recommendations:

- Revise Refinery policies and checklists to ensure appropriate information – including process safety and inspection information – is considered when evaluating leaks and addressing the issue of whether to shut down or continue operation of equipment.

¹ Based on the methodology used to perform the investigation, a "causal factor" is a mistake or failure that, if corrected, could have prevented the incident from occurring or would have significantly mitigated its consequences.

- Enhance the Refinery’s mechanical integrity program to ensure the Refinery properly identifies and monitors piping circuits for appropriate damage mechanisms using a standardized methodology and documentation system.
- Implement certain improvements concerning inspector training and competency, oversight of mechanical integrity, inspection plans and escalation procedures. Develop and implement a process to review and act upon mechanical integrity-related recommendations from industry alerts, Chevron Energy Technology Company (“ETC”), and other subject-matter experts. Inspect Crude Unit piping that falls under the ETC Sulfidation Inspection Guidelines criteria for sulfidation corrosion prior to restarting the Crude Unit, and implement the ETC Sulfidation Inspection Guidelines for the remainder of the Refinery.
- Ensure relevant technical studies and inspection data are considered for the Refinery’s equipment reliability plans and incorporated into the ROI/IPR process.

In addition to the four causal factors of the incident, the investigation report also found six “additional consideration” which, while not considered a direct cause of the August 6 incident, represent opportunities to prevent a similar incident from recurring (with specific additional recommendations noted):

- The Chevron Fire Department did not complete a Hazard Material Data Sheet and positioned Engine Foam 60 too close to the leak source when responding to the Incident.
 - Review the Pre-Fire Plan to ensure sufficient guidance is provided on equipment positioning.
- The leaking line could not be isolated on the upstream side to mitigate loss of containment.
 - Review company/industry loss history on large fractionating towers to determine if internal Engineering Standard FRS-DU-5267 (Emergency Isolation and Depressuring Valves) adequately addresses mitigation of accidental releases from these systems. Revise the standard as warranted by the findings of this review.
- The ETC Sulfidation Inspection Guidelines were not fully implemented and action items were not tracked to completion.
 - Ensure Refinery business plans provide for the appropriate implementation of process safety recommendations.
- The minimum thicknesses calculated for the 4-sidecut washout spool piping did not include safety factors considered in the Refinery Piping Inspection Guideline and American Petroleum Institute Recommended Practice 574, which may have triggered a Fitness for Service analysis and led to additional inspections and resulting data.

- Ensure sufficient organizational capacity and competency for minimum thickness Fitness for Service determinations.
- The June 2012 inspection of the P-1149/A suction piping was not entered in the inspection management system.
 - Consider additional training on expectations under the “Richmond Refinery Piping Inspection Guidelines” and “RFMS Piping Data Entry (Reliability Focused Maintenance System) and ACD (Add/Change/Delete) Guideline.”
- The Crude Unit Process Hazard Analyses did not consider the potential for sulfidation corrosion.
 - Review and modify the Process Hazard Analysis (“PHA”) procedures to ensure that teams consider known corrosion threats/mechanisms.
 - Consider a project to evaluate the purpose and methods of various process safety management (“PSM”) reviews to determine if these activities can be combined or better sequenced to improve risk understanding across the various functions and promote better process safety outcomes.

Actions to Address Report Findings and Recommendations, and To Prevent Recurrence

In our Fourth Update to the 30-Day Report for the CWS Level 3 Event of August 6, 2012, submitted January 28, 2013, we summarized the measures the Refinery is implementing to prevent a recurrence of the incident. We are providing CCHS a further update of those measures, and the status of their implementation. In addition to previously sharing these measures with CCHS, we have previewed these actions with Cal/OSHA and the CSB in order to ensure alignment with their understanding of the causes of the incident.

Low-Silicon Carbon Steel and Piping Component Inspections

- The Refinery has inspected every piping component in the Crude Unit potentially susceptible to sulfidation corrosion. Of the approximately 4,600 piping components inspected, we replaced four carbon steel piping components that appeared to have higher corrosion rates than other piping components in the system.
- Our enhanced inspection programs are being implemented throughout the Refinery, and we are replacing every component found as indicated by the results of these inspections. Over the longer-term, we will conduct 100 percent piping component inspections throughout our refining network.

Mechanical Integrity Program

- We are strengthening the Refinery's reliability program for piping and equipment to ensure it covers potential damage mechanisms applicable to those systems. As part of this effort, CUSA has begun implementing an enhanced process for regular damage mechanism reviews for each unit and piping circuit so as to formalize the evaluation of known damage mechanisms, the consequences of a failure, and the safeguards necessary to mitigate failures and other potential risks from those damage mechanisms.
- We also are reviewing and modifying our PHA procedures to ensure that known corrosion threats/mechanisms have been appropriately considered.
- The Refinery is implementing an enhanced process to better review, prioritize, and act upon mechanical integrity-related recommendations from internal and external technical experts, including industry standards and alerts, to ensure that the right information gets into the hands of the right people at the right time so the right decisions can be made.

Assessment, Decision-Making, and Oversight

- The Refinery is implementing a process for additional oversight of mechanical integrity-related recommendations, inspection plans, and turnaround work lists.
- We are reviewing and improving our mechanical integrity training as a way to further support our leaders, inspectors, operating groups, and engineers. We are also making certain that the appropriate technical resources are readily available to assist any evaluation of the fitness of equipment for service.

Leak Response

- We have implemented a new protocol for evaluating leaks with simple guidance for making sometimes necessary rapid decisions around leak response and further enhancing situational awareness skills. We recently shared our new leak response protocol with CCHS, Cal/OSHA, and the CSB, as well as other refineries and industrial facilities in Contra Costa County.

Process Safety Focus

- We are reemphasizing our expectations around process safety and the responsibility of all personnel for process safety performance, including the importance of incorporating process safety into decision-making.

With the submission of its investigation report, CUSA believes that, absent new information coming to light or a request for additional information from CCHS, this will be the final update to the 30-Day Report.

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If you have questions or comments, please feel to contact me directly at the number above, or Karen Draper of my staff at (510) 242-1547.

Sincerely,

A handwritten signature in blue ink that reads "Steve Wildman". The signature is written in a cursive style with a prominent initial "S".

Steve Wildman