

# Inspection Checklist

**RECEIVED**  
AUG 26 2019



**BENICIA FIRE DEPT.**

Solano County  
Department of Resource Management  
675 Texas St., Suite 5500  
Fairfield, CA 94533-6341  
707-784-6765

20015-50R-1  
VALERO REFINING CO BENICIA CA  
3400 E SECOND ST  
BENICIA CA 94510  
Program 4 - Refinery

ROUTINE - INITIAL (INVENTORIED)

In	Class I	Class II	Minor	N/A	(P1/2/3/4) General
				X	CAL013 (P1/2/3/4) Release preventative measures
In	Class I	Class II	Minor	N/A	(P1/2/3/4) Coordination with AA
				X	CAL014 (P1/2/3/4) Coordination with CUPA
In	Class I	Class II	Minor	N/A	(P1/2/3/4) RMP Submission
				X	CAL015 (P1/2/3/4) (T1,2) RMP submitted within time frame to USEPA
				X	CAL016 (P1/2/3/4) (T3) RMP submitted within time frame to CUPA
				X	CAL017 (P1/2/3/4) (T3) RMP submitted once notified
				X	CAL018 (P1/2/3/4) (T3) RMP submitted for new source
				X	CAL020 (P1/2/3/4) RMP certified by qualified person
In	Class I	Class II	Minor	N/A	(P1/2/3/4) RMP Updates
				X	CAL021 (P1/2/3/4) RMP deficiencies corrected within 60 days
				X	CAL022 (P1/2/3/4) (T1,2) RMP updated & submitted to USEPA and CUPA
				X	CAL023 (P1/2/3/4) (T3) RMP updated and submitted to CUPA
				X	CAL024 (P1/2/3/4) Change of owner/operator notification
In	Class I	Class II	Minor	N/A	(P1/2/3/4) RMP Corrections
				X	CAL025 (P1/2/3/4) New accident history information
				X	CAL026 (P1/2/3/4) Emergency contact information updated
In	Class I	Class II	Minor	N/A	(P1/2/3/4) Covered process modification
				X	CAL027 (P1/2/3/4) Pre-notification of covered source modification
				X	CAL028 (P1/2/3/4) Post-notification of covered source modification
In	Class I	Class II	Minor	N/A	(P1/2/3/4) Registration
				X	CAL029 (P1/2/3/4) Registration includes all covered processes
				X	CAL030 (P1/2/3/4) (T1,2) Complete registration submitted
				X	CAL031 (P1/2/3/4) (T3) Complete registration submitted
				X	CAL032 (P1/2/3/4) (T1,2) De-registration submitted to USEPA & CUPA
				X	CAL033 (P1/2/3/4) (T3) De-registration submitted to CUPA
In	Class I	Class II	Minor	N/A	(P1/2/3/4) Records Retention
				X	CAL034 (P1/2/3/4) Records retained for 5 years
In	Class I	Class II	Minor	N/A	(P2/3/4) RMP Submission
				X	CAL054 (P2/3/4) RMP certification submitted
				X	CAL055 (P2/3/4) RMP submittal is complete
In	Class I	Class II	Minor	N/A	(P2/3/4) Hazard Assessment
				X	CAL056 (P2/3/4) Hazard Assessment complete
In	Class I	Class II	Minor	N/A	(P2/3/4) Emergency Response
X					CAL058 (P2/3/4) Emergency response (Responding)
X					CAL059 (P2/3/4) Emergency response (Responding) coordination
X					CAL060 (P2/3/4) Emergency response plan (Responding) requested
In	Class I	Class II	Minor	N/A	(P4) Process Safety Information
				X	CAL40101 (P4) Compilation of process safety information
				X	CAL40102 (P4) Complete regulated substance info in process safety
				X	CAL40103 (P4) Complete technology info included in process safety
	1				CAL40104 (P4) Complete equipment info included in process safety

In	Class I	Class II	Minor	N/A	(P4) Process Safety Information
				X	CAL40105 (P4) Equipment compliance documentation included
				X	CAL40106 (P4) Existing equipment deemed safe
In	Class I	Class II	Minor	N/A	(P4) Process Safety Culture
				X	CAL40201 (P4) PSCA complete
				X	CAL40202 (P4) PSCA team qualifications
				X	CAL40203 (P4) PSCA report complete
				X	CAL40204 (P4) PSCA corrective actions developed
				X	CAL40205 (P4) PSCA assessment of corrective actions conducted
				X	CAL40206 (P4) PSCA reports/plans signed
				X	CAL40207 (P4) PSCA available to employees
In	Class I	Class II	Minor	N/A	(P4) Process Hazard Analysis
				X	CAL40301 (P4) PHA performed
				X	CAL40302 (P4) PHA methodology chosen in consultation with CUPA
				X	CAL40303 (P4) PHA complete
				X	CAL40304 (P4) PHA team qualifications
				X	CAL40305 (P4) PHA recommendations available
				X	CAL40306 (P4) PHA report complete
				X	CAL40307 (P4) PHA corrective action work process
				X	CAL40308 (P4) PHA five year revalidation
				X	CAL40309 (P4) PHA document retention
In	Class I	Class II	Minor	N/A	(P4) Hazard Control Analysis
				X	CAL40401 (P4) HCA schedule
				X	CAL40402 (P4) HCA conducted
				X	CAL40403 (P4) HCA updated
				X	CAL40404 (P4) HCA team qualifications
				X	CAL40405 (P4) HCA requirements
				X	CAL40406 (P4) HCA recommendations
				X	CAL40407 (P4) HCA complete report
				X	CAL40408 (P4) HCA corrective action work process
				X	CAL40409 (P4) HCA records
In	Class I	Class II	Minor	N/A	(P4) Safeguard Protection Analysis
				X	CAL40501 (P4) SPA written report
				X	CAL40502 (P4) SPA IPLs
				X	CAL40503 (P4) SPA methodology
				X	CAL40504 (P4) SPA timeline
				X	CAL40505 (P4) SPA team qualifications
				X	CAL40506 (P4) SPA documentation requirements
				X	CAL40507 (P4) SPA recommendations annex
				X	CAL40508 (P4) SPA corrective action work process
				X	CAL40509 (P4) SPA records
In	Class I	Class II	Minor	N/A	(P4) Operating Procedures
	1				CAL40601 (P4) Operating procedures complete
				X	CAL40602 (P4) Operating limits included in operating procedures
				X	CAL40603 (P4) Safety and health included in operating procedures
				X	CAL40604 (P4) Safety systems included in operating procedures
				X	CAL40605 (P4) Emergency operations included in operating procedures
				X	CAL40606 (P4) Operating procedures accessible to employees
				X	CAL40607 (P4) Operating procedures annually reviewed and certified
X					CAL40608 (P4) Safe work procedures in place
In	Class I	Class II	Minor	N/A	(P4) Management of Change
				X	CAL40701 (P4) Management of Change procedures established
	2				CAL40702 (P4) Prior considerations included in Management of Change
				X	CAL40703 (P4) DMR & HCA included in Management of Change

In	Class I	Class II	Minor	N/A	(P4) Management of Change
				X	CAL40704 (P4) Qualified personnel/methods used
				X	CAL40705 (P4) Employee participation provided in Management of Change
				X	CAL40706 (P4) Process safety updated after managed change
				X	CAL40707 (P4) Operating procedures updated after managed change
				X	CAL40708 (P4) Written procedures for organizational change
				X	CAL40709 (P4) MOOC assessment
				X	CAL40710 (P4) MOOC requirements
				X	CAL40711 (P4) Employees informed about change
In	Class I	Class II	Minor	N/A	(P4) Pre-Startup
				X	CAL40801 (P4) Pre-Startup safety review performed
				X	CAL40802 (P4) Pre-Startup safety review general requirements
				X	CAL40803 (P4) Employee representative is part of safety review
In	Class I	Class II	Minor	N/A	(P4) Compliance Audits
				X	CAL40901 (P4) Triennial compliance audit performed
				X	CAL40902 (P4) Compliance audit performed by knowledgeable person
				X	CAL40903 (P4) Compliance audit report complete
				X	CAL40904 (P4) Compliance audit corrective action work process
				X	CAL40905 (P4) Compliance audits retained
				X	CAL40906 (P4) Compliance audit consultation
In	Class I	Class II	Minor	N/A	(P4) Incident Investigation
				X	CAL41001 (P4) Incident investigation procedures are in place
				X	CAL41002 (P4) Root cause analysis included in procedures
				X	CAL41003 (P4) Incident investigation initiated within 48 hours
				X	CAL41004 (P4) Incident investigation performed by appropriate team
				X	CAL41005 (P4) Root cause analysis method implemented
				X	CAL41006 (P4) DMR reviewed/incorporated into investigation
				X	CAL41007 (P4) Recommendations developed for incident investigation
				X	CAL41008 (P4) Investigation report submitted
				X	CAL41009 (P4) Investigation report is complete
				X	CAL41010 (P4) Investigation report is available to employees
				X	CAL41011 (P4) Incident investigation corrective action work process
				X	CAL41012 (P4) Incident investigation report is retained
				X	CAL41013 (P4) Assistance provided in independent analysis
In	Class I	Class II	Minor	N/A	(P4) Employee Participation
				X	CAL41101 (P4) Written employee participation plan
				X	CAL41102 (P4) Employee representative selection in procedures
In	Class I	Class II	Minor	N/A	(P4) Contractors
				X	CAL41201 (P4) Owner/Operator responsibilities
				X	CAL41202 (P4) Contractor responsibilities
In	Class I	Class II	Minor	N/A	(P4) Training
				X	CAL41301 (P4) Initial training provided
				X	CAL41302 (P4) Refresher training provided
				X	CAL41303 (P4) Employee training documented
				X	CAL41304 (P4) Written program includes requirements and testing
				X	CAL41305 (P4) Training program covers Program 4 elements
				X	CAL41306 (P4) Employee participation provided in training program
				X	CAL41307 (P4) Employee trained prior to implementing a change
				X	CAL41308 (P4) Employees trained on human factors
In	Class I	Class II	Minor	N/A	(P4) Human Factors Program
				X	CAL41401 (P4) Human factors program in place
				X	CAL41402 (P4) Analysis of human factors included where relevant
				X	CAL41403 (P4) Effective method of evaluation used in analysis

In	Class I	Class II	Minor	N/A	(P4) Human Factors Program
				X	CAL41404 (P4) New/Revised procedures includes analysis
				X	CAL41405 (P4) Human factors revision schedule
				X	CAL41406 (P4) Employee participation provided in human factors
				X	CAL41407 (P4) Human factors program available to employees
In	Class I	Class II	Minor	N/A	(P4) Mechanical Integrity
	1				CAL41501 (P4) Written maintenance procedures for mechanical integ
				X	CAL41502 (P4) DMR performed
				X	CAL41503 (P4) DMR updated
				X	CAL41504 (P4) DMR reviewed
				X	CAL41505 (P4) DMR is available
				X	CAL41506 (P4) DMR team qualifications
				X	CAL41507 (P4) DMR full and complete
				X	CAL41508 (P4) Damage mechanisms are complete
				X	CAL41509 (P4) DMR includes assessment
				X	CAL41510 (P4) DMR report is complete
				X	CAL41511 (P4) DMR report reviewed with employees
	1				CAL41512 (P4) Mechanical integrity corrective action work process
				X	CAL41513 (P4) DMR retained
	1				CAL41514 (P4) Inspection and testing on process equipment completed
	1				CAL41515 (P4) Equipment deficiencies corrected
	1				CAL41516 (P4) Equipment quality assurance
In	Class I	Class II	Minor	N/A	(P4) Hot Work Permit
				X	CAL41601 (P4) Hot work permit issued
				X	CAL41602 (P4) Hot work permit fire documentation
In	Class I	Class II	Minor	N/A	(P4) Accidental Release Program
				X	CAL41701 (P4) ARP management system in place
				X	CAL41702 (P4) Policies and procedures part of ARP management system
				X	CAL41703 (P4) ARP management system tracks changes
				X	CAL41704 (P4) ARP management system corrective action work process
				X	CAL41705 (P4) Findings and recommendations provided
				X	CAL41706 (P4) Change/Rejection of recommendation is communicated
				X	CAL41707 (P4) Comment documentation
				X	CAL41708 (P4) Final decision documented and is available
				X	CAL41709 (P4) Corrective actions developed/documentated
				X	CAL41710 (P4) Corrective actions annexed
				X	CAL41711 (P4) MOC of completion date change
				X	CAL41712 (P4) Corrective action prioritization
				X	CAL41713 (P4) Corrective action schedule not requiring shutdown
				X	CAL41714 (P4) Corrective action schedule from compliance audit
				X	CAL41715 (P4) Corrective action schedule requiring shutdown
				X	CAL41716 (P4) Delayed corrective acitons documented
				X	CAL41717 (P4) Corrective action completion annexed
				X	CAL41718 (P4) Stop work procedures/hazard reporting in place
				X	CAL41719 (P4) Information reporting in place
				X	CAL41720 (P4) Process safety performance reporting
				X	CAL41721 (P4) List of site-specific indicators produced
In	Class I	Class II	Minor	N/A	(P4) Information Access
				X	CAL41801 (P4) Information access



# RISK MANAGEMENT INSPECTION REPORT

Solano County  
Department of Resource Management  
675 Texas St., Suite 5500  
Fairfield, CA 94533-6341  
707-784-6765

SITE NO. INV NO. IR NO. DATE INSPECTION TIME INSPECTOR  
20015 1 03/13/2019 LaPlace, Colby S

<b>SITE INFORMATION</b>	<b>INVENTORY/MANAGER/OWNER</b>	<b>SERVICE TYPE/FREQUENCY</b>
VALERO REFINING CO BENICIA CA 3400 E SECOND ST BENICIA CA 94510 707-745-7562	Program 4 - Refinery Owner: VALERO REFINING CO BENICIA CA 707-745-7562	ROUTINE - INITIAL (INVENTORIED) 1 Time per year

**CALL-BACK REASON**  
03/28/2019 ONGOING INSPECTION WITH MULTIPLE DATES CONTINUING THROUGH JULY 2019

This is a Notice to Comply.  
Items noted below were noted as out of compliance with California Code of Regulations, and pose a danger to human health or the environment. Correct noted violations within 15/30 days.

### COMMENTS

<u>CODE</u>	<u>DESCRIPTION</u>
CTI	<p>CONSENT FOR INSPECTION. NO VIOLATIONS THIS ITEM. [HSC 25502(e)]</p> <p>Consent to inspect, photograph, and sample granted by: <u>Chris Robinson (name), Process Safety Mgr (title).</u></p>
Violation:	<p>This item is not a violation. Violations found during this inspection are described in the Class I Violations Detail section below.</p> <p>This Valero Refining Co. Benicia CA incident specific inspection was initiated in response to an incident from March 11, through March 24, 2019 that resulted in a major incident on March 23 and March 24, 2019. Solano County CUPA's investigation commenced on March 13, 2019. All items marked as N/A on the Inspection Checklist were not addressed during this inspection.</p>
Correction:	<p>Site specific corrective actions are describe in the Class I Violation Detail section below</p> <p>Within 30 days of signing this Risk Management Inspection Report, Valero shall provide Solano County CUPA a corrective action spread sheet that lists each of the violations and Valero's proposed completion date that meets concurrence of Solano County CUPA.</p>

Violations Summary		
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<u>CODE</u>	<u>DESCRIPTION</u>	<u>CORRECTED</u>
CAL40104	<p>The Owner/Operator failed to include piping and instrument diagrams (P&amp;ID's).            [19 CCR 4.5 2762.1(d)(2)] Valero performed a Management of Change (MOC) # 130842 dated January 31, 2018 to replace a 4 inch control valve with a 6 inch control valve. The P&amp;ID was not updated until the discrepancy was noted by US EPA employee performing a P&amp;ID "walkdown" on 6-4-2019.</p>	_____
CAL40601	<p>The Owner/Operator failed to provide procedures to safely conduct temporary operations.            [19 CCR 4.5 2762.3(a)(1)(C)]</p> <p><b><u>Site Specific Violation Description:</u></b></p> <p>Valero Benicia Refinery by having inadequate operating procedures during the idling and restart of Furnace, F-105 on November 1, 2018 during maintenance that caused furnace tube damage, subsequent furnace tube leak failures, and resulted in the major incident on March 23, 2019 and March 24, 2019.</p>	_____
CAL40702	<p>The Owner/Operator failed to address the technical basis for proposed change.            [19 CCR 4.5 2762.6(b)(1)]</p> <p><b><u>Site Specific Violation Description:</u></b></p> <p>Valero Benicia Refinery violated 19 CCR, section 2762.6 (b)(1) regarding Management of Change as noted in MOC #130842 by changing by a 4-inch diameter valve on the Coker Unit to 6-inch diameter valve</p>	_____
CAL41501	<p>The Owner/Operator failed to establish, implement and maintain written procedures with clear instructions for safely maintaining the integrity of process equipment.            [19 CCR 4.5 2762.5(a)(1)]</p> <p><b><u>Site Specific Violation Description:</u></b></p> <p>Valero failed to have procedures to ensure that the furnace tubes were dry following purging the tubes with steam. Equipment in high temperature petroleum service has a procedural step requiring draining of equipment but there is not step ensuring the lines that are dry.</p>	_____
CAL41512	<p>The Owner/Operator failed to follow the corrective action work process documented in subsections 2762.16 (d) and (e).            [19 CCR 4.5 2762.5(e)(11)]</p>	_____

<u>CODE</u>	<u>DESCRIPTION</u>	<u>CORRECTED</u>
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CAL41514	<p>The Owner/Operator failed to perform inspections and tests as frequently as recommended by applicable manufacturers' recommendations, RAGAGEP, internal practices that are more protective, or more frequently if determined to be necessary by prior operating experience. [19 CCR 4.5 2762.5(b)(2)]</p>	_____
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**Site Specific Violation Description:**

Valero violated 19 CCR., section 2762.5(b)(2) by failing to establish an adequate risk based inspection frequency on the Coker Unit petroleum coke drain line which Solano County CUPA observed leaking during March 24, 2019 incident and on the Coker Process Unit to Coke Silos transfer line, that according to Valero personnel in meeting on April 3, 2019 failed five times in the last three years, including the failure of the transfer line that exacerbated the Coker Unit's operational problems as described by Valero Personnel during the March 13, 2019 meeting with CUPA, US EPA, and BAAQMD representatives.

CAL41515	<p>The Owner/Operator failed to correct deficiencies in equipment that are outside acceptable limits. [19 CCR 4.5 2762.5(c)]</p>	_____
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**Site Specific Violation Description:**

Valero failed to decrease the intervals between inspections to a an appropriate frequency and establish an appropriate and effective inspection frequency to prevent the safety valve, SV-107 from fouling and/or malfunctioning.

CAL41516	<p>The Owner/Operator failed to ensure and document that newly installed process equipment for which no RAGAGEP exists, are designed, built, installed, maintained, inspected, tested and operated in a safe manner. [19 CCR 4.5 2762.5(d)(3)]</p>	_____
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**Site Specific Violations Descriptions:**

1. Valero Benicia Refinery violated 19 CCR, section 2762.5(d) (3) by failing to ensure that the carbon monoxide and oxygen sensors on Furnace F105/106 that have not been operational for at least 3 years are maintained, inspected, tested and replaced in compliance with manufacturer's specifications, any other design specifications, and all applicable codes and standards.

## Class I Violations Detail

<u>CODE</u>	<u>DESCRIPTION</u>
CAL40104	<i>Complete information, pursuant to Section 2762.1(d), pertaining to the equipment of the process has been compiled as part of the Process Safety Information.</i>
Violation:	The Owner/Operator failed to include piping and instrument diagrams (P&ID's). [19 CCR 4.5 2762.1(d)(2)] Valero performed a Management of Change (MOC) # 130842 dated January 31, 2018 to replace a 4 inch control valve with a 6 inch control valve. The P&ID was not updated until the discrepancy was noted by US EPA employee performing a P&ID "walkdown" on 6-4-2019.
Correction:	The Owner/Operator shall update the process safety information to include piping and instrument diagrams (P&ID's).  The violation was corrected on site subsequent to 6-4-2019 US EPA inspection. Solano County CUPA accepts this as corrected on-site.
CAL40601	<i>Operating procedures have been written and implemented, pursuant to Section 2762.3(a)(1), that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information.</i>
Violation:	The Owner/Operator failed to provide procedures to safely conduct temporary operations. [19 CCR 4.5 2762.3(a)(1)(C)]
	<b><u>Site Specific Violation Description:</u></b>  Valero Benicia Refinery by having inadequate operating procedures during the idling and restart of Furnace, F-105 on November 1, 2018 during maintenance that caused furnace tube damage, subsequent furnace tube leak failures, and resulted in the major incident on March 23, 2019 and March 24, 2019.
Correction:	The Owner/Operator shall ensure that clear procedures to safely conduct temporary operations are written and implemented.
	<b><u>Site Specific Corrective Actions:</u></b>  Valero Benicia Refinery shall prepare and provide corrective action plan with a time table for implementation for CUPA review and concurrence within 90 days of signing inspection report that includes the following:
	<ol style="list-style-type: none"> <li>1 Develop and implement a method to determine crude flow deviation or by-pass of the furnace for all 6 furnace flow passes. The measurement and active monitoring of normalized flowrate trend currently in place is a corrective action that is accepted by Solano County CUPA</li> <li>2 Develop and implement new or revised operating procedures that incorporate process measurements and actions to be taken when observed operational parameters are outside of established normal parameters. The revised</li> </ol>

CODEDESCRIPTION

- consequences for deviation (COD) that incorporates low flow scenario in conjunction with furnace tube temperature measurements as proposed by Valero in their July 12, 2019 RCA with a completion date of October 1, 2019 is acceptable to Solano County CUPA
- 3 Develop and implement temporary operating procedures when placing F-105 and F-106 in a "State of Idle" that prevents furnace tubes from being overheated that could result in coke fouling and lead to tube failure. Valero shall ensure that new COD procedures include furnace idling events. Valero will provide new procedures for on-site review by Solano County CUPA.
  - 4 Develop a method to improve Valero's ability to troubleshoot the Flue Gas Scrubber system by having a method to identify "Furnace Fines" generated from crude oil leaks verses Coker fines generated from the Coker system. Valero shall provide Solano County CUPA for on-site review methods employed to discern differences in fines captured by FGS system.
  - 5 Develop and effective training program and perform initial and supplemental training for each employee involved in operating Furnaces F-105 and F-106 to ensure they received, understood, and successfully completed the training; Respondent shall provide for employee participation in developing and implementing the training program. Valero shall provide Solano County CUPA a copy of revised training procedures for on-site review that incorporate revised procedures or acceptance.
  - 6 Provide a list of MOC's developed and implemented to address the furnace process improvements and procedural changes. Provide list and completed MOC's for on-site review by Solano County CUPA
  - 7 Evaluate Human Factors that led to F-105 furnace failure from either having inadequate written operating procedures for idling or the deviation from the established operating procedures according to section 2762.15. Valero shall provide Solano County a summary of the results of the Human Factors review for on-site by Solano County CUPA.
  - 8 Perform Damage Mechanism Review for both furnaces F-105 and F-106 and the pipestill unit including ancillary equipment pursuant to subsection 2662.5 (e). The RCA dated July 12, 2019 addressed F-105 and F-106. Valero's planned year end DMR for the pipestill is acceptable to Solano County CUPA pursuant to subsection 2762.5(e);
  - 9 Perform Safeguard Protection Analysis (SPA) of the Coker and Flue Gas Scrubber System including Furnaces F-105 and F-106. Valero shall provide Solano County CUPA a summary of the SPA for on-site review.
  - 10 Ensure that operating records including checklists, are maintained according to Respondent's records retention policy that conforms to the provisions pursuant to section.

CAL40702 *Appropriate considerations, pursuant to Section 2762.6(b), have been addressed in the Management of Change procedures prior to any change. (2)*

Violation: The Owner/Operator failed to address the technical basis for proposed change.  
[19 CCR 4.5 2762.6(b)(1)]

**Site Specific Violation Description:**

Valero Benicia Refinery violated 19 CCR, section 2762.6 (b)(1) regarding Management of

<u>CODE</u>	<u>DESCRIPTION</u>
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Change as noted in MOC #130842 by changing by a 4-inch diameter valve on the Coker Unit to 6-inch diameter valve

Correction: The Owner/Operator shall ensure that the technical basis for the proposed change is included.

**Site Specific Corrective Action:**

Correction for this violation is included in the corrective action listed below.

Violation: The Owner/Operator failed to consider the process safety impacts for proposed change. [19 CCR 4.5 2762.6(b)(2)]

**Site Specific Violation Description:**

Valero Benicia Refinery violated 19 CCR, section 2762.6 (b)(2) regarding Management of Change as noted in MOC #130842 by changing by a 4-inch diameter valve on the Coker Unit to 6-inch diameter valve without performing evaluation of the potential safety impact of these changes by performing an adequate Process Hazard Analysis.

Correction: The Owner/Operator shall ensure that the impacts of the proposed change on process safety are included.

**Site Specific Corrective Action:**

Valero Benicia Refinery informed Solano County CUPA that they are in the process of reviewing their MOC's that were performed using their previous MOC procedure. Valero is reviewing the adequacy of these older MOC's and updating them as necessary. Valero shall establish a process to systematically identify individual MOCs throughout the refinery including all petroleum refining processes, piping, safety equipment, storage tanks, and utilities. Valero will evaluate these MOCs to identify whether the technical basis of the change was actually valid, whether the identified change resulted in the use of materials incompatible with the process, re-evaluate process safety impacts, evaluate applicable damage mechanisms such as mechanical loading failures, erosion, corrosion, thermal related failures, cracking, embrittlement, and ensure the change in materials and equipment are adequately addressed in process safety information. The Respondent shall ensure that all affected employees participate in this process, Respondent shall ensure deficient materials or equipment that require replacement, the needed mechanical integrity, and MOC processes conform with applicable sections of Title 19, CCR, article 6.5. Valero shall provide Solano County an on-site listing of the older MOC's. Solano County will identify which MOC's shall be provided for more detail review. Respondent shall prepare and submit a corrective action plan and schedule of corrective action for the CUPA's review and concurrence within 90 days of signing the inspection report

CAL41501 *Written procedures for maintaining the integrity of process equipment have been established and implemented. Documents developed under this section (2762.5) are available to employees and their representatives pursuant to Section 2762.10.*

CODEDESCRIPTION

Violation: The Owner/Operator failed to establish, implement and maintain written procedures with clear instructions for safely maintaining the integrity of process equipment.  
[19 CCR 4.5 2762.5(a)(1)]

**Site Specific Violation Description:**

Valero failed to have procedures to ensure that the furnace tubes were dry following purging the tubes with steam. Equipment in high temperature petroleum service has a procedural step requiring draining of equipment but there is not step ensuring the lines that are dry.

Correction: The Owner/Operator shall establish, implement and maintain written procedures that provide clear instructions for safely conducting maintenance activities on process equipment, consistent with the Process Safety Information.

**Site Specific Corrective Action:**

Valero shall modify existing line entry procedures to ensure that the equipment is dry in any high temperature petroleum system after purging with steam. Valero shall consider separate employee "sign off's" for the various drain locations. Valero shall identify, evaluate, mitigate any underlining associated human factors. Valero shall establish a revised and effective line entry procedure that is based on operating and maintenance employees experience with process equipment. Valero shall provide an corrective action plan and implementation schedule Solano County CUPA within 90 days of signing this inspection report.

CAL41512 *The facility follows the corrective action work process documented in subsections 2762.16 (d) and (e).*

Violation: The Owner/Operator failed to follow the corrective action work process documented in subsections 2762.16 (d) and (e).  
[19 CCR 4.5 2762.5(e)(11)]

Correction: The Owner/Operator shall follow the corrective action work process documented in subsections 2762.16 (d) and (e) when resolving the DMR team's findings and recommendations, determining action items for implementation, tracking to completion, and documentation of closeout.

CAL41514 *Inspections and testing on process equipment adequately performed pursuant to Section 2762.5(b).*

Violation: The Owner/Operator failed to perform inspections and tests as frequently as recommended by applicable manufacturers' recommendations, RAGAGEP, internal practices that are more protective, or more frequently if determined to be necessary by prior operating experience.  
[19 CCR 4.5 2762.5(b)(2)]

**Site Specific Violation Description:**

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Valero violated 19 CCR., section 2762.5(b)(2) by failing to establish an adequate risk based inspection frequency on the Coker Unit petroleum coke drain line which Solano County CUPA observed leaking during March 24, 2019 incident and on the Coker Process Unit to Coke Silos transfer line, that according to Valero personnel in meeting on April 3, 2019 failed five times in the last three years, including the failure of the transfer line that exacerbated the Coker Unit's operational problems as described by Valero Personnel during the March 13, 2019 meeting with CUPA, US EPA, and BAAQMD representatives.

Correction: The Owner/Operator shall ensure that the frequency of inspections and tests are consistent with applicable manufacturers' recommendations, RAGAGEP, internal practices that are more protective, or more frequently if determined to be necessary by prior operating experience.

Site Specific Corrective Action:

Valero shall reduce petroleum coke releases by developing a reliable Coker drain line and coke transfer line inspection process that will prevent coke fine releases to the environment. Solano County CUPA understands and disagrees with the Valero Risk Matrix, which values these coke releases as: "AR" acceptable Risk. The frequency of these release and the institutional knowledge regarding these releases is sufficient to provide adequate information of system weak point and locations where line thickness measurement frequently could prevent releases. Running to failure is not a viable option. During a March 13, 2019 Valero personnel explained to Solano County CUPA, US EPA and Bay Area Air Quality Management personnel, that Coker Process Unit was in an upset condition partially caused by a silo transfer line failure. Silo line failure can cause Coke Process issues, which are not an "AR" acceptable risk condition for Solano County CUPA. Valero shall increase surveillance of the coke transfer lines or pursue another option to reduce the need to modify Coker Unit operations and the risk of potential operational upset. As part of this process, Valero shall identify, evaluate, mitigate any underlining associated human factors. Valero shall provide a corrective action plan and schedule for CUPA review and concurrence within 90 days of signing inspection report.

CAL41515 *Deficiencies in equipment that are outside acceptable limits are corrected before further use, or in a safe and timely manner.*

Violation: The Owner/Operator failed to correct deficiencies in equipment that are outside acceptable limits.  
[19 CCR 4.5 2762.5(c)]

Site Specific Violation Description:

Valero failed to decrease the intervals between inspections to a an appropriate frequency and establish an appropriate and effective inspection frequency to prevent the safety valve, SV-107 from fouling and/or malfunctioning.

Correction: The Owner/Operator shall ensure that deficiencies in equipment that are outside acceptable limits are corrected before further use, or in a safe and timely manner.

Site Specific Corrective Action:

Valero shall revise the mechanical integrity program for SV-107 to decrease the interval

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between inspections and establish an appropriate frequency of inspections to protect SV-107 from fouling or modify the system with appropriate devices such as check valves, rupture discs, spare valves to ensure both the functionality and reseating of this safety valve. The above frequency of safety valve inspections to prevent fouling remains undefined and the process shall be continued.

Valero will evaluate the where use of pilot operated valves are appropriate for service where fouling is prevalent according to RAGAGEP and manufacturers recommendations by referencing American Petroleum Institute (API) 520 Part I, sections, 2.2.2.5 & 2.2.2.9, Anderson Greenwood, Crosby Pressure Relief Valve Engineering Handbook No. TP-v300, May 1997, page 2.5, API 520, Part II, section 5.7, and API 576, section 4.5.3.4. Valero shall establish an inspection program that includes participation of operating and maintenance employees with experience with the process equipment. Valero shall complete the evaluation of SV-107 pilot system as stated in thier Root Cause Analysis (RCA) document dated July 12, 2019. Solano County concurs with the October 1, 2019 completion date as stated in the RCA

Provide the revised mechanical integrity procedures for Solano CUPA's to review on-site and concurrence within 90 days of signing this inspection report.

CAL41516 *New or updated equipment and spare or maintenance parts are installed properly and are suitable to the process they will be used in with the criterial established in subsection 2762.1(d).*

Violation: The Owner/Operator failed to ensure and document that newly installed process equipment for which no RAGAGEP exists, are designed, built, installed, maintained, inspected, tested and operated in a safe manner.  
[19 CCR 4.5 2762.5(d)(3)]

**Site Specific Violations Descriptions:**

1. Valero Benicia Refinery violated 19 CCR, section 2762.5(d)(3) by failing to ensure that the carbon monoxide and oxygen sensors on Furnace F105/106 that have not been operational for at least 3 years are maintained, inspected, tested and replaced in compliance with manufacturer's specifications, any other design specifications, and all applicable codes and standards.

Correction: The Owner/Operator shall conduct regularly scheduled checks and inspections as necessary to ensure that the requirements of section 2762.5(d)(1) are met.

**Site Specific Corrective Actions:**

1. Valero Benicia Refinery shall ensure carbon monoxide and oxygen sensors installed on all furnaces are functional, maintained, inspected, and tested. Respondent shall establish or revise an existing process that documents and ensures that all carbon monoxide and oxygen sensors for furnaces are inspected maintained and tested according to manufacturer's specifications, design specifications, and all other standards and codes. Solano County CUPA agrees that this above requirement was corrected on-site by the purchase and installation of the Carbon Dioxide and Oxygen meters.

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The following corrective action is still in progress:  
Respondent shall identify and evaluate and mitigate the human factors that are posing barriers preventing an adequate mechanical integrity process. The Respondent shall provide Solano County CUPA a summary of the human factors analysis for an on-site review within 90 days of signing inspection report.

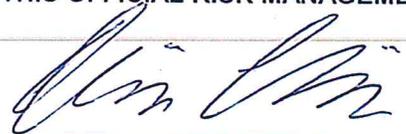
CalARP Checklist:

In: CAL058, CAL059, CAL060, CAL40608

Class I: CAL40104, CAL40601, CAL40702, CAL41501, CAL41512, CAL41514, CAL41515, CAL41516

I HEREBY, ACKNOWLEDGE THE ISSUANCE AND RECEIPT OF THIS OFFICIAL RISK MANAGEMENT INSPECTION REPORT.

  
Colby S LaPlace, Sr. Haz Mat Specialist

 Chris Robinson  
8-22-19  
RECEIVED BY: SIGNATURE

Signature for receipt of document, but not agreement to substance