

Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	January 30-February 3, 2023	
Media Program:	Air	
Regulatory Program(s)	Clean Air Act Section 112(r) and 40 C.F.R. Part 68 Chemical Accident Prevention Provisions (Risk Management Plan)	
Company Name:	Valero Corpus Christi Refining Texas- LP	
Facility Name:	Valero Corpus Christi - East Plant	
Facility Physical Location:	1300 Cantwell Lane	
(city, state, zip code)	Corpus Christi, Texas 78407	
Mailing address:	Nueces County	
(city, state, zip code)		
County/Parish:		
Facility Phone Number	(361) 289-6000	
Facility Contact:	Joe Almaraz	Health, Safety and Environmental Manager
	Joe.Almaraz@Valero Corpus Christi.com	
FRS Number:	1000 0004 5033	
Identification/Permit Number:	Air Operating Permit ID: O2238	
Media Identifier Number:	RMP 1000 0011 8133	
NAICS:	32411 (Petroleum Refineries)	
SIC:	2911	
Personnel participating in inspection:		
Kayla Buchanan	US EPA Region 6	Inspector
Howard Cole	US EPA Region 6	Lead Inspector
Aimee Boss	US EPA Region 6	Inspector
Michelle Flower	Valero Corpus Christi	HR Director
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Chris Nelson	Valero Corpus Christi	Safety Manager
Kevin Lassahn	Valero Corpus Christi	Vice President
Jason Hensley	Valero Corpus Christi	Maintenance Director
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Meagan Merguard	Valero Corpus Christi	Environmental Supervisor
Aimee Almaraz	Valero Corpus Christi	Environmental Manager
Alan De La Rosa	Valero Corpus Christi	Control Systems Manager
Lee Green	Valero Corpus Christi	Reliability Manager
Joey Castellaro	Valero Corpus Christi	Process Manager
Victor Hoover	Valero Corpus Christi	PSM Manager
EPA Lead Inspector	<i>Howard Cole</i>	07/06/2023
Signature/Date	Howard Cole	Date
Supervisor		
Signature/Date	Samuel Tates	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

United States Environmental Protection Agency (EPA) Region 6 inspectors Kayla Buchanan, Aimee Boss, and Howard Cole arrived at the Valero Corpus Christi (“Valero Corpus Christi”) at 9:00 AM on Monday, January 30, 2023, for an announced inspection. We met with Victor Hoover (PSM Manager), and other Valero Corpus Christi employees for an opening meeting. I presented my credentials and informed Valero Corpus Christi personnel that this was an EPA inspection to determine compliance with the federal Chemical Accident Prevention Program. The scope of the inspection was a partial compliance evaluation (PCE), which included an evaluation of the facility’s compliance with the Clean Air Act (CAA) Section 112(r) and the Chemical Accident Prevention Provisions in 40 C.F.R. Part 68 and the General Duty Clause. Valero Corpus Christi’s Risk Management Plan (RMP) is listed as a Program Level Three (3), Title V facility. This is the non-union facility.

FACILITY DESCRIPTION

Valero Corpus Christi Refining is a full conversion fuels refinery with some petrochemical and lubricants production. The refinery has crude and vacuum distillation units, delayed coking units, gas oil treatment, ultra-low sulfur diesel, hydrocracker unit, hydrodesulfurization units, HDS reforming units, hydrobon, sulfur recovery units, solvent extraction/aromatics recovery units, and light-ends fractionation units. The refinery also has blending facilities for gasoline, caustic treating units and various utility systems. The East Plant facility is capable of processing heavy, high-sulfur crude oil into light products, including conventional gasoline, diesel, jet fuel, petrochemicals, propane, butane, and light naphthas. In addition, the refinery produces multiple grades of asphalt and petroleum coke. Ultra-low sulfur diesel fuel and some petrochemical feedstocks are also produced. The regulated substances are contained within the tank farm and process units. The facility operates 24 hours a day, 7 days a week and employs approximately 320 full time employees.

Section II – OBSERVATIONS

Subpart A – General

40 C.F.R. § 68.10 Applicability – Valero Corpus Christi is the owner/operator of a stationary source that has more than a threshold quantity of regulated flammable substances (methane, ethane, ethylene, propane, propylene, butene, 2-butene-cis, 2-butene-trans, 2-methyl propene, isobutane, butane, isopentane, pentane, hydrogen, 2,2-Dimethylpropane, and flammable mixtures) in a covered process, as listed in 40 C.F.R. § 68.130; therefore, is subject to the Chemical Accident Prevention Provisions. Valero Corpus Christi is classified under the North American Industrial Classification System (NAICS) code 32411 (Petroleum Refineries). The facility is also subject to the Occupational Safety and Health Administration (OSHA) process safety management (PSM) standard, 29 C.F.R. § 1910.119. The facility does not handle any listed regulated toxic substances at or above the threshold quantity.

40 C.F.R. § 68.10 Program Eligibility – Valero Corpus Christi re-submitted an RMP registration (5-year update) under 40 C.F.R. § 68.190 on February 5, 2018, and then again on January 18, 2023. The next registration re-submittal is due on January 18, 2028, unless an update or correction is required by 40 C.F.R. § 68.190 or 40 C.F.R. § 68.195 prior to the five-year renewal date.

40 C.F.R. § 68.12 General requirements – The re-submitted RMP plan requires the facility to: develop and implement a management system; conduct a hazard assessment; implement the prevention requirements of 40 C.F.R. § 68.65 - § 68.87; develop and implement an emergency response program; and include the data elements from 40 C.F.R. § 68.175 in their RMP.

40 C.F.R. § 68.15 Management – Valero Corpus Christi has developed a management system to oversee the implementation of the risk management program elements and provided an organizational chart that documents the lines of authority.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability –The facility is required to prepare an off-site consequence analysis and complete the five-year accident history. Valero Corpus Christi has ten (10) Program Level 3 processes subject to this subpart.

40 C.F.R. § 68.22 Off-site Consequence Analysis Parameters – Valero Corpus Christi uses RMP*Comp™ as the technique for modeling the release scenarios. For both the worst-case and alternative case scenarios involving flammables, the facility used the endpoints provided in Appendix A of 40 C.F.R. Part 68, appropriate wind speeds and stability classes, ambient temperatures and humidity values, values for height of the release, and surface roughness values for the release scenario analyses.

40 C.F.R. § 68.25 Worse-case Release Scenario Analysis – Valero Corpus Christi analyzed one worst-case release scenario for propane, estimated to create the greatest distance to endpoint, resulting from an accidental release of a regulated flammable substance from a covered process under worst-case conditions.

40 C.F.R. § 68.28 Alternative Release Scenario Analysis – Valero Corpus Christi identified and analyzed at least one alternative release (propane) scenario to represent all flammable substances held in covered processes.

40 C.F.R. § 68.30 Defining Offsite Impacts - Population – Valero Corpus Christi used the MARPLOT mapping program to define the affected off-site population, based on a circle with the point of release at the center. The facility used the most recent Census data, estimated to two significant digits, in the OCA documentation.

40 C.F.R. § 68.33 Defining Offsite Impacts - Environment – Valero Corpus Christi identified environmental receptors in the OCA, as determined by the distance to endpoint using methods such as local U.S. Geological Survey (U.S.G.S.) maps or any other data source containing U.S.G.S. data to identify environmental receptors.

40 C.F.R. § 68.36 Review and Update – Valero Corpus Christi reviewed and updated the off-site consequence analyses at least once every five years.

40 C.F.R. § 68.39 Documentation – For the worst-case and alternative release scenarios, a description of the vessel or pipeline and substance selected, assumptions and parameters used, the rationale for

selection, the anticipated effect of the administrative controls and passive mitigation on the release quantity, and the release rate was performed and provided.

40 C.F.R. § 68.42 Five-year accident history – Valero Corpus Christi did not have any reportable accidents listed in their five-year accident history in their February 5, 2018, RMP, and one accident reported in their January 18, 2023, RMP submittal at the time of the inspection.

Subpart D – Program 3 Prevention Program

40 C.F.R. § 68.65 Process Safety Information – Valero Corpus Christi compiled written process safety information, which includes information pertaining to the hazards of the regulated substances used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process. I reviewed the Safety Data Sheets for RMP regulated process chemicals which contain the following data for the hazards of each substance: toxicity information, permissible exposure limits, physical data, reactivity data, corrosivity data, thermal and chemical stability data, and the hazardous effects of inadvertent mixing of materials that could foreseeably occur. I reviewed documentation concerning the technology of the covered processes, which included block flow diagrams, process chemistry, maximum intended inventory, safe upper and lower limits for such items as temperatures, pressures, flows, or compositions and an evaluation of the consequences of deviation.

EPA reviewed documentation pertaining to the equipment of each process, including, piping and instrumentation diagrams (P&IDs), electrical classification, process safety valve (PSV) relief system design, design basis, design codes and standards employed, and other safety systems.

40 C.F.R. § 68.65(d)(2) requires the owner or operator to document that equipment complies with recognized and generally accepted good engineering practices. Repair recommendations for pressure vessels 129T3003 and 129E3004 were not completed by the required due date and lacked a documented and approved change of date which is not permitted by API 510. The recommendation was approved 6/29/2016 and was due to be conducted during the following scheduled outage. Valero Corpus Christi did not provide documentation indicating that a deferral was done. The documentation that was provided indicated that these repairs are “active” rather than “closed.” These repair recommendations are overdue for completion **[AOC 1 – § 68.65(d)(2)]**

40 C.F.R. § 68.67 Process hazard analysis (PHA) – Valero Corpus Christi provided a PHA procedure for review (Process Hazard Analysis Procedure HSE-PSM-0005). Valero Corpus Christi performed initial PHAs that identified, evaluated, and controlled the hazards involved in the processes. The facility completes each PHA based on the five-year cycle from the previous PHA, as they are divided among the covered process units. All PHAs reviewed were completed within the five-year cycle. The PHAs performed use the Hazard and Operability Study (HAZOP) methodology to identify hazards. The following PHAs were reviewed: Gas Oil Treater HDS (Complex 7-Unit 144) conducted in April 2013 and 2018, Crude Unit (Complex 7-Unit 108) conducted in February 2014 and 2019, Hydrocracker Unit (Complex 8-Unit-129) conducted in December 2017 and November 2022.

Valero Corpus Christi addressed the PHA facility siting requirement of 68.67(c)(5) by providing facility siting checklists which were included in the PHA, and facility siting studies conducted in 2015 and 2022 for Complex 7, 8, and 8Q. In the 2015 study there is a recommendation to develop a **formal** written

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safe-haven procedure to include example requirements to be contained in the procedure. No formal written safe-haven procedure was provided.

For Units 108, 129, and 144 the 2022 facility siting study Section 9.2 Toxics states that:
“Permanent occupied buildings identified as either an Emergency Operation Shelter or temporary Shelter-in-Place, pending further instruction by the incident management organization should be designated in the Emergency Action Plan.”

Valero Corpus Christi failed to designate buildings in the Emergency Action Plan, such as but not limited, to the Administration Building, Training center, Pump house, and United Rentals Office, Gunderland Marine Building, Lab, Maintenance Building, Wastewater Building, Truck Loading as either Emergency Operation Shelter or temporary Shelter-in-Place.

For Units 108, 129, and 144 the 2022 facility siting study Section 9.2 Toxics states that:
“Buildings under consideration for EOS or SIP should have a toxic evaluation performed.”

Valero Corpus Christi failed to document the actions nor did the facility document in a schedule when it would conduct a toxics evaluation for the Administration Building or Training Center.

Valero Corpus Christi failed to document the actions and schedule to assure employees, contractors, and visitors are trained to respond in the event of a toxic release.

Valero Corpus Christi failed to promptly address the PHA team's findings and recommendations and failed to assure that recommendations are resolved in a timely manner and as soon as possible [**AOC 2 – § 68.67(e)**].

40 C.F.R. § 68.69 Operating Procedures – Valero Corpus Christi developed and implemented written operating procedures that provide clear instructions for safely conducting most activities involved in each covered process, consistent with the process safety information, and which address the required elements. The procedures consisted of steps for each operating phase: initial startup; normal operations; temporary operations; emergency shutdown, including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner; emergency operations; normal shutdown; and, startup following a turnaround, or after an emergency shutdown.

68.69(d) requires the owner or operator to develop and implement safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a stationary source by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

The facility failed to develop and implement safe work practices to provide for the control of hazards during operations such as opening process equipment and lockout/tagout. Valero Corpus Christi requires that all employees, contractors, and visitors wear portable H₂S monitors when entering the various process units. The Valero Corpus Christi Hydrogen Sulfide (H₂S) procedure (Section 7.4.4) applies to employees and contractors who perform line-opening of equipment that may involve exposure to H₂S. This procedure requires the employees/contractors working in process areas to

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remove their H₂S monitors once they don supplied-air respirators. This is not safe a work practice and is contrary to the basic principles of exposure monitoring. The OSHA standard 1910.134(d)(1)(iii) requires the employer to identify and evaluate the respiratory hazard(s) in the workplace; **this evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s)** and an identification of the contaminant's chemical state and physical form **[AOC 3 - § 68.69(d)]**.

The purpose of the H₂S portable device (or area fixed or portable monitors) is to monitor the concentration of H₂S in the work area and to determine the concentration of H₂S in the employees' breathing zone. It is most necessary when employees are working in H₂S environments which exceed the OSHA permissible exposure limit or National Institute of Occupational Safety and Health (NIOSH) and American Conference of Governmental Industrial Hygienists (ACGIH) exposure limits, or in H₂S environments which equal or exceed the H₂S concentrations which are immediately dangerous to life and health level (IDLH). The use of respiratory protection such as supplied-air respirators does not eliminate the need for exposure monitoring. The effectiveness of respiratory protection is dependent on several factors, which may fail, and expose the wearer to a life-threatening H₂S environment. Most importantly olfactory fatigue begins at approximately 100 ppm at which point the employee can no longer smell H₂S, which could lead to additional exposure resulting in death. By removing the H₂S monitor, an employee cannot ascertain the threat of H₂S exposure in the event respiratory protection failed.

40 C.F.R. § 68.71 Training – Valero Corpus Christi provided information regarding their operator training program. The site uses a variety of training methods which includes instructor-led classroom sessions, on-the-job training with experienced personnel, and finally job specific trainings (JSTs). The EPA team requested training records for **a total of 12 operators in in the GOT, C/V and Cracker Units**. The facility provides new operators initial training which includes an overview of the process and in the operating procedures as specified in § 68.69. The training includes specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks. Refresher training was provided at least every three years to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process.

40 C.F.R. § 68.73 Mechanical Integrity

During this inspection EPA requested for review the inspection and test records (internal inspection, external inspection, inspection and test plan, and ultrasonic testing (non-destructive examination) for 14 pressure vessels (heat exchangers, towers, reactors, knockout-drum, etc.) and 19 piping circuits in Units 108, 129, and 144. EPA also requested a list of current-active pipe and pressure vessel leak repair devices (clamp, engineered clamp, wrap, or other) in place in the East Plant and a list of leak repair devices that have been removed in 2021 and 2022.

We also requested a list of atmospheric pressure and thermal relief valves that would release hydrocarbons in the East plant. **Valero Corpus Christi stated to the inspector that they have none.**

The following mechanical integrity Areas of Concern were identified:

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An Area of Concern was identified for failure to implement a maintenance procedure Hydrogen Sulfide (H₂S) Safety Standard 700.01 during the installation and removal of flange blinds **[AOC 4 - § 68.73(b)]**.

The definitions of Elevated H₂S hazards and High H₂S hazards do not provide for safe work practices. The exposure levels between 10 ppm and 99 ppm are the basis for many of the requirements but do not reflect the potential hazards of the process. This range of H₂S concentrations exceed the OSHA, NIOSH, and ACGIH limits and at the IDLH concentration (100 ppm). For example, Section 7.4.1 requires an informal JSA be performed a for Elevated H₂S hazards and Section 8.1 requires a formal JSA.

EPA identified that Valero Corpus Christi failed to conduct internal, external, or ultrasonic testing for pressure vessels 129T3005 and failed to conduct corrosion under insulation (CUI) inspections **[AOC 5 - 40 CFR § 68.73(d)(1)]**.

EPA identified that Valero Corpus Christi failed to perform internal, external, and ultrasonic inspection on pressure vessels, relief valves and piping at the intervals required by API 510 and 570 **[AOC 6- 40 CFR § 68.73(d)(2)]**.

EPA identified that Valero Corpus Christi failed to identify the date of the inspection or test, the name of the person who performed the inspection or test, a description of the inspection or test performed, and the results of the inspection or test for the isometric drawing and ultrasonic testing performed **[AOC 7- 40 CFR § 68.73(d)(4)]**.

EPA identified that Valero Corpus Christi failed to correct deficiencies in their relief system and pressure relief valves. In June-August 2013 Valero Corpus Christi contracted Smith & Burgess to conduct a Relief Systems Documentation Study in the Crude Unit (108), Hydrocracker Unit (129), and Gas Oil Unit (144). The report includes the scope of work, codes and standards employed, the findings/concerns, and the proposed mitigations/resolutions for the findings identified, and the relief system documentation for all equipment and relief devices in this Unit. Valero Corpus Christi has been making changes in their pressure relief valves and relief system since 2013. However, as of October 2022, one-hundred-thirty-one (131) of the pressure relief valves/system findings which required field modifications or completion verification were not completed, which included: backpressure issues, modification of inlet and outlet piping, switching to pilot operated relief devices, installation of SIS devices and alarms, set pressures which exceed maximum allowable working pressure (MAWP), no relief present in the event of an external fire, overfilling, or hydraulic expansion, missing car seal open (CSO) due to the presence of block valve, discharge pressure exceeds MAWP. The following pressure relief valves have or had a set pressure which exceeded the MAWP **[AOC 8-§ 68.73(e)]**

- 44PSV005
- 129 RV015, 129RV118, 129RV135, 129RV256, 129RV257,
- 129RV301, 129RV1132, 129RV1507
- 108PSV57, 108PSV913
- 108PSV48 (Set temperature exceed MAWT)

40 C.F.R. § 68.75 Management of Change (MOC) – Valero Corpus Christi provided procedures for how the facility manages changes (except for “replacements in kind”) to process chemicals, technology, equipment, and procedures; and changes to stationary sources that affect a covered process. The facility

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provided the Management of Change and Pre-Start-Up Safety Review Procedure with supporting appendices.

The RMP standard requires implementation of the management of change process when there are changes in process safety information. When a pressure vessel is re-rated, a change in the process safety information, P&ID, and operating procedure is needed. In the process of addressing issues in the pressure relief system/pressure relief valves Valero Corpus Christi performed a re-rate of pressure vessels but did not implement its written MOC procedure [AOC 9: 40 CFR § 68.75(a)].

The RMP standard requires that employees involved in operating a process whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process. During the 2021 compliance audit, the auditors identified over 30 instances where training related to the MOC was not performed before the start of the process and this finding took into consideration employee leave schedules.

At the time of this inspection approximately fifteen (15) operations employees involved in operating a process had not completed the necessary MOC training prior to start-up [AOC 10-§ 68.75(c)]

40 C.F.R. § 68.77 Pre-startup Safety Review – Valero Corpus Christi provided a PSSR walk through form. The facility provided pre-startup safety review records for the associated MOCs, which were also reviewed. The PSSRs documented that, when the facility installed a new stationary source, or significantly modified an existing source, a review was conducted prior to the introduction of the newly regulated substances, including the appropriate communication elements and training.

40 C.F.R. § 68.79 Compliance Audits –

Valero Corpus Christi certified that they evaluated compliance with the provisions of this subpart at least every three years to verify that procedures and practices developed under this subpart are adequate and are being followed. The compliance audits were conducted by at least one person knowledgeable in the process. The two most recent audit reports conducted on May 21-May 25, 2018, and February 22-March 26, 2021, were reviewed.

The facility did not promptly determine and document an appropriate response to each of the findings of the compliance audits or document that deficiencies had been corrected. Valero Corpus Christi procedures allow for compliance audits findings to be closed if a schedule has been completed for correction of the finding; although the schedule for completion of the specific finding (equipment, procedure process safety information) may allow for the finding to go uncorrected for years (e.g., 5-10 years).

Valero Corpus Christi conducted compliance audits in 2012, 2015 and 2018. The 2018 compliance audit states the following:

“At the time of the 2018 audit, two findings from the 2015 audit and (related to process operating limits and PHAs) and two findings from the 2012 audit (related to piping corrosion under insulation/ underground inspections and PHAs) continued to be worked on in accordance with previously approved corrective action plans. However, there is no information documenting as to whether in 2018 these findings have been corrected and when and how they have been corrected. They are no longer being tracked in the 2018 audit.

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Deep Well Pump Cans: Approximately 10% of the deep well pump cans have been inspected. According to 2018 compliance audit the schedule for completion was not finalized until 11/18/2021. The schedule for completion extends for 8 years in 2018.

In the 2021 compliance audit indicates there are no repeat findings yet there are repeat findings: “two findings from previous process safety audits, related to CUI and deep well vertical can inspections continue to be worked according to approved corrective action plan.

In the 2021 Compliance Audit Item 2 review API 570 create IWRs was apparently completed on 7/14 2022 addressing inspection, testing and repair recommendations of process equipment that date back to 2017. However, a schedule is a not corrective action for inspection, testing and repair recommendations of process equipment.

Failure to promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected [AOC 11-§ 68.79(d)].

40 C.F.R. § 68.81 Incident Investigation – Valero Corpus Christi provided an incident investigation procedure (PSM-SOP-0002). The facility has investigated incidents which resulted in, or could reasonably have resulted in, a catastrophic release. I reviewed incidents and each of these incidents had investigations initiated no later than 48 hours following the incident. For each investigation reviewed, the investigation team consisted of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience, who thoroughly investigated and analyzed each incident.

40 C.F.R. § 68.83 Employee Participation – Valero Corpus Christi has developed a written plan of action regarding the implementation of the employee participation required by this section.

40 C.F.R. § 68.85 Hot Work Permit – Valero Corpus Christi has an internal procedure that requires the facility to issue general work permits for hot work operations conducted on or near a covered process. Hot work permits were reviewed, and no deficiencies were identified.

40 C.F.R. § 68.87 Contractors – Valero Corpus Christi provide a Contractor Host and Contractor Safety procedure (HSE-FM-0038). The facility uses *ISNetWorld* and GAPS to obtain and evaluate information regarding an owner or operator’s safety performance and programs when selecting a contractor.

Subpart E – Emergency Response

40 C.F.R. § 68.90 Applicability – Valero Corpus Christi is designated as a responding stationary source and is subject to the requirements of 68.93 to 68.95.

40 C.F.R. § 68.93 Emergency Response Coordination Activities – Valero Corpus Christi coordinated response needs with the local emergency planning commissions (LEPCs) and other response organizations to determine how the covered processes at the facility are addressed in the community’s emergency response plan. The Corpus Christi Fire Department receives Tier II reports through the Local Emergency Planning Committee (LEPC) in Nueces County.

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40 C.F.R. § 68.95 Emergency Response Program – Valero Corpus Christi provided the Emergency Action Plan in which EPA viewed and requested sections. For operators joining the emergency response team, the new recruit class will spend one week conducting onsite training which includes HAZWOPER, equipment, and emergency response. The members will then attend Texas A&M university two days for initial training then return with the full team for fire and hazmat response training. Rescue and emergency medical services training is separate for selected employees.

40 C.F.R. § 68.96 Emergency Response Exercises – Valero Corpus Christi provided documentation that the facility has conducted emergency response drills in coordination with local emergency planning and response organizations. These drills included an emergency response accountability drill, annual evacuation, and marine spill drills.

Subpart G – Risk Management Plan

40 C.F.R. § 68.190 Updates –Valero Corpus Christi re-submitted an RMP registration (5-year update) under 40 C.F.R. § 68.190 on February 5, 2018, and then again on January 18, 2023.

40 C.F.R. § 68.195 Required corrections – Valero Corpus Christi’s next registration re-submittal is due on January 18, 2028, unless an update or correction is required by 40 C.F.R. § 68.190 or 40 C.F.R. § 68.195 prior to the five-year renewal date.

Section III – AREAS OF CONCERN

On the last day of the inspection, February 3, 2023, I conducted a closing conference, during which I presented a few of the Areas of Concern identified (68.67(e), 68.69(d), 68.73(b)) during the inspection. I indicated that there may be additional Areas of Concern once all the documents requested were submitted and then reviewed.

AOC 1– 40 C.F.R. §68.65(d)(2) Process Safety Information: The owner or operator shall document that equipment complies with recognized and generally accepted good engineering practices.

The owner or operator did not document that equipment complies with recognized and generally accepted good engineering practices such as API 510 Section 6.8 Deferral of Inspection Repair Recommendation Due Dates. This standard states that inspection repair recommendations that cannot be completed by their due date can be deferred for a specific period, if appropriate, by a documented change in date of required completion. Inspection recommendations that have not been completed by the required due date without a documented and approved change of date are not permitted by this code and are considered overdue for completion.

Valero Corpus Christi failed to document completion of a June 2016 repair recommendation for pressure vessel **129T3003** addressing the removal of trays 19-36 and perform 100% WFMT on the welds from the top head to the transition section.

Valero Corpus Christi failed to document a due date for the completion for the repair recommendation for pressure vessel **129E3004**, Engineering Work Request (CCEWR151578/CCEWR161578) to replace and redesign the channel head due to extensive oversizing of the threaded bolt holes.

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AOC 2 – 40 C.F.R. §68.67(e) Process Hazard Analysis: The owner or operator shall establish a system to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

- i. Valero Corpus Christi failed to assure that the recommendation, “Develop a Formal Written Safe Haven Program and Procedures” contained in the December 2015 Facility Siting Study Complex 7, 8, 8Q) was resolved in a timely manner. Valero Corpus Christi did not document what actions were to be taken, develop a written schedule of when these actions are to be taken, complete the actions as soon as possible, or document that the recommendations were ever resolved.

(Complex 8Q-10.1 CC-FS-2015-01)

(Complex 8-10.2 CC-FS-2015-02)

(Complex 7-10.2 CC-EP- FS-2015-02)

- ii. Valero Corpus Christi failed to designate buildings, such as but not limited to, the Administration Building, Training center, Pumphouse, and United Rentals Office, as either Emergency Operation Shelter or temporary Shelter-in-Place.
- iii.
 - a. Valero Corpus Christi failed to document what actions are to be taken; develop a written schedule of when these actions are to be completed; and complete actions as soon as possible to assure that buildings designated for Shelter-in Place, such as but not limited to the Administration Building and Training Center have a toxics evaluation performed as required by Section 9.2 Toxics of the 2022 Facility Siting Study.
 - b. Valero Corpus Christi failed to document what actions are to be taken; develop a written schedule of when these actions are to be completed; and complete actions as soon as possible to assure the training of employees, contractors, and visitors, on the actions that may need to be taken in the event of a toxic release and actions expected to be taken by people that may in emergency operations shelters at the time of a toxic release.
- iv. Valero Corpus Christi failed to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and complete the following actions as soon as possible:

Start Date: 11/11/2022 Due date: 5/12/2023

Action Item 458331/4133375 Admin building as EOS in EAP

Action Item 458331/4133394 Investigate lack of building pressurization

Action Item: 4133374 Remove legacy Signs and Post Updated Evacuation Maps

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Action Item 458331/4133379/4133393 Develop PM for 5 BRM blast door closures latches located in the East Plant, EOS/SIP door seals

Action Items 458331/4133397/4133401/4133403 Execute work order to seal wall penetrations for the C8 Sulfolane Shelter, C8Q Reformer Shelter, C8Q HCU Shelter

Start Date: 11/11/2022 Due date: 5/10/2024

Action Item 458331/4133407 Repair oxygen detection sensors

AOC 3 – 40 C.F.R §68.69(d) Operating Procedures

(d) The owner or operator shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a stationary source by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

The facility failed to develop and implement safe work practices to provide for the control of hazards during operations such as opening process equipment and lockout/tagout. Valero Corpus Christi requires that all employees, contractors, and visitors wear portable H2S monitors when entering the various units. The Valero Corpus Christi H2S procedure (Section 7.4.4) includes an **unsafe work practice** for employees and contractors who perform line-opening of equipment that may involve exposure to H2S which requires the employees/contractors to **remove their H2S monitors** once they don their supplied-air respirator.

AOC 4– 40 C.F.R §68.73(b) Mechanical Integrity: Written procedures. The owner or operator shall establish and implement written procedures to maintain the on-going integrity of process equipment.

Valero Corpus Christi failed to implement Safety Policy and Procedure – Hydrogen Sulfide (H2S) Safety Standard 700.01, Revised July 2019, during the installation of blinds on 144E001 and 144E002 and to remove blind flanges and install block valves on 144E001 and 144E002 1' vent and drain lines for chemical cleaning.

- a. Failure to place danger signs where potential exposure may occur on equipment that is routinely opened or serviced in accordance with Section 5.3 Danger Signs.
- b. Failure to prepare an execution plan for installing fixed H2S monitors in all H2S High Hazard Areas as per SHELL DEP 32.30.20.11 with selection based upon a documented hazard assessment.

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- c. Failure to provide continuous monitoring for H2S inside the exclusion zone using a direct reading instrument. Monitoring equipment shall also be utilized to ensure that the area outside the barricade does not exceed 10 ppm in accordance with Section 7.4.5.3.
- d. Failure to ensure that during the initial line break, downwind work that could be impacted, shall be stopped and the employees evacuated to prevent possible exposure in accordance with Section 7.4.5.4.

AOC 5– 40 C.F.R. §68.73 (d)(1) Mechanical Integrity: Inspection and testing.**Inspections and tests shall be performed on process equipment.**

- a. Failure to conduct internal, external, or ultrasonic testing for pressure vessels 129T3005.
- b. Failure to perform corrosion under insulation (CUI) inspections for the following pressure vessels: 129T3003, 144V008, 108V006, 108T005, and 108T001.
- c. Failure to perform corrosion under insulation (CUI) inspections for the following piping circuits:

144-05910	108-06730	108-06741	108-0619
108 06832	108-06927	108-06928	108-06938
108-06940DL	108-08566DL	129-01929	129-01937
129-01983	129-01994	129-0200	129-02007
129-02071	144-5930		

AOC 6– 40 C.F.R. §68.73(d)(2) Mechanical Integrity: Inspection and testing.**Inspection and testing procedures shall follow recognized and generally accepted good engineering practices.**

- a. Inspections of pressure vessels 144V004, 144V008, 129T3003 did not follow recognized and generally accepted good engineering practices such as API 510 Section 6.5.1 Internal, On-stream, and Thickness Measurement Inspections/Inspection Interval which requires that the period between internal inspection shall not exceed ten years. There is insufficient data to support a Risk Based Inspection analysis justification extending the internal inspection for these pressure vessels.
 - i. For pressure vessel 144V004 the last inspection was conducted 2/27/2012 and the next inspection was not performed by the due date of 2/27/2022.
 - ii. For pressure vessel 144V008 the last inspection was conducted on 2/27/2012 and the next inspection was not performed by the due date of 2/27/2022.
 - iii. For pressure vessel 129T3003 the last inspection was conducted on 10/31/2011 and the next inspection was not performed by the due date of 10/31/2021.

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- iv. Inspections of pressure vessels 129T3003, 144V004 and 144V008 did not follow recognized and generally accepted good engineering practices such as API 510 Sections 6.3 which requires that when a Risk Based Inspection interval for the internal or on-stream inspection exceeds the 10-year limit, the RBI assessment shall be reviewed and approved by the engineer and inspector at intervals not to exceed 10 years and the RBI assessments should be in compliance with the recommended practices of API 580.
- b. Inspections of pressure vessels 108T002, 144V008, 129T3003 did not follow recognized and generally accepted good engineering practices such as API 510 Section 6.5.1 Internal, On-stream, and Thickness Measurement Inspections/Inspection Interval which requires that the period between thickness measurement inspections shall not exceed ten years. There is insufficient data to support a Risk Based Inspection analysis justification extending thickness measurement inspections for these pressure vessels.
 - i. Failure to conduct thickness measurements on 108T002 Atmospheric Gas Oil stripper at 10-year intervals. There is no indication that a non-destructive examination (NDE) was ever performed, and no results of such testing have been provided.

Failure to conduct thickness measurements on the nozzles of 108T002 at 10-year intervals.
 - ii. Failure to conduct thickness measurements on 129T3003 Debutanizer at 10-year intervals. It appears a NDE was performed in 2010 and 2011; however, no results of such testing have been provided. The next inspection would be required in 2021.

Failure to conduct thickness measurements on the nozzles of 129T3003 at 10-year intervals.
 - iii. Failure to conduct thickness measurements on 129E3004 Debutanizer Bottoms Reactor Effluent Exchanger at 10-year intervals. There is no indication that a non-destructive examination (NDE) was ever performed, and no results of such testing have been provided.
 - iv. Failure to conduct thickness measurements on the nozzles of pressure vessel 108V006 and 108T005.
- c. Inspections of new pressure vessels 129V3004 and 144E013 installed in 2016 and 180V-002 installed in 2019 did not follow recognized and generally accepted good engineering practices such as API 510 6.2 Inspection During Installation and Service Changes/Vessel Installations, which requires that initial thickness readings at designated CMLs be obtained.

For pressure vessel 129V3004, 144E013, and 180V-002 initial thickness readings at designated CMLs were not collected when a new pressure vessel was installed.
- d. Inspections of pressure vessels did not follow recognized and generally accepted good engineering practices such as API 510 Sections 5.5.5, 5.6.2.1, 5.6.2.2, et al. The owner failed to perform

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ultrasonic testing and data analysis necessary to calculate short and long-term corrosion rates, remaining-life, and next inspection due date for the following pressure vessels.

144V004	144V008	129T3003	129RX302A	129E3004	108V006
108V003	108T006	108T005	108T002	108T001	

- e. Inspections of pressure relief valves did not follow recognized and generally accepted good engineering practices such as but not limited to API 510 Sections 6.7.1. The owner's proposed interval for the inspection and testing deferral for pressure relief valves 144RV027, 141RV1225, and 141RV1245 exceeded 6-months. These pressure relief valve deferrals were extended to 1/31/24 which is beyond their 6-month due date.

AOC 7– 40 C.F.R §68.73(d)(4) Mechanical Integrity: Inspection and Testing

The owner or operator shall document each inspection and test that has been performed on process equipment. The documentation shall identify the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection or test.

- a. The isometric drawings provided (last revision) to document the performance of ultrasonic testing did not identify the date of the inspection or test, the name of the person who performed the inspection or test, a description of the inspection or test performed, and the results of the inspection or test for the following pressure vessels:

108T001-May 7, 2009	108T002-July 1, 2003	108T005-March 31, 2004
108T006-July 25, 2012	108V003-Nov 10, 2003	108V006-May 6, 2009
129E3004-March 1, 2010	144V004-June 1, 2012	129RX302A-March 2, 2010
129T3003-February 25, 2010	144V008-Dec. 18, 2003	180V-003-1-July 23, 2007
129V3004-July 6, 2005 (ultrasonic testing represents previous vessel)		
144E013-February 9, 2005 (ultrasonic testing represents previous vessel)		

- b. The pressure vessel isometric drawings were not updated to reflect the dates and locations documenting the performance of ultrasonic testing or other non-destructive examinations (NDE). The last revision of the isometric drawing reflects a date:

108T001-May 7, 2009	108T002-July 1, 2003	108T005-March 31, 2004
108T006-July 25, 2012	108V003-Nov 10, 2003	108V006-May 6, 2009
129E3004-March 1, 2010	144V004-June 1, 2012	129RX302A-March 2, 2010
129T3003-February 25, 2010	144V008-Dec. 18, 2003	180V-003-1-July 23, 2007
129V3004-July 6, 2005 (ultrasonic testing represents previous vessel)		
144E013-February 9, 2005 (ultrasonic testing represents previous vessel)		

AOC 8– 40 C.F.R §68.73(e) Mechanical Integrity-Equipment deficiencies

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The owner or operator shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in §68.65) before further use or in a safe and timely manner, when necessary, means are taken to assure safe operation.

1. Valero Corpus Christi did not correct deficiencies in one-hundred-thirty one (131) of the pressure relief valves/system that are outside acceptable limits (as defined by the June-August 2013, Smith & Burgess Relief Systems Documentation Study) in the Crude Unit (108), Hydrocracker Unit (129), and Gas Oil Unit (144) before further use or in a safe and timely manner when necessary, means are taken to assure safe operation.

Valero Corpus Christi summoned a relief study in June-August 2013 for the Crude Unit, 144 Gas oil, and 129 Hydrocracker. As of October 2022, one-hundred-thirty-one (131) PRV required field modification included issues or modifications to: backpressure, modification of inlet and outlet piping, change to pilot operated relief device, installation of SIS device, MAWP exceeded, one relief valve for multiple pieces of equipment, installation of a high level alarm, no relief device is present in the event of an external fire, or overfilling, or hydraulic expansion, missing CSO necessary due to the presence of block valve, discharge pressure exceeds MAWP.

2. Valero Corpus Christi did not correct deficiencies in conditions that are outside acceptable limits (as defined by the June-August 2013, Smith & Burgess Relief Systems Documentation Study) before further use or in a safe and timely manner where the set pressure of a pressure relief valve exceeded the maximum allowable working pressure (MAWP) of the pressure vessel for the following pressure relief valves:

-144PSV005
 -129 RV015, 129RV118, 129RV135, 129RV256, 129RV257,
 129RV301, 129RV1132, 129RV1507
 -108PSV57, 108PSV913
 -108PSV48 (Set temperature exceeds the MAWT)

3. Valero Corpus Christi did not correct deficiencies in equipment that are outside acceptable limits defined by the process safety information in §68.65) before further use or in a safe and timely manner, when necessary, means are taken to assure safe operation.
 - a. The C7 Light Oil Shelter is deficient in that they do not maintain positive pressure necessary to prevent the infiltration of toxic and flammable chemicals during a release.
 - b. The O2 in the following buildings need to be repaired or replaced: C7 O2/Light Oil Shelter.

AOC 9 – 40 C.F.R §68.75(a) Management of Change: The owner or operator shall establish and implement written procedures to manage changes (except for “replacements in kind”) to process chemicals, technology, equipment, and procedures; and changes to stationary sources that affect a covered process.

Valero Corpus Christi performed a re-rate of pressure vessels 108-E009 (shell), 108T007, and 108-E031(tube) in November 2019 and did not implement a written management of change.

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AOC 10 – 40 C.F.R §68.75 (c) Management of Change: Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process.

The owner failed to ensure that employees involved in operating a process whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process. At the time of the inspection approximately fifteen (15) operations employees involved in operating a process had not completed the necessary MOC training for 30+ days and forty-four (44) had not completed the necessary MOC training for 15-30 days after the start-up of the process or affected part of the process.

AOC 11 - 40 C.F.R §68.79(d) Compliance Audit

(d) The owner or operator shall promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.

Valero Corpus Christi failed to properly document the close out of the findings from the 2018 compliance audit. A 2018 compliance audit conducted between May 21-May 25, 2018, indicated that indicated that (2) findings from the 2012 compliance audit related to piping corrosion under insulation and underground inspections continue to be worked according to approved correction action plans. At the time of the 2021 compliance audit conducted between February 22-March 26, 2021 (2) findings from previous safety audits related to piping corrosion under insulation and underground inspections/deep well can inspections continue to be worked according to approved correction action plans.

The owner did not promptly determine and document an appropriate response to the findings related to piping corrosion under insulation and deep well vertical can inspections from previous compliance audit, and document that the deficiencies have been corrected.

Valero Corpus Christi did not document that previous compliance audit findings identified in 2012 were promptly corrected. A 2021 compliance audit conducted indicated that all the findings from the 2018 compliance audit were closed. Setting a schedule for completion of the compliance audit findings does not document that the deficiencies are promptly corrected.

Valero Corpus Christi failed to promptly determine and document an appropriate response to finding #2 of the compliance audit, and document that deficiencies have been corrected. In the 2021 Compliance Audit Finding #2- API 570 recommendations from inspection reports were not tracked or documented as reviewed or corrected. A review of inspection reports was completed in July 2022. However, a review and schedule are not corrective actions for inspection, testing and repair recommendations of process equipment.

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Section IV – FOLLOW UP

Information was received by EPA between February 3-February 15, 2023, after exiting the Facility on February 3, 2023: Confidential Business Information and additional supporting data related to the Areas of Concern documented in this report.

Section V – LIST OF APPENDICES

There are no photos, videos, or other appendices in this report.