



**Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT**

Inspection Date(s):	11/14/2022 – 11/17/2022	
Media Program:	Air	
Regulatory Program(s)	Clean Air Act Section 112(r) and 40 Code of Federal Regulations (C.F.R.) Part 68 Chemical Accident Risk Management Plan (RMP)	
Company Name:	Blanchard Refining Company LLC	
Facility Name:	Galveston Bay Refining	
Facility Physical Location:	2401 5 th Avenue South	
(city, state, zip code)	Texas City, Texas 77590	
Mailing address:	539 South Main St.	
(city, state, zip code)	Findlay, Ohio	
County/Parish:	Galveston	
Facility Phone Number	409-945-1762	
Facility Contact:	Kevin Bogard	Vice President, GBR
	KBogard@marathonpetroleum.com	
FRS Number:	110059763536	
Identification/Permit Number:	O-01541	
Media Identifier Number:	-----	
NAICS:	32411	
SIC:	N/A	
Personnel participating in inspection:		
Sherronda Phelps	US EPA	Air Inspector
David Leaver	Blanchard Refining	General Manager
Honor Sheard	Blanchard Refining	HESS Manager
EPA Lead Inspector Signature/Date	<i>Sherronda Phelps</i>	7/19/2023
	Sherronda Phelps	Date
Supervisor Signature/Date		
	Samuel Tates	Date

**US EPA REGION 6
CLEAN AIR ACT SECTION 112(r)
INSPECTION REPORT**

Stationary Source	Blanchard Refining Company LLC – Galveston Bay Ref
Date of Inspection	14 November – 17 November, 2022; Virtual Closing 22 November 2022
USEPA Contact	Sherronda Phelps, U.S. EPA Region 6
Description of Activities	Inspection included the following activities: • Opening conference with facility representatives • Document review • Field verification • Personnel interviews • Virtual closing meeting with facility representatives
Inspection Participants	U.S. EPA • Sherronda Phelps, Region 6 ERG • Dan Roper • Brook McKeown
Facility Participants	David Leaver, General Manager Honor Sheard, HESS Manager Alecia Cavender, PSM Coordinator Kaleb Brankamp, Senior Counsel Josh Brand, Economics & Planning Supervisor Thomas Garland, Union Representative Lance Williams, Inspection Supervisor Jeff Johnson, Operations Excellence Supervisor Bryan Dinkel, FCC Technologist Johnnie McClelland, Area Team Leader Walter McDonald, FCCU 3/Alky 2 Ops Excellence Specialist Beau Slaughter, CAD & Data Lead Robert Ellison, I&E Engineering Supervisor Ashleigh Wertz, I&E Engineer Ricardo Real, I&E Reliability Supervisor Harry Diaz, Tech Service Greg McGhee, Alky 3 Day Foreman Peter Nguyen, Controls Engineer Jeremy Olguin, Process Control Engineer Mark Garvin, Fire Chief Michael Babin, Safety Supervisor Glenda Alaniz, Advanced Commercial Sourcing Supply Jon Carter, Inspection Coordinator Kirk Douglas, Reliability Specialist Frank Lamanoco, Analyzer Foreman Christian Jones, Reliability Specialist Becky Pierce, PSM

Stationary Source Information

USEPA Facility ID #	1000 0008 2985
Most Recent Submission	Date – 07 October 2021 Anniversary Date – 09 October 2024
Facility Location	2401 5 th Avenue South Texas City, Texas 77590-8349
Lat / Long	29.379167, -094.929167
Number of Employees	1,489
Description of Surrounding Area	The facility is located in an industrial area.

FACILITY/PROCESS DESCRIPTION

The Blanchard Refining Company Galveston Bay Refinery (Blanchard Refinery, GBR, or the Facility), located in Texas City, Texas, was founded in 1909. The Facility covers 2,100 acres and employs 1,286 employees and 2,430 full-time contractors. The Facility processes approximately 502,500 barrels per day of crude oil into various fuel products such as gasoline, jet fuel, and diesel fuel.

The Facility is comprised of East, West and Bay Plants. The Bay Plant is the legacy Marathon facility, and the East and West Plants were purchased by Marathon in 2013. The site was designated as a single facility in 2018. The East Plant consists of initial crude processing, including one Fluid Catalytic Cracking Unit (FCCU) and Hydrofluoric Acid (HF Acid) Alkylation Unit (Alky 3). The West Plant includes finishing and co-generation operations. The Bay Plant has two crude units, as well as sulfur recovery units that treat acid gas generated by both the Bay and East Plants.

The Facility reported 19 RMP covered processes, all of which are designated as Program Level 3 for flammables. The Facility reported three toxic substances as part of its Program Level 3 covered processes, specifically hydrogen sulfide, aqueous ammonia (20% or greater), and hydrofluoric acid. Table 1 below summarizes the covered processes and associated regulated substances (flammable mixture(s) and toxics) reported by the Facility in its most recent RMP submission.

Table 1. RMP Covered Processes for the Refinery

Process ID	Process Name	Program Level	Chemical	Quantity (lb)	Category
1000103670	SHU3	3	Flammable Mixture	600,000	Flammable
1000103671	NDU2	3	Hydrogen Sulfide	4,100	Toxic
		3	Flammable Mixture	1,800,000	Flammable
1000103672	FCCU No. 3	3	Flammable Mixture	4,300,000	Flammable
		3	Hydrogen Sulfide	4,600	Toxic
1000103673	DDU 100/200/300	3	Flammable Mixture	110,000	Flammable
		3	Hydrogen Sulfide	9,300	Toxic
1000103674	OMCC	3	Flammable Mixture	42,000,000	Flammable
1000103675	RHU	3	Flammable Mixture	3,600,000	Flammable
		3	Hydrogen Sulfide	210,000	Toxic
1000103676	AU2	3	Flammable Mixture	150,000	Flammable
1000103677	Pipestill 3B	3	Hydrogen Sulfide	5,200	Toxic
		3	Flammable Mixture	220,000	Flammable

Table 1. RMP Covered Processes for the Refinery

Process ID	Process Name	Program Level	Chemical	Quantity (lb)	Category
1000103678	#5 Topper	3	Flammable Mixture	65,000	Flammable
1000103679	FCCU	3	Flammable Mixture	120,000	Flammable
1000103680	Cokers	3	Hydrogen Sulfide	35,000	Toxic
		3	Flammable Mixture	65,000	Flammable
1000103681	RDU	3	Flammable Mixture	280,000	Flammable
1000103682	Ultraformer Unit No. 4	3	Flammable Mixture	1,500,000	Flammable
		3	Hydrogen Sulfide	7,800	Toxic
1000103683	Ultraformer Unit No. 3	3	Flammable Mixture	1,700,000	Flammable
		3	Hydrogen Sulfide	8,600	Toxic
1000103684	Ultracracker	3	Flammable Mixture	950,000	Flammable
1000103685	NDU	3	Flammable Mixture	710,000	Flammable
		3	Hydrogen Sulfide	4,200	Toxic
1000103686	Power Station 2/OSU	3	Flammable Mixture	11,000	Flammable
		3	Ammonia (20% or greater)	80,000	Toxic
1000103687	Alkylation Unit No. 3	3	Flammable Mixture	4,500,000	Flammable
		3	Hydrogen Fluoride	800,000	Toxic
1000103688	CFHU	3	Flammable Mixture	230,000	Flammable
		3	Hydrogen Sulfide	8,200	Toxic
1000103689	Alkylation Unit No. 2	3	Flammable Mixture	2,200,000	Flammable
1000103690	Merox	3	Flammable Mixture	68,000	Flammable
1000103691	Gas Concentration	3	Flammable Mixture	800,000	Flammable
1000103692	#4 Topper	3	Flammable Mixture	31,000	Flammable
1000103693	Tank Farm	3	Flammable Mixture	21,000,000	Flammable
1000103694	HF Acid Alkylation	3	Flammable Mixture	870,000	Flammable
		3	Hydrogen Fluoride	360,000	Toxic
1000103695	SRU (Bay Plant)	3	Hydrogen Sulfide	21,000	Toxic
1000103696	Propylene	3	Flammable Mixture	220,000	Flammable

Table 1. RMP Covered Processes for the Refinery

Process ID	Process Name	Program Level	Chemical	Quantity (lb)	Category
1000103697	SRU (East Plant)	3	Hydrogen Sulfide	5,900	Toxic
1000103698	Pipestill 3A	3	Flammable Mixture	210,000	Flammable
		3	Hydrogen Sulfide	5,100	Toxic
1000103699	ARU	3	Flammable Mixture	1,300,000	Flammable

PURPOSE OF THE INSPECTION

EPA inspected the Marathon GBR Refinery on November 14 through November 17, 2022 and focused on the Facility's implementation of and compliance with the requirements of CAA § 112(r) Accidental Release Provision and RMP rule. While at the refinery, the inspection team performed a field walkdown of the HF Acid Alkylation Unit (Alky 3), conducted interviews with refinery representatives, and requested documents for review.

In preparation for the inspection, Sherronda Phelps of U.S. EPA Region 6 sent an electronic inspection announcement and associated document request to Kevin Bogard, the GBR Refinery Vice President, on November 4, 2022. The document request included a list of documents that the inspection team intended to review upon their arrival at the Facility on November 14, 2023. EPA's correspondence also requested that the Facility inform employee representatives of the inspection and invite them to participate as required by CAA § 112(r)(6)(L). Ms. Alecia Cavender confirmed receipt of the notice of inspection on behalf of the Blanchard Refinery on November 7, 2022.

OPENING MEEPTING

EPA Inspector Sherronda Phelps initiated the opening meeting at approximately 9:00 AM on Monday, November 14, 2022 by introducing the members of the inspection team and explaining the purpose and scope of the inspection. They discussed the expected logistics of each day, including interviews with personnel, documentation requests, a driving tour of the refinery, and walkthroughs of the Alky 3 Unit. The opening meeting included Facility representatives who also participated throughout the inspection. The Sign-In Sheet records all Facility representatives who were either present at the opening conference or who participated in interviews during the inspection.

INSPECTION OVERVIEW

Blanchard Refinery representatives provided a brief overview of the entire refinery as well as specific details about the operation of the Alky 3 Unit. The Facility coordinated a driving tour of the refinery to help familiarize the inspection team with the physical layout of the Facility and equipment. The inspection team met with Blanchard Refinery personnel to discuss the Facility's implementation of and compliance with the requirements of CAA § 112(r) RMP and discuss the operation and maintenance of various process units.

While on-site, the inspection team requested additional documentation to support the Facility's implementation of CAA § 112(r) RMP requirements at the selected operating units. The requests were provided verbally and via e-mail at the end of each day. The inspection team has since received the documents requested during the inspection.

FIELD OBSERVATIONS

On Monday, November 14, 2022, refinery representatives provided a driving tour of the entire refinery to the EPA inspection team. On Wednesday, November 16, 2022, refinery representatives escorted EPA inspectors to the Alky 3 Unit process area. During the November 16, 2022 walkthrough, EPA inspectors took a total of four photographs of process equipment. These photographs and a photograph log are provided as Attachment 1.

During the site walkthrough in Alky 3, the inspection team spot-checked sections of Piping and Instrumentation Diagrams (P&IDs) B-2265-G-0019-4, B-2265-G-0022-1, and B-2265-G-2042 against the equipment and tagging observed in the field. No concerns were identified based on the P&ID walk-down.

DOCUMENTATION REVIEW

The inspection team reviewed all applicable sections of RMP under 40 CFR Part 68 for Program Level 3 facilities. Each reviewed RMP element is discussed below. Bulleted comments are provided to highlight key observations. The inspection team focused primarily on the HF Acid Alkylation process, or Alky 3, that had an incident in May 2021.

40 CFR § 68.15 - Management System

The inspection team reviewed refinery document RGD-PS-000009-GB, "Risk Management Site Plan," dated October 8, 2018. The document defines the person with overall responsibility for implementation of the RMP program and submittal of the RMP as the Process Safety Management (PSM) Coordinator. The Emergency Preparedness Supervisor serves as the alternate.

Two different documents were provided that assigned responsibility for each program element. The "PSM Management Responsibility/Target Zero Teams" document, dated November 10, 2022 lists the "Element Champion," "Element Team Lead," and "PSM Support" person assigned to each RMP element. The "PSM RMP Management – Organizational Responsibility" document assigns "Process Owners" and "Process Support" individuals for each RMP element and includes an RMP organizational chart. Several inconsistencies were noted between these two documents.

- The "PSM Management Responsibility/Target Zero Teams" document lists Ken Bloch as the PSM Supervisor. The "PSM RMP Management – Organizational Responsibility" document lists Alecia Cavender as the PSM Supervisor. Additionally, Ken Bloch is listed with the title of Senior HES Professional and is also listed as having overall responsibility for RMP implementation. The titles assigned to individuals are not consistent between the two documents, and the person listed with overall responsibility for RMP implementation does not align with the refinery guidance document RGD-PS-000009-GB.

- The responsibility hierarchy between these two documents is inconsistent. One identifies “Element Champion,” “Element Team Lead,” and “PSM Support” persons for each element. The other identifies “Process Owners” and “Process Support” for each element. The “Element Champion” for Training is identified as Bryan Pape who is also listed as the Operations Manager in the “PSM Management Responsibility/Target Zero Teams” document. However, the “Process Owner” for Training in the “PSM RMP Management – Organizational Responsibility” document is Operations Supervisor Matt Bedell.

Therefore, the management system does not properly identify the person that has the overall responsibility for implementation of the risk management program elements, as required per 40 CFR § 68.15(b). Additionally, the lines of authority and individuals responsible for implementing individual program elements are not consistently or clearly defined, as required per 40 CFR § 68.15(c)

40 CFR §§ 68.20 – 60.42 - Hazard Assessment/Offsite Consequence Analysis (OCA)

The Facility used EPA's RMP*Comp to model the worst-case scenarios (WCSs) and alternate release scenarios (ARS) for flammables. For toxics, the WCS was modeled with EPA's OCA Guidance Reference Tables or Equations and RMP*Comp was used to model the ARS. The Facility modeled and reported two flammables WCSs due to processes affecting different public receptors, and one WCS for toxics. The two flammable WCSs were modeled on releases from pentane spheres in the Bay Plant and West Plant. The toxic WCS was modeled as an HF acid release from the Alky 3 unit. The inspection team has no areas of concern at this time.

40 CFR § 68.65 - Process Safety Information (PSI)

The Facility follows the Marathon Corporation Refinery Standard Practice (RSP) for PSM/RMP PSI, RSP-1302, dated February 21, 2021. Refinery document RGD-EPS2-000001-GB, “Process Safety Information Site Practice,” dated September 14, 2021, defines the PSI requirements and where documentation to meet these requirements is maintained. Additionally, the Facility follows Marathon Corporate RSP-1129-030, “HF Acid Alkylation Unit Protection and Mitigation Systems,” dated November 16, 2020, which establishes minimum safety requirements and inspection frequencies for HF Alkylation units.

The safety systems associated with the Alky 3 unit consist of cameras and monitors, HF acid gas detectors, Boreal (laser) HF acid gas detectors, remote fire monitors, a deluge system, emergency isolation valves, and a rapid acid deinventory system.

The inspection team reviewed a list of relief valves for the Alky 3 unit “0020-ALKY 3 – RVs ALL,” that included the manufacturer, model number, installation dates and replacement/repair dates. The replacement dates for all relief valves in Alky 3 are at least within 10 years of the installation dates. Table 1 of Refinery Maintenance document GBR-ASI-G-18, “Pressure Relief Device Inspection and Testing,” dated December 4, 2018, states that the maximum task interval for offline repair for all types of relief valves is based on inspection and performance history, with a 10-year maximum. Table 1 states that the basis to this interval is American Petroleum Institute (API) 510, local jurisdictional requirements, and SP-90-30. SP-90-30 (“Pressure Relieving Device Inspection Program”) dated June 17, 2020, states that pressure relief valves (PRVs) in HF acid service default to a maximum offline repair interval of five years, which can be modified with pre-pop history. SP-90-30 is consistent with API 751 (2021) Section 6.5.9.4 on

PRV Inspection Intervals, which states that "... without unneutralized pop testing inspection data, a maximum inspection interval of 5 years shall be used." Relief valve 0020-X-RV22D, in HF-service has an installation date of 4/29/2021 and a replacement date of 4/28/2028, seven years after the installation date. Although this exceeds the default minimum replacement interval of five years established by SP-90-30 and API 751 (2021), it is unknown if pre-pop testing data exists to have extended the replacement date.

The inspection team reviewed a list of safe operating limits (SOLs) and consequences of deviation (CODs) for the Alky 3 unit. The Facility has made changes to the oxygen (O₂) alarm levels for Furnace F-1001 within the distributed control system (DCS) to establish LO and LO LO alarms of 2.5% and 2.0%, respectively. This change is based on recommendations within Corporate Process Safety Advisories (PSAs) 1405 and 21-05, which address explosion risk in heaters from oxygen deficient/fuel rich conditions. Although the alarm change was made within the DCS, the safe operating limits and consequences of deviation for the LO and LO LO O₂ alarm for F-1001 were not updated within the Master Alarm Database / Ops Limits Tables ("Area 3-Domain 5_Alky3-Safe Operating Limits w Consequences of Deviation"), where this PSI documentation is maintained. Therefore, the safe upper and lower limits and consequences of deviation for the technology of the process are not being properly documented, as required per 40 CFR § 68.65(c)(iv) and (v).

The Facility installed butane defluorinators and associated equipment at the Bay Plant Alky Unit in 2019 as part of the Butane Defluorinator project. As stated in the Incident 319448 Investigation Report, the inlet piping for the defluorinator relief valves, including for 92R-215, was installed with uninsulated carbon steel piping. Honeywell Universal Oil Products (or UOP) is the licensor for the butane defluorinator technology and worked on the project, however, the Facility did not include design of the relief valve inlet, outlet and bypass piping in UOP's scope of work. In the first version of the P&IDs for the project provided by UOP in October 2016, the defluorinator relief valve inlet piping was designated to be constructed with Monel, although the piping was indicated to be outside of UOP's scope. In later versions of the P&IDs, the Monel piping specification was removed and the piping was ultimately installed with low residual element carbon steel. Per the Incident Investigation Report, "the investigation was unable to definitively determine the project team's basis for selection of low residual element carbon steel for the relief valve inlet piping". On December 10, 2021, approximately two years after the butane defluorinator equipment was initially installed, piping leading to 92R-215 developed a 4-inch log by 1.5-inch wide hole that resulted in a hydrocarbon and HR release.

- Per the Incident Investigation report, UOP has specified using Monel for defluorinator relief valve inlet piping since 2005, due to high corrosion in these piping segments.
- Refinery Reference Document RRD-1190-076 for HF Alky Material Review discusses dead-leg corrosion for defluorinator relief valve inlet lines, and that dead-legs in these locations are often purged or upgraded to Monel to prevent plugging.
- Additionally, API 751 (2013) includes the following discussions related to carbon steel corrosion in dilute HF streams and dead-legs:
 - Section 3.2.2: Carbon Steel, includes discussion on carbon steel being inappropriate for high-temperature streams in contact with HF states that *"In general, carbon steel has demonstrated satisfactory resistance to corrosion....in dissolved HF or vapor phase HF (such as settler effluent and isobutane recycle*

systems) up to approximately 160°F.” Although the Incident Investigation report does not provide the specific temperatures anticipated for the relief valve piping, the butane superheater (upstream of 92R-215) and the butane defluorinator (downstream of 92R-215) both operate at 650°F. Additionally, the investigation report states that “*the temperature [of materials in the relief valve inlet piping] is low enough to condense but at a high enough temperature to cause accelerated corrosion in carbon steel*”.

- Section 3.3.2: Piping, states that “*stagnant flow and other dead-leg connections should be eliminated where possible.*” Additionally, “*Due to the potential for corrosion and plugging in the carbon steel inlet lines to some of the safety relief valves in the HF alkylation unit, the inspection program should include periodic thickness testing and/or radiographic examination of these lines especially near the high point. Purging of these lines or upgrading the metallurgy to Alloy 400 should be considered if problematic corrosion occurs..... This corrosion has been reported in the inlet lines to safety relief valves located on the lower part of fractionation columns, on superheaters for stripping vapor to HF regenerator columns, and on the top of propane and n-butane defluorinators*”.
- Appendix D.1.4 Operating Conditions and Locations, states that “*operating conditions and specific locations where higher corrosion rates have been observed are as follows: ... f) dead-legs or start-up lines exposed to HF;... and m) relief valve inlet lines in HF service (including bottom of fractionators and on defluorinators*”.

Based on the known hazards associated with carbon steel piping corrosion in HF-service and specifically within dead-leg piping locations, as provided in UOP piping specifications, RRD-1190-076, and API 751 (2013), the Facility did not properly document that butane defluorinator relief valve inlet piping construction complied with recognized and generally accepted good engineering practices, per 40 CFR § 68.65(d)(2).

The inspection team also reviewed safety data sheets (SDSs), materials of construction, and maximum intended inventory documentation while on-site. No observations were noted by the inspection team with respect to this documentation.

40 CFR § 68.67 - Process Hazard Analysis (PHA)

The inspection team reviewed the 2018 Alky 3 PHA. The Facility performed PHAs using a combination of Hazard and Operability Study (HAZOP) and checklist methodologies. The inspection team did not identify any areas of concern with respect to the 2018 Alky 3 PHA.

The facility completed a HAZOP PHA associated with the 2019 installation of butane defluorinators in the Bay Plant Alky Unit. The HAZOP was initially completed in 2017 and updated in late 2018 due to design changes. As stated in the Incident 319448 Investigation Report, the PHA analysis did not include discussions of the materials of construction, particularly as they relate to HF corrosion in piping and piping dead-legs. HF corrosion hazards in piping dead-legs and dilute HF streams were known issues at the time of the PHA, as documented in API 751 (2013), Section 3.3.2 and Appendix D.1. Therefore, the PHA did not address the hazards of the process, per 40 CFR § 68.67(c)(1).

40 CFR § 68.69 - Operating Procedures

The Facility maintains operating procedures for RMP-covered processes through RSP-1304 (“PSM/RMP Refining Operating Procedures”), dated September 9, 2020. Section 1.3.1 of RSP-1304 states that operating limits for each procedure are accessible as part of the master alarm and limit database within the Ops Limit Web Tool and therefore are not listed directly within procedures. Section 1.3.7 and Section 1.3.9 of RSP-1304 state that initial startup procedures and temporary procedures, respectively are not maintained as part of the permanent operating procedures.

The inspection team reviewed the 2022 Annual Operating Procedure Certification for the Alky 3 Unit, dated January 1, 2022. The certification covered five emergency shutdown procedures, 26 emergency operating procedures, 51 normal operating procedures, 41 startup procedures, and 24 shutdown procedures.

The inspection team reviewed refinery operating procedures (ROP) ROP-0020-1000 (“Alky 3 Startup”), a prior version dated February 5, 2021 and the current version dated June 10, 2022; ROP-0064-1007 (“Vapor Recovery Unit [VRU] Initial Startup”), dated June 12, 2020; and, ROP-0064-1000 (“VRU Startup”), dated June 12, 2020.

The Alky 3 Startup procedure in place on May 4, 2021 (dated February 5, 2021) did not provide clear instructions for operators to accurately verify equipment were in the proper condition to safely restart the unit, resulting in a 74-pound release of hydrofluoric acid. Namely, the operating procedure did not clearly state that operators needed to walk down the Acid Transfer section of Alky 3 or conduct tightness testing prior to restart. The procedure did not provide clear instructions for safely starting up the process following a turnaround, as required by 40 CFR § 68.69(a)(1)(vii).

The Facility follows Refinery Safe Work Procedure RSW-000029-GB, “PR-2 Hot Work,” dated March 25, 2020 for hot work. The inspection team reviewed Safe Work Permits for hot work at the Alky 3 unit for the month of May 2021. Of the 26 permits reviewed, eight (Permit numbers 0999760, 1141565, 1175824, 1175903, 1186502, 1206546, 1206547 and 1226014) did not have the Job Completeness section completed to indicate if the work was completed or ongoing and whether locks were removed at the termination of the permit.

Additionally, Safe Work Permits Nos. 1141566, 1175908, 1187396, 1187382, 1187391, 1187398 and 1226014 state that a Post Joint Job Site Visit was required in the Job Information section of the permit. However, the Job Completeness section related to the Post Joint Job Site Visit was not populated. Therefore, the Facility did not properly populate the Safe Work Permits and did not follow the safe work practices developed by the Facility for the control of hazards during operations involving opening process equipment or piping, as required by 40 CFR § 68.69(d).

40 CFR § 68.71 - Training

The Facility establishes training required under RMP for operators in covered processes in “PS 5.1 PSM/RMP Operations/Products Control Site Plan” (Doc Number PS-009245-GB), dated July 2021. There are initial training requirements for new operators, specific to each process unit. The

initial training is a series of classroom-based and on the job requirements. Refresher training is required every 36 months, or three years, for each job that the operator is qualified for.

The inspection team reviewed five years of training records for Alky 3 Shift A operators. Johnathan Easley completed the initial qualification for a console operator in February 2018. The subsequent refresher training was completed in September 2021, 42 months after the initial training, exceeding the required 36-month frequency.

40 CFR § 68.73 - Mechanical Integrity

The Facility manages mechanical integrity work processes with several tools. Inspections are managed in the Asset Performance Management (AMP) system. The MI Program also makes equipment data visible that is maintained within the computerized maintenance management software (CMMS), SAP, and SPI.

The inspection team reviewed a sampling of inspection and maintenance records for equipment in the Alky 3 unit. Additionally, a list of overdue inspection, testing and preventative maintenance (ITPM) tasks for Alky 3 were reviewed (“Overdue ITPM Tasks – Alky 3”). Two items are present on the list, with deferrals projected to be completed within four months of the original due date.

The inspection team reviewed Marathon corporate Process Safety Advisory (PSA) 1112, dated June 1, 2013 for a Depropanizer piping failure incident at GBR. The incident was caused by the presence of residual elements (REs) in HF Acid service piping. Of note, PSA-1112 had established a December 31, 2014 deadline to implement a RE inspection plan for each site with active HF Alkylation processes. RSP-1190-010, Appendix I established enhanced inspection requirements for main and trace HF alkylation unit piping. The RSP required inspection of 100% of affected components by either December 31, 2014 and/or December 31, 2016 for certain piping conditions, including carbon steel exposed to HF at certain temperatures, potential dead legs, and services with certain water content, among other component types. Following completion of the inspections, a periodic inspection schedule was meant to be established based on the determined corrosion rate. The inspection team discussed the implementation of these inspections at the Alky 3 unit and did not identify any areas of concern at this time.

As documented in the “Alky 3 Incidents Near Miss Investigations Nov 2017 to 2022,” Boreal laser #1070 was out of service from September 13, 2020 through December 13, 2020 and Boreal laser #1074 was out of service from May 19, 2020 through December 13, 2020. The required Corporate preventative maintenance (PM) inspection frequency for HF acid detectors is six months, per Section 7.1 of RSP-1129-030 (“HF Acid Alkylation Unit Protection and Mitigation Systems”). The inspection team requested the PM inspection records for the Boreal lasers for 2020-2022. The Facility was not able to provide inspection records for 2020, stating that the inspections were not conducted in 2020 as the vendor was not contacted to schedule the inspections. As such, the inspection team identified the following areas of concern:

- The Facility did not conduct inspections of process equipment consistent with applicable manufacturer’s recommendations and good engineering practice, per 40 CFR § 68.73(d)(3).
- The Facility did not correct equipment deficiencies in a safe and timely manner, per 40 CFR § 68.73(e).

40 CFR § 68.75 and § 68.77 - Management of Change (MOC) and Pre-Startup Safety Review (PSSR)

The inspection team evaluated MOC No. 86779 titled *Alky 3 SIS Documentation Update*. This MOC focuses on updating Safety Instrumentation System (SIS) documentation that was affected by Safety Integrity Level (SIL) calculations to adjust the logic solver testing frequency as part of a turnaround (TAR) deferral completed under a separate MOC. The MOC was created on December 18, 2021 and was due on December 31, 2022.

The completion comments on Task Number 254183 to review the change for compliance with MPC Core Specs and standard practices states:

“Per MOC 68518, identified it was feasible to extend the Alky 3 TAR from 2020 to 2021, which required revised SIL calculations to be ran on logic solver of Alky 3. Validated SIL rating not impacted with the extension of TAR. Updating SIS documentation, accordingly per MOC 68518.”

The Alky 3 turnaround occurred in 2021, and the unit restarted in May 2021. At the time of the inspection in November 2022, safety documentation had still not been updated for the validated change to logic solver testing frequency. Specifically, Safety Requirement Specifications for the SIS were updated but had not been approved as of November 2022. Although the due date for this item within the MOC documentation was December 21, 2022, these changes were not made prior to the unit being restarted in 2021. Process safety information had not been updated, as required by 40 CFR § 68.75(d).

Additionally, operators were only notified of the changes to the safety documentation for the logic solvers on June 3, 2022, well after the unit restarted. Employees involved in operating a process and maintenance employees were not informed of or trained on the change prior to the start-up of the process, as required per 40 CFR § 68.75(c).

40 CFR § 68.79 - Compliance Audits

The inspection team reviewed the most recent site-wide Compliance Audit, which was completed in February 2020. The compliance audit was conducted by a third-party company, as required by Refinery Guidance Document RDG-PS-000002-GB, “GBR PSM/RMP Compliance Audits,” dated February 27, 2019. The compliance audit evaluated each program element by selecting documents to review from different processes. Each element was not evaluated for each covered RMP process. The previous compliance audits were completed in 2017 and 2018 for the East/West plants and Bay plant, respectively.

During the inspection in November 2022, the inspection team reviewed the findings from the 2020 Compliance Audit and the tracking and closure of these items. The inspection team did not identify any areas of concern at this time.

40 CFR § 68.81 - Incident Investigation

The Facility has an incident investigation procedure that covers process safety incidents subject to RMP as well as incidents of lesser severity or other types (e.g., personal safety). For incidents subject to RMP, the Facility would generally use a TapRoot Root Cause Analysis approach.

The Facility investigated one incident in the last five years from the date of the inspection that was reported in the RMP accident history, an Alky 3 incident that occurred on May 4, 2021.

The incident was initiated at 3:15 PM and resulted in the release of 74 pounds of HF. The release occurred from an approximately 10% open drain valve on the Auxiliary Acid Dump Drum, when HF was being introduced to the unit during start-up after a turnaround. Prior to the start-up of the unit, a blind had been removed from the system which was not communicated to the operators on shift at the time of the incident. Neither a pressure leak test nor a P&ID walkdown were performed following the removal of the blind, as required by the PR-14 Energy Isolation Policy. Additionally, there was not an explicit requirement in the start-up procedure to do a walkthrough utilizing a Bullplug checklist prior to startup. The incident investigation report was started within 24 hours of the incident.

The incident investigation report lists two causal factors. However, the SnapChart identifies five other opportunities for improvement (OFI) that were recommendations ultimately implemented but not included in the incident investigation report. Section 4.4 of RGD-PS-000003-GB, "Incident Investigation & Reporting Site Plan PS 11.0," dated May 21, 2018, indicates that OFIs are part of the final investigation report content. These OFIs are recommendations generated from the incident and should be included in the incident report, per 40 CFR § 68.81(d)(5).

40 CFR § 68.83 - Employee Participation

The Facility follows RGD-PS-000021-GB, "GBR PSM/RMP Employee Participation," dated February 11, 2021. Employee representatives from the United Steel Workers union participated in each day of the inspection. The inspection team did not identify any areas of concern at this time.

40 CFR § 68.85 - Hot Work Permit

The Facility follows Refinery Safe Work Procedure RSW-000029-GB, "PR-2 Hot Work," dated March 25, 2020. The inspection team reviewed Safe Work Permits for hot work at the Alky 3 unit for the month of May 2021.

Safe Work Permit # 1187388 was authorized for work on May 2, 2021 at the depropanizer (C-1003). The work description states that a pump was restored (P-1027B) and plug valves were dropped. The work required pneumatic and battery-powered tools. The Job Site Preparation section of the permit was not completed – which indicates blinding, lockout and tagout requirements, in addition to other hazards to be considered. The Minimum Energy Isolation Requirements provided in Attachment A of the Refinery Safe Work Procedure RSW-000031-GB, "PR-14 Energy Isolation" dated May 12, 2022 states that hot work completed on hydrocarbon streams must be blinded. Additionally, the Job Completeness section of the permit indicates that personal and craft locks were removed at the end of the job, although no information on applying locks was provided in the Job Site Preparation section. The Safe Work Permit did not properly document that protection requirements were implemented prior to beginning the hot work operations, per 40 CFR § 68.85(b).

40 CFR § 68.87 – Contractors

The Facility follows PSM-1070 Appendix H, "Process Safety Management Appendix H: Contractors," dated April 12, 2019. The document establishes roles and requirements for the

employer (Marathon) and the contractors. The Facility uses ISNet to evaluate contractor qualifications and safety metrics. Contractors are required to complete an 8-hour basic training class on refinery safety prior to entering the site and complete a refresher every two years. Entrance to the Facility is controlled by key card entrance tied to completion of the safety training and other metrics. The inspection team did not identify any areas of concern at this time.

40 CFR § 68.95 - Emergency Response

The Facility is a responding site with emergency response personnel that consists of a fire chief, fire protection engineer, training coordinator, three hourly employees, as well as an approximately 80-person emergency response team (ERT), comprised of employees from other process areas.

The Facility participates in drills with a mutual aid organization of local facilities that meets quarterly and coordinates with the Galveston City LEPC. Emergency response procedures are detailed in the facility's Emergency Action Plan and One Plan. The One Plan includes references to policy GBR-Dept-ENV-08 for notifications to environmental regulatory agencies, but specifically references notifications to the National Response Center (NRC), Texas Commission on Environmental Quality (TCEQ), and Galveston County Health District (GCHD).

The inspection team reviewed the three-year ERT training for operators on the A shift and did not identify any areas of concern at this time.

AREAS OF CONCERN

1. **Management, 40 CFR § 68.15(b)** – *The owner or operator shall assign a qualified person or position that has the overall responsibility for the development, implementation, and integration of the risk management program elements.*
 - Blanchard Refinery identifies different individuals and with overall responsibility for the development, implementation, and integration of the RMP elements between RGD-PS-000009-GB, “PSM Management Responsibility/Target Zero Teams” and “PSM RMP Management – Organizational Responsibility” documents.
2. **Management, 40 CFR § 68.15(c)** – *When responsibility for implementing individual requirements of this part is assigned to persons other than the person identified under paragraph (b) of this section, the names or positions of these people shall be documented and the lines of authority defined through an organization chart or similar.*
 - The titles assigned to individuals responsible for implementing individual elements and lines of authority are not consistent between RMP Management documents (“PSM Management Responsibility/Target Zero Teams” and “PSM RMP Management – Organizational Responsibility”).

3. **Process Safety Information, 40 CFR § 68.65(c)(1)(iv) and (v)** – *Information concerning the technology of the process shall include at least the following: ... (iv) safe upper and lower limits for such items as temperatures, pressures, flows, or compositions; and, (v) an evaluation of the consequences of deviations.*
 - The safe operating limits and consequences of deviation for the LO and LO LO O₂ alarm for F-1001 were not accurate within the Master Alarm Database / Ops Limits Tables (“Area 3-Domain 5_Alky3-Safe Operating Limits w Consequences of Deviation”) and do not match the alarm levels within the DCS and based on requirements prescribed by PSA-1405 and 21-05.
4. **Process Safety Information, 40 CFR § 68.65(d)(2)** – *The owner or operator shall document that equipment complies with recognized and generally accepted good engineering practices.*
 - Based on the known hazards associated with carbon steel piping corrosion in HF-service and specifically within dead-leg piping locations, as provided in UOP piping specifications, RRD-1190-076, and API 751 (2013), Blanchard Refinery did not properly document that butane defluorinator relief valve inlet piping construction installed in 2019 complied with recognized and generally accepted good engineering practices.
5. **Process Hazard Analysis, 40 CFR § 68.67(c)(1)** – *The process hazard analysis shall address: 1) The hazards of the process.*
 - The PHA associated with Butane Defluorinator Project in the Bay Plant Alky Unit, initially completed in 2017 and updated in late 2018, did not address hazards associated of the materials of construction, particularly as they relate to HF corrosion in carbon steel piping and piping dead-legs.
6. **Operating Procedures, 40 CFR § 68.69(a)(1)(vii)** – *The owner or operator shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements: 1) steps for each operating phase: ... (vii) startup following a turnaround, or after an emergency shutdown.*
 - ROP-0020-1000, dated February 5, 2021 and in use on June 10, 2022, when the Alky 3 Unit released 74-pounds of HF during start-up, did not did not clearly state that operators needed to walk down the Acid Transfer section of Alky 3 or conduct tightness testing prior to restart.
7. **Operating Procedures, 40 CFR § 68.69(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.

- Eight Safe Work Permits (Permit numbers 0999760, 1141565, 1175824, 1175903, 1186502, 1206546, 1206547 and 1226014) did not have the Job Completeness section completed to indicate if the work was completed or ongoing and whether locks were removed at the termination of the permit, as required by RSW-000029-GB,
- Safe Work Permits Nos. 1141566, 1175908, 1187396, 1187382, 1187391, 1187398 and 1226014 state that a Post Joint Job Site Visit was required in the Job Information section of the permit. However, the Job Completeness section related to the Post Joint Job Site Visit was not populated.

8. **Training, 40 CFR § 68.71(b)** – *Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The owner or operator, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.*

- Johnathan Easley, Alky 3 Shift A Operator, completed the initial qualification for a console operator in February 2018. The subsequent refresher training was completed in September 2021, 42 months after the initial training, exceeding the required 36-month frequency required by PS 5.1 PSM/RMP Operations/Products Control Site Plan (Doc Number PS-009245-GB).

9. **Mechanical Integrity, 40 CFR § 68.73(d)(3)** – *The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.*

- The Facility was not able to provide inspection records for Boreal Lasers HF Detectors in the Alky 3 Unit for calendar year 2020, stating that the inspections were not conducted in 2020 as the vendor was not contacted to schedule the inspections. The preventative maintenance (PM) inspection frequency for HF acid detectors is six months, per Section 7.1 of RSP-1129-030 ("HF Acid Alkylation Unit Protection and Mitigation Systems").

10. **Mechanical Integrity, 40 CFR § 68.73(e)** – *The owner or operator shall correct deficiencies in equipment that are outside of 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.*

- In the Alky 3 Unit, Boreal laser #1070 was out of service from September 13, 2020 through December 13, 2020 and Boreal laser #1074 was out of service from May 19, 2020 through December 13, 2020.

11. **Management of Change, 40 CFR § 68.75(c)** – *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.*
 - Blanchard Refinery did not inform or train employees of the updates to SIS documentation related to a change in logic solver frequency testing for the Alky 3 Unit initiated by MOC No. 86779 until June 3rd, 2022, after the unit restarted from turnaround in May 2021.
12. **Management of Change, 40 CFR § 68.75(d)**– *If a change covered by this paragraph results in a change in the process safety information required by § 68.65 of this part, such information shall be updated accordingly.*
 - MOC No. 86779 titled *Alky 3 SIS Documentation Update* still had outstanding safety documentation update tasks as of November 2022, although the MOC was related to extending the Alky 3 TAR date. The Alky 3 Unit restarted from turnaround in May 2021 and did not update process safety information prior to restarting the unit.
13. **Incident Investigation, 40 CFR § 68.81(d)(5)** – *A report shall be prepared at the conclusion of the investigation which includes at a minimum: ... 5) any recommendations resulting from the investigation.*
 - The incident investigation report for the incident on May 4, 2021 lists two causal factors. However, the SnapChart identifies five other opportunities for improvement (OFI) that were recommendations ultimately implemented but not included in the incident investigation report, as required by Section 4.4 of RGD-PS-000003-GB, “Incident Investigation & Reporting Site Plan PS 11.0,” dated May 21, 2018.
14. **Hot Work, 40 CFR § 68.85(b)** – *The permit shall document that the fire prevention and protection requirements in 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.*
 - Safe Work Permit # 1187388, authorized for work on May 2, 2021, did not have the Job Site Preparation section of the permit was not completed – which indicates blinding, lockout and tagout requirements, in addition to other hazards to be considered. The Job Completeness section of the permit indicates that personal and craft locks were removed at the end of the job, although no information on applying locks was provided in the Job Site Preparation section.

The Safe Work Permit did not properly document that protection requirements were implemented prior to beginning the hot work operations.

LIST OF ATTACHMENTS

Attachment 1: Photolog



Dan Roper, ERG

4/17/2023

Date



Brook McKeown, ERG

4/17/2023

Date

Photolog

Blanchard Refining - Galveston Bay Refinery

Inspection Date: November 14 - 17, 2022

Photographer: Dan Roper, ERG

Original Image Storage: CD in Report file

Camera: Nikon Coolpix W300

No. of Images: 4

Photo	Image ID	Description
	1 DSCN1597	Photograph of water deluge system in the HF Alky 3 Unit.
	2 DSCN1598	Photograph of temporary clamp in the HF Alky 3 Unit.
	3 DSCN1599	Photograph of the location of the HF leak on May 4, 2021.
	4 DSCN1600	Photograph of equipment involved in the HF leak on May 4, 2021.