



March 6, 2024

Mr. Gregory A. Ochs
Director, Central Region OPS
Pipeline and Hazardous Materials Safety Administration
901 Locust Street, Suite 480
Kansas City, MO 64106

Re: Notice of Amendment CPF 3-2024-003 NOA) (Notice) related to Inspection of Pembina Cochin LLC and Vantage Pipeline US LP pipelines and procedures for Control Room Management (CRM) in Edmonton, Alberta, Canada.

Dear Mr. Ochs,

Pembina Cochin LLC and its subsidiary, Vantage Pipeline US LP (collectively Pembina), values the partnership it has with the Pipeline and Hazardous Material Safety Administration (PHMSA) in assuring public safety and regulatory compliance. Pembina continues to maintain plans, procedures, and standards that meet or exceed PHMSA regulations while maintaining a safety culture that proactively promotes and recognizes operational compliance as a top priority.

This letter is confirming the receipt of the Notice regarding inadequacies identified by PHMSA representatives within the Pembina plans and/or procedures during the inspection of Pembina's CRM procedures from August 15 to September 28, 2022. Pembina appreciates PHMSA's efforts during the audit and the valuable input regarding areas to improve our plans and procedures. We find this process useful to further refining our Pipeline Safety Programs.

In regard to NOA #1 195.446 CRM, PHMSA found:

Pembina's procedure, US Pipeline Control Management Process Version 5, dated April 27, 2022, (US PCMP) section 1.3 was not adequate to determine whether an asset is a control room. Specifically, the US PCMP presented two considerations for determination: (1) whether there is a computer-based system used in the control room to collect and display information and (2) whether controllers are using the system "with assigned operational authority and responsibility to monitor and control regulated pipeline facilities." The US PCMP also stated that persons who use the system for "monitoring but use verbal or manual means to call-out personnel to perform control actions" are considered controllers. The US PCMP needed to include a process to apply these criteria to assets such as pumping stations or customer locations to support the determination of where the control rooms are located and where they are not.

Pembina needs to amend the US PCMP to include a procedure that supports the criteria and create a record to verify it applied the criteria to various assets in determining control room locations.

Pembina is not contesting this finding and has amended the US PCMP Section 1.4 CRITERIA FOR DETERMINING IF A FACILITY IS A CONTROL ROOM. (See attached documentation NOA #1)

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Regarding NOA #2 195.446 CRM, PHMSA found:

Pembina's US PCMP procedures were not adequate to ensure that a controller's role and responsibilities were clearly defined when the controller is not the first person to detect an Abnormal Operating Condition (AOC). Specifically, Pembina procedure US PCMP section 3.2.1.3 provided a bulleted list for the controller to respond to an AOC. O&M Plan V6, dated December 1, 2021, section 26.2 "Response to AOC Incidents" had steps to follow when an Abnormal Operation was identified in the field. Section 26.2's procedures for Abnormal Operations was not cross-referenced in the US PCMP plan. During the inspection, Pembina informed the PHMSA inspectors that in practice, field personnel call the emergency hot line which rings a special phone on the consoles. However, this step was missing from the section 26.2 procedure.

Pembina needs to amend the O&M procedure to include the step where the field personnel call the emergency hot line that rings on the consoles. Both the specific hot line number and where the hot line phone is located need to be included in the US PCMP plan. Additionally, the procedure needs to include the responding controller's required response and follow-up actions to the hot-line phone call.

Pembina is not contesting this finding and has amended the US PCMP Section 3.2.1.3 Response to AOCs and US O&M Manual Section 26.2 Response to AOC Incidents. (See attached documentation NOA #2)

Regarding NOA #3 195.446 CRM, PHMSA found:

Pembina's procedure SPCC-Evacuation-Immediate Version 3.0.0, dated March 15, 2022, was not adequate to ensure that a controller's role and responsibilities during an emergency was adequately defined. Specifically, Pembina's SPCC-Evacuation Immediate Version 3.0.0 procedure did not include a process for monitoring the Vantage Pipeline during evacuation. Step 2 of the procedure stated, "[s]hutdown all pipelines except AEGS and Vantage using the emergency shutdown command." This was insufficient because it did not include a directive to monitor the pipeline system after it's been shut down.

Pembina had a laptop that was intended to be used to monitor the pipeline remotely during the evacuation. Step 15 of the procedure described how this laptop with a USB modem was used to maintain SCADA control of the AEGS pipeline; Step 15 failed to include the Cochin pipeline. The procedure is unclear on whether a separate laptop is required to monitor the Cochin pipeline or if the same laptop is used to monitor both the AEGS and Cochin pipeline systems.

Pembina needs to amend the SPCC-Evacuation-Immediate Version 3.0.0 procedure to include consideration of how the Vantage system will be monitored and/or controlled during an evacuation event.

Pembina is not contesting this finding and has amended the SPCC-Evacuation-Immediate Version 3.0.0. (See attached documentation NOA #3)

Regarding NOA #4 195.446 CRM, PHMSA found:

Pembina's procedure US PCMP did not adequately state the controllers' responsibilities in the event of a SCADA failure or system communications failure. Specifically, US PCMP section 7.5.1 did not include a control room practice that if communications are "down" for 15 minutes the sites will shut down. The US PCMP language did not instruct the controllers how to act upon a 15-minute communication loss.

Pembina needs to amend the US PCMP to include the roles and responsibilities of the controller if there is a SCADA or communications failure for greater than 15 minutes. The procedure must include instructions on how to manually shut down the system and verify all valves and assets are in the expected status since the system does not automatically shut down. If there is already a process for the manual shut down and verification, then this must be referenced in the CRM Plan.

Pembina is not contesting this finding and has amended the US PCMP Section 3.2.1.5 "Roles during AOC's and Emergencies" (See attached documentation NOA #4)

Regarding NOA #5 195.446 CRM, PHMSA found:

Pembina's procedure SPCC Elog and Handover Guideline Version 3, dated June 15, 2022, was not adequate to define what information needed to be exchanged during short breaks. Specifically, section 7.1.1 defined a short break as less than 15 minutes and require a verbal handover with no documentation requirement. Section 7.1.2 identified an extended break as greater than 15 minutes and requires a "mini shift turnover," but failed to describe what information needed to be exchanged. The required communications, in practice, were the same between controllers and for both types of breaks. The procedures did not describe what the person assuming the monitoring needs to do. For example, the procedure should clarify whether the person assuming monitoring should monitor only or acknowledge alarms or send set points. Also, before leaving the console for the short break, the procedures need to clarify what the controller needed to verify before leaving, such as making sure that (1) all commands sent have been completed, (2) there are no unacknowledged alarms, (3) any calls to field personnel have been returned, etc. Lastly, the procedures should have an upper limit on the time away from console when a full shift change is required. This procedure was also not referenced in the US CRM Plan.

Pembina needs to amend the SPCC Elog and Handover Guideline Version 3 to define what the controller needs to verify before leaving the console, the different levels of time away from the console and what information needs to be exchanged for the different time away durations. For example, the procedure should identify what information needs to be exchanged between controllers when taking a break of less than 15 minutes, a break of greater than 15 minutes, and if there is a high limit after 15 minutes where a full shift change must occur. The procedure also needs to address documentation requirements for the time away.

Pembina is not contesting this finding and has amended the SPCC Elog and Handover Guideline Version 3 Section 7.1.1 Short Breaks. (See attached documentation NOA #5)

Regarding NOA #6CRM, PHMSA found:

Pembina's procedures in its US PCMP did not adequately define the roles, responsibilities, and qualifications of non-controller personnel. Specifically, section 3.2.2.1 stated "[a]ll non-controller personnel are prohibited from superseding the technical actions of a Control Center Operator (CCO)." During the inspection, Pembina communicated to the PHMSA inspectors that it did not want anyone to direct or supersede a controller. Section 3.2.2.1 allows for other operators/controllers to direct or supersede the technical actions of another operator/controller. Pembina needs to amend the US PCMP to clearly state that no one has the authority to direct or supersede the technical actions of a controller.

Pembina is not contesting this finding and has amended the US PCM section 3.2.2 NON- CONTROLLER PERSONNEL RESPONSIBILITIES. (See attached documentation NOA #6)

Regarding NOA #7 CRM, PHMSA found:

Pembina's procedures in its US PCMP was not adequate to address the requirements of § 195.446(c)(1) to clearly define the types of changes to the SCADA system(s) that constitute additions, expansions, or replacements under the meaning of the CRM rule. Specifically, the US Assets Alarm Management Plan Version 5.0, dated June 22, 2022, (US ALM) section 1.2 stated, "[i]mplementation of API RP 1165 is required when changes are made to the SCADA system that impact the display characteristics of the screens." While Pembina did implement SCADA Human Machine Interface (HMI) 6 screens that display characteristics that represent the bulk of API RP 1165, other changes still need to be made to meet the full requirements of § 195.446(c)(1). Pembina needs to define additions (i.e., new consoles, additional HMI screens, existing facilities added to SCADA), expansion (i.e., new assets or facilities, server memory, acquired assets with different SCADA system), and replacement (i.e., new SCADA system, failed HMI, failed server). Some of these examples would require additional API RP 1165 implementation. For example, adding new facilities in SCADA would require following API RP 1165 design standards, conducting an audit of conformance, and, if the acquisition causes a new SCADA system to be necessary, then a plan would be needed to make the acquired assets compliant with API RP 1165 in SCADA

Pembina needs to amend the US ALM to provide definitions and examples that constitute additions, expansions and replacements to SCADA systems, to ensure API RP 1165 will be appropriately implemented. The procedure must also be updated to include a method to document circumstances when certain provisions of API RP 1165 are not practical for the SCADA system use.

Pembina is not contesting this finding and the SCADA team developed a new style guide to address the design standards for additions, expansions and replacements and incorporate 1165 provisions. (See attached documentation NOA #7)

Regarding NOA #8 195.446 CRM, PHMSA found:

Pembina's US ALM did not adequately define safety-related points. Specifically, US ALM section 2.1 provided a list of qualifiers used to identify safety related points. Section 2.1 did not include any leak notification alarms as safety related points.

Pembina needs to amend the US ALM to include leak notifications as points affecting safety.

Pembina is not contesting this finding but requires additional time to complete the publication of the updated procedure. Pembina is proposing to finalize by March 29, 2024 and will provide a copy of the updated procedure when complete.

Regarding NOA #9 195.446 CRM PHMSA found:

Pembina's Fatigue Risk Management Process Version 4, dated June 6, 2022, (FRMP) section 5.2 was not adequate to determine the effectiveness of the fatigue education/training program. Specifically, the procedure simply stated that Pembina will review the effectiveness of fatigue education program. While the procedure required review of the program for effectiveness once each calendar year, not to exceed 15 months, it did not provide a process on how Pembina would conduct the review. The procedure needed to include what would be evaluated, what information would be collected and analyzed to determine effectiveness, and some criteria should be provided to determine "effectiveness" or define what effectiveness is.

Pembina needs to amend the FRMP to include a process for review of Pembina's training content related to fatigue causes, health concerns, behaviors, mitigation technics, and any other relevant content. The procedure also needs to include criteria used to determine how "effective" the training is.

Pembina is not contesting this finding and the SPCC training team completed a 2023 effectiveness review in January and February 2024. Attached is the summary of the review which includes the method of collection, what was evaluated, the results and the action plan. Pembina has submitted the SPCC PHMSA Fatigue Training Program Effectiveness Review for 2024 along with this letter. (See attached documentation NOA #9)

Regarding NOA #10 CRM PHMSA found:

Pembina's procedures in its FRMP were not adequate because they did not provide for 35-hours of continuous off-duty rest period if the extended or emergency hours are exceeded. Specifically, FRMP section 6.5 allowed for "occasional one 18-hour hold-over shift (19-hours with hand-over time), or two 14-hour shifts (15-hours with hand-over time) in any sliding 5-day period is allowed within the following parameters." Under the current procedures, for any hours over 14 extended duty hours, the controller may not be able to get 8 hours of continuous sleep, when taking into consideration factors such as commute, personal time, and family duties. Therefore, it is important for accommodations be made to provide the controller adequate opportunities for rest. Examples of this may include provisions for lodging to eliminate or reduce the commute, delayed starts following the extended day or 35-hours off after hours of service are exceeded in any of the scales provided.

Pembina needs to amend the FRMP to provide established hours of continuous off-duty rest period when any hours-of-service limits are reached or exceeded.

Pembina is not contesting this finding and has amended the United States Pipeline Systems Fatigue Risk Management Process (FRMP) accordingly. Section 7.5 "Management of extra hours and hold-overs" was updated to include 10 hours off and accommodations to reduce impact as per the attached document. (See attached documentation NOA #10)

Regarding NOA #11 195.446 CRM PHMSA found:

Pembina's US ALM was not adequate to describe practices in place to document and correct inaccurate or malfunctioning alarms once identified. During the inspection, Pembina described to PHMSA inspectors a reasonable practice in place, but the practice was not represented in procedure; some steps were missing. This procedure should be represented in both sections 3.5.2 and 3.7.1

Pembina needs to amend the US ALM to document the practice in place to document, track and correct inaccurate or malfunctioning alarms once identified.

Pembina is not contesting this finding and has amended The SPCC Alarm Philosophy to reference the Monthly Alarm procedure section 7.3 "ALARM PERFORMANCE REPORTING" page 2 and has submitted the amended section along with this letter. (See attached documentation NOA #11)

Regarding NOA #12 195.446 CRM PHMSA found:

Pembina's US ALM section 3.4 was not adequate to provide a process for alarm rationalization. Specifically, the procedure did not provide criteria to determine how alarms will be prioritized. Section 3.3.4 stated, "[a]larm priority is determined by analyzing what the direct consequences would be if no action was taken by the operator and based on how much time the operator has to respond." This was a statement not a procedure of how alarm priorities are determined and established. While the operator had a practice in place, Pembina did not have a procedure with specific steps, criteria and considerations for alarm rationalization and priority determination.

Pembina needs to amend the US ALM to provide a clear process that will support consistent alarm rationalization and priority assignment.

Pembina is not contesting this finding and has amended The SPCC Alarm Philosophy. Section 9 "Alarm documentation and rationalization" has been updated to describe how to perform the Alarm Rationalization and how priority would be determined. Attached are snippets from the Alarm philosophy of how the alarm priority is determined. Pembina has submitted the amended section along with this letter. (See attached documentation NOA #12).

Regarding NOA #13 195.446 CRM PHMSA found:

Pembina's US ALM procedures were not adequate to define what changes controllers can make to alarm limits or setpoints, inhibit alarms, or take points off-scan to provide for effective controller response to alarms. Specifically, the US ALM sections 1.3 (inhibit alarms), 3.1.5 (forced or bypassed points), and 3.3.4 (hi-hi and lo-lo

alarms) allowed controllers to change hi and low alarms and failed to provide a statement for controller authority to taking points off-scan or putting them back on scan.

Pembina needs to amend the US ALM to include the controller's authority and documentation on regarding taking a point off-scan and returning it to scan.

Pembina is not contesting this finding and has amended the SPCC Alarm Management Plan, to reflect the addition of section 5.8 "Remove the operators' ability to adjust alarm limits", such that controllers do not have the ability to take devices off scan. The amended section is included with this letter. (See attached documentation NOA #13)

Regarding NOA #14 195.446 CRM PHMSA found:

Pembina's US ALM procedure section 3.9 item V was not adequate to address how identified deficiencies would be addressed and corrected. Specifically, the procedure directed deficiencies to be "noted and tracked as part of the US PCMP Corrective Action Process." When this process was reviewed by the PHMSA inspectors during the inspection, the PHMSA inspectors determined that the US PCMP Corrective Action Process solely detailed the procedure for deficiencies identified through audit findings. While this is important to ensuring procedures and records are current and complete, the deficiencies described in § 195.446(e)(6) related to the compliance requirements defined in sections §195.446(e)(1) through subsection (e)(5). The Alarm Management Form process appeared to address those needs for many of the issues, but not all. Each of the different elements in § 195.446(e) should be clearly stated how an identified deficiency will be documented, addressed, and followed through to correction.

Pembina needs to amend the US ALM to define when deficiencies are identified under each of the sections § 195.446(e)(1) through (e)(5), how the deficiencies will be documented, and the corrective action completed.

Pembina is not contesting this finding and has amended the Alarm Program and developed a Monthly Alarm Procedure. The SPCC Alarm Philosophy was updated at section 7.3 "ALARM PERFORMANCE REPORTING" to reference the Monthly Alarm Procedure. The amended section is included with this letter (See attached documentation NOA #14).

Regarding NOA #15 195.446 CRM PHMSA found:

Pembina's US PCMP was not adequate to define the established controller training program and content. Specifically, US PCMP section 4 did not include a list of the training topics and a description and layout of the training program. The procedure also did not state or provide a process to review the training program content once each calendar year not to exceed 15 months. Section 4.3 of the plan referenced the Training, Mentorship, & Qualification (TMQ) as the model for training controllers; this is the Canadian training model, and it described the roles and responsibilities of various actors in the training effort. Because the regulations are different for control room management between Canada and the US, it was not clear if all the required

content for § 195.446 related to training was included in the TMQ program. There is major differences between the Canadian and US regulations. For example, TQM section 11 stated that the requirement to review the program and content is “every 15 months, but at least once each calendar year;” this is the reverse of the US requirement of the US regulation. Additionally, TMQ section 11 failed to provide a process for how the review would be 10 conducted and the US PCMP procedure also lacked a process for conducting review of the training program.

Pembina needs to amend the US PCMP to include training topics, a description and layout of the training program, a reference to the program that will include content, and a process to describe how the review of content will be conducted. When describing the training program, the procedure needs to include content, training plan, assessments, retraining, and operator qualification.

Pembina is not contesting this finding and a new document SPCC Training and Qualification has been developed to outline the SPCC training program. The document includes corporate requirements, operator qualification plan, required topics, description of training plan, assessment, content review, frequency, retraining, qualification and content review. The US PCMP will be updated to reference the new document. Pembina requires additional time to complete the review stage and the new document is anticipated to be published by Monday May 6, 2024.

Regarding NOA #16 195.446 CRM PHMSA found:

Pembina’s US PCMP was not adequate to provide controllers training on recognizing and responding to abnormal operating conditions that are likely to occur simultaneously or in sequence. Specifically, section 3.2.1 listed abnormal operations from code language and then added that these are “likely to occur simultaneously or in sequence.” This was inadequate because it did not provide the relationships between abnormal operations and the resulting response of the controller. For example, an uncommanded valve closure can be followed by a sudden increase in upstream pressure and pump shutdown due to high discharge pressure. Responses to these conditions are defined roles and responsibilities of the controller and therefore must be included in the training program content. Section 3.2.1.2 stated, “SPCC response to any single leak trigger requires an immediate check if more than one leak trigger has occurred simultaneously or in sequence.” This was inadequate because it did not define the required or expected controller response. Section 3.2.1.3 provided a step of actions to take when responding to an abnormal operation. This was inadequate because it only related to single abnormal conditions and did not address the requirement of § 195.446(h)(1).

Pembina needs to amend the US PCMP to identify a list of cause and effect of abnormal operations. For example, when a pump shuts down un-commanded, the upstream pressure can rise and the downstream fall; something similar can happen when a valve closes un-commanded. There may be other conditions unique to the pipeline operations. The procedure needs to be amended to identify these conditions and develop training procedure and content to support controller training.

Pembina is not contesting this finding and the cause and effect for abnormal operations will be updated in the new SPCC Training and Qualification document. The US PCMP will be updated to reference the new document. Pembina requires additional time to complete the review stage and the new document is anticipated to be published by Monday May 6, 2024. (See attached documentation NOA #15-17).

Regarding NOA #17 195.446 CRM PHMSA found:

Pembina's US PCMP section 4.4 was not adequate to define the frequency of new and recurring team training. Specifically, section 4.4 failed to address when a new operator or new collaborator, as defined in section 4.4.1, will be initially trained. Section 4.4 also did not address how often team training would be conducted (i.e., annually, every two years, every three years, etc.).

Pembina needs to amend the US PCMP to include when and how initial training will be conducted, the frequency for team training, as well as when and how group Team Training will be conducted.

Pembina is not contesting the Notice and a new document SPCC Training and Qualification has been developed to outline the SPCC training program. The document will include the frequency of initial training and team training. The US PCMP will be updated to reference the new document. Pembina requires additional time to complete the review stage and the new document is anticipated to be published by Monday May 6, 2024.

Regarding NOA #18 195.446 CRM, PHMSA found:

Pembina's US PCMP was not adequate to ensure compliance and coordination with regulators. Specifically, US PCMP section 9.6 only identified compliance and coordination with regulators for US Vantage Pipeline; section 9.6 failed to mention Pembina Cochin pipeline, which is a separate pipeline system. The procedure also identified Vantage's Regulatory Team as responsible for compliance validation and coordination and only referenced Regulatory Procedure US-REG-001 for guidance. USREG-001 applies to reporting requirements under Part 195 (Drug & Alcohol, IMP, Annual Reports, etc.). The procedure needs to require Pembina Cochin Pipeline compliance and coordination with regulators.

Pembina needs to amend the US PCMP to include the Pembina Cochin Pipeline and the appropriate sections of regulations.

Pembina is not contesting this finding and has amended the US PCMP SEC 9.6. (See attached documentation NOA #18)

Regarding NOA #19 195.446 CRM PHMSA found:

Pembina's US PCMP was not adequate to ensure records are maintained properly to demonstrate compliance. Specifically, section 7.3.1 "Control Centre Documentation & Records Management" failed to specify how long records need to be maintained. Section 7.3.1 referred to "long term retention," this language is subjective and did not clarify how long documents will be retained. While Pembina did have a corporate

retention policy, it was not referenced in the US PCMP. Pembina could reference this retention policy in its US PCMP to meet this requirement.

Pembina needs to amend the US PCMP to clearly state Vantage's the retention policy. If Pembina chooses to use its corporate retention policy, the procedure should reference that policy and include reference to where the policy is located.

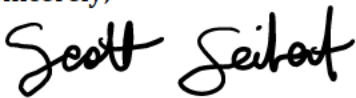
Pembina is not contesting this finding and has amended the US PCMP SEC 7.4.1. (See attached documentation NOA #19)

*****Cost Analysis*****

Pembina is requesting an additional 30 Days (April 5th, 2024) to gather the documentation of the safety improvement costs associated with fulfilling this Notice of Amendment. Pembina is in the process of collecting contractor billings, personnel time spent, any upgrades to SCADA/applications/reporting tools/etc. associated with the NOA's. Pembina will submit the total costs to Gregory Ochs, Director, Central Region, Pipeline and Hazardous Materials Safety Administration on or before April 5th, 2024.

If you need further information or clarification regarding this matter, please contact Scott Seibert at (815) 508-5661(cell).

Sincerely,



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