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May 3, 2021

Mr. Robert Burrough
Director, Eastern Region
Pipeline and Hazardous Materials Safety Administration
840 Beaver Tavern Road, Suite 300
West Trenton, NJ 08628

RE: Notice of Amendment

CPF 1-2021-012-NOA

Dear Mr. Burrough,

Crestwood Equity Partners, L.P. ("Crestwood") submits the following response to the Pipeline and Hazardous Materials Safety Administration's ("PHMSA") Notice of Amendment ("NOA") CPF 1-2021-012-NOA. This letter provides Crestwood's formal response to Items 1 through 4 identified in the NOA.

- 1. TPGS's written procedures for conducting operations, maintenance, and emergency preparedness and response activities under §192.12(a)(3) were inadequate. Specifically, TPGS's *UNGS OM* did not describe its operation and maintenance (O&M) processes in detail in accordance with API RP 1170, Section 9.7.1 Procedures (Section 9.7.1).**

At the time of the inspection, TPGS's *UNGS OM* did not describe the O&M processes with specificity. Procedures presented to PHMSA at the time only re-stated the requirements of API RP 1170. Therefore, TPGS's procedures lacked details to thoroughly describe the O&M processes used to maintain ongoing functional integrity of the storage facility. TPGS must revise its procedures to include detailed O&M procedures.

Response: Crestwood has updated language to the UNGS O&M Section S2.34.7.1 that reads as follows:

S2.34.7.1 Procedures**[API RP 1170 Sec.9.7.1]**

"Local operations and engineering shall develop, maintain, and implement operation and maintenance procedures. These procedures should allow for the safe operation and necessary maintenance of the wellhead and cavern to ensure integrity. The following procedures shall be developed:

- Emergency Response
 - Reference Facility Specific ERP
- Mechanical Integrity Testing (specific procedure developed as needed)
- ESD System Testing (Annual Testing)
 - Reference Section S2.34.4.4 in O&M & FORM OPS.47
- Specific well work procedures (developed as needed)
 - Reference Gas Storage Workover Process Guidelines
- Instrumentation testing and calibration
 - Reference Section S2.34.4.1 in O&M & SOP S2.34.4.1 & FORM OPS.46
- Periodic wellhead and wellhead valve inspections (Annual inspection and service)
 - Reference Subsurface Integrity Management Plan Section 11.1.6 & FORM OPS.48."

2. **TPGS's written procedures for conducting operations, maintenance, and emergency preparedness and response activities under § 192.12(a)(3) were inadequate. Specifically, TPGS's OM S2.29.1 procedures did not describe the process it uses to establish a maximum and minimum storage operating pressure, or its process for converting maximum and minimum pressure at a casing seat to a maximum and minimum wellhead pressure, in accordance with API RP 1170, Section 9.1-Minimum and Maximum Operating Limits (Section 9.1).**

Response: Crestwood updated language to Crestwood O&M Section S2.34.1 that reads as follows:

S2.34.1 MINIMUM & MAXIMUM OPERATING LIMITS [API RP 1170 Sec. 9.1]

"The calculation of the maximum and minimum storage operating pressures is outlined in the Subsurface Integrity Management Plan, and shall be further dictated by Engineering & Permit Requirements."

In addition, Crestwood's Subsurface Integrity Management Plan Section 6.1 has been amended to read as follows:

6.1 Maximum & Minimum Operating Limits

6.1.1

"Maximum & Minimum Operating Limits – Maximum and minimum operating limits for caverns are defined by results from geo-mechanical evaluations, laboratory testing of salt cores, and state and FERC certificate requirements. These pressures are expressed as a maximum/minimum pressure gradient at the casing shoe that shall not be exceeded. Maximum/minimum surface pressures are calculated utilizing the maximum/minimum pressure gradients allowed at the casing seat depths, gas specific gravity, gas composition, and estimated temperature. These calculations are kept in the Cavern Capacity Calculation folder in the individual facility files on the Crestwood server. This information is used to calculate the expected maximum and minimum wellhead pressures utilized during standard operations..

6.1.2

"Surface pressure is defined by the following equation:"

6.1.2.1

" $P_{\text{surface}} = P_{\text{depth}} \times e^{[(0.01875 \times SG \times \text{depth}) / (Z_{\text{ave}} \times T_{\text{ave}})]}$

P_{depth} = Maximum/minimum pressure gradients X casing depth, psig

P_{surface} = Pressure at surface, psig

SG = Gas Specific Gravity, unitless

Depth = Depth from casing shoe to surface, feet

Z_{ave} = The average of gas compressibility at surface conditions, and the gas compressibility at casing seat depth, unitless

T_{ave} = Average of the surface and casing seat temperatures, °R"

- 3. TPGS's written procedures for conducting operations, maintenance, and emergency preparedness and response activities under §192.12(a)(3) were inadequate. Specifically, TPGS does not have detailed procedures to describe its evaluation process for the applicability of integrity monitoring methods in accordance with API RP 1170, Section 10.4 - *Review of Integrity Monitoring Methods* (Section 10.4). At the time of the inspection, TPGS's procedures did not describe the evaluation processes for integrity monitoring methods in detail. Therefore, TPGS did not develop evaluation processes for integrity monitoring methods as required by Section 10.4. TPGS must revise its procedures to include details on its integrity monitoring methods.**

Response: Crestwood's Subsurface Integrity Management Plan Section 11 reads as follows:

11.0 Threat Mitigation

11.1

"Preventative & Mitigative Measures – Sections 11.1.1 – 11.1.22 identify the preventative and mitigative measures, and associated records employed by operations and engineering to monitor integrity of the reservoir/cavern/well systems. Crestwood engineering performed initial review of RP1170 Table 1 and RP1171 Table 2, as well as other internally utilized methods, and has listed the actions utilized by Crestwood to monitor and manage risks. This section will identify the method, frequency, reviewer, and required interval for all applicable reviews."

11.1.1

"Continuous Weekly Monitoring of Pressure & Flow data – Local operations should continuously monitor the flow and associated pressures to identify any potential integrity issues. This data is maintained within the SCADA system, and is monitored/reviewed at least weekly by operations. Abnormal operating conditions identified should be documented and pursued as outlined in Section 9 above."

11.1.2

"Wellsite Inspections – Wellsite Inspections should be completed monthly at both reservoir and cavern well sites by operations personnel. When completed, these inspections should be reviewed by the facility/operations manager. Abnormal operating conditions identified should be documented and pursued as outlined in Section 9 above..

11.1.3

"Annulus Monitoring – All wells shall be monitored for annular pressure as indicated in Crestwood O&M Section R2.34.4 & S2.34.3.4.2. Annular pressures should be checked weekly by operations, and reported to facility/operations manager on Form OPS.41. Thresholds for action due to the presence of annular pressure have also been established in Crestwood O&M Section R2.34.4 & S2.34.3.4.2. These annular pressures should also be reviewed by engineering during the annual data review and assessment process."

11.1.4

"Annulus Pressure Test – Annular pressure tests will be conducted as deemed necessary by operations and/or engineering. These tests can be performed by Crestwood operations or a third party. When completed, the results of the tests will be reviewed by Crestwood engineering, or a third party."

11.1.5

"Well Inspection Logging – The Crestwood Standard Casing Inspection Guidelines document identifies the frequency of casing inspections based on results from baseline casing inspections. The initial casing inspection schedule was derived by engineering using the risk management and identification process identified in the Storage Risk Management Plan and available well records. Subsequent casing inspections will follow that schedule and incorporate modifications to the schedule based on either additional well data obtained, new circumstances that require modification, or casing inspection results that require a change in logging frequency as identified in the standard. Engineering will review any new casing inspections annually during the annual data review and assessment process, and incorporate the results through modification of the risk ranking and potential modification of the casing inspection schedule."

11.1.6

"Annual Wellhead & Valve Inspection – Wellheads and associated valves will be inspected by Crestwood operations or a third party annually. This should include visual inspection for leaks, function testing of the valves where possible, and testing of wellhead seals where possible. The valves will be maintained, repaired, or replaced in accordance with local operations valve maintenance program for isolation valves. The valve inspections should be: (i) reviewed by facility/operations manager when completed; and (ii) reviewed by engineering during the annual data review and assessment process."

11.1.7

"Valve Maintenance & Greasing – This should be completed by operations or a third party during the annual inspection, and/or any time it is deemed necessary for the proper operation of the valve(s) in question."

11.1.8

"Annual ESD Testing – Operations will test ESD's annually as indicated in Crestwood O&M Section R2.34.4 and S2.34.4.4. The valves will be maintained, repaired, or replaced in accordance with local operations valve maintenance program."

11.1.9

"Review of Surface Encroachment by third parties – Operations should monitor continuously for third party activity surrounding well and pipeline areas during daily activities. 3rd party activity that could potentially impact reservoir or cavern operations should be brought to the attention of the facility/operations manager."

11.1.10

"Public Awareness/Damage Prevention – Public awareness events should be held annually for all gas storage sites as identified in Crestwood O&M Section R2.36.9. These events educate the public on items such as damage prevention notification systems, hazards related to unintended releases, indications of a release, procedures for reporting the release, and actions to be taken for public safety during the release."

11.1.11

"Maintenance Management System – This is a work order/compliance management software tool that is utilized to notify operations/engineering of compliance tasks coming due, and to document the results/outcomes of the identified compliance task. Well compliance tasks should be tracked in the maintenance management system."

11.1.12

"Well Specific Work Procedures – Well specific procedures are utilized to ensure that the proper steps are followed to maintain integrity, and to complete the desired well work/remediation. Reference Workover Process Guidelines."

11.1.13

"Employee Training – Operations personnel complete training as required in Crestwood O&M Section R2.36.11, and as applicable to their assigned duties."

11.1.14

"Requirement for qualified personnel – Crestwood requires that well work be supervised either by a qualified Crestwood employee or a qualified company designee."

11.1.15

"Semi-Annual Inventory Tests – Inventory tests are completed by operations and engineering using the processes and frequencies identified in Sections 7.1 and 7.2 above."

11.1.16

"Hysteresis Curves – Hysteresis data is maintained continuously for all reservoir storage fields, used to document the pressure vs. inventory relationship, and to monitor integrity of the reservoir. This data is updated and reviewed regularly by engineering."

11.1.17

"Cavern Volume Monitoring – Cavern volumes are monitored by engineering and checked using the process and frequency identified in Section 7.2 above."

11.1.18

"Gas Composition Monitoring – Gas composition is monitored continuously in the SCADA system, and checked routinely by operations."

11.1.19

"Subsidence Monitoring – A 3rd party group completes subsidence surveys on salt storage locations annually to monitor ground subsidence surrounding gas storage caverns."

11.1.20

"Stop Work Authority – When completing well work or any associated task all personnel can stop the work occurring to assess the situation for safety reasons or if abnormal conditions are recognized."

11.1.21

"Emergency Response Training - Operations personnel complete Emergency Response Training as outlined in Crestwood O&M Section R2.35.6.2, and, when held, participate in well control drill scenarios. Emergency Response Training and drill frequencies are identified in the respective documents."

11.1.22

"Annual Review of applicable programs for storage facilities – Operations, engineering, and compliance complete annual reviews, , to the following programs:

11.1.22.1 Control Room

11.1.22.2 O&M

11.1.22.3 Public Awareness

11.1.22.4 Drug & Alcohol Program

11.1.22.5 Storage Risk Management Plan

11.1.22.6 Subsurface Integrity Management Plan

11.1.22.7 Task Op Risk Rankings"



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4. **TPGS's written procedures for conducting operations, maintenance, and emergency preparedness and response activities under §192.12(a)(3) were inadequate. Specifically, TPGS's UNGS OM procedures did not describe the process for Lockout and Tagout (LOTO) operations in accordance with API RP 1170, Section 9.6.8 - Lockout and Tagout Systems (Section 9.6.8).**

Response: Crestwood has updated language to O&M Section S2.34.5.1 that reads as follows:

S2.34.5.1 GENERAL

"Well workovers may be necessary during gas storage service. Various reasons include partial or total loss of de-brining string, well or cavern integrity issues, maintenance of wellhead components, and/or recovery of volume lost due to creep closure.

Workover methods consist of working on a pressurized cavern or working on a depressurized cavern.

Workovers take place at periods typically every 15 years for natural gas caverns. Workover procedures will be developed and reviewed by Crestwood SME's and possibly 3rd party contractors prior to each workover. If required, Operations shall follow Lock-Out-Tag-Out (LOTO) procedures, and should retain documents indicating LOTO for cavern workover operations. These records shall be maintained in the well file."

Crestwood believes that the responses herein address CPF 1-2021-012-NOA pertaining to Crestwood's Tres Palacios facility in Markham, Texas.

Respectfully,

Crestwood Midstream Partners LP

A handwritten signature in black ink, appearing to read 'Robert Pettus', is written over a horizontal line.

Robert Pettus
Sr. Manager, Construction and Pipeline Regulatory