

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO

UNITED STATES OF AMERICA
and
NEW MEXICO ENVIRONMENT DEPARTMENT,

Plaintiffs,

v.

Civil No. 1:23cv00654 KWR/JMR

MEWBOURNE OIL COMPANY,

Defendant.

CONSENT DECREE

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WHEREAS, the United States of America, on behalf of the United States Environmental Protection Agency (“EPA”), and the New Mexico Environment Department (“NMED”), have filed a Complaint concurrently with the lodging of this Consent Decree, pursuant to the Clean Air Act, 42 U.S.C. § 7401, *et seq.* (“the Act”) and the New Mexico Air Quality Control Act, NMSA 1978, § 74-2-1, *et seq.* (“AQCA”).

WHEREAS, the Complaint alleges that Defendant, Mewbourne Oil Company (“Mewbourne”), violated requirements of: (a) the Act; (b) the Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for Which Construction, Modification, or Reconstruction Commenced After August 23, 2011, and On or Before September 18, 2015, 40 C.F.R. part 60, subpart OOOO (“NSPS OOOO”); (c) the Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification, or Reconstruction Commenced After September 18, 2015, 40 C.F.R. part 60 subpart OOOOa (“NSPS OOOOa”); and (d) the AQCA and implementing regulations issued thereunder by NMED and included in an EPA-approved State Implementation Plan (“SIP”). The Complaint further alleges that Mewbourne violated requirements of the Texas Clean Air Act, Tex. Health and Safety Code Ann. § 382.001, *et seq.* (“TCAA”) and implementing regulations issued thereunder by the Texas Commission on Environmental Quality and included in an EPA-approved SIP.

WHEREAS, these violations occurred at numerous Storage Vessels that are part of Mewbourne’s oil and natural gas production system located in Lea and Eddy Counties in New Mexico and numerous counties in Texas.

WHEREAS, Mewbourne’s oil and natural gas production system separates produced oil,

produced water, and natural gas at well pads. After separation, the produced oil and produced water are emptied into Storage Vessels prior to being transported by pipelines or tanker trucks for sale, reuse, or disposal. If produced oil or water is still pressurized as it is transferred into Storage Vessels, the pressure of the fluids decreases and vapors, which include volatile organic compounds (“VOC”), are released from the fluid.

WHEREAS, VOC is a precursor to ground-level ozone, commonly known as smog. Ground-level ozone is one of six criteria pollutants for which the EPA has promulgated a National Ambient Air Quality Standard (“NAAQS”) due to its adverse effects on human health and the environment.

WHEREAS, ground-level ozone is formed, in part, by the chemical reactions between VOCs and oxides of nitrogen (“NO_x”) that occur in the presence of heat and sunlight.

WHEREAS, Mewbourne has equipped some of the Storage Vessels that are part of its oil and natural gas production system with Vapor Control Systems that include covers and closed vents used to route vapors from the Storage Vessels to a control device or through a Vapor Recovery Unit.

WHEREAS, NSPS OOOO, NSPS OOOOa, and NMED’s General Construction Permit for Oil and Gas Facilities, where applicable, require owners and operators of oil and natural gas production systems to comply with design and operating requirements associated with the Vapor Control System so that it captures and routes all emissions from Storage Vessels back to the process stream or to a control device.

WHEREAS, TCEQ’s Permit by Rule for Oil and Gas Handling and Production Facilities, where applicable, limits total emissions from such facilities to 25 tons per year each of SO₂, all

other sulfur compounds combined, and all VOC compounds combined, and to 250 tons per year each of NO_x and carbon monoxide (“CO”). Where a flare is used to comply with these limits, the flare is subject to the requirements of 30 T.A.C. § 106.492.

WHEREAS, the Complaint alleges that on April 16–18, 2019, the EPA and NMED inspected 16 of Mewbourne’s oil and natural gas production well pads in New Mexico. At 13 of these well pads, the inspectors observed that Storage Vessels were releasing significant amounts of VOC emissions to the atmosphere.

WHEREAS, the Complaint alleges that, during flyover inspections conducted by the EPA in September and October of 2019 and October of 2020, the EPA observed significant VOC emissions to the atmosphere at 66 of Mewbourne’s well pads in New Mexico and Texas.

WHEREAS, the Complaint further alleges that many of the Storage Vessels at Mewbourne’s well pads were equipped with Vapor Control Systems that failed to route all vapors from the Storage Vessel to control devices or to a process, resulting in vapors being emitted directly to the atmosphere.

WHEREAS, Mewbourne does not admit any liability to the United States, New Mexico, or Texas arising out of the occurrences alleged in the Complaint.

WHEREAS, the United States, NMED, and Mewbourne (the “Parties”) recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation among the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section I (Jurisdiction and Venue),

and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, 1355, and 1367; and Section 113(b) of the Act, 42 U.S.C. § 7413(b), and over the Parties. Venue lies in this District pursuant to Section 113(b) of the Act, 42 U.S.C. § 7413(b), and 28 U.S.C. §§ 1391(b) and 1395(a), because Mewbourne conducts business in this judicial district. For purposes of this Consent Decree, or any action to enforce this Decree, Mewbourne consents to the following: (1) this Court's jurisdiction over this Decree and any such enforcement action; (2) this Court's jurisdiction over the Defendant; and (3) venue in this judicial district.

2. For purposes of this Consent Decree, Mewbourne agrees that the Complaint states claims upon which relief may be granted pursuant to Section 113(b) of the Act, 42 U.S.C. § 7413(b).

3. The States of New Mexico and Texas have actual notice of the commencement of this action in accordance with the requirements of Section 113 of the Act, 42 U.S.C. § 7413.

II. APPLICABILITY

4. The obligations of this Consent Decree apply to and are binding upon the United States, NMED, and upon Mewbourne and any successors, assigns, or other entities or persons otherwise bound by law, consistent with the provisions of Section XV (Sales or Transfers of Operations). Unless otherwise noted, the obligations of this Consent Decree shall become enforceable on the Effective Date as provided in Section XVII (Effective Date).

5. Mewbourne shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties might reasonably include compliance with any provision of this Consent Decree, as well as to any contractor retained to perform work required under this Consent Decree. Mewbourne shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

6. In any action to enforce this Consent Decree, Mewbourne shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

III. DEFINITIONS

7. Terms used in this Consent Decree that are defined in the Act, the AQCA, the TCAA, or in the regulations promulgated pursuant to those statutes, shall have the meanings assigned to them therein unless otherwise provided in this Consent Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply.

- a. “AVO” shall mean audio, visual, and olfactory.
- b. “Battery Pad” shall mean a property with one or more Storage Vessel(s) capable of receiving Produced Oil from Production Operations.
- c. “Business Day” shall mean each of the 5 days from Monday through Friday, except for federal and state holidays.
- d. “Calendar Day” or “Day” shall mean any of the 7 days of the week. In computing any period of time under this Consent Decree expressed in Calendar Days or Days, where the last day would fall on a Saturday,

Sunday, or federal or state holiday, the period shall run until close of business the next Business Day.

- e. “CO” shall mean carbon monoxide.
- f. “Complaint” shall mean the Complaint filed by the United States and NMED in this action.
- g. “Compromised Equipment” shall mean equipment associated with a Vapor Control System that shows signs of wear beyond normal wear and tear (and cannot be addressed by routine maintenance such as tightening, cleaning, or lubricating the equipment) such that the equipment creates a likelihood of VOC emissions in excess of the quantity, rate, opacity or concentration specified by an applicable air quality regulation, permit condition, or Notice of Intent application. Examples include, but are not limited to, indications of inefficient connection of the thief hatch to the Storage Vessel such as cracks or grooves in gaskets, abnormally or heavily corroded equipment, and beveling of surfaces that interferes with effective sealing.
- h. “Consent Decree” or “Decree” shall mean this Consent Decree and all Appendices attached hereto.
- i. “Construction Permit” shall mean a permit issued under the Construction Permit program set forth under the AQCA regulations at 20.2.72 NMAC.

- j. “Date of Lodging” shall mean the date this Consent Decree is filed for lodging with the Clerk of the Court for the United States District Court for the District of New Mexico.
- k. “Defendant” or “Mewbourne” shall mean Mewbourne Oil Company.
- l. “Design Analysis Methodology” shall mean the methodology referenced in Paragraph 24 and attached hereto as Appendix E.
- m. “DOJ” means the United States Department of Justice and any of its successor departments or agencies.
- n. “Effective Date” shall have the definition provided in Section XVII (Effective Date).
- o. “Engineering Evaluation” shall mean the evaluations performed by Mewbourne in compliance with Paragraph 25 of this Consent Decree to determine whether the Vapor Control System is adequately designed and sized for PMIVFR, PPIVFR, and Peak Modeled Pressure.
- p. “Environmental Mitigation Project” shall mean the requirements specified in Subsection V.K and Appendix H of this Consent Decree to remedy, reduce, or offset past excess emissions resulting from Mewbourne’s alleged violations of the Act in this matter.
- q. “EPA” shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.
- r. “Facility” shall mean each Battery Pad identified in Appendices A, B, and C.

- s. “Field Survey” shall mean the survey performed by Mewbourne in compliance with Paragraphs 14 through 18.
- t. “Flame Arrestor” shall mean a device in a Vapor Control System that allows gas to pass through it but stops a flame from returning to an ignition source to prevent a larger, uncontrolled fire or explosion.
- u. “Heater-Treater” shall mean a unit that heats the reservoir fluid to break oil/water emulsions and to reduce the oil viscosity. The water is then typically removed by using gravity to allow the water to separate from the oil.
- v. “IR Camera Inspection” shall mean an inspection of a Vapor Control System using an optical gas imaging infrared camera (or any alternative technology approved for purposes of this Consent Decree in writing by the EPA) designed for and capable of detecting hydrocarbon and VOC emissions, conducted by trained personnel who maintain proficiency through regular use of the optical gas imaging infrared camera.
- w. “Leak Point” shall mean the pressure at which a PRD first opens to release vapors, as determined in accordance with Paragraph 35.
- x. “Limited Field Survey” shall mean the survey performed by Mewbourne in compliance with Paragraphs 19 through 22.
- y. “Malfunction” shall mean any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, instrumentation, monitoring system, or a process to operate in a normal or

usual manner. Failures that are caused in part by poor maintenance or careless operation are not Malfunctions.

- z. “Maximum Design Pressure” shall mean the pressure of each Vapor Control System determined according to an Engineering Evaluation as the highest pressure of a Vapor Control System before over-pressurization occurs.
- aa. “NMED” shall mean the New Mexico Environment Department and any of its successor departments or agencies.
- bb. “Normal Operations” shall mean all periods of Battery Pad operation, excluding Malfunctions, planned maintenance, unplanned maintenance, and the operation of equipment that has been Shut-In. Normal Operations include, but are not limited to, receipt or transfer of liquids from a Separator or Heater-Treater.
- cc. “NO_x” shall mean nitrogen oxides.
- dd. “NSPS OOOO” shall mean the Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for Which Construction, Modification, or Reconstruction Commenced after August 23, 2011, and on or before September 15, 2015, set forth at 40 C.F.R. part 60 subpart OOOO.
- ee. “NSPS OOOOa” shall mean the Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification, or

Reconstruction Commenced After September 18, 2015, set forth at 40 C.F.R. part 60, subpart OOOOa.

- ff. “Operator” shall mean the operator of record under 19-15-2-7 NMAC, in New Mexico, or under 16 T.A.C. § 5.102, in Texas.
- gg. “Paragraph” shall mean a portion of this Consent Decree identified by an Arabic numeral.
- hh. “Parties” shall mean the United States, NMED, and Mewbourne.
- ii. “Peak Modeled Pressure” shall mean the highest pressure predicted by the model to be experienced by the Vapor Control System during Normal Operations, as determined according to an Engineering Evaluation.
- jj. “Plaintiffs” shall mean the United States and NMED.
- kk. “Potential Minimum Instantaneous Vapor Flow Rate” or “PMIVFR” shall mean the minimum instantaneous rate of vapors routed to a Vapor Control System during Normal Operations, including flashing, working, breathing, and standing losses, as determined according to an Engineering Evaluation.
- ll. “Potential Peak Instantaneous Vapor Flow Rate” or “PPIVFR” shall mean the maximum instantaneous rate of vapors routed to a Vapor Control System during Normal Operations, including flashing, working, breathing, and standing losses, as determined according to an Engineering Evaluation.

- mm. “Pressurized Liquids” shall mean: (i) pressurized Produced Oil upstream of the Storage Vessel(s) that has not been exposed to the atmosphere; and (ii) pressurized Produced Water upstream of the Storage Vessel(s) that has not been exposed to the atmosphere.
- nn. “Produced Oil” shall mean oil that is separated from extracted reservoir fluids during Production Operations.
- oo. “Produced Water” shall mean water that is separated from extracted reservoir fluids during Production Operations.
- pp. “Production Operations” shall mean the extraction, separation using Separators and/or Heater-Treaters, and temporary storage of reservoir fluids from an oil or natural gas well at a Battery Pad.
- qq. “PRD” or “Pressure Relief Device” shall mean thief hatches and PRVs.
- rr. “PRV” shall mean pressure relief valve.
- ss. “PSI” or “psi” shall mean pounds per square inch.
- tt. “QA/QC” shall mean quality assurance and quality control.
- uu. “Reliable Information” shall mean any of the following information, observations or detections, when collected by employees or contractors of the EPA, NMED, or the Texas Commission on Environmental Quality, trained Mewbourne employees, trained Mewbourne contractors, or the Verifier: (i) VOC emissions from a Vapor Control System, an open bypass device or any bypass as described in Paragraph 44, an open thief hatch, an open PRV, or open-ended line emissions, while using an optical gas

imaging camera, AVO techniques, or EPA Method 21 monitoring techniques; (ii) Visible Smoke Emissions from a combustion control device; (iii) VOC emissions from an unlit flare; (iv) Pilot Monitor failures as described in Paragraph 46; (v) significant staining emanating from a PRV, where such staining was not identified during a Field Survey or previously identified as Reliable Information; or (vi) recorded VRU availability that is less than represented on a rolling 12-month basis, as described in Paragraph 45. The following shall not be considered Reliable Information: (vii) any observation or detection of VOC emissions made during observations conducted by Mewbourne or its contractors from aircraft, drones, satellites, continuous monitoring systems not otherwise required under Section V of the Consent Decree, or other remote sensing technology not required by law; (viii) any observation or detection of VOC emissions made during active maintenance of equipment associated with a Vapor Control System; (ix) any observation or detection of VOC emissions from a lit flare, as long as the flare is operated and maintained in conformance with the manufacturer's specifications and the plume of VOC emissions is insignificant and does not extend away from the flare tip or combustion zone; (x) any exceedance of a Storage Vessel Pressure Monitoring Trigger Point; (xi) any observation or detection of VOC emissions made during well unloading, tank truck loadout conducted without emission controls, or gauging activities; (xii) any observation or

detection of VOC emissions made during onsite active well maintenance (e.g., swabbing and liquids unloading) at the Facility associated with the Storage Vessel System; and (xiii) any observation or detection of VOC emissions made during a Limited Field Survey.

- vv. “Root Cause Analysis” shall mean an assessment conducted through a process of investigation to determine the primary cause and any contributing cause(s) of Reliable Information, including but not limited to an analysis of relevant historical trends.
- ww. “Section” shall mean a portion of this Consent Decree identified by a Roman numeral.
- xx. “Separator” shall mean a pressurized vessel designed to separate reservoir fluids into their constituent components of oil, natural gas, and water.
- yy. “Set Point” shall mean the lowest pressure at which a PRD is designed to open completely.
- zz. “Shut-In” shall mean: (i) the flow of all liquids and vapor into the Storage Vessel System has ceased and cannot be resumed without Mewbourne personnel opening valves, activating equipment, or supplying a power source; or (ii) the temporary removal from service of equipment at a Battery Pad as provided in compliance with Paragraph 49.
- aaa. “Storage Vessel” shall mean the definition of “storage vessel” as set forth in 40 C.F.R. § 60.5430a.

- bbb. “Storage Vessel System” shall mean one or more Storage Vessels, with at least one Produced Oil Storage Vessel, that share a common Vapor Control System.
- ccc. “Subject Vapor Control Systems” shall mean the Vapor Control Systems located at the facilities listed in Appendices A and B and those Storage Vessel Systems newly identified pursuant to Paragraph 55.
- ddd. “Subsection” shall mean a portion of this Consent Decree within a Section that is identified with a capitalized alphabetical letter.
- eee. “TPY” or “tpy” shall mean tons per year.
- fff. “Trigger Point” shall mean a pressure, measured by the Storage Vessel Pressure Monitor in accordance with Paragraph 33 and selected in accordance with Paragraph 36, that is less than the lowest Leak Point of any of the Subject Vapor Control System’s PRDs, and in no case may the value of the Trigger Point be equal to or exceed the lowest Set Point of any of the Subject Vapor Control System’s PRDs.
- ggg. “United States” shall mean the United States of America, acting on behalf of the EPA.
- hhh. “Vapor Control System” or “VCS” shall mean the system used to contain, convey, or control vapors from one or more Storage Vessel(s) (including flashing, working, breathing, and standing losses as well as any emissions routed to the Storage Vessel Vapor Control Systems). The Vapor Control System includes the Storage Vessel System and any vapor control piping,

fittings, connectors, liquid knockout vessels, openings on Storage Vessels (such as thief hatches and any other pressure relief devices), Vapor Recovery Units and emission control devices.

- iii. “Vapor Recovery Unit” or “VRU” shall mean a device that captures and compresses vapors from a Storage Vessel System, vapor recovery tower, or gun barrel tank, and routes such vapors for recovery to sales line (i.e., “routes to process”).
- jjj. “Verifier” shall mean the independent third-party verifier designated pursuant to Paragraph 70.
- kkk. “Visible Smoke Emissions” shall mean smoke observed pursuant to EPA Method 22 during Normal Operations or Malfunction for more than one minute in any fifteen-minute period.
- III. “VOC” shall mean volatile organic compounds as defined in 40 C.F.R. §§ 51.100(s) or 60.2.

IV. CIVIL PENALTY

8. Within 30 Days after the Effective Date, Mewbourne shall pay the sum of \$5,500,000 as a civil penalty, together with interest accruing from the date on which the Consent Decree is lodged with the Court, at the rate specified in 28 U.S.C. § 1961 as of the date of lodging.

9. Mewbourne shall pay \$2,750,000 of the civil penalty due by FedWire Electronic Funds Transfer (“EFT”) to the DOJ account, in accordance with instructions provided to

Mewbourne by the Financial Litigation Unit (“FLU”) of the United States Attorney’s Office for the District of New Mexico after the Effective Date. The payment instructions provided by the FLU will include a Consolidated Debt Collection System (“CDCS”) number, which Mewbourne shall use to identify all payments required to be made in accordance with this Consent Decree.

The FLU will provide the payment instructions to:

Reagan Butts,
General Counsel
Mewbourne Oil Company
3620 Old Bullard Road
Tyler, TX 75701
rbutts@mewbourne.com
(903) 534-7986

10. Mewbourne may change the individual to receive payment instructions on its behalf by providing written notice of such change to DOJ and the EPA in accordance with Section XIV (Notices).

11. Mewbourne shall pay \$2,750,000 of the civil penalty due to the State of New Mexico General Fund, NMED-Air Quality Bureau, 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico, 87505 by wire transfer (ACH deposit) or by certified or corporate check. On the date that delivery of funds is initiated, Mewbourne shall notify the Air Quality Bureau by email at ENV-AQB.Settlement.Notifications@state.nm.us.

a. Wire transfers must be made to Wells Fargo Bank as follows:

Wells Fargo Bank, N.A.
100 W. Washington Street, Floor 20
Phoenix, AZ 85003
Routing Transit Number: 121000248
Deposit Account Number: 4123107799
Descriptor: NMED-AQB-C&E

- b. Certified or corporate checks must be sent to the following address:

New Mexico Environment Department
Air Quality Bureau
c/o Compliance and Enforcement Manager
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505

12. At the time of payment, Mewbourne shall send notice that payment has been made: (i) to the EPA via email at cinwd_acctsreceivable@epa.gov or via regular mail at EPA Cincinnati Finance Office, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268; (ii) to DOJ via email or regular mail in accordance with Section XIV; (iii) to the EPA in accordance with Section XIV; and (iv) to NMED via email or regular mail in accordance with Section XIV. Such notice shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States and NMED v. Mewbourne Oil Company* and shall reference the civil action number, CDCS Number, and DOJ case number 90-5-2-1-12294.

13. Mewbourne shall not deduct any penalties paid under this Consent Decree pursuant to this Section or Section VIII (Stipulated Penalties) in calculating its federal, state, or local income tax.

V. COMPLIANCE REQUIREMENTS

A. FIELD SURVEYS

14. Vapor Control System Field Survey. By no later than 180 Days after the Effective Date, Mewbourne shall conduct a Field Survey at each Facility in Appendices A and B.

15. During the Field Survey, Mewbourne shall, unless such information is not reasonably available in the field:

- a. inventory all Storage Vessels, the Vapor Control System (including piping configuration and low spots where liquids can accumulate), PRVs, thief hatches, thief hatch mountings, thief hatch gaskets, VRUs, flares, flow-regulating valves associated with a VRU or flare, and blowdown valves;
- b. record whether all components of the Vapor Control System are operating;
- c. record the manufacturer and model of PRVs, thief hatches, thief hatch mountings, thief hatch gaskets, VRUs, flares, and flow-regulating valves associated with a VRU or flare;
- d. record the Set Points of PRVs and thief hatches;
- e. record the minimum inlet pressure for each flare and VRU associated with each Vapor Control System;
- f. evaluate and record the condition of all PRVs, thief hatches, thief hatch mountings, thief hatch gaskets, VRUs, flares, flow-regulating valves associated with a VRU or flare, blowdown valves, and monitoring systems associated with the Vapor Control System;
- g. confirm that every thief hatch is either welded to the Storage Vessel or bolt-mounted with a suitable gasket to the Storage Vessel, in accordance with good engineering practices and applicable manufacturer specifications;
- h. confirm that every open-ended line in the Vapor Control System is capped;

- i. confirm that every bypass device (including open ended lines) in the Vapor Control System complies with the requirements in Paragraph 44(a);
- j. survey the PRVs, thief hatches, blowdown valves, mountings, gaskets, VRUs, control devices, monitoring systems and equipment upstream of the Vapor Control System that is associated with the Vapor Control System to identify Compromised Equipment, evidence of significant staining emanating from PRVs, or any equipment in need of repair or replacement to reduce the likelihood of excess VOC emissions;
- k. ensure that all signage at each Battery Pad: (i) is of durable construction with lettering legible and large enough to be read under normal conditions at a distance of 50 feet; and (ii) displays the well number, property name, operator's name, location by footage, quarter-quarter section, township and range, and API number; and
- l. record the set point of any backpressure regulating valves at the inlet of any VRU or control device, unless the VRU or control device is equipped with a pressure gauge that records the set point of the backpressure regulator valve.

16. For any Compromised Equipment or equipment identified as in need of repair or replacement pursuant to Paragraph 15, Mewbourne shall take appropriate corrective action as soon as practicable, including the repair, replacement, or upgrade of equipment.

17. Nothing herein shall require Mewbourne to repair, replace, or upgrade such equipment on Shut-In Storage Vessel Systems and their associated Vapor Control System except

that Mewbourne must repair, replace, or upgrade such equipment prior to resuming Normal Operations.

18. Mewbourne shall maintain records of the following information for each Field Survey:

- a. the date of the Field Survey;
- b. the full name of the person who performed the Field Survey;
- c. all information required to be recorded pursuant to Paragraph 15;
- d. any Reliable Information identified during the Field Survey;
- e. any significant staining around potential venting points or other evidence of VOC emissions observed during the Field Survey; and
- f. any equipment repaired, replaced, or upgraded under Paragraph 16, or other corrective action performed, including a description of how that equipment was repaired or with what it was replaced or upgraded.

19. Limited Field Survey. By no later than 180 Days after the Effective Date, Mewbourne shall conduct a Limited Field Survey at each Battery Pad listed in Appendix C. As a part of the Limited Field Survey, Mewbourne shall, unless such information is not reasonably available in the field:

- a. inventory all Storage Vessels, the Vapor Control System (including piping configuration and low spots where liquids can accumulate), PRVs, thief hatches, thief hatch mountings, thief hatch gaskets, VRUs, flares, and blowdown valves;
- b. record whether all components of the Vapor Control System are operating;

- c. record the Set Points of PRVs and thief hatches;
- d. record the minimum inlet pressure of flares;
- e. evaluate the condition of all PRVs, thief hatches, thief hatch mountings, thief hatch gaskets, blowdown valves, and monitoring systems associated with the Vapor Control System; and
- f. ensure that all signage at each Battery Pad: (i) is of durable construction with lettering legible and large enough to be read under normal conditions at 50 feet; and (ii) displays the well number, property name, operator's name, location by footage, quarter-quarter section, township and range, and API number.

20. If, while conducting a Limited Field Survey, Mewbourne observes Compromised Equipment, Mewbourne shall as quickly as practicable take appropriate corrective action, including the repair, replacement, or upgrade of equipment to reduce the likelihood of excess VOC emissions.

21. If, while conducting a Limited Field Survey, Mewbourne observes Compromised Equipment that is the cause of observed or detected emissions in excess of the quantity, rate, opacity or concentration specified by an applicable air quality regulation, permit condition, or PBR registration representation ("excess emissions"), Mewbourne shall: (a) take appropriate corrective action regarding such Compromised Equipment within 5 Days, or (b) by no later than the end of the fifth Day, temporarily remove from service as much equipment at the Battery Pad as is necessary to stop such excess emissions until the corrective action required by subparagraph (a) is completed.

22. Mewbourne shall maintain records of the following information for each Limited Field Survey:

- a. the date of the Limited Field Survey;
- b. the full name of the person who performed the Limited Field Survey;
- c. the information collected in Paragraph 19;
- d. whether Compromised Equipment was observed; and
- e. as to any equipment repaired, replaced, upgraded or removed from service under Paragraph 20 or 21, a description of how that equipment was repaired or with what it was replaced or upgraded and the dates of any repairs, replacements, upgrades, and removals from and returns to service.

B. SAMPLING

23. Pressurized Liquid Sampling. By no later than 180 Days after the Effective Date, Mewbourne shall collect and analyze Pressurized Liquids samples from Storage Vessel Systems at Facilities listed in Appendices A and B, in accordance with the Sampling and Analysis Plan (“SAP”) set forth in Appendix D. Where a vapor recovery tower is in use at a Facility, such Pressurized Liquids samples shall be obtained from a separator located upstream of the vapor recovery tower. For samples collected after the Effective Date, Mewbourne shall provide no fewer than 21 Days’ written notice to the EPA (and, for New Mexico facilities, to NMED) of the date when field sampling events are scheduled to occur.

C. COMPLIANCE ASSESSMENT

24. Design Analysis Methodology. The EPA has reviewed and approved, after consultation with NMED, the Design Analysis Methodology set forth in Appendix E.

25. Engineering Evaluation. No later than 270 Days after the Effective Date, Mewbourne shall prepare an Engineering Evaluation for each Subject Vapor Control System that shall be based on the approved Design Analysis Methodology. Each Engineering Evaluation shall incorporate the results of the Field Survey performed pursuant to Paragraphs 14 through 18 and the results of the Pressurized Liquid sampling performed pursuant to Paragraph 23. Each Engineering Evaluation shall include a determination as to whether the Subject Vapor Control System achieves the following objectives: the Subject Vapor Control System is adequately designed and sized for PMIVFR, PPIVFR, and Peak Modeled Pressure. For each Subject Vapor Control System that is not adequately designed to achieve these objectives, Mewbourne shall determine what design, equipment, operational, or other modifications are necessary to achieve these objectives and revise the Engineering Evaluation accordingly.

26. Modifications. With respect to each Subject Vapor Control System for which Mewbourne has determined, pursuant to Paragraph 25, that modifications are necessary to achieve the objectives specified in Paragraph 25, Mewbourne shall implement the modifications referenced in the revised Engineering Evaluation no later than 330 Days after the Effective Date.

27. Production Operations Shut-In. If Mewbourne has not implemented the modifications required by Paragraph 26 by the deadline specified therein, Mewbourne shall immediately Shut-In all Production Operations associated with that Subject Vapor Control System until the modifications required under Paragraph 26 have been completed.

28. In the event that Production Operations are Shut-In pursuant to Paragraph 27, Mewbourne may resume Production Operations for up to 5 Calendar Days for the sole purposes

of: (i) completing an Engineering Evaluation at a Subject Vapor Control System; or (ii) taking corrective action pursuant to Paragraph 16.

29. Verification by IR Camera Inspection. No later than 360 Days after the Effective Date, Mewbourne shall verify that each Subject Vapor Control System is adequately designed to achieve the objectives specified in Paragraph 25 by conducting an IR Camera Inspection of each Subject Vapor Control System.

- a. Inspections under this Paragraph must be conducted pursuant to the IR Camera Standard Operating Procedure (“SOP”) set forth in Appendix F. A video record of each IR Camera Inspection performed pursuant to this Paragraph shall be maintained and available to the EPA and NMED upon request.
- b. Such inspection shall be conducted during Normal Operations while, and immediately after, Produced Oil is sent to the Storage Vessel System. If multiple separators are capable of sending Produced Oil simultaneously to the Storage Vessel System, such inspections shall also be conducted when that occurs.
- c. If Mewbourne observes Reliable Information during an IR Camera Inspection required under this Paragraph, Mewbourne shall comply with the requirements of Paragraph 48.

30. Certification of Completion Report. No later than 390 Days after the Effective Date, Mewbourne shall submit to the Plaintiffs a Certification of Completion Report. The report

shall contain, in spreadsheet or database format, the following results of the Engineering Evaluation (including any revised Engineering Evaluation):

- a. the PMIVFR, PPIVFR, Vapor Control System Capacity, Peak Modeled Pressure and the Maximum Design Pressure;
- b. a description of each modification made to equipment or to operations as a result of the Engineering Evaluation;
- c. the original and the revised Maximum Design Pressure for any Subject Vapor Control System for which an original or revised Engineering Evaluation was performed pursuant to Paragraphs 25 or 31;
- d. a description of the principal site-specific or system-wide operational parameters or practices relied upon in the Engineering Evaluation (including the maximum operating pressure for the final stage of separation, the minimum operating temperature of the heater-treater, the minimum available headspace in Storage Vessels, and whether the flow to the Storage Vessels is intermittent (i.e., transient) or steady state);
- e. the Set Point of each thief hatch and PRV in the Storage Vessel System;
and
- f. the date an IR Camera Inspection was completed pursuant to Paragraph 29 and a summary of the results of such inspection, along with a description of all corrective actions performed to address any Reliable Information observed on the date of an IR Camera Inspection, the date and time of

each corrective action, and the date and method of verification used to determine that the corrective action was successful.

31. Operational or Equipment Changes after the Certification of Completion Report.

After Mewbourne has submitted a Certification of Completion Report for a Subject Vapor Control System under Paragraph 30, if an operational or equipment change is made such that the PPIVFR is increased beyond what was evaluated in the Engineering Evaluation; or the Vapor Control System capacity decreases, Mewbourne shall:

- a. revise the Engineering Evaluation required by Paragraph 25 within 30 Days of the operational or equipment change;
- b. implement all modifications necessary to ensure that the Subject Vapor Control System achieves the objectives specified in Paragraph 25 within 90 Days of the operational or equipment change;
- c. verify that each Subject Vapor Control System achieves the objectives specified in Paragraph 25 by conducting an IR Camera Inspection in compliance with Paragraph 29 within 30 Days of implementing the modifications required by subparagraph 31(b); and
- d. submit a supplemental Certification of Completion Report (consistent with the requirements of Paragraph 30) together with the next Semi-Annual Report required under Paragraph 84 that is due no less than 30 Days following completion of the requirement in subparagraph 31(c).

D. DIRECTED INSPECTION/PREVENTATIVE MAINTENANCE

32. Directed Inspection/Preventive Maintenance Program. By no later than 30 Days after the Effective Date, Mewbourne shall comply with the directed inspection and preventative maintenance requirements set forth in Appendix G at all Facilities in Appendices A and B.

E. STORAGE VESSEL PRESSURE MONITORING

33. No later than 90 Days after the Effective Date, Mewbourne shall, in accordance with manufacturer's recommendations, install, calibrate, maintain, and operate one electronic pressure monitor at each Subject Vapor Control System (collectively, "Storage Vessel Pressure Monitors"). These monitors shall measure and record data at least once every minute and, every 5 minutes, shall transmit 5 pressure measurement records—one from each of the 5 minutes—to a central monitoring station (e.g., a SCADA system). The Storage Vessel Pressure Monitors must be operated and function continuously except during instances of planned or unplanned maintenance or Malfunction of the Storage Vessel Pressure Monitors. If a Storage Vessel Pressure Monitor is identified as Malfunctioning, Mewbourne shall complete the repair within 5 Days. Mewbourne shall record all dates, durations and causes of Storage Vessel Pressure Monitor maintenance, Malfunctions, and other failures and report this information as required by Paragraph 84 (Reporting Requirements). In the case of a telecommunications failure beyond Mewbourne's control, it shall not be a violation of the data transmission requirement in this Paragraph if data recorded during such failure is transmitted to a central monitoring station within a reasonable time after the recommencement of telecommunications services.

34. For the first 90 Days after the Storage Vessel Pressure Monitors are installed pursuant to Paragraph 33, Mewbourne shall calibrate and optimize the Storage Vessel Pressure Monitors to assess and maximize their performance, reliability, and accuracy.

35. No later than 90 Days after the Storage Vessel Pressure Monitors are installed pursuant to Paragraph 33, Mewbourne shall determine the lowest Leak Point of all PRDs in each Subject Vapor Control System. Mewbourne may make this determination using representative Vapor Control System field testing (with an IR Camera), or by using representative PRD bench testing. PRD bench testing will be considered representative if such testing is based on a sample of PRDs of sufficient size to generate statistically significant results and all PRDs in the sample have the same make, model, and Set Point as the PRD for which a Leak Point is being determined. VCS field testing will be considered representative if such testing is based on a sample of Vapor Control Systems of sufficient size to generate statistically significant results and each VCS in the sample is equipped with a set of PRDs that have the same make, model, and Set Point as the PRDs in the VCS for which a Leak Point is being determined.

36. No later than 90 Days after the Storage Vessel Pressure Monitors are installed pursuant to Paragraph 33, Mewbourne shall select the Trigger Point for each Subject Vapor Control System.

37. At any time after 180 Days after the Effective Date, if there are two or more measurements within a 48-hour period that exceed the Trigger Point for a Vapor Control System, Mewbourne shall conduct a site investigation and comply with the requirements set forth in Paragraph 47. For purposes of this Paragraph, "measurement" means a single data point that exceeds the Trigger Point. Multiple pressure monitor measurements with a continuous duration

of one minute or longer during one Day will result in only one site investigation. During the site investigation, Mewbourne shall test the Storage Vessel Pressure Monitor, evaluate whether the Vapor Control System is operating as designed, and conduct an IR Camera Inspection. The site investigation shall be completed no later than the end of the Day following the Day during which measurement(s) triggered a site visit. If three or more site investigations are required pursuant to this Paragraph in any rolling six-month period, Mewbourne shall perform a Root Cause Analysis pursuant to Paragraphs 50 through 52, and the deadline for completing such analysis shall be 30 Days after the date of the third site investigation.

F. VRU AND CONTROL DEVICE MONITORING

38. Vapor Inlet Monitors. No later than 330 Days after the Effective Date, Mewbourne shall, in accordance with manufacturer's recommendations, install, calibrate, maintain, and operate a monitor for each vapor inlet to a VRU or control device (collectively, "Vapor Inlet Monitors") at each Subject Vapor Control System.

39. Each Vapor Inlet Monitor shall be located and designed to demonstrate that the pressures or flows at the inlet to the VRU or control device are consistent with the VRU and control device manufacturer specifications. Each Vapor Inlet Monitor shall continually measure, calculate, and record vapor volumetric flow or pressure, as appropriate.

40. Each Vapor Inlet Monitor shall record data at least once every 5 minutes and transmit at least once every 5 minutes to a SCADA system. The Vapor Inlet Monitors must be operated and function continuously except during instances of Malfunction. If the Vapor Inlet Monitor is identified as Malfunctioning, Mewbourne shall complete the repair within 5 Days. Mewbourne shall record all dates, durations, and causes of failures of the Vapor Inlet Monitor

and report this information as required by Paragraph 84. In the case of a telecommunications failure beyond Mewbourne's control, it shall not be a violation of the data transmission requirement in this Paragraph if data recorded during such failure is transmitted to a central monitoring station within a reasonable time after the recommencement of telecommunications services.

41. For the first 30 Days after each Vapor Inlet Monitor is installed pursuant to Paragraph 38, Mewbourne shall verify the calibration of and optimize the Vapor Inlet Monitor to ensure that the data produced by the Vapor Inlet Monitor are accurate and reliable.

42. No later than 60 Days after each Vapor Inlet Monitor is installed pursuant to Paragraph 38, above, Mewbourne shall record the date, time, location, and flow or pressure measurement at all times when the volumetric flow or pressure is less than the minimum, or greater than the maximum, specified by the equipment manufacturer. Each such record shall constitute Reliable Information and Mewbourne shall comply with the requirements set forth in Paragraph 48.

43. If the Engineering Evaluation indicates a backpressure regulator valve is necessary to prevent the flow to the VRU or control device when the flow or pressure is inconsistent with manufacturer specifications, Mewbourne shall no later than 330 Days after the Effective Date, install, calibrate, maintain, and operate a backpressure regulator valve and will not be required to comply with the monitoring requirements in Paragraphs 38 through 42.

44. Bypass Monitoring. No later than 90 Days after the Effective Date, at each Subject Vapor Control System with a VRU or flare equipped with a bypass device that can divert vapor flow to the atmosphere, Mewbourne shall:

- a. secure the bypass device valve installed at the inlet to the bypass device in the non-diverting position using a car-seal or a lock-and-key type configuration;
- b. visually inspect the seal or closure mechanism at least once every month to verify that the valve is maintained in the non-diverting position and the vent stream is not diverted through the bypass device; and
- c. maintain records of each inspection and of each time the key is checked out.

Except when a bypass to the atmosphere is necessary to conduct active maintenance on a VRU or flare, whenever a bypass to the atmosphere occurs at such a Facility, such bypass shall constitute Reliable Information and Mewbourne shall comply with the requirements set forth in Paragraph 48. Mewbourne shall not operate any Subject Vapor Control System pursuant to 40 C.F.R. §§ 60.5365(e)(3) or 60.5365a(e)(5).

45. VRU Availability Monitoring. Starting no later than the Effective Date, Mewbourne shall record VRU availability for VRUs at Subject Vapor Control Systems for which written representations have been made by Mewbourne to a state permitting authority related to VRU availability. Whenever recorded VRU availability is less than represented availability on a rolling 12-month basis, such information shall constitute Reliable Information and Mewbourne shall comply with the requirements set forth in Paragraph 48. Mewbourne may remove a VRU in accordance with applicable legal requirements, as long as Mewbourne complies with Paragraph 31.

46. Combustion Control Device Pilot Monitoring. No later than 150 Days after the Effective Date, Mewbourne shall, in accordance with manufacturer's recommendations, install, calibrate, maintain, and operate, for each combustion control device at a Subject Vapor Control System, a thermocouple or equivalent device to detect the presence of a flame for each combustion control device (collectively, "Pilot Monitors"). These monitors shall record data at least once every 60 seconds and, whenever the monitor fails to detect the presence of a flame, the monitors shall transmit data reporting such event to a central monitoring station within 60 seconds. The Pilot Monitors must be operated and function continuously except during instances of planned or unplanned maintenance or Malfunction of the Pilot Monitors. In the event of any Malfunction of a Pilot Monitor, Mewbourne shall complete the repair or maintenance of the Pilot Monitor within 5 Days. Mewbourne shall record all dates, durations, and causes of Pilot Monitor maintenance and Malfunctions, and report this information as required by Paragraph 84. Each such record shall constitute Reliable Information and Mewbourne shall comply with the requirements set forth in Paragraph 48. In the case of a telecommunications failure beyond Mewbourne's control, it shall not be a violation of the data transmission requirement in this Paragraph if data recorded during such failure is transmitted to a central monitoring station within a reasonable time after the recommencement of telecommunications services.

G. RELIABLE INFORMATION, ROOT CAUSE ANALYSIS, AND CORRECTIVE ACTION

47. If at any time after the Effective Date Mewbourne observes any improperly open bypass device, improperly open thief hatch, or open-ended line, Mewbourne shall address such

observation with corrective action (including by manually closing such device or equipment, if appropriate) as quickly as practicable and no later than 8 hours after the observation. If at any time after the Effective Date Mewbourne observes an improperly open PRV, Mewbourne shall address such observation with corrective action as quickly as practicable and make a first attempt to complete corrective action no later than 8 hours after the observation. Such first attempt may be the identification of: (a) one or more replacement parts that must be purchased or procured to complete the corrective action; or (b) the need for a manlift to complete the corrective action.

48. If at any time after the Effective Date Mewbourne observes Reliable Information, Mewbourne shall, within 5 Days of such observation, either: (a) identify the suspected cause of the Reliable Information and complete all necessary corrective actions to address the Reliable Information; or (b) Shut-In equipment or Production Operations in accordance with Paragraph 49.

49. If Mewbourne is required to temporarily Shut-In equipment or Production Operations pursuant to Paragraph 48, Mewbourne shall proceed as follows:

- a. If the Storage Vessel System has already undergone an Engineering Evaluation pursuant to Paragraph 25, Mewbourne shall: (i) temporarily remove from service as much equipment at the Battery Pad as is necessary to stop the VOC emissions or Visible Smoke Emissions that are Reliable Information that have not been addressed by timely repair; and (ii) comply with the requirements of Paragraph 29 within 30 Days of resuming operation of Shut-In equipment.
- b. If the Storage Vessel System has not yet undergone an Engineering

Evaluation pursuant to Paragraph 25, Mewbourne shall Shut-in all Production Operations which shall remain Shut-In until the Engineering Evaluation and all necessary modifications, pursuant to Paragraph 26, have been completed. Mewbourne shall comply with the requirements of Paragraph 29 at such Storage Vessel System within 30 Days of resuming any Production Operations associated with that Storage Vessel System.

50. If Mewbourne becomes aware of three or more instances of Reliable Information related to any single Vapor Control System or conducts three or more site investigations pursuant to Paragraph 37 in any rolling six-month period, Mewbourne shall complete, within 30 Days of the third such instance, a Root Cause Analysis and identify the corrective actions to be taken to address any operation, maintenance, or design cause(s). Mewbourne shall implement any corrective actions necessary to address operation and maintenance causes no later than 30 Days after the completion of the Root Cause Analysis. Where the Root Cause Analysis identifies corrective action(s) to address a design cause, Mewbourne shall comply with Paragraph 51. Additional instances of Reliable Information at a Vapor Control System at which Mewbourne is performing a Root Cause Analysis at that time shall be added as additional information in that Root Cause Analysis but shall not trigger additional Root Cause Analyses.

51. If the Root Cause Analysis indicates that the Subject Vapor Control System is not adequately designed and sized for PMIVFR, PPIVFR, and Peak Modeled Pressure, as determined in accordance with the Design Analysis Methodology, Mewbourne shall:

- a. if the Storage Vessel System has not yet undergone an Engineering Evaluation pursuant to Paragraph 25, Mewbourne shall complete the

Engineering Evaluation required by Paragraph 25 and implement any necessary modifications required by Paragraph 26 no later than 90 Days after the completion of the Root Cause Analysis and no later than the deadline specified by Paragraph 26 to ensure that the Subject Vapor Control System is adequately designed and sized;

- b. if the Storage Vessel System has undergone an Engineering Evaluation pursuant to Paragraph 25, revise the Engineering Evaluation and implement any necessary modifications no later than 90 Days after the completion of the Root Cause Analysis to ensure that the Subject Vapor Control System is adequately designed and sized;
- c. immediately Shut-In and cease all Production Operations associated with that Subject Vapor Control System if Mewbourne fails to implement the modifications required by Paragraph 51(a) or (b) within 90 Days after the completion of the Root Cause Analysis;
- d. if Production Operations are Shut-In under subparagraph 51(c), comply with the requirements of Paragraph 29 at such Storage Vessel System within 30 Days of resuming any Production Operations associated with that Storage Vessel System; and
- e. submit a supplemental Certification of Completion Report together with the next Semi-Annual Report required under Paragraph 84 that is due no less than 30 Days following completion of all requirements in this Paragraph 51.

52. In the event that Production Operations are temporarily Shut-In pursuant to subparagraph 51(c), Mewbourne may resume Production Operations for up to five Days for the sole purpose of making the necessary modifications pursuant to subparagraphs 51(a) or 51(b).

H. PERFORMANCE STANDARDS

53. For each Battery Pad listed in Appendices A and B, no later than the date by which Mewbourne submits the Certification of Completion report, Mewbourne shall:

- a. ensure that each Storage Vessel at a Subject Vapor Control System is equipped with a cover that forms a continuous impermeable barrier over the entire surface area of the liquid in the Storage Vessel, and that each cover opening is secured in a closed, sealed position except during those times when it is necessary to use the opening;
- b. ensure that each Storage Vessel thief hatch is equipped, maintained, and operated with a weighted mechanism, or equivalent, to ensure that the lid remains properly seated, and that the material of each hatch gasket is selected based on the composition of the fluid in the storage vessel and weather conditions;
- c. ensure the Subject Vapor Control System is designed and operated with no detectable emissions as determined using AVO or OGI inspections;
- d. ensure that each Subject Vapor Control System is designed to route all gases, vapors, and fumes emitted from the material in a Storage Vessel to a flare that meets the requirements in 40 C.F.R. § 60.18(b) or to a process;

- e. ensure that the VOC emissions from each Storage Vessel are reduced by 95.0 percent; and
- f. ensure that each Facility with a Subject Vapor Control System is operated consistent with good air pollution control practice for minimizing emissions.

54. As to any facility listed in Appendix A that is not permitted under 20.2.72 NMAC, following the completion of the Field Survey required by Paragraph 14 and the Pressurized Liquid Sampling required by Paragraph 23 and no later than the date by which Mewbourne submits the Certification of Completion Report required by Paragraph 30, Mewbourne shall submit a Construction Permit registration pursuant to 20.2.72 NMAC if the potential emission rate of CO or NO_x from the Facility exceeds 10 pounds per hour or 25 tons per year. If, at any time after the Effective Date, Mewbourne determines, as to any Facility listed in Appendix A that is permitted under 20.2.72 NMAC, that the potential emission rate of any regulated air pollutant has increased or will increase, or Mewbourne has undertaken a Modification of that facility, as defined at 20.2.72.7.P NMAC, Mewbourne shall submit a corresponding registration modification under 20.2.72 NMAC. As to any facility listed in Appendix B, no later than the date by which Mewbourne submits the Certification of Completion Report required by Paragraph 30, Mewbourne shall comply with 30 T.A.C. Ch. 116.

I. NEWLY IDENTIFIED SUBJECT VAPOR CONTROL SYSTEM

55. If, at any time after the Effective Date, Mewbourne redirects Produced Oil from a Storage Vessel System at a Battery Pad identified in Appendices A or B to any Storage Vessel System at a Battery Pad that is not identified in Appendices A or B, Mewbourne shall:

- a. notify the EPA and, for facilities in New Mexico, NMED, within 30 Days of sending Produced Oil to such newly identified Subject Vapor Control System;
- b. propose a schedule for compliance at the newly identified Subject Vapor Control System with the applicable requirements of the Consent Decree, which shall be subject to EPA approval after consultation with NMED for facilities in New Mexico; and
- c. identify such newly identified Subject Vapor Control System to the EPA as part of the next semi-annual report, as required by Paragraph 84.

J. EMISSION CREDIT GENERATION

56. Mewbourne shall not use any emission reductions that result from actions required by this Consent Decree for the purposes of obtaining project decreases, netting reductions, or emission offset credits, including applying for, obtaining, trading, or selling any emission reductions credits.

K. ENVIRONMENTAL MITIGATION PROJECT

57. Mewbourne shall implement the Environmental Mitigation Project (“Project”) described in Appendix H in compliance with the approved plan and schedule for such Project and other terms of this Consent Decree.

58. Mewbourne shall maintain and, within 30 Days of a request from the EPA or NMED, provide copies of all documents to identify and substantiate the costs expended to implement the Project described in Appendix H.

59. All plans and reports prepared by Mewbourne pursuant to the requirements of this Subsection K (Environmental Mitigation Project) are required to be submitted to the EPA and NMED and Mewbourne shall make any such plan or report available to the public upon request and without charge.

60. Project Certification. As part of each plan submitted to the EPA and NMED for any Project, Mewbourne shall certify that:

- a. Mewbourne is not required to perform the Project by any federal, state, or local law or regulation or by any agreement, grant, or as injunctive relief awarded in any other action in any forum;
- b. the Project is not a project that Mewbourne was planning or intending to construct, perform, or implement other than in settlement of the claims resolved in this Consent Decree; and
- c. Mewbourne has not received and will not receive credit for the Project in any other enforcement action.

61. Mewbourne shall use its best efforts to secure as much environmental benefit as possible for the Project, consistent with the applicable requirements and limits of this Consent Decree.

62. Mewbourne shall comply with the reporting requirements described in Appendix H.

63. In connection with any communication to the public or shareholders regarding Mewbourne's actions or expenditures relating in any way to the Project, Mewbourne shall

include prominently in the communication the information that the actions and expenditures were required as a part of this Consent Decree.

64. Project Completion Notice. No later than 30 Days following the completion of the Project required under this Consent Decree (including any applicable periods of demonstration or testing), Mewbourne shall submit to the EPA and NMED a report that documents the date the Project was completed, the results achieved by implementing the Project, including a general discussion of the environmental benefits and, where feasible, the estimated emissions reductions, and the costs expended by Mewbourne in implementing the Project.

L. THIRD-PARTY VERIFICATION PROGRAM

65. Mewbourne shall hire an independent third-party verifier (“Verifier”) to conduct a compliance verification program (“Verification Program”) at each Facility with a Subject Vapor Control System. Mewbourne shall ensure that the Verifier: (a) evaluates and makes a determination as to Mewbourne’s compliance with Paragraphs 14 through 30 and 33 through 46; and (b) prepares a Verification Program Report, as detailed in Paragraph 82.

66. Mewbourne shall bear the cost of retaining the Verifier and shall ensure that the Verifier conducts the Verification Program in accordance with the requirements of this Section.

67. Mewbourne shall not employ the Verifier or any of its personnel who managed, conducted, or otherwise participated in this Verification Program to provide any other commercial, business, or voluntary services to Mewbourne for a period of no less than one year following the Verifier’s submission of its final Verification Program Report.

68. Hiring. Within 30 Days of the Effective Date, Mewbourne shall submit to the EPA and NMED the name(s) and qualifications of one or more proposed Verifiers that meet the following requirements:

- a. The proposed Verifier has expertise and competence in Vapor Control Systems, NSPS OOOO, NSPS OOOOa, and the Construction Permit requirements pursuant to 20.2.72 NMAC;
- b. The proposed Verifier and its personnel have not been employed by Mewbourne, have not conducted research and/or development for Mewbourne, and have not provided advisory services of any kind (including but not limited to design, construction, financial, engineering, hazardous waste management, legal, or consulting services) to Mewbourne, within three years of the Effective Date; and
- c. The proposed Verifier has not been retained by Mewbourne to satisfy any of the requirements of Section V (Compliance Requirements) of this Consent Decree.

69. Mewbourne's submission shall include the executed Verifier Certification attached to the Consent Decree as Appendix I. A copy of the certification for each proposed Verifier shall be submitted to the EPA.

70. Verifier Approval Procedure. The EPA, after consulting with NMED, shall inform Mewbourne in writing which of the proposed Verifiers, if any, it has approved. Within 30 Days of the EPA's written approval, Mewbourne shall retain the approved candidate to serve as the Verifier and to perform the activities set forth in this Section. If the EPA has not responded

within 90 Days of receiving Mewbourne's submission, Mewbourne's proposed Verifier shall be deemed approved and Mewbourne shall retain the approved candidate to serve as the Verifier and to perform the activities set forth in this Subsection.

71. If the EPA disapproves of all proposed Verifiers, Mewbourne shall, within 30 Days of receipt of the EPA's written notification, submit to the EPA for approval the name(s) and qualifications of one or more additional proposed Verifiers that meet the qualifications set forth in Paragraph 68 of this Section. The EPA, after consulting with NMED, shall again provide written approval or disapproval of the proposed Verifier, pursuant to Paragraph 70.

72. Verifier Replacement Procedure. If Mewbourne or the EPA determines that the Verifier approved by the EPA cannot satisfactorily perform the required Compliance Verification Program, Mewbourne, the EPA, and NMED shall informally confer. If they agree that a new Verifier should be selected, Mewbourne shall submit to the EPA for approval the name(s) and qualifications of one or more proposed replacement Verifiers that meet the qualifications set forth in Paragraph 68 of this Section. If Mewbourne and the EPA do not agree on the need to select a replacement Verifier, the EPA's position shall control, subject to Mewbourne's right to invoke the dispute resolution procedures in Section X (Dispute Resolution) of this Consent Decree.

73. Nothing in Paragraph 72 precludes the EPA from assessing stipulated penalties for missed Verification Program deadlines associated with the need to replace a Verifier, unless Mewbourne successfully asserts that the inability of the Verifier to perform the required

Verification Programs was due to a Force Majeure event in accordance with Section IX (Force Majeure) of this Consent Decree.

74. Conducting the Compliance Verification Program. Mewbourne shall give the Verifier a copy of this Consent Decree including all appendices, the Engineering Evaluations developed pursuant to Paragraph 25, the Certification of Completion Reports developed pursuant to Paragraphs 30 and 31, and all other information and access necessary to complete the Verification Program.

75. Mewbourne shall ensure the Verifier reviews all records necessary to demonstrate compliance with Paragraphs 14 through 30 and 33 through 46 as of the date of the initiation of the Verification Program for that Subject Vapor Control System; provided, however, that for the purposes of assessing compliance with any Reliable Information requirement, such records shall be limited to the records required to be prepared to comply with Paragraph 84(j) through 84(m). Such documents may include, but are not limited to, time-stamped and geo-tagged digital media collected as a part of activities under Paragraphs 14 through 30 and 33 through 46. To the extent Mewbourne has not maintained documents necessary for the Verifier to complete its review of a Facility with a Subject Vapor Control System under this Paragraph, Mewbourne shall either provide those documents upon request or ensure that Verifier has access to that Facility with a Subject Vapor Control System to collect the information necessary for the Verifier to complete its review. Facilities with Subject Vapor Control Systems visited by the Verifier under this Paragraph shall not count toward the number of facilities to be visited by the Verifier under Paragraph 76.

76. In addition to providing access to any Facility in accordance with Paragraph 75, Mewbourne shall ensure that the Verifier conducts an in-person visit to 20 percent of the Facilities with Subject Vapor Control Systems. The Facilities subject to site visits shall be chosen by the Verifier and the Verifier's site visits shall be conducted in sufficient detail to permit the Verifier to validate the results of the determinations made pursuant to Paragraph 75. Mewbourne shall instruct the Verifier to notify Mewbourne within 24 hours of any observation of Reliable Information during the site visit.

77. One or more representatives of Mewbourne with a comprehensive understanding of this Consent Decree shall accompany the Verifier during any on-site portion of the Verification Program. The representatives of Mewbourne shall not interfere with the independent judgment of the Verifier.

78. Mewbourne shall permit representatives of the EPA and NMED to participate in the on-site portion of the Verification Program as observers. Mewbourne shall make best efforts to notify the EPA and—as appropriate for New Mexico facilities, NMED—at least 14 Days before each site visit by the Verifier.

79. As to each Facility with a Subject Vapor Control System, Mewbourne shall ensure that the Third Party Verifier begins the Verification Program no less than 60 Days after the later of: (a) the date that Mewbourne submits the Certification of Completion Report pursuant to Paragraph 30; and (b) the date that Mewbourne complies with the requirements set forth in Paragraphs 33 through 46. Mewbourne shall ensure that the Third Party Verifier completes the Verification Program no later than 60 Days after the Verification Program is commenced.

80. Mewbourne shall cooperate fully with any reasonable requests of the Verifier, and provide the Verifier with access, upon reasonable notice and taking into account operational impacts, to all records, employees, contractors, and properties under Mewbourne's ownership or control that the Verifier reasonably deems appropriate to effectively perform the duties described in this Subsection.

81. Mewbourne shall direct the Verifier to prepare a Verification Program Report for each Facility with a Subject Vapor Control System no later than 30 Days after the Verifier completes the Verification Program for the Facility pursuant to Paragraph 79. Mewbourne shall ensure that the Verifier submits the Compliance Verification Program Reports simultaneously to Mewbourne and the EPA. In the next Semi-Annual Report following the Verifier's submission of each Verification Program Report, Mewbourne shall provide a summary of the actions taken in response to the Verifier's recommendations, including a justification for any decision to not implement a recommended corrective action set forth in the Verification Program Report.

82. The Verification Program Report shall present the Verification Program findings and shall, at a minimum, contain the following information:

- a. a summary of the Verification Program scope, including the period of time covered by the Verification Program and an identification of all Facilities evaluated;
- b. a summary of the Verification Program process, including any obstacles encountered;
- c. identification of Verifier's team members as well as the representatives of Mewbourne and any regulatory agency personnel observing the

Verification Program;

- d. the date(s) the on-site portion of the Verification Program was conducted;
- e. Verification Program findings for any Facility with a Subject Vapor Control System reviewed during the relevant period, including: (i) whether the site-specific inputs and assumptions were correctly identified in the Engineering Evaluation using the Design Analysis Methodology; (ii) whether each Subject Vapor Control System is adequately designed and sized for PMIVFR, PPIVFR, and Peak Modeled Pressure using the Design Analysis Methodology; (iii) whether all modifications made pursuant to Paragraphs 26 or 31 have been fully and correctly implemented; and (iv) whether Mewbourne timely satisfied the requirements in Paragraphs 48 through 52;
- f. copies of any photos or videos obtained during the on-site portion of the Verification Program and the names of any Mewbourne representatives or personnel interviewed;
- g. recommendations by the Verifier, based on the findings and areas of concern, for corrective actions and any proposed schedule for implementation or the date of implementation; and
- h. a detailed description of any Reliable Information observed by the Verifier during the on-site portion of the Verification Program, including the date the Reliable Information was observed, a description of the Reliable

Information, and identification of the Subject Vapor Control System at issue; and

- i. a certification by the Verifier, in the form set forth in Paragraph 87.

83. Confidential Business Information. Mewbourne may assert that any information required to be provided under this Subsection is protected as Confidential Business Information (“CBI”) under 40 C.F.R. part 2 or 20.2.1.115 NMAC. Upon a request for substantiation of such an assertion by the the EPA or NMED, Mewbourne shall follow the procedures for substantiating its CBI claims set forth in 40 C.F.R. part 2 or 20.2.1.115 NMAC.

VI. REPORTING REQUIREMENTS

84. Following entry of this Consent Decree, Mewbourne shall submit to the United States and NMED in accordance with the requirements of Section XIV (Notices), a Semi-Annual Report no later than 30 Days after the end of each half of the calendar year (i.e., January through June, and July through December). Each Semi-Annual Report shall contain the following information for the reporting period:

- a. all records required to be maintained pursuant to Paragraph 18 regarding the Field Surveys;
- b. all records required to be maintained pursuant to Paragraph 22 regarding the Limited Field Surveys;
- c. all records of Pressurized Liquid sampling performed pursuant to Paragraph 23, including but not limited to QA/QC assessments and analytical results;

- d. the Design Analysis Methodology referenced in Paragraph 24, including any updates or modifications to such Methodology;
- e. all Certification of Completion reports prepared pursuant to Paragraphs 30 and 31, including any updates or modifications to such reports;
- f. where any Facility was required to be Shut-In pursuant to Paragraphs 27, 47, or 51, identify the Facility, the date such operations were required to be Shut-In, the cause of the Shut-In, and the date production operations resumed;
- g. identify all Storage Vessel Systems newly identified pursuant to Paragraph 55, including the dates by which Mewbourne must comply with Paragraphs 14 through 31 at such Systems.
- h. (i) the date that the annual review of the DI/PM Program was completed; (ii) a discussion of whether Mewbourne identified any recurring or systemic issues; (iii) a description of and timing of all modifications, corrective actions, or other actions planned; and (iv) a summary of any non-material updates or changes to the DI/PM Program or any associated SOPs;
- i. (i) the dates of all IR Camera inspections undertaken pursuant to Paragraphs 29, 31, 37 or Appendix G and the reason therefor; and (ii) the dates of all AVO inspections undertaken pursuant to Appendix G;
- j. whenever Mewbourne obtains Reliable Information: (i) the date Reliable Information was obtained; (ii) a description of the Reliable Information;

- (iii) identification of the Subject Vapor Control System at issue; (iv) the suspected cause of the Reliable Information; (v) a description of the corrective actions implemented (including identification of any equipment temporarily removed from service), the date and time corrective actions were implemented (or schedule for implementation of such corrective actions) and the date of Shut-in of equipment or Production Operations, if applicable; (vi) the date the corrective action was verified by an IR Camera Inspection; and (vii) a summary of the results of that inspection.
- k. whenever a Storage Vessel Pressure Monitor records two or more measurements within a 48-hour period that exceed the Trigger Point for a Vapor Control System: (i) the date of such Trigger Point exceedance; (ii) all Storage Vessel Pressure Monitor measurements taken at that Subject Vapor Control System during the preceding 30-Day period; (iii) the date of the site investigation undertaken pursuant to Paragraph 37; and (iv) a summary of the results of that site investigation;
- l. all dates, durations and causes of Storage Vessel Pressure Monitor maintenance, Malfunctions, and other failures;
- m. whenever Mewbourne completes a Root Cause Analysis: (i) the operation, maintenance, or design cause(s) identified in the Root Cause Analysis; and (ii) a description of the corrective actions implemented, and the date and time corrective actions were implemented (or schedule for implementation of such corrective actions);

- n. the Compliance Verification Program Report and a summary of the actions taken in response to the Verifier's recommendations pursuant to Subsection L (Third Party Verification Program);
- o. all dates, durations and causes of failures of the Vapor Inlet Monitor, pursuant to Paragraph 40;
- p. all dates, durations and causes of the Pilot Monitor maintenance or Malfunctions, pursuant to Paragraph 46;
- q. a summary of activities undertaken pursuant to Subsection K (Environmental Mitigation Project), the status of Environmental Mitigation Project milestones set forth in Appendix H, and a summary of costs incurred in the implementation of Subsection K since the previous Semi-Annual report; and
- r. a list of any Storage Vessel Systems (identified in Appendix A, B, or C or newly identified in accordance with Paragraph 55) for which all associated wells have been Plugged and Abandoned, as set forth in Paragraph 142, together with an identification of the associated wells that have been Plugged and Abandoned and the date thereof.

85. This report shall also include a description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If Mewbourne violates, or has reason to believe that it may violate, any requirement of this Consent Decree with an associated stipulated penalty, Mewbourne shall notify the United States, the EPA, and NMED

in accordance with the requirements of Section XIV (Notices) of such violation and its likely duration, in writing, within 10 Days of the Day Mewbourne first becomes aware of the violation, with an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Mewbourne shall so state in the report. Mewbourne shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 Days of the day Mewbourne becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Mewbourne of its obligation to provide the notice required by Section IX (Force Majeure). If the EPA or NMED become aware of any violation of any requirement of this Consent Decree, they will use best efforts to promptly notify Mewbourne of such violation.

86. Whenever any violation of this Consent Decree or of any applicable permits or any other event affecting Mewbourne's performance under this Consent Decree may pose an immediate threat to the public health or welfare or the environment, Mewbourne shall comply with any applicable federal and state or local laws and, in addition, shall notify the EPA and NMED as per Section XIV (Notices) orally or by electronic or facsimile transmission as soon as possible, but no later than 24 hours after Mewbourne first knew of the violation or event. This notice requirement is in addition to the requirement to provide notice of a violation of this Consent Decree set forth in Paragraph 85.

87. Certification Statement. Each report submitted by Mewbourne under this Section, and each Certification of Completion Report submitted pursuant to the requirements of

Paragraphs 30 or 31 shall be signed by an official of the submitting party and include the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

88. This certification requirement does not apply to emergency notifications where compliance would be impractical.

89. The reporting requirements of this Consent Decree do not relieve Mewbourne of any reporting obligations required by the Act, or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

90. Any information provided pursuant to this Consent Decree may be used by the United States or NMED in any proceeding to enforce the provisions of this Decree and as otherwise permitted by law.

VII. APPROVAL OF DELIVERABLES

91. After review of any plan, report, or other item that is required to be submitted for the EPA's approval pursuant to this Consent Decree, the EPA will, after consultation with NMED as appropriate, in writing: (a) approve the submission; (b) approve the submission upon specified conditions; (c) approve part of the submission and disapprove the remainder; or (d) disapprove the submission.

92. If the submission is approved pursuant to Paragraph 91(a), Mewbourne shall take all actions required by the plan, report, or other document, in accordance with the schedules and requirements of the plan, report, or other document, as approved. If the submission is conditionally approved or approved only in part pursuant to Paragraph 91(b) or (c), Mewbourne shall, upon written direction from the EPA (after consulting with NMED), take all actions required by the approved plan, report, or other item that the EPA determines are technically severable from any disapproved portions, subject to Mewbourne's right to dispute only the specified conditions or the disapproved portions, under Section X (Dispute Resolution).

93. If the submission is disapproved in whole or in part pursuant to Paragraph 91(c) or (d), Mewbourne shall, within 45 Days or such other time as the Parties agree to in writing, correct all deficiencies and resubmit the plan, report, or other item, or disapproved portion thereof, for approval, in accordance with the preceding Paragraphs. If the resubmission is approved in whole or in part, Mewbourne shall proceed in accordance with the preceding Paragraph.

94. If a resubmitted plan, report, or other item, or portion thereof, is disapproved in whole or in part, the EPA after consulting with NMED with respect to New Mexico Facilities may again require Mewbourne to correct any deficiencies, in accordance with the preceding Paragraphs 91 through 93, subject to Mewbourne's right to invoke Dispute Resolution and the right of the EPA or NMED to seek stipulated penalties as provided in Section VIII (Stipulated Penalties).

95. If Mewbourne elects to invoke Dispute Resolution as provided in Paragraphs 92 and 94, Mewbourne shall do so by sending a Notice of Dispute in accordance with

Paragraph 112 within 30 Days (or such other time as the Parties agree to in writing) after receipt of the applicable decision.

96. Any stipulated penalties applicable to the original submission, as provided in Section VIII (Stipulated Penalties), accrue during the 45 Day period or other specified period, but shall not be payable unless the resubmission is untimely or is disapproved in whole or in part; provided that, if the original submission was so deficient as to constitute a material breach of Mewbourne's obligations under this Consent Decree, the stipulated penalties applicable to the original submission shall be due and payable notwithstanding any subsequent resubmission.

VIII. STIPULATED PENALTIES

97. Mewbourne shall be liable for stipulated penalties to the United States and NMED for violations of this Consent Decree as specified below, unless excused under Section IX (Force Majeure), or reduced or waived by the United States or NMED pursuant to Paragraph 101 of the Consent Decree. A violation includes failing to perform any obligation required by the terms of this Consent Decree, including any work plan approved under this Consent Decree, according to all applicable requirements of this Consent Decree and within the specified time schedules established by or approved under this Consent Decree.

Violation	Penalty per Facility (unless otherwise noted)
(a) Failure to perform any of the requirements associated with the Vapor Control System Field Survey, as specified in Paragraphs 14, 15, and 18, at each Facility listed in Appendices A and B.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter

Violation	Penalty per Facility (unless otherwise noted)
(b) Failure to take corrective action in accordance with Paragraph 16.	\$1,000 per Day for the first 30 Days and \$5,000 per Day thereafter
(c) Failure to perform any of the requirements associated with the Limited Field Survey, as specified in Paragraphs 19 and 22, at each Battery Pad listed in Appendix C.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(d) Failure to take corrective action or temporarily remove equipment from service in accordance with Paragraphs 20 and 21.	\$1,000 per Day for the first 30 Days and \$5,000 per Day thereafter
(e) Failure to collect and analyze Pressurized Liquids samples from Storage Vessel Systems at Facilities listed in Appendices A and B, as specified in Paragraph 23.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(f) Failure to prepare an Engineering Evaluation for each Subject Vapor Control System, as specified in Paragraph 25.	\$1,000 per Day for the first 30 Days and \$5,000 per Day thereafter
(g) Failure to Shut-In Production Operations as required in Paragraph 27.	\$1,500 per Day for the first 30 Days and \$7,500 per Day thereafter
(h) Resuming operations for greater than five Calendar Days in violation of Paragraph 28.	\$1,000 per Day for the first 30 Days and \$5,000 per Day thereafter

Violation	Penalty per Facility (unless otherwise noted)
(i) Failure to verify that each Subject Vapor Control System is adequately designed by conducting an IR Camera Inspection, as specified in Paragraph 29.	\$550 per Day for the first 30 Days and \$3,300 per Day thereafter
(j) Failure to submit to the EPA and NMED a Certification of Completion Report as specified in Paragraph 30.	\$550 per Day for the first 30 Days and \$3,300 per Day thereafter
(k) Failure to revise an Engineering Evaluation, implement the necessary modifications, verify effectiveness with an IR Camera Inspection, or submit an updated Certification of Completion report, as required by Paragraph 31.	\$550 per Day for the first 30 Days and \$3,300 per Day thereafter
(l) Failure to comply with the DI/PM plan, as required by Paragraph 32.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(m) Failure to comply with any of the requirements pertaining to Storage Vessel Pressure Monitoring set forth in Paragraphs 33 through 37.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(n) Failure to comply with any of the requirements pertaining to VRU, Bypass, and Control Device Monitoring set forth in Paragraphs 38 through 46.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(o) Failure to comply with any of the requirements pertaining to an improperly open PRV, bypass device, or thief hatch, or an open-ended line, as set forth in Paragraph 47	\$1,500 per Day for the first 30 Days and \$7,500 per Day thereafter

Violation	Penalty per Facility (unless otherwise noted)
(p) Failure to comply with any of the requirements pertaining to the observation of Reliable Information set forth in Paragraphs 48 and 49.	\$1,500 per Day for the first 30 Days and \$7,500 per Day thereafter
(q) Failure to complete a Root Cause Analysis and complete all necessary corrective actions or modifications or Shut-In all Production Operations associated with the Storage Vessel System, as required in Paragraphs 50 and 51.	\$1,500 per Day for the first 30 Days and \$7,500 per Day thereafter
(r) Failure to comply with requirements set forth in Paragraph 53(c) at each Battery Pad listed in Appendices A and B, except insofar as such detectable emissions are addressed in a manner consistent with this Consent Decree.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(s) Failure to comply with requirements set forth in Paragraph 53(a), (b), (d), (e), or (f) at each Battery Pad listed in Appendices A and B.	\$1,500 per Day for the first 30 Days and \$7,500 per Day thereafter
(t) Failure to submit a Construction Permit registration, as required in Paragraph 54.	\$550 per Day for the first 30 Days and \$3,300 per Day thereafter
(u) Failure to comply with any of the requirements for Newly Identified Subject Vapor Control Systems as required in Paragraph 55.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(v) Failure to implement the Environmental Mitigation Project as required by Paragraphs 57 through 64 and Appendix H.	\$550 per Day for the first 30 Days and \$3,300 per Day thereafter

Violation	Penalty per Facility (unless otherwise noted)
(w) Failure to comply with the Reporting Requirements as set forth in Paragraphs 84 through 87.	\$550 per Day for the first 30 Days and \$2,750 per Day thereafter
(x) Failure to comply with any of the requirements pertaining to the Third-Party Verification Program set forth in Paragraphs 65 through 83.	\$550 per Day for the first 30 Days and \$3,300 per Day thereafter
(y) Violation of any other requirement of this Consent Decree.	\$1,000 per Day per violation

98. Late Payment of Civil Penalty. If Mewbourne fails to pay the civil penalty required to be paid under Section IV (Civil Penalty) when due, Mewbourne shall pay a stipulated penalty of \$2,000 per Day for each Day that the payment is late to the United States or NMED.

99. Stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

100. Mewbourne shall pay stipulated penalties to the United States and NMED within 30 Days of a written demand by either the United States or NMED. Mewbourne shall pay 50 percent of the total stipulated penalty amount due to the United States and 50 percent to NMED. The Plaintiff making a demand for payment of a stipulated penalty shall simultaneously send a copy of the demand to the other Plaintiff.

101. The United States or NMED may, in the unreviewable exercise of their discretion, reduce or waive stipulated penalties otherwise due them under this Consent Decree.

102. Stipulated penalties shall continue to accrue as provided in Paragraph 99, during any Dispute Resolution, but need not be paid until the following:

- a. If the dispute is resolved by agreement or by a decision of the EPA or NMED that is not appealed to the Court, Mewbourne shall pay accrued penalties determined to be owing, together with interest, to the United States or NMED within 30 Days of the effective date of the agreement or the receipt of the EPA's or NMED's decision or order;
- b. If the dispute is appealed to the Court and the United States or NMED prevails in whole or in part, Mewbourne shall pay all accrued penalties determined by the Court to be owing, together with interest, within 60 Days of receiving the Court's decision or order, except as provided in Paragraph 102(c);
- c. If any Party appeals the District Court's decision, Mewbourne shall pay all accrued penalties determined to be owing, together with interest, within 15 Days of receiving the final appellate court decision.

103. If Mewbourne fails to pay stipulated penalties according to the terms of this Consent Decree, Mewbourne shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States or NMED from seeking any remedy otherwise provided by law for Mewbourne's failure to pay any stipulated penalties.

104. Mewbourne shall pay stipulated penalties owing to the United States and NMED in the manner set forth and with the confirmation notices required by Paragraphs 9 through 12, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid.

105. Stipulated penalties are not the United States' or NMED's exclusive remedy for violations of this Consent Decree. Subject to the provisions of Section XII (Effect of Settlement/Reservation of Rights), the United States and NMED expressly reserve the right to seek any other relief they deem appropriate for Mewbourne's violation of this Consent Decree or applicable law, including but not limited to an action against Mewbourne for statutory penalties, additional injunctive relief, mitigation or offset measures, and/or contempt. However, the amount of any statutory penalty assessed for a violation of this Consent Decree shall be reduced by an amount equal to the amount of any stipulated penalty assessed and paid pursuant to this Consent Decree.

IX. FORCE MAJEURE

106. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Mewbourne, of any entity controlled by Mewbourne, or of Mewbourne's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Mewbourne's best efforts to fulfill the obligation. The requirement that Mewbourne exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (a) as it is occurring and (b) following the potential force majeure,

such that the delay and any adverse effects of the delay are minimized. "Force Majeure" does not include Mewbourne's financial inability to perform any obligation under this Consent Decree.

107. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, Mewbourne shall provide notice to Daniel Hoyt by email to Hoyt.Daniel@epa.gov within 72 hours of when Mewbourne first knew that the event might cause a delay. Within 7 Days thereafter, Mewbourne shall provide in writing to the EPA and NMED: an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Mewbourne's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Mewbourne, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Mewbourne shall include with any notice all available documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Mewbourne from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Mewbourne shall be deemed to know of any circumstance of which Mewbourne, any entity controlled by Mewbourne, or Mewbourne's contractors knew or should have known.

108. If the EPA, after a reasonable opportunity for review and comment by NMED, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure

event will be extended by the EPA, after a reasonable opportunity for review and comment by NMED, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. The EPA will notify Mewbourne in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

109. If the EPA, after a reasonable opportunity for review and comment by NMED, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, the EPA will notify Mewbourne in writing of its decision.

110. If Mewbourne elects to invoke the dispute resolution procedures set forth in Section X (Dispute Resolution), it shall do so no later than 15 Days after receipt of the EPA's notice. In any such proceeding, Mewbourne shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Mewbourne complied with the requirements of Paragraphs 106 and 107. If Mewbourne carries this burden, the delay at issue shall be deemed not to be a violation by Mewbourne of the affected obligation of this Consent Decree identified to the EPA, NMED, and the Court.

X. DISPUTE RESOLUTION

111. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree.

112. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Mewbourne sends DOJ, the EPA, and NMED a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed 30 Days from the date the dispute arises, unless that period is modified by written agreement. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States (after consultation with NMED) shall be considered binding unless, within 30 Days after the conclusion of the informal negotiation period, Mewbourne invokes formal dispute resolution procedures as set forth below.

113. Formal Dispute Resolution. Mewbourne shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by sending DOJ, the EPA, and NMED a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Mewbourne's position and any supporting documentation relied upon by Mewbourne.

114. The United States, after consultation with NMED, will send Mewbourne its Statement of Position within 45 Days of receipt of Mewbourne's Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data,

analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States' Statement of Position is binding on Mewbourne, unless Mewbourne files a motion for judicial review of the dispute in accordance with the following Paragraph.

115. Judicial Dispute Resolution. Mewbourne may seek judicial review of the dispute by filing with the Court and serving on the United States and NMED a motion requesting judicial resolution of the dispute. The motion must be filed within 45 Days of receipt of the United States' Statement of Position pursuant to the preceding Paragraph. The motion shall contain a written statement of Mewbourne's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

116. The United States shall, after consultation with NMED, respond to Mewbourne's motion within the time period allowed by the Local Rules of this Court. Mewbourne may file a reply memorandum, to the extent permitted by the Local Rules.

117. Disputes Concerning Matters Accorded Record Review. Except as otherwise provided in this Consent Decree, in any dispute brought under Paragraph 113 pertaining to the adequacy or appropriateness of plans, procedures to implement plans, schedules or any other items requiring approval by the EPA under this Consent Decree; the adequacy of the performance of work undertaken pursuant to this Consent Decree; and all other disputes that are accorded review on the administrative record under applicable principles of administrative law, the EPA shall maintain an administrative record of the dispute that contains all Statements of

Position, including supporting documentation and referenced data or information, submitted pursuant to this Paragraph, and Mewbourne shall have the burden of demonstrating, based on the administrative record, that the position of the United States is arbitrary and capricious or otherwise not in accordance with law.

118. Other Disputes. Except as otherwise provided in this Consent Decree, in any other dispute brought under Paragraph 113, Mewbourne shall bear the burden of demonstrating that its position complies with and furthers the objectives this Consent Decree and that Mewbourne is entitled to relief under applicable principles of law.

119. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Mewbourne under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 102. If Mewbourne does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section VIII (Stipulated Penalties).

XI. INFORMATION COLLECTION AND RETENTION

120. The United States, NMED, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any Facility covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

- a. monitor the progress of activities required under this Consent Decree;

- b. verify any data or information submitted to the United States or NMED in accordance with the terms of this Consent Decree;
- c. obtain samples and, upon request, splits of any samples taken by Mewbourne or its representatives, contractors, or consultants;
- d. obtain documentary evidence, including photographs and similar data; and
- e. assess Mewbourne's compliance with this Consent Decree.

121. Upon request, Mewbourne shall provide the EPA and NMED or their authorized representatives splits of any samples taken by Mewbourne. Upon request, the EPA and NMED shall provide Mewbourne splits of any samples taken by the EPA or NMED.

122. Until five years after the termination of this Consent Decree, Mewbourne shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to Mewbourne's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States or NMED, Mewbourne shall provide copies of any documents, records, or other information required to be maintained under this Paragraph.

123. At the conclusion of the information-retention period provided in the preceding Paragraph, Mewbourne shall notify the United States and NMED at least 90 Days prior to the destruction of any documents, records, or other information subject to the requirements of the

preceding Paragraph and, upon request by the United States or NMED, Mewbourne shall deliver any such documents, records, or other information to the EPA or NMED. Mewbourne may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Mewbourne asserts such a privilege, it shall provide the following: (a) the title of the document, record, or information; (b) the date of the document, record, or information; (c) the name and title of each author of the document, record, or information; (d) the name and title of each addressee and recipient; (e) a description of the subject of the document, record, or information; and (f) the privilege asserted by Mewbourne. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

124. Mewbourne may also assert that information required to be provided under this Section is protected as Confidential Business Information (“CBI”) under 40 C.F.R. part 2 or 20.2.1.115 NMAC. As to any information that Mewbourne seeks to protect as CBI, Mewbourne shall follow the procedures set forth in 40 C.F.R. part 2 or 20.2.1.115 NMAC.

125. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or NMED pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of Mewbourne to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

126. This Consent Decree resolves the civil claims of the United States and NMED for the violations of the following provisions of federal and state law at the Battery Pads listed in Appendices A, B, and C, through the date of lodging:

- a. 42 U.S.C. § 7475;
- b. 42 U.S.C. § 7661a;
- c. 40 C.F.R. §§ 60.5365 and 60.5365a;
- d. 40 C.F.R. §§ 60.5370 and 60.5370a;
- e. 40 C.F.R. §§ 60.5395 and 60.5395a;
- f. 40 C.F.R. §§ 60.5410 and 60.5410a;
- g. 40 C.F.R. §§ 60.5411 and 60.5411a;
- h. 40 C.F.R. §§ 60.5412 and 60.5412a;
- i. 40 C.F.R. §§ 60.5415 and 60.5415a;
- j. 40 C.F.R. §§ 60.5416 and 60.5416a;
- k. 40 C.F.R. §§ 60.5417 and 60.5417a;
- l. 40 C.F.R. §§ 60.5420 and 60.5420a;
- m. 40 C.F.R. § 60.18;
- n. 20.2.7.14, 20.2.7.15, 20.2.7.109, 20.2.7.110, 20.2.7.114, and 20.2.7.116 NMAC;
- o. 20.2.38.112 NMAC;
- p. 20.2.61.109 NMAC;
- q. 20.2.70.200, 20.2.70.201, and 20.2.70.300 NMAC;

- r. 20.2.71.110 and 20.2.71.113 NMAC;
- s. 20.2.72.200, 20.2.72.213, 20.2.72.119 NMAC;
- t. 20.2.73.200, 20.2.73.300 NMAC;
- u. 20.2.74.200 NMAC;
- v. 20.2.75.10 and 20.2.75.11 NMAC;
- w. 20.2.77.9 NMAC (as to adoption of the provisions of 40 C.F.R. part 60 that are referenced in Paragraph 126(c) through (m);
- x. 30 T.A.C. § 106.4;
- y. 30 T.A.C. § 106.6;
- z. 30 T.A.C. § 106.352;
- aa. 30 T.A.C. § 106.492;
- bb. 30 T.A.C. § 116.110;
- cc. 30 T.A.C. § 116.111;
- dd. 30 T.A.C. § 116.160; and
- ee. 30 T.A.C. § 122.121.

127. The United States and NMED reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree. This Consent Decree shall not be construed to limit the rights of the United States or NMED to obtain penalties or injunctive relief under the Act or implementing regulations, or under other federal or state laws, regulations, or permit conditions, except as expressly specified in Paragraph 126. The United States and NMED further reserve all legal and equitable remedies to address any imminent and substantial endangerment

to the public health or welfare or the environment arising at, or posed by, any of Mewbourne's Facilities, whether related to the violations addressed in this Consent Decree or otherwise.

128. In any subsequent administrative or judicial proceeding initiated by the United States or NMED for injunctive relief, civil penalties, other appropriate relief relating to any of Mewbourne's Battery Pads listed in Appendices A, B, or C, Mewbourne shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or NMED in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 126.

129. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Mewbourne is responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits; and Mewbourne's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States and NMED do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Mewbourne's compliance with any aspect of this Consent Decree will result in compliance with provisions of the Act or with any other provisions of federal, State, or local laws, regulations, or permits.

130. This Consent Decree does not limit or affect the rights of any of the Parties against any third parties not party to this Consent Decree, nor does it limit the rights of third

parties not party to this Consent Decree, against Mewbourne, except as otherwise provided by law.

131. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

XIII. COSTS

132. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States and NMED shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by Mewbourne.

XIV. NOTICES

133. Unless otherwise specified in this Consent Decree, materials shall be accompanied by a cover letter containing a table of contents and submitted electronically as described below, unless such notices are unable to be uploaded to the CDX electronic system (in the case of the EPA) or transmitted by email (in the case of all parties). For all notices to the EPA, Defendant shall register for the CDX electronic system and upload the notice at https://cdx.epa.gov/epa_home.asp. Any notice that cannot be uploaded to CDX or transmitted via email shall be submitted via overnight mail (and if any attachment is voluminous, it shall be provided on a disk, hard drive, or other equivalent successor technology) to the addresses below. As to the United States: submit materials to DOJ at the email or, if necessary, the mail address below. As to the EPA: submit materials via CDX, email or, if necessary, the mail address below if CDX or email is not possible).

As to DOJ by email (preferred):	eescdcopy.enrd@usdoj.gov Re: DJ # 90-5-2-1-12294
As to DOJ by mail:	EES Case Management Unit Environment and Natural Resources Division U.S. Department of Justice P.O. Box 7611 Washington, D.C. 20044-7611 Re: DJ # 90-5-2-1-12294
As to DOJ by overnight mail:	4 Constitution Square 150 M Street, N. E. Suite 2.900 Washington, D.C. 20002 Re: DJ # 90-5-2-1-12294
As to the EPA by email (preferred):	AED_Oil_Gas_CD@epa.gov
As to the EPA by mail:	Director, Air Enforcement Division 1200 Pennsylvania Avenue, N.W. William J. Clinton South Building MC 2242A Washington, D.C. 20460
As to the EPA by telephone:	202-564-7898
As to NMED by email (preferred):	ENV-AQB.Settlement.Notifications@state.nm.us
As to NMED by mail:	Air Quality Bureau Attn: Compliance & Enforcement Section Chief 525 Camino de los Marquez, Suite 1 Santa Fe, NM 87505
As to Mewbourne by email (preferred):	rbutts@mewbourne.com
As to Mewbourne by mail:	Reagan Butts General Counsel Mewbourne Oil Company 3620 Old Bullard Road Tyler, TX 75701

134. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

135. Notices submitted pursuant to this Section shall be deemed submitted upon mailing or transmission by email, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XV. SALES OR TRANSFERS OF OPERATIONS

136. This Consent Decree does not prohibit the sale or transfer of Mewbourne's ownership of a working interest in any well, or any well and associated Storage Vessel System, provided that Mewbourne both (a) remains the Operator of the well and associated Storage Vessel System and (b) retains the minimum working interest necessary to remain the Operator of the well and associated Storage Vessel System.

137. If Mewbourne proposes to sell an operational interest in, or transfer operation of, any well associated with a Storage Vessel System to a third party unaffiliated with Mewbourne, Mewbourne shall, at least 30 Days prior to the sale or transfer: (a) notify the United States and, as to Facilities in New Mexico, NMED, of the proposed sale or transfer and of the specific Consent Decree provisions that Mewbourne proposes the transferee assume; (b) certify that the transferee is contractually bound to assume the obligations and liabilities of the Consent Decree; and (c) submit a certified statement from the transferee describing how the transferee has both the financial and technical ability to assume the obligations and liabilities of the Consent Decree.

138. No sale or transfer of an operational interest in, or the operation of, any well associated with a Storage Vessel System shall relieve Mewbourne of its obligations to ensure that the terms of the Consent Decree are implemented unless and until the Court has approved a modification pursuant to Section XIX (Modification) of this Consent Decree substituting the

third party as a party to this Consent Decree with respect to the well(s) and associated Storage Vessel System(s) that are the subject of the sale or transfer. The modification shall make the third party a party to this Consent Decree and shall establish, as between Mewbourne and the third party, their respective responsibilities for compliance with requirements of this Consent Decree that may be applicable to the transferred or purchased Storage Vessel Systems and associated well production assets.

139. No earlier than 30 Days after giving notice of a proposed sale or transfer pursuant to Paragraph 137, Mewbourne may file a motion with the Court to modify this Consent Decree in accordance with Section XIX (Modification) to make the terms and conditions of this Consent Decree specifically relating to the well(s) and associated Storage Vessel System(s) sold or transferred applicable to the transferee. Mewbourne shall be released from the specific obligations and liabilities of this Consent Decree relating to the well(s) and associated Storage Vessel System(s) sold or transferred unless the United States opposes the motion and the Court finds that the transferee does not have the financial and technical ability to assume the obligations and liabilities under this Consent Decree.

140. This Consent Decree shall not be construed to impede the transfer of an operational interest in, or the operation of, any well associated with a Storage Vessel System to a third party unaffiliated with Mewbourne so long as the requirements of this Consent Decree are met.

141. Notwithstanding anything to the contrary in this Section, Mewbourne may not assign, and may not be released from, any obligation under this Consent Decree that is not specific to the purchased or transferred Storage Vessel Systems and associated well production

assets, including the obligations set forth in Subsection K (Environmental Mitigation Project) and Section IV (Civil Penalty).

XVI. PLUGGING AND ABANDONMENT

142. The permanent plugging and abandonment of a well in compliance with 19.15.25.10 NMAC (as to New Mexico Facilities) and 16 T.A.C. § 3.14(d) (as to Texas Facilities) (hereinafter, “Plugged and Abandoned”), shall be deemed to satisfy all requirements of this Consent Decree applicable to the well (as long as the well no longer emits or has the potential to emit hydrocarbons) and to a related Storage Vessel System listed in Appendix A, B, or C or newly identified in accordance with Paragraph 55 (as long as all wells associated with the Storage Vessel System have been Plugged and Abandoned). Mewbourne shall maintain copies of all documentation required by 19.15.25.11 NMAC (for New Mexico Facilities) and 16 T.A.C. § 3.14(b)(1) (for Texas Facilities) for inspection and review by the EPA and NMED (as applicable) upon request. In each Semi-Annual Report, Mewbourne shall report a list of any Storage Vessel Systems (identified in Appendix A, B or C or newly identified in accordance with Paragraph 55) for which all associated wells have been Plugged and Abandoned, together with an identification of the associated wells that have been Plugged and Abandoned and the date thereof. Nothing herein shall preclude Mewbourne from reusing any equipment from a plugged and abandoned well.

XVII. EFFECTIVE DATE

143. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

XVIII. RETENTION OF JURISDICTION

144. The Court retains jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Consent Decree or entering orders modifying this Consent Decree, pursuant to Sections X and XIX, or effectuating or enforcing compliance with the terms of this Consent Decree.

XIX. MODIFICATION

145. The terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Consent Decree, it is effective only upon approval by the Court.

146. Any disputes concerning modification of this Consent Decree shall be resolved pursuant to Section X (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 117, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

XX. TERMINATION

147. After Mewbourne has: (a) completed the requirements of Paragraphs 14 through 31 for each of the Facilities listed in Appendices A, B, and C; (b) has thereafter maintained satisfactory compliance with this Consent Decree for a period of three years at all Facilities with Subject Vapor Control Systems (except that such three-year requirement shall not apply at those Storage Vessel Systems identified pursuant to Paragraph 55); (c) has complied with all other requirements of this Consent Decree, including those relating to the Mitigation Project required by Subsection K (Environmental Mitigation Project); and (d) has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, Mewbourne may serve upon the Plaintiffs a Request for Termination, stating that Mewbourne has satisfied those requirements, together with all necessary supporting documentation.

148. Following receipt by the United States and NMED of Mewbourne's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Mewbourne has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States, after consultation with NMED with respect to New Mexico Facilities, agrees that the Consent Decree may be terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Consent Decree.

149. If the United States, after consultation with the NMED with respect to New Mexico Facilities, does not agree that the Consent Decree may be terminated, Mewbourne may invoke Dispute Resolution under Section X (Dispute Resolution). However, Mewbourne shall

not seek Dispute Resolution of any dispute regarding termination until 90 Days after service of its Request for Termination.

XXI. PUBLIC PARTICIPATION

150. This Consent Decree shall be lodged with the Court for a period of not less than 30 Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States and NMED reserve the right to withdraw or withhold their consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Mewbourne consents to entry of this Consent Decree without further notice and agrees not to withdraw from or oppose entry of this Consent Decree by the Court or to challenge any provision of the Consent Decree, unless the United States or NMED has notified Mewbourne in writing that it no longer supports entry of the Consent Decree.

XXII. SIGNATORIES/SERVICE

151. Each undersigned representative of Mewbourne, NMED and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

152. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Mewbourne agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any

applicable Local Rules of this Court including, but not limited to, service of a summons. Mewbourne need not file an answer to the complaint in this action unless or until the Court expressly declines to enter this Consent Decree.

XXIII. INTEGRATION

153. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Consent Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Consent Decree.

XXIV. FINAL JUDGMENT

154. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States, NMED, and Mewbourne.

XXV. 26 U.S.C. SECTION 162(f)(2)(A)(ii) IDENTIFICATION

155. For purposes of the identification requirement of Section 162(f)(2)(A)(ii) of the Internal Revenue Code, 26 U.S.C. § 162(f)(2)(A)(ii), performance of the requirements set out in: (a) Paragraphs 5 (of Section II (Applicability)), 14 through 83 (of Section V (Compliance Requirements)), 84 through 87 (of Section VI (Reporting)), and 120 through 123 (of Section XI (Information Collection and Retention)); and (b) Appendices D, E, F, G, H, and I, is restitution or required to come into compliance with law.

XXVI. APPENDICES

156. The following Appendices are attached to and part of this Consent Decree:

157. “Appendix A” is the Facilities with Subject Vapor Control Systems in New Mexico;

158. “Appendix B” is the Facilities with Subject Vapor Control Systems in Texas;

159. “Appendix C” is the Limited Field Survey Facilities in New Mexico and Texas;

160. “Appendix D” is the Sampling and Analysis Plan;

161. “Appendix E” is the Design Analysis Methodology;

162. “Appendix F” is the IR Camera Standard Operating Procedure;

163. “Appendix G” is the Directed Inspection/Preventative Maintenance (“DI/PM”)

Requirements;

164. “Appendix H” is the Mitigation Project;

165. “Appendix I” is the Verifier Certification.

Dated and entered this day of Oct. 5, 2023


UNITED STATES DISTRICT JUDGE

FOR THE UNITED STATES OF AMERICA:

TODD KIM
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice

**NICOLE
VEILLEUX**

Digitally signed by
NICOLE VEILLEUX
Date: 2023.08.08
11:20:40 -04'00'

Date: _____

NICOLE VEILLEUX
Senior Counsel
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, DC 20044-7611

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ALEXANDREA ROLAND
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U.S. Environmental Protection Agency, Region 6
1201 Elm Street
Dallas, TX 75270
(214) 665-2753
roland.alexandrea@epa.gov

FOR THE U.S. ENVIRONMENTAL PROTECTION
AGENCY:

Date: _____

**LAWRENCE
STARFIELD**

Digitally signed by LAWRENCE
STARFIELD
Date: 2023.08.07 14:15:27 -04'00'

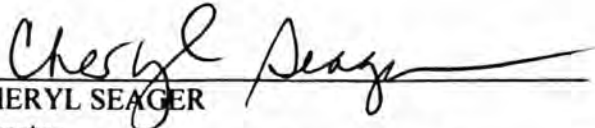
LAWRENCE E. STARFIELD
Principal Deputy Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

ROSEMARIE A. KELLEY
Director, Office of Civil Enforcement
U.S. Environmental Protection Agency,
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

MARY E. GREENE
Director, Air Enforcement Division
Office of Civil Enforcement
U.S. Environmental Protection Agency,
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

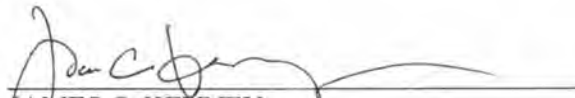
FOR THE U.S. ENVIRONMENTAL PROTECTION
AGENCY:

Date: July 17, 2023

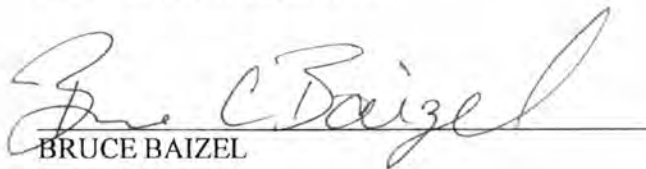

CHERYL SEAGER
Director
Office of Enforcement and Compliance Assurance Division
U.S. Environmental Protection Agency, Region 6
1201 Elm Street
Dallas, TX 75270

FOR THE NEW MEXICO ENVIRONMENT DEPARTMENT:

Date: July 10, 2023


JAMES C. KENNEY
Secretary
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87501

Date: July 10, 2023


BRUCE BAIZEL
General Counsel
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87501

FOR MEWBOURNE OIL COMPANY:

A handwritten signature in black ink, appearing to read "Drew Robison", is written over a horizontal line. To the right of the signature, the initials "RLB" are handwritten.

DREW ROBISON
Vice President of Corporate Affairs

06/28/2023
Date

APPENDIX A: Facilities with Subject Vapor Control Systems in New Mexico

	Tank ID	Battery Name	Latitude	Longitude
1	2088	EMPIRE 7 BATT Master Tank	32.84262	-104.10855
2	2179	LONG DRAW 10 FED BAT Master Tank	32.58903	-104.47846
3	2248	QUICK DRAW 10 BATT OIL Master Tank	32.58926	-104.46974
4	4778	LONG DRAW 9 H # 1 Master	32.58856	-104.48263
5	5041	PARKWAY 26 BATT OIL Master Tank	32.63694	-104.05273
6	5645	RED HILLS WEST 22 FED COM #1H OIL MT	32.03491	-103.67027
7	6117	RED HILLS WEST UNIT #002H MASTER OIL	32.06439	-103.66508
8	6323	FOUR PEAKS 35 FED #1H OIL MASTER	32.62252	-104.05313
9	6432	HAYHURST 23 ST COM #2H OIL MASTER	32.10910	-104.15763
10	6461	ZIRCON 2 ST #1H OIL MASTER	32.68416	-104.05331
11	6481	PINE BOX 17 AP FED #1H OIL MASTER TANK	32.57960	-104.49999
12	6548	COOKSEY 36 ST COM #1H OIL MASTER	32.07982	-104.13592
13	6693	SKEEN 21 ST COM #2H OIL MASTER	32.03453	-104.08977
14	6928	THOMPSON 8 FED COM #2H OIL MT	32.59286	-104.09018
15	7056	WYATT DRAW 13 MD #1H OIL MT	32.65269	-104.44570
16	7123	NORTE 13 HE FED #1H (NM) OIL MT	32.66227	-103.71230
17	7144	ZIRCON 1 STATE #1H OIL MASTER	32.68411	-104.03590
18	7456	LAYLA 35 MD #1H OIL MT	32.25546	-104.06557
19	7526	DERRINGER 18 FED #2H OIL MT	32.57452	-104.12118
20	7656	STATE B 33 EH COM #1H OIL MT	32.61784	-104.49751
21	7715	MIRAGE 30 PM STATE COM #1H OIL MT	32.62520	-104.10564
22	7767	MALAGA 13 CN FED COM #1H OIL MT	32.13672	-104.04301
23	7808	RUGER 31 MP FED #1H OIL MT	32.61233	-104.11973
24	8033	MAD DOG 35 CN ST COM #1H OIL MT	32.26756	-103.44280
25	8040	WILLOW LAKE 35 MD FED COM #1H OIL MT	32.16708	-104.06549
26	8208	BLACK LAKE 5 PA ST COM #1H OIL MT	32.15243	-104.10191
27	8245	WILDCAT 21 LI FED COM #1H OIL MT	32.28954	-103.48296
28	8371	ZIRCON 12/7 BC FED COM #1H OIL MT	32.68039	-104.02841
29	8449	URSA 27 FED COM #4H OIL MT	32.72284	-103.96808
30	8585	EXCALIBUR 17 MP FED #1H OIL MT	32.65410	-103.69378
31	8615	MAD DOG 26 MD ST COM #1H OIL MT	32.26875	-103.44813

	Tank ID	Battery Name	Latitude	Longitude
32	8728	SCHARB 10 PA STATE #1H OIL MT	32.66843	-103.54303
33	8780	MARATHON ROAD 15 PA FED #1H OIL MT	32.56699	-103.54078
34	8813	URSA 27 FED COM #1H OIL MT	32.71177	-103.96730
35	9028	PERAZZI 9 DA FED #1H OIL MT	32.59309	-104.08905
36	9202	RED HILLS WEST UNIT #007H OIL MT	32.06424	-103.66797
37	9313	LEO 15 DA FED COM #1H OIL MT	32.75553	-103.97049
38	9428	OWL DRAW 22 27 B2AP FED COM #1H OIL MT	32.03565	-104.17106
39	9588	MARATHON ROAD 14 MD FED #1H OIL MT	32.56553	-103.53641
40	9662	CABRA LOCA 11 B3OB ST #1H OIL MT	32.39930	-103.43909
41	9816	EL MAR 21 A3DM FED COM #1H OIL MT	32.03542	-103.58407
42	9919	SCHARB 10 B3NC STATE #1H OIL MT	32.66841	-103.55005
43	9949	PERRO LOCO 22 B3OB FED #1H OIL MT	32.37068	-103.45617
44	10013	RIO BRAVO 7 B3NC FED #1H OIL MT	32.48712	-104.43651
45	10053	GOBBLER 5 B2PM ST COM #1H OIL MT	32.68309	-104.08952
46	10135	PADUCA 7/6 A2ED FED COM #1H OIL MSTR	32.05825	-103.72027
47	10187	JESTER 19 30 W2DE FED COM #1H OIL MT	32.29725	-104.23567
48	10240	TORO 36 B3DM STATE #1H OIL MT	32.26742	-103.43030
49	10249	GLOCK 16 B2AD FED #1H OIL MT	32.57793	-104.07167
50	10316	JESTER 19/30 WOAHD FED COM #1H OIL MT	32.29674	-104.22286
51	10473	RED HILLS WEST UNIT #009H OIL MT	32.05145	-103.70475
52	10515	LONE WOLF 36 B2DA ST COM #1H OIL MT	32.71026	-103.72765
53	10548	CRAZY WOLF 1/2 B2CD FED COM #1H OIL MT	32.69342	-103.71972
54	10556	TORO 36 B3BO STATE #1H OIL MT	32.26744	-103.42171
55	10565	STERLING POUND 20/29 W2DE ST #1 OIL MT	32.29670	-104.21843
56	10616	BEBOP 36 W1MD STATE #2H OIL MT	32.07966	-103.73901
57	10630	SALADO DRAW 10 A3PA FED #2H OIL MT	32.05107	-103.55233
58	10657	VIPER 29/32 W0LM FED COM #1H OIL MT	32.27548	-104.21903
59	10724	YARDBIRDS 34 W20B FEE #1H OIL MT	32.25494	-104.07442
60	10758	GOOSE 29/28 W2BA ST COM #1H OIL MT	32.28218	-104.21136
61	10777	YARDBIRDS 34 W2NC FEE #1H OIL MT	32.25438	-104.07699
62	10786	JOURNEY 12 B2MP FEE #1H OIL MT	32.22616	-104.04820
63	10834	DEVON 6 W2AD FEE #1H OIL MT	32.16566	-104.11850

	Tank ID	Battery Name	Latitude	Longitude
64	10982	BIRDDOG 20/17 B2ED ST COM #1H OIL MT	32.46485	-103.49879
65	11005	OWL DRAW 2722 W2NC FED COM #2H OIL MT	32.00661	-104.17881
66	11103	ORYX 14 B3DM FED COM #1H OIL MT	32.31170	-103.44728
67	11112	ANNABELLE 13/18 W2BA FED COM #1H OIL MT	32.22518	-104.24914
68	11122	SALADO DRAW 10 W0DM FEE #2H OIL MT	32.06406	-103.56743
69	11129	SALADO DRAW 10 A3DM FEE 1H OIL MT	32.06406	-103.56728
70	11191	OWL DRAW 27/22 B2MD FED COM #1H OIL MT	32.00664	-104.18526
71	11237	JENNINGS 34 W1MD FED COM #1H OIL MT	32.07920	-103.66845
72	11314	PRONGHORN 15 B3DM FED COM #1H OIL MT	32.31172	-103.46514
73	11332	HOLLYWOOD 28/33 W2IP FED COM #1H OIL MT	32.27542	-104.18776
74	11360	WILD TURKEY 36/35 B2AB ST COM 1H OIL MT	32.71096	-104.12266
75	11395	JOURNEY 12 W0MP FEE COM #3H OIL MT	32.22573	-104.04819
76	11439	BIG SINKS 1 W1PA FED COM #2H OIL MT	32.06327	-103.72471
77	11561	LOVING TOWNSITE 21 W2PA FEE #1H OIL MT	32.28312	-104.08475
78	11636	ROSCOE 6 B3AD FED COM #1H OIL MT	32.51918	-104.22080
79	11646	ROCK SPUR 27 W2CN STATE COM #1H OIL MT	32.19494	-104.07916
80	11660	YARDBIRDS 3 W2AP FEE #1H OIL MT	32.25334	-104.06785
81	11704	LITTLE VALLEY FEDERAL #001H OIL MT	32.47333	-103.70249
82	11711	MOTLEY 6/7 W2DE FED COM #1H OIL MT	32.25352	-104.13463
83	11766	RED HILLS WEST 21 W1DM FED 2H OIL MT	32.03461	-103.68651
84	11841	DEVON 12/1 W2PI FEE #1H OIL MT	32.13716	-104.13681
85	11897	GHOSTRIDER 25/36 WODM FED COM #2H OIL MT	32.28216	-104.25412
86	11950	SALADO DRAW 10 W1PA FED COM #2H OIL MT	32.05138	-103.55328
87	11996	PAVO MACHO 31/32 B2EH FED OM #1H OIL MT	32.70584	-104.12085
88	12013	SPEEDWAGON 27 W2PA FEE #1H OIL MT	32.26809	-104.06849
89	12027	RED HILLS WEST UNIT #018H BATTERY	32.05221	-103.70324
90	12035	BRADLEY 29 FED COM #3H OIL MT	32.71384	-103.99136
91	12121	ARCHDUKE 19 W2AP FED COM #1H OIL MT	32.20950	-104.22245
92	12129	ANNABELLE 18/13 W2PO FED COM #1H OIL MT	32.21009	-104.22192
93	12200	EL MAR 21 W0DM FED COM #2H OIL MT	32.03444	-103.58103
94	12222	REBEL 16/9 B2OJ ST COM #1H OIL MT	32.47209	-103.47336
95	12296	MOTLEY 6/7 W2AH FEE COM #2H OIL MT	32.25296	-104.12092

	Tank ID	Battery Name	Latitude	Longitude
96	12387	LINDALE 24/25 W1AH FED COM #1H OIL MT	32.03398	-103.82734
97	12413	WHITESNAKE 20/21 W2BC FEE #1H OIL MT	32.29595	-104.11050
98	12460	ARMSTRONG 26/35 W1IP FED COM #1H OIL MT	32.10139	-103.74179
99	12511	IBEX 10 B3NC FED COM #1H OIL MT	32.31175	-103.46050
100	12522	ROCK SPUR 27 W2AP STATE #1H OIL MT	32.19541	-104.07020
101	12535	DELAWARE RANCH 11 W2NC FEE #1H OIL MT	32.05061	-104.06191
102	12570	DERRINGER 18 B2MP FED #1H OIL MT	32.56753	-104.12061
103	12668	VIRGO 24/23 B2AD FED COM #1H OIL MT	32.73864	-103.91800
104	12692	SOUTH LOVING 2/11 W0CF ST #1H OIL MT	32.25304	-104.16599
105	12723	GHOSTRIDER 25/36 W0AP FED COM 1H OIL MT	32.28243	-104.23881
106	12749	BOSTON 7 W0LI FEE #1H OIL MT	32.23015	-104.13443
107	12774	SALADO DRAW 9 AP FED COM 1H OIL MT	32.06310	-103.57247
108	12793	PRONGHORN 15 B3BO FED COM #1H OIL MT	32.31226	-103.45495
109	12804	IBEX 10 B3OB FED COM #1H OIL MT	32.31226	-103.45472
110	12828	ARMSTRONG 26/35 W0LM FED COM #1H OIL MT	32.10124	-103.75598
111	12857	NIGHT RANGER 28 W2AP FEE #1H OIL MT	32.28246	-104.08474
112	12873	SUMIDEROS 12 W1PA FED COM #1H OIL MT	32.05114	-103.72425
113	12886	SKYNYRD 2 W0CN FEE #1H OIL MT	32.25376	-104.06295
114	12916	SAPPHIRE 11/12 B2NN ST COM #1H OIL MT	32.67086	-104.05038
115	13015	PAVO FRIO 29/30 B2FE FED COM #1H OIL MT	32.71884	-104.09548
116	13209	FULLER 13/24 BATTERY OIL MT	32.04573	-103.93860
117	13470	PARKCHESTER 24/23 B2AD ST COM #1H OIL MT	32.65319	-104.12264
118	13508	BILBREY 34/27 BATT OIL MT	32.43072	-103.66659
119	13530	KANSAS 21/28 W1LM FED COM #1H OIL MT	32.20428	-104.10028
120	13536	CREEDENCE 21/16 W1ED ST COM #1H OIL MT	32.20429	-104.09986
121	13567	DOLLY VARDEN 25/24 B2ED ST COM 1H OIL MT	32.45015	-103.43000
122	13648	FULLER 13/12 BATTERY OIL MT	32.04574	-103.93733
123	13983	HEREFORD 29/20 B1PA ST COM 1H OIL MT	32.62565	-103.47490
124	14152	BLACK SHEEP 4/33 B3OB FED COM 1H OIL MT	32.41456	-103.47420
125	14172	BIG SINKS 1/12 W1BO FED COM #1H OIL MT	32.07828	-103.72850

	Tank ID	Battery Name	Latitude	Longitude
126	14198	PALE RIDER 8/5 W0OB ST COM 1H OIL MT	32.13910	-104.10548
127	14217	KNOX 13/14 B2IL FED COM #1H OIL MT	32.74253	-103.91560
128	14230	INLAND 26/23 B2OJ ST COM 1H OIL MT	32.44515	-103.43533
129	14249	CREEDENCE 21/16 W1OB FED 1H OIL MT	32.20360	-104.08698
130	14284	EL JEFE 35/2 W0CN FED COM 1H OIL MT	32.17886	-104.06378
131	14301	GOBBLER 5/6 B3IL ST COM 2H OIL MT	32.68309	-104.08952
132	14314	SALADO DRAW 9 W0CN FED COM 1H OIL MT	32.06271	-103.58184
133	14348	SILVER BULLET 16 BATT OIL MT	32.04719	-103.98829
134	14365	LOCO HILLS 2/1 B2GH FED COM 1H OIL MT	32.77930	-103.94114
135	14404	WINTERFELL/CASTLE BLACK OIL MT	32.77920	-103.80419
136	14434	WINGMAN 12/11 W0PM STATE COM 1H OIL MT	32.31375	-104.23991
137	14435	AIR BOSS 13/14 W0AD FED COM 1H OIL MT	32.31361	-104.23991
138	14477	BONANZA 22/15 W0ED FED COM 1H OIL MT	32.11280	-104.08028
139	14494	PHOENIX 21/22 B2KI FED COM #1H OIL MT	32.72265	-103.98648
140	14529	ZACH 17/8 W1MD FED COM 1H OIL MT	32.03773	-103.59872
141	14546	KANSAS 28/33 W0AP FED COM #1H OIL MT	32.20360	-104.08588
142	14597	BOURBON RED 11/12 BATT OIL MT	32.67156	-104.15420
143	14610	LAYLA 35/26 W0MD FEE 1H OIL MT	32.25647	-104.05933
144	14640	SLIDER 18 WOMD FED COM #1H OIL MT	32.29725	-104.23567
145	14649	RATTLESNAKE 13/18 B2LK ST COM 1H OIL MT	32.65814	-104.13645
146	14707	EASY COMPANY 36/35 W0IJ FED 1H OIL MT	32.52893	-104.12619
147	14816	FORTY NINER RIDGE 16/21 BATT OIL MT	32.30185	-103.88907
148	14949 & 14944	CHICAGO 9/8 FED BATT MT/CHICAGO 9/8 FEE BATT OIL MT	32.23364	-104.08622
149	15123	ANTELOPE 9 B3OB STATE COM #1H BATTERY	32.31243	-103.47650
150	16726	RED HILLS WEST UNIT #023H BATTERY	32.05045	-103.68989
151	16864	SALT DRAW 2 BATTERY #1	32.16815	-104.06343
152	16877	CAPER-LOX BATTERY	32.47278	-103.70410
153	14641 & 13742	FOREIGNER 33/4 FEE & FED BATTERY	32.25935	-104.09352

APPENDIX B: Facilities with Subject Vapor Control Systems in Texas

	Tank ID	Battery Name	Latitude	Longitude
154	5514	UNIVERSITY B11 28 BATTERY	32.10765	-102.78942
155	5518	UNIVERSITY B11 7 BATTERY	32.14462	-102.82845
156	5834	UNIVERSITY B11 18 BATTERY	32.13919	-102.82612
157	6847	UNIVERSITY B11 5 BATTERY	32.15973	-102.82375
158	7223	UNIVERSITY B11 32 BATTERY	32.09095	-102.79232
159	8424	TXL WEST 11 B201PA BATTERY	31.97126	-103.92486
160	8749	MAGRUDER 8 BATTERY	32.07652	-102.78768
161	9085	BRUMLOW 39 B301MD BATTERY	31.76418	-103.33980
162	9093	UNIVERSITY B11 6 FAC	32.15703	-102.83194
163	9114	BRUMLOW 48 W101MD BATTERY	31.75844	-103.30204
164	9326	TXL 31 B201CN BATTERY	31.92703	-103.90060
165	9600	UNIVERSITY B21 7 BATTERY	31.74853	-103.27882
166	9739	BRUMLOW 46 W101DM BATTERY	31.76268	-103.33932
167	9808	HARRISON 44 FAC	31.76743	-103.26979
168	9860	HARRISON 43 W102MD BATTERY	31.76296	-103.28595
169	9868	TXL 37 W101MD BATTERY	31.89899	-103.81956
170	10225	HARRISON 43 B301MD BATTERY	31.76341	-103.28442
171	10462	TXL 37 W201PA BATTERY	31.89861	-103.80589
172	10504	TXL 48 W101DM BATTERY	31.89735	-103.81962
173	10587	UNIVERSITY B21 5 BATTERY	31.75369	-103.26446
174	10673	UNIVERSITY B20 1 PA BATTERY	31.74786	-103.28359
175	10750	TXL 45 B201DM OIL MT BATTERY	31.89776	-103.87151
176	10821	KENTZEL STATE 42 SL W202DM OIL MT BATTERY	31.91252	-103.80216
177	10852	UNIVERSITY B20 11 BATTERY	31.73967	-103.31249
178	10958	UNIVERSITY B20 2 BATTERY	31.74052	-103.31281
179	10992	ZUMA 3 B203BO OIL MT BATTERY	31.99969	-103.94638
180	11025	TXL 7 B201BO BATTERY	31.86880	-103.89729
181	11069	UNIVERSITY B21 8 BATTERY	31.75238	-103.26408
182	11160	TXL 31 H301PA BATTERY	31.91283	-103.89164
183	11262	MITCHELL 39 BATTERY	31.76592	-103.32497

	Tank ID	Battery Name	Latitude	Longitude
184	11295	ZUMA 3 B203DM BATTERY	31.99941	-103.95658
185	11369	UNIVERSITY B20 12AP BATTERY	31.74723	-103.28324
186	11513	TXL 39 H301DM BATTERY	31.91193	-103.85446
187	11523	MITCHELL 28 47 DM BATTERY	31.76683	-103.32222
188	11607	TXL SOUTH 56-T2-2X11 W101DE BATTERY	31.88257	-103.83777
189	11679	TXL 19 H301DM BATTERY	31.95581	-103.90519
190	11688	ZUMA 57-T1 3X10 W102AP BATTERY	31.99992	-103.94128
191	11754	UNIVERSITY B20 12 13 W101DD BATTERY	31.74560	-103.29670
192	11982	TXL 47 H301AP BATTERY	31.89740	-103.82586
193	12036	UNIVERSITY B20 12BO	31.74640	-103.28566
194	12176	UNIVERSITY B21 5PA BATTERY	31.75621	-103.25472
195	12256	ZUMA 3 B203CN BATTERY	31.99991	-103.95118
196	12630	TXL SOUTH 56-T2-2X11 W001CF OIL MT BATTERY	31.88208	-103.83781
197	12979	UNIVERSITY B20 211 W101BO FACILITY	31.75529	-103.30961
198	13031	UNIVERSITY B21 8 W101AP FACILITY	31.75676	-103.25351
199	13103	GLASSCOCK UNIT 4441 FACILITY	31.86638	-101.55088
200	13243	KENTZEL STATE 42 W101BO OIL MT BATTERY	31.91181	-103.79223
201	13297	RED BLUFF 1 001 OIL MT	31.99502	-103.91508
202	13307	CALVERLEY 43 6 A W101DM BATTERY	31.87492	-101.57028
203	13723	TXL 40 45 H302BO BATTERY	31.91474	-103.86329
204	14333	CALVERLEY 42 31 A W101MD BATTERY	31.87466	-101.57626
205	14627	GOODNIGHT BATTERY	31.93389	-103.33852
206	16696	TXL 41-44 BATTERY	31.91053	-103.87877

APPENDIX C: Limited Field Survey Facilities in New Mexico and Texas

	Tank ID	Battery Name	State	Latitude	Longitude
207	931	JUSTICE FED COM #2 BATTERY	NM	32.51122	-104.14594
208	2180	LONG DRAW 4 BATT MASTER TANK	NM	32.59582	-104.48194
209	2261	SANTO NINO 29 #1-3 BATTERY	NM	32.71998	-104.00109
210	4823	LONG DRAW 4 I FED # 1 MASTER	NM	32.59946	-104.48224
211	5078	BRADLEY 29 FED COM #1H BATTERY	NM	32.71384	-103.99136
212	5090	WYATT DRAW 24/25 MASTER OIL	NM	32.64513	-104.44549
213	5243	WEST DRAW 5 K #1 MASTER OIL	NM	32.59966	-104.50804
214	5248	BURTON 4 FED COM #3H BATTERY	NM	32.60742	-104.07167
215	5345	ARIES 20 BATT OIL MASTER TANK	NM	32.72725	-104.00467
216	5546	RED HILLS WEST UNIT #001H OIL MT	NM	32.05153	-103.68991
217	5635	PB 21 CN FED COM #1H - OIL MASTER	NM	32.56545	-104.49090
218	5916	WEST DRAW 5/8 PH FED COM #1H BATTERY	NM	32.59902	-104.49942
219	5963	BRADLEY 28 FED COM #1H MASTER OIL	NM	32.72108	-103.98516
220	5967	BRADLEY 29 FED COM #2H OIL MASTER	NM	32.72103	-103.98523
221	5982	RUGER 6 FED COM #3H OIL MT	NM	32.60975	-104.11097
222	6004	W D 24/25 NF FED COM #1H MSTR OIL	NM	32.64310	-104.43965
223	6239	PHOENIX 21 FED COM #1H OIL MASTER TANK	NM	32.72530	-103.98300
224	6271	TAMANO 10 FED COM #6H OIL MT	NM	32.76766	-103.86441
225	6294	BRADLEY 30 FED #1H OIL MASTER	NM	32.71596	-104.00195
226	6471	DELAWARE RANCH 11 FED COM #2H OIL MASTER	NM	32.06287	-104.05475
227	6535	OCELOT 34 FED COM #1H MASTER OIL	NM	32.62276	-103.75132
228	6679	CROW FLATS 26 FED #1H OIL MASTER	NM	32.88734	-104.13959
229	6708	RED HILLS WEST 21 FED COM #2H MASTER OIL	NM	32.03490	-103.68105

	Tank ID	Battery Name	State	Latitude	Longitude
230	6747	ZIRCON 1 STATE #2H OIL MT	NM	32.69491	-104.02051
231	6809	AVALON RIDGE 33 FED COM #2H MASTER OIL	NM	32.53640	-104.19010
232	6825	SHARPS 3 FED COM #2H OIL MT	NM	32.59596	-104.05470
233	6900	SALADO DRAW 10 FED COM #1H MASTER OIL	NM	32.06431	-103.56347
234	6992	LAYLA 35 #2H OIL MT	NM	32.26814	-104.05984
235	7012	BRADLEY 28 FED #3H OIL MT	NM	32.71248	-103.98351
236	7063	TAMANO 10 FED COM #8H OIL MT	NM	32.75945	-103.86470
237	7087	SAN LORENZO 22/27 LE FEE #1H OIL MT	NM	32.11427	-104.08227
238	7173	SAN LORENZO 9 PA FEE #1H OIL MT	NM	32.13784	-104.08553
239	7233	MALAGA 30 FED COM #1H OIL MASTER	NM	32.18603	-104.01630
240	7295	QUERECHO 28 MD FED #1H OIL MT	NM	32.71176	-103.77587
241	7317	DORADO 34 FED COM #1H OIL MT	NM	32.70137	-103.95325
242	7376	SAN LORENZO 15 DM FEE COM #1H OIL MASTER	NM	32.13647	-104.08141
243	7397	BRADLEY 30 FED COM #3H OIL MASTER	NM	32.72065	-104.01968
244	7508	BRADLEY 28 FED #4H OIL MT	NM	32.71669	-103.98687
245	7549	ARIES 19 IL FED COM #1H OIL MT	NM	32.72715	-104.00576
246	7635	TAMANO 15 AD FED COM #1H OIL MASTER	NM	32.75280	-103.84985
247	7662	SAN LORENZO 9 NC FEE #1H OIL MT	NM	32.13776	-104.09861
248	7785	DELAWARE RANCH 11 NC FEE #1H OIL MT	NM	32.05071	-104.05889
249	7839	SAN LORENZO 15 PA ST COM #1H OIL MT	NM	32.12314	-104.06786
250	7858	LAYLA 35 OB #1H OIL MT	NM	32.25472	-104.05547
251	7924	VOYAGER 11 EH FED COM #1H OIL MT	NM	32.58945	-104.25961
252	7931	DELAWARE RANCH 14 CN FEE COM #1H OIL MT	NM	32.04918	-104.06128
253	7968	BURTON 4 IL FED COM #1H OIL MT	NM	32.60016	-104.07159

	Tank ID	Battery Name	State	Latitude	Longitude
254	8003	BISON WALLOW 34 FED #2H OIL MSTR	NM	32.07947	-103.96515
255	8011	DELAWARE RANCH 13 EH FED COM #1H OIL MT	NM	32.04375	-104.04908
256	8104	SAN LORENZO 22/27 LE #2H OIL MT	NM	32.11469	-104.08126
257	8130	DORADO 34 DA FED COM #1H OIL MT	NM	32.70974	-103.96744
258	8156	WINCHESTER 36 AD #1H OIL MT	NM	32.62361	-104.12212
259	8170	MALAGA 30 MP FED COM #1H OIL MT	NM	32.18439	-104.03074
260	8238	BRADLEY 36 PM ST COM #1H OIL MT	NM	32.69746	-104.02104
261	8357	YOUNG 16 NC STATE COM #1H OIL MT	NM	32.74136	-103.77346
262	8364	BLACK LAKE 7 NC ST COM #1H OIL MT	NM	32.13800	-104.12830
263	8402	GLOCK 17 MP FED COM #1H OIL MT	NM	32.56738	-104.10465
264	8409	JAN #4375H OIL MT	TX	36.1894861	-100.069366
265	8493	ARIES 20 MP FED COM #1H OIL MT	NM	32.72696	-104.00488
266	8515	SAN LORENZO 15 OB #1H OIL MT	NM	32.12342	-104.07151
267	8522	TWO MESAS 7 MP FED #1H OIL MT	NM	32.58328	-104.01827
268	8562	DELAWARE RANCH 12 NC FED COM #1H OIL MT	NM	32.04995	-104.04281
269	8599	OWL DRAW 23 DM FED COM #1H OIL MT	NM	32.03626	-104.16638
270	8636	TAMANO 11 NC FED #1H OIL MT	NM	32.75484	-103.84132
271	8643	BRADLEY 36 LI STATE COM #1H OIL MT	NM	32.70288	-104.03658
272	8650	TWO LAKES 1 XU STATE COM #1H OIL MT	NM	32.94724	-104.12121
273	8657	HENRY 8 IL FED #1H OIL MT	NM	32.58553	-104.08959
274	8767	OWL DRAW 23 DM FED COM #2H OIL MT	NM	32.03626	-104.16604
275	8874	SAVAGE 5 EH FED #1H OIL MT	NM	32.60376	-104.10597
276	8942	DELAWARE RANCH 12 MD FED COM #1H OIL MT	NM	32.05006	-104.04734

	Tank ID	Battery Name	State	Latitude	Longitude
277	9056	MAVERICK 13 DM FED COM #1H OIL MT	NM	32.22401	-104.25340
278	9063	TRUE GRIT 8 B3BO FED COM #1H OIL MT	NM	32.41230	-104.41619
279	9139	BRUSHY DRAW 1 DM #1H OIL MT	NM	32.07875	-103.94504
280	9159	ZIRCON 2 B1EH STATE #2H OIL MT	NM	32.69056	-104.05320
281	9262	BURTON 4 FED COM #4H OIL MT	NM	32.60742	-104.07167
282	9347	BRADLEY 31 B2DA FED COM #1H OIL MT	NM	32.71093	-104.01932
283	9375	RATTLESNAKE 13 PM STATE #1H OIL MT	NM	32.65526	-104.12234
284	9386	QUERECHO 28 OB FED #1H OIL MT	NM	32.71159	-103.76760
285	9407	OWL DRAW 22 W1AP FED COM #1H OIL MT	NM	32.03575	-104.17134
286	9468	DELAWARE RANCH 14 B2BO FEE #1H OIL MT	NM	32.04981	-104.05482
287	9502	URSA 27 B2IL FED COM #1H OIL MT	NM	32.71464	-103.94858
288	9722	RUGER 31 B2EH FED #1H OIL MT	NM	32.61796	-104.12128
289	9783	BIG SINKS 1 A2PA FED COM #1H OIL MT	NM	32.06393	-103.72368
290	9838	ZIRCON 12 7 B2JK FED COM #1H OIL MT	NM	32.67476	-104.02977
291	9957	BRADLEY 36 B2DA ST COM #1H OIL MSTR	NM	32.70998	-104.03672
292	9973	MARATHON ROAD 15 NC FED #1H OIL MT	NM	32.56660	-103.55100
293	10270	YARDBIRDS 3 W2DM FEE #1H OIL MT	NM	32.25344	-104.08055
294	10294	BIG SINKS 1 A3OB FEE #2H OIL MT	NM	32.06410	-103.72932
295	10442	BUZZARD 59 #M001MD	TX	36.217975	-100.907558
296	10451	COLTRANE 36 B2PA ST #1H OIL MT	NM	32.08110	-103.72496
297	10483	COURSON PARNELL 477 #2HC	TX	36.188101	-100.670989
298	10490	EL MAR 21 W1DM FED COM #3H OIL MT	NM	32.03538	-103.58339
299	10523	YARDBIRDS 3 D3BO FEE #1H OIL MT	NM	32.25340	-104.07321
300	10595	YARDBIRDS 34 PA FEE #1H OIL MT	NM	32.25467	-104.07011

	Tank ID	Battery Name	State	Latitude	Longitude
301	10639	ROY LINN 580 #C001DN	TX	36.242679	-100.670288
302	10681	SPEEDWAGON 27 W2DM FEE #1H OIL MT	NM	32.28256	-104.08144
303	10898	PEARSON 74 #M001PA	TX	36.200222	-101.058564
304	10949	PAVO MACHO 31 B2MP FED #1H OIL MT	NM	32.69841	-104.12160
305	10975	MORRIS 736 #M001BP	TX	36.289666	-100.573531
306	11034	RIFENBURG 58 #M001PA	TX	36.217832	-100.914676
307	11042	BUZZARD 59 #M002PA	TX	36.218062	-100.895323
308	11092	CABRA NINO 11 B3NC STATE COM #1H OIL MT	NM	32.39931	-103.44351
309	11169	PEPPER BLAIS 54 #M001MD	TX	36.213895	-101.125784
310	11181	COMMODORE 30 W2PA FED COM #1H OIL MT	NM	32.18032	-104.22366
311	11270	EL NINO 13 B3DM ST COM #1H OIL MT	NM	32.39809	-103.43099
312	11291	ANNA MAE WRIGHT #C001BP	TX	36.318194	-100.846786
313	11342	DEVON 8 W2PM FEE #1H OIL MT	NM	32.13863	-104.10070
314	11377	JENNINGS 27 W0AP FED COM #3H OIL MT	NM	32.10836	-103.65682
315	11457	BENBROOK 53 #M001AP	TX	36.227561	-101.096108
316	11532	WEST LOVING 12 W2EH STATE COM 1H OIL MT	NM	32.23314	-104.15166
317	11550	BOSTON 7 W2MP FEE #1H OIL MT	NM	32.22628	-104.13505
318	11591	BLACK STONE 68 #M001MD	TX	36.203222	-100.871432
319	11617	LAUNE 54 #M001MD	TX	36.231316	-100.907262
320	11698	RIO BRAVO 17/20 W2AP FED COM #1H OIL MT	NM	32.48609	-104.41254
321	11719	GRIFFIN 67 #C001PA	TX	36.203138	-100.843094
322	11725	COURSON HERNDON 662 #M001PA	TX	36.261795	-100.768336
323	11788	RIFENBURG #M002CM	TX	36.231474	-100.927911
324	11849	COURSON KEY 35 #M001OB	TX	36.261354	-100.843287
325	11857	NUSBAUM 55 #M001PA	TX	36.212653	-101.132309
326	11938	GHEEN 664 #M001MD	TX	36.261090	-100.742431

	Tank ID	Battery Name	State	Latitude	Longitude
327	11967	SCOTT 72 #M001AP	TX	36.214203	-101.094627
328	12060	HARRELSON 313 #C002PA	TX	36.142960	-100.713178
329	12067	QUEEN 23/24 W0OP FED COM #1H OIL MT	NM	32.19793	-104.06018
330	12088	PADUCA 7/6 W1ED FED COM #2H OIL MT	NM	32.05807	-103.72060
331	12106	BLACK STONE 68 #M002PA	TX	36.203188	-100.859499
332	12144	FORTY NINER RIDGE 103H OIL MT	NM	32.28610	-103.86121
333	12186	WOLFMAN 5/4 W0LI FED COM #1H OIL MT	NM	32.33107	-104.21926
334	12194	BOGLE FLATS FED UNIT 3 Y1KC 1H OIL MT	NM	32.41671	-104.59136
335	12228	SUTTON 70 #M001DM	TX	36.328635	-101.143156
336	12249	COURSON KEY 35 #M002DM	TX	36.261708	-100.851932
337	12318	RICHARDSON 71 #M001OA	TX	36.203264	-100.915293
338	12331	BUZZARD 69 #M002BO	TX	36.216985	-100.879838
339	12338	FULLER 14/23 EAST BATT OIL MT	NM	32.04344	-103.94667
340	12351	FULLER 14/11 EAST BATTERY	NM	32.04341	-103.94715
341	12364	WHITE 57 #M002PA	TX	36.232380	-100.945775
342	12428	ZEPPELIN 32 W0LI ST COM #1H OIL MT	NM	32.25987	-104.11652
343	12450	MEKEEL 213 #C002MD	TX	36.100781	-100.671644
344	12473	COURSON LEATHERMAN 748 #M001DM	TX	36.274554	-100.786486
345	12583	OXBOW 26/25 W1DA FED COM #1H OIL MT	NM	32.10515	-104.06625
346	12611	SALADO DRAW 9/16 W0BO FED COM #2H OIL MT	NM	32.06301	-103.57261
347	12651	DEAR 8 #M001AP	TX	36.289735	-100.965906
348	12658	WHITE 57 #M003DM	TX	36.232398	-100.945779
349	12685	SWINK TARBOX 105 #C001PA	TX	36.129591	-100.930747
350	12736	GAZELLE 22 B3MD FED COM #1H OIL MT	NM	32.28383	-103.46376
351	12844	BUZZARD 76 #M001DM	TX	36.202135	-100.887858

	Tank ID	Battery Name	State	Latitude	Longitude
352	12903	PRINCE 31 W0DA FED COM #1H OIL MT	NM	32.17919	-104.03021
353	12938	ROY LINN 653 #M002DM	TX	36.261416	-100.670929
354	12960	FLEETWOOD 36/25 W0ML ST COM #1H OIL MT	NM	32.16829	-104.04512
355	12989	TARBOX 106 #C001ND	TX	36.129104	-100.923619
356	13023	PAVO FRIO 29/28 B2GH FED COM #1H OIL MT	NM	32.71899	-104.09537
357	13041	DARNELL-PSHIGODA 27/38 #M002BG	TX	36.288700	-100.896862
358	13114	COURSON ELDON 747 #M001PA	TX	36.274534	-100.770037
359	13121	RED HILLS WEST 21 W1AP FED COM #2H OIL M	NM	32.03461	-103.67342
360	13140	WRIGHT 7 #M001H	TX	36.289265	-100.961049
361	13153	VIPER 32/29 W2PI FED COM #1H OIL MT	NM	32.25438	-104.20680
362	13162	BUFFALO TRACE 1/36 W1PA FED 1H OIL MT	NM	32.06210	-103.93149
363	13188	GEMINI 36/35 B2PO FED COM 1H OIL MT	NM	32.78426	-103.91929
364	13192	LOCO HILLS 1/2 B2AB FED COM 1H OIL MT	NM	32.78405	-103.91930
365	13197	GRAY 353/352 #C003CN	TX	36.171494	-100.018068
366	13335	DELAWARE RANCH 11/14 W1AP FED 1H OIL MT	NM	32.06427	-104.05078
367	13348	CHAROLAIS 28/21 B2NC ST COM 1H OIL MT	NM	32.62541	-103.46653
368	13366	RUSTLER BREAKS 26/23 W0ML FEE #2H OIL MT	NM	32.17994	-104.06476
369	13374	ARCHER 57 #M001ND	TX	36.301279	-101.069072
370	13397	GLOCK 17/16 DA BATTERY OIL MT	NM	32.57844	-104.10821
371	13410	SAND CHUTE 4/9 B2AP FED COM 1H	NM	32.60935	-103.45598
372	13419	ROY LINN 653 #M001AO	TX	36.260766	-100.658715
373	13441	ELIZABETH-GRAHAM 383/410 A #C002OB	TX	36.158677	-100.553191
374	13455	SUNDOWN 31/32 W0DA FEE #1H OIL MT	NM	32.35201	-104.23713

	Tank ID	Battery Name	State	Latitude	Longitude
375	13489	SCHNELL 73/64 A #M001PI	TX	36.313648	-101.188466
376	13556	WILLIAMS 83 #M001CN	TX	36.188605	-100.847644
377	13582	PADUCA 7/6 W1GB FED COM 1H OIL MT	NM	32.05914	-103.71149
378	13604	SCHULTZ-YAUCK 803/782 #C003CP	TX	36.318831	-100.198874
379	13612	STINGER 6 W0IL FED COM 1H OIL MT	NM	32.33043	-104.21904
380	13628	COLTRANE 36/25 W0PI FED COM #1H OIL MT	NM	32.08106	-103.72418
381	13677	DELAWARE RANCH 13/24 W1DM FED 1H OIL MT	NM	32.04793	-104.04906
382	13696	SAPPHIRE 11/12 B3DC ST COM 2H OIL MT	NM	32.67834	-104.05205
383	13715	FARNSWORTH 3/17 A #M001AH	TX	36.245584	-100.950130
384	13760	YUMA 3/10 W1CN ST COM #1H OIL MT	NM	32.16487	-104.08016
385	13779	STYX 17 W2PA FEE COM #1H OIL MT (NEW)	NM	32.29762	-104.10362
386	13796	WISHBONE 35/34 B2PM FED COM 1H OIL MT	NM	32.69789	-104.03782
387	13851	ARMSTRONG 26/23 BATT OIL MT	NM	32.10069	-103.75138
388	13975	HEREFORD 29/20 W1OB FED COM 1H OIL MT	NM	32.62565	-103.47470
389	13989	REBEL 9/16 B2IP ST COM 1H OIL MT	NM	32.49272	-103.46802
390	14006	NORMANDY 31/32 W0LI FED COM 1H OIL MT	NM	32.52989	-104.12060
391	14019	MILLEDGE-PSH 28/37 A #M005CN OIL MT	TX	36.29074	-100.88304
392	14036	MCGARRAUGH-BROWNLEE #C004PA OIL MT	TX	36.11545	-100.73173
393	14044	GLOCK 17/16 B3MP FED COM 1H OIL MT	NM	32.57085	-104.10319
394	14063	STARSHIP 28/21 W0OB FEE 1H OIL MT	NM	32.27009	-104.08752
395	14089	RED HILLS WEST UNIT #010H OIL MT	NM	32.05273	-103.66911
396	14109	OXBOW 23/24 B2MP FED COM 1Y OIL MT	NM	32.10739	-104.06577

	Tank ID	Battery Name	State	Latitude	Longitude
397	14139	IBEX 15/10 B3PA FED COM 1H OIL MT	NM	32.29970	-103.44982
398	14167	WOLF FEDERAL #001 OIL MT	NM	32.77779	-103.75747
399	14270	ROGERS-MCGARRAUGH 237/204 #M001DE OIL MT	TX	36.12904	-100.50652
400	14378	LOCO HILLS 2/3 B2CD FED COM 1H OIL MT	NM	32.77930	-103.94114
401	14396	PIONEER 31 #C001OB OIL MT	TX	36.04009	-100.55641
402	14417	LINDALE 24/25 WIDE FED #1H OIL MT	NM	32.03319	-103.84133
403	14448	BUFFALO TRACE 1/36 W1MD FED 1H OIL MT	NM	32.06258	-103.94251
404	14510	WEST LOVING 11/12 W0BA FED COM 1H OIL MT	NM	32.23752	-104.16078
405	14571	LA RANCH 406 #C001OA OIL MT	TX	36.17249	-100.62483
406	14578	FULLER 14/23 WEST BATT OIL MT	NM	32.04435	-103.96047
407	14582	COURSON URBAN 108 #C001MD OIL MT	TX	36.12905	-100.88764
408	14662	MERYDITH-TREGELL 469/412 A#M003AO OIL MT	TX	36.20095	-100.51385
409	14671	FOXHOLE 25/26 BATT OIL MT	NM	32.54671	-104.12510
410	14694	WINTERFELL 5/6 B2JI FED COM 1H OIL MT	NM	32.77272	-103.78225
411	14720	MIRAGE 30 B3IL ST COM 2H OIL MT	NM	32.63067	-104.10690
412	14746	LITTLE GIANTS 20/19 W0IL FED 1H OIL MT	NM	32.37373	-104.09814
413	14790	SANTA VACA 19/18 BATT OIL MT	NM	32.63947	-103.49895
414	14962	RED HILLS WEST 22 W0AP FED 2H OIL MT	NM	32.03358	-103.66855
415	15011	FNR FED UNIT #1H BATTERY OIL MT NEW	NM	32.30077	-103.89920
416	15077	HOSS 2-11 BATTERY	NM	32.16722	-104.05483
417	15494	RAM 3 BATTERY	NM	32.41376	-103.45107
418	10733 & 12046	DODD 60 #M001MD/BUZZARD 69 #M001DM	TX	36.217864	-100.888457
419	11352 & 12319	FARNSWORTH 56 #M001AP/ORTHA JONES 41 #M002PA	TX	36.245994	-100.932209

	Tank ID	Battery Name	State	Latitude	Longitude
420	11880 & 11888	FARNSWORTH 56 #M002DM/ORTHA JONES 41 #M001MD	TX	36.246216	-100.941642
421	12114 & 12137	COURSON TREW 78 #M001DM/COURSON GRIFFIN 67 #M002MD	TX	36.203201	-100.853037
422	13051 & 13062	CAST AWAY BATTERY & LA TRUCHA BATTERY	NM	32.52131	-103.40681

APPENDIX D: Sampling and Analysis Plan

This document is intended to provide a procedure detailing the general steps required to obtain a sample of pressurized liquid hydrocarbons from separators for broad use in calculating emission estimates for Mewbourne production sites. It outlines requirements for sample collection, analytical methods, reporting, quality assurance, and criteria for determining whether a sample can be considered representative for different production sites.

This plan does not cover the analysis of produced water samples. Flash emission calculations from produced water at each facility shall be based on an assumed level of hydrocarbon carryover in produced water and the results of oil sampling corresponding to the facility. Facilities will be modeled with the assumption that 3% of the total produced water throughput is managed as skim oil in the gun barrel tanks.

1. Pre-Sampling Requirements

- A. The pre-sampling requirements of CARB Protocol § 7.1 shall apply.
- B. Prior to sampling, Mewbourne shall provide the sample technician with information necessary to prepare a report complying with the Report Requirements of this Appendix. Refer to Figure 1 (CARB Form 1).
- C. Mewbourne shall ensure that the sampling technician and the laboratory technician use checklists and/or other appropriate documentation to facilitate compliance with the requirements of this Appendix. Refer to Figure 2 (Data Checklist).

2. Sample Collection Procedure

- A. Liquid sample collection shall be completed as soon as practicable after a dump event. Samples shall not be taken during dump events, and in no case shall a sample be taken more than thirty minutes following a dump event. If a dumping event occurs during the collection of a sample, that sample shall be rejected and a new sample collected.
- B. If there is insufficient time between dumping events to collect a sample, then the level controller shall be temporarily adjusted to achieve a long enough period between dumping events to collect a sample.
- C. If a separator has proportional (or throttling) level control, then the sample should be collected during a period when the flow is stable.
- D. The sampling point shall be at a location at, or immediately downstream of the separator, and shall be sufficiently far upstream of the dump valve to avoid interference from localized effects created by flow through the dump valve.
- E. Prior to sampling, the sample connection shall be flushed to verify the absence of pluggage from the sampling connection and to eliminate interference from the accumulation of static fluid in the sampling connection.
- F. During sampling, the separator temperature and pressure shall be representative of reasonably anticipated worst-case operating conditions. The reasonably anticipated worst-case operating condition will be represented by the unadjusted operating

temperature and pressure of the separator at the time of the sampling event and not to exceed 60 psig, which is the maximum pressure at which Mewbourne operates its heater treaters.

- G. Except as specified otherwise in this Appendix, the procedures of the most current version of GPA 2174 shall apply.
- H. The liquid sampling rate shall not exceed 60 milliliters per minute and shall be verified by timing the fill indicator on the cylinder used during collection.
- I. Measure and record both pre-sampling and post-sampling temperature in degrees Fahrenheit (“°F”) and pressure in pounds per square inch gauge (“psig”).
- J. Temperature, pressure, and volume measurement instruments shall comply with the requirements of CARB Protocol §§ 5.1–5.3. This clause shall not be construed to require the use of a Constant Volume (“CV”) cylinder sampling method.
- K. Except as specified in this Appendix, sample collection shall follow CARB Protocol Section 9 (Constant Pressure (“CP”) Cylinder Sampling Method). Refer to Figure 3 (Sampling Manifold).
- L. Notwithstanding CARB Protocol 9.1, if the separator immediately upstream of the vapor control system required for testing is a vapor recovery tower (“VRT”), a pressure separator immediately upstream of the VRT shall be identified.

3. Analytical Methods and Quality Assurance

- A. Perform extended analysis of hydrocarbons using GPA Standard 2103 (Method for the Analysis of Natural Gas Condensate Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography).
- B. Of the requirements in Section 10.6 of the CARB Protocol, Section 10.6(c) will be followed for the analysis of API gravity.
- C. Sample integrity verification will be conducted on the pressurized liquid hydrocarbon sample obtained by equation of state modeling of the composition determined by GPA Standard 2103.

The sample integrity verification is intended to demonstrate the pressurized liquid hydrocarbon sample was obtained correctly in the field and has not been compromised prior to testing. The bubble point verification referenced in Section 4.D. achieves this by comparing the bubble point pressure at field sample collection temperature with the field measured sample collection pressure.

The acceptable percent difference values resulting from the sample integrity verification shall be less than or equal to ± 30 percent. If a sample fails the integrity verification test, it will be deemed invalid for use in calculating emission estimates at Mewbourne production facilities.

4. Determination of Flash Gas Composition

- A. Flash gas composition shall be calculated by performing a flash calculation on a fluid having the composition determined from the liquid sample extended hydrocarbon analysis.

The flash calculation shall incorporate a suitable Equation of State (“EOS”) model (e.g., Peng-Robinson) and shall be performed using process simulation (“PSM”) software.

The PSM/EOS model will mimic the actual field equipment from the point of sample collection to the storage tank with pressures and temperatures taken from field measurements.

- B. Where a representative sample is used in lieu of a sample taken from the subject facility, the sampling or laboratory technician shall perform simulated back blending of the modeled liquid sample with a gas stream having composition appropriate to the subject facility, based on an empirical analysis of subject facility heater treater gas or sales gas. The purpose of the simulated back blending procedure is to ensure that the pre-flash modeled system has a system pressure consistent with the worst-case operating pressure of the separator in the subject facility.
- C. Where a VRT is used at the subject facility, the flash calculation shall comprise two flash calculations: (1) involving transfer of fluids from the separator to the VRT; and (2) involving transfer of fluids from the VRT to an atmospheric oil storage vessel.
- D. Calculation of bubble point will be done via the PSM/EOS for the pressurized liquid composition at the sample collection temperature, T_{sep} .

5. Report Requirements

Upon completion of the sample analysis and any associated lab modeling, a comprehensive report providing measurements, analyses and calculations will be prepared. Refer to Figure 2 (Data Checklist). The report documents must include the following:

- A. Completed CARB Protocol Field Data Form (Form 1)
- B. Sample identification
- C. Date and time sampled
- D. Data analyzed
- E. Description of vessel sampled
- F. Facility name and location
- G. Local ambient temperature and barometric pressure
- H. Annual average oil throughput for vessel
- I. Results of analysis (hydrocarbons C_1 through C_{10+} , benzene-toluene-ethylbenzene-xylene components, CO_2 , and N_2);
- J. Relative specific gravity of decanes (C_{10+}) fraction (calculated);
- K. Average molecular weight;
- L. Average molecular weight of decanes (C_{10+}) fraction (calculated);
- M. True vapor pressure at 100 °F (calculated);
- N. Average boiling point temperature (°F) (calculated);

- O. Cubic feet gas per gallon of liquid, as ideal gas (calculated);
- P. British thermal units per gallon of liquid at 14.73 pounds per square inch absolute (“psia”) (calculated);
- Q. Pounds per gallon of liquid at 14.73 psia (calculated);
- R. Bubble point temperature (°F) and pressure (psig);
- S. Conditions (temperature in °F and pressure in psig) at time of liquids sample collection;
- T. Conditions (temperature in °F and pressure in psig) at time of liquids sample analysis;
- U. Start and stop times for sampling; and
- V. Quality assurance data, including data flags (if any).
- W. Field data sheets and checklists.
- X. Calibration certificates for field instruments.

6. Representative Sample Criteria

A sample shall be considered sufficiently representative for use in emissions determinations, design analysis methodologies, permitting, and/or engineering evaluations for a subject facility if it satisfies all the following criteria:

- A. Produces from the same geologic formation(s) and within a ten-mile radius of the subject facility;
- B. Operating conditions of sampled separator at representative facility must be conservative and within 20 psig of the subject site separator operating conditions; and
- C. Operating conditions of sampled separator at representative facility must be within 20 degrees Celsius of the subject site separator operating conditions.
- D. If more than one sufficiently representative sample exists for a subject facility, then the reason for selecting a particular representative sample shall be documented. The following factors, at a minimum, shall be addressed in the explanation: relative similarity of separator operating conditions; relative similarity of geological substrates; relative physical proximity of surface sites; and the apparent validity of the representative samples under consideration.

7. Incorporation by Reference

- A. Appendix C to Title 17 California Code of Regulations (17 CCR Appendix C, Eff. Oct. 1, 2017), “Test Procedure for Determining Annual Flash Emission Rate of Gaseous Compounds from Crude Oil, Condensate, and Produced Water.” (“CARB Protocol”).
- B. GPA Midstream Association, 2020. GPA 2174-20, “Obtaining Pressurized Liquid Hydrocarbons Samples” (“GPA 2174”).
- C. GPA Midstream Association, 2020. GPA 2103-20, “Method for the Analysis of Natural Gas Condensate Mixtures Containing Nitrogen and Carbon Dioxide by Gas Chromatography.”

Flash Analysis Testing Field Data Form

Production Company: _____ Sampling Company: _____
 Address: _____ Address: _____
 City: _____ City: _____
 Contact: _____ Contact: _____
 Phone: _____ Phone: _____
 Email: _____ Email: _____

Sample Collection Information

Facility / Well ID: _____ Vessel ID: _____
 Sample Point: ☐ Sample Probe ☐ Sight glass ☐ Other: _____
 Date and Time: Begin: _____ End: _____

Beginning Vessel Pressure: _____ psia Ending Vessel Pressure: _____ psia
 Vessel Temperature: _____ °F Vessel Temperature: _____ °F
 Vessel Description: _____ Vessel Throughput: _____ Bbls./day
 Storage Tank Pressure: _____ psia Storage Tank Temperature: _____ °F
 Barometric Pressure: _____ psia Ambient Temperature: _____ °F

Dump Valve Actuation: ☐ Snap-acting ☐ Throttling Dump Cycle Time: _____ minutes

Cylinder Type: ☐ CP ☐ CV ☐ Other: _____
 Sampled Fluid: ☐ Crude oil ☐ Condensate ☐ Produced water

	Sample 1	Sample 2	Sample 3
Sample Collection Pressure:	_____ psia	_____ psia	_____ psia
Sample Collection Temperature:	_____ °F	_____ °F	_____ °F
Cylinder ID:	_____	_____	_____
Cylinder Volume:	_____ ml	_____ ml	_____ ml
Pre-charge (Displacement) Fluid:	_____	_____	_____
Sample Volume:	_____ ml	_____ ml	_____ ml
Pre-charge (Outage) volume:	_____ ml	_____ ml	_____ ml
Sample Collection Rate:	_____ ml/min.	_____ ml/min.	_____ ml/min.
Passed Leak Test:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Packaged per DOT requirements:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labels and COC Completed:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge Certified:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermometer Certified:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

Figure D-1. CARB Form 1

Sample identification	Form 1	Sample Tag	Analysis Report	Client Provided	Lab Provided
Form 1 Completed					
Sample identification					
Date and time sampled					
Date analyzed					
Description of vessel sampled					
Facility name and location					
Local ambient temperature and barometric pressure					
Annual average oil throughput for vessel					
Wt. % Results of analysis, N2, CO2, C1-C10+, including BTEX					
Average molecular weight, Total					
Average molecular weight, C10+					
Specific gravity, Total					
Specific gravity, C10+					
True vapor pressure at 100 °F					
Average boiling point temperature (°F)					
Cubic feet gas per gallon of liquid, as ideal gas					
BTU per gallon of liquid at 14.696 psia, 60°F					
Pounds per gallon of liquid at 14.696 psia, 60°F					
Bubble point pressure @ Tsep					
Sample Collection Pressure and Temperature					
Sample Analysis Pressure and Temperature					
Start and stop times for sampling					
Data Quality Flags					
Calibration certificates for field instruments.					
Atmospheric pressure and temperature in the field					
Atmospheric pressure and temperature in the laboratory					
Molecular Weight of flash gas					
FGOR					

Figure D-2. Data Checklist

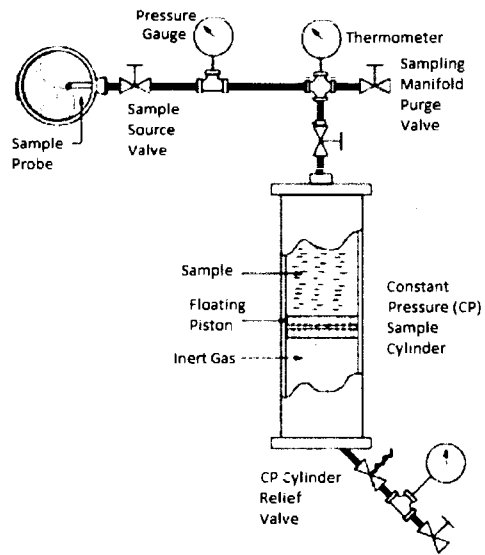


Figure D-3. Sampling Manifold

APPENDIX E: DESIGN ANALYSIS METHODOLOGY

Design Analysis Methodology

Mewbourne Oil Company

June 23, 2023

APPENDIX E: Design Analysis Methodology

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8 Table of Abbreviations**14****1 Introduction**

This document specifies a process for conducting vapor control system adequacy assessments at oil production site tank batteries. The purpose of an adequacy assessment is to determine whether SVCS components (closed vent system, control devices, and recovery devices) are capable of conveying and controlling hydrocarbon vapors generated in the course of operations without losses to the atmosphere. An assessment may be conducted prospectively, when evaluating designs for a new tank battery, or retrospectively, when assessing the adequacy of an existing design.

Use of this methodology is a requirement of the Clean Air Act Consent Decree of which this document is an Appendix. Terms and acronyms used in the methodology have the meanings defined in the Consent Decree. The methodology, however, can be used to meet other requirements, such as voluntary internal standards, compliance with otherwise applicable State and Federal requirements, or in implementing corrective actions as part of a self-audit. This document may be revised from time to time to the extent permitted under the Consent Decree.

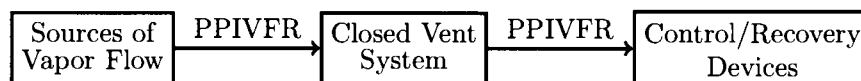


Figure 1: System components

A design assessment consists of four main steps:

1. Estimating the peak potential instantaneous vapor flow rate (PPIVFR or “peak vapor flow rate”), considering all potential sources of vapor present during normal operations.
2. Estimating the vapor handling capacity of the closed vent system (CVS), considering all sources of frictional losses in the vent system piping and all pressure relieving devices.
3. Determining whether the CVS capacity exceeds the PPIVFR (i.e., whether CVS is of adequate design).
4. Determining whether control and recovery devices can accommodate the PPIVFR and the potential minimum instantaneous vapor flow rate (PMIVFR).

The methodology embodies the same overall framework as guidelines issued by the Colorado Department of Health and Environment (CDPHE),^[1] and by the United States Environmental Protection Agency (EPA) in its Oil and Natural Gas Exploration and Production Facilities New Owner Audit Program.^[3] The use of process simulator software is encouraged for both components of the assessment in order to facilitate uniform application of the methodology with consistent results. Notwithstanding, certain applications of the methodology do not require a process simulator, and can be carried out with a spreadsheet, with data analysis software, or with hand calculations.

The remainder of this document is organized as follows:

- Section 2 provides background information on typical equipment configurations at Mewbourne assets.
- Section 3 describes the process for determining the peak liquid flow rate, which is a necessary preliminary step to determining the PPIVFR.
- Section 4 describes the process for determining the PPIVFR, given the peak liquid flow rate, considering all sources of vapors at a tank battery.

- Section 5 summarizes the approach to determining the capacity of the CVS and assessing its adequacy. Published information on calculating frictional losses from piping and control system is summarized in § 5.2.
- Section 6 describes the process for determining whether control and recovery devices receiving vapors conveyed by a CVS of adequate design are themselves capable of processing vapors so conveyed.
- Section 7.2 addresses quality assurance and documentation considerations.

2 Equipment Configurations Covered

In applying this methodology, the unit of analysis is the battery. A tank battery is a group of oil and water tanks that share a closed vent system and vapor control equipment. Tanks within a battery are usually set within the same secondary containment area. If two or more batteries are located on the same graded pad, separate assessments should be undertaken. At all sites covered by this methodology, reservoir fluids are brought to the surface at one or more wellheads, the fluids are processed in one or more upstream separation units, and liquids are then directed to a heater-treater. The system boundary for purposes of the methodology begins at the point where oil exits the dump valve of the heater-treater.

Two typical battery configurations are described below. One is a "standard" configuration which uses a VRU and flare to manage all generated vapors, and the other is a "VRT" configuration.

Description of the configurations is for illustrative purposes only. The methodology can be applied to a tank battery regardless of its overall operational configuration. For example, some batteries may omit the flare, the VRU, or the gunbarrel separator.

2.1 Standard Configuration

The "standard" configuration (fig. 2) is mostly attested in batteries constructed prior to 2019. Oil (solid black line) is intermittently dumped from heater treaters directly into atmospheric oil tanks. More than one heater-treater may generate liquid flows where production occurs from more than one oil well. Produced water (solid blue line) flows separately from the heater-treaters to a gunbarrel separator. The gunbarrel separator operates as a constant level process tank with separate piping used for outflowing produced water and skim oil. Water storage vessels are usually connected in parallel such that they have the same liquid level (except for one water tank reserved for surge volumes). Oil tanks are usually filled in a one-at-a-time fashion, with dumps from a particular heater treater alternating between the tanks associated with it. Skim oil from the gunbarrel separator flows into one of the oil tanks, which may also receive dumps from a heater treater. Flash vapors are generated from oil entering the oil tanks, as well as from produced water entering the gunbarrel separator. Working and breathing losses are also generated in the oil tanks and in the water tanks. The gunbarrel separator has breathing losses, while working losses are negligible where the separator is operated with a constant liquid level during routine operations.

A shared closed vent system collects vapors (dashed red line) from the oil tanks, the gunbarrel separator, and the water tanks. A vapor recovery unit (VRU) and a flare stack are installed on opposite ends of the tank battery. The VRU is activated when system pressure exceeds the ON set point at the associated pressure sensor, and is deactivated when system pressure drops below the OFF set point. Flows to the flare pass through an in-line pressure vent valve or check valve upstream of the knockout drum. Vapors in the closed vent system passively flow from regions of high pressure to regions of low pressure, considering resistance to flow created by friction. When the VRU is operating, its suction

2.2 VRT Configuration

represents the point in the system with the lowest pressure. When the VRU is not operating, vapors flow to the flare stack.

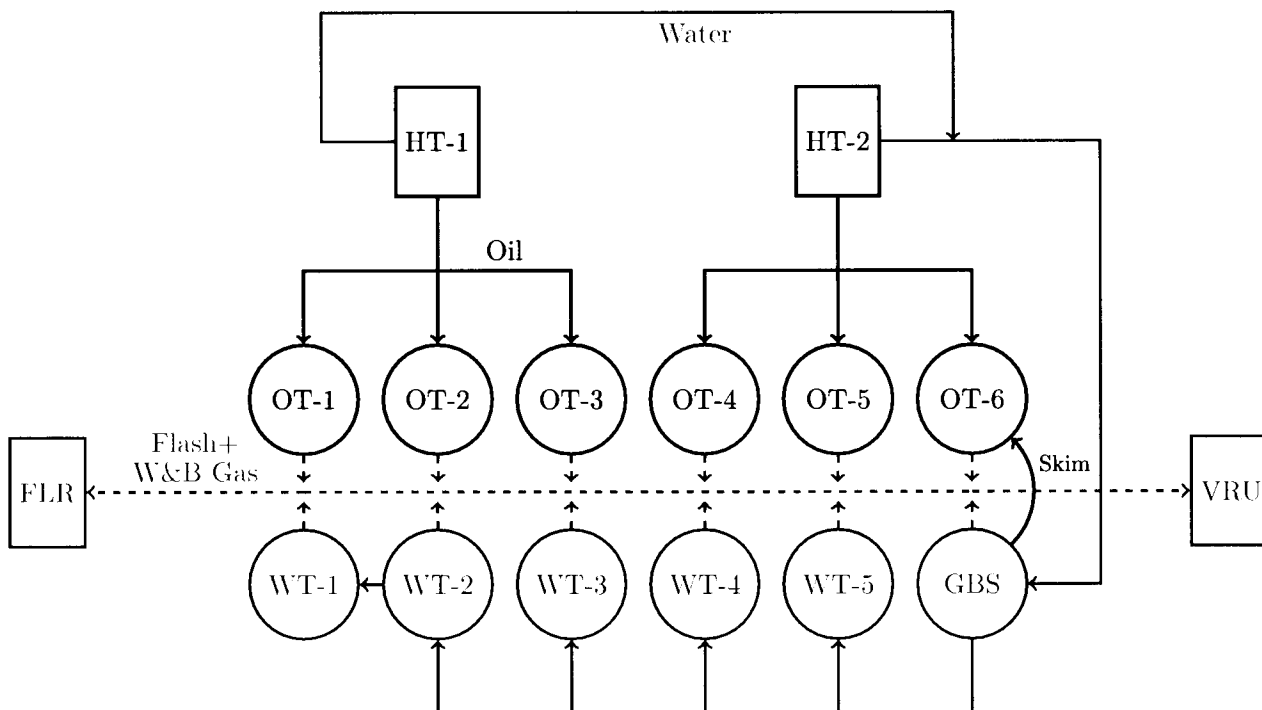


Figure 2: Standard Flow Configuration

2.2 VRT Configuration

The “VRT” configuration (fig. 3) is mostly attested in batteries constructed in 2019 or later. Instead of being dumped directly into the oil tanks, oil (solid black line) from the heater-treaters is dumped into one or more vapor recovery towers (VRTs). VRTs operate at near atmospheric pressure, but can withstand higher pressure (or vacuum) than oil storage tanks. Water (solid blue line) is routed to the gunbarrel separator as in the standard configuration. VRT overheads consist of flash gas (dashed red line) that is collected by a VRU and returned to the process. With VRTs in operation, flash emissions from oil tanks are significantly reduced.¹ Flash gas from the gunbarrel separator is also recovered by the VRU. Under the VRT configuration, the VRU achieves high on-stream time and overhead vapors are generally not flared except during outages of the VRU. VRT batteries may incorporate two flare stacks or may use a single stack with dual tips.

3 Determining Peak Liquid Flows to a CVS

The modeled flow rate of flash gas into the CVS is proportional to the flow rate of high-pressure oil and water into a low-pressure vessel. The peak liquid flow rate is based on the flow coefficient for the heater-treater dump valve when its trim is in 100% open position and the pressure drop across the valve corresponds to the heater-treater’s maximum operating pressure. The flow coefficient is defined

¹The VRT does not affect the potential for flash emissions from the GBS and the water tanks.

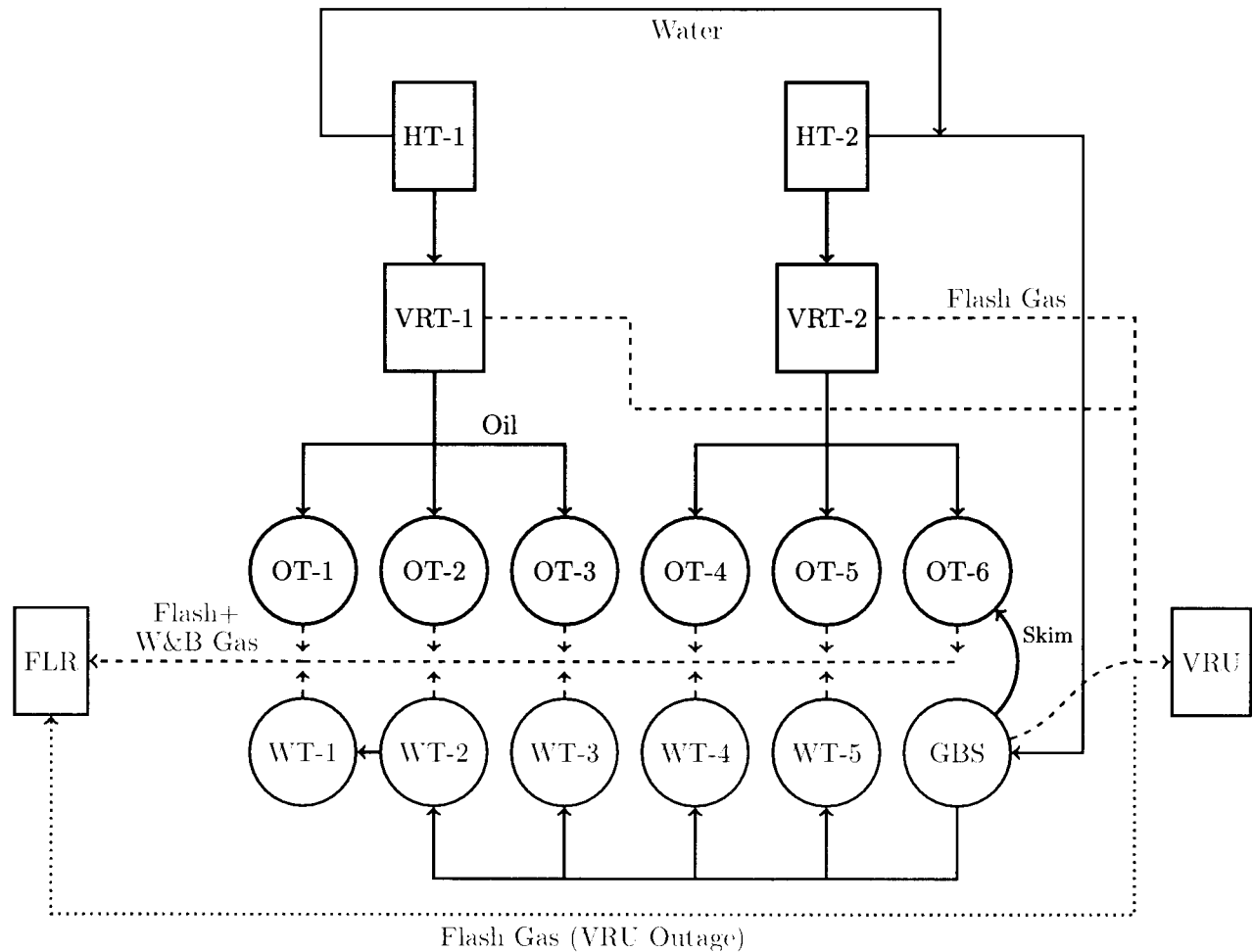


Figure 3: VRT Battery Flow Configuration

through the relationship given below, which yields a conservatively high peak liquid flow rate. C_v is a valve-specific correlation that varies depending on the valve's % open position, and is usually expressed as the flow rate of 60° F water (in gpm) resulting from a 1 psi pressure differential across the valve.^[6]

$$Q_{\text{peak}}(\text{oil/water, HT}_i) = C_v \sqrt{\frac{\Delta P}{SG}} \quad (1)$$

For sites with more than one heater-treater, the maximum flow rate is the sum of the flow rates across each heater-treater dump valve. If valves are physically constrained (e.g., through installation of a trim kit) so that they cannot open 100% or if they are configured so that they do not open simultaneously, such constraints are considered in determining the peak liquid flow rate. A refinement of equation 1 is used for sizing valves in applications where flashing (i.e., choked or critical flow.^[4]) may occur:²

²ProMax supplies values for the choked flow pressure drop, bubble point pressure, critical pressure, and piping/fitting geometry factors.

$$Q_{\text{peak}}(\text{oil/water, HT}_i) = C_v F_p \sqrt{\frac{\min(\Delta P, \Delta P_{\text{CHOKED}})}{SG}} \quad (2)$$

$$\Delta P_{\text{CHOKED}} = F_L^2 (P_1 - F_F P_v) \quad (3)$$

$$F_F = 0.96 - 0.28 \sqrt{\frac{P_v}{P_c}} \quad (4)$$

Where F_p is a coefficient specific to the fittings attached to the valve, F_L is a valve-specific liquid pressure recovery factor, F_F is a piping geometry factor that depends on the bubble point pressure (P_v) and the critical pressure (P_c), P_1 is the maximum static upstream pressure, and ΔP_{CHOKED} is the maximum pressure differential across the valve, considering the effects of choked flow caused by flashing.^[6]

Because the system boundary for the assessment starts at the point immediately downstream of the dump valve, it is not necessary to estimate liquid flow rates from upstream equipment (e.g., wellhead, primary separator(s)). Total peak liquid flow into a system is the sum of the peak flows from each heater treater for a particular liquid (oil or water):

$$Q_{\text{total}}(\text{oil}) = \sum_{i \in \text{HT's}} Q_{\text{peak}}(\text{oil}, i) \quad (5)$$

$$Q_{\text{total}}(\text{water}) = \sum_{i \in \text{HT's}} Q_{\text{peak}}(\text{water}, i) \quad (6)$$

Where frictional losses affect the pressure downstream of the heater treater dump valve, the methods described in § 5.2 (below) should be used in determining the the pressure drop across the dump valve (ΔP), considering the length of piping runs to the receiving vessel, the presence of fittings, and the minimum static liquid head present in the downstream piping.

4 Determining Peak Vapor Flow to a SVCS

The peak vapor flow entering a closed vent system is the sum of peak flows from flash gas (determined in accordance with sec. 4.1), working and breathing losses (determined in accordance with sec. 4.2), and other vapor sources (determined in accordance with sec. 4.3, where such vapor sources are present).

$$Q_{\text{peak}} = Q_{\text{flash}} + Q_{\text{working}} + Q_{\text{breathing}} + Q_{\text{other vapor sources}} \quad (7)$$

4.1 Flash Gas Volumes

4.1.1 Estimating Flash Gas Volumes from a Flash Calculation

The peak flow of flash gas into a closed vent system (or portion thereof) is the product of the peak liquid flow and the applicable flash factor for the liquid.

$$Q_{\text{flash}} = \sum_{j \in \{\text{oil, water}\}} Q_{\text{total}}(j) \times FF(j) \quad (8)$$

The flash factor (the number of standard volumes of flash gas liberated per volume of liquid recovered) is determined using an equation of state based on a site-specific or representative pressurized oil sample, as well as the operating conditions (pressure and temperature) of the upstream and downstream process vessels. Flash factors are determined separately for oil downstream of a heater-treater and oil

4.2 Working and Breathing Gas Volumes

downstream of a VRT. For assessments conducted pursuant to the Consent Decree, sample collection, sample analysis, and representativeness criteria are carried out consistent with an approved Pressurized Liquids Sampling and Analysis Plan. Equations of state are semi-empirical equations relating temperature, pressure, and specific volume of real liquids and gases. They are used to predict thermodynamic properties of pure fluids and mixtures based on available physical properties. If a mixture of volatile liquids of known composition, temperature, and pressure is flashed (subjected to a sudden reduction in pressure), an equation of state estimates the fraction of the feed that will be vaporized after the sample reaches equilibrium at the new conditions, as well as the composition of the liberated gas. Currently available process simulators (e.g., ProMax, VMGSim) use the Peng-Robinson³ or Redlich-Kwong-Soave equations of state.^[9] The equation of state used to predict a flash factor should be suited to the fluids and operating conditions being modeled, and Mewbourne will use the default Peng-Robinson equation of state in simulations conducted under the Consent Decree.

4.1.2 Flash Factors for Produced Vessels in Produced Water Service

The flash factor for produced water is 3% of the heater-treater-to-oil tank flash factor, plus 0.5 scf/Bbl of produced water for sites employing a three-phase separator (not shown in figs. 2–3) as the upstream process vessel.⁴

4.2 Working and Breathing Gas Volumes

4.2.1 Outbreathing Factors

Working and breathing losses are estimated using a procedure derived from outbreathing requirements for nonrefrigerated, atmospheric tanks under API Standard 2000.^[5] For working losses, this methodology stipulates a working loss factor of 5.6146 scf/Bbl, which is the physical volume of vapors displaced by inbound flow of one barrel of liquid. For tanks in the size range employed at production batteries, API 2000 calls for 0.6 or 1 scfh air of outbreathing capacity per Bbl of total storage capacity to account for “thermal venting” (i.e., breathing losses).

$$Q_{\text{working}} = \sum_{j \in \{\text{oil, water}\}} WL_j \times Q_{\text{total}}(j) \quad (9)$$

Where $WL_j = 6 \text{ scf /Bbl oil or produced water}$.

$$Q_{\text{breathing}} = \sum_{j \in \{\text{oil, water}\}} BL_j \times V_{\text{total}}(j) \quad (10)$$

Where $BL_j = 1 \text{ scf/h per Bbl of oil storage capacity}$ and $BL_j = 0.6 \text{ scf/h per Bbl of produced water storage capacity}$.

³A different equation of state (COSTALD HBT) is used for liquid density and liquid molar volume calculations in ProMax due to inaccuracies in Peng-Robinson for those quantities.

⁴The 3% factor is empirically derived from continuous water- and skim oil-gauging data at six Mewbourne batteries, and is generally accepted for use in permitting. The +0.5 scf/Bbl correction for sites with three-phase separators is the modeled flash factor for produced water across a throttling (adiabatic) valve reducing the pressure of a representative produced water stream from 125 psig to 60 psig. Use of a correction factor accounts for the fact that the upstream vessel generating produced water may operate at a higher pressure than the heater-treater.

4.3 Vapor Volumes from Other Sources

4.3 Vapor Volumes from Other Sources

At the majority of batteries subject to this methodology, the total peak flow of vapors into a closed vent system will be comprised of the flash, working, and breathing gas volumes. However, to the extent that any of the following other sources of vapors are determined to be present in a system, they should be considered in an assessment and estimated according to generally accepted calculation methodologies applicable to the process generating the vapors:

1. Blanketing gas introduced into storage tank headspace
2. Gas bleed from pneumatic controllers
3. Captured truck loading vapors
4. Leak-by of sales gas, gas-lift gas, or flare knockout drum vapors into the vent system
5. Working losses from transfers of hydrocarbon liquids from flare knockout drums, or working and flashing losses from compressor scrubber liquids, to the oil storage tanks.⁵
6. Any other documented vapor sources.

5 Determining CVS Capacity and Adequacy

An adequate closed vent system must be capable of conveying to control/recovery devices the peak vapor rate that occurs during normal operations, without the pressure exceeding the relief pressure in any pressure relieving device or safety device. System adequacy can be determined using a steady-state model, assuming the potential vapor rate; or on a transient basis, considering the intermittent nature of vapor flows and the available tank headspace surge capacity. This methodology uses a steady-state model. A steady state model assumes that vapors enter the system at a constant rate equal to the peak rate (i.e., the duration and frequency of dump events is irrelevant), and determines whether such a flow rate can be accommodated in the closed vent system piping, assuming zero available headspace in the storage vessels.

5.1 Overall Approach

System capacity is determined with the following steps:

1. Determine P_{thresh} :
 - (a) Identify all pressure-relieving devices and other equipment which may direct vent gas to the atmosphere. Determine the pressure at which each device begins to release vent gas. The lowest such pressure is the threshold pressure (P_{thresh}).
 - (b) If a closed vent system is segregated into two or more portions that do not share a vapor space, then P_{thresh} is determined for each such portion.
2. Identify all sources of pressure drop.
 - (a) Determine vent system piping dimensions and layout (inner diameter, length, connectivity and elevation changes) and material of construction.

⁵Where water draws are recycled from the bottom of an oil tank to a water tank, there is no net change in the liquid level volumes within the tank battery. Where recycled fluids are sent to processing equipment upstream of the heater-treater, this practice does not affect the calculation of Q_{peak} .

5.2 Methods for determining total pressure drop

- (b) Identify and count all fittings that create obstructions to flow within the piping (e.g., bends, elbows, tees, flame arrestors, in-line valves).
 - (c) Determine pressure drop across flare assembly, including knockout drum, flare stack, burner, and any other obstructions to flow. If other control devices (e.g., combustor) are used, perform similar analysis for such control devices.
 - (d) Identify any other sources of frictional losses in the system that may occur during normal operations (e.g., standing liquid at low points in the vent system).
3. Calculate the peak vapor flow rate. See § 4.
 4. Calculate the total pressure drop (ΔP_{peak}) for each branch of the vent system along which the peak vapor flow rate may occur, given the peak vapor flow rate.
 - (a) Sum all frictional losses due to flow through piping and across fittings.
 - (b) Sum all losses due to elevation changes.
 - (c) Sum all losses due to components of the flare system (burner, riser, knockout drum, flame arrester).

The highest value of ΔP_{peak} corresponds to the critical branch.

5. Determine whether the system is adequate for the critical branch within each segregated portion of the CVS. I.e.,

$$\Delta P_{\text{peak}} < P_{\text{thresh}}$$

5.2 Methods for determining total pressure drop

Equations and estimating factors for calculating total pressure drop in a branch of a closed vent system are summarized below.

5.2.1 Frictional losses from flow through piping and across fittings

For the flow of low-pressure gases in sections of straight piping, frictional forces are directly proportional to the length of the piping, and also depend on the turbulence of the flow (i.e., the Reynolds number), the diameter of the pipe, and the roughness of the pipe. Several empirical models are available for estimating frictional forces, with Colebrook-White and Spitzglass (low pressure) being two options for vent system assessments. The Colebrook-White equation is shown below.

$$\frac{1}{\sqrt{f_F}} + 1.737 \ln \left(0.269 \frac{\epsilon}{D} + \frac{1.257}{\text{Re} \sqrt{f_F}} \right) = 0 \quad (11)$$

The friction factor (f_F) is proportional to the frictional losses per unit length of piping, expressed as a fraction of the fluid's kinetic energy.^[10] ProMax assumes an effective surface roughness (ϵ) value of 0.0018 inches when using equation 11, which corresponds to the literature value for commercial steel pipe.^[10] The calculated value of f_F is used to estimate total pressure drop due to frictional losses:

$$\begin{aligned} \Delta p &= 2f_F \frac{\rho v^2}{g_c} \frac{L}{D} & (\text{US Units}) \\ \Delta p &= 2f_F \rho v^2 \frac{L}{D} & (\text{SI Units}) \end{aligned} \quad (12)$$

API 2000 Annex A venting factors are expressed as normal or standard flow of equivalent air, while flash factors calculated under the DAM are expressed as actual vapor flow for a modeled hydrocarbon

5.2 Methods for determining total pressure drop

mixture. The criteria for determining when to use equivalent air as a reference fluid are covered under Annex D of API 2000. Air is not incorporated into peak vapor flow calculations. However, API 2000 may specify air as a reference fluid for performing fluid flow calculations.

Frictional losses associated with fittings are customarily accounted for through the method of “equivalent lengths,” which represents fittings by the length of piping that would have an equivalent contribution to the overall frictional losses. Equivalent lengths are expressed as multiples of the piping diameter. Published equivalent lengths for different component types are summarized in table 1,^[2,10] and the methods given in reference^[2] may be used to develop equivalent lengths for other types of fittings or system geometry features as necessary. ProMax treats all fittings as branch T’s (using an equivalent length of 60 diameters).

Type of Fitting.....	$(L/D)_e$
Angle valve (open)	160
Close return bend	75
Gate valve (open)	6.5
Globe valve (open)	330
Ball valve (open)	3
Sudden expansion/contraction, 3:4	6.5
Flanged Connection, $\beta = 1$	0
Square 90° elbow	70
Standard 90° elbow	30
Standard “T” (through side outlet)	70
45° elbow	15

Table 1: Equivalent Lengths for Common Pipe Fittings

Frictional losses can be calculated using ProMax or in a spreadsheet or database program capable of solving equation 11, which is implicit in f_F . The majority of piping to be evaluated under the Consent Decree is adequately represented by the ϵ value corresponding to commercial steel pipe. However, this methodology does not preclude the calculation of total pressure drop in systems with piping of mixed materials.

5.2.2 Pressure drop from changes in elevation

Changes in elevation create a loss in pressure proportional to the vertical distance that a fluid must be moved.

$$\begin{aligned}\Delta P_{\text{elev}} &= \rho z \left(\frac{g}{g_c} \right) && \text{(US Units)} \\ &= \rho z g && \text{(SI Units)}\end{aligned}\tag{13}$$

An important application of equation 13 is in calculating the back pressure due to liquid collected at a low point in the piping system. For such a calculation, the density and height of the *liquid* is used, though it is customary to specify the pressure in terms of water column, regardless of the type of liquid being assessed. ProMax defaults of 1” H₂O will be used unless field survey findings indicate that a different liquid height is appropriate. Promax uses equation 13 to calculate pressure drop due to elevation changes as well as due to accumulated liquids.

5.2.3 Pressure drop associated with flare components

In the event it is not practical to obtain information from the vendor on frictional losses in flare assemblies, published EPA guidelines can be used.^[7] These state that the pressure drop across the flare tip is estimated by modeling the burner as an orifice plate. Flow of fluids through an orifice plate as a function of pressure drop is determined from the following relation:^[2]

$$Q = \frac{C_d A}{\sqrt{1 - \beta^4}} \sqrt{\frac{2 \Delta p}{\rho}} \quad (\text{SI units})$$

$$= \frac{C_d A}{\sqrt{1 - \beta^4}} \sqrt{\frac{2 \Delta p}{\rho / g_c}} \quad (\text{US units}) \quad (14)$$

Where: Δp is the pressure drop; Q is the vent stream flow rate; ρ is the density of the fluid, C_d is the orifice discharge coefficient (a typical value is 0.61), A is the orifice area, and β is the ratio of the orifice diameter to the piping diameter.⁶ Reference^[2] provides relations for determining the quantity $\frac{C_d}{\sqrt{1 - \beta^4}}$, also called the flow coefficient.

EPA guidelines also provide the following for other components of the flare assembly:

1. The pressure drop associated with the flare stack riser is calculated based on its height in the same manner as for other elevation changes in the vent system.
2. The effect of a knockout drum is assumed to be equivalent to one close return bend.⁷

For flame arrestors, an equivalent length of 100–300 diameters is recommended if specific data are not available from the vendor.^[8] ProMax requires users to input the overall pressure losses associated with the control device in units of oz./in.² A pressure drop calculated in units of inches of water column may be converted to units of oz./in.² by multiplying by 0.57746.

6 Control Device and VRU Capacity

Once it is determined that a closed vent system is adequate (i.e., capable of conveying all vapors to a functioning control or recovery device), an assessment must determine whether the associated control and recovery devices are capable of processing the vapors so conveyed.

6.1 System performance under Peak Flow Conditions

Control and recovery devices receiving vapors conveyed by the closed vent system shall be capable of processing the peak vapor flow rate.

6.1.1 Flares

For air-, steam- and unassisted flares (but not pressure-assisted flares), the peak vapor flow rate shall not exceed the maximum flow rate that can be accommodated by the flare tip, consistent with the exit velocity specifications of 40 CFR §§ 60.18(f)(4)–(5), considering all sources of vapor to the flare. The relevant regulatory equations express (in SI units) a minimum exit velocity that is 60 ft/s where the vent gas has a net heating value of 300 Btu/scf or less, 400 ft/s where the vent gas has a net heating value

⁶Reference^[2] uses h_L (head loss), which is equivalent to $\Delta p / \rho$.

⁷Reference^[7] at 74.

6.2 System Performance under Turndown Conditions

of greater than 1,000 Btu/scf, and an intermediate value scaled according to the logarithm of the exit velocity, when the net heating value is within the range of 300–1,000 Btu/scf.

6.1.2 VRUs

For VRUs, the peak vapor flow rate shall not exceed the maximum rated flow capacity of the VRU compressor, considering all sources of vapor to the VRU.

6.1.3 Other Control Devices

For other control devices, the peak vapor flow rate shall not exceed the manufacturer's specified maximum waste gas flow rate.

6.2 System Performance under Turndown Conditions

Control and recovery devices receiving vapors conveyed by the closed vent system shall be capable of accommodating a potential minimum vapor flow rate or pressure that will be no less than the minimum flow rate or pressure specified by the manufacturer.

6.2.1 Flares

For air-, steam- and unassisted flares (but not pressure-assisted flares), the flare system shall be equipped with a check valve, back pressure valve, or other device ensuring positive flow through the flare stack.

6.2.2 VRUs

For VRUs, the minimum suction pressure of the compressor shall be 0 psig, or a positive value that is 50% or less of P_{thresh} for the critical branch.

6.2.3 Other Control Devices

For other control devices, the manufacturer's specified minimum vapor flow rate shall be determined. The inlet to the control device shall be equipped with a back pressure valve or equivalent device that prevents flows less than the manufacturer's specified value from entering the control device.

7 Quality Assurance and Verification

7.1 Preparer Qualifications

A design assessment can be prepared by, under the direction of, or under the supervision of, an in-house engineer with expertise on the design and operation of the closed vent system, or a qualified professional engineer. Data on battery piping and control systems can be collected by an in-house or external field technician having familiarity with basic principles of tank battery construction.

7.2 Documentation and Verification

Each assessment must contain sufficient supporting documentation to permit a reasonable level of verification by an independent third-party verifier. Documentation of the analysis should include the following information:

7.2 Documentation and Verification

1. General Information

- (a) Name and identifier of tank battery.
- (b) Details on configuration, including inventory of major pieces of process equipment and air pollution control equipment at and downstream of the heater treater(s).

2. Peak Liquid Rate

- (a) Valve coefficient, valve size, and maximum liquid flow rates calculated for heater treater dump valves.
- (b) Upstream and downstream pressure used to calculate pressure drop across dump valve.
- (c) Any operational restrictions considered in calculating the peak liquid flow rate.
- (d) Peak oil and water flow rate to battery, calculated considering the preceding three items.

3. Sampling and Analysis

- (a) Flash factor for oil and water.
- (b) Identifier of sampling and analysis report used to determine flash factor.

4. Closed Vent System Capacity

- (a) Value of P_{thresh} for each segregated portion of the closed vent system, and type of associated pressure-relieving device.
- (b) Method used to calculate frictional losses in piping along critical path.
- (c) Length, diameter, and type of piping (i.e., basis for roughness factor selection).
- (d) Number, type, size, and equivalent length of all fittings along the critical path and all other evaluated paths.
- (e) Total pressure drop associated with flare system and other air pollution control devices.
- (f) Total pressure drop along critical path due to all sources of resistance to flow.
- (g) Peak vapor flow rate in each segregated portion of closed vent system.
- (h) System capacity in each segregated portion of closed vent system.

5. Control/recovery device capacity:

- (a) Maximum exit velocity at PPIVFR for flares.
- (b) Maximum rated flow capacity for VRUs.
- (c) Minimum suction pressure for VRUs.
- (d) Applicable manufacturer's specifications for other control devices (including pressure-assisted flares).

8 Table of Abbreviations

AP-42.....	Compilation of Air Emissions Factors (EPA Publication)
β	Piping diameter expansion/contraction factor
C_v	Valve Coefficient (equation term)
C_d	Orifice Discharge Coefficient (equation term)
CDPHE.....	Colorado Department of Health and Environment
CVS.....	Closed Vent System
D	Pipe diameter (equation term)
ΔP	Pressure Drop (equation term)
ΔP_{CHOKED}	Pressure Drop, choked flow (equation term)
ΔP_{elev}	Pressure Drop due to elevation changes (equation term)
ΔP_{peak}	Total pressure drop under peak flow conditions
EPA.....	US Environmental Protection Agency
ϵ	Effective Surface Roughness (equation term)
FLR.....	Flare
f_F	Friction factor
F_F	Piping geometry factor (equation term)
FF.....	Flash factor (equation term)
F_p	Fitting geometry factor (equation term)
F_L	Pressure recovery factor (equation term)
g	Gravitational constant (equation term)
g_c	Unit conversion factor (equation term)
γ_g	Gas gravity (equation term)
GBS.....	Gunbarrel Separator
HT.....	Heater Treater
L	Piping length (equation term)
MW_a, MW_{air}	Molecular weight (equation terms)
OT.....	Oil Tank
P_1	Maximum static upstream pressure (equation term)
PMIVFR.....	Potential Minimum Instantaneous Vapor Flow Rate
PPIVFR.....	Peak Potential Instantaneous Vapor Flow Rate
P_{thresh}	Threshold pressure
P_c	Critical Pressure (equation term)
P_v	Bubble point pressure (equation term)
Q	Volumetric Flow (equation term)
Re	Reynolds Number (equation term)
RVP.....	Reid Vapor Pressure
ρ	Fluid density (equation term)
SG.....	Specific Gravity (equation term)
SVCS.....	Subject Vapor Control System
T, T_{std}	Temperature (equation terms)
v	Velocity (equation term)
V	Vessel maximum working capacity (equation term)
VRT.....	Vapor Recovery Tower
VRU.....	Vapor Recovery Unit
W&B.....	Working and Breathing
WT.....	Water Tank
z	Change in elevation (equation term)

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APPENDIX F: IR Camera Standard Operating Procedure

This Standard Operating Procedure (“SOP”) covers the procedures for conducting Infrared (“IR”) Camera Inspections at Well Production Facilities.

I. IR Camera Safety

The IR Camera is a Class I Division 2 device, meaning that it is not intrinsically safe and should not be used in Class 1 Division 1 areas. A Class 1 Division 1 area is one in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. These areas include, but are not limited to, tank berms and separator housing cabinets. Care should be taken to use the camera responsibly and in safe areas. Below are some additional safety considerations:

- a. Visually inspect location for any leaks or safety concerns before beginning any IR camera inspections.
- b. Prior to beginning an inspection, perform a walk-through of the facility with your gas monitor to verify that lower explosive limit (“LEL”) concentrations are within safe levels. If you get any LEL alarm on your personal gas monitor, DO NOT begin the inspection and notify a supervisor.
- c. Always change batteries in a safe location, outside of tank berms, and away from process equipment and flammable liquids/gases.

II. Camera Initial Verification and Operational Considerations

A. Optical Gas Imaging Initial Verification

As required by 40 C.F.R. § 60.5397a(7)(i), the manufacturer of Mewbourne’s OGI camera used third party testing to verify the camera meets the specifications of 40 C.F.R. § 60.5397a(7)(i)(A) and (B) as listed below:

- a. Mewbourne’s OGI camera is capable of imaging gases in the spectral range for the compound of the highest concentration in the potential fugitive emissions.
- b. Mewbourne’s OGI camera is capable of imaging a gas composed of half methane and half propane at a concentration of 10,000 ppm at a flow rate of ≤ 60 g/hr from a quarter inch diameter orifice.

These initial parameters have been independently tested and verified by the national Physical Laboratory and deemed compliant with the sensitivity standard for optical gas imaging equipment.

B. Procedure for Daily Verification Check

Consistent with 40 C.F.R. § 60.5397a(c)(7), surveyors will perform a verification check, based on a preset list, for the optical gas imaging camera to ensure proper operation. Best management practices specify re-calibration is not recommended or required; the camera’s ability to detect gases is not influenced by calibration and will not degrade over time. Completion of the daily

verification checklist will serve as evidence the camera is functioning properly and the survey can commence. An example of the daily verification checklist is shown below.

Daily Verification Checklist for Optical Gas Imaging Camera	
Powers on in a timely manner <i>(cooldown mode should take approximately 10-12 minutes)</i>	<input checked="" type="checkbox"/>
Produces an infrared (IR) image	<input checked="" type="checkbox"/>
Displays zero error messages	<input checked="" type="checkbox"/>
Focuses properly	<input checked="" type="checkbox"/>
Engages in Enhanced Mode	<input checked="" type="checkbox"/>

C. Procedure for Determining Maximum Viewing Distance, Maximum Wind Speed, and Adequate Thermal Background

Camera operators will follow manufacturer's recommended procedures along with utilizing their certification training to determine maximum viewing distance, maximum wind speed, and adequate thermal background. Surveys shall not be performed by any operator when the wind speed on site is equal to or greater than 20 miles per hour. Maximum viewing distance of less than 300 feet will be observed. The survey will be conducted during ambient conditions that allow adequate contrast between background and observed equipment. Ambient temperature must be no less than 10°F and no greater than 122°F.

Over the course of surveying, several issues can possibly occur, and it will be up to the surveyor to mitigate any issues to obtain accurate survey results. Environmental conditions, poor thermal background, adverse monitoring conditions, and monitoring interference can potentially inhibit the performance of the camera and survey process. Prior to and during the survey, the surveyor will identify any potential issues and make necessary adjustments to ensure the authenticity of survey results.

Poor thermal imaging is one potential issue that could occur over the course of surveying fugitive emissions components. Thermal imaging issues that could occur during surveying include reflective surfaces, poor thermal background, steam interference, and certain weather conditions. Reflective surfaces provide inadequate temperature results from surfaces that are not directly transmitting heat. Poor thermal background inhibits a clear contrast between the fugitive gas cloud and the background. Weather events such as rain, wind, and dust will interfere with the clarity of the fugitive gas cloud. Certain times of the day can also affect the performance of gas optical imaging; dawn and dusk reduce the efficacy of optical gas imaging. As issues occur or become apparent, the surveyor will address each issue to obtain accurate survey results.

To address thermal imaging problems and ensure adequate survey results, the surveyor will make necessary adjustments for a successful survey. Steps to mitigate thermal imaging issue could include:

- Changing the polarity;
- Changing the viewing angle;
- Decreasing the viewing distance for a safe-to-monitor component;
- Utilizing the Enhanced Mode, especially with a low-contrast background; or
- Performing non-uniformity correction process for image noise or artifacts.

D. Surveyor Training & Experience

Using OGI detection equipment requires the operators to be qualified through training and experience. Qualification is obtained either through Infrared Thermography Certification through the Infrared Training Center course or by completing thorough training by certified OGI personnel. The training and experience of the surveyor will be documented for every survey.

III. Procedures for Calibration and Maintenance

A. Standard Calibration

Mewbourne's OGI cameras are all calibrated prior to reaching the customer to the standards set by the National Institute of Standards and Technology. The calibration stores associated calibration constants, calibration curves, and related functionality within the camera's firmware. User recalibration is not required or recommended per manufacturer instructions. A Standard Calibration certification is available for the calibration and calibration references. The ability to detect gases is not influenced by the calibration and will not degrade over time. Prior to each survey, the surveyor will ensure the detection equipment is working properly by utilizing the daily verification checklist outlined previously.

B. Standard Maintenance

Mewbourne's OGI camera is based on a robust design for minimal recalibration and maintenance. The microcooler uses pressurized helium gas to maintain the internal temperature for low drift interference with readings. The cooler will run at a maximum speed for about 10 minutes until slowing to maintain optimal operating temperature. Consequently, the gas pressure decreases and requires the motor to operate at 100 percent speed for longer to maintain the optimal operating temperature. If the camera fails the daily verification check, Mewbourne will send off for repairs. Mewbourne maintains multiple cameras in inventory so there will be no survey delays associated with camera maintenance.

IV. Inspection Types

A. Verification by IR Camera Inspection

An initial Verification by IR Camera Inspection should be completed for each Subject Vapor Control System (“SVCS”) to ensure that it is adequately designed to control emissions from the associated Storage Vessel System and that there are no detectable fugitive emissions during normal operations. Any visible emission observed during the IR Camera Inspection qualifies as a fugitive emission. The initial verification should monitor the Storage Vessel System, associated open-ended lines (e.g., vent lines, blowdown valves or lines), and associated pressure relief devices (e.g., thief hatches) during Normal Operations. This Verification by IR Camera Inspection shall occur while and immediately after oil is being sent to the Storage Vessel System from all associated separator(s), meaning during and after nearly simultaneous well cycle(s).

- a. Set up time with pumper to coordinate the inspection with required well cycle(s).
- b. Capture a photo of the facility sign utilizing the IR Camera prior to beginning the inspection.
- c. Observe the Storage Vessel System with the IR Camera from a safe distance that allows for optimal observation. Elevated components such as thief hatches and blowdown valves on tank tops are to be monitored from ground level and outside of storage vessel secondary containment. Ensure that elevated components are in focus and monitor as close as possible to the storage vessel where all components are still visible.
- d. Observe the Storage Vessel System through the IR Camera for 2 minutes prior to well cycle, or as long as possible up to 2 minutes, in the case of dump valve actuation frequencies shorter than 2 minutes.
- e. Once the well begins cycling, record a video for 30 seconds.
- f. Continue to observe the Storage Vessel System through the IR Camera for the duration of the well cycle(s), recording 30-second videos every 5 minutes. If emissions are detected during any point during this inspection, record a 10–15 second video of the detected emissions, then stop the inspection and call your supervisor or a member of HSE engineering.
- g. Once well completes its cycle, record a final 30-second video and continue to observe through the IR Camera for 2 minutes.

The dump valve(s) may be manually tripped open in sequence to send oil to the Storage Vessel System from all of the associated separator(s) so that the IR Camera inspection may be completed. This may be used to address any issues that may arise that make it impractical for personnel to conduct the IR Camera inspection during nearly simultaneous well cycle(s).

Example instances include:

- a. The well runs outside of normal business hours.
- b. Sales line complications (i.e., sales freeze, high line pressure).

- c. Well cycle is over 30 minutes without any oil being dumped to the tanks.

The procedure for tripping the dump valve(s) will be as follows:

- a. This process must be completed by a team of at least 2 employees.
- b. Ensure that the separator oil box has an adequate liquid level (e.g., the level of the sight glass is at least 50 percent full). This can be determined by utilizing the sight glass or verifying the level with an IR Camera.
- c. One employee will remain by the production tanks with IR camera to view any possible emissions.
- d. The other employee will find the indicated well's separator oil dump line.
 - i. Employee will inspect the dump valve to ensure there are no clear indications of abnormal operation.
 - ii. Once the dump valve inspection is complete, the oil dump may be activated.
 - 1. If snap acting dump valve is present, depress manual switch on level controller.
 - 2. If mechanical dump valve is present, pull down on trunnion assembly to open dump valve.
 - 3. If treater dump valve is present, push up on counterweight lever arm to open dump valve.
 - iii. The dump valves may be opened until either the operator sees the level of oil decrease to the bottom of the sight glass or until they hear gas traveling through the body of the valve, whichever occurs first.

B. Periodic Inspections and Inspections in Response to Tank Pressure Monitor Exceedances

Periodic Inspections are IR Camera Inspections of Storage Vessel Systems, and any associated open-ended lines (e.g., vent lines, blowdown valves or lines) and pressure relief devices as assigned.

Inspections in Response to Tank Pressure Monitor Exceedances are IR Camera Inspections of Storage Vessel Systems conducted pursuant to Paragraph 37 of the Consent Decree.

All such inspections should be conducted as follows:

- a. Observe the Storage Vessel System with the IR Camera from a safe distance that allows for optimal observation. Elevated components such as thief hatches and blowdown valves on tank tops are to be monitored from ground level and outside of tank berms. Monitor as close as possible to tank where all components are still visible.
- b. Ensure that all components are in focus.

- c. For Periodic Inspections, record at least one short (hereinafter, “short” means approximately 10 to 15 seconds) video for each source of emissions detected during a Periodic Inspection. Record at least one video per site, even if no fugitive emissions are detected.
- d. For Inspections in Response to Tank Pressure Monitor Exceedances, record: (i) at least one short video for each source of emissions detected during the Periodic Inspection; and (ii) at least one short video from each location where IR monitoring is conducted, documenting the location’s field of view.

APPENDIX G: Directed Inspection/Preventative Maintenance (“DI/PM”) Requirements

This Appendix sets out the directed inspection and preventative maintenance (“DI/PM”) program to be implemented at each Facility listed in either Appendix A or Appendix B (“DI/PM Facility(ies)”).

I. Directed Inspections

Mewbourne will conduct a calendar weekly audio, visual, and olfactory (“AVO”) walk-around inspection and calendar monthly infrared (“IR”) camera inspections at each DI/PM Facility. The weekly AVO walk-around inspections will be conducted in accordance with the description of each inspection type set forth in Section I.A and the Standard Operating Procedures (“SOP”) set forth in Section I.C and will include an inspection of all of the equipment listed in Section I.B. The monthly IR camera inspections will be conducted in accordance with the IR Camera Inspection SOP in Appendix F and as set forth in Section I.D and will include an inspection of all of the equipment listed in Section I.B. The required weekly and monthly inspections will be completed regardless of the production status of the DI/PM Facility. While conducting inspections, Mewbourne will utilize field data collection software to document inspection data, including corrective actions.

A. Descriptions of each inspection type:

1. Audio

An inspection that determines whether any hissing, bubbling, or other sounds can be heard that indicate the presence of emissions.

2. Visual

An inspection that determines whether there is evidence of emissions visible to the naked eye, including:

- a. wave refraction in the air (if not caused by heat);
- b. wave refraction shadows on equipment or the ground around equipment (if not caused by heat);
- c. active bubbling or any other visual cues indicating emissions;
- d. significant new staining since the last AVO inspection that may indicate abnormal operation; and
- e. evidence of a significant spill since the last AVO inspection that may indicate abnormal operation.

3. Olfactory

An inspection that determines whether there is evidence of hydrocarbon emissions that can be smelled.

B. Equipment to be inspected

Walk the DI/PM Facility so that the following equipment is monitored in accordance with the AVO inspections described in Section I.A. and the IR Camera inspections described in Section I.D.:

1. tanks (including all oil, condensate, produced water, and gun barrel tanks);
2. tank thief hatches;
3. tank pressure relief valves (“PRVs”);
4. tank blowdown valves and other tank-related valves;
5. tank piping (e.g., load line and blowdown line);
6. separators;
7. heater treaters;
8. vapor recovery towers;
9. dump valves;
10. flare;
11. vapor recovery unit (“VRU”);
12. vapor control system piping and equalizer lines;
13. backpressure regulator valves;
14. knock out pots; and
15. VRU or flare bypass valves.

C. Standard operating procedures for weekly audio, visual, and olfactory (“AVO”) walk-around inspection

If emissions are observed from a DI/PM Facility, the emissions must be documented as Reliable Information in accordance with Section III and the more detailed instructions for each equipment type below. If corrective action during the AVO inspection is not possible or is unsuccessful, the appropriate supervisor must be contacted and a work order for the corrective action must be prepared prior to ending the AVO inspection.

1. Tanks

- a. Inspect tank thief hatches to ensure they are closed, latched, and properly sealed. Thief hatches that are found to be open during any time other than normal operation of the hatch must immediately be closed, latched, and properly sealed.
- b. Confirm that PRVs are properly sealed.
- c. Confirm that tank blowdown valves are closed. If other valves are present, such as isolation valves, confirm that valves are in the proper position.
- d. Clean any significant new staining on tanks near PRV, thief hatches, and blowdowns.
- e. Confirm that the tank pressure monitor is recording and transmitting data to a central monitoring station in accordance with the intervals specified in Paragraph 33 of the Consent Decree.
- f. Document any AVO-detectable emissions from tank components, including PRV, thief hatch, and tank piping such as the load line, blowdown line, etc. as Reliable Information in accordance with Section III.
- g. Document any corrective actions that were taken during the inspection to repair emissions that were observed.
- h. Document any corrective actions that could not be taken during the inspection, document that the appropriate supervisor was contacted, and document that a work order for the corrective action to be taken has been created.

2. Separators, heater treaters and vapor recovery towers

- a. Confirm separator, heater treater and vapor recovery tower are operating.
- b. Ensure that dump valve is operating properly by triggering the level controller, opening the dump valve, and listening for proper stoppage of flow once dump valve returns to closed position. Replace the separator dump valve orifice if flow is evident when in the fully closed position.
- c. If the Engineering Evaluation for the DI/PM Facility has been completed, compare the observed separator, heater treater and vapor recovery tower operating pressures and temperatures to what was used in the Engineering Evaluation prepared for that DI/PM Facility to ensure that the observed operating conditions are within the specifications used in the Engineering Evaluation.
- d. If the Engineering Evaluation for the DI/PM Facility has been completed, compare the observed set point(s) of any device restricting final stage dump

flow rate to the set point(s) used in the Engineering Evaluation prepared for that DI/PM Facility to ensure that the observed set point(s) are within the specification used in the Engineering Evaluation.

- e. If the Engineering Evaluation for the DI/PM Facility has been completed, document any corrective actions that were taken to return any dump valve to proper operation, or to return the separator, heater treater or vapor recovery tower pressure, temperature or dump flow rate set point to within the specifications used in the Engineering Evaluation.
- f. Document any corrective actions that could not be taken during the inspection, document that the appropriate supervisor was contacted, and document that a work order for the corrective action to be taken has been created.

3. Vapor Control System

- a. Ensure the flare pilot light is on by viewing the pilot light through sight glass or that the auto-ignitor box indicates "Pilot On."
- b. Confirm proper operation of flare auto igniter by checking that the battery is not dead.
- c. Confirm that the combustion control device pilot monitor is recording and transmitting data to a central monitoring station in accordance with the intervals specified in Paragraph 46 of the Consent Decree.
- d. Confirm the absence of smoke from the flare. If smoke is observed, conduct an EPA Method 22 test to determine whether smoke is visible for more than one minute in any fifteen-minute period.
- e. Confirm proper operation of any installed VRUs.
- f. Indicate whether any flare or VRU bypass valve is in the non-diverting position and locked.
- g. Document any AVO-detectable emissions from the flare as Reliable Information in accordance with Section III.
- h. Document any corrective action that were taken to return vapor control system components to proper operation, to address AVO-detected emissions, or to address smoke detected using EPA Method 22.
- i. Document any corrective actions that could not be taken during the inspection, document that the appropriate supervisor was contacted, and document that a work order for the corrective action to be taken has been created.

4. Knock-out pots
 - a. Check for fluids in each knock-out pot.
 - b. Starting with the knock-out pot at the tank, drain any fluids that may be present.
 - c. If applicable, drain any fluids that may be present in the knock-out pot at the end of the flare line.
 - d. After all knock-out pots have been drained, as applicable, inspect all flares to verify that knock-out drains are closed and secured.

D. Monthly IR Camera Inspections

Mewbourne will perform an IR Camera Inspection of the equipment set forth in Section I.B., at each DI/PM Facility on a calendar monthly basis in accordance with the IR Camera Inspection SOP set forth in Appendix F. Fugitive emissions detected during the IR Camera Inspections will be documented as Reliable Information in accordance with Section III.

II. Preventative Maintenance

Mewbourne will implement a quarterly, semi-annual, and annual preventative maintenance program at each DI/PM Facility in accordance with the SOPs below for each maintenance interval. If at any time during these maintenance activities, Mewbourne observes Compromised Equipment that may lead to excess emissions, Mewbourne will replace such equipment as soon as practicable. If at any time during these maintenance activities Mewbourne observes Reliable Information, Mewbourne will document the emissions in accordance with Section III and keep records of the corrective action taken to address the emissions. In the case of observed Compromised Equipment or Reliable Information, Mewbourne will document any corrective actions that could not be taken during the maintenance activities or AVO inspection, document that the appropriate supervisor was contacted, and document that a work order for the corrective action to be taken has been created. While conducting the required maintenance, Mewbourne will utilize field data collection software to document maintenance work, including corrective actions. On the intervals indicated below, Mewbourne shall perform the maintenance activities set forth below:

A. Quarterly maintenance

Blow out below-grade vapor lines between the tanks and a flare. Document completion of such blow out, including whether fluid was present.

B. Semi-annual maintenance

1. Tanks

- a. Wipe down PRV seals and seating plate surfaces, then test with soapy water or inspect with an optical gas imaging camera. Replace seals as necessary if an indication of emissions is observed and document the emissions as Reliable Information in accordance with Section III.
- b. Inspect and clean relief gaskets and vacuum gaskets, then test with soapy water or an optical gas imaging camera. Replace gaskets as necessary if an indication of emissions is observed and document the emissions as Reliable Information in accordance with Section III.
- c. Verify that the thief hatch rim has a secure seal in the closed position with soapy water or an optical gas imaging camera. Replace seals as necessary if an indication of emissions is observed and document the emissions as Reliable Information in accordance with Section III.
- d. Inspect thief hatch base gasket and test with soapy water or an optical gas imaging camera. Replace gasket as necessary if an indication of emissions is observed and document the emissions as Reliable Information in accordance with Section III.
- e. Verify integrity of thief hatch welds and collars on top of tank with soapy water or an optical gas imaging camera. If an indication of emissions is observed, attempt corrective action.
- f. Evaluate bypass monitoring records and all monitoring data collected during the most recent semi-annual period (i.e., lock and key bypass records, Storage Vessel Pressure Monitor data, and Flare Pilot Monitor data) for trends and recurring issues to determine if any additional preventative maintenance or change in operation is needed.

2. Flares

- a. Blow out below-grade vapor lines between the tanks and a flare or combustor. Document completion of blow out, including whether fluid was present.
- b. Test thermocouple and transmitter.
- c. If equipped with a blower, make sure blower is running properly.
- d. Ensure pilot orifice is unobstructed.

- e. Inspect pilot assembly and verify correct positioning, including verifying that spark gap is sufficient to create spark. Reposition or replace components, as necessary.
- f. Clean rosebud and/or pilot orifice and gas mixer to remove any accumulated debris.
- g. Verify no wires are out of place, disconnected, or damaged.
- h. Bring igniter down and inspect rails/conduit.
- i. Check igniter electrode and flame rod for visual damage or excess debris accumulation. Clean if necessary and replace if unable to clean adequately.
- j. Check spark for audible and visual confirmation of spark creation.
- k. Check pilot orifice for adequate gas flow.
- l. Clean sight glass and replace if needed.
- m. Clean air intake cells using an air compressor to vacuum out base. Blow out base if air intake cells are mounted horizontally; blow out air intake cells if mounted vertically.
- n. When returning the flare to service, observe flare tip when burning to look for indication that any part of the tip is not burning (e.g., plugged) and verify the absence of smoke. Replace flare tip if unable to clean adequately or if unable to obtain full burn.
- o. Inspect supply gas line and associated regulator for damage, proper setting pressure, and gas flow.

C. Annual Maintenance

During the first two years of production from a well, Mewbourne shall replace Separator dump valve orifices at least annually. After the first two years of production from a well, Mewbourne shall perform an auditory inspection of the separator dump valve orifice to confirm that no fluids or gases are passing through the dump valve when in the fully closed position, and replace the orifice if flow is evident when in the fully closed position.

At least annually, Mewbourne shall ensure that all required signage at the DI/PM Facility is of durable construction with lettering legible and large enough to be read under normal conditions at a distance of 50 feet; (ii) displays the well number, property name, operator's name, location by footage, quarter-quarter section, township and range, and API number; and (iii) remains in place until the well is plugged and abandoned.

At least annually, Mewbourne shall confirm that the backpressure regulator valve set point is consistent with the Engineering Evaluation.

III. Reliable Information From DI/PM Inspections

Maintain records of each instance of Reliable Information detected during the weekly and monthly inspections set forth in Section I, and preventative maintenance inspections set forth in Section II. The records must include the date and time Reliable Information was obtained; a description of the Reliable Information; identification of the DI/PM Facility at issue; the operation, maintenance or design cause(s) if known; a description of any work orders that were submitted; and a description and the results of any corrective actions that were attempted.

IV. Spare Parts

Mewbourne shall evaluate what parts are appropriate to maintain in inventory for pumpers and emissions crew; procure and maintain a spare parts inventory adequate to support normal operating, maintenance, and replacement requirements; and establish written procedures for the acquisition of parts on an emergency basis. Mewbourne shall designate an employee with the responsibility for maintaining an adequate spare parts inventory. The spare parts inventory may be based initially on vendor recommendations.

V. Training

Mewbourne shall train each person (except for independent contractors solely responsible for servicing equipment) responsible for implementing any part of the DI/PM Program. This training shall include a review of this Appendix, a review of the use of field software and devices to document activities under the DI/PM Program, and the requirements set forth in the Consent Decree regarding Reliable Information. Mewbourne shall ensure that refresher training for each such person is performed once per calendar year. New personnel must be trained prior to implementing any part of the DI/PM program and such training will include a job shadowing component.

Mewbourne shall maintain records indicating the successful completion of training by each person for which training is required. Mewbourne shall maintain records of all Thermography Certifications held by any person conducting IR Camera Inspections. Mewbourne shall make the records required under this paragraph available to Plaintiffs upon request.

VI. Annual Review

A DI/PM program-trained employee whose primary duties do not include performing duties in the DI/PM program on a routine basis will by June 1 of each year complete an annual review of DI/PM Program records from the previous calendar year in consultation with persons performing DI/PM duties.

This annual review shall:

1. analyze all directed inspection, preventative maintenance, equipment monitoring, and corrective action data completed at each DI/PM Facility;
2. evaluate whether the directed inspection and preventative maintenance requirements were implemented at the required frequencies;
3. evaluate whether records of directed inspection, preventative maintenance, and corrective action activities were maintained properly;
4. evaluate whether training and qualification records were maintained properly;
5. evaluate whether corrective action or Shut-In was timely performed in response to the observation of Reliable Information;
6. evaluate whether there are recurring or systemic issues associated with any particular DI/PM Facility;
7. evaluate whether there are recurring or systemic issues across multiple DI/PM Facilities; and
8. review the effectiveness of Mewbourne's spare parts program.

On the basis of each annual review, Mewbourne shall identify any changes or updates to the DI/PM Program or any associated SOPs that may be needed. Mewbourne shall submit any material changes or updates to the EPA for approval pursuant to Section VII of the Consent Decree (Approval of Deliverables), including any proposed changes to inspection or maintenance frequencies. Mewbourne shall implement any non-material changes or updates without need for the EPA's approval, such as updated repair methods or improved training documents, and shall include a summary of such changes or updates in the next Semi-Annual Report, submitted pursuant to Paragraph 84 of the Consent Decree.

APPENDIX H: Mitigation Project

1. By no later than January 1, 2024, Mewbourne shall replace no fewer than 2,068 intermittent bleed Pneumatic Controllers at facilities for which it is the Operator in the Permian Basin with Non-emitting Pneumatic Controllers (“the Project”). Nothing in the Consent Decree or in this Appendix shall prohibit Mewbourne from including, as part of the Project, Mewbourne’s replacements of intermittent bleed Pneumatic Controllers with Non-emitting Pneumatic Controllers where such replacements were conducted after September 30, 2022.

2. In accordance with Section VI (Reporting Requirements) of the Consent Decree, Mewbourne shall submit the following information in each Semi-Annual Report:

- a) the cumulative number of intermittent bleed Pneumatic Controllers that have been replaced with Non-emitting Pneumatic Controllers;
- b) the number of intermittent bleed Pneumatic Controllers that have been replaced with Non-emitting Pneumatic Controllers during the relevant Semi-Annual Report reporting period;
- c) the cumulative costs expended on the Project, provided that Mewbourne need not report any cumulative costs that exceed \$1,000,000;
- d) the cost expended on the Project during the relevant Semi-Annual Report reporting period, provided that Mewbourne need not report period costs once cumulative costs have exceeded \$1,000,000; and
- e) a cumulative list of all facilities at which Mewbourne has completed the replacement of intermittent bleed Pneumatic Controllers with Non-emitting Pneumatic Controllers, together with the number of devices that were replaced at each facility.

3. Nothing in this Appendix shall relieve Mewbourne of its obligation to comply with all applicable federal, state, and local laws and regulations in implementing the Project, including any requirement to obtain permits under the Act or the AQCA.

4. For purposes of this Appendix:

- a) “Pneumatic Controller” means a device that monitors a process parameter such as liquid level, pressure, or temperature and uses pressurized gas (which may be released to the atmosphere during normal operation) and sends a signal to a control valve in order to control the process parameter. Controllers that do not utilize pressurized gas are not Pneumatic Controllers;
- b) “Non-emitting Controller” means a device that monitors a process parameter such as liquid level, pressure, or temperature and sends a signal to a control valve in order to control the process parameter and does not emit natural gas to the atmosphere. Examples of Non-emitting Controllers include but are not limited to instrument air or inert gas pneumatic controllers, electric controllers, mechanical controllers and routed pneumatic controllers; and
- c) “Routed Pneumatic Controller” means a Pneumatic Controller of any type that releases natural gas to a process, sales line, or to a combustion device instead of directly to the atmosphere.

APPENDIX I: Verifier Certification

[VERIFIER] makes the following certifications and representations in connection with its proposed appointment as the Independent Third-Party Verifier pursuant to the Consent Decree entered in *United States and NMED v. Mewbourne Oil Company*:

“Verifier” means [VERIFIER], and the employees or contractors who would provide the services described above.

“Mewbourne” means Mewbourne Oil Company.

1. Financial interests

- a) Verifier has no financial interest in Mewbourne or any of its subsidiaries or affiliates.
- b) If, between the date of this certification and when Verifier’s term as the Independent Third-Party Verifier expires, Verifier’s financial interests with respect to Mewbourne change, Verifier agrees to notify the U.S. Department of Justice and Mewbourne in writing as soon as reasonably possible after becoming aware of the change. Verifier is aware that acquiring a financial interest in Mewbourne could disqualify it from continuing the services described above.

2. Employment, professional relationships, and affiliations

- a) Verifier is not a party to any employment, consulting, agency, attorney-client, auditing or other professional relationship or affiliation with Mewbourne, or any of its subsidiaries or affiliates.
- b) Verifier has not been a party to such a professional relationship or affiliation with Mewbourne within the past 3 years.
- c) Verifier agrees not to engage in such a professional relationship or affiliation with Verifier during its term as the Independent Third-Party Verifier or for a period of no less than 1 year after the submittal of its final Verification Program Report under Paragraph 81 of the Consent Decree.
- d) After the date of this certification, to the extent that the services of additional personnel will be utilized in the proper discharge of the Independent Compliance Monitor’s duties, prior to engaging any such personnel, Verifier agrees to review the backgrounds of all such personnel to determine whether said personnel or any other entity with which said personnel is affiliated, is or has been a party to any employment, consulting, agency, attorney-client, auditing or other professional relationship or affiliation with Mewbourne or any of its subsidiaries or affiliates. To the extent any such relationship or affiliation exists, Verifier will notify the U.S. Department of Justice to seek a determination whether it is appropriate to engage said personnel to assist in the services described above.

Date: _____