

**STATE OF NEW MEXICO
BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD**

IN THE MATTER OF:

PROPOSED NEW REGULATION

20.2.50

No. EIB 21-27 (R)

Oil and Gas Sector – Ozone Precursor Pollutants

REBUTTAL TESTIMONY OF ADAM MEYER

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. Adam Meyer. 3755 Dudley Street Wheatridge CO 80033

Q. ARE YOUR QUALIFICATIONS PROVIDED IN YOUR DIRECT TESTIMONY IN THIS MATTER?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is to rebut certain aspects of the direct written testimony as presented in NMED Exhibit 32 and parts of the testimony provided behalf of the Environmental Defense Fund. My rebuttal testimony covers certain definitions in section 20.2.50.7 (auto-igniter, bleed rate, closed vent systems, downtime, control device, non-emitting controller, pneumatic controller, pneumatic diaphragm pump and vapor recovery unit/vapor recovery control unit). I also provide rebuttal testimony relating to the topics of control devices (section 20.2.50.115), hydrocarbon liquid transfers (section 20.2.50.120), pneumatics (section 20.2.50.122) and storage vessels (section 20.2.50.123).

I. DEFINITIONS, 20.2.50.7 NMAC

Q. IN NMED’S PROPOSED DEFINITIONS OF AUTO-IGNITER AT 20.2.50.7.B, DO YOU AGREE THAT ALL AUTO-IGNITERS RELIGHT THE PILOT FLAME “IN THE COMBUSTION CHAMBER” AS DEFINED IN THE PROPOSAL AND REITERATED IN THE KUEHN/PALMER TESTIMONY (NMED EXHIBIT 32, PAGE 14)?

A. No.

Q. DOES NMOGA’S EXHIBIT 47, PROPOSED 20.2.50.7.Q, WHICH REMOVES “IN THE COMBUSTION CHAMBER”, PROVIDE A MORE CORRECT DEFINITION OF AN AUTO-IGNITER? WHY?

A. Yes. NMOGA removed “in the combustion chamber” because the tip of an open flare tip, where a pilot flame is applied, is generally not considered a combustion chamber in this industry. As such, removing “in the combustion chamber” is appropriate as the proposed rules also apply to open tip flares.

Q. IN NMED’S PROPOSED DEFINITION OF BLEED RATE IN 20.2.50.7.C, AS SUPPORTED BY THE TESTIMONY OF MS. BISBEY-KUEHN AND MR. PALMER IN NMED EXHIBIT 32, PAGE 14, DOES THIS DEFINITION, WHICH ASSIGNS A BLEED RATE TO AN INTERMITTENT CONTROLLER, CONFORM TO FEDERAL, OTHER STATE OR INDUSTRY PRACTICE?

A. No.

Q. DOES NMOGA’S EXHIBIT 47 REDLINE DEFINITION OF BLEED RATE BETTER CORRESPOND TO FEDERAL, OTHER STATE AND INDUSTRY PRACTICE?

A. NMOGA’s redline is more current with latest definitions of bleed rate as it pertains to different types of pneumatic controllers and their as-designed state. For example, Colorado Regulation 7, it was understood that intermittent pneumatic controllers are not designed to bleed gas continuously, but instead designed to release gas only during de-activation. Colorado Regulation 7 is written accordingly to address the various types of controllers.

Q. IN NMED EXHIBIT 32, PG. 14, MS. BISBEY-KUEN AND MR. PALMER TESTIFY THAT A CLOSED VENT SYSTEM ROUTES VOC EMISSIONS TO A CONTROL DEVICE "WITH NO LOSS OF VOC EMISSIONS TO THE ATMOSPHERE." DO YOU AGREE THAT A “CLOSED VENT SYSTEM” CAN ALWAYS ACHIEVE “NO LOSS” OF VOC EMISSIONS AS NMED HAS PROPOSED AT 20.2.50.7.F? WHY OR WHY NOT?

A. No. I believe that a closed vent system can be designed with the intent for no loss under normal process conditions. However, I do not agree that no loss in the closed vent system can be guaranteed during operations. During operations, failures occur and maintenance activities occur, and not all failures can be designed out of a system economically through redundancy or other means.

Q. DOES NMOGA’S REDLINE AT PAGE 2, LINE 31-36, BETTER SET FORTH THE LIMITS ON WHAT A CLOSED VENT SYSTEM CAN ACHIEVE?

A. Yes, it is better to specify “minimal loss” as that promotes improvement and will be easier to comply with compared to “no loss”. And minimal loss is consistent with the Department’s proposal to develop and incorporate an LDAR program – the very purpose of which is a recognition that these systems cannot be operated to avoid any and all losses to the atmosphere, but rather that an LDAR program is appropriate to reduce the emissions that will occur from these systems.

Q. MS. BISBEY-KUEHN AND MR. PALMER, ON PAGE 16 OF EXHIBIT 32, TESTIFY THAT ALL CONTROL DEVICES MUST BE “DESIGNED, SIZED, INSTALLED, OPERATED, AND MAINTAINED IN ORDER TO MINIMIZE EMISSIONS AND ACHIEVE THE EMISSION STANDARDS REQUIRED BY PART 50.” WHY SHOULDN’T DEVICES

1 USED ONLY TO CONTROL MALFUNCTIONS, MAINTENANCE, UPSET OR OTHER
2 TEMPORARY DEVICES NOT BE SUBJECT TO ALL THE CONTROL REQUIREMENTS?

3 A. It is difficult to engineer and design a system for every unanticipated malfunction,
4 maintenance, and upset condition. An engineer can only design for anticipated events. Even for
5 anticipated events, however, gas composition, ambient conditions, process pressure and
6 temperature, etc., can be constantly changing during operations. As such, it is better to not
7 classify devices that are strictly used for malfunction, maintenance, and upset operations as
8 'control devices' because the operator cannot guarantee the efficiency required by control
9 devices in other parts of the rule.

10 Q. IN THEIR TESTIMONY, MS. BISBEY-KUEHN AND MR. PALMER PROPOSE TO
11 EXTEND THE CLOSED VENT SYSTEM REQUIREMENTS TO TEMPORARY AND
12 PORTABLE SYSTEMS. DO YOU BELIEVE THE CLOSED VENT SYSTEM
13 REQUIREMENTS ARE APPROPRIATE OR SHOULD THEY BE MORE RELAXED FOR
14 TEMPORARY, NON-PERMANENT INSTALLATIONS?

15 A. No. For temporary or portable devices, a formal closed vent system analysis as
16 described in the rules may not be appropriate due to the time required to deploy, the potential
17 unknown gas composition, and unknown process conditions. As such, it is more appropriate that
18 temporary or portable closed vent systems be sized using best engineering practices at the
19 discretion of the operator or in-house engineer.

20 Q. DO YOU BELIEVE THAT THE NMOGA REDLINES IN EXHIBIT 47 IN WHICH
21 CVS REQUIREMENTS ONLY APPLY TO PERMANENT CONTROLS PROVIDE A
22 BETTER APPROACH? WHY?

23 A. Yes, I believe it provides better clarification and removes burden for the operator to
24 design for every possible and unanticipated malfunction, maintenance activities, or upsets.

25 Q. IN NMED EXHIBIT 32, PG. 16, LINES 11-13, MS. BISBEY-KUEHN AND MR.
26 PALMER TESTIFY THAT DOWNTIME SHOULD BE READ TO MEAN ONLY THAT THE
27 EQUIPMENT OR CONTROL DEVICE IS NOT IN OPERATION. IN PROPOSED
28 20.2.50.7.N "DOWNTIME," WHY DO YOU PREFER "IS INOPERABLE" AS STATED IN
29 THE NMOGA REDLINE AT NMOGA EXHIBIT 47 TO "NOT IN OPERATION, OR WHEN
30 A WELL IS PRODUCING AND THE CONTROL DEVICE IS NOT IN OPERATION"?

31 A. In the context of where it is used in the proposed rule, "downtime" is the condition where
32 a piece of equipment or system is intended to be operating or functional but is not. As such, "is
33 inoperable" speaks better to that state. "Not in operation" could be interpreted as either an
34 equipment or system that is intended to be operating but is not; or could be interpreted as a piece
35 of equipment that is intentionally on standby or inactive.

36 Q. IN NMED EXHIBIT 32, MS. BISBEY-KUEHN AND MR. PALMER TESTIFY
37 REPEATEDLY REGARDING THE IMPORTANCE OF TRANSITIONING TO NON-
38 EMITTING CONTROLLERS. GIVEN THE IMPORTANCE OF THIS CONCEPT IN NMED'S
39 PROPOSAL, DO YOU BELIEVE THAT THE DEFINITION OF "NON-EMITTING

1 CONTROLLER” PROPOSED IN NMOGA EXHIBIT 47 IS IMPORTANT AND
2 REPRESENTS AN APPROPRIATE DEFINITION THAT WOULD BE ACCEPTED BY
3 MOST PARTIES IN THIS AREA?

4 A. Yes.

5 Q. WITH REGARD TO THE PROPOSED DEFINITION OF “PNEUMATIC
6 CONTROLLER,” IN NMED EXHIBIT 32, MS. BISBEY-KUEHN AND MR. PALMER
7 EXPLAIN THAT “THERE ARE SEVERAL WAYS TO REDUCE EMISSIONS FROM
8 PNEUMATIC CONTROLLERS, INCLUDING REPLACING HIGH BLEED CONTROLLERS
9 WITH LOW BLEED OR ZERO BLEED MODELS, USING INSTRUMENT AIR RATHER
10 THAN NATURAL GAS TO DRIVE CONTROLLERS, AND USING NON-GAS-DRIVEN
11 CONTROLLERS SUCH AS MECHANICAL OR ELECTRIC CONTROLLERS, INCLUDING
12 SOLAR-POWERED CONTROLLERS.” GIVEN THAT THE CONTROL STRATEGY
13 DEPENDS SO MUCH ON CATEGORIZING VARIOUS TYPES OF CONTROLLERS, DO
14 YOU BELIEVE THAT THE PROPOSED NMOGA REDLINE IN NMOGA EXHIBIT 47
15 PROVIDES A BETTER DEFINITION THAN THE NMED PROPOSAL THAT WILL
16 ENHANCE INDUSTRY COMPLIANCE BY USING STANDARD INDUSTRY
17 TERMINOLOGY?

18 A. Yes.

19 Q. IN NMED EXHIBIT 32, PAGE 73, MS. BISBY-KUEHN AND MR. PALMER
20 TESTIFY THAT VAPOR RECOVERY UNITS ARE USED FOR THE PURPOSE OF
21 ROUTING EMISSIONS BACK TO THE INLET LINE OF A SEPARATOR. IS THIS
22 ALWAYS TRUE, AND WHY IS NMOGA ATTEMPTING TO DISTINGUISH BETWEEN
23 “VAPOR RECOVERY UNITS” AND “VAPOR RECOVERY CONTROL UNITS” IN ITS
24 PROPOSED DEFINITION IN NMOGA EXHIBIT 47?

25 A. Depending on the operator and the basin, personnel use the term “VRU” to mean a
26 compressor pulling vapors from separation equipment or to mean a compressor pulling vapors
27 from storage vessels. NMOGA is offering the definition of VRCU to help clarify and point out
28 the that rules pertain to those compressors used as control devices, versus a VRU which is
29 considered process equipment. This redline is an attempt distinguish between the two and to
30 convey that these rules apply to those compressors used as control devices (VRCUs).

31 32 **II. CONTROL DEVICES, 20.2.50.115 NMAC** 33

34 Q. IN NMED EXHIBIT 32, PAGES 70-79, NMED TECHNICAL WITNESSES MS.
35 KUEHN AND MR. PALMER TESTIFY THAT CONTROL DEVICE STANDARDS
36 DETAILED IN PROPOSED 20.2.50.115 NMAC SHOULD BE ADOPTED AS PROVIDED IN
37 NMED EXHIBIT 41. DO YOU AGREE?

38 A. Not explicitly as written.

1 Q. IN NMED EXHIBIT 32, PAGE 75-76, MS. BISBEY-KUEHN AND MR. PALMER
 2 TESTIFY THAT CONTROL DEVICES MUST BE “DESIGNED, SIZED, INSTALLED,
 3 OPERATED, AND MAINTAINED IN ORDER TO MINIMIZE EMISSIONS AND ACHIEVE
 4 THE EMISSION STANDARDS REQUIRED BY PART 50.” THESE WITNESSES ALSO
 5 TESTIFY THAT CLOSED VENT SYSTEMS MUST BE DESIGNED AND CERTIFIED BY A
 6 PROFESSIONAL ENGINEER OR AN IN-HOUSE ENGINEER WHAT ARE YOUR
 7 TECHNICAL CONCERNS WITH THESE PROPOSALS?

8 A. The two biggest concerns are that (1) the proposed rules do not differentiate between
 9 design of control devices versus in-operation of control devices and (2) the requirements for
 10 closed vent system analysis need to be updated to the latest developments of that discipline.

11 Throughout the section, there are requirements for control devices such as, “combust the gas sent
 12 to the flare” and “combustion shall be maintained for the duration of the time...” As written, the
 13 rules could be interpreted not to allow for unanticipated maintenance, malfunction, upsets, or
 14 other situations. The rules should specifically distinguish between requirements for design and
 15 requirements for operations, and they should be different. For example, a control device “should
 16 be designed for all reasonably anticipated flow scenarios using best engineering practices and
 17 assumptions of composition, atmospheric conditions, and process conditions.” On the operations
 18 side, the requirements should be tailored to understand that there is no perfect operation of that
 19 designed equipment. For example, the control device “should be used, operated, and maintained
 20 in accordance with the intended design and vendor recommendations to ensure proper
 21 combustion efficiency to the maximum extent possible.”

22 The other concern is related to the closed vent system analysis. New facilities (greenfield) and
 23 existing facilities (brownfield) can and should be assessed differently. A new facility will require
 24 a theoretical model to predict required capacity of the closed vent system prior to construction,
 25 whereas a closed vent system at a facility in operation can and should be allowed to be assessed
 26 using field instruments such as tank pressure data, control device inlet pressure data, flowmeter
 27 data, etc., without relying on a theoretical model.

28 Q. CAN YOU EXPLAIN WHETHER THE REDLINES AND ASSOCIATED
 29 JUSTIFICATIONS PROVIDED IN 20.2.50.115 OF APPENDIX B OF NMOGA’S NOTICE OF
 30 INTENT WOULD ADDRESS YOUR TECHNICAL CONCERNS?

31 A. The changes would give the operator flexibility to perform a theoretical closed vent
 32 system analysis or perform an assessment of facility data to show adequate capacity of the closed
 33 vent system. However, as outlined above, I believe more clarity is needed to distinguish between
 34 design and operation requirements.

35 Q. IN NMED EXHIBIT 41, SECTION 20.2.50.115.B.2, NMAC, NMED’S PROPOSAL
 36 REQUIRES CONTROL DEVICES TO BE “ADEQUATELY DESIGNED AND SIZED TO
 37 ACHIEVE THE CONTROL EFFICIENCY RATES” AND “HANDLE FLUCTUATIONS IN
 38 EMISSIONS OF VOC OR NOX.” SIMILARLY, IN EXHIBIT 32, PG. 142, NMED
 39 WITNESSES MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT CONTROLS CAN
 40 “NORMALLY HANDLE FLUCTUATIONS IN CONCENTRATION.” IS IT TECHNICALLY

1 FEASIBLE TO DESIGN AND SIZE A CONTROL DEVICE TO HANDLE ALL
2 FLUCTUATIONS IN EMISSIONS? WHY OR WHY NOT?

3 A. I believe it is feasible to design and size a control device to handle anticipated and
4 predictable fluctuations in flowrate and pressure, but not feasible to combine that with
5 unpredictable fluctuating gas compositions, atmospheric conditions, maintenance activities,
6 failures, and upset conditions. There could be an infinite number of permutations to consider in
7 order to design a control device if the term “all fluctuations” is not removed.

8 Q. HOW SHOULD THE RULE BE REVISED TO ADDRESS THIS CONCERN?

9 A. Focus on design of control devices based on predictable and anticipated process
10 conditions and events, and better define control efficiency from a totalized perspective.

11 Q. IN NMED EXHIBIT 41, PROPOSED SECTION 20.2.50.115.B.5 NMAC REQUIRES
12 THAT CLOSED VENT SYSTEMS PREVENT ANY UNBURNT GAS FROM BEING
13 RELEASED TO THE ATMOSPHERE. IN NMED EXHIBIT 32, NMED TECHNICAL
14 WITNESSES MS. KUEHN AND MR. PALMER TESTIFY THAT CONTROL DEVICES ARE
15 GENERALLY REQUIRED TO MEET 95% OR 98% CONTROL EFFICIENCY
16 STANDARDS. IS THE REQUIREMENT IN 20.2.50.115(B)(4) CONSISTENT WITH
17 MEETING A 95% OR 98% CONTROL EFFICIENCY?

18 A. No. Specifically when it comes to maintaining efficiency for fluctuations or unanticipated
19 events. The phrase “unburnt gas shall not be vented to atmosphere” also does not make logical
20 sense because that is the only place for unburnt gas to go.

21 Q. IN NMED EXHIBIT 41, PROPOSED SECTION 20.2.50.115.B.6 NMAC, AS
22 SUPPORTED BY THE BISBEY-KUEHN TESTIMONY ON PAGES 70-79, REQUIRES THE
23 OWNER OR OPERATOR OF A CLOSED VENT SYSTEM FOR A PNEUMATIC
24 CONTROLLER TO MEET VARIOUS REQUIREMENTS. CAN A CLOSED VENT SYSTEM
25 BE USED TO CONTROL EMISSIONS FROM A PNEUMATIC CONTROLLER? WHY OR
26 WHY NOT?

27 A. Yes. a closed vent system can be used to capture the exhaust of pneumatic controllers in
28 some instances where there is sufficiently low backpressure on the controller exhaust port.
29 Emissions from failed seals and gaskets would be difficult to capture.

30 Q. IN NMED EXHIBIT 41, PROPOSED 20.2.50.115.C NMAC REQUIRES EXISTING
31 FLARES TO BE RETROFITTED WITH A CONTINUOUS PILOT FLAME OR AUTO-
32 IGNITER. IN NMED EXHIBIT 32, PAGE 76, MS. BISBEY-KUEHN AND MR. PALMER
33 TESTIFY THAT THIS MUST OCCUR “ONE YEAR AFTER THE EFFECTIVE DATE OF
34 PART 50,” BUT DO NOT PROVIDE ANY SPECIFICS ON HOW THIS IS TO BE
35 ACHIEVED. WHAT TECHNICAL OR ECONOMIC CHALLENGES, IF ANY, ARE THERE
36 WITH RETROFITTING EXISTING FLARES THAT NMED’S TESTIMONY IS NOT
37 ADDRESSING?

A. There will be supply chain bottlenecks compared to the phase in of the rule. In order to properly assess phase in of the rule, NMED and industry together should evaluate lead times on equipment; otherwise, operators may be at risk of noncompliance through no fault of their own.

III. HYDROCARBON LIQUID TRANSFERS, 20.2.50.120 NMAC

Q. IN NMED EXHIBIT 32, PAGES 110-116, NMED TECHNICAL WITNESSES MS. KUEHN AND MR. PALMER TESTIFY THAT THE STANDARDS FOR HYDROCARBON LIQUID TRANSFERS IN PROPOSED 20.2.50.120 NMAC SHOULD BE ADOPTED AS PROVIDED IN NMED EXHIBIT 41. DO YOU AGREE?

A. No.

Q. IF ADOPTED BY NMED, DO THE REDLINES AND ASSOCIATED JUSTIFICATIONS PROVIDED IN 20.2.50.120 OF APPENDIX B OF NMOGA'S NOTICE OF INTENT TO PRESENT TECHNICAL TESTIMONY ADDRESS YOUR CONCERNS?

A. Yes.

Q. IN NMED EXHIBIT 32, PG. 10, LINES 12-18, NMED HAS PROPOSED TO REVISE 20.2.50.120(B)(1) TO REQUIRE THAT VAPOR BALANCE OR RECOVERY OPERATIONS CONTROL 100% OF VOC EMISSIONS. WHAT CONCERNS, IF ANY, DO YOU HAVE WITH THIS CHANGE?

A. Connecting and disconnecting hoses will always release trace emissions with most loadout configurations, therefore 100% capture cannot be guaranteed.

IV. PNEUMATICS, 20.2.50.122 NMAC

Q. IN NMED EXHIBIT 32, PAGES 122-138, NMED TECHNICAL WITNESSES MS. KUEHN AND MR. PALMER TESTIFY THAT THE STANDARDS FOR PNEUMATIC CONTROLLERS AND PUMPS IN PROPOSED 20.2.50.122 NMAC SHOULD BE ADOPTED AS PROVIDED IN NMED EXHIBIT 41. DO YOU AGREE?

A. No.

Q. IN NMED EXHIBIT 32, PAGE 125, IN SUPPORT OF THE PROPOSED RULE CONTAINED IN EXHIBIT 41, MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT EMISSIONS FROM PNEUMATIC CONTROLLERS CAN BE REDUCED BY "REPLACING HIGH BLEED CONTROLLERS WITH LOW BLEED OR ZERO BLEED MODELS, USING INSTRUMENT AIR RATHER THAN NATURAL GAS TO DRIVE CONTROLLERS, AND USING NON-GAS-DRIVEN CONTROLLERS SUCH AS MECHANICAL OR ELECTRIC CONTROLLERS." WHAT ARE THE TECHNICAL AND ECONOMICAL FEASIBILITY HURDLES ASSOCIATED WITH TRANSITIONING TO NON-EMITTING CONTROLLERS THAT NMED'S TESTIMONY IS NOT ADDRESSING?

1 A. Assuming non-emitting controllers can be instrument air driven, there are technical
 2 hurdles with engineering and designing a solution for facilities without access to sustainable
 3 power – either grid power or solar/generator. The system would need to be designed to ensure
 4 continued service. Economic hurdles include supply chain issues as well as personnel issues.
 5 Electrical system would require electrical one-line diagrams, cable schedules, and other
 6 engineering and design deliverables to be developed. If this cannot be accomplished in house,
 7 operators would need to outsource to third party engineering firms to accomplish the task. There
 8 may be a shortage of available engineering firms if the rollout of the rules is too short.

9 Q. WHEN ELECTRICITY IS NOT AVAILABLE, WHAT CHALLENGES DOES THAT
 10 PRESENT FOR UTILIZING NON-EMITTING CONTROLLERS?

11 A. A couple of examples could be designing the solar/teg/generator system to provide
 12 facility three-day autonomy, or having fail safe electric actuated valves, or size of valves that can
 13 be actuated, and having available personnel to properly engineer and design the system.

14 Q. DR. MCCABE, ON BEHALF OF CLEAN AIR ADVOCATES, HAS TESTIFIED
 15 THAT ALL THESE PROBLEMS CAN BE SOLVED WITH SOLAR SOLUTIONS. DO YOU
 16 AGREE? WHY OR WHY NOT?

17 A. No. Depending on the device being powered, solar alone may not guarantee proper
 18 operation or safe operation. For example, most control valves or on/off valves are selected for
 19 the process and often that process requires a quick reaction time from the valve. If, for example,
 20 a valve must open in 1-3 seconds, it could require a large current to accomplish that actuation
 21 time. As such, an electrically actuated valve, which usually take a long time to actuate, may not
 22 be suitable in that situation.

23 Q. WHAT OTHER HURDLES DO YOU SEE IN REGARD TO A DR. MCCABE'S
 24 ASSERTION THAT PNEUMATIC CONTROLLERS CAN BE REPLACED WITH SOLAR
 25 SOLUTIONS?

26 A. In addition to the challenges to using electric actuated valves already noted, there will
 27 likely be significant supply chain issues regarding availability of solar packages for remote sites
 28 that do not have access to grid electricity. In his testimony, Dr. McCabe points out that Calscan,
 29 an Alberta vendor of packages that utilize solar-power and batteries to power electric actuators
 30 and instrumentation for zero emission separators. However, whether or not that vendor
 31 equipment is appropriate to satisfy the required reaction time of a valve, for example, we cannot
 32 blanketly say that this equipment is an option for all sites.

33 Q. DR. MCCABE URGES NMED TO REQUIRE PNEUMATIC CONTROLLERS AT
 34 NATURAL GAS PROCESSING PLANTS AND TRANSMISSION COMPRESSOR
 35 STATIONS TO BE RETROFITTED WITHIN SIX MONTHS OF THE EFFECTIVE DATE OF
 36 THE RULE, RATHER THAN THE SCHEDULE SET OUT IN NMED EXHIBIT 41,
 37 SECTION 20.2.50.122.B.3, TABLE 2. WHAT IS YOUR UNDERSTANDING OF DR.
 38 MCCABE'S RATIONALE?

1 A. As I understand it, Dr. McCabe's rationale is that since all transmission gas compressor
2 stations have access to line power just like natural gas processing plant which have non-emitting
3 controllers, then all compressor stations can and should be converted to non-emitting controllers
4 within 6 months.

5 Q. DO YOU AGREE WITH THIS RATIONALE?

6 A. No.

7 Q. WHAT CHALLENGES WOULD A SIX-MONTH RETROFIT SCHEDULE FOR
8 THESE PNEUMATIC CONTROLLERS PRESENT?

9 A. First, the rationale that all gas process plants have non-emitting controllers and therefore
10 compressor stations should as well is irrelevant. Retrofitting a facility to a deadline versus
11 designing a facility from scratch (i.e., greenfield) with ample time is not a good comparison.

12 In addition, speaking strictly to the addition of an instrument air compressor and building, there
13 will be significant delays with engineering, design, and procurement (supply chain issues). Even
14 if all engineering, design, and procurement is within the six months, then construction times
15 needs to be accounted for, which means planned facility outage. As a side note, an outage will
16 cause suction pressure and pipeline pressure to increase, which will affect upstream producers.
17 Lessons learned from Colorado, when gathering pressure increases, you can expect higher
18 emissions from well production facilities. To my knowledge, Dr. McCabe did not present a
19 study to compare the benefit of switching to non-emitting controllers versus the immediate
20 emissions increases that could be created at all associated production facilities due to the outage.

21 Q. CONSIDERING THESE CHALLENGES, DO YOU BELIEVE DR. MCCABE'S SIX-
22 MONTH DEADLINE PROPOSAL IS FEASIBLE?

23 A. No, I do not believe it can be done in six months.

24 Q. DR. MCCABE URGES NMED TO REQUIRE MORE REDUCTIONS FROM
25 PNEUMATICS AT A MORE ACCELERATED RATE. WHAT CHALLENGES WOULD
26 THIS APPROACH ENTAIL?

27 A. As already discussed, supply chain and technical challenges of assessing each actuated
28 valve or device for their required actuation time.

29 Q. DR. MCCABE TESTIFIES THAT THIS MORE STRINGENT APPROACH WILL
30 NOT INCREASE COSTS BUT SIMPLY REQUIRE THAT THE SAME AMOUNT OF
31 MONEY BE SPENT SOONER. DO YOU AGREE?

32 A. No. Vendors typically have expedited fees.

33 Q. WHAT ADDITIONAL COSTS WOULD BE ASSOCIATED WITH DR. MCCABE'S
34 MORE STRINGENT, ACCELERATED APPROACH?

35 A. The biggest is supply chain. Dr. McCabe's testimony does not account for the global
36 pandemic. COVID didn't just affect a local shutdown of a foundry or a mill. It was an

international shutdown of supply chains through all industries. I cannot say what the end cost will be; all I can do is use the vendor quotes I have right now to estimate on a per facility basis and say that in a normal world, one could extrapolate that to an industry-wide impact. But with COVID, I believe we are in uncharted territory and to oversimplify the costs and schedule impact of this rule is imprudent.

Q. DR. MCCABE ALSO TESTIFIES THAT NMED OVERESTIMATED THE COSTS OF ITS PNEUMATICS PROPOSAL. DO YOU AGREE?

A. No. By my assessment, NMED underestimated costs per ton of VOC per year. First, the emission factor used by NMED was from an older study and more recent studies have refined that emission factor. Second, costs for equipment were underestimated. To my knowledge, the NMED study did not take into account many things such as (1) the costs for buildings used to house instrument air equipment; (2) costs associated with PLCs and electric instruments, such as level controllers, necessary for system operation, or (3) in general, current pricing to the current market. There is also the consideration that prices for equipment and components could rise significantly if there is a sudden demand to meet stringent roll out schedules.

Q. CAN YOU REMIND THE BOARD WHY NMED'S ANALYSIS FAILS TO ACCURATELY ASSESS THE COSTS AND REDUCTIONS OF ITS PNEUMATICS PROPOSAL?

A. The costs do not reflect the current (post-COVID) equipment costs, especially with supply chain bottlenecks, cost of buildings, cost of transformers, costs associated with programmable logic controllers and cabinets, and level controller costs. In addition, the NMED analysis does not utilize the latest studies on emission factors for pneumatics.

Q. HAS DR. MCCABE PRESENTED AN INDEPENDENT COST ANALYSIS TO SUPPORT THE MORE STRINGENT, ACCELERATED PROPOSAL?

A. Not to my knowledge.

Q. DOES DR. MCCABE PROVIDE ANY EVIDENCE THAT THE MORE STRINGENT, ACCELERATED APPROACH WILL MEANINGFULLY REDUCE OZONE CONCENTRATIONS IN THE COUNTIES AFFECTED BY THIS RULE?

A. Not to my knowledge.

Q. DR. MCCABE ASSERTS THAT, IF THE MORE STRINGENT PNEUMATICS PROPOSAL IS NOT ADOPTED, THEN "THOUSANDS OF ADDITIONAL TONS OF VOCs AND TENS OF THOUSANDS OF ADDITIONAL TONS OF METHANE WILL BE EMITTED." IS THERE ANY BASIS FOR THIS STATEMENT PROVIDED, AND DO YOU AGREE?

A. I do not recall seeing a basis for these statements.

V. STORAGE VESSELS, 20.2.50.123 NMAC

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2 Q. IN NMED EXHIBIT 32, PAGES 138 TO 148, NMED TECHNICAL WITNESSES MS.
3 KUEHN AND MR. PALMER TESTIFY THAT THE STANDARDS FOR STORAGE
4 VESSELS IN PROPOSED 20.2.50.123 NMAC SHOULD BE ADOPTED AS PROVIDED IN
5 NMED EXHIBIT 41. DO YOU AGREE?

6 A. NO.

7 Q. WHAT ARE YOUR TECHNICAL CONCERNS WITH PROPOSED 20.2.50.123
8 NMAC AS PRESENTED IN NMED EXHIBIT 41 THAT NMED'S TECHNICAL
9 TESTIMONY FAILS TO ADDRESS?

10 A. One concern is that the TPY applicability threshold does not indicate whether averaging
11 production across the tanks is permissible. From a technical perspective, the potential of one tank
12 to cause emissions can be shown to be the same as its adjacent overflow tank by assessment or
13 test of the vapor spaces in each. If they are found to be adequately communicating their vapor
14 spaces, then the tanks have the same potential of emissions even if production is restricted to one
15 of them. The NMOGA redlines intend to clarify that.

16 Another concern is if closed vent system analysis is adopted to mean what has become expected
17 from recent consent decrees on the subject. More specifically, the expectation that closed vent
18 system shall be designed for the simultaneous dump or flow of all "nonprecluded" inputs into the
19 tank system. This practice often results in oversizing of control devices, which can lead to
20 turndown issues, not to mention costs.

21 The other concern I have is the applicability of the rule for single tank batteries. Smaller tank
22 batteries often have higher pressure spikes due to unavailable vapor space, as such can lead to a
23 larger facility modification than was previously intended/estimated. I believe there is a point of
24 diminishing return, and therefore believe that single tank batteries and other facility
25 circumstances need a carveout of the applicability.

26 Q. WOULD THE REDLINES AND ASSOCIATED JUSTIFICATIONS PROVIDED IN
27 20.2.50.123 OF APPENDIX B OF NMOGA'S NOTICE OF INTENT TO PRESENT
28 TECHNICAL TESTIMONY ADDRESS THESE TECHNICAL CONCERNS?

29 A. Yes.

30 Q. CAN YOU EXPLAIN WHY THESE CHANGES WOULD ADDRESS YOUR
31 TECHNICAL CONCERNS?

32 A. I believe it addresses current topics and incorporates years of experience and field studies
33 related to tank vapor management (since 2014).

34 Q. MS. KUEHN AND MR. PALMER TESTIFY THAT COMBUSTION DEVICES
35 DESIGNED TO MEET A 98% EFFICIENCY "MAY NOT CONTINUOUSLY MEET THIS
36 EFFICIENCY IN PRACTICE, DUE TO FACTORS SUCH AS VARIABILITY OF FIELD
37 CONDITIONS." NMED EXHIBIT 32, PG. 142. CONSIDERING THIS TESTIMONY, IS IT

1 APPROPRIATE FOR PROPOSED 20.2.50.123.B(2) NMAC TO REQUIRE OWNERS AND
2 OPERATORS OF STORAGE VESSELS TO CAPTURE AND CONTROL AT LEAST 98%
3 OF VOC EMISSIONS?

4 A. No. Echoing that testimony, control devices can be designed with an assumed basis of
5 process conditions – flow, pressure, temperature, composition. But during operations, that level
6 of control cannot be guaranteed.

7 Q. IF A CONTROL DEVICE ACHIEVES 98% CONTROL, WHAT CAPTURE
8 EFFICIENCY MUST BE ACHIEVED TO “CAPTURE AND CONTROL” AT LEAST 98% OF
9 VOC EMISSIONS AS REQUIRED BY PROPOSED 20.2.50.123.B(2) NMAC?

10 A. 100% would be required.

11 Q. IS 100% CAPTURE EFFICIENCY ON A CONTINUOUS BASIS TECHNICALLY
12 FEASIBLE?

13 A. No.

14 Q. CONSIDERING THESE ISSUES AND NMED’S OWN TESTIMONY, WHAT
15 CHANGES SHOULD BE MADE TO THE RULE?

16 A. The rule should better define and provide separation between design requirements and
17 operational requirements.

18 Q. HAVE YOU REVIEWED NMED EXHIBIT 100, WHICH CONTAINS A COST-PER-
19 TON ANALYSIS FOR PROPOSED 20.2.50.123 NMAC?

20 A. Yes.

21 Q. WHAT ISSUES, IF ANY, HAVE YOU IDENTIFIED WITH THIS ANALYSIS?

22 A. Costs were omitted that are generally not anticipated unless you have done tank retrofits
23 before. These could include costs associated with tank replacement to a higher-pressure rating,
24 costs with needing larger capacity control devices (to size for all non-precluded inputs to the tank
25 system flowing simultaneously), and costs associated with additional combustors or flares for
26 truck vapors if water truck loadout vapors are to be controlled.

27 Q. TOM ALEXANDER, TECHNICAL WITNESS FOR THE ENVIRONMENTAL
28 DEFENSE FUND, PROPOSES REQUIRING OPERATORS TO INSTALL AUTO GAUGES
29 ON NEW STORAGE TANKS AND FLOWBACK VESSELS. DR. MCCABE ON BEHALF
30 OF CLEAN AIR ADVOCATES HAS OFFERED A SIMILAR PROPOSAL. CAA EXHIBIT 3.
31 WHAT CONCERNS DO YOU HAVE WITH THIS PROPOSAL?

32 A. I have no concerns with adding auto gauges to new facility builds so long as the language
33 is revised to allow hatches to be opened during maintenance activities. The other concern is if
34 modifying an existing facility falls under that category. Adding auto gauge to a new tank on an
35 existing tank battery would result in confusion of gauging practices for that facility.
36 Modifications to existing tank batteries should not apply to the rule.

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By: /s/ Adam Meyer
Adam Meyer