

Slide1: NMOCD Proposed Rule Change for Operating at Below Atmospheric Pressure

19.15.5.307

Slide 2: Agenda

- Need for Rule Change (B. Gantner)
- NMOGA Committee Research (B. Gantner)
- NMOCD Vacuum Workgroup (B. Gantner)
- Rule Description (R. Ezeanyim)
- Discussion (R. Ezeanyim)

Slide 3: Why is there a need for this rule change?

- The present rule language is unclear on whether or not vacuum operations are allowed
- Frank Chavez, NMOCD Aztec District Supervisor, raises issue of safety and compliance with current rule for vacuum operations as certain reservoirs are reaching maturity (December 2000)
- NMOGA research indicates that there will be significant reserves left in place if vacuum operations are not allowed

Slide 4: NMOGA Regulatory Practices Committee – Vacuum Workgroup

- Rules of various states dealing with vacuum operations researched in January 2001
- Issue presented to RPC in February 2001 and workgroup formed
- Safety issue (explosion potential) researched and found not to be issue unless significant integrity breach allows oxygen above 12% (i.e., 60% infiltration)
- Hugoton field visited by NMOGA group to examine industry experience with vacuum operations (December 2001)

Slide 5: NMOGA Regulatory Practices Committee – Vacuum Workgroup

- Initial NMOGA-proposed rule change submitted to NMOCD (May 2002)
- Objections filed by gatherers on proposed rule based upon concerns with pipeline integrity and safety

Slide 6: Vacuum Workgroup (OCD/Industry)

- Formed in late 2002 to work on proposed rule collaboratively
- Industry Representatives
 - Producers: B. Gantner, A. Alexander (BR), B. Hawkins (BP)
 - Gatherers: D. Bays, Greg Hale (EPFS), D. Beaver, R. Smith (Williams)
- NMOCD Representatives
 - R. Ezeanyim, D. Brooks, F. Chavez, C. Perrin

Slide 7: Vacuum Workgroup (OCD/Industry)

- First Meeting – August 6, 2003
 - Issues of pipeline integrity and safety raised by gatherers
 - Producers believe that vacuum operations can be done safely with minimal notice
 - Agreement to visit Hugoton field by workgroup
- Hugoton Field visit – September 17-18, 2003
- Second Meeting – October 15, 2003
 - Issues of pipeline integrity resolved
 - Agreement reached on language by producers and gatherers

Slide 8: Hugoton Field Tour September 18, 2003

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| <ul style="list-style-type: none">■ Toured production operations of BP<ul style="list-style-type: none">■ Vacuum operations since 1991■ Initial problems when initiated fewer problems today■ No explosions at wellhead■ Some gathering line failures replaced with poly pipe as they occur■ Have agreements with gatherers with set oxygen limits■ No significant incidents from vacuum operations other than purging issues | <ul style="list-style-type: none">■ Toured pipeline operations of Duke<ul style="list-style-type: none">■ Vacuum operations for nearly 20 years■ Have continuous monitoring systems in plants and at CDPs■ Inject corrosion inhibitors at strategic locations to prevent oxygen and other corrosion■ Original pipeline system placed in 1920s■ No significant incidents from vacuum operations■ Enforce agreements with producers |
|--|--|

Slide 9: Proposed NMOCD Rule Operation at Below Atmospheric Pressure

19.15.5.307 [USE OF VACUUM PUMPS: Vacuum pumps or other devices shall not be used for the purpose of creating a partial vacuum in any stratum containing oil or gas.] **OPERATION AT BELOW ATMOSPHERIC PRESSURE:**

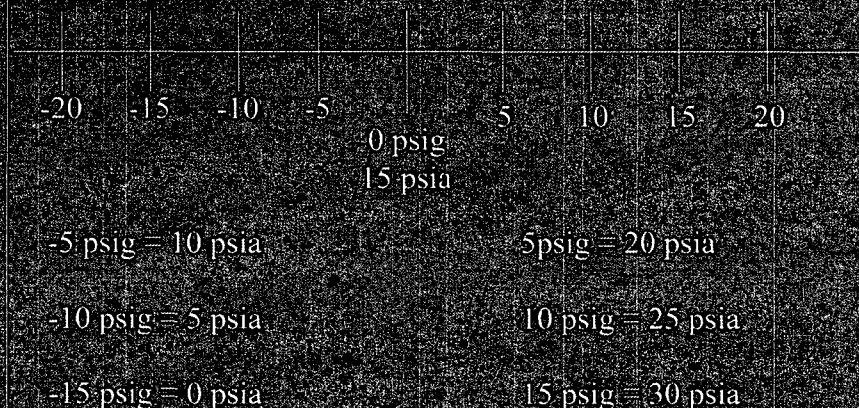
A. A well operator may use vacuum pumps, gathering system compressors or other devices to operate a well or gathering system at below atmospheric pressure only if that operator has:

- (1) executed a written agreement with the operator of the downstream gathering system or pipeline to which the well or gathering system so operated is immediately connected allowing operation of the well or gathering system at below atmospheric pressure; and
- (2) filed a sundry notice (form C-103) in the appropriate district office of the division for each well operated at below atmospheric pressure or served by a gathering system operated at below atmospheric pressure, notifying the division that the well or gathering system serving the well is being operated at below atmospheric pressure.

B. A gathering system operator may use vacuum pumps, gathering system compressors or other devices to operate the gathering system at below atmospheric pressure, or may accept gas originating from a well operated at below atmospheric pressure or that has been carried by any upstream gathering system operated at below atmospheric pressure, only if that operator has executed a written agreement with the operator of the downstream gathering system or pipeline to which the gathering system is immediately connected allowing operation of upstream wells or gathering systems at below atmospheric pressure.

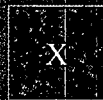
[1-1-50...2-1-96; 19.15.5.307 NMAC - Rn, 19 NMAC 15.E.307, 5-15-00]

Slide 10: Atmospheric Pressure Atmospheric Pressure: 14.7 psia 15.065 psia



Slide 11

Rule Description



Gas Producer



1st Gas Gatherer



2nd Gas Gatherer
OR Pipeline

Section A: Producers:

- (1) X executes written agreement with Y
- (2) X files Sundry Notice (Form C-103) with appropriate District Office

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Rule Description

Section B: Gas Gatherers:

- (1) If Z is another gas gatherer or pipeline, Y executes a second written agreement with Z
 - (a) If Y operates at below atmospheric pressure
 - (b) If Y accepts gas from a well operated at below atmospheric pressure
 - (c) If any upstream gatherer operated at below atmospheric pressure.

Summary: If the gatherer or anyone upstream of the gatherer operates at below atmospheric pressure, the gatherer must execute an agreement with the next downstream gatherer.

Slide 13: Correlative Rights

- Texas with highly permeable and homogenous formations have correlative rights issue!
- Hugoton Field
 - Avg Porosity = 15%
 - Range 8 – 20%
 - Avg Permeability = 25 md
 - Range 0.2 – 100 md
- New Mexico generally has tight formations of lower permeability so correlative rights not an issue
 - SJB - Fruitland Coal-HPA
 - Avg Porosity HPA/LPA = N/A
 - Avg Permeability HPA = 100 md
 - (Range 10 – 400md)
 - Note - Coal is highly discontinuous in HPA and LPA with highly variable drainage
 - SJB - Mesa Verde
 - Avg Porosity = 8.0% (Range 6-12%)
 - Avg Permeability = 0.1 md
 - (Range 0.02 – 1 md)
 - SJB - Dakota
 - Avg Porosity = 8.0% (Range =6-12%)
 - Avg Permeability = 0.5 md
 - (Range = 0.003 – 0.85 md)

Slide 14: Correlative Rights

- No action on correlative rights is considered necessary for other similar issues
 - Compression
 - Acid and Frac Stimulation
 - Reperforating
 - Recavitations