

OIL AND GAS DOCKET NO. 01-0266450

THE APPLICATION OF EOG RESOURCES, INC. TO ESTABLISH THE EAGLEVILLE (EAGLE FORD-1) FIELD AND TO ADOPT TEMPORARY FIELD RULES FOR THE PROPOSED EAGLEVILLE (EAGLE FORD-1) FIELD, ATASCOSA, GONZALES, LA SALLE, MCMULLEN AND WILSON COUNTIES, TEXAS

OIL AND GAS DOCKET NO. 02-0266475

THE APPLICATION OF EOG RESOURCES, INC. TO ESTABLISH THE EAGLEVILLE (EAGLE FORD-2) FIELD AND TO ADOPT TEMPORARY FIELD RULES FOR THE PROPOSED EAGLEVILLE (EAGLE FORD-2) FIELD, DE WITT AND KARNES COUNTIES, TEXAS

OIL AND GAS DOCKET NO. 01-0266477

THE APPLICATION OF EOG RESOURCES, INC. TO CONSIDER A NEW FIELD DESIGNATION FOR THE EAGLEVILLE (EAGLE FORD-1 SOUR) FIELD AND TO ADOPT TEMPORARY FIELD RULES FOR THE PROPOSED EAGLEVILLE (EAGLE FORD-1 SOUR) FIELD, ATASCOSA AND MCMULLEN COUNTIES, TEXAS

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner
Mark J. Helmueller - Legal Examiner

REVIEWED BY: James M. Doherty - Legal Examiner

APPEARANCES:

REPRESENTING:

APPLICANT:

Doug Dashiell
Roberto T. Alaniz
Dan Wilkirson
David Frye

EOG Resources, Inc.

PROTESTANTS:

Patrick Thompson

Y-Bar Ranch Ltd., et al

Clark Jobe

Murphy Exploration & Production Co.

Cary McGregor
Mike Cherry
David Klatt

James Bostic
Yolanda Perez
Greg Cloud

Burlington Resources Oil and Gas
Company, LP

INTERESTED PARTIES:

Steve Towns

San Isidro Development Company

Ana Maria Marsland-Griffith

Anadarko E & P Company, LP

George Neale

El Paso E & P Company, LP
Energen Resources Corporation
Tanos Exploration, LLC

Mike McElroy

Petro-Hunt, LLC

Glenn Johnson
Bill G. Spencer
Jim Clark

Chesapeake Operating, Inc.

Dale E. Miller

Hilcorp Energy Company

Tim George
Walter S. Light, Jr.

ExxonMobil Corporation, Lighting
Oil Company and U.S. Enercorp

Brian Sullivan
Mari Lynn Gobran
Anneliese Biasetti

Pioneer Natural Resources USA, Inc.

David Gross

Texas Crude Energy, Inc. and Comstock
Oil & Gas, LP

John Soule
Taylor Lepley

Petrohawk Operating Company

Michael Huhnke
Charles Kana
Douglas O'Brien

Texas Crude Energy, Inc.

Duel Glass	Glass Minerals
Robert Dreyling	Self

OBSERVERS:

Ryan P. Dobbs	Cinco Natural Resources
Charles R. Roberts	Various Landowners

PROCEDURAL HISTORY

Application Filed:	June 30, 2010
Notice of Hearing:	July 9, 2010
Hearing Held:	July 28, 2010
Transcript Received:	August 17, 2010
Docket Closed:	September 15, 2010
Proposal for Decision Issued:	October 5, 2010

EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

EOG Resources, Inc. ("EOG") requests that the Eagleville (Eagle Ford) Field be expanded and divided into two fields called the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields. It is proposed that the Eagleville (Eagle Ford-1) Field include the entirety of Atascosa, Gonzales, La Salle, McMullen and Wilson Counties located in RRC District 1 and the Eagleville (Eagle Ford-2) Field include the entirety of De Witt and Karnes Counties located in RRC District 2. EOG had originally wanted one field, but RRC staff felt that the Eagle Ford field area was too large to be administered in only one district and recommended a field for each RRC District.

EOG also requested that a new field called the Eagleville (Eagle Ford-1 Sour) Field be created to contain all of the wells in District 1 with an H₂S concentration greater than 100 ppm. EOG proposed that the five existing Eagle Ford oil fields (Dilworth, Eagleville, Leesville, Pilgram and Klotzman Fields) existing in the seven county area be consolidated into the respective Eagleville district field.

EOG requests the following Temporary Field Rules be adopted for the new fields:

1. Designation of the fields as the correlative interval from 10,294 feet to 10,580 feet, as shown on the log of the EOG Resources, Inc. - Milton Unit, Well No.

- 1 (API No. 42-255-31608);
2. 330' lease line spacing for the perpendicular distance along a horizontal drainhole, 100' lease line spacing for the first and last take points and no between well spacing with special provisions for "take points", off-lease penetration point and a "box rule" for a horizontal drainhole well;
3. 80 acre oil units with the assignment of additional acreage for horizontal wells pursuant to Statewide Rule 86 and no filing of individual well proration unit plats;
4. Allocation based on 100% acres, a maximum oil allowable of 800 BOPD and no casinghead gas limitation for oil wells.

EOG proposes that the 100' lease line spacing be used for "No Perf Zones" (NPZs) for any unleased or unpooled interior tracts that would require a Statewide Rule 37 exception instead of the 330' lease line spacing (See attached EOG Exhibit No. 21 - No Perf Zone Example). EOG also requests that all over-production in the proposed fields be canceled.

Murphy Exploration & Production Co. ("Murphy") requested that the assignment of additional acreage for horizontal wells be based on a formula and not pursuant to Statewide Rule 86. San Isidro Development Company ("San Isidro") requested that the Dilworth (Eagle Ford) Field located in McMullen County be excluded from the Eagleville (Eagle Ford-1) Field. In addition, Burlington Resources Oil and Gas Company, LP ("Burlington") requested that the new fields contain only oil wells and suggested some wording changes to the proposed Field Rules to remove any ambiguity concerning gas wells. EOG did not consider any of these recommendations to be adverse.

The applications were protested by leased and unleased mineral owners who were opposed to the off-lease penetration points and the Murphy request that the assignment of additional acreage for horizontal wells be based on a formula and not pursuant to Statewide Rule 86.

The examiners recommend approval of the new field designations for the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields. The examiners also recommend approval of off-lease penetration points, the calculation of additional acreage assignment for horizontal wells be pursuant to Statewide Rule 86 and 330 foot NPZ's for any unleased or unpooled interior tracts. In addition, the examiners recommend that the request for a separate Eagleville (Eagle Ford-1 Sour) Field be denied and that the Eagleville (Eagle Ford-1) Field be regulated pursuant to Statewide Rule 36.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence

The Eagleville (Eagle Ford) Field was discovered in March 2009 upon completion of the Milton Unit, Well No. 1, a horizontal well drilled by EOG Resources. On initial test, the well produced 112 BOPD, 131 MCFGPD and 28 BWPD. To date, EOG has completed 29 wells in the seven counties that are the subject of these applications.

EOG submitted cross sections that show that the proposed Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields produce from the Eagle Ford formation which extends across the seven counties that are the subject of these applications. EOG requests that the entire correlative interval from 10,294 feet to 10,580 feet as shown on the log of the EOG Resources, Inc. - Milton Unit, Well No. 1 (API No. 42-255-31608), Section 64, John Randon Survey, A-247, Karnes County, Texas, be considered the correlative interval for the Eagleville (Eagle Ford-1), Eagleville (Eagle Ford-1 Sour) and Eagleville (Eagle Ford-2) Fields. This interval includes the entire Eagle Ford formation and is located stratigraphically between the base of the Austin Chalk and the top of the Buda Lime formations.

EOG is proposing to drill additional horizontal wells and requests horizontal rules in order to promote the efficient and effective development of the remaining hydrocarbons. EOG requests a spacing rule that requires 330' lease line spacing for the perpendicular distance along a horizontal drainhole, 100' lease line spacing for the first and last take points and no between well spacing with special provisions for "take points", off-lease penetration point and a "box rule" for a horizontal drainhole well. EOG also proposes 100 foot "No Perf Zones" (NPZ's) for any unleased or unpooled interior tracts that would require a Statewide Rule 37 exception. EOG argues that the proposed spacing is necessary to allow drilling of horizontal wells which may have to be placed very near each other in some cases to achieve optimal fracture treatment results.

EOG also requests 80 acre oil units with the assignment of additional acreage for horizontal wells pursuant to Statewide Rule 86. EOG feels that adopting a density rule similar to the one in the Eagleville (Eagle Ford) Field will provide consistency in developing the Eagleville (Eagle Ford-1), Eagleville (Eagle Ford-1 Sour) and Eagleville (Eagle Ford-2) Fields.

Operators are currently developing the field with horizontal wellbores. EOG requests that a field rule be adopted which includes language relevant to measurement of distances to lease lines for horizontal drainhole wells. EOG's proposed rule specifies that, for purposes of lease line spacing, the nearest "take point" in a horizontal well be used. This take-point could be a perforation, if a horizontal well is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased well.

Similar rules have been adopted in other tight reservoirs, including the Newark, East (Barnett Shale), Carthage (Haynesville Shale) and Eagleville (Eagle Ford Sour) Fields.

The proposed rule would allow operators to drill horizontal wells with penetration points, as defined by Rule 86, at distances closer than 330 feet to a lease line, as long as no take-point, other than the first and last take points, is closer than 100 feet to any lease line. Horizontal drainhole length on a lease is then maximized, resulting in the additional recovery of oil. For purposes of the assignment of additional acreage pursuant to Statewide Rule 86, it is proposed that the distance between the first and last take-point in a horizontal well be used.

EOG proposes a 10% tolerance "box rule" for horizontal drainhole wells that would allow drainholes to deviate 33 feet from either side of their permitted track without the necessity of obtaining a Statewide Rule 37 exception. As drilled wells for which all points are located within the "box" would be considered in compliance with their drilling permits.

In some cases, it is beneficial to penetrate the reservoir off lease, while still having "take points" no closer to lease lines than allowed under the field rules. EOG requests that Field Rules for the subject field provide for an off-lease penetration point. Statewide Rule 86 requires that the penetration point of a horizontal drainhole be on the lease. In this field, a well generally requires approximately 800 feet of horizontal displacement to make the 90 degree turn from vertical to horizontal. If the penetration point is required to be on the lease, then the first point of production would be about 800 feet from the lease line. Since there is a requested 100' lease line spacing for the first and last take points, the proposed rule will allow approximately 700 feet of additional producing drainhole, resulting in the recovery of additional oil and gas reserves. Similar rules allowing offsite penetration points have been adopted in other fields, after notice to the mineral owners of the off-lease tract on which the penetration point is to be located and if no protest is received.

EOG submitted PVT analysis of a sample from the Dan A. Hughes Company - Darlene Lease, Well No. 1H, located approximately 15 miles west of the Milton No. 1H. The initial reservoir pressure was 5,050 psig and the reservoir is an undersaturated oil reservoir, producing at a gas-oil ratio of 477 cubic feet per barrel of oil. The bubble point was calculated to be 2,780 psig.

EOG submitted a well locator map showing the H₂S Concentration of the wells located in the proposed Eagleville (Eagle Ford-1) Field area. All of the wells had some H₂S concentration and three wells had H₂S concentrations over 100 ppm. The three wells had H₂S concentrations of 230, 400 and 780 ppm and were located in McMullen and Atascosa Counties. EOG proposes that all wells with an H₂S concentration greater than 100 ppm be included in the new Eagleville (Eagle Ford-1 Sour) Field.

The Eagle Ford formation is unique in that it contains an oil zone on top of a gas zone. Since the permeability is less than a microdarcy, EOG believes that there is no migration of fluids in the reservoir and wells only produce fluids that are contacted by the fracture treatment. As a result, the recovery factor is the same for both oil and gas wells. Since many wells in the Eagle Ford trend have high initial potentials of over 1,000 BOPD and there is no migration of reservoir fluids, EOG requests an 800 BOPD allowable and that the daily casinghead gas limitation for oil wells be eliminated. A similar rule has been adopted in other fields with horizontal wells, specifically, the Newark, East (Barnett Shale) and Eagleville (Eagle Ford Sour) Fields.

Allocation based on 100% acreage is appropriate given that the interval is not lenticular. Additionally, EOG requests that proration unit plats not be required for individual wells, but that Form P-15 be filed to designate the number of acres to be assigned to each well. EOG also requests that all over-production in the new fields be canceled.

Murphy's Evidence

Murphy requested that the assignment of additional acreage for horizontal wells be based on a formula and not pursuant to Statewide Rule 86. Murphy focused on the Giddings (Eagle Ford) Field, as it is one of the oldest Eagle Ford fields and contains 14 vertical wells and 9 horizontal wells. Murphy calculated the estimated ultimate recovery ("EUR") for each well. The average vertical well EUR was 9,000 BO and the average horizontal well had an average horizontal lateral length of 1,762 feet with an average EUR of 58,000 BO. Murphy calculated a horizontal to vertical well performance ratio of 6.54 and used this value to derive a horizontal acreage drainage factor.

Since the base unit for the Giddings (Eagle Ford) Field is 40 acres, the equivalent horizontal unit size would be 40 acres times the 6.54 ratio, or 262 acres. Murphy then derived the horizontal acreage factor by solving the standard formula of area equals the drainhole length times a factor plus the base unit. By using 262 acres for the total acreage minus the base unit of 40 and dividing by the average lateral length of 1762 feet, Murphy computed a horizontal acreage factor of 0.126. As a result, Murphy proposed that the assignment of acreage for horizontal lateral wells be based on 0.126 acres per foot of horizontal lateral length.

Murphy compared the proposed 0.126 factor to the factors currently in place in other Eagle Ford fields. The Briscoe Ranch and Eagleville Fields are both on Statewide Rule 86, which is a 0.0486 factor. In the Hawkville Field a 0.16249 factor has been adopted and in the Sugarkane Field a 0.2 factor has been adopted. Based on this analysis, Murphy felt that the 0.126 factor that was derived from the analysis of the Giddings (Eagle Ford) horizontal and vertical well EUR performance was appropriate.

San Isidro's Evidence

San Isidro requested that the Dilworth (Eagle Ford) Field located in McMullen County be excluded from the Eagleville (Eagle Ford-1) Field. The Dilworth Ranch comprises the Dilworth (Eagle Ford) Field and San Isidro is the only operator in the field. The field is under Statewide Rules and San Isidro believes that it is too early to establish temporary Field Rules, as they are still gathering data. Currently, San Isidro is drilling their sixth well and they do not think that staying with statewide rules will cause any waste, as they control the entire field.

Protestants' Evidence

The mineral owner protestants were opposed to the proposed off-lease penetration point. They felt that the notice provisions of the proposed off-lease penetration point rule should be the same as that required under Statewide Rule 86 and 38, which requires notice to all adjacent operators and unleased mineral owners. The proposed rule is similar to the provisions contained in Statewide Rule 37.

The mineral owners also opposed the Murphy request for the assignment of additional acreage for horizontal wells be based on a formula and not pursuant to Statewide Rule 86. They felt that the proposed formula would allow too much acreage to be assigned to a horizontal well and that there was not enough drainage data available in the Eagle Ford to justify the formula.

Burlington requested that the new fields only contain oil wells and suggested some wording changes to the proposed Field Rules to remove any ambiguity concerning gas wells.

EXAMINERS' OPINION

The examiners recommend that most, but not all, of the Field Rules proposed by EOG be approved as temporary field rules. The examiners recommend approval of the new field designations for the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields. The examiners also recommend approval of all of the Temporary Field Rules proposed by EOG, with the exception of the 100 foot NPZ's for any unleased or unpooled interior tracts and the new field designation of a separate field to contain all of the wells that have a H₂S concentration greater than 100 ppm.

The examiners recommend 330 foot NPZ's for any unleased or unpooled interior tracts that would require a Statewide Rule 37 exception. No micro-seismic, fracture treatment design or any other credible evidence was presented that would indicate that 100 foot NPZ's on both sides of an unleased or unpooled interior tract would prevent undue drainage across mineral property lines and protect the correlative rights of internal tract

owners. The examiners believe that 330 foot NPZ's would also be consistent with the 330 foot perpendicular lease line spacing.

In addition, the examiners recommend that the request for designation of an Eagleville (Eagle Ford-1 Sour) Field be denied and that the Eagleville (Eagle Ford-1) Field be regulated pursuant to Statewide Rule 36. All of the wells in the Eagleville (Eagle Ford-1) Field contain some concentration of H₂S and there is no way to predict which wells will have an H₂S concentration greater than 100 ppm. As a result, all wells in the field should be regulated pursuant to Statewide Rule 36 during drilling to avoid the possibility of not having the necessary safety equipment on location if H₂S was encountered.

The examiners also recommend that the five existing Eagle Ford oil fields (Dilworth, Eagleville, Leesville, Pilgram and Klotzman Fields) existing in the seven county area be consolidated into the respective Eagleville district field. Since the proposed Eagleville field areas encompass these five fields, there is no basis to exclude any of them when there is credible evidence that the Eagle Ford reservoir is continuous and contiguous across all of the county.

Likewise, the examiners recommend that the assignment of acreage to horizontal drainhole wells be based on Statewide Rule 86. Although the calculation of a horizontal acreage factor of 0.126 is based on sound engineering principles, the analysis was only on wells in the Giddings (Eagle Ford) Field which is of limited areal extent. The proposed seven county field area has not been adequately developed to justify using any other factor than that allowed under Statewide Rule 86.

The examiners agree with Burlington that EOG's proposed Field Rule No.3 contained some ambiguity as it related to the assignment of additional acreage pursuant to Statewide Rule 86 and have modified the language in the Final Order. However, the examiners do not believe that specifically excluding gas wells in either of the proposed fields has any merit.

EOG established that the Eagle Ford formation has limited permeability and there is no migration of fluids in the reservoir. Since wells only produce fluids that are contacted by the fracture treatment, the recovery factor is the same for both oil and gas wells. As a result, the examiners agree with EOG that the daily casinghead gas limitation for oil wells should be eliminated. Likewise, should a gas well be placed in either proposed field, the field can be classified as associated-prorated at that time. This field classification, along with the elimination of the daily casinghead gas limitation for oil wells, would allow both oil and gas wells to produce without being restricted by Statewide Rule 49.

FINDINGS OF FACT

1. Notice of this application and hearing was provided to all persons entitled to notice at least ten (10) days prior to the date of the hearing.

2. The Eagleville (Eagle Ford) Field was discovered in March 2009 upon completion of the Milton Unit, Well No. 1, a horizontal well drilled by EOG Resources. On initial test, the well produced 112 BOPD, 131 MCFGPD and 28 BWPD.
3. The Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields should be defined as the correlative interval from 10,294 feet to 10,580 feet as shown on the log of the EOG Resources, Inc. - Milton Unit, Well No. 1 (API No. 42-255-31608). The interval includes the entire Eagle Ford formation and is continuous and contiguous across the area.
4. Adoption of an 80 acre density rule for the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields on a temporary basis is appropriate.
 - a. The nearest Eagle Ford oil field is the Eagleville (Eagle Ford Sour) Field in Frio County, which also operates under the proposed density rule.
 - b. The calculated recoverable oil underlying 80 acres in the Eagleville (Eagle Ford Sour) Field is 191.7 MBO, which results in a drainage area of approximately 85 acres.
 - c. Lower permeability and porosity of the Eagle Ford formation will reduce the ultimate recovery and drainage area of the wells.
5. A spacing rule which utilizes “take-points” in a horizontal well for determination of distances to lease lines will not harm correlative rights.
 - a. The Eagle Ford Formation is a tight formation and is not commercially productive unless fracture-stimulated.
 - b. A take-point in a horizontal well in this field may be a perforation, if a horizontal well is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased portion of the wellbore.
 - c. “Take points” will allow the horizontal drainhole length on a lease to be maximized.
6. Field Rules that provide for 330' lease line spacing for the perpendicular distance along a horizontal drainhole, 100' lease line spacing for the first and last take points and no between well spacing with special provisions for “take points”, an off-lease penetration point and a “box rule” for horizontal wells will

provide consistency in developing the field and will allow greater flexibility in selecting future drilling locations.

7. The proposed 100 foot NPZ's on both sides of an unleased or unpooled interior tract would not prevent undue drainage across mineral property lines and would not protect the correlative rights of internal tract owners.
8. The proposed 33 foot "box rule" will allow operators reasonable minor deviations from the wellbore track that has been permitted without the need to re-permit the well.
9. Allowing an off-lease penetration point will result in maximum producing drainhole length, thereby increasing ultimate recovery from horizontal drainhole wells. The proposed rule will allow approximately an additional 700 feet of producing drainhole. To protect correlative rights, prior notice and opportunity to object should be given to the mineral owners of offsite surface locations.
10. For purposes of assignment of additional acreage pursuant to Statewide Rule 86, the distance between the first and last take-point in a horizontal well should be used.
11. Since wells only produce fluids that are contacted by the fracture treatment and the recovery factor is the same for both oil and gas wells, no casinghead gas limitation for oil wells is appropriate.
12. The five existing Eagle Ford oil fields (Dilworth, Eagleville, Leesville, Pilgram and Klotzman Fields) existing in the seven county area should be consolidated into the respective Eagleville district field.
13. The Eagleville (Eagle Ford-1) Field contains wells with H₂S concentrations over 100 ppm and should be regulated pursuant to Statewide Rule 36.
14. Since many wells in the Eagle Ford trend have high initial potentials of over 1,000 BOPD and there is no migration of reservoir fluids, an 800 BOPD allowable is appropriate for the field.
15. Allocation based on 100% acreage is a reasonable formula which will protect correlative rights of mineral owners in the field. Elimination of the requirement to file individual well proration unit plats will reduce unnecessary paperwork.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was issued.
2. All things have been accomplished or have occurred to give the Commission jurisdiction in this matter.
3. Approval of the new field designations and adoption of the Field Rules on a temporary basis for the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields as set forth herein is necessary to prevent waste, protect correlative rights and promote development of the field.
4. The proposed 100 foot NPZs on both sides of an unleased or unpooled interior tract will not protect correlative rights.
5. Cancellation of all overproduction in the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields will not cause waste and will not harm correlative rights.

RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiners recommend that the Commission approve the new field designation and Temporary Field Rules for the Eagleville (Eagle Ford-1) and Eagleville (Eagle Ford-2) Fields, as recommended by EOG, with the exception of the 100 foot NPZ's for any unleased or unpooled interior tracts and the new field designation for a separate field to contain all of the wells that have a H₂S concentration greater than 100 ppm. In addition, the examiners recommend that the five Eagle Ford oil fields in the seven subject counties be consolidated into the Eagleville (Eagle Ford-1) or Eagleville (Eagle Ford-2) Fields as appropriate and that the Eagleville (Eagle Ford-1) Field be regulated pursuant to Statewide Rule 36.

Respectfully submitted,

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James M. Doherty
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