



October 18, 2018

U.S. CERTIFIED MAIL – 91 7199 9991 7038 7703 4818

**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #201H**

Sec 4: Lot 1, SE/4NE/4, and E/2 SE/4 - T24S-R32E

Sec 9: E/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 330' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 330' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #201H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,450' and a MD of approximately 20,010' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "A. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #201H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #201H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #202H**  
Sec 4: Lot 1, SE/4NE/4, and E/2 SE/4 - T24S-R32E  
Sec 9: E/2 E/2 - T24S-R32E  
Approximate First Take Point: 100' FNL / 1310' FEL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 1310' FEL, Sec.9-T24S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #202H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,450' and a MD of approximately 20,010' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

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- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

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Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #202H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #202H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #203H**  
Sec 4: Lot 2, SW/4NE/4, W/2SE/4 - T24S-R32E  
Sec 9: W/2 E/2 - T24S-R32E  
Approximate First Take Point: 100' FNL / 2310' FEL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 2310' FEL, Sec.9-T24S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #203H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,450' and a MD of approximately 20,010' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

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Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #203H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #203H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



October 18, 2018

U.S. CERTIFIED MAIL – 91 7199 9991 7038 7703 4801

**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #204H**  
Sec 4: Lot 3, SE/4NW/4, E/2SW/4 - T24S-R32E  
Sec 33: E/2 W/2 - T23S-R32E  
Approximate First Take Point: 100' FSL / 1720' FWL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 1720' FWL, Sec.33-T23S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #204H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,450' and a MD of approximately 20,010' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "AR", followed by a horizontal line.

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #204H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #204H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #205H**  
Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E  
Sec 33: W/2 W/2 - T23S-R32E  
Approximate First Take Point: 100' FSL / 730' FWL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 730' FWL, Sec.33-T23S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #205H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,450' and a MD of approximately 20,010' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

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- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

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If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #205H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #205H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #301H**

Sec 4: Lot 1, SE/4NE/4, and E/2 SE/4 - T24S-R32E

Sec 9: E/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 330' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 330' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #301H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,685' and a MD of approximately 20,245' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

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If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #301H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #301H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #302H**

Sec 4: Lot 1, SE/4NE/4, and E/2 SE/4 - T24S-R32E

Sec 9: E/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 825' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 825' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #302H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,575' and a MD of approximately 20,135' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

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- 3 Year Primary Term
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If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #302H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #302H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #303H**  
Sec 4: Lot 2, SW/4NE/4, W/2SE/4 - T24S-R32E  
Sec 9: W/2 E/2 - T24S-R32E  
Approximate First Take Point: 100' FNL / 1520' FEL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 1520' FEL, Sec.9-T24S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #303H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,685' and a MD of approximately 20,245' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

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Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #303H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #303H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #304H**  
Sec 4: Lot 2, SW/4NE/4, W/2SE/4 - T24S-R32E  
Sec 9: W/2 E/2 - T24S-R32E  
Approximate First Take Point: 100' FNL / 1850' FEL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 1850' FEL, Sec.9-T24S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #304H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,575' and a MD of approximately 20,135' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
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- COG Operating LLC named as Operator

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Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #304H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #304H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #305H**

Sec 4: Lot 2, SW/4NE/4, W/2SE/4 - T24S-R32E

Sec 9: W/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 2490' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 2490' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #305H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,685' and a MD of approximately 20,245' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

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- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

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- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
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If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "A. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #305H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #305H.

Company: **EOG Resources Inc.** \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #306H**  
Sec 4: Lot 3, SE/4NW/4, E/2SW/4 - T24S-R32E  
Sec 33: E/2 W/2 - T23S-R32E  
Approximate First Take Point: 100' FSL / 2310' FWL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 2310' FWL, Sec.33-T23S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #306H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,575' and a MD of approximately 20,135' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "A.C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #306H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #306H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #307H**  
Sec 4: Lot 3, SE/4NW/4, E/2SW/4 - T24S-R32E  
Sec 33: E/2 W/2 - T23S-R32E  
Approximate First Take Point: 100' FSL / 1910' FWL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 1910' FWL, Sec.33-T23S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #307H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,685' and a MD of approximately 20,245' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "A.C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #307H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #307H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #308H**

Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E

Sec 33: W/2 W/2 - T23S-R32E

Approximate First Take Point: 100' FSL / 1310' FWL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 1310' FWL, Sec.33-T23S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #308H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,575' and a MD of approximately 20,135' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
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The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #308H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #308H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #309H**  
Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E  
Sec 33: W/2 W/2 - T23S-R32E  
Approximate First Take Point: 100' FSL / 920' FWL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 920' FWL, Sec.33-T23S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #309H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,685' and a MD of approximately 20,245' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

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Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #309H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #309H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #310H**

Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E

Sec 33: W/2 W/2 - T23S-R32E

Approximate First Take Point: 100' FSL / 330' FWL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 330' FWL, Sec.33-T23S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #310H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 9,575' and a MD of approximately 20,135' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$10,396,855.00, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

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- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

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- 3 Year Primary Term
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If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "AR Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #310H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #310H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #501H**

Sec 4: Lot 1, SE/4NE/4, and E/2 SE/4 - T24S-R32E

Sec 9: E/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 330' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 330' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #501H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,600' and a MD of approximately 21,160' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385.00 and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

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- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #501H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #501H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #502H**

Sec 4: Lot 1, SE/4NE/4, and E/2 SE/4 - T24S-R32E

Sec 9: E/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 990' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 990' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #502H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,840' and a MD of approximately 21,400' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385 and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

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- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

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Respectfully,

A handwritten signature in blue ink, appearing to read "A. C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #502H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #502H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #503H**  
Sec 4: Lot 2, SW/4NE/4, W/2SE/4 - T24S-R32E  
Sec 9: W/2 E/2 - T24S-R32E  
Approximate First Take Point: 100' FNL / 1650' FEL, Sec.4-T24S-R32E  
Approximate Last Take Point: 100' FSL / 1650' FEL, Sec.9-T24S-R32E  
Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #503H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,600' and a MD of approximately 21,160' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 1, 2, S2NE and SE/4 of Sec. 4-T24S-R32E and the E/2 of Sec. 9-T24S-R32E. It has the following general provisions:

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Respectfully,

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Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #503H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #503H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #504H**

Sec 4: Lot 2, SW/4NE/4, W/2SE/4 - T24S-R32E

Sec 9: W/2 E/2 - T24S-R32E

Approximate First Take Point: 100' FNL / 2310' FEL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 2310' FEL, Sec.9-T24S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #504H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,840' and a MD of approximately 21,400' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

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Respectfully,

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Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #504H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #504H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #505H**

Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E

Sec 33: W/2 W/2 - T23S-R32E

Approximate First Take Point: 100' FSL / 990' FWL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 990' FWL, Sec.33-T23S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #505H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,840' and a MD of approximately 21,400' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

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- \$7,000/\$700 Drilling and Producing Rate
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If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #505H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #505H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_





**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #506H**

Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E

Sec 33: W/2 W/2 - T23S-R32E

Approximate First Take Point: 100' FSL / 330' FWL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 330' FWL, Sec.33-T23S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #506H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,600' and a MD of approximately 21,160' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
- 3 Year Primary Term
- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

Respectfully,

A handwritten signature in blue ink, appearing to read "Adam C. Reker".

Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #506H.

\_\_\_\_\_ I/We hereby elect **not** to participate in the Mastiff Federal Com #506H.

Company: **EOG Resources Inc.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**EOG Resources Inc.**  
5509 Champions Drive  
Midland, TX 79706  
Attention: Land Department

**Re: Well Proposal – Mastiff Federal Com #507H**

Sec 4: Lot 4, SW/4NW/4, and W/2SW/4 - T24S-R32E

Sec 33: W/2 W/2 - T23S-R32E

Approximate First Take Point: 100' FSL / 330' FWL, Sec.4-T24S-R32E

Approximate Last Take Point: 100' FSL / 330' FWL, Sec.33-T23S-R32E

Lea County, New Mexico

Dear Sir/Madam:

COG Operating LLC (COG), as Operator, hereby proposes the drilling and completion of the Mastiff Federal Com #507H well as a horizontal well at the above-captioned location, or at a legal location as approved by the governing regulatory agency, to a TVD of approximately 10,840' and a MD of approximately 21,400' to test the Bone Spring Formation ("Operation"). Surface Hole Location and Bottom Hole Location to be determined in accordance with COG's operating plans and surface restrictions on the property. The total cost of the Operation is estimated to be \$11,800,385, and a detailed description of the cost is set out in the enclosed Authority for Expenditure ("AFE").

COG is proposing to drill this well under the terms of the modified 1989 AAPL form of Operating Agreement which is enclosed for your review and approval. The Operating Agreement's contract lands will cover the Lots 3 and 4, S/2NW/4, and SW/4 of Sec. 4-T24S-R32E and the W/2 of Sec. 33-T23S-R32E. It has the following general provisions:

- 100/300 Non-Consenting Penalty
- \$7,000/\$700 Drilling and Producing Rate
- COG Operating LLC named as Operator

Please indicate your participation election in the space provided below, sign and return this letter, along with a signed copy of the enclosed AFE and a copy of your geologic well requirements. A self-addressed, postage paid envelope is enclosed for your convenience. If you do not wish to participate, COG would like to term assign your leasehold under the following general terms:

- Reservation unto Assignor of the positive difference, if any, between existing burdens and 20%
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- \$3,000/ Net Acre Bonus Consideration

The term assignment offer is subject to the approval of COG's management and verification of title.

If an agreement cannot be reached within 30 days of the date of this letter, COG will apply to the New Mexico Oil Conservation Division for compulsory pooling of your interest into a spacing unit for the proposed well if uncommitted at such time.



If you have any questions, please do not hesitate to contact the undersigned at (432) 685-2515.

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Adam C. Reker  
Landman

\_\_\_\_\_ I/We hereby elect to participate in the Mastiff Federal Com #507H.

\_\_\_\_\_ I/We hereby elect not to participate in the Mastiff Federal Com #507H.

Company: EOG Resources Inc.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



WELL NAME:	MASTIFF FED COM #201H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 330 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 330 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,010
LEGAL:	Sec 4-24S-32E	TVD:	9,450

		Drlq - Rig		Tank Btty		Pmpg			
INTANGIBLE COSTS		Release(D)	Completion(C)	Constrctn(TB)	Equipment(PEQ)	TOTAL			
Title/Curative/Permit	201	20,000						20,000	
Insurance	202	2,500	302					2,500	
Damages/Right of Way	203	20,000	303	351				20,000	
Survey/Stake Location	204	7,000		352				7,000	
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366	190,000	
Drilling / Completion Overhead	206	7,500	306	15,000				22,500	
Turnkey Contract	207	0						0	
Footage Contract	208	0						0	
Daywork Contract	209	495,000						495,000	
Directional Drilling Services	210	186,000						186,000	
Frac Equipment			307	1,418,000				1,418,000	
Frac Chemicals			308	513,000				513,000	
Frac Proppant			309	404,000				404,000	
Frac Proppant Transportation			310	399,000				399,000	
Fuel & Power	211	98,000	311	68,000	354		367	166,000	
Water	212	60,000	312	1,019,000			368	1,079,000	
Bits	213	92,000	313	12,000			369	104,000	
Mud & Chemicals	214	70,000	314	20,000			370	90,000	
Drill Stem Test	215	0	315					0	
Coring & Analysis	216	0						0	
Cement Surface	217	25,500						25,500	
Cement Intermediate	218	35,000						35,000	
Cement 2nd Intermediate/Production	219	130,000						130,000	
Cement Squeeze & Other (Kickoff Plug)	220	0					371	0	
Float Equipment & Centralizers	221	32,500						32,500	
Casing Crews & Equipment	222	39,000						39,000	
Fishing Tools & Service	223	0	323				372	0	
Geologic/Engineering	224	6,000	324		355		373	6,000	
Contract Labor	225	6,500	325	40,000	356	122,935	374	175,935	
Company Supervision	226	32,400	326	15,000	357		375	47,400	
Contract Supervision	227	85,000	327	182,000	358		376	272,000	
Testing Casing/Tubing	228	30,000	328	5,000			377	35,000	
Mud Logging Unit	229	28,000	329					28,000	
Logging	230	0					378	0	
Perforating/Wireline Services	231	4,000	331	538,000			379	542,000	
Stimulation/Treating			332	12,000			380	12,000	
Completion Unit			333	90,000			381	98,800	
Swabbing Unit			334				382	0	
Rentals-Surface	235	125,000	335	466,000	359		383	598,000	
Rentals-Subsurface	236	110,000	336	80,000			384	190,000	
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	243,000	
Welding Services	238	3,000	338	5,000	361		386	8,000	
Water Disposal	239	0	339	60,000	362	135,000	387	195,000	
Plug to Abandon	240	0	340					0	
Seismic Analysis	241	0	341					0	
Miscellaneous	242	0	342				389	0	
Contingency	243	42,000	343	250,000	363		390	292,000	
Closed Loop & Environmental	244	220,000	344	5,000	364		388	225,000	
Dyed Diesel	245		345	484,000					
Coil Tubing			346					0	
Flowback Crews & Equip			347	48,000				48,000	
Offset Directional/Frac	248		348				391	0	
TOTAL INTANGIBLES		2,346,900		6,198,000		302,935		30,300	8,878,135

TANGIBLE COSTS									
Surface Casing	401		48,000						48,000
Intermediate Casing	402		174,000						174,000
Production Casing/Liner	403		327,000						327,000
Tubing		504	52,030			530	5,000		57,030
Wellhead Equipment	405	60,000	505	18,700			531	3,000	81,700
Pumping Unit							506	96,000	96,000
Prime Mover							507		0
Rods							508	35,000	35,000
Pumps-Sub Surface (BH)			509				532	5,000	5,000
Tanks				510	63,645.00				63,645
Flowlines				511	26,593.00				26,593
Heater Treater/Separator				512	140,007.00				140,007
Electrical System				513	130,000.00	533	15,000		145,000
Packers/Anchors/Hangers	414	514	65,000			534	2,000		67,000
Couplings/Fittings/Valves	415			515	102,282				102,282
Dehydration				517					0
Injection Plant/CO2 Equipment				518					0
Pumps-Surface				521	5,000				5,000
Instrumentation/SCADA/POC				522	10,482	529	7,000		17,482
Miscellaneous	419	519		523	5,241	535	3,000		8,241
Contingency	420	520		524		536			0
Meters/LACT				525	25,156				25,156
Flares/Combustors/Emission				526	23,584				23,584
Gas Lift/Compression		527	11,000	516	60,000	528			71,000
<b>TOTAL TANGIBLES</b>		609,000	146,730		591,990		171,000		1,518,720
<b>TOTAL WELL COSTS</b>		2,955,900	6,345,000		894,925		201,300		10,396,855

% of

28%

61%

9%

2%

COG Operating LLC

Date Prepared: 10/18/18

COG Operating LLC 

We approve: \_\_\_\_\_  
 \_\_\_\_\_ % Working Interest

By: \_\_\_\_\_ MB

Company: \_\_\_\_\_  
By: \_\_\_\_\_

Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #202H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 1310 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 1310 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,010
LEGAL:	Sec 4-24S-32E	TVD:	9,450

INTANGIBLE COSTS		Drig - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpg Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000
Drilling / Completion Overhead	206	7,500	306	15,000	366	
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	367
Water	212	60,000	312	1,019,000		368
Bits	213	92,000	313	12,000		369
Mud & Chemicals	214	70,000	314	20,000		370
Drill Stem Test	215	0	315			
Coring & Analysis	216	0				
Cement Surface	217	25,500				
Cement Intermediate	218	35,000				
Cement 2nd Intermediate/Production	219	130,000				
Cement Squeeze & Other (Kickoff Plug)	220	0			371	
Float Equipment & Centralizers	221	32,500				
Casing Crews & Equipment	222	39,000				
Fishing Tools & Service	223	0	323			372
Geologic/Engineering	224	6,000	324			373
Contract Labor	225	6,500	325	40,000	356	122,935
Company Supervision	226	32,400	326	15,000	357	
Contract Supervision	227	85,000	327	182,000	358	
Testing Casing/Tubing	228	30,000	328	5,000		376
Mud Logging Unit	229	28,000	329			377
Logging	230	0				378
Perforating/Wireline Services	231	4,000	331	538,000		379
Stimulation/Treating			332	12,000		380
Completion Unit			333	90,000		381
Swabbing Unit			334			382
Rentals-Surface	235	125,000	335	466,000	359	383
Rentals-Subsurface	236	110,000	336	80,000		384
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	385
Welding Services	238	3,000	338	5,000	361	386
Water Disposal	239	0	339	60,000	362	135,000
Plug to Abandon	240	0	340			387
Seismic Analysis	241	0	341			
Miscellaneous	242	0	342			389
Contingency	243	42,000	343	250,000	363	390
Closed Loop & Environmental	244	220,000	344	5,000	364	388
Dyed Diesel	245		345	484,000		
Coil Tubing			346			
Flowback Crews & Equip			347	48,000		
Offset Directional/Frac	248		348			391
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030		530
Wellhead Equipment	405	60,000	505	18,700		531
Pumping Unit						506
Prime Mover						507
Rods						508
Pumps-Sub Surface (BH)			509			532
Tanks						510
Flowlines						511
Heater Treater/Separator						512
Electrical System						513
Packers/Anchors/Hangers	414		514	65,000		533
Couplings/Fittings/Valves	415					534
Dehydration						515
Injection Plant/CO2 Equipment						517
Pumps-Surface						518
Instrumentation/SCADA/POC						521
Miscellaneous	419		519			522
Contingency	420		520			523
Meters/LACT						524
Flares/Combustors/Emission						525
Gas Lift/Compression			527	11,000		526
TOTAL TANGIBLES		609,000		146,730		516
TOTAL WELL COSTS		2,955,900		6,345,000		894,925

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
Date Prepared: 10/18/18					
COG Operating LLC <i>ACR</i>					
By: MB					
We approve: _____					
% Working Interest					
Company: _____					
By: _____					
Printed Name: _____					
Title: _____					
Date: _____					
This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.					



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #203H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 2310 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 2310 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,010
LEGAL:	Sec 4-24S-32E	TVD:	9,450

INTANGIBLE COSTS		Drlg - Rig		Completion(C)		Tank Btty		Pmpg		TOTAL	
		Release(D)				Constrctn(TB)		Equipment(PEQ)			
Title/Curative/Permit	201	20,000									20,000
Insurance	202	2,500	302								2,500
Damages/Right of Way	203	20,000	303		351						20,000
Survey/Stake Location	204	7,000			352						7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366				190,000
Drilling / Completion Overhead	206	7,500	306	15,000							22,500
Turnkey Contract	207	0									0
Footage Contract	208	0									0
Daywork Contract	209	495,000									495,000
Directional Drilling Services	210	186,000									186,000
Frac Equipment			307	1,418,000							1,418,000
Frac Chemicals			308	513,000							513,000
Frac Proppant			309	404,000							404,000
Frac Proppant Transportation			310	399,000							399,000
Fuel & Power	211	98,000	311	68,000	354		367				166,000
Water	212	60,000	312	1,019,000			368				1,079,000
Bits	213	92,000	313	12,000			369				104,000
Mud & Chemicals	214	70,000	314	20,000			370				90,000
Drill Stem Test	215	0	315								0
Coring & Analysis	216	0									0
Cement Surface	217	25,500									25,500
Cement Intermediate	218	35,000									35,000
Cement 2nd Intermediate/Production	219	130,000									130,000
Cement Squeeze & Other (Kickoff Plug)	220	0					371				0
Float Equipment & Centralizers	221	32,500									32,500
Casing Crews & Equipment	222	39,000									39,000
Fishing Tools & Service	223	0	323				372				0
Geologic/Engineering	224	6,000	324		355		373				6,000
Contract Labor	225	6,500	325	40,000	356	122,935	374	6,500			175,935
Company Supervision	226	32,400	326	15,000	357		375				47,400
Contract Supervision	227	85,000	327	182,000	358		376	5,000			272,000
Testing Casing/Tubing	228	30,000	328	5,000			377				35,000
Mud Logging Unit	229	28,000	329								28,000
Logging	230	0					378				0
Perforating/Wireline Services	231	4,000	331	538,000			379				542,000
Stimulation/Treating			332	12,000			380				12,000
Completion Unit			333	90,000			381	8,800			98,800
Swabbing Unit			334				382				0
Rentals-Surface	235	125,000	335	466,000	359		383	7,000			598,000
Rentals-Subsurface	236	110,000	336	80,000			384				190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000			243,000
Welding Services	238	3,000	338	5,000	361		386				8,000
Water Disposal	239	0	339	60,000	362	135,000	387				195,000
Plug to Abandon	240	0	340								0
Seismic Analysis	241	0	341								0
Miscellaneous	242	0	342				389				0
Contingency	243	42,000	343	250,000	363		390				292,000
Closed Loop & Environmental	244	220,000	344	5,000	364		388				225,000
Dyed Diesel	245		345	484,000							
Coil Tubing			346								0
Flowback Crews & Equip			347	48,000							48,000
Offset Directional/Frac	248		348				391				0
TOTAL INTANGIBLES		2,346,900		6,198,000		302,935		30,300			8,878,135

TANGIBLE COSTS									
Surface Casing	401	48,000							48,000
Intermediate Casing	402	174,000							174,000
Production Casing/Liner	403	327,000							327,000
Tubing			504	52,030			530	5,000	57,030
Wellhead Equipment	405	60,000	505	18,700			531	3,000	81,700
Pumping Unit							506	96,000	96,000
Prime Mover							507		0
Rods							508	35,000	35,000
Pumps-Sub Surface (BH)			509				532	5,000	5,000
Tanks					510	63,645.00			63,645
Flowlines					511	26,593.00			26,593
Heater Treater/Separator					512	140,007.00			140,007
Electrical System					513	130,000.00	533	15,000	145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000	67,000
Couplings/Fittings/Valves	415				515	102,282			102,282
Dehydration					517				0
Injection Plant/CO2 Equipment					518				0
Pumps-Surface					521	5,000			5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000	17,482
Miscellaneous	419		519		523	5,241	535	3,000	8,241
Contingency	420		520		524		536		0
Meters/LACT					525	25,156			25,156
Flares/Combustors/Emission					526	23,584			23,584
Gas Lift/Compression			527	11,000	516	60,000	528		71,000
TOTAL TANGIBLES		609,000		146,730		591,990		171,000	1,518,720
TOTAL WELL COSTS		2,955,900		6,345,000		894,925		201,300	10,396,855

COG Operating LLC

Date Prepared: 10/18/18

We approve:  
% Working Interest

COG Operating LLC

By: MB

Company:  
By:

Printed Name:  
Title:  
Date:

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #204H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 1720 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 1720 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,010
LEGAL:	Sec 4-24S-32E	TVD:	9,450

INTANGIBLE COSTS		Drig - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL			
Title/Curative/Permit	201	20,000				20,000			
Insurance	202	2,500	302			2,500			
Damages/Right of Way	203	20,000	303	351		20,000			
Survey/Stake Location	204	7,000		352		7,000			
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366	190,000	
Drilling / Completion Overhead	206	7,500	306	15,000				22,500	
Turnkey Contract	207	0						0	
Footage Contract	208	0						0	
Daywork Contract	209	495,000						495,000	
Directional Drilling Services	210	186,000						186,000	
Frac Equipment			307	1,418,000				1,418,000	
Frac Chemicals			308	513,000				513,000	
Frac Proppant			309	404,000				404,000	
Frac Proppant Transportation			310	399,000				399,000	
Fuel & Power	211	98,000	311	68,000	354		367	166,000	
Water	212	60,000	312	1,019,000			368	1,079,000	
Bits	213	92,000	313	12,000			369	104,000	
Mud & Chemicals	214	70,000	314	20,000			370	90,000	
Drill Stem Test	215	0	315					0	
Coring & Analysis	216	0						0	
Cement Surface	217	25,500						25,500	
Cement Intermediate	218	35,000						35,000	
Cement 2nd Intermediate/Production	219	130,000						130,000	
Cement Squeeze & Other (Kickoff Plug)	220	0					371	0	
Float Equipment & Centralizers	221	32,500						32,500	
Casing Crews & Equipment	222	39,000						39,000	
Fishing Tools & Service	223	0	323				372	0	
Geologic/Engineering	224	6,000	324		355		373	6,000	
Contract Labor	225	6,500	325	40,000	356	122,935	374	6,500	175,935
Company Supervision	226	32,400	326	15,000	357		375	47,400	
Contract Supervision	227	85,000	327	182,000	358		376	5,000	272,000
Testing Casing/Tubing	228	30,000	328	5,000			377	35,000	
Mud Logging Unit	229	28,000	329					28,000	
Logging	230	0					378	0	
Perforating/Wireline Services	231	4,000	331	538,000			379	542,000	
Stimulation/Treating			332	12,000			380	12,000	
Completion Unit			333	90,000			381	8,800	98,800
Swabbing Unit			334				382	0	
Rentals-Surface	235	125,000	335	466,000	359		383	7,000	598,000
Rentals-Subsurface	236	110,000	336	80,000			384	190,000	
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000	243,000
Welding Services	238	3,000	338	5,000	361		386	8,000	
Water Disposal	239	0	339	60,000	362	135,000	387	195,000	
Plug to Abandon	240	0	340					0	
Seismic Analysis	241	0	341					0	
Miscellaneous	242	0	342				389	0	
Contingency	243	42,000	343	250,000	363		390	292,000	
Closed Loop & Environmental	244	220,000	344	5,000	364		388	225,000	
Dyed Diesel	245		345	484,000					
Coil Tubing			346					0	
Flowback Crews & Equip			347	48,000				48,000	
Offset Directional/Frac	248		348				391	0	
TOTAL INTANGIBLES		2,346,900		6,198,000		302,935		30,300	8,878,135

TANGIBLE COSTS									
Surface Casing	401	48,000							48,000
Intermediate Casing	402	174,000							174,000
Production Casing/Liner	403	327,000							327,000
Tubing			504	52,030			530	5,000	57,030
Wellhead Equipment	405	60,000	505	18,700			531	3,000	81,700
Pumping Unit							506	96,000	96,000
Prime Mover							507		0
Rods							508	35,000	35,000
Pumps-Sub Surface (BH)			509				532	5,000	5,000
Tanks					510	63,645.00			63,645
Flowlines					511	26,593.00			26,593
Heater Treater/Separator					512	140,007.00			140,007
Electrical System					513	130,000.00	533	15,000	145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000	67,000
Couplings/Fittings/Valves	415				515	102,282			102,282
Dehydration					517				0
Injection Plant/CO2 Equipment					518				0
Pumps-Surface					521	5,000			5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000	17,482
Miscellaneous	419		519		523	5,241	535	3,000	8,241
Contingency	420		520		524		536		0
Meters/LACT					525	25,156			25,156
Flares/Combustors/Emission					526	23,584			23,584
Gas Lift/Compression			527	11,000	516	60,000	528		71,000
TOTAL TANGIBLES		609,000		146,730		591,990		171,000	1,518,720
TOTAL WELL COSTS		2,955,900		6,345,000		894,925		201,300	10,396,855

% of Total Well Cost		28%	61%	9%	2%
COG Operating LLC					
<hr/>		<hr/>			
		Date Prepared: 10/18/18			
		COG Operating LLC <i>AIR</i>			
We approve:					
<hr/>		<hr/>			
% Working Interest		By: MB			
		<hr/>			
Company:					
<hr/>					
By:					
<hr/>					
Printed Name:					
<hr/>					
Title:					
<hr/>					
Date:					
<hr/>					
		This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.			



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #205H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 730 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 730 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,010
LEGAL:	Sec 4-24S-32E	TVD:	9,450

INTANGIBLE COSTS		Drilq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpg Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000
Drilling / Completion Overhead	206	7,500	306	15,000	366	
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	
Water	212	60,000	312	1,019,000	367	
Bits	213	92,000	313	12,000	368	
Mud & Chemicals	214	70,000	314	20,000	369	
Drill Stem Test	215	0	315		370	
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	356	122,935
Company Supervision	226	32,400	326	15,000	357	
Contract Supervision	227	85,000	327	182,000	358	
Testing Casing/Tubing	228	30,000	328	5,000	376	5,000
Mud Logging Unit	229	28,000	329		377	
Logging	230	0				28,000
Perforating/Wireline Services	231	4,000	331	538,000	378	0
Stimulation/Treating			332	12,000	379	
Completion Unit			333	90,000	380	12,000
Swabbing Unit			334		381	8,800
Rentals-Surface	235	125,000	335	466,000	382	0
Rentals-Subsurface	236	110,000	336	80,000	383	7,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	384	
Welding Services	238	3,000	338	5,000	385	3,000
Water Disposal	239	0	339	60,000	386	
Plug to Abandon	240	0	340		387	135,000
Seismic Analysis	241	0	341			
Miscellaneous	242	0	342		389	
Contingency	243	42,000	343	250,000	390	
Closed Loop & Environmental	244	220,000	344	5,000	388	
Dyed Diesel	245		345	484,000		
Coil Tubing			346			
Flowback Crews & Equip			347	48,000		
Offset Directional/Frac	248		348		391	
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS									
Surface Casing	401	48,000							48,000
Intermediate Casing	402	174,000							174,000
Production Casing/Liner	403	327,000							327,000
Tubing			504	52,030			530	5,000	57,030
Wellhead Equipment	405	60,000	505	18,700			531	3,000	81,700
Pumping Unit							536	96,000	96,000
Prime Mover							507		0
Rods							508	35,000	35,000
Pumps-Sub Surface (BH)			509				532	5,000	5,000
Tanks					510	63,645.00			63,645
Flowlines					511	26,593.00			26,593
Heater Treater/Separator					512	140,007.00			140,007
Electrical System					513	130,000.00	533	15,000	145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000	67,000
Couplings/Fittings/Valves	415				515	102,282			102,282
Dehydration					517				0
Injection Plant/CO2 Equipment					518				0
Pumps-Surface					521	5,000			5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000	17,482
Miscellaneous	419		519		523	5,241	535	3,000	8,241
Contingency	420		520		524		536		0
Meters/LACT					525	25,156			25,156
Flares/Combustors/Emission					526	23,584			23,584
Gas Lift/Compression			527	11,000	516	60,000	528		71,000
TOTAL TANGIBLES		609,000		146,730		591,990		171,000	1,518,720
TOTAL WELL COSTS		2,955,900		6,345,000		894,925		201,300	10,396,855

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
Date Prepared: 10/18/18					
COG Operating LLC <i>ALB</i>					
We approve: _____					
% Working Interest					
By: _____					
Company: _____					
By: _____					
Printed Name: _____					
Title: _____					
Date: _____					
This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.					



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #301H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 330 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 330 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,245
LEGAL:	Sec 4-24S-32E	TVD:	9,685

INTANGIBLE COSTS		Drig - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	45,000	366	190,000
Drilling / Completion Overhead	206	7,500	306	15,000		22,500
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	367	166,000
Water	212	60,000	312	1,019,000	368	1,079,000
Bits	213	92,000	313	12,000	369	104,000
Mud & Chemicals	214	70,000	314	20,000	370	90,000
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	374	175,935
Company Supervision	226	32,400	326	15,000	375	47,400
Contract Supervision	227	85,000	327	182,000	376	272,000
Testing Casing/Tubing	228	30,000	328	5,000	377	35,000
Mud Logging Unit	229	28,000	329			28,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	90,000	381	98,800
Swabbing Unit			334		382	0
Rentals-Surface	235	125,000	335	466,000	383	598,000
Rentals-Subsurface	236	110,000	336	80,000	384	190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	385	243,000
Welding Services	238	3,000	338	5,000	386	8,000
Water Disposal	239	0	339	60,000	387	195,000
Plug to Abandon	240	0	340			0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342		389	0
Contingency	243	42,000	343	250,000	390	292,000
Closed Loop & Environmental	244	220,000	344	5,000	388	225,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346			0
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	57,030
Wellhead Equipment	405	60,000	505	18,700	531	81,700
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	145,000
Packers/Anchors/Hangers	414		514	65,000	534	67,000
Couplings/Fittings/Valves	415			515	102,282	102,282
Dehydration				517		0
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	5,000
Instrumentation/SCADA/POC				522	10,482	17,482
Miscellaneous	419		519	523	5,241	8,241
Contingency	420		520	524		0
Meters/LACT				525	25,156	25,156
Flares/Combustors/Emission				526	23,584	23,584
Gas Lift/Compression			527	11,000	516	71,000
TOTAL TANGIBLES		609,000	146,730	591,990	171,000	1,518,720
TOTAL WELL COSTS		2,955,900	6,345,000	894,925	201,300	10,396,855

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
		Date Prepared: 10/18/18			
We approve:		COG Operating LLC <i>ALR</i>			
_____% Working Interest		By: MB			
Company:					
By:					
Printed Name:					
Title:					
Date:					
		This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.			



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #302H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 825 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 825 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,135
LEGAL:	Sec 4-24S-32E	TVD:	9,575

INTANGIBLE COSTS		Drilq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	353	45,000	190,000
Drilling / Completion Overhead	206	7,500	306		366	22,500
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	166,000
Water	212	60,000	312	1,019,000	367	1,079,000
Bits	213	92,000	313	12,000	368	104,000
Mud & Chemicals	214	70,000	314	20,000	369	90,000
Drill Stem Test	215	0	315		370	0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	356	175,935
Company Supervision	226	32,400	326	15,000	357	47,400
Contract Supervision	227	85,000	327	182,000	358	272,000
Testing Casing/Tubing	228	30,000	328	5,000	376	35,000
Mud Logging Unit	229	28,000	329		377	28,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	90,000	381	98,800
Swabbing Unit			334		382	0
Rentals-Surface	235	125,000	335	466,000	359	598,000
Rentals-Subsurface	236	110,000	336	80,000	384	190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	243,000
Welding Services	238	3,000	338	5,000	361	8,000
Water Disposal	239	0	339	60,000	362	195,000
Plug to Abandon	240	0	340		387	0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342		389	0
Contingency	243	42,000	343	250,000	363	292,000
Closed Loop & Environmental	244	220,000	344	5,000	364	225,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346			0
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	57,030
Wellhead Equipment	405	60,000	505	18,700	531	81,700
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	145,000
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415			515	102,282	67,000
Dehydration				517		102,282
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	0
Instrumentation/SCADA/POC				522	10,482	5,000
Miscellaneous	419		519	523	5,241	7,000
Contingency	420		520	524		3,000
Meters/LACT				525	25,156	8,241
Flares/Combustors/Emission				526	23,584	0
Gas Lift/Compression			527	11,000	516	25,156
TOTAL TANGIBLES		609,000	146,730	591,990	528	23,584
TOTAL WELL COSTS		2,955,900	6,345,000	894,925		71,000

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
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Date Prepared:10/18/18

COG Operating LLC

By:MB

We approve:  
% Working Interest

Company:  
By:

Printed Name:  
Title:  
Date:

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #303H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 1520 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 1520 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,245
LEGAL:	Sec 4-24S-32E	TVD:	9,685

INTANGIBLE COSTS		Drilq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	45,000	190,000
Drilling / Completion Overhead	206	7,500	306	15,000		22,500
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	166,000
Water	212	60,000	312	1,019,000	367	1,079,000
Bits	213	92,000	313	12,000	368	104,000
Mud & Chemicals	214	70,000	314	20,000	369	90,000
Drill Stem Test	215	0	315		370	0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	356	175,935
Company Supervision	226	32,400	326	15,000	357	47,400
Contract Supervision	227	85,000	327	182,000	358	272,000
Testing Casing/Tubing	228	30,000	328	5,000	376	35,000
Mud Logging Unit	229	28,000	329		377	28,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	90,000	381	98,800
Swabbing Unit			334		382	0
Rentals-Surface	235	125,000	335	466,000	359	598,000
Rentals-Subsurface	236	110,000	336	80,000	383	190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	384	243,000
Welding Services	238	3,000	338	5,000	385	8,000
Water Disposal	239	0	339	60,000	361	195,000
Plug to Abandon	240	0	340		387	0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342		389	0
Contingency	243	42,000	343	250,000	363	292,000
Closed Loop & Environmental	244	220,000	344	5,000	364	225,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346			0
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	57,030
Wellhead Equipment	405	60,000	505	18,700	531	81,700
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	145,000
Packers/Anchors/Hangers	414		514	65,000	533	67,000
Couplings/Fittings/Valves	415			515	102,282	102,282
Dehydration				517		0
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	5,000
Instrumentation/SCADA/POC				522	10,482	17,482
Miscellaneous	419		519	523	5,241	8,241
Contingency	420		520	524		0
Meters/LACT				525	25,156	25,156
Flares/Combustors/Emission				526	23,584	23,584
Gas Lift/Compression			527	11,000	516	71,000
TOTAL TANGIBLES		609,000	146,730	591,990	171,000	1,518,720
TOTAL WELL COSTS		2,955,900	6,345,000	894,925	201,300	10,396,855

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
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Date Prepared:10/18/18

COG Operating LLC

We approve:  
% Working Interest

Company:  
By:

Printed Name:  
Title:  
Date:

By:MB

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #304H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 1850 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 1850 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,135
LEGAL:	Sec 4-24S-32E	TVD:	9,575

INTANGIBLE COSTS		Drilg - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	45,000	366	190,000
Drilling / Completion Overhead	206	7,500	306			22,500
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	367	166,000
Water	212	60,000	312	1,019,000	368	1,079,000
Bits	213	92,000	313	12,000	369	104,000
Mud & Chemicals	214	70,000	314	20,000	370	90,000
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	374	175,935
Company Supervision	226	32,400	326	15,000	375	47,400
Contract Supervision	227	85,000	327	182,000	376	272,000
Testing Casing/Tubing	228	30,000	328	5,000	377	35,000
Mud Logging Unit	229	28,000	329			28,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	90,000	381	98,800
Swabbing Unit			334		382	0
Rentals-Surface	235	125,000	335	466,000	383	598,000
Rentals-Subsurface	236	110,000	336	80,000	384	190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	385	243,000
Welding Services	238	3,000	338	5,000	386	8,000
Water Disposal	239	0	339	60,000	387	195,000
Plug to Abandon	240	0	340			0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342		389	0
Contingency	243	42,000	343	250,000	390	292,000
Closed Loop & Environmental	244	220,000	344	5,000	388	225,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346			0
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	57,030
Wellhead Equipment	405	60,000	505	18,700	531	81,700
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	145,000
Packers/Anchors/Hangers	414		514	65,000	534	67,000
Couplings/Fittings/Valves	415			515	102,282	102,282
Dehydration				517		0
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	5,000
Instrumentation/SCADA/POC				522	10,482	17,482
Miscellaneous	419		519	5,241	535	8,241
Contingency	420		520		536	0
Meters/LACT				525	25,156	25,156
Flares/Combustors/Emission				526	23,584	23,584
Gas Lift/Compression			527	11,000	528	71,000
TOTAL TANGIBLES		609,000	146,730	591,990	171,000	1,518,720
TOTAL WELL COSTS		2,955,900	6,345,000	894,925	201,300	10,396,855

COG Operating LLC		% of Total Well Cost	28%	61%	9%	2%
		Date Prepared:	10/18/18			
We approve:		COG Operating LLC	KCA			
_____% Working Interest		By:	MB			
Company:						
By:						
Printed Name:						
Title:						
Date:		This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.				



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #305H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 2490 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 2490 FEL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,245
LEGAL:	Sec 4-24S-32E	TVD:	9,685

INTANGIBLE COSTS		Drilg - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	45,000	366	190,000
Drilling / Completion Overhead	206	7,500	306			22,500
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	367	166,000
Water	212	60,000	312	1,019,000	368	1,079,000
Bits	213	92,000	313	12,000	369	104,000
Mud & Chemicals	214	70,000	314	20,000	370	90,000
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	374	175,935
Company Supervision	226	32,400	326	15,000	375	47,400
Contract Supervision	227	85,000	327	182,000	376	272,000
Testing Casing/Tubing	228	30,000	328	5,000	377	35,000
Mud Logging Unit	229	28,000	329			28,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	90,000	381	98,800
Swabbing Unit			334		382	0
Rentals-Surface	235	125,000	335	466,000	383	598,000
Rentals-Subsurface	236	110,000	336	80,000	384	190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	385	243,000
Welding Services	238	3,000	338	5,000	386	8,000
Water Disposal	239	0	339	60,000	387	195,000
Plug to Abandon	240	0	340			0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342		389	0
Contingency	243	42,000	343	250,000	390	292,000
Closed Loop & Environmental	244	220,000	344	5,000	388	225,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346			0
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	57,030
Wellhead Equipment	405	60,000	505	18,700	531	81,700
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	145,000
Packers/Anchors/Hangers	414		514	65,000	534	67,000
Couplings/Fittings/Valves	415			515	102,282	102,282
Dehydration				517		0
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	5,000
Instrumentation/SCADA/POC				522	10,482	17,482
Miscellaneous	419		519	523	5,241	8,241
Contingency	420		520	524		0
Meters/LACT				525	25,156	25,156
Flares/Combustors/Emission				526	23,584	23,584
Gas Lift/Compression			527	11,000	516	71,000
TOTAL TANGIBLES		609,000	146,730	591,990	171,000	1,518,720
TOTAL WELL COSTS		2,955,900	6,345,000	894,925	201,300	10,396,855

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
Date Prepared: 10/18/18					
COG Operating LLC <i>ACA</i>					
We approve: _____					
% Working Interest					
By: _____ MB					
Company: _____					
By: _____					
Printed Name: _____					
Title: _____					
Date: _____					
This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.					



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #306H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 2310 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 2310 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,135
LEGAL:	Sec 4-24S-32E	TVD:	9,575

INTANGIBLE COSTS		Drilg - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000
Drilling / Completion Overhead	206	7,500	306	15,000	366	
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	367
Water	212	60,000	312	1,019,000	368	
Bits	213	92,000	313	12,000	369	
Mud & Chemicals	214	70,000	314	20,000	370	
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	356	122,935
Company Supervision	226	32,400	326	15,000	357	375
Contract Supervision	227	85,000	327	182,000	358	376
Testing Casing/Tubing	228	30,000	328	5,000	377	378
Mud Logging Unit	229	28,000	329			379
Logging	230	0			378	380
Perforating/Wireline Services	231	4,000	331	538,000	379	381
Stimulation/Treating			332	12,000	380	382
Completion Unit			333	90,000	381	383
Swabbing Unit			334		382	383
Rentals-Surface	235	125,000	335	466,000	359	384
Rentals-Subsurface	236	110,000	336	80,000	384	385
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	386
Welding Services	238	3,000	338	5,000	361	387
Water Disposal	239	0	339	60,000	362	387
Plug to Abandon	240	0	340			387
Seismic Analysis	241	0	341			389
Miscellaneous	242	0	342			390
Contingency	243	42,000	343	250,000	363	388
Closed Loop & Environmental	244	220,000	344	5,000	364	388
Dyed Diesel	245		345	484,000		389
Coil Tubing			346			390
Flowback Crews & Equip			347	48,000		388
Offset Directional/Frac	248		348		391	389
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135
TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	5,000
Wellhead Equipment	405	60,000	505	18,700	531	3,000
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	130,000
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415			515	102,282	102,282
Dehydration				517		0
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	5,000
Instrumentation/SCADA/POC				522	10,482	10,482
Miscellaneous	419		519	5,241	535	3,000
Contingency	420		520		536	0
Meters/LACT				525	25,156	25,156
Flares/Combustors/Emission				526	23,584	23,584
Gas Lift/Compression			527	11,000	516	60,000
TOTAL TANGIBLES		609,000	146,730	591,990	171,000	1,518,720
TOTAL WELL COSTS		2,955,900	6,345,000	894,925	201,300	10,396,855
% of Total Well Cost		28%	61%	9%	2%	

COG Operating LLC

Date Prepared: 10/18/18

COG Operating LLC *ACR*

We approve:  
\_\_\_\_\_% Working Interest

By: MB

Company:  
By: \_\_\_\_\_

Printed Name:  
Title:  
Date: \_\_\_\_\_

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME: MASTIFF FED COM #307H		PROSPECT NAME: Bulldog 2432 (717113)	
FTP:	Sec 4: 100 FSL & 1910 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 1910 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,245
LEGAL:	Sec 4-24S-32E	TVD:	9,685

INTANGIBLE COSTS		Drilg - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	45,000	190,000
Drilling / Completion Overhead	206	7,500	306	15,000		22,500
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	166,000
Water	212	60,000	312	1,019,000	368	1,079,000
Bits	213	92,000	313	12,000	369	104,000
Mud & Chemicals	214	70,000	314	20,000	370	90,000
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	25,500				25,500
Cement Intermediate	218	35,000				35,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	32,500				32,500
Casing Crews & Equipment	222	39,000				39,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	6,000	324	355	373	6,000
Contract Labor	225	6,500	325	40,000	356	175,935
Company Supervision	226	32,400	326	15,000	357	47,400
Contract Supervision	227	85,000	327	182,000	358	272,000
Testing Casing/Tubing	228	30,000	328	5,000	377	35,000
Mud Logging Unit	229	28,000	329			28,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	90,000	381	98,800
Swabbing Unit			334		382	0
Rentals-Surface	235	125,000	335	466,000	359	598,000
Rentals-Subsurface	236	110,000	336	80,000	384	190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	243,000
Welding Services	238	3,000	338	5,000	361	8,000
Water Disposal	239	0	339	60,000	362	195,000
Plug to Abandon	240	0	340			0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342		389	0
Contingency	243	42,000	343	250,000	363	292,000
Closed Loop & Environmental	244	220,000	344	5,000	364	225,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346			0
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135
TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	57,030
Wellhead Equipment	405	60,000	505	18,700	531	81,700
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	145,000
Packers/Anchors/Hangers	414		514	65,000	533	67,000
Couplings/Fittings/Valves	415			515	102,282	102,282
Dehydration				517		0
Injection Plant/CO2 Equipment				518		0
Pumps-Surface				521	5,000	5,000
Instrumentation/SCADA/POC				522	10,482	17,482
Miscellaneous	419		519	523	5,241	8,241
Contingency	420		520	524		0
Meters/LACT				525	25,156	25,156
Flares/Combustors/Emission				526	23,584	23,584
Gas Lift/Compression			527	11,000	516	71,000
TOTAL TANGIBLES		609,000	146,730	591,990	171,000	1,518,720
TOTAL WELL COSTS		2,955,900	6,345,000	894,925	201,300	10,396,855

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
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Date Prepared: 10/18/18

COG Operating LLC 

We approve:  
% Working Interest

By: MB

Company:  
By:

Printed Name:  
Title:  
Date:

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME: MASTIFF FED COM #308H		PROSPECT NAME: Bulldog 2432 (717113)	
FTP:	Sec 4: 100 FSL & 1310 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 1310 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,135
LEGAL:	Sec 4-24S-32E	TVD:	9,575

INTANGIBLE COSTS		Drilq - Rig		Tank Btty		Pmpg		TOTAL	
		Release(D)	Completion(C)	Constrctn(TB)		Equipment(PEQ)			
Title/Curative/Permit	201	20,000						20,000	
Insurance	202	2,500	302					2,500	
Damages/Right of Way	203	20,000	303	351				20,000	
Survey/Stake Location	204	7,000		352				7,000	
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366	190,000	
Drilling / Completion Overhead	206	7,500	306	15,000				22,500	
Turnkey Contract	207	0						0	
Footage Contract	208	0						0	
Daywork Contract	209	495,000						495,000	
Directional Drilling Services	210	186,000						186,000	
Frac Equipment			307	1,418,000				1,418,000	
Frac Chemicals			308	513,000				513,000	
Frac Proppant			309	404,000				404,000	
Frac Proppant Transportation			310	399,000				399,000	
Fuel & Power	211	98,000	311	68,000	354		367	166,000	
Water	212	60,000	312	1,019,000			368	1,079,000	
Bits	213	92,000	313	12,000			369	104,000	
Mud & Chemicals	214	70,000	314	20,000			370	90,000	
Drill Stem Test	215	0	315					0	
Coring & Analysis	216	0						0	
Cement Surface	217	25,500						25,500	
Cement Intermediate	218	35,000						35,000	
Cement 2nd Intermediate/Production	219	130,000						130,000	
Cement Squeeze & Other (Kickoff Plug)	220	0					371	0	
Float Equipment & Centralizers	221	32,500						32,500	
Casing Crews & Equipment	222	39,000						39,000	
Fishing Tools & Service	223	0	323				372	0	
Geologic/Engineering	224	6,000	324		355		373	6,000	
Contract Labor	225	6,500	325	40,000	356	122,935	374	6,500	
Company Supervision	226	32,400	326	15,000	357		375	47,400	
Contract Supervision	227	85,000	327	182,000	358		376	5,000	
Testing Casing/Tubing	228	30,000	328	5,000			377	35,000	
Mud Logging Unit	229	28,000	329					28,000	
Logging	230	0					378	0	
Perforating/Wireline Services	231	4,000	331	538,000			379	542,000	
Stimulation/Treating			332	12,000			380	12,000	
Completion Unit			333	90,000			381	8,800	
Swabbing Unit			334				382	0	
Rentals-Surface	235	125,000	335	466,000	359		383	7,000	
Rentals-Subsurface	236	110,000	336	80,000			384	190,000	
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000	
Welding Services	238	3,000	338	5,000	361		386	8,000	
Water Disposal	239	0	339	60,000	362	135,000	387	195,000	
Plug to Abandon	240	0	340					0	
Seismic Analysis	241	0	341					0	
Miscellaneous	242	0	342				389	0	
Contingency	243	42,000	343	250,000	363		390	292,000	
Closed Loop & Environmental	244	220,000	344	5,000	364		388	225,000	
Dyed Diesel	245		345	484,000					
Coil Tubing			346					0	
Flowback Crews & Equip			347	48,000				48,000	
Offset Directional/Frac	248		348				391	0	
TOTAL INTANGIBLES		2,346,900		6,198,000		302,935		30,300	
								8,878,135	

TANGIBLE COSTS									
Surface Casing	401	48,000							48,000
Intermediate Casing	402	174,000							174,000
Production Casing/Liner	403	327,000							327,000
Tubing			504	52,030					57,030
Wellhead Equipment	405	60,000	505	18,700			530	5,000	81,700
Pumping Unit							531	3,000	96,000
Prime Mover							532	96,000	0
Rods							507		35,000
Pumps-Sub Surface (BH)			509				508	35,000	5,000
Tanks					510	63,645.00			63,645
Flowlines					511	26,593.00			26,593
Heater Treater/Separator					512	140,007.00			140,007
Electrical System					513	130,000.00	533	15,000	145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000	67,000
Couplings/Fittings/Valves	415				515	102,282			102,282
Dehydration					517				0
Injection Plant/CO2 Equipment					518				0
Pumps-Surface					521	5,000			5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000	17,482
Miscellaneous	419		519		523	5,241	535	3,000	8,241
Contingency	420		520		524		536		0
Meters/LACT					525	25,156			25,156
Flares/Combustors/Emission					526	23,584			23,584
Gas Lift/Compression			527	11,000	516	60,000	528	71,000	71,000
TOTAL TANGIBLES		609,000		146,730		591,990		171,000	1,518,720
TOTAL WELL COSTS		2,955,900		6,345,000		894,925		201,300	10,396,855

COG Operating LLC

% of Total Well Cost

28%

61%


9%

2%

Date Prepared:

10/18/18

COG Operating LLC



We approve:

% Working Interest

By:

MB

Company:

By:

Printed Name:

Title:

Date:

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #309H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 920 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 920 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,245
LEGAL:	Sec 4-24S-32E	TVD:	9,685

INTANGIBLE COSTS		Drilq - Rig		Completion(C)		Tank Btty		Pmpq		TOTAL	
		Release(D)				Constrctn(TB)		Equipment(PEQ)			
Title/Curative/Permit	201	20,000									20,000
Insurance	202	2,500	302								2,500
Damages/Right of Way	203	20,000	303		351						20,000
Survey/Stake Location	204	7,000			352						7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366				190,000
Drilling / Completion Overhead	206	7,500	306	15,000							22,500
Turnkey Contract	207	0									0
Footage Contract	208	0									0
Daywork Contract	209	495,000									495,000
Directional Drilling Services	210	186,000									186,000
Frac Equipment			307	1,418,000							1,418,000
Frac Chemicals			308	513,000							513,000
Frac Proppant			309	404,000							404,000
Frac Proppant Transportation			310	399,000							399,000
Fuel & Power	211	98,000	311	68,000	354		367				166,000
Water	212	60,000	312	1,019,000			368				1,079,000
Bits	213	92,000	313	12,000			369				104,000
Mud & Chemicals	214	70,000	314	20,000			370				90,000
Drill Stem Test	215	0	315								0
Coring & Analysis	216	0									0
Cement Surface	217	25,500									25,500
Cement Intermediate	218	35,000									35,000
Cement 2nd Intermediate/Production	219	130,000									130,000
Cement Squeeze & Other (Kickoff Plug)	220	0					371				0
Float Equipment & Centralizers	221	32,500									32,500
Casing Crews & Equipment	222	39,000									39,000
Fishing Tools & Service	223	0	323				372				0
Geologic/Engineering	224	6,000	324		355		373				6,000
Contract Labor	225	6,500	325	40,000	356	122,935	374	6,500			175,935
Company Supervision	226	32,400	326	15,000	357		375				47,400
Contract Supervision	227	85,000	327	182,000	358		376	5,000			272,000
Testing Casing/Tubing	228	30,000	328	5,000			377				35,000
Mud Logging Unit	229	28,000	329								28,000
Logging	230	0					378				0
Perforating/Wireline Services	231	4,000	331	538,000			379				542,000
Stimulation/Treating			332	12,000			380				12,000
Completion Unit			333	90,000			381	8,800			98,800
Swabbing Unit			334				382				0
Rentals-Surface	235	125,000	335	466,000	359		383	7,000			598,000
Rentals-Subsurface	236	110,000	336	80,000			384				190,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000			243,000
Welding Services	238	3,000	338	5,000	361		386				8,000
Water Disposal	239	0	339	60,000	362	135,000	387				195,000
Plug to Abandon	240	0	340								0
Seismic Analysis	241	0	341								0
Miscellaneous	242	0	342				389				0
Contingency	243	42,000	343	250,000	363		390				292,000
Closed Loop & Environmental	244	220,000	344	5,000	364		388				225,000
Dyed Diesel	245		345	484,000							
Coil Tubing			346								0
Flowback Crews & Equip			347	48,000							48,000
Offset Directional/Frac	248		348				391				0
TOTAL INTANGIBLES		2,346,900		6,198,000		302,935		30,300			8,878,135
TANGIBLE COSTS											
Surface Casing	401	48,000									48,000
Intermediate Casing	402	174,000									174,000
Production Casing/Liner	403	327,000									327,000
Tubing			504	52,030			530	5,000			57,030
Wellhead Equipment	405	60,000	505	18,700			531	3,000			81,700
Pumping Unit							506	96,000			96,000
Prime Mover							507				0
Rods							508	35,000			35,000
Pumps-Sub Surface (BH)			509				532	5,000			5,000
Tanks					510	63,645.00					63,645
Flowlines					511	26,593.00					26,593
Heater Treater/Separator					512	140,007.00					140,007
Electrical System					513	130,000.00	533	15,000			145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000			67,000
Couplings/Fittings/Valves	415				515	102,282					102,282
Dehydration					517						0
Injection Plant/CO2 Equipment					518						0
Pumps-Surface					521	5,000					5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000			17,482
Miscellaneous	419		519		523	5,241	535	3,000			8,241
Contingency	420		520		524		536				0
Meters/LACT					525	25,156					25,156
Flares/Combustors/Emission					526	23,584					23,584
Gas Lift/Compression			527	11,000	516	60,000	528				71,000
TOTAL TANGIBLES		609,000		146,730		591,990		171,000			1,518,720
TOTAL WELL COSTS		2,955,900		6,345,000		894,925		201,300			10,396,855

COG Operating LLC

Date Prepared: 10/18/18

We approve:  
% Working Interest

COG Operating LLC

By: MB

Company:  
By:

Printed Name:  
Title:  
Date:

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.




COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #310H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 330 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 330 FWL	OBJECTIVE:	Drill and Complete
FORMATION:	Avalon Shale	DEPTH:	20,135
LEGAL:	Sec 4-24S-32E	TVD:	9,575

INTANGIBLE COSTS		Drilq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpg Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000
Drilling / Completion Overhead	206	7,500	306	15,000	366	
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	495,000				495,000
Directional Drilling Services	210	186,000				186,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	513,000		513,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	98,000	311	68,000	354	367
Water	212	60,000	312	1,019,000		368
Bits	213	92,000	313	12,000		369
Mud & Chemicals	214	70,000	314	20,000		370
Drill Stem Test	215	0	315			
Coring & Analysis	216	0				
Cement Surface	217	25,500				
Cement Intermediate	218	35,000				
Cement 2nd Intermediate/Production	219	130,000				
Cement Squeeze & Other (Kickoff Plug)	220	0			371	
Float Equipment & Centralizers	221	32,500				
Casing Crews & Equipment	222	39,000				
Fishing Tools & Service	223	0	323			372
Geologic/Engineering	224	6,000	324			373
Contract Labor	225	6,500	325	40,000	356	122,935
Company Supervision	226	32,400	326	15,000	357	375
Contract Supervision	227	85,000	327	182,000	358	376
Testing Casing/Tubing	228	30,000	328	5,000		377
Mud Logging Unit	229	28,000	329			
Logging	230	0				378
Perforating/Wireline Services	231	4,000	331	538,000		379
Stimulation/Treating			332	12,000		380
Completion Unit			333	90,000		381
Swabbing Unit			334			382
Rentals-Surface	235	125,000	335	466,000	359	383
Rentals-Subsurface	236	110,000	336	80,000		384
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	385
Welding Services	238	3,000	338	5,000	361	386
Water Disposal	239	0	339	60,000	362	135,000
Plug to Abandon	240	0	340			
Seismic Analysis	241	0	341			
Miscellaneous	242	0	342			389
Contingency	243	42,000	343	250,000	363	390
Closed Loop & Environmental	244	220,000	344	5,000	364	388
Dyed Diesel	245		345	484,000		
Coil Tubing			346			
Flowback Crews & Equip			347	48,000		
Offset Directional/Frac	248		348			391
TOTAL INTANGIBLES		2,346,900	6,198,000	302,935	30,300	8,878,135

TANGIBLE COSTS						
Surface Casing	401	48,000				48,000
Intermediate Casing	402	174,000				174,000
Production Casing/Liner	403	327,000				327,000
Tubing			504	52,030	530	5,000
Wellhead Equipment	405	60,000	505	18,700	531	3,000
Pumping Unit					506	96,000
Prime Mover					507	0
Rods					508	35,000
Pumps-Sub Surface (BH)			509		532	5,000
Tanks				510	63,645.00	63,645
Flowlines				511	26,593.00	26,593
Heater Treater/Separator				512	140,007.00	140,007
Electrical System				513	130,000.00	130,000.00
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415				534	2,000
Dehydration				515	102,282	102,282
Injection Plant/CO2 Equipment				517		0
Pumps-Surface				518		0
Instrumentation/SCADA/POC				521	5,000	5,000
Miscellaneous	419		519		522	10,482
Contingency	420		520		523	5,241
Meters/LACT				524		3,000
Flares/Combustors/Emission				525	25,156	25,156
Gas Lift/Compression				526	23,584	23,584
TOTAL TANGIBLES		609,000	146,730	516	60,000	528
TOTAL WELL COSTS		2,955,900	6,345,000		591,990	171,000

COG Operating LLC	% of Total Well Cost	28%	61%	9%	2%
Date Prepared: 10/18/18					
COG Operating LLC 					
By: MB					
We approve: _____					
_____% Working Interest					
Company: _____					
By: _____					
Printed Name: _____					
Title: _____					
Date: _____					
This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.					



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #501H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 330 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 330 FEL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,160
LEGAL:	Sec 4-24S-32E	TVD:	10,600

INTANGIBLE COSTS		Drilg - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000
Drilling / Completion Overhead	206	8,400	306	15,000	366	
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	720,000				720,000
Directional Drilling Services	210	243,000				243,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	473,000		473,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	152,000	311	68,000	354	
Water	212	105,000	312	945,000	367	
Bits	213	92,000	313	9,000	368	
Mud & Chemicals	214	95,000	314	46,000	369	
Drill Stem Test	215	0	315		370	
Coring & Analysis	216	0				0
Cement Surface	217	37,000				37,000
Cement Intermediate	218	60,000				60,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	
Float Equipment & Centralizers	221	50,000				50,000
Casing Crews & Equipment	222	52,000				52,000
Fishing Tools & Service	223	0	323		372	
Geologic/Engineering	224	7,200	324		373	
Contract Labor	225	6,500	325	23,800	355	
Company Supervision	226	50,400	326	15,000	356	122,935
Contract Supervision	227	123,000	327	268,000	357	
Testing Casing/Tubing	228	30,000	328	5,000	358	
Mud Logging Unit	229	36,000	329		376	5,000
Logging	230	0			377	
Perforating/Wireline Services	231	4,000	331	538,000	378	
Stimulation/Treating			332	12,000	379	
Completion Unit			333	138,000	380	
Swabbing Unit			334		381	8,800
Rentals-Surface	235	150,000	335	385,000	382	
Rentals-Subsurface	236	135,000	336	90,000	383	7,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	384	
Welding Services	238	3,000	338	5,000	385	3,000
Water Disposal	239	0	339	60,000	386	
Plug to Abandon	240	0	340		387	135,000
Seismic Analysis	241	0	341			
Miscellaneous	242	0	342	5,000	388	
Contingency	243	54,000	343	250,000	389	
Closed Loop & Environmental	244	275,000	344		390	
Dyed Diesel	245		345	484,000	391	
Coil Tubing			346	750,000	398	
Flowback Crews & Equip			347	48,000		
Offset Directional/Frac	248		348			
TOTAL INTANGIBLES		3,003,000	6,903,800	302,935	30,300	10,240,035

TANGIBLE COSTS						
Surface Casing	401	65,000				65,000
Intermediate Casing	402	169,000				169,000
Production Casing/Liner	403	361,000				361,000
Tubing			504	53,460	530	5,000
Wellhead Equipment	405	28,000	505	20,900	531	3,000
Pumping Unit					506	96,000
Prime Mover				0	507	0
Rods					508	55,000
Pumps-Sub Surface (BH)			509	0	532	5,000
Tanks					510	63,645.00
Flowlines					511	26,593.00
Heater Treater/Separator					512	140,007.00
Electrical System					513	130,000.00
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415				534	2,000
Dehydration					515	102,282
Injection Plant/CO2 Equipment					517	
Pumps-Surface				0	518	
Instrumentation/SCADA/POC					521	5,000
Miscellaneous	419		519		522	10,482
Contingency	420		520		523	5,241
Meters/LACT					524	
Flares/Combustors/Emission					525	25,156
Gas Lift/Compression					526	23,584
TOTAL TANGIBLES		623,000		15,000	516	60,000
TOTAL WELL COSTS		3,626,000		7,059,000	528	191,000

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
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Date Prepared:	10/18/18
COG Operating LLC	MB
By:	

We approve:	
% Working Interest	
Company:	
By:	
Printed Name:	
Title:	
Date:	

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #502H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 990 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 990 FEL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,400
LEGAL:	Sec 4-24S-32E	TVD:	10,840

INTANGIBLE COSTS		Drilg - Rig Release(D)		Completion(C)		Tank Btty Constrctn(TB)		Pmpq Equipment(PEQ)		TOTAL
Title/Curative/Permit	201	20,000								20,000
Insurance	202	2,500	302							2,500
Damages/Right of Way	203	20,000	303		351					20,000
Survey/Stake Location	204	7,000			352					7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366			190,000
Drilling / Completion Overhead	206	8,400	306	15,000						23,400
Turnkey Contract	207	0								0
Footage Contract	208	0								0
Daywork Contract	209	720,000								720,000
Directional Drilling Services	210	243,000								243,000
Frac Equipment			307	1,418,000						1,418,000
Frac Chemicals			308	473,000						473,000
Frac Proppant			309	404,000						404,000
Frac Proppant Transportation			310	399,000						399,000
Fuel & Power	211	152,000	311	68,000	354		367			220,000
Water	212	105,000	312	945,000			368			1,050,000
Bits	213	92,000	313	9,000			369			101,000
Mud & Chemicals	214	95,000	314	46,000			370			141,000
Drill Stem Test	215	0	315							0
Coring & Analysis	216	0								0
Cement Surface	217	37,000								37,000
Cement Intermediate	218	60,000								60,000
Cement 2nd Intermediate/Production	219	130,000								130,000
Cement Squeeze & Other (Kickoff Plug)	220	0					371			0
Float Equipment & Centralizers	221	50,000								50,000
Casing Crews & Equipment	222	52,000								52,000
Fishing Tools & Service	223	0	323				372			0
Geologic/Engineering	224	7,200	324		355		373			7,200
Contract Labor	225	6,500	325	23,800	356	122,935	374	6,500		159,735
Company Supervision	226	50,400	326	15,000	357		375			65,400
Contract Supervision	227	123,000	327	268,000	358		376	5,000		396,000
Testing Casing/Tubing	228	30,000	328	5,000			377			35,000
Mud Logging Unit	229	36,000	329							36,000
Logging	230	0					378			0
Perforating/Wireline Services	231	4,000	331	538,000			379			542,000
Stimulation/Treating			332	12,000			380			12,000
Completion Unit			333	138,000			381	8,800		146,800
Swabbing Unit			334				382			0
Rentals-Surface	235	150,000	335	385,000	359		383	7,000		542,000
Rentals-Subsurface	236	135,000	336	90,000			384			225,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000		243,000
Welding Services	238	3,000	338	5,000	361		386			8,000
Water Disposal	239	0	339	60,000	362	135,000	387			195,000
Plug to Abandon	240	0	340							0
Seismic Analysis	241	0	341							0
Miscellaneous	242	0	342	5,000			389			5,000
Contingency	243	54,000	343	250,000	363		390			304,000
Closed Loop & Environmental	244	275,000	344		364		388			275,000
Dyed Diesel	245		345	484,000						
Coil Tubing			346	750,000						750,000
Flowback Crews & Equip			347	48,000						48,000
Offset Directional/Frac	248		348				391			0
TOTAL INTANGIBLES		3,003,000		6,903,800		302,935		30,300		10,240,035

TANGIBLE COSTS										
Surface Casing	401	65,000								65,000
Intermediate Casing	402	169,000								169,000
Production Casing/Liner	403	361,000								361,000
Tubing			504	53,460			530	5,000		58,460
Wellhead Equipment	405	28,000	505	20,900			531	3,000		51,900
Pumping Unit							506	96,000		96,000
Prime Mover				0			507	0		0
Rods							508	55,000		55,000
Pumps-Sub Surface (BH)			509	0			532	5,000		5,000
Tanks					510	63,645.00				63,645
Flowlines					511	26,593.00				26,593
Heater Treater/Separator					512	140,007.00				140,007
Electrical System					513	130,000.00	533	15,000		145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000		67,000
Couplings/Fittings/Valves	415				515	102,282				102,282
Dehydration					517					0
Injection Plant/CO2 Equipment				0	518					0
Pumps-Surface				0	521	5,000				5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000		17,482
Miscellaneous	419		519		523	5,241	535	3,000		8,241
Contingency	420		520		524		536			0
Meters/LACT					525	25,156				25,156
Flares/Combustors/Emission					526	23,584				23,584
Gas Lift/Compression			527	15,000	516	60,000	528			75,000
TOTAL TANGIBLES		623,000		154,360		591,990		191,000		1,560,350
TOTAL WELL COSTS		3,626,000		7,059,000		894,925		221,300		11,800,385

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
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Date Prepared:10/18/18

COG Operating LLC

We approve:  
\_\_\_\_\_% Working Interest

Company:  
By:\_\_\_\_\_

Printed Name:  
Title:  
Date:\_\_\_\_\_

By:MB

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COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #503H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 1650 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 1650 FEL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,160
LEGAL:	Sec 4-24S-32E	TVD:	10,600

INTANGIBLE COSTS		Drilq - Rig Release(D)		Completion(C)		Tank Btty Constrctn(TB)		Pmpq Equipment(PEQ)		TOTAL
Title/Curative/Permit	201	20,000								20,000
Insurance	202	2,500	302							2,500
Damages/Right of Way	203	20,000	303		351					20,000
Survey/Stake Location	204	7,000			352					7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366			190,000
Drilling / Completion Overhead	206	8,400	306	15,000						23,400
Turnkey Contract	207	0								0
Footage Contract	208	0								0
Daywork Contract	209	720,000								720,000
Directional Drilling Services	210	243,000								243,000
Frac Equipment			307	1,418,000						1,418,000
Frac Chemicals			308	473,000						473,000
Frac Proppant			309	404,000						404,000
Frac Proppant Transportation			310	399,000						399,000
Fuel & Power	211	152,000	311	68,000	354		367			220,000
Water	212	105,000	312	945,000			368			1,050,000
Bits	213	92,000	313	9,000			369			101,000
Mud & Chemicals	214	95,000	314	46,000			370			141,000
Drill Stem Test	215	0	315							0
Coring & Analysis	216	0								0
Cement Surface	217	37,000								37,000
Cement Intermediate	218	60,000								60,000
Cement 2nd Intermediate/Production	219	130,000								130,000
Cement Squeeze & Other (Kickoff Plug)	220	0					371			0
Float Equipment & Centralizers	221	50,000								50,000
Casing Crews & Equipment	222	52,000								52,000
Fishing Tools & Service	223	0	323				372			0
Geologic/Engineering	224	7,200	324		355		373			7,200
Contract Labor	225	6,500	325	23,800	356	122,935	374	6,500		159,735
Company Supervision	226	50,400	326	15,000	357		375			65,400
Contract Supervision	227	123,000	327	268,000	358		376	5,000		396,000
Testing Casing/Tubing	228	30,000	328	5,000			377			35,000
Mud Logging Unit	229	36,000	329							36,000
Logging	230	0					378			0
Perforating/Wireline Services	231	4,000	331	538,000			379			542,000
Stimulation/Treating			332	12,000			380			12,000
Completion Unit			333	138,000			381	8,800		146,800
Swabbing Unit			334				382			0
Rentals-Surface	235	150,000	335	385,000	359		383	7,000		542,000
Rentals-Subsurface	236	135,000	336	90,000			384			225,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000		243,000
Welding Services	238	3,000	338	5,000	361		386			8,000
Water Disposal	239	0	339	60,000	362	135,000	387			195,000
Plug to Abandon	240	0	340							0
Seismic Analysis	241	0	341							0
Miscellaneous	242	0	342	5,000			389			5,000
Contingency	243	54,000	343	250,000	363		390			304,000
Closed Loop & Environmental	244	275,000	344		364		388			275,000
Dyed Diesel	245		345	484,000						
Coil Tubing			346	750,000						750,000
Flowback Crews & Equip			347	48,000						48,000
Offset Directional/Frac	248		348				391			0
TOTAL INTANGIBLES		3,003,000		6,903,800		302,935		30,300		10,240,035

TANGIBLE COSTS										
Surface Casing	401	65,000								65,000
Intermediate Casing	402	169,000								169,000
Production Casing/Liner	403	361,000								361,000
Tubing			504	53,460			530	5,000		58,460
Wellhead Equipment	405	28,000	505	20,900			531	3,000		51,900
Pumping Unit							506	96,000		96,000
Prime Mover				0			507	0		0
Rods							508	55,000		55,000
Pumps-Sub Surface (BH)			509	0			532	5,000		5,000
Tanks					510	63,645.00				63,645
Flowlines					511	26,593.00				26,593
Heater Treater/Separator					512	140,007.00				140,007
Electrical System					513	130,000.00	533	15,000		145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000		67,000
Couplings/Fittings/Valves	415				515	102,282				102,282
Dehydration					517					0
Injection Plant/CO2 Equipment				0	518					0
Pumps-Surface				0	521	5,000				5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000		17,482
Miscellaneous	419		519		523	5,241	535	3,000		8,241
Contingency	420		520		524		536			0
Meters/LACT					525	25,156				25,156
Flares/Combustors/Emission					526	23,584				23,584
Gas Lift/Compression			527	15,000	516	60,000	528			75,000
TOTAL TANGIBLES		623,000		154,360		591,990		191,000		1,560,350
TOTAL WELL COSTS		3,626,000		7,059,000		894,925		221,300		11,800,385

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
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Date Prepared:10/18/18

COG Operating LLC

We approve:  
\_\_\_\_\_% Working Interest

Company:  
By:\_\_\_\_\_

Printed Name:  
Title:  
Date:\_\_\_\_\_

By:\_\_\_\_\_

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COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #504H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FNL & 2310 FEL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 9: 100 FSL & 2310 FEL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,400
LEGAL:	Sec 4-24S-32E	TVD:	10,840

INTANGIBLE COSTS		Drilq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000
Drilling / Completion Overhead	206	8,400	306	15,000	366	
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	720,000				720,000
Directional Drilling Services	210	243,000				243,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	473,000		473,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	152,000	311	68,000	354	
Water	212	105,000	312	945,000	367	
Bits	213	92,000	313	9,000	368	
Mud & Chemicals	214	95,000	314	46,000	369	
Drill Stem Test	215	0	315		370	
Coring & Analysis	216	0				0
Cement Surface	217	37,000				37,000
Cement Intermediate	218	60,000				60,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	
Float Equipment & Centralizers	221	50,000				50,000
Casing Crews & Equipment	222	52,000				52,000
Fishing Tools & Service	223	0	323		372	
Geologic/Engineering	224	7,200	324		373	
Contract Labor	225	6,500	325	23,800	356	122,935
Company Supervision	226	50,400	326	15,000	357	
Contract Supervision	227	123,000	327	268,000	358	
Testing Casing/Tubing	228	30,000	328	5,000		376
Mud Logging Unit	229	36,000	329			377
Logging	230	0				378
Perforating/Wireline Services	231	4,000	331	538,000		379
Stimulation/Treating			332	12,000		380
Completion Unit			333	138,000		381
Swabbing Unit			334			382
Rentals-Surface	235	150,000	335	385,000	359	
Rentals-Subsurface	236	135,000	336	90,000		383
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	
Welding Services	238	3,000	338	5,000	361	
Water Disposal	239	0	339	60,000	362	135,000
Plug to Abandon	240	0	340			387
Seismic Analysis	241	0	341			
Miscellaneous	242	0	342	5,000		389
Contingency	243	54,000	343	250,000	363	
Closed Loop & Environmental	244	275,000	344		364	
Dyed Diesel	245		345	484,000		390
Coil Tubing			346	750,000		388
Flowback Crews & Equip			347	48,000		
Offset Directional/Frac	248		348			391
TOTAL INTANGIBLES		3,003,000	6,903,800	302,935	30,300	10,240,035

TANGIBLE COSTS						
Surface Casing	401	65,000				65,000
Intermediate Casing	402	169,000				169,000
Production Casing/Liner	403	361,000				361,000
Tubing			504	53,460	530	5,000
Wellhead Equipment	405	28,000	505	20,900	531	3,000
Pumping Unit					506	96,000
Prime Mover				0	507	0
Rods					508	55,000
Pumps-Sub Surface (BH)			509	0	532	5,000
Tanks					510	63,645.00
Flowlines					511	26,593.00
Heater Treater/Separator					512	140,007.00
Electrical System					513	130,000.00
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415				534	2,000
Dehydration					515	102,282
Injection Plant/CO2 Equipment					517	
Pumps-Surface				0	518	
Instrumentation/SCADA/POC				0	521	5,000
Miscellaneous	419		519		522	10,482
Contingency	420		520		523	5,241
Meters/LACT					524	
Flares/Combustors/Emission					525	25,156
Gas Lift/Compression					526	23,584
TOTAL TANGIBLES		623,000		154,360	516	60,000
TOTAL WELL COSTS		3,626,000		7,059,000	528	191,000

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
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Date Prepared:10/18/18

COG Operating LLC

We approve:  
\_\_\_\_\_% Working Interest

Company:  
By:\_\_\_\_\_

Printed Name:  
Title:  
Date:\_\_\_\_\_

By:\_\_\_\_\_

MB

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COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #505H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 990 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 990 FWL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,400
LEGAL:	Sec 4-24S-32E	TVD:	10,840

INTANGIBLE COSTS		Drlq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	45,000	190,000
Drilling / Completion Overhead	206	8,400	306	15,000		23,400
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	720,000				720,000
Directional Drilling Services	210	243,000				243,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	473,000		473,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	152,000	311	68,000	354	220,000
Water	212	105,000	312	945,000	368	1,050,000
Bits	213	92,000	313	9,000	369	101,000
Mud & Chemicals	214	95,000	314	46,000	370	141,000
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	37,000				37,000
Cement Intermediate	218	60,000				60,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	50,000				50,000
Casing Crews & Equipment	222	52,000				52,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	7,200	324	355	373	7,200
Contract Labor	225	6,500	325	23,800	356	159,735
Company Supervision	226	50,400	326	15,000	357	65,400
Contract Supervision	227	123,000	327	268,000	358	396,000
Testing Casing/Tubing	228	30,000	328	5,000	377	35,000
Mud Logging Unit	229	36,000	329			36,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	138,000	381	146,800
Swabbing Unit			334		382	0
Rentals-Surface	235	150,000	335	385,000	359	542,000
Rentals-Subsurface	236	135,000	336	90,000	384	225,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	243,000
Welding Services	238	3,000	338	5,000	361	8,000
Water Disposal	239	0	339	60,000	362	195,000
Plug to Abandon	240	0	340		387	0
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342	5,000	389	5,000
Contingency	243	54,000	343	250,000	363	304,000
Closed Loop & Environmental	244	275,000	344		364	275,000
Dyed Diesel	245		345	484,000		
Coil Tubing			346	750,000		750,000
Flowback Crews & Equip			347	48,000		48,000
Offset Directional/Frac	248		348		391	0
TOTAL INTANGIBLES		3,003,000	6,903,800	302,935	30,300	10,240,035

TANGIBLE COSTS						
Surface Casing	401	65,000				65,000
Intermediate Casing	402	169,000				169,000
Production Casing/Liner	403	361,000				361,000
Tubing			504	53,460	530	58,460
Wellhead Equipment	405	28,000	505	20,900	531	51,900
Pumping Unit					506	96,000
Prime Mover				0	507	0
Rods					508	55,000
Pumps-Sub Surface (BH)			509	0	532	5,000
Tanks					510	63,645
Flowlines					511	26,593.00
Heater Treater/Separator					512	140,007.00
Electrical System					513	130,000.00
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415				534	2,000
Dehydration					515	102,282
Injection Plant/CO2 Equipment				0	517	0
Pumps-Surface				0	518	0
Instrumentation/SCADA/POC					521	5,000
Miscellaneous	419		519		522	10,482
Contingency	420		520		523	5,241
Meters/LACT					524	3,000
Flares/Combustors/Emission					525	25,156
Gas Lift/Compression			527	15,000	526	23,584
TOTAL TANGIBLES		623,000		154,360	516	60,000
TOTAL WELL COSTS		3,626,000		7,059,000	528	191,000

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
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Date Prepared:10/18/18

COG Operating LLC

We approve:  
\_\_\_\_\_% Working Interest

Company:  
By:\_\_\_\_\_

Printed Name:  
Title:  
Date:\_\_\_\_\_

By:\_\_\_\_\_

MB

This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #506H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 330 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 330 FWL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,160
LEGAL:	Sec 4-24S-32E	TVD:	10,600

INTANGIBLE COSTS		Drilq - Rig Release(D)	Completion(C)	Tank Btty Constrctn(TB)	Pmpq Equipment(PEQ)	TOTAL
Title/Curative/Permit	201	20,000				20,000
Insurance	202	2,500	302			2,500
Damages/Right of Way	203	20,000	303	351		20,000
Survey/Stake Location	204	7,000		352		7,000
Location/Pits/Road Expense	205	135,000	305	10,000	45,000	190,000
Drilling / Completion Overhead	206	8,400	306	15,000		23,400
Turnkey Contract	207	0				0
Footage Contract	208	0				0
Daywork Contract	209	720,000				720,000
Directional Drilling Services	210	243,000				243,000
Frac Equipment			307	1,418,000		1,418,000
Frac Chemicals			308	473,000		473,000
Frac Proppant			309	404,000		404,000
Frac Proppant Transportation			310	399,000		399,000
Fuel & Power	211	152,000	311	68,000	354	220,000
Water	212	105,000	312	945,000	368	1,050,000
Bits	213	92,000	313	9,000	369	101,000
Mud & Chemicals	214	95,000	314	46,000	370	141,000
Drill Stem Test	215	0	315			0
Coring & Analysis	216	0				0
Cement Surface	217	37,000				37,000
Cement Intermediate	218	60,000				60,000
Cement 2nd Intermediate/Production	219	130,000				130,000
Cement Squeeze & Other (Kickoff Plug)	220	0			371	0
Float Equipment & Centralizers	221	50,000				50,000
Casing Crews & Equipment	222	52,000				52,000
Fishing Tools & Service	223	0	323		372	0
Geologic/Engineering	224	7,200	324		373	7,200
Contract Labor	225	6,500	325	23,800	356	159,735
Company Supervision	226	50,400	326	15,000	357	65,400
Contract Supervision	227	123,000	327	268,000	358	396,000
Testing Casing/Tubing	228	30,000	328	5,000	377	35,000
Mud Logging Unit	229	36,000	329			36,000
Logging	230	0			378	0
Perforating/Wireline Services	231	4,000	331	538,000	379	542,000
Stimulation/Treating			332	12,000	380	12,000
Completion Unit			333	138,000	381	146,800
Swabbing Unit			334		382	0
Rentals-Surface	235	150,000	335	385,000	359	542,000
Rentals-Subsurface	236	135,000	336	90,000	384	225,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360	243,000
Welding Services	238	3,000	338	5,000	361	8,000
Water Disposal	239	0	339	60,000	362	135,000
Plug to Abandon	240	0	340		387	195,000
Seismic Analysis	241	0	341			0
Miscellaneous	242	0	342	5,000	389	5,000
Contingency	243	54,000	343	250,000	363	304,000
Closed Loop & Environmental	244	275,000	344		364	388
Dyed Diesel	245		345	484,000		275,000
Coil Tubing			346	750,000		
Flowback Crews & Equip			347	48,000		750,000
Offset Directional/Frac	248		348		391	48,000
TOTAL INTANGIBLES		3,003,000	6,903,800	302,935	30,300	10,240,035

TANGIBLE COSTS						
Surface Casing	401	65,000				65,000
Intermediate Casing	402	169,000				169,000
Production Casing/Liner	403	361,000				361,000
Tubing			504	53,460	530	58,460
Wellhead Equipment	405	28,000	505	20,900	531	51,900
Pumping Unit					506	96,000
Prime Mover				0	507	0
Rods					508	55,000
Pumps-Sub Surface (BH)			509	0	532	5,000
Tanks						5,000
Flowlines				510	63,645.00	63,645
Heater Treater/Separator				511	26,593.00	26,593
Electrical System				512	140,007.00	140,007
Packers/Anchors/Hangers	414		514	65,000	533	15,000
Couplings/Fittings/Valves	415				534	2,000
Dehydration				515	102,282	102,282
Injection Plant/CO2 Equipment				517		0
Pumps-Surface				518		0
Instrumentation/SCADA/POC				521	5,000	5,000
Miscellaneous	419		519		522	10,482
Contingency	420		520		523	5,241
Meters/LACT				524		3,000
Flares/Combustors/Emission				525	25,156	25,156
Gas Lift/Compression				526	23,584	23,584
TOTAL TANGIBLES		623,000	154,360	591,990	528	75,000
TOTAL WELL COSTS		3,626,000	7,059,000	894,925	221,300	11,800,385

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
Date Prepared: 10/18/18					
COG Operating LLC <i>ALP</i>					
We approve: _____					
By: _____ MB					
Company: _____					
By: _____					
Printed Name: _____					
Title: _____					
Date: _____					
This AFE is only an estimate. By signing you agree to pay your share of the actual costs incurred.					



COG OPERATING LLC  
AUTHORITY FOR EXPENDITURE  
DRILLING

WELL NAME:	MASTIFF FED COM #507H	PROSPECT NAME:	Bulldog 2432 (717113)
FTP:	Sec 4: 100 FSL & 330 FWL	STATE & COUNTY:	New Mexico, Lea
LTP:	Sec 33: 100 FNL & 330 FWL	OBJECTIVE:	DRILL AND COMPLETE
FORMATION:	2nd Bone Spring	DEPTH:	21,400
LEGAL:	Sec 4-24S-32E	TVD:	10,840

INTANGIBLE COSTS		Drilg - Rig Release(D)		Completion(C)		Tank Btty Constrctn(TB)		Pmpq Equipment(PEQ)		TOTAL
Title/Curative/Permit	201	20,000								20,000
Insurance	202	2,500	302							2,500
Damages/Right of Way	203	20,000	303		351					20,000
Survey/Stake Location	204	7,000			352					7,000
Location/Pits/Road Expense	205	135,000	305	10,000	353	45,000	366			190,000
Drilling / Completion Overhead	206	8,400	306	15,000						23,400
Turnkey Contract	207	0								0
Footage Contract	208	0								0
Daywork Contract	209	720,000								720,000
Directional Drilling Services	210	243,000								243,000
Frac Equipment			307	1,418,000						1,418,000
Frac Chemicals			308	473,000						473,000
Frac Proppant			309	404,000						404,000
Frac Proppant Transportation			310	399,000						399,000
Fuel & Power	211	152,000	311	68,000	354		367			220,000
Water	212	105,000	312	945,000			368			1,050,000
Bits	213	92,000	313	9,000			369			101,000
Mud & Chemicals	214	95,000	314	46,000			370			141,000
Drill Stem Test	215	0	315							0
Coring & Analysis	216	0								0
Cement Surface	217	37,000								37,000
Cement Intermediate	218	60,000								60,000
Cement 2nd Intermediate/Production	219	130,000								130,000
Cement Squeeze & Other (Kickoff Plug)	220	0					371			0
Float Equipment & Centralizers	221	50,000								50,000
Casing Crews & Equipment	222	52,000								52,000
Fishing Tools & Service	223	0	323				372			0
Geologic/Engineering	224	7,200	324		355		373			7,200
Contract Labor	225	6,500	325	23,800	356	122,935	374	6,500		159,735
Company Supervision	226	50,400	326	15,000	357		375			65,400
Contract Supervision	227	123,000	327	268,000	358		376	5,000		396,000
Testing Casing/Tubing	228	30,000	328	5,000			377			35,000
Mud Logging Unit	229	36,000	329							36,000
Logging	230	0					378			0
Perforating/Wireline Services	231	4,000	331	538,000			379			542,000
Stimulation/Treating			332	12,000			380			12,000
Completion Unit			333	138,000			381	8,800		146,800
Swabbing Unit			334				382			0
Rentals-Surface	235	150,000	335	385,000	359		383	7,000		542,000
Rentals-Subsurface	236	135,000	336	90,000			384			225,000
Trucking/Forklift/Rig Mobilization	237	200,000	337	40,000	360		385	3,000		243,000
Welding Services	238	3,000	338	5,000	361		386			8,000
Water Disposal	239	0	339	60,000	362	135,000	387			195,000
Plug to Abandon	240	0	340							0
Seismic Analysis	241	0	341							0
Miscellaneous	242	0	342	5,000			389			5,000
Contingency	243	54,000	343	250,000	363		390			304,000
Closed Loop & Environmental	244	275,000	344		364		388			275,000
Dyed Diesel	245		345	484,000						
Coil Tubing			346	750,000						750,000
Flowback Crews & Equip			347	48,000						48,000
Offset Directional/Frac	248		348				391			0
TOTAL INTANGIBLES		3,003,000		6,903,800		302,935		30,300		10,240,035

TANGIBLE COSTS										
Surface Casing	401	65,000								65,000
Intermediate Casing	402	169,000								169,000
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Tubing			504	53,460			530	5,000		58,460
Wellhead Equipment	405	28,000	505	20,900			531	3,000		51,900
Pumping Unit							506	96,000		96,000
Prime Mover				0			507	0		0
Rods							508	55,000		55,000
Pumps-Sub Surface (BH)			509	0			532	5,000		5,000
Tanks					510	63,645.00				63,645
Flowlines					511	26,593.00				26,593
Heater Treater/Separator					512	140,007.00				140,007
Electrical System					513	130,000.00	533	15,000		145,000
Packers/Anchors/Hangers	414		514	65,000			534	2,000		67,000
Couplings/Fittings/Valves	415				515	102,282				102,282
Dehydration					517					0
Injection Plant/CO2 Equipment				0	518					0
Pumps-Surface				0	521	5,000				5,000
Instrumentation/SCADA/POC					522	10,482	529	7,000		17,482
Miscellaneous	419		519		523	5,241	535	3,000		8,241
Contingency	420		520		524		536			0
Meters/LACT					525	25,156				25,156
Flares/Combustors/Emission					526	23,584				23,584
Gas Lift/Compression			527	15,000	516	60,000	528			75,000
TOTAL TANGIBLES		623,000		154,360		591,990		191,000		1,560,350
TOTAL WELL COSTS		3,626,000		7,059,000		894,925		221,300		11,800,385

COG Operating LLC	% of Total Well Cost	31%	60%	8%	2%
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Date Prepared: 10/18/18

COG Operating LLC *ACG*

By: MB

We approve:  
\_\_\_\_\_% Working Interest

Company:  
By: \_\_\_\_\_

Printed Name:  
Title:  
Date: \_\_\_\_\_

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