Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM002748

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.:

8. Lease Name and Well No.: BONES FEDERAL 4H

2. Name of Operator: EOG RESOURCES INCORPORATED

9. API Well No.: 30 015 47356

3a. Address: 1111 BAGBY ST., SKY LOBBY 2 Houston TX 77002

3b. Phone No. *(include area code)*: (713)651-7000

10. Field and Pool, or Exploratory: WILDCAT / PERMO PENN

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NENE / 1284 FNL / 501 FEL / LAT 32.8527561 / LONG -103.9356175

At proposed prod. zone: SWNW / 2100 FNL / 100 FWL / LAT 32.8504923 / LONG -103.9508486

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 11 / T17S / R30E / NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 501 feet

16. No of acres in lease: 1240

17. Spacing Unit dedicated to this well: 240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 440 feet

19. Proposed Depth: 4800 feet / 9145 feet

20. BLM/BIA Bond No. in file: FED: NM2308

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3745 feet

22. Approximate date work will start*: 07/01/2019

23. Estimated duration: 60 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature: (Electronic Submission)

Name *(Printed/Typed)*: Tina Huerta / Ph: (575)748-4168

Date: 01/11/2019

Title: Regulatory Specialist

Approved by *(Signature)*: (Electronic Submission)

Name *(Printed/Typed)*: Cody Layton / Ph: (575)234-5959

Date: 06/23/2020

Title: Assistant Field Manager Lands & Minerals

Office: CARLSBAD

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 06/23/2020

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources
Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

FORM C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name
30 015 47356	96718	Loco Hills; Glorieta-Yeso

[4]Property Code	[5]Property Name	[6]Well Number
328974	BONES FEDERAL	4H

[7]OGRID No.	[8]Operator Name	[9]Elevation
7377	EOG RESOURCES, INC.	3745'

[10]Surface Location

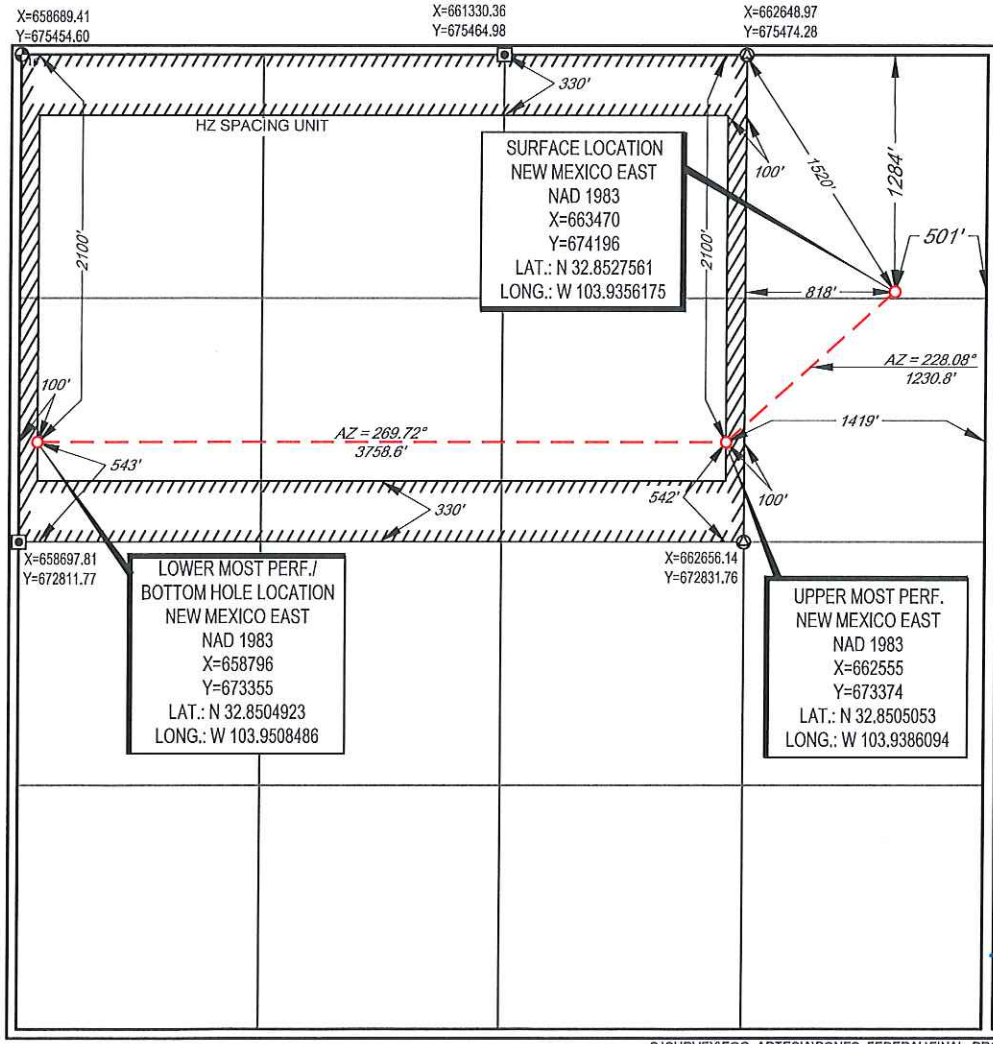
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	11	17-S	30-E	–	1284	NORTH	501	EAST	EDDY

[11]Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	11	17-S	30-E	–	2100	NORTH	100	WEST	EDDY

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]Order No.
240.00			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



[17]OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature 11/6/2018 Date

Tina Huerta
Printed Name

tina_huerta@eogresources.com
E-mail Address

[18]SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true to the best of my belief.

08/16/2018
Date of Survey
Signature and Seal of Professional Surveyor

MICHAEL B. BROWN
NEW MEXICO
18329
PROFESSIONAL SURVEYOR

Certificate Number

S:\SURVEY\EOG_ARTESIA\BONES_FEDERAL\FINAL_PRODUCTS\LO_BONES_FEDERAL_4H.DWG 10/31/2018 2:01:38 PM csmith5

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1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: December 5, 2018

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: EOG Resources, Inc. 7377

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Data Federal 1H		11–17S-30E	1289' FNL 651' FEL	500	0	
Data Federal 2H		11–17S-30E	1249' FNL 653' FEL	500	0	
Data Federal 3H		11–17S-30E	1209' FNL 654' FEL	500	0	
Bones Federal 4H		11–17S-30E	1284' FNL 501' FEL	500	0	
Bones Federal 5H		11–17S-30E	1244' FNL 503' FEL	500	0	
Bones Federal 6H		11–17S-30E	1204' FNL 504' FEL	500	0	
Mr. Scott Federal Com 1H		12–17S-30E	1567'FSL 2401' FEL	500	0	
La Forge Federal Com 2H		12–17S-30E	1591'FSL 2832' FEL	500	0	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to DCP Midstream and will be connected to DCP Midstream low pressure gathering system located in Eddy County, New Mexico. It will require 27' of pipeline to connect the facility to low/high pressure gathering system. EOG provides (periodically) to DCP Midstream a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, EOG and DCP Midstream have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at DCP Midstream Processing Plant located in New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on DCP Midstream system at that time. Based on current information, it is EOG's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

Intent [X] As Drilled [ ]

API #

Operator Name:	Property Name:	Well Number
EOG Resources, Inc.	Bones Federal	4H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
A	11	17S	30E		1284	North	501	East	Eddy

Latitude	Longitude	NAD
32.8527561	-103.9356175	83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
G	11	17S	30E		2100	North	1419	East	Eddy

Latitude	Longitude	NAD
32.8505053	-103.9386094	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
E	11	17S	30E		2100	North	100	West	Eddy

Latitude	Longitude	NAD
32.8504923	-103.9508486	83

Is this well the defining well for the Horizontal Spacing Unit? [X]

Is this well an infill well? [ ]

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**EOG RESOURCES INC**
WELL NAME & NO.:	**BONES FEDERAL 4H**
SURFACE HOLE FOOTAGE:	**1284'/N & 501'/E**
BOTTOM HOLE FOOTAGE	**2100'/N & 100'/W**
LOCATION:	**Section 11, T.17 S., R.30 E., NMPM**
COUNTY:	**EDDY County, New Mexico**

COA

H2S	(•) Yes	( ) No	
Potash	(•) None	( ) Secretary	( ) R-111-P
Cave/Karst Potential	(•) Low	( ) Medium	( ) High
Cave/Karst Potential	( ) Critical		
Variance	( ) None	(•) Flex Hose	( ) Other
Wellhead	( ) Conventional	(•) Multibowl	( ) Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☐ COM	☐ Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grayburg** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **400** feet (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.
  Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

3. The minimum required fill of cement behind the **7 X 5 ½** inch production casing is:

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout

preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
b. When the operator proposes to set surface casing with Spudder Rig
   - Notify the BLM when moving in and removing the Spudder Rig.
   - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.

- BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.

d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the

BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JJP06232020

EOG RESOURCES, INC.
BONES FEDERAL NO. 4H

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	436’
Tansill	1,292’
Yates	1,465’
Seven Rivers	1,720’
Queen	2,329’
Grayburg	2,737’
San Andres	3,052’
Glorieta	4,492’
Yeso	4,599’
TD	9,557’

3. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Rustler	436’	Fresh Water, Oil
Grayburg	2,737’	Oil
San Andres	3,052’	Oil
Glorieta	4,492’	Oil
Yeso	4,599’	Oil

No other Formations are expected to give up oil, gas or fresh water in measurable quantities. Surface fresh water sands will be protected by setting 13.375” casing at 400’ and circulating cement back to surface.

4. CASING PROGRAM - NEW

Hole & Casing String:

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF_{min} Collapse	DF_{min} Burst	DF_{min} Tension
17.5”	0’-400’	13.375”	48#	H-40/ J-55	STC	1.125	1.25	1.60
12.25”	0’ –100’	9.625	40#	J-55	LTC	1.125	1.25	1.60
12.25”	100’ – 3,300’	9.625	36#	J-55	LTC	1.125	1.25	1.60
12.25”	3,300’ – 3,500’	9.625	40#	J-55	LTC	1.125	1.25	1.60
8.75”	0’ – 5,536’	7”	29#	L-80	BTC	1.125	1.25	1.60
8.75”	5,536’-9,557’	5 ½”	17#	L-80	BTC	1.125	1.25	1.60

Cementing Program:
Note: Cement volumes based on bit size plus at least 100% excess on surface, 100% excess in Contingency Intermediate and 35% excess in production string.

Cement Design:

Depth	No. Sacks	Wt. lb/gal	Yld Ft^3/ft	Volume Ft^3	Slurry Description
400’	415	14.8	1.34	95	Tail: Class 'C' + 2%PF1(Calcium Chloride) (100% excess)
3500’*	1075	12.8	1.79	343	Lead: 35:65 Poz C + .02 gal/sk Anti Foam + 1% Extender + .13 lb/sk Lost Circulation (TOC @ Surface)
	200	14.8	1.33	47	Tail: Class C + 0.13% Anti Foam
9557’	210	11.9	2.47	92	Lead: Class 50/50 PozC + 5%PF44(BWOW)(Salt) + 10% PF20(Bentonite Gel) +.2%PF153(Anti Settling Agent(+ 3#/sk OF42(Kolseal) + 0.125#/sk PF29 (celloflake) + 0.4#/sk PF45 (Defoamer) (TOC @ 500’ into previous casing string) 35% Excess
	930	13	1.48	244	Tail: Class PVL + 1.3% PF44(BWOW)(Salt) + 5% PF174 (Expanding Cement) + 0.5% PF606 (Fluid Loss) + 0.1% PF153 (Anti Settling Agent) + 0.4#/sk PF45 (Defoamer) 35% Excess

*Cement will be done in 2 stages if water flow is encountered. DV Tool placement will be placed above water flow depth. Cement volumes will be adjusted accordingly.

5. MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:

A variance is requested to use a co-flex line between the BOP and choke manifold, dependent on rig selection (instead of using a steel line). Certification and specs are attached.

The minimum blowout preventer equipment (BOPE) shown in Exhibit #1 will consist of a double rams with blind rams & pipe rams preventer (3,000 psi WP) and an annular preventer (3,000-psi WP). Both units will be hydraulically operated and the ram-type will be equipped with blind rams on bottom and drill pipe rams on top. All BOPE will be tested in accordance with Onshore Oil & Gas order No. 2.

Before drilling out of the surface casing, the ram-type BOP and accessory equipment will be tested to 3,000/ 250 psig and the annular preventer to 1,500/ 250 psig. The surface casing will be tested to 1200 psi for 30 minutes.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

A hydraulically operated choke will be installed prior to drilling out of the surface casing shoe.

6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM:

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal.

The applicable depths and properties of the drilling fluid systems are as follows.

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0 – 400'	Fresh Water	8.6-8.8	28-32	N/c
400' – 3,500' Vertical	Brine	9.2-10.2	32-34	N/c
3,500' – 9,557' Vertical/Curve/Lateral	Cut Brine	8.8-9.4	30-34	N/c

The highest mud weight needed to balance formation is expected to be 10.2 ppg. In order to maintain hole stability, mud weights up to 10.2 ppg may be utilized.

An electronic pit volume totalizer (PVT) will be utilized on the circulating system, to monitor pit volume, flow rate, pump pressure and stroke rate.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times.

7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT:

(A) A kelly cock will be kept in the drill string at all times.

(B) A full opening drill pipe-stabbing valve (inside BOP) with proper drill pipe connections will be on the rig floor at all times.

(C) H_2S monitoring and detection equipment will be utilized from surface casing point to TD.

8. LOGGING, TESTING AND CORING PROGRAM:

Open-hole logs are not planned for this well.

GR–Directional surveys will be run in open hole during drilling phase of operations.

9. ABNORMAL CONDITIONS, PRESSURES, TEMPERATURES AND POTENTIAL HAZARDS:

The estimated bottom-hole temperature (BHT) at TD is 110 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 2766 psig (based on 10.2 ppg MW). Hydrogen sulfide has been encountered, reported or are known to exist at this depth in this area. Severe loss circulation is expected from spud to surface casing point.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

The drilling operation should be finished in approximately one month. If the well is productive, an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

(A) EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and cement on the subject well. After WOC 8 hours or 500 psi compressive strength (whichever is greater), the Surface Rig will move off so the wellhead can be installed. A welder will cut the casing to the proper height and weld on the wellhead (both "A" and "B" sections). The weld will be tested to 1000 psi. All valves will be closed and a wellhead cap will be installed (diagram attached). If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

11. WELLHEAD:

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 3/8" BOP/BOPE system with a minimum working pressure of 3,000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3,000 psi pressure test. This pressure test will be repeated at least every 30 days, as per Onshore Order No. 2

The minimum working pressure of the BOP and related BOPE required for drilling below the surface casing shoe shall be 3,000 psi.

The multi-bowl wellhead will be installed by vendor's representative(s). A copy of the installation instructions for the Stream Flo HES Multi-Bowl WH system has been sent to the NM BLM office in Carlsbad, NM.

The wellhead will be installed by a third party welder while being monitored by WH vendor's representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

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Bones Federal 4H

Hydrogen Sulfide Plan Summary

A. All personnel shall receive proper H2S training in accordance with Onshore Order III.C.3.a.

B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.

C. Required Emergency Equipment:

- Well control equipment
  a. Flare line 150' from wellhead to be ignited by flare gun.
  b. Choke manifold with a remotely operated choke.
  c. Mud/gas separator

- Protective equipment for essential personnel.

  Breathing apparatus:
  a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
  b. Work/Escape packs —4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
  c. Emergency Escape Packs —4 packs shall be stored in the doghouse for emergency evacuation.

  Auxiliary Rescue Equipment:
  a. Stretcher
  b. Two OSHA full body harness
  c. 100 ft 5/8 inch OSHA approved rope
  d. 1-20# class ABC fire extinguisher

- H2S detection and monitoring equipment:
  The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.
  (Gas sample tubes will be stored in the safety trailer)

- Visual warning systems.
  a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
  b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
  c. Two wind socks will be placed in strategic locations, visible from all angles.

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- Mud program:
  The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.

- Metallurgy:
  All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

- Communication:
  Communication will be via cell phones and land lines where available.

EOG RESOURCES, INC.
Bones Federal 4H

Emergency Assistance Telephone List

PUBLIC SAFETY:	**911 or**
Eddy County Sheriff's Department	(575) 887-7551
Fire Department:	
Carlsbad	(575) 885-3125
Artesia	(575) 746-5050
Hospitals:	
Carlsbad	(575) 887-4121
Artesia	(575) 748-3333
Hobbs	(575) 392-1979
Dept. of Public Safety/Carlsbad	(575) 748-9718
Highway Department	(575) 885-3281
New Mexico Oil Conservation	(575) 476-3440
U.S. Dept. of Labor	(575) 887-1174

EOG Resources, Inc.		
EOG / Artesia	Office	(575) 748-1471

Company Drilling Consultants:		
Brent Patterson	Cell	(575) 365-7032

Drilling Engineer		
Jeremiah Mullen	Office	(575) 748-4378
	Cell	(575) 703-5467

Drilling Manager		
Tim Bussell	Office	(575) 748-4221
	Cell	(575) 365-5695

Safety		
Brian Chandler (HSE Manager)	Office	(432) 686-3695
	Cell	(817) 239-0251

EOG Resources - Artesia

Eddy County (NAD83)
Bones
Bones Federal #4H

Lateral
Plan #1

Anticollision Report

02 January, 2019

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Reference Site:	Bones	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.980 usft	**Error Surface:**	Combined Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 1/2/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.000	9,557.198	Plan #1 (Lateral)	MWD	OWSG MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Data						
Data Federal #1H - Lateral - Plan #1	3,596.871	3,585.345	141.592	123.919	8.012	CC
Data Federal #1H - Lateral - Plan #1	3,800.000	3,785.605	142.185	123.455	7.591	ES
Data Federal #1H - Lateral - Plan #1	4,600.000	4,567.829	160.280	136.438	6.723	SF

Offset Design Data - Data Federal #1H - Lateral - Plan #1

Survey Program: 0-MWD

Offset Site Error: 0.000 usft

Offset Well Error: 0.000 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.000	0.000	1.000	-1.000	0.000	0.001	-92.29	-6.000	-150.000	150.120				
100.000	100.000	101.000	99.000	0.147	0.151	-92.29	-6.000	-150.000	150.120	149.910	0.21	713.491	
200.000	200.000	201.000	199.000	0.505	0.509	-92.29	-6.000	-150.000	150.120	149.403	0.72	209.271	
300.000	300.000	301.000	299.000	0.864	0.868	-92.29	-6.000	-150.000	150.120	148.896	1.22	122.617	
400.000	400.000	401.000	399.000	1.222	1.226	-92.29	-6.000	-150.000	150.120	148.389	1.73	86.712	
500.000	500.000	501.000	499.000	1.581	1.584	-92.29	-6.000	-150.000	150.120	147.882	2.24	67.071	
600.000	600.000	601.000	599.000	1.939	1.943	-92.29	-6.000	-150.000	150.120	147.375	2.75	54.685	
700.000	700.000	701.000	699.000	2.298	2.301	-92.29	-6.000	-150.000	150.120	146.868	3.25	46.161	
800.000	800.000	801.000	799.000	2.656	2.660	-92.29	-6.000	-150.000	150.120	146.361	3.76	39.935	
900.000	900.000	901.000	899.000	3.015	3.018	-92.29	-6.000	-150.000	150.120	145.854	4.27	35.190	
1,000.000	1,000.000	1,001.000	999.000	3.373	3.377	-92.29	-6.000	-150.000	150.120	145.347	4.77	31.452	
1,100.000	1,100.000	1,101.000	1,099.000	3.732	3.735	-92.29	-6.000	-150.000	150.120	144.840	5.28	28.432	
1,200.000	1,200.000	1,201.000	1,199.000	4.090	4.094	-92.29	-6.000	-150.000	150.120	144.333	5.79	25.941	
1,300.000	1,300.000	1,301.000	1,299.000	4.449	4.452	-92.29	-6.000	-150.000	150.120	143.826	6.29	23.852	
1,400.000	1,400.000	1,401.000	1,399.000	4.807	4.811	-92.29	-6.000	-150.000	150.120	143.319	6.80	22.074	
1,500.000	1,500.000	1,501.000	1,499.000	5.166	5.169	-92.29	-6.000	-150.000	150.120	142.812	7.31	20.543	
1,600.000	1,600.000	1,601.000	1,599.000	5.524	5.528	-92.29	-6.000	-150.000	150.120	142.305	7.81	19.210	
1,700.000	1,700.000	1,701.000	1,699.000	5.883	5.886	-92.29	-6.000	-150.000	150.120	141.798	8.32	18.040	
1,800.000	1,800.000	1,801.000	1,799.000	6.241	6.245	-92.29	-6.000	-150.000	150.120	141.291	8.83	17.004	
1,900.000	1,900.000	1,901.000	1,899.000	6.599	6.603	-92.29	-6.000	-150.000	150.120	140.784	9.34	16.080	
2,000.000	2,000.000	2,001.000	1,999.000	6.958	6.962	-92.29	-6.000	-150.000	150.120	140.277	9.84	15.252	
2,100.000	2,100.000	2,101.000	2,099.000	7.316	7.320	-92.29	-6.000	-150.000	150.120	139.770	10.35	14.505	
2,200.000	2,200.000	2,201.000	2,199.000	7.675	7.678	-92.29	-6.000	-150.000	150.120	139.263	10.86	13.828	
2,300.000	2,300.000	2,301.000	2,299.000	8.033	8.037	-92.29	-6.000	-150.000	150.120	138.757	11.36	13.211	

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Bones Federal #4H
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Reference Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Data - Data Federal #1H - Lateral - Plan #1

Offset Site Error: 0.000 usft

Survey Program: 0-MWD

Offset Well Error: 0.000 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,400.000	2,400.000	2,401.000	2,399.000	8.392	8.395	-92.29	-6.000	-150.000	150.120	138.250	11.87	12.647	
2,500.000	2,500.000	2,501.000	2,499.000	8.750	8.754	-92.29	-6.000	-150.000	150.120	137.743	12.38	12.129	
2,600.000	2,600.000	2,601.000	2,599.000	9.109	9.112	-92.29	-6.000	-150.000	150.120	137.236	12.88	11.651	
2,700.000	2,700.000	2,701.000	2,699.000	9.467	9.471	-92.29	-6.000	-150.000	150.120	136.729	13.39	11.210	
2,800.000	2,800.000	2,801.000	2,799.000	9.826	9.829	-92.29	-6.000	-150.000	150.120	136.222	13.90	10.801	
2,861.114	2,861.114	2,860.114	2,860.114	10.045	10.041	-92.29	-6.000	-150.000	150.120	135.917	14.20	10.570	
2,900.000	2,899.999	2,901.001	2,898.999	10.177	10.188	66.55	-6.000	-150.000	150.015	135.615	14.40	10.418	
3,000.000	2,999.945	3,001.054	2,998.945	10.502	10.546	67.67	-6.000	-150.000	148.808	133.925	14.88	9.999	
3,100.000	3,099.723	3,097.926	3,097.924	10.828	10.888	69.98	-6.235	-150.095	146.521	131.167	15.35	9.543	
3,200.000	3,199.210	3,195.510	3,195.430	11.156	11.205	72.31	-9.676	-151.485	144.535	128.729	15.81	9.144	
3,300.000	3,298.285	3,293.410	3,292.980	11.488	11.524	74.29	-17.250	-154.545	143.138	126.876	16.26	8.802	
3,400.000	3,396.827	3,391.569	3,390.312	11.828	11.845	75.91	-28.973	-159.282	142.233	125.509	16.72	8.504	
3,500.000	3,494.717	3,489.928	3,487.163	12.178	12.173	77.12	-44.841	-165.693	141.739	124.540	17.20	8.241	
3,596.871	3,588.809	3,585.345	3,580.272	12.529	12.501	77.90	-64.145	-173.492	141.592	123.919	17.67	8.012	CC
3,600.000	3,591.835	3,588.428	3,583.264	12.541	12.512	77.92	-64.833	-173.770	141.592	123.904	17.69	8.005	
3,700.000	3,688.062	3,687.007	3,678.354	12.920	12.865	78.29	-88.908	-183.497	141.748	123.550	18.20	7.789	
3,800.000	3,783.282	3,785.605	3,772.169	13.320	13.237	78.23	-117.008	-194.850	142.185	123.455	18.73	7.591	ES
3,900.000	3,877.379	3,884.159	3,864.455	13.744	13.634	77.75	-149.053	-207.797	142.908	123.616	19.29	7.408	
4,000.000	3,970.237	3,982.609	3,954.964	14.195	14.061	76.85	-184.948	-222.300	143.939	124.058	19.88	7.240	
4,100.000	4,061.744	4,080.894	4,043.458	14.678	14.523	75.55	-224.580	-238.312	145.326	124.825	20.50	7.089	
4,200.000	4,151.788	4,178.954	4,129.710	15.195	15.025	73.89	-267.819	-255.782	147.133	125.985	21.15	6.957	
4,300.000	4,240.260	4,276.733	4,213.506	15.750	15.571	71.88	-314.521	-274.651	149.440	127.623	21.82	6.850	
4,400.000	4,327.052	4,374.173	4,294.647	16.346	16.166	69.58	-364.531	-294.856	152.337	129.839	22.50	6.771	
4,500.000	4,412.057	4,471.222	4,372.949	16.985	16.811	67.03	-417.678	-316.329	155.919	132.740	23.18	6.727	
4,600.000	4,495.173	4,567.829	4,448.244	17.670	17.503	64.28	-473.786	-338.998	160.280	136.438	23.84	6.723	SF
4,700.000	4,576.298	4,646.166	4,506.306	18.402	18.126	62.24	-520.670	-362.653	170.907	146.988	23.92	7.145	
4,800.000	4,655.333	4,722.226	4,558.650	19.183	18.793	60.87	-566.081	-393.897	192.081	168.219	23.86	8.050	
4,861.114	4,702.565	4,766.690	4,587.105	19.684	19.211	60.33	-592.317	-415.767	209.819	186.021	23.80	8.817	
4,900.000	4,732.408	4,794.239	4,603.863	20.012	19.480	56.61	-608.385	-430.593	222.075	198.363	23.71	9.365	
4,950.000	4,770.818	4,829.117	4,624.063	20.443	19.839	51.43	-628.466	-450.715	237.458	213.971	23.49	10.110	
5,000.000	4,809.049	4,863.357	4,642.735	20.881	20.204	46.00	-647.842	-471.881	252.414	229.284	23.13	10.913	
5,050.000	4,846.868	4,900.250	4,661.310	21.323	20.616	40.41	-668.023	-495.795	266.913	244.126	22.79	11.713	
5,100.000	4,884.039	4,947.279	4,685.075	21.768	21.165	34.35	-694.210	-527.552	279.377	256.464	22.91	12.193	
5,150.000	4,920.335	4,984.485	4,703.500	22.216	21.616	28.79	-714.516	-552.696	289.678	267.256	22.42	12.919	
5,200.000	4,955.530	5,015.099	4,717.763	22.667	22.003	23.88	-730.248	-574.740	299.947	278.429	21.52	13.939	
5,250.000	4,989.409	5,045.436	4,730.925	23.121	22.399	19.39	-744.781	-597.883	310.371	289.835	20.54	15.113	
5,300.000	5,021.763	5,075.000	4,742.771	23.580	22.797	15.33	-757.874	-621.589	320.933	301.460	19.47	16.481	
5,350.000	5,052.391	5,105.450	4,753.910	24.045	23.218	11.61	-770.202	-647.100	331.610	313.156	18.45	17.969	
5,400.000	5,081.106	5,135.219	4,763.717	24.521	23.640	8.29	-781.073	-673.015	342.379	324.951	17.43	19.646	
5,450.000	5,107.730	5,164.895	4,772.388	25.008	24.071	5.31	-790.704	-699.706	353.209	336.737	16.47	21.444	
5,461.485	5,113.532	5,171.704	4,774.218	25.125	24.172	4.67	-792.740	-705.941	355.702	339.436	16.27	21.868	
5,500.000	5,132.790	5,194.551	4,779.917	25.517	24.512	3.58	-799.089	-727.133	364.882	349.224	15.66	23.304	
5,536.485	5,151.032	5,216.164	4,784.673	25.910	24.838	2.69	-804.401	-747.534	375.012	359.821	15.19	24.687	
5,550.000	5,157.623	5,225.000	4,786.437	26.063	24.973	2.35	-806.375	-755.964	378.917	363.837	15.08	25.128	
5,575.000	5,168.924	5,239.151	4,789.041	26.361	25.190	1.85	-809.296	-769.562	385.630	370.833	14.80	26.062	
5,600.000	5,179.043	5,254.288	4,791.525	26.678	25.424	1.40	-812.090	-784.230	391.670	377.080	14.59	26.846	
5,625.000	5,187.952	5,269.576	4,793.713	27.015	25.662	1.02	-814.562	-799.157	397.017	382.597	14.42	27.532	
5,650.000	5,195.626	5,284.996	4,795.593	27.371	25.903	0.70	-816.697	-814.311	401.657	387.371	14.29	28.116	
5,675.000	5,202.044	5,300.000	4,797.104	27.745	26.140	0.46	-818.427	-829.138	405.577	391.409	14.17	28.628	
5,700.000	5,207.189	5,316.150	4,798.379	28.137	26.394	0.26	-819.904	-845.169	408.763	394.650	14.11	28.963	
5,725.000	5,211.047	5,331.844	4,799.266	28.545	26.643	0.12	-820.955	-860.801	411.211	397.141	14.07	29.226	
5,750.000	5,213.607	5,350.000	4,799.860	28.969	26.933	0.03	-821.696	-878.932	412.923	398.817	14.11	29.272	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Reference Site:	Bones	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Data - Data Federal #1H - Lateral - Plan #1

Offset Site Error: 0.000 usft

Survey Program: 0-MWD

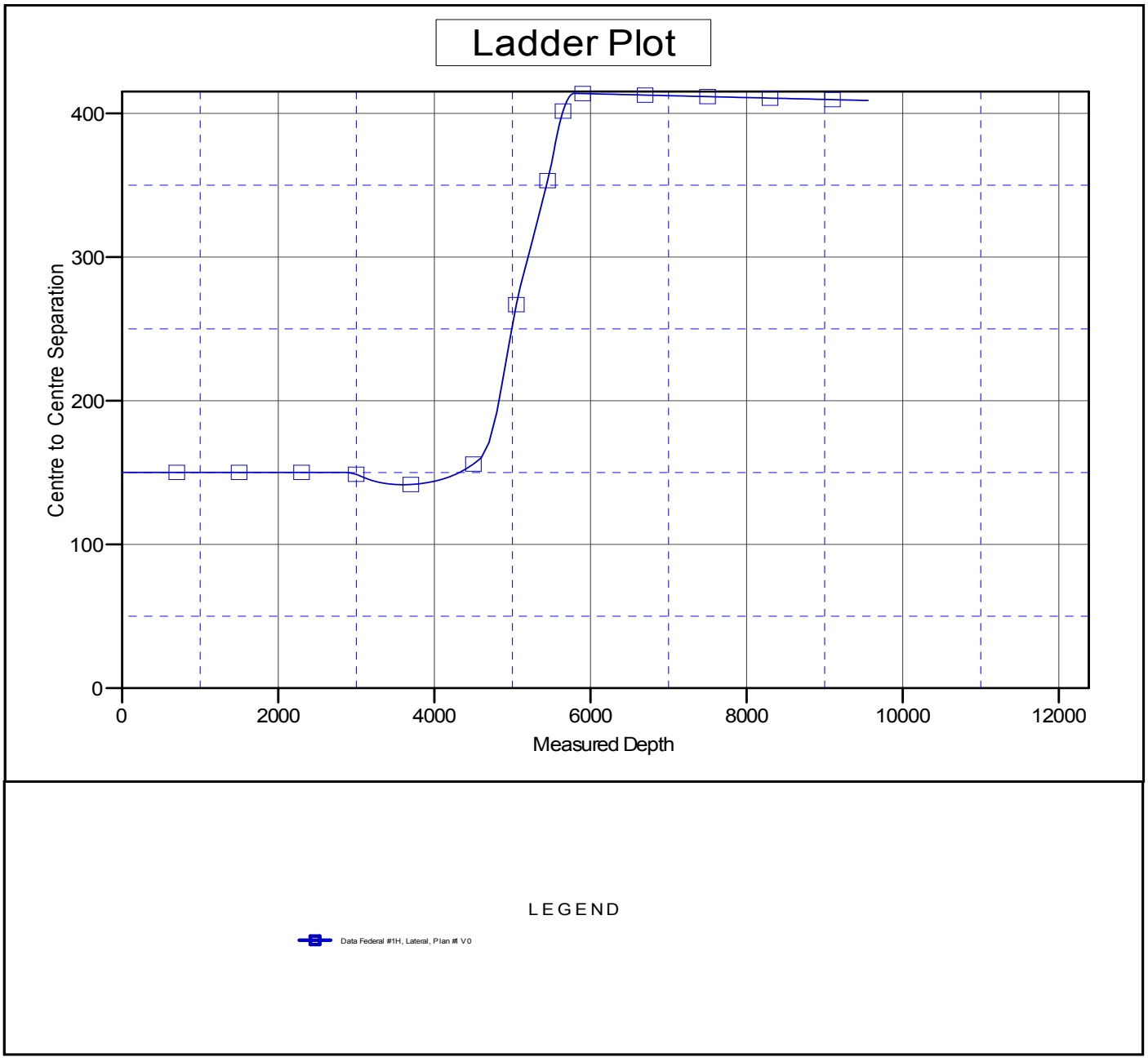
Offset Well Error: 0.000 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,775.000	5,214.862	5,365.244	4,800.000	29.406	27.176	0.00	-821.915	-891.854	413.863	399.806	14.06	29.442	
5,787.118	5,215.000	5,375.043	4,800.000	29.623	27.333	0.00	-821.976	-903.971	414.000	399.860	14.14	29.279	
5,800.000	5,214.983	5,387.924	4,800.000	29.856	27.541	0.00	-822.041	-916.853	413.983	399.746	14.24	29.077	
5,900.000	5,214.850	5,487.924	4,800.000	31.772	29.282	0.00	-822.546	-1,016.851	413.851	398.830	15.02	27.552	
6,000.000	5,214.718	5,587.924	4,800.000	33.859	31.215	0.00	-823.050	-1,116.850	413.718	397.876	15.84	26.114	
6,100.000	5,214.585	5,687.924	4,800.000	36.084	33.313	0.00	-823.555	-1,216.849	413.585	396.888	16.70	24.769	
6,200.000	5,214.452	5,787.924	4,800.000	38.422	35.547	0.00	-824.060	-1,316.847	413.453	395.872	17.58	23.517	
6,300.000	5,214.320	5,887.924	4,800.000	40.853	37.893	0.00	-824.564	-1,416.846	413.320	394.831	18.49	22.355	
6,400.000	5,214.187	5,987.924	4,800.000	43.359	40.330	0.00	-825.069	-1,516.845	413.188	393.770	19.42	21.279	
6,500.000	5,214.055	6,087.924	4,800.000	45.928	42.842	0.00	-825.573	-1,616.843	413.055	392.690	20.37	20.283	
6,600.000	5,213.922	6,187.924	4,800.000	48.548	45.417	0.00	-826.078	-1,716.842	412.922	391.594	21.33	19.361	
6,700.000	5,213.789	6,287.923	4,800.000	51.211	48.043	0.00	-826.583	-1,816.841	412.790	390.485	22.30	18.507	
6,800.000	5,213.657	6,387.923	4,800.000	53.911	50.711	0.00	-827.087	-1,916.839	412.657	389.364	23.29	17.716	
6,900.000	5,213.524	6,487.923	4,800.000	56.641	53.416	0.00	-827.592	-2,016.838	412.524	388.233	24.29	16.982	
7,000.000	5,213.391	6,587.923	4,800.000	59.399	56.152	0.00	-828.096	-2,116.836	412.392	387.092	25.30	16.300	
7,100.000	5,213.259	6,687.923	4,800.000	62.178	58.914	0.00	-828.601	-2,216.835	412.259	385.943	26.32	15.666	
7,200.000	5,213.126	6,787.923	4,800.000	64.978	61.699	0.00	-829.106	-2,316.834	412.127	384.787	27.34	15.074	
7,300.000	5,212.993	6,887.923	4,800.000	67.795	64.503	0.00	-829.610	-2,416.832	411.994	383.624	28.37	14.522	
7,400.000	5,212.861	6,987.923	4,800.000	70.627	67.324	0.00	-830.115	-2,516.831	411.861	382.455	29.41	14.006	
7,500.000	5,212.728	7,087.923	4,800.000	73.472	70.160	0.00	-830.619	-2,616.830	411.729	381.282	30.45	13.523	
7,600.000	5,212.596	7,187.923	4,800.000	76.328	73.009	0.00	-831.124	-2,716.828	411.596	380.103	31.49	13.070	
7,700.000	5,212.463	7,287.923	4,800.000	79.196	75.869	0.00	-831.629	-2,816.827	411.463	378.921	32.54	12.644	
7,800.000	5,212.330	7,387.922	4,800.000	82.072	78.740	0.00	-832.133	-2,916.825	411.331	377.734	33.60	12.243	
7,900.000	5,212.198	7,487.922	4,800.000	84.957	81.620	0.00	-832.638	-3,016.824	411.198	376.544	34.65	11.866	
8,000.000	5,212.065	7,587.922	4,800.000	87.849	84.507	0.00	-833.142	-3,116.823	411.065	375.351	35.71	11.510	
8,100.000	5,211.932	7,687.922	4,800.000	90.748	87.403	0.00	-833.647	-3,216.821	410.933	374.155	36.78	11.173	
8,200.000	5,211.800	7,787.922	4,800.000	93.653	90.304	0.00	-834.152	-3,316.820	410.800	372.956	37.84	10.855	
8,300.000	5,211.667	7,887.922	4,800.000	96.563	93.212	0.00	-834.656	-3,416.819	410.668	371.755	38.91	10.553	
8,400.000	5,211.535	7,987.922	4,800.000	99.478	96.125	0.00	-835.161	-3,516.817	410.535	370.551	39.98	10.267	
8,500.000	5,211.402	8,087.922	4,800.000	102.398	99.043	0.00	-835.665	-3,616.816	410.402	369.345	41.06	9.996	
8,600.000	5,211.269	8,187.922	4,800.000	105.323	101.965	0.00	-836.170	-3,716.815	410.270	368.138	42.13	9.738	
8,700.000	5,211.137	8,287.922	4,800.000	108.251	104.892	0.00	-836.675	-3,816.813	410.137	366.929	43.21	9.492	
8,800.000	5,211.004	8,387.922	4,800.000	111.182	107.822	0.00	-837.179	-3,916.812	410.004	365.718	44.29	9.258	
8,900.000	5,210.871	8,487.921	4,800.000	114.117	110.756	0.00	-837.684	-4,016.810	409.872	364.505	45.37	9.035	
9,000.000	5,210.739	8,587.921	4,800.000	117.055	113.692	0.00	-838.188	-4,116.809	409.739	363.292	46.45	8.822	
9,100.000	5,210.606	8,687.921	4,800.000	119.996	116.632	0.00	-838.693	-4,216.808	409.607	362.076	47.53	8.618	
9,200.000	5,210.474	8,787.921	4,800.000	122.939	119.575	0.00	-839.198	-4,316.806	409.474	360.860	48.61	8.423	
9,300.000	5,210.341	8,887.921	4,800.000	125.884	122.520	0.00	-839.702	-4,416.805	409.341	359.643	49.70	8.236	
9,400.000	5,210.208	8,987.921	4,800.000	128.832	125.467	0.00	-840.207	-4,516.804	409.209	358.424	50.78	8.058	
9,500.000	5,210.076	9,087.921	4,800.000	131.782	128.416	0.00	-840.711	-4,616.802	409.076	357.204	51.87	7.886	
9,557.198	5,210.000	9,145.119	4,800.000	133.470	130.104	0.00	-841.000	-4,674.000	409.000	356.506	52.49	7.791	

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Reference Site:	Bones	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3763.000usft (Planning Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Bones Federal #4H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.22°

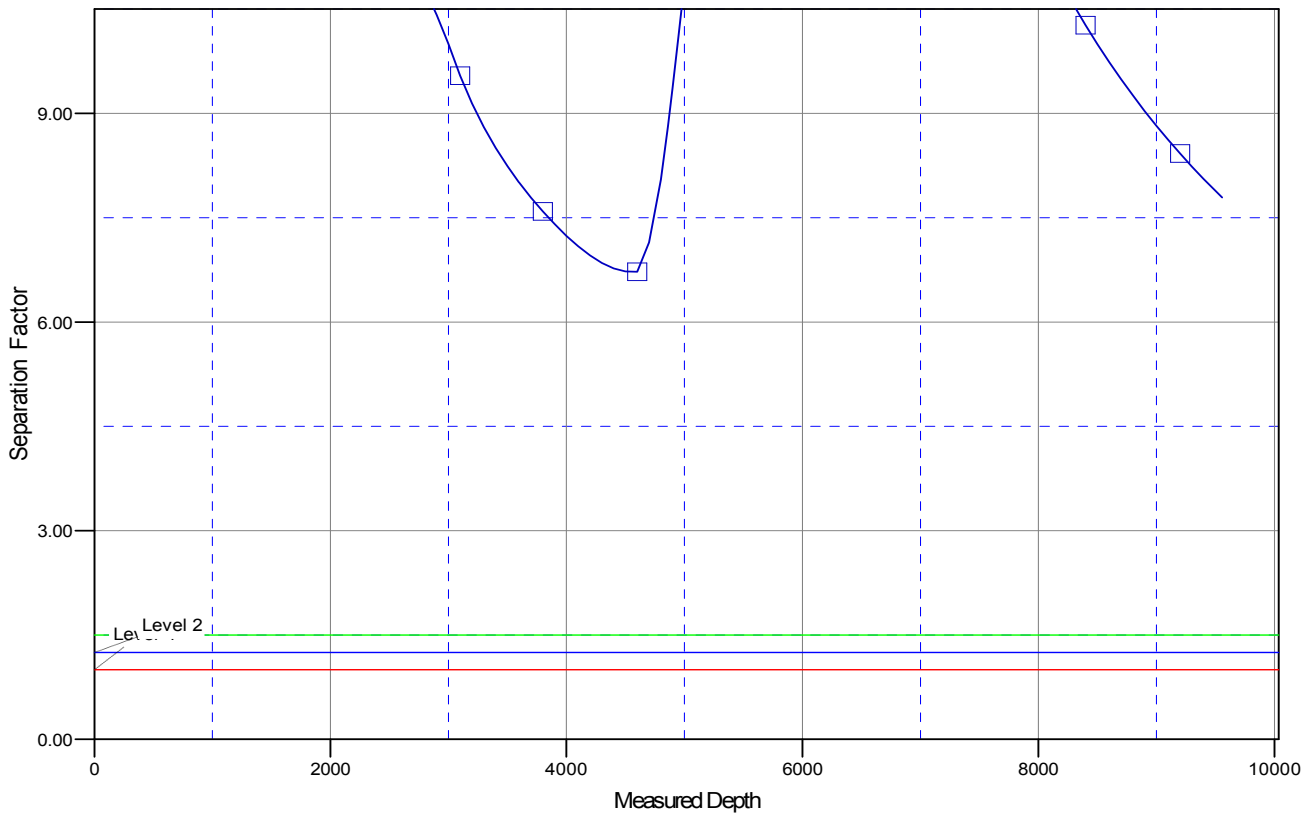


Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Reference Site:	Bones	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3763.000usft (Planning Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Bones Federal #4H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.22°

Separation Factor Plot



LEGEND

Data Federal #1H, Lateral, Plan #1 V0

EOG Resources - Artesia

Eddy County (NAD83)
Bones
Bones Federal #4H

Lateral

Plan: Plan #1

Standard Planning Report

02 January, 2019

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site:	Bones	**North Reference:**	Grid
Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project Eddy County (NAD83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Bones

Site Position:		**Northing:**	674,196.00 usft	**Latitude:**	32° 51' 9.923 N
From:	Map	**Easting:**	663,470.00 usft	**Longitude:**	103° 56' 8.227 W
Position Uncertainty:	0.000 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.22 °

Well Bones Federal #4H

Well Position	**+N/-S**	0.000 usft	**Northing:**	674,196.00 usft	**Latitude:**	32° 51' 9.923 N
	+E/-W	0.000 usft	**Easting:**	663,470.00 usft	**Longitude:**	103° 56' 8.227 W
Position Uncertainty		0.000 usft	**Wellhead Elevation:**	3,763.000 usft	**Ground Level:**	3,745.000 usft

Wellbore Lateral

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/26/2018	7.02	60.56	48,119.98561579

Design Plan #1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.000

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.000	0.000	0.000	259.800

Plan Survey Tool Program **Date** 1/2/2019

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.000	9,557.198	Plan #1 (Lateral)	MWD	
				OWSG MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.000	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	
400.000	0.00	0.000	400.000	0.000	0.000	0.00	0.00	0.00	0.00	
2,861.114	0.00	0.000	2,861.114	0.000	0.000	0.00	0.00	0.00	0.00	
4,861.114	40.00	201.250	4,702.565	-624.663	-242.918	2.00	2.00	0.00	201.25	
5,461.485	60.00	269.720	5,113.532	-820.503	-599.657	9.00	3.33	11.40	95.53	
5,536.485	60.00	269.720	5,151.032	-820.821	-664.608	0.00	0.00	0.00	0.00	
5,787.118	90.08	269.711	5,215.000	-822.010	-903.971	12.00	12.00	0.00	-0.02	
9,557.198	90.08	269.711	5,210.000	-841.000	-4,674.000	0.00	0.00	0.00	0.00	[BF#4H]BHL1

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site:	Bones	**North Reference:**	Grid
Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.000	0.00	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00
100.000	0.00	0.000	100.000	0.000	0.000	0.000	0.00	0.00	0.00
200.000	0.00	0.000	200.000	0.000	0.000	0.000	0.00	0.00	0.00
300.000	0.00	0.000	300.000	0.000	0.000	0.000	0.00	0.00	0.00
400.000	0.00	0.000	400.000	0.000	0.000	0.000	0.00	0.00	0.00
500.000	0.00	0.000	500.000	0.000	0.000	0.000	0.00	0.00	0.00
600.000	0.00	0.000	600.000	0.000	0.000	0.000	0.00	0.00	0.00
700.000	0.00	0.000	700.000	0.000	0.000	0.000	0.00	0.00	0.00
800.000	0.00	0.000	800.000	0.000	0.000	0.000	0.00	0.00	0.00
900.000	0.00	0.000	900.000	0.000	0.000	0.000	0.00	0.00	0.00
1,000.000	0.00	0.000	1,000.000	0.000	0.000	0.000	0.00	0.00	0.00
1,100.000	0.00	0.000	1,100.000	0.000	0.000	0.000	0.00	0.00	0.00
1,200.000	0.00	0.000	1,200.000	0.000	0.000	0.000	0.00	0.00	0.00
1,300.000	0.00	0.000	1,300.000	0.000	0.000	0.000	0.00	0.00	0.00
1,400.000	0.00	0.000	1,400.000	0.000	0.000	0.000	0.00	0.00	0.00
1,500.000	0.00	0.000	1,500.000	0.000	0.000	0.000	0.00	0.00	0.00
1,600.000	0.00	0.000	1,600.000	0.000	0.000	0.000	0.00	0.00	0.00
1,700.000	0.00	0.000	1,700.000	0.000	0.000	0.000	0.00	0.00	0.00
1,800.000	0.00	0.000	1,800.000	0.000	0.000	0.000	0.00	0.00	0.00
1,900.000	0.00	0.000	1,900.000	0.000	0.000	0.000	0.00	0.00	0.00
2,000.000	0.00	0.000	2,000.000	0.000	0.000	0.000	0.00	0.00	0.00
2,100.000	0.00	0.000	2,100.000	0.000	0.000	0.000	0.00	0.00	0.00
2,200.000	0.00	0.000	2,200.000	0.000	0.000	0.000	0.00	0.00	0.00
2,300.000	0.00	0.000	2,300.000	0.000	0.000	0.000	0.00	0.00	0.00
2,400.000	0.00	0.000	2,400.000	0.000	0.000	0.000	0.00	0.00	0.00
2,500.000	0.00	0.000	2,500.000	0.000	0.000	0.000	0.00	0.00	0.00
2,600.000	0.00	0.000	2,600.000	0.000	0.000	0.000	0.00	0.00	0.00
2,700.000	0.00	0.000	2,700.000	0.000	0.000	0.000	0.00	0.00	0.00
2,800.000	0.00	0.000	2,800.000	0.000	0.000	0.000	0.00	0.00	0.00
2,861.114	0.00	0.000	2,861.114	0.000	0.000	0.000	0.00	0.00	0.00
KOP BEGIN 2°/100' BR									
2,900.000	0.78	201.250	2,899.999	-0.246	-0.096	0.138	2.00	2.00	0.00
3,000.000	2.78	201.250	2,999.945	-3.137	-1.220	1.756	2.00	2.00	0.00
3,100.000	4.78	201.250	3,099.723	-9.277	-3.608	5.194	2.00	2.00	0.00
3,200.000	6.78	201.250	3,199.210	-18.659	-7.256	10.446	2.00	2.00	0.00
3,300.000	8.78	201.250	3,298.285	-31.272	-12.161	17.507	2.00	2.00	0.00
3,400.000	10.78	201.250	3,396.827	-47.099	-18.316	26.367	2.00	2.00	0.00
3,500.000	12.78	201.250	3,494.717	-66.122	-25.713	37.016	2.00	2.00	0.00
3,600.000	14.78	201.250	3,591.835	-88.317	-34.344	49.441	2.00	2.00	0.00
3,700.000	16.78	201.250	3,688.062	-113.657	-44.199	63.628	2.00	2.00	0.00
3,800.000	18.78	201.250	3,783.282	-142.112	-55.264	79.557	2.00	2.00	0.00
3,900.000	20.78	201.250	3,877.379	-173.647	-67.528	97.211	2.00	2.00	0.00
4,000.000	22.78	201.250	3,970.237	-208.224	-80.974	116.568	2.00	2.00	0.00
4,100.000	24.78	201.250	4,061.744	-245.799	-95.586	137.603	2.00	2.00	0.00
4,200.000	26.78	201.250	4,151.788	-286.329	-111.347	160.293	2.00	2.00	0.00
4,300.000	28.78	201.250	4,240.260	-329.762	-128.237	184.607	2.00	2.00	0.00
4,400.000	30.78	201.250	4,327.052	-376.046	-146.236	210.518	2.00	2.00	0.00
4,500.000	32.78	201.250	4,412.057	-425.126	-165.322	237.994	2.00	2.00	0.00
4,600.000	34.78	201.250	4,495.173	-476.940	-185.472	267.001	2.00	2.00	0.00
4,700.000	36.78	201.250	4,576.298	-531.427	-206.661	297.503	2.00	2.00	0.00
4,800.000	38.78	201.250	4,655.333	-588.518	-228.862	329.465	2.00	2.00	0.00
4,861.114	40.00	201.250	4,702.565	-624.663	-242.918	349.699	2.00	2.00	0.00
4,900.000	39.79	206.698	4,732.408	-647.434	-253.041	363.695	9.00	-0.54	14.01
4,950.000	39.90	213.722	4,770.818	-675.079	-269.140	384.435	9.00	0.21	14.05

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site:	Bones	**North Reference:**	Grid
Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.000	40.42	220.655	4,809.049	-700.727	-288.613	408.142	9.00	1.05	13.86
5,050.000	41.35	227.384	4,846.868	-724.221	-311.341	434.671	9.00	1.86	13.46
5,100.000	42.66	233.822	4,884.039	-745.415	-337.183	463.858	9.00	2.61	12.88
5,150.000	44.30	239.910	4,920.335	-764.179	-365.980	495.523	9.00	3.29	12.18
5,200.000	46.25	245.620	4,955.530	-780.397	-397.555	529.470	9.00	3.90	11.42
5,250.000	48.47	250.946	4,989.409	-793.969	-431.712	565.491	9.00	4.43	10.65
5,300.000	50.92	255.902	5,021.763	-804.811	-468.242	603.363	9.00	4.89	9.91
5,350.000	53.56	260.513	5,052.391	-812.857	-506.918	642.854	9.00	5.28	9.22
5,400.000	56.36	264.811	5,081.106	-818.057	-547.503	683.718	9.00	5.61	8.60
5,450.000	59.31	268.832	5,107.730	-820.378	-589.747	725.705	9.00	5.89	8.04
5,461.485	60.00	269.720	5,113.532	-820.503	-599.657	735.481	9.00	6.04	7.73
START 75' TANGENT/9°/100' BR									
5,500.000	60.00	269.720	5,132.790	-820.666	-633.012	768.337	0.00	0.00	0.00
5,536.485	60.00	269.720	5,151.032	-820.821	-664.608	799.462	0.00	0.00	0.00
END 60° TANGENT/START 12°/100' BR									
5,550.000	61.62	269.719	5,157.623	-820.879	-676.407	811.084	12.00	12.00	0.00
5,575.000	64.62	269.718	5,168.924	-820.988	-698.703	833.047	12.00	12.00	0.00
5,600.000	67.62	269.718	5,179.043	-821.100	-721.560	855.563	12.00	12.00	0.00
5,625.000	70.62	269.717	5,187.952	-821.216	-744.916	878.570	12.00	12.00	0.00
5,650.000	73.62	269.716	5,195.626	-821.334	-768.706	902.004	12.00	12.00	0.00
5,675.000	76.62	269.715	5,202.044	-821.454	-792.864	925.803	12.00	12.00	0.00
5,700.000	79.62	269.714	5,207.189	-821.575	-817.326	949.899	12.00	12.00	0.00
5,725.000	82.62	269.713	5,211.047	-821.699	-842.023	974.228	12.00	12.00	0.00
5,750.000	85.62	269.713	5,213.607	-821.823	-866.889	998.723	12.00	12.00	0.00
5,775.000	88.62	269.712	5,214.862	-821.949	-891.854	1,023.315	12.00	12.00	0.00
5,787.118	90.08	269.711	5,215.000	-822.010	-903.971	1,035.251	12.00	12.00	0.00
[BF#4H]EOC 5787' MD (5215' TVD)									
5,798.147	90.08	269.711	5,214.985	-822.065	-915.000	1,046.116	0.00	0.00	0.00
[BF#4H]UMP 5798' MD (5215' TVD)									
5,800.000	90.08	269.711	5,214.983	-822.075	-916.853	1,047.941	0.00	0.00	0.00
5,900.000	90.08	269.711	5,214.850	-822.578	-1,016.851	1,146.449	0.00	0.00	0.00
6,000.000	90.08	269.711	5,214.718	-823.082	-1,116.850	1,244.956	0.00	0.00	0.00
6,100.000	90.08	269.711	5,214.585	-823.586	-1,216.849	1,343.463	0.00	0.00	0.00
6,200.000	90.08	269.711	5,214.452	-824.090	-1,316.847	1,441.971	0.00	0.00	0.00
6,300.000	90.08	269.711	5,214.320	-824.593	-1,416.846	1,540.478	0.00	0.00	0.00
6,400.000	90.08	269.711	5,214.187	-825.097	-1,516.844	1,638.985	0.00	0.00	0.00
6,500.000	90.08	269.711	5,214.055	-825.601	-1,616.843	1,737.493	0.00	0.00	0.00
6,600.000	90.08	269.711	5,213.922	-826.104	-1,716.842	1,836.000	0.00	0.00	0.00
6,700.000	90.08	269.711	5,213.789	-826.608	-1,816.840	1,934.507	0.00	0.00	0.00
6,800.000	90.08	269.711	5,213.657	-827.112	-1,916.839	2,033.015	0.00	0.00	0.00
6,900.000	90.08	269.711	5,213.524	-827.615	-2,016.838	2,131.522	0.00	0.00	0.00
7,000.000	90.08	269.711	5,213.391	-828.119	-2,116.836	2,230.030	0.00	0.00	0.00
7,100.000	90.08	269.711	5,213.259	-828.623	-2,216.835	2,328.537	0.00	0.00	0.00
7,200.000	90.08	269.711	5,213.126	-829.127	-2,316.834	2,427.044	0.00	0.00	0.00
7,300.000	90.08	269.711	5,212.993	-829.630	-2,416.832	2,525.552	0.00	0.00	0.00
7,400.000	90.08	269.711	5,212.861	-830.134	-2,516.831	2,624.059	0.00	0.00	0.00
7,500.000	90.08	269.711	5,212.728	-830.638	-2,616.829	2,722.566	0.00	0.00	0.00
7,600.000	90.08	269.711	5,212.596	-831.141	-2,716.828	2,821.074	0.00	0.00	0.00
7,700.000	90.08	269.711	5,212.463	-831.645	-2,816.827	2,919.581	0.00	0.00	0.00
7,800.000	90.08	269.711	5,212.330	-832.149	-2,916.825	3,018.089	0.00	0.00	0.00
7,900.000	90.08	269.711	5,212.198	-832.653	-3,016.824	3,116.596	0.00	0.00	0.00
8,000.000	90.08	269.711	5,212.065	-833.156	-3,116.823	3,215.103	0.00	0.00	0.00
8,100.000	90.08	269.711	5,211.932	-833.660	-3,216.821	3,313.611	0.00	0.00	0.00

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Bones Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3763.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3763.000usft (Planning Rig)
Site:	Bones	**North Reference:**	Grid
Well:	Bones Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,200.000	90.08	269.711	5,211.800	-834.164	-3,316.820	3,412.118	0.00	0.00	0.00
8,300.000	90.08	269.711	5,211.667	-834.667	-3,416.819	3,510.625	0.00	0.00	0.00
8,400.000	90.08	269.711	5,211.535	-835.171	-3,516.817	3,609.133	0.00	0.00	0.00
8,500.000	90.08	269.711	5,211.402	-835.675	-3,616.816	3,707.640	0.00	0.00	0.00
8,600.000	90.08	269.711	5,211.269	-836.178	-3,716.815	3,806.147	0.00	0.00	0.00
8,700.000	90.08	269.711	5,211.137	-836.682	-3,816.813	3,904.655	0.00	0.00	0.00
8,800.000	90.08	269.711	5,211.004	-837.186	-3,916.812	4,003.162	0.00	0.00	0.00
8,900.000	90.08	269.711	5,210.871	-837.690	-4,016.810	4,101.670	0.00	0.00	0.00
9,000.000	90.08	269.711	5,210.739	-838.193	-4,116.809	4,200.177	0.00	0.00	0.00
9,100.000	90.08	269.711	5,210.606	-838.697	-4,216.808	4,298.684	0.00	0.00	0.00
9,200.000	90.08	269.711	5,210.474	-839.201	-4,316.806	4,397.192	0.00	0.00	0.00
9,300.000	90.08	269.711	5,210.341	-839.704	-4,416.805	4,495.699	0.00	0.00	0.00
9,400.000	90.08	269.711	5,210.208	-840.208	-4,516.804	4,594.206	0.00	0.00	0.00
9,500.000	90.08	269.711	5,210.076	-840.712	-4,616.802	4,692.714	0.00	0.00	0.00
9,557.198	90.08	269.711	5,210.000	-841.000	-4,673.999	4,749.058	0.00	0.00	0.00
[BF#4H]BHL 9557' MD (5210' TVD)									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
[BF#4H]BHL1 - plan hits target center - Point	0.00	0.000	5,210.000	-841.000	-4,674.000	673,355.00	658,796.00	32° 51' 1.772 N	103° 57' 3.056 W
[BF#4H]UMP1 - plan misses target center by 0.067usft at 5798.147usft MD (5214.986 TVD, -822.065 N, -915.000 E) - Point	0.00	0.000	5,215.000	-822.000	-915.000	673,374.00	662,555.00	32° 51' 1.823 N	103° 56' 18.990 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,861.114	2,861.114	0.000	0.000	KOP BEGIN 2°/100' BR
5,461.485	5,113.532	-820.503	-599.657	START 75' TANGENT/9°/100' BR
5,536.485	5,151.032	-820.821	-664.608	END 60° TANGENT/START 12°/100' BR
5,787.118	5,215.000	-822.010	-903.971	[BF#4H]EOC 5787' MD (5215' TVD)
5,798.147	5,214.985	-822.065	-915.000	[BF#4H]UMP 5798' MD (5215' TVD)
9,557.198	5,210.000	-841.000	-4,673.999	[BF#4H]BHL 9557' MD (5210' TVD)

Project: Eddy County (NAD83)
Site: Bones
Well: Bones Federal #4H
Wellbore: Lateral
Design: Plan #1
Ground Elevation 3745.000
Northing 674196.00
Easting 663470.00
KB @ 3763.000usft (Planning Rig)

PROJECT DETAILS: Eddy County (NAD83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

eog resources

T G M

Azimuths to Grid North
True North: -0.22°
Magnetic North: 6.80°

Magnetic Field
Strength: 48120.0snT
Dip Angle: 60.56°
Date: 11/26/2018
Model: IGRF2015

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.000	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.000
2	400.000	0.00	0.000	400.000	0.000	0.000	0.00	0.00	0.000
3	2861.114	0.00	0.000	2861.114	0.000	0.000	0.00	0.00	0.000
4	4861.114	40.00	201.250	4702.565	-624.663	-242.918	2.00	201.25	349.699
5	5461.485	60.00	269.720	5113.533	-820.503	-599.657	9.00	95.53	735.481
6	5536.485	60.00	269.720	5151.033	-820.821	-664.608	0.00	0.00	799.462
7	5787.118	90.08	269.711	5215.000	-822.010	-903.971	12.00	-0.02	1035.252
8	9557.198	90.08	269.711	5210.000	-841.000	-4674.000	0.00	0.00	4749.059

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
[BF#4H]BHL1	5210.000	-841.000	-4674.000	673355.00	658796.00
- plan hits target center					
[BF#4H]UMP1	5215.000	-822.000	-915.000	673374.00	662555.00

- plan misses target center by 0.067usft at 5798.147usft MD (5214.986 TVD, -822.065 N, -915.000 E)