Rec'd 08/21/2020 - NMOCD

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.
NMLC0029435B

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.
RIKER FEDERAL
4H

2. Name of Operator
EOG RESOURCES INCORPORATED

9. API Well No.
3001547358

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
1111 Bagby Sky Lobby2 Houston TX 77002	(713)651-7000	CEDAR LAKE;GLORIETA-YESO / GLORI

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

At surface SWSW / 761 FSL / 296 FWL / LAT 32.8583403 / LONG -103.91821

At proposed prod. zone SWSW / 510 FSL / 100 FWL / LAT 32.8576912 / LONG -103.9336542

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 6 / T17S / R31E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
	EDDY	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
296 feet	1885	320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
400 feet	5150 feet / 10348 feet	FED: NM2308

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3724 feet	07/01/2019	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	Name *(Printed/Typed)*	Date
(Electronic Submission)	Yolanda Maese / Ph: (575)748-4329	01/10/2019

Title
SR OPERATIONS ASSISTANT

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	05/27/2020

Title	Office
Assistant Field Manager Lands & Minerals	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: 05/27/2020

Entered - KMS NMOCD

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
3001547358	96831	Cedar Lake; Glorieta-Yeso

[4]Property Code	[5]Property Name	[6]Well Number
329306	RIKER FEDERAL	4H

[7]OGRID No.	[8]Operator Name	[9]Elevation
7377	EOG RESOURCES, INC.	3724'

[10]Surface Location

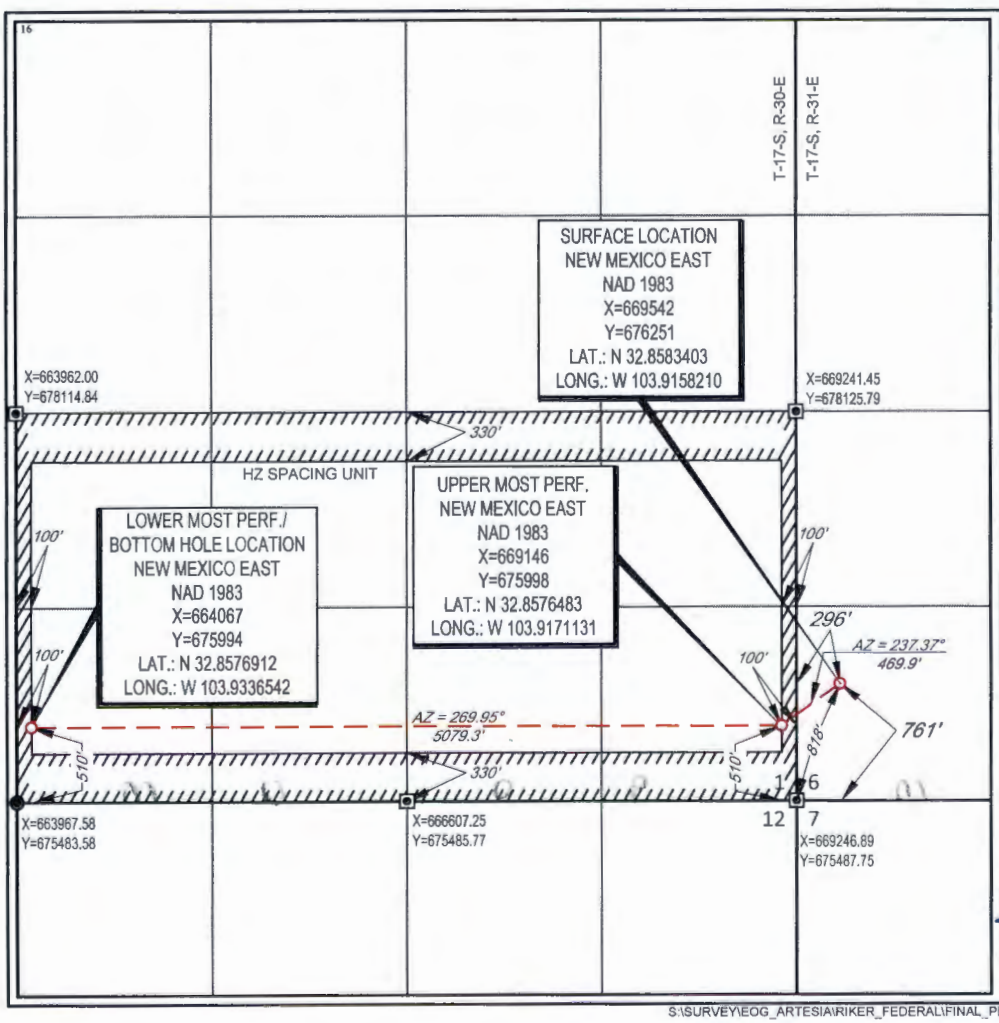
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	6	17-S	31-E	–	761	SOUTH	296	WEST	EDDY

[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
M	1	17-S	30-E	–	510	SOUTH	100	WEST	EDDY

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]Order No.
320.00			

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 — Date: 10/25/2018

Yolanda Maese
Printed Name

yolanda_maese@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.

08/24/2018
Date of Survey
Signature and Seal of Professional Surveyor

MICHAEL B. BROWN
NEW MEXICO
18329
PROFESSIONAL SURVEYOR

Certificate Number

S:\SURVEY\EOG_ARTESIA\RIKER_FEDERAL\FINAL_PRODUCTS\LO_RIKER_FEDERAL_4H.DWG 10/25/2018 9:53:41 AM csmith5

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
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: 10/25/2018

☒ 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
Riker Fed 4H		M-6-17S-31E	761' FSL 296' FWL	500	0	
Riker Fed 5H		M-6-17S-31E	911' FSL 297' FWL	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 no one and will be connected to DCP's **low**~~/high~~ pressure gathering system located in Eddy County, New Mexico. It will require 1500 ' of pipeline to connect the facility to **low**~~/high~~ pressure gathering system. EOG Resources, Inc. provides (periodically) to DCP a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, EOG Resources, Inc. and DCP have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at DCP Processing Plant located in Sec. 7, Twn. 18S, Rng. 28E, Eddy County, 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 Gas Transporter system at that time. Based on current information, it is Operator'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.	Riker Federal	4H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
M	6	17S	31E		761	South	296	West	Eddy

Latitude	Longitude	NAD
32.8583403	-103.9158210	83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
P	1	17S	30E		510	South	100	East	Eddy

Latitude	Longitude	NAD
32.8576483	-103.9171131	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
M	1	17S	30E		510	South	100	West	Eddy

Latitude	Longitude	NAD
32.8576912	-103.9336542	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 INCORPORATED**
WELL NAME & NO.:	**Riker Federal 4H**
SURFACE HOLE FOOTAGE:	**761'/S & 296'/W**
BOTTOM HOLE FOOTAGE	**510'/S & 100'/W**
LOCATION:	**Section 6, T.17 S., R.31 E., NMPM**
COUNTY:	**Eddt 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 **Square Lake, Grayburg, and San Andres** formations. 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

Primary Casing Design

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 **7 X 5 ½** inch intermediate casing is:

    - 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.**

Alternate Casing Design:

3. 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.

    e. 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.
    f. 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)
    g. 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.
    h. If cement falls back, remedial cementing will be done prior to drilling out that string.

4. 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.

5. 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.

EOG RESOURCES, INC.
RIKER FEDERAL NO. 4H

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	350’
Tansill	1,325’
Yates	1,465’
Seven Rivers	1,725’
Queen	2,330’
Grayburg	2,750’
San Andres	3,060’
Glorieta	4,565’
Yeso	4,580’
TD	10,348’

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

Rustler	350’	Fresh Water, Oil
Grayburg	2,750’	Oil
San Andres	3,060’	Oil
Glorieta	4,565’	Oil
Yeso	4,580’	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

EOG Resources requests approval of a contingency hole size and intermediate 9 5/8” casing string if water flow risk is deemed to be high. We request to have a contingency plan approved to drill out with either a 12 ¼” hole if water flow risk is high and the option to drill out with 8 ¾” if the water flow risk is determined to be low. Please see below for primary and contingency request.

Primary 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
8.75”	0’ –5,323’	7”	29#	L-80	BTC	1.125	1.25	1.60
8.75”	5,323’-10,348’	5 ½”	17#	L-80	BTC	1.125	1.25	1.60

EOG RESOURCES, INC.
RIKER FEDERAL NO. 4H

Contingency 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' – 5,323'	7"	29#	L-80	BTC	1.125	1.25	1.60
8.75"	5,323'-10,348'	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.

Primary 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)
10348'	440	11.9	2.47	194	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 @ Surface) 35% Excess
	1160	13	1.48	306	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

Contingency 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
10348'	200	11.9	2.47	88	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
	1160	13	1.48	306	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’ – 10,348’ Vertical/Curve/Lateral	Cut Brine	8.8-9.4	30-34	N/c
*Reflects the contingency mud system if contingency plan is followed if not the next line will be utilized out from under surface. Mud properties will be adjusted per hole conditions.				

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 2742 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 9-5/8" surface casing, a 9 5/8" 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.

11. DIRECTIONAL WELL OFFSET:

EOG Resources is aware of the directional well listed below in the immediate vicinity of our planned lateral. We plan to take all precautions to avoid collision with the well and are aware of the risk. The well is owned by EOG Resources.

API 30-015-40942 Jackson B #53 1-17S-30E 440 FSL 740 FWL
Picard Federal #1H (planned horizontal on same pad)

EOG Resources - Artesia

Eddy County (NAD83)
Riker
Riker Federal #4H

Lateral
Plan #2

Anticollision Report

21 December, 2018

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Reference Plan #2

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** 12/21/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.000	10,348.181	Plan #2 (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
Jackson B						
Jackson B #53 - Vertical - Directional	9,474.799	5,171.170	156.299	20.607	1.152	Level 2, CC, ES, SF
Picard						
Picard Federal #1H - Lateral - Plan #1	3,905.596	3,905.596	50.000	30.499	2.564	CC
Picard Federal #1H - Lateral - Plan #1	4,000.000	3,998.663	50.332	30.365	2.521	ES, SF

Offset Design Jackson B - Jackson B #53 - Vertical - Directional — **Offset Site Error:** 0.000 usft

Survey Program: 644-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
0.000	0.000	2.292	2.292	0.000	0.004	-93.89	-328.706	-4,833.194	4,844.359				
100.000	100.000	116.880	116.879	0.147	0.211	-93.89	-328.824	-4,833.006	4,844.202	4,843.946	0.26	N/A	
200.000	200.000	231.464	231.462	0.505	0.417	-93.90	-329.170	-4,832.457	4,843.745	4,843.090	0.65	7,395.635	
300.000	300.000	346.042	346.035	0.864	0.624	-93.90	-329.743	-4,831.547	4,842.986	4,841.921	1.06	4,547.963	
400.000	400.000	460.611	460.593	1.222	0.830	-93.91	-330.544	-4,830.275	4,841.926	4,840.449	1.48	3,278.747	
500.000	500.000	575.166	575.133	1.581	1.036	-93.93	-331.572	-4,828.642	4,840.566	4,838.676	1.89	2,562.060	
600.000	600.000	689.706	689.648	1.939	1.243	-93.94	-332.828	-4,826.649	4,838.905	4,836.602	2.30	2,101.867	
700.000	700.000	790.197	790.116	2.298	1.687	-93.96	-333.917	-4,824.802	4,837.146	4,834.297	2.85	1,697.997	
800.000	800.000	894.693	894.586	2.656	2.064	-93.97	-335.055	-4,822.767	4,835.278	4,831.917	3.36	1,438.584	
900.000	900.000	999.719	999.584	3.015	2.443	-93.99	-336.170	-4,820.618	4,833.311	4,829.434	3.88	1,246.804	
1,000.000	1,000.000	1,104.742	1,104.577	3.373	2.821	-94.00	-337.240	-4,818.363	4,831.240	4,826.847	4.39	1,099.740	
1,100.000	1,100.000	1,212.692	1,212.494	3.732	3.211	-94.02	-338.322	-4,815.912	4,829.046	4,824.128	4.92	982.033	
1,200.000	1,200.000	1,322.453	1,322.215	4.090	3.607	-94.03	-339.510	-4,813.200	4,826.656	4,821.210	5.45	886.148	
1,300.000	1,300.000	1,432.200	1,431.915	4.449	4.004	-94.05	-340.796	-4,810.258	4,824.065	4,818.088	5.98	807.134	
1,400.000	1,400.000	1,523.679	1,523.354	4.807	4.335	-94.07	-341.995	-4,807.845	4,821.520	4,815.057	6.46	745.935	
1,500.000	1,500.000	1,619.593	1,619.227	5.166	4.682	-94.09	-343.381	-4,805.366	4,819.045	4,812.084	6.96	692.266	
1,600.000	1,600.000	1,714.260	1,713.852	5.524	5.024	-94.11	-344.863	-4,803.000	4,816.664	4,809.208	7.46	646.020	
1,700.000	1,700.000	1,808.378	1,807.932	5.883	5.365	-94.13	-346.393	-4,800.757	4,814.403	4,806.454	7.95	605.639	
1,800.000	1,800.000	1,902.508	1,902.024	6.241	5.705	-94.15	-347.975	-4,798.624	4,812.264	4,803.821	8.44	569.989	
1,900.000	1,900.000	1,997.118	1,996.598	6.599	6.047	-94.17	-349.604	-4,796.587	4,810.241	4,801.304	8.94	538.224	
2,000.000	2,000.000	2,091.731	2,091.176	6.958	6.388	-94.19	-351.259	-4,794.654	4,808.330	4,798.899	9.43	509.801	
2,100.000	2,100.000	2,188.245	2,187.658	7.316	6.737	-94.21	-352.967	-4,792.782	4,806.525	4,796.594	9.93	483.996	

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 Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design Jackson B - Jackson B #53 - Vertical - Directional

Offset Site Error: 0.000 usft

Survey Program: 644-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
2,200.000	2,200.000	2,288.252	2,287.631	7.675	7.098	-94.23	-354.666	-4,790.870	4,804.743	4,794.304	10.44	460.290	
2,300.000	2,300.000	2,388.262	2,387.610	8.033	7.459	-94.25	-356.266	-4,788.964	4,802.960	4,792.014	10.95	438.781	
2,400.000	2,400.000	2,485.524	2,484.845	8.392	7.809	-94.27	-357.682	-4,787.143	4,801.202	4,789.755	11.45	419.432	
2,500.000	2,500.000	3,348.000	3,330.131	8.750	11.015	-94.56	-375.229	-4,707.612	4,794.602	4,780.821	13.78	347.913	
2,600.000	2,600.000	3,348.000	3,330.131	9.109	11.015	-94.56	-375.229	-4,707.612	4,778.345	4,764.304	14.04	340.313	
2,700.000	2,700.000	3,348.000	3,330.131	9.467	11.015	-94.56	-375.229	-4,707.612	4,764.132	4,749.829	14.30	333.083	
2,800.000	2,800.000	3,348.000	3,330.131	9.826	11.015	-94.56	-375.229	-4,707.612	4,751.981	4,737.415	14.57	326.224	
2,900.000	2,900.000	3,348.000	3,330.131	10.184	11.015	-94.56	-375.229	-4,707.612	4,741.909	4,727.078	14.83	319.731	
3,000.000	3,000.000	3,348.000	3,330.131	10.543	11.015	-94.56	-375.229	-4,707.612	4,733.928	4,718.832	15.10	313.599	
3,100.000	3,100.000	3,348.000	3,330.131	10.901	11.015	-94.56	-375.229	-4,707.612	4,728.049	4,712.689	15.36	307.823	
3,200.000	3,200.000	3,371.746	3,353.863	11.260	11.101	-94.56	-375.424	-4,706.838	4,724.228	4,708.548	15.68	301.278	
3,300.000	3,300.000	3,485.010	3,467.055	11.618	11.509	-94.58	-376.542	-4,702.922	4,720.858	4,704.639	16.22	291.058	
3,400.000	3,400.000	3,592.966	3,574.930	11.977	11.900	-94.60	-377.709	-4,698.942	4,717.269	4,700.523	16.75	281.694	
3,500.000	3,500.000	3,705.536	3,687.406	12.335	12.309	-94.62	-379.124	-4,694.561	4,713.493	4,696.209	17.28	272.705	
3,600.000	3,600.000	3,822.459	3,804.211	12.693	12.735	-94.64	-380.870	-4,689.597	4,709.381	4,691.547	17.83	264.074	
3,700.000	3,700.000	3,934.317	3,915.933	13.052	13.144	-94.67	-382.842	-4,684.459	4,704.943	4,686.572	18.37	256.106	
3,800.000	3,800.000	4,041.093	4,022.565	13.410	13.536	-94.70	-385.022	-4,679.360	4,700.352	4,681.455	18.90	248.742	
3,900.000	3,900.000	4,154.127	4,135.434	13.769	13.952	-94.74	-387.245	-4,673.680	4,695.501	4,676.064	19.44	241.571	
4,000.000	4,000.000	4,263.285	4,244.421	14.127	14.354	-94.77	-389.384	-4,667.949	4,690.431	4,670.462	19.97	234.889	
4,100.000	4,100.000	4,377.210	4,358.153	14.486	14.774	-94.80	-391.579	-4,661.702	4,685.127	4,664.615	20.51	228.412	
4,200.500	4,200.500	4,473.031	4,453.806	14.846	15.128	-94.83	-393.437	-4,656.333	4,679.677	4,658.665	21.01	222.714	
4,250.000	4,249.974	4,520.604	4,501.294	15.015	15.304	56.18	-394.436	-4,653.694	4,676.264	4,655.011	21.25	220.026	
4,300.000	4,299.794	4,574.960	4,555.555	15.178	15.505	56.48	-395.623	-4,650.693	4,671.290	4,649.784	21.51	217.211	
4,350.000	4,349.302	4,707.185	4,687.464	15.341	15.997	57.01	-397.900	-4,641.884	4,664.051	4,642.106	21.95	212.528	
4,400.000	4,398.343	4,768.820	4,748.916	15.502	16.228	57.62	-398.967	-4,637.254	4,655.048	4,632.834	22.21	209.557	
4,450.000	4,446.764	4,833.417	4,813.299	15.664	16.472	58.36	-400.302	-4,632.178	4,644.433	4,621.944	22.49	206.524	
4,500.000	4,494.412	4,898.383	4,878.021	15.827	16.718	59.24	-401.964	-4,626.811	4,632.237	4,609.472	22.76	203.484	
4,550.000	4,541.138	4,963.008	4,942.363	15.994	16.964	60.25	-404.152	-4,621.177	4,618.504	4,595.464	23.04	200.455	
4,600.000	4,586.796	5,015.737	4,994.839	16.168	17.167	61.36	-406.165	-4,616.426	4,603.365	4,580.076	23.29	197.661	
4,650.000	4,631.242	5,075.836	5,054.629	16.349	17.398	62.64	-408.605	-4,610.856	4,586.905	4,563.348	23.56	194.711	
4,696.423	4,671.302	5,138.397	5,116.840	16.526	17.640	63.99	-411.168	-4,604.770	4,570.415	4,546.589	23.83	191.832	
4,700.000	4,674.340	5,143.128	5,121.544	16.541	17.658	63.47	-411.362	-4,604.297	4,569.091	4,545.245	23.85	191.604	
4,750.000	4,716.618	5,192.778	5,170.901	16.746	17.851	56.11	-413.335	-4,599.285	4,548.767	4,524.670	24.10	188.770	
4,800.000	4,758.358	5,241.784	5,219.613	16.968	18.042	49.10	-415.178	-4,594.251	4,525.109	4,500.760	24.35	185.840	
4,850.000	4,799.301	5,286.263	5,263.818	17.207	18.215	42.51	-416.854	-4,589.615	4,498.266	4,473.676	24.59	182.926	
4,900.000	4,839.196	5,329.406	5,306.688	17.465	18.383	36.37	-418.532	-4,585.061	4,468.396	4,443.571	24.83	179.995	
4,950.000	4,877.796	5,356.941	5,334.048	17.745	18.491	30.55	-419.601	-4,582.168	4,435.728	4,410.709	25.02	177.295	
5,000.000	4,914.863	5,383.797	5,360.742	18.051	18.595	25.01	-420.614	-4,579.391	4,400.489	4,375.286	25.20	174.599	
5,050.000	4,950.170	5,409.065	5,385.861	18.389	18.694	19.60	-421.542	-4,576.820	4,362.875	4,337.500	25.37	171.941	
5,100.000	4,983.497	5,439.884	5,416.504	18.763	18.814	14.13	-422.649	-4,573.719	4,323.084	4,297.539	25.54	169.236	
5,150.000	5,014.641	5,477.675	5,454.071	19.181	18.961	8.31	-424.040	-4,569.847	4,281.266	4,255.551	25.72	166.487	
5,200.000	5,043.408	5,511.505	5,487.690	19.649	19.093	1.74	-425.324	-4,566.300	4,237.674	4,211.814	25.86	163.868	
5,247.822	5,068.536	5,533.155	5,509.201	20.148	19.178	-5.68	-426.147	-4,564.001	4,194.596	4,168.637	25.96	161.582	
5,300.000	5,094.625	5,553.211	5,529.132	20.749	19.256	-5.77	-426.857	-4,561.876	4,146.969	4,120.920	26.05	159.200	
5,322.822	5,106.036	5,561.995	5,537.862	21.029	19.290	-5.80	-427.152	-4,560.948	4,126.140	4,100.052	26.09	158.167	
5,325.000	5,107.121	5,562.830	5,538.691	21.056	19.293	-5.87	-427.180	-4,560.860	4,124.150	4,098.059	26.09	158.067	
5,350.000	5,118.948	5,571.788	5,547.595	21.381	19.328	-6.71	-427.469	-4,559.915	4,101.035	4,074.903	26.13	156.936	
5,375.000	5,129.606	5,579.592	5,555.351	21.729	19.359	-7.84	-427.713	-4,559.093	4,077.458	4,051.290	26.17	155.817	
5,400.000	5,139.067	5,586.217	5,561.937	22.098	19.385	-9.42	-427.913	-4,558.396	4,053.484	4,027.285	26.20	154.722	
5,425.000	5,147.303	5,591.645	5,567.332	22.488	19.406	-11.80	-428.074	-4,557.825	4,029.177	4,002.954	26.22	153.654	
5,450.000	5,154.294	5,595.859	5,571.521	22.898	19.422	-15.71	-428.195	-4,557.382	4,004.603	3,978.363	26.24	152.613	
5,475.000	5,160.018	5,598.845	5,574.489	23.326	19.434	-23.22	-428.280	-4,557.069	3,979.831	3,953.578	26.25	151.600	

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 Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design Jackson B - Jackson B #53 - Vertical - Directional — **Offset Site Error:** 0.000 usft

Survey Program: 644-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
5,500.000	5,164.461	5,600.594	5,576.228	23.773	19.441	-41.84	-428.329	-4,556.886	3,954.927	3,928.668	26.26	150.616	
5,525.000	5,167.611	5,601.099	5,576.730	24.234	19.443	-94.86	-428.343	-4,556.833	3,929.960	3,903.701	26.26	149.661	
5,550.000	5,169.459	5,600.358	5,575.993	24.709	19.440	-141.81	-428.323	-4,556.910	3,904.998	3,878.743	26.25	148.736	
5,574.822	5,170.000	5,598.389	5,574.036	25.191	19.432	-157.64	-428.267	-4,557.117	3,880.286	3,854.041	26.25	147.847	
5,600.000	5,169.894	5,595.768	5,571.431	25.691	19.422	-157.53	-428.193	-4,557.392	3,855.280	3,829.046	26.23	146.958	
5,700.000	5,169.475	5,585.338	5,561.062	27.792	19.381	-157.05	-427.887	-4,558.488	3,755.966	3,729.775	26.19	143.406	
5,800.000	5,169.056	5,574.871	5,550.659	30.046	19.340	-156.55	-427.566	-4,559.590	3,656.658	3,630.508	26.15	139.837	
5,900.000	5,168.637	5,564.370	5,540.222	32.420	19.299	-156.02	-427.230	-4,560.697	3,557.356	3,531.247	26.11	136.252	
6,000.000	5,168.218	5,553.832	5,529.749	34.891	19.258	-155.48	-426.879	-4,561.811	3,458.061	3,431.992	26.07	132.649	
6,100.000	5,167.799	5,543.259	5,519.242	37.438	19.217	-154.90	-426.511	-4,562.930	3,358.774	3,332.743	26.03	129.029	
6,200.000	5,167.380	5,537.258	5,513.275	40.048	19.194	-154.56	-426.326	-4,563.550	3,259.483	3,233.481	26.00	125.351	
6,300.000	5,166.961	5,523.212	5,499.321	42.708	19.139	-153.74	-425.777	-4,565.056	3,160.222	3,134.260	25.96	121.725	
6,400.000	5,166.542	5,509.396	5,485.594	45.410	19.085	-152.87	-425.243	-4,566.524	3,060.958	3,035.034	25.92	118.075	
6,500.000	5,166.123	5,495.806	5,472.090	48.146	19.032	-151.96	-424.723	-4,567.955	2,961.693	2,935.805	25.89	114.401	
6,600.000	5,165.704	5,482.436	5,458.802	50.912	18.980	-151.00	-424.218	-4,569.352	2,862.428	2,836.572	25.86	110.704	
6,700.000	5,165.285	5,469.280	5,445.726	53.703	18.928	-149.99	-423.727	-4,570.715	2,763.164	2,737.336	25.83	106.983	
6,800.000	5,164.866	5,456.333	5,432.857	56.514	18.878	-148.93	-423.249	-4,572.045	2,663.902	2,638.099	25.80	103.237	
6,900.000	5,164.447	5,443.591	5,420.189	59.343	18.828	-147.80	-422.783	-4,573.344	2,564.645	2,538.861	25.78	99.467	
7,000.000	5,164.028	5,431.048	5,407.719	62.188	18.779	-146.61	-422.330	-4,574.611	2,465.393	2,439.623	25.77	95.669	
7,100.000	5,163.609	5,419.805	5,396.540	65.046	18.736	-145.47	-421.928	-4,575.739	2,366.150	2,340.386	25.76	91.839	
7,200.000	5,163.190	5,410.608	5,387.396	67.916	18.700	-144.49	-421.598	-4,576.664	2,266.928	2,241.159	25.77	87.971	
7,300.000	5,162.771	5,401.310	5,378.151	70.796	18.663	-143.43	-421.260	-4,577.605	2,167.733	2,141.949	25.78	84.075	
7,400.000	5,162.352	5,391.909	5,368.805	73.685	18.627	-142.31	-420.915	-4,578.561	2,068.567	2,042.759	25.81	80.150	
7,500.000	5,161.933	5,382.402	5,359.355	76.583	18.590	-141.10	-420.562	-4,579.534	1,969.435	1,943.587	25.85	76.193	
7,600.000	5,161.514	5,372.788	5,349.799	79.487	18.552	-139.81	-420.202	-4,580.524	1,870.341	1,844.436	25.91	72.200	
7,700.000	5,161.095	5,363.066	5,340.136	82.398	18.514	-138.43	-419.835	-4,581.531	1,771.290	1,745.306	25.98	68.167	
7,800.000	5,160.676	5,353.234	5,330.364	85.315	18.476	-136.94	-419.459	-4,582.555	1,672.289	1,646.196	26.09	64.090	
7,900.000	5,160.257	5,343.289	5,320.482	88.237	18.437	-135.34	-419.075	-4,583.597	1,573.346	1,547.108	26.24	59.964	
8,000.000	5,159.838	5,334.039	5,311.290	91.164	18.401	-133.76	-418.716	-4,584.569	1,474.470	1,448.036	26.43	55.779	
8,100.000	5,159.419	5,322.580	5,299.905	94.095	18.357	-131.68	-418.263	-4,585.786	1,375.678	1,348.988	26.69	51.543	
8,200.000	5,159.000	5,311.192	5,288.589	97.029	18.312	-129.44	-417.817	-4,586.991	1,276.977	1,249.944	27.03	47.238	
8,300.000	5,158.581	5,299.873	5,277.342	99.968	18.268	-127.06	-417.377	-4,588.184	1,178.388	1,150.895	27.49	42.862	
8,400.000	5,158.162	5,288.622	5,266.162	102.909	18.224	-124.51	-416.944	-4,589.367	1,079.945	1,051.830	28.11	38.412	
8,500.000	5,157.743	5,277.440	5,255.050	105.854	18.181	-121.80	-416.517	-4,590.539	981.691	952.726	28.97	33.892	
8,600.000	5,157.324	5,266.326	5,244.005	108.801	18.137	-118.93	-416.096	-4,591.700	883.693	853.550	30.14	29.317	
8,700.000	5,156.905	5,255.279	5,233.025	111.750	18.094	-115.88	-415.681	-4,592.851	786.045	754.247	31.80	24.720	
8,800.000	5,156.487	5,244.451	5,222.264	114.702	18.052	-112.72	-415.275	-4,593.974	688.899	654.725	34.17	20.158	
8,900.000	5,156.068	5,233.358	5,211.237	117.656	18.009	-109.31	-414.868	-4,595.123	592.506	554.844	37.66	15.732	
9,000.000	5,155.649	5,222.347	5,200.293	120.612	17.966	-105.75	-414.460	-4,596.258	497.301	454.366	42.93	11.583	
9,100.000	5,155.230	5,211.418	5,189.430	123.570	17.924	-102.08	-414.049	-4,597.381	404.125	352.934	51.19	7.894	
9,200.000	5,154.811	5,200.570	5,178.647	126.530	17.882	-98.31	-413.635	-4,598.491	314.793	250.134	64.66	4.869	
9,300.000	5,154.392	5,189.802	5,167.943	129.491	17.840	-94.47	-413.220	-4,599.588	233.756	146.630	87.13	2.683	
9,400.000	5,153.973	5,179.114	5,157.318	132.454	17.798	-90.61	-412.803	-4,600.674	173.095	53.368	119.73	1.446	Level 3
9,474.799	5,153.659	5,171.170	5,149.421	134.671	17.767	-87.71	-412.490	-4,601.477	156.299	20.607	135.69	1.152	Level 2, CC, ES, SF
9,500.000	5,153.554	5,168.503	5,146.770	135.418	17.757	-86.74	-412.384	-4,601.747	158.296	23.035	135.26	1.170	Level 2
9,600.000	5,153.135	5,157.970	5,136.299	138.383	17.716	-82.91	-411.963	-4,602.808	199.827	87.742	112.08	1.783	
9,700.000	5,152.716	5,147.513	5,125.903	141.350	17.676	-79.15	-411.540	-4,603.858	273.102	186.516	86.59	3.154	
9,800.000	5,152.297	5,137.191	5,115.642	144.318	17.635	-75.51	-411.119	-4,604.890	359.195	289.259	69.94	5.136	
9,900.000	5,151.878	5,127.151	5,105.660	147.286	17.597	-72.06	-410.707	-4,605.887	450.828	391.418	59.41	7.588	
10,000.000	5,151.459	5,117.266	5,095.831	150.256	17.558	-68.77	-410.302	-4,606.861	545.221	492.756	52.47	10.392	
10,100.000	5,151.040	5,107.531	5,086.151	153.227	17.521	-65.66	-409.903	-4,607.812	641.159	593.501	47.66	13.453	
10,200.000	5,150.621	5,097.943	5,076.616	156.198	17.484	-62.72	-409.510	-4,608.741	738.044	693.850	44.19	16.700	

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 Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design Jackson B - Jackson B #53 - Vertical - Directional

Offset Site Error: 0.000 usft

Survey Program: 644-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
10,300.000	5,150.202	5,088.499	5,067.225	159.171	17.447	-59.95	-409.124	-4,609.649	835.548	793.938	41.61	20.081	
10,348.181	5,150.000	5,084.000	5,062.749	160.603	17.430	-58.68	-408.939	-4,610.080	882.688	842.095	40.59	21.745	

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design Picard - Picard 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
0.000	0.000	0.000	0.000	0.000	0.000	180.00	-50.000	0.000	50.000				
100.000	100.000	100.000	100.000	0.147	0.147	180.00	-50.000	0.000	50.000	49.792	0.21	240.556	
200.000	200.000	200.000	200.000	0.505	0.505	180.00	-50.000	0.000	50.000	49.285	0.71	69.949	
300.000	300.000	300.000	300.000	0.864	0.864	180.00	-50.000	0.000	50.000	48.778	1.22	40.924	
400.000	400.000	400.000	400.000	1.222	1.222	180.00	-50.000	0.000	50.000	48.271	1.73	28.923	
500.000	500.000	500.000	500.000	1.581	1.581	180.00	-50.000	0.000	50.000	47.764	2.24	22.365	
600.000	600.000	600.000	600.000	1.939	1.939	180.00	-50.000	0.000	50.000	47.257	2.74	18.231	
700.000	700.000	700.000	700.000	2.298	2.298	180.00	-50.000	0.000	50.000	46.750	3.25	15.387	
800.000	800.000	800.000	800.000	2.656	2.656	180.00	-50.000	0.000	50.000	46.243	3.76	13.310	
900.000	900.000	900.000	900.000	3.015	3.015	180.00	-50.000	0.000	50.000	45.737	4.26	11.727	
1,000.000	1,000.000	1,000.000	1,000.000	3.373	3.373	180.00	-50.000	0.000	50.000	45.230	4.77	10.481	
1,100.000	1,100.000	1,100.000	1,100.000	3.732	3.732	180.00	-50.000	0.000	50.000	44.723	5.28	9.474	
1,200.000	1,200.000	1,200.000	1,200.000	4.090	4.090	180.00	-50.000	0.000	50.000	44.216	5.78	8.644	
1,300.000	1,300.000	1,300.000	1,300.000	4.449	4.449	180.00	-50.000	0.000	50.000	43.709	6.29	7.947	
1,400.000	1,400.000	1,400.000	1,400.000	4.807	4.807	180.00	-50.000	0.000	50.000	43.202	6.80	7.355	
1,500.000	1,500.000	1,500.000	1,500.000	5.166	5.166	180.00	-50.000	0.000	50.000	42.695	7.31	6.844	
1,600.000	1,600.000	1,600.000	1,600.000	5.524	5.524	180.00	-50.000	0.000	50.000	42.188	7.81	6.400	
1,700.000	1,700.000	1,700.000	1,700.000	5.883	5.883	180.00	-50.000	0.000	50.000	41.681	8.32	6.010	
1,800.000	1,800.000	1,800.000	1,800.000	6.241	6.241	180.00	-50.000	0.000	50.000	41.174	8.83	5.665	
1,900.000	1,900.000	1,900.000	1,900.000	6.599	6.599	180.00	-50.000	0.000	50.000	40.667	9.33	5.357	
2,000.000	2,000.000	2,000.000	2,000.000	6.958	6.958	180.00	-50.000	0.000	50.000	40.160	9.84	5.081	
2,100.000	2,100.000	2,100.000	2,100.000	7.316	7.316	180.00	-50.000	0.000	50.000	39.653	10.35	4.832	
2,200.000	2,200.000	2,200.000	2,200.000	7.675	7.675	180.00	-50.000	0.000	50.000	39.146	10.85	4.607	
2,300.000	2,300.000	2,300.000	2,300.000	8.033	8.033	180.00	-50.000	0.000	50.000	38.639	11.36	4.401	
2,400.000	2,400.000	2,400.000	2,400.000	8.392	8.392	180.00	-50.000	0.000	50.000	38.132	11.87	4.213	
2,500.000	2,500.000	2,500.000	2,500.000	8.750	8.750	180.00	-50.000	0.000	50.000	37.625	12.37	4.040	
2,600.000	2,600.000	2,600.000	2,600.000	9.109	9.109	180.00	-50.000	0.000	50.000	37.118	12.88	3.881	
2,700.000	2,700.000	2,700.000	2,700.000	9.467	9.467	180.00	-50.000	0.000	50.000	36.611	13.39	3.734	
2,800.000	2,800.000	2,800.000	2,800.000	9.826	9.826	180.00	-50.000	0.000	50.000	36.104	13.90	3.598	
2,900.000	2,900.000	2,900.000	2,900.000	10.184	10.184	180.00	-50.000	0.000	50.000	35.597	14.40	3.472	
3,000.000	3,000.000	3,000.000	3,000.000	10.543	10.543	180.00	-50.000	0.000	50.000	35.090	14.91	3.354	
3,100.000	3,100.000	3,100.000	3,100.000	10.901	10.901	180.00	-50.000	0.000	50.000	34.583	15.42	3.243	
3,200.000	3,200.000	3,200.000	3,200.000	11.260	11.260	180.00	-50.000	0.000	50.000	34.077	15.92	3.140	
3,300.000	3,300.000	3,300.000	3,300.000	11.618	11.618	180.00	-50.000	0.000	50.000	33.570	16.43	3.043	
3,400.000	3,400.000	3,400.000	3,400.000	11.977	11.977	180.00	-50.000	0.000	50.000	33.063	16.94	2.952	
3,500.000	3,500.000	3,500.000	3,500.000	12.335	12.335	180.00	-50.000	0.000	50.000	32.556	17.44	2.866	
3,600.000	3,600.000	3,600.000	3,600.000	12.693	12.693	180.00	-50.000	0.000	50.000	32.049	17.95	2.785	
3,700.000	3,700.000	3,700.000	3,700.000	13.052	13.052	180.00	-50.000	0.000	50.000	31.542	18.46	2.709	
3,800.000	3,800.000	3,800.000	3,800.000	13.410	13.410	180.00	-50.000	0.000	50.000	31.035	18.97	2.636	
3,900.000	3,900.000	3,900.000	3,900.000	13.769	13.769	180.00	-50.000	0.000	50.000	30.528	19.47	2.568	
3,905.596	3,905.596	3,905.596	3,905.596	13.789	13.789	180.00	-50.000	0.000	50.000	30.499	19.50	2.564	CC
4,000.000	4,000.000	3,998.663	3,998.658	14.127	14.119	-179.66	-50.314	-0.299	50.332	30.365	19.97	2.521	ES, SF
4,100.000	4,100.000	4,092.069	4,091.429	14.486	14.427	-172.78	-57.657	-7.302	58.746	38.488	20.26	2.900	
4,200.500	4,200.500	4,181.231	4,177.744	14.846	14.719	-162.99	-73.625	-22.528	80.287	60.104	20.18	3.978	
4,250.000	4,249.974	4,222.952	4,216.906	15.015	14.858	-8.03	-84.022	-32.442	94.672	74.670	20.00	4.733	
4,300.000	4,299.794	4,264.028	4,254.479	15.178	14.999	-4.66	-96.024	-43.887	109.841	90.101	19.74	5.564	
4,350.000	4,349.302	4,304.069	4,290.017	15.341	15.141	-1.87	-109.364	-56.608	125.543	106.132	19.41	6.468	
4,400.000	4,398.343	4,343.113	4,323.506	15.502	15.289	0.49	-123.882	-70.452	141.690	122.663	19.03	7.447	
4,450.000	4,446.764	4,381.203	4,354.952	15.664	15.442	2.50	-139.432	-85.279	158.203	139.608	18.60	8.508	
4,500.000	4,494.412	4,421.930	4,387.242	15.827	15.619	4.49	-157.192	-102.606	174.808	156.455	18.35	9.525	
4,550.000	4,541.138	4,466.728	4,422.035	15.994	15.834	7.18	-175.542	-124.024	189.922	171.569	18.35	10.348	
4,600.000	4,586.796	4,510.489	4,455.310	16.168	16.067	10.32	-191.751	-147.355	203.547	185.274	18.27	11.139	

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 Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design Picard - Picard 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
4,650.000	4,631.242	4,552.744	4,486.623	16.349	16.315	13.79	-205.719	-172.037	216.148	198.039	18.11	11.936	
4,696.423	4,671.302	4,590.296	4,513.665	16.526	16.558	17.19	-216.694	-195.661	227.381	209.490	17.89	12.709	
4,700.000	4,674.340	4,593.119	4,515.665	16.541	16.577	17.03	-217.464	-197.498	228.243	210.373	17.87	12.772	
4,750.000	4,716.618	4,632.136	4,542.802	16.746	16.855	14.70	-227.281	-223.747	240.750	223.155	17.60	13.683	
4,800.000	4,758.358	4,670.401	4,568.432	16.968	17.152	12.37	-235.409	-250.965	253.843	236.546	17.30	14.675	
4,850.000	4,799.301	4,707.999	4,592.575	17.207	17.468	10.19	-241.922	-279.034	267.191	250.212	16.98	15.736	
4,900.000	4,839.196	4,745.006	4,615.250	17.465	17.807	8.26	-246.882	-307.851	280.519	263.876	16.64	16.855	
4,950.000	4,877.796	4,781.487	4,636.470	17.745	18.173	6.62	-250.348	-337.316	293.602	277.313	16.29	18.025	
5,000.000	4,914.863	4,817.502	4,656.248	18.051	18.562	5.26	-252.371	-367.340	306.254	290.335	15.92	19.238	
5,050.000	4,950.170	4,853.828	4,674.957	18.389	18.979	4.18	-253.002	-398.466	318.321	302.747	15.57	20.439	
5,100.000	4,983.497	4,901.985	4,699.036	18.763	19.582	3.50	-253.039	-440.171	328.630	312.838	15.79	20.810	
5,150.000	5,014.641	4,940.685	4,718.189	19.181	20.103	2.39	-253.068	-473.798	336.521	320.960	15.56	21.625	
5,200.000	5,043.408	4,969.470	4,731.034	19.649	20.521	1.14	-253.090	-499.552	344.058	329.179	14.88	23.123	
5,247.822	5,068.536	5,000.000	4,742.936	20.148	20.995	0.00	-253.114	-527.661	351.211	336.830	14.38	24.421	
5,300.000	5,094.625	5,025.000	4,751.329	20.749	21.409	0.00	-253.134	-551.207	360.494	346.943	13.55	26.602	
5,322.822	5,106.036	5,038.891	4,755.456	21.029	21.650	0.00	-253.145	-564.470	365.544	352.198	13.35	27.391	
5,325.000	5,107.121	5,040.090	4,755.794	21.056	21.671	0.00	-253.146	-565.621	366.052	352.730	13.32	27.478	
5,350.000	5,118.948	5,050.000	4,758.478	21.381	21.843	0.00	-253.154	-575.160	371.608	358.691	12.92	28.770	
5,375.000	5,129.606	5,067.586	4,762.751	21.729	22.162	0.00	-253.168	-592.218	376.516	363.709	12.81	29.399	
5,400.000	5,139.067	5,081.313	4,765.648	22.098	22.415	0.00	-253.179	-605.635	380.881	368.304	12.58	30.284	
5,425.000	5,147.303	5,095.028	4,768.156	22.488	22.674	0.00	-253.190	-619.119	384.663	372.294	12.37	31.099	
5,450.000	5,154.294	5,108.733	4,770.274	22.898	22.937	0.00	-253.200	-632.659	387.860	375.675	12.18	31.831	
5,475.000	5,160.018	5,125.000	4,772.283	23.326	23.254	0.00	-253.213	-648.800	390.485	378.390	12.09	32.287	
5,500.000	5,164.461	5,136.122	4,773.339	23.773	23.476	0.00	-253.222	-659.871	392.489	380.591	11.90	32.989	
5,525.000	5,167.611	5,150.000	4,774.295	24.234	23.753	0.00	-253.233	-673.716	393.918	382.116	11.80	33.376	
5,550.000	5,169.459	5,163.491	4,774.839	24.709	24.028	0.00	-253.244	-687.196	394.755	383.024	11.73	33.650	
5,574.822	5,170.000	5,178.222	4,775.002	25.191	24.329	0.00	-253.254	-700.444	395.000	383.304	11.70	33.772	
5,600.000	5,169.894	5,201.918	4,774.923	25.691	24.825	0.00	-253.274	-725.621	394.973	383.123	11.85	33.331	
5,700.000	5,169.475	5,301.918	4,774.609	27.792	27.015	0.00	-253.353	-825.620	394.869	382.348	12.52	31.538	
5,800.000	5,169.056	5,401.917	4,774.294	30.046	29.352	0.00	-253.431	-925.620	394.764	381.513	13.25	29.791	
5,900.000	5,168.637	5,501.917	4,773.980	32.420	31.798	0.00	-253.509	-1,025.619	394.659	380.628	14.03	28.127	
6,000.000	5,168.218	5,601.917	4,773.666	34.891	34.330	0.00	-253.588	-1,125.619	394.554	379.701	14.85	26.564	
6,100.000	5,167.799	5,701.917	4,773.352	37.438	36.933	0.00	-253.666	-1,225.618	394.449	378.739	15.71	25.107	
6,200.000	5,167.380	5,801.917	4,773.038	40.048	39.591	0.00	-253.745	-1,325.618	394.345	377.747	16.60	23.758	
6,300.000	5,166.961	5,901.917	4,772.723	42.708	42.295	0.00	-253.823	-1,425.617	394.240	376.729	17.51	22.514	
6,400.000	5,166.542	6,001.917	4,772.409	45.410	45.035	0.00	-253.902	-1,525.616	394.135	375.690	18.45	21.368	
6,500.000	5,166.123	6,101.917	4,772.095	48.146	47.805	0.00	-253.980	-1,625.616	394.030	374.632	19.40	20.313	
6,600.000	5,165.704	6,201.917	4,771.781	50.912	50.601	0.00	-254.059	-1,725.615	393.926	373.559	20.37	19.341	
6,700.000	5,165.285	6,301.917	4,771.467	53.703	53.419	0.00	-254.137	-1,825.615	393.821	372.471	21.35	18.446	
6,800.000	5,164.866	6,401.917	4,771.152	56.514	56.255	0.00	-254.216	-1,925.614	393.716	371.372	22.34	17.621	
6,900.000	5,164.447	6,501.917	4,770.838	59.343	59.107	0.00	-254.294	-2,025.613	393.611	370.262	23.35	16.858	
7,000.000	5,164.028	6,601.917	4,770.524	62.188	61.972	0.00	-254.372	-2,125.613	393.506	369.143	24.36	16.152	
7,100.000	5,163.609	6,701.917	4,770.210	65.046	64.849	0.00	-254.451	-2,225.612	393.402	368.017	25.39	15.497	
7,200.000	5,163.190	6,801.917	4,769.895	67.916	67.736	0.00	-254.529	-2,325.612	393.297	366.883	26.41	14.890	
7,300.000	5,162.771	6,901.917	4,769.581	70.796	70.632	0.00	-254.608	-2,425.611	393.192	365.742	27.45	14.324	
7,400.000	5,162.352	7,001.917	4,769.267	73.685	73.536	0.00	-254.686	-2,525.611	393.087	364.597	28.49	13.797	
7,500.000	5,161.933	7,101.916	4,768.953	76.583	76.447	0.00	-254.765	-2,625.610	392.982	363.446	29.54	13.305	
7,600.000	5,161.514	7,201.916	4,768.639	79.487	79.364	0.00	-254.843	-2,725.609	392.878	362.291	30.59	12.845	
7,700.000	5,161.095	7,301.916	4,768.324	82.398	82.286	0.00	-254.922	-2,825.609	392.773	361.131	31.64	12.413	
7,800.000	5,160.676	7,401.916	4,768.010	85.315	85.214	0.00	-255.000	-2,925.608	392.668	359.968	32.70	12.008	
7,900.000	5,160.257	7,501.916	4,767.696	88.237	88.146	0.00	-255.078	-3,025.608	392.563	358.802	33.76	11.628	
8,000.000	5,159.838	7,601.916	4,767.382	91.164	91.082	0.00	-255.157	-3,125.607	392.459	357.633	34.83	11.269	

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Offset Design Picard - Picard 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
8,100.000	5,159.419	7,701.916	4,767.068	94.095	94.022	0.00	-255.235	-3,225.606	392.354	356.460	35.89	10.931	
8,200.000	5,159.000	7,801.916	4,766.753	97.029	96.965	0.00	-255.314	-3,325.606	392.249	355.286	36.96	10.612	
8,300.000	5,158.581	7,901.916	4,766.439	99.968	99.911	0.00	-255.392	-3,425.605	392.144	354.109	38.04	10.310	
8,400.000	5,158.162	8,001.916	4,766.125	102.909	102.860	0.00	-255.471	-3,525.605	392.039	352.930	39.11	10.024	
8,500.000	5,157.743	8,101.916	4,765.811	105.854	105.811	0.00	-255.549	-3,625.604	391.935	351.749	40.19	9.753	
8,600.000	5,157.324	8,201.916	4,765.497	108.801	108.765	0.00	-255.628	-3,725.603	391.830	350.566	41.26	9.496	
8,700.000	5,156.905	8,301.916	4,765.182	111.750	111.721	0.00	-255.706	-3,825.603	391.725	349.382	42.34	9.251	
8,800.000	5,156.487	8,401.916	4,764.868	114.702	114.679	0.00	-255.784	-3,925.602	391.620	348.196	43.42	9.018	
8,900.000	5,156.068	8,501.916	4,764.554	117.656	117.639	0.00	-255.863	-4,025.602	391.516	347.009	44.51	8.797	
9,000.000	5,155.649	8,601.916	4,764.240	120.612	120.600	0.00	-255.941	-4,125.601	391.411	345.820	45.59	8.585	
9,100.000	5,155.230	8,701.916	4,763.926	123.570	123.563	0.00	-256.020	-4,225.601	391.306	344.630	46.68	8.384	
9,200.000	5,154.811	8,801.915	4,763.611	126.530	126.527	0.00	-256.098	-4,325.600	391.201	343.439	47.76	8.191	
9,300.000	5,154.392	8,901.915	4,763.297	129.491	129.493	0.00	-256.177	-4,425.599	391.096	342.247	48.85	8.006	
9,400.000	5,153.973	9,001.915	4,762.983	132.454	132.460	0.00	-256.255	-4,525.599	390.992	341.054	49.94	7.830	
9,500.000	5,153.554	9,101.915	4,762.669	135.418	135.429	0.00	-256.334	-4,625.598	390.887	339.860	51.03	7.660	
9,600.000	5,153.135	9,201.915	4,762.354	138.383	138.398	0.00	-256.412	-4,725.598	390.782	338.665	52.12	7.498	
9,700.000	5,152.716	9,301.915	4,762.040	141.350	141.369	0.00	-256.491	-4,825.597	390.677	337.470	53.21	7.343	
9,800.000	5,152.297	9,401.915	4,761.726	144.318	144.340	0.00	-256.569	-4,925.596	390.572	336.273	54.30	7.193	
9,900.000	5,151.878	9,501.915	4,761.412	147.286	147.312	0.00	-256.647	-5,025.596	390.468	335.076	55.39	7.049	
10,000.000	5,151.459	9,601.915	4,761.098	150.256	150.286	0.00	-256.726	-5,125.595	390.363	333.878	56.48	6.911	
10,100.000	5,151.040	9,701.915	4,760.783	153.227	153.260	0.00	-256.804	-5,225.595	390.258	332.680	57.58	6.778	
10,200.000	5,150.621	9,801.915	4,760.469	156.198	156.235	0.00	-256.883	-5,325.594	390.153	331.481	58.67	6.650	
10,300.000	5,150.202	9,901.915	4,760.155	159.171	159.210	0.00	-256.961	-5,425.594	390.049	330.281	59.77	6.526	
10,348.181	5,150.000	9,950.096	4,760.004	160.603	160.644	0.00	-256.999	-5,473.774	389.998	329.703	60.30	6.468	

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3742.000usft (Planning Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

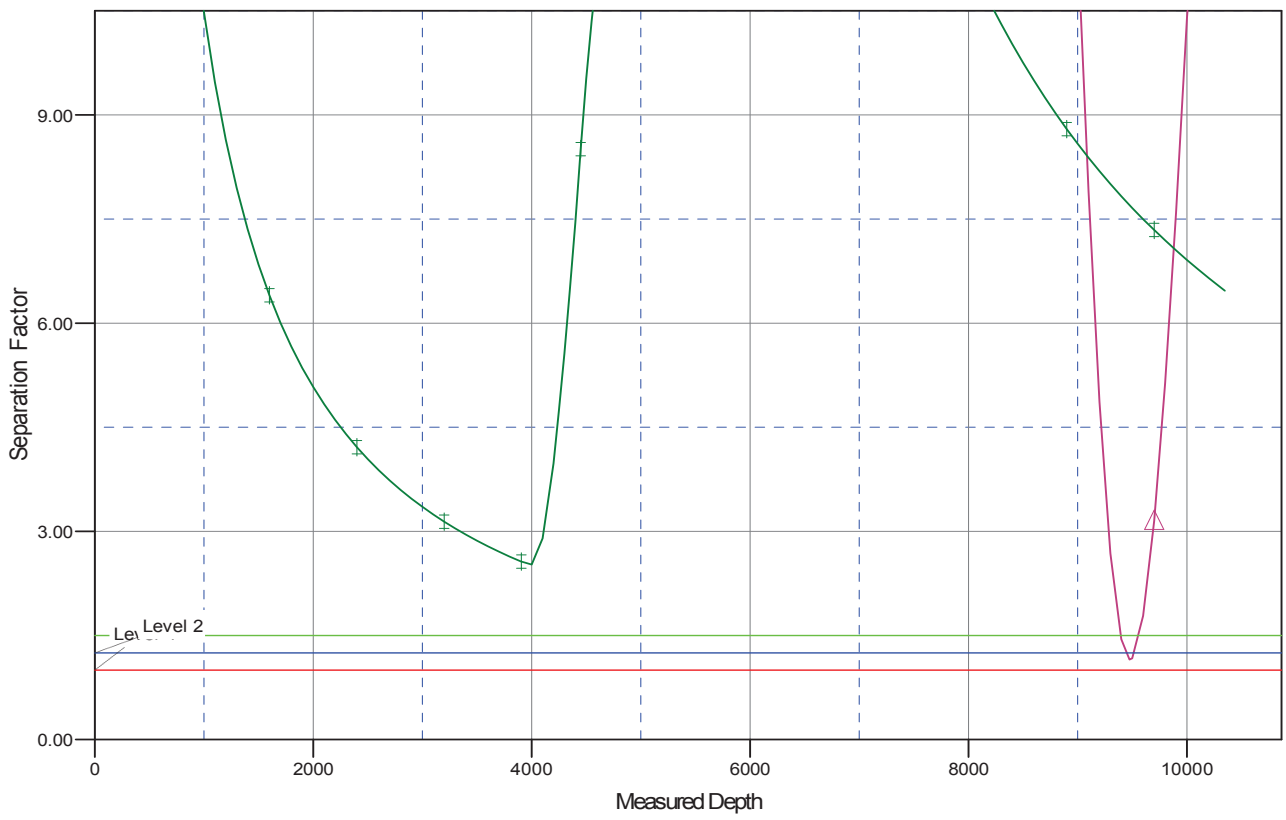
Coordinates are relative to: Riker Federal #4H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.23°

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Reference Site:	Riker	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Riker 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 #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3742.000usft (Planning Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Riker Federal #4H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.23°

Separation Factor Plot



LEGEND

Jackson B #53, Vertical, Directional V0
Picard Federal #1H, Lateral, Plan#1 V0

EOG Resources - Artesia

Eddy County (NAD83)
Riker
Riker Federal #4H

Lateral

Plan: Plan #2

Standard Planning Report

21 December, 2018

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site:	Riker	**North Reference:**	Grid
Well:	Riker Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

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 Riker

Site Position:		**Northing:**	677,473.00 usft	**Latitude:**	32° 51' 42.101 N
From:	Map	**Easting:**	669,943.00 usft	**Longitude:**	103° 54' 52.193 W
Position Uncertainty:	0.000 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.23 °

Well Riker Federal #4H

Well Position	**+N/-S**	-1,222.000 usft	**Northing:**	676,251.00 usft	**Latitude:**	32° 51' 30.025 N
	+E/-W	-401.000 usft	**Easting:**	669,542.00 usft	**Longitude:**	103° 54' 56.951 W
Position Uncertainty		0.000 usft	**Wellhead Elevation:**	3,742.000 usft	**Ground Level:**	3,724.000 usft

Wellbore Lateral

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/23/2018	7.02	60.57	48,135.19596694

Design Plan #2

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	267.312

Plan Survey Tool Program **Date** 12/21/2018

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.000	10,348.181	Plan #2 (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	
3,300.000	0.00	0.000	3,300.000	0.000	0.000	0.00	0.00	0.00	0.00	
4,200.500	0.00	0.000	4,200.500	0.000	0.000	0.00	0.00	0.00	0.00	
4,696.423	31.83	209.170	4,671.302	-117.226	-65.435	6.42	6.42	0.00	209.17	
5,247.822	60.00	269.950	5,068.536	-253.000	-396.000	9.00	5.11	11.02	82.80	
5,322.822	60.00	269.950	5,106.036	-253.057	-460.952	0.00	0.00	0.00	0.00	
5,574.822	90.24	269.955	5,170.000	-253.255	-701.685	12.00	12.00	0.00	0.01	
10,348.181	90.24	269.955	5,150.000	-257.000	-5,475.000	0.00	0.00	0.00	0.00	[RF#4H]BHL1

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site:	Riker	**North Reference:**	Grid
Well:	Riker Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

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
2,900.000	0.00	0.000	2,900.000	0.000	0.000	0.000	0.00	0.00	0.00
3,000.000	0.00	0.000	3,000.000	0.000	0.000	0.000	0.00	0.00	0.00
3,100.000	0.00	0.000	3,100.000	0.000	0.000	0.000	0.00	0.00	0.00
3,200.000	0.00	0.000	3,200.000	0.000	0.000	0.000	0.00	0.00	0.00
3,300.000	0.00	0.000	3,300.000	0.000	0.000	0.000	0.00	0.00	0.00
3,400.000	0.00	0.000	3,400.000	0.000	0.000	0.000	0.00	0.00	0.00
3,500.000	0.00	0.000	3,500.000	0.000	0.000	0.000	0.00	0.00	0.00
3,600.000	0.00	0.000	3,600.000	0.000	0.000	0.000	0.00	0.00	0.00
3,700.000	0.00	0.000	3,700.000	0.000	0.000	0.000	0.00	0.00	0.00
3,800.000	0.00	0.000	3,800.000	0.000	0.000	0.000	0.00	0.00	0.00
3,900.000	0.00	0.000	3,900.000	0.000	0.000	0.000	0.00	0.00	0.00
4,000.000	0.00	0.000	4,000.000	0.000	0.000	0.000	0.00	0.00	0.00
4,100.000	0.00	0.000	4,100.000	0.000	0.000	0.000	0.00	0.00	0.00
4,200.500	0.00	0.000	4,200.500	0.000	0.000	0.000	0.00	0.00	0.00
KOP									
4,250.000	3.18	209.170	4,249.974	-1.198	-0.669	0.724	6.42	6.42	0.00
4,300.000	6.39	209.170	4,299.794	-4.837	-2.700	2.924	6.42	6.42	0.00
4,350.000	9.60	209.170	4,349.302	-10.906	-6.088	6.592	6.42	6.42	0.00
4,400.000	12.81	209.170	4,398.343	-19.385	-10.821	11.718	6.42	6.42	0.00
4,450.000	16.01	209.170	4,446.764	-30.249	-16.885	18.284	6.42	6.42	0.00
4,500.000	19.22	209.170	4,494.412	-43.462	-24.260	26.272	6.42	6.42	0.00
4,550.000	22.43	209.170	4,541.138	-58.984	-32.925	35.654	6.42	6.42	0.00
4,600.000	25.64	209.170	4,586.796	-76.766	-42.850	46.403	6.42	6.42	0.00
4,650.000	28.85	209.170	4,631.242	-96.752	-54.006	58.483	6.42	6.42	0.00
4,696.423	31.83	209.170	4,671.302	-117.226	-65.435	70.860	6.42	6.42	0.00

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site:	Riker	**North Reference:**	Grid
Well:	Riker Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

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)
4,700.000	31.87	209.775	4,674.340	-118.869	-66.364	71.864	9.00	1.17	16.91
4,750.000	32.75	218.038	4,716.618	-140.991	-81.261	87.782	9.00	1.75	16.53
4,800.000	34.14	225.810	4,758.358	-161.433	-99.664	107.123	9.00	2.78	15.54
4,850.000	35.98	232.963	4,799.301	-180.069	-121.459	129.769	9.00	3.68	14.31
4,900.000	38.21	239.449	4,839.196	-196.785	-146.514	155.580	9.00	4.46	12.97
4,950.000	40.76	245.284	4,877.796	-211.477	-174.672	184.396	9.00	5.10	11.67
5,000.000	43.57	250.519	4,914.863	-224.055	-205.761	216.040	9.00	5.63	10.47
5,050.000	46.60	255.220	4,950.170	-234.442	-239.588	250.317	9.00	6.06	9.40
5,100.000	49.81	259.462	4,983.497	-242.572	-275.946	287.016	9.00	6.41	8.48
5,150.000	53.15	263.314	5,014.641	-248.397	-314.609	325.910	9.00	6.69	7.70
5,200.000	56.61	266.837	5,043.408	-251.880	-355.340	366.760	9.00	6.91	7.05
5,247.822	60.00	269.950	5,068.536	-253.000	-396.000	407.427	9.00	7.09	6.51
START 75 TANGENT 9°/100'									
5,298.554	60.00	269.950	5,093.902	-253.038	-439.935	451.316	0.00	0.00	0.00
[RF#4H]UMP 5299' MD (5094' TVD)									
5,300.000	60.00	269.950	5,094.625	-253.039	-441.188	452.567	0.00	0.00	0.00
5,322.822	60.00	269.950	5,106.036	-253.057	-460.952	472.311	0.00	0.00	0.00
END 60° TANGENT/START 12°/100' BR									
5,325.000	60.26	269.950	5,107.121	-253.058	-462.841	474.197	12.00	12.00	0.00
5,350.000	63.26	269.951	5,118.948	-253.077	-484.863	496.196	12.00	12.00	0.00
5,375.000	66.26	269.951	5,129.606	-253.097	-507.474	518.783	12.00	12.00	0.00
5,400.000	69.26	269.952	5,139.067	-253.116	-530.611	541.896	12.00	12.00	0.00
5,425.000	72.26	269.952	5,147.303	-253.136	-554.213	565.472	12.00	12.00	0.00
5,450.000	75.26	269.953	5,154.294	-253.156	-578.212	589.447	12.00	12.00	0.00
5,475.000	78.26	269.953	5,160.018	-253.176	-602.545	613.754	12.00	12.00	0.00
5,500.000	81.26	269.954	5,164.461	-253.196	-627.144	638.327	12.00	12.00	0.00
5,525.000	84.26	269.954	5,167.611	-253.216	-651.942	663.098	12.00	12.00	0.00
5,550.000	87.26	269.955	5,169.459	-253.236	-676.871	688.000	12.00	12.00	0.00
5,574.822	90.24	269.955	5,170.000	-253.255	-701.684	712.787	12.00	12.00	0.00
[RF#4H]EOC 5575' MD (5170' TVD)									
5,600.000	90.24	269.955	5,169.894	-253.275	-726.862	737.938	0.00	0.00	0.00
5,700.000	90.24	269.955	5,169.475	-253.354	-826.861	837.831	0.00	0.00	0.00
5,800.000	90.24	269.955	5,169.056	-253.432	-926.860	937.724	0.00	0.00	0.00
5,900.000	90.24	269.955	5,168.637	-253.510	-1,026.859	1,037.617	0.00	0.00	0.00
6,000.000	90.24	269.955	5,168.218	-253.589	-1,126.858	1,137.510	0.00	0.00	0.00
6,100.000	90.24	269.955	5,167.799	-253.667	-1,226.857	1,237.402	0.00	0.00	0.00
6,200.000	90.24	269.955	5,167.380	-253.746	-1,326.857	1,337.295	0.00	0.00	0.00
6,300.000	90.24	269.955	5,166.961	-253.824	-1,426.856	1,437.188	0.00	0.00	0.00
6,400.000	90.24	269.955	5,166.542	-253.903	-1,526.855	1,537.081	0.00	0.00	0.00
6,500.000	90.24	269.955	5,166.123	-253.981	-1,626.854	1,636.973	0.00	0.00	0.00
6,600.000	90.24	269.955	5,165.704	-254.060	-1,726.853	1,736.866	0.00	0.00	0.00
6,700.000	90.24	269.955	5,165.285	-254.138	-1,826.852	1,836.759	0.00	0.00	0.00
6,800.000	90.24	269.955	5,164.866	-254.217	-1,926.851	1,936.652	0.00	0.00	0.00
6,900.000	90.24	269.955	5,164.447	-254.295	-2,026.850	2,036.545	0.00	0.00	0.00
7,000.000	90.24	269.955	5,164.028	-254.373	-2,126.849	2,136.437	0.00	0.00	0.00
7,100.000	90.24	269.955	5,163.609	-254.452	-2,226.848	2,236.330	0.00	0.00	0.00
7,200.000	90.24	269.955	5,163.190	-254.530	-2,326.847	2,336.223	0.00	0.00	0.00
7,300.000	90.24	269.955	5,162.771	-254.609	-2,426.847	2,436.116	0.00	0.00	0.00
7,400.000	90.24	269.955	5,162.352	-254.687	-2,526.846	2,536.008	0.00	0.00	0.00
7,500.000	90.24	269.955	5,161.933	-254.766	-2,626.845	2,635.901	0.00	0.00	0.00
7,600.000	90.24	269.955	5,161.514	-254.844	-2,726.844	2,735.794	0.00	0.00	0.00
7,700.000	90.24	269.955	5,161.095	-254.923	-2,826.843	2,835.687	0.00	0.00	0.00
7,800.000	90.24	269.955	5,160.676	-255.001	-2,926.842	2,935.579	0.00	0.00	0.00

Database:	EDM 5000.14	**Local Co-ordinate Reference:**	Well Riker Federal #4H
Company:	EOG Resources - Artesia	**TVD Reference:**	KB @ 3742.000usft (Planning Rig)
Project:	Eddy County (NAD83)	**MD Reference:**	KB @ 3742.000usft (Planning Rig)
Site:	Riker	**North Reference:**	Grid
Well:	Riker Federal #4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #2		

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)
7,900.000	90.24	269.955	5,160.257	-255.079	-3,026.841	3,035.472	0.00	0.00	0.00
8,000.000	90.24	269.955	5,159.838	-255.158	-3,126.840	3,135.365	0.00	0.00	0.00
8,100.000	90.24	269.955	5,159.419	-255.236	-3,226.839	3,235.258	0.00	0.00	0.00
8,200.000	90.24	269.955	5,159.000	-255.315	-3,326.838	3,335.151	0.00	0.00	0.00
8,300.000	90.24	269.955	5,158.581	-255.393	-3,426.837	3,435.043	0.00	0.00	0.00
8,400.000	90.24	269.955	5,158.162	-255.472	-3,526.836	3,534.936	0.00	0.00	0.00
8,500.000	90.24	269.955	5,157.743	-255.550	-3,626.836	3,634.829	0.00	0.00	0.00
8,600.000	90.24	269.955	5,157.324	-255.629	-3,726.835	3,734.722	0.00	0.00	0.00
8,700.000	90.24	269.955	5,156.905	-255.707	-3,826.834	3,834.614	0.00	0.00	0.00
8,800.000	90.24	269.955	5,156.487	-255.785	-3,926.833	3,934.507	0.00	0.00	0.00
8,900.000	90.24	269.955	5,156.068	-255.864	-4,026.832	4,034.400	0.00	0.00	0.00
9,000.000	90.24	269.955	5,155.649	-255.942	-4,126.831	4,134.293	0.00	0.00	0.00
9,100.000	90.24	269.955	5,155.230	-256.021	-4,226.830	4,234.186	0.00	0.00	0.00
9,200.000	90.24	269.955	5,154.811	-256.099	-4,326.829	4,334.078	0.00	0.00	0.00
9,300.000	90.24	269.955	5,154.392	-256.178	-4,426.828	4,433.971	0.00	0.00	0.00
9,400.000	90.24	269.955	5,153.973	-256.256	-4,526.827	4,533.864	0.00	0.00	0.00
9,500.000	90.24	269.955	5,153.554	-256.335	-4,626.826	4,633.757	0.00	0.00	0.00
9,600.000	90.24	269.955	5,153.135	-256.413	-4,726.826	4,733.649	0.00	0.00	0.00
9,700.000	90.24	269.955	5,152.716	-256.492	-4,826.825	4,833.542	0.00	0.00	0.00
9,800.000	90.24	269.955	5,152.297	-256.570	-4,926.824	4,933.435	0.00	0.00	0.00
9,900.000	90.24	269.955	5,151.878	-256.648	-5,026.823	5,033.328	0.00	0.00	0.00
10,000.000	90.24	269.955	5,151.459	-256.727	-5,126.822	5,133.221	0.00	0.00	0.00
10,100.000	90.24	269.955	5,151.040	-256.805	-5,226.821	5,233.113	0.00	0.00	0.00
10,200.000	90.24	269.955	5,150.621	-256.884	-5,326.820	5,333.006	0.00	0.00	0.00
10,300.000	90.24	269.955	5,150.202	-256.962	-5,426.819	5,432.899	0.00	0.00	0.00
10,348.181	90.24	269.955	5,150.000	-257.000	-5,475.000	5,481.028	0.00	0.00	0.00
[RF#4H]BHL 10348' MD (5150' 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
[RF#4H]BHL1 - plan hits target center - Point	0.00	0.000	5,150.000	-257.000	-5,475.000	675,994.00	664,067.00	32° 51' 27.692 N	103° 56' 1.149 W
[RF#4H]UMP1 - plan misses target center by 87.870usft at 5298.554usft MD (5093.902 TVD, -253.038 N, -439.935 E) - Point	0.00	0.000	5,170.000	-253.000	-396.000	675,998.00	669,146.00	32° 51' 27.537 N	103° 55' 1.605 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,200.500	4,200.500	0.000	0.000	KOP
5,247.822	5,068.536	-253.000	-396.000	START 75 TANGENT 9°/100'
5,298.554	5,093.902	-253.038	-439.935	[RF#4H]UMP 5299' MD (5094' TVD)
5,322.822	5,106.036	-253.057	-460.952	END 60° TANGENT/START 12°/100' BR
5,574.822	5,170.000	-253.255	-701.684	[RF#4H]EOC 5575' MD (5170' TVD)
10,348.181	5,150.000	-257.000	-5,475.000	[RF#4H]BHL 10348' MD (5150' TVD)

Project:	Eddy County (NAD83)
Site:	Riker
Well:	Riker Federal #4H
Wellbore:	Lateral
Design:	Plan #2
Ground Elevation	3724.000
Northing	676251.00
Easting	669542.00
KB @ 3742.000usft (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:	-0.23°
Magnetic North:	6.79°
Magnetic Field	
Strength:	48135.2snT
Dip Angle:	60.57°
Date:	10/23/2018
Model:	IGRF2015

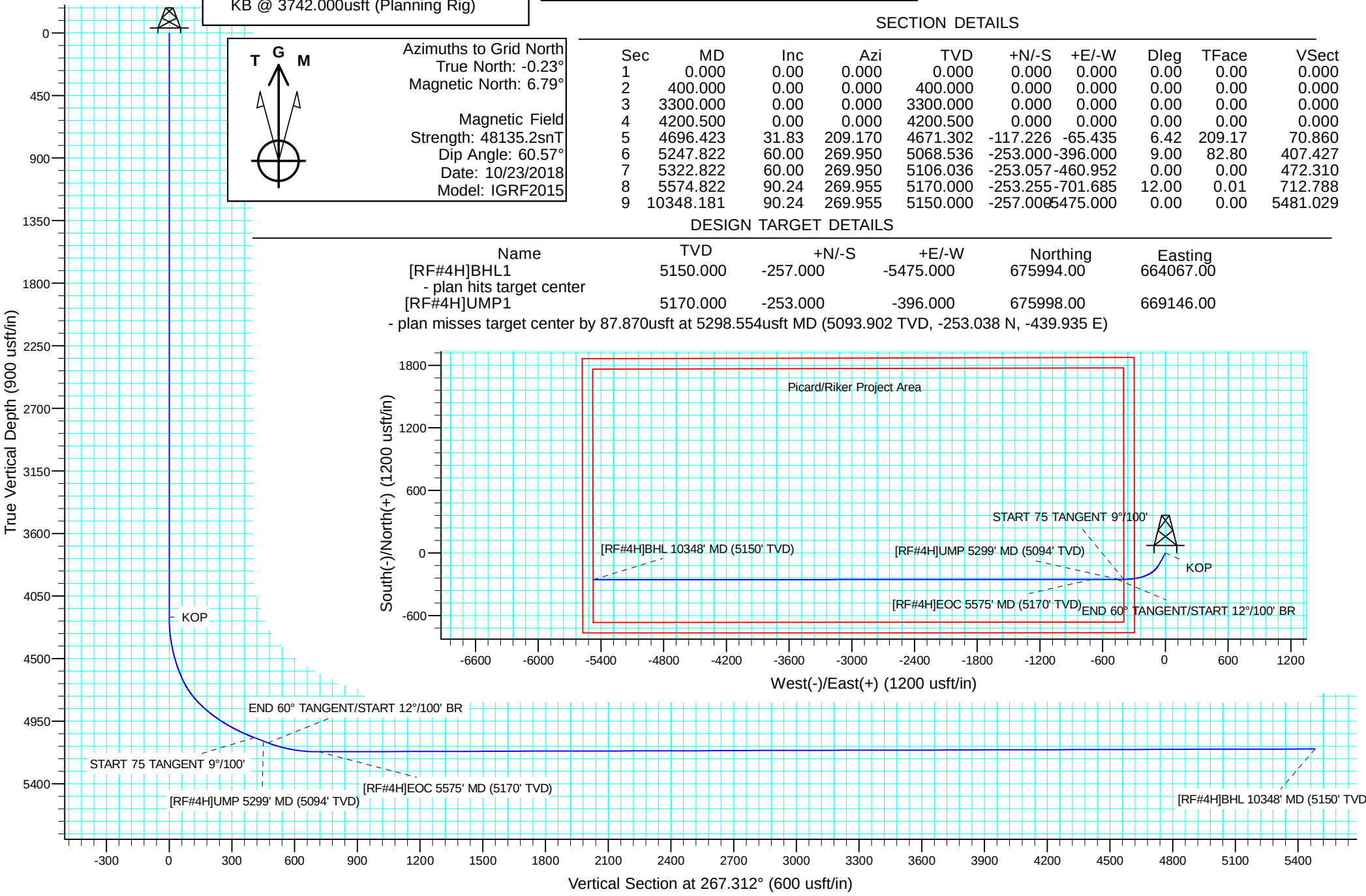
SECTION DETAILS

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	3300.000	0.00	0.000	3300.000	0.000	0.000	0.00	0.00	0.000
4	4200.500	0.00	0.000	4200.500	0.000	0.000	0.00	0.00	0.000
5	4696.423	31.83	209.170	4671.302	-117.226	-65.435	6.42	209.17	70.860
6	5247.822	60.00	269.950	5068.536	-253.000	-396.000	9.00	82.80	407.427
7	5322.822	60.00	269.950	5106.036	-253.057	-460.952	0.00	0.00	472.310
8	5574.822	90.24	269.955	5170.000	-253.255	-701.685	12.00	0.01	712.788
9	10348.181	90.24	269.955	5150.000	-257.000	-5475.000	0.00	0.00	5481.029

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
[RF#4H]BHL1	5150.000	-257.000	-5475.000	675994.00	664067.00
- plan hits target center					
[RF#4H]UMP1	5170.000	-253.000	-396.000	675998.00	669146.00

- plan misses target center by 87.870usft at 5298.554usft MD (5093.902 TVD, -253.038 N, -439.935 E)



EOG RESOURCES, INC.
Riker 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.

EOG RESOURCES, INC.
Riker Federal 4H

- 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.
Riker 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