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Form 3160-3
(June 2015)

APR 2 4 2019

DISTRICT II-ARTESIA O.C.D.

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.
NMNM001372

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.
WARREN FEDERAL
10H 325419

2. Name of Operator
EOG RESOURCES INCORPORATED 7377

9. API Well No.
30-015-45913

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
1111 Bagby Sky Lobby2 Houston TX 77002	(713)651-7000	PENASCO DRAW / SAN ANDRES-YESO 50270

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

At surface NESE / 1953 FSL / 447 FEL / LAT 32.673702 / LONG -104.4997397

At proposed prod. zone SESE / 1340 FSL / 100 FEL / LAT 32.6719451 / LONG -104.4816997

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 8 / T19S / R25E / 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
447 feet	682.69	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
200 feet	2525 feet / 7764 feet	FED: NM2308

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3534 feet	04/01/2019	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)	Tina Huerta / Ph: (575)748-4168	11/01/2018

Title
Regulatory Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Christopher Walls / Ph: (575)234-2234	04/23/2019

Title	Office
Petroleum Engineer	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

Approval Date: 04/23/2019

(Continued on page 2)

*(Instructions on page 2)

RW 4-24-19

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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Additional Operator Remarks

Location of Well

1. SHL: NESE / 1953 FSL / 447 FEL / TWSP: 19S / RANGE: 25E / SECTION: 8 / LAT: 32.673702 / LONG: -104.4997397 (TVD: 1472 feet, MD: 1472 feet)
   PPP: SESE / 1309 FSL / 100 FWL / TWSP: 19S / RANGE: 25E / SECTION: 9 / LAT: 32.6719237 / LONG: -104.979576 (TVD: 2300 feet, MD: 2750 feet)
   BHL: SESE / 1340 FSL / 100 FEL / TWSP: 19S / RANGE: 25E / SECTION: 9 / LAT: 32.6719451 / LONG: -104.4816997 (TVD: 2525 feet, MD: 7764 feet)

BLM Point of Contact

Name: Linda (Cathleen) Queen
Title: Project Manager-Carlsbad Field Office
Phone: 5752345962
Email: cqueen@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**EOG RESOURCES INCORPORATED**
LEASE NO.:	**NMNM001372**
WELL NAME & NO.:	**WARREN FEDERAL 10H**
SURFACE HOLE FOOTAGE:	**1953'/S & 447'/E**
BOTTOM HOLE FOOTAGE	**1340'/S & 100'/E**
LOCATION:	**SECTION 8, T19S, R25E, NMPM**
COUNTY:	**EDDY**

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☒ 4 String Area	☒ Capitan Reef	☒ WIPP

A. Hydrogen Sulfide

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **9 5/8"** surface casing shall be set at approximately **1,250'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
    a. **If cement does not circulate to 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 **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.
    b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
    c. If cement falls back, remedial cementing will be done prior to drilling out that string.

d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The minimum required fill of cement behind the **7 X 5 ½ "** production 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.**

❖ **In <u>Medium/High Cave/Karst Areas</u> if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.**

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. 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.

JJP04022019

GENERAL REQUIREMENTS

1. 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)

   ☒ Chaves and Roosevelt Counties
   Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
   During office hours call (575) 627-0272.
   After office hours call (575)

   ☒ 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

2. 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.

3. 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.

4. The record of the drilling rate along with the GR/N well log (one log per well pad is acceptable) 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. 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.

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

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. 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.

f. 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. This test shall be performed prior to the test at full stack pressure.

g. 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

1. 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.

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

EXIBIT 1a
EOG Resources, Inc.
3M Choke Manifold Equipment

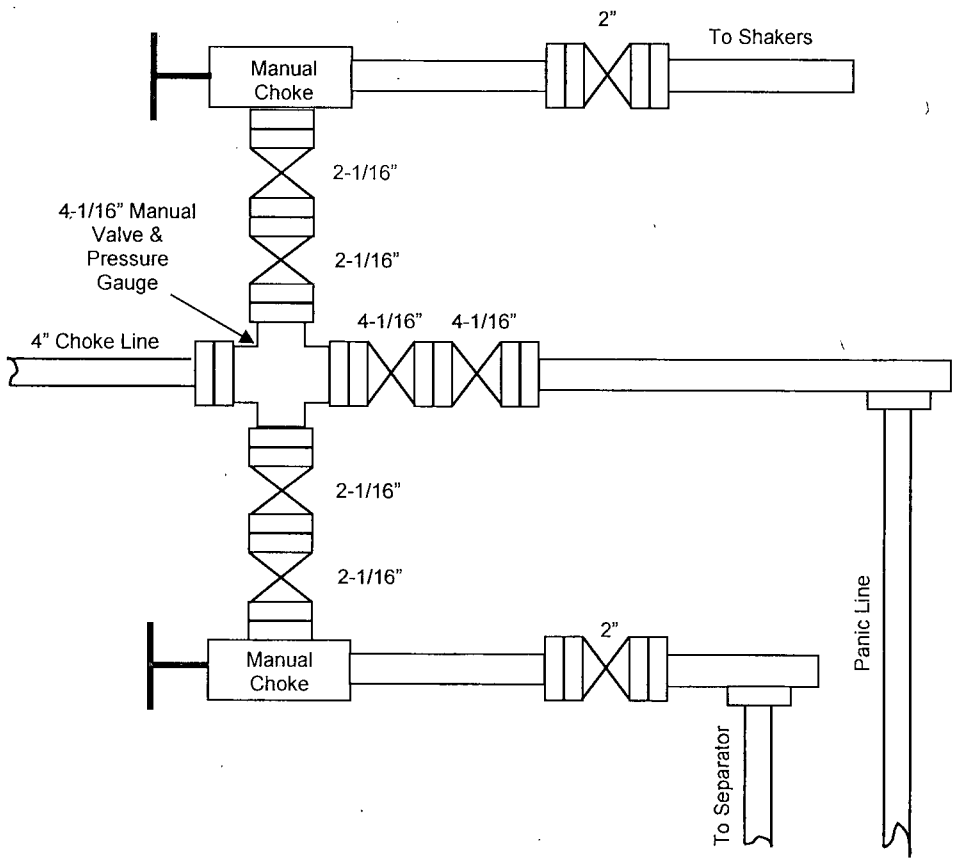
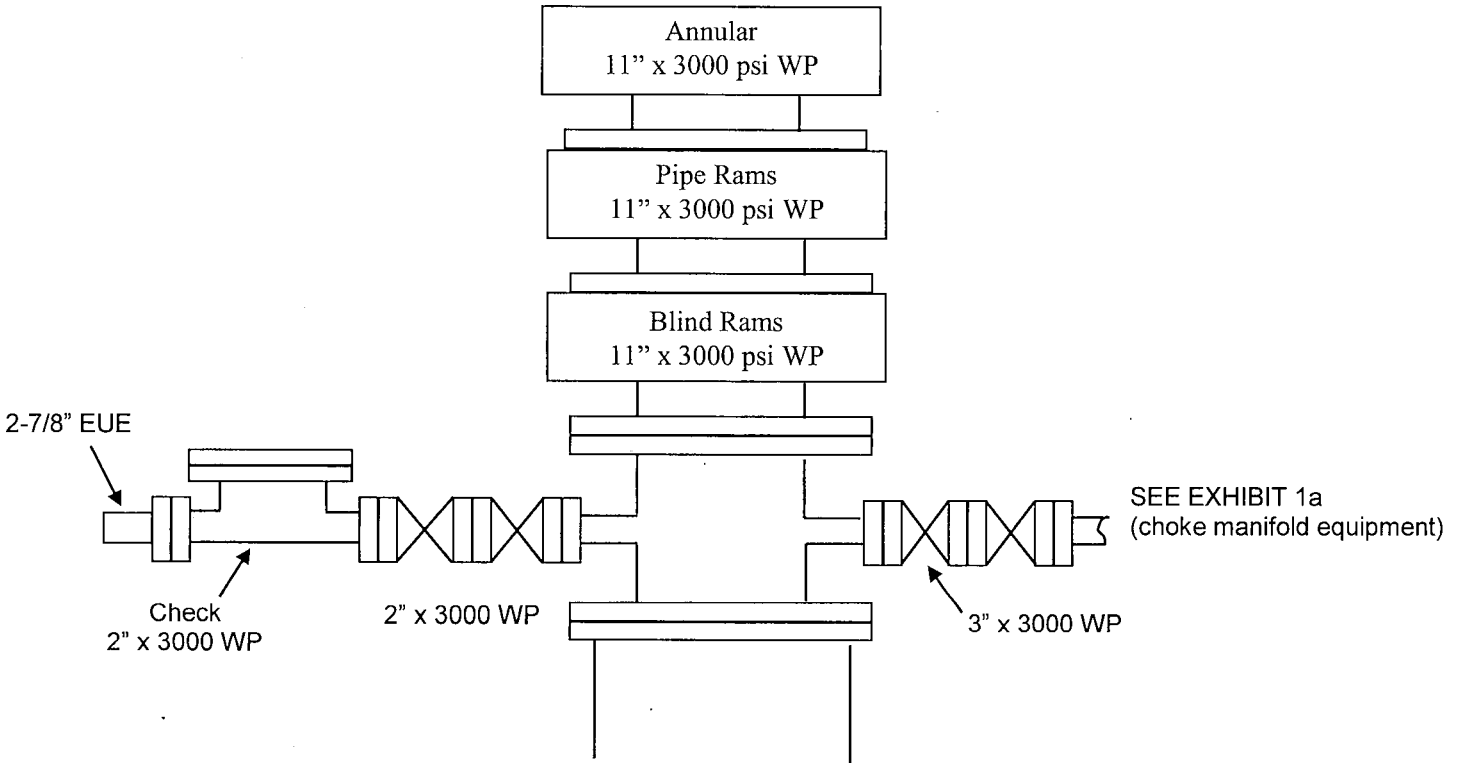


EXHIBIT 1

EOG Resources
3000 PSI BOPE



EOG RESOURCES, INC.
WARREN FEDERAL NO. 10H

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Grayburg	260'
San Andres	610'
Glorieta	2,037'
Yeso	2,115'
TD	7,786'

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

Grayburg	260'	Fresh Water
San Andres	610'	Fresh Water, Oil
Glorieta	2,037'	Oil
Yeso	2,115'	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 9.625" casing at 1250' and circulating cement back to surface.

4. CASING PROGRAM - NEW

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF_{min} Collapse	DF_{min} Burst	DF_{min} Tension
12.25"	0'-1250'	9.625"	36#	J-55	LTC	1.125	1.25	1.60
8.75"	0' –2398'	7"	29#	L-80	BTC	1.125	1.25	1.60
8.75"	2398'-7786'	5 ½"	17#	L-80	BTC	1.125	1.25	1.60

EOG RESOURCES, INC.
WARREN FEDERAL NO. 10H

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

Depth	No. Sacks	Wt. lb/gal	Yld Ft^3/ft	Cubic Ft	Slurry Description
1250'	265	12.9	1.97	93	Lead: Class 'C' + 4%PF20(Bentonite Gel) + 2%PF1(Calcium Chloride) + 0.125#/skPF29(Celloflake) + 0.4#/skPF45 (Defoamer) 100% Excess (TOC @ Surface)
	200	1.34	1.34	48	Tail: Class 'C' + 2%PF1(Calcium Chloride)
7786'	200	11.9	2.47	86	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
	1245	13	1.48	320	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

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 – 1250'	Fresh Water	8.6-8.8	28-32	N/c
1250' – 7786' Vertical/Curve/Lateral	Fresh Water	8.6-8.8	28-32	N/c

The highest mud weight needed to balance formation is expected to be 8.8 ppg. In order to maintain hole stability, mud weights up to 8.8 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 98 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 1155 psig (based on 8.8 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.

EOG RESOURCES, INC.
WARREN FEDERAL 10H

Emergency Assistance Telephone List

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

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

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

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

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

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

EOG Resources - Artesia

Eddy County (NAD83)
Warren
Warren Federal #10H

Lateral

Plan: Plan #1

Standard Planning Report

31 October, 2018

Database:	EDM 5000.14	Local Co-ordinate Reference:	Well Warren Federal #10H
Company:	EOG Resources - Artesia	TVD Reference:	KB @ 3552.000usft (Planning Rig)
Project:	Eddy County (NAD83)	MD Reference:	KB @ 3552.000usft (Planning Rig)
Site:	Warren	North Reference:	Grid
Well:	Warren Federal #10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project Eddy County (NAD83)

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

Site Warren

Site Position:		Northing:	608,903.94 usft	Latitude:	32° 40' 25.722 N
From:	Map	Easting:	490,131.69 usft	Longitude:	104° 29' 59.093 W
Position Uncertainty:	0.000 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.09 °

Well Warren Federal #10H

Well Position	+N/-S	-39.940 usft	Northing:	608,864.00 usft	Latitude:	32° 40' 25.327 N
	+E/-W	2.310 usft	Easting:	490,134.00 usft	Longitude:	104° 29' 59.066 W
Position Uncertainty		0.000 usft	Wellhead Elevation:	3,552.000 usft	Ground Level:	3,534.000 usft

Wellbore Lateral

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/30/2018	7.27	60.31	47,962.17573307

Design Plan #1

Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.000

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.000	0.000	0.000	96.486

Plan Survey Tool Program Date 10/31/2018

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.000	7,785.855	Plan #1 (Lateral)	MWD	
				OWSG MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.000	0.00	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	
1,250.000	0.00	0.000	1,250.000	0.000	0.000	0.00	0.00	0.00	0.00	
1,342.647	0.00	0.000	1,342.647	0.000	0.000	0.00	0.00	0.00	0.00	
2,024.170	45.00	165.000	1,956.233	-245.496	65.780	6.60	6.60	0.00	165.00	
2,322.742	60.00	136.560	2,139.815	-445.004	184.176	9.00	5.02	-9.53	-65.85	
2,397.742	60.00	136.560	2,177.315	-492.165	228.836	0.00	0.00	0.00	0.00	
2,830.703	87.44	89.918	2,304.013	-638.122	599.783	12.00	6.34	-10.77	-67.27	
7,785.855	87.44	89.918	2,525.000	-631.000	5,550.000	0.00	0.00	0.00	0.00	[WF#10H]BHL1

Database:	EDM 5000.14	Local Co-ordinate Reference:	Well Warren Federal #10H
Company:	EOG Resources - Artesia	TVD Reference:	KB @ 3552.000usft (Planning Rig)
Project:	Eddy County (NAD83)	MD Reference:	KB @ 3552.000usft (Planning Rig)
Site:	Warren	North Reference:	Grid
Well:	Warren Federal #10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.000	0.00	0.000	0.000	0.000	0.000	0.000	0.00	0.00	0.00
100.000	0.00	0.000	100.000	0.000	0.000	0.000	0.00	0.00	0.00
200.000	0.00	0.000	200.000	0.000	0.000	0.000	0.00	0.00	0.00
300.000	0.00	0.000	300.000	0.000	0.000	0.000	0.00	0.00	0.00
400.000	0.00	0.000	400.000	0.000	0.000	0.000	0.00	0.00	0.00
500.000	0.00	0.000	500.000	0.000	0.000	0.000	0.00	0.00	0.00
600.000	0.00	0.000	600.000	0.000	0.000	0.000	0.00	0.00	0.00
700.000	0.00	0.000	700.000	0.000	0.000	0.000	0.00	0.00	0.00
800.000	0.00	0.000	800.000	0.000	0.000	0.000	0.00	0.00	0.00
900.000	0.00	0.000	900.000	0.000	0.000	0.000	0.00	0.00	0.00
1,000.000	0.00	0.000	1,000.000	0.000	0.000	0.000	0.00	0.00	0.00
1,100.000	0.00	0.000	1,100.000	0.000	0.000	0.000	0.00	0.00	0.00
1,200.000	0.00	0.000	1,200.000	0.000	0.000	0.000	0.00	0.00	0.00
1,250.000	0.00	0.000	1,250.000	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
1,342.647	0.00	0.000	1,342.647	0.000	0.000	0.000	0.00	0.00	0.00
KOP 9°/100' BUILD RATE									
1,350.000	0.49	165.000	1,350.000	-0.030	0.008	0.011	6.60	6.60	0.00
1,400.000	3.79	165.000	1,399.958	-1.830	0.490	0.694	6.60	6.60	0.00
1,450.000	7.09	165.000	1,449.726	-6.406	1.717	2.429	6.60	6.60	0.00
1,500.000	10.39	165.000	1,499.139	-13.743	3.682	5.211	6.60	6.60	0.00
1,550.000	13.69	165.000	1,548.032	-23.816	6.382	9.031	6.60	6.60	0.00
1,600.000	16.99	165.000	1,596.244	-36.593	9.805	13.876	6.60	6.60	0.00
1,650.000	20.29	165.000	1,643.614	-52.030	13.941	19.729	6.60	6.60	0.00
1,700.000	23.60	165.000	1,689.984	-70.076	18.777	26.572	6.60	6.60	0.00
1,750.000	26.90	165.000	1,735.202	-90.672	24.296	34.382	6.60	6.60	0.00
1,800.000	30.20	165.000	1,779.117	-113.749	30.479	43.133	6.60	6.60	0.00
1,850.000	33.50	165.000	1,821.583	-139.231	37.307	52.795	6.60	6.60	0.00
1,900.000	36.80	165.000	1,862.460	-167.033	44.756	63.338	6.60	6.60	0.00
1,950.000	40.10	165.000	1,901.611	-197.062	52.803	74.725	6.60	6.60	0.00
2,000.000	43.40	165.000	1,938.907	-229.219	61.419	86.918	6.60	6.60	0.00
2,024.170	45.00	165.000	1,956.233	-245.496	65.780	93.090	6.60	6.60	0.00
HOLD 165° AZ									
2,050.000	45.99	162.050	1,974.341	-263.156	71.007	100.279	9.00	3.83	-11.42
2,100.000	48.11	156.624	2,008.421	-297.361	83.939	116.991	9.00	4.24	-10.85
2,150.000	50.47	151.566	2,041.045	-331.417	100.512	137.305	9.00	4.72	-10.12
2,200.000	53.03	146.853	2,072.009	-365.112	120.624	161.095	9.00	5.12	-9.43
2,250.000	55.76	142.457	2,101.125	-398.240	144.152	188.214	9.00	5.47	-8.79
2,300.000	58.65	138.346	2,128.212	-430.597	170.949	218.495	9.00	5.77	-8.22
2,322.742	60.00	136.560	2,139.815	-445.004	184.176	233.264	9.00	5.95	-7.85
START 75' TANGENT									
2,397.742	60.00	136.560	2,177.315	-492.165	228.836	282.966	0.00	0.00	0.00
END 60° TANGENT									
2,400.000	60.11	136.272	2,178.442	-493.582	230.185	284.466	12.00	4.65	-12.77
2,425.000	61.31	133.121	2,190.676	-508.912	245.683	301.597	12.00	4.81	-12.60
2,450.000	62.58	130.043	2,202.436	-523.549	262.185	319.647	12.00	5.10	-12.31
2,475.000	63.92	127.038	2,213.688	-537.454	279.646	338.567	12.00	5.36	-12.02
2,500.000	65.33	124.102	2,224.403	-550.588	298.018	358.305	12.00	5.61	-11.74
2,525.000	66.78	121.233	2,234.551	-562.916	317.251	378.807	12.00	5.83	-11.48
2,550.000	68.29	118.427	2,244.105	-574.404	337.292	400.017	12.00	6.03	-11.23
2,575.000	69.85	115.679	2,253.037	-585.020	358.085	421.877	12.00	6.22	-10.99
2,600.000	71.44	112.987	2,261.324	-594.735	379.575	444.326	12.00	6.39	-10.77
2,625.000	73.08	110.345	2,268.942	-603.522	401.702	467.304	12.00	6.54	-10.57

Database:	EDM 5000.14	Local Co-ordinate Reference:	Well Warren Federal #10H
Company:	EOG Resources - Artesia	TVD Reference:	KB @ 3552.000usft (Planning Rig)
Project:	Eddy County (NAD83)	MD Reference:	KB @ 3552.000usft (Planning Rig)
Site:	Warren	North Reference:	Grid
Well:	Warren Federal #10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,650.000	74.74	107.749	2,275.872	-611.358	424.405	490.747	12.00	6.67	-10.38
2,675.000	76.44	105.195	2,282.093	-618.221	447.623	514.591	12.00	6.79	-10.22
2,700.000	78.16	102.676	2,287.589	-624.092	471.291	538.771	12.00	6.89	-10.07
2,725.000	79.91	100.190	2,292.345	-628.955	495.345	563.220	12.00	6.98	-9.95
2,750.000	81.67	97.730	2,296.348	-632.796	519.718	587.872	12.00	7.05	-9.84
2,775.000	83.45	95.293	2,299.587	-635.606	544.345	612.658	12.00	7.11	-9.75
2,778.697	83.71	94.934	2,300.000	-635.934	548.004	616.331	12.00	7.14	-9.71
[WF#10H]UMP1 2779' MD (2300' TVD)									
2,800.000	85.24	92.873	2,302.052	-637.377	569.157	637.512	12.00	7.16	-9.68
2,825.000	87.03	90.465	2,303.738	-638.102	594.087	662.364	12.00	7.19	-9.63
2,830.703	87.44	89.918	2,304.013	-638.122	599.783	668.026	12.00	7.20	-9.61
[WF#10H]EOC1 2831' MD (2304' TVD)									
2,900.000	87.44	89.918	2,307.103	-638.022	669.011	736.800	0.00	0.00	0.00
3,000.000	87.44	89.918	2,311.563	-637.878	768.912	836.044	0.00	0.00	0.00
3,100.000	87.44	89.918	2,316.022	-637.734	868.812	935.289	0.00	0.00	0.00
3,200.000	87.44	89.918	2,320.482	-637.591	968.712	1,034.534	0.00	0.00	0.00
3,300.000	87.44	89.918	2,324.942	-637.447	1,068.613	1,133.779	0.00	0.00	0.00
3,400.000	87.44	89.918	2,329.402	-637.303	1,168.513	1,233.023	0.00	0.00	0.00
3,500.000	87.44	89.918	2,333.861	-637.160	1,268.414	1,332.268	0.00	0.00	0.00
3,600.000	87.44	89.918	2,338.321	-637.016	1,368.314	1,431.513	0.00	0.00	0.00
3,700.000	87.44	89.918	2,342.781	-636.872	1,468.214	1,530.758	0.00	0.00	0.00
3,800.000	87.44	89.918	2,347.241	-636.728	1,568.115	1,630.002	0.00	0.00	0.00
3,900.000	87.44	89.918	2,351.700	-636.585	1,668.015	1,729.247	0.00	0.00	0.00
4,000.000	87.44	89.918	2,356.160	-636.441	1,767.915	1,828.492	0.00	0.00	0.00
4,100.000	87.44	89.918	2,360.620	-636.297	1,867.816	1,927.737	0.00	0.00	0.00
4,200.000	87.44	89.918	2,365.080	-636.154	1,967.716	2,026.982	0.00	0.00	0.00
4,300.000	87.44	89.918	2,369.539	-636.010	2,067.617	2,126.226	0.00	0.00	0.00
4,400.000	87.44	89.918	2,373.999	-635.866	2,167.517	2,225.471	0.00	0.00	0.00
4,500.000	87.44	89.918	2,378.459	-635.722	2,267.417	2,324.716	0.00	0.00	0.00
4,600.000	87.44	89.918	2,382.919	-635.579	2,367.318	2,423.961	0.00	0.00	0.00
4,700.000	87.44	89.918	2,387.378	-635.435	2,467.218	2,523.205	0.00	0.00	0.00
4,800.000	87.44	89.918	2,391.838	-635.291	2,567.119	2,622.450	0.00	0.00	0.00
4,900.000	87.44	89.918	2,396.298	-635.148	2,667.019	2,721.695	0.00	0.00	0.00
5,000.000	87.44	89.918	2,400.758	-635.004	2,766.919	2,820.940	0.00	0.00	0.00
5,100.000	87.44	89.918	2,405.217	-634.860	2,866.820	2,920.184	0.00	0.00	0.00
5,200.000	87.44	89.918	2,409.677	-634.716	2,966.720	3,019.429	0.00	0.00	0.00
5,300.000	87.44	89.918	2,414.137	-634.573	3,066.621	3,118.674	0.00	0.00	0.00
5,400.000	87.44	89.918	2,418.597	-634.429	3,166.521	3,217.919	0.00	0.00	0.00
5,500.000	87.44	89.918	2,423.056	-634.285	3,266.421	3,317.163	0.00	0.00	0.00
5,600.000	87.44	89.918	2,427.516	-634.141	3,366.322	3,416.408	0.00	0.00	0.00
5,700.000	87.44	89.918	2,431.976	-633.998	3,466.222	3,515.653	0.00	0.00	0.00
5,800.000	87.44	89.918	2,436.436	-633.854	3,566.123	3,614.898	0.00	0.00	0.00
5,900.000	87.44	89.918	2,440.895	-633.710	3,666.023	3,714.142	0.00	0.00	0.00
6,000.000	87.44	89.918	2,445.355	-633.567	3,765.923	3,813.387	0.00	0.00	0.00
6,100.000	87.44	89.918	2,449.815	-633.423	3,865.824	3,912.632	0.00	0.00	0.00
6,200.000	87.44	89.918	2,454.275	-633.279	3,965.724	4,011.877	0.00	0.00	0.00
6,300.000	87.44	89.918	2,458.734	-633.135	4,065.625	4,111.122	0.00	0.00	0.00
6,400.000	87.44	89.918	2,463.194	-632.992	4,165.525	4,210.366	0.00	0.00	0.00
6,500.000	87.44	89.918	2,467.654	-632.848	4,265.425	4,309.611	0.00	0.00	0.00
6,600.000	87.44	89.918	2,472.114	-632.704	4,365.326	4,408.856	0.00	0.00	0.00
6,700.000	87.44	89.918	2,476.573	-632.561	4,465.226	4,508.101	0.00	0.00	0.00
6,800.000	87.44	89.918	2,481.033	-632.417	4,565.127	4,607.345	0.00	0.00	0.00
6,900.000	87.44	89.918	2,485.493	-632.273	4,665.027	4,706.590	0.00	0.00	0.00

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Company:	EOG Resources - Artesia	TVD Reference:	KB @ 3552.000usft (Planning Rig)
Project:	Eddy County (NAD83)	MD Reference:	KB @ 3552.000usft (Planning Rig)
Site:	Warren	North Reference:	Grid
Well:	Warren Federal #10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,000.000	87.44	89.918	2,489.953	-632.129	4,764.927	4,805.835	0.00	0.00	0.00
7,100.000	87.44	89.918	2,494.412	-631.986	4,864.828	4,905.080	0.00	0.00	0.00
7,200.000	87.44	89.918	2,498.872	-631.842	4,964.728	5,004.324	0.00	0.00	0.00
7,300.000	87.44	89.918	2,503.332	-631.698	5,064.629	5,103.569	0.00	0.00	0.00
7,400.000	87.44	89.918	2,507.792	-631.555	5,164.529	5,202.814	0.00	0.00	0.00
7,500.000	87.44	89.918	2,512.251	-631.411	5,264.429	5,302.059	0.00	0.00	0.00
7,600.000	87.44	89.918	2,516.711	-631.267	5,364.330	5,401.303	0.00	0.00	0.00
7,700.000	87.44	89.918	2,521.171	-631.123	5,464.230	5,500.548	0.00	0.00	0.00
7,785.855	87.44	89.918	2,525.000	-631.000	5,550.000	5,585.755	0.00	0.00	0.00
[WF#10H]BHL1 7786' MD (2525' 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
[WF#10H]UMP1	0.00	0.000	2,300.000	-636.000	548.000	608,228.00	490,682.00	32° 40' 19.042 N	104° 29' 52.643 W
- plan misses target center by 0.066usft at 2778.697usft MD (2300.000 TVD, -635.934 N, 548.004 E)									
- Point									
[WF#10H]BHL1	0.00	0.000	2,525.000	-631.000	5,550.000	608,233.00	495,684.00	32° 40' 19.164 N	104° 28' 54.122 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,342.647	1,342.647	0.000	0.000	KOP 9°/100' BUILD RATE
2,024.170	1,956.233	-245.496	65.780	HOLD 165° AZ
2,322.742	2,139.815	-445.004	184.176	START 75' TANGENT
2,397.742	2,177.315	-492.165	228.836	END 60° TANGENT
2,778.697	2,300.000	-635.934	548.004	[WF#10H]UMP1 2779' MD (2300' TVD)
2,830.703	2,304.013	-638.122	599.783	[WF#10H]EOC1 2831' MD (2304' TVD)
7,785.855	2,525.000	-631.000	5,550.000	[WF#10H]BHL1 7786' MD (2525' TVD)

eog resources

EOG Resources - Artesia

Eddy County (NAD83)
Warren
Warren Federal #10H

Lateral
Plan #1

Anticollision Report

31 October, 2018

eog resources

Anticollision Report

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Warren Federal #10H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3552.000usft (Planning Rig)
Reference Site:	Warren	**MD Reference:**	KB @ 3552.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Warren Federal #10H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

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

Survey Tool Program **Date** 10/31/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.000	7,785.855	Plan #1 (Lateral)	MWD	OWSG MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Thomas						
Thomas AJJ #7H - Lateral - Lateral	2,248.981	2,148.421	19.000	7.787	1.694	CC, ES, SF

Offset Design Thomas - Thomas AJJ #7H - Lateral - Lateral — Offset Site Error: 0.000 usft

Survey Program: 100-GYRO-NS, 1038-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	146.82	-454.100	296.900	542.585				
100.000	100.000	93.498	93.498	0.147	0.134	146.83	-454.129	296.855	542.546	542.348	0.20	2,736.827	
200.000	200.000	193.398	193.398	0.505	0.468	146.83	-454.137	296.860	542.555	541.866	0.69	787.404	
300.000	300.000	293.257	293.257	0.864	0.817	146.81	-454.050	297.050	542.587	541.398	1.19	456.319	
400.000	400.000	393.167	393.166	1.222	1.167	146.78	-453.967	297.276	542.641	540.951	1.69	321.234	
500.000	500.000	490.719	490.718	1.581	1.508	146.77	-454.135	297.503	542.913	540.729	2.18	248.599	
600.000	600.000	585.648	585.642	1.939	1.841	146.76	-454.818	298.116	543.870	541.197	2.67	203.499	
700.000	700.000	682.282	682.260	2.298	2.181	146.72	-456.049	299.378	545.650	542.484	3.17	172.373	
800.000	800.000	779.023	778.973	2.656	2.522	146.67	-457.716	300.984	548.002	544.343	3.66	149.783	
900.000	900.000	877.165	877.074	3.015	2.870	146.62	-459.771	302.942	550.847	546.692	4.16	132.566	
1,000.000	1,000.000	978.173	978.037	3.373	3.094	146.58	-462.051	304.875	553.786	549.217	4.57	121.198	
1,100.000	1,100.000	1,078.398	1,078.226	3.732	3.223	146.60	-464.408	306.193	556.473	551.551	4.92	113.052	
1,200.000	1,200.000	1,186.228	1,186.021	4.090	3.292	146.65	-466.895	307.290	558.994	553.751	5.24	106.620	
1,250.000	1,250.000	1,242.683	1,242.473	4.269	3.344	146.68	-467.320	307.246	559.276	553.860	5.42	103.270	
1,300.000	1,300.000	1,292.879	1,292.669	4.449	3.400	146.70	-467.527	307.084	559.359	553.767	5.59	100.023	
1,342.647	1,342.647	1,335.705	1,335.494	4.602	3.456	146.72	-467.692	306.937	559.416	553.668	5.75	97.325	
1,350.000	1,350.000	1,343.091	1,342.880	4.627	3.467	-18.27	-467.718	306.912	559.395	553.620	5.77	96.867	
1,400.000	1,399.958	1,393.283	1,393.071	4.789	3.546	-18.35	-467.871	306.761	557.670	551.718	5.95	93.692	
1,450.000	1,449.726	1,443.284	1,443.073	4.957	3.624	-18.58	-467.982	306.637	553.199	547.066	6.13	90.204	
1,500.000	1,499.139	1,492.924	1,492.712	5.127	3.701	-18.98	-468.051	306.539	546.002	539.687	6.32	86.459	
1,550.000	1,548.032	1,542.168	1,541.956	5.298	3.794	-19.55	-468.087	306.448	536.112	529.604	6.51	82.372	
1,600.000	1,596.244	1,590.762	1,590.550	5.471	3.892	-20.32	-468.110	306.314	523.570	516.864	6.71	78.078	
1,650.000	1,643.614	1,638.492	1,638.279	5.654	3.988	-21.31	-468.121	306.138	508.441	501.537	6.90	73.651	
1,700.000	1,689.984	1,685.196	1,684.983	5.861	4.082	-22.55	-468.122	305.922	490.810	483.708	7.10	69.112	
1,750.000	1,735.202	1,730.745	1,730.532	6.089	4.182	-24.11	-468.078	305.739	470.796	463.490	7.31	64.444	
1,800.000	1,779.117	1,800.000	1,954.673	6.344	4.403	-26.60	-452.204	245.054	440.157	433.174	6.98	63.034	

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

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Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Thomas - Thomas AJJ #7H - Lateral - Lateral — Offset Site Error: 0.000 usft

Survey Program: 100-GYRO-NS, 1038-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
1,850.000	1,821.583	2,128.504	2,075.422	6.630	6.172	-17.77	-417.716	146.488	396.549	389.542	7.01	56.600	
1,900.000	1,862.460	2,141.063	2,083.320	6.950	6.332	-19.22	-413.798	137.543	348.131	340.985	7.15	48.719	
1,950.000	1,901.611	2,150.374	2,089.161	7.309	6.453	-22.49	-410.924	130.885	299.148	291.884	7.26	41.186	
2,000.000	1,938.907	2,157.556	2,093.657	7.709	6.546	-29.88	-408.727	125.735	249.723	242.369	7.35	33.959	
2,024.170	1,956.233	2,160.255	2,095.346	7.918	6.582	-37.00	-407.906	123.796	225.712	218.325	7.39	30.555	
2,050.000	1,974.341	2,162.420	2,096.699	8.152	6.610	-17.74	-407.249	122.240	199.980	192.563	7.42	26.962	
2,100.000	2,008.421	2,163.921	2,097.637	8.643	6.633	58.45	-406.795	121.158	150.076	142.583	7.49	20.030	
2,150.000	2,041.045	2,162.195	2,096.559	9.183	6.607	85.63	-407.317	122.402	100.428	92.786	7.64	13.143	
2,200.000	2,072.009	2,156.913	2,093.255	9.773	6.538	84.88	-408.923	126.197	52.156	43.906	8.25	6.322	
2,248.981	2,100.551	2,148.421	2,087.936	10.402	6.427	67.07	-411.525	132.284	19.000	7.787	11.21	1.694	CC, ES, SF
2,250.000	2,101.125	2,148.209	2,087.804	10.415	6.424	66.50	-411.590	132.435	19.027	7.871	11.16	1.706	
2,300.000	2,128.212	2,136.152	2,080.235	11.113	6.268	32.49	-415.324	141.046	53.364	46.139	7.23	7.386	
2,322.742	2,139.815	2,129.639	2,076.139	11.451	6.185	18.82	-417.361	145.682	74.263	67.287	6.98	10.645	
2,397.742	2,177.315	2,112.181	2,064.885	12.612	5.984	5.10	-422.729	157.901	145.170	138.190	6.98	20.800	
2,400.000	2,178.442	2,111.714	2,064.578	12.649	5.978	4.17	-422.870	158.222	147.329	140.348	6.98	21.102	
2,425.000	2,190.676	2,106.435	2,061.072	13.059	5.918	-4.87	-424.450	161.839	171.226	164.211	7.01	24.409	
2,450.000	2,202.436	2,100.971	2,057.395	13.483	5.856	-11.72	-426.066	165.544	195.028	187.974	7.05	27.649	
2,475.000	2,213.688	2,098.000	2,055.376	13.919	5.822	-16.98	-426.935	167.543	218.697	211.519	7.18	30.467	
2,500.000	2,224.403	2,090.128	2,049.956	14.365	5.745	-20.55	-429.174	172.794	242.134	234.968	7.17	33.789	
2,525.000	2,234.551	2,084.679	2,046.145	14.821	5.691	-23.38	-430.655	176.396	265.374	258.141	7.23	36.692	
2,550.000	2,244.105	2,079.168	2,042.242	15.287	5.637	-25.53	-432.096	180.010	288.367	281.063	7.30	39.484	
2,575.000	2,253.037	2,073.601	2,038.251	15.761	5.583	-27.18	-433.494	183.630	311.091	303.712	7.38	42.160	
2,600.000	2,261.324	2,067.000	2,033.457	16.243	5.519	-28.32	-435.076	187.883	333.527	326.088	7.44	44.838	
2,625.000	2,268.942	2,067.000	2,033.457	16.732	5.519	-30.20	-435.076	187.883	355.706	348.069	7.64	46.573	
2,650.000	2,275.872	2,056.736	2,025.867	17.227	5.435	-30.34	-437.378	194.398	377.448	369.806	7.64	49.392	
2,675.000	2,282.093	2,051.068	2,021.606	17.727	5.389	-31.04	-438.569	197.941	398.905	391.164	7.74	51.529	
2,700.000	2,287.589	2,045.369	2,017.273	18.231	5.343	-31.63	-439.710	201.462	420.004	412.158	7.85	53.529	
2,725.000	2,292.345	2,036.000	2,010.045	18.738	5.268	-31.73	-441.459	207.160	440.761	432.863	7.90	55.805	
2,750.000	2,296.348	2,036.000	2,010.045	19.245	5.268	-32.88	-441.459	207.160	461.077	452.973	8.10	56.894	
2,775.000	2,299.587	2,026.753	2,002.801	19.752	5.205	-32.94	-443.079	212.673	480.977	472.800	8.18	58.823	
2,800.000	2,302.052	2,019.959	1,997.417	20.258	5.160	-33.27	-444.232	216.655	500.447	492.154	8.29	60.346	
2,825.000	2,303.738	2,013.146	1,991.969	20.760	5.115	-33.61	-445.356	220.587	519.464	511.047	8.42	61.721	
2,830.703	2,304.013	2,011.591	1,990.717	20.875	5.105	-33.69	-445.608	221.476	523.737	515.297	8.44	62.056	
2,900.000	2,307.103	1,992.461	1,975.136	22.297	4.993	-31.87	-448.597	232.163	576.755	567.945	8.81	65.467	
3,000.000	2,311.563	1,974.000	1,959.797	24.513	4.904	-30.23	-451.347	242.059	656.945	647.602	9.34	70.318	
3,100.000	2,316.022	1,943.000	1,933.312	26.884	4.806	-27.68	-455.778	257.539	740.470	730.782	9.69	76.429	
3,200.000	2,320.482	1,930.133	1,922.054	29.372	4.767	-26.70	-457.516	263.521	826.637	816.557	10.08	82.009	
3,300.000	2,324.942	1,912.000	1,905.957	31.948	4.712	-25.41	-459.732	271.567	914.882	904.507	10.37	88.189	
3,400.000	2,329.402	1,900.725	1,895.810	34.592	4.674	-24.66	-460.986	276.320	1,004.740	994.096	10.64	94.393	
3,500.000	2,333.861	1,880.000	1,876.878	37.290	4.606	-23.37	-463.080	284.484	1,096.064	1,085.218	10.85	101.056	
3,600.000	2,338.321	1,880.000	1,876.878	40.029	4.606	-23.37	-463.080	284.484	1,188.240	1,177.173	11.07	107.372	
3,700.000	2,342.781	1,880.000	1,876.878	42.801	4.606	-23.37	-463.080	284.484	1,281.590	1,270.338	11.25	113.903	
3,800.000	2,347.241	1,867.209	1,864.983	45.601	4.560	-22.63	-464.188	289.051	1,375.543	1,364.149	11.39	120.729	
3,900.000	2,351.700	1,862.171	1,860.243	48.422	4.542	-22.36	-464.570	290.718	1,470.279	1,458.751	11.53	127.533	
4,000.000	2,356.160	1,849.000	1,847.723	51.262	4.495	-21.67	-465.423	294.713	1,565.731	1,554.090	11.64	134.499	
4,100.000	2,360.620	1,849.000	1,847.723	54.117	4.495	-21.67	-465.423	294.713	1,661.412	1,649.658	11.75	141.345	
4,200.000	2,365.080	1,849.000	1,847.723	56.986	4.495	-21.67	-465.423	294.713	1,757.574	1,745.717	11.86	148.243	
4,300.000	2,369.539	1,849.000	1,847.723	59.865	4.495	-21.67	-465.423	294.713	1,854.141	1,842.192	11.95	155.174	
4,400.000	2,373.999	1,849.000	1,847.723	62.753	4.495	-21.67	-465.423	294.713	1,951.055	1,939.021	12.03	162.127	
4,500.000	2,378.459	1,849.000	1,847.723	65.650	4.495	-21.67	-465.423	294.713	2,048.265	2,036.152	12.11	169.089	
4,600.000	2,382.919	1,849.000	1,847.723	68.553	4.495	-21.67	-465.423	294.713	2,145.732	2,133.544	12.19	176.053	
4,700.000	2,387.378	1,849.000	1,847.723	71.463	4.495	-21.67	-465.423	294.713	2,243.421	2,231.163	12.26	183.010	

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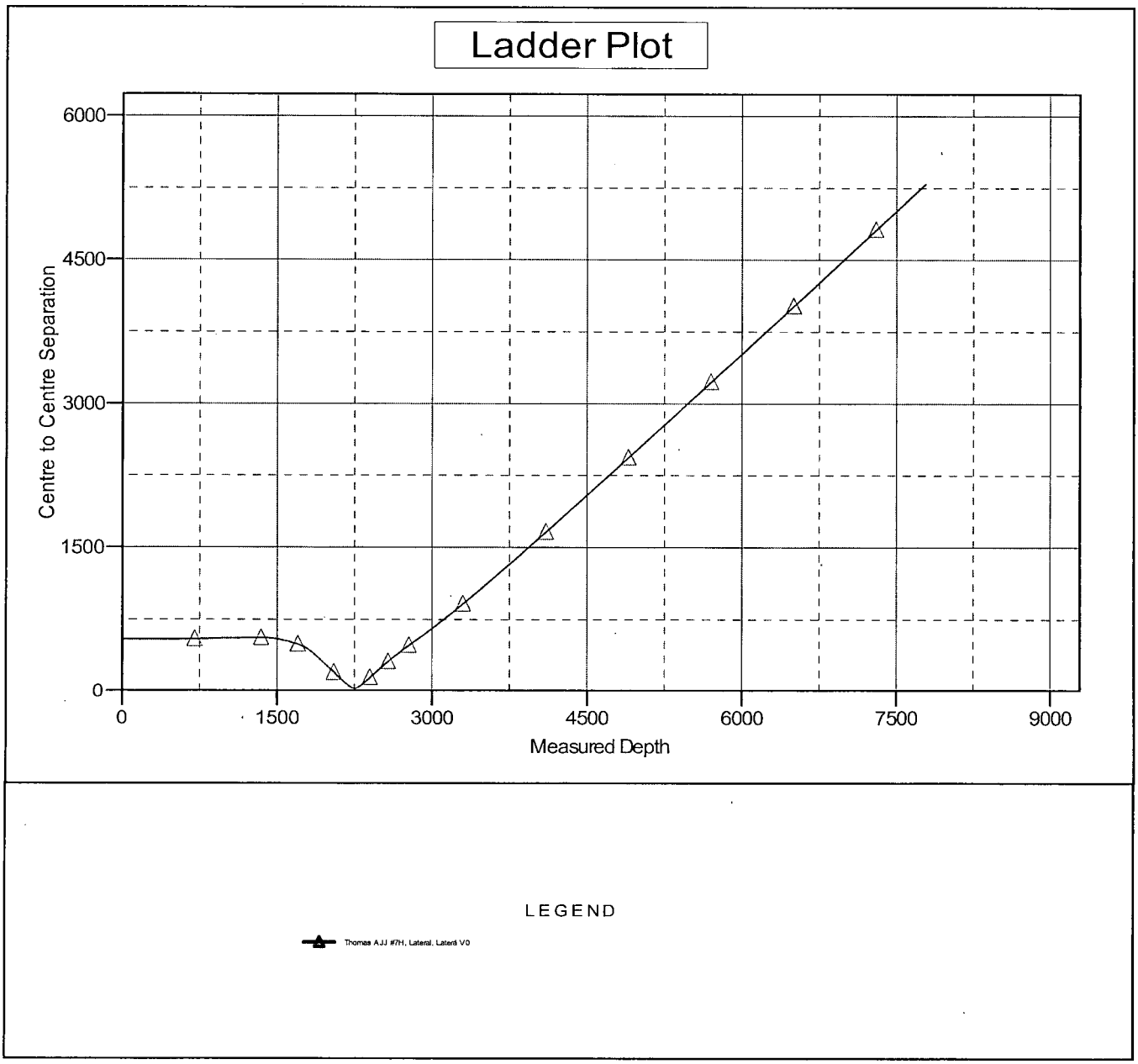
4,800.000	2,391.838	1,849.000	1,847.723	74.378	4.495	-21.67	-465.423	294.713	2,341.306	2,328.980	12.33	189.954	
4,900.000	2,396.298	1,833.604	1,832.858	77.298	4.443	-20.92	-466.227	298.631	2,438.848	2,426.454	12.39	196.780	
5,000.000	2,400.758	1,831.949	1,831.247	80.222	4.437	-20.84	-466.305	298.999	2,536.942	2,524.484	12.46	203.651	
5,100.000	2,405.217	1,818.000	1,817.573	83.150	4.391	-20.21	-466.901	301.684	2,635.500	2,622.977	12.52	210.453	
5,200.000	2,409.677	1,818.000	1,817.573	86.082	4.391	-20.21	-466.901	301.684	2,733.772	2,721.189	12.58	217.256	
5,300.000	2,414.137	1,818.000	1,817.573	89.016	4.391	-20.21	-466.901	301.684	2,832.166	2,819.524	12.64	224.026	
5,400.000	2,418.597	1,818.000	1,817.573	91.954	4.391	-20.21	-466.901	301.684	2,930.668	2,917.968	12.70	230.761	
5,500.000	2,423.056	1,818.000	1,817.573	94.893	4.391	-20.21	-466.901	301.684	3,029.268	3,016.511	12.76	237.458	
5,600.000	2,427.516	1,818.000	1,817.573	97.835	4.391	-20.21	-466.901	301.684	3,127.957	3,115.144	12.81	244.114	
5,700.000	2,431.976	1,818.000	1,817.573	100.779	4.391	-20.21	-466.901	301.684	3,226.727	3,213.858	12.87	250.726	
5,800.000	2,436.436	1,818.000	1,817.573	103.725	4.391	-20.21	-466.901	301.684	3,325.571	3,312.645	12.93	257.293	
5,900.000	2,440.895	1,818.000	1,817.573	106.673	4.391	-20.21	-466.901	301.684	3,424.481	3,411.501	12.98	263.813	
6,000.000	2,445.355	1,818.000	1,817.573	109.622	4.391	-20.21	-466.901	301.684	3,523.453	3,510.417	13.04	270.284	
6,100.000	2,449.815	1,818.000	1,817.573	112.573	4.391	-20.21	-466.901	301.684	3,622.482	3,609.390	13.09	276.704	
6,200.000	2,454.275	1,818.000	1,817.573	115.525	4.391	-20.21	-466.901	301.684	3,721.562	3,708.415	13.15	283.072	
6,300.000	2,458.734	1,818.000	1,817.573	118.478	4.391	-20.21	-466.901	301.684	3,820.691	3,807.488	13.20	289.388	
6,400.000	2,463.194	1,818.000	1,817.573	121.432	4.391	-20.21	-466.901	301.684	3,919.863	3,906.605	13.26	295.649	
6,500.000	2,467.654	1,818.000	1,817.573	124.388	4.391	-20.21	-466.901	301.684	4,019.077	4,005.762	13.31	301.854	
6,600.000	2,472.114	1,818.000	1,817.573	127.344	4.391	-20.21	-466.901	301.684	4,118.329	4,104.958	13.37	308.003	
6,700.000	2,476.573	1,818.000	1,817.573	130.302	4.391	-20.21	-466.901	301.684	4,217.616	4,204.188	13.43	314.095	
6,800.000	2,481.033	1,818.000	1,817.573	133.260	4.391	-20.21	-466.901	301.684	4,316.936	4,303.451	13.48	320.129	
6,900.000	2,485.493	1,818.000	1,817.573	136.219	4.391	-20.21	-466.901	301.684	4,416.286	4,402.744	13.54	326.105	
7,000.000	2,489.953	1,818.000	1,817.573	139.179	4.391	-20.21	-466.901	301.684	4,515.666	4,502.065	13.60	332.021	
7,100.000	2,494.412	1,818.000	1,817.573	142.139	4.391	-20.21	-466.901	301.684	4,615.072	4,601.413	13.66	337.877	
7,200.000	2,498.872	1,818.000	1,817.573	145.100	4.391	-20.21	-466.901	301.684	4,714.503	4,700.785	13.72	343.673	
7,300.000	2,503.332	1,818.000	1,817.573	148.062	4.391	-20.21	-466.901	301.684	4,813.958	4,800.180	13.78	349.408	
7,400.000	2,507.792	1,818.000	1,817.573	151.024	4.391	-20.21	-466.901	301.684	4,913.435	4,899.597	13.84	355.082	
7,500.000	2,512.251	1,818.000	1,817.573	153.987	4.391	-20.21	-466.901	301.684	5,012.933	4,999.035	13.90	360.695	
7,600.000	2,516.711	1,818.000	1,817.573	156.950	4.391	-20.21	-466.901	301.684	5,112.450	5,098.491	13.96	366.247	
7,700.000	2,521.171	1,818.000	1,817.573	159.914	4.391	-20.21	-466.901	301.684	5,211.986	5,197.965	14.02	371.736	
7,785.855	2,525.000	1,818.000	1,817.573	162.459	4.391	-20.21	-466.901	301.684	5,297.456	5,283.382	14.07	376.400	
7,786.193	2,525.015	1,818.000	1,817.573	162.469	4.391	-20.21	-466.901	301.684	5,297.793	5,282.463	15.33	345.570	

Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Warren Federal #10H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3552.000usft (Planning Rig)
Reference Site:	Warren	**MD Reference:**	KB @ 3552.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Warren Federal #10H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3552.000usft (Planning Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Warren Federal #10H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: -0.09°

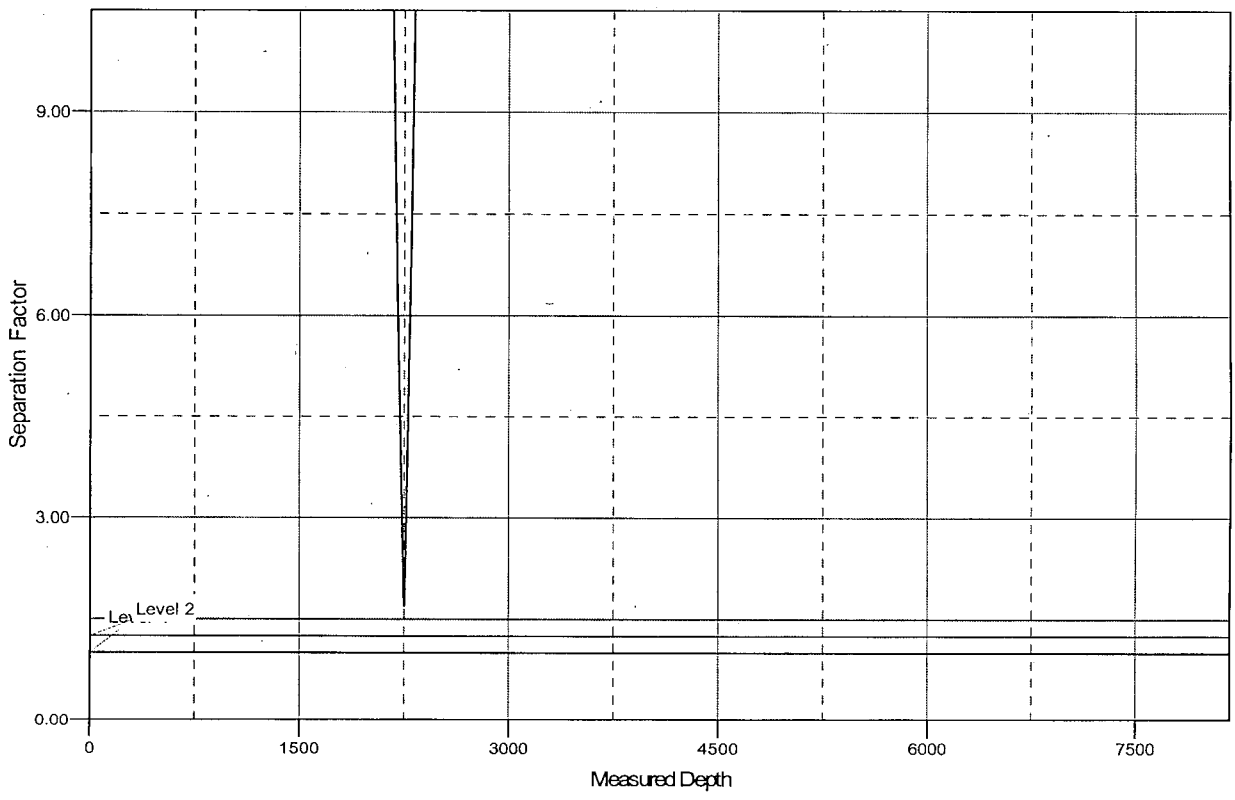


Company:	EOG Resources - Artesia	**Local Co-ordinate Reference:**	Well Warren Federal #10H
Project:	Eddy County (NAD83)	**TVD Reference:**	KB @ 3552.000usft (Planning Rig)
Reference Site:	Warren	**MD Reference:**	KB @ 3552.000usft (Planning Rig)
Site Error:	0.000 usft	**North Reference:**	Grid
Reference Well:	Warren Federal #10H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.000 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Lateral	**Database:**	EDM 5000.14
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3552.000usft (Planning Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Warren Federal #10H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: -0.09°

Separation Factor Plot



LEGEND

Thomas AJJ #7H, Lateral, Lateral V0

Project:	Eddy County (NAD83)
Site:	Warren
Well:	Warren Federal #10H
Wellbore:	Lateral
Design:	Plan #1
Ground Elevation	3534.000
Northing	608864.00
Easting	490134.00

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

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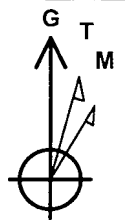


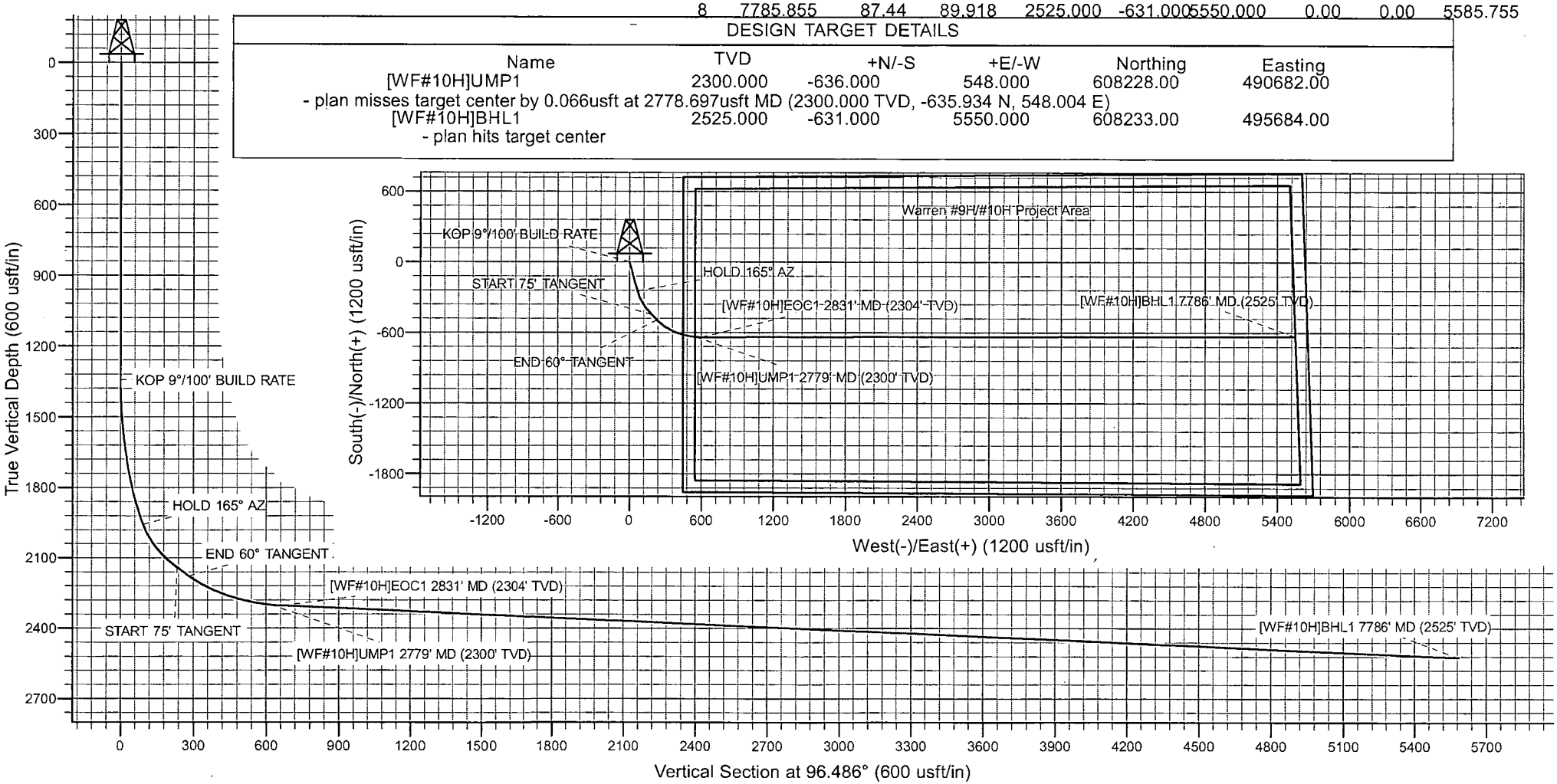
Azimuths to Grid North	
True North:	0.09°
Magnetic North:	7.36°
Magnetic Field	
Strength:	47962.2snT
Dip Angle:	60.31°
Date:	10/30/2018
Model:	IGRF2015

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	1250.000	0.00	0.000	1250.000	0.000	0.000	0.00	0.00	0.000
3	1342.647	0.00	0.000	1342.647	0.000	0.000	0.00	0.00	0.000
4	2024.170	45.00	165.000	1956.233	-245.496	65.780	6.60	165.00	93.090
5	2322.742	60.00	136.560	2139.815	-445.004	184.176	9.00	-65.85	233.264
6	2397.742	60.00	136.560	2177.315	-492.165	228.836	0.00	0.00	282.966
7	2830.703	87.44	89.918	2304.013	-638.122	599.783	12.00	-67.27	668.026
8	7785.855	87.44	89.918	2525.000	-631.000	5550.000	0.00	0.00	5585.755

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
[WF#10H]UMP1	2300.000	-636.000	548.000	608228.00	490682.00
- plan misses target center by 0.066usft at 2778.697usft MD (2300.000 TVD, -635.934 N, 548.004 E)					
[WF#10H]BHL1	2525.000	-631.000	5550.000	608233.00	495684.00
- plan hits target center					



Manufacturer: Midwest Hose & Specialty

Serial Number: SN#90067

Length: 35'

Size: OD = 8" ID = 4"

Ends: Flanges Size: 4-1/16"

WP Rating: 10,000 psi Anchors required by manfacturer: No

MIDWEST

HOSE AND SPECIALTY INC.

INTERNAL HYDROSTATIC TEST REPORT

Customer:	P.O. Number:
CACTUS	RIG #123
	Asset # M10761

HOSE SPECIFICATIONS

Type: CHOKE LINE		Length: 35'	
I.D. 4"	*INCHES*	O.D. 8"	*INCHES*

WORKING PRESSURE	TEST PRESSURE	BURST PRESSURE
10,000 *PSI*	15,000 *PSI*	*PSI*

COUPLINGS

Type of End Fitting	
4 1/16 10K FLANGE	
Type of Coupling: SWEDGED	MANUFACTURED BY MIDWEST HOSE & SPECIALTY

PROCEDURE

Hose assembly pressure tested with water at ambient temperature.

TIME HELD AT TEST PRESSURE	ACTUAL BURST PRESSURE:
1 *MIN.*	0 *PSI*

COMMENTS:

SN#90087 M10761
Hose is covered with stainless steel armour cover and wraped with fire resistant vermiculite coated fiberglass insulation rated for 1500 degrees complete with lifting eyes

Date:	Tested By:	Approved:
6/6/2011	BOBBY FINK	MENDI JACKSON

Midwest Hose & Specialty, Inc.

Internal Hydrostatic Test Graph

Customer: CACTUS

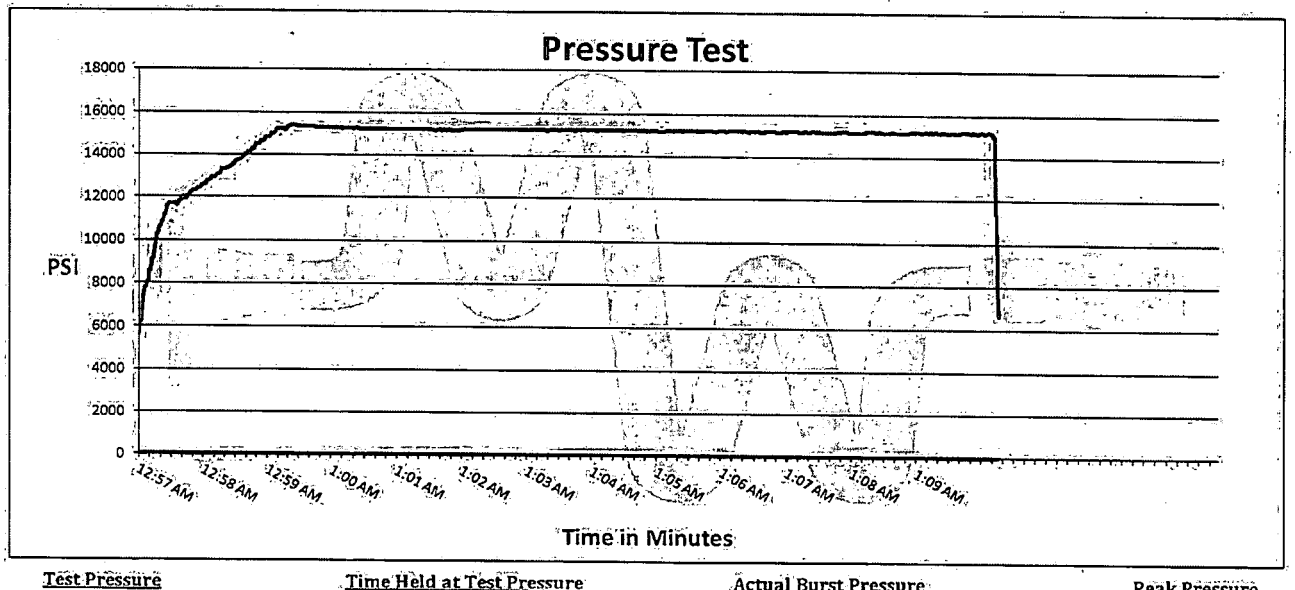
SALES ORDER# 90067

Hose Specifications

Hose Type	Length
C & K	35'
I.D.	**O.D.**
4"	8"
Working Pressure	**Burst Pressure**
10000 PSI	Standard Safety Multiplier Applies

Verification

Type of Fitting	Coupling Method
4 1/16 10K	Swage
Die Size	**Final O.D.**
6.62"	6.68"
Hose Serial #	**Hose Assembly Serial #**
	90067



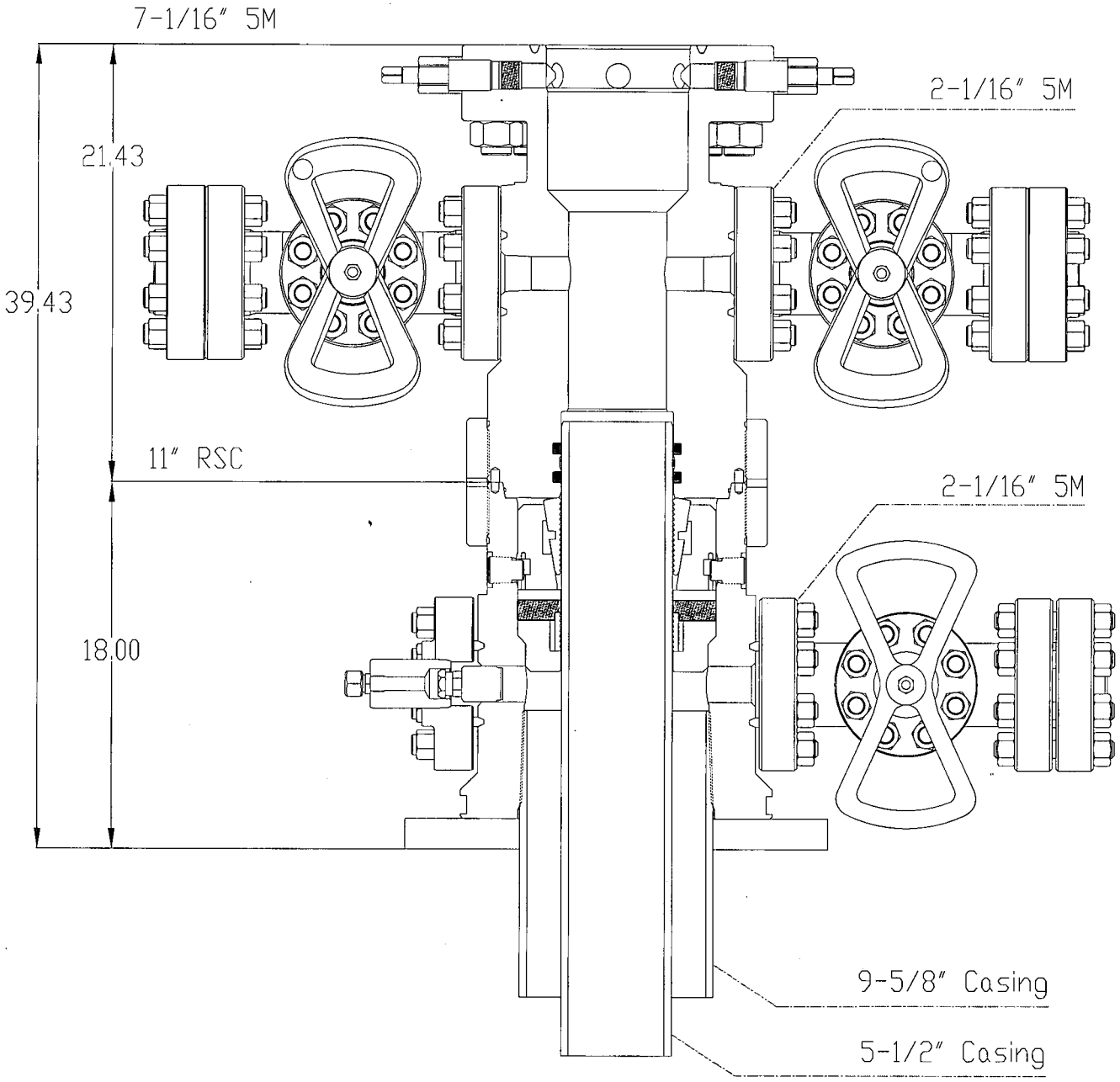
Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	11 1/4 Minutes		15439 PSI

Comments: Hose assembly pressure tested with water at amblent temperature.

Tested By: Bobby Fink

Approved By: Mendi Jackson

x Mendi Jackson



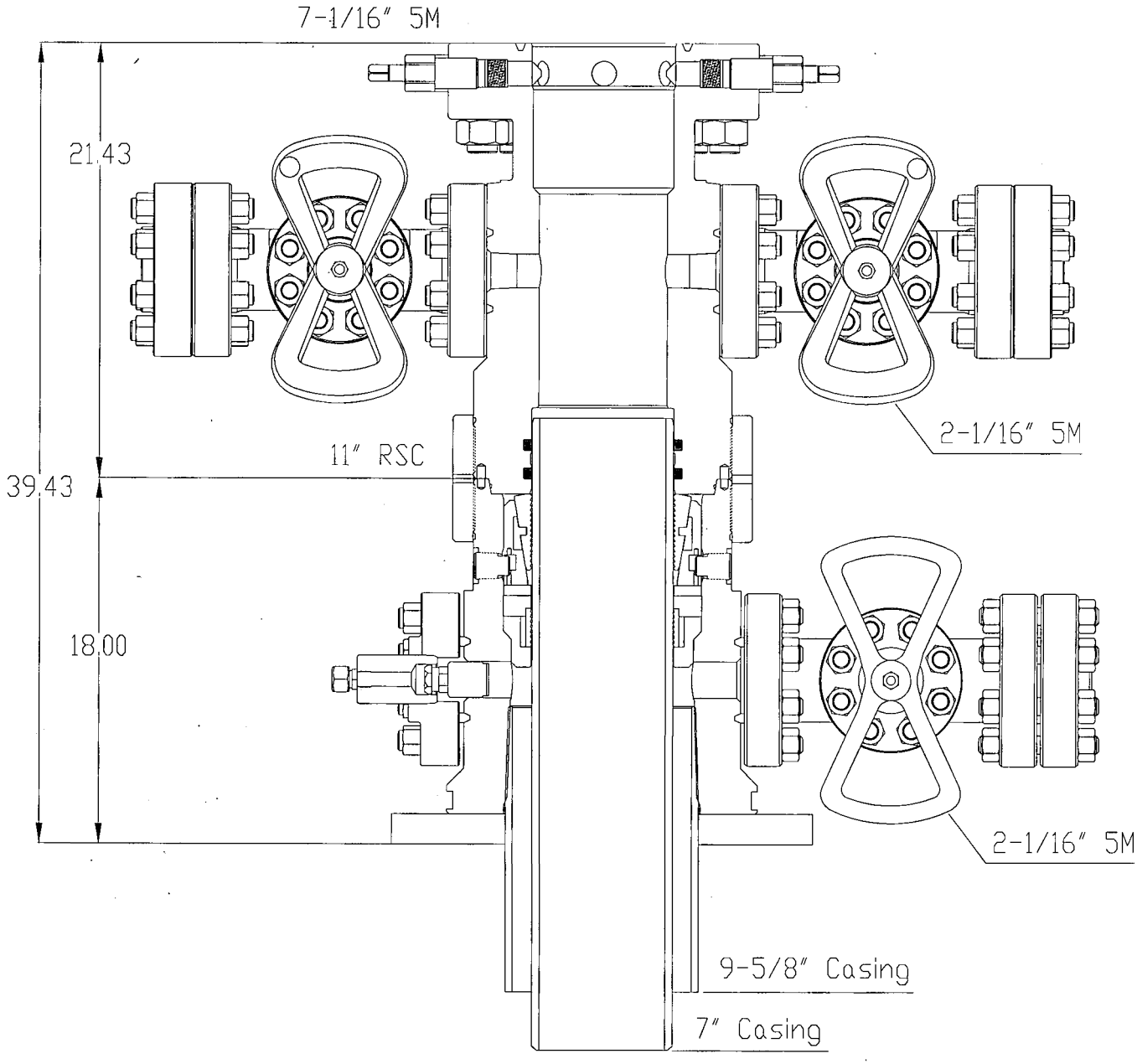
*CONCEPT QUOTE DRAWING

EOG RESOURCES INC.
9-5/8" X 5-1/2" 5M
HES WELLHEAD SYSTEM
QUOTE: HOU - 119274

DWN	CB	3/01/18
CHK		
APP		
	BY	DATE

Stream Flo
Worldwide Expertise - Global Strength

DRAWING NO
WH-17830
PG 2



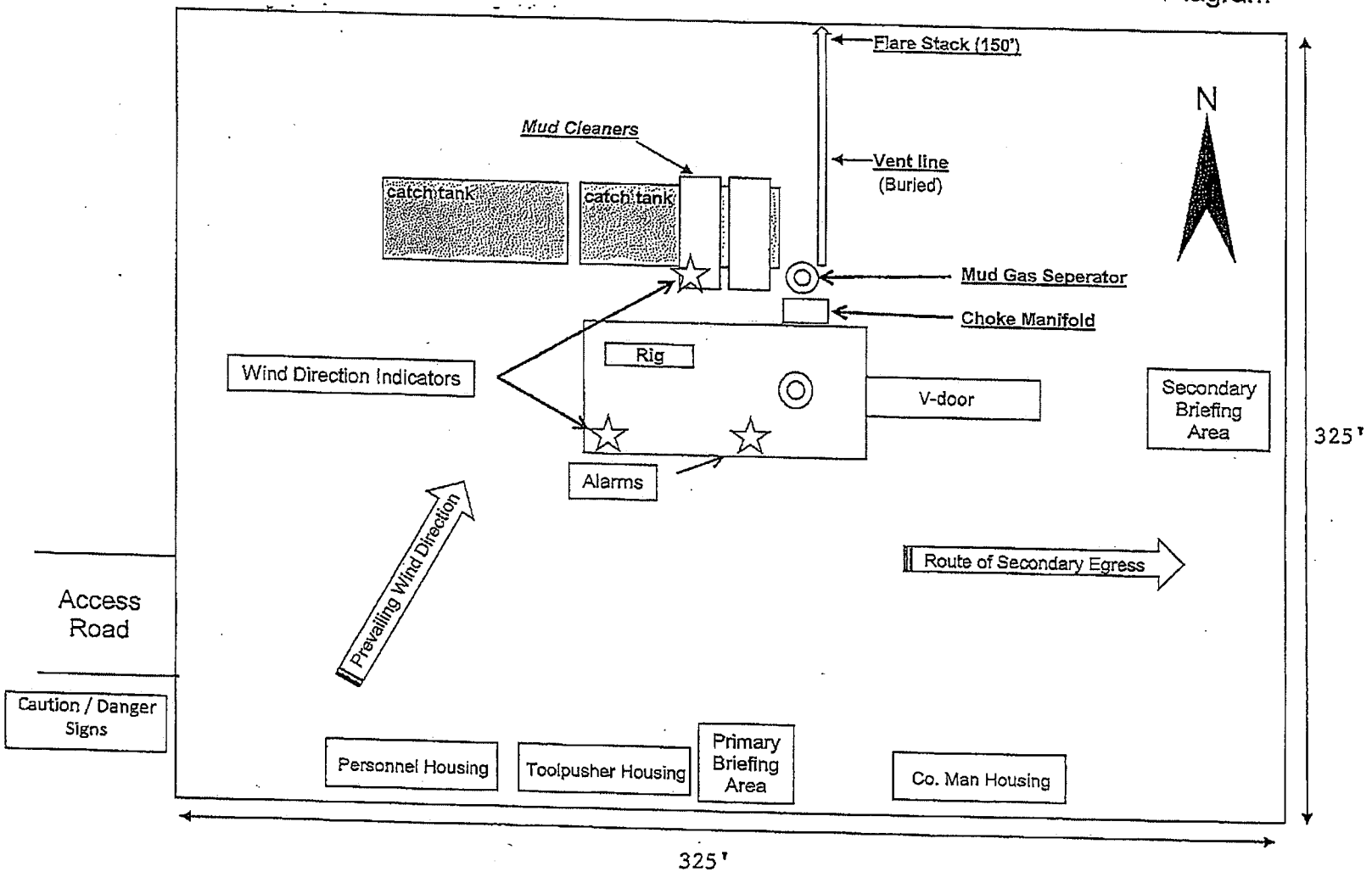
*CONCEPT QUOTE DRAWING

EOG RESOURCES INC. 9-5/8" X 7" 5M HES WELLHEAD SYSTEM QUOTE: HOU - 119274	DWN	CB	1/25/18	DRAWING NO WH-17830
	CHK			
	APP			
		BY	DATE	

Stream Flo
Worldwide Expertise - Global Strength

EOG Resources

Well Site Diagram



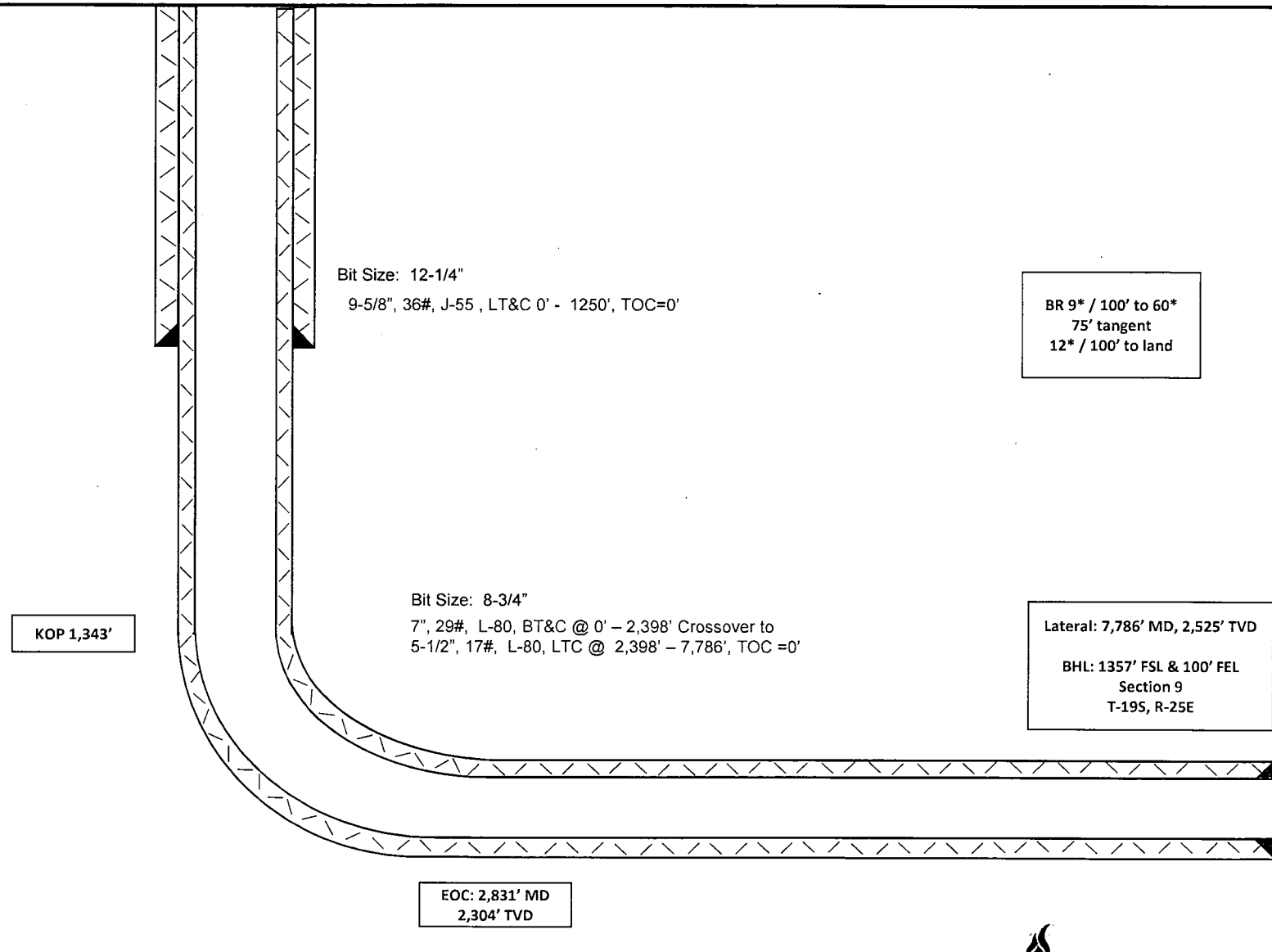
1953' FSL
447' FEL
Section 8
T-19S, R-25E

Warren Federal #10H

Proposed Wellbore

API: 30-015-*****

KB: 3,534'
GL: 3,552'



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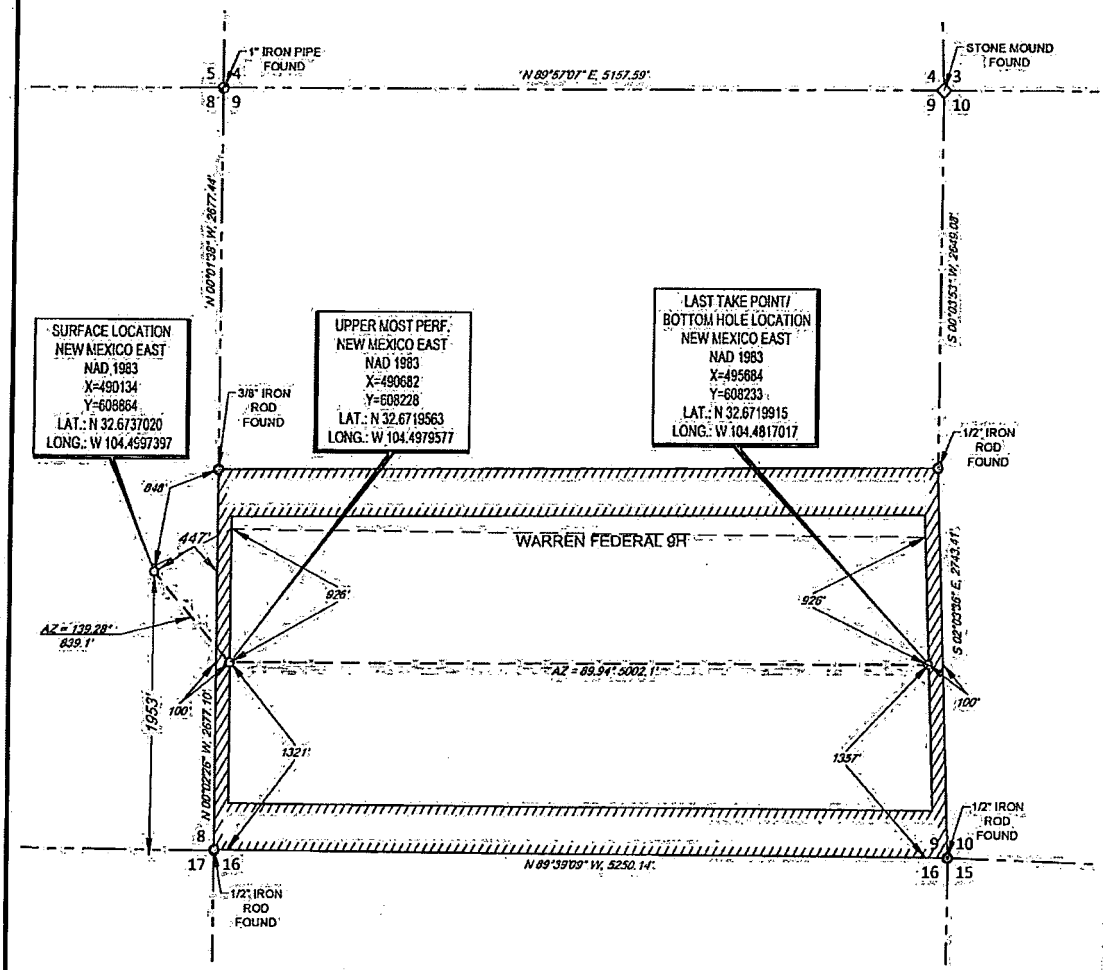
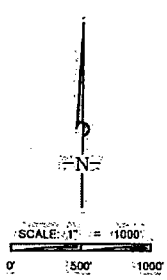
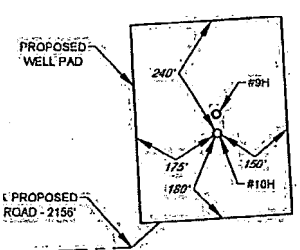
eog resources, inc.

EXHIBIT 2A

SECTION 8, TOWNSHIP 19-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO







DETAIL VIEW
SCALE: 1" = 300'

LEASE NAME & WELL NO.: WARREN FEDERAL 10H

SECTION 8 TWP 19-S RGE 25-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 1953 FSL & 447 FEL

DISTANCE & DIRECTION

FROM INT. OF NM-21 N. & HWY 285, GO WEST ON NM-21 ±4.0 MILES, THENCE NORTH (RIGHT) ON A PROPOSED RD. ±3.5 MILES, THENCE RIGHT ONTO A PROPOSED RD. ±2156 FEET TO A POINT ±210 FEET SOUTHWEST OF THE LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

Michael Blake Brown, P.S. No. 18329
OCTOBER 26, 2018

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EXHIBIT 2B

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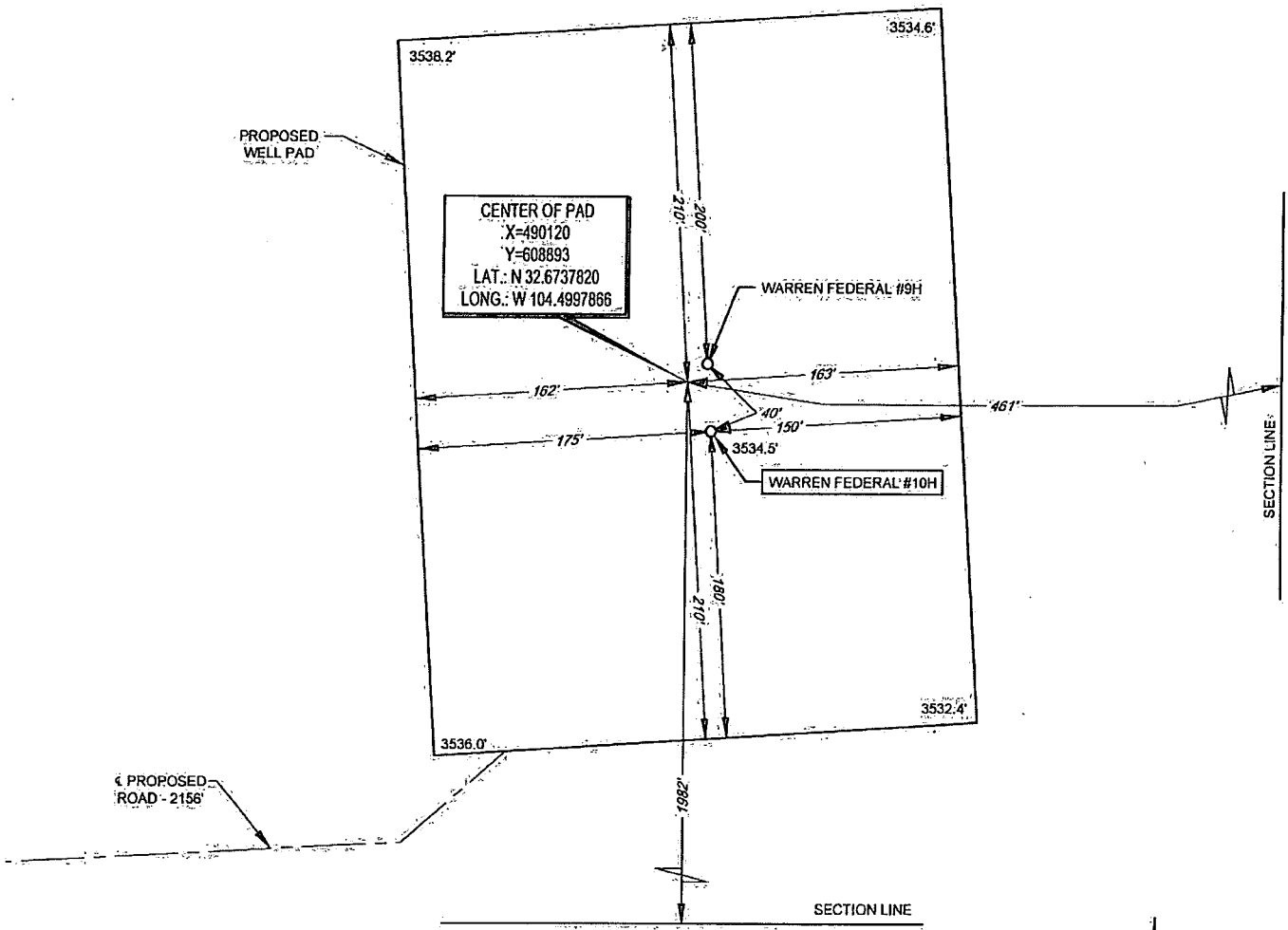
SECTION 8, TOWNSHIP 19-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: WARREN FEDERAL 10H

10H LATITUDE N 32.6737020 10H LONGITUDE W 104.4997397

CENTER OF PAD IS 1982' FSL & 461' FEL

N

SCALE: 1" = 100'
0' 50' 100'

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

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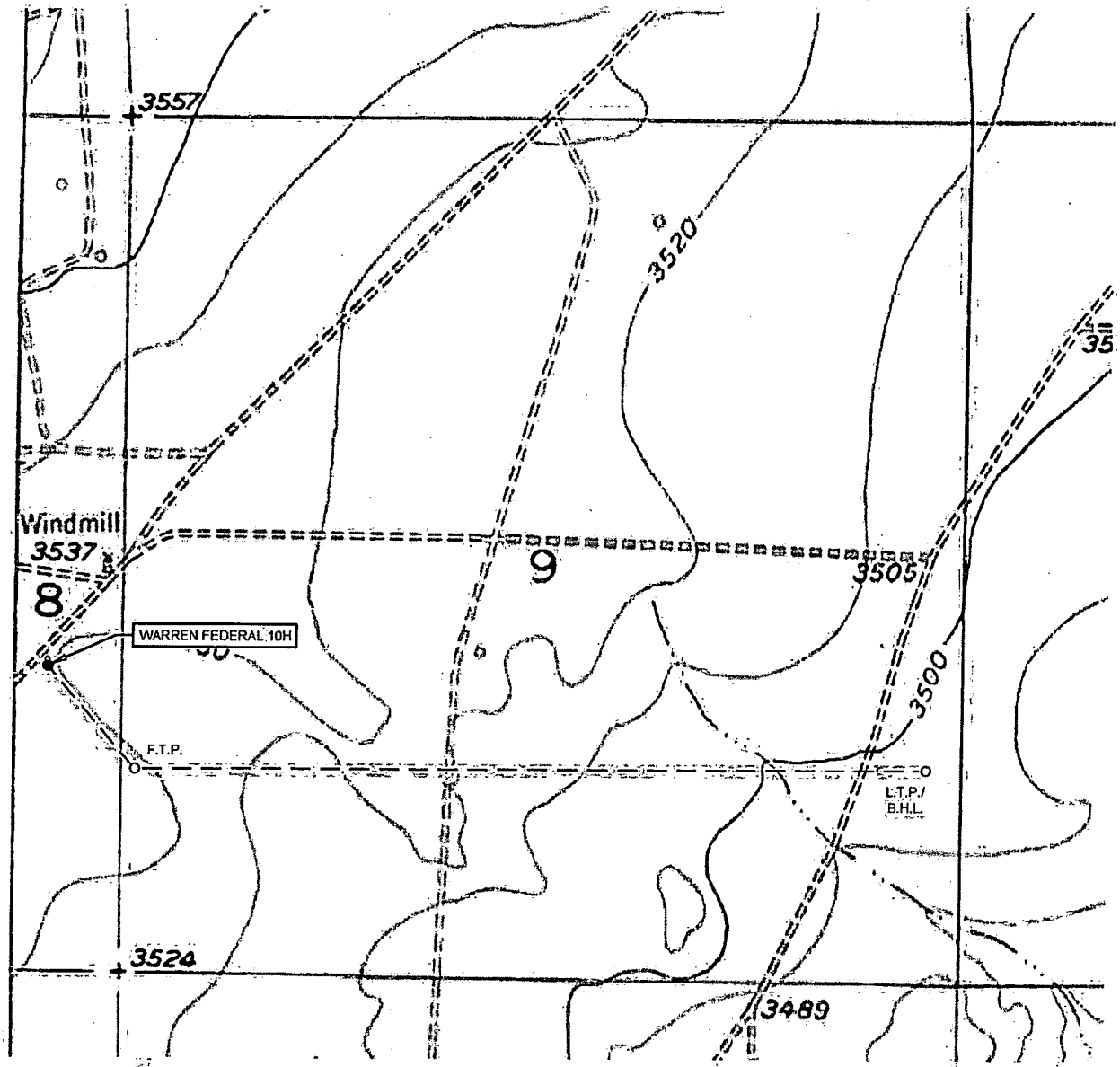
S:\SURVEY\EOG_ARTESIA\WARREN_FEDERAL\FINAL_PRODUCTS\LO_WARREN_FEDERAL_10H_REV1.DWG 10/26/2018 4:18:22 PM csmith5

LOCATION & ELEVATION VERIFICATION MAP



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LEASE NAME & WELL NO.: WARREN FEDERAL 10H

SECTION 8 TWP 19-S RGE 25-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM ELEVATION 3534'
DESCRIPTION 1953 FSL & 447 FEL

LATITUDE N 32.6737020 LONGITUDE W 104.4997397

N

SCALE: 1" = 1000'
0 500' 1000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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VICINITY MAP

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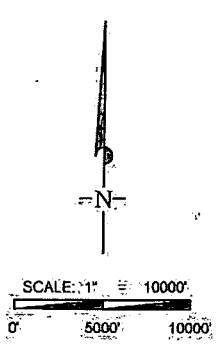

LEASE NAME & WELL NO.: WARREN FEDERAL 10H

SECTION 8 TWP 19-S RGE 25-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 1953 FSL & 447 FEL

DISTANCE & DIRECTION

FROM INT. OF NM-21 N. & HWY. 285, GO WEST ON NM-21 ±4.0 MILES, THENCE NORTH (RIGHT) ON A PROPOSED RD. ±3.5 MILES, THENCE RIGHT ONTO A PROPOSED RD. ±2156 FEET TO A POINT ±210 FEET SOUTHWEST OF THE LOCATION.

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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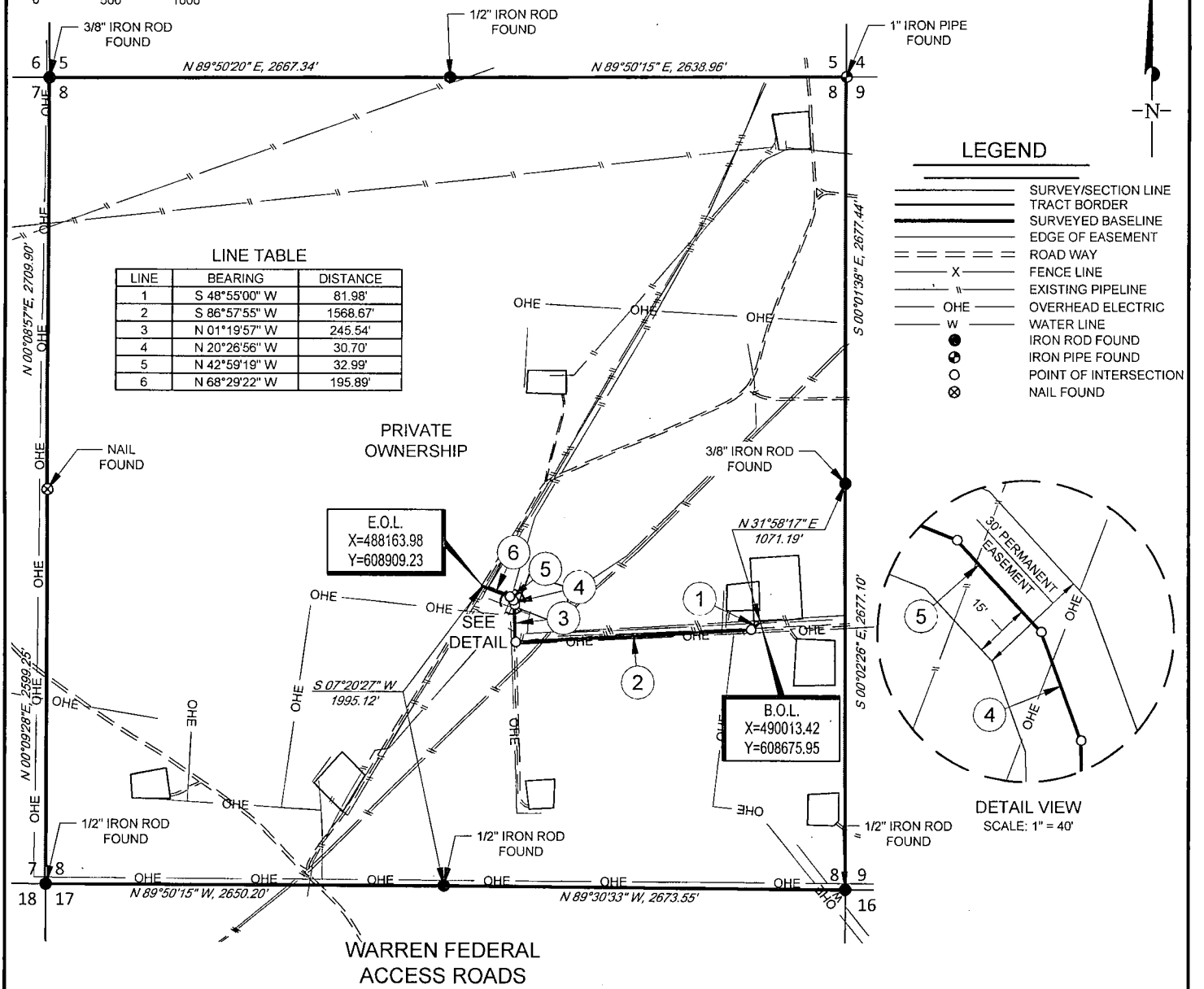
SCALE: 1" = 1000'

0' 500' 1000'

SECTION 8, TOWNSHIP 19-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



LINE TABLE

LINE	BEARING	DISTANCE
1	S 48°55'00" W	81.98'
2	S 86°57'55" W	1568.67'
3	N 01°19'57" W	245.54'
4	N 20°26'56" W	30.70'
5	N 42°59'19" W	32.99'
6	N 68°29'22" W	195.89'

LEGEND

- SURVEY/SECTION LINE
- TRACT BORDER
- SURVEYED BASELINE
- EDGE OF EASEMENT
- ROAD WAY
- FENCE LINE
- EXISTING PIPELINE
- OVERHEAD ELECTRIC
- WATER LINE
- IRON ROD FOUND
- IRON PIPE FOUND
- POINT OF INTERSECTION
- NAIL FOUND

DETAIL VIEW
SCALE: 1" = 40'

Being a proposed road easement being 30 feet in width, 15 feet left, and 15 feet right of the above platted centerline total line footage containing 2155.77 feet or 130.65 rods, containing 1.48 acres more or less.

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LOYALTY INNOVATION LEGACY
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TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
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"PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE."

Michael Blake Brown, P.S. No. 18329

OCTOBER 15, 2018

eog resources, inc.

WARREN FEDERAL ACCESS ROADS	REVISION: INT	DATE
DATE: 10/15/2018		
FILE: EP_WARREN_FEDERAL_ACCESS_RD_SEC8		
DRAWN BY: IMU		
SHEET: 1 OF 1		

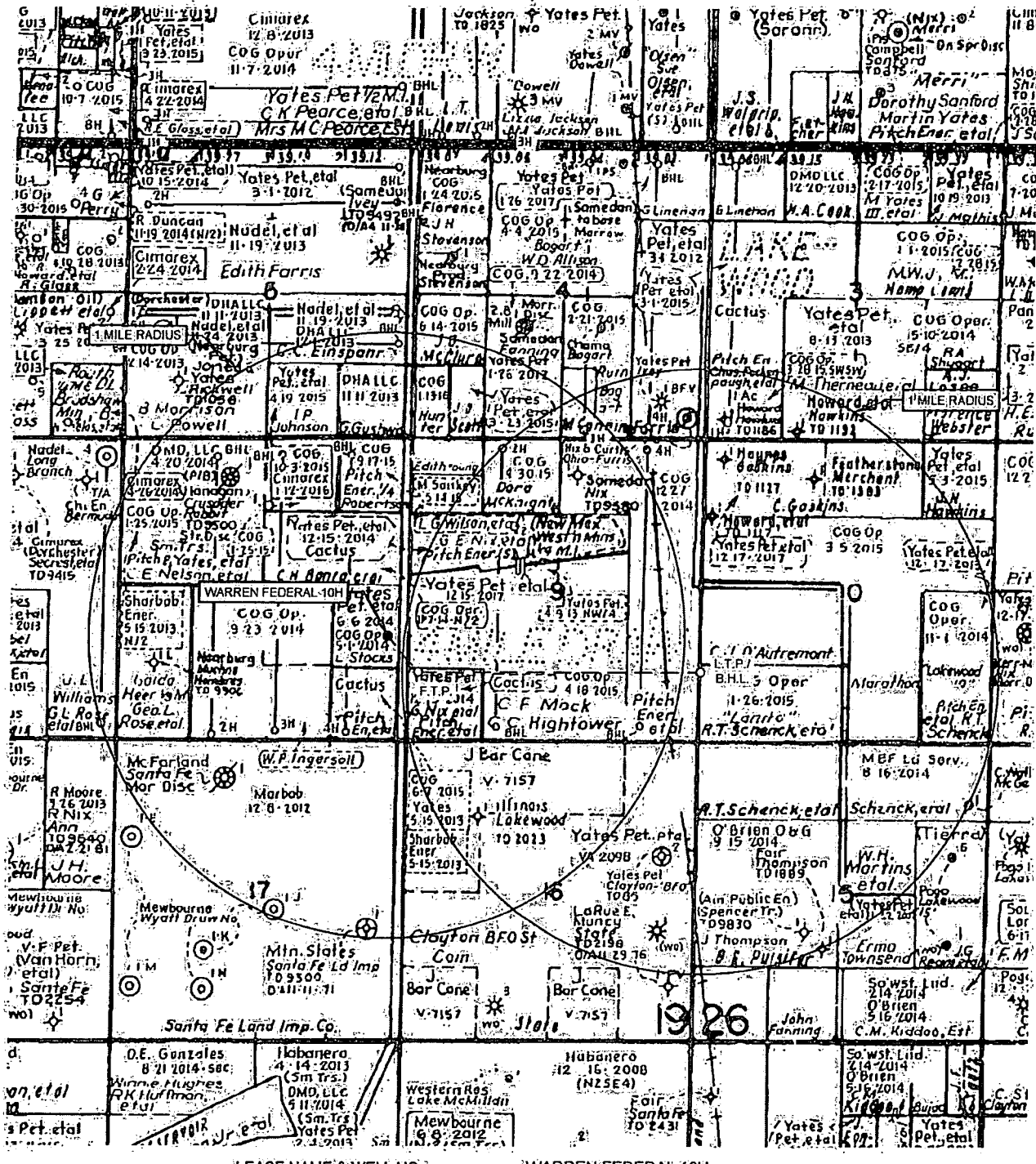
NOTES:
1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY EOG RESOURCES, INC. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
4. B.O.L./P.O.B. = BEGINNING OF LINE/POINT OF BEGINNING
5. E.O.L./P.O.E. = END OF LINE/POINT OF EXIT
6. ADJOINER INFORMATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.

S:\SURVEY\EOG_ARTES\A\WARREN_FEDERAL\FINAL_PRODUCTS\EP_WARREN_FEDERAL_ACCESS_RD_SEC8.DWG 10/17/2018 11:16:41 AM lurena

EXHIBIT 3

eog resources, Inc.

SECTION 8, TOWNSHIP 19-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: WARREN FEDERAL 10H

SCALE: NTS

10H LATITUDE N.32.6737020 10H LONGITUDE W 104.4997397

N

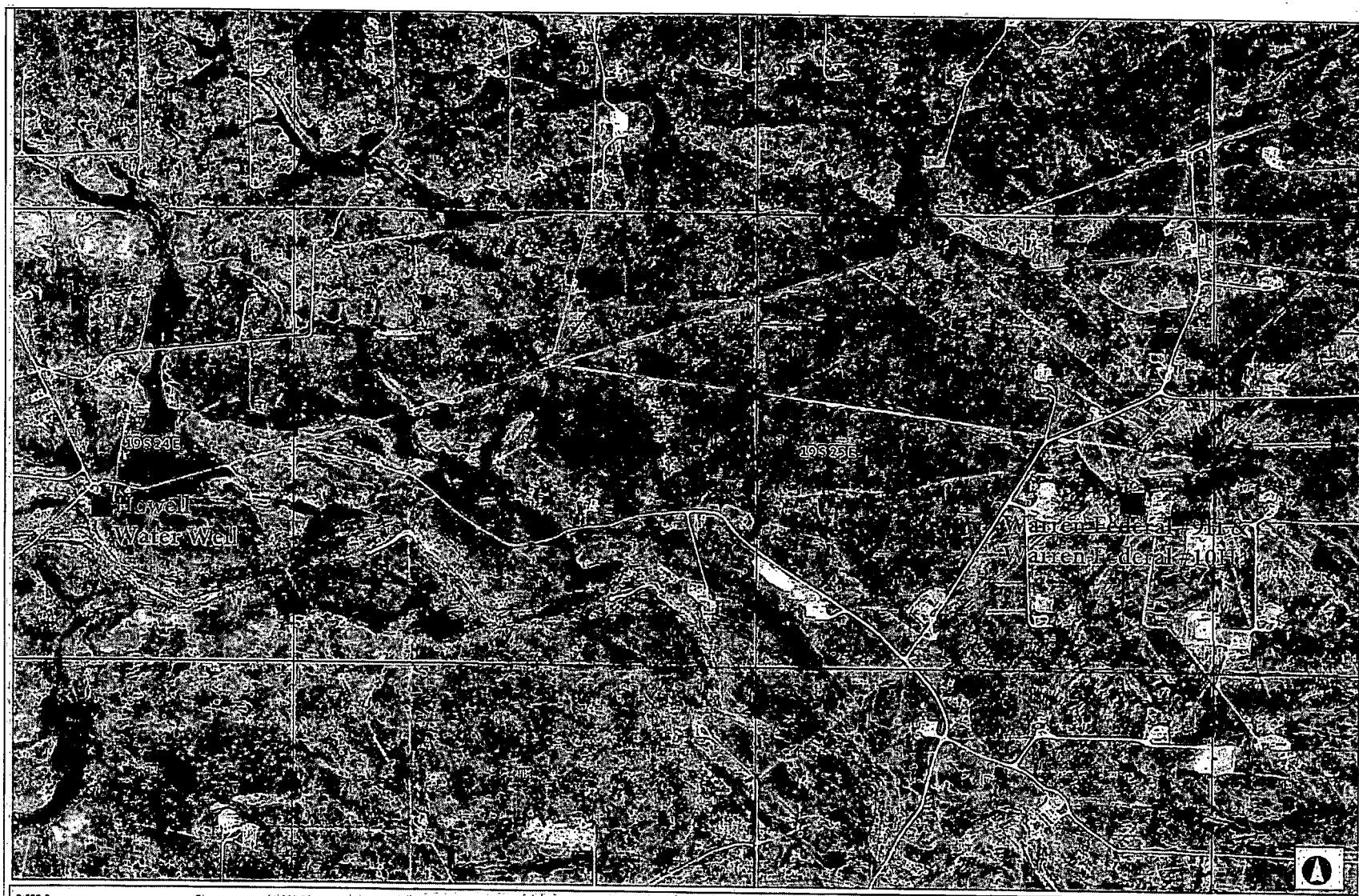
ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED, UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, STE. 146 · FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 · FAX (817) 744-7554
2903 NORTH BIG SPRING · MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 · FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

Legend/Key	
Color	Description
	Warren Federal #9H, #10H Drill Pad
	Proposed Electrical Hookup
	Current CVE Electric Grid
	Projected Wellbore Paths
	Warren Federal #9H, #10H Flowline
	Proposed location for Warren Peace CTB
	Water Transfer Line

Proposed Flowlines for Wells, water takeaway, and gas takeaway		
	Proposed Electrical Hookup	Total Footage - 1700 ft
	Warren Federal #9H, #10H Drill Pad	2 - 4" Poly SDR-7 Flowlines, total footage = 500'
	Water Transfer Line	6" Poly SDR-7 Flowlines, total footage = 200'



Legend

- Jeffersonian Sections
- Land Calendar Legend
  - EXPIRATION
  - OBLIGATION
  - PAYMENT

2,566.8 0 1,283.39 2,566.8 Feet

1:15,401

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere.

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Date: 8/29/2016

eog resources

ARTESIA DIVISION

Warren Federal #9H & Warren Federal #10H

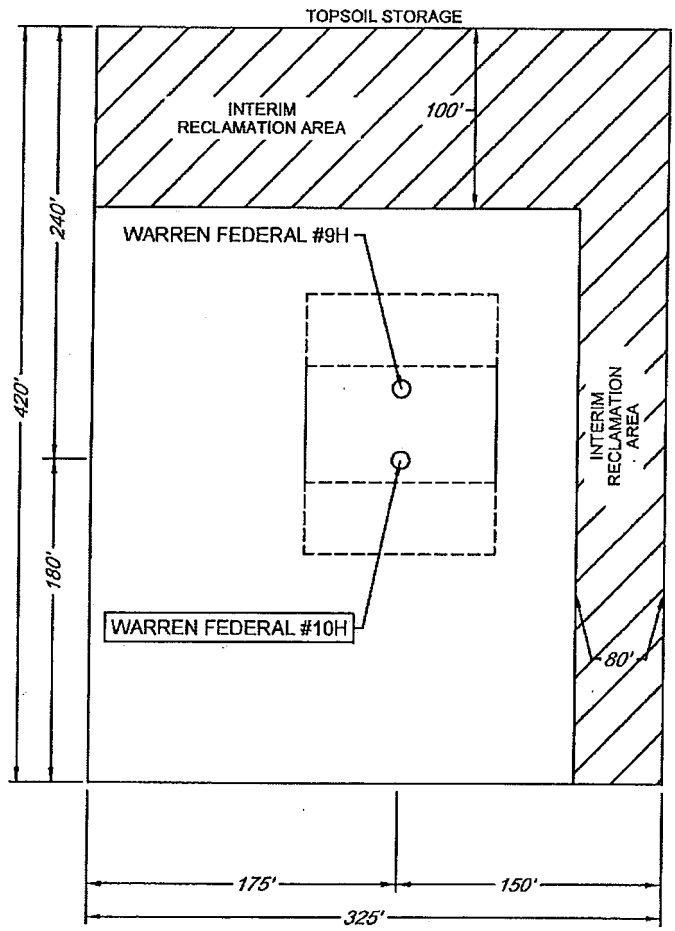
Author: Trixy Duke

EXHIBIT 2C

RECLAMATION AND FACILITY DIAGRAM - PRODUCTION FACILITIES DIAGRAM

SECTION 8, TOWNSHIP 19-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: WARREN FEDERAL 10H

10H LATITUDE N 32.6737020 10H LONGITUDE W 104.4997397

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MULTI-POINT SURFACE USE AND OPERATIONS PLAN
EOG Resources, Inc.

Warren Federal 10H
1953' FSL and 447' FEL Section 8, T19S-R25E - Surface Hole Location
1357' FSL and 100' FEL Section 9, T19S-R25E -Bottom Hole Location
Eddy County, New Mexico

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

1. EXISTING ROADS:

Attached is a portion of the County map showing the well and roads in the vicinity of the proposed location. The proposed well site is located approximately 22 miles southwest of Artesia, New Mexico and the access route to the location is indicated on Exhibit. Operator will maintain existing roads in condition the same or better than before operations begin. Operator will repair pot holes, clear ditches, repair the crown, etc. All existing structures along the entire access route such as cattle guards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use. Operator will reasonably prevent and abate fugitive dust as needed when created by vehicular traffic and equipment caused by the operator. The BLM's written approval will be acquired before application of surfactants, binding agents, or other dust suppression chemicals on roadways.

DIRECTIONS:
(See Exhibit A) From Artesia, go South on US-285 for approximately 12.9 miles. Turn right (West) onto CR21 (Rockin R Red Road). Travel West on CR28 for 7.1 miles. Turn right onto lease road and travel 1.06 miles. Stay left and go another .2 miles. Turn right and go .41 miles. Turn right and go .10 miles. Turn left and travel .32 miles. The location will be on the north side of the road.

2. PLANNED ACCESS ROAD.

A. (See Exhibit) Existing access road runs along Southeast edge of well location. The road will be crowned and ditched to a 2% slope from the tip of the crown to the edge of the driving surface.
B. The road will be 14 feet in width (driving surface) and will be adequately drained to control to control runoff and soil erosion. Ditches will be 3' wide with a 3:1 slopes.
C. The road will be bladed with drainage on one side. A traffic turnout may be built.
D. Existing roads will be maintained in the same or better condition.
E. The route of road is visible.

3. LOCATION OF EXISTING WELL

A. There is no drilling activity within a one-mile radius of the well site.
B. Exhibits shows existing wells within a one-mile radius of the proposed well site.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

   A. There are no production facilities on this lease at the present time.
   B. Central tank battery will be an on location gathering facility with water and gas take away.

5. LOCATION AND TYPE OF WATER SUPPLY:

   A. It is planned to drill the proposed well with a fresh water system. The water will be obtained from commercial sources and will be hauled to the location by truck over the existing and proposed roads shown in Exhibit.

6. SOURCE OF CONSTRUCTION MATERIALS:

   Dirt contractor will locate closest pit and obtain any permits and materials needed for construction of the well location.

7. METHODS OF HANDLING WASTE DISPOSAL:

   A. This well will be drilled with a closed loop system
   B. The closed loop system will be constructed, maintained, and closed in compliance with the State of New Mexico, Energy and Natural Resources Department, Oil Conservation Division – the "Pit Rule" 19.15.17 NMAC.
   C. Drilling fluids will be removed after drilling and completions are completed.
   D. Water produced during operations will be collected in tanks until hauled to an approved disposal system, or separate disposal application will be submitted.
   E. Oil produced during operations will be stored in tanks until sold.
   F. Current laws and regulations pertaining to the disposal of human waste will be complied with.
   G. All trash, junk, and other waste materials will be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Burial on site is not approved.

8. ANCILLARY FACILITIES: None.

9. WELLSITE LAYOUT:

   A. Attached exhibit shows the relative location and dimensions of the well pad, the closed loop mud system, location of the drilling equipment. All of the location will be constructed within the 325' x 420' staked area.
   B. A 325' x 420' area has been staked and flagged.

9. PLANS FOR RESTORATION:

   A. After finishing drilling and/or completion operations, all equipment and other material not needed for further operations will be removed. The location will be cleaned of all trash and junk to leave the well site in as aesthetically pleasing a condition as possible. The location will be reduced to a 250' x 250' after completion operations have been conducted. At this point the surfacing material will be removed and topsoil will be redistributed. The area will be contoured as closely as possible to its original state and reseeded. Please note attached Reclamation Plat.

B. If the proposed well is plugged and abandoned, all equipment and other material will be removed. The location will be cleaned of all trash and junk to leave the well site in as aesthetically pleasing a condition as possible. At this point the surfacing material will be removed, topsoil will be redistributed. The area will be contoured as closely as possible to its original location and reseeded. These actions will be completed and accomplished as expeditiously as possible.

C. The reclamation of the pad will be done in sixty days if possible after the well is put in production.

11. SURFACE OWNERSHIP:

Surface Estate:	John Walter Thomas, et al 10117 Estate Lane Dallas, TX 75238
Mineral Estate:	Fee Lease Leased to EOG Y Resources, Inc. 104 South Fourth Street Artesia, NM 88210

12. OTHER INFORMATION:

A. Topography: Refer to the existing archaeological report for a description of the topography, flora, fauna, soil characteristics, dwellings, historical and cultural sites.
B. The primary surface use is for grazing.