Form 3160-3 FORM APPROVED OMB No. 1004-0137 (June 2015) Expires: January 31, 2018 **UNITED STATES** DEPARTMENT OF THE INTERIOR 5. Lease Serial No. NMNM26394 **BUREAU OF LAND MANAGEMENT** APPLICATION FOR PERMIT TO DRILL OR REENTER 6. If Indian, Allotee or Tribe Name 7. If Unit or CA Agreement, Name and No. **✓** DRILL REENTER 1a. Type of work: 1b. Type of Well: Oil Well Gas Well Other 8. Lease Name and Well No. 1c. Type of Completion: Hydraulic Fracturing Single Zone Multiple Zone GREEN DRAKE 16 FED COM/415H 2. Name of Operator 9. API Well No. 30-025-51630 EOG RESOURCES INCORPORATED 3a. Address 3b. Phone No. (include area code) 10. Field and Pool, or Exploratory 1111 BAGBY SKY LOBBY 2, HOUSTON, TX77002 RED HILLS/LOWER BONE SPRING 4. Location of Well (Report location clearly and in accordance with any State requirements.*) 11. Sec., T. R. M. or Blk. and Survey or Area At surface T-25-S, R-33-E, Sec 16, 2390' FSL, 2164' FWL, Lea Co., NM, SEC 16/T25S/R33E/NMP At proposed prod. zone T-25-S, R-33-E, Sec 21, 100' FSL, 820' FWL, Lea Co., N.M. 12. County or Parish 13. State 14. Distance in miles and direction from nearest town or post office* I FA NM 15. Distance from proposed* 16. No of acres in lease 17. Spacing Unit dedicated to this well location to nearest property or lease line, ft. 480 (Also to nearest drig. unit line, if any) 18. Distance from proposed location* 19. Proposed Depth 20. BLM/BIA Bond No. in file to nearest well, drilling, completed, NMNM2308 applied for, on this lease, ft. 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 22. Approximate date work will start* 23. Estimated duration 30 DAYS 3404 6/22/23 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. 4. Bond to cover the operations unless covered by an existing bond on file (see 2. A Drilling Plan. Item 20 above). 3. A Surface Use Plan (if the location is on National Forest System Lands, the 5. Operator certification. 6. Such other site specific information and/or plans as may be requested by the SUPO must be filed with the appropriate Forest Service Office). BLM. Name (Printed/Typed) Date 25. Signature 6/16/23 CRAIG RICHARDSON CRAIG RICHARDSON Title REGULATORY SPECIALIST Date 6/16/2023 proved by (Signature) Name (Printed/Typed) Digitally signed by CHRISTOPHER WALLS CHRISTOPHER WALLS Digitally signed by CHRISTOPHER Date: 2023.06.16 10:51:26 -06'00' Title Office 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



(Continued on page 2) *(Instructions on page 2)

of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

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.

DISTRICT I

1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-0720

DISTRICT II
81 I S. First St., Artesia, NM 88210
Phone: (575) 348-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fc, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

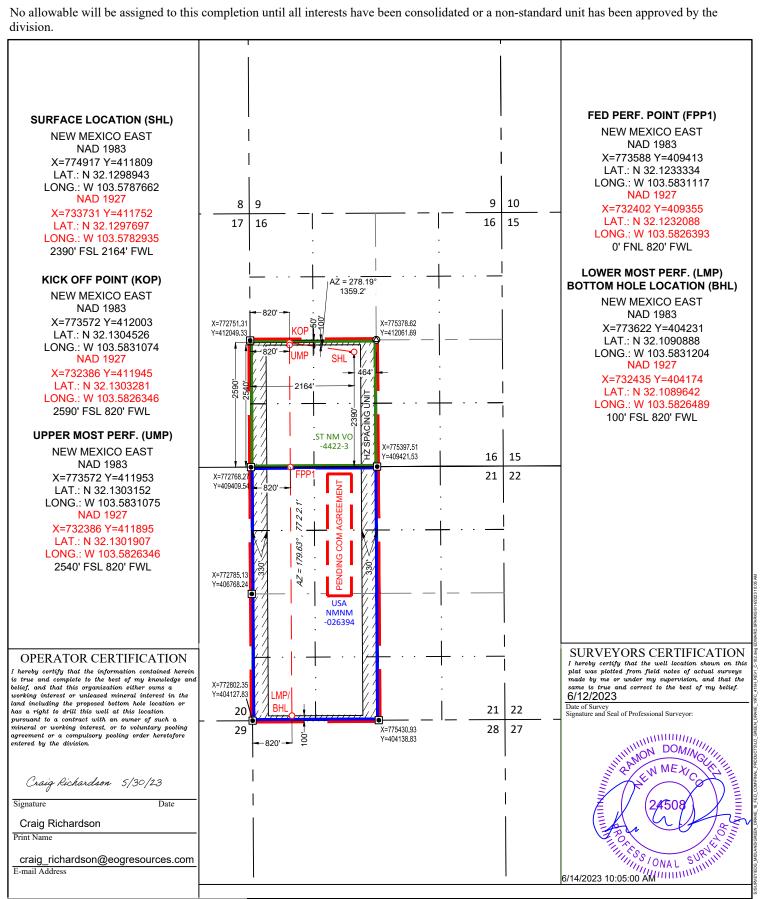
State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | | | | Pool Code Pool Name | | | | | |
|-----------------|------------------|----------|------------------|-------------------------|------------------|----------------------|---------------|----------------|--------|
| 3 | 1630 | 5102 | 0 | | | | | | |
| Property Co | ode | | • | | Property Name | | | Well Nun | nber |
| 323122 | | | | GRE | EEN DRAKE 16 | FED COM | | 41 | 5H |
| OGRID N | 0. | | | | Operator Name | | | Elevation | on |
| 7377 | | | | E | OG RESOURC | ES, INC. | | 3404' | |
| | Surface Location | | | | | | | | |
| UL or lot no. | Section | Township | p Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
| K | 16 | 25-S | 33-E | - | 2390' | SOUTH | 2164' | WEST | LEA |
| | | • | Botte | om Hole | Location If Diff | erent From Surfac | ee | | |
| UL or lot no. | Section | Township | p Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
| M | 21 | 25-S | 33-E | - | 100' | 100' SOUTH 820' WEST | | | |
| Dedicated Acres | Joint or | Infill | Consolidated Coo | olidated Code Order No. | | | | | |
| 480.00 | | | | PENDING COM AGREEMENT | | | | | |



State of New Mexico Energy, Minerals and Natural Resources Department

Submit Electronically Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description Effective May 25, 2021

| I. Operator:EOG F | Resources, Inc | OGRII | D: 7377 | | Date: 2/9 | 9/2022 | |
|---|----------------|--------------------|--------------------------|----------------------------|--------------------------|----------------|------------------------------------|
| II. Type: ⊠ Original | ☐ Amendm | ent due to □ 19.15 | 5.27.9.D(6)(a) NI | MAC □ 19.15.27. | 9.D(6)(b) NMA | .C □ Oti | her. |
| If Other, please describe: | | | | | | | |
| III. Well(s): Provide the be recompleted from a si | _ | | | | wells proposed | to be dri | illed or proposed to |
| Well Name | API | ULSTR | Footages | Anticipated Oil BBL/D | Anticipated Gas MCF/D | | Anticipated roduced Water BBL/D |
| GREEN DRAKE 16 FED COM 415H 30- | 025-51630 | K-16-25S-33E | 2390' FSL & 2164' FEL | +/- 1000 | +/- 3500 | | |
| IV. Central Delivery Pontal NMACV. Anticipated Schedulor proposed to be recomposed to be recomposed. | le: Provide th | e following inform | ation for each no | ew or recompleted | well or set of v | | .15.27.9(D)(1) posed to be drilled |
| Well Name | API | Spud Date | TD Reached Date | Completion Commencement | n Initia | l Flow Date | First Production Date |
| Green Drake 16 Fed Com 404H | 025 51(20 | 06/22/23 | 07/07/23 | 09/07/23 | 10/07/ | 23 | 11/07/23 |
| VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture. | | | | | | | |
| VII. Operational Pract Subsection A through F | | | ription of the ac | tions Operator wi | ll take to comp | ly with t | he requirements of |
| VIII. Best Managemen during active and planne | | 1 | ete description of | f Operator's best 1 | nanagement pra | actices to | o minimize venting |

Section 2 – Enhanced Plan EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

🗓 Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

| Well | API | Anticipated Average Natural Gas Rate MCF/D | Anticipated Volume of Natural Gas for the First Year MCF | |
|------|-----|---|--|--|
| | | | | |
| | | | | |

X. Natural Gas Gathering System (NGGS):

| Operator | System | ULSTR of Tie-in | Anticipated Gathering | Available Maximum Daily Capacity |
|----------|--------|-----------------|-----------------------|----------------------------------|
| | | | Start Date | of System Segment Tie-in |
| | | | | |
| | | | | |

| XI. Map. Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the |
|---|
| production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of |
| the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected. |

| XII. Line Capacity. The natural | gas gathering system [| □ will □ will | not have capacity t | o gather 1 | 100% of the | e anticipated | natural ga |
|---------------------------------|----------------------------|---------------|---------------------|------------|-------------|---------------|------------|
| production volume from the well | prior to the date of first | production. | | | | | |

| VIII I : Programme Outside of the control of the | '(1 |
|---|--|
| | its existing well(s) connected to the same segment, or portion, of the |
| natural gas gathering system(s) described above will continue to m | neet anticipated increases in line pressure caused by the new well(s) |

| \neg | Attach On | arator's | nlan to | monoga | production | in rocnone | o to the inc | reased line r | roccuro |
|--------|-----------|----------|---------|--------|------------|------------|---------------|---------------|---------|
| | Affach Ob | erator s | nian to | manage | production | in respons | se to the inc | reased line i | ressure |

| XIV. Confidentiality: \square Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provides | ded in |
|--|--------|
| Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific inform | nation |
| for which confidentiality is asserted and the basis for such assertion. | |

(i)

Section 3 - Certifications Effective May 25, 2021

| | Effective May 25, 2021 | | | | | |
|---|--|--|--|--|--|--|
| Operator certifies that, a | after reasonable inquiry and based on the available information at the time of submittal: | | | | | |
| one hundred percent of | Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport ne hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, aking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or | | | | | |
| hundred percent of the a into account the current | Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one nundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. <i>f Operator checks this box, Operator will select one of the following:</i> | | | | | |
| Well Shut-In. ☐ Opera D of 19.15.27.9 NMAC | tor will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection ; or | | | | | |
| Venting and Flaring F | Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential | | | | | |
| alternative beneficial us | es for the natural gas until a natural gas gathering system is available, including: | | | | | |
| (a) | power generation on lease; | | | | | |
| (b) | power generation for grid; | | | | | |
| (c) | compression on lease; | | | | | |
| (d) | liquids removal on lease; | | | | | |
| (e) | reinjection for underground storage; | | | | | |
| (f) | reinjection for temporary storage; | | | | | |
| (g) | reinjection for enhanced oil recovery; | | | | | |
| (h) | fuel cell production; and | | | | | |

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

other alternative beneficial uses approved by the division.

- (a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or
- (b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.
- 2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

| Signature: Craig Richardson |
|---|
| Printed Name: Craig Richardson |
| Title: Regulatory Specialist |
| E-mail Address: craig_richardson@eogresources.com |
| Date: 6/20/2022 |
| Phone: (432) 848-9161 |
| OIL CONSERVATION DIVISION |
| (Only applicable when submitted as a standalone form) |
| Approved By: |
| Title: |
| Approval Date: |
| Conditions of Approval: |
| |
| |
| |
| |

Natural Gas Management Plan Items VI-VIII

VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Adequate separation relates to retention time for Liquid Liquid separation and velocity for Gas-Liquid separation.
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering is selected to be serviced without flow interruptions or the need to release
 gas from the well.

VII. Operational Practices: Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F 19.15.27.8 NMAC.

Drilling Operations

- All flare stacks will be properly sized. The flare stacks will be located at a minimum 100' from the nearest surface hole location on the pad.
- All natural gas produced during drilling operations will be flared, unless there is an equipment malfunction
 and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which
 point the gas will be vented.

Completions/Recompletions Operations

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as excess VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which
 point it will be flared until it meets pipeline spec.

Production Operations

- Weekly AVOs will be performed on all facilities.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All plunger lift systems will be optimized to limit the amount of waste.
- All tanks will have automatic gauging equipment installed.
- Leaking thief hatches found during AVOs will be cleaned and properly re-sealed.

Performance Standards

- Production equipment will be designed to handle maximum anticipated rates and pressure.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Weekly AVOs will be performed on all wells and facilities that produce more than 60 Mcfd.

Measurement & Estimation

- All volume that is flared and vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- No meter bypasses with be installed.

• When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

VIII. Best Management Practices: Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

- During downhole well maintenance, EOG will use best management practices to vent as minimally as possible.
- Prior to the commencement of any maintenance, the tank or vessel will be isolated from the rest of the facilities.
- All valves upstream of the equipment will be closed and isolated.
- After equipment has been isolated, the equipment will be blown down to as low a pressure as possible into the collection system.
- If the equipment being maintained cannot be relieved into the collection system, it shall be released to a tank where the vapor can either be captured or combusted if possible.
- After downhole well maintenance, natural gas will be flared until it reaches pipeline specification.

Revised Permit Information 06/14/2023:

Well Name: Green Drake 16 Fed Com 415H

Location: SHL: 2390' FSL & 2164' FWL, Section 16, T-25-S, R-33-E, Lea Co., N.M.

BHL: 100' FSL & 820' FWL, Section 21, T-25-S, R-33-E, Lea Co., N.M.

Casing Program A:

| Hole | Interval MD | | Interval TVD | | Csg | | | |
|--------|-------------|---------|--------------|---------|---------|--------|---------|------|
| Size | From (ft) | To (ft) | From (ft) | To (ft) | OD | Weight | Grade | Conn |
| 16" | 0 | 1,140 | 0 | 1,140 | 13-3/8" | 54.5# | J-55 | STC |
| 11" | 0 | 4,168 | 0 | 4,000 | 9-5/8" | 40# | J-55 | LTC |
| 11" | 4,168 | 4,878 | 4,000 | 4,710 | 9-5/8" | 40# | HCK-55 | LTC |
| 6-3/4" | 0 | 18,173 | 0 | 10,476 | 5-1/2" | 17# | HCP-110 | LTC |

Variance is requested to waive the centralizer requirements for the 9-5/8" casing in the 11" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 11" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 5-1/2" casing in the 6-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 6-3/4" hole interval to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422" annulus clearance requirement for the intermediate (salt) section from Onshore Order #2 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

Cementing Program:

| Cent | nung 110 | 51 4111. | | |
|-------------------|-----------|----------|---------------|--|
| Depth | No. Sacks | Wt. | Yld Ft3/sk | Slurry Description |
| 1,140' 13-3/8" | 340 | 13.5 | 1.73 | Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 100 | 14.8 | 1.34 | Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 940') |
| 4,710' 9-5/8" | 450 | 12.7 | 2.22 | Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 160 | 14.8 | 1.32 | Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 3,770') |
| 18,173' 5-1/2" | 360 | 10.5 | 3.21 | Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 4,210') |
| | 580 | 13.2 | 1.52 | Tail: Class H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ 10090') |



| Additive | Purpose | | | | | |
|---------------------|---|--|--|--|--|--|
| Bentonite Gel | Lightweight/Lost circulation prevention | | | | | |
| Calcium Chloride | Accelerator | | | | | |
| Cello-flake | Lost circulation prevention | | | | | |
| Sodium Metasilicate | Accelerator | | | | | |
| MagOx | Expansive agent | | | | | |
| Pre-Mag-M | Expansive agent | | | | | |
| Sodium Chloride | Accelerator | | | | | |
| FL-62 | Fluid loss control | | | | | |
| Halad-344 | Fluid loss control | | | | | |
| Halad-9 | Fluid loss control | | | | | |
| HR-601 | Retarder | | | | | |
| Microbond | Expansive Agent | | | | | |

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

Mud Program:

| Depth (TVD) | Type | Weight (ppg) | Viscosity | Water Loss |
|------------------|-------------|--------------|-----------|------------|
| 0 – 1,140' | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| 1,140' – 4,710' | Brine | 8.6-8.8 | 28-34 | N/c |
| 4,710' – 18,173' | Oil Base | 8.8-9.5 | 58-68 | N/c - 6 |

Wellhead & Offline Cementing:

EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of Onshore Order No. 2 (item III.A.2.a.i) to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with Batch Drilling & Offline cement operations to include the following:

- Full BOPE test at first installation on the pad.
- Full BOPE test every 21 days per Onshore Order No. 2.
- Function test BOP elements per Onshore Order No. 2.
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or intermediate sections, according to attached offline cementing support documentation.
- After the well section is secured, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad.
- TA cap will also be installed per Wellhead vendor procedure and pressure inside
 the casing will be monitored via the valve on the TA cap as per standard batch
 drilling ops.
- See attached "EOG BLM Variance 3a -Offline Cement Intermediate Operational Procedure"



TUBING REQUIREMENTS

EOG respectively requests an exception to the following NMOCD rule:

• 19.15.16.10 Casing AND TUBING RQUIREMENTS:

J (3): "The operator shall set tubing as near the bottom as practical and tubing perforations shall not be more than 250 feet above top of pay zone."

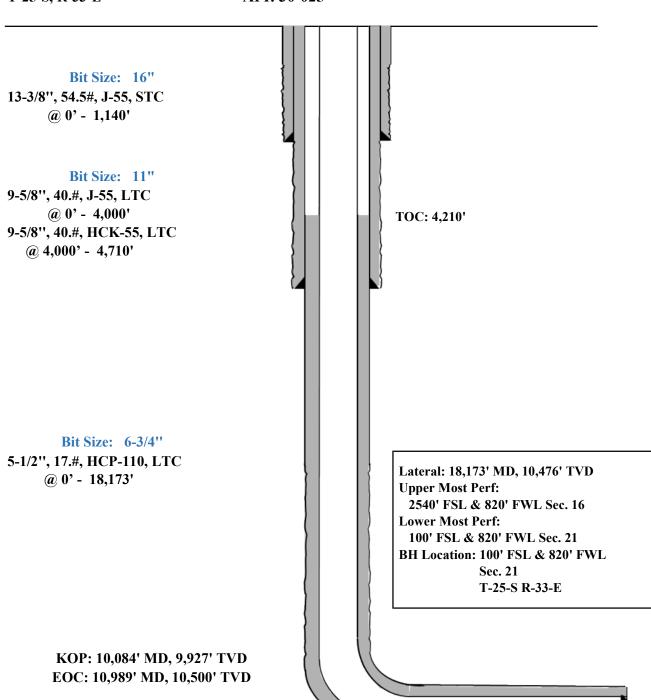
With horizontal flowing and gas lifted wells an end of tubing depth placed at or slightly above KOP is a conservative way to ensure the tubing stays clean from debris, plugging, and allows for fewer well interventions post offset completion. The deeper the tubulars are run into the curve, the higher the probability is that the tubing will become stuck in sand and or well debris as the well produces over time. An additional consideration for EOT placement during artificial lift installations is avoiding the high dog leg severity and inclinations found in the curve section of the wellbore to help improve reliability and performance. Dog leg severity and inclinations tend not to hamper gas lifted or flowing wells, but they do effect other forms of artificial lift like rod pump or ESP (electric submersible pump). Keeping the EOT above KOP is an industry best practice for those respective forms of artificial lift.



2390' FSL Revised Wellbore A: KB: 3429' 2164' FWL GL: 3404'

Section 16

T-25-S, R-33-E API: 30-025-*****





Revised Permit Information 06/14/2023:

Well Name: Green Drake 16 Fed Com 415H

Location: SHL: 2390' FSL & 2164' FWL, Section 16, T-25-S, R-33-E, Lea Co., N.M.

BHL: 100' FSL & 820' FWL, Section 21, T-25-S, R-33-E, Lea Co., N.M.

Casing Program B:

| Hole | Interv | al MD | Interva | al TVD | Csg | | | |
|---------|-----------|---------|-----------|---------|---------|--------|---------|--------|
| Size | From (ft) | To (ft) | From (ft) | To (ft) | OD | Weight | Grade | Conn |
| 13-1/2" | 0 | 1,140 | 0 | 1,140 | 10-3/4" | 40.5# | J-55 | STC |
| 9-7/8" | 0 | 4,168 | 0 | 4,000 | 8-5/8" | 32# | J-55 | BTC-SC |
| 9-7/8" | 4,168 | 4,878 | 4,000 | 4,710 | 8-5/8" | 32# | P110-EC | BTC-SC |
| 6-3/4" | 0 | 18,173 | 0 | 10,476 | 5-1/2" | 17# | HCP-110 | LTC |

Cementing Program:

| Depth | No. Sacks | Wt. | Yld Ft3/sk | Slurry Description |
|--------------------|-----------|------|---------------|--|
| 1,140' 10-3/4'' | 380 | 13.5 | 1.73 | Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello- Flake (TOC @ Surface) |
| | 110 | 14.8 | 1.34 | Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 940') |
| 4,710' 8-5/8" | 320 | 12.7 | 2.22 | Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 150 | 14.8 | 1.32 | Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 3,770') |
| 18,173' 5-1/2'' | 600 | 10.5 | 3.21 | Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 4,210') |
| | 600 | 13.2 | 1.52 | Tail: Class H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ 10090') |



Variance is requested to waive the centralizer requirements for the 8-5/8" casing in the 9-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 9-7/8" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 5-1/2" casing in the 6-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 6-3/4" hole interval to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422" annulus clearance requirement for the intermediate (salt) section from Onshore Order #2 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

Wellhead & Offline Cementing:

EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of Onshore Order No. 2 (item III.A.2.a.i) to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with Batch Drilling & Offline cement operations to include the following:

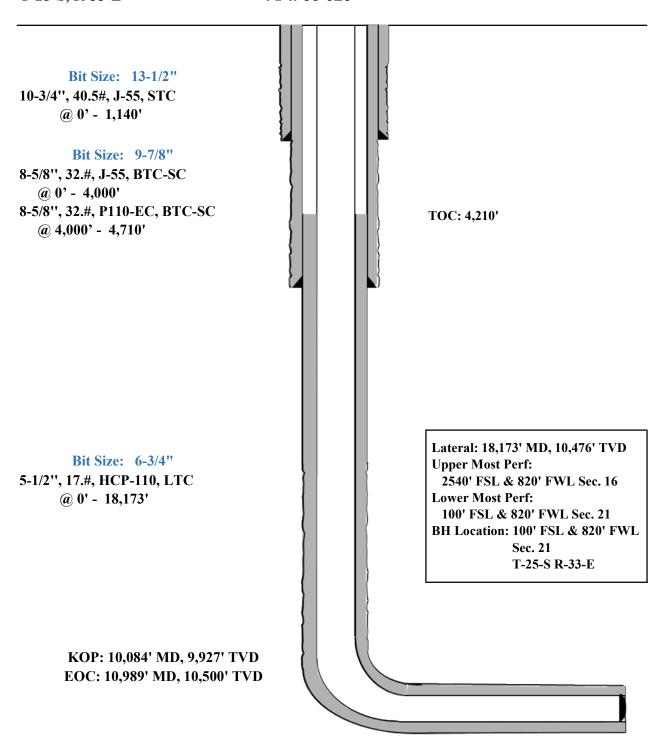
- Full BOPE test at first installation on the pad.
- Full BOPE test every 21 days per Onshore Order No. 2.
- Function test BOP elements per Onshore Order No. 2.
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or intermediate sections, according to attached offline cementing support documentation.
- After the well section is secured, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad.
- TA cap will also be installed per Wellhead vendor procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.
- See attached "EOG BLM Variance 3a -Offline Cement Intermediate Operational Procedure"

Seog resourcesGreen Drake 16 Fed Com 415H

2390' Revised Wellbore B: KB: 3429' 2164' GL: 3404'

Section 16

T-25-S, R-33-E API: 30-025-*****





GEOLOGIC NAME OF SURFACE FORMATION:

Permian

ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

| Rustler | 1,041' |
|------------------------|---------|
| Tamarisk Anhydrite | 1,112' |
| Top of Salt | 1,321' |
| Base of Salt | 4,606' |
| Lamar | 4,972' |
| Bell Canyon | 5,024' |
| Cherry Canyon | 6,114' |
| Brushy Canyon | 9,007' |
| Bone Spring Lime | 9,190' |
| Leonard (Avalon) Shale | 9,248' |
| 1st Bone Spring Sand | 10,122' |
| 2nd Bone Spring Shale | 10,362' |
| 2nd Bone Spring Sand | 10,716' |
| 3rd Bone Spring Carb | 11,230' |
| 3rd Bone Spring Sand | 11,878' |
| Wolfcamp | 12,299' |
| TD | 10,476' |
| | |

ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

| Upper Permian Sands | 0- 400' | Fresh Wat |
|------------------------|---------|-----------|
| Bell Canyon | 5,024' | Oil |
| Cherry Canyon | 6,114' | Oil |
| Brushy Canyon | 9,007' | Oil |
| Leonard (Avalon) Shale | 9,248' | Oil |
| 1st Bone Spring Sand | 10,122' | Oil |
| 2nd Bone Spring Shale | 10,362' | Oil |
| 2nd Bone Spring Sand | 10,716' | Oil |

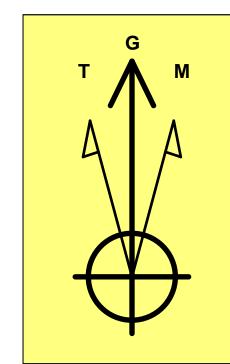


1400-

7000-

9100-

Released to Imaging: 6/20/2023 1:36:53 PM



Azimuths to Grid North
True North: -0.40°
Magnetic North: 5.89°

Magnetic Field Strength: 47216.9nT Dip Angle: 59.74° Date: 7/28/2023 Model: IGRF2020

To convert a Magnetic Direction to a Grid Direction, Add 5.89°
To convert a Magnetic Direction to a True Direction, Add 6.29° East
To convert a True Direction to a Grid Direction, Subtract 0.40°

Lea County, NM (NAD 83 NME)

Green Drake 16 Fed Com #415H

Plan #0.1 RT

PROJECT DETAILS: Lea County, NM (NAD 83 NME)

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

System Datum: Mean Sea Level

WELL DETAILS: #415H

3404.0

KB = 30' @ 3434.0usft
Northing Easting Latitt
411809.00 774917.00 32° 7' 47

Latittude Longitude 32° 7' 47.615 N 103° 34' 43.557 W

| | | | | | | S | SECTION | I DETAILS | | |
|-----|---------|-------|--------|---------|---------|---------|---------|-----------|--------|-------------------------------------|
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 1300.0 | 0.00 | 0.00 | 1300.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 1986.3 | 13.73 | 278.21 | 1979.8 | 11.7 | -81.0 | 2.00 | 278.21 | -12.2 | |
| 4 | 7023.6 | 13.73 | 278.21 | 6873.2 | 182.3 | -1264.0 | 0.00 | 0.00 | -190.5 | |
| 5 | 7710.0 | 0.00 | 0.00 | 7553.0 | 194.0 | -1345.0 | 2.00 | 180.00 | -202.7 | |
| 6 | 10084.0 | 0.00 | 0.00 | 9927.0 | 194.0 | -1345.0 | 0.00 | 0.00 | -202.7 | KOP(Green Drake 16 Fed Com #415H) |
| 7 | 10989.3 | 90.53 | 179.63 | 10499.9 | -384.3 | -1341.3 | 10.00 | 179.63 | 375.6 | |
| 8 | 11414.0 | 90.53 | 179.63 | 10496.0 | -809.0 | -1338.5 | 0.00 | 0.00 | 800.3 | TGT#1(Green Drake 16 Fed Com #415H) |
| 9 | 11440.6 | 90.00 | 179.63 | 10495.9 | -835.6 | -1338.4 | 2.00 | 180.00 | 826.9 | |
| 10 | 16214.1 | 90.00 | 179.63 | 10496.0 | -5609.0 | -1307.6 | 0.00 | 0.00 | 5600.4 | TGT#2(Green Drake 16 Fed Com #415H) |
| 11 | 16243.7 | 90.59 | 179.63 | 10495.8 | -5638.5 | -1307.4 | 2.00 | 0.00 | 5630.0 | |
| 12 | 18173.3 | 90.59 | 179.63 | 10476.0 | -7568.0 | -1295.0 | 0.00 | 0.00 | 7559.5 | PBHL(Green Drake 16 Fed Com #415H) |

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES) +E/-W TVD +N/-S Northing **Easting KOP(Green Drake 16 Fed Com #415H)** 9927.0 412003.00 773572.00 TGT#1(Green Drake 16 Fed Com #415H) 10496.0 -809.0 -1338.5 411000.00 773578.46 TGT#2(Green Drake 16 Fed Com #415H) 10496.0 -5609.0 -1307.6 406200.00 773609.38 PBHL(Green Drake 16 Fed Com #415H) -7568.0 10476.0 404241.00 773622.00 FTP(Green Drake 16 Fed Com #415H) 144.0 10506.0 -1345.0 411953.00 773572.00

300--1200 -2100 -2400 -2700 -3300 -5100 -5400 -5700 -6000 -6300 -6600 -6900 -7200 -7500 West(-)/East(+)

West(-)/East(+)

9800
10150
-350 0 350 700 1050 1400 1750 2100 2450 2800 3150 3500 3850 4200 4550 4900 5250 5600 5950 6300 6650 7000 7350 7700
Vertical Section at 179.63°

Lea County, NM (NAD 83 NME) Green Drake 16 Fed Com #415H OH Plan #0.1 RT 15:12, June 14 2023



Midland

Lea County, NM (NAD 83 NME) Green Drake 16 Fed Com #415H 143930 OH

Plan: Plan #0.1 RT

Standard Planning Report

14 June, 2023



Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)
Site: Green Drake 16 Fed Com

Well: #415H Wellbore: 0H

Design: Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft KB = 30' @ 3434.0usft

Grid

Minimum Curvature

Project Lea County, NM (NAD 83 NME)

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

System Datum:

Mean Sea Level

Site Green Drake 16 Fed Com

 Site Position:
 Northing:
 411,802.00 usft
 Latitude:
 32° 7' 47.652 N

 From:
 Map
 Easting:
 773,380.00 usft
 Longitude:
 103° 35' 1.431 W

Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 "

Well #415H

0.0 usft **Well Position** +N/-S Northing: 411,809.00 usft Latitude: 32° 7' 47.615 N +E/-W 0.0 usft Easting: 774,917.00 usft Longitude: 103° 34' 43.557 W **Position Uncertainty** 0.0 usft Wellhead Elevation: usft **Ground Level:** 3,404.0 usft

Grid Convergence: 0.40 °

Wellbore OH

 Magnetics
 Model Name
 Sample Date
 Declination (°)
 Dip Angle (°)
 Field Strength (nT)

 IGRF2020
 7/28/2023
 6.29
 59.74
 47,216.87351743

Design Plan #0.1 RT

Audit Notes:

Version:Phase:PROTOTYPETie On Depth:0.0

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

 0.0
 0.0
 0.0
 179.63

Plan Survey Tool Program Date 6/14/2023

Depth From Depth To

(usft) (usft) Survey (Wellbore) Tool Name Remarks

1 0.0 18,173.3 Plan #0.1 RT (OH) EOG MWD+IFR1

MWD + IFR1



Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)
Site: Green Drake 16 Fed Com

Well: #415H Wellbore: 0H

Design: Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft KB = 30' @ 3434.0usft

Grid

| 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 |
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,986.3 | 13.73 | 278.21 | 1,979.8 | 11.7 | -81.0 | 2.00 | 2.00 | 0.00 | 278.21 | |
| 7,023.6 | 13.73 | 278.21 | 6,873.2 | 182.3 | -1,264.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,710.0 | 0.00 | 0.00 | 7,553.0 | 194.0 | -1,345.0 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 10,084.0 | 0.00 | 0.00 | 9,927.0 | 194.0 | -1,345.0 | 0.00 | 0.00 | 0.00 | 0.00 | KOP(Green Drake 16 |
| 10,989.3 | 90.53 | 179.63 | 10,499.9 | -384.3 | -1,341.3 | 10.00 | 10.00 | 19.84 | 179.63 | |
| 11,414.0 | 90.53 | 179.63 | 10,496.0 | -809.0 | -1,338.5 | 0.00 | 0.00 | 0.00 | 0.00 | TGT#1(Green Drake |
| 11,440.6 | 90.00 | 179.63 | 10,495.9 | -835.6 | -1,338.4 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 16,214.1 | 90.00 | 179.63 | 10,496.0 | -5,609.0 | -1,307.6 | 0.00 | 0.00 | 0.00 | 0.00 | TGT#2(Green Drake |
| 16,243.7 | 90.59 | 179.63 | 10,495.8 | -5,638.5 | -1,307.4 | 2.00 | 2.00 | 0.00 | 0.00 | |
| 18,173.3 | 90.59 | 179.63 | 10,476.0 | -7,568.0 | -1,295.0 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL(Green Drake 1 |

Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)
Site: Green Drake 16 Fed Com

Well: #415H Wellbore: 0H

Design: Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft KB = 30' @ 3434.0usft

Grid

| Design: | Plan #0.1 R1 | | | | | | | | |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|----------------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 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) |
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 900.0 | 0.00 | 0.00 | 900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 900.0 | | | | | | | | | |
| 1,000.0 | 0.00 | 0.00 | 1,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,082.0 | 0.00 | 0.00 | 1,082.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| RUSTLER | | | | | | | | | |
| 1,100.0 | 0.00 | 0.00 | 1,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,154.0 | 0.00 | 0.00 | 1,154.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| TAMARISK A | | | | | | | | | |
| 1,200.0 | 0.00 | 0.00 | 1,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 2.00 | 278.21 | 1,400.0 | 0.0 | -1.7 | -0.3 | 2.00 | 2.00 | 0.00 |
| 1,418.0 | 2.36 | 278.21 | 1,418.0 | 0.2 | -1. <i>1</i> -2.4 | -0.3 | 2.00 | 2.00 | 0.00 |
| | 2.30 | 270.21 | 1,410.0 | 0.5 | -2.4 | -0.4 | 2.00 | 2.00 | 0.00 |
| SALT TOP | 4.00 | 070.04 | 4 400 0 | 4.0 | 0.0 | 4.0 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 4.00 | 278.21 | 1,499.8 | 1.0 | -6.9 | -1.0 | 2.00 | 2.00 | 0.00 |
| 1,600.0 | 6.00 | 278.21 | 1,599.5 | 2.2 | -15.5 | -2.3 | 2.00 | 2.00 | 0.00 |
| 1,700.0 | 8.00 | 278.21 | 1,698.7 | 4.0 | -27.6 | -4.2 | 2.00 | 2.00 | 0.00 |
| 1,800.0 | 10.00 | 278.21 | 1,797.5 | 6.2 | -43.1 | -6.5 | 2.00 | 2.00 | 0.00 |
| 1,900.0 | 12.00 | 278.21 | 1,895.6 | 8.9 | -62.0 | -9.3 | 2.00 | 2.00 | 0.00 |
| 1,986.3 | 13.73 | 278.21 | 1,979.8 | 11.7 | -81.0 | -12.2 | 2.00 | 2.00 | 0.00 |
| 2,000.0 | 13.73 | 278.21 | 1,993.1 | 12.1 | -84.2 | -12.7 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 13.73 | 278.21 | 2,090.2 | 15.5 | -107.7 | -16.2 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 13.73 | 278.21 | 2,187.4 | 18.9 | -131.2 | -19.8 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 13.73 | 278.21 | 2,284.5 | 22.3 | -154.6 | -23.3 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 13.73 | 278.21 | 2,381.6 | 25.7 | -178.1 | -26.8 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 13.73 | 278.21 | 2,478.8 | 29.1 | -201.6 | -30.4 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | |
| 2,600.0 | 13.73 | 278.21 | 2,575.9 | 32.5 | -225.1 | -33.9 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 13.73 | 278.21 | 2,673.1 | 35.9 | -248.6 | -37.5 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 13.73 | 278.21 | 2,770.2 | 39.2 | -272.1 | -41.0 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 13.73 | 278.21 | 2,867.4 | 42.6 | -295.6 | -44.5 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 13.73 | 278.21 | 2,964.5 | 46.0 | -319.0 | -48.1 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 13.73 | 278.21 | 3,061.6 | 49.4 | -342.5 | -51.6 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 13.73 | 278.21 | 3,158.8 | 52.8 | -366.0 | -55.2 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 13.73 | 278.21 | 3,255.9 | 56.2 | -389.5 | -58.7 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 13.73 | 278.21 | 3,353.1 | 59.6 | -413.0 | -62.2 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 13.73 | 278.21 | 3,450.2 | 63.0 | -436.5 | -65.8 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 13.73 | 278.21 | 3,547.4 | 66.3 | -460.0 | -69.3 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 13.73 | 278.21 | 3,644.5 | 69.7 | -400.0 -483.4 | -72.9 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 13.73 | 278.21 | 3,741.7 | 73.1 | -506.9 | -76.4 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 13.73 | 278.21 | 3,838.8 | 76.5 | -530.4 | -70.4 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 13.73 | 278.21 | 3,935.9 | 79.9 | -553.9 | -83.5 | 0.00 | 0.00 | 0.00 |
| • | | | | | | | | | |
| 4,100.0 | 13.73 | 278.21 | 4,033.1 | 83.3 | -577.4 | -87.0 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 13.73 | 278.21 | 4,130.2 | 86.7 | -600.9 | -90.5 | 0.00 | 0.00 | 0.00 |
| 4,300.0 | 13.73 | 278.21 | 4,227.4 | 90.1 | -624.4 | -94.1 | 0.00 | 0.00 | 0.00 |
| 4,400.0 | 13.73 | 278.21 | 4,324.5 | 93.4 | -647.8 | -97.6 | 0.00 | 0.00 | 0.00 |
| 4,500.0 | 13.73 | 278.21 | 4,421.7 | 96.8 | -671.3 | -101.2 | 0.00 | 0.00 | 0.00 |

Planning Report

Database: Company:

Project:

PEDM Midland

Lea County, NM (NAD 83 NME)

Green Drake 16 Fed Com Site:

Well: #415H ОН Wellbore: Design:

Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft

KB = 30' @ 3434.0usft

Grid

| | Plan #0.1 KT | | | | | | | | |
|-----------------------------|--------------------|------------------|-----------------------------|-----------------|---------------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| d 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) |
| 4,600.0 4,700.0 | | 278.21 278.21 | 4,518.8 4,616.0 | 100.2 103.6 | -694.8 -718.3 | -104.7 -108.2 | 0.00 0.00 | 0.00 0.00 | 0.00 0.00 |
| 4,792.2 | 13.73 | 278.21 | 4,705.5 | 106.7 | -740.0 | -111.5 | 0.00 | 0.00 | 0.00 |
| BASE OF | | | | | | | | | |
| 4,800.0 4,900.0 | | 278.21 278.21 | 4,713.1 4,810.2 | 107.0 110.4 | -741.8 -765.3 | -111.8 -115.3 | 0.00 0.00 | 0.00 0.00 | 0.00 0.00 |
| 5,000.0 5,094.3 | | 278.21 278.21 | 4,907.4 4,999.0 | 113.8 117.0 | -788.8 -810.9 | -118.9 -122.2 | 0.00 0.00 | 0.00 0.00 | 0.00 0.00 |
| | | 270.21 | 4,999.0 | 117.0 | -010.9 | -122.2 | 0.00 | 0.00 | 0.00 |
| 5,100.0 | | 278.21 | 5,004.5 | 117.2 | -812.2 | -122.4 | 0.00 | 0.00 | 0.00 |
| 5,100.0 | | 278.21 | 5,004.5 | 117.2 | -815.6 | -122.4 | 0.00 | 0.00 | 0.00 |
| | | 270.21 | 3,010.4 | 117.0 | -013.0 | -122.9 | 0.00 | 0.00 | 0.00 |
| 5,200.0 | | 278.21 | 5,101.7 | 120.5 | -835.7 | -125.9 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | |
| 5,300.0 | | 278.21 | 5,198.8 | 123.9 | -859.2 | -129.5 | 0.00 | 0.00 | 0.00 |
| 5,400.0 | | 278.21 | 5,296.0 | 127.3 | -882.7 | -133.0 | 0.00 | 0.00 | 0.00 |
| 5,500.0 | | 278.21 | 5,393.1 | 130.7 | -906.2 | -136.6 | 0.00 | 0.00 | 0.00 |
| 5,600.0 | | 278.21 | 5,490.2 | 134.1 | -929.7 | -140.1 | 0.00 | 0.00 | 0.00 |
| 5,700.0 | | 278.21 | 5,587.4 | 137.5 | -953.2 | -143.6 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | | 278.21 | 5,684.5 | 140.9 | -976.6 | -147.2 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | | 278.21 | 5,781.7 | 144.3 | -1,000.1 | -150.7 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | | 278.21 | 5,878.8 | 147.6 | -1,023.6 | -154.3 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | | 278.21 | 5,976.0 | 151.0 | -1,047.1 | -157.8 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 13.73 | 278.21 | 6,073.1 | 154.4 | -1,070.6 | -161.3 | 0.00 | 0.00 | 0.00 |
| 6,233.4 | | 278.21 | 6,105.6 | 155.6 | -1,078.4 | -162.5 | 0.00 | 0.00 | 0.00 |
| CHERRY C | | 070.04 | 6 470 0 | 457.0 | 1.004.4 | 404.0 | 0.00 | 0.00 | 0.00 |
| 6,300.0 | | 278.21 | 6,170.3 | 157.8 | -1,094.1 | -164.9 | 0.00 | 0.00 | 0.00 |
| 6,400.0 | | 278.21 | 6,267.4 | 161.2 | -1,117.6 1 141.0 | -168.4 | 0.00 | 0.00 | 0.00 |
| 6,500.0 | | 278.21 | 6,364.5 | 164.6 | -1,141.0 1.164.5 | -171.9 | 0.00 | 0.00 | 0.00 |
| 6,600.0 | 13.73 | 278.21 | 6,461.7 | 168.0 | -1,164.5 | -175.5 | 0.00 | 0.00 | 0.00 |
| 6,700.0 | | 278.21 | 6,558.8 | 171.4 | -1,188.0 | -179.0 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 13.73 | 278.21 | 6,656.0 | 174.7 | -1,211.5 | -182.6 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | | 278.21 | 6,753.1 | 178.1 | -1,235.0 | -186.1 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 13.73 | 278.21 | 6,850.3 | 181.5 | -1,258.5 | -189.6 | 0.00 | 0.00 | 0.00 |
| 7,023.6 | 13.73 | 278.21 | 6,873.2 | 182.3 | -1,264.0 | -190.5 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 12.20 | 278.21 | 6,947.6 | 184.8 | -1,281.0 | -193.0 | 2.00 | -2.00 | 0.00 |
| 7,200.0 | | 278.21 | 7,045.7 | 187.5 | -1,300.2 | -195.9 | 2.00 | -2.00 | 0.00 |
| 7,300.0 | | 278.21 | 7,144.4 | 189.8 | -1,316.0 | -198.3 | 2.00 | -2.00 | 0.00 |
| 7,400.0 | | 278.21 | 7,243.6 | 191.6 | -1,328.4 | -200.2 | 2.00 | -2.00 | 0.00 |
| 7,500.0 | | 278.21 | 7,343.2 | 192.9 | -1,337.4 | -201.5 | 2.00 | -2.00 | 0.00 |
| 7,600.0 | 2.20 | 278.21 | 7,443.1 | 193.7 | -1,342.9 | -202.4 | 2.00 | -2.00 | 0.00 |
| 7,710.0 | | 0.00 | 7,553.0 | 194.0 | -1,345.0 | -202.7 | 2.00 | -2.00 | 0.00 |
| 7,710.2 | | 0.00 | 7,553.2 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| BRUSHYP | | | | | | | | | |
| 7,775.2 | | 0.00 | 7,618.2 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| BRUSHY (| | 2.25 | 70100 | 404.0 | 40456 | 000 = | 2.22 | 2.25 | 0.05 |
| 7,800.0 | 0.00 | 0.00 | 7,643.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 7,900.0 | | 0.00 | 7,743.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,000.0 | | 0.00 | 7,843.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,100.0 | | 0.00 | 7,943.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,200.0 | | 0.00 | 8,043.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,300.0 | 0.00 | 0.00 | 8,143.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,400.0 | 0.00 | 0.00 | 8,243.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,500.0 | | 0.00 | 8,343.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |

Planning Report

Database: Company:

Project:

Site:

PEDM

Midland

Lea County, NM (NAD 83 NME)

Green Drake 16 Fed Com

Well: Wellbore: #415H OH

Design: Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft

KB = 30' @ 3434.0usft

Grid

| sign: | Plan #0.1 KT | | | | | | | | |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| anned Survey | | | | | | | | | |
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 8,600.0 | 0.00 | 0.00 | 8,443.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,700.0 | 0.00 | 0.00 | 8,543.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,800.0 | 0.00 | 0.00 | 8,643.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 8,900.0 | 0.00 | 0.00 | 8,743.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,000.0 | 0.00 | 0.00 | 8,843.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,100.0 | 0.00 | 0.00 | 8,943.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,200.0 | 0.00 | 0.00 | 9,043.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,300.0 | 0.00 | 0.00 | 9,143.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,335.2 | 0.00 | 0.00 | 9,178.2 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| BONE SPRII | NG LIME | | | | | | | | |
| 9,374.8 | 0.00 | 0.00 | 9,217.8 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| LEONARD A | SHALE | | | | | | | | |
| 9,400.0 | 0.00 | 0.00 | 9,243.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,500.0 | 0.00 | 0.00 | 9,343.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,600.0 | 0.00 | 0.00 | 9,443.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,700.0 | 0.00 | 0.00 | 9,543.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,705.8 | 0.00 | 0.00 | 9,548.8 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| LEONARD E | SHALE | | | | | | | | |
| 9,800.0 | 0.00 | 0.00 | 9,643.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 9,900.0 | 0.00 | 0.00 | 9,743.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 10,000.0 | 0.00 | 0.00 | 9,843.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 10,084.0 | 0.00 | 0.00 | 9,927.0 | 194.0 | -1,345.0 | -202.7 | 0.00 | 0.00 | 0.00 |
| 10,100.0 | 1.60 | 179.63 | 9,943.0 | 193.8 | -1,345.0 | -202.5 | 10.00 | 10.00 | 0.00 |
| 10,150.0 | 6.60 | 179.63 | 9,992.9 | 190.2 | -1,345.0 | -198.9 | 10.00 | 10.00 | 0.00 |
| 10,200.0 | 11.60 | 179.63 | 10,042.2 | 182.3 | -1,344.9 | -191.0 | 10.00 | 10.00 | 0.00 |
| 10,250.0 | 16.60 | 179.63 | 10,090.7 | 170.1 | -1,344.8 | -178.8 | 10.00 | 10.00 | 0.00 |
| 10,288.9 | 20.49 | 179.63 | 10,127.6 | 157.7 | -1,344.8 | -166.4 | 10.00 | 10.00 | 0.00 |
| | PRING SAND | | -, | 2 | ,2 : | | | | |
| 10,300.0 | 21.60 | 179.63 | 10,138.0 | 153.8 | -1,344.7 | -162.4 | 10.00 | 10.00 | 0.00 |
| 10,350.0 | 26.60 | 179.63 | 10,183.6 | 133.3 | -1,344.6 | -142.0 | 10.00 | 10.00 | 0.00 |
| 10,400.0 | 31.60 | 179.63 | 10,227.3 | 109.0 | -1,344.5 | -117.7 | 10.00 | 10.00 | 0.00 |
| 10,450.0 | 36.60 | 179.63 | 10,268.6 | 81.0 | -1,344.3 | -89.7 | 10.00 | 10.00 | 0.00 |
| 10,500.0 | 41.60 | 179.63 | 10,307.4 | 49.5 | -1,344.1 | -58.2 | 10.00 | 10.00 | 0.00 |
| 10,525.3 | 44.14 | 179.63 | 10,326.0 | 32.2 | -1,344.0 | -40.9 | 10.00 | 10.00 | 0.00 |
| | SPRING SHALE | | | | | | | | |
| 10,550.0 | 46.60 | 179.63 | 10,343.3 | 14.7 | -1,343.8 | -23.4 | 10.00 | 10.00 | 0.00 |
| 10,600.0 | 51.60 | 179.63 | 10,376.0 | -23.1 | -1,343.6 | 14.4 | 10.00 | 10.00 | 0.00 |
| 10,650.0 | 56.60 | 179.63 | 10,405.4 | -63.6 | -1,343.3 | 54.9 | 10.00 | 10.00 | 0.00 |
| 10,700.0 | 61.60 | 179.63 | 10,431.0 | -106.5 | -1,343.1 | 97.8 | 10.00 | 10.00 | 0.00 |
| 10,750.0 | 66.60 | 179.63 | 10,452.9 | -151.4 | -1,342.8 | 142.8 | 10.00 | 10.00 | 0.00 |
| 10,800.0 | 71.60 | 179.63 | 10,470.7 | -198.1 | -1,342.5 | 189.5 | 10.00 | 10.00 | 0.00 |
| 10,850.0 | 76.60 | 179.63 | 10,484.4 | -246.2 | -1,342.2 | 237.5 | 10.00 | 10.00 | 0.00 |
| 10,900.0 | 81.60 | 179.63 | 10,493.8 | -295.3 | -1,341.8 | 286.6 | 10.00 | 10.00 | 0.00 |
| 10,913.2 | 82.93 | 179.63 | 10,495.6 | -308.4 | -1,341.8 | 299.7 | 10.00 | 10.00 | 0.00 |
| SBSG SH TO | | | , | | | | | | |
| 10,950.0 | 86.60 | 179.63 | 10,499.0 | -345.0 | -1,341.5 | 336.3 | 10.00 | 10.00 | 0.00 |
| 10,989.3 | 90.53 | 179.63 | 10,499.9 | -384.3 | -1,341.3 | 375.6 | 10.00 | 10.00 | 0.00 |
| 11,000.0 | 90.53 | 179.63 | 10,499.8 | -395.0 | -1,341.2 | 386.3 | 0.00 | 0.00 | 0.00 |
| 11,100.0 | 90.53 | 179.63 | 10,498.9 | -495.0 | -1,340.6 | 486.3 | 0.00 | 0.00 | 0.00 |
| 11,200.0 | 90.53 | 179.63 | 10,498.0 | -595.0 | -1,339.9 | 586.3 | 0.00 | 0.00 | 0.00 |
| 11,300.0 | 90.53 | 179.63 | 10,497.1 | -695.0 | -1,339.3 | 686.3 | 0.00 | 0.00 | 0.00 |
| 11,400.0 | 90.53 | 179.63 | 10,496.1 | -795.0 | -1,338.6 | 786.3 | 0.00 | 0.00 | 0.00 |
| 11,414.0 | 90.53 | 179.63 | 10,496.0 | -809.0 | -1,338.5 | 800.3 | 0.00 | 0.00 | 0.00 |

Planning Report

PEDM Database: Company:

Site:

Midland Project: Lea County, NM (NAD 83 NME) Green Drake 16 Fed Com

Well: #415H ОН Wellbore:

Design: Plan #0.1 RT Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft KB = 30' @ 3434.0usft

Grid

| esign: | Plan #0.1 R1 | | | | | | | | |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 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) |
| 11,440.6 | 90.00 | 179.63 | 10,495.9 | -835.6 | -1,338.4 | 826.9 | 2.00 | -2.00 | 0.00 |
| 11,500.0 | 90.00 | 179.63 | 10,495.9 | -895.0 | -1,338.0 | 886.3 | 0.00 | 0.00 | 0.00 |
| 11,600.0 | 90.00 | 179.63 | 10,495.9 | -995.0 | -1,337.3 | 986.3 | 0.00 | 0.00 | 0.00 |
| 11,700.0 | 90.00 | 179.63 | 10,495.9 | -1,095.0 | -1,336.7 | 1,086.3 | 0.00 | 0.00 | 0.00 |
| 11,800.0 | 90.00 | 179.63 | 10,495.9 | -1,195.0 | -1,336.1 | 1,186.3 | 0.00 | 0.00 | 0.00 |
| 11,900.0 | 90.00 | 179.63 | 10,495.9 | -1,294.9 | -1,335.4 | 1,286.3 | 0.00 | 0.00 | 0.00 |
| 12,000.0 | 90.00 | 179.63 | 10,495.9 | -1,394.9 | -1,334.8 | 1,386.3 | 0.00 | 0.00 | 0.00 |
| 12,100.0 | 90.00 | 179.63 | 10,495.9 | -1,494.9 | -1,334.1 | 1,486.3 | 0.00 | 0.00 | 0.00 |
| 12,200.0 | 90.00 | 179.63 | 10,495.9 | -1,594.9 | -1,333.5 | 1,586.3 | 0.00 | 0.00 | 0.00 |
| 12,300.0 | 90.00 | 179.63 | 10,495.9 | -1,694.9 | -1,332.8 | 1,686.3 | 0.00 | 0.00 | 0.00 |
| 12,400.0 | 90.00 | 179.63 | 10,495.9 | -1,794.9 | -1,332.2 | 1,786.3 | 0.00 | 0.00 | 0.00 |
| 12,500.0 | 90.00 | 179.63 | 10,495.9 | -1,894.9 | -1,331.5 | 1,886.3 | 0.00 | 0.00 | 0.00 |
| 12,600.0 | 90.00 | 179.63 | 10,495.9 | -1,994.9 | -1,330.9 | 1,986.3 | 0.00 | 0.00 | 0.00 |
| 12,700.0 | 90.00 | 179.63 | 10,495.9 | -2,094.9 | -1,330.3 | 2,086.3 | 0.00 | 0.00 | 0.00 |
| 12,800.0 | 90.00 | 179.63 | 10,495.9 | -2,194.9 | -1,329.6 | 2,186.3 | 0.00 | 0.00 | 0.00 |
| 12,900.0 | 90.00 | 179.63 | 10,495.9 | -2,294.9 | -1,329.0 | 2,286.3 | 0.00 | 0.00 | 0.00 |
| 13,000.0 | 90.00 | 179.63 | 10,495.9 | -2,394.9 | -1,328.3 | 2,386.3 | 0.00 | 0.00 | 0.00 |
| 13,100.0 | 90.00 | 179.63 | 10,495.9 | -2,494.9 | -1,327.7 | 2,486.3 | 0.00 | 0.00 | 0.00 |
| 13,200.0 | 90.00 | 179.63 | 10,495.9 | -2,594.9 | -1,327.0 | 2,586.3 | 0.00 | 0.00 | 0.00 |
| 13,300.0 | 90.00 | 179.63 | 10,495.9 | -2,694.9 | -1,326.4 | 2,686.3 | 0.00 | 0.00 | 0.00 |
| 13,400.0 | 90.00 | 179.63 | 10,495.9 | -2,794.9 | -1,325.7 | 2,786.3 | 0.00 | 0.00 | 0.00 |
| 13,500.0 | 90.00 | 179.63 | 10,495.9 | -2,894.9 | -1,325.1 | 2,886.3 | 0.00 | 0.00 | 0.00 |
| 13,600.0 | 90.00 | 179.63 | 10,495.9 | -2,994.9 | -1,324.5 | 2,986.3 | 0.00 | 0.00 | 0.00 |
| 13,700.0 | 90.00 | 179.63 | 10,495.9 | -3,094.9 | -1,323.8 | 3,086.3 | 0.00 | 0.00 | 0.00 |
| 13,800.0 | 90.00 | 179.63 | 10,495.9 | -3,194.9 | -1,323.2 | 3,186.3 | 0.00 | 0.00 | 0.00 |
| 13,900.0 | 90.00 | 179.63 | 10,495.9 | -3,294.9 | -1,322.5 | 3,286.3 | 0.00 | 0.00 | 0.00 |
| 14,000.0 | 90.00 | 179.63 | 10,495.9 | -3,394.9 | -1,321.9 | 3,386.3 | 0.00 | 0.00 | 0.00 |
| 14,100.0 | 90.00 | 179.63 | 10,495.9 | -3,494.9 | -1,321.2 | 3,486.3 | 0.00 | 0.00 | 0.00 |
| 14,200.0 | 90.00 | 179.63 | 10,495.9 | -3,594.9 | -1,320.6 | 3,586.3 | 0.00 | 0.00 | 0.00 |
| 14,300.0 | 90.00 | 179.63 | 10,496.0 | -3,694.9 | -1,319.9 | 3,686.3 | 0.00 | 0.00 | 0.00 |
| 14,400.0 | 90.00 | 179.63 | 10,496.0 | -3,794.9 | -1,319.3 | 3,786.3 | 0.00 | 0.00 | 0.00 |
| 14,500.0 | 90.00 | 179.63 | 10,496.0 | -3,894.9 | -1,318.7 | 3,886.3 | 0.00 | 0.00 | 0.00 |
| 14,600.0 | 90.00 | 179.63 | 10,496.0 | -3,994.9 | -1,318.0 | 3,986.3 | 0.00 | 0.00 | 0.00 |
| 14,700.0 | 90.00 | 179.63 | 10,496.0 | -4,094.9 | -1,317.4 | 4,086.3 | 0.00 | 0.00 | 0.00 |
| 14,800.0 | 90.00 | 179.63 | 10,496.0 | -4,194.9 | -1,316.7 | 4,186.3 | 0.00 | 0.00 | 0.00 |
| 14,900.0 | 90.00 | 179.63 | 10,496.0 | -4,294.9 | -1,316.1 | 4,286.3 | 0.00 | 0.00 | 0.00 |
| 15,000.0 | 90.00 | 179.63 | 10,496.0 | -4,394.9 | -1,315.4 | 4,386.3 | 0.00 | 0.00 | 0.00 |
| 15,100.0 | 90.00 | 179.63 | 10,496.0 | -4,494.9 | -1,314.8 | 4,486.3 | 0.00 | 0.00 | 0.00 |
| 15,200.0 | 90.00 | 179.63 | 10,496.0 | -4,594.9 | -1,314.2 | 4,586.3 | 0.00 | 0.00 | 0.00 |
| 15,300.0 | 90.00 | 179.63 | 10,496.0 | -4,694.9 | -1,313.5 | 4,686.3 | 0.00 | 0.00 | 0.00 |
| 15,400.0 | 90.00 | 179.63 | 10,496.0 | -4,794.9 | -1,312.9 | 4,786.3 | 0.00 | 0.00 | 0.00 |
| 15,500.0 | 90.00 | 179.63 | 10,496.0 | -4,894.9 | -1,312.2 | 4,886.3 | 0.00 | 0.00 | 0.00 |
| 15,600.0 | 90.00 | 179.63 | 10,496.0 | -4,994.9 | -1,311.6 | 4,986.3 | 0.00 | 0.00 | 0.00 |
| 15,700.0 | 90.00 | 179.63 | 10,496.0 | -5,094.9 | -1,310.9 | 5,086.3 | 0.00 | 0.00 | 0.00 |
| 15,800.0 | 90.00 | 179.63 | 10,496.0 | -5,194.9 | -1,310.3 | 5,186.3 | 0.00 | 0.00 | 0.00 |
| 15,900.0 | 90.00 | 179.63 | 10,496.0 | -5,294.9 | -1,309.6 | 5,286.3 | 0.00 | 0.00 | 0.00 |
| 16,000.0 | 90.00 | 179.63 | 10,496.0 | -5,394.9 | -1,309.0 | 5,386.3 | 0.00 | 0.00 | 0.00 |
| 16,100.0 | 90.00 | 179.63 | 10,496.0 | -5,494.9 | -1,308.4 | 5,486.3 | 0.00 | 0.00 | 0.00 |
| 16,200.0 | 90.00 | 179.63 | 10,496.0 | -5,594.9 | -1,307.7 | 5,586.3 | 0.00 | 0.00 | 0.00 |
| 16,214.1 | 90.00 | 179.63 | 10,496.0 | -5,609.0 | -1,307.6 | 5,600.4 | 0.00 | 0.00 | 0.00 |
| 16,243.7 | 90.59 | 179.63 | 10,495.8 | -5,638.5 | -1,307.4 | 5,630.0 | 2.00 | 2.00 | 0.00 |
| 16,300.0 | 90.59 | 179.63 | 10,495.3 | -5,694.9 | -1,307.1 | 5,686.3 | 0.00 | 0.00 | 0.00 |
| 16,400.0 | 90.59 | 179.63 | 10,494.2 | -5,794.8 | -1,306.4 | 5,786.3 | 0.00 | 0.00 | 0.00 |
| 16,500.0 | 90.59 | 179.63 | 10,493.2 | -5,894.8 | -1,305.8 | 5,886.3 | 0.00 | 0.00 | 0.00 |

Planning Report

Database: PEDM Company: Midland

Company: Midland
Project: Lea County, NM (NAD 83 NME)
Site: Green Drake 16 Fed Com

 Well:
 #415H

 Wellbore:
 OH

 Design:
 Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft KB = 30' @ 3434.0usft

Grid

| ned 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) |
| 16,600.0 | 90.59 | 179.63 | 10,492.2 | -5,994.8 | -1,305.1 | 5,986.3 | 0.00 | 0.00 | 0.00 |
| 16,700.0 | 90.59 | 179.63 | 10,491.2 | -6,094.8 | -1,304.5 | 6,086.3 | 0.00 | 0.00 | 0.00 |
| 16,800.0 | 90.59 | 179.63 | 10,490.1 | -6,194.8 | -1,303.8 | 6,186.3 | 0.00 | 0.00 | 0.00 |
| 16,900.0 | 90.59 | 179.63 | 10,489.1 | -6,294.8 | -1,303.2 | 6,286.3 | 0.00 | 0.00 | 0.00 |
| 17,000.0 | 90.59 | 179.63 | 10,488.1 | -6,394.8 | -1,302.6 | 6,386.3 | 0.00 | 0.00 | 0.00 |
| 17,100.0 | 90.59 | 179.63 | 10,487.0 | -6,494.8 | -1,301.9 | 6,486.3 | 0.00 | 0.00 | 0.00 |
| 17,200.0 | 90.59 | 179.63 | 10,486.0 | -6,594.8 | -1,301.3 | 6,586.2 | 0.00 | 0.00 | 0.00 |
| 17,300.0 | 90.59 | 179.63 | 10,485.0 | -6,694.8 | -1,300.6 | 6,686.2 | 0.00 | 0.00 | 0.00 |
| 17,400.0 | 90.59 | 179.63 | 10,484.0 | -6,794.8 | -1,300.0 | 6,786.2 | 0.00 | 0.00 | 0.00 |
| 17,500.0 | 90.59 | 179.63 | 10,482.9 | -6,894.8 | -1,299.3 | 6,886.2 | 0.00 | 0.00 | 0.00 |
| 17,600.0 | 90.59 | 179.63 | 10,481.9 | -6,994.8 | -1,298.7 | 6,986.2 | 0.00 | 0.00 | 0.00 |
| 17,700.0 | 90.59 | 179.63 | 10,480.9 | -7,094.8 | -1,298.0 | 7,086.2 | 0.00 | 0.00 | 0.00 |
| 17,800.0 | 90.59 | 179.63 | 10,479.8 | -7,194.7 | -1,297.4 | 7,186.2 | 0.00 | 0.00 | 0.00 |
| 17,900.0 | 90.59 | 179.63 | 10,478.8 | -7,294.7 | -1,296.8 | 7,286.2 | 0.00 | 0.00 | 0.00 |
| 18,000.0 | 90.59 | 179.63 | 10,477.8 | -7,394.7 | -1,296.1 | 7,386.2 | 0.00 | 0.00 | 0.00 |
| 18,100.0 | 90.59 | 179.63 | 10,476.8 | -7,494.7 | -1,295.5 | 7,486.2 | 0.00 | 0.00 | 0.00 |
| 18,173.3 | 90.59 | 179.63 | 10,476.0 | -7,568.0 | -1,295.0 | 7,559.5 | 0.00 | 0.00 | 0.00 |

| 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 |
| KOP(Green Drake 16 F∈ - plan hits target cent - Polygon | 0.00 er | 0.00 | 9,927.0 | 194.0 | -1,345.0 | 412,003.00 | 773,572.00 | 32° 7' 49.628 N | 103° 34' 59.182 W |
| Point 1 | | | 9,927.0 | 30.0 | -40.0 | 412,033.00 | 773,532.00 | | |
| Point 2 | | | 9,927.0 | 30.0 | 40.0 | 412,033.00 | 773,612.00 | | |
| Point 3 | | | 9,927.0 | -50.0 | 40.0 | 411,953.00 | 773,612.00 | | |
| Point 4 | | | 9,927.0 | -50.0 | -40.0 | 411,953.00 | 773,532.00 | | |
| PBHL(Green Drake 16 F - plan hits target cent - Rectangle (sides W | | 179.63 ,712.1) | 10,476.0 | -7,568.0 | -1,295.0 | 404,241.00 | 773,622.00 | 32° 6′ 32.816 N | 103° 34' 59.229 W |
| TGT#1(Green Drake 16 - plan hits target cent - Point | 0.00 er | 0.00 | 10,496.0 | -809.0 | -1,338.5 | 411,000.00 | 773,578.46 | 32° 7' 39.702 N | 103° 34' 59.188 W |
| TGT#2(Green Drake 16 - plan hits target cent - Point | 0.00 er | 0.00 | 10,496.0 | -5,609.0 | -1,307.6 | 406,200.00 | 773,609.38 | 32° 6′ 52.202 N | 103° 34' 59.217 W |
| FTP(Green Drake 16 Fe - plan misses target o - Point | 0.00 center by 207 | 0.00 3usft at 105 | 10,506.0 58.8usft MD | 144.0 (10349.3 TVE | -1,345.0 D, 8.3 N, -1343 | 411,953.00 3.8 E) | 773,572.00 | 32° 7′ 49.133 N | 103° 34' 59.186 W |



Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)
Site: Green Drake 16 Fed Com

Well: #415H Wellbore: OH

Design: Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #415H

KB = 30' @ 3434.0usft KB = 30' @ 3434.0usft

Grid

| nations | | | | | | |
|---------|-----------------------------|-----------------------------|-----------------------|-----------|------------|-------------------------|
| | Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
| | 1,082.0 | 1,082.0 | RUSTLER | | | |
| | 1,154.0 | 1,154.0 | TAMARISK ANHYDRITE | | | |
| | 1,418.0 | 1,418.0 | SALT TOP | | | |
| | 4,792.2 | 4,705.5 | BASE OF SALT | | | |
| | 5,094.3 | 4,999.0 | LAMAR LIMESTONE | | | |
| | 5,114.3 | 5,018.4 | BELL CANYON | | | |
| | 6,233.4 | 6,105.6 | CHERRY CANYON | | | |
| | 7,710.2 | 7,553.2 | BRUSHYPOROSITY | | | |
| | 7,775.2 | 7,618.2 | BRUSHY CANYON | | | |
| | 9,335.2 | 9,178.2 | BONE SPRING LIME | | | |
| | 9,374.8 | 9,217.8 | LEONARD A SHALE | | | |
| | 9,705.8 | 9,548.8 | LEONARD B SHALE | | | |
| | 10,288.9 | 10,127.6 | 1ST BONE SPRING SAND | | | |
| | 10,525.3 | 10,326.0 | 2ND BONE SPRING SHALE | | | |
| | 10,913.2 | 10,495.6 | SBSG SH TOW | | | |

Current Design (Salt Strings)

0.422" Annular clearance requirement

- Casing collars shall have a minimum clearance of 0.422 inches on all sides in the hole/casing annulus, with recognition that variances can be granted for justified exceptions.
- 12.25" Hole x 9.625"40# J55/HCK55 LTC Casing
 - 1.3125" Clearance to casing OD
 - 0.8125" Clearance to coupling OD
- 9.875" Hole x 8.75" 38.5# P110 Sprint-SF Casing
 - 0.5625" Clearance to casing OD
 - 0.433" Clearance to coupling OD

Annular Clearance Variance Request

EOG request permission to allow deviation from the 0.422" annulus clearance requirement for the intermediate (salt) section from Onshore Order #2 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues

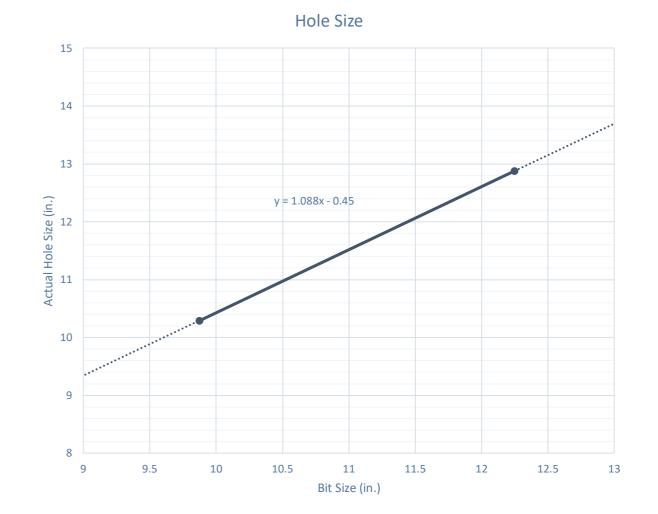
Volumetric Hole Size Calculation

Hole Size Calculations Off Cement Volumes

- Known volume of cement pumped
- Known volume of cement returned to surface
- Must not have had any losses
- Must have bumped plug

Average Hole Size

- 12.25" Hole
 - 12.88" Hole
 - 5.13% diameter increase
 - 10.52% area increase
 - 0.63" Average enlargement
 - 0.58" Median enlargement
 - 179 Well Count
- 9.875" Hole
 - 10.30" Hole
 - 4.24% diameter increase
 - 9.64% area increase
 - 0.42" Average enlargement
 - 0.46" Median enlargement
 - 11 Well Count

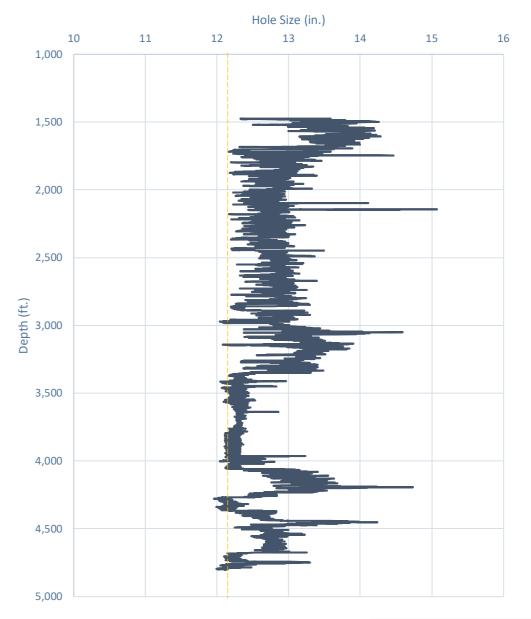


Modelo 10 Fed Com #501H

Caliper Hole Size (12.25")

Average Hole Size

- 12.25" Bit
 - 12.76" Hole
 - 4.14% diameter increase
 - 8.44% area increase
 - 0.51" Average enlargement
 - 0.52" Median enlargement
 - Brine

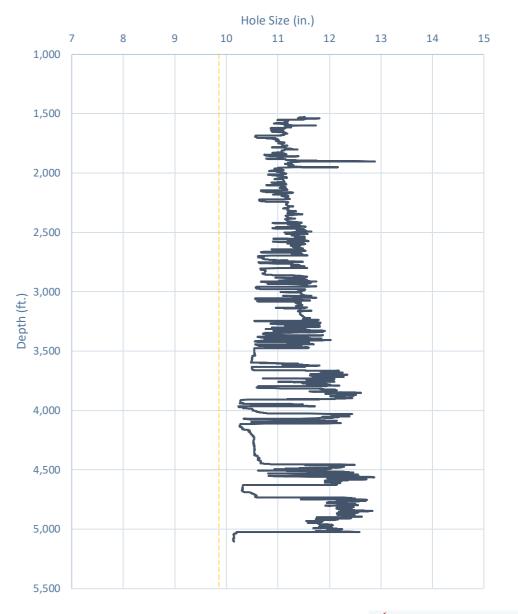


Caliper Hole Size (9.875")

Average Hole Size

- 9.875" Hole
 - 11.21" Hole
 - 13.54% diameter increase
 - 28.92% area increase
 - 1.33" Average enlargement
 - 1.30" Median enlargement
 - EnerLite

Whirling Wind 11 Fed Com #744H



Design A

Proposed 11" Hole with 9.625" 40# J55/HCK55 LTC Casing

- 11" Bit + 0.52" Average hole enlargement = 11.52" Hole Size
 - 0.9475" Clearance to casing OD

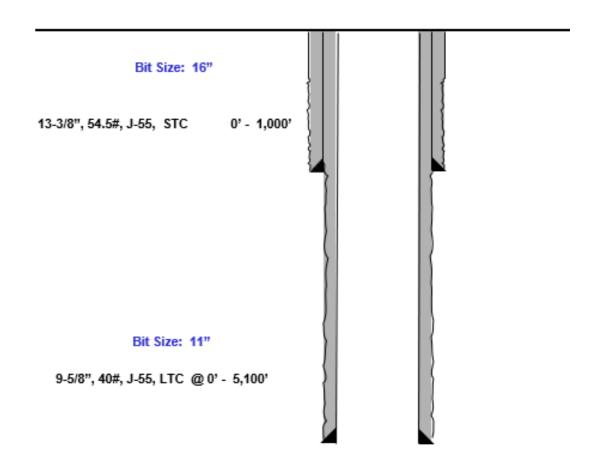
$$=\frac{11.52-9.625}{2}$$

• 0.4475" Clearance to coupling OD

$$=\frac{11.52-10.625}{2}$$

- Previous Shoe 13.375" 54.5# J55 STC
 - 0.995" Clearance to coupling OD (~1,200' overlap)

$$=\frac{12.615-10.625}{2}$$



Design B

Proposed 9.875" Hole with 8.625" 32# J55/P110 BTC-SC Casing

- 9.875" Bit + 0.42" Average hole enlargement = 10.295" Hole Size
 - 0.835" Clearance to casing OD

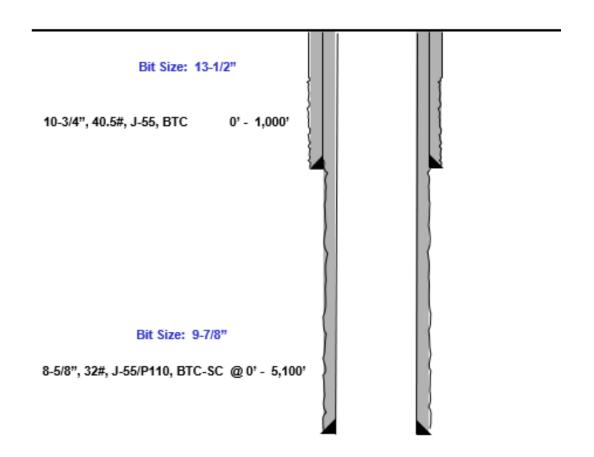
$$=\frac{10.295-8.625}{2}$$

• 0.585" Clearance to coupling OD

$$=\frac{10.295-9.125}{2}$$

- Previous Shoe 10.75" 40.5# J55 STC
 - 0.4625" Clearance to coupling OD (~1,200' overlap)

$$=\frac{10.05-9.125}{2}$$



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Index

Casing Spec Sheets

PERFORMANCE DATA

API LTC 9.625 in 40.00 lbs/ft K55 HC **Technical Data Sheet**

| Tubular Parameters | | | | | |
|--------------------|--------|--------|------------------------------|-------|------|
| Size | 9.625 | in | Minimum Yield | 55 | ksi |
| Nominal Weight | 40.00 | lbs/ft | Minimum Tensile | 95 | ksi |
| Grade | K55 HC | | Yield Load | 629 | kips |
| PE Weight | 38.94 | lbs/ft | Tensile Load | 1088 | kips |
| Wall Thickness | 0.395 | in | Min. Internal Yield Pressure | 3,950 | psi |
| Nominal ID | 8.835 | in | Collapse Pressure | 3600 | psi |
| Drift Diameter | 8.750 | in | | 1 | 1 |

in²

| Connection Parameters | | |
|------------------------------|--------|-------|
| Connection OD | 10.625 | in |
| Coupling Length | 10.500 | in |
| Threads Per Inch | 8 | tpi |
| Standoff Thread Turns | 3.50 | turns |
| Make-Up Loss | 4.750 | in |
| Min. Internal Yield Pressure | 3,950 | psi |

11.454

Pipe Body and API Connections Performance Data

13.375 54.50/0.380 J55 PDF

New Search »



| 6/8/2015 10:04:37 AM | | | | | |
|----------------------------------|--------|--------|-----|--------|----------|
| Mechanical Properties | Ptpe | втс | LTC | STC | |
| Minimum Yield Strength | 55,000 | - | - | - | psi |
| Maximum Yield Strength | 80,000 | - | - | - | psi |
| Minimum Tensile Strength | 75,000 | - | - | - | psi |
| Dimensions | Ptpe | втс | LTC | STC | |
| Outside Diameter | 13.375 | 14.375 | - | 14.375 | in. |
| Wall Thickness | 0.380 | - | - | - | in. |
| Inside Diameter | 12.615 | 12.615 | - | 12.615 | in. |
| Standard Drift | 12.459 | 12.459 | - | 12.459 | in. |
| Alternate Drift | - | - | - | - | in. |
| Nominal Linear Weight, T&C | 54.50 | - | - | - | lbs/ft |
| Plain End Weight | 52.79 | - | - | - | lbs/ft |
| Performance | Ptpe | втс | LTC | STC | |
| Minimum Collapse Pressure | 1,130 | 1,130 | - | 1,130 | psi |
| Minimum Internal Yield Pressure | 2,740 | 2,740 | - | 2,740 | psi |
| Minimum Pipe Body Yield Strength | 853.00 | - | - | - | 1000 lbs |
| Joint Strength | - | 909 | - | 514 | 1000 lbs |
| Reference Length | - | 11,125 | - | 6,290 | ft |
| Make-Up Data | Ptpe | втс | LTC | STC | |
| Make-Up Loss | - | 4.81 | - | 3.50 | in. |
| Minimum Make-Up Torque | - | - | - | 3,860 | ff-lbs |
| Maximum Make-Up Torque | - | - | - | 6,430 | ft-lbs |

Nom. Pipe Body Area

3,150

5,250

ft-lbs

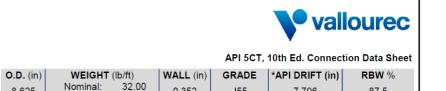
ft-lbs

Casing Spec Sheets

Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55 PDF

New Search » « Back to Previous List USC Metric 6/8/2015 10:14:05 AM BTC LTC Ptpe STC **Mechanical Properties** Minimum Yield Strength 55,000 psi Maximum Yield Strength 80,000 Minimum Tensile Strength 75,000 psi BTC LTC Pipe STC 11.750 Outside Diamete 10.750 11.750 Wall Thickness 0.350 Inside Diameter 10.050 10.050 10.050 Standard Drift 9.894 9.894 in. Alternate Drift in. 40.50 Nominal Linear Weight, T&C lbs/ft 38.91 lbs/ft Plain End Weight Performance Ptpe BTC STC Minimum Collapse Pressure psi Minimum Internal Yield Pressure 3.130 3.130 3.130 629.00 1000 lbs Minimum Pipe Body Yield Strength 700 420 Joint Strength 1000 lbs Reference Length 11,522 6,915 BTC STC Make-Up Data Ptpe 4.81 Make-Up Loss 3.50 in.



J55

0.352

75 ksi

| Material Properties (PE) | | | | | |
|---------------------------|--------|--|--|--|--|
| Pipe | | | | | |
| Minimum Yield Strength: | 55 ksi | | | | |
| Maximum Yield Strength: | 80 ksi | | | | |
| Minimum Tensile Strength: | 75 ksi | | | | |
| Coupling | | | | | |
| Minimum Yield Strength: | 55 ksi | | | | |
| Maximum Yield Strength: | 80 ksi | | | | |
| | | | | | |

Minimum Tensile Strength:

Plain End:

31.13

8.625

MADE IN USA

#Od

SLN

#0/M

PA

S

8.625

STAR

VALLOUREC

| Pipe Body Data (PE) | | | | | | | |
|--|-----------------------|--|--|--|--|--|--|
| Geometry | | | | | | | |
| Nominal ID: | 7.92 inch | | | | | | |
| Nominal Area: | 9.149 in ² | | | | | | |
| *Special/Alt. Drift: | 7.875 inch | | | | | | |
| Performance | • | | | | | | |
| Pipe Body Yield Strength: | 503 kips | | | | | | |
| Collapse Resistance: | 2,530 psi | | | | | | |
| Internal Yield Pressure: (API Historical) | 3,930 psi | | | | | | |

7.796

87.5

| Coupling OD: 9. | | | | | | |
|------------------------|----------|--------|--|--|--|--|
| STC Performa | ance | | | | | |
| STC Internal Pressure: | 3,930 | psi | | | | |
| STC Joint Strength: | 372 | kips | | | | |
| LTC Performance | | | | | | |
| LTC Internal Pressure: | 3,930 | psi | | | | |
| LTC Joint Strength: | | kips | | | | |
| SC-BTC Performance - C | plg OD = | 9.125" | | | | |
| BTC Internal Pressure: | 3,930 | psi | | | | |
| BTC Joint Strength: | 503 | kips | | | | |

API Connection Data

| API Connection Torque | | | | | | | | |
|--|---------------------|---------|------------|------|-------|--|--|--|
| | 5 | STC Tor | que (ft-lb | s) | | | | |
| Min: | 2,793 | Opti: | 3,724 | Max: | 4,655 | | | |
| | | | | | | | | |
| | LTC Torque (ft-lbs) | | | | | | | |
| Min: | 3,130 | Opti: | 4,174 | Max: | 5,217 | | | |
| | | | | | | | | |
| BTC Torque (ft-lbs) | | | | | | | | |
| follow API guidelines regarding positional make up | | | | | | | | |
| | | | | | | | | |

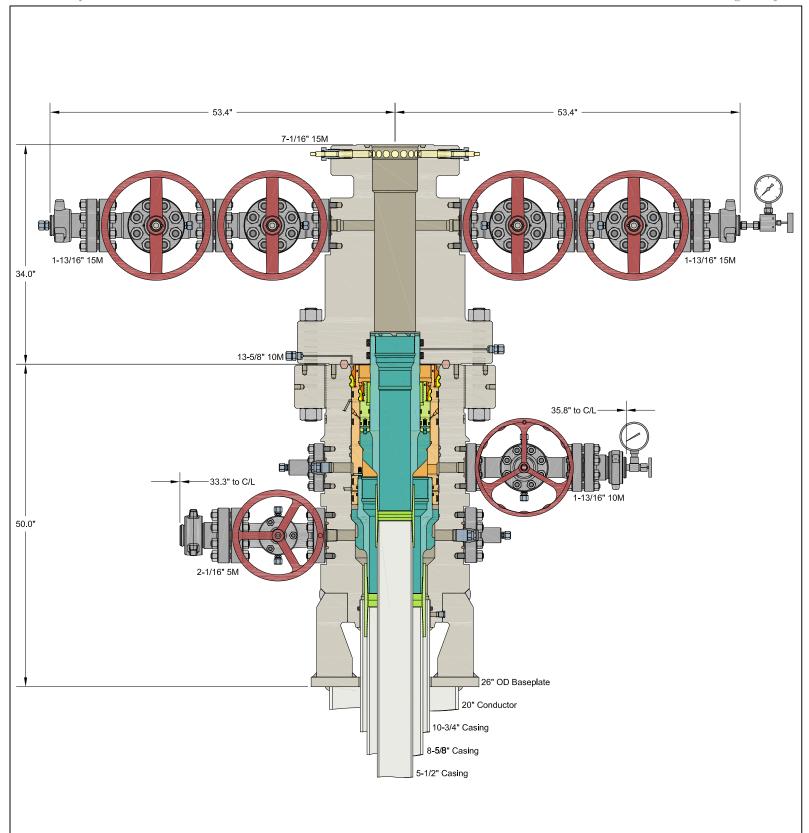
*Alt. Drift will be used unless API Drift is specified on order.

**If above API connections do not suit your needs, VAM® premium connections are available up to 100% of pipe body ratings.

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Minimum Make-Up Torque

Maximum Make-Up Torque



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And 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS Tubing Head

ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC **EOG RESOURCES** 14APR21 DLE DRAWN 10-3/4" x 8-5/8" x 5-1/2" MBU-3T-SF-SOW Wellhead System APPRV With 8-5/8" & 5-1/2" Pin Bottom Mandrel Casing Hangers SDT-3141

DRAWING NO.



2/24/2022

Cement Program

1. No changes to the cement program will take place for offline cementing.

Summarized Operational Procedure for Intermediate Casing

- 1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment back pressure valves.
 - a. Float equipment is equipped with two back pressure valves rated to a minimum of 5,000 psi.
- 2. Land production casing on mandrel hanger through BOP.
 - a. If casing is unable to be landed with a mandrel hanger, then the casing will be cemented online.
- 3. Break circulation and confirm no restrictions.
 - a. Ensure no blockage of float equipment and appropriate annular returns.
 - b. Perform flow check to confirm well is static.
- 4. Set pack-off
 - a. If utilizing a fluted/ported mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid, remove landing joint, and set annular packoff through BOP. Pressure test to 5,000 psi for 10 min.
 - b. If utilizing a solid mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid. Pressure test seals to 5,000 psi for 10 min. Remove landing joint through BOP.
- 5. After confirmation of both annular barriers and the two casing barriers, install TA plug and pressure test to 5,000 psi for 10 min. Notify the BLM with intent to proceed with nipple down and offline cementing.
 - a. Minimum 4 hrs notice.
- 6. With the well secured and BLM notified, nipple down BOP and secure on hydraulic carrier or cradle.
 - a. Note, if any of the barriers fail to test, the BOP stack will not be nippled down until after the cement job has concluded and both lead and tail slurry have reached 500 psi.
- 7. Skid/Walk rig off current well.
- 8. Confirm well is static before removing TA Plug.
 - a. Cementing operations will not proceed until well is under control. (If well is not static, notify BLM and proceed to kill)
 - b. Casing outlet valves will provide access to both the casing ID and annulus. Rig or third party pump truck will kill well prior to cementing.
 - c. Well control plan can be seen in Section B, Well Control Procedures.
 - d. If need be, rig can be moved back over well and BOP nippled back up for any further remediation.



2/24/2022

- e. Diagram for rig positioning relative to offline cementing can be seen in Figure 4.
- 9. Rig up return lines to take returns from wellhead to pits and rig choke.
 - a. Test all connections and lines from wellhead to choke manifold to 5,000 psi high for 10 min.
 - b. If either test fails, perform corrections and retest before proceeding.
 - c. Return line schematics can be seen in Figure 3.
- 10. Remove TA Plug from the casing.
- 11. Install offline cement tool.
 - a. Current offline cement tool schematics can be seen in Figure 1 (Cameron) and Figure 2 (Cactus).
- 12. Rig up cement head and cementing lines.
 - a. Pressure test cement lines against cement head to 80% of casing burst for 10 min.
- 13. Break circulation on well to confirm no restrictions.
 - a. If gas is present on circulation, well will be shut in and returns rerouted through gas buster.
 - b. Max anticipated time before circulating with cement truck is 6 hrs.
- 14. Pump cement job as per plan.
 - a. At plug bump, test casing to 0.22 psi/ft or 1500 psi, whichever is greater.
 - b. If plug does not bump on calculated, shut down and wait 8 hrs or 500 psi compressive strength, whichever is greater before testing casing.
- 15. Confirm well is static and floats are holding after cement job.
 - a. With floats holding and backside static:
 - i. Remove cement head.
 - b. If floats are leaking:
 - i. Shut-in well and WOC (Wait on Cement) until tail slurry reaches 500 psi compressive strength and the casing is static prior to removing cement head.
 - c. If there is flow on the backside:
 - i. Shut in well and WOC until tail slurry reaches 500 psi compressive strength. Ensure that the casing is static prior to removing cement head.
- 16. Remove offline cement tool.
- 17. Install night cap with pressure gauge for monitoring.
- 18. Test night cap to 5,000 psi for 10 min.



2/24/2022

Example Well Control Plan Content

A. Well Control Component Table

The table below, which covers the cementing of the <u>5M MASP (Maximum Allowable Surface Pressure) portion of the well</u>, outlines the well control component rating in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the BOP nippled up to the wellhead.

Intermediate hole section, 5M requirement

| Component | RWP |
|--------------------------|-----|
| Pack-off | 10M |
| Casing Wellhead Valves | 10M |
| Annular Wellhead Valves | 5M |
| TA Plug | 10M |
| Float Valves | 5M |
| 2" 1502 Lo-Torque Valves | 15M |

B. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while circulating and cementing through the Offline Cement Adapter.

General Procedure While Circulating

- 1. Sound alarm (alert crew).
- 2. Shut down pumps.
- 3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
- 4. Confirm shut-in.
- 5. Notify tool pusher/company representative.

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- 6. Read and record the following:
 - a. SICP (Shut in Casing Pressure) and AP (Annular Pressure)
 - b. Pit gain
 - c. Time
 - d. Regroup and identify forward plan to continue circulating out kick via rig choke and mud/gas separator. Circulate and adjust mud density as needed to control well.

General Procedure While Cementing

- 1. Sound alarm (alert crew).
- 2. Shut down pumps.
- 3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
- 4. Confirm shut-in.
- 5. Notify tool pusher/company representative.
- 6. Open rig choke and begin pumping again taking returns through choke manifold and mud/gas separator.
- 7. Continue to place cement until plug bumps.
- 8. At plug bump close rig choke and cement head.
- 9. Read and record the following
 - a. SICP and AP
 - b. Pit gain
 - c. Time
 - d. Shut-in annulus valves on wellhead

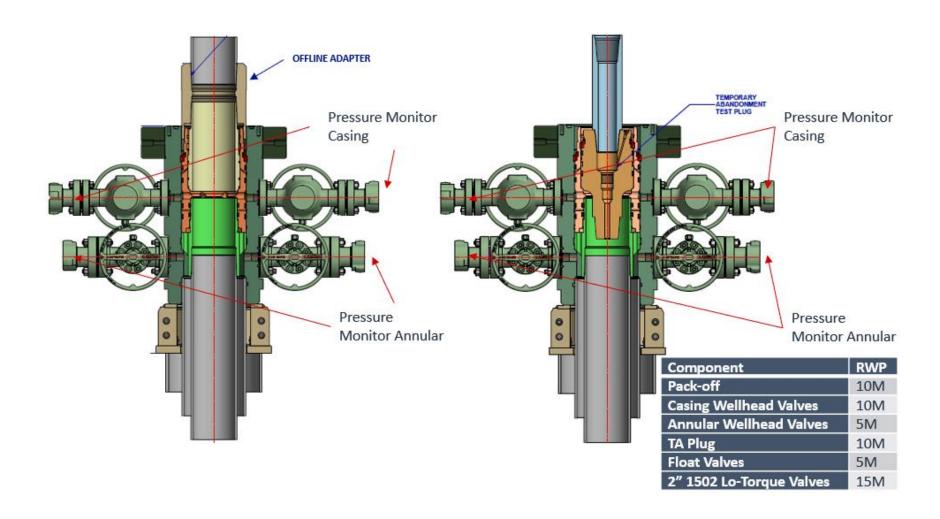
General Procedure After Cementing

- 1. Sound alarm (alert crew).
- 2. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
- 3. Confirm shut-in.
- 4. Notify tool pusher/company representative.
- 5. Read and record the following:
 - a. SICP and AP
 - b. Pit gain
 - c. Time
 - d. Shut-in annulus valves on wellhead



2/24/2022

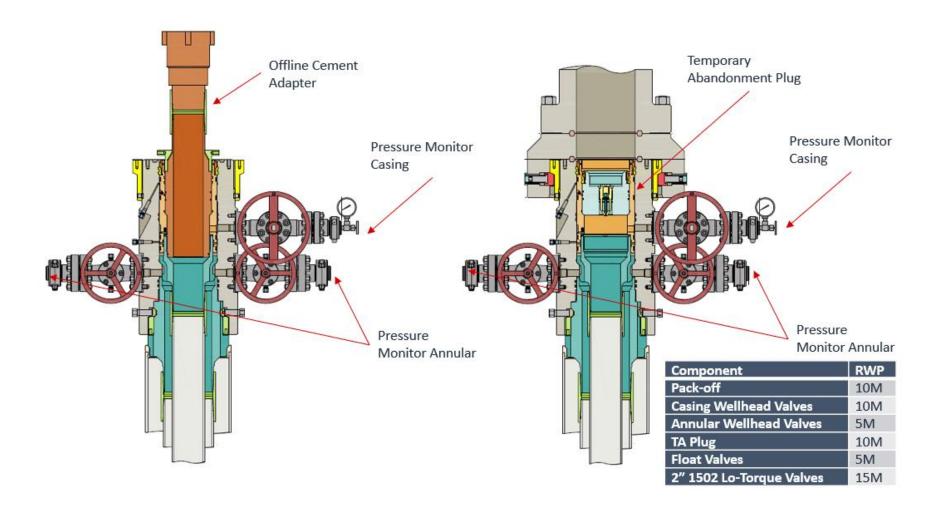
Figure 1: Cameron TA Plug and Offline Adapter Schematic





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Figure 2: Cactus TA Plug and Offline Adapter Schematic

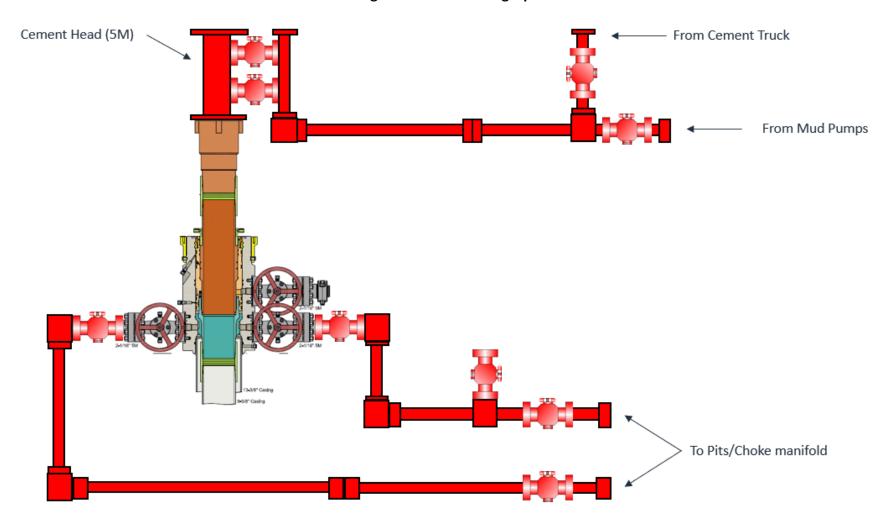


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Figure 3: Back Yard Rig Up



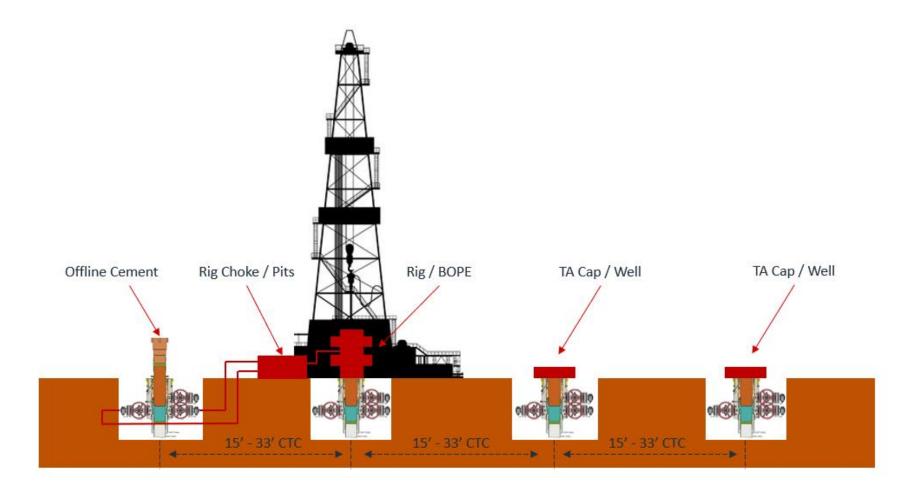
*** All Lines 10M rated working pressure

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Figure 4: Rig Placement Diagram



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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 Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170

1220 S. St Francis Dr., Santa Fe, NM 87505 Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 S. St Francis Dr. **Santa Fe, NM 87505**

CONDITIONS

Action 230706

CONDITIONS

| Operator: | OGRID: |
|-------------------|---|
| EOG RESOURCES INC | 7377 |
| P.O. Box 2267 | Action Number: |
| Midland, TX 79702 | 230706 |
| | Action Type: |
| | [C-101] BLM - Federal/Indian Land Lease (Form 3160-3) |

CONDITIONS

| Created By | Condition | Condition Date |
|---------------|--|-------------------|
| pkautz | Will require a File As Drilled C-102 and a Directional Survey with the C-104 | 6/20/2023 |
| pkautz | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string | 6/20/2023 |
| pkautz | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system | 6/20/2023 |
| pkautz | Cement is required to circulate on both surface and intermediate1 strings of casing | 6/20/2023 |