F/P (H)

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD
AUG 20 2019
RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM126971
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other	6. If Indian, Allotee or Tribe Name
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. RAIDER FEDERAL COM 503H (318010)
2. Name of Operator CENTENNIAL RESOURCE PRODUCTION LLC (372165)	9. API Well No. 30-025-46301
3a. Address 1001 17th Street, Suite 1800 Denver CO 80202	3b. Phone No. *(include area code)* (720)499-1400
	10. Field and Pool, or Exploratory 96434 2ND BONESPRING SAND / RED HILLS;
4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface SESE / 300 FSL / 1010 FEL / LAT 32.196616 / LONG -103.469637 At proposed prod. zone NENE / 100 FNL / 330 FEL / LAT 32.224525 / LONG -103.467445	11. Sec., T. R. M. or Blk. and Survey or Area SEC 21 / T24S / R34E / NMP

14. Distance in miles and direction from nearest town or post office* 19.7 miles	12. County or Parish LEA	13. State NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 300 feet	16. No of acres in lease 240	17. Spacing Unit dedicated to this well 160
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 11000 feet / 20882 feet	20, BLM/BIA Bond No. in file FED: NMB001471
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3498 feet	22. Approximate date work will start* 04/03/2021	23. Estimated duration 30 days

24. Attachments

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

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

25. Signature (Electronic Submission)	Name *(Printed/Typed)* Kanicia Schlichting / Ph: (720)499-1537	Date 03/22/2019
Title Sr. Regulatory Analyst		
Approved by *(Signature)* (Electronic Submission)	Name *(Printed/Typed)* Cody Layton / Ph: (575)234-5959	Date 08/16/2019
Title Assistant Field Manager Lands & Minerals	Office CARLSBAD	

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

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

GCP Rec 08/20/19

APPROVED WITH CONDITIONS

Approval Date: 08/16/2019

KZ 08/21/19

REQUIRES NSL

(Continued on page 2)

*(Instructions on page 2)

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: SESE / 300 FSL / 1010 FEL / TWSP: 24S / RANGE: 34E / SECTION: 21 / LAT: 32.196616 / LONG: -103.469637 (TVD: 0 feet, MD: 0 feet)
   PPP: SESE / 100 FSL / 330 FEL / TWSP: 24S / RANGE: 34E / SECTION: 21 / LAT: 32.196064 / LONG: -103.467438 (TVD: 11000 feet, MD: 11351 feet)
   PPP: SENE / 2639 FSL / 328 FEL / TWSP: 24S / RANGE: 34E / SECTION: 21 / LAT: 32.203042 / LONG: -103.46744 (TVD: 11000 feet, MD: 13066 feet)
   BHL: NENE / 100 FNL / 330 FEL / TWSP: 24S / RANGE: 34E / SECTION: 16 / LAT: 32.224525 / LONG: -103.467445 (TVD: 11000 feet, MD: 20882 feet)

BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

Approval Date: 08/16/2019

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 CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CENTENNIAL RESOURCE PRODUCTION LLC**
LEASE NO.:	**NMNM126971**
WELL NAME & NO.:	**RAIDER FEDERAL COM 503H**
SURFACE HOLE FOOTAGE:	**300' FEL & 1010' FEL**
BOTTOM HOLE FOOTAGE	**100' FNL & 330' FEL**
LOCATION:	**Section 21, T. 24 S., R 34 E., NMPM**
COUNTY:	**Lea County, New Mexico**

COA

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
Other	☑ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

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 **13-3/8** inch surface casing shall be set at approximately **1300 feet** (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and above the salt) and cemented to the surface.

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

Approval Date: 08/16/2019

include the lead cement)

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

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

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

    - Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

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

C. PRESSURE CONTROL

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

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

JJP06192019

GENERAL REQUIREMENTS

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

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

☒ 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

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

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

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

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

A. CASING

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

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

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.

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

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

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

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

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

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

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

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

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

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

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME: Centennial Resource Production LLC

WELL NAME & NO.: Raider Federal Com 501H
SURFACE HOLE FOOTAGE: 300'/S & 1070'/E
BOTTOM HOLE FOOTAGE: 100'/N & 1980'/E

WELL NAME & NO.: Raider Federal Com 502H
SURFACE HOLE FOOTAGE: 300'/S & 1040'/E
BOTTOM HOLE FOOTAGE: 100'/N & 660'/E

WELL NAME & NO.: Raider Federal Com 503H
SURFACE HOLE FOOTAGE: 300'/S & 1010'/E
BOTTOM HOLE FOOTAGE: 100'/N & 330'/E

LOCATION: Section 21, T.24 S., R.34 E., NMPM
COUNTY: Lea County, New Mexico

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

Pipelines
Electric Lines
☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Watershed
Surface disturbance will not be allowed (within x feet of drainage; or describe pad restriction).
The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.
Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control.

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:
Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be

constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

Turnouts

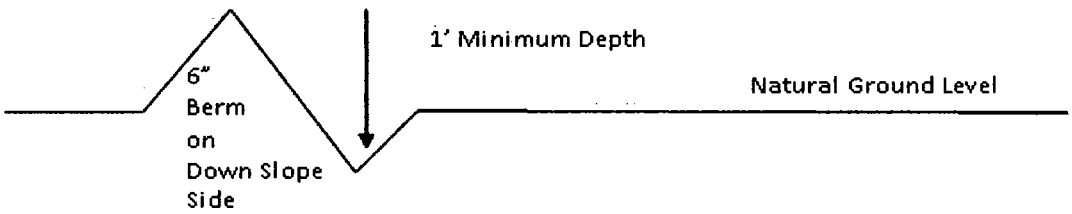
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

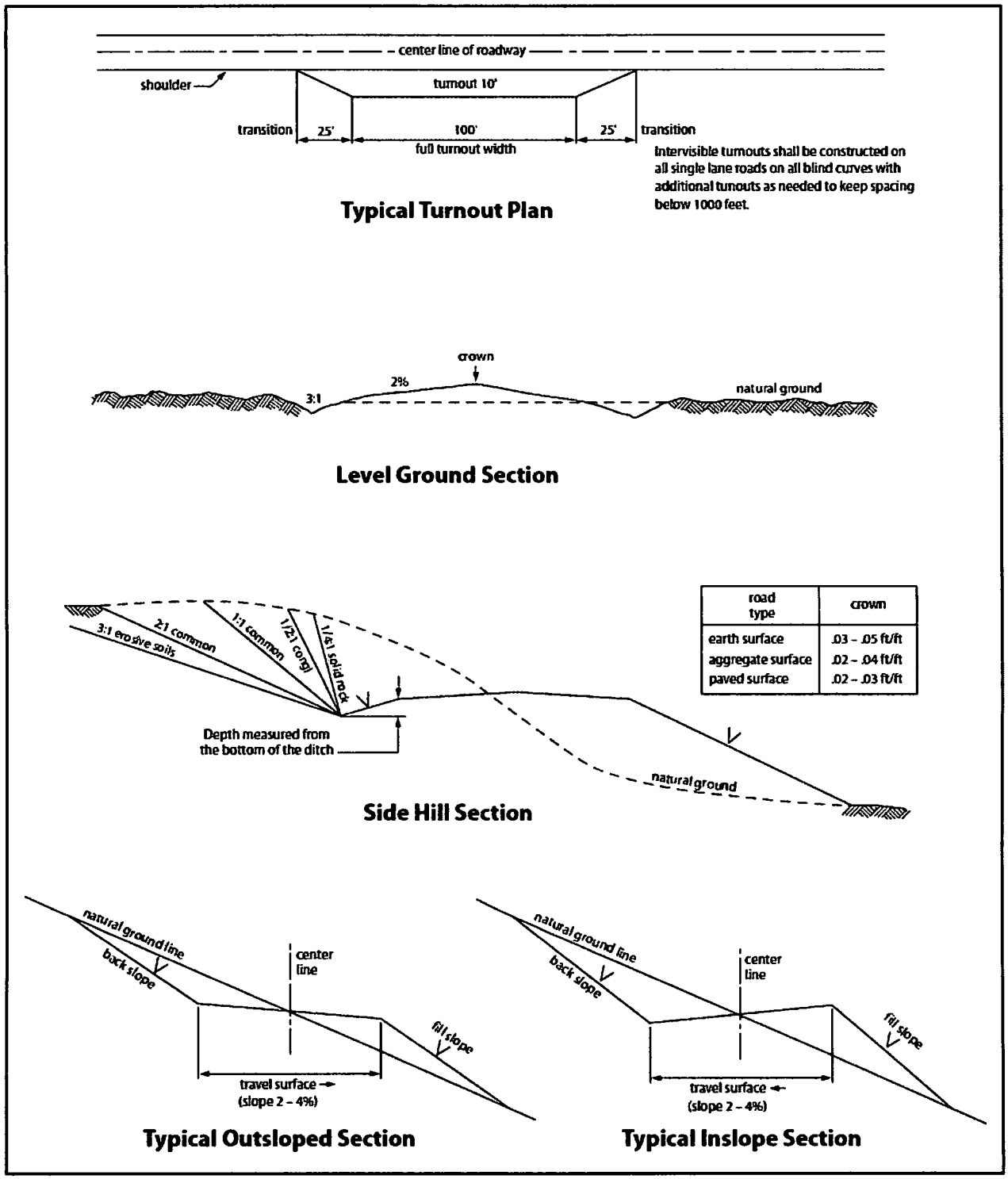


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production

equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms

are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.

4. Holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;

b. Activities of other parties including, but not limited to:
   (1) Land clearing
   (2) Earth-disturbing and earth-moving work
   (3) Blasting
   (4) Vandalism and sabotage;

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized

right-of-way width of **30** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 6 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section

102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **30** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(**X**) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD

ELECTRIC DISTRIBUTION LINES

A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving

that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly.
    - Fill in any holes from the poles removed.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:
Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

08/18/2019

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Kanicia Schlichting **Signed on:** 03/22/2019

Title: Sr. Regulatory Analyst

Street Address: 1001 17th Street, Suite 1800

City: Denver **State:** CO **Zip:** 80202

Phone: (720)499-1537

Email address: Kanicia.schlichting@cdevinc.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

08/18/2019

APD ID: 10400039801 **Submission Date:** 03/22/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Section 1 - General

APD ID: 10400039801 **Tie to previous NOS?** **Submission Date:** 03/22/2019

BLM Office: CARLSBAD **User:** Kanicia Schlichting **Title:** Sr. Regulatory Analyst

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM126971 **Lease Acres:** 240

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** CENTENNIAL RESOURCE PRODUCTION LLC

Operator letter of designation:

Operator Info

Operator Organization Name: CENTENNIAL RESOURCE PRODUCTION LLC

Operator Address: 1001 17th Street, Suite 1800 **Zip:** 80202

Operator PO Box:

Operator City: Denver **State:** CO

Operator Phone: (720)499-1400

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? EXISTING **Master Development Plan name:** Raider Pad

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: RAIDER FEDERAL COM **Well Number:** 503H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** 2ND BONESPRING SAND **Pool Name:** RED HILLS; BONE SPRING, NORTH

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** RAIDER PAD **Number:** 501

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 19.7 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 300 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: RAIDER_FEDERAL_COM_503H_Lease_Plat_Revised_3.15.19_20190322111734.pdf

RAIDER_FEDERAL_COM_503H_Plat_Revised_3.15.19_20190322111735.pdf

Well work start Date: 04/03/2021 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 23782 **Reference Datum:**

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	300	FSL	1010	FEL	24S	34E	21	Aliquot SESE	32.196616	-103.469637	LEA	NEW MEXICO	NEW MEXICO	F	FEE	3498	0	0
KOP Leg #1	300	FSL	1010	FEL	24S	34E	21	Aliquot SESE	32.196616	-103.469637	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-6929	10451	10427
PPP Leg #1	2639	FSL	328	FEL	24S	34E	21	Aliquot SENE	32.203042	-103.46744	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126971	-7502	13066	11000

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	100	FSL	330	FEL	24S	34E	21	Aliquot SESE	32.196064	-103.467438	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-7502	11351	11000
EXIT Leg #1	100	FNL	330	FEL	24S	34E	16	Aliquot NENE	32.224525	-103.467445	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7502	20882	11000
BHL Leg #1	100	FNL	330	FEL	24S	34E	16	Aliquot NENE	32.224525	-103.467445	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-7502	20882	11000

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name

4 Property Code	5 Property Name	6 Well Number
	RAIDER FEDERAL COM	#503H
7 OGRID No.	8 Operator Name	9 Elevation
	CENTENNIAL RESOURCE PRODUCTION, LLC	3497.6'

10 Surface Location

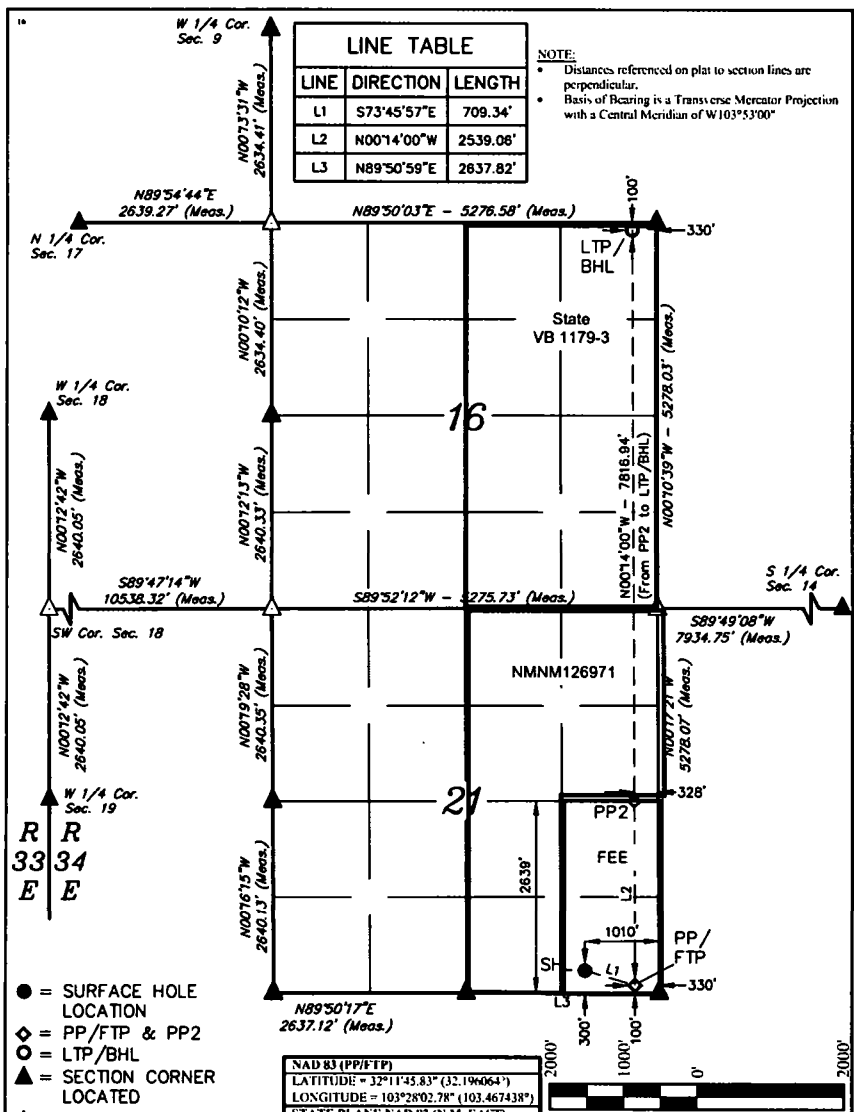
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	21	24S	34E		300	SOUTH	1010	EAST	LEA

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	16	24S	34E		100	NORTH	330	EAST	LEA

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
320			

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



NAD 83 (PP/FTP)
LATITUDE = 32°11'45.83" (32.196064°)
LONGITUDE = 103°28'02.78" (103.467438°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 436140.96' X: 809186.39'
UTM, NAD 83 (ZONE 13)
Y: 11690258.14' X: 2114356.93'

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°11'47.82" (32.196616°)
LONGITUDE = 103°28'10.69" (103.469637°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 436336.38' X: 808504.62'
UTM, NAD 83 (ZONE 13)
Y: 11690439.31' X: 2113674.05'

NAD 83 (PP2/CROSSING FEE INTO FED)
LATITUDE = 32°12'10.95" (32.203042°)
LONGITUDE = 103°28'02.78" (103.467440°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 438679.53' X: 809165.43'
UTM, NAD 83 (ZONE 13)
Y: 11692796.20' X: 2114320.23'

NAD 83 (LTP/BHL)
LATITUDE = 32°13'28.29" (32.224525°)
LONGITUDE = 103°28'02.80" (103.467445°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 446494.95' X: 809100.87'
UTM, NAD 83 (ZONE 13)
Y: 11700610.02' X: 2114207.20'

17 OPERATOR CERTIFICATION

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

Signature Date

Printed Name

E-mail Address

18 SURVEYOR CERTIFICATION

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

December 01, 2018

Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE NEW MEXICO 23782 PROFESSIONAL SURVEYOR 03-14-19

Certificate Number:

APD ID: 10400039801 **Submission Date:** 03/22/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3498	1215	1215	SANDSTONE	NONE	N
2	CAPITAN REEF	-1888	5386	5386	OTHER : CARBONATE	USEABLE WATER	N
3	BELL CANYON	-1930	5428	5428	SANDSTONE	NATURAL GAS,OIL	N
4	CHERRY CANYON	-2830	6328	6328	SANDSTONE	NATURAL GAS,OIL	N
5	BRUSHY CANYON	-4229	7727	7727	SANDSTONE	NATURAL GAS,OIL	N
6	BONE SPRING LIME	-5617	9115	9115	OTHER : CARBONATE	NATURAL GAS,OIL	N
7	AVALON SAND	-5705	9203	9203	SHALE	NATURAL GAS,CO2,OIL	N
8	FIRST BONE SPRING SAND	-6692	10190	10190	SANDSTONE	NATURAL GAS,OIL	N
9	BONE SPRING 2ND	-6903	10401	10401	SANDSTONE	NATURAL GAS,OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 1100

Equipment: The BOP and related equipment will meet or exceed the requirements of a 5M-psi system as set forth in On Shore Order No. 2. See attached BOP Schematic. A. Casinghead: 13 5/8" – 5,000 psi SOW x 13" – 5,000 psi WP Intermediate Spool: 13" – 5,000 psi WP x 11" – 5,000 psi WP Tubinghead: 11" – 5,000 psi WP x 7 1/16" – 15,000 psi WP B. Minimum Specified Pressure Control Equipment • Annular preventer • One Pipe ram, One blind ram • Drilling spool, or blowout preventer with 2 side outlets. Choke side will be a 3-inch minimum diameter, kill line shall be at least 2-inch diameter • 3 inch diameter choke line • 2 – 3 inch choke line valves • 2 inch kill line • 2 chokes with 1 remotely controlled from rig floor (see Figure 2) • 2 – 2 inch kill line valves and a check valve • Upper kelly cock valve with handle available • When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer edge of the substructure and be unobstructed) • Lower kelly cock valve with handle available • Safety valve(s) and subs to fit all drill string connections in use • Inside BOP or float sub available • Pressure gauge on choke manifold • All BOPE connections subjected to well pressure shall be flanged, welded, or clamped • Fill-up line above the uppermost preventer. C. Auxiliary Equipment • Audio and visual mud monitoring equipment shall be placed to detect volume changes indicating loss or gain of circulating fluid volume. (OOS 1, III.C.2) • Gas Buster will be used below intermediate casing setting depth. • Upper and lower kelly cocks with handles, safety valve and subs to fit all drill string connections and a pressure gauge installed on choke manifold.

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Requesting Variance? YES

Variance request: Centennial is requesting to use a flex hose on the choke manifold. Please see attachment for specs in section 8.

Testing Procedure: The BOP test shall be performed before drilling out of the surface casing shoe and will occur at a minimum: a. when initially installed b. whenever any seal subject to test pressure is broken c. following related repairs d. at 30 day intervals e. checked daily as to mechanical operating conditions. The ram type preventer(s) will be tested using a test plug to 250 psi (low) and 5,000 psi (high) (casinghead WP) with a test plug upon its installation onto the 13" surface casing. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing. The annular type preventer(s) shall be tested to 50% of its working pressure. Pressure will be maintained for at least 10 minutes or until provisions of the test are met, whichever is longer. • A Sundry Notice (Form 3160 5), along with a copy of the BOP test report, shall be submitted to the local BLM office within 5 working days following the test. • If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure. • The BLM office will be provided with a minimum of four (4) hours' notice of BOP testing to allow witnessing. The BOP Configuration, choke manifold layout, and accumulator system, will be in compliance with Onshore Order 2 for a 5,000 psi system. A remote accumulator will be used. Pressures, capacities, and specific placement and use of the manual and/or hydraulic controls, accumulator controls, bleed lines, etc., will be identified at the time of the BLM 'witnessed BOP test. Any remote controls will be capable of both opening and closing all preventers and shall be readily accessible

Choke Diagram Attachment:

HP650_10M_Choke_Manifold_20190307120217.pdf

BOP Diagram Attachment:

HP650_BOP_Schematic_CoFlex_Choke_5K_2019_1_29_20190307120238.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	CONDUCTOR	26	20.0	NEW	API	N	0	120	0	120	3498	3378	120	H-40	94	OTHER - Weld						
2	SURFACE	17.5	13.375	NEW	API	N	0	1300	0	1300	3498	2198	1300	J-55	54.5	OTHER - BTC	1.76	4.26	DRY	12.04	DRY	12.04
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5351	0	5340	3498	-1842	5351	J-55	40	LT&C	1.31	1.42	DRY	2.43	DRY	2.95
4	PRODUCTION	8.75	5.5	NEW	API	N	0	10451	0	10427	3498	-6929	10451	P-110	20	OTHER - TMK UP DQX	2.05	2.33	DRY	3.07	DRY	3.07
5	PRODUCTION	8.5	5.5	NEW	API	N	10451	20882	10427	11000	-6929	-7502	10431	P-110	20	OTHER - TMK UP DQX	1.94	2.21	DRY	55.892	DRY	55.92

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Casing Attachments

Casing ID: 1 **String Type:** CONDUCTOR

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing ID: 2 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20180920095914.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20180920100112.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Casing Attachments

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20190307121343.pdf

TMK_UP_DQX_5.5_x_20_P110_TAPERED_STRING_SPEC_20190307121419.pdf

Casing ID: 5 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CASING_ASSUMPTIONS_WORKSHEET_20180920100203.pdf

TMK_UP_DQX_5.5_x_20_P110_TAPERED_STRING_SPEC_20190307121430.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0		0	0
CONDUCTOR	Lead		0	120	121	1.49	12.9	181	0	Grout	Bentonite 4% BWOC, Cellophane #/sx, CaCl2 2% BWOC.

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	800	639	1.74	13.5	1111	100	Class C Premium	Premium Gel Bentonite 4%, C-45 Econolite 0.25%, Phenoseal 0.25#/sk, CaCl 1%, Defoamer C-41P 0.75%
SURFACE	Tail		800	1300	518	1.34	14.8	695	100	Class C Premium	C-45 Econolite 0.10%, CaCl 1.0%
INTERMEDIATE	Lead		0	4851	1151	3.44	10.7	3959	150	TXI Lightweight	Salt 1.77/sk, C-45 Econolite 2.25%, STE 6.00%, Citric Acid 0.18%, C-19 0.10%, CSA-1000 0.20%, C-530P 0.30%, CTB-15 LCM 7#/sk, Gyp Seal 8#/sk
INTERMEDIATE	Tail		4851	5351	141	1.33	14.8	188	20	Class C Premium	C-45 Econolite 0.10%, Citric acid 0.05%, C503P 0.25%
PRODUCTION	Lead		0	10451	1023	3.41	10.6	3488	30	TXI Lightweight	Salt 8.98#/sk, STE 6.00%, Citric acid 0.20%, CSA-1000 0.23%, C47B 0.10%, C-503P 0.30%
PRODUCTION	Tail		10451	20882	2409	1.24	14.2	2987	25	50:25:25 Class H: Poz: CPO18	Citric acid 0.03%, CSA-1000 0.05%, C47B 0.25%, C-503P 0.30%

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient quantities of mud materials will be on the well site at all times for the purpose of assuring well control and maintaining wellbore integrity. Surface interval will employ fresh water mud. The intermediate hole will utilize a diesel emulsified brine fluid to inhibit salt washout and prevent severe fluid losses. The production hole will employ oil base fluid to inhibit formation reactivity and of the appropriate density to maintain well control.

Describe the mud monitoring system utilized: Centrifuge separation system. Open tank monitoring with EDR will be used for drilling fluids and return volumes. Open tank monitoring will be used for cement and cuttings return volumes. Mud properties will be monitored at least every 24 hours using industry accepted mud check practices.

Circulating Medium Table

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1300	5351	OTHER : Brine	9	10							
0	20882	OIL-BASED MUD	8.8	10							
0	1300	OTHER : FW	8.6	9.5							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Will utilize MWD/LWD (Gamma Ray logging) from intermediate hole to TD of the well.

List of open and cased hole logs run in the well:

OTH

Other log type(s):

GR

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5720 **Anticipated Surface Pressure:** 3300

Anticipated Bottom Hole Temperature(F): 200

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

H2S_Plan_Raider_Fed_Com_503H_20190322142355.docx

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

RAIDER_FEDERAL_COM_503H___APD_PLAN__1_20190322122938.pdf

Other proposed operations facets description:

We are planning on using a spudder rig to preset surface casing. Gas Capture Plan is attached.

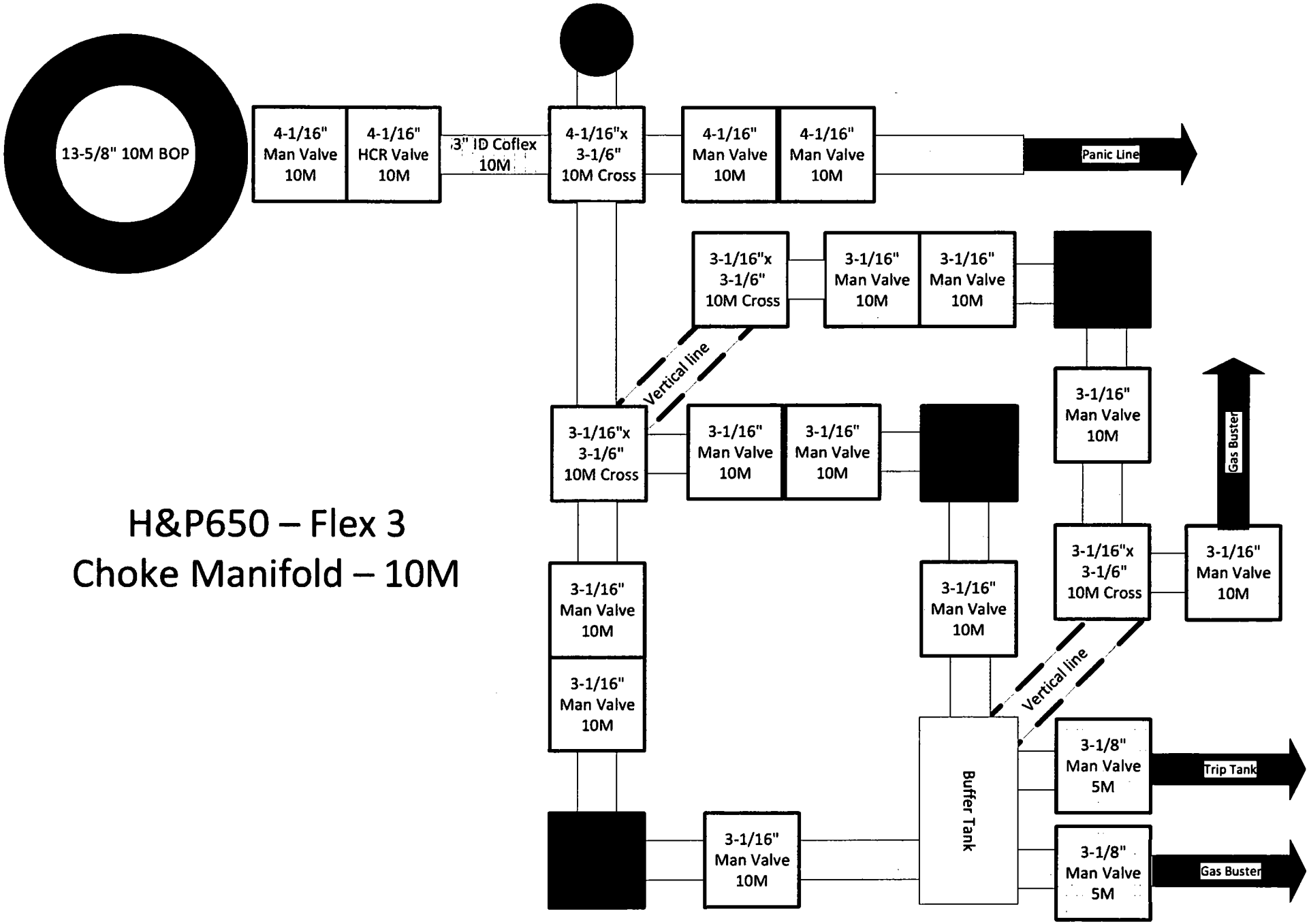
Other proposed operations facets attachment:

Raider_Federal_Com_703H_704H_503H_Gas_Capture_Plan_20190322123804.docx

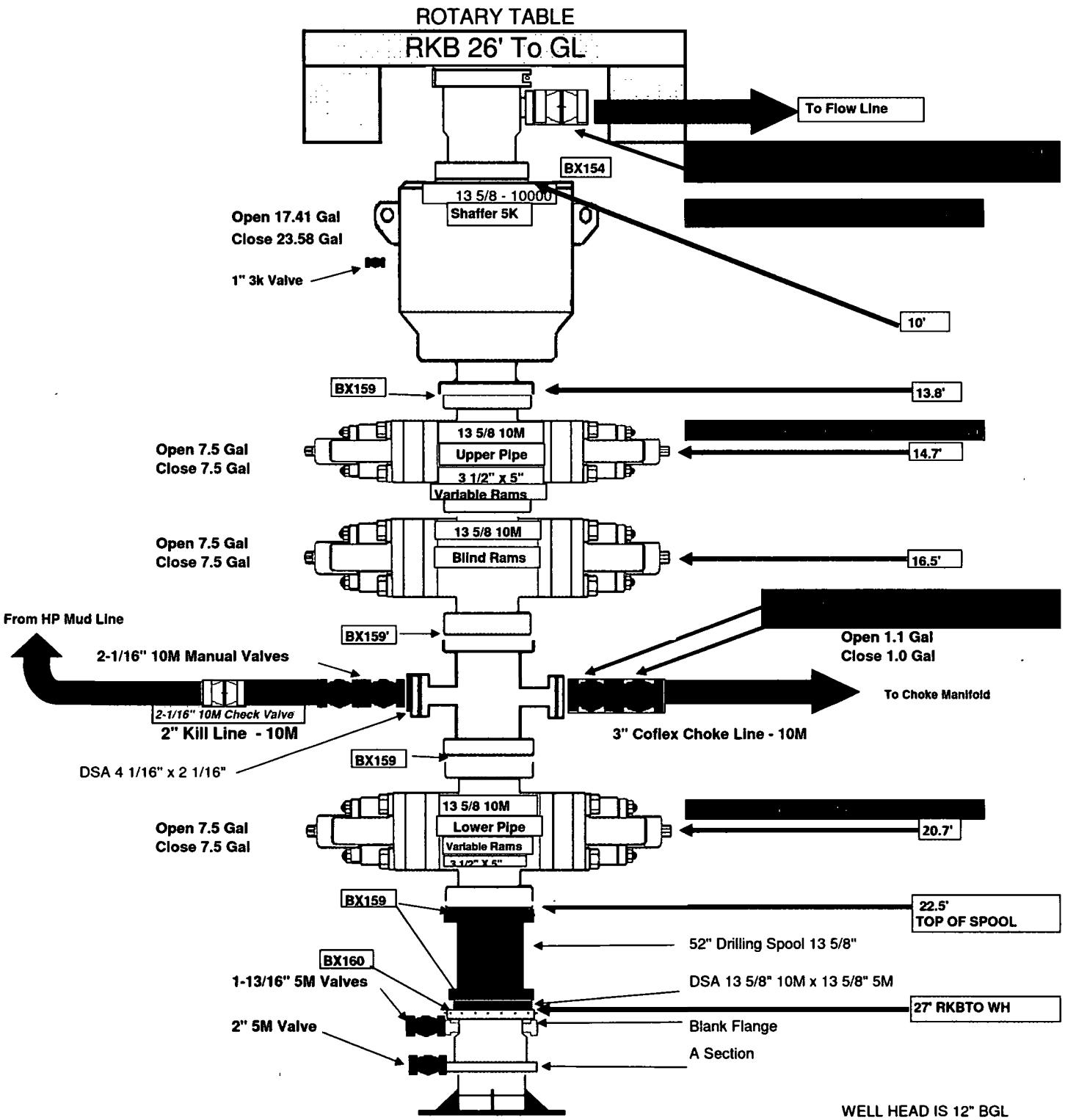
Other Variance attachment:

H_P650_Flex_Hose____Continental_Hose_PO_4500409659_SN_67255_20190307122906.pdf

H&P650 – Flex 3
Choke Manifold – 10M



H&P 650


ROTARY TABLE
RKB 26' To GL
To Flow Line
BX154
13 5/8 - 10000
Shaffer 5K
Open 17.41 Gal
Close 23.58 Gal
1" 3k Valve
10'
BX159
13.8'
13 5/8 10M
Upper Pipe
3 1/2" x 5"
Variable Rams
Open 7.5 Gal
Close 7.5 Gal
14.7'
13 5/8 10M
Blind Rams
Open 7.5 Gal
Close 7.5 Gal
16.5'
From HP Mud Line
BX159'
2-1/16" 10M Manual Valves
Open 1.1 Gal
Close 1.0 Gal
To Choke Manifold
2-1/16" 10M Check Valve
2" Kill Line - 10M
3" Coflex Choke Line - 10M
BX159
DSA 4 1/16" x 2 1/16"
13 5/8 10M
Lower Pipe
Variable Rams
3 1/2" X 5"
Open 7.5 Gal
Close 7.5 Gal
20.7'
BX159
22.5'
TOP OF SPOOL
52" Drilling Spool 13 5/8"
BX160
1-13/16" 5M Valves
DSA 13 5/8" 10M x 13 5/8" 5M
27' RKBTO WH
2" 5M Valve
Blank Flange
A Section
WELL HEAD IS 12" BGL

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface: - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
- No Cement baskets will be run

Production: - 1 welded bow spring centralizer on a stop ring 6' above float shoe
- 1 centralizer every other joint to the top of the tail cement
- 1 centralizer every 4 joints to 500' below the top of the lead cement
- The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

- CENTENNIAL RESOURCE DEVELOPOMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface: - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
- No Cement baskets will be run

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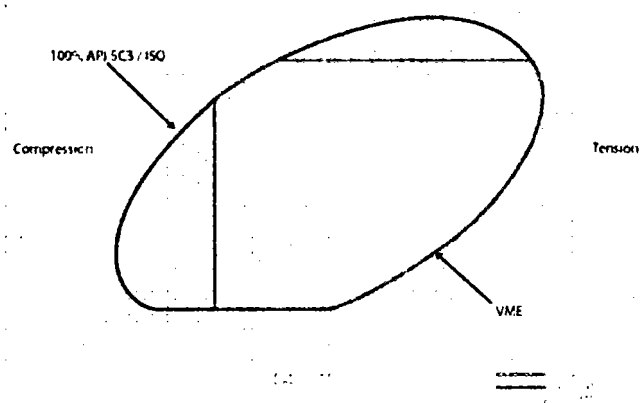
TECHNICAL DATA SHEET TMK UP DQX 5.5 X 20 P110 HC

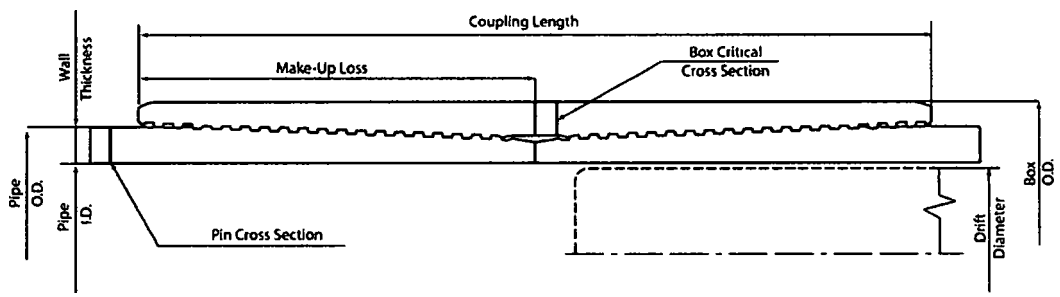
TUBULAR PARAMETERS	
Nominal OD, (inch)	5.500
Wall Thickness, (inch)	0.361
Pipe Grade	P110 HC
Coupling	Regular
Coupling Grade	P110 HC
Drift	Standard

CONNECTION PARAMETERS	
Connection OD (inch)	6.05
Connection ID, (inch)	4.778
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Yeld Strength in Compression, (klbs)	641
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	12 640
Collapse Pressure, (psi)	12 780
Uniaxial Bending (deg/100ft)	91.7

PIPE BODY PROPERTIES	
PE Weight, (lbs/ft)	19.81
Nominal Weight, (lbs/ft)	20.00
Nominal ID, (inch)	4.778
Drift Diameter, (inch)	4.653
Nominal Pipe Body Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Min. Internal Yield Pressure, (psi)	12 640
Collapse Pressure, (psi)	12 780



MAKE-UP TORQUES	
Yield Torque, (ft-lb)	20 600
Minimum Make-Up Torque, (ft-lb)	11 600
Optimum Make-Up Torque, (ft-lb)	12 900
Maximum Make-Up Torque, (ft-lb)	14 100



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Print date: 03/02/2018 20:57

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface: - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
- No Cement baskets will be run

Production: - 1 welded bow spring centralizer on a stop ring 6' above float shoe
- 1 centralizer every other joint to the top of the tail cement
- 1 centralizer every 4 joints to 500' below the top of the lead cement
- The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

- CENTENNIAL RESOURCE DEVELOPOMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

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TECHNICAL DATA SHEET TMK UP DQX 5.5 X 20 P110 HC

TUBULAR PARAMETERS	
Nominal OD, (inch)	5.500
Wall Thickness, (inch)	0.361
Pipe Grade	P110 HC
Coupling	Regular
Coupling Grade	P110 HC
Drift	Standard

CONNECTION PARAMETERS	
Connection OD (inch)	6.05
Connection ID, (inch)	4.778
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Yeld Strength in Compression, (klbs)	641
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	12 640
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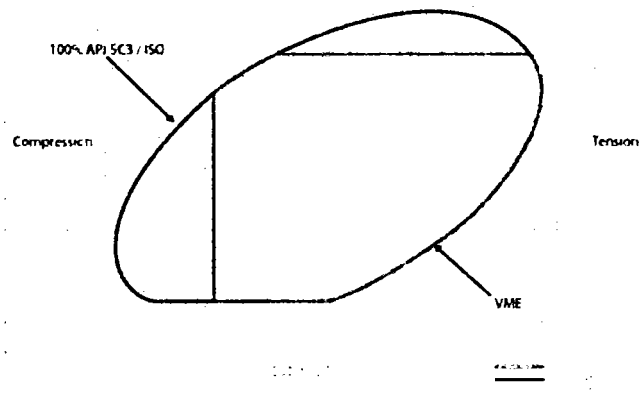

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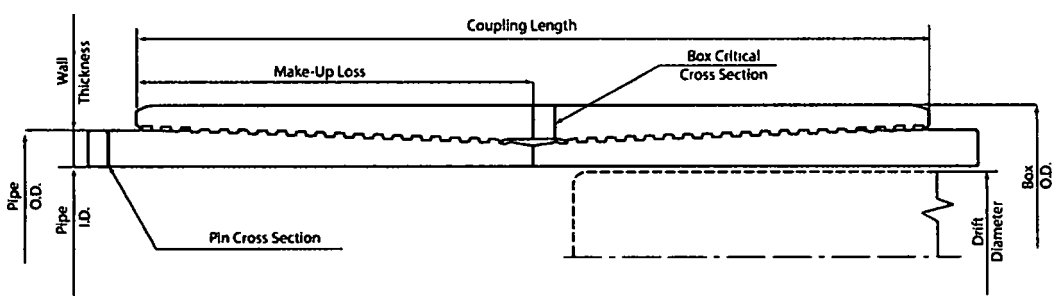

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Print date: 03/02/2018 20:57

CENTENNIAL
RESOURCE DEVELOPMENT, INC

HYDROGEN SULFIDE CONTINGENCY PLAN

[redacted]

Initial Date: 3/22/18

Revision Date:

Table of Contents

INTRODUCTION

This plan specifies precautionary measures, safety equipment, emergency procedures, responsibilities, duties, and the compliance status pertaining to the production operations of Hydrogen Sulfide producing wells on:

Centennial Resource Development, Inc.

This plan will be in full effect prior to and continuing with all drilling operations for all wells producing potential Hydrogen Sulfide on the

[redacted]

This plan was developed in response to the potential hazards involved when producing formations that may contain Hydrogen Sulfide (H_2S) It has been written in compliance with current **New Mexico Oil Conservation Division Rule 118 and Bureau of Land Management 43 CFR 3160 Onshore Order No. 6.**

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

This plan shall require the full cooperation and efforts of all individuals participating in the production of potential H_2S wells.

Each individual is required to know their assigned responsibilities and duties in regard to normal production operations and emergency procedures.

Each person should thoroughly understand and be able to use all safety related equipment on the production facility.

Each person should become familiar with the location of all safety equipment and become involved in ensuring that all equipment is properly stored, easily accessible, and routinely maintained.

An ongoing training program will remain in effect with regular training, equipment inspections, and annual certifications for all personnel.

Centennial Resource Development, Inc. shall make every reasonable effort to provide all possible safeguards to protect all personnel, both on this location and in the immediate vicinity, from the harmful effects of H_2S exposure, if a release to the atmosphere should occur.

DIRECTIONS TO LOCATION

PROCEED IN A WESTERLY, THEN NORTHWESTERLY, THEN WESTERLY DIRECTION FROM JAL, NEW MEXICO ALONG NM-128 APPROXIMATELY 18.0 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTH; TURN LEFT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 0.1 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD FOR THE SOLOMON FEDERAL COM 709H, 710H, 711H & SHEBA FEDERAL COM 506H, 507H TO THE SOUTH; FOLLOW ROAD FLAGS IN A SOUTHERLY, THEN SOUTHEASTERLY, THEN SOUTHERLY DIRECTION APPROXIMATELY 5,757' TO THE JUNCTION OF THIS ROAD AND THE BEGINNING OF THE PROPOSED ACCESS ROAD FOR THE RAIDER FEDERAL COM #701H & #702H TO THE WEST; FOLLOW ROAD FLAGS IN A WESTERLY DIRECTION APPROXIMATELY 2,603' TO THE BEGINNING OF THE PROPOSED ACCESS ROAD TO THE NORTH; FOLLOW ROAD FLAGS IN A NORTHERLY DIRECTION APPROXIMATELY 62' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM JAL, NEW MEXICO TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 19.7 MILES..

SAFE BRIEFING AREAS

Two areas will be designated as "SAFE BRIEFING AREAS".

The Primary Safe Briefing Area

If the Primary Safe Briefing Area cannot be used due to wind conditions; the designated secondary safe briefing area will be used.

These two areas are so designated for accessibility reasons related to self-contained safe breathing air device locations, evacuation muster point utility, and for ease of overall communication, organizational support, as well as the all-important prevailing wind directions. Drawings of the facility denoting these locations are included on Page 15.

If H_2S is detected in concentrations equal to or in excess of 15 PPM, all personnel not assigned emergency duties are to assemble in the appropriate "SAFE BRIEFING AREA" for instructions.

Wind Direction Indicators: A windsock, shall be positioned, allowing the wind direction to be observed from anywhere on the charted facility location.

Warning-DANGER SIGNS for Approaching Traffic: All signs shall also be illuminated under conditions of poor visibility.

DANGER
POISONOUS GAS
HYDROGEN SULFIDE
DO NOT APPROACH IF AMBER LIGHTS ARE FLASHING

An amber strobe light system will be activated for H_2S concentrations of 10 PPM or greater and an audible alarm will sound when H_2S exceeds 15 ppm, and. This condition will exist until the all clear is given.

DRILL SITE LOCATION:

1. The drilling rig should be situated on location such that the prevailing winds blow across the rig toward the reserve pit or at right angles to a line from the rig to the reserve pit.
2. The entrance to the location should be designated so that it can be barricaded if Hydrogen Sulfide emergency conditions arise. An auxiliary exit (or entrance) should be available in case of a catastrophe; a shift in wind direction would not preclude escape from the location. Appropriate warning signs and flags should be placed at all location entrances.
3. Once H2S safety procedures are established on location, no beards or facial hair, which will interfere with face seal or mask, will be allowed on location.
4. A minimum of two BRIEFING AREAS will be established, no less than 250 feet from the wellhead and in such location that at least one area will be up-wind from the well at all times. Upon recognition of an emergency situation, all personnel should assemble at the designated briefing areas for instructions.
5. A safety equipment trailer will be station at one of the briefing areas.
6. Windsocks will be installed and wind streamers (6 to 8 feet above ground level) placed at the location entrance. Windsocks shall be illuminated for nighttime operations. Personnel should develop wind direction consciousness.
7. The mud-logging trailer will be located so as to minimize the danger from the gas that breaks out of the drilling fluid.
8. Shale shaker mud tanks will be located so as to minimize the danger from gas that breaks out of the drilling fluid.
9. Electric power plant(s) will be located as far from the well bore as practical so that it may be used under conditions where it otherwise would have to be shut down.
10. When approaching depth where Hydrogen Sulfide may be encountered, appropriate warning signs will be posted on all access roads to the location and at the foot of all stairways to the derrick floor.
11. Appropriate smoking areas will be designated, and smoking will be prohibited elsewhere.

The table below lists various poisonous gases and the concentrations at which they become dangerous.

TOXICITY OF VARIOUS GASES

TOXICITY OF GASES (Taken from API RP-49 September 1974 – Re-issued August 1978)					
Common Name	**Chemical Formula**	**Gravity (Air = 1)**	**Threshold 1 Limit**	**Hazardous 2 Limit**	**Lethal 3 Limit**
Hydrogen Sulfide	H_2S	1.18	10 ppm	250 ppm/1hr	600 ppm
Sulfur Dioxide	SO_2	2.21	20 ppm	---	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/1hr	1000 ppm
Carbon Dioxide	CO_2	1.52	5000 ppm	5%	10%
Methane	CH_4	0.55	90000 ppm	Combustible Above 5% in Air	

1. Threshold concentration at which it is believed that all workers may repeatedly be exposed day after day, without adverse effect	2. Hazardous concentration that may cause death	3. Lethal concentration that will cause death with short-term exposure

Properties of Gases

The produced gas will probably be a mixture of Carbon Dioxide, Hydrogen Sulfide, and Methane.

Carbon Dioxide

Carbon Dioxide (CO_2) is usually considered inert and is commonly used to extinguish fires.

It is heavier than air (1.52 times) and it will concentrate in low areas of still air.

Humans cannot breathe air containing more than 10% CO_2 without losing consciousness. Air containing 5% CO_2 will cause disorientation in a few minutes.

Continued exposures to CO_2 after being affected will cause convulsions, coma, and respiratory failure.

The threshold limit of CO_2 is 5000 ppm.

Short-term exposure to 50,000 PPM (5%) is reasonable. This gas is colorless and odorless and can be tolerated in relatively high concentrations.

Hydrogen Sulfide

Hydrogen Sulfide (H_2S) itself is a colorless, transparent gas and is flammable. It is heavier than air and, hence, may accumulate in low places.

Although the slightest presence of H_2S in the air is normally detectable by its characteristic "rotten egg" odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost, allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of Hydrogen Sulfide.

HYDROGEN SULFIDE TOXICITY			
Concentration			Effects
$\%H_2S$	PPM	GR/100 SCF 1	
0.001	10	0.65	Safe for 8 hours without respirator. Obvious and unpleasant odor.
0.002	20	1.30	Burning in eyes and irritation of respiratory tract after on hour.
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell shortly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; need prompt artificial respiration.
0.07	700	45.92	Unconscious quickly; death will result if not rescued promptly
0.10	1000	64.80	DEATH!
Note: 1 grain per 100 cubic feet			

Sulfur Dioxide

Sulfur Dioxide is a colorless, transparent gas and is non-flammable.

Sulfur Dioxide (SO_2) is produced during the burning of H_2S. Although SO_2 is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures. Since Sulfur Dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect. The following table indicates the toxic nature of the gas.

SULFUR DIOXIDE TOXICITY		
Concentration		Effects
$\%SO_2$	PPM	
0.0005	3 to 5	Pungent odor-normally a person can detect SO_2 in this range.
0.0012	12	Throat irritation, coughing, and constriction of the chest tearing and smarting of eyes.
0.15	150	So irritating that it can only be endured for a few minutes.
0.05	500	Causes a sense of suffocation, even with first breath.

H_2S REQUIRED EQUIPMENT LIST

RESPIRATORY SAFETY SYSTEMS

- Working cascade system available on rig floor and pit system & 750' of air line hose
- Four (4) breathing air manifolds
- Four (4) 30-minute rescue packs
- Five (5) work/Escape units
- Five (5) escape units
- One (1) filler hose for the work/escape/rescue units

DETECTION AND ALARM SYSTEM

- **4 channel H2S monitor**
- **4 wireless H2S monitors**
- **H2S alarm system (Audible/Red strobe)**
- **Personal gas monitor for each person on location**
- **Gas sample tubes**

WELL CONTROL EQUIPMENT

- **Flare line with remote ignitor and backup flare gun, placed 150' from wellhead**
- **Choke manifold with remotely operated choke**
- **Mud gas separator**

VISUAL WARNING SYSTEMS

- **One color code condition sign will be placed at each entrance reflecting possible conditions at the site**
- **A colored condition flag will be on display, reflecting current condition at the site at the time**
- **At least 4 wind socks placed on location, visible at all angles and locations**

MUD PROGRAM

- **Mud will contain sufficient weight and additives to control and minimize H2S**

METALLURGY

- **All drill strings, casing, tubing, wellhead, BOP, spools, kill lines, choke manifold and lines, and valves shall be suitable for anticipated H2S volume and pressure**

COMMUNICATION

- **Cell phones, intercoms, and satellite phones will be available on location**

ADDITIONAL SAFETY RELATED ITEMS

- **Stretcher**
- **2 OSHA full body harness**

- **20# class ABC fire extinguisher**

DETERMINATION OF RADIUS OF EXPOSURE

Potentially hazardous volume means a volume of gas of such H2S concentration and flow rate that it may result in radius of exposure-calculated ambient concentrations of 100 ppm H2S at any occupied residence, school, church, park, school bus stop, place of business or other area where the public could reasonably be expected to frequent, or 500 ppm H2S at any Federal, State, County or municipal road or highway.

Currently there are no residence located within the ROE

Radius of exposure means the calculation resulting from using the Pasquill -Gifford derived equation, or by such other method(s) that may be approved by the authorized officer. Advanced Fire and Safety has provided the Pasquill-Gifford formula in excel format for simple calculations.

NEW MEXICO OIL & GAS CONSERVATION DIVISION 118

[redacted]

H2S Concentration- [redacted] PPM

Maximum Escape Volume- [redacted] MCF/Day

100 PPM Radius of Exposure - [redacted]
(Formula= 1.589 x ([redacted]/1000000) x ([redacted] x 1000) x .6258

500 PPM Radius of Exposure (Block 16)- [redacted]
Formula= .4546 x ([redacted]/1000000) x ([redacted] x 1000) x .6258

EMERGENCY CONTACT LIST

911 is available in the area			
NAME	**POSITION**	**COMPANY**	**NUMBER**
Centennial Contacts			
Dennis Hartwig	Drilling Engineer	CDEV	720-530-6723
Ricky Mills/John Helm	Superintendent	CDEV	432-305-1068
Mike Ponder/Wayne Miller	Field Superintendent	CDEV	432-287-3003
Brett Thompson	Drilling Manager	CDEV	720-656-7027
Reggie Phillips	HSE Manager	CDEV	432-638-3380
H&P 650 Drilling Office	Drilling Supervisor	CDEV	432-538-3343
Local Emergency Response			
Fire Department			575-395-2511
Jal Community Hospital			505-395-2511
State Police			505-827-9000
Lea County Sheriff			575-396-3611
Safety Contractor			
Advanced Safety	Office	Advanced Safety	833-296-3913
Joe Gadway	Permian Supervisor	Advanced Safety	318-446-3716
Clint Hudson	Operations Manager	Advanced Safety	337-552-8330
Well Control Company			
Wild Well Control			866-404-9564
Contractors			
Tommy E Lee	Pump Trucks		432-813-7140
Paul Smith	Drilling Fluids	Momentum	307-258-6254
Compass Coordinators	Cement	Compass	432-561-5970

CENTENNIAL
RESOURCE DEVELOPMENT, INC

NEW MEXICO

LEA
RAIDER FEDERAL
RAIDER FEDERAL COM 503H

RAIDER FEDERAL COM 503H

Plan: PWP0

Survey Report - Geographic

05 February, 2019

CENTENNIAL
RESOURCE DEVELOPMENT INC

Project: RAIDER FEDERAL COM
Site: RAIDER FEDERAL COM
Wells: RAIDER FEDERAL COM 501H_502H_503H
Design: APD PLAN

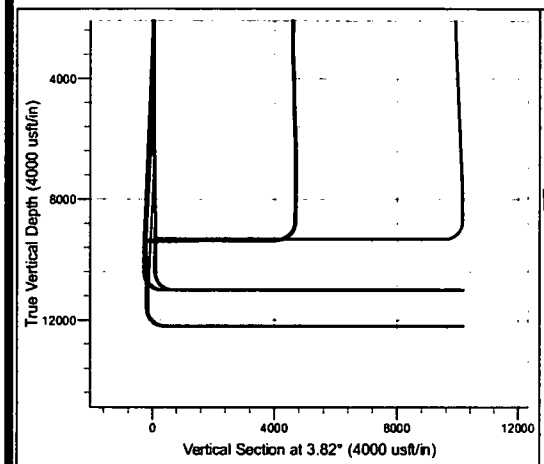
PROJECT DETAILS: LEA COUNTY

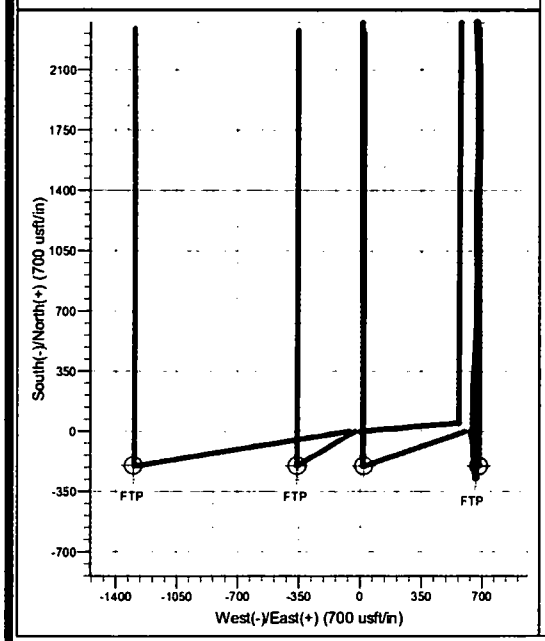
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Zone 13N (108 W to 102 W)

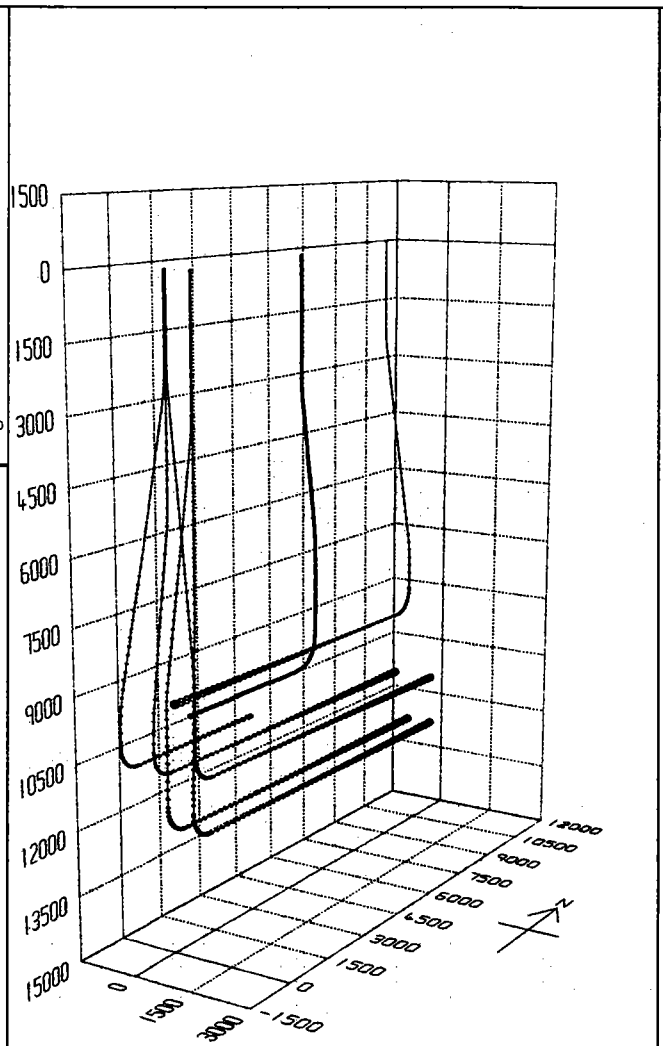
System Datum: Mean Sea Level

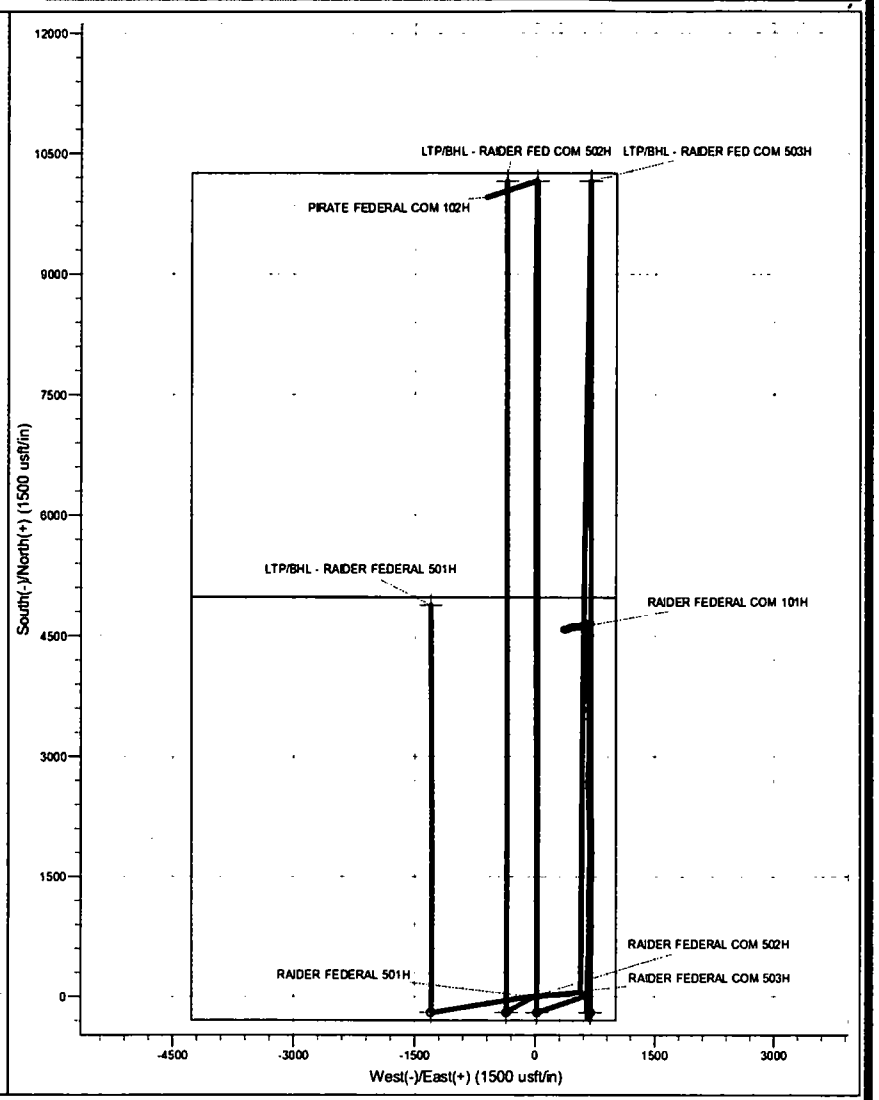
Azimuths to True North
Magnetic North: 7.70°

Magnetic Field
Strength: 48787.1snT
Dip Angle: 60.23°
Date: 11/6/2018
Model: IGRF200510









CENTENNIAL

LGC

Survey Report - Geographic

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Well:	RAIDER FEDERAL COM 503H	**North Reference:**	True
Wellbore:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Project	LEA		
Map System:	Universal Transverse Mercator (US Survey Feet)	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	RAIDER FEDERAL				
Site Position:		**Northing:**	11,249,335.16 usft	**Latitude:**	30° 59' 18.404 N
From:	Map	**Easting:**	1,308,106.99 usft	**Longitude:**	106° 3' 38.987 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.55 °

Well	RAIDER FEDERAL COM 503H					
Well Position	**+N/-S**	0.0 usft	**Northing:**	11,690,449.31 usft	**Latitude:**	32° 11' 47.819 N
	+E/-W	0.0 usft	**Easting:**	2,113,674.05 usft	**Longitude:**	103° 28' 10.692 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,498.0 usft

Wellbore	RAIDER FEDERAL COM 503H			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	12/31/2009	7.70	60.23	48,787.07851185

Design	PWP0				
Audit Notes:					
Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.0	0.0	0.0	3.82	

Survey Tool Program	**Date** 2/5/2019			
From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	20,881.1	PWP0 (RAIDER FEDERAL COM 503H)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
100.0	0.00	0.00	100.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
200.0	0.00	0.00	200.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
300.0	0.00	0.00	300.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
400.0	0.00	0.00	400.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
500.0	0.00	0.00	500.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
600.0	0.00	0.00	600.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
700.0	0.00	0.00	700.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
800.0	0.00	0.00	800.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
900.0	0.00	0.00	900.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Well:	RAIDER FEDERAL COM 503H	**North Reference:**	True
Wellbore:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,200.0	0.00	0.00	1,200.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	11,690,449.31	2,113,674.05	32° 11' 47.819 N	103° 28' 10.692 W
2,100.0	1.00	85.00	2,100.0	0.1	0.9	11,690,449.40	2,113,674.92	32° 11' 47.820 N	103° 28' 10.682 W
2,200.0	2.00	85.00	2,200.0	0.3	3.5	11,690,449.66	2,113,677.52	32° 11' 47.822 N	103° 28' 10.652 W
2,300.0	3.00	85.00	2,299.9	0.7	7.8	11,690,450.11	2,113,681.86	32° 11' 47.826 N	103° 28' 10.601 W
2,400.0	4.00	85.00	2,399.7	1.2	13.9	11,690,450.73	2,113,687.93	32° 11' 47.831 N	103° 28' 10.531 W
2,500.0	5.00	85.00	2,499.4	1.9	21.7	11,690,451.52	2,113,695.74	32° 11' 47.838 N	103° 28' 10.440 W
2,600.0	5.00	85.00	2,599.0	2.7	30.4	11,690,452.40	2,113,704.41	32° 11' 47.845 N	103° 28' 10.339 W
2,700.0	5.00	85.00	2,698.6	3.4	39.1	11,690,453.29	2,113,713.08	32° 11' 47.853 N	103° 28' 10.238 W
2,800.0	5.00	85.00	2,798.2	4.2	47.8	11,690,454.17	2,113,721.75	32° 11' 47.860 N	103° 28' 10.136 W
2,900.0	5.00	85.00	2,897.8	4.9	56.4	11,690,455.05	2,113,730.42	32° 11' 47.868 N	103° 28' 10.035 W
3,000.0	5.00	85.00	2,997.5	5.7	65.1	11,690,455.94	2,113,739.09	32° 11' 47.875 N	103° 28' 9.934 W
3,100.0	5.00	85.00	3,097.1	6.5	73.8	11,690,456.82	2,113,747.76	32° 11' 47.883 N	103° 28' 9.833 W
3,200.0	5.00	85.00	3,196.7	7.2	82.5	11,690,457.70	2,113,756.43	32° 11' 47.890 N	103° 28' 9.732 W
3,300.0	5.00	85.00	3,296.3	8.0	91.2	11,690,458.59	2,113,765.10	32° 11' 47.898 N	103° 28' 9.631 W
3,400.0	5.00	85.00	3,395.9	8.7	99.9	11,690,459.47	2,113,773.77	32° 11' 47.905 N	103° 28' 9.530 W
3,500.0	5.00	85.00	3,495.6	9.5	108.5	11,690,460.35	2,113,782.44	32° 11' 47.913 N	103° 28' 9.429 W
3,600.0	5.00	85.00	3,595.2	10.3	117.2	11,690,461.23	2,113,791.12	32° 11' 47.920 N	103° 28' 9.328 W
3,700.0	5.00	85.00	3,694.8	11.0	125.9	11,690,462.12	2,113,799.79	32° 11' 47.928 N	103° 28' 9.227 W
3,800.0	5.00	85.00	3,794.4	11.8	134.6	11,690,463.00	2,113,808.46	32° 11' 47.935 N	103° 28' 9.126 W
3,900.0	5.00	85.00	3,894.0	12.5	143.3	11,690,463.88	2,113,817.13	32° 11' 47.943 N	103° 28' 9.025 W
4,000.0	5.00	85.00	3,993.7	13.3	152.0	11,690,464.77	2,113,825.80	32° 11' 47.950 N	103° 28' 8.924 W
4,100.0	5.00	85.00	4,093.3	14.1	160.6	11,690,465.65	2,113,834.47	32° 11' 47.958 N	103° 28' 8.823 W
4,200.0	5.00	85.00	4,192.9	14.8	169.3	11,690,466.53	2,113,843.14	32° 11' 47.965 N	103° 28' 8.722 W
4,300.0	5.00	85.00	4,292.5	15.6	178.0	11,690,467.42	2,113,851.81	32° 11' 47.973 N	103° 28' 8.621 W
4,400.0	5.00	85.00	4,392.1	16.3	186.7	11,690,468.30	2,113,860.48	32° 11' 47.980 N	103° 28' 8.520 W
4,500.0	5.00	85.00	4,491.8	17.1	195.4	11,690,469.18	2,113,869.15	32° 11' 47.988 N	103° 28' 8.419 W
4,600.0	5.00	85.00	4,591.4	17.9	204.1	11,690,470.07	2,113,877.82	32° 11' 47.995 N	103° 28' 8.317 W
4,700.0	5.00	85.00	4,691.0	18.6	212.7	11,690,470.95	2,113,886.49	32° 11' 48.003 N	103° 28' 8.216 W
4,800.0	5.00	85.00	4,790.6	19.4	221.4	11,690,471.83	2,113,895.16	32° 11' 48.011 N	103° 28' 8.115 W
4,900.0	5.00	85.00	4,890.2	20.1	230.1	11,690,472.72	2,113,903.83	32° 11' 48.018 N	103° 28' 8.014 W
5,000.0	5.00	85.00	4,989.9	20.9	238.8	11,690,473.60	2,113,912.51	32° 11' 48.026 N	103° 28' 7.913 W
5,100.0	5.00	85.00	5,089.5	21.7	247.5	11,690,474.48	2,113,921.18	32° 11' 48.033 N	103° 28' 7.812 W
5,200.0	5.00	85.00	5,189.1	22.4	256.1	11,690,475.36	2,113,929.85	32° 11' 48.041 N	103° 28' 7.711 W
5,300.0	5.00	85.00	5,288.7	23.2	264.8	11,690,476.25	2,113,938.52	32° 11' 48.048 N	103° 28' 7.610 W
5,400.0	5.00	85.00	5,388.3	23.9	273.5	11,690,477.13	2,113,947.19	32° 11' 48.056 N	103° 28' 7.509 W
5,500.0	5.00	85.00	5,487.9	24.7	282.2	11,690,478.01	2,113,955.86	32° 11' 48.063 N	103° 28' 7.408 W
5,600.0	5.00	85.00	5,587.6	25.4	290.9	11,690,478.90	2,113,964.53	32° 11' 48.071 N	103° 28' 7.307 W
5,700.0	5.00	85.00	5,687.2	26.2	299.6	11,690,479.78	2,113,973.20	32° 11' 48.078 N	103° 28' 7.206 W
5,800.0	5.00	85.00	5,786.8	27.0	308.2	11,690,480.66	2,113,981.87	32° 11' 48.086 N	103° 28' 7.105 W
5,900.0	5.00	85.00	5,886.4	27.7	316.9	11,690,481.55	2,113,990.54	32° 11' 48.093 N	103° 28' 7.004 W
6,000.0	5.00	85.00	5,986.0	28.5	325.6	11,690,482.43	2,113,999.21	32° 11' 48.101 N	103° 28' 6.903 W
6,100.0	5.00	85.00	6,085.7	29.2	334.3	11,690,483.31	2,114,007.88	32° 11' 48.108 N	103° 28' 6.802 W
6,200.0	5.00	85.00	6,185.3	30.0	343.0	11,690,484.20	2,114,016.55	32° 11' 48.116 N	103° 28' 6.701 W
6,300.0	5.00	85.00	6,284.9	30.8	351.7	11,690,485.08	2,114,025.23	32° 11' 48.123 N	103° 28' 6.600 W
6,400.0	5.00	85.00	6,384.5	31.5	360.3	11,690,485.96	2,114,033.90	32° 11' 48.131 N	103° 28' 6.499 W
6,500.0	5.00	85.00	6,484.1	32.3	369.0	11,690,486.85	2,114,042.57	32° 11' 48.138 N	103° 28' 6.397 W
6,600.0	5.00	85.00	6,583.8	33.0	377.7	11,690,487.73	2,114,051.24	32° 11' 48.146 N	103° 28' 6.296 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Well:	RAIDER FEDERAL COM 503H	**North Reference:**	True
Wellbore:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,700.0	5.00	85.00	6,683.4	33.8	386.4	11,690,488.61	2,114,059.91	32° 11' 48.153 N	103° 28' 6.195 W
6,800.0	5.00	85.00	6,783.0	34.6	395.1	11,690,489.50	2,114,068.58	32° 11' 48.161 N	103° 28' 6.094 W
6,900.0	5.00	85.00	6,882.6	35.3	403.7	11,690,490.38	2,114,077.25	32° 11' 48.168 N	103° 28' 5.993 W
7,000.0	5.00	85.00	6,982.2	36.1	412.4	11,690,491.26	2,114,085.92	32° 11' 48.176 N	103° 28' 5.892 W
7,100.0	5.00	85.00	7,081.9	36.8	421.1	11,690,492.14	2,114,094.59	32° 11' 48.183 N	103° 28' 5.791 W
7,200.0	5.00	85.00	7,181.5	37.6	429.8	11,690,493.03	2,114,103.26	32° 11' 48.191 N	103° 28' 5.690 W
7,300.0	5.00	85.00	7,281.1	38.4	438.5	11,690,493.91	2,114,111.93	32° 11' 48.198 N	103° 28' 5.589 W
7,400.0	5.00	85.00	7,380.7	39.1	447.2	11,690,494.79	2,114,120.60	32° 11' 48.206 N	103° 28' 5.488 W
7,500.0	5.00	85.00	7,480.3	39.9	455.8	11,690,495.68	2,114,129.27	32° 11' 48.213 N	103° 28' 5.387 W
7,600.0	5.00	85.00	7,580.0	40.6	464.5	11,690,496.56	2,114,137.94	32° 11' 48.221 N	103° 28' 5.286 W
7,700.0	5.00	85.00	7,679.6	41.4	473.2	11,690,497.44	2,114,146.62	32° 11' 48.229 N	103° 28' 5.185 W
7,800.0	5.00	85.00	7,779.2	42.2	481.9	11,690,498.33	2,114,155.29	32° 11' 48.236 N	103° 28' 5.084 W
7,900.0	5.00	85.00	7,878.8	42.9	490.6	11,690,499.21	2,114,163.96	32° 11' 48.244 N	103° 28' 4.983 W
8,000.0	5.00	85.00	7,978.4	43.7	499.3	11,690,500.09	2,114,172.63	32° 11' 48.251 N	103° 28' 4.882 W
8,100.0	5.00	85.00	8,078.1	44.4	507.9	11,690,500.98	2,114,181.30	32° 11' 48.259 N	103° 28' 4.781 W
8,200.0	5.00	85.00	8,177.7	45.2	516.6	11,690,501.86	2,114,189.97	32° 11' 48.266 N	103° 28' 4.680 W
8,300.0	5.00	85.00	8,277.3	46.0	525.3	11,690,502.74	2,114,198.64	32° 11' 48.274 N	103° 28' 4.579 W
8,400.0	5.00	85.00	8,376.9	46.7	534.0	11,690,503.63	2,114,207.31	32° 11' 48.281 N	103° 28' 4.477 W
8,500.0	5.00	85.00	8,476.5	47.5	542.7	11,690,504.51	2,114,215.98	32° 11' 48.289 N	103° 28' 4.376 W
8,600.0	4.00	85.00	8,576.2	48.2	550.5	11,690,505.30	2,114,223.79	32° 11' 48.295 N	103° 28' 4.285 W
8,700.0	3.00	85.00	8,676.0	48.7	556.6	11,690,505.92	2,114,229.86	32° 11' 48.301 N	103° 28' 4.215 W
8,800.0	2.00	85.00	8,775.9	49.1	560.9	11,690,506.36	2,114,234.20	32° 11' 48.304 N	103° 28' 4.164 W
8,900.0	1.00	85.00	8,875.9	49.3	563.5	11,690,506.63	2,114,236.80	32° 11' 48.307 N	103° 28' 4.134 W
9,000.0	0.00	0.00	8,975.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,100.0	0.00	0.00	9,075.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,200.0	0.00	0.00	9,175.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,300.0	0.00	0.00	9,275.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,400.0	0.00	0.00	9,375.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,500.0	0.00	0.00	9,475.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,600.0	0.00	0.00	9,575.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,700.0	0.00	0.00	9,675.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,800.0	0.00	0.00	9,775.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
9,900.0	0.00	0.00	9,875.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,000.0	0.00	0.00	9,975.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,100.0	0.00	0.00	10,075.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,200.0	0.00	0.00	10,175.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,300.0	0.00	0.00	10,275.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,400.0	0.00	0.00	10,375.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,451.0	0.00	0.00	10,426.9	49.4	564.4	11,690,506.72	2,114,237.67	32° 11' 48.307 N	103° 28' 4.124 W
10,500.0	4.90	0.23	10,475.8	51.5	564.4	11,690,508.81	2,114,237.65	32° 11' 48.328 N	103° 28' 4.124 W
10,600.0	14.90	0.23	10,574.2	68.6	564.5	11,690,525.98	2,114,237.47	32° 11' 48.498 N	103° 28' 4.123 W
10,700.0	24.89	0.23	10,668.1	102.6	564.6	11,690,559.96	2,114,237.13	32° 11' 48.834 N	103° 28' 4.121 W
10,800.0	34.89	0.23	10,754.7	152.4	564.8	11,690,609.73	2,114,236.62	32° 11' 49.327 N	103° 28' 4.119 W
10,900.0	44.89	0.23	10,831.4	216.4	565.1	11,690,673.78	2,114,235.96	32° 11' 49.961 N	103° 28' 4.116 W
11,000.0	54.89	0.23	10,895.7	292.8	565.4	11,690,750.16	2,114,235.18	32° 11' 50.717 N	103° 28' 4.112 W
11,100.0	64.88	0.23	10,945.8	379.2	565.7	11,690,836.55	2,114,234.30	32° 11' 51.572 N	103° 28' 4.108 W
11,200.0	74.88	0.23	10,980.2	473.0	566.1	11,690,930.32	2,114,233.34	32° 11' 52.500 N	103° 28' 4.104 W
11,300.0	84.88	0.23	10,997.7	571.3	566.5	11,691,028.63	2,114,232.34	32° 11' 53.473 N	103° 28' 4.099 W
11,351.2	90.00	0.23	11,000.0	622.5	566.7	11,691,079.79	2,114,231.81	32° 11' 53.979 N	103° 28' 4.097 W
11,400.0	90.00	0.23	11,000.0	671.2	566.9	11,691,128.56	2,114,231.32	32° 11' 54.462 N	103° 28' 4.094 W
11,500.0	90.00	0.24	11,000.0	771.2	567.3	11,691,228.56	2,114,230.31	32° 11' 55.452 N	103° 28' 4.090 W
11,600.0	90.00	0.25	11,000.0	871.2	567.7	11,691,328.55	2,114,229.33	32° 11' 56.441 N	103° 28' 4.084 W
11,700.0	90.00	0.26	11,000.0	971.2	568.2	11,691,428.55	2,114,228.36	32° 11' 57.431 N	103° 28' 4.079 W
11,800.0	90.00	0.27	11,000.0	1,071.2	568.7	11,691,528.54	2,114,227.40	32° 11' 58.420 N	103° 28' 4.074 W
11,900.0	90.00	0.28	11,000.0	1,171.2	569.2	11,691,628.54	2,114,226.47	32° 11' 59.410 N	103° 28' 4.068 W

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Well:	RAIDER FEDERAL COM 503H	**North Reference:**	True
Wellbore:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,000.0	90.00	0.29	11,000.0	1,271.2	569.7	11,691,728.53	2,114,225.55	32° 12' 0.400 N	103° 28' 4.062 W
12,100.0	90.00	0.30	11,000.0	1,371.2	570.2	11,691,828.53	2,114,224.65	32° 12' 1.389 N	103° 28' 4.056 W
12,200.0	90.00	0.31	11,000.0	1,471.2	570.7	11,691,928.53	2,114,223.77	32° 12' 2.379 N	103° 28' 4.050 W
12,300.0	90.00	0.32	11,000.0	1,571.2	571.3	11,692,028.52	2,114,222.90	32° 12' 3.369 N	103° 28' 4.043 W
12,400.0	90.00	0.33	11,000.0	1,671.2	571.9	11,692,128.52	2,114,222.05	32° 12' 4.358 N	103° 28' 4.036 W
12,500.0	90.00	0.34	11,000.0	1,771.2	572.4	11,692,228.51	2,114,221.22	32° 12' 5.348 N	103° 28' 4.029 W
12,600.0	90.00	0.35	11,000.0	1,871.2	573.1	11,692,328.51	2,114,220.41	32° 12' 6.338 N	103° 28' 4.022 W
12,700.0	90.00	0.36	11,000.0	1,971.2	573.7	11,692,428.51	2,114,219.62	32° 12' 7.327 N	103° 28' 4.015 W
12,800.0	90.00	0.37	11,000.0	2,071.2	574.3	11,692,528.51	2,114,218.84	32° 12' 8.317 N	103° 28' 4.007 W
12,900.0	90.00	0.38	11,000.0	2,171.2	575.0	11,692,628.50	2,114,218.08	32° 12' 9.307 N	103° 28' 4.000 W
13,000.0	90.00	0.39	11,000.0	2,271.2	575.7	11,692,728.50	2,114,217.33	32° 12' 10.296 N	103° 28' 3.992 W
13,100.0	90.00	0.40	11,000.0	2,371.2	576.4	11,692,828.50	2,114,216.61	32° 12' 11.286 N	103° 28' 3.984 W
13,200.0	90.00	0.41	11,000.0	2,471.2	577.1	11,692,928.49	2,114,215.90	32° 12' 12.275 N	103° 28' 3.975 W
13,300.0	90.00	0.42	11,000.0	2,571.2	577.8	11,693,028.49	2,114,215.21	32° 12' 13.265 N	103° 28' 3.967 W
13,400.0	90.00	0.43	11,000.0	2,671.2	578.6	11,693,128.49	2,114,214.54	32° 12' 14.255 N	103° 28' 3.958 W
13,500.0	90.00	0.44	11,000.0	2,771.2	579.3	11,693,228.49	2,114,213.88	32° 12' 15.244 N	103° 28' 3.949 W
13,600.0	90.00	0.45	11,000.0	2,871.2	580.1	11,693,328.49	2,114,213.24	32° 12' 16.234 N	103° 28' 3.940 W
13,700.0	90.00	0.46	11,000.0	2,971.2	580.9	11,693,428.48	2,114,212.62	32° 12' 17.224 N	103° 28' 3.930 W
13,800.0	90.00	0.47	11,000.0	3,071.2	581.7	11,693,528.48	2,114,212.02	32° 12' 18.213 N	103° 28' 3.921 W
13,900.0	90.00	0.48	11,000.0	3,171.2	582.6	11,693,628.48	2,114,211.43	32° 12' 19.203 N	103° 28' 3.911 W
14,000.0	90.00	0.49	11,000.0	3,271.2	583.4	11,693,728.48	2,114,210.86	32° 12' 20.193 N	103° 28' 3.901 W
14,100.0	90.00	0.50	11,000.0	3,371.2	584.3	11,693,828.48	2,114,210.31	32° 12' 21.182 N	103° 28' 3.891 W
14,200.0	90.00	0.51	11,000.0	3,471.2	585.2	11,693,928.48	2,114,209.78	32° 12' 22.172 N	103° 28' 3.881 W
14,300.0	90.00	0.52	11,000.0	3,571.2	586.1	11,694,028.47	2,114,209.26	32° 12' 23.161 N	103° 28' 3.870 W
14,400.0	90.00	0.53	11,000.0	3,671.2	587.0	11,694,128.47	2,114,208.76	32° 12' 24.151 N	103° 28' 3.859 W
14,500.0	90.00	0.54	11,000.0	3,771.2	588.0	11,694,228.47	2,114,208.28	32° 12' 25.141 N	103° 28' 3.848 W
14,600.0	90.00	0.55	11,000.0	3,871.2	588.9	11,694,328.47	2,114,207.82	32° 12' 26.130 N	103° 28' 3.837 W
14,700.0	90.00	0.56	11,000.0	3,971.2	589.9	11,694,428.47	2,114,207.37	32° 12' 27.120 N	103° 28' 3.826 W
14,800.0	90.00	0.57	11,000.0	4,071.2	590.9	11,694,528.47	2,114,206.94	32° 12' 28.109 N	103° 28' 3.814 W
14,900.0	90.00	0.58	11,000.0	4,171.2	591.9	11,694,628.47	2,114,206.53	32° 12' 29.099 N	103° 28' 3.802 W
15,000.0	90.00	0.59	11,000.0	4,271.1	592.9	11,694,728.47	2,114,206.14	32° 12' 30.089 N	103° 28' 3.790 W
15,100.0	90.00	0.60	11,000.0	4,371.1	594.0	11,694,828.47	2,114,205.76	32° 12' 31.078 N	103° 28' 3.778 W
15,200.0	90.00	0.61	11,000.0	4,471.1	595.1	11,694,928.47	2,114,205.40	32° 12' 32.068 N	103° 28' 3.766 W
15,300.0	90.00	0.62	11,000.0	4,571.1	596.1	11,695,028.47	2,114,205.06	32° 12' 33.057 N	103° 28' 3.753 W
15,400.0	90.00	0.63	11,000.0	4,671.1	597.2	11,695,128.46	2,114,204.74	32° 12' 34.047 N	103° 28' 3.740 W
15,500.0	90.00	0.64	11,000.0	4,771.1	598.4	11,695,228.46	2,114,204.43	32° 12' 35.037 N	103° 28' 3.727 W
15,600.0	90.00	0.65	11,000.0	4,871.1	599.5	11,695,328.46	2,114,204.14	32° 12' 36.026 N	103° 28' 3.714 W
15,700.0	90.00	0.66	11,000.0	4,971.1	600.6	11,695,428.46	2,114,203.87	32° 12' 37.016 N	103° 28' 3.700 W
15,800.0	90.00	0.67	11,000.0	5,071.1	601.8	11,695,528.46	2,114,203.61	32° 12' 38.005 N	103° 28' 3.687 W
15,900.0	90.00	0.68	11,000.0	5,171.1	603.0	11,695,628.46	2,114,203.38	32° 12' 38.995 N	103° 28' 3.673 W
16,000.0	90.00	0.69	11,000.0	5,271.1	604.2	11,695,728.46	2,114,203.16	32° 12' 39.985 N	103° 28' 3.659 W
16,100.0	90.00	0.70	11,000.0	5,371.1	605.4	11,695,828.46	2,114,202.95	32° 12' 40.974 N	103° 28' 3.645 W
16,200.0	90.00	0.71	11,000.0	5,471.1	606.7	11,695,928.46	2,114,202.77	32° 12' 41.964 N	103° 28' 3.630 W
16,300.0	90.00	0.72	11,000.0	5,571.1	607.9	11,696,028.46	2,114,202.60	32° 12' 42.953 N	103° 28' 3.616 W
16,400.0	90.00	0.73	11,000.0	5,671.1	609.2	11,696,128.46	2,114,202.45	32° 12' 43.943 N	103° 28' 3.601 W
16,500.0	90.00	0.74	11,000.0	5,771.0	610.5	11,696,228.46	2,114,202.32	32° 12' 44.933 N	103° 28' 3.586 W
16,600.0	90.00	0.75	11,000.0	5,871.0	611.8	11,696,328.46	2,114,202.21	32° 12' 45.922 N	103° 28' 3.570 W
16,700.0	90.00	0.76	11,000.0	5,971.0	613.1	11,696,428.46	2,114,202.11	32° 12' 46.912 N	103° 28' 3.555 W
16,800.0	90.00	0.77	11,000.0	6,071.0	614.5	11,696,528.46	2,114,202.03	32° 12' 47.901 N	103° 28' 3.539 W
16,900.0	90.00	0.78	11,000.0	6,171.0	615.8	11,696,628.46	2,114,201.97	32° 12' 48.891 N	103° 28' 3.523 W
17,000.0	90.00	0.79	11,000.0	6,271.0	617.2	11,696,728.46	2,114,201.92	32° 12' 49.880 N	103° 28' 3.507 W
17,100.0	90.00	0.80	11,000.0	6,371.0	618.6	11,696,828.46	2,114,201.89	32° 12' 50.870 N	103° 28' 3.491 W
17,200.0	90.00	0.81	11,000.0	6,471.0	620.0	11,696,928.46	2,114,201.88	32° 12' 51.860 N	103° 28' 3.475 W
17,300.0	90.00	0.82	11,000.0	6,571.0	621.4	11,697,028.46	2,114,201.89	32° 12' 52.849 N	103° 28' 3.458 W
17,400.0	90.00	0.83	11,000.0	6,671.0	622.9	11,697,128.46	2,114,201.92	32° 12' 53.839 N	103° 28' 3.441 W

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Survey Report - Geographic

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Well:	RAIDER FEDERAL COM 503H	**North Reference:**	True
Wellbore:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP0	**Database:**	Centennial EDM SQL Server

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
17,500.0	90.00	0.84	11,000.0	6,770.9	624.4	11,697,228.46	2,114,201.96	32° 12' 54.828 N	103° 28' 3.424 W
17,600.0	90.00	0.85	11,000.0	6,870.9	625.8	11,697,328.46	2,114,202.02	32° 12' 55.818 N	103° 28' 3.407 W
17,700.0	90.00	0.86	11,000.0	6,970.9	627.3	11,697,428.46	2,114,202.09	32° 12' 56.807 N	103° 28' 3.389 W
17,800.0	90.00	0.87	11,000.0	7,070.9	628.9	11,697,528.46	2,114,202.19	32° 12' 57.797 N	103° 28' 3.371 W
17,900.0	90.00	0.88	11,000.0	7,170.9	630.4	11,697,628.46	2,114,202.30	32° 12' 58.786 N	103° 28' 3.354 W
18,000.0	90.00	0.89	11,000.0	7,270.9	631.9	11,697,728.46	2,114,202.43	32° 12' 59.776 N	103° 28' 3.335 W
18,100.0	90.00	0.90	11,000.0	7,370.9	633.5	11,697,828.46	2,114,202.58	32° 13' 0.765 N	103° 28' 3.317 W
18,160.1	90.00	0.91	11,000.0	7,431.0	634.5	11,697,888.57	2,114,202.67	32° 13' 1.360 N	103° 28' 3.306 W
18,200.0	90.00	0.91	11,000.0	7,470.9	635.1	11,697,928.46	2,114,202.74	32° 13' 1.755 N	103° 28' 3.299 W
18,300.0	90.00	0.91	11,000.0	7,570.9	636.7	11,698,028.46	2,114,202.91	32° 13' 2.745 N	103° 28' 3.280 W
18,400.0	90.00	0.91	11,000.0	7,670.8	638.3	11,698,128.46	2,114,203.07	32° 13' 3.734 N	103° 28' 3.262 W
18,500.0	90.00	0.91	11,000.0	7,770.8	639.9	11,698,228.46	2,114,203.24	32° 13' 4.724 N	103° 28' 3.243 W
18,600.0	90.00	0.91	11,000.0	7,870.8	641.5	11,698,328.46	2,114,203.41	32° 13' 5.713 N	103° 28' 3.224 W
18,700.0	90.00	0.91	11,000.0	7,970.8	643.1	11,698,428.46	2,114,203.57	32° 13' 6.703 N	103° 28' 3.206 W
18,800.0	90.00	0.91	11,000.0	8,070.8	644.6	11,698,528.46	2,114,203.74	32° 13' 7.692 N	103° 28' 3.187 W
18,900.0	90.00	0.91	11,000.0	8,170.8	646.2	11,698,628.46	2,114,203.90	32° 13' 8.682 N	103° 28' 3.169 W
19,000.0	90.00	0.91	11,000.0	8,270.8	647.8	11,698,728.46	2,114,204.07	32° 13' 9.671 N	103° 28' 3.150 W
19,100.0	90.00	0.91	11,000.0	8,370.8	649.4	11,698,828.46	2,114,204.24	32° 13' 10.661 N	103° 28' 3.132 W
19,200.0	90.00	0.91	11,000.0	8,470.7	651.0	11,698,928.46	2,114,204.40	32° 13' 11.650 N	103° 28' 3.113 W
19,300.0	90.00	0.91	11,000.0	8,570.7	652.6	11,699,028.46	2,114,204.57	32° 13' 12.640 N	103° 28' 3.095 W
19,400.0	90.00	0.91	11,000.0	8,670.7	654.2	11,699,128.46	2,114,204.74	32° 13' 13.629 N	103° 28' 3.076 W
19,500.0	90.00	0.91	11,000.0	8,770.7	655.8	11,699,228.46	2,114,204.90	32° 13' 14.619 N	103° 28' 3.058 W
19,600.0	90.00	0.91	11,000.0	8,870.7	657.4	11,699,328.46	2,114,205.07	32° 13' 15.608 N	103° 28' 3.039 W
19,700.0	90.00	0.91	11,000.0	8,970.7	658.9	11,699,428.46	2,114,205.23	32° 13' 16.598 N	103° 28' 3.021 W
19,800.0	90.00	0.91	11,000.0	9,070.7	660.5	11,699,528.46	2,114,205.40	32° 13' 17.588 N	103° 28' 3.002 W
19,900.0	90.00	0.91	11,000.0	9,170.7	662.1	11,699,628.46	2,114,205.57	32° 13' 18.577 N	103° 28' 2.983 W
20,000.0	90.00	0.91	11,000.0	9,270.6	663.7	11,699,728.46	2,114,205.73	32° 13' 19.567 N	103° 28' 2.965 W
20,100.0	90.00	0.91	11,000.0	9,370.6	665.3	11,699,828.46	2,114,205.90	32° 13' 20.556 N	103° 28' 2.946 W
20,200.0	90.00	0.91	11,000.0	9,470.6	666.9	11,699,928.46	2,114,206.06	32° 13' 21.546 N	103° 28' 2.928 W
20,300.0	90.00	0.91	11,000.0	9,570.6	668.5	11,700,028.46	2,114,206.23	32° 13' 22.535 N	103° 28' 2.909 W
20,400.0	90.00	0.91	11,000.0	9,670.6	670.1	11,700,128.46	2,114,206.40	32° 13' 23.525 N	103° 28' 2.891 W
20,500.0	90.00	0.91	11,000.0	9,770.6	671.7	11,700,228.46	2,114,206.56	32° 13' 24.514 N	103° 28' 2.872 W
20,600.0	90.00	0.91	11,000.0	9,870.6	673.3	11,700,328.46	2,114,206.73	32° 13' 25.504 N	103° 28' 2.854 W
20,700.0	90.00	0.91	11,000.0	9,970.6	674.8	11,700,428.46	2,114,206.90	32° 13' 26.493 N	103° 28' 2.835 W
20,800.0	90.00	0.91	11,000.0	10,070.5	676.4	11,700,528.46	2,114,207.06	32° 13' 27.483 N	103° 28' 2.817 W
20,881.6	90.00	0.91	11,000.0	10,152.1	677.7	11,700,610.02	2,114,207.20	32° 13' 28.290 N	103° 28' 2.801 W

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
LTP/BHL - RAIDER FED - plan hits target center - Point	0.00	0.00	11,000.0	10,152.1	677.7	11,700,610.02	2,114,207.20	32° 13' 28.290 N	103° 28' 2.801 W
FTP - RAIDER FED COI - plan misses target center by 445.3usft at 10800.0usft MD (10754.7 TVD, 152.4 N, 564.8 E) - Circle (radius 50.0)	0.00	0.00	11,000.0	-200.9	680.1	11,690,258.14	2,114,356.93	32° 11' 45.831 N	103° 28' 2.777 W

Checked By: _____ Approved By: _____ Date: _____

CENTENNIAL
RESOURCE DEVELOPMENT, INC

NEW MEXICO

LEA
RAIDER FEDERAL
RAIDER FEDERAL COM 503H

RAIDER FEDERAL COM 503H
PWP0

Anticollision Summary Report

05 February, 2019

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Anticollision Summary Report

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Reference Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	RAIDER FEDERAL COM 503H	**Database:**	Centennial EDM SQL Server
Reference Design:	PWP0	**Offset TVD Reference:**	Offset Datum

Reference	PWP0		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 2/5/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,881.1	PWP0 (RAIDER FEDERAL COM 503H)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

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
PIRATE FEDERAL						
PIRATE FEDERAL COM 102H - PIRATE FEDERAL COM	9,300.0	19,253.5	545.6	429.3	4.691	SF
PIRATE FEDERAL COM 102H - PIRATE FEDERAL COM	9,333.1	19,253.5	544.6	428.6	4.693	CC, ES
RAIDER FEDERAL						
RAIDER FEDERAL 501H - RAIDER FEDERAL 501H - P	2,000.0	2,000.0	60.0	46.1	4.318	CC, ES
RAIDER FEDERAL 501H - RAIDER FEDERAL 501H - P	2,100.0	2,098.9	61.7	47.1	4.231	SF
RAIDER FEDERAL COM 101H - RAIDER FEDERAL CO	9,405.8	13,734.9	87.3	5.8	1.071	Level 2, CC, ES, SF
RAIDER FEDERAL COM 502H - RAIDER FEDERAL CO	2,000.0	2,000.0	30.0	16.1	2.157	CC, ES
RAIDER FEDERAL COM 502H - RAIDER FEDERAL CO	2,100.0	2,100.0	30.8	16.2	2.112	SF
RAIDER FEDERAL COM 703H - RAIDER FEDERAL CO	5,897.8	5,902.5	120.9	79.5	2.916	CC, ES
RAIDER FEDERAL COM 703H - RAIDER FEDERAL CO	6,000.0	6,002.2	122.5	80.3	2.903	SF
RAIDER FEDERAL COM 704H - RAIDER FEDERAL CO	8,540.5	8,512.3	155.6	95.6	2.591	CC
RAIDER FEDERAL COM 704H - RAIDER FEDERAL CO	8,600.0	8,571.7	155.9	95.4	2.577	ES
RAIDER FEDERAL COM 704H - RAIDER FEDERAL CO	8,700.0	8,671.4	157.4	96.2	2.573	SF

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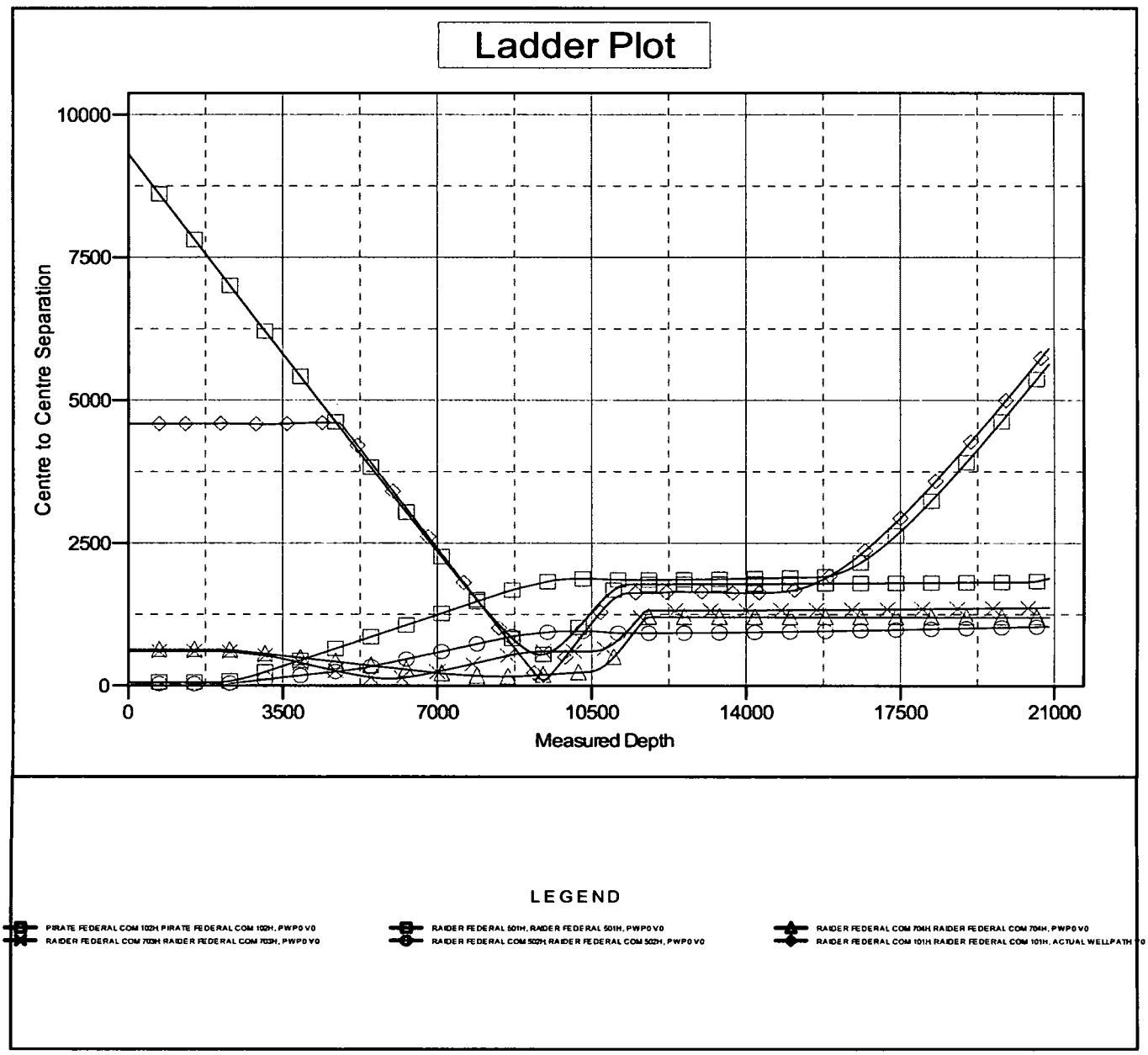
Anticollision Summary Report

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Reference Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	RAIDER FEDERAL COM 503H	**Database:**	Centennial EDM SQL Server
Reference Design:	PWP0	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB=3498+25 @ 3523.0usft	Coordinates are relative to: RAIDER FEDERAL COM 503H
Offset Depths are relative to Offset Datum	Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N
Central Meridian is 105° 0' 0.000 W	Grid Convergence at Surface is: 0.82°



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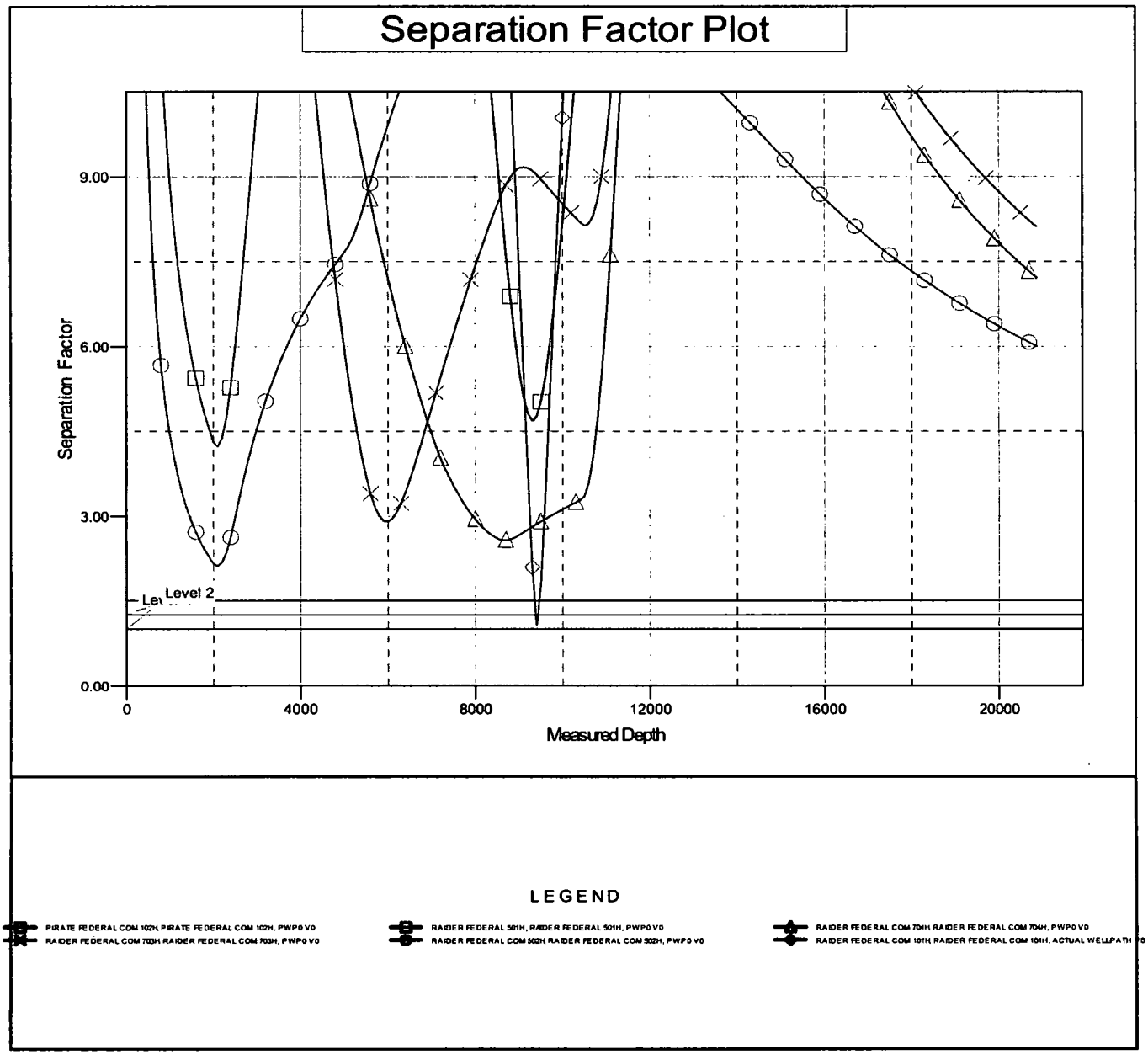
Anticollision Summary Report

Company:	NEW MEXICO	**Local Co-ordinate Reference:**	Well RAIDER FEDERAL COM 503H
Project:	LEA	**TVD Reference:**	RKB=3498+25 @ 3523.0usft
Reference Site:	RAIDER FEDERAL	**MD Reference:**	RKB=3498+25 @ 3523.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	RAIDER FEDERAL COM 503H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	RAIDER FEDERAL COM 503H	**Database:**	Centennial EDM SQL Server
Reference Design:	PWP0	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB=3498+25 @ 3523.0usft	Coordinates are relative to: RAIDER FEDERAL COM 503H
Offset Depths are relative to Offset Datum	Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N
Central Meridian is 105° 0' 0.000 W	Grid Convergence at Surface is: 0.82°

Separation Factor Plot



- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°:	504	
PURCHASER:	ContiTech Oil & Marine Corp.			P.O. N°:	4500409659	
CONTITECH RUBBER order N°:	538236	HOSE TYPE:	3" ID	Choke and Kill Hose		
HOSE SERIAL N°:	67255	NOMINAL / ACTUAL LENGTH:		10,67 m / 10,77 m		
W.P. 68,9 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration:	60	min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 20 MPa

COUPLINGS Type	Serial N°		Quality	Heat N°
3" coupling with	9251	9254	AISI 4130	A0579N
4 1/16" 10K API b.w. Flange end			AISI 4130	035608

Not Designed For Well Testing

API Spec 16 C

Temperature rate:"B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

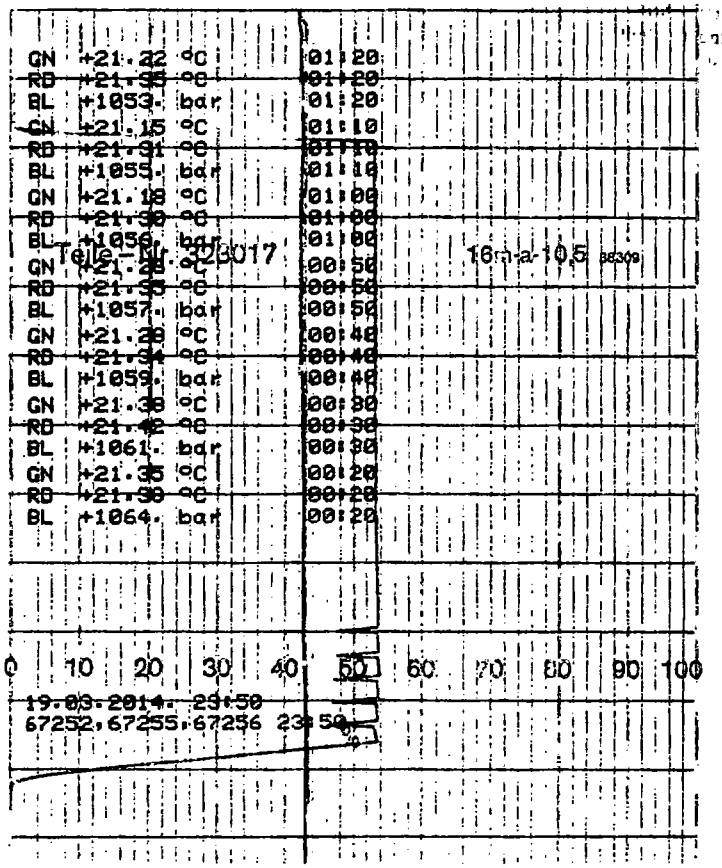
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

Date:	Inspector	Quality Control
20. March 2014.		ContiTech Rubber Industrial Kft. Quality Control Dept.

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE *No: 501, 504, 505*

Page: 1 / 1



Hose Data Sheet

CRI Order No.	538236
Customer	ContiTech Oil & Marine Corp.
Customer Order No	4500409659
Item No.	1
Hose Type	Flexible Hose
Standard	**API SPEC 16 C**
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
Type of coupling other end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St.steel outer wrap
Internal stripwound tube	No
Lining	OIL + GAS RESISTANT SOUR
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max.design temperature [°C]	100
Min.design temperature [°C]	-20
Min. Bend Radius operating [m]	0,90
Min. Bend Radius storage [m]	0,90
Electrical continuity	The Hose is electrically continuous
Type of packing	WOODEN CRATE ISPM-15

APD ID: 10400039801 **Submission Date:** 03/22/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Existing_Roads_Maps_20190307130554.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** YES

ROW ID(s)

ID: State ROW

Do the existing roads need to be improved? YES

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Existing_Road_Improvement_20180920102027.pdf

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

New_Roads_Map_20190307131418.pdf

New road type: RESOURCE

Length: 28.98 Feet **Width (ft.):** 30

Max slope (%): 2 **Max grade (%):** 8

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 20

New road access erosion control: Drainage and erosion will be constantly monitored to prevent compromising the road integrity and to protect the surrounding native topography

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 4

Offsite topsoil source description:

Onsite topsoil removal process: Equipment will be used to strip 4 inches in depth and stockpile, utilizing berms for run-off

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Drainage control will be ditches

Road Drainage Control Structures (DCS) description:

Road Drainage Control Structures (DCS) attachment:

TYPICAL_ACCESS_CROSS_SECTIONS_20180920102337.pdf

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Existing_Wells_List_20190307131631.pdf
Existing_Wells_20190307131631.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Handles/Separates Gas, Oil, and Water

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Production Facilities map:

Production_Facilities_Plat_20190307132208.pdf

Raider_Federal_703H_704H_503H_Comingle_FAC_Plan_20190322124731.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: OTHER

Water source type: OTHER

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 350000

Source volume (acre-feet): 45.112583

Source volume (gal): 14700000

Water source and transportation map:

Raider_water_map_source_20190322125708.pdf

Water source comments: Temporary surface lines will be used to transport water for drilling and completion operations from the Calico Jack Pit to the Raider Pad.

New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be hauled from the existing "Madera Caliche" pit located in SENW, Section 6, T25S, R35E. Pit has been identified for use in the attached exhibit. Any native caliche on the proposed site can be used by "flipping" the location and using all native soils.
Construction Materials source location attachment:

Raider_Caliche_Source_Map_20180920103033.pdf

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: General trash/garbage

Amount of waste: 5000 pounds

Waste disposal frequency : Weekly

Safe containment description: Enclosed trash trailer

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Haul to commercial facility

Waste type: SEWAGE

Waste content description: Grey Water/Human Waste

Amount of waste: 5000 gallons

Waste disposal frequency : Weekly

Safe containment description: Approved waste storage tanks with containment

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Haul to commercial facility

Waste type: DRILLING

Waste content description: Fresh water based drilling fluid

Amount of waste: 1500 barrels

Waste disposal frequency : Weekly

Safe containment description: Steel tanks with plastic-lined containment berms

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL **Disposal location ownership:** COMMERCIAL FACILITY

Disposal type description:

Disposal location description: Haul to commercial facility

Waste type: DRILLING

Waste content description: Brine water based drilling fluid

Amount of waste: 1500 barrels

Waste disposal frequency : Monthly

Safe containment description: Steel tanks with plastic-lined containment berms

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL **Disposal location ownership:** COMMERCIAL FACILITY

Disposal type description:

Disposal location description: Haul to commercial facility

Waste type: DRILLING

Waste content description: Drill cuttings

Amount of waste: 1500 barrels

Waste disposal frequency : Monthly

Safe containment description: Steel tanks

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL **Disposal location ownership:** COMMERCIAL FACILITY

Disposal type description:

Disposal location description: Haul to commercial facility

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Cuttings will be stored on site in steel tanks and hauled to an appropriate commercial facility when drilling operations are complete

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Raider_Federal_501H_Well_Site_Layout_20190307132451.pdf

Comments:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** RAIDER PAD

Multiple Well Pad Number: 501

Recontouring attachment:

IR_Map_20190307132530.pdf

Drainage/Erosion control construction: Drainage and erosion will be constantly monitored to prevent compromising the well site integrity, and to protect the surrounding native topography.

Drainage/Erosion control reclamation: Upon reclamation, well site will be returned to its native contour. Water breaks will be added if needed, to prevent unnatural erosion and loss of vegetation.

Wellpad long term disturbance (acres): 2 **Wellpad short term disturbance (acres):** 3.138

Access road long term disturbance (acres): 0.04 **Access road short term disturbance (acres):** 0.04

Pipeline long term disturbance (acres): 0 **Pipeline short term disturbance (acres):** 0

Other long term disturbance (acres): 0 **Other short term disturbance (acres):** 0

Total long term disturbance: 2.04 **Total short term disturbance:** 3.178

Disturbance Comments: Onsite done for this pad on 7/24/18 with Matthew Wirth.

Reconstruction method: Come back in with heavy equipment, remove caliche in the reclamation area, and replace with native topsoil. Reconstruction of pad will occur once all wells on location have been drilled and completed.

Topsoil redistribution: Surface disturbance will be limited to well site surveyed dimensions. Topsoil will be stored along the west edge of the pad site.

Soil treatment: Native caliche will be used in the initial construction of the well pad. Pad will be compacted using fresh water, dust control measures will be implemented as needed.

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Coral **Last Name:** Richline

Phone: (432)315-0119 **Email:** Coral.Richline@cdevinc.com

Seedbed prep: Prepare a 3-5 inch deep seedbed, with the top 3-4 inches consisting of topsoil.

Seed BMP: Seeding will be done in the proper season, and monitored for the re-establishment of native vegetation.

Seed method: Broadcast

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: Spray for noxious weeds and bare ground as needed.

Weed treatment plan attachment:

Monitoring plan description: All disturbed areas will be closely monitored for any primary or secondary noxious weeds.

Should any be found, chemical spraying in accordance with state regulations will be implemented.

Monitoring plan attachment:

Success standards: No primary or secondary noxious weed will be allowed. Vegetation will be returned to its native standard.

Pit closure description: No open pits will be constructed.

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: PIPELINE

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: OTHER

Describe: Power Line

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite Information: Onsite conducted with Matthew Wirth on 7/24/18.

Other SUPO Attachment

Arch_Survey_Boundary_20190307132717.pdf

PROCEED IN A WESTERLY, THEN NORTHWESTERLY, THEN WESTERLY DIRECTION FROM JAL, NEW MEXICO ALONG NM-128 APPROXIMATELY 18.0 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTH; TURN LEFT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 0.1 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD FOR THE SOLOMON FEDERAL COM 709H, 710H, 711H & SHEBA FEDERAL COM 506H, 507H TO THE SOUTH; FOLLOW ROAD FLAGS IN A SOUTHERLY, THEN SOUTHEASTERLY, THEN SOUTHERLY DIRECTION APPROXIMATELY 5,757' TO THE JUNCTION OF THIS ROAD AND THE BEGINNING OF THE PROPOSED ACCESS ROAD FOR THE RAIDER FEDERAL COM #701H & #702H TO THE WEST; FOLLOW ROAD FLAGS IN A WESTERLY DIRECTION APPROXIMATELY 2,603' TO THE BEGINNING OF THE PROPOSED ACCESS ROAD TO THE NORTH; FOLLOW ROAD FLAGS IN A NORTHERLY DIRECTION APPROXIMATELY 62' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM JAL, NEW MEXICO TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 19.7 MILES.

REV: 1 12-08-18 C.D. (ADD #503H & PAD LAYOUT CHANGE)

CENTENNIAL RESOURCE PRODUCTION, LLC

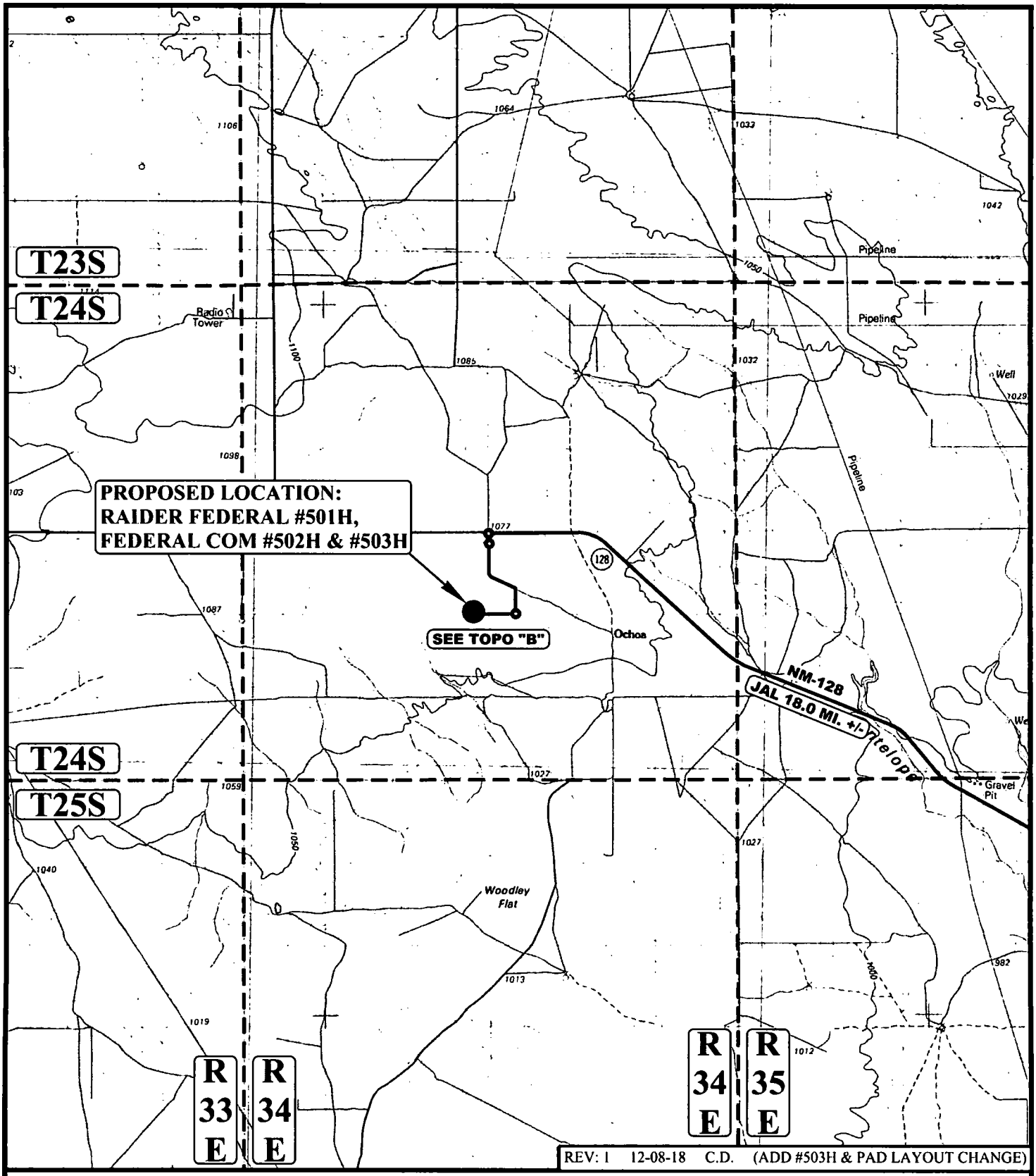
RAIDER FEDERAL #501H,
FEDERAL COM #502H & #503H
SE 1/4 SE 1/4 SECTION 21, T24S, R34E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-13-18	
DRAWN BY	J.A.	07-18-18	

ROAD DESCRIPTION

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



REV: 1 12-08-18 C.D. (ADD #503H & PAD LAYOUT CHANGE)

LEGEND:

● PROPOSED LOCATION

N

CENTENNIAL RESOURCE PRODUCTION, LLC

RAIDER FEDERAL #501H,
FEDERAL COM #502H & #503H
SE 1/4 SE 1/4 SECTION 21, T24S, R34E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.A.	07-18-18	1 : 100,000

ACCESS ROAD MAP **TOPO A**

UINTAH ENGINEERING & LAND SURVEYING

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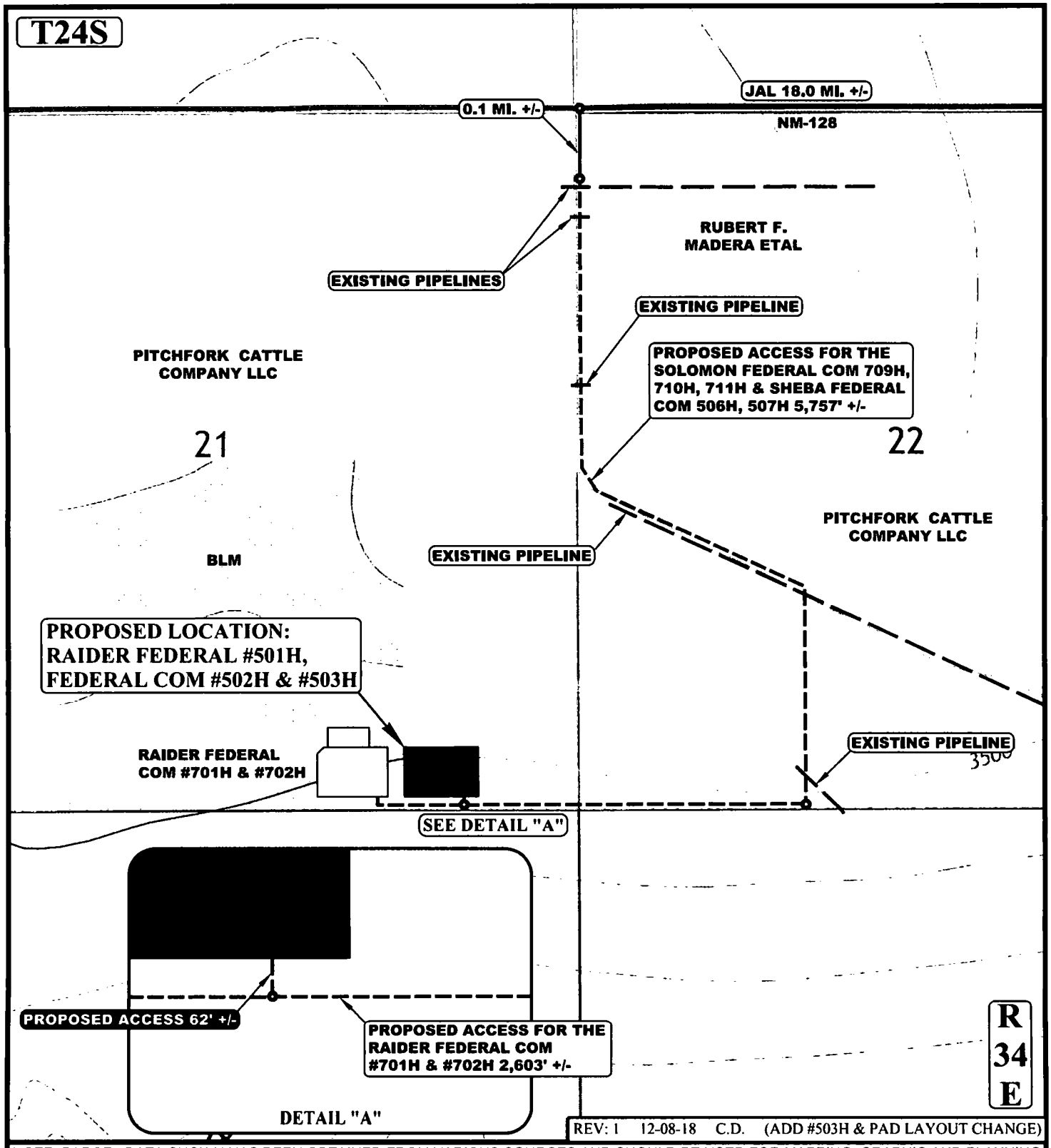

REV: 1 12-08-18 C.D. (ADD #503H & PAD LAYOUT CHANGE)

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LEGEND:

- EXISTING ROAD
- PROPOSED ROAD
- PROPOSED ROAD (SERVICING OTHER WELLS)
- EXISTING PIPELINE

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

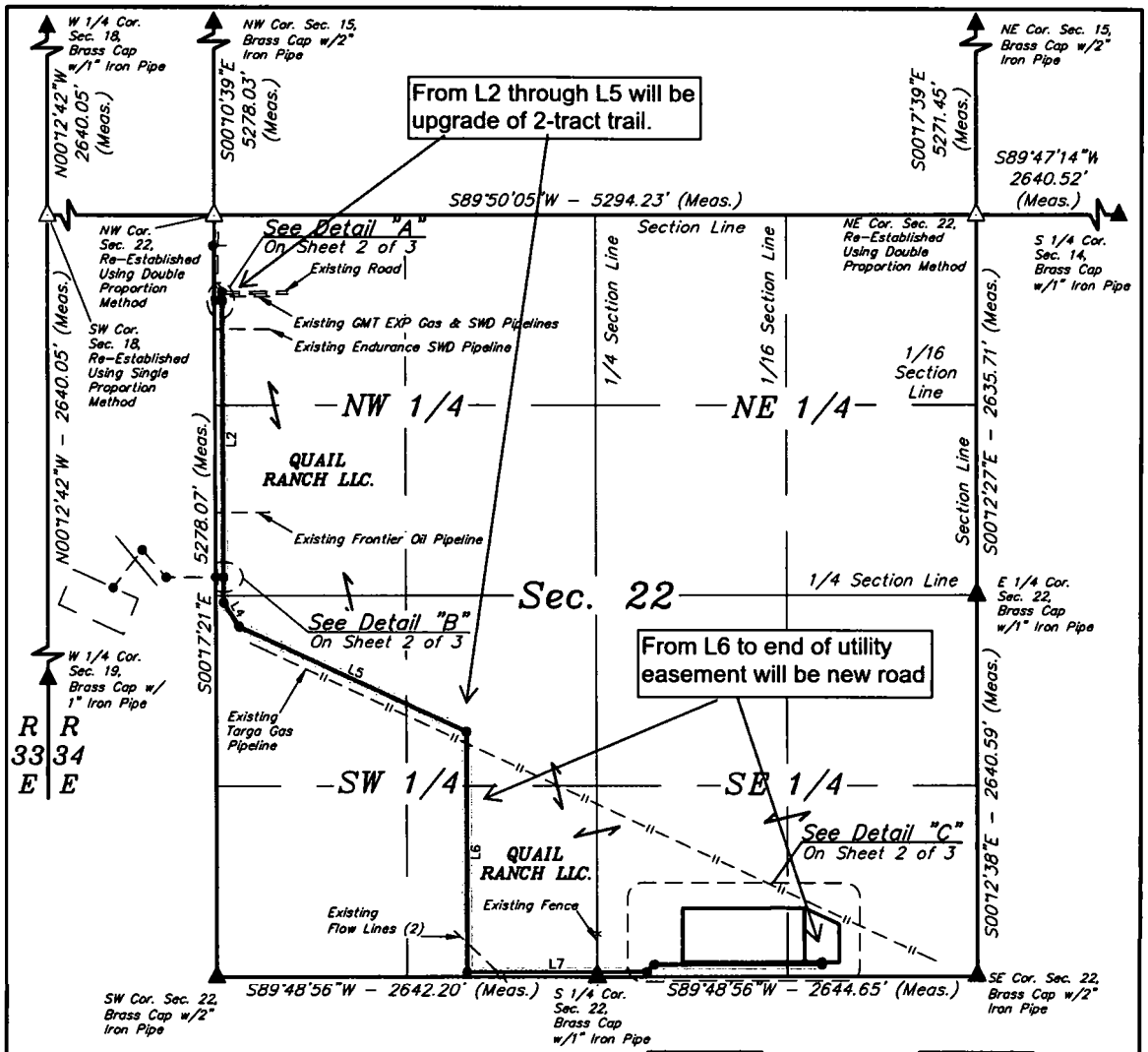
N

CENTENNIAL RESOURCE PRODUCTION, LLC

RAIDER FEDERAL #501H,
FEDERAL COM #502H & #503H
SE 1/4 SE 1/4 SECTION 21, T24S, R34E, N.M.P.M.
LEA COUNTY, NEW MEXICO

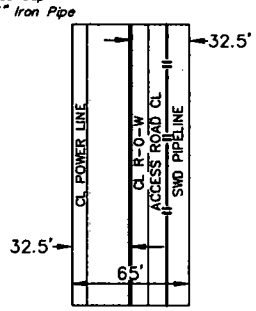
SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.A.	07-18-18	1 : 12,000

ACCESS ROAD MAP **TOPO B**

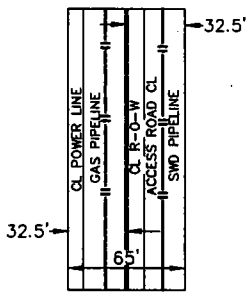


1000' 500' 0' 1000'

LINE TABLE			
LINE	DIRECTION	LENGTH	RODS
L1	S00°17'18"E	60.60'	3.67
L2	S00°17'18"E	1914.08'	116.00
L3	S00°17'18"E	176.04'	10.67
L4	S32°46'31"E	198.44'	12.03
L5	S65°23'25"E	1740.08'	105.46
L6	S00°17'18"E	1662.80'	100.78
L7	N89°48'56"E	1246.89'	75.57
L8	N44°51'14"E	74.30'	4.50
L9	N89°48'56"E	1163.58'	70.52
L10	N00°11'04"W	15.18'	0.92
L13	N89°41'45"E	53.86'	3.26
L14	N89°59'14"W	53.84'	3.26



TYPICAL RIGHT-OF-WAY DETAIL L1-L2
NO SCALE



TYPICAL RIGHT-OF-WAY DETAIL L9-L10
NO SCALE

PRELIMINARY

THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED, VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.
DATE: 09-11-18

FILE: 64303-B1

Sheet 1 of 3

▲ = SECTION CORNERS LOCATED.

REV: 01 09-11-18 J.P.P. (OWNERSHIP NAME CHANGE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

CENTENNIAL RESOURCE PRODUCTION, LLC

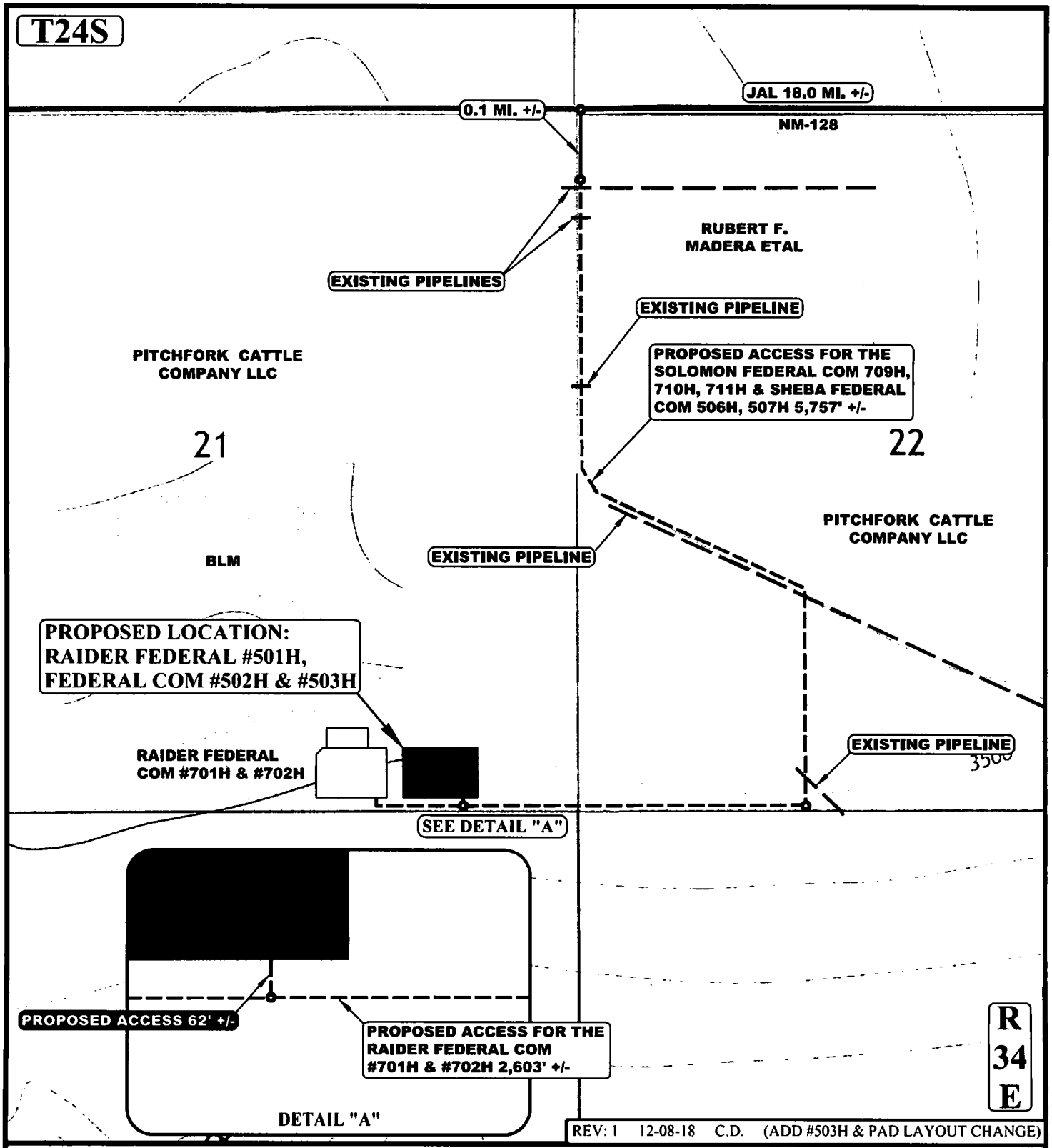
SOLOMON FEDERAL COM 709H, 710H, 711H & SHEBA FEDERAL COM 506H, 507H ON QUAIL RANCH LLC. LANDS IN SECTION 22, T24S, R34E, N.M.P.M. LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-12-18	SCALE
DRAWN BY	J.P.P.	07-19-18	1" = 1000'

POWER LINE, GAS, UTILITY EASEMENTS

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



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LEGEND:

- EXISTING ROAD
- PROPOSED ROAD
- PROPOSED ROAD (SERVICING OTHER WELLS)
- EXISTING PIPELINE

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

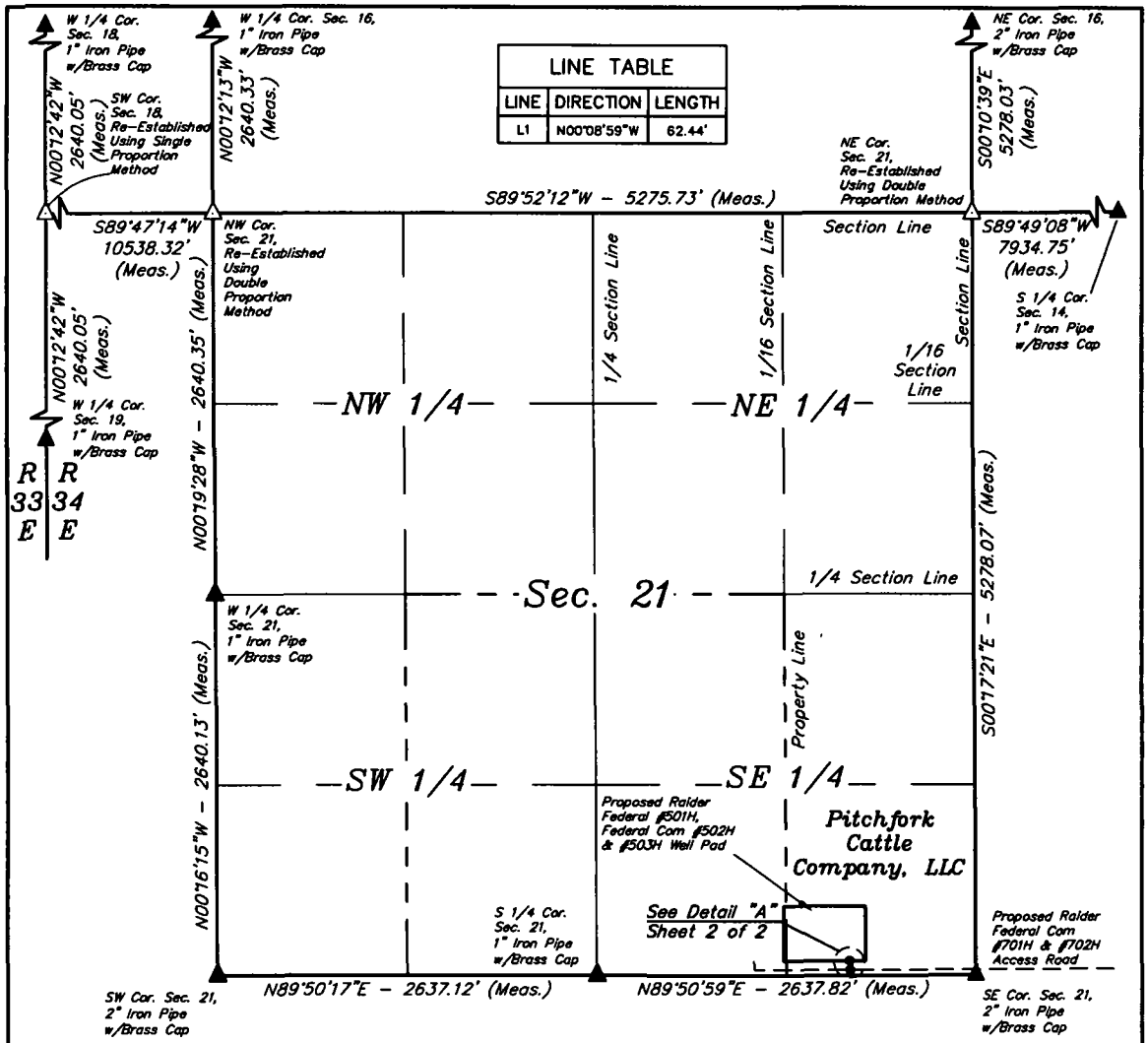
N

CENTENNIAL RESOURCE PRODUCTION, LLC

**RAIDER FEDERAL #501H,
FEDERAL COM #502H & #503H
SE 1/4 SE 1/4 SECTION 21, T24S, R34E, N.M.P.M.
LEA COUNTY, NEW MEXICO**

SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.A.	07-18-18	1 : 12,000

ACCESS ROAD MAP TOPO B

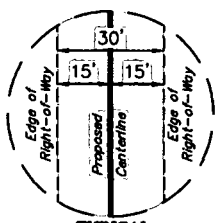


LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N00°08'59"W	62.44'

1000' 500' 0' 1000'

ACREAGE / LENGTH TABLE			
OWNERSHIP	FEET	RODS	ACRES
Pitchfork Cattle Company, LLC	62.44	3.78	0.043

▲ = SECTION CORNERS LOCATED.
△ = SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground.)



TYPICAL RIGHT-OF-WAY DETAIL
NO SCALE

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
12-08-18
PROFESSIONAL SURVEYOR

Sheet 1 of 2

FILE: 64264-A | REV: 1 12-09-18 C.D. (NAME & PAD LAYOUT CHANGE)

NOTES:
- The maximum grade of existing ground for the proposed access road is ±1.05%.
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

CENTENNIAL RESOURCE PRODUCTION, LLC

RAIDER FEDERAL #501H, FEDERAL COM #502H & #503H ON PITCHFORK CATTLE COMPANY, LLC LANDS IN SECTION 21, T24S, R34E, N.M.P.M. LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.N.	07-13-18	1" = 1000'

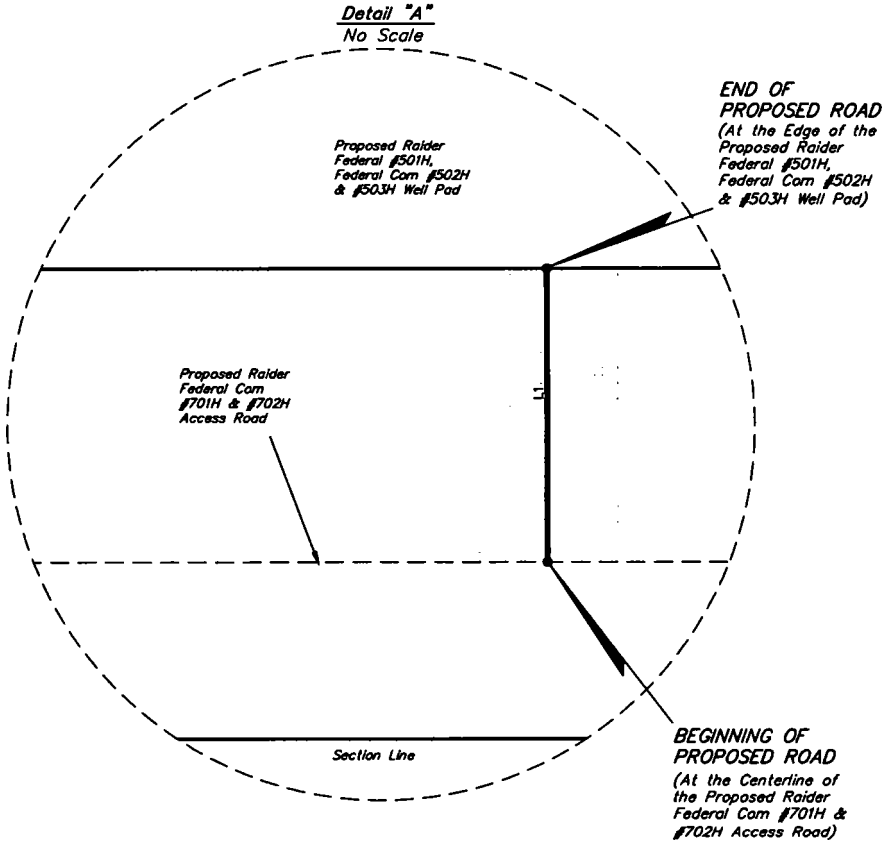
ACCESS ROAD R-O-W

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017
UINTAH ENGINEERING & LAND SURVEYING

ROAD RIGHT-OF-WAY DESCRIPTION

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE SE 1/4 SE 1/4 OF SECTION 21, T24S, R34E, N.M.P.M., WHICH BEARS N87°41'56"W 881.53' FROM THE SOUTHEAST CORNER OF SAID SECTION 21, THENCE N00°08'59"W 62.44' TO A POINT IN THE SE 1/4 SE 1/4 OF SAID SECTION 21, WHICH BEARS N83°39'47"W 886.40' FROM THE SOUTHEAST CORNER OF SAID SECTION 21. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 0.043 ACRES MORE OR LESS.



CERTIFICATE

THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

STATE OF NEW MEXICO
23782
PROFESSIONAL SURVEYOR
12-08-18

BEGINNING OF ROAD BEARS N87°41'56"W 881.53' FROM THE SOUTHEAST CORNER OF SECTION 21, T24S, R34E, N.M.P.M.

END OF ROAD BEARS N83°39'47"W 886.40' FROM THE SOUTHEAST CORNER OF SECTION 21, T24S, R34E, N.M.P.M.

FILE: 64264-B

Sheet 2 of 2

REV: 1 12-09-18 C.D. (NAME & PAD LAYOUT CHANGE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

CENTENNIAL RESOURCE PRODUCTION, LLC

RAIDER FEDERAL #501H, FEDERAL COM #502H & #503H ON PITCHFORK CATTLE COMPANY, LLC LANDS IN SECTION 21, T24S, R34E, N.M.P.M. LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.N.	07-13-18	N/A

ACCESS ROAD R-O-W

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

CENTENNIAL RESOURCE PRODUCTION, LLC

SHEET: 1
DATE: 02-08-2018

GEOMETRIC SPECIFICATIONS

GRAVEL SPECIFICATION:

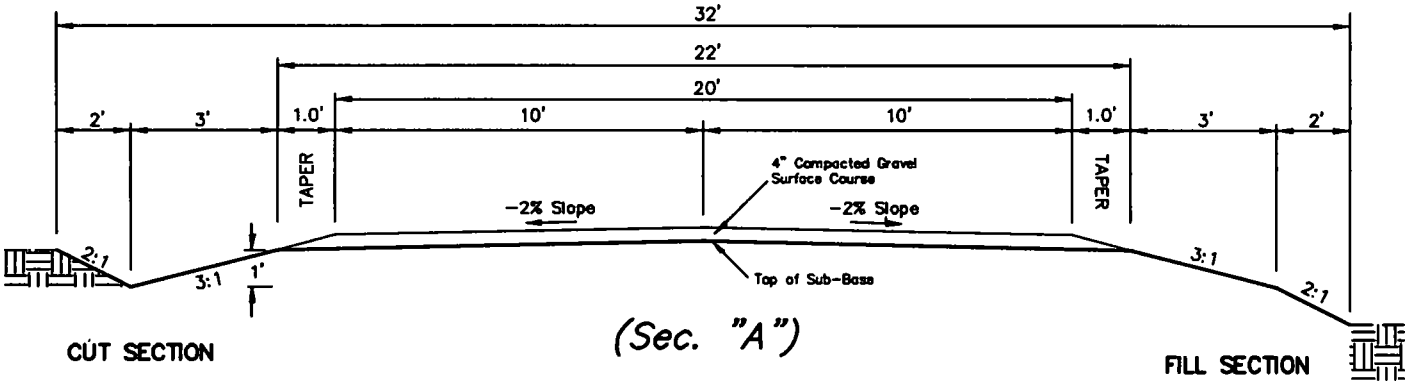
3" minus pit run gravel (AASHTO M145-49 A-1-a Soil)

Do not place gravel on road until Inspector/Engineer has approved the sub-grade.

Place gravel to full widened width on turnouts, curve widening, and intersection flares.

TYPICAL CROSS SECTIONS

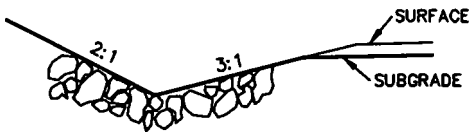
(for Proposed Access Road)



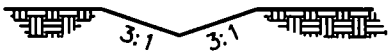
CUT SECTION

(Sec. "A")

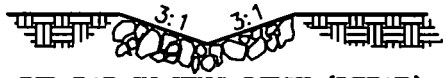
FILL SECTION



RIP RAP IN BAR DITCH
(Only Where Specified)



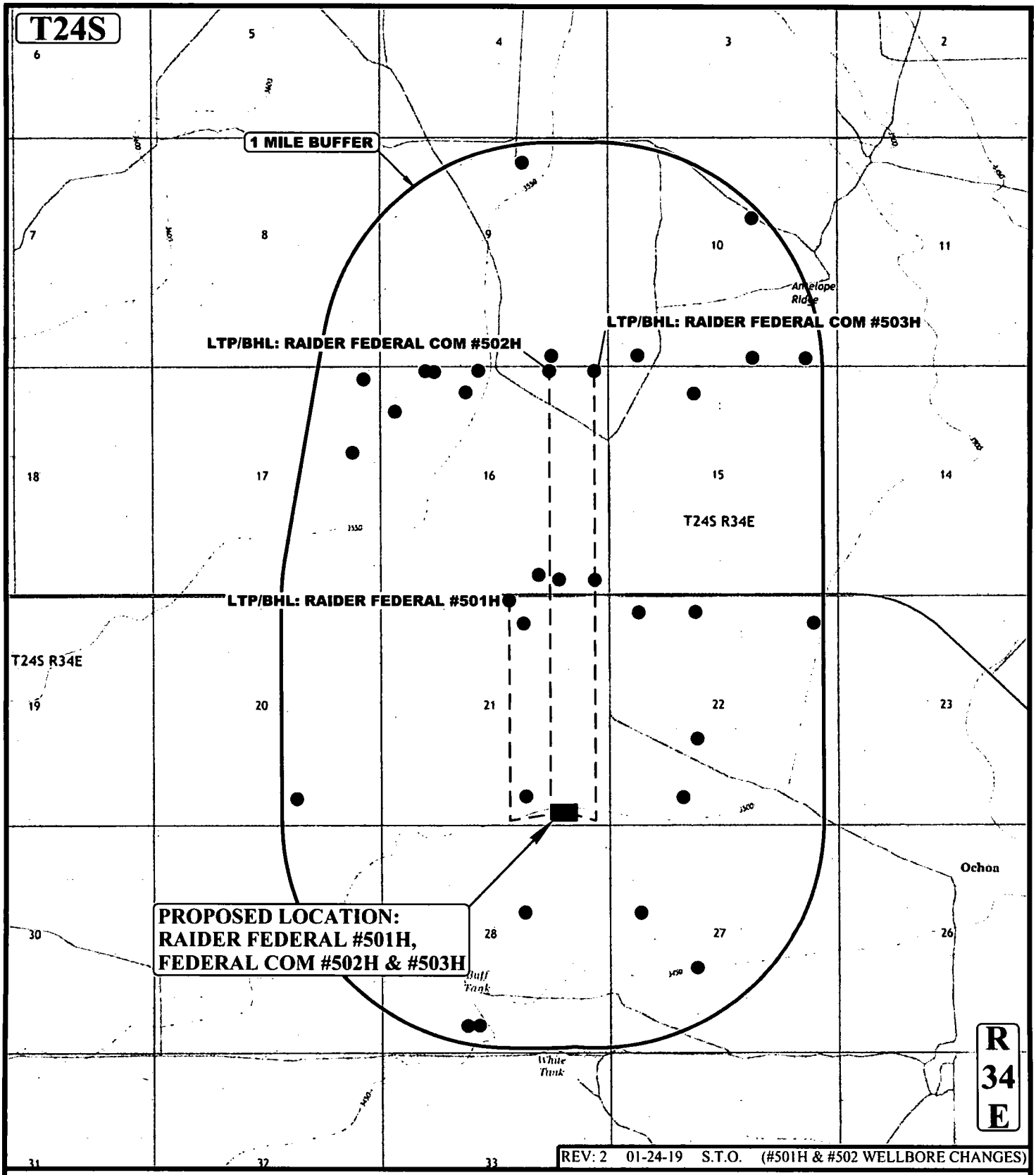
WING DITCH (DETAIL)



RIP RAP IN WING DITCH (DETAIL)
(Only Where Specified)

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East Vernal, Utah

API	wellname	section	township	range	unit_ltr	ogrid_name	status	Well Type
30-025-08494	PRE-ONGARD WELL #001	21	24S	34E	B	PRE-ONGARD WELL OPERATOR	P	Oil
30-025-28235	PRE-ONGARD WELL #001	22	24S	34E	K	PRE-ONGARD WELL OPERATOR	P	Oil
30-025-28321	PRE-ONGARD WELL #001	27	24S	34E	K	PRE-ONGARD WELL OPERATOR	P	Oil
30-025-28488	PITCHFORK RANCH 28 FEDERAL COM #001	28	24S	34E	G	EOG RESOURCES INC	A	Gas
30-025-28641	VACA RIDGE 21 FEDERAL COM #001	21	24S	34E	O	CIMAREX ENERGY CO. OF COLORADO	P	Gas
30-025-29917	PRE-ONGARD WELL #001	27	24S	34E	E	PRE-ONGARD WELL OPERATOR	P	Gas
30-025-30179	PRE-ONGARD WELL #001	22	24S	34E	N	PRE-ONGARD WELL OPERATOR	P	Oil
30-025-42999	ROMEO FEDERAL COM #001H	22	24S	34E	D	CENTENNIAL RESOURCE PRODUCTION, LLC	A	Oil
30-025-43401	RAIDER FEDERAL #301H	21	24S	34E	B	CENTENNIAL RESOURCE PRODUCTION, LLC	N	Oil
30-025-43408	RAIDER FEDERAL COM #101H	21	24S	34E	A	CENTENNIAL RESOURCE PRODUCTION, LLC	N	Oil
30-025-44866	STONEWALL 28 FEDERAL COM #301H	28	24S	34E	D	EOG RESOURCES INC	N	Oil
30-025-44867	STONEWALL 28 FEDERAL COM #302H	28	24S	34E	D	EOG RESOURCES INC	N	Oil
30-025-44868	STONEWALL 28 FEDERAL COM #703H	28	24S	34E	D	EOG RESOURCES INC	N	Oil
30-025-44869	STONEWALL 28 FEDERAL COM #704H	28	24S	34E	C	EOG RESOURCES INC	N	Oil
30-025-44870	STONEWALL 28 FEDERAL COM #705H	28	24S	34E	C	EOG RESOURCES INC	N	Oil
30-025-44871	STONEWALL 28 FEDERAL COM #706H	28	24S	34E	C	EOG RESOURCES INC	N	Oil
30-025-44872	STONEWALL 28 FEDERAL COM #707H	28	24S	34E	C	EOG RESOURCES INC	N	Oil
30-025-44873	STONEWALL 28 FEDERAL COM #708H	28	24S	34E	B	EOG RESOURCES INC	N	Oil
30-025-44874	STONEWALL 28 FEDERAL COM #713H	28	24S	34E	A	EOG RESOURCES INC	N	Oil
30-025-44875	STONEWALL 28 FEDERAL COM #714H	28	24S	34E	A	EOG RESOURCES INC	N	Oil
30-025-44926	STONEWALL 28 FEDERAL COM #709H	28	24S	34E	B	EOG RESOURCES INC	N	Oil
30-025-44927	STONEWALL 28 FEDERAL COM #710H	28	24S	34E	B	EOG RESOURCES INC	N	Oil
30-025-44928	STONEWALL 28 FEDERAL COM #711H	28	24S	34E	B	EOG RESOURCES INC	N	Oil
30-025-44929	STONEWALL 28 FEDERAL COM #712H	28	24S	34E	B	EOG RESOURCES INC	N	Oil
30-025-44930	STONEWALL 28 FEDERAL COM #715H	28	24S	34E	A	EOG RESOURCES INC	N	Oil



REV: 2 01-24-19 S.T.O. (#501H & #502 WELLBORE CHANGES)

LEGEND:

● EXISTING WELLS

N

CENTENNIAL RESOURCE PRODUCTION, LLC

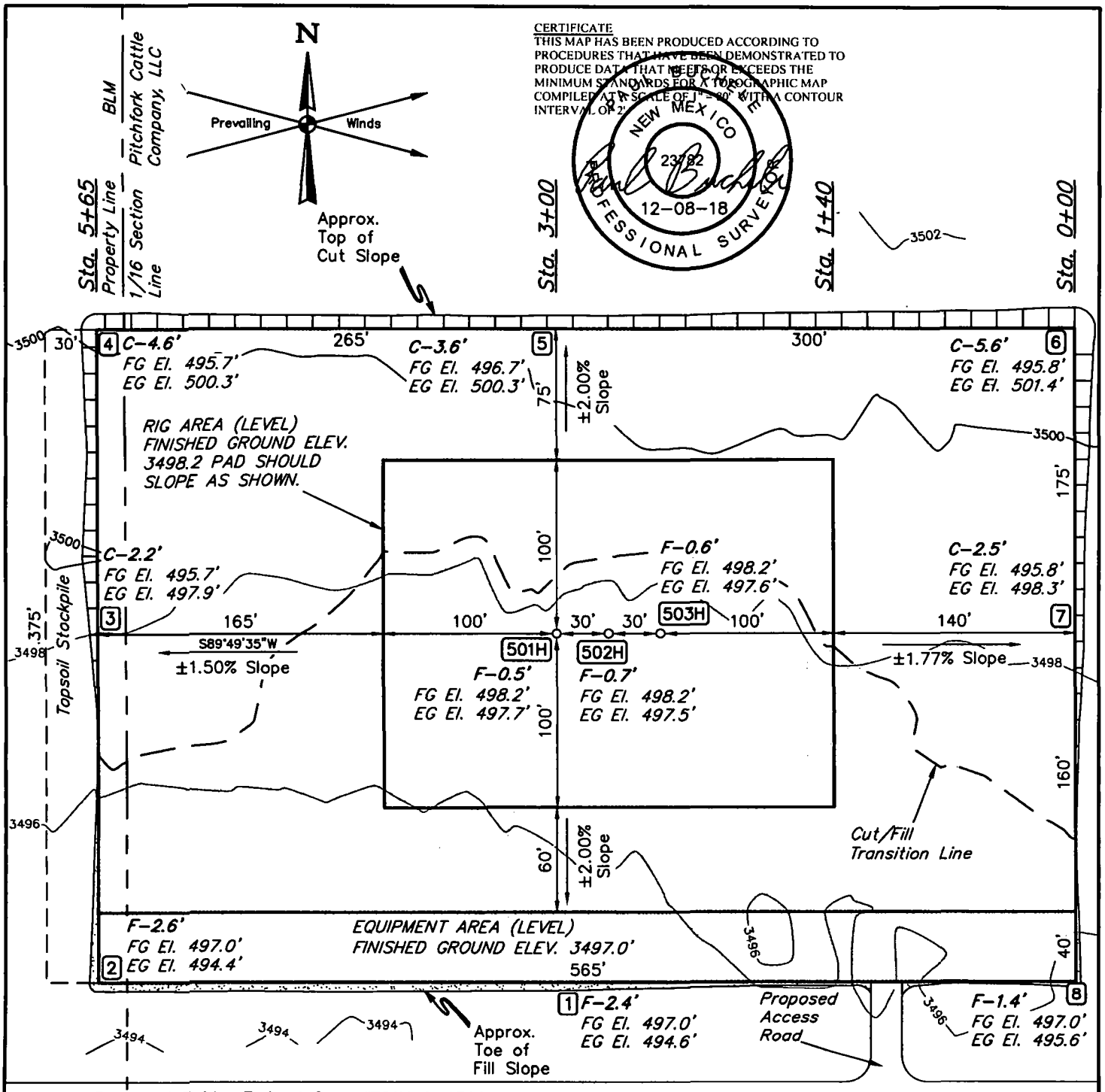
RAIDER FEDERAL #501H,
FEDERAL COM #502H & #503H
SE 1/4 SE 1/4 SECTION 21, T24S, R34E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.A.	07-18-18	1 : 36,000

WELL PROXIMITY MAP **TOPO C**

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



REV: 1 12-08-18 C.D. (ADD #503H & PAD LAYOUT CHANGE)

NOTE: Earthwork Calculations Require Fill @ the Location Stakes For Balance. All Fill is to be Compacted to a Minimum of 95% of the Maximum Dry Density Obtained by AASHTO method t-99.

NOTES:

- Contours shown at 2' intervals.
- Cut/Fill slopes 2:1 (Typ. except Pit/Berm).
- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

CENTENNIAL RESOURCE PRODUCTION, LLC

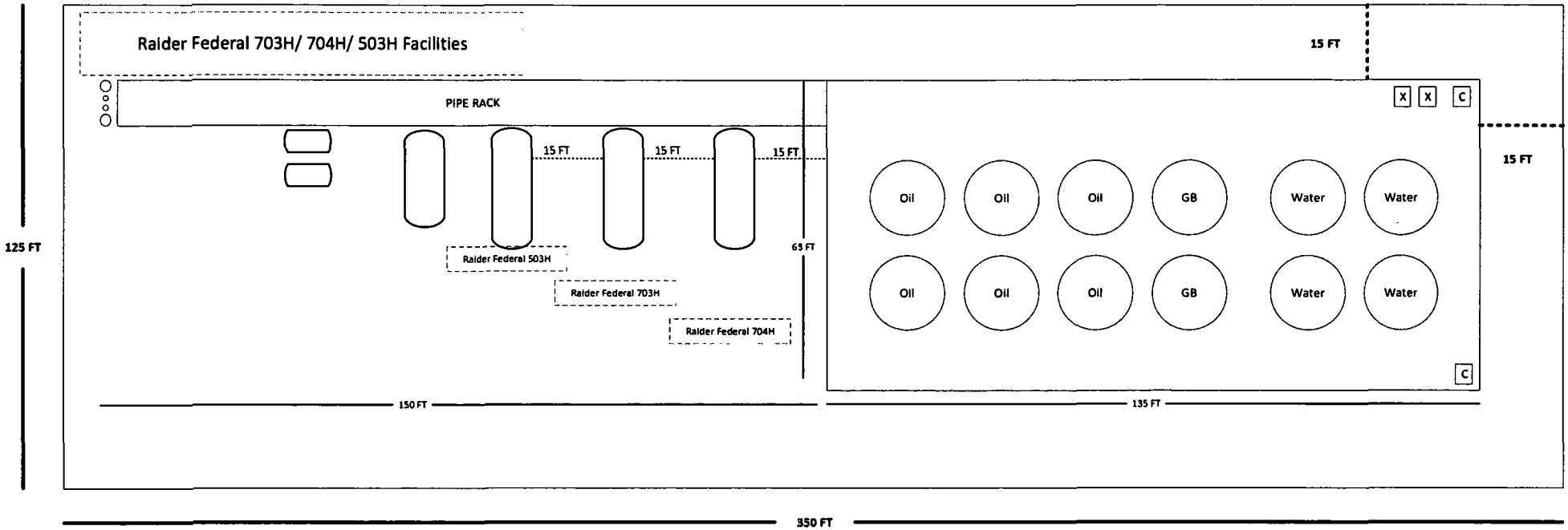
RAIDER FEDERAL #501H, FEDERAL COM #502H & #503H
SE 1/4 SE 1/4 SECTION 21, T24S, R34E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	R.C., M.D.	07-13-18	SCALE
DRAWN BY	J.N.	07-13-18	1" = 80'

LOCATION LAYOUT **FIGURE #1**

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017


Raider Federal 703H/ 704H/ 503H Facilities
15 FT
PIPE RACK
X
X
C
15 FT
15 FT
15 FT
15 FT
Oil
Oil
Oil
GB
Water
Water
125 FT
Raider Federal 503H
65 FT
Raider Federal 703H
Oil
Oil
Oil
GB
Water
Water
Raider Federal 704H
C
150 FT
135 FT
350 FT

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report

08/18/2019

APD ID: 10400039801 **Submission Date:** 03/22/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

08/18/2019

APD ID: 10400039801 **Submission Date:** 03/22/2019

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: RAIDER FEDERAL COM **Well Number:** 503H

Well Type: OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001471

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: