Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM112941

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
COBBER 21-33 FED COM 6H

2. Name of Operator
DEVON ENERGY PRODUCTION COM LP
Contact: REBECCA DEAL
E-Mail: Rebecca.Deal@dvn.com

9. API Well No.
30-025-46922-00-X1

3a. Address
P O BOX 250
ARTESIA, NM 88201

3b. Phone No. (include area code)
Ph: 405-228-8429

10. Field and Pool or Exploratory Area
WC-025 G09 S263619C-WOLFCAMP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 21 T26S R34E NENE 216FNL 1293FEL
32.035595 N Lat, 103.470467 W Lon

OCD – HOBBS
03/30/2020
RECEIVED

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Devon Energy Production Co., L.P. respectfully requests the following changes to the approved APD:

BHL change from 2619 FNL & 1300 FEL, 28-26S-34E to 20 FSL & 1660 FEL 33-26S-34E.

TVD/MD change from 12,630'/20,564' to 12,867'/25,628'

Name change from Cobber 21-28 Fed 6H to Cobber 21-33 Fed Com 6H.

NEW PROP-ID 327351

Please see attached revised C-102, drilling & directional plan.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #506214 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION COM LP, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 03/09/2020 (20PP1607SE)

Name *(Printed/Typed)* REBECCA DEAL — Title REGULATORY COMPLIANCE PROFESSI

Signature (Electronic Submission) — Date 03/09/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By LONG VO — Title PETROLEUM ENGINEER — Date 03/11/2020

Conditions of approval, if any, are attached. Approval of this notice 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.

Office Hobbs

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.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Revisions to Operator-Submitted EC Data for Sundry Notice #506214

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM112941	NMNM112941
Agreement:		
Operator:	DEVON ENERGY PRODUCTION COMPAN 333 WEST SHERIDAN AVE OKLAHOMA CITY, OK 73102 Ph: 405-228-8429	DEVON ENERGY PRODUCTION COM LP P O BOX 250 ARTESIA, NM 88201 Ph: 575-748-1854
Admin Contact:	REBECCA DEAL REGULATORY COMPLIANCE PROFESSI E-Mail: Rebecca.Deal@dvn.com Ph: 405-228-8429	REBECCA DEAL REGULATORY COMPLIANCE PROFESSI E-Mail: Rebecca.Deal@dvn.com Ph: 405-228-8429
Tech Contact:	REBECCA DEAL REGULATORY COMPLIANCE PROFESSI E-Mail: Rebecca.Deal@dvn.com Ph: 405-228-8429	REBECCA DEAL REGULATORY COMPLIANCE PROFESSI E-Mail: Rebecca.Deal@dvn.com Ph: 405-228-8429
Location: State: County:	 NM LEA	 NM LEA
Field/Pool:	JABALINA; WOLFCAMP, SW	WC-025 G09 S263619C-WOLFCAMP
Well/Facility:	COBBER 21-33 FED COM 6H Sec 21 T26S R34E Mer NMP NENE 216FNL 1293FWL	COBBER 21-33 FED COM 6H Sec 21 T26S R34E NENE 216FNL 1293FEL 32.035595 N Lat, 103.470467 W Lon

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Devon Energy Production Company LP**
LEASE NO.:	**NMNM112941**
LOCATION:	Section 21, T.26 S., R.34 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	Cobber 21-33 Fed Com 2H
SURFACE HOLE FOOTAGE:	234'/N & 616'/W
BOTTOM HOLE FOOTAGE	20'/S & 360'/W

WELL NAME & NO.:	Cobber 21-33 Fed Com 3H
SURFACE HOLE FOOTAGE:	234'/N & 1562'/W
BOTTOM HOLE FOOTAGE	20'/S & 2310'/W

WELL NAME & NO.:	Cobber 21-33 Fed Com 4H
SURFACE HOLE FOOTAGE:	234'/N & 1532'/W
BOTTOM HOLE FOOTAGE	20'/S & 1660'/W

WELL NAME & NO.:	Cobber 21-33 Fed Com 6H
SURFACE HOLE FOOTAGE:	216'/N & 1293'/E
BOTTOM HOLE FOOTAGE	20'/S & 1660'/E

WELL NAME & NO.:	Cobber 21-33 Fed Com 9H
SURFACE HOLE FOOTAGE:	383'/N & 490'/E
BOTTOM HOLE FOOTAGE	20'/S & 360'/E

COA

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

All Previous COAs Still Apply

A. CASING

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

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

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

Operator has proposed to pump down 13-3/8" X 8-5/8" annulus. Operator must run a CBL from TD of the 8-5/8" casing to surface. Submit results to BLM.

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

2. 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.
      Cement excess is less than 25%, more cement might be required.

B. PRESSURE CONTROL

1. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

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

C. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, 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.

GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

A. CASING

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

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

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

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

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

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

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

B. PRESSURE CONTROL

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

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

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

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

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

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

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

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

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

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

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

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

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

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

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

1. Geologic Formations

TVD of target	12867	Pilot hole depth	N/A
MD at TD:	25628	Deepest expected fresh water	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Rustler	700		
Salt	1100		
Base of Salt	5100		
Delaware	5350		
Bone Spring 1st	9650		
Bone Spring 2nd	11150		
Bone Spring 3rd	12250		
Wolfcamp	12650		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program (Primary Design)

Hole Size	Csg. Size	Wt (PPF)	Grade	Conn	Casing Interval		Casing Interval	
					From (MD)	To (MD)	From (TVD)	To (TVD)
17 1/2	13 3/8	48.0	H40	STC	0	725	0	725
9 7/8	8 5/8	32.0	P110	TLW	0	12250	0	12250
7 7/8	5 1/2	17.0	P110	BTC	0	25628	0	12867

• All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for continengcy casing.

3. Cementing Program (Primary Design)

Casing	# Sks	TOC	Wt. ppg	Yld (ft3/sack)	Slurry Description
Surface	563	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	483	Surf	9	3.27	Lead: Class C Cement + additives
	465	4000' above	13.2	1.44	Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.44	Squeeze Lead: Class C Cement + additives
	483	Surf	9	3.27	Lead: Class C Cement + additives
	465	4000' above	13.2	1.44	Tail: Class H / C + additives
Production	117	10303	9.0	3.3	Lead: Class H /C + additives
	1764	12303	13.2	1.4	Tail: Class H / C + additives

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

4. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-58"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	13-5/8"	10M	Annular (5M)	X	100% of rated working pressure
			Blind Ram	X	10M
			Pipe Ram		
			Double Ram	X	
			Other*		
			Annular (5M)		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
Y	A variance is requested to run a 5 M annular on a 10M system

5. Mud Program (Three String Design)

Section	Type	Weight (ppg)
Surface	FW Gel	8.5-9
Intermediate	DBE / Cut Brine	10-10.5
Production	OBM	10-10.5

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well - vertical portion of hole). Stated logs run will be in the Completion Rpeort and sbumitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain.
	Coring? If yes, explain.

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specfiy what type and where?
BH pressure at deepest TVD	7025
Abnormal temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogren Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S plan attached.

8. Other facets of operation

Is this a walking operation? Potentially

1 If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2 The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3 The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed

from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

1. Spudder rig will move in and batch drill surface hole.
    a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.,
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi-well pa.
6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. Drilling operations will be performed with drilling rig. A that time an approved BOP stack will be nippled up and tested on the wellhead before drilling operations commences on each well.
    a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

X Directional Plan

_____ Other, describe

WCDSC Permian NM

Lea County (NAD83 New Mexico East)
Sec 21-T26S-R34E
Cobber 21-33 Fed Com 6H

Wellbore #1

Plan: Permit Plan 3

Standard Planning Report - Geographic

05 February, 2020

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Project Lea County (NAD83 New Mexico East)

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

Site Sec 21-T26S-R34E

Site Position:		**Northing:**	372,767.99 usft	**Latitude:**	32.021870
From:	Map	**Easting:**	809,394.37 usft	**Longitude:**	-103.468410
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.46 °

Well Cobber 21-33 Fed Com 6H

Well Position	**+N/-S**	0.00 ft	**Northing:**	377,756.14 usft	**Latitude:**	32.035596
	+E/-W	0.00 ft	**Easting:**	808,717.84 usft	**Longitude:**	-103.470464
Position Uncertainty		0.50 ft	**Wellhead Elevation:**		**Ground Level:**	3,307.40 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/18/2019	6.65	59.88	47,606.13207187

Design Permit Plan 3

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	181.15

Plan Survey Tool Program **Date** 2/5/2020

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	25,627.81	Permit Plan 3 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,750.00	0.00	0.00	2,750.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,006.83	2.57	294.34	3,006.74	2.37	-5.24	1.00	1.00	0.00	294.34	
11,781.74	2.57	294.34	11,772.84	164.42	-363.50	0.00	0.00	0.00	0.00	
11,952.96	0.00	0.00	11,944.00	166.00	-367.00	1.50	-1.50	0.00	180.00	
12,303.00	0.00	0.00	12,294.04	166.00	-367.00	0.00	0.00	0.00	0.00	
13,203.00	90.00	179.52	12,867.00	-406.94	-362.17	10.00	10.00	0.00	179.52	PBHL - Cobber 21-33
25,627.81	90.00	179.52	12,867.00	-12,831.31	-257.50	0.00	0.00	0.00	0.00	PBHL - Cobber 21-33

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
100.00	0.00	0.00	100.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
200.00	0.00	0.00	200.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
300.00	0.00	0.00	300.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
400.00	0.00	0.00	400.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
500.00	0.00	0.00	500.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
600.00	0.00	0.00	600.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
700.00	0.00	0.00	700.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
800.00	0.00	0.00	800.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
900.00	0.00	0.00	900.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,000.00	0.00	0.00	1,000.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,100.00	0.00	0.00	1,100.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,200.00	0.00	0.00	1,200.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,300.00	0.00	0.00	1,300.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,400.00	0.00	0.00	1,400.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,500.00	0.00	0.00	1,500.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,600.00	0.00	0.00	1,600.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,700.00	0.00	0.00	1,700.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,800.00	0.00	0.00	1,800.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
1,900.00	0.00	0.00	1,900.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,000.00	0.00	0.00	2,000.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,100.00	0.00	0.00	2,100.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,200.00	0.00	0.00	2,200.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,300.00	0.00	0.00	2,300.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,400.00	0.00	0.00	2,400.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,500.00	0.00	0.00	2,500.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,600.00	0.00	0.00	2,600.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,700.00	0.00	0.00	2,700.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,750.00	0.00	0.00	2,750.00	0.00	0.00	377,756.14	808,717.84	32.035596	-103.470464
2,800.00	0.50	294.34	2,800.00	0.09	-0.20	377,756.23	808,717.64	32.035596	-103.470465
2,900.00	1.50	294.34	2,899.98	0.81	-1.79	377,756.95	808,716.05	32.035598	-103.470470
3,000.00	2.50	294.34	2,999.92	2.25	-4.97	377,758.39	808,712.87	32.035602	-103.470480
3,006.83	2.57	294.34	3,006.74	2.37	-5.24	377,758.51	808,712.59	32.035602	-103.470481
3,100.00	2.57	294.34	3,099.82	4.09	-9.05	377,760.23	808,708.79	32.035607	-103.470493
3,200.00	2.57	294.34	3,199.72	5.94	-13.13	377,762.08	808,704.71	32.035612	-103.470506
3,300.00	2.57	294.34	3,299.62	7.79	-17.21	377,763.92	808,700.62	32.035617	-103.470519
3,400.00	2.57	294.34	3,399.52	9.63	-21.30	377,765.77	808,696.54	32.035623	-103.470532
3,500.00	2.57	294.34	3,499.42	11.48	-25.38	377,767.62	808,692.46	32.035628	-103.470546
3,600.00	2.57	294.34	3,599.32	13.33	-29.46	377,769.46	808,688.38	32.035633	-103.470559
3,700.00	2.57	294.34	3,699.22	15.17	-33.54	377,771.31	808,684.29	32.035638	-103.470572
3,800.00	2.57	294.34	3,799.12	17.02	-37.63	377,773.16	808,680.21	32.035643	-103.470585
3,900.00	2.57	294.34	3,899.02	18.87	-41.71	377,775.00	808,676.13	32.035648	-103.470598
4,000.00	2.57	294.34	3,998.92	20.71	-45.79	377,776.85	808,672.05	32.035654	-103.470611
4,100.00	2.57	294.34	4,098.82	22.56	-49.88	377,778.70	808,667.96	32.035659	-103.470624
4,200.00	2.57	294.34	4,198.72	24.41	-53.96	377,780.54	808,663.88	32.035664	-103.470637
4,300.00	2.57	294.34	4,298.62	26.25	-58.04	377,782.39	808,659.80	32.035669	-103.470651
4,400.00	2.57	294.34	4,398.51	28.10	-62.12	377,784.24	808,655.71	32.035674	-103.470664
4,500.00	2.57	294.34	4,498.41	29.95	-66.21	377,786.08	808,651.63	32.035679	-103.470677
4,600.00	2.57	294.34	4,598.31	31.79	-70.29	377,787.93	808,647.55	32.035685	-103.470690
4,700.00	2.57	294.34	4,698.21	33.64	-74.37	377,789.78	808,643.47	32.035690	-103.470703
4,800.00	2.57	294.34	4,798.11	35.49	-78.46	377,791.62	808,639.38	32.035695	-103.470716
4,900.00	2.57	294.34	4,898.01	37.33	-82.54	377,793.47	808,635.30	32.035700	-103.470729
5,000.00	2.57	294.34	4,997.91	39.18	-86.62	377,795.32	808,631.22	32.035705	-103.470743
5,100.00	2.57	294.34	5,097.81	41.03	-90.70	377,797.16	808,627.13	32.035710	-103.470756
5,200.00	2.57	294.34	5,197.71	42.87	-94.79	377,799.01	808,623.05	32.035716	-103.470769

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,300.00	2.57	294.34	5,297.61	44.72	-98.87	377,800.86	808,618.97	32.035721	-103.470782
5,400.00	2.57	294.34	5,397.51	46.57	-102.95	377,802.71	808,614.89	32.035726	-103.470795
5,500.00	2.57	294.34	5,497.41	48.41	-107.03	377,804.55	808,610.80	32.035731	-103.470808
5,600.00	2.57	294.34	5,597.31	50.26	-111.12	377,806.40	808,606.72	32.035736	-103.470821
5,700.00	2.57	294.34	5,697.21	52.11	-115.20	377,808.25	808,602.64	32.035741	-103.470834
5,800.00	2.57	294.34	5,797.11	53.95	-119.28	377,810.09	808,598.56	32.035747	-103.470848
5,900.00	2.57	294.34	5,897.01	55.80	-123.37	377,811.94	808,594.47	32.035752	-103.470861
6,000.00	2.57	294.34	5,996.91	57.65	-127.45	377,813.79	808,590.39	32.035757	-103.470874
6,100.00	2.57	294.34	6,096.81	59.49	-131.53	377,815.63	808,586.31	32.035762	-103.470887
6,200.00	2.57	294.34	6,196.71	61.34	-135.61	377,817.48	808,582.22	32.035767	-103.470900
6,300.00	2.57	294.34	6,296.61	63.19	-139.70	377,819.33	808,578.14	32.035772	-103.470913
6,400.00	2.57	294.34	6,396.51	65.03	-143.78	377,821.17	808,574.06	32.035778	-103.470926
6,500.00	2.57	294.34	6,496.41	66.88	-147.86	377,823.02	808,569.98	32.035783	-103.470939
6,600.00	2.57	294.34	6,596.30	68.73	-151.95	377,824.87	808,565.89	32.035788	-103.470953
6,700.00	2.57	294.34	6,696.20	70.57	-156.03	377,826.71	808,561.81	32.035793	-103.470966
6,800.00	2.57	294.34	6,796.10	72.42	-160.11	377,828.56	808,557.73	32.035798	-103.470979
6,900.00	2.57	294.34	6,896.00	74.27	-164.19	377,830.41	808,553.64	32.035803	-103.470992
7,000.00	2.57	294.34	6,995.90	76.11	-168.28	377,832.25	808,549.56	32.035809	-103.471005
7,100.00	2.57	294.34	7,095.80	77.96	-172.36	377,834.10	808,545.48	32.035814	-103.471018
7,200.00	2.57	294.34	7,195.70	79.81	-176.44	377,835.95	808,541.40	32.035819	-103.471031
7,300.00	2.57	294.34	7,295.60	81.65	-180.52	377,837.79	808,537.31	32.035824	-103.471044
7,400.00	2.57	294.34	7,395.50	83.50	-184.61	377,839.64	808,533.23	32.035829	-103.471058
7,500.00	2.57	294.34	7,495.40	85.35	-188.69	377,841.49	808,529.15	32.035834	-103.471071
7,600.00	2.57	294.34	7,595.30	87.19	-192.77	377,843.33	808,525.07	32.035840	-103.471084
7,700.00	2.57	294.34	7,695.20	89.04	-196.86	377,845.18	808,520.98	32.035845	-103.471097
7,800.00	2.57	294.34	7,795.10	90.89	-200.94	377,847.03	808,516.90	32.035850	-103.471110
7,900.00	2.57	294.34	7,895.00	92.73	-205.02	377,848.87	808,512.82	32.035855	-103.471123
8,000.00	2.57	294.34	7,994.90	94.58	-209.10	377,850.72	808,508.73	32.035860	-103.471136
8,100.00	2.57	294.34	8,094.80	96.43	-213.19	377,852.57	808,504.65	32.035865	-103.471149
8,200.00	2.57	294.34	8,194.70	98.27	-217.27	377,854.41	808,500.57	32.035871	-103.471163
8,300.00	2.57	294.34	8,294.60	100.12	-221.35	377,856.26	808,496.49	32.035876	-103.471176
8,400.00	2.57	294.34	8,394.50	101.97	-225.44	377,858.11	808,492.40	32.035881	-103.471189
8,500.00	2.57	294.34	8,494.40	103.81	-229.52	377,859.95	808,488.32	32.035886	-103.471202
8,600.00	2.57	294.34	8,594.30	105.66	-233.60	377,861.80	808,484.24	32.035891	-103.471215
8,700.00	2.57	294.34	8,694.20	107.51	-237.68	377,863.65	808,480.16	32.035896	-103.471228
8,800.00	2.57	294.34	8,794.10	109.35	-241.77	377,865.49	808,476.07	32.035902	-103.471241
8,900.00	2.57	294.34	8,893.99	111.20	-245.85	377,867.34	808,471.99	32.035907	-103.471254
9,000.00	2.57	294.34	8,993.89	113.05	-249.93	377,869.19	808,467.91	32.035912	-103.471268
9,100.00	2.57	294.34	9,093.79	114.89	-254.01	377,871.03	808,463.82	32.035917	-103.471281
9,200.00	2.57	294.34	9,193.69	116.74	-258.10	377,872.88	808,459.74	32.035922	-103.471294
9,300.00	2.57	294.34	9,293.59	118.59	-262.18	377,874.73	808,455.66	32.035927	-103.471307
9,400.00	2.57	294.34	9,393.49	120.44	-266.26	377,876.57	808,451.58	32.035933	-103.471320
9,500.00	2.57	294.34	9,493.39	122.28	-270.35	377,878.42	808,447.49	32.035938	-103.471333
9,600.00	2.57	294.34	9,593.29	124.13	-274.43	377,880.27	808,443.41	32.035943	-103.471346
9,700.00	2.57	294.34	9,693.19	125.98	-278.51	377,882.11	808,439.33	32.035948	-103.471359
9,800.00	2.57	294.34	9,793.09	127.82	-282.59	377,883.96	808,435.24	32.035953	-103.471373
9,900.00	2.57	294.34	9,892.99	129.67	-286.68	377,885.81	808,431.16	32.035958	-103.471386
10,000.00	2.57	294.34	9,992.89	131.52	-290.76	377,887.65	808,427.08	32.035964	-103.471399
10,100.00	2.57	294.34	10,092.79	133.36	-294.84	377,889.50	808,423.00	32.035969	-103.471412
10,200.00	2.57	294.34	10,192.69	135.21	-298.93	377,891.35	808,418.91	32.035974	-103.471425
10,300.00	2.57	294.34	10,292.59	137.06	-303.01	377,893.19	808,414.83	32.035979	-103.471438
10,400.00	2.57	294.34	10,392.49	138.90	-307.09	377,895.04	808,410.75	32.035984	-103.471451
10,500.00	2.57	294.34	10,492.39	140.75	-311.17	377,896.89	808,406.67	32.035989	-103.471464
10,600.00	2.57	294.34	10,592.29	142.60	-315.26	377,898.73	808,402.58	32.035995	-103.471478
10,700.00	2.57	294.34	10,692.19	144.44	-319.34	377,900.58	808,398.50	32.036000	-103.471491

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,800.00	2.57	294.34	10,792.09	146.29	-323.42	377,902.43	808,394.42	32.036005	-103.471504
10,900.00	2.57	294.34	10,891.99	148.14	-327.50	377,904.27	808,390.33	32.036010	-103.471517
11,000.00	2.57	294.34	10,991.89	149.98	-331.59	377,906.12	808,386.25	32.036015	-103.471530
11,100.00	2.57	294.34	11,091.78	151.83	-335.67	377,907.97	808,382.17	32.036020	-103.471543
11,200.00	2.57	294.34	11,191.68	153.68	-339.75	377,909.81	808,378.09	32.036026	-103.471556
11,300.00	2.57	294.34	11,291.58	155.52	-343.84	377,911.66	808,374.00	32.036031	-103.471569
11,400.00	2.57	294.34	11,391.48	157.37	-347.92	377,913.51	808,369.92	32.036036	-103.471583
11,500.00	2.57	294.34	11,491.38	159.22	-352.00	377,915.35	808,365.84	32.036041	-103.471596
11,600.00	2.57	294.34	11,591.28	161.06	-356.08	377,917.20	808,361.75	32.036046	-103.471609
11,700.00	2.57	294.34	11,691.18	162.91	-360.17	377,919.05	808,357.67	32.036051	-103.471622
11,781.74	2.57	294.34	11,772.84	164.42	-363.50	377,920.56	808,354.33	32.036056	-103.471633
11,800.00	2.29	294.34	11,791.08	164.74	-364.21	377,920.88	808,353.63	32.036056	-103.471635
11,900.00	0.79	294.34	11,891.04	165.85	-366.67	377,921.99	808,351.17	32.036060	-103.471643
11,952.96	0.00	0.00	11,944.00	166.00	-367.00	377,922.14	808,350.84	32.036060	-103.471644
12,000.00	0.00	0.00	11,991.04	166.00	-367.00	377,922.14	808,350.84	32.036060	-103.471644
12,100.00	0.00	0.00	12,091.04	166.00	-367.00	377,922.14	808,350.84	32.036060	-103.471644
12,200.00	0.00	0.00	12,191.04	166.00	-367.00	377,922.14	808,350.84	32.036060	-103.471644
12,300.00	0.00	0.00	12,291.04	166.00	-367.00	377,922.14	808,350.84	32.036060	-103.471644
12,303.00	0.00	0.00	12,294.04	166.00	-367.00	377,922.14	808,350.84	32.036060	-103.471644
KOP @ 12303' MD, 50' FNL, 1660' FEL									
12,400.00	9.70	179.52	12,390.58	157.81	-366.93	377,913.95	808,350.91	32.036037	-103.471644
12,500.00	19.70	179.52	12,487.18	132.47	-366.72	377,888.60	808,351.12	32.035968	-103.471644
12,544.00	24.10	179.52	12,528.00	116.06	-366.58	377,872.20	808,351.26	32.035923	-103.471644
FTP @ 12544' MD, 100' FNL, 1660' FEL									
12,600.00	29.70	179.52	12,577.92	90.73	-366.37	377,846.87	808,351.47	32.035853	-103.471644
12,700.00	39.70	179.52	12,660.03	33.88	-365.89	377,790.02	808,351.95	32.035697	-103.471644
12,800.00	49.70	179.52	12,731.02	-36.37	-365.30	377,719.77	808,352.54	32.035504	-103.471644
12,900.00	59.70	179.52	12,788.73	-117.88	-364.61	377,638.26	808,353.23	32.035280	-103.471644
13,000.00	69.70	179.52	12,831.41	-208.17	-363.85	377,547.97	808,353.99	32.035031	-103.471643
13,100.00	79.70	179.52	12,857.77	-304.50	-363.04	377,451.64	808,354.80	32.034767	-103.471643
13,200.00	89.70	179.52	12,866.99	-403.94	-362.20	377,352.20	808,355.64	32.034493	-103.471643
13,203.00	90.00	179.52	12,867.00	-406.94	-362.17	377,349.20	808,355.67	32.034485	-103.471643
13,300.00	90.00	179.52	12,867.00	-503.94	-361.36	377,252.20	808,356.48	32.034218	-103.471643
13,400.00	90.00	179.52	12,867.00	-603.93	-360.51	377,152.21	808,357.33	32.033944	-103.471643
13,500.00	90.00	179.52	12,867.00	-703.93	-359.67	377,052.21	808,358.17	32.033669	-103.471643
13,600.00	90.00	179.52	12,867.00	-803.93	-358.83	376,952.21	808,359.01	32.033394	-103.471643
13,700.00	90.00	179.52	12,867.00	-903.92	-357.99	376,852.22	808,359.85	32.033119	-103.471642
13,800.00	90.00	179.52	12,867.00	-1,003.92	-357.14	376,752.22	808,360.70	32.032844	-103.471642
13,900.00	90.00	179.52	12,867.00	-1,103.91	-356.30	376,652.23	808,361.54	32.032569	-103.471642
14,000.00	90.00	179.52	12,867.00	-1,203.91	-355.46	376,552.23	808,362.38	32.032294	-103.471642
14,100.00	90.00	179.52	12,867.00	-1,303.91	-354.62	376,452.23	808,363.22	32.032019	-103.471642
14,200.00	90.00	179.52	12,867.00	-1,403.90	-353.77	376,352.24	808,364.06	32.031745	-103.471642
14,300.00	90.00	179.52	12,867.00	-1,503.90	-352.93	376,252.24	808,364.91	32.031470	-103.471642
14,400.00	90.00	179.52	12,867.00	-1,603.90	-352.09	376,152.24	808,365.75	32.031195	-103.471641
14,500.00	90.00	179.52	12,867.00	-1,703.89	-351.25	376,052.25	808,366.59	32.030920	-103.471641
14,600.00	90.00	179.52	12,867.00	-1,803.89	-350.40	375,952.25	808,367.43	32.030645	-103.471641
14,700.00	90.00	179.52	12,867.00	-1,903.89	-349.56	375,852.26	808,368.28	32.030370	-103.471641
14,800.00	90.00	179.52	12,867.00	-2,003.88	-348.72	375,752.26	808,369.12	32.030095	-103.471641
14,900.00	90.00	179.52	12,867.00	-2,103.88	-347.88	375,652.26	808,369.96	32.029820	-103.471641
15,000.00	90.00	179.52	12,867.00	-2,203.88	-347.03	375,552.27	808,370.80	32.029546	-103.471641
15,100.00	90.00	179.52	12,867.00	-2,303.87	-346.19	375,452.27	808,371.65	32.029271	-103.471640
15,200.00	90.00	179.52	12,867.00	-2,403.87	-345.35	375,352.27	808,372.49	32.028996	-103.471640
15,300.00	90.00	179.52	12,867.00	-2,503.86	-344.51	375,252.28	808,373.33	32.028721	-103.471640
15,400.00	90.00	179.52	12,867.00	-2,603.86	-343.66	375,152.28	808,374.17	32.028446	-103.471640

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,500.00	90.00	179.52	12,867.00	-2,703.86	-342.82	375,052.29	808,375.02	32.028171	-103.471640
15,600.00	90.00	179.52	12,867.00	-2,803.85	-341.98	374,952.29	808,375.86	32.027896	-103.471640
15,700.00	90.00	179.52	12,867.00	-2,903.85	-341.14	374,852.29	808,376.70	32.027621	-103.471640
15,800.00	90.00	179.52	12,867.00	-3,003.85	-340.29	374,752.30	808,377.54	32.027347	-103.471639
15,900.00	90.00	179.52	12,867.00	-3,103.84	-339.45	374,652.30	808,378.39	32.027072	-103.471639
16,000.00	90.00	179.52	12,867.00	-3,203.84	-338.61	374,552.30	808,379.23	32.026797	-103.471639
16,100.00	90.00	179.52	12,867.00	-3,303.84	-337.77	374,452.31	808,380.07	32.026522	-103.471639
16,200.00	90.00	179.52	12,867.00	-3,403.83	-336.92	374,352.31	808,380.91	32.026247	-103.471639
16,300.00	90.00	179.52	12,867.00	-3,503.83	-336.08	374,252.32	808,381.76	32.025972	-103.471639
16,400.00	90.00	179.52	12,867.00	-3,603.83	-335.24	374,152.32	808,382.60	32.025697	-103.471639
16,500.00	90.00	179.52	12,867.00	-3,703.82	-334.40	374,052.32	808,383.44	32.025422	-103.471638
16,600.00	90.00	179.52	12,867.00	-3,803.82	-333.56	373,952.33	808,384.28	32.025148	-103.471638
16,700.00	90.00	179.52	12,867.00	-3,903.82	-332.71	373,852.33	808,385.13	32.024873	-103.471638
16,800.00	90.00	179.52	12,867.00	-4,003.81	-331.87	373,752.33	808,385.97	32.024598	-103.471638
16,900.00	90.00	179.52	12,867.00	-4,103.81	-331.03	373,652.34	808,386.81	32.024323	-103.471638
17,000.00	90.00	179.52	12,867.00	-4,203.80	-330.19	373,552.34	808,387.65	32.024048	-103.471638
17,100.00	90.00	179.52	12,867.00	-4,303.80	-329.34	373,452.35	808,388.50	32.023773	-103.471638
17,200.00	90.00	179.52	12,867.00	-4,403.80	-328.50	373,352.35	808,389.34	32.023498	-103.471637
17,300.00	90.00	179.52	12,867.00	-4,503.79	-327.66	373,252.35	808,390.18	32.023223	-103.471637
17,400.00	90.00	179.52	12,867.00	-4,603.79	-326.82	373,152.36	808,391.02	32.022949	-103.471637
17,500.00	90.00	179.52	12,867.00	-4,703.79	-325.97	373,052.36	808,391.87	32.022674	-103.471637
17,600.00	90.00	179.52	12,867.00	-4,803.78	-325.13	372,952.36	808,392.71	32.022399	-103.471637
17,700.00	90.00	179.52	12,867.00	-4,903.78	-324.29	372,852.37	808,393.55	32.022124	-103.471637
17,800.00	90.00	179.52	12,867.00	-5,003.78	-323.45	372,752.37	808,394.39	32.021849	-103.471637
17,858.00	90.00	179.52	12,867.00	-5,061.77	-322.96	372,694.37	808,394.88	32.021690	-103.471636
Cross section @ 17858' MD, 0' FNL, 1660' FEL									
17,900.00	90.00	179.52	12,867.00	-5,103.77	-322.60	372,652.38	808,395.24	32.021574	-103.471636
18,000.00	90.00	179.52	12,867.00	-5,203.77	-321.76	372,552.38	808,396.08	32.021299	-103.471636
18,100.00	90.00	179.52	12,867.00	-5,303.77	-320.92	372,452.38	808,396.92	32.021024	-103.471636
18,200.00	90.00	179.52	12,867.00	-5,403.76	-320.08	372,352.39	808,397.76	32.020750	-103.471636
18,300.00	90.00	179.52	12,867.00	-5,503.76	-319.23	372,252.39	808,398.61	32.020475	-103.471636
18,400.00	90.00	179.52	12,867.00	-5,603.75	-318.39	372,152.39	808,399.45	32.020200	-103.471636
18,500.00	90.00	179.52	12,867.00	-5,703.75	-317.55	372,052.40	808,400.29	32.019925	-103.471635
18,600.00	90.00	179.52	12,867.00	-5,803.75	-316.71	371,952.40	808,401.13	32.019650	-103.471635
18,700.00	90.00	179.52	12,867.00	-5,903.74	-315.86	371,852.41	808,401.97	32.019375	-103.471635
18,800.00	90.00	179.52	12,867.00	-6,003.74	-315.02	371,752.41	808,402.82	32.019100	-103.471635
18,900.00	90.00	179.52	12,867.00	-6,103.74	-314.18	371,652.41	808,403.66	32.018825	-103.471635
19,000.00	90.00	179.52	12,867.00	-6,203.73	-313.34	371,552.42	808,404.50	32.018551	-103.471635
19,100.00	90.00	179.52	12,867.00	-6,303.73	-312.49	371,452.42	808,405.34	32.018276	-103.471635
19,200.00	90.00	179.52	12,867.00	-6,403.73	-311.65	371,352.42	808,406.19	32.018001	-103.471634
19,300.00	90.00	179.52	12,867.00	-6,503.72	-310.81	371,252.43	808,407.03	32.017726	-103.471634
19,400.00	90.00	179.52	12,867.00	-6,603.72	-309.97	371,152.43	808,407.87	32.017451	-103.471634
19,500.00	90.00	179.52	12,867.00	-6,703.72	-309.12	371,052.44	808,408.71	32.017176	-103.471634
19,600.00	90.00	179.52	12,867.00	-6,803.71	-308.28	370,952.44	808,409.56	32.016901	-103.471634
19,700.00	90.00	179.52	12,867.00	-6,903.71	-307.44	370,852.44	808,410.40	32.016626	-103.471634
19,800.00	90.00	179.52	12,867.00	-7,003.71	-306.60	370,752.45	808,411.24	32.016351	-103.471634
19,900.00	90.00	179.52	12,867.00	-7,103.70	-305.75	370,652.45	808,412.08	32.016077	-103.471633
20,000.00	90.00	179.52	12,867.00	-7,203.70	-304.91	370,552.45	808,412.93	32.015802	-103.471633
20,100.00	90.00	179.52	12,867.00	-7,303.69	-304.07	370,452.46	808,413.77	32.015527	-103.471633
20,200.00	90.00	179.52	12,867.00	-7,403.69	-303.23	370,352.46	808,414.61	32.015252	-103.471633
20,300.00	90.00	179.52	12,867.00	-7,503.69	-302.38	370,252.47	808,415.45	32.014977	-103.471633
20,400.00	90.00	179.52	12,867.00	-7,603.68	-301.54	370,152.47	808,416.30	32.014702	-103.471633
20,500.00	90.00	179.52	12,867.00	-7,703.68	-300.70	370,052.47	808,417.14	32.014427	-103.471633
20,600.00	90.00	179.52	12,867.00	-7,803.68	-299.86	369,952.48	808,417.98	32.014152	-103.471632

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,700.00	90.00	179.52	12,867.00	-7,903.67	-299.01	369,852.48	808,418.82	32.013878	-103.471632
20,800.00	90.00	179.52	12,867.00	-8,003.67	-298.17	369,752.48	808,419.67	32.013603	-103.471632
20,900.00	90.00	179.52	12,867.00	-8,103.67	-297.33	369,652.49	808,420.51	32.013328	-103.471632
21,000.00	90.00	179.52	12,867.00	-8,203.66	-296.49	369,552.49	808,421.35	32.013053	-103.471632
21,100.00	90.00	179.52	12,867.00	-8,303.66	-295.64	369,452.50	808,422.19	32.012778	-103.471632
21,200.00	90.00	179.52	12,867.00	-8,403.66	-294.80	369,352.50	808,423.04	32.012503	-103.471632
21,300.00	90.00	179.52	12,867.00	-8,503.65	-293.96	369,252.50	808,423.88	32.012228	-103.471631
21,400.00	90.00	179.52	12,867.00	-8,603.65	-293.12	369,152.51	808,424.72	32.011953	-103.471631
21,500.00	90.00	179.52	12,867.00	-8,703.64	-292.28	369,052.51	808,425.56	32.011679	-103.471631
21,600.00	90.00	179.52	12,867.00	-8,803.64	-291.43	368,952.51	808,426.41	32.011404	-103.471631
21,700.00	90.00	179.52	12,867.00	-8,903.64	-290.59	368,852.52	808,427.25	32.011129	-103.471631
21,800.00	90.00	179.52	12,867.00	-9,003.63	-289.75	368,752.52	808,428.09	32.010854	-103.471631
21,900.00	90.00	179.52	12,867.00	-9,103.63	-288.91	368,652.53	808,428.93	32.010579	-103.471631
22,000.00	90.00	179.52	12,867.00	-9,203.63	-288.06	368,552.53	808,429.78	32.010304	-103.471630
22,100.00	90.00	179.52	12,867.00	-9,303.62	-287.22	368,452.53	808,430.62	32.010029	-103.471630
22,200.00	90.00	179.52	12,867.00	-9,403.62	-286.38	368,352.54	808,431.46	32.009754	-103.471630
22,300.00	90.00	179.52	12,867.00	-9,503.62	-285.54	368,252.54	808,432.30	32.009480	-103.471630
22,400.00	90.00	179.52	12,867.00	-9,603.61	-284.69	368,152.54	808,433.15	32.009205	-103.471630
22,500.00	90.00	179.52	12,867.00	-9,703.61	-283.85	368,052.55	808,433.99	32.008930	-103.471630
22,600.00	90.00	179.52	12,867.00	-9,803.61	-283.01	367,952.55	808,434.83	32.008655	-103.471630
22,700.00	90.00	179.52	12,867.00	-9,903.60	-282.17	367,852.56	808,435.67	32.008380	-103.471629
22,800.00	90.00	179.52	12,867.00	-10,003.60	-281.32	367,752.56	808,436.52	32.008105	-103.471629
22,900.00	90.00	179.52	12,867.00	-10,103.60	-280.48	367,652.56	808,437.36	32.007830	-103.471629
23,000.00	90.00	179.52	12,867.00	-10,203.59	-279.64	367,552.57	808,438.20	32.007555	-103.471629
23,100.00	90.00	179.52	12,867.00	-10,303.59	-278.80	367,452.57	808,439.04	32.007281	-103.471629
23,138.00	90.00	179.52	12,867.00	-10,341.59	-278.48	367,414.57	808,439.36	32.007176	-103.471629
Cross section @ 23138' MD, 0' FNL, 1660' FEL									
23,200.00	90.00	179.52	12,867.00	-10,403.58	-277.95	367,352.57	808,439.89	32.007006	-103.471629
23,300.00	90.00	179.52	12,867.00	-10,503.58	-277.11	367,252.58	808,440.73	32.006731	-103.471628
23,400.00	90.00	179.52	12,867.00	-10,603.58	-276.27	367,152.58	808,441.57	32.006456	-103.471628
23,500.00	90.00	179.52	12,867.00	-10,703.57	-275.43	367,052.59	808,442.41	32.006181	-103.471628
23,600.00	90.00	179.52	12,867.00	-10,803.57	-274.58	366,952.59	808,443.25	32.005906	-103.471628
23,700.00	90.00	179.52	12,867.00	-10,903.57	-273.74	366,852.59	808,444.10	32.005631	-103.471628
23,800.00	90.00	179.52	12,867.00	-11,003.56	-272.90	366,752.60	808,444.94	32.005356	-103.471628
23,900.00	90.00	179.52	12,867.00	-11,103.56	-272.06	366,652.60	808,445.78	32.005082	-103.471628
24,000.00	90.00	179.52	12,867.00	-11,203.56	-271.21	366,552.60	808,446.62	32.004807	-103.471627
24,100.00	90.00	179.52	12,867.00	-11,303.55	-270.37	366,452.61	808,447.47	32.004532	-103.471627
24,200.00	90.00	179.52	12,867.00	-11,403.55	-269.53	366,352.61	808,448.31	32.004257	-103.471627
24,300.00	90.00	179.52	12,867.00	-11,503.55	-268.69	366,252.62	808,449.15	32.003982	-103.471627
24,400.00	90.00	179.52	12,867.00	-11,603.54	-267.84	366,152.62	808,449.99	32.003707	-103.471627
24,500.00	90.00	179.52	12,867.00	-11,703.54	-267.00	366,052.62	808,450.84	32.003432	-103.471627
24,600.00	90.00	179.52	12,867.00	-11,803.54	-266.16	365,952.63	808,451.68	32.003157	-103.471627
24,700.00	90.00	179.52	12,867.00	-11,903.53	-265.32	365,852.63	808,452.52	32.002883	-103.471626
24,800.00	90.00	179.52	12,867.00	-12,003.53	-264.47	365,752.63	808,453.36	32.002608	-103.471626
24,900.00	90.00	179.52	12,867.00	-12,103.52	-263.63	365,652.64	808,454.21	32.002333	-103.471626
25,000.00	90.00	179.52	12,867.00	-12,203.52	-262.79	365,552.64	808,455.05	32.002058	-103.471626
25,100.00	90.00	179.52	12,867.00	-12,303.52	-261.95	365,452.65	808,455.89	32.001783	-103.471626
25,200.00	90.00	179.52	12,867.00	-12,403.51	-261.10	365,352.65	808,456.73	32.001508	-103.471626
25,300.00	90.00	179.52	12,867.00	-12,503.51	-260.26	365,252.65	808,457.58	32.001233	-103.471626
25,400.00	90.00	179.52	12,867.00	-12,603.51	-259.42	365,152.66	808,458.42	32.000958	-103.471625
25,500.00	90.00	179.52	12,867.00	-12,703.50	-258.58	365,052.66	808,459.26	32.000684	-103.471625
25,548.00	90.00	179.52	12,867.00	-12,751.50	-258.17	365,004.66	808,459.67	32.000552	-103.471625
LTP @ 25548' MD, 100' FSL, 1660' FEL									
25,600.00	90.00	179.52	12,867.00	-12,803.50	-257.73	364,952.66	808,460.10	32.000409	-103.471625

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Cobber 21-33 Fed Com 6H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3332.40ft
Project:	Lea County (NAD83 New Mexico East)	**MD Reference:**	RKB @ 3332.40ft
Site:	Sec 21-T26S-R34E	**North Reference:**	Grid
Well:	Cobber 21-33 Fed Com 6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
25,627.80	90.00	179.52	12,867.00	-12,831.30	-257.50	364,924.87	808,460.34	32.000332	-103.471625
PBHL; 20' FSL, 1660' FEL									
25,627.81	90.00	179.52	12,867.00	-12,831.31	-257.50	364,924.86	808,460.34	32.000332	-103.471625

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Cobber 21-33 Fe	0.00	0.00	0.00	-12,831.31	-257.50	364,924.86	808,460.34	32.000332	-103.471625
- plan misses target center by 12833.89ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
12,303.00	12,294.04	166.00	-367.00	KOP @ 12303' MD, 50' FNL, 1660' FEL
12,544.00	12,528.00	116.06	-366.58	FTP @ 12544' MD, 100' FNL, 1660' FEL
17,858.00	12,867.00	-5,061.77	-322.96	Cross section @ 17858' MD, 0' FNL, 1660' FEL
23,138.00	12,867.00	-10,341.59	-278.48	Cross section @ 23138' MD, 0' FNL, 1660' FEL
25,548.00	12,867.00	-12,751.50	-258.17	LTP @ 25548' MD, 100' FSL, 1660' FEL
25,627.80	12,867.00	-12,831.30	-257.50	PBHL; 20' FSL, 1660' FEL