

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Heather Riley, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-4 or 3160-5 form.

Operator Signature Date: Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf_Owner	UL	Sec	Twp	N/S	Rng	W/E	Feet	NS	Ft	EW
30-043-21307-00-00	W ESCAVADA UNIT	304H	ENDURING RESOURCES, LLC	O	N	Sandoval	N	P	17	22	N	7	W	235	S	248	E

Application Type:

☐ P&A ☐ Drilling/Casing Change ☐ Location Change

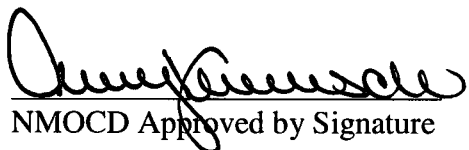
☐ **Recomplete/DHC** (For hydraulic fracturing operations review EPA Underground injection control Guidance #84; Submit Gas Capture Plan form prior to spudding or initiating recompletion operations)

☒ **Other:**

Conditions of Approval:

- **Name change DENIED BY NMOCD well is part of a unit, must be named the same as all wells drilled within the W Escavada Unit. Property Code: 321258**

Change of plans have been reviewed and approved by NMOCD.


NMOCD Approved by Signature

6/25/18
Date

18

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUN 05 2018

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.

Farmington Field Office
Bureau of Land Management

SUBMIT IN TRIPLICATE - Other instructions on page 2

I. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator
Enduring Resources LLC

3a. Address
332 CR 2100 Aztec, NM 87410

3b. Phone No.
505-636-9743

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 235' FSL & 248' FEL, Sec 17, T22N, R7W
BHL: 2301' FSL & 1087' FWL, Sec 7 T22N, R7W

5. Lease Serial No.
NO-G-1311-1807

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
W Escavada Unit 2207-17P 03LH

9. API Well No.
30-043-21307

10. Field and Pool or Exploratory Area
Escavada W; Mancos

11. Country or Parish, State
Sandoval, 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 <u>Change in plans/Well name change</u>
	☐ 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 recomple 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.)

Enduring Resources LLC. Requests to change the well name from W Escavada Unit #304H to W Escavada Unit 2207-17P 03LH along with the directional and ops plans.

Attached: Updated C102, directional plan, ops plan, wellbore diagram and BOPE/Choke diagrams.

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)
Lacey Granillo

Title: Permitting Specialist

Date: 6/5/18

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title RE

Date 6/18/18

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 FFO

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.

ADHERE TO PREVIOUS NMOCD
CONDITIONS OF APPROVAL

NMOCDP

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, 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 Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

S of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Rev August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21307	*Pool Code 98225	*Pool Name ESCAVADA W; MANCOS
*Property Code 317688	NAME CHANGE DENIED	
*Well Number 03LH		
*Elevation 6878'		

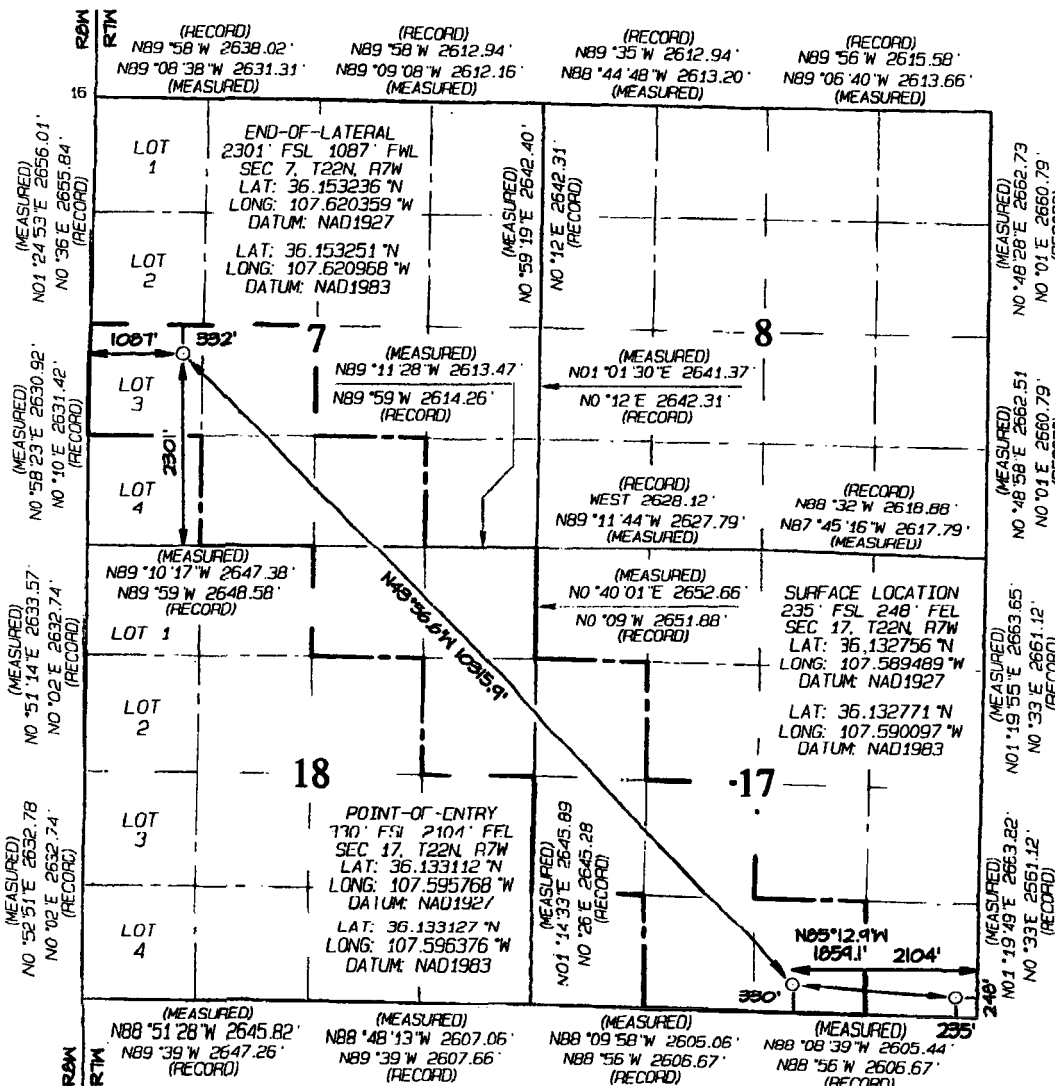
UL or lot no.	Section	Township	Range	Lot Idn	Feet from UL	North/South line	Feet from the	East/West line	County
P	17	22N	7W		235	SOUTH	248	EAST	SANDOVAL

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
L	7	22N	7W	3	2301	SOUTH	1087	WEST	SANDOVAL

12 Dedicated Acres 480.94 N/2 SW/4, SE/4 SW/4 SW/4 SE/4 - Section 7 N/2 NE/4, SE/4 NE/4 - Section 18 SW/4 NW/4, N/2 SW/4 SE/4 SW/4, SW/4 SE/4 - Section 17	13 Joint or Infill	14 Consolidation Code	15 Order No. R-14100
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION
UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



17 OPERATOR CERTIFICATION

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

Signature: *Lacey Granillo* Date: 6/5/18

Printed Name: Lacey Granillo

E-mail Address: lgranillo@enduringresources.com

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.

Date Revised: JANUARY 23, 2018
Date of Survey: MARCH 3, 2016

Signature and Seal of Professional Surveyor:

JASON C. EDWARDS
NEW MEXICO
REGISTERED PROFESSIONAL SURVEYOR
15269

Certificate Number 15269



Enduring Resources LLC

San Juan Basin - West Escavada Unit

2207-17P

03LH

Wellbore #1

Plan: Design #1

Standard Planning Report

04 June, 2018



Planning Report

Database: EDM
Company: Enduring Resources LLC
Project: San Juan Basin - West Escavada Unit
Site: 2207-17P
Well: 03LH
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 03LH
TVD Reference: KB @ 6900.0usft (Original Well Elev)
MD Reference: KB @ 6900.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	San Juan Basin - West Escavada Unit		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	2207-17P, Sandoval Co., New Mexico		
Site Position:		Northing:	1,867,714.17 usft
From:	Lat/Long	Easting:	2,794,957.05 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	36.132769°N
		Longitude:	107.589962°W
		Grid Convergence:	0.14 °

Well	03LH		
Well Position	+N/-S	0.6 usft	Northing: 1,867,714.79 usft
	+E/-W	-39.9 usft	Easting: 2,794,917.18 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Latitude: 36.132771°N
			Longitude: 107.590097°W
			Ground Level: 6,878.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	12/31/2009	(°)
			9.91
			Dip Angle
			(°)
			63.02
			Field Strength
			(nT)
			50,579.34924323

Design	Design #1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			309.15

Plan Survey Tool Program	Date 8/4/2018		
Depth From	Depth To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
1	0.0	15,831.8 Design #1 (Wellbore #1)	MWD
			OWSG MWD - Standard

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
220.0	0.00	0.00	220.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,507.3	20.15	258.23	1,486.7	-35.8	-171.6	2.00	2.00	0.00	258.23	
4,557.2	20.15	258.23	4,350.0	-250.0	-1,200.0	0.00	0.00	0.00	0.00	03LH-KOP
5,274.1	84.74	308.53	4,776.5	-33.8	-1,870.7	10.00	9.01	6.74	51.55	
5,517.5	89.86	315.12	4,788.0	125.0	-1,854.5	4.11	2.11	3.53	59.43	03LH-POE
15,831.8	89.86	315.12	4,813.0	7,433.7	-9,132.2	0.00	0.00	0.00	0.00	03LH-BHL



Planning Report

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Company: Enduring Resources LLC
Project: San Juan Basin - West Escavada Unit
Site: 2207-17P
Well: 03LH
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 03LH
TVD Reference: KB @ 6900.0usft (Original Well Elev)
MD Reference: KB @ 6900.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
220.0	0.00	0.00	220.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	2.00	258.23	600.0	-0.4	-1.7	1.1	2.00	2.00	0.00
610.0	2.20	258.23	610.0	-0.4	-2.1	1.3	2.00	2.00	0.00
Ojo Alamo									
700.0	4.00	258.23	699.8	-1.4	-6.8	4.4	2.00	2.00	0.00
800.0	6.00	258.23	799.5	-3.2	-15.4	9.9	2.00	2.00	0.00
830.7	6.61	258.23	830.0	-3.9	-18.7	12.0	2.00	2.00	0.00
Kirtland									
900.0	8.00	258.23	898.7	-5.7	-27.3	17.6	2.00	2.00	0.00
926.6	8.53	258.23	925.0	-6.5	-31.0	20.0	2.00	2.00	0.00
Fruitland									
1,000.0	10.00	258.23	997.5	-8.9	-42.6	27.4	2.00	2.00	0.00
1,100.0	12.00	258.23	1,095.6	-12.8	-61.3	39.5	2.00	2.00	0.00
1,200.0	14.00	258.23	1,193.1	-17.4	-83.3	53.7	2.00	2.00	0.00
1,233.0	14.66	258.23	1,225.0	-19.0	-91.3	58.8	2.00	2.00	0.00
Pictured Cliffs									
1,300.0	16.00	258.23	1,289.6	-22.6	-108.6	70.0	2.00	2.00	0.00
1,400.0	18.00	258.23	1,385.3	-28.6	-137.3	88.4	2.00	2.00	0.00
1,420.8	18.42	258.23	1,405.0	-29.9	-143.6	92.5	2.00	2.00	0.00
Lewis									
1,500.0	20.00	258.23	1,479.8	-35.2	-169.1	108.9	2.00	2.00	0.00
1,507.3	20.15	258.23	1,486.7	-35.8	-171.6	110.5	2.00	2.00	0.00
1,596.1	20.15	258.23	1,570.0	-42.0	-201.5	129.8	0.00	0.00	0.00
Chacra									
1,600.0	20.15	258.23	1,573.7	-42.3	-202.8	130.6	0.00	0.00	0.00
1,700.0	20.15	258.23	1,667.6	-49.3	-236.6	152.4	0.00	0.00	0.00
1,800.0	20.15	258.23	1,761.5	-56.3	-270.3	174.1	0.00	0.00	0.00
1,900.0	20.15	258.23	1,855.3	-63.3	-304.0	195.8	0.00	0.00	0.00
2,000.0	20.15	258.23	1,949.2	-70.4	-337.7	217.5	0.00	0.00	0.00
2,000.8	20.15	258.23	1,950.0	-70.4	-338.0	217.7	0.00	0.00	0.00
Cliff House									
2,100.0	20.15	258.23	2,043.1	-77.4	-371.4	239.2	0.00	0.00	0.00
2,200.0	20.15	258.23	2,137.0	-84.4	-405.2	260.9	0.00	0.00	0.00
2,300.0	20.15	258.23	2,230.9	-91.4	-438.9	282.6	0.00	0.00	0.00
2,400.0	20.15	258.23	2,324.7	-98.5	-472.6	304.4	0.00	0.00	0.00
2,500.0	20.15	258.23	2,418.6	-105.5	-506.3	326.1	0.00	0.00	0.00
2,600.0	20.15	258.23	2,512.5	-112.5	-540.0	347.8	0.00	0.00	0.00
2,700.0	20.15	258.23	2,606.4	-119.5	-573.8	369.5	0.00	0.00	0.00
2,794.4	20.15	258.23	2,695.0	-126.2	-605.6	390.0	0.00	0.00	0.00
Menefee									
2,800.0	20.15	258.23	2,700.3	-126.6	-607.5	391.2	0.00	0.00	0.00
2,847.6	20.15	258.23	2,745.0	-129.9	-623.5	401.6	0.00	0.00	0.00
9 5/8"									
2,900.0	20.15	258.23	2,794.2	-133.6	-641.2	412.9	0.00	0.00	0.00
3,000.0	20.15	258.23	2,888.0	-140.6	-674.9	434.7	0.00	0.00	0.00
3,100.0	20.15	258.23	2,981.9	-147.6	-708.6	456.4	0.00	0.00	0.00



Planning Report

Database: EDM
Company: Enduring Resources LLC
Project: San Juan Basin - West Escavada Unit
Site: 2207-17P
Well: 03LH
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference:
TYD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well 03LH
KB @ 6900.0usft (Original Well Elev)
KB @ 6900.0usft (Original Well Elev)
Grid
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,200.0	20.15	258.23	3,075.8	-154.7	-742.4	478.1	0.00	0.00	0.00
3,300.0	20.15	258.23	3,169.7	-161.7	-776.1	499.8	0.00	0.00	0.00
3,400.0	20.15	258.23	3,263.6	-168.7	-809.8	521.5	0.00	0.00	0.00
3,500.0	20.15	258.23	3,357.4	-175.7	-843.5	543.2	0.00	0.00	0.00
3,600.0	20.15	258.23	3,451.3	-182.8	-877.2	565.0	0.00	0.00	0.00
3,700.0	20.15	258.23	3,545.2	-189.8	-910.9	586.7	0.00	0.00	0.00
3,758.4	20.15	258.23	3,600.0	-193.9	-930.6	599.3	0.00	0.00	0.00
Point Lookout									
3,800.0	20.15	258.23	3,639.1	-196.8	-944.7	608.4	0.00	0.00	0.00
3,900.0	20.15	258.23	3,733.0	-203.8	-978.4	630.1	0.00	0.00	0.00
4,000.0	20.15	258.23	3,826.8	-210.9	-1,012.1	651.8	0.00	0.00	0.00
4,030.0	20.15	258.23	3,855.0	-213.0	-1,022.2	658.3	0.00	0.00	0.00
Mancos									
4,100.0	20.15	258.23	3,920.7	-217.9	-1,045.8	673.5	0.00	0.00	0.00
4,200.0	20.15	258.23	4,014.6	-224.9	-1,079.5	695.2	0.00	0.00	0.00
4,264.3	20.15	258.23	4,075.0	-229.4	-1,101.2	709.2	0.00	0.00	0.00
Gallup (Mncs. A)									
4,300.0	20.15	258.23	4,108.5	-231.9	-1,113.3	717.0	0.00	0.00	0.00
4,400.0	20.15	258.23	4,202.4	-239.0	-1,147.0	738.7	0.00	0.00	0.00
4,500.0	20.15	258.23	4,296.3	-246.0	-1,180.7	760.4	0.00	0.00	0.00
4,557.2	20.15	258.23	4,350.0	-250.0	-1,200.0	772.8	0.00	0.00	0.00
03LH-KOP									
4,600.0	23.04	266.81	4,389.8	-252.0	-1,215.8	783.7	10.00	6.77	20.07
4,700.0	31.02	280.24	4,478.8	-248.5	-1,260.6	820.8	10.00	7.98	13.43
4,800.0	39.85	288.39	4,560.3	-233.7	-1,316.5	873.4	10.00	8.83	8.16
4,900.0	49.07	293.95	4,631.6	-208.2	-1,381.6	940.0	10.00	9.22	5.55
5,000.0	58.49	298.12	4,690.7	-172.7	-1,453.9	1,018.5	10.00	9.42	4.17
5,100.0	68.02	301.51	4,735.6	-128.3	-1,531.2	1,108.5	10.00	9.53	3.40
5,200.0	77.81	304.48	4,765.1	-76.3	-1,611.2	1,201.4	10.00	9.59	2.96
5,274.1	84.74	306.53	4,776.5	-33.8	-1,670.7	1,274.4	10.00	9.62	2.77
5,300.0	85.28	307.45	4,778.8	-18.2	-1,691.3	1,300.2	4.11	2.09	3.55
5,400.0	87.38	310.98	4,785.2	44.8	-1,768.6	1,400.0	4.11	2.10	3.54
5,500.0	89.49	314.51	4,787.9	112.7	-1,842.0	1,499.7	4.11	2.11	3.52
5,517.5	89.86	315.12	4,788.0	125.0	-1,854.5	1,517.1	4.11	2.11	3.52
Gallup (Target) - 03LH-POE									
5,600.0	89.86	315.12	4,788.2	183.5	-1,912.7	1,599.2	0.00	0.00	0.00
5,700.0	89.86	315.12	4,788.4	254.3	-1,983.2	1,698.6	0.00	0.00	0.00
5,800.0	89.86	315.12	4,788.7	325.2	-2,053.8	1,798.1	0.00	0.00	0.00
5,900.0	89.86	315.12	4,788.9	396.0	-2,124.3	1,897.5	0.00	0.00	0.00
6,000.0	89.86	315.12	4,789.2	466.9	-2,194.9	1,997.0	0.00	0.00	0.00
6,100.0	89.86	315.12	4,789.4	537.8	-2,265.5	2,096.4	0.00	0.00	0.00
6,200.0	89.86	315.12	4,789.7	608.6	-2,336.0	2,195.9	0.00	0.00	0.00
6,300.0	89.86	315.12	4,789.9	679.5	-2,406.6	2,295.4	0.00	0.00	0.00
6,400.0	89.86	315.12	4,790.1	750.3	-2,477.1	2,394.8	0.00	0.00	0.00
6,500.0	89.86	315.12	4,790.4	821.2	-2,547.7	2,494.3	0.00	0.00	0.00
6,600.0	89.86	315.12	4,790.6	892.1	-2,618.3	2,593.7	0.00	0.00	0.00
6,700.0	89.86	315.12	4,790.9	962.9	-2,688.8	2,693.2	0.00	0.00	0.00
6,800.0	89.86	315.12	4,791.1	1,033.8	-2,759.4	2,792.6	0.00	0.00	0.00
6,900.0	89.86	315.12	4,791.4	1,104.6	-2,829.9	2,892.1	0.00	0.00	0.00
7,000.0	89.86	315.12	4,791.6	1,175.5	-2,900.5	2,991.6	0.00	0.00	0.00
7,100.0	89.86	315.12	4,791.8	1,246.4	-2,971.1	3,091.0	0.00	0.00	0.00
7,200.0	89.86	315.12	4,792.1	1,317.2	-3,041.6	3,190.5	0.00	0.00	0.00
7,300.0	89.86	315.12	4,792.3	1,388.1	-3,112.2	3,289.9	0.00	0.00	0.00



Planning Report

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 Wellbore: Wellbore #1
 Design: Design #1

Local Co-ordinate Reference: Well 03LH
 TVD Reference: KB @ 6900.0usft (Original Well Elev)
 MD Reference: KB @ 6900.0usft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,400.0	89.86	315.12	4,792.6	1,458.9	-3,182.7	3,389.4	0.00	0.00	0.00
7,500.0	89.86	315.12	4,792.8	1,529.8	-3,253.3	3,488.8	0.00	0.00	0.00
7,600.0	89.86	315.12	4,793.0	1,600.7	-3,323.9	3,588.3	0.00	0.00	0.00
7,700.0	89.86	315.12	4,793.3	1,671.5	-3,394.4	3,687.7	0.00	0.00	0.00
7,800.0	89.86	315.12	4,793.5	1,742.4	-3,465.0	3,787.2	0.00	0.00	0.00
7,900.0	89.86	315.12	4,793.8	1,813.2	-3,535.5	3,886.7	0.00	0.00	0.00
8,000.0	89.86	315.12	4,794.0	1,884.1	-3,606.1	3,986.1	0.00	0.00	0.00
8,100.0	89.86	315.12	4,794.3	1,955.0	-3,676.7	4,085.6	0.00	0.00	0.00
8,200.0	89.86	315.12	4,794.5	2,025.8	-3,747.2	4,185.0	0.00	0.00	0.00
8,300.0	89.86	315.12	4,794.7	2,096.7	-3,817.8	4,284.5	0.00	0.00	0.00
8,400.0	89.86	315.12	4,795.0	2,167.5	-3,888.4	4,383.9	0.00	0.00	0.00
8,500.0	89.86	315.12	4,795.2	2,238.4	-3,958.9	4,483.4	0.00	0.00	0.00
8,600.0	89.86	315.12	4,795.5	2,309.3	-4,029.5	4,582.9	0.00	0.00	0.00
8,700.0	89.86	315.12	4,795.7	2,380.1	-4,100.0	4,682.3	0.00	0.00	0.00
8,800.0	89.86	315.12	4,796.0	2,451.0	-4,170.6	4,781.8	0.00	0.00	0.00
8,900.0	89.86	315.12	4,796.2	2,521.8	-4,241.2	4,881.2	0.00	0.00	0.00
9,000.0	89.86	315.12	4,796.4	2,592.7	-4,311.7	4,980.7	0.00	0.00	0.00
9,100.0	89.86	315.12	4,796.7	2,663.6	-4,382.3	5,080.1	0.00	0.00	0.00
9,200.0	89.86	315.12	4,796.9	2,734.4	-4,452.8	5,179.6	0.00	0.00	0.00
9,300.0	89.86	315.12	4,797.2	2,805.3	-4,523.4	5,279.1	0.00	0.00	0.00
9,400.0	89.86	315.12	4,797.4	2,876.1	-4,594.0	5,378.5	0.00	0.00	0.00
9,500.0	89.86	315.12	4,797.7	2,947.0	-4,664.5	5,478.0	0.00	0.00	0.00
9,600.0	89.86	315.12	4,797.9	3,017.9	-4,735.1	5,577.4	0.00	0.00	0.00
9,700.0	89.86	315.12	4,798.1	3,088.7	-4,805.6	5,676.9	0.00	0.00	0.00
9,800.0	89.86	315.12	4,798.4	3,159.6	-4,876.2	5,776.3	0.00	0.00	0.00
9,900.0	89.86	315.12	4,798.6	3,230.4	-4,946.8	5,875.8	0.00	0.00	0.00
10,000.0	89.86	315.12	4,798.9	3,301.3	-5,017.3	5,975.2	0.00	0.00	0.00
10,100.0	89.86	315.12	4,799.1	3,372.2	-5,087.9	6,074.7	0.00	0.00	0.00
10,200.0	89.86	315.12	4,799.3	3,443.0	-5,158.4	6,174.2	0.00	0.00	0.00
10,300.0	89.86	315.12	4,799.6	3,513.9	-5,229.0	6,273.6	0.00	0.00	0.00
10,400.0	89.86	315.12	4,799.8	3,584.7	-5,299.6	6,373.1	0.00	0.00	0.00
10,500.0	89.86	315.12	4,800.1	3,655.6	-5,370.1	6,472.5	0.00	0.00	0.00
10,600.0	89.86	315.12	4,800.3	3,726.5	-5,440.7	6,572.0	0.00	0.00	0.00
10,700.0	89.86	315.12	4,800.6	3,797.3	-5,511.2	6,671.4	0.00	0.00	0.00
10,800.0	89.86	315.12	4,800.8	3,868.2	-5,581.8	6,770.9	0.00	0.00	0.00
10,900.0	89.86	315.12	4,801.0	3,939.0	-5,652.4	6,870.4	0.00	0.00	0.00
11,000.0	89.86	315.12	4,801.3	4,009.9	-5,722.9	6,969.8	0.00	0.00	0.00
11,100.0	89.86	315.12	4,801.5	4,080.8	-5,793.5	7,069.3	0.00	0.00	0.00
11,200.0	89.86	315.12	4,801.8	4,151.6	-5,864.0	7,168.7	0.00	0.00	0.00
11,300.0	89.86	315.12	4,802.0	4,222.5	-5,934.6	7,268.2	0.00	0.00	0.00
11,400.0	89.86	315.12	4,802.3	4,293.3	-6,005.2	7,367.6	0.00	0.00	0.00
11,500.0	89.86	315.12	4,802.5	4,364.2	-6,075.7	7,467.1	0.00	0.00	0.00
11,600.0	89.86	315.12	4,802.7	4,435.1	-6,146.3	7,566.5	0.00	0.00	0.00
11,700.0	89.86	315.12	4,803.0	4,505.9	-6,216.8	7,666.0	0.00	0.00	0.00
11,800.0	89.86	315.12	4,803.2	4,576.8	-6,287.4	7,765.5	0.00	0.00	0.00
11,900.0	89.86	315.12	4,803.5	4,647.6	-6,358.0	7,864.9	0.00	0.00	0.00
12,000.0	89.86	315.12	4,803.7	4,718.5	-6,428.5	7,964.4	0.00	0.00	0.00
12,100.0	89.86	315.12	4,804.0	4,789.4	-6,499.1	8,063.8	0.00	0.00	0.00
12,200.0	89.86	315.12	4,804.2	4,860.2	-6,569.7	8,163.3	0.00	0.00	0.00
12,300.0	89.86	315.12	4,804.4	4,931.1	-6,640.2	8,262.7	0.00	0.00	0.00
12,400.0	89.86	315.12	4,804.7	5,001.9	-6,710.8	8,362.2	0.00	0.00	0.00
12,500.0	89.86	315.12	4,804.9	5,072.8	-6,781.3	8,461.7	0.00	0.00	0.00
12,600.0	89.86	315.12	4,805.2	5,143.7	-6,851.9	8,561.1	0.00	0.00	0.00
12,700.0	89.86	315.12	4,805.4	5,214.5	-6,922.5	8,660.6	0.00	0.00	0.00



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Local Co-ordinate Reference: Well 03LH
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MD Reference: KB @ 6900.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,800.0	89.86	315.12	4,805.7	5,285.4	-6,993.0	8,760.0	0.00	0.00	0.00
12,900.0	89.86	315.12	4,805.9	5,356.2	-7,063.6	8,859.5	0.00	0.00	0.00
13,000.0	89.86	315.12	4,806.1	5,427.1	-7,134.1	8,958.9	0.00	0.00	0.00
13,100.0	89.86	315.12	4,806.4	5,498.0	-7,204.7	9,058.4	0.00	0.00	0.00
13,200.0	89.86	315.12	4,806.6	5,568.8	-7,275.3	9,157.8	0.00	0.00	0.00
13,300.0	89.86	315.12	4,806.9	5,639.7	-7,345.8	9,257.3	0.00	0.00	0.00
13,400.0	89.86	315.12	4,807.1	5,710.6	-7,416.4	9,356.8	0.00	0.00	0.00
13,500.0	89.86	315.12	4,807.3	5,781.4	-7,486.9	9,456.2	0.00	0.00	0.00
13,600.0	89.86	315.12	4,807.6	5,852.3	-7,557.5	9,555.7	0.00	0.00	0.00
13,700.0	89.86	315.12	4,807.8	5,923.1	-7,628.1	9,655.1	0.00	0.00	0.00
13,800.0	89.86	315.12	4,808.1	5,994.0	-7,698.6	9,754.6	0.00	0.00	0.00
13,900.0	89.86	315.12	4,808.3	6,064.9	-7,769.2	9,854.0	0.00	0.00	0.00
14,000.0	89.86	315.12	4,808.6	6,135.7	-7,839.7	9,953.5	0.00	0.00	0.00
14,100.0	89.86	315.12	4,808.8	6,206.6	-7,910.3	10,053.0	0.00	0.00	0.00
14,200.0	89.86	315.12	4,809.0	6,277.4	-7,980.9	10,152.4	0.00	0.00	0.00
14,300.0	89.86	315.12	4,809.3	6,348.3	-8,051.4	10,251.9	0.00	0.00	0.00
14,400.0	89.86	315.12	4,809.5	6,419.2	-8,122.0	10,351.3	0.00	0.00	0.00
14,500.0	89.86	315.12	4,809.8	6,490.0	-8,192.5	10,450.8	0.00	0.00	0.00
14,600.0	89.86	315.12	4,810.0	6,560.9	-8,263.1	10,550.2	0.00	0.00	0.00
14,700.0	89.86	315.12	4,810.3	6,631.7	-8,333.7	10,649.7	0.00	0.00	0.00
14,800.0	89.86	315.12	4,810.5	6,702.6	-8,404.2	10,749.1	0.00	0.00	0.00
14,900.0	89.86	315.12	4,810.7	6,773.5	-8,474.8	10,848.6	0.00	0.00	0.00
15,000.0	89.86	315.12	4,811.0	6,844.3	-8,545.3	10,948.1	0.00	0.00	0.00
15,100.0	89.86	315.12	4,811.2	6,915.2	-8,615.9	11,047.5	0.00	0.00	0.00
15,200.0	89.86	315.12	4,811.5	6,986.0	-8,686.5	11,147.0	0.00	0.00	0.00
15,300.0	89.86	315.12	4,811.7	7,056.9	-8,757.0	11,246.4	0.00	0.00	0.00
15,400.0	89.86	315.12	4,812.0	7,127.8	-8,827.6	11,345.9	0.00	0.00	0.00
15,500.0	89.86	315.12	4,812.2	7,198.6	-8,898.1	11,445.3	0.00	0.00	0.00
15,600.0	89.86	315.12	4,812.4	7,269.5	-8,968.7	11,544.8	0.00	0.00	0.00
15,700.0	89.86	315.12	4,812.7	7,340.3	-9,039.3	11,644.3	0.00	0.00	0.00
15,800.0	89.86	315.12	4,812.9	7,411.2	-9,109.8	11,743.7	0.00	0.00	0.00
15,831.8	89.86	315.12	4,813.0	7,433.7	-9,132.2	11,775.3	0.00	0.00	0.00

03LH-BHL

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
03LH-KOP - hit/miss target - Shape	0.00	0.00	4,350.0	-250.0	-1,200.0	1,867,464.79	2,793,717.18	36.132092°N	107.594163°W
- plan hits target center - Point									
03LH-POE - plan hits target center - Point	0.00	0.00	4,788.0	125.0	-1,854.5	1,867,839.80	2,793,082.73	36.133127°N	107.598378°W
- plan hits target center - Point									
03LH-BHL - plan hits target center - Point	0.00	0.00	4,813.0	7,433.7	-9,132.2	1,875,148.49	2,785,784.94	36.153251°N	107.620868°W
- plan hits target center - Point									



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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
220.0	220.0	13 3/8"	13-3/8	17-1/2
2,847.6	2,745.0	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")
610.0	610.0	Ojo Alamo		0.00	
830.7	830.0	Kirtland		0.00	
926.6	925.0	Fruitland		0.00	
1,233.0	1,225.0	Pictured Cliffs		0.00	
1,420.8	1,405.0	Lewis		0.00	
1,596.1	1,570.0	Chacra		0.00	
2,000.8	1,950.0	Cliff House		0.00	
2,794.4	2,695.0	Menefee		0.00	
3,758.4	3,600.0	Point Lookout		0.00	
4,030.0	3,855.0	Mancos		0.00	
4,264.3	4,075.0	Gallup (Mncs. A)		0.00	
5,517.5	4,788.0	Gallup (Target)		0.00	



Enduring Resources LLC

Directional Drilling Plan
Plan View & Section View

W Escavada Unit 2207-17P-03LH

Sandoval Co., New Mexico

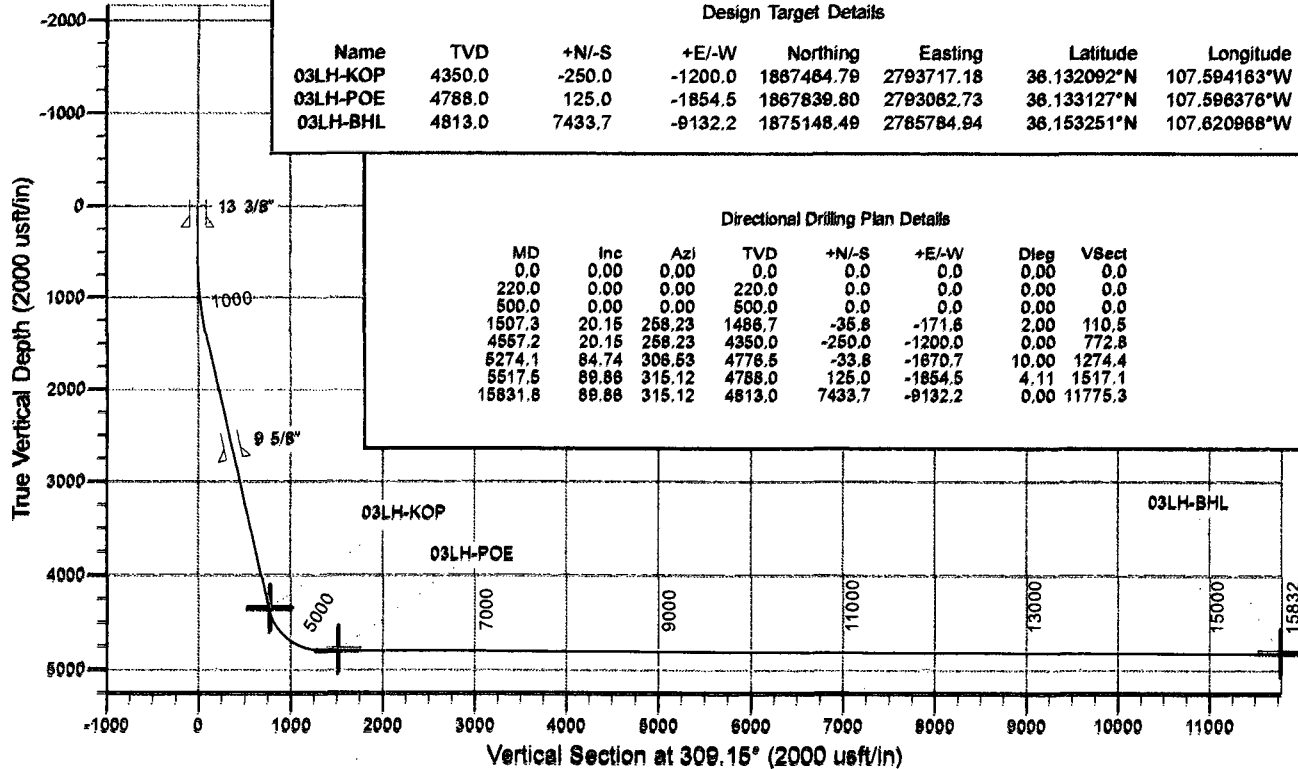
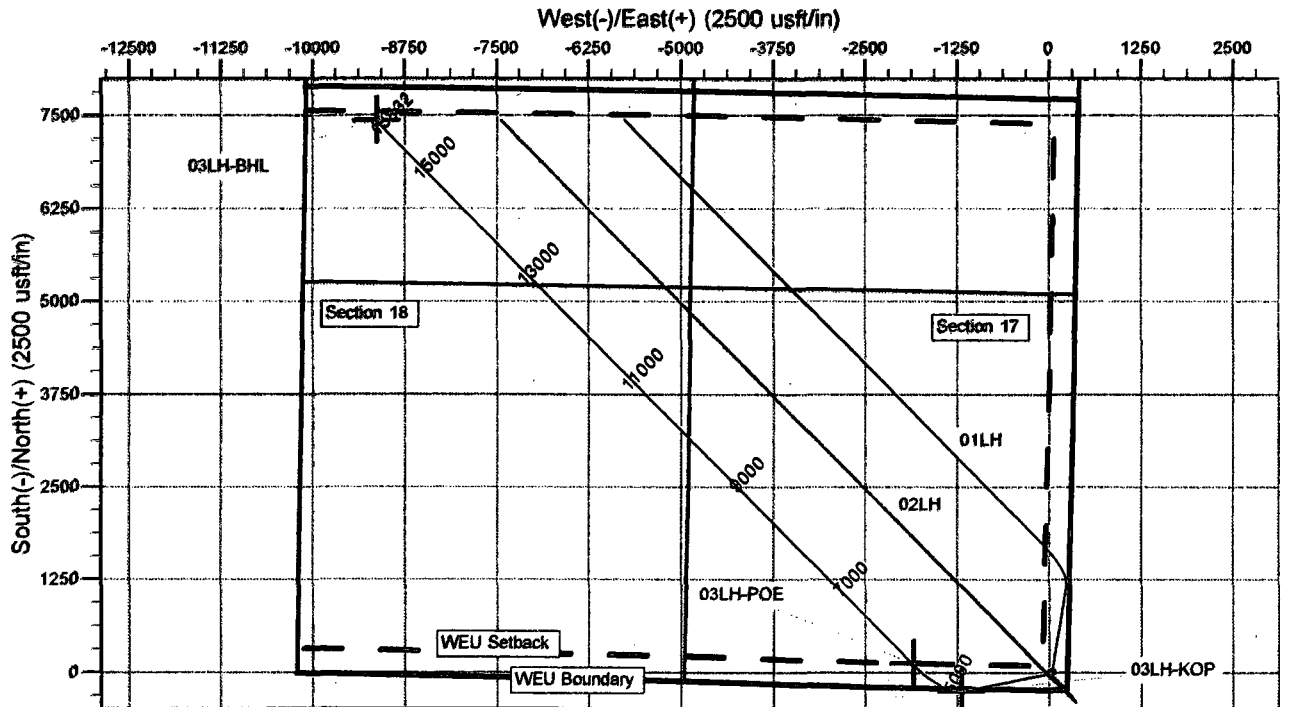
T27N-R07W-Sec.17-Lot P

Surface Latitude: 36.132771°N

Surface Longitude: 107.590097°W

Ground Level: 6878.0

Reference Elevation: KB @ 6900.0usft (Original Well Elev)





ENDURING RESOURCES IV, LLC
1050 SEVENTEENTH STREET, SUITE 2500
DENVER, COLORADO 80202

DRILLING PLAN: *Drill, complete, and equip single lateral in the Gallup formation*

WELL INFORMATION:

Name: W Escavada Unit 2207-17P-03LH

API Number: 30-043-21307

State: New Mexico

County: Sandoval

Surface Elevation: 6,878 ft ASL (GL) 6,900 ft ASL (KB)

Surface Location: 17-22N-07W Sec-Twn-Rng 235 ft FSL 248 ft FEL

36.132771 ° N latitude 107.590097 ° W longitude (NAD 83)

BH Location: 7-22N-07W Sec-Twn-Rng 2,301 ft FSL 1,087 ft FWL

36.153251 ° N latitude 107.620968 ° W longitude (NAD 83)

Driving Directions: From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM: south on 550 for 53.6 miles to MM 97.7, right (south) on Indian Service Route #474 for 4.9 miles, right (west) at fork continuing on #474 for 2.5 miles, right (west) at fork for 0.3 miles, right (west) for 1.0 miles to 4-way intersection, straight (west) for 1.2 miles to 4-way intersection, left (south) for 1.7 miles to 4-way intersection, right (west) for 1.9 miles to NEU 317H pad, left (southwest) for approximately 1.3 miles to location.

GEOLOGIC AND RESERVOIR INFORMATION:

Prognosis:	Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
	Ojo Alamo	6,290	610	610	W	normal
	Kirtland	6,070	830	831	W	normal
	Fruitland	5,975	925	927	G, W	normal
	Pictured Cliffs	5,675	1,225	1,233	G, W	normal
	Lewis	5,495	1,405	1,421	G, W	normal
	Chacra	5,330	1,570	1,596	G, W	normal
	Cliff House	4,950	1,950	2,001	G, W	normal
	Menefee	4,205	2,695	2,794	G, W	normal
	Point Lookout	3,300	3,600	3,758	G, W	normal
	Mancos	3,045	3,855	4,030	O,G	normal
	Gallup (MNCS. A)	2,825	4,075	4,264	O,G	normal
	Gallup (Target Depth)	2,112	4,788	5,518	O,G	normal
	PROJECTED WELL TD	2,087	4,813	15,832	O,G	normal

Surface: Nacimiento

Oil & Gas Zones: Several gas bearing zones will be encountered; target formation is the Gallup

Pressure: Normal pressure gradient (0.43 psi/ft) anticipated in all formations

Max. pressure gradient: 0.43 psi/ft Evacuated hole gradient: 0.22 psi/ft

Maximum anticipated BH pressure, assuming maximum pressure gradient: 2,060 psi

Maximum anticipated surface pressure, assuming partially evacuated hole: 1,010 psi

Temperature: Maximum anticipated BHT is 165° F or less

H₂S INFORMATION:

H₂S Zones: Encountering hydrogen-sulfide bearing zones is **NOT** anticipated.

Safety: Sensors and alarms will be placed in the substructure, on the rig floor, above the pits, and at the shakers.

LOGGING, CORING, AND TESTING:

Mud Logs: None planned; remote geo-steering from drill out of 9-5/8" casing to TD; gas chromatograph from drillout of 13-3/8" casing to TD.

MWD / LWD: Gamma Ray from drillout of 13-3/8" casing to TD

Open Hole Logs: None planned

Testing: None planned

Coring: None planned

Cased Hole Logs: CBL on 5-1/2" casing from deepest free-fall depth to surface

DRILLING RIG INFORMATION:

Contractor: Aztec

Rig No.: 1000

Draw Works: E80 AC 1,500 hp

Mast: Hyduke Triple (136 ft, 600,000 lbs, 10 lines)

Top Drive: NOV IDS-350PE (350 ton)

Prime Movers: 4 - GE Jenbacher Natural Gas Generator

Pumps: 2 - RS F-1600 (7,500 psi)

BOPE 1: Cameron double gate ram (13-5/8", 5,000 psi)

BOPE 2: Cameron annular (13-5/8", 5,000 psi)

Choke: Cameron (4", 10,000 psi)

KB-Gl (ft): 22

BOPE REQUIREMENTS:

See attached diagram for details regarding BOPE specifications and configuration.

- 1) Rig will be equipped with upper and lower kelly cocks with handles available.
- 2) Inside BOP and TIW valves will be available to use on all sizes and threads of drill pipe used while drilling the well.
- 2) BOP accumulator will have enough capacity to open the HCR valve, close all rams and annular preventer, and retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity, and the fluid level shall be maintained at manufacturer's recommendation. There will be two additional sources of power for the closing pumps (electric and air). Sufficient nitrogen bottles will be available and will be recharged when pressure falls below manufacturer's recommended minimum.
- 3) BOP testing shall be conducted (a) when initially installed, (b) whenever any seal is broken or repaired, (c) if the time since the previous test exceeds 30 days. Tests will be conducted using a test plug. BOP ram preventers will be tested to 5,000 psi for 10 minutes, and the annular preventer will be tested to 2,500 psi for 10 minutes. Ram and annular preventers will be tested to 250 psi for 5 minutes. Additionally, BOP and casing strings will be tested to .22 psi/ft or 1,500 psi, whichever is greater but not exceeding 70% of yield strength of the casing, for 30 minutes, prior to drilling out 13-3/8" and 9-5/8" casing. Rams and hydraulically operated remote choke line valve will be function tested daily at a minimum.
- 4) Remote valve for BOP rams, HCR, and choke shall be placed in a location that is readily available to the driller. The remote BOP valve shall be capable of closing and opening the rams.
- 5) Manual locking devices (hand wheels) shall be installed on rams. A valve will be installed on the annular preventer's closing line as close as possible to the preventer to act as a locking device. The valve will be maintained in the open position and shall only be closed when there is no power to the accumulator.

FLUIDS AND SOLIDS CONTROL PROGRAM:

- Fluid Measurement:** Pumps shall be equipped with stroke counters with displays in the dog-house. Slow pump speed shall be recorded daily and after mudding up, at a minimum, on the drilling report. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog-house. Gas-detecting equipment will be installed at the shakers, and readouts will be available in the dog-house and the in the geologist's work-station (if geologist or mud-logger is on-site).
- Closed-Loop System:** A fully, closed-loop system will be utilized. The system will consist of above-ground piping and above-ground storage tanks and bins. The system will not entail any earthen pits, below-grade storage, or drying pads. All equipment will be disassembled and removed from the site when drilling operations cease. The system will be capable of storing all fluids and generated cuttings and of preventing uncontrolled releases of the same. The system will be operated in an efficient manner to allow the recycling and reuse of as much fluid as possible and to minimize the amount of fluids and solids that require disposal.
- Fluid Disposal:** Fluids that cannot be reused, recycled, or returned to the supplier will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).
- Solids Disposal:** Drilling solids will be stored (until haul-off) on-site in separate containers with no other waste, debris, or garbage products. Waste solids will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).
- Fluid Program:** See "Detailed Drilling Plan" section for specifics.

DETAILED DRILLING PLAN:

SURFACE: Drill vertically to casing setting depth (plus necessary rathole), run casing, cement casing to surface.

0 ft (MD)	to	240 ft (MD)	Hole Section Length:	240 ft
0 ft (TVD)	to	240 ft (TVD)	Casing Required:	220 ft

Note: Surface hole may be drilled, cased, and cemented with a smaller rig in advance of the drilling rig.

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	Fresh Water	8.4	N/C	2 - 8	2 - 12	9.0	Spud mud

Hole Size: 17-1/2"

Bit / Motor: Mill Tooth or PDC, no motor

MWD / Survey: No MWD, run gyro survey after drilling

Logging: None

Casing Specs:							
						Tens. Body (lbs)	Tens. (lbs)
Specs	13.375	Wt (lb/ft) 54.5	Grade J-55	Conn. STC	Collapse (psi) 1,130	Burst (psi) 2,730	853,000
Loading					105	590	111,406
Min. S.F.					10.78	4.63	7.66

Assumptions: Collapse: fully evacuated casing with 8.4 ppg equivalent external pressure gradient

Burst: maximum anticipated surface pressure with 9.5 ppg fluid inside casing while drilling intermediate hole and 8.4 ppg equivalent external pressure gradient

Tension: buoyed weight in 8.4 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: 3,860 Optimum: 5,140 Maximum: 6,430

Casing Details: Guide shoe, single-valve float collar, 1 jt casing, double-valve float collar, landing collar, casing to surface

Centralizers: 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 2 jts to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
	Class G	15.8	1.174	5.15	0.6946	100%	0	284

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton HALCEM surface cementing blend

Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.

INTERMEDIATE: Drill as per directional plan to casing setting depth, run casing, cement casing to surface, install wellhead.

220 ft (MD)	to	2,848 ft (MD)	Hole Section Length:	2,628 ft
220 ft (TVD)	to	2,745 ft (TVD)	Casing Required:	2,848 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	WBM	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	OBM as contingency

Hole Size: 12-1/4"

Bit / Motor: PDC w/mud motor

MWD / Survey: MWD with GR, inclination, and azimuth survey (every 100' at a minimum)

Logging: None

Pressure Test: NU BOPE and test (as noted above); pressure test 13-3/8" casing to 1,500 psi for 30 minutes.

Note: The intermediate hole section may be drilled with a 2,000 psi annular preventer only (no blind or pipe rams).

Maximum anticipated surface pressure while drilling intermediate hole section is 580 psi

Casing Specs:	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	9.625	36.0	J-55	LTC	2,020	3,520	564,000
Loading					1,199	1,167	189,409
Min. S.F.					1.68	3.02	2.98

Assumptions: Collapse: fully evacuated casing with 8.4 ppg equivalent external pressure gradient

Burst: maximum anticipated surface pressure with 9.5 ppg fluid inside casing while drilling production hole and 8.4 ppg equivalent external pressure gradient

Tension: buoyed weight in 8.4 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: 3,400 Optimum: 4,530 Maximum: 5,660

Casing Details: Guide shoe, single-valve float collar, 1 jt casing, double-valve float collar, landing collar, casing to surface, 11" SK API-certified wellhead

Centralizers: 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 3 jts to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ Blend	12.3	1.987	10.16	0.3132	40%	0	518
Tail	Class G	15.8	1.148	4.98	0.3132	10%	2,348	150

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton ECONOCEM & HALCEM cementing blend

Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.

PRODUCTION: Drill to TD following directional plan, run casing, cement casing to surface.

2,848 ft (MD)	to	15,832 ft (MD)	Hole Section Length:	12,984 ft
2,745 ft (TVD)	to	4,813 ft (TVD)	Casing Required:	15,832 ft

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	WBM	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	OBM as contingency

Hole Size: 8-1/2"

Bit / Motor: PDC w/mud motor

MWD / Survey: MWD with GR, inclination, and azimuth (survey every joint from KOP to Landing Point and survey every 100' minimum before KOP and after Landing Point)

Logging: GR MWD for entire section, no mud-log or cuttings sampling, no OH WL logs

Pressure Test: NU BOPE and test (as noted above); pressure test 9-5/8" casing to **1,500** psi for 30 minutes.

Casing Specs:	Size (in)	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	5.500	17.0	P-110	LTC	7,460	10,640	546,000	445,000
Loading					2,378	8,950	332,244	332,244
Min. S.F.					3.14	1.19	1.64	1.34

Assumptions: Collapse: fully evacuated casing with 9.5 ppg fluid in the annulus (floating casing during running)
 Burst: 8,500 psi maximum surface treating pressure with 10.2 ppg equivalent mud weight sand laden fluid with 8.4 ppg equivalent external pressure gradient
 Tension: buoyed weight in 9.0 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: 3,470 Optimum: 4,620 Maximum: 5,780

Casing Details: Guide shoe, single-valve float collar, 1 jt casing, double-valve float collar, 1 jt casing, landing collar, toe-initiation sleeve x 2, casing to surface with 4 - 20' marker joints spaced evenly in lateral and 1 - 20' marker joint at KOP. The toe-initiation sleeves will be positioned inside the applicable unit setback.

Centralizers: Lateral: 1 centralizer every 2 joints at a minimum (will evaluate running additional centralizers based on surveys)

Curve: 1 centralizer every joint from landing point to KOP

Vertical: 1 centralizer every 2 joints from KOP to 9-5/8" shoe, 1 every 3 joints from 9-5/8" shoe to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ blend	12.3	1.987	10.16	0.2691	40%	0	782
Tail	G:POZ blend	13.3	1.354	5.94	0.2291	10%	4,350	2,137

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton ECONOCHEM & EXTENDACHEM cementing blend

Notify NMOCD & BLM if cement is not circulated to surface.

Note: The lateral may be drilled past applicable setback to maximize the length of the completed interval and to maximize resource recovery. If the well is drilled past the setback, the toe initiation sleeve and all perforations will be placed inside the setback. An unorthodox location application is not required because the completed interval will be entirely within the setback as defined and allowed by NMAC 19.15.16.7B(1), NMAC 19.15.16.14B(2), NMAC 19.15.16.15B(2). Order number for West Escavada Unit is R-14100-A.

FINISH WELL: ND BOP, NU WH with BPV and cap, RDMO.

COMPLETION AND PRODUCTION PLAN:

Frac: Lateral will be fracture-stimulated in approximately 50 plug-and-perf stages with approximately 325,000 bbls slickwater fluid and 18,000,000 lbs of proppant.

Flowback: Depending on well pressures, flow back may be either up 5-1/2" casing or 2-7/8" production tubing. Well will be flowed back until proppant volumes are low enough that the well can safely be produced through permanent production facilities.

Production: Well will produce up production tubing via gas-lift into permanent production and storage facilities.

ESTIMATED START DATES:

Drilling: 7/1/2017

Completion: 9/1/2017

Production: 10/15/2017

Prepared by: Alec Bridge 6/4/2018

WELL NAME: W Escavada Unit 2207-17P-03LH**OBJECTIVE: Drill, complete, and equip single lateral in the Gallup formation**

API Number: 30-043-21307

State: New Mexico

County: Sandoval

Surface Elev.: 6,878 ft ASL (GL) 6,900 ft ASL (KB)

Surface Location: 17-22N-07W Sec-Twn- Rng 235 ft FSL 248 ft FEL

BH Location: 7-22N-07W Sec-Twn- Rng 2301 ft FSL 1087 ft FWL

Driving Directions: From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM: south on 550 for 53.6 miles to MM 97.7, right (south) on Indian Service Route #474 for 4.9 miles, right (west) at fork continuing on #474 for 2.5 miles, right (west) at fork for 0.3 miles, right (west) for 1.0 miles to 4-way intersection, straight (west) for 1.2 miles to 4-way intersection, left (south) for 1.7 miles to 4-way intersection, right (west) for 1.9 miles to NEU 317H pad, left (southwest) for approximately 1.3 miles to location.

QUICK REFERENCE	
Sur TD (MD)	240 ft
Int TD (MD)	2,848 ft
KOP (MD)	4,557 ft
KOP (TVD)	4,350 ft
Target (TVD)	4,788 ft
Curve BUR	10 °/100 ft
LP (MD)	5,517 ft
TD (MD)	15,832 ft
Lat Len (ft)	10,315 ft

WELL CONSTRUCTION SUMMARY:

	Hole (in)	TD MD (ft)	Csg (in)	Csg (lb/ft)	Csg (grade)	Csg (conn)	Csg Top (ft)	Csg Bot (ft)
Surface	17.500	240	13.375	54.5	J-55	STC	0	220
Intermediate	12.250	2,848	9.625	36.0	J-55	LTC	0'	2,848
Production	8.500	15,832	5.500	17.0	P-110	LTC	0	15,832

CEMENT PROPERTIES SUMMARY:

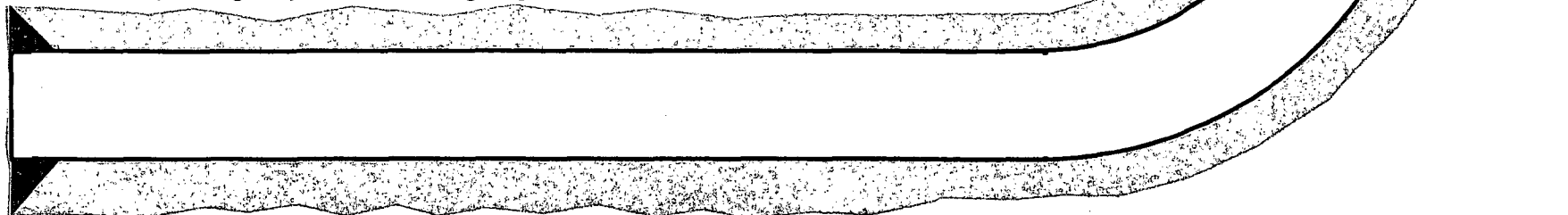
	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	Hole Cap. (cuft/ft)	% Excess	TOC (ft MD)	Total (sx)
Surface	Class G	15.8	1.174	5.15	0.6946	100%	0	284
Inter. (Lead)	G:POZ Blend	12.3	1.987	10.16	0.3132	40%	0	518
Inter. (Tail)	Class G	15.8	1.148	4.98	0.3132	10%	2,348	150
Prod. (Lead)	G:POZ blend	12.3	1.987	10.16	0.2691	40%	0	782
Prod. (Tail)	G:POZ blend	13.3	1.354	5.94	0.2291	10%	4,350	2,137

COMPLETION / PRODUCTION SUMMARY:

Frac: 55-stage (+/-) plug-and-perf frac with slick water and 18,000,000 lbs (+/-) proppant

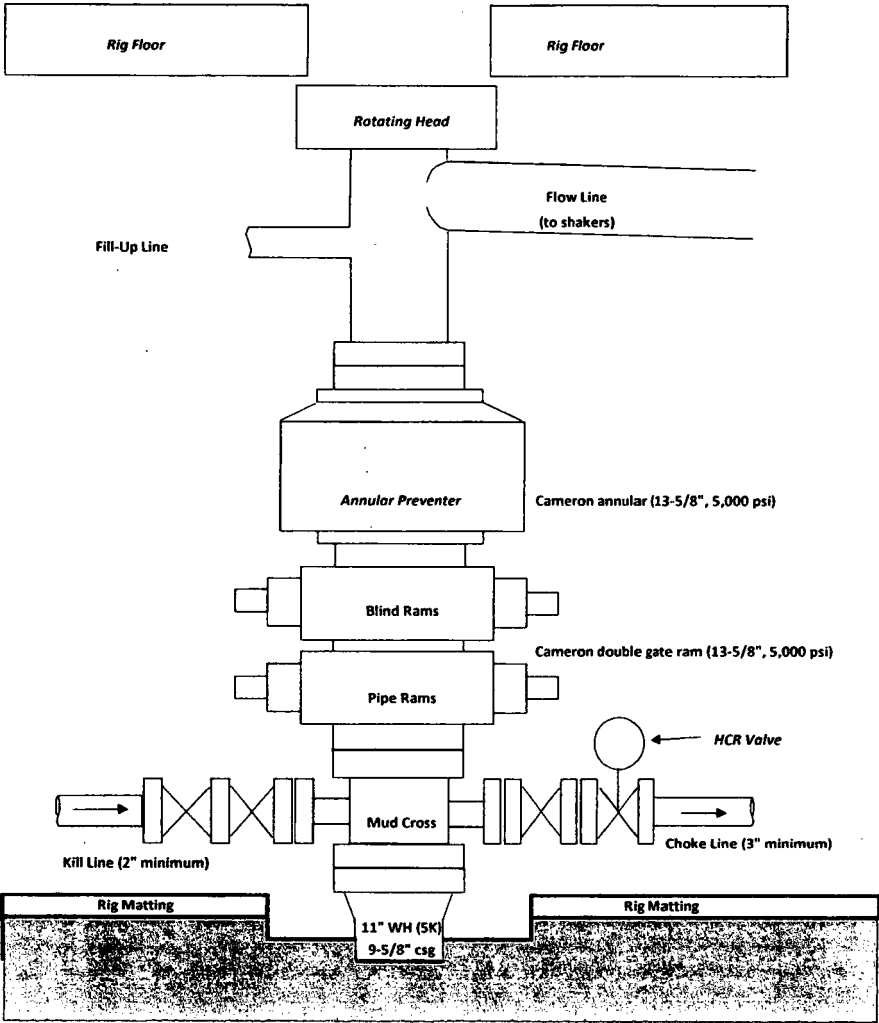
Flowback: Flow up 5-1/2" casing or 2-7/8" tubing until returns are free of sand

Production: 2-7/8" tubing with packer set in 7" casing and gas-lift mandrels as needed



BOPE & CHOKE MANIFOLD DIAGRAMS

BOPE



CHOKE MANIFOLD

