

Form 3160-5
(June 2019)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021**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.

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

3a. Address

3b. Phone No. (include area code)

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

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

8. Well Name and No.

9. API Well No.

10. Field and Pool or Exploratory Area

11. Country or Parish, State

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 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 recompleat 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 recompleat 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 detennined that the site is ready for final inspection.)

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

Title

Signature

Date

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

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)

GENERAL INSTRUCTIONS

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

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

Additional Information

Location of Well

0. SHL: SESE / 1027 FSL / 356 FEL / TWSP: 22N / RANGE: 7W / SECTION: 2 / LAT: 36.163894 / LONG: -107.536735 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 379 FSL / 833 FEL / TWSP: 22N / RANGE: 7W / SECTION: 2 / LAT: 36.162117 / LONG: -107.538368 (TVD: 0 feet, MD: 0 feet)

BHL: NWNW / 892 FNL / 330 FWL / TWSP: 22N / RANGE: 7W / SECTION: 2 / LAT: 36.173329 / LONG: -107.552113 (TVD: 0 feet, MD: 0 feet)

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code 42289	³ Pool Name LYBROOK GALLUP
⁴ Property Code	⁵ Property Name S CHACO UNIT	⁶ Well Number 345H
⁷ GRID No. 372286	⁸ Operator Name ENDURING RESOURCES, LLC	⁹ Elevation 7003'

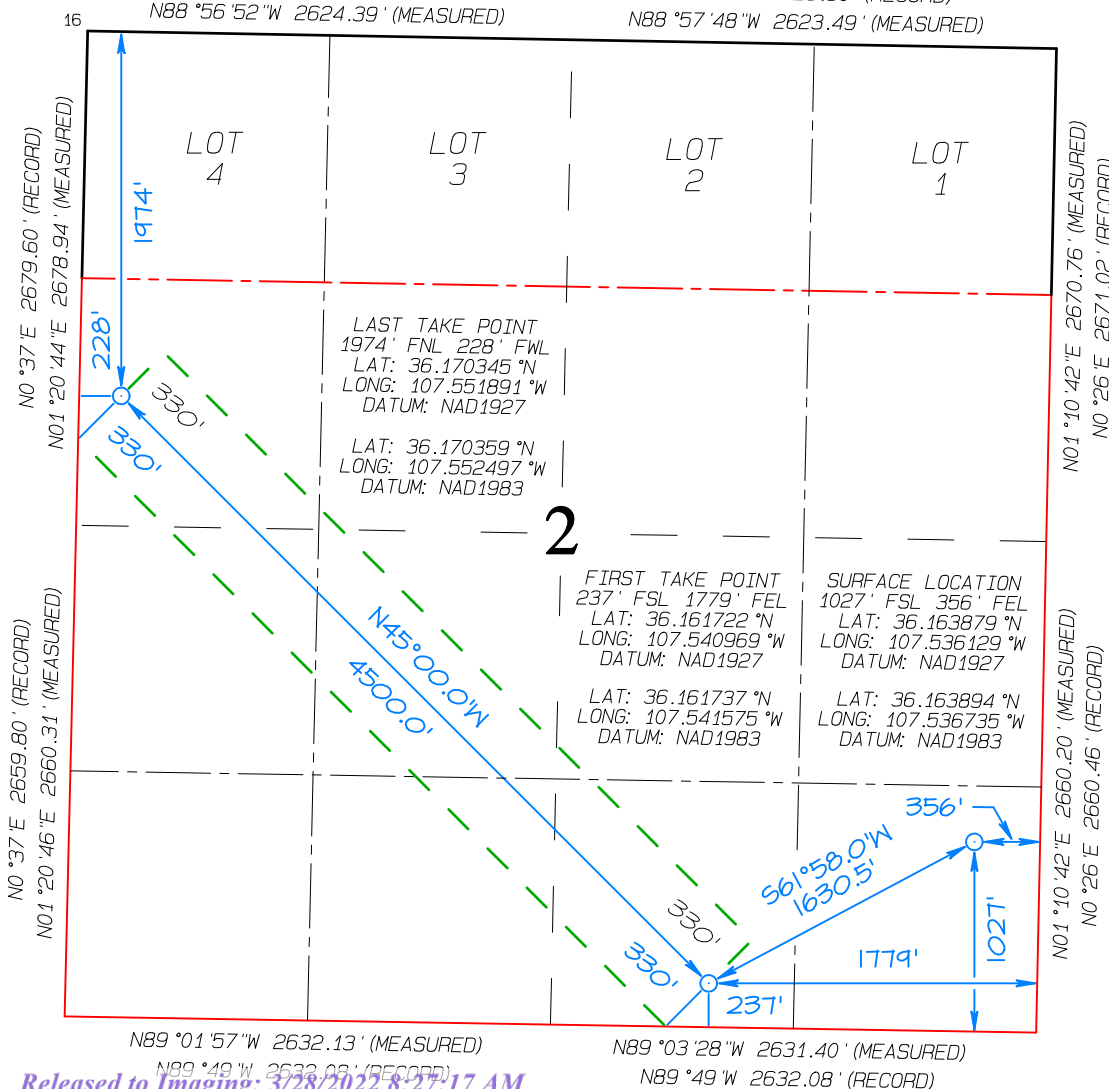
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	2	22N	7W		1027	SOUTH	356	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
E	2	22N	7W		1974	NORTH	228	WEST	SANDOVAL

¹² Dedicated Acres 480.00	S/2 & S/2 N/2 Section 2, T22NR7W	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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 DIVISIONN89°42'W 2623.50' (RECORD)
N88°56'52"W 2624.39' (MEASURED)N89°42'W 2623.50' (RECORD)
N88°57'48"W 2623.49' (MEASURED)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.

Khem Suthiwan 3/21/22

Signature Date

Khem Suthiwan

Printed Name

ksuthiwan@enduringresources.com

E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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

Date Revised: MARCH 2, 2022
Date of Survey: JUNE 12, 2015

Signature and Seal of Professional Surveyor

**JASON C. EDWARDS**

Certificate Number 15269



Well: S Chaco Unit 345 H
Site: S Chaco Unit 344 Pad (344, 345 & 908)
Project: Sandoval County, New Mexico NAD83 NM W
Design: rev0
Rig:

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
S Chaco 345 FTP 237 FSL 1779 FEL 330 perp	5172.00	-789.52	-1426.29	1878298.385	2809213.656	36.161737000	-107.541575000
S Chaco 345 PBHL 1974 FNL 228 FWL 330 perp	5230.00	2339.55	-4659.37	1881427.452	2805980.585	36.170359000	-107.552497000

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Western Zone
 System Datum: Mean Sea Level
 Depth Reference: RKB=7003+28 @ 7031.00ft
 Surface location:
 Northing 1879087.903 Easting 2810639.945 Latitude 36.163894000 Longitude -107.536735000

Total Corr (M=>G): To convert a Magnetic Direction to a Grid Direction, Add 8.46°

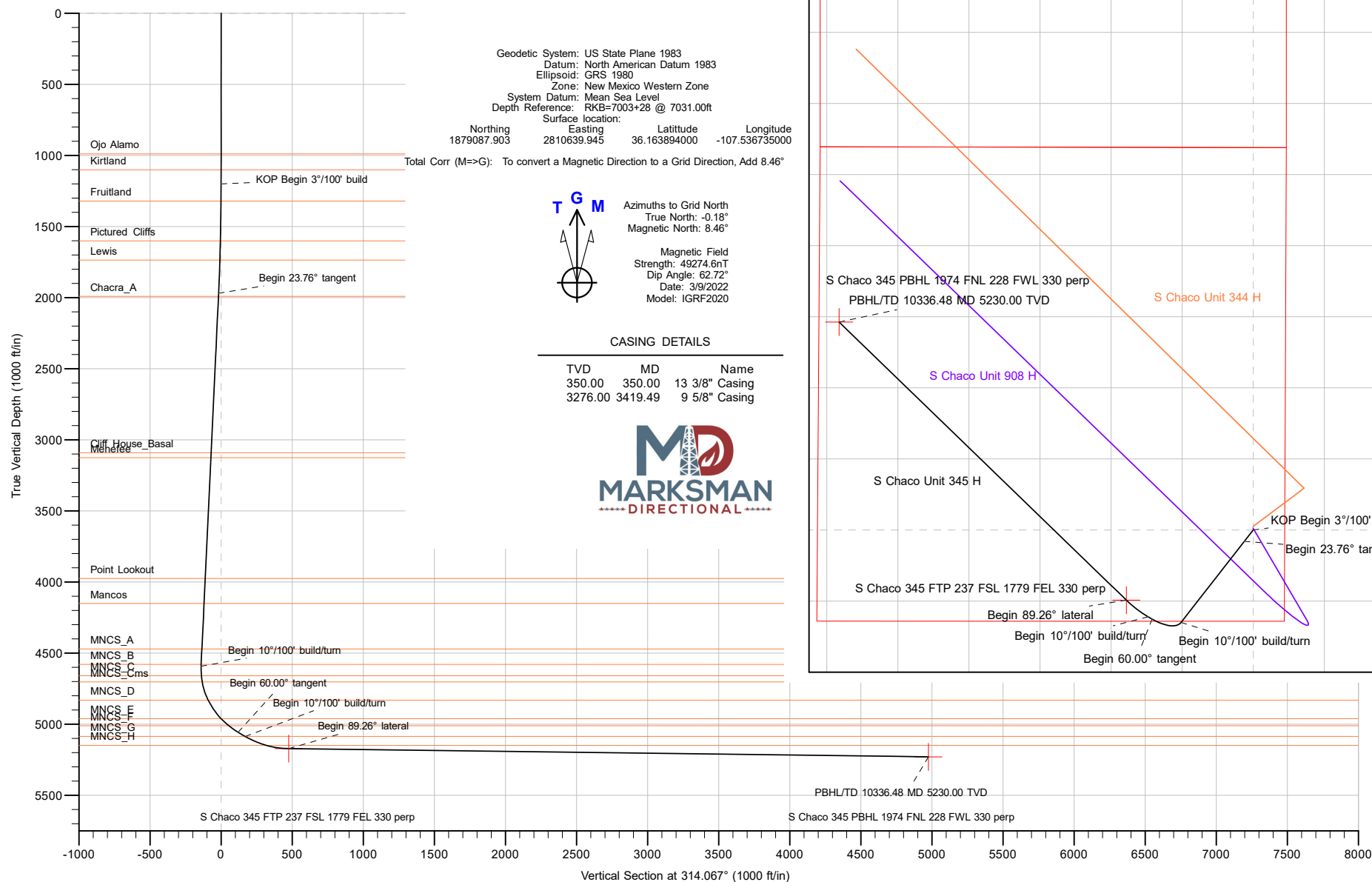


Azimuths to Grid North
 True North: -0.18°
 Magnetic North: 8.46°

Magnetic Field
 Strength: 49274.6nT
 Dip Angle: 62.72°
 Date: 3/9/2022
 Model: IGRF2020

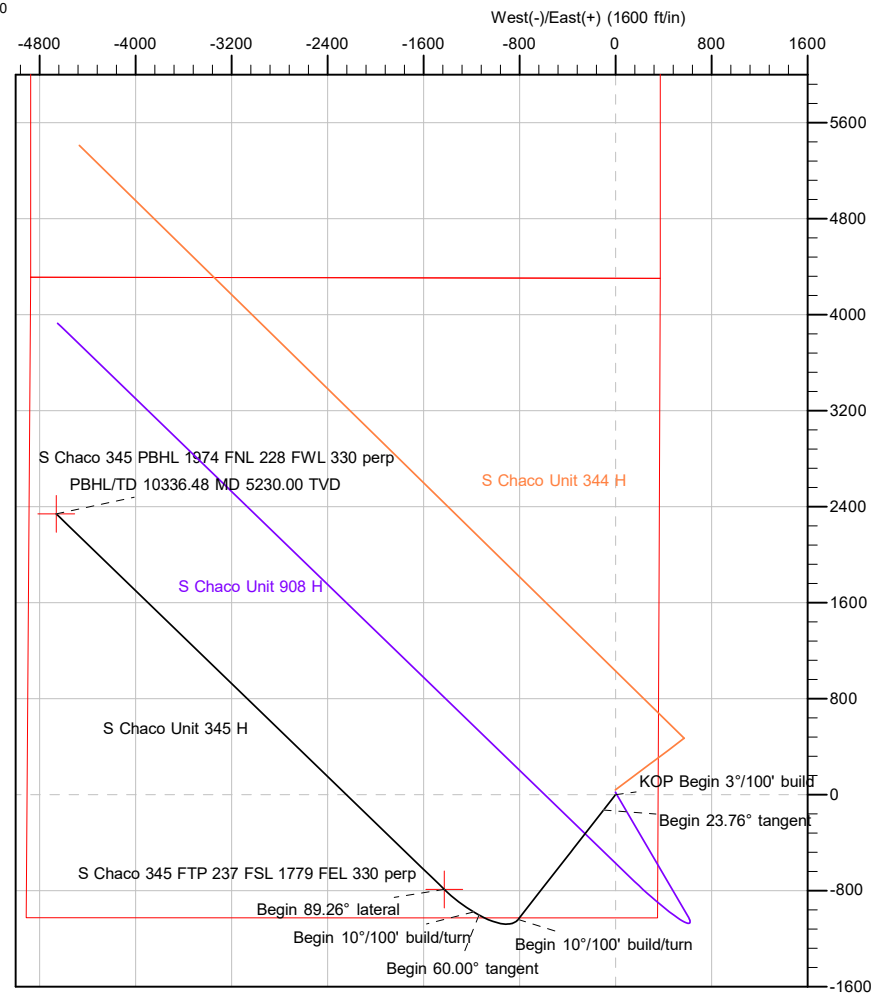
CASING DETAILS

TVD	MD	Name
350.00	350.00	13 3/8" Casing
3276.00	3419.49	9 5/8" Casing



Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.000	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 3°/100' build
3	1991.96	23.76	217.953	1969.46	-127.63	-99.55	3.00	217.95	-17.24	Begin 23.76° tangent
4	4858.97	23.76	217.953	4593.49	-1038.43	-809.93	0.00	0.00	-140.27	Begin 10°/100' build/turn
5	5453.99	60.00	299.733	5056.96	-1001.81	-1137.35	10.00	95.87	120.46	Begin 60.00° tangent
6	5513.99	60.00	299.733	5086.96	-976.04	-1182.47	0.00	0.00	170.80	Begin 10°/100' build/turn
7	5836.78	89.26	314.063	5172.00	-789.52	-1426.29	10.00	27.61	475.72	Begin 89.26° lateral
8	10336.48	89.26	314.063	5230.00	2339.55	-4659.37	0.00	0.00	4975.04	PBHL/TD



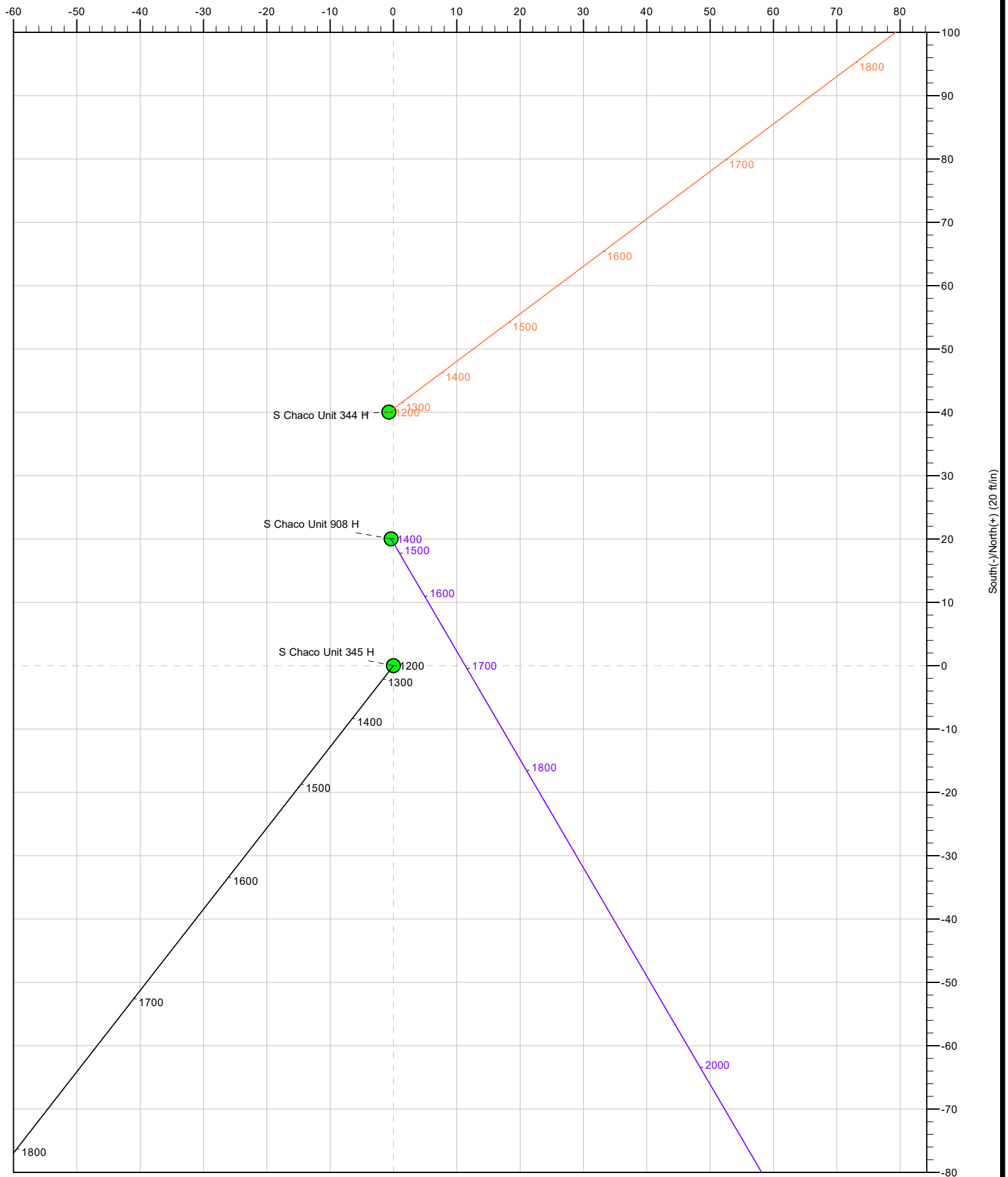
South(-)/North(+) (1600 ft/in)



Well: S Chaco Unit 345 H
Site: S Chaco Unit 344 Pad (344, 345 & 908)
Project: Sandoval County, New Mexico NAD83 NM W
Design: rev0
Rig:



West(-)/East(+) (20 ft/in)





Planning Report

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Project	Sandoval County, New Mexico NAD83 NM W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	S Chaco Unit 344 Pad (344, 345 & 908)				
Site Position:		Northing:	1,879,087.903 usft	Latitude:	36.163894000
From:	Lat/Long	Easting:	2,810,639.945 usft	Longitude:	-107.536735000
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	S Chaco Unit 345 H, Surf loc: 1027 FSL 356 FEL Section 02-T22N-R07W					
Well Position	+N/-S	0.00 ft	Northing:	1,879,087.903 usft	Latitude:	36.163894000
	+E/-W	0.00 ft	Easting:	2,810,639.945 usft	Longitude:	-107.536735000
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	7,003.00 ft
Grid Convergence:		0.18 °				

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/9/2022	8.63	62.72	49,274.61460906

Design	rev0				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	314.067	

Plan Survey Tool Program	Date	3/15/2022			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	10,336.44 rev0 (Original Hole)	MWD		
			OWSG MWD - Standard		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,991.96	23.76	217.953	1,969.46	-127.63	-99.55	3.00	3.00	0.00	217.95	
4,858.97	23.76	217.953	4,593.49	-1,038.43	-809.93	0.00	0.00	0.00	0.00	
5,453.99	60.00	299.733	5,056.96	-1,001.81	-1,137.35	10.00	6.09	13.74	95.87	
5,513.99	60.00	299.733	5,086.96	-976.04	-1,182.47	0.00	0.00	0.00	0.00	
5,836.78	89.26	314.063	5,172.00	-789.52	-1,426.29	10.00	9.07	4.44	27.61	
10,336.48	89.26	314.063	5,230.00	2,339.55	-4,659.37	0.00	0.00	0.00	0.00	S Chaco 345 PBHL 1'



Planning Report

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
989.00	0.00	0.000	989.00	0.00	0.00	0.00	0.00	0.00	0.00
Ojo Alamo									
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,101.00	0.00	0.000	1,101.00	0.00	0.00	0.00	0.00	0.00	0.00
Kirtland									
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 3°/100' build									
1,300.00	3.00	217.953	1,299.95	-2.06	-1.61	-0.28	3.00	3.00	0.00
1,321.08	3.63	217.953	1,321.00	-3.03	-2.36	-0.41	3.00	3.00	0.00
Fruitland									
1,400.00	6.00	217.953	1,399.63	-8.25	-6.43	-1.11	3.00	3.00	0.00
1,500.00	9.00	217.953	1,498.77	-18.54	-14.46	-2.50	3.00	3.00	0.00
1,600.00	12.00	217.953	1,597.08	-32.91	-25.67	-4.45	3.00	3.00	0.00
1,604.01	12.12	217.953	1,601.00	-33.57	-26.18	-4.53	3.00	3.00	0.00
Pictured Cliffs									
1,700.00	15.00	217.953	1,694.31	-51.31	-40.02	-6.93	3.00	3.00	0.00
1,743.30	16.30	217.953	1,736.00	-60.52	-47.21	-8.18	3.00	3.00	0.00
Lewis									
1,800.00	18.00	217.953	1,790.18	-73.71	-57.49	-9.96	3.00	3.00	0.00
1,900.00	21.00	217.953	1,884.43	-100.03	-78.02	-13.51	3.00	3.00	0.00
1,991.96	23.76	217.953	1,969.46	-127.63	-99.55	-17.24	3.00	3.00	0.00
Begin 23.76° tangent									
2,000.00	23.76	217.953	1,976.82	-130.18	-101.54	-17.59	0.00	0.00	0.00
2,015.50	23.76	217.953	1,991.00	-135.11	-105.38	-18.25	0.00	0.00	0.00
Chacra_A									
2,100.00	23.76	217.953	2,068.34	-161.95	-126.32	-21.88	0.00	0.00	0.00
2,200.00	23.76	217.953	2,159.87	-193.72	-151.09	-26.17	0.00	0.00	0.00
2,300.00	23.76	217.953	2,251.39	-225.49	-175.87	-30.46	0.00	0.00	0.00
2,400.00	23.76	217.953	2,342.92	-257.26	-200.65	-34.75	0.00	0.00	0.00
2,500.00	23.76	217.953	2,434.44	-289.03	-225.43	-39.04	0.00	0.00	0.00
2,600.00	23.76	217.953	2,525.97	-320.80	-250.21	-43.33	0.00	0.00	0.00
2,700.00	23.76	217.953	2,617.49	-352.56	-274.98	-47.62	0.00	0.00	0.00
2,800.00	23.76	217.953	2,709.02	-384.33	-299.76	-51.92	0.00	0.00	0.00
2,900.00	23.76	217.953	2,800.54	-416.10	-324.54	-56.21	0.00	0.00	0.00
3,000.00	23.76	217.953	2,892.07	-447.87	-349.32	-60.50	0.00	0.00	0.00
3,100.00	23.76	217.953	2,983.59	-479.64	-374.10	-64.79	0.00	0.00	0.00
3,200.00	23.76	217.953	3,075.12	-511.41	-398.87	-69.08	0.00	0.00	0.00
3,217.35	23.76	217.953	3,091.00	-516.92	-403.17	-69.83	0.00	0.00	0.00
Cliff House_Basal									
3,255.60	23.76	217.953	3,126.00	-529.07	-412.65	-71.47	0.00	0.00	0.00
Menefee									
3,300.00	23.76	217.953	3,166.64	-543.17	-423.65	-73.37	0.00	0.00	0.00



Planning Report

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,400.00	23.76	217.953	3,258.17	-574.94	-448.43	-77.66	0.00	0.00	0.00
3,500.00	23.76	217.953	3,349.69	-606.71	-473.21	-81.95	0.00	0.00	0.00
3,600.00	23.76	217.953	3,441.22	-638.48	-497.99	-86.25	0.00	0.00	0.00
3,700.00	23.76	217.953	3,532.74	-670.25	-522.76	-90.54	0.00	0.00	0.00
3,800.00	23.76	217.953	3,624.27	-702.02	-547.54	-94.83	0.00	0.00	0.00
3,900.00	23.76	217.953	3,715.79	-733.78	-572.32	-99.12	0.00	0.00	0.00
4,000.00	23.76	217.953	3,807.32	-765.55	-597.10	-103.41	0.00	0.00	0.00
4,100.00	23.76	217.953	3,898.84	-797.32	-621.88	-107.70	0.00	0.00	0.00
4,183.21	23.76	217.953	3,975.00	-823.76	-642.49	-111.27	0.00	0.00	0.00
Point Lookout									
4,200.00	23.76	217.953	3,990.37	-829.09	-646.65	-111.99	0.00	0.00	0.00
4,300.00	23.76	217.953	4,081.89	-860.86	-671.43	-116.28	0.00	0.00	0.00
4,375.51	23.76	217.953	4,151.00	-884.85	-690.14	-119.52	0.00	0.00	0.00
Mancos									
4,400.00	23.76	217.953	4,173.42	-892.63	-696.21	-120.58	0.00	0.00	0.00
4,500.00	23.76	217.953	4,264.94	-924.39	-720.99	-124.87	0.00	0.00	0.00
4,600.00	23.76	217.953	4,356.47	-956.16	-745.77	-129.16	0.00	0.00	0.00
4,700.00	23.76	217.953	4,447.99	-987.93	-770.54	-133.45	0.00	0.00	0.00
4,725.14	23.76	217.953	4,471.00	-995.92	-776.77	-134.53	0.00	0.00	0.00
MNCS_A									
4,800.00	23.76	217.953	4,539.52	-1,019.70	-795.32	-137.74	0.00	0.00	0.00
4,843.14	23.76	217.953	4,579.00	-1,033.41	-806.01	-139.59	0.00	0.00	0.00
MNCS_B									
4,858.97	23.76	217.953	4,593.49	-1,038.43	-809.93	-140.27	0.00	0.00	0.00
Begin 10°/100' build/turn									
4,900.00	23.67	228.164	4,631.07	-1,050.45	-821.16	-140.56	10.00	-0.21	24.89
4,930.53	24.04	235.662	4,659.00	-1,058.05	-830.86	-138.87	10.00	1.21	24.56
MNCS_C									
4,950.00	24.46	240.291	4,676.75	-1,062.28	-837.64	-136.95	10.00	2.16	23.78
4,978.93	25.33	246.848	4,703.00	-1,067.69	-848.54	-132.88	10.00	3.02	22.66
MNCS_Cms									
5,000.00	26.14	251.329	4,721.98	-1,070.95	-857.08	-129.01	10.00	3.83	21.27
5,050.00	28.56	260.875	4,766.41	-1,076.37	-879.33	-116.79	10.00	4.83	19.09
5,100.00	31.54	268.904	4,809.70	-1,078.52	-904.22	-100.40	10.00	5.96	16.06
5,125.22	33.21	272.433	4,831.00	-1,078.35	-917.72	-90.59	10.00	6.63	13.99
MNCS_D									
5,150.00	34.94	275.600	4,851.53	-1,077.37	-931.56	-79.96	10.00	6.98	12.78
5,200.00	38.65	281.203	4,891.57	-1,072.94	-961.15	-55.62	10.00	7.42	11.21
5,250.00	42.59	285.944	4,929.52	-1,065.25	-992.75	-27.56	10.00	7.87	9.48
5,294.05	46.20	289.557	4,961.00	-1,055.83	-1,022.08	0.06	10.00	8.19	8.20
MNCS_E									
5,300.00	46.69	290.011	4,965.10	-1,054.37	-1,026.13	3.99	10.00	8.33	7.63
5,350.00	50.92	293.556	4,998.03	-1,040.38	-1,061.04	38.80	10.00	8.46	7.09
5,370.99	52.73	294.918	5,011.00	-1,033.60	-1,076.09	54.33	10.00	8.60	6.49
MNCS_F									
5,400.00	55.25	296.695	5,028.05	-1,023.38	-1,097.21	76.61	10.00	8.69	6.13
5,453.99	60.00	299.733	5,056.96	-1,001.81	-1,137.35	120.46	10.00	8.80	5.63
Begin 60.00° tangent									
5,500.00	60.00	299.733	5,079.97	-982.05	-1,171.95	159.07	0.00	0.00	0.00
5,512.07	60.00	299.733	5,086.00	-976.86	-1,181.03	169.19	0.00	0.00	0.00
MNCS_G									
5,513.99	60.00	299.733	5,086.96	-976.04	-1,182.47	170.80	0.00	0.00	0.00



Planning Report

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Begin 10°/100' build/turn									
5,550.00	63.20	301.602	5,104.09	-959.88	-1,209.71	201.61	10.00	8.90	5.19
5,600.00	67.69	304.029	5,124.86	-935.23	-1,247.91	246.21	10.00	8.97	4.86
5,650.00	72.21	306.305	5,142.00	-908.17	-1,286.28	292.60	10.00	9.04	4.55
5,674.39	74.43	307.372	5,149.00	-894.16	-1,304.98	315.78	10.00	9.08	4.37
MNCS_H									
5,700.00	76.76	308.468	5,155.37	-878.92	-1,324.54	340.43	10.00	9.10	4.28
5,750.00	81.32	310.551	5,164.88	-847.69	-1,362.40	389.35	10.00	9.13	4.17
5,800.00	85.89	312.584	5,170.45	-814.73	-1,399.56	438.98	10.00	9.15	4.07
5,836.78	89.26	314.063	5,172.00	-789.52	-1,426.29	475.72	10.00	9.16	4.02
Begin 89.26° lateral									
5,900.00	89.26	314.063	5,172.82	-745.56	-1,471.71	538.93	0.00	0.00	0.00
6,000.00	89.26	314.063	5,174.10	-676.02	-1,543.56	638.92	0.00	0.00	0.00
6,100.00	89.26	314.063	5,175.39	-606.48	-1,615.42	738.91	0.00	0.00	0.00
6,200.00	89.26	314.063	5,176.68	-536.94	-1,687.27	838.90	0.00	0.00	0.00
6,300.00	89.26	314.063	5,177.97	-467.40	-1,759.12	938.90	0.00	0.00	0.00
6,400.00	89.26	314.063	5,179.26	-397.86	-1,830.97	1,038.89	0.00	0.00	0.00
6,500.00	89.26	314.063	5,180.55	-328.32	-1,902.82	1,138.88	0.00	0.00	0.00
6,600.00	89.26	314.063	5,181.84	-258.78	-1,974.67	1,238.87	0.00	0.00	0.00
6,700.00	89.26	314.063	5,183.13	-189.24	-2,046.52	1,338.86	0.00	0.00	0.00
6,800.00	89.26	314.063	5,184.42	-119.70	-2,118.37	1,438.85	0.00	0.00	0.00
6,900.00	89.26	314.063	5,185.70	-50.16	-2,190.22	1,538.85	0.00	0.00	0.00
7,000.00	89.26	314.063	5,186.99	19.38	-2,262.08	1,638.84	0.00	0.00	0.00
7,100.00	89.26	314.063	5,188.28	88.92	-2,333.93	1,738.83	0.00	0.00	0.00
7,200.00	89.26	314.063	5,189.57	158.45	-2,405.78	1,838.82	0.00	0.00	0.00
7,300.00	89.26	314.063	5,190.86	227.99	-2,477.63	1,938.81	0.00	0.00	0.00
7,400.00	89.26	314.063	5,192.15	297.53	-2,549.48	2,038.80	0.00	0.00	0.00
7,500.00	89.26	314.063	5,193.44	367.07	-2,621.33	2,138.80	0.00	0.00	0.00
7,600.00	89.26	314.063	5,194.73	436.61	-2,693.18	2,238.79	0.00	0.00	0.00
7,700.00	89.26	314.063	5,196.02	506.15	-2,765.03	2,338.78	0.00	0.00	0.00
7,800.00	89.26	314.063	5,197.31	575.69	-2,836.88	2,438.77	0.00	0.00	0.00
7,900.00	89.26	314.063	5,198.59	645.23	-2,908.73	2,538.76	0.00	0.00	0.00
8,000.00	89.26	314.063	5,199.88	714.77	-2,980.59	2,638.75	0.00	0.00	0.00
8,100.00	89.26	314.063	5,201.17	784.31	-3,052.44	2,738.75	0.00	0.00	0.00
8,200.00	89.26	314.063	5,202.46	853.85	-3,124.29	2,838.74	0.00	0.00	0.00
8,300.00	89.26	314.063	5,203.75	923.39	-3,196.14	2,938.73	0.00	0.00	0.00
8,400.00	89.26	314.063	5,205.04	992.93	-3,267.99	3,038.72	0.00	0.00	0.00
8,500.00	89.26	314.063	5,206.33	1,062.47	-3,339.84	3,138.71	0.00	0.00	0.00
8,600.00	89.26	314.063	5,207.62	1,132.01	-3,411.69	3,238.70	0.00	0.00	0.00
8,700.00	89.26	314.063	5,208.91	1,201.55	-3,483.54	3,338.70	0.00	0.00	0.00
8,800.00	89.26	314.063	5,210.20	1,271.09	-3,555.39	3,438.69	0.00	0.00	0.00
8,900.00	89.26	314.063	5,211.48	1,340.63	-3,627.24	3,538.68	0.00	0.00	0.00
9,000.00	89.26	314.063	5,212.77	1,410.17	-3,699.10	3,638.67	0.00	0.00	0.00
9,100.00	89.26	314.063	5,214.06	1,479.71	-3,770.95	3,738.66	0.00	0.00	0.00
9,200.00	89.26	314.063	5,215.35	1,549.25	-3,842.80	3,838.65	0.00	0.00	0.00
9,300.00	89.26	314.063	5,216.64	1,618.79	-3,914.65	3,938.65	0.00	0.00	0.00
9,400.00	89.26	314.063	5,217.93	1,688.33	-3,986.50	4,038.64	0.00	0.00	0.00
9,500.00	89.26	314.063	5,219.22	1,757.87	-4,058.35	4,138.63	0.00	0.00	0.00
9,600.00	89.26	314.063	5,220.51	1,827.41	-4,130.20	4,238.62	0.00	0.00	0.00
9,700.00	89.26	314.063	5,221.80	1,896.95	-4,202.05	4,338.61	0.00	0.00	0.00
9,800.00	89.26	314.063	5,223.09	1,966.49	-4,273.90	4,438.60	0.00	0.00	0.00
9,900.00	89.26	314.063	5,224.37	2,036.03	-4,345.75	4,538.60	0.00	0.00	0.00
10,000.00	89.26	314.063	5,225.66	2,105.57	-4,417.61	4,638.59	0.00	0.00	0.00



Planning Report

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,100.00	89.26	314.063	5,226.95	2,175.11	-4,489.46	4,738.58	0.00	0.00	0.00
10,200.00	89.26	314.063	5,228.24	2,244.65	-4,561.31	4,838.57	0.00	0.00	0.00
10,300.00	89.26	314.063	5,229.53	2,314.19	-4,633.16	4,938.56	0.00	0.00	0.00
10,336.48	89.26	314.063	5,230.00	2,339.55	-4,659.37	4,975.04	0.00	0.00	0.00
PBHL/TD 10336.48 MD 5230.00 TVD									

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
S Chaco 345 FTP 237 F - plan hits target center - Point	0.00	2.158	5,172.00	-789.52	-1,426.29	1,878,298.385	2,809,213.656	36.161737000	-107.541575000
S Chaco 345 PBHL 1974 - plan hits target center - Point	0.00	2.158	5,230.00	2,339.55	-4,659.37	1,881,427.452	2,805,980.585	36.170359000	-107.552497000

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
350.00	350.00	13 3/8" Casing	13-5/8	17-1/2	
3,419.49	3,276.00	9 5/8" Casing	9-5/8	12-1/4	



Planning Report

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Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
989.00	989.00	Ojo Alamo				
1,101.00	1,101.00	Kirtland				
1,321.08	1,321.00	Fruitland				
1,604.01	1,601.00	Pictured Cliffs				
1,743.30	1,736.00	Lewis				
2,015.50	1,991.00	Chacra_A				
3,217.35	3,091.00	Cliff House_Basal				
3,255.60	3,126.00	Menefee				
4,183.21	3,975.00	Point Lookout				
4,375.51	4,151.00	Mancos				
4,725.14	4,471.00	MNCS_A				
4,843.14	4,579.00	MNCS_B				
4,930.53	4,659.00	MNCS_C				
4,978.93	4,703.00	MNCS_Cms				
5,125.22	4,831.00	MNCS_D				
5,294.05	4,961.00	MNCS_E				
5,370.99	5,011.00	MNCS_F				
5,512.07	5,086.00	MNCS_G				
5,674.39	5,149.00	MNCS_H				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,200.00	1,200.00	0.00	0.00	KOP Begin 3°/100' build	
1,991.96	1,969.46	-127.63	-99.55	Begin 23.76° tangent	
4,858.97	4,593.49	-1,038.43	-809.93	Begin 10°/100' build/turn	
5,453.99	5,056.96	-1,001.81	-1,137.35	Begin 60.00° tangent	
5,513.99	5,086.96	-976.04	-1,182.47	Begin 10°/100' build/turn	
5,836.78	5,172.00	-789.52	-1,426.29	Begin 89.26° lateral	
10,336.48	5,230.00	2,339.55	-4,659.37	PBHL/TD 10336.48 MD 5230.00 TVD	



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Project	Sandoval County, New Mexico NAD83 NM W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	S Chaco Unit 344 Pad (344, 345 & 908)				
Site Position:		Northing:	1,879,087.903 usft	Latitude:	36.163894000
From:	Lat/Long	Easting:	2,810,639.945 usft	Longitude:	-107.536735000
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	S Chaco Unit 345 H, Surf loc: 1027 FSL 356 FEL Section 02-T22N-R07W					
Well Position	+N/-S	0.00 ft	Northing:	1,879,087.903 usft	Latitude:	36.163894000
	+E/-W	0.00 ft	Easting:	2,810,639.945 usft	Longitude:	-107.536735000
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	7,003.00 ft
Grid Convergence:		0.18 °				

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/9/2022	8.63	62.72	49,274.61460906

Design	rev0			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	314.067

Plan Survey Tool Program	Date	3/15/2022		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	10,336.44 rev0 (Original Hole)	MWD	
			OWSG MWD - Standard	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,991.96	23.76	217.953	1,969.46	-127.63	-99.55	3.00	3.00	0.00	217.95	
4,858.97	23.76	217.953	4,593.49	-1,038.43	-809.93	0.00	0.00	0.00	0.00	
5,453.99	60.00	299.733	5,056.96	-1,001.81	-1,137.35	10.00	6.09	13.74	95.87	
5,513.99	60.00	299.733	5,086.96	-976.04	-1,182.47	0.00	0.00	0.00	0.00	
5,836.78	89.26	314.063	5,172.00	-789.52	-1,426.29	10.00	9.07	4.44	27.61	
10,336.48	89.26	314.063	5,230.00	2,339.55	-4,659.37	0.00	0.00	0.00	0.00	S Chaco 345 PBHL 1'



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	0.000	0.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
100.00	0.00	0.000	100.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
200.00	0.00	0.000	200.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
300.00	0.00	0.000	300.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
400.00	0.00	0.000	400.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
500.00	0.00	0.000	500.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
600.00	0.00	0.000	600.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
700.00	0.00	0.000	700.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
800.00	0.00	0.000	800.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
900.00	0.00	0.000	900.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
989.00	0.00	0.000	989.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
Ojo Alamo									
1,000.00	0.00	0.000	1,000.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
1,100.00	0.00	0.000	1,100.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
1,101.00	0.00	0.000	1,101.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
Kirtland									
1,200.00	0.00	0.000	1,200.00	0.00	0.00	1,879,087.903	2,810,639.945	36.163894000	-107.536735000
KOP Begin 3°/100' build									
1,300.00	3.00	217.953	1,299.95	-2.06	-1.61	1,879,085.839	2,810,638.335	36.163888344	-107.536740475
1,321.08	3.63	217.953	1,321.00	-3.03	-2.36	1,879,084.877	2,810,637.585	36.163885708	-107.536743026
Fruitland									
1,400.00	6.00	217.953	1,399.63	-8.25	-6.43	1,879,079.653	2,810,633.510	36.163871391	-107.536756884
1,500.00	9.00	217.953	1,498.77	-18.54	-14.46	1,879,069.362	2,810,625.484	36.163843188	-107.536784183
1,600.00	12.00	217.953	1,597.08	-32.91	-25.67	1,879,054.994	2,810,614.278	36.163803812	-107.536822297
1,604.01	12.12	217.953	1,601.00	-33.57	-26.18	1,879,054.334	2,810,613.763	36.163802003	-107.536824047
Pictured Cliffs									
1,700.00	15.00	217.953	1,694.31	-51.31	-40.02	1,879,036.588	2,810,599.922	36.163753371	-107.536871120
1,743.30	16.30	217.953	1,736.00	-60.52	-47.21	1,879,027.379	2,810,592.739	36.163728132	-107.536895550
Lewis									
1,800.00	18.00	217.953	1,790.18	-73.71	-57.49	1,879,014.196	2,810,582.457	36.163692003	-107.536930520
1,900.00	21.00	217.953	1,884.43	-100.03	-78.02	1,878,987.878	2,810,561.930	36.163619877	-107.537000333
1,991.96	23.76	217.953	1,969.46	-127.63	-99.55	1,878,960.272	2,810,540.399	36.163544224	-107.537073560
Begin 23.76° tangent									
2,000.00	23.76	217.953	1,976.82	-130.18	-101.54	1,878,957.718	2,810,538.407	36.163537223	-107.537080336
2,015.50	23.76	217.953	1,991.00	-135.11	-105.38	1,878,952.795	2,810,534.567	36.163523731	-107.537093395
Chacra_A									
2,100.00	23.76	217.953	2,068.34	-161.95	-126.32	1,878,925.950	2,810,513.629	36.163450161	-107.537164606
2,200.00	23.76	217.953	2,159.87	-193.72	-151.09	1,878,894.181	2,810,488.851	36.163363098	-107.537248876
2,300.00	23.76	217.953	2,251.39	-225.49	-175.87	1,878,862.413	2,810,464.073	36.163276035	-107.537333146
2,400.00	23.76	217.953	2,342.92	-257.26	-200.65	1,878,830.645	2,810,439.295	36.163188973	-107.537417416
2,500.00	23.76	217.953	2,434.44	-289.03	-225.43	1,878,798.876	2,810,414.517	36.163101910	-107.537501685
2,600.00	23.76	217.953	2,525.97	-320.80	-250.21	1,878,767.108	2,810,389.739	36.163014847	-107.537585954
2,700.00	23.76	217.953	2,617.49	-352.56	-274.98	1,878,735.340	2,810,364.961	36.162927784	-107.537670224
2,800.00	23.76	217.953	2,709.02	-384.33	-299.76	1,878,703.571	2,810,340.183	36.162840721	-107.537754492
2,900.00	23.76	217.953	2,800.54	-416.10	-324.54	1,878,671.803	2,810,315.405	36.162753658	-107.537838761
3,000.00	23.76	217.953	2,892.07	-447.87	-349.32	1,878,640.035	2,810,290.627	36.162666595	-107.537923030
3,100.00	23.76	217.953	2,983.59	-479.64	-374.10	1,878,608.266	2,810,265.849	36.162579531	-107.538007298
3,200.00	23.76	217.953	3,075.12	-511.41	-398.87	1,878,576.498	2,810,241.072	36.162492468	-107.538091566
3,217.35	23.76	217.953	3,091.00	-516.92	-403.17	1,878,570.985	2,810,236.771	36.162477359	-107.538106190
Cliff House_Basal									
3,255.60	23.76	217.953	3,126.00	-529.07	-412.65	1,878,558.836	2,810,227.296	36.162444065	-107.538138415
Menefee									
3,300.00	23.76	217.953	3,166.64	-543.17	-423.65	1,878,544.730	2,810,216.294	36.162405405	-107.538175834



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
3,400.00	23.76	217.953	3,258.17	-574.94	-448.43	1,878,512.961	2,810,191.516	36.162318341	-107.538260102	
3,500.00	23.76	217.953	3,349.69	-606.71	-473.21	1,878,481.193	2,810,166.738	36.162231278	-107.538344369	
3,600.00	23.76	217.953	3,441.22	-638.48	-497.99	1,878,449.425	2,810,141.960	36.162144214	-107.538428637	
3,700.00	23.76	217.953	3,532.74	-670.25	-522.76	1,878,417.656	2,810,117.182	36.162057151	-107.538512904	
3,800.00	23.76	217.953	3,624.27	-702.02	-547.54	1,878,385.888	2,810,092.404	36.161970087	-107.538597171	
3,900.00	23.76	217.953	3,715.79	-733.78	-572.32	1,878,354.120	2,810,067.626	36.161883023	-107.538681438	
4,000.00	23.76	217.953	3,807.32	-765.55	-597.10	1,878,322.351	2,810,042.848	36.161795960	-107.538765704	
4,100.00	23.76	217.953	3,898.84	-797.32	-621.88	1,878,290.583	2,810,018.070	36.161708896	-107.538849971	
4,183.21	23.76	217.953	3,975.00	-823.76	-642.49	1,878,264.148	2,809,997.452	36.161636449	-107.538920090	
Point Lookout										
4,200.00	23.76	217.953	3,990.37	-829.09	-646.65	1,878,258.815	2,809,993.292	36.161621832	-107.538934237	
4,300.00	23.76	217.953	4,081.89	-860.86	-671.43	1,878,227.046	2,809,968.514	36.161534768	-107.539018503	
4,375.51	23.76	217.953	4,151.00	-884.85	-690.14	1,878,203.058	2,809,949.805	36.161469027	-107.539082131	
Mancos										
4,400.00	23.76	217.953	4,173.42	-892.63	-696.21	1,878,195.278	2,809,943.737	36.161447704	-107.539102769	
4,500.00	23.76	217.953	4,264.94	-924.39	-720.99	1,878,163.510	2,809,918.959	36.161360640	-107.539187035	
4,600.00	23.76	217.953	4,356.47	-956.16	-745.77	1,878,131.741	2,809,894.181	36.161273576	-107.539271300	
4,700.00	23.76	217.953	4,447.99	-987.93	-770.54	1,878,099.973	2,809,869.403	36.161186511	-107.539355566	
4,725.14	23.76	217.953	4,471.00	-995.92	-776.77	1,878,091.986	2,809,863.174	36.161164624	-107.539376750	
MNCS_A										
4,800.00	23.76	217.953	4,539.52	-1,019.70	-795.32	1,878,068.205	2,809,844.625	36.161099447	-107.539439831	
4,843.14	23.76	217.953	4,579.00	-1,033.41	-806.01	1,878,054.500	2,809,833.936	36.161061887	-107.539476183	
MNCS_B										
4,858.97	23.76	217.953	4,593.49	-1,038.43	-809.93	1,878,049.471	2,809,830.014	36.161048107	-107.539489520	
Begin 10°/100' build/turn										
4,900.00	23.67	228.164	4,631.07	-1,050.45	-821.16	1,878,037.454	2,809,818.788	36.161015188	-107.539527672	
4,930.53	24.04	235.662	4,659.00	-1,058.05	-830.86	1,878,029.856	2,809,809.083	36.160994395	-107.539560627	
MNCS_C										
4,950.00	24.46	240.291	4,676.75	-1,062.28	-837.64	1,878,025.621	2,809,802.308	36.160982819	-107.539583623	
4,978.93	25.33	246.848	4,703.00	-1,067.69	-848.54	1,878,020.217	2,809,791.411	36.160968064	-107.539620595	
MNCS_Cms										
5,000.00	26.14	251.329	4,721.98	-1,070.95	-857.08	1,878,016.959	2,809,782.869	36.160959185	-107.539649565	
5,050.00	28.56	260.875	4,766.41	-1,076.37	-879.33	1,878,011.534	2,809,760.619	36.160944467	-107.539724994	
5,100.00	31.54	268.904	4,809.70	-1,078.52	-904.22	1,878,009.387	2,809,735.729	36.160938776	-107.539809337	
5,125.22	33.21	272.433	4,831.00	-1,078.35	-917.72	1,878,009.554	2,809,722.231	36.160939347	-107.539855059	
MNCS_D										
5,150.00	34.94	275.600	4,851.53	-1,077.37	-931.56	1,878,010.535	2,809,708.386	36.160942156	-107.539901952	
5,200.00	38.65	281.203	4,891.57	-1,072.94	-961.15	1,878,014.969	2,809,678.800	36.160954582	-107.540002134	
5,250.00	42.59	285.944	4,929.52	-1,065.25	-992.75	1,878,022.655	2,809,647.196	36.160975958	-107.540109121	
5,294.05	46.20	289.557	4,961.00	-1,055.83	-1,022.08	1,878,032.075	2,809,617.870	36.161002080	-107.540208370	
MNCS_E										
5,300.00	46.69	290.011	4,965.10	-1,054.37	-1,026.13	1,878,033.535	2,809,613.813	36.161006122	-107.540222098	
5,350.00	50.92	293.556	4,998.03	-1,040.38	-1,061.04	1,878,047.525	2,809,578.907	36.161044845	-107.540340206	
5,370.99	52.73	294.918	5,011.00	-1,033.60	-1,076.09	1,878,054.301	2,809,563.861	36.161063583	-107.540391106	
MNCS_F										
5,400.00	55.25	296.695	5,028.05	-1,023.38	-1,097.21	1,878,064.520	2,809,542.742	36.161091831	-107.540462546	
5,453.99	60.00	299.733	5,056.96	-1,001.81	-1,137.35	1,878,086.094	2,809,502.598	36.161151429	-107.540598321	
Begin 60.00° tangent										
5,500.00	60.00	299.733	5,079.97	-982.05	-1,171.95	1,878,105.857	2,809,467.996	36.161206005	-107.540715338	
5,512.07	60.00	299.733	5,086.00	-976.86	-1,181.03	1,878,111.040	2,809,458.921	36.161220319	-107.540746028	
MNCS_G										
5,513.99	60.00	299.733	5,086.96	-976.04	-1,182.47	1,878,111.865	2,809,457.477	36.161222597	-107.540750911	
Begin 10°/100' build/turn										



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,550.00	63.20	301.602	5,104.09	-959.88	-1,209.71	1,878,128.026	2,809,430.238	36.161267219	-107.540843023	
5,600.00	67.69	304.029	5,124.86	-935.23	-1,247.91	1,878,152.678	2,809,392.040	36.161335257	-107.540972176	
5,650.00	72.21	306.305	5,142.00	-908.17	-1,286.28	1,878,179.733	2,809,353.664	36.161409896	-107.541101905	
5,674.39	74.43	307.372	5,149.00	-894.16	-1,304.98	1,878,193.742	2,809,334.966	36.161448536	-107.541165105	
MNCS_H										
5,700.00	76.76	308.468	5,155.37	-878.92	-1,324.54	1,878,208.984	2,809,315.403	36.161490568	-107.541231223	
5,750.00	81.32	310.551	5,164.88	-847.69	-1,362.40	1,878,240.209	2,809,277.548	36.161576659	-107.541359147	
5,800.00	85.89	312.584	5,170.45	-814.73	-1,399.56	1,878,273.171	2,809,240.386	36.161667513	-107.541484703	
5,836.78	89.26	314.063	5,172.00	-789.52	-1,426.29	1,878,298.381	2,809,213.657	36.161736989	-107.541574998	
Begin 89.26° lateral										
5,900.00	89.26	314.063	5,172.82	-745.56	-1,471.71	1,878,342.343	2,809,168.234	36.161858130	-107.541728428	
6,000.00	89.26	314.063	5,174.10	-676.02	-1,543.56	1,878,411.882	2,809,096.383	36.162049753	-107.541971130	
6,100.00	89.26	314.063	5,175.39	-606.48	-1,615.42	1,878,481.422	2,809,024.532	36.162241376	-107.542213833	
6,200.00	89.26	314.063	5,176.68	-536.94	-1,687.27	1,878,550.961	2,808,952.681	36.162432999	-107.542456537	
6,300.00	89.26	314.063	5,177.97	-467.40	-1,759.12	1,878,620.501	2,808,880.831	36.162624621	-107.542699243	
6,400.00	89.26	314.063	5,179.26	-397.86	-1,830.97	1,878,690.040	2,808,808.980	36.162816243	-107.542941950	
6,500.00	89.26	314.063	5,180.55	-328.32	-1,902.82	1,878,759.580	2,808,737.129	36.163007864	-107.543184658	
6,600.00	89.26	314.063	5,181.84	-258.78	-1,974.67	1,878,829.120	2,808,665.278	36.163199485	-107.543427367	
6,700.00	89.26	314.063	5,183.13	-189.24	-2,046.52	1,878,898.659	2,808,593.427	36.163391105	-107.543670078	
6,800.00	89.26	314.063	5,184.42	-119.70	-2,118.37	1,878,968.199	2,808,521.576	36.163582725	-107.543912790	
6,900.00	89.26	314.063	5,185.70	-50.16	-2,190.22	1,879,037.738	2,808,449.725	36.163774344	-107.544155502	
7,000.00	89.26	314.063	5,186.99	19.38	-2,262.08	1,879,107.278	2,808,377.875	36.163965963	-107.544398217	
7,100.00	89.26	314.063	5,188.28	88.92	-2,333.93	1,879,176.817	2,808,306.024	36.164157581	-107.544640932	
7,200.00	89.26	314.063	5,189.57	158.45	-2,405.78	1,879,246.357	2,808,234.173	36.164349198	-107.544883648	
7,300.00	89.26	314.063	5,190.86	227.99	-2,477.63	1,879,315.897	2,808,162.322	36.164540816	-107.545126366	
7,400.00	89.26	314.063	5,192.15	297.53	-2,549.48	1,879,385.436	2,808,090.471	36.164732432	-107.545369084	
7,500.00	89.26	314.063	5,193.44	367.07	-2,621.33	1,879,454.976	2,808,018.620	36.164924049	-107.545611804	
7,600.00	89.26	314.063	5,194.73	436.61	-2,693.18	1,879,524.515	2,807,946.769	36.165115664	-107.545854526	
7,700.00	89.26	314.063	5,196.02	506.15	-2,765.03	1,879,594.055	2,807,874.919	36.165307280	-107.546097248	
7,800.00	89.26	314.063	5,197.31	575.69	-2,836.88	1,879,663.594	2,807,803.068	36.165498894	-107.546339971	
7,900.00	89.26	314.063	5,198.59	645.23	-2,908.73	1,879,733.134	2,807,731.217	36.165690509	-107.546582696	
8,000.00	89.26	314.063	5,199.88	714.77	-2,980.59	1,879,802.673	2,807,659.366	36.165882122	-107.546825422	
8,100.00	89.26	314.063	5,201.17	784.31	-3,052.44	1,879,872.213	2,807,587.515	36.166073736	-107.547068149	
8,200.00	89.26	314.063	5,202.46	853.85	-3,124.29	1,879,941.753	2,807,515.664	36.166265349	-107.547310877	
8,300.00	89.26	314.063	5,203.75	923.39	-3,196.14	1,880,011.292	2,807,443.813	36.166456961	-107.547553607	
8,400.00	89.26	314.063	5,205.04	992.93	-3,267.99	1,880,080.832	2,807,371.962	36.166648573	-107.547796337	
8,500.00	89.26	314.063	5,206.33	1,062.47	-3,339.84	1,880,150.371	2,807,300.112	36.166840184	-107.548039069	
8,600.00	89.26	314.063	5,207.62	1,132.01	-3,411.69	1,880,219.911	2,807,228.261	36.167031795	-107.548281802	
8,700.00	89.26	314.063	5,208.91	1,201.55	-3,483.54	1,880,289.450	2,807,156.410	36.167223405	-107.548524536	
8,800.00	89.26	314.063	5,210.20	1,271.09	-3,555.39	1,880,358.990	2,807,084.559	36.167415015	-107.548767271	
8,900.00	89.26	314.063	5,211.48	1,340.63	-3,627.24	1,880,428.530	2,807,012.708	36.167606624	-107.549010008	
9,000.00	89.26	314.063	5,212.77	1,410.17	-3,699.10	1,880,498.069	2,806,940.857	36.167798233	-107.549252745	
9,100.00	89.26	314.063	5,214.06	1,479.71	-3,770.95	1,880,567.609	2,806,869.006	36.167989841	-107.549495484	
9,200.00	89.26	314.063	5,215.35	1,549.25	-3,842.80	1,880,637.148	2,806,797.156	36.168181449	-107.549738224	
9,300.00	89.26	314.063	5,216.64	1,618.79	-3,914.65	1,880,706.688	2,806,725.305	36.168373057	-107.549980966	
9,400.00	89.26	314.063	5,217.93	1,688.33	-3,986.50	1,880,776.227	2,806,653.454	36.168564664	-107.550223708	
9,500.00	89.26	314.063	5,219.22	1,757.87	-4,058.35	1,880,845.767	2,806,581.603	36.168756270	-107.550466452	
9,600.00	89.26	314.063	5,220.51	1,827.41	-4,130.20	1,880,915.307	2,806,509.752	36.168947876	-107.550709196	
9,700.00	89.26	314.063	5,221.80	1,896.95	-4,202.05	1,880,984.846	2,806,437.901	36.169139481	-107.550951942	
9,800.00	89.26	314.063	5,223.09	1,966.49	-4,273.90	1,881,054.386	2,806,366.050	36.169331086	-107.551194689	
9,900.00	89.26	314.063	5,224.37	2,036.03	-4,345.75	1,881,123.925	2,806,294.200	36.169522690	-107.551437438	
10,000.00	89.26	314.063	5,225.66	2,105.57	-4,417.61	1,881,193.465	2,806,222.349	36.169714294	-107.551680187	
10,100.00	89.26	314.063	5,226.95	2,175.11	-4,489.46	1,881,263.004	2,806,150.498	36.169905898	-107.551922938	
10,200.00	89.26	314.063	5,228.24	2,244.65	-4,561.31	1,881,332.544	2,806,078.647	36.170097501	-107.552165690	



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,300.00	89.26	314.063	5,229.53	2,314.19	-4,633.16	1,881,402.083	2,806,006.796	36.170289103	-107.552408443	
10,336.48	89.26	314.063	5,230.00	2,339.55	-4,659.37	1,881,427.452	2,805,980.585	36.170359000	-107.552497000	
PBHL/TD 10336.48 MD 5230.00 TVD										

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	
S Chaco 345 FTP 237 F - plan hits target center - Point	0.00	2.158	5,172.00	-789.52	-1,426.29	1,878,298.385	2,809,213.656	36.161737000	-107.541575000	
S Chaco 345 PBHL 197 - plan hits target center - Point	0.00	2.158	5,230.00	2,339.55	-4,659.37	1,881,427.452	2,805,980.585	36.170359000	-107.552497000	

Casing Points							
Measured Depth (ft)	Vertical Depth (ft)	Name				Casing Diameter (")	Hole Diameter (")
350.00	350.00	13 3/8" Casing				13-5/8	17-1/2
3,419.49	3,276.00	9 5/8" Casing				9-5/8	12-1/4

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
989.00	989.00	Ojo Alamo				
1,101.00	1,101.00	Kirtland				
1,321.08	1,321.00	Fruitland				
1,604.01	1,601.00	Pictured Cliffs				
1,743.30	1,736.00	Lewis				
2,015.50	1,991.00	Chacra_A				
3,217.35	3,091.00	Cliff House_Basal				
3,255.60	3,126.00	Menefee				
4,183.21	3,975.00	Point Lookout				
4,375.51	4,151.00	Mancos				
4,725.14	4,471.00	MNCS_A				
4,843.14	4,579.00	MNCS_B				
4,930.53	4,659.00	MNCS_C				
4,978.93	4,703.00	MNCS_Cms				
5,125.22	4,831.00	MNCS_D				
5,294.05	4,961.00	MNCS_E				
5,370.99	5,011.00	MNCS_F				
5,512.07	5,086.00	MNCS_G				
5,674.39	5,149.00	MNCS_H				



Planning Report - Geographic

Database:	DB_Feb2822	Local Co-ordinate Reference:	Well S Chaco Unit 345 H
Company:	Enduring Resources LLC	TVD Reference:	RKB=7003+28 @ 7031.00ft
Project:	Sandoval County, New Mexico NAD83 NM W	MD Reference:	RKB=7003+28 @ 7031.00ft
Site:	S Chaco Unit 344 Pad (344, 345 & 908)	North Reference:	Grid
Well:	S Chaco Unit 345 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,200.00	1,200.00	0.00	0.00	KOP Begin 3°/100' build	
1,991.96	1,969.46	-127.63	-99.55	Begin 23.76° tangent	
4,858.97	4,593.49	-1,038.43	-809.93	Begin 10°/100' build/turn	
5,453.99	5,056.96	-1,001.81	-1,137.35	Begin 60.00° tangent	
5,513.99	5,086.96	-976.04	-1,182.47	Begin 10°/100' build/turn	
5,836.78	5,172.00	-789.52	-1,426.29	Begin 89.26° lateral	
10,336.48	5,230.00	2,339.55	-4,659.37	PBHL/TD 10336.48 MD 5230.00 TVD	



ENDURING RESOURCES IV, LLC
6300 S SYRACUSE WAY, SUITE 525
CENTENNIAL, COLORADO 80111

DRILLING PLAN: *Drill, complete, and equip single lateral in the Mancos-H formation*

WELL INFORMATION:

Name: S CHACO UNIT 345H

API Number: 30-043-21279

AFE Number: not yet assigned

ER Well Number: not yet assigned

State: New Mexico

County: San Juan

Surface Elevation: 7,003 ft ASL (GL) 7,031 ft ASL (KB)

Surface Location: 2-22N-07W Sec-Twn-Rng 1,027 ft FSL 356 ft FEL

36.163894 ° N latitude 107.536735 ° W longitude (NAD 83)

BH Location: 2-22N-07W Sec-Twn-Rng 1,974 ft FNL 228 ft FWL

36.170359 ° N latitude 107.552497 ° W longitude (NAD 83)

Driving Directions: FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM:

South on US Hwy 550 for 48.3 miles to MM 103.0; Right (South) on Atkins Road for 4.2 miles to 4-way intersection; Left (East) exiting Atkins Road for 0.3 miles to fork; Right (South) along existing access road for 0.2 miles; Right (South) for 0.6 miles to S CHACO UNIT 344H PAD (WELLS: 344H, 345H, 908H).

GEOLOGIC AND RESERVOIR INFORMATION:

Prognosis:	Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
	Ojo Alamo	6,042	989	989	W	normal
	Kirtland	5,930	1,101	1,101	W	normal
	Fruitland	5,710	1,321	1,321	G, W	sub
	Pictured Cliffs	5,430	1,601	1,604	G, W	sub
	Lewis	5,295	1,736	1,743	G, W	normal
	Chacra	5,040	1,991	2,016	G, W	normal
	Cliff House	3,940	3,091	3,217	G, W	sub
	Menefee	3,905	3,126	3,256	G, W	normal
	Point Lookout	3,056	3,975	4,183	G, W	normal
	Mancos	2,880	4,151	4,376	O,G	sub (~0.38)
	Gallup (MNCS_A)	2,560	4,471	4,725	O,G	sub (~0.38)
	MNCS_B	2,452	4,579	4,843	O,G	sub (~0.38)
	MNCS_C	2,372	4,659	4,931	O,G	sub (~0.38)
	MNCS_Cms	2,328	4,703	4,979	O,G	sub (~0.38)
	MNCS_D	2,200	4,831	5,125	O,G	sub (~0.38)
	MNCS_E	2,070	4,961	5,294	O,G	sub (~0.38)
	MNCS_F	2,020	5,011	5,371	O,G	sub (~0.38)
	MNCS_G	1,945	5,086	5,512	O,G	sub (~0.38)
	MNCS_H	1,882	5,149	5,674	O,G	sub (~0.38)
	FTP (LP) TARGET	1,859	5,172	5,837	O,G	sub (~0.38)
	LTP (TD) TARGET	1,801	5,230	10,336	O,G	sub (~0.38)

Surface: Nacimiento

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

Pressure: Normal (0.43 psi/ft) or sub-normal pressure gradients 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: 2,250 psi

Maximum anticipated surface pressure, assuming partially evacuated hole: 1,100 psi

Temperature: Maximum anticipated BHT is 135° 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 detection 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: Ensign

Rig No.: 773

Draw Works: Pacific Rim 1500AC

Mast: ADR 1500S Cantilever Triple (142 ft, 800,000 lbs, 12 lines)

Top Drive: Tesco 500-ESI-1350 (500 ton, 1,350 hp)

Prime Movers: 3 - CAT 3512 (1,475 hp)

Pumps: 3 - Gardner-Denver PZ11 (7,500 psi)

BOPE 1: Cameron single gate ram (pipe) & double gate ram (pipe & blind) (13-5/8", 10,000 psi)

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

Choke 3", 10,000 psi

KB-GL (ft): 28

NOTE: A different rig may be used to drill the well depending on rig availability

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.
- 3) 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.
- 4) 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 3,000 psig for 10 minutes, and the annular preventer will be tested to 1,500 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.
- 5) 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.
- 6) Manual locking devices (hand wheels) shall be intalled 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. Sufficient weighting agent will be on location to weight up mud system to balance the maximum expected pressure gradient.

DETAILED DRILLING PLAN:

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

0 ft (MD)	to	350 ft (MD)	Hole Section Length:	350 ft
0 ft (TVD)	to	350 ft (TVD)	Casing Required:	350 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, deviation survey

Logging: None

Casing Specs:		Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	13.375	54.5	J-55	BTC	1,130	2,730	853,000	909,000
Loading					153	708	116,634	116,634
Min. S.F.					7.39	3.86	7.31	7.79

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: N/A Optimum: N/A Maximum: N/A

Make-up as per API Buttress Connection running procedure.

Casing Summary: Float shoe, 1 jt casing, float 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)
	Type III	14.6	1.39	6.686	0.6946	100%	0	350

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

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.*

350 ft (MD)	to	3,419 ft (MD)	Hole Section Length:	3,069 ft
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350 ft (TVD)	to	3,276 ft (TVD)	Casing Required:	3,419 ft
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Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (KCl)	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	

Hole Size: 12-1/4"

Bit / Motor: PDC w/mud motor

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

Logging: None

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

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	453,000
Loading					1,431	1,287	207,335	207,335
Min. S.F.					1.41	2.73	2.72	2.18

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 Summary: Float shoe, 1 jt casing, float collar, casing to surface

Centralizers: 1 centralizers jt stop-banded 10' from float shoe on bottom 1 jt & 1 centralizer floating on bottom joint, 1 centralizer per jt (floating) to KOP ; 1 centralizer per 2 jts (floating) to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	III:POZ Blend	12.5	2.140	12.05	70%	0	698
Tail	Type III	14.6	1.38	6.64	20%	2,919	136

Annular Capacity 0.3627 cuft/ft 9-5/8" casing x 13-3/8" casing annulus

0.3132 cuft/ft 9-5/8" casing x 12-1/4" hole annulus

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

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.

3,419 ft (MD)	to	10,336 ft (MD)	Hole Section Length:	6,917 ft
3,276 ft (TVD)	to	5,230 ft (TVD)	Casing Required:	10,336 ft

Estimated KOP:	4,859 ft (MD)	4,593 ft (TVD)
Estimated Landing Point (FTP):	5,837 ft (MD)	5,172 ft (TVD)
Estimated Lateral Length:	4,499 ft (MD)	

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	ES	OWR
	OBM	8.7 - 9.0	10 - 15	10 - 20	6 - 10	500+	80:20

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					2,584	8,990	301,624	301,624
Min. S.F.					2.89	1.18	1.81	1.48

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 150,000 lbs over-pull

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

Casing Summary: Float shoe, 1 jt casing, float collar w/debris catcher, 1 jt casing, float collar, 20' marker joint, toe-initiation sleeve, casing to KOP with 20' marker joints spaced evenly in lateral every ~2,000', floatation sub, casing to surface. The toe-initiation sleeve shall be placed no closer to the unit boundary than 100' measured along the azimuth of the well or 330' measured perpendicular to the azimuth of the well. **Note: the LTP is the maximum depth of the toe sleeve and is noted on the Well Plan. Drill past the LTP as required for necessary rat-hole and shoe-track length to place the toe sleeve as close to (but not past) the planned LTP as possible.**

Centralizers: Centralizer count and placement may be adjusted based on well conditions and as-drilled surveys

Lateral: 1 centralizer per joint

FTP to 9-5/8" shoe: 1 centralizer per joint

9-5/8" shoe to surface: 1 centralizer per 2 joints

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	Type III	12.4	2.360	13.40	65%	0	543
Tail	G:POZ blend	13.3	1.560	7.70	10%	4,376	963

Annular Capacity 0.2691 cuft/ft 5-1/2" casing x 9-5/8" casing annulus

0.2291 cuft/ft 5-1/2" casing x 8-1/2" hole annulus

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

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

Note: This well will not be considered an unorthodox well location as defined by NMAC 19.15.16.15.C.5. As defined in NMAC 19.15.16.15.C.1.a and 19.15.16.15.C.1.b, no point in the completed interval shall be closer to the unit boundary than 100' measured along the azimuth of the well or 330' measured perpendicular to the azimuth well. The boundaries of the completed interval, as defined by NMAC 19.15.16.7.B, are the last take point and first take point, as defined by NMAC 19.15.16.7.E and NMAC 19.15.16.7.J, respectively. In the case of this well, the last take point will be the bottom toe-initiation sleeve, and the first take point will be the top perforation. **Neither the bottom toe-initiation sleeve nor the top perforation shall be closer to the unit boundary than 100' measured along the azimuth of the well or 330' measured perpendicular to the azimuth of the well.**

FINISH WELL: ND BOP, cap well, RDMO.

COMPLETION AND PRODUCTION PLAN:

Frac: 20 plug-and-perf stages with 180,000 bbls slickwater fluid and 7,000,000 lbs of proppant (estimated)

Flowback: Flow back through production tubing as pressures allow (ESP may be used for load recovery assistance)

Production: Produce through production tubing via gas-lift into permanent production and storage facilities

ESTIMATED START DATES:

Drilling: 6/1/2022

Completion: 7/21/2022

Production: 9/9/2022

Prepared by: Alec Bridge 3/14/2022

WELL NAME: S CHACO UNIT 345H
OBJECTIVE: Drill, complete, and equip single lateral in the Mancos-H formation

API Number: 30-043-21279
AFE Number: not yet assigned
ER Well Number: not yet assigned

State: New Mexico
County: San Juan

Surface Elev.: 7,003 ft ASL (GL) 7,031 ft ASL (KB)
Surface Location: 2-22N-07W Sec-Twn- Rng 1,027 ft FSL 356 ft FEL
BH Location: 2-22N-07W Sec-Twn- Rng 1974 ft FNL 228 ft FWL

Driving Directions: FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM:

South on US Hwy 550 for 48.3 miles to MM 103.0; Right (South) on Atkins Road for 4.2 miles to 4-way intersection; Left (East) exiting Atkins Road for 0.3 miles to fork; Right (South) along existing access road for 0.2 miles; Right (South) for 0.6 miles to S CHACO UNIT 344H PAD (WELLS: 344H, 345H, 908H).

QUICK REFERENCE	
Sur TD (MD)	350 ft
Int TD (MD)	3,419 ft
KOP (MD)	4,859 ft
KOP (TVD)	4,593 ft
Target (TVD)	5,172 ft
Curve BUR	10 °/100 ft
POE (MD)	5,837 ft
TD (MD)	10,336 ft
Lat Len (ft)	4,499 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	350	13.375	54.5	J-55	BTC	0	350
Intermediate	12.250	3,419	9.625	36.0	J-55	LTC	0	3,419
Production	8.500	10,336	5.500	17.0	P-110	LTC	0	10,336

CEMENT PROPERTIES SUMMARY:

	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	Hole Cap. (cuft/ft)	% Excess	TOC (ft MD)	Total (sx)
Surface	Type III	14.6	1.39	6.686	0.6946	100%	0	350
Inter. (Lead)	III:POZ Blend	12.5	2.14	12.05	0.3627	70%	0	698
Inter. (Tail)	Type III	14.6	1.38	6.64	0.3132	20%	2,919	136
Prod. (Lead)	Type III	12.4	2.360	13.4	0.2691	65%	0	543
Prod. (Tail)	G:POZ blend	13.3	1.560	7.7	0.2291	10%	4,376	963

COMPLETION / PRODUCTION SUMMARY:

Frac: 20 plug-and-perf stages with 180,000 bbls slickwater fluid and 7,000,000 lbs of proppant (estimated)
Flowback: Flow back through production tubing as pressures allow (ESP may be used for load recovery assistance)
Production: Produce through production tubing via gas-lift into permanent production and storage facilities

Tops	TVD (ft KB)	MD (ft KB)
Ojo Alamo	989	989
Kirtland	1,101	1,101
Fruitland	1,321	1,321
Pictured Cliffs	1,601	1,604
Lewis	1,736	1,743
Chacra	1,991	2,016
Cliff House	3,091	3,217
Menefee	3,126	3,256
Point Lookout	3,975	4,183
Mancos	4,151	4,376
Gallup (MNCS_A)	4,471	4,725
MNCS_B	4,579	4,843
MNCS_C	4,659	4,931
MNCS_Cms	4,703	4,979
MNCS_D	4,831	5,125
MNCS_E	4,961	5,294
MNCS_F	5,011	5,371
MNCS_G	5,086	5,512
MNCS_H	5,149	5,674
FTP (LP) TARGET	5,172	5,837
LTP (TD) TARGET	5,230	10,336

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 92718

CONDITIONS

Operator: ENDURING RESOURCES, LLC 6300 S Syracuse Way, Suite 525 Centennial, CO 80111	OGRID: 372286
	Action Number: 92718
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
kpickford	• NSP Will require administrative order for non-standard spacing unit	3/28/2022
kpickford	Adhere to previous NMOCD Conditions of Approval	3/28/2022