

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Gabriel Wade, Acting 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 3160-5 form.

Operator Signature Date: **Original APD 9/11/2018**
Sundry Date 3/28/2019

WELL INFORMATION:

ENDURING RESOURCES, LLC
30-039-31373 RINCON UNIT #713H

Conditions of Approval:
(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☐ Hold C-104 for NSL, NSP, DHC,
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☒ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - ☒ A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - ☒ A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - ☒ A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☒ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Submit Gas Capture Plan form prior to spudding or initiating recompletions operations.
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

- ✓ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.
- ✓ Comply with current regulations at time of spud
Prior to production operator needs to be in compliance with RULE 19.15.5.9



NMOCD Approved by Signature

4/3/19
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

MAR 28 2019

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.

5. Lease Serial No.

NMSF079366

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

Enduring Resources IV, LLC

3a. Address

200 Energy Court Farmington NM 87401

3b. Phone No. (include area code)

505-636-9743

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

NMNM078406X

8. Well Name and No.

RINCON UNIT 713H

9. API Well No.

30-039-31373

10. Field and Pool or Exploratory Area

Basin Mancos

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

SHL: 1129' FNL & 1241' FEL SEC 21 27N 6W

BHL: 602' FNL & 763' FWL SEC 19 27N 6W

11. Country or Parish, State

Rio Arriba 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 ShutOff
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other <u>Change in plans</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 recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Enduring Resources requests a change in plans for the above mentioned well per the attached updated C102, Wellbore, Ops plan and Drill plan.

Summary of changes that apply:

- Directional plans modified to allow for more clearance between offset wells in the intermediate section
- 9-5/8" intermediate casing point lowered into the Mancos
- Added a contingency for the use of DV Tool / ECP in the 9-5/8" intermediate casing
- Changed BHL & POE

NMOCD

APR 02 2019

DISTRICT III

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

Lacey Granillo

Title: Permit Specialist

Signature

Date: 3/28/19

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Dave Mankiewicz

Title

AFM

Date

3/28/19

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.

NMOCD

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462



ENDURING RESOURCES IV, LLC
1050 SEVENTEENTH STREET, SUITE 2500
DENVER, COLORADO 80265

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

WELL INFORMATION:

Name: Rincon Unit 713H

API Number: 30-039-31373

State: New Mexico

County: Rio Arriba

Surface Elevation: 6,538 ft ASL (GL)

6,563 ft ASL (KB)

Surface Location: 21-27N-06W Sec-Twn-Rng

1,129 ft FNL

1,241 ft FEL

36.563993 ° N latitude 107.467778 ° W longitude (NAD 83)

BH Location: 19-27N-06W Sec-Twn-Rng

602 ft FNL

763 ft FWL

36.565399 ° N latitude 107.514643 ° W longitude (NAD 83)

Driving Directions: From intersection of US Hwy 64 & US Hwy 550 in Bloomfield, NM: east on Hwy 64 for 36.8 miles to General American Road (GAR) just past MM 101, right (S) on GAR for 1.2 miles to fork, continue right (SW) on GAR for 3.4 miles to 4-way intersection, straight (S) on GAR for 1.1 miles to fork, right (SW) along Munoz Wash for 4.3 miles to 4-way intersection, straight (SW) across Carrizo Wash for 0.3 mile to fork, left (SE) onto CR #492 for 0.4 miles to fork, straight (S) on 492 for 1.4 miles to fork, right (N) uphill on existing road for 0.6 miles to fork, left (SW) for 0.8 miles to fork, left (SE) for 0.1 miles to fork, right (SW) to location to staked location which overlaps existing roadway.

GEOLOGIC AND RESERVOIR INFORMATION:

Prognosis:	Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
	Ojo Alamo	4,200	2,363	2,366	W	normal
	Kirtland	3,900	2,663	2,672	W	normal
	Fruitland	3,560	3,003	3,018	G, W	sub
	Pictured Cliffs	3,390	3,173	3,191	G, W	sub
	Lewis	3,150	3,413	3,435	G, W	normal
	Chacra	2,400	4,163	4,198	G, W	normal
	Cliff House	1,715	4,848	4,896	G, W	sub
	Menefee	1,700	4,863	4,911	G, W	normal
	Point Lookout	1,155	5,408	5,466	G, W	sub
	Mancos	725	5,838	5,903	O,G	normal
	Gallup (MNCS_A)	225	6,338	6,426	O,G	normal
	MNCS_C TARGET (POE)	-37	6,600	6,984	O,G	normal
	PROJECTED WELL TD (BHL)	45	6,518	20,708	O,G	normal

Surface: San Jose

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: 2,840 psi

Maximum anticipated surface pressure, assuming partially evacuated hole: 1,390 psi

Temperature: Maximum anticipated BHT is 185° 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", 3,000 psi)

BOPE 2: Cameron annular (13-5/8", 3,000 psi)

Choke Cameron (4", 10,000 psi)

KB-GL (ft): 25

Note: Actual drilling rig may vary depending on availability at time the well is scheduled to be drilled.

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 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.
- 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	320 ft (MD)	Hole Section Length:	320 ft
0 ft (TVD)	to	320 ft (TVD)	Casing Required:	320 ft

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

Update: Surface section was drilled, cased, cemented in November 2018

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 deviation survey after drilling

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					140	1,518	115,209	115,209
Min. S.F.					8.08	1.80	7.40	7.89

Assumptions: Collapse: fully evacuated casing with 8.4 ppg fluid outside casing

Burst: maximum anticipated surface pressure while drilling intermediate hole or test pressure with 9.5 ppg fluid inside casing 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 Details: 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)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
	Class G	15.8	1.174	5.15	100%	0	379

Annular Capacity 0.6946 cuft/ft 13-3/8" casing x 17-1/2" hole annulus

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.

320 ft (MD)	to	6,005 ft (MD)	Hole Section Length:	5,685 ft
320 ft (TVD)	to	5,938 ft (TVD)	Casing Required:	6,005 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND	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.

Maximum anticipated surface pressure while drilling intermediate hole section is 1,250 psi

Casing Design Note: The intermediate casing string will be a split-string of 9-5/8" 40.0# J55 LTC and 9-5/8" 40.0# HCL-80 LTC casings.

Casing Section #1:		TVD (ft)	MD (ft)				
Top		0	0	Total Section Length:		4,949 ft	
Bottom		4,900	4,949	Total Cum. String Length:		4,949 ft	
Casing Specs:		Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)
Specs		9.625	40.0	J-55	LTC	2,570	3,950
Loading						2,140	1,780
Min. S.F.						1.20	2.22
MU Torque (ft lbs):		Minumum:	3,900	Optimum:	5,200	Maximum:	6,500

Casing Section #2:		TVD (ft)	MD (ft)				
Top		4,900	4,949	Total Section Length:		1,056 ft	
Bottom		5,938	6,005	Total Cum. String Length:		1,056 ft	
Casing Specs:		Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)
Specs		9.625	40.0	HCL-80	LTC	4,230	5,750
Loading						2,594	1,840
Min. S.F.						1.63	3.13

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

Burst: maximum anticipated surface pressure while drilling production hole or test pressure with 9.5 ppg fluid inside casing 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): Minumum: 5,450 Optimum: 7,270 Maximum: 9,090

Casing Details: 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

Casing Contingency: Hole conditions encountered during the drilling of the 12-1/4" intermediate hole section may warrant the use of an ECP and/or a DV Tool to ensure that cement can be successfully circulated to surface. Anticipated placement tool placement is ~100' above the Point Lookout top. Actual drilling conditions will determine if a tools are needed and their exact placement.

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ Blend	12.3	1.987	10.16	40%	0	1,226
Tail	Class G	15.8	1.148	4.98	10%	5,505	150

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

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.

6,005 ft (MD)	to	20,708 ft (MD)	Hole Section Length:	14,703 ft
5,938 ft (TVD)	to	6,518 ft (TVD)	Casing Required:	20,708 ft

Estimated KOP:	6,018 ft (MD)	5,950 ft (TVD)
Estimated Landing Point (P.O.E.):	6,984 ft (MD)	6,600 ft (TVD)
Estimated Lateral Length:	13,724 ft (MD)	

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND	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.

Maximum anticipated surface pressure while drilling production hole section is **1,390** psi

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					3,220	9,110	403,775	403,775
Min. S.F.					2.32	1.17	1.35	1.10

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: Float shoe, float collar, 2 jts casing, float collar, 1 jt casing, toe-initiation sleeve, 1 jt casing, toe-initiation sleeve, casing to KOP with 20' marker joints spaced evenly in lateral every 2,000'. Place Floatation Sub at KOP (+/-). Continue running casing to surface. **The toe-initiation sleeves must be positioned INSIDE any unit setbacks.**

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

Lateral: estimated 1 centralizer per joint

POE to KOP: estimated 1 centralizer per joint from landing point to KOP

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

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ blend	12.4	1.907	9.98	40%	0	1,169
Tail	G:POZ blend	13.3	1.354	5.94	10%	5,903	2,756

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

Halliburton ECONOCEM & EXTENDACEM 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).

FINISH WELL: ND BOP, NU WH, RDMO.

COMPLETION AND PRODUCTION PLAN:

Frac: Lateral will be fracture-stimulated in approximately 75 plug-and-perf stages with approximately 375,000 bbls slickwater fluid and 27,000,000 lbs of proppant.

Flowback: Well will be flowed back through production tubing. An ESP may be used to assist in load water recovery.

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

ESTIMATED START DATES:

Drilling: TBD

Completion: TBD

Production: TBD

Prepared by: Alec Bridge 9/4/2018

Updated by: Alec Bridge 10/18/2018 - lengthened lateral by ~5,000', changed 9-5/8" casing weight from 36# to 40#, updated BOPE information

Alec Bridge 3/6/2019 - lowered 9-5/8" casing point into the Mancos, added contingency ECP and/or DV Tool in

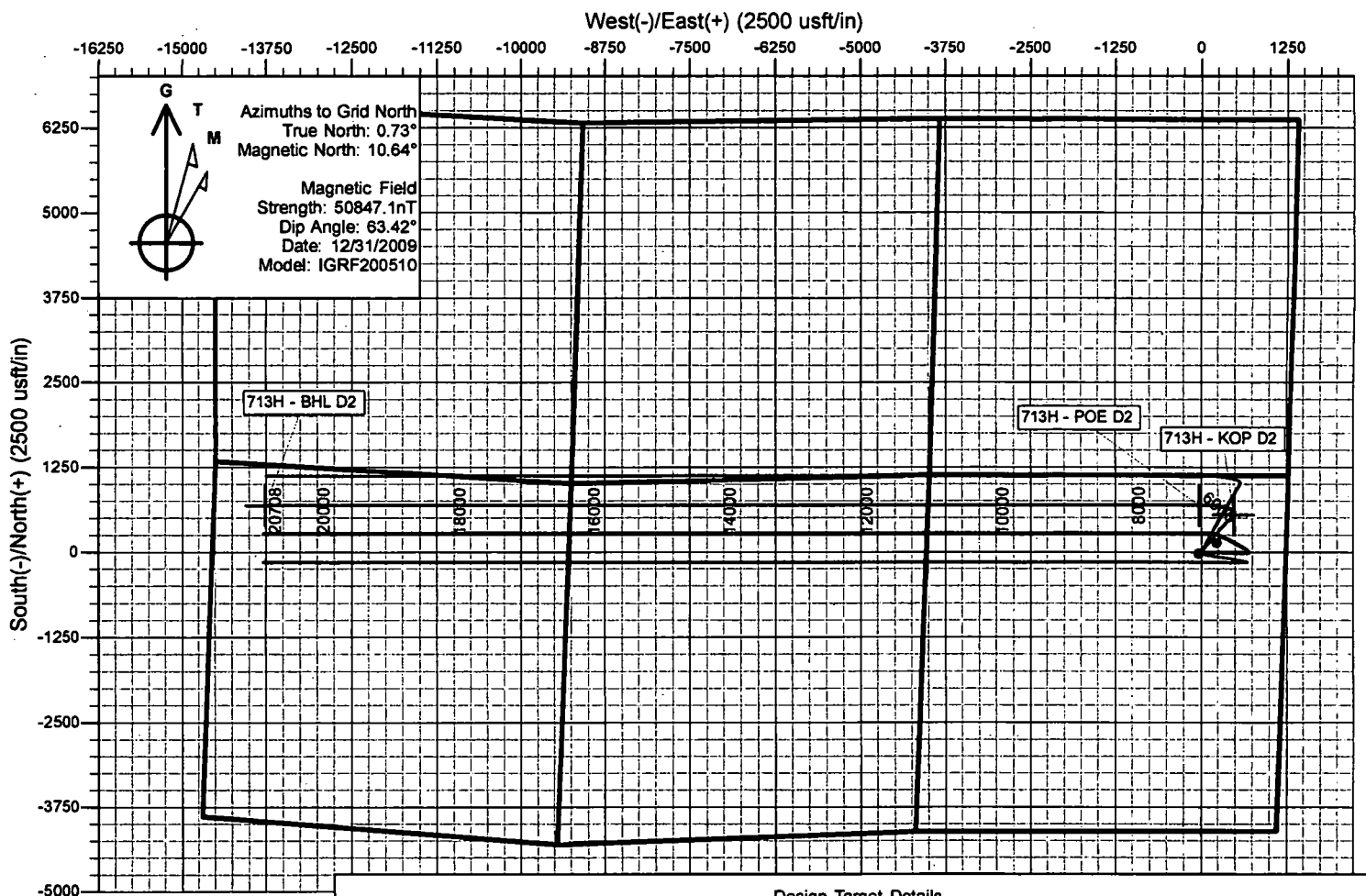


Enduring Resources LLC

Directional Drilling Plan
Plan View & Section View

Rincon Unit 713H

Rio Arriba Co., New Mexico
T27N-R06W-Sec.21-Lot A
Surface Latitude: 36.563993°N
Surface Longitude: 107.467778°W
Ground Level: 6538.0
Reference Elevation: KB @ 6563.0usft (Original Well Elev)

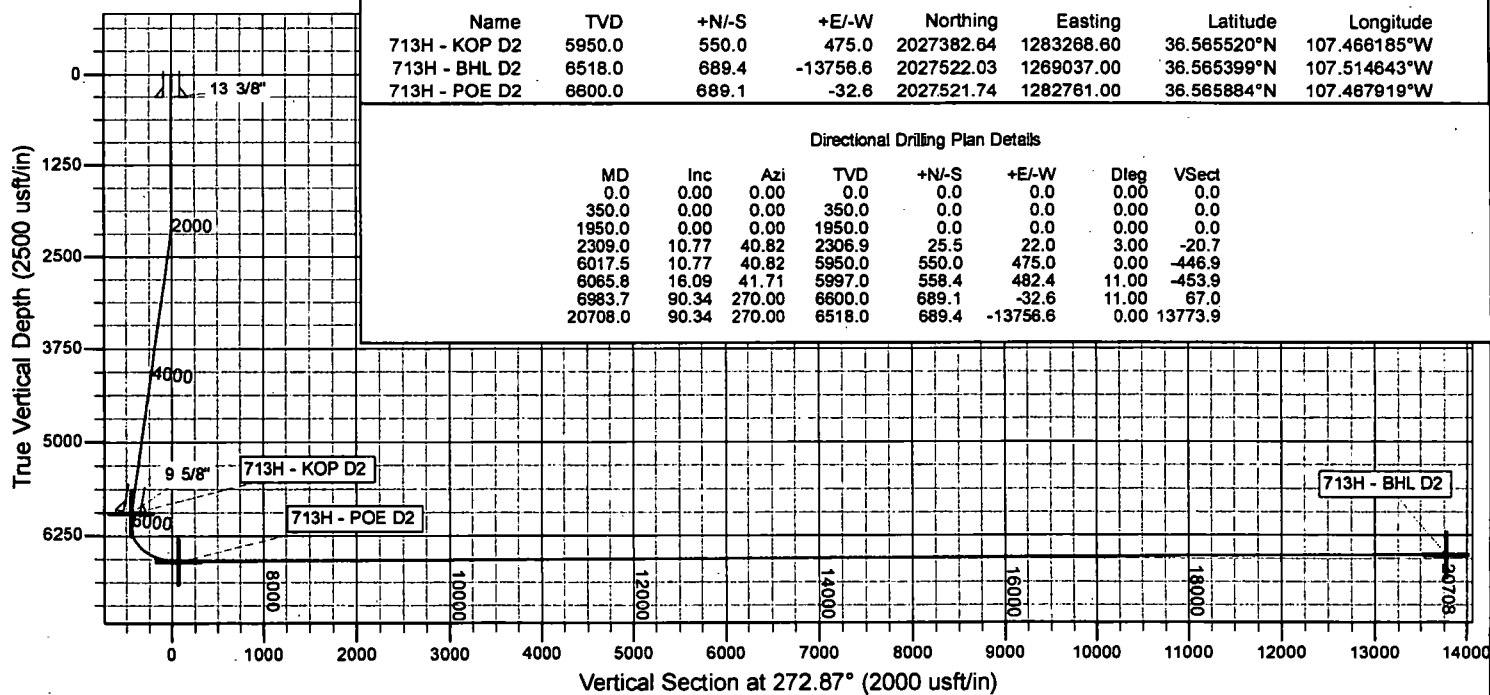


Design Target Details

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
713H - KOP D2	5950.0	550.0	475.0	2027382.64	1283268.60	36.565520°N	107.466185°W
713H - BHL D2	6518.0	689.4	-13756.6	2027522.03	1269037.00	36.565399°N	107.514643°W
713H - POE D2	6600.0	689.1	-32.6	2027521.74	1282761.00	36.565884°N	107.467919°W

Directional Drilling Plan Details

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.0
1950.0	0.00	0.00	1950.0	0.0	0.0	0.00	0.0
2309.0	10.77	40.82	2306.9	25.5	22.0	3.00	-20.7
6017.5	10.77	40.82	5950.0	550.0	475.0	0.00	-446.9
6065.8	16.09	41.71	5997.0	558.4	482.4	11.00	-453.9
6983.7	90.34	270.00	6600.0	689.1	-32.6	11.00	67.0
20708.0	90.34	270.00	6518.0	689.4	-13756.6	0.00	13773.9





Enduring Resources LLC

San Juan Basin - Rincon Unit

613H Pad

713H

Wellbore #1

Plan: Design #2

Standard Planning Report

07 March, 2019



Planning Report

Database: EDM
Company: Enduring Resources LLC
Project: San Juan Basin - Rincon Unit
Site: 613H Pad
Well: 713H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well 713H
TVD Reference: KB @ 6563.0usft (Original Well Elev)
MD Reference: KB @ 6563.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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

Site	613H Pad, Rio Arriba Co., New Mexico			
Site Position:		Northing:	2,026,844.45 usft	Latitude: 36.564026°N
From:	Lat/Long	Easting:	1,282,809.90 usft	Longitude: 107.467723°W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence: -0.73°

Well	713H			
Well Position	+N/-S	-11.8 usft	Northing:	2,026,832.64 usft
	+E/-W	-16.3 usft	Easting:	1,282,793.60 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level: 6,538.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.91	63.42	50,847.06535313

Design	Design #2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	272.87

Plan Survey Tool Program	Date 3/7/2019			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	20,708.0 Design #2 (Wellbore #1)	MWD	
			OWSG MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,950.0	0.00	0.00	1,950.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,309.0	10.77	40.82	2,306.9	25.5	22.0	3.00	3.00	0.00	40.82	
6,017.5	10.77	40.82	5,950.0	550.0	475.0	0.00	0.00	0.00	0.00	713H - KOP D2
6,065.8	16.09	41.71	5,997.0	558.4	482.4	11.00	10.99	1.84	2.66	
6,983.7	90.34	270.00	6,600.0	689.1	-32.6	11.00	8.09	-14.35	-130.50	713H - POE D2
20,708.0	90.34	270.00	6,518.0	689.4	-13,756.6	0.00	0.00	0.00	0.00	713H - BHL D2



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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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,950.0	0.00	0.00	1,950.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	1.50	40.82	2,000.0	0.5	0.4	-0.4	3.00	3.00	0.00
2,100.0	4.50	40.82	2,099.8	4.5	3.8	-3.6	3.00	3.00	0.00
2,200.0	7.50	40.82	2,199.3	12.4	10.7	-10.0	3.00	3.00	0.00
2,300.0	10.50	40.82	2,298.0	24.2	20.9	-19.7	3.00	3.00	0.00
2,309.0	10.77	40.82	2,306.9	25.5	22.0	-20.7	3.00	3.00	0.00
2,366.1	10.77	40.82	2,363.0	33.5	29.0	-27.3	0.00	0.00	0.00
Ojo Alamo									
2,400.0	10.77	40.82	2,396.3	38.3	33.1	-31.1	0.00	0.00	0.00
2,500.0	10.77	40.82	2,494.5	52.5	45.3	-42.6	0.00	0.00	0.00
2,600.0	10.77	40.82	2,592.8	66.6	57.5	-54.1	0.00	0.00	0.00
2,671.5	10.77	40.82	2,663.0	76.7	66.3	-62.3	0.00	0.00	0.00
Kirtland									
2,700.0	10.77	40.82	2,691.0	80.8	69.8	-65.6	0.00	0.00	0.00
2,800.0	10.77	40.82	2,789.2	94.9	82.0	-77.1	0.00	0.00	0.00
2,900.0	10.77	40.82	2,887.5	109.1	94.2	-88.6	0.00	0.00	0.00
3,000.0	10.77	40.82	2,985.7	123.2	106.4	-100.1	0.00	0.00	0.00
3,017.6	10.77	40.82	3,003.0	125.7	108.5	-102.1	0.00	0.00	0.00
Fruitland									
3,100.0	10.77	40.82	3,084.0	137.3	118.6	-111.6	0.00	0.00	0.00
3,190.6	10.77	40.82	3,173.0	150.2	129.7	-122.0	0.00	0.00	0.00
Pictured Cliffs									
3,200.0	10.77	40.82	3,182.2	151.5	130.8	-123.1	0.00	0.00	0.00
3,300.0	10.77	40.82	3,280.4	165.6	143.0	-134.6	0.00	0.00	0.00
3,400.0	10.77	40.82	3,378.7	179.8	155.3	-146.1	0.00	0.00	0.00
3,434.9	10.77	40.82	3,413.0	184.7	159.5	-150.1	0.00	0.00	0.00
Lewis									
3,500.0	10.77	40.82	3,476.9	193.9	167.5	-157.6	0.00	0.00	0.00
3,600.0	10.77	40.82	3,575.1	208.1	179.7	-169.1	0.00	0.00	0.00
3,700.0	10.77	40.82	3,673.4	222.2	191.9	-180.5	0.00	0.00	0.00



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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)
3,800.0	10.77	40.82	3,771.6	236.4	204.1	-192.0	0.00	0.00	0.00
3,900.0	10.77	40.82	3,869.9	250.5	216.3	-203.5	0.00	0.00	0.00
4,000.0	10.77	40.82	3,968.1	264.6	228.6	-215.0	0.00	0.00	0.00
4,100.0	10.77	40.82	4,066.3	278.8	240.8	-226.5	0.00	0.00	0.00
4,198.4	10.77	40.82	4,163.0	292.7	252.8	-237.8	0.00	0.00	0.00
Chacra									
4,200.0	10.77	40.82	4,164.6	292.9	253.0	-238.0	0.00	0.00	0.00
4,300.0	10.77	40.82	4,262.8	307.1	265.2	-249.5	0.00	0.00	0.00
4,400.0	10.77	40.82	4,361.0	321.2	277.4	-261.0	0.00	0.00	0.00
4,500.0	10.77	40.82	4,459.3	335.4	289.6	-272.5	0.00	0.00	0.00
4,600.0	10.77	40.82	4,557.5	349.5	301.8	-284.0	0.00	0.00	0.00
4,700.0	10.77	40.82	4,655.8	363.7	314.1	-295.5	0.00	0.00	0.00
4,800.0	10.77	40.82	4,754.0	377.8	326.3	-307.0	0.00	0.00	0.00
4,895.7	10.77	40.82	4,848.0	391.3	338.0	-318.0	0.00	0.00	0.00
Cliff House									
4,900.0	10.77	40.82	4,852.2	391.9	338.5	-318.5	0.00	0.00	0.00
4,911.0	10.77	40.82	4,863.0	393.5	339.8	-319.7	0.00	0.00	0.00
Menefee									
5,000.0	10.77	40.82	4,950.5	406.1	350.7	-329.9	0.00	0.00	0.00
5,100.0	10.77	40.82	5,048.7	420.2	362.9	-341.4	0.00	0.00	0.00
5,200.0	10.77	40.82	5,147.0	434.4	375.1	-352.9	0.00	0.00	0.00
5,300.0	10.77	40.82	5,245.2	448.5	387.4	-364.4	0.00	0.00	0.00
5,400.0	10.77	40.82	5,343.4	462.7	399.6	-375.9	0.00	0.00	0.00
5,465.7	10.77	40.82	5,408.0	472.0	407.6	-383.5	0.00	0.00	0.00
Point Lookout									
5,500.0	10.77	40.82	5,441.7	476.8	411.8	-387.4	0.00	0.00	0.00
5,600.0	10.77	40.82	5,539.9	491.0	424.0	-398.9	0.00	0.00	0.00
5,700.0	10.77	40.82	5,638.1	505.1	436.2	-410.4	0.00	0.00	0.00
5,800.0	10.77	40.82	5,736.4	519.2	448.4	-421.9	0.00	0.00	0.00
5,900.0	10.77	40.82	5,834.6	533.4	460.7	-433.4	0.00	0.00	0.00
5,903.4	10.77	40.82	5,838.0	533.9	461.1	-433.8	0.00	0.00	0.00
Mancos									
6,000.0	10.77	40.82	5,932.9	547.5	472.9	-444.9	0.00	0.00	0.00
6,005.2	10.77	40.82	5,938.0	548.3	473.5	-445.5	0.00	0.00	0.00
9 5/8"									
6,017.5	10.77	40.82	5,950.0	550.0	475.0	-446.9	0.00	0.00	0.00
713H - KOP D2									
6,065.8	16.09	41.71	5,997.0	558.4	482.4	-453.9	11.00	10.99	1.84
6,100.0	13.94	29.76	6,030.0	565.5	487.6	-458.7	11.00	-6.30	-34.95
6,200.0	12.84	341.09	6,127.6	586.6	490.0	-460.0	11.00	-1.09	-48.68
6,300.0	19.34	307.98	6,223.8	607.3	473.3	-442.3	11.00	6.49	-33.11
6,400.0	28.66	293.31	6,315.2	627.1	438.1	-406.2	11.00	9.32	-14.67
6,426.3	31.28	290.86	6,338.0	632.0	425.9	-393.8	11.00	9.97	-9.31
Gallup (MNCS_A)									
6,500.0	38.81	285.62	6,398.3	645.1	385.8	-353.0	11.00	10.22	-7.11
6,503.5	39.18	285.42	6,401.0	645.7	383.6	-350.8	11.00	10.36	-5.85
MNCS_B									
6,600.0	49.29	280.77	6,470.1	660.6	318.1	-284.7	11.00	10.48	-4.82
6,700.0	59.91	277.25	6,527.9	673.2	237.7	-203.7	11.00	10.62	-3.52
6,772.7	67.68	275.15	6,560.0	680.2	173.0	-138.7	11.00	10.69	-2.89
MNCS_C									
6,800.0	70.61	274.43	6,569.7	682.3	147.5	-113.2	11.00	10.72	-2.66
6,900.0	81.34	271.96	6,593.9	687.7	50.8	-16.3	11.00	10.74	-2.47



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6,983.7	90.34	270.00	6,600.0	689.1	-32.6	67.0	11.00	10.75	-2.34
713H - POE D2									
7,000.0	90.34	270.00	6,599.9	689.1	-48.9	83.3	0.00	0.00	0.00
7,100.0	90.34	270.00	6,599.3	689.1	-148.9	183.2	0.00	0.00	0.00
7,200.0	90.34	270.00	6,598.7	689.1	-248.9	283.0	0.00	0.00	0.00
7,300.0	90.34	270.00	6,598.1	689.1	-348.9	382.9	0.00	0.00	0.00
7,400.0	90.34	270.00	6,597.5	689.1	-448.9	482.8	0.00	0.00	0.00
7,500.0	90.34	270.00	6,596.9	689.1	-548.9	582.7	0.00	0.00	0.00
7,600.0	90.34	270.00	6,596.3	689.1	-648.9	682.5	0.00	0.00	0.00
7,700.0	90.34	270.00	6,595.7	689.1	-748.9	782.4	0.00	0.00	0.00
7,800.0	90.34	270.00	6,595.1	689.1	-848.9	882.3	0.00	0.00	0.00
7,900.0	90.34	270.00	6,594.5	689.1	-948.9	982.2	0.00	0.00	0.00
8,000.0	90.34	270.00	6,593.9	689.1	-1,048.9	1,082.0	0.00	0.00	0.00
8,100.0	90.34	270.00	6,593.3	689.1	-1,148.9	1,181.9	0.00	0.00	0.00
8,200.0	90.34	270.00	6,592.7	689.1	-1,248.9	1,281.8	0.00	0.00	0.00
8,300.0	90.34	270.00	6,592.1	689.1	-1,348.9	1,381.7	0.00	0.00	0.00
8,400.0	90.34	270.00	6,591.5	689.1	-1,448.9	1,481.5	0.00	0.00	0.00
8,500.0	90.34	270.00	6,590.9	689.1	-1,548.8	1,581.4	0.00	0.00	0.00
8,600.0	90.34	270.00	6,590.3	689.1	-1,648.8	1,681.3	0.00	0.00	0.00
8,700.0	90.34	270.00	6,589.7	689.1	-1,748.8	1,781.1	0.00	0.00	0.00
8,800.0	90.34	270.00	6,589.1	689.1	-1,848.8	1,881.0	0.00	0.00	0.00
8,900.0	90.34	270.00	6,588.6	689.1	-1,948.8	1,980.9	0.00	0.00	0.00
9,000.0	90.34	270.00	6,588.0	689.1	-2,048.8	2,080.8	0.00	0.00	0.00
9,100.0	90.34	270.00	6,587.4	689.1	-2,148.8	2,180.6	0.00	0.00	0.00
9,200.0	90.34	270.00	6,586.8	689.1	-2,248.8	2,280.5	0.00	0.00	0.00
9,300.0	90.34	270.00	6,586.2	689.1	-2,348.8	2,380.4	0.00	0.00	0.00
9,400.0	90.34	270.00	6,585.6	689.1	-2,448.8	2,480.3	0.00	0.00	0.00
9,500.0	90.34	270.00	6,585.0	689.2	-2,548.8	2,580.1	0.00	0.00	0.00
9,600.0	90.34	270.00	6,584.4	689.2	-2,648.8	2,680.0	0.00	0.00	0.00
9,700.0	90.34	270.00	6,583.8	689.2	-2,748.8	2,779.9	0.00	0.00	0.00
9,800.0	90.34	270.00	6,583.2	689.2	-2,848.8	2,879.7	0.00	0.00	0.00
9,900.0	90.34	270.00	6,582.6	689.2	-2,948.8	2,979.6	0.00	0.00	0.00
10,000.0	90.34	270.00	6,582.0	689.2	-3,048.8	3,079.5	0.00	0.00	0.00
10,100.0	90.34	270.00	6,581.4	689.2	-3,148.8	3,179.4	0.00	0.00	0.00
10,200.0	90.34	270.00	6,580.8	689.2	-3,248.8	3,279.2	0.00	0.00	0.00
10,300.0	90.34	270.00	6,580.2	689.2	-3,348.8	3,379.1	0.00	0.00	0.00
10,400.0	90.34	270.00	6,579.6	689.2	-3,448.8	3,479.0	0.00	0.00	0.00
10,500.0	90.34	270.00	6,579.0	689.2	-3,548.8	3,578.9	0.00	0.00	0.00
10,600.0	90.34	270.00	6,578.4	689.2	-3,648.8	3,678.7	0.00	0.00	0.00
10,700.0	90.34	270.00	6,577.8	689.2	-3,748.8	3,778.6	0.00	0.00	0.00
10,800.0	90.34	270.00	6,577.2	689.2	-3,848.8	3,878.5	0.00	0.00	0.00
10,900.0	90.34	270.00	6,576.6	689.2	-3,948.8	3,978.4	0.00	0.00	0.00
11,000.0	90.34	270.00	6,576.0	689.2	-4,048.8	4,078.2	0.00	0.00	0.00
11,100.0	90.34	270.00	6,575.4	689.2	-4,148.8	4,178.1	0.00	0.00	0.00
11,200.0	90.34	270.00	6,574.8	689.2	-4,248.8	4,278.0	0.00	0.00	0.00
11,300.0	90.34	270.00	6,574.2	689.2	-4,348.8	4,377.8	0.00	0.00	0.00
11,400.0	90.34	270.00	6,573.6	689.2	-4,448.8	4,477.7	0.00	0.00	0.00
11,500.0	90.34	270.00	6,573.0	689.2	-4,548.8	4,577.6	0.00	0.00	0.00
11,600.0	90.34	270.00	6,572.4	689.2	-4,648.8	4,677.5	0.00	0.00	0.00
11,700.0	90.34	270.00	6,571.8	689.2	-4,748.8	4,777.3	0.00	0.00	0.00
11,800.0	90.34	270.00	6,571.2	689.2	-4,848.8	4,877.2	0.00	0.00	0.00
11,900.0	90.34	270.00	6,570.6	689.2	-4,948.8	4,977.1	0.00	0.00	0.00
12,000.0	90.34	270.00	6,570.0	689.2	-5,048.8	5,077.0	0.00	0.00	0.00



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MD Reference: KB @ 6563.0usft (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)
12,100.0	90.34	270.00	6,569.4	689.2	-5,148.8	5,176.8	0.00	0.00	0.00
12,200.0	90.34	270.00	6,568.8	689.2	-5,248.8	5,276.7	0.00	0.00	0.00
12,300.0	90.34	270.00	6,568.2	689.2	-5,348.8	5,376.6	0.00	0.00	0.00
12,400.0	90.34	270.00	6,567.6	689.2	-5,448.8	5,476.4	0.00	0.00	0.00
12,500.0	90.34	270.00	6,567.0	689.2	-5,548.8	5,576.3	0.00	0.00	0.00
12,600.0	90.34	270.00	6,566.4	689.2	-5,648.8	5,676.2	0.00	0.00	0.00
12,700.0	90.34	270.00	6,565.8	689.2	-5,748.8	5,776.1	0.00	0.00	0.00
12,800.0	90.34	270.00	6,565.2	689.2	-5,848.8	5,875.9	0.00	0.00	0.00
12,900.0	90.34	270.00	6,564.7	689.2	-5,948.8	5,975.8	0.00	0.00	0.00
13,000.0	90.34	270.00	6,564.1	689.2	-6,048.8	6,075.7	0.00	0.00	0.00
13,100.0	90.34	270.00	6,563.5	689.2	-6,148.8	6,175.6	0.00	0.00	0.00
13,200.0	90.34	270.00	6,562.9	689.2	-6,248.8	6,275.4	0.00	0.00	0.00
13,300.0	90.34	270.00	6,562.3	689.2	-6,348.8	6,375.3	0.00	0.00	0.00
13,400.0	90.34	270.00	6,561.7	689.2	-6,448.8	6,475.2	0.00	0.00	0.00
13,500.0	90.34	270.00	6,561.1	689.2	-6,548.8	6,575.0	0.00	0.00	0.00
13,600.0	90.34	270.00	6,560.5	689.2	-6,648.8	6,674.9	0.00	0.00	0.00
13,700.0	90.34	270.00	6,559.9	689.2	-6,748.8	6,774.8	0.00	0.00	0.00
13,800.0	90.34	270.00	6,559.3	689.2	-6,848.8	6,874.7	0.00	0.00	0.00
13,900.0	90.34	270.00	6,558.7	689.2	-6,948.8	6,974.5	0.00	0.00	0.00
14,000.0	90.34	270.00	6,558.1	689.2	-7,048.8	7,074.4	0.00	0.00	0.00
14,100.0	90.34	270.00	6,557.5	689.2	-7,148.7	7,174.3	0.00	0.00	0.00
14,200.0	90.34	270.00	6,556.9	689.2	-7,248.7	7,274.2	0.00	0.00	0.00
14,300.0	90.34	270.00	6,556.3	689.2	-7,348.7	7,374.0	0.00	0.00	0.00
14,400.0	90.34	270.00	6,555.7	689.3	-7,448.7	7,473.9	0.00	0.00	0.00
14,500.0	90.34	270.00	6,555.1	689.3	-7,548.7	7,573.8	0.00	0.00	0.00
14,600.0	90.34	270.00	6,554.5	689.3	-7,648.7	7,673.7	0.00	0.00	0.00
14,700.0	90.34	270.00	6,553.9	689.3	-7,748.7	7,773.5	0.00	0.00	0.00
14,800.0	90.34	270.00	6,553.3	689.3	-7,848.7	7,873.4	0.00	0.00	0.00
14,900.0	90.34	270.00	6,552.7	689.3	-7,948.7	7,973.3	0.00	0.00	0.00
15,000.0	90.34	270.00	6,552.1	689.3	-8,048.7	8,073.1	0.00	0.00	0.00
15,100.0	90.34	270.00	6,551.5	689.3	-8,148.7	8,173.0	0.00	0.00	0.00
15,200.0	90.34	270.00	6,550.9	689.3	-8,248.7	8,272.9	0.00	0.00	0.00
15,300.0	90.34	270.00	6,550.3	689.3	-8,348.7	8,372.8	0.00	0.00	0.00
15,400.0	90.34	270.00	6,549.7	689.3	-8,448.7	8,472.6	0.00	0.00	0.00
15,500.0	90.34	270.00	6,549.1	689.3	-8,548.7	8,572.5	0.00	0.00	0.00
15,600.0	90.34	270.00	6,548.5	689.3	-8,648.7	8,672.4	0.00	0.00	0.00
15,700.0	90.34	270.00	6,547.9	689.3	-8,748.7	8,772.3	0.00	0.00	0.00
15,800.0	90.34	270.00	6,547.3	689.3	-8,848.7	8,872.1	0.00	0.00	0.00
15,900.0	90.34	270.00	6,546.7	689.3	-8,948.7	8,972.0	0.00	0.00	0.00
16,000.0	90.34	270.00	6,546.1	689.3	-9,048.7	9,071.9	0.00	0.00	0.00
16,100.0	90.34	270.00	6,545.5	689.3	-9,148.7	9,171.7	0.00	0.00	0.00
16,200.0	90.34	270.00	6,544.9	689.3	-9,248.7	9,271.6	0.00	0.00	0.00
16,300.0	90.34	270.00	6,544.3	689.3	-9,348.7	9,371.5	0.00	0.00	0.00
16,400.0	90.34	270.00	6,543.7	689.3	-9,448.7	9,471.4	0.00	0.00	0.00
16,500.0	90.34	270.00	6,543.1	689.3	-9,548.7	9,571.2	0.00	0.00	0.00
16,600.0	90.34	270.00	6,542.5	689.3	-9,648.7	9,671.1	0.00	0.00	0.00
16,700.0	90.34	270.00	6,541.9	689.3	-9,748.7	9,771.0	0.00	0.00	0.00
16,800.0	90.34	270.00	6,541.3	689.3	-9,848.7	9,870.9	0.00	0.00	0.00
16,900.0	90.34	270.00	6,540.8	689.3	-9,948.7	9,970.7	0.00	0.00	0.00
17,000.0	90.34	270.00	6,540.2	689.3	-10,048.7	10,070.6	0.00	0.00	0.00
17,100.0	90.34	270.00	6,539.6	689.3	-10,148.7	10,170.5	0.00	0.00	0.00
17,200.0	90.34	270.00	6,539.0	689.3	-10,248.7	10,270.3	0.00	0.00	0.00
17,300.0	90.34	270.00	6,538.4	689.3	-10,348.7	10,370.2	0.00	0.00	0.00
17,400.0	90.34	270.00	6,537.8	689.3	-10,448.7	10,470.1	0.00	0.00	0.00



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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)
17,500.0	90.34	270.00	6,537.2	689.3	-10,548.7	10,570.0	0.00	0.00	0.00
17,600.0	90.34	270.00	6,536.6	689.3	-10,648.7	10,669.8	0.00	0.00	0.00
17,700.0	90.34	270.00	6,536.0	689.3	-10,748.7	10,769.7	0.00	0.00	0.00
17,800.0	90.34	270.00	6,535.4	689.3	-10,848.7	10,869.6	0.00	0.00	0.00
17,900.0	90.34	270.00	6,534.8	689.3	-10,948.7	10,969.5	0.00	0.00	0.00
18,000.0	90.34	270.00	6,534.2	689.3	-11,048.7	11,069.3	0.00	0.00	0.00
18,100.0	90.34	270.00	6,533.6	689.3	-11,148.7	11,169.2	0.00	0.00	0.00
18,200.0	90.34	270.00	6,533.0	689.3	-11,248.7	11,269.1	0.00	0.00	0.00
18,300.0	90.34	270.00	6,532.4	689.3	-11,348.7	11,369.0	0.00	0.00	0.00
18,400.0	90.34	270.00	6,531.8	689.3	-11,448.7	11,468.8	0.00	0.00	0.00
18,500.0	90.34	270.00	6,531.2	689.3	-11,548.7	11,568.7	0.00	0.00	0.00
18,600.0	90.34	270.00	6,530.6	689.3	-11,648.7	11,668.6	0.00	0.00	0.00
18,700.0	90.34	270.00	6,530.0	689.3	-11,748.7	11,768.4	0.00	0.00	0.00
18,800.0	90.34	270.00	6,529.4	689.3	-11,848.7	11,868.3	0.00	0.00	0.00
18,900.0	90.34	270.00	6,528.8	689.3	-11,948.7	11,968.2	0.00	0.00	0.00
19,000.0	90.34	270.00	6,528.2	689.3	-12,048.7	12,068.1	0.00	0.00	0.00
19,100.0	90.34	270.00	6,527.6	689.3	-12,148.7	12,167.9	0.00	0.00	0.00
19,200.0	90.34	270.00	6,527.0	689.4	-12,248.7	12,267.8	0.00	0.00	0.00
19,300.0	90.34	270.00	6,526.4	689.4	-12,348.7	12,367.7	0.00	0.00	0.00
19,400.0	90.34	270.00	6,525.8	689.4	-12,448.7	12,467.6	0.00	0.00	0.00
19,500.0	90.34	270.00	6,525.2	689.4	-12,548.7	12,567.4	0.00	0.00	0.00
19,600.0	90.34	270.00	6,524.6	689.4	-12,648.7	12,667.3	0.00	0.00	0.00
19,700.0	90.34	270.00	6,524.0	689.4	-12,748.6	12,767.2	0.00	0.00	0.00
19,800.0	90.34	270.00	6,523.4	689.4	-12,848.6	12,867.0	0.00	0.00	0.00
19,900.0	90.34	270.00	6,522.8	689.4	-12,948.6	12,966.9	0.00	0.00	0.00
20,000.0	90.34	270.00	6,522.2	689.4	-13,048.6	13,066.8	0.00	0.00	0.00
20,100.0	90.34	270.00	6,521.6	689.4	-13,148.6	13,166.7	0.00	0.00	0.00
20,200.0	90.34	270.00	6,521.0	689.4	-13,248.6	13,266.5	0.00	0.00	0.00
20,300.0	90.34	270.00	6,520.4	689.4	-13,348.6	13,366.4	0.00	0.00	0.00
20,400.0	90.34	270.00	6,519.8	689.4	-13,448.6	13,466.3	0.00	0.00	0.00
20,500.0	90.34	270.00	6,519.2	689.4	-13,548.6	13,566.2	0.00	0.00	0.00
20,600.0	90.34	270.00	6,518.6	689.4	-13,648.6	13,666.0	0.00	0.00	0.00
20,700.0	90.34	270.00	6,518.0	689.4	-13,748.6	13,765.9	0.00	0.00	0.00
20,708.0	90.34	270.00	6,518.0	689.4	-13,756.6	13,773.9	0.00	0.00	0.00

713H - BHL D2

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
713H - KOP D2 - plan hits target center - Point	0.00	360.00	5,950.0	550.0	475.0	2,027,382.64	1,283,268.60	36.565520°N	107.466185°W
713H - BHL D2 - plan hits target center - Point	0.00	360.00	6,518.0	689.4	-13,756.6	2,027,522.02	1,269,037.00	36.565399°N	107.514643°W
713H - POE D2 - plan hits target center - Point	0.00	0.00	6,600.0	689.1	-32.6	2,027,521.74	1,282,761.00	36.565884°N	107.467919°W



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MD Reference: KB @ 6563.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
320.0	320.0	13 3/8"	13-3/8	17-1/2
6,005.2	5,938.0	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,366.1	2,363.0	Ojo Alamo		0.00	
2,671.5	2,663.0	Kirtland		0.00	
3,017.6	3,003.0	Fruitland		0.00	
3,190.6	3,173.0	Pictured Cliffs		0.00	
3,434.9	3,413.0	Lewis		0.00	
4,198.4	4,163.0	Chacra		0.00	
4,895.7	4,848.0	Cliff House		0.00	
4,911.0	4,863.0	Menefee		0.00	
5,465.7	5,408.0	Point Lookout		0.00	
5,903.4	5,838.0	Mancos		0.00	
6,426.3	6,338.0	Gallup (MNCS_A)		0.00	
6,503.5	6,401.0	MNCS_B		0.00	
6,772.7	6,560.0	MNCS_C		0.00	

WELL NAME: Rincon Unit 713H**OBJECTIVE: Drill, complete, and equip single lateral in the Mancos-C formation****API Number: 30-039-31373****State: New Mexico****County: Rio Arriba****Surface Elev.: 6,538 ft ASL (GL) 6,563 ft ASL (KB)****Surface Location: 21-27N-06W Sec-Twn- Rng 1,129 ft FNL 1,241 ft FEL****BH Location: 19-27N-06W Sec-Twn- Rng 602 ft FNL 763 ft FWL**

Driving Directions: From intersection of US Hwy 64 & US Hwy 550 in Bloomfield, NM: east on Hwy 64 for 36.8 miles to General American Road (GAR) just past MM 101, right (S) on GAR for 1.2 miles to fork, continue right (SW) on GAR for 3.4 miles to 4-way intersection, straight (S) on GAR for 1.1 miles to fork, right (SW) along Munoz Wash for 4.3 miles to 4-way intersection, straight (SW) across Carrizo Wash for 0.3 mile to fork, left (SE) onto CR #492 for 0.4 miles to fork, straight (S) on 492 for 1.4 miles to fork, right (N) uphill on existing road for 0.6 miles to fork, left (SW) for 0.8 miles to fork, left (SE) for 0.1 miles to fork, right (SW) to location to staked location which overlaps existing roadway.

QUICK REFERENCE

Sur TD (MD)	320 ft
Int TD (MD)	6,005 ft
KOP (MD)	6,018 ft
KOP (TVD)	5,950 ft
Target (TVD)	6,600 ft
Curve BUR	10 °/100 ft
POE (MD)	6,984 ft
TD (MD)	20,708 ft
Lat Len (ft)	13,724 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	320	13.375	54.5	J-55	BTC	0	320
Intermediate	12.250	6,005	9.625	40.0	J-55	LTC	0	6,005
Production	8.500	20,708	5.500	17.0	P-110	LTC	0	20,708

CEMENT PROPERTIES SUMMARY:

	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	% Excess	TOC (ft MD)	Total (sx)
Surface	Class G	15.8	1.174	5.15	100%	0	379
Inter. (Lead)	G:POZ Blend	12.3	1.987	10.16	40%	0	1,226
Inter. (Tail)	Class G	15.8	1.148	4.98	10%	5,505	150
Prod. (Lead)	G:POZ blend	12.4	1.9068	9.981	40%	0	1,169
Prod. (Tail)	G:POZ blend	13.3	1.354	5.94	10%	5,903	2,756

COMPLETION / PRODUCTION SUMMARY:

Frac: 75-stage (+/-) plug-and-perf frac with slick water and 27,000,000 lbs (+/-) proppant

Flowback: Flow up production tubing as pressures allow (an ESP may be used to assist in load-water recovery)

Production: 2-7/8" tubing, ESP will be replaced with gas lift as well conditions dictate

