

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

Adrienne Sandoval, Division Director
Oil Conservation Division



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

Operator Signature Date: **Original APD 11/12/2015**
Sundry Date 1/30/2020

WELL INFORMATION:

ENDURING RESOURCES, LLC
30-045-35734 KIMBETO WASH UNIT #791H

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

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.
NMNM1175776. If Indian, Allottee or Tribe Name
EASTERN NAVAJO7. If Unit or CA/Agreement, Name and/or No.
NMNM135255A8. Well Name and No.
KIMBETO WASH UNIT 789H9. API Well No.
30-045-35734-00-X110. Field and Pool or Exploratory Area
BASIN MANCOS11. County or Parish, State
SAN JUAN COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
ENDURING RESOURCES LLCContact: LACEY GRANILLO
E-Mail: LGRANILLO@ENDURINGRESOURCES.COM3a. Address
1050 17TH STREET SUITE 2500
DENVER, CO 802653b. Phone No. (include area code)
Ph: 505-636-9743

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

Sec 30 T23N R9W NWNW 664FNL 524FWL
36.203340 N Lat, 107.837214 W Lon**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	Change to Original A PD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple 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.

CHANGE IN PLANS

A summary of the requested changes to the approved APD is outlined below. Please reference the attachments for additional details.

Change name from KIMBETO WASH UNIT 791H to KIMBETO WASH UNIT 789H.

C102

Moved BHL from section 30 to section 32

Moved POE from section 30 to section 30

Drilling Program

Directional plan updated based on new POE and BHL

Casing program change

NMOCD

FEB 06 2020

DISTRICT III

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

Electronic Submission #501491 verified by the BLM Well Information System
For ENDURING RESOURCES LLC, sent to the Farmington
Committed to AFMSS for processing by JOE KILLINS on 01/30/2020 (20JK0105SE)

Name (Printed/Typed) LACEY GRANILLO

Title PERMITTING SPECIALIST

Signature (Electronic Submission)

Date 01/30/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By (BLM Approver Not Specified)

Title

Date 02/05/2020

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

Office Farmington

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

(Instructions on page 2)

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

NMOCD AV

Additional data for EC transaction #501491 that would not fit on the form

32. Additional remarks, continued

Surface: 9-5/8 to 13-3/8

Intermediate: 7 to 9-5/8

Production: 4-1/2 liner to 5-1/2 long-string

Frac Program

Fluid type: change from nitrogen foam to slick-water

Water volume: increase from 15,000 bbls to 240,000 bbls (estimated)

Sand weight: increase from 3.1 million lbs to 8.5 million lbs (estimated)

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

District II
811 S. First Street, Artesia, NM 88210
Phone (505) 748-1263 Fax (505) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

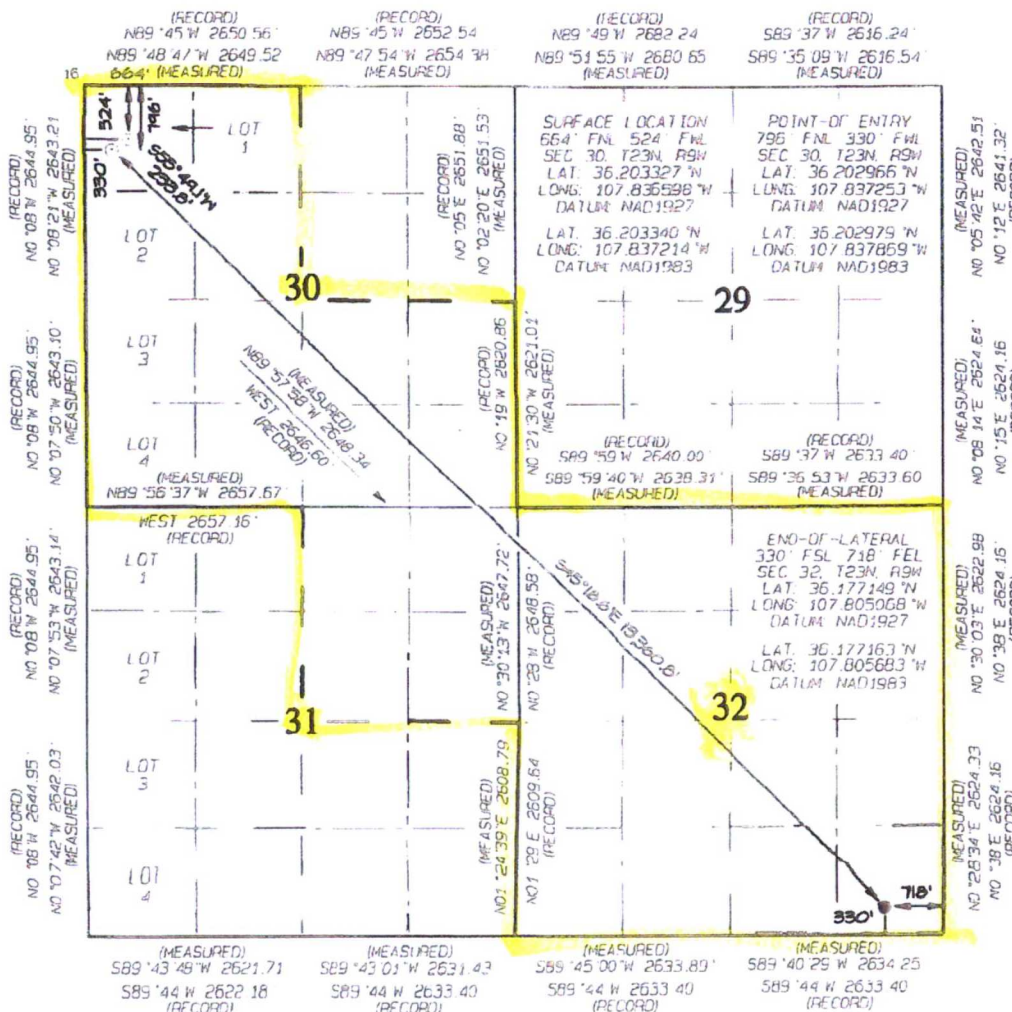
API Number 30-045-35734		Pool Code 9/232	Pool Name BASIN MANCOS	
Property Code 321239		Property Name KIMBETO WASH UNIT		Well Number 789H
GRID No 372286		Operator Name ENDURING RESOURCES, LLC		Elevation 6596

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
D	30	23N	9W	1	664	NORTH	524	WEST	SAN JUAN

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
P	32	23N	9W		330	SOUTH	718	EAST	SAN JUAN

12 Dedicated Acres 1280.46		W/2 & SE/4 - Section 30 NE/4 - Section 31 Entire Section 32		13 Joint or In/In/1	14 Consolidation Ends	15 Order No R-14084
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION
UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



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

Signature: *[Signature]*
Printed Name: *Grant Rodriguez*
Address: *[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: JULY 29, 2019
Date of Survey: JULY 15, 2015

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



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

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

WELL INFORMATION:

Name: KIMBETO WASH UNIT 789H (FKA 791H)

API Number: 30-045-35734

State: New Mexico

County: San Juan

Surface Elevation: 6,596 ft ASL (GL) 6,624 ft ASL (KB)

Surface Location: 30-23N-09W Sec-Twn-Rng 664 ft FNL 524 ft FWL

36.20334 ° N latitude 107.837214 ° W longitude (NAD 83)

BH Location: 32-23N-09W Sec-Twn-Rng 330 ft FSL 718 ft FEL

36.177163 ° N latitude 107.805683 ° W longitude (NAD 83)

Driving Directions: From the intersection of US Hwy 550 and US Hwy 64 in Bloomfield, NM: South on US Hwy 550 for 35.9 miles to MM 115.7; right (Southwest) at Nageezi Post Office on CR #7800 for 0.4 miles to 4-way intersection; right (Northwest) remaining on CR #7800 for 3.6 miles to end of pavement; straight (Southwest) on CR #7800 for 1.2 miles to fork in roadway; left (South) for 3.0 miles; right (Northwest) on access road for 220' into Kimbeto Wash Unit 789H Pad (4 wells: 789H, 791H, 887H, 889H).

GEOLOGIC AND RESERVOIR INFORMATION:

Prognosis:	Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
	Ojo Alamo	6,515	109	109	W	normal
	Kirtland	6,430	194	194	W	normal
	Fruitland	6,145	479	479	G, W	sub
	Pictured Cliffs	5,800	824	824	G, W	sub
	Lewis	5,680	944	944	G, W	normal
	Chacra	5,440	1,184	1,184	G, W	normal
	Cliff House	4,500	2,124	2,159	G, W	sub
	Menefee	4,480	2,144	2,180	G, W	normal
	Point Lookout	3,425	3,199	3,284	G, W	normal
	Mancos	3,280	3,344	3,436	O,G	sub (~0.38)
	Gallup (MNCS_A)	2,955	3,669	3,776	O,G	sub (~0.38)
	MNCS_B	2,840	3,784	3,893	O,G	sub (~0.38)
	MNCS_C	2,770	3,854	3,963	O,G	sub (~0.38)
	MNCS_Cms	2,730	3,894	4,003	O,G	sub (~0.38)
	MNCS_D	2,610	4,014	4,127	O,G	sub (~0.38)
	MNCS_E	2,445	4,179	4,317	O,G	sub (~0.38)
	MNCS_F	2,390	4,234	4,390	O,G	sub (~0.38)
	MNCS_G	2,320	4,304	4,500	O,G	sub (~0.38)
	MNCS_H	2,277	4,347	4,586	O,G	sub (~0.38)
	MNCS_I	2,225	4,399	4,757	O,G	sub (~0.38)
	P.O.E. TARGET	2,214	4,410	4,983	O,G	sub (~0.38)
	PROJECTED TD	2,314	4,310	18,345	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:				1,900	psi
Maximum anticipated surface pressure, assuming partially evacuated hole:				930	psi

Temperature: Maximum anticipated BHT is 125° 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

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 in the geologist's work-station (if geologist or mud-logger is on-site).

✓ **Closed-Loop System:** A fully, closed-loop system will be utilized. The system will consist of above-ground piping and above-ground storage tanks and bins. The system will not entail any earthen pits, below-grade storage, or drying pads. All equipment will be disassembled and removed from the site when drilling operations cease. The system will be capable of storing all fluids and generated cuttings and of preventing uncontrolled releases of the same. The system will be operated in an efficient manner to allow the recycling and reuse of as much fluid as possible and to minimize the amount of fluids and solids that require disposal.

Fluid Disposal: Fluids that cannot be reused, recycled, or returned to the supplier will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).

Solids Disposal: Drilling solids will be stored (until haul-off) on-site in separate containers with no other waste, debris, or garbage products. Waste solids will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).

Fluid Program: See "Detailed Drilling Plan" section for specifics.

DETAILED DRILLING PLAN:

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

0 ft (MD)	to	240 ft (MD)	Hole Section Length:	240 ft
0 ft (TVD)	to	240 ft (TVD)	Casing Required:	240 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					105	539	111,406	111,406
Min. S.F.					10.78	5.07	7.66	8.16

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)
	Class G	15.8	1.174	5.15	0.6946	100%	0	284

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

Halliburton HALCEM surface cementing blend

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

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

240 ft (MD)	to	2,552 ft (MD)	Hole Section Length:	2,312 ft
240 ft (TVD)	to	2,500 ft (TVD)	Casing Required:	2,552 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (KCI)	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
Loading					1,092	1,073	180,117
Min. S.F.					1.85	3.28	3.13

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: 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)
Lead	G:POZ Blend	12.3	1.987	10.16	70%	0	560
Tail	Class G	15.8	1.148	4.98	20%	2,052	164

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 ECONOCHEM & HALCEM cementing blend

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

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

2,552 ft (MD)	to	18,345 ft (MD)	Hole Section Length:	15,793 ft
2,500 ft (TVD)	to	4,310 ft (TVD)	Casing Required:	18,345 ft

Estimated KOP:	3,756 ft (MD)	3,650 ft (TVD)
Estimated Landing Point (P.O.E.):	4,983 ft (MD)	4,410 ft (TVD)
Estimated Lateral Length:	13,362 ft (MD)	

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

Hole Size: 8-1/2"

Bit / Motor: PDC w/mud motor

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

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

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

Casing Specs:	Size (in)	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	5.500	17.0	P-110	LTC	7,460	10,640	546,000	445,000
Loading					2,129	8,903	369,111	369,111
Min. S.F.					3.50	1.20	1.48	1.21

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 Summary: Float shoe, 1 jt casing, float collar, 1 jt casing, float collar, 1 jt casing, toe-initiation sleeve, 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 sleeves must be positioned INSIDE the 330' unit setback.**

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

Lateral: 1 centralizer per joint

Curve: 1 centralizer per joint from landing point to KOP

KOP to surf: 1 centralizer per 2 joints

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	9.981	50%	0	761
Tail	G:POZ blend	13.3	1.360	5.999	10%	3,776	2,699

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 outside the applicable unit setback to maximize the length of the completed interval and to maximize resource recovery. If the well is drilled outside the setback, the toe initiation sleeve(s) 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). Kimbeto Wash Unit Order Number is R-14084.

FINISH WELL: ND BOP, cap well, RDMO.

COMPLETION AND PRODUCTION PLAN:

Frac: 75 plug-and-perf stages with 300,000 bbls slickwater fluid and 24,000,000 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: 9/1/2019

Completion: 10/31/2019

Production: 11/30/2019

Prepared by: Alec Bridge 7/25/2019

WELL NAME: KIMBETO WASH UNIT 789H (FKA 791H)

OBJECTIVE: Drill, complete, and equip single lateral in the Mancos-I formation

API Number: 30-045-35734

State: New Mexico

County: San Juan

Surface Elev.: 6,596 ft ASL (GL) 6,624 ft ASL (KB)

Surface Location: 30-23N-09W Sec-Twn-Rng 664 ft FNL 524 ft FWL

BH Location: 32-23N-09W Sec-Twn-Rng 330 ft FSL 718 ft FEL

Driving Directions: From the intersection of US Hwy 550 and US Hwy 64 in Bloomfield, NM: South on US Hwy 550 for 35.9 miles to MM 115.7; right (Southwest) at Nageezi Post Office on CR #7800 for 0.4 miles to 4-way intersection; right (Northwest) remaining on CR #7800 for 3.6 miles to end of pavement; straight (Southwest) on CR #7800 for 1.2 miles to fork in roadway; left (South) for 3.0 miles; right (Northwest) on access road for 220' into Kimbeto Wash Unit 789H Pad (4 wells: 789H, 791H, 887H, 889H).

QUICK REFERENCE	
Sur TD (MD)	240 ft
Int TD (MD)	2,552 ft
KOP (MD)	3,756 ft
KOP (TVD)	3,650 ft
Target (TVD)	4,410 ft
Curve BUR	10 °/100 ft
POE (MD)	4,983 ft
TD (MD)	18,345 ft
Lat Len (ft)	13,362 ft

WELL CONSTRUCTION SUMMARY:

	Hole (in)	TD MD (ft)	Csg (in)	Csg (lb/ft)	Csg (grade)	Csg (conn)	Csg Top (ft)	Csg Bot (ft)
Surface	17.500	240	13.375	54.5	J-55	BTC	0	240
Intermediate	12.250	2,552	9.625	36.0	J-55	LTC	0	2,552
Production	8.500	18,345	5.500	17.0	P-110	LTC	0	18,345

CEMENT PROPERTIES SUMMARY:

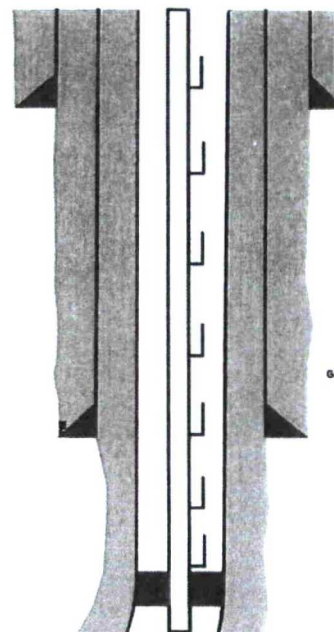
	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	Hole Cap. (cuft/ft)	% Excess	TOC (ft MD)	Total (sx)
Surface	Class G	15.8	1.174	5.15	0.6946	100%	0	284
Inter. (Lead)	G:POZ Blend	12.3	1.987	10.16	0.3627	70%	0	560
Inter. (Tail)	Class G	15.8	1.148	4.98	0.3132	20%	2,052	164
Prod. (Lead)	G:POZ blend	12.4	1.907	9.981	0.2691	50%	0	761
Prod. (Tail)	G:POZ blend	13.3	1.360	5.999	0.2291	10%	3,776	2,699

COMPLETION / PRODUCTION SUMMARY:

Frac: 75 plug-and-perf stages with 300,000 bbls slickwater fluid and 24,000,000 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



Topo	TVD (ft KB)	MD (ft KB)
Ojo Alamo	108	109
Kirtland	194	194
Fruitland	479	479
Pictured Cliffs	824	824
Lewis	944	944
Chaco	1,184	1,184
Cliff House	2,124	2,159
Manefee	2,144	2,180
Point Lookout	3,199	3,284
Mancos	3,344	3,436
Gallup (MNC_A)	3,689	3,776
MNCS_B	3,784	3,883
MNCS_C	3,854	3,963
MNCS_Cms	3,894	4,003
MNCS_D	4,014	4,127
MNCS_E	4,179	4,317
MNCS_F	4,234	4,390
MNCS_G	4,304	4,500
MNCS_H	4,347	4,586
MNCS_J	4,399	4,757
P.O.E. TARGET	4,410	4,968
PROJECTED TD	4,910	18,845



Enduring Resources LLC

Directional Drilling Plan
Plan View & Section View

Kimбето Wash Unit 791H

San Juan County, New Mexico

T23N-R09W-Sec.30-Lot D

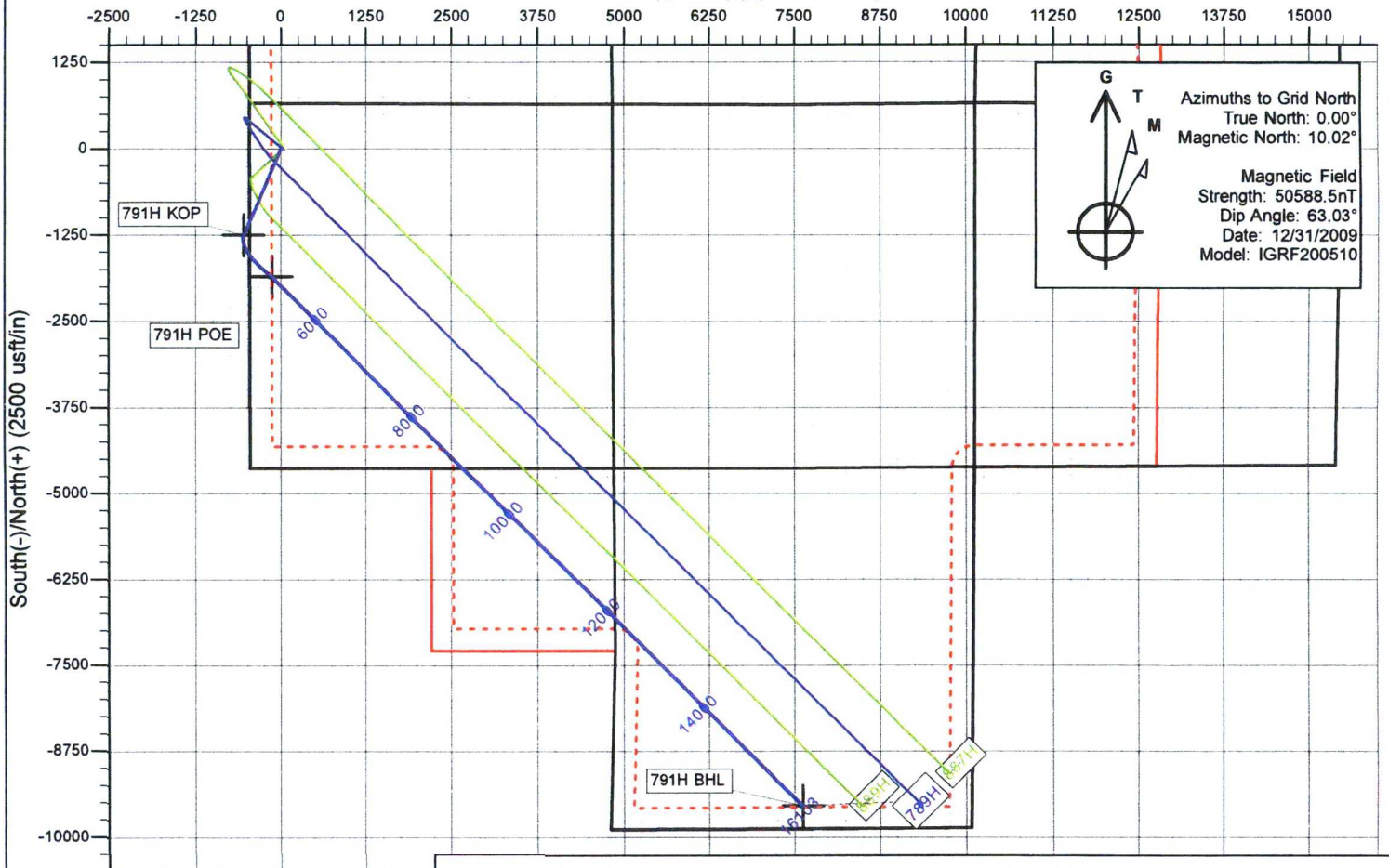
Surface Latitude: 36.203353°N

Surface Longitude: 107.837417°W

Ground Level: 6596.0

Reference Elevation: KB @ 6624.0usft (Original Well Elev)

West(-)/East(+) (2500 usft/in)

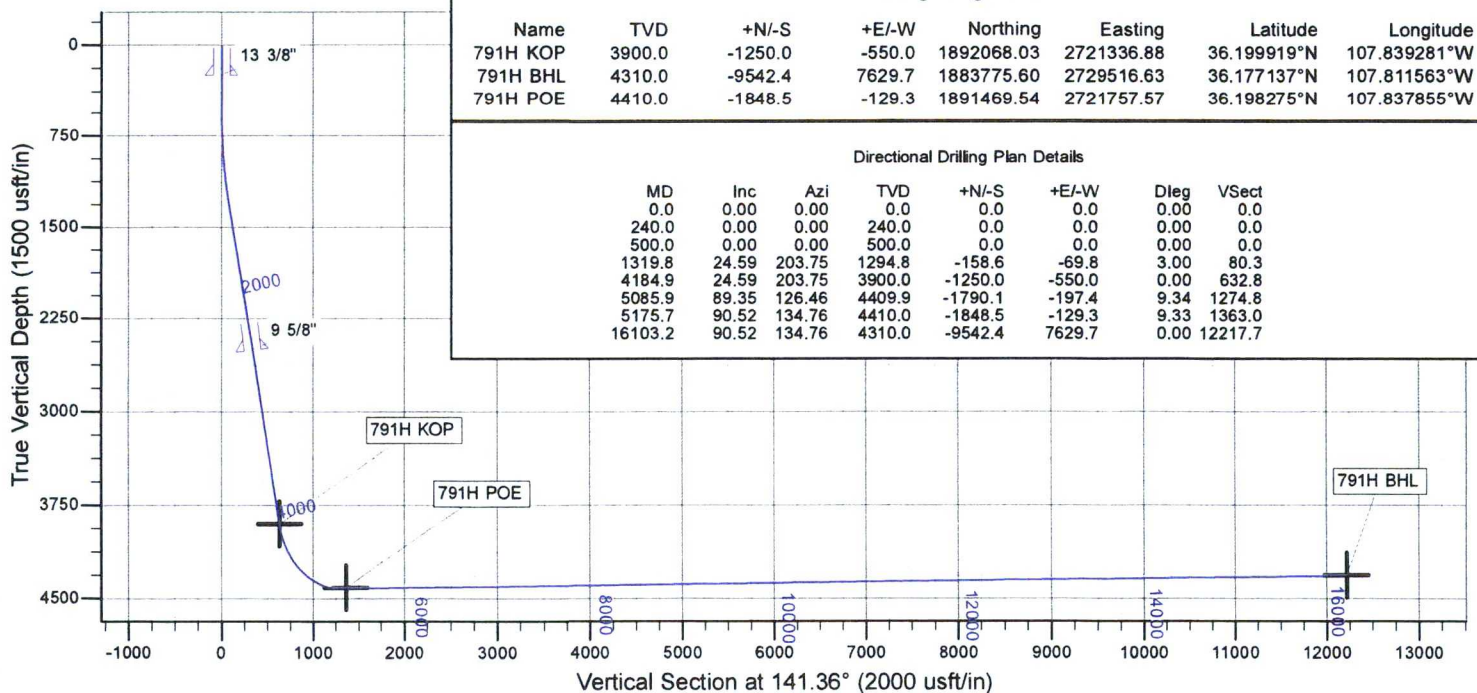


Design Target Details

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
791H KOP	3900.0	-1250.0	-550.0	1892068.03	2721336.88	36.199919°N	107.839281°W
791H BHL	4310.0	-9542.4	7629.7	1883775.60	2729516.63	36.177137°N	107.811563°W
791H POE	4410.0	-1848.5	-129.3	1891469.54	2721757.57	36.198275°N	107.837855°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
240.0	0.00	0.00	240.0	0.0	0.0	0.00	0.0
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.0
1319.8	24.59	203.75	1294.8	-158.6	-69.8	3.00	80.3
4184.9	24.59	203.75	3900.0	-1250.0	-550.0	0.00	632.8
5085.9	89.35	126.46	4409.9	-1790.1	-197.4	9.34	1274.8
5175.7	90.52	134.76	4410.0	-1848.5	-129.3	9.33	1363.0
16103.2	90.52	134.76	4310.0	-9542.4	7629.7	0.00	12217.7





Enduring Resources LLC

San Juan Basin - Kimbeto Wash Unit

789H Pad

789H

Wellbore #1

Plan: Design #1

Standard Planning Report

29 July, 2019

NMOC

FEB 07 2020

DISTRICT III



Planning Report

Database: EDM
Company: Enduring Resources LLC
Project: San Juan Basin - Kimbeto Wash Unit
Site: 789H Pad
Well: 789H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 789H
TVD Reference: KB @ 6624.0usft (Original Well Elev)
MD Reference: KB @ 6624.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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

Site	789H Pad, San Juan County, New Mexico				
Site Position:		Northing:	1,893,313.30 usft	Latitude:	36.203340°N
From:	Lat/Long	Easting:	2,721,946.77 usft	Longitude:	107.837214°W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.00 °

Well	789H					
Well Position	+N/-S	0.0 usft	Northing:	1,893,313.30 usft	Latitude:	36.203340°N
	+E/-W	0.0 usft	Easting:	2,721,946.77 usft	Longitude:	107.837214°W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	6,596.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	10.02	63.03	50,588.56911318

Design	Design #1			
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	135.68

Plan Survey Tool Program	Date	7/29/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	18,344.6	Design #1 (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	
240.0	0.00	0.00	240.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,572.7	17.18	308.05	1,564.2	52.5	-67.1	3.00	3.00	0.00	308.05	
3,756.0	17.18	308.05	3,650.0	450.0	-575.0	0.00	0.00	0.00	0.00	789H KOP
4,823.2	86.92	142.96	4,406.3	-11.0	-298.6	9.70	6.54	-15.47	-164.67	
4,983.3	90.43	134.69	4,410.0	-131.4	-193.2	5.61	2.19	-5.17	-67.16	789H POE
18,344.6	90.43	134.69	4,310.0	-9,527.8	9,305.2	0.00	0.00	0.00	0.00	789H BHL



Planning Report

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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
109.0	0.00	0.00	109.0	0.0	0.0	0.0	0.00	0.00	0.00
Ojo Alamo									
194.0	0.00	0.00	194.0	0.0	0.0	0.0	0.00	0.00	0.00
Kirtland									
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
479.0	0.00	0.00	479.0	0.0	0.0	0.0	0.00	0.00	0.00
Fruitland									
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
824.0	0.00	0.00	824.0	0.0	0.0	0.0	0.00	0.00	0.00
Pictured Cliffs									
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
944.0	0.00	0.00	944.0	0.0	0.0	0.0	0.00	0.00	0.00
Lewis									
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	3.00	308.05	1,100.0	1.6	-2.1	-2.6	3.00	3.00	0.00
1,184.3	5.53	308.05	1,184.0	5.5	-7.0	-8.8	3.00	3.00	0.00
Chacra									
1,200.0	6.00	308.05	1,199.6	6.4	-8.2	-10.4	3.00	3.00	0.00
1,300.0	9.00	308.05	1,298.8	14.5	-18.5	-23.3	3.00	3.00	0.00
1,400.0	12.00	308.05	1,397.1	25.7	-32.9	-41.4	3.00	3.00	0.00
1,500.0	15.00	308.05	1,494.3	40.1	-51.2	-64.5	3.00	3.00	0.00
1,572.7	17.18	308.05	1,564.2	52.5	-67.1	-84.5	3.00	3.00	0.00
1,600.0	17.18	308.05	1,590.2	57.5	-73.5	-92.5	0.00	0.00	0.00
1,700.0	17.18	308.05	1,685.8	75.7	-96.7	-121.7	0.00	0.00	0.00
1,800.0	17.18	308.05	1,781.3	93.9	-120.0	-151.0	0.00	0.00	0.00
1,900.0	17.18	308.05	1,876.8	112.1	-143.3	-180.3	0.00	0.00	0.00
2,000.0	17.18	308.05	1,972.4	130.3	-166.5	-209.6	0.00	0.00	0.00
2,100.0	17.18	308.05	2,067.9	148.5	-189.8	-238.9	0.00	0.00	0.00
2,158.7	17.18	308.05	2,124.0	159.2	-203.4	-256.0	0.00	0.00	0.00
Cliff House									
2,179.6	17.18	308.05	2,144.0	163.0	-208.3	-262.2	0.00	0.00	0.00
Menefee									
2,200.0	17.18	308.05	2,163.5	166.7	-213.0	-268.1	0.00	0.00	0.00
2,300.0	17.18	308.05	2,259.0	184.9	-236.3	-297.4	0.00	0.00	0.00
2,400.0	17.18	308.05	2,354.5	203.1	-259.6	-326.7	0.00	0.00	0.00
2,500.0	17.18	308.05	2,450.1	221.3	-282.8	-356.0	0.00	0.00	0.00
2,552.3	17.18	308.05	2,500.0	230.9	-295.0	-371.3	0.00	0.00	0.00
9 5/8"									
2,600.0	17.18	308.05	2,545.6	239.5	-306.1	-385.2	0.00	0.00	0.00
2,700.0	17.18	308.05	2,641.1	257.8	-329.4	-414.5	0.00	0.00	0.00
2,800.0	17.18	308.05	2,736.7	276.0	-352.6	-443.8	0.00	0.00	0.00
2,900.0	17.18	308.05	2,832.2	294.2	-375.9	-473.1	0.00	0.00	0.00
3,000.0	17.18	308.05	2,927.8	312.4	-399.1	-502.4	0.00	0.00	0.00
3,100.0	17.18	308.05	3,023.3	330.6	-422.4	-531.6	0.00	0.00	0.00



Planning Report

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Site: 789H Pad
Well: 789H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 789H
TVD Reference: KB @ 6624.0usft (Original Well Elev)
MD Reference: KB @ 6624.0usft (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)
3,200.0	17.18	308.05	3,118.8	348.8	-445.7	-560.9	0.00	0.00	0.00
3,283.9	17.18	308.05	3,199.0	364.1	-465.2	-585.5	0.00	0.00	0.00
Point Lookout									
3,300.0	17.18	308.05	3,214.4	367.0	-468.9	-590.2	0.00	0.00	0.00
3,400.0	17.18	308.05	3,309.9	385.2	-492.2	-619.5	0.00	0.00	0.00
3,435.7	17.18	308.05	3,344.0	391.7	-500.5	-629.9	0.00	0.00	0.00
Mancos									
3,500.0	17.18	308.05	3,405.4	403.4	-515.5	-648.7	0.00	0.00	0.00
3,600.0	17.18	308.05	3,501.0	421.6	-538.7	-678.0	0.00	0.00	0.00
3,700.0	17.18	308.05	3,596.5	439.8	-562.0	-707.3	0.00	0.00	0.00
3,756.0	17.18	308.05	3,650.0	450.0	-575.0	-723.7	0.00	0.00	0.00
3,775.8	15.34	306.13	3,669.0	453.3	-579.4	-729.2	9.70	-9.31	-9.70
Gallup (MNCS_A)									
3,800.0	13.11	303.07	3,692.5	456.7	-584.3	-735.0	9.70	-9.19	-12.63
3,892.7	5.58	269.47	3,784.0	462.4	-597.7	-748.4	9.70	-8.11	-36.23
MNCS_B									
3,900.0	5.19	263.22	3,791.2	462.4	-598.3	-748.9	9.70	-5.36	-86.17
3,963.0	5.67	194.83	3,854.0	459.1	-602.0	-749.0	9.70	0.75	-108.54
MNCS_C									
4,000.0	8.36	174.93	3,890.7	454.6	-602.2	-746.0	9.70	7.28	-53.78
4,003.3	8.63	173.78	3,894.0	454.1	-602.2	-745.6	9.70	8.23	-34.71
MNCS_Cms									
4,100.0	17.34	157.26	3,988.1	433.6	-595.8	-726.5	9.70	9.00	-17.09
4,127.3	19.90	155.22	4,014.0	425.6	-592.3	-718.3	9.70	9.40	-7.47
MNCS_D									
4,200.0	26.82	151.64	4,080.7	399.9	-579.3	-690.8	9.70	9.51	-4.92
4,300.0	36.41	148.82	4,165.8	354.6	-553.1	-640.1	9.70	9.59	-2.82
4,316.6	38.00	148.48	4,179.0	346.0	-547.9	-630.4	9.70	9.62	-2.07
MNCS_E									
4,390.1	45.08	147.20	4,234.0	304.8	-521.9	-582.7	9.70	9.63	-1.73
MNCS_F									
4,400.0	46.04	147.06	4,240.9	298.8	-518.1	-575.8	9.70	9.64	-1.49
4,500.0	55.69	145.79	4,304.0	234.3	-475.2	-499.7	9.70	9.65	-1.27
4,500.1	55.69	145.79	4,304.0	234.3	-475.2	-499.6	0.00	0.00	0.00
MNCS_G									
4,585.7	63.96	144.92	4,347.0	173.5	-433.1	-426.7	9.71	9.67	-1.02
MNCS_H									
4,600.0	65.35	144.78	4,353.1	162.9	-425.7	-413.9	9.70	9.66	-0.93
4,700.0	75.01	143.92	4,387.0	86.5	-370.9	-321.1	9.70	9.67	-0.86
4,756.6	80.49	143.48	4,399.0	42.0	-338.2	-266.3	9.70	9.67	-0.79
MNCS_I									
4,800.0	84.68	143.14	4,404.6	7.5	-312.5	-223.7	9.70	9.67	-0.77
4,823.2	86.92	142.96	4,406.3	-11.0	-298.6	-200.8	9.70	9.67	-0.76
4,900.0	88.60	138.99	4,409.3	-70.6	-250.2	-124.3	5.61	2.18	-5.17
4,983.3	90.43	134.69	4,410.0	-131.4	-193.2	-41.0	5.61	2.19	-5.16
5,000.0	90.43	134.69	4,409.9	-143.1	-181.4	-24.4	0.00	0.00	0.00
5,100.0	90.43	134.69	4,409.1	-213.4	-110.3	75.6	0.00	0.00	0.00
5,200.0	90.43	134.69	4,408.4	-283.8	-39.2	175.6	0.00	0.00	0.00
5,300.0	90.43	134.69	4,407.6	-354.1	31.9	275.6	0.00	0.00	0.00
5,400.0	90.43	134.69	4,406.9	-424.4	103.0	375.6	0.00	0.00	0.00
5,500.0	90.43	134.69	4,406.1	-494.7	174.0	475.6	0.00	0.00	0.00
5,600.0	90.43	134.69	4,405.4	-565.1	245.1	575.5	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)
5,700.0	90.43	134.69	4,404.6	-635.4	316.2	675.5	0.00	0.00	0.00
5,800.0	90.43	134.69	4,403.9	-705.7	387.3	775.5	0.00	0.00	0.00
5,900.0	90.43	134.69	4,403.1	-776.0	458.4	875.5	0.00	0.00	0.00
6,000.0	90.43	134.69	4,402.4	-846.4	529.5	975.5	0.00	0.00	0.00
6,100.0	90.43	134.69	4,401.6	-916.7	600.6	1,075.4	0.00	0.00	0.00
6,200.0	90.43	134.69	4,400.9	-987.0	671.7	1,175.4	0.00	0.00	0.00
6,300.0	90.43	134.69	4,400.1	-1,057.4	742.8	1,275.4	0.00	0.00	0.00
6,400.0	90.43	134.69	4,399.4	-1,127.7	813.8	1,375.4	0.00	0.00	0.00
6,500.0	90.43	134.69	4,398.6	-1,198.0	884.9	1,475.4	0.00	0.00	0.00
6,600.0	90.43	134.69	4,397.9	-1,268.3	956.0	1,575.4	0.00	0.00	0.00
6,700.0	90.43	134.69	4,397.2	-1,338.7	1,027.1	1,675.3	0.00	0.00	0.00
6,800.0	90.43	134.69	4,396.4	-1,409.0	1,098.2	1,775.3	0.00	0.00	0.00
6,900.0	90.43	134.69	4,395.7	-1,479.3	1,169.3	1,875.3	0.00	0.00	0.00
7,000.0	90.43	134.69	4,394.9	-1,549.6	1,240.4	1,975.3	0.00	0.00	0.00
7,100.0	90.43	134.69	4,394.2	-1,620.0	1,311.5	2,075.3	0.00	0.00	0.00
7,200.0	90.43	134.69	4,393.4	-1,690.3	1,382.6	2,175.3	0.00	0.00	0.00
7,300.0	90.43	134.69	4,392.7	-1,760.6	1,453.7	2,275.2	0.00	0.00	0.00
7,400.0	90.43	134.69	4,391.9	-1,830.9	1,524.7	2,375.2	0.00	0.00	0.00
7,500.0	90.43	134.69	4,391.2	-1,901.3	1,595.8	2,475.2	0.00	0.00	0.00
7,600.0	90.43	134.69	4,390.4	-1,971.6	1,666.9	2,575.2	0.00	0.00	0.00
7,700.0	90.43	134.69	4,389.7	-2,041.9	1,738.0	2,675.2	0.00	0.00	0.00
7,800.0	90.43	134.69	4,388.9	-2,112.2	1,809.1	2,775.1	0.00	0.00	0.00
7,900.0	90.43	134.69	4,388.2	-2,182.6	1,880.2	2,875.1	0.00	0.00	0.00
8,000.0	90.43	134.69	4,387.4	-2,252.9	1,951.3	2,975.1	0.00	0.00	0.00
8,100.0	90.43	134.69	4,386.7	-2,323.2	2,022.4	3,075.1	0.00	0.00	0.00
8,200.0	90.43	134.69	4,385.9	-2,393.5	2,093.5	3,175.1	0.00	0.00	0.00
8,300.0	90.43	134.69	4,385.2	-2,463.9	2,164.5	3,275.1	0.00	0.00	0.00
8,400.0	90.43	134.69	4,384.4	-2,534.2	2,235.6	3,375.0	0.00	0.00	0.00
8,500.0	90.43	134.69	4,383.7	-2,604.5	2,306.7	3,475.0	0.00	0.00	0.00
8,600.0	90.43	134.69	4,382.9	-2,674.8	2,377.8	3,575.0	0.00	0.00	0.00
8,700.0	90.43	134.69	4,382.2	-2,745.2	2,448.9	3,675.0	0.00	0.00	0.00
8,800.0	90.43	134.69	4,381.4	-2,815.5	2,520.0	3,775.0	0.00	0.00	0.00
8,900.0	90.43	134.69	4,380.7	-2,885.8	2,591.1	3,875.0	0.00	0.00	0.00
9,000.0	90.43	134.69	4,379.9	-2,956.1	2,662.2	3,974.9	0.00	0.00	0.00
9,100.0	90.43	134.69	4,379.2	-3,026.5	2,733.3	4,074.9	0.00	0.00	0.00
9,200.0	90.43	134.69	4,378.4	-3,096.8	2,804.4	4,174.9	0.00	0.00	0.00
9,300.0	90.43	134.69	4,377.7	-3,167.1	2,875.4	4,274.9	0.00	0.00	0.00
9,400.0	90.43	134.69	4,376.9	-3,237.5	2,946.5	4,374.9	0.00	0.00	0.00
9,500.0	90.43	134.69	4,376.2	-3,307.8	3,017.6	4,474.8	0.00	0.00	0.00
9,600.0	90.43	134.69	4,375.4	-3,378.1	3,088.7	4,574.8	0.00	0.00	0.00
9,700.0	90.43	134.69	4,374.7	-3,448.4	3,159.8	4,674.8	0.00	0.00	0.00
9,800.0	90.43	134.69	4,374.0	-3,518.8	3,230.9	4,774.8	0.00	0.00	0.00
9,900.0	90.43	134.69	4,373.2	-3,589.1	3,302.0	4,874.8	0.00	0.00	0.00
10,000.0	90.43	134.69	4,372.5	-3,659.4	3,373.1	4,974.8	0.00	0.00	0.00
10,100.0	90.43	134.69	4,371.7	-3,729.7	3,444.2	5,074.7	0.00	0.00	0.00
10,200.0	90.43	134.69	4,371.0	-3,800.1	3,515.2	5,174.7	0.00	0.00	0.00
10,300.0	90.43	134.69	4,370.2	-3,870.4	3,586.3	5,274.7	0.00	0.00	0.00
10,400.0	90.43	134.69	4,369.5	-3,940.7	3,657.4	5,374.7	0.00	0.00	0.00
10,500.0	90.43	134.69	4,368.7	-4,011.0	3,728.5	5,474.7	0.00	0.00	0.00
10,600.0	90.43	134.69	4,368.0	-4,081.4	3,799.6	5,574.7	0.00	0.00	0.00
10,700.0	90.43	134.69	4,367.2	-4,151.7	3,870.7	5,674.6	0.00	0.00	0.00
10,800.0	90.43	134.69	4,366.5	-4,222.0	3,941.8	5,774.6	0.00	0.00	0.00
10,900.0	90.43	134.69	4,365.7	-4,292.3	4,012.9	5,874.6	0.00	0.00	0.00
11,000.0	90.43	134.69	4,365.0	-4,362.7	4,084.0	5,974.6	0.00	0.00	0.00



Planning Report

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Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 789H
TVD Reference: KB @ 6624.0usft (Original Well Elev)
MD Reference: KB @ 6624.0usft (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)
11,100.0	90.43	134.69	4,364.2	-4,433.0	4,155.1	6,074.6	0.00	0.00	0.00
11,200.0	90.43	134.69	4,363.5	-4,503.3	4,226.1	6,174.5	0.00	0.00	0.00
11,300.0	90.43	134.69	4,362.7	-4,573.6	4,297.2	6,274.5	0.00	0.00	0.00
11,400.0	90.43	134.69	4,362.0	-4,644.0	4,368.3	6,374.5	0.00	0.00	0.00
11,500.0	90.43	134.69	4,361.2	-4,714.3	4,439.4	6,474.5	0.00	0.00	0.00
11,600.0	90.43	134.69	4,360.5	-4,784.6	4,510.5	6,574.5	0.00	0.00	0.00
11,700.0	90.43	134.69	4,359.7	-4,854.9	4,581.6	6,674.5	0.00	0.00	0.00
11,800.0	90.43	134.69	4,359.0	-4,925.3	4,652.7	6,774.4	0.00	0.00	0.00
11,900.0	90.43	134.69	4,358.2	-4,995.6	4,723.8	6,874.4	0.00	0.00	0.00
12,000.0	90.43	134.69	4,357.5	-5,065.9	4,794.9	6,974.4	0.00	0.00	0.00
12,100.0	90.43	134.69	4,356.7	-5,136.2	4,865.9	7,074.4	0.00	0.00	0.00
12,200.0	90.43	134.69	4,356.0	-5,206.6	4,937.0	7,174.4	0.00	0.00	0.00
12,300.0	90.43	134.69	4,355.2	-5,276.9	5,008.1	7,274.4	0.00	0.00	0.00
12,400.0	90.43	134.69	4,354.5	-5,347.2	5,079.2	7,374.3	0.00	0.00	0.00
12,500.0	90.43	134.69	4,353.7	-5,417.6	5,150.3	7,474.3	0.00	0.00	0.00
12,600.0	90.43	134.69	4,353.0	-5,487.9	5,221.4	7,574.3	0.00	0.00	0.00
12,700.0	90.43	134.69	4,352.2	-5,558.2	5,292.5	7,674.3	0.00	0.00	0.00
12,800.0	90.43	134.69	4,351.5	-5,628.5	5,363.6	7,774.3	0.00	0.00	0.00
12,900.0	90.43	134.69	4,350.7	-5,698.9	5,434.7	7,874.2	0.00	0.00	0.00
13,000.0	90.43	134.69	4,350.0	-5,769.2	5,505.8	7,974.2	0.00	0.00	0.00
13,100.0	90.43	134.69	4,349.3	-5,839.5	5,576.8	8,074.2	0.00	0.00	0.00
13,200.0	90.43	134.69	4,348.5	-5,909.8	5,647.9	8,174.2	0.00	0.00	0.00
13,300.0	90.43	134.69	4,347.8	-5,980.2	5,719.0	8,274.2	0.00	0.00	0.00
13,400.0	90.43	134.69	4,347.0	-6,050.5	5,790.1	8,374.2	0.00	0.00	0.00
13,500.0	90.43	134.69	4,346.3	-6,120.8	5,861.2	8,474.1	0.00	0.00	0.00
13,600.0	90.43	134.69	4,345.5	-6,191.1	5,932.3	8,574.1	0.00	0.00	0.00
13,700.0	90.43	134.69	4,344.8	-6,261.5	6,003.4	8,674.1	0.00	0.00	0.00
13,800.0	90.43	134.69	4,344.0	-6,331.8	6,074.5	8,774.1	0.00	0.00	0.00
13,900.0	90.43	134.69	4,343.3	-6,402.1	6,145.6	8,874.1	0.00	0.00	0.00
14,000.0	90.43	134.69	4,342.5	-6,472.4	6,216.7	8,974.1	0.00	0.00	0.00
14,100.0	90.43	134.69	4,341.8	-6,542.8	6,287.7	9,074.0	0.00	0.00	0.00
14,200.0	90.43	134.69	4,341.0	-6,613.1	6,358.8	9,174.0	0.00	0.00	0.00
14,300.0	90.43	134.69	4,340.3	-6,683.4	6,429.9	9,274.0	0.00	0.00	0.00
14,400.0	90.43	134.69	4,339.5	-6,753.7	6,501.0	9,374.0	0.00	0.00	0.00
14,500.0	90.43	134.69	4,338.8	-6,824.1	6,572.1	9,474.0	0.00	0.00	0.00
14,600.0	90.43	134.69	4,338.0	-6,894.4	6,643.2	9,573.9	0.00	0.00	0.00
14,700.0	90.43	134.69	4,337.3	-6,964.7	6,714.3	9,673.9	0.00	0.00	0.00
14,800.0	90.43	134.69	4,336.5	-7,035.0	6,785.4	9,773.9	0.00	0.00	0.00
14,900.0	90.43	134.69	4,335.8	-7,105.4	6,856.5	9,873.9	0.00	0.00	0.00
15,000.0	90.43	134.69	4,335.0	-7,175.7	6,927.5	9,973.9	0.00	0.00	0.00
15,100.0	90.43	134.69	4,334.3	-7,246.0	6,998.6	10,073.9	0.00	0.00	0.00
15,200.0	90.43	134.69	4,333.5	-7,316.3	7,069.7	10,173.8	0.00	0.00	0.00
15,300.0	90.43	134.69	4,332.8	-7,386.7	7,140.8	10,273.8	0.00	0.00	0.00
15,400.0	90.43	134.69	4,332.0	-7,457.0	7,211.9	10,373.8	0.00	0.00	0.00
15,500.0	90.43	134.69	4,331.3	-7,527.3	7,283.0	10,473.8	0.00	0.00	0.00
15,600.0	90.43	134.69	4,330.5	-7,597.7	7,354.1	10,573.8	0.00	0.00	0.00
15,700.0	90.43	134.69	4,329.8	-7,668.0	7,425.2	10,673.8	0.00	0.00	0.00
15,800.0	90.43	134.69	4,329.0	-7,738.3	7,496.3	10,773.7	0.00	0.00	0.00
15,900.0	90.43	134.69	4,328.3	-7,808.6	7,567.4	10,873.7	0.00	0.00	0.00
16,000.0	90.43	134.69	4,327.5	-7,879.0	7,638.4	10,973.7	0.00	0.00	0.00
16,100.0	90.43	134.69	4,326.8	-7,949.3	7,709.5	11,073.7	0.00	0.00	0.00
16,200.0	90.43	134.69	4,326.1	-8,019.6	7,780.6	11,173.7	0.00	0.00	0.00
16,300.0	90.43	134.69	4,325.3	-8,089.9	7,851.7	11,273.6	0.00	0.00	0.00
16,400.0	90.43	134.69	4,324.6	-8,160.3	7,922.8	11,373.6	0.00	0.00	0.00



Planning Report

Database: EDM
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Site: 789H Pad
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Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 789H
TVD Reference: KB @ 6624.0usft (Original Well Elev)
MD Reference: KB @ 6624.0usft (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)
16,500.0	90.43	134.69	4,323.8	-8,230.6	7,993.9	11,473.6	0.00	0.00	0.00
16,600.0	90.43	134.69	4,323.1	-8,300.9	8,065.0	11,573.6	0.00	0.00	0.00
16,700.0	90.43	134.69	4,322.3	-8,371.2	8,136.1	11,673.6	0.00	0.00	0.00
16,800.0	90.43	134.69	4,321.6	-8,441.6	8,207.2	11,773.6	0.00	0.00	0.00
16,900.0	90.43	134.69	4,320.8	-8,511.9	8,278.2	11,873.5	0.00	0.00	0.00
17,000.0	90.43	134.69	4,320.1	-8,582.2	8,349.3	11,973.5	0.00	0.00	0.00
17,100.0	90.43	134.69	4,319.3	-8,652.5	8,420.4	12,073.5	0.00	0.00	0.00
17,200.0	90.43	134.69	4,318.6	-8,722.9	8,491.5	12,173.5	0.00	0.00	0.00
17,300.0	90.43	134.69	4,317.8	-8,793.2	8,562.6	12,273.5	0.00	0.00	0.00
17,400.0	90.43	134.69	4,317.1	-8,863.5	8,633.7	12,373.5	0.00	0.00	0.00
17,500.0	90.43	134.69	4,316.3	-8,933.8	8,704.8	12,473.4	0.00	0.00	0.00
17,600.0	90.43	134.69	4,315.6	-9,004.2	8,775.9	12,573.4	0.00	0.00	0.00
17,700.0	90.43	134.69	4,314.8	-9,074.5	8,847.0	12,673.4	0.00	0.00	0.00
17,800.0	90.43	134.69	4,314.1	-9,144.8	8,918.1	12,773.4	0.00	0.00	0.00
17,900.0	90.43	134.69	4,313.3	-9,215.1	8,989.1	12,873.4	0.00	0.00	0.00
18,000.0	90.43	134.69	4,312.6	-9,285.5	9,060.2	12,973.3	0.00	0.00	0.00
18,100.0	90.43	134.69	4,311.8	-9,355.8	9,131.3	13,073.3	0.00	0.00	0.00
18,200.0	90.43	134.69	4,311.1	-9,426.1	9,202.4	13,173.3	0.00	0.00	0.00
18,300.0	90.43	134.69	4,310.3	-9,496.4	9,273.5	13,273.3	0.00	0.00	0.00
18,344.6	90.43	134.69	4,310.0	-9,527.8	9,305.2	13,317.9	0.00	0.00	0.00

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
789H KOP - plan hits target center - Point	0.00	0.01	3,650.0	450.0	-575.0	1,893,763.30	2,721,371.77	36.204576°N	107.839163°W
789H BHL - plan hits target center - Point	0.00	0.00	4,310.0	-9,527.8	9,305.2	1,883,785.50	2,731,251.96	36.177163°N	107.805683°W
789H POE - plan hits target center - Point	0.00	0.01	4,410.0	-131.4	-193.2	1,893,181.89	2,721,753.52	36.202979°N	107.837869°W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
240.0	240.0	13 3/8"	13-3/8	17-1/2
2,552.3	2,500.0	9 5/8"	9-5/8	12-1/4



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MD Reference: KB @ 6624.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
109.0	109.0	Ojo Alamo		0.00	
194.0	194.0	Kirtland		0.00	
479.0	479.0	Fruitland		0.00	
824.0	824.0	Pictured Cliffs		0.00	
944.0	944.0	Lewis		0.00	
1,184.3	1,184.0	Chacra		0.00	
2,158.7	2,124.0	Cliff House		0.00	
2,179.6	2,144.0	Menefee		0.00	
3,283.9	3,199.0	Point Lookout		0.00	
3,435.7	3,344.0	Mancos		0.00	
3,775.8	3,669.0	Gallup (MNCS_A)		0.00	
3,892.7	3,784.0	MNCS_B		0.00	
3,963.0	3,854.0	MNCS_C		0.00	
4,003.3	3,894.0	MNCS_Cms		0.00	
4,127.3	4,014.0	MNCS_D		0.00	
4,316.6	4,179.0	MNCS_E		0.00	
4,390.1	4,234.0	MNCS_F		0.00	
4,500.1	4,304.0	MNCS_G		0.00	
4,585.7	4,347.0	MNCS_H		0.00	
4,756.6	4,399.0	MNCS_I		0.00	