

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division



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

Operator Signature Date: October 25, 2013

Application Type:

☐ P&A ☒ Drilling/Casing Change ☐ Recomplete/DHC
☐ Location Change ☐ Other: _____

Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf_Owner	UL	Sec	Twp	N/S	Rng	W/E
30-045-34755-00-00	NE HOGBACK UNIT	074	CHUZA OIL COMPANY	G	N	San Juan	F	H	10	30	N	16	W

Conditions of Approval:

Notify NMOCD 24hrs prior to beginning operations.
Hold C104 for directional survey and "as drilled" plat

Submit sundry to add H to well number

NMOCD Approved by Signature

12/2/13
Date

RECEIVED

United States
Department of the Interior
Bureau of Land Management
Farmington Field Office
Bureau of Land Management

OCT 23 2013

5. Lease Serial No.

NMNM077281

6. If Indian, Allottee or Tribe

7. If Unit or CA Agreement

NM-78403A

8. Lease Name and Well No.

NE Hogback Unit NEHU #074

9. API Well No.

#30-045-34755

10. Field and Pool, or Explor.

32870 Horseshoe Gallup

11. Sec, T.R.M or BLK and Surv.

1. Type of Well:

Oil

2. Name of Operator

Chuha Oil Company

3b. Phone No. (Include area code)

505-690-7803

3a. Address

1000 Cordova Place #376, Santa Fe NM 87505

4. Location of Well(Footage, Sec., T.R.M, ect)

2270' FNL / 330' FEL, Section 10, T30N, R16W, San Juan County, NM LAT:

36.82969° N. (NAD 83) LONG: 108.50436° (NAD 83) LAT: 36°

49°46.89130" N. (NAD 27) LONG: 108° 30'15.68648 W. (NAD 27)

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)
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Recomplete
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Constuction	☐ Spud Well
	☒ Change Plans	☐ Plug and Abandon	☐ Other _____
	☐ Convert to Inject.	☐ Plug Back	

13. Describe Proposed or Completed Operation:

Chuha is currently permitted for a vertical well. Chuha hopes to drill a horizontal well with a $\pm 3,000'$ lateral into the Upper Gallup Sandstone, and plan details are included in the attached 8-Point Drilling Plan and Horizontal Plan. Chuha also requests the option of using a closed-loop drilling system during the construction of this well to alleviate possible spacing constraints associated with an in-ground reserve pit (as permitted).

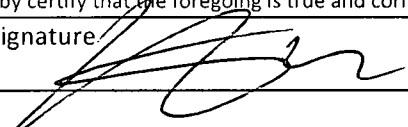
RCVD NOV 27 '13
OIL CONS. DIV.
DIST. 3

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

CONFIDENTIAL

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

I hereby certify that the foregoing is true and correct.

14. Signature 	Name (Typed/Printed) Patrick Padilla	Date 10-25-13
Title President, Chuza Oil Company		
Approved by (Signature) 	Name (Typed/Printed) Troy Salyers	Date 11/21/2013
Title Petroleum Engineer	Office FFO	

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

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 to agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

NMOC
PV

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

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

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

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

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

¹ API Number 30.045-34755	² Pool Code 32870	³ Pool Name HORSESHOE GALLUP
⁴ Property Code 300241	⁵ Property Name NE. HOGBACK UNIT	⁶ Well Number 74
⁷ GRID No. 279508	⁸ Operator Name CHUZA OIL COMPANY	⁹ Elevation 5432'

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
H	10	30N	16W		2270	NORTH	330	EAST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

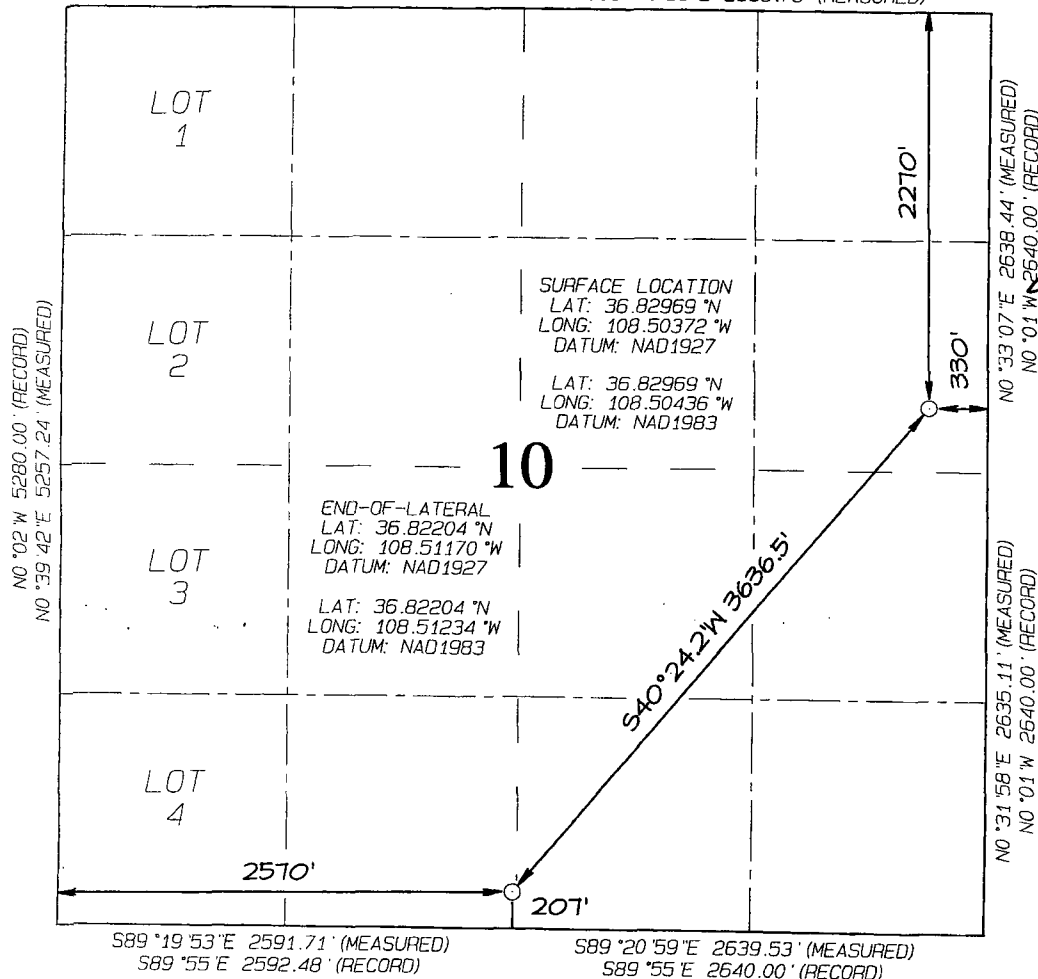
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	10	30N	16W		207	SOUTH	2570	WEST	SAN JUAN

¹² Dedicated Acres 200: Section 10, Unit Letters H, I, J, N, O	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R - 13607	RCVD NOV 27 '13 OIL CONS. DIV.
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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

DIST. 3

¹⁶ N89°56'E 2587.20' (RECORD) N89°56'E 2640.00' (RECORD)
S89°33'48"E 2583.52' (MEASURED) S89°28'36"E 2636.76' (MEASURED)



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

Signature: *[Signature]* Date: 11-18-13
Printed Name: Patrick Padilla
E-mail Address: ppadilla@chuzaoil.co

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 Survey: OCTOBER 30, 2013
Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
REGISTERED PROFESSIONAL SURVEYOR
15269

JASON C. EDWARDS
Certificate Number 15269



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Project Management
Field Operations
Training

Chuza: 8-Point Drilling Plan Northeast Hogback Unit (NEHU) Wells

WELL NAME: NEHU #074 / API: #30-045-34754

1.) GEOLOGY

1.1 Estimated Formation Tops

<u>Formation Name</u>	<u>Depth (TVD)</u>
Upper Mancos Shale	200'
Upper Gallup Top	1,484'
Upper Gallup Bottom	1,518'
Lower Gallup Top	1,590'
Lower Gallup Bottom	1,622'
TD (Pilot Hole)	1,750' TVD
TD (HZ)	1,500' TVD / 5,000' MD

1.2 Producing Zone

Upper Gallup Sandstone.

1.3 Water Zones

Water zones will be protected with casing, cement and weighted mud. Freshwater found while drilling will be recorded. Oil and gas shows will be tested for commercial potential based on the engineer's recommendations.

2.) Logging Plan

Logging will be done after finishing pilot hole. Open hole will be logged from $\pm 1,750'$ to surface casing shoe at 200'. Entire well will be logged using quad-combo log, which includes:

- Gamma Ray Openhole.
- Sonic Scanner Dipole Shear.
- Neutron Density.
- Magnetic Resonance.

2.1 Record and Measure

Gauge any noticeable increases in gas flow. Record all gauges in tour book and in morning reports.

2.2 Mud Logging Program

Mud logger will be on location after setting surface casing to TD.

3.) DRILLING

3.1 Preparatory Work

- Build location with environmentally-friendly contractor.
 - Move in rig up (MIRU) drilling rig.
-



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3.2 Overview

3.2.1 Pilot Hole

- Drill to $\pm 30'$ above the top of Upper Gallup formation (as determined by mud logger).
- Obtain oriented core of Mancos and Upper Gallup, according to coring plan.
- Trip to surface; release core for lab analysis.
- Drill to $\pm 30'$ above the top of Lower Gallup formation (as determined by mud logger).
- Obtain oriented core of Mancos and Lower Gallup, according to coring plan.
- Drill to planned pilot hole depth ($\approx 1,750'$ TVD).
- Run an openhole whipstock.

3.2.2 Horizontal Section

- Kick off using open-hole whipstock.
- Drill horizontal well ($\approx 3,000'$ lateral) into the Upper Gallup.
- If required, stimulate lateral with multi-stage fracturing to improve drainage and ultimate recovery.

3.3 Drilling Fluid Program

A water-based 8.4 ppg to 9.0 ppg drilling fluid will be used in the vertical section, curve and the lateral. Treat for lost circulation as necessary. Notify engineering of any fluid losses.

4.) Blowout Preventers (BOP)

BOPs are planned to be installed after running and cementing the surface casing. Plans are to use:

- (1) Annular BOP, 11" Shaffer Spherical 3M
- (1) BOP Double Ram, 11" Hydraulic Shaffer LWS 3M

4.1 BOP Testing

- While the drillpipe is in use, the pipe rams and blind rams will be function-tested once each trip.
- The anticipated reservoir pressure is expected to be less than 1,000 psi so the BOPE will be tested to 250 psi (low) for five minutes and 1,500 psi (high) for 10 minutes.
- Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. All tests and inspections will be recorded in the tour book regarding time and results.

5.) Casing Program:

Casing type	Hole Size (in)	Depth (MD ft)	Casing Size (in)	Wt. & Grade	Burst (psi)	Collapse (psi)	Body Yi (ksi)	Joint (ksi)	Drift (in)
Conductor	N/A	40'	16"	H40, 65.0#	1,640	670	736	STC	15.062
Surface	12-1/4"	200'	9-5/8"	J-55, 40.0#	3,950	2,570	630	BTC (714)	8.765 SD
Production	8- 3/4"	5,000'	5-1/2"	N-80, 17.0#	7,740	6,280	397	W 521 (276)	4.767



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6.) Cement Program

Below are details regarding proposed cement plan. Please note actual cement program might change depending on hole conditions and updated cement company recommendations.

6.1 Surface Casing**Spacer:**

Total Spacer = 56.15 ft³ = 10.00 bbl

Primary Cement : (200.00 ft fill)

40.00 ft * 0.7632 ft³/ft * 100 % = 61.05 ft³

160.00 ft * 0.3132 ft³/ft * 100 % = 100.22 ft³

Total Primary Cement = 161.27 ft³ = 28.72 bbl

Shoe Joint Volume: (40.00 ft fill)

40.00 ft * 0.4341 ft³/ft = 17.36 ft³ = 3.09 bbl

Primary plus shoe joint

= 161.27 ft³ + 17.36 ft³ = 178.64 ft³ = 31.82 bbl

Sacks of Cement = 152.68 sks ≈ 153 sks

Total Pipe Capacity:

200.00 ft * 0.4341 ft³/ft = 86.81 ft³ = 15.46 bbl

Displacement Volume to Shoe Joint:

Capacity of Pipe - Shoe Joint = 15.46 bbl - 3.09 bbl = 12.37 bbl

Fluid Instructions:**Fluid 1: Water Spacer**

Fresh Water Fluid Density: 8.33 lbm/gal

Fluid Volume: 10 bbl

Fluid 2: Primary Cement

Premium Cement Fluid Weight 15.80 lbm/gal

94 lbm/sk Premium Cement (Cement) Slurry Yield: 1.17 ft³/sk

0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive) Total Mixing Fluid: 5.00 Gal/sk

2 % Calcium Chloride (Accelerator) Top of Fluid: 0 ft

Calculated Fill: 200 ft

Volume: 31.82 bbl

Calculated Sacks: 152.68 sks

Fluid 3: Water Spacer

Displacement Fluid Density: 8.33 lbm/gal

Fluid Volume: 12.37 bbl

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal (Approximate)	Water Requirements
1	Spacer	Fresh Water	8.3	10 bbls
2	Cement	Class G/ PREMIUM	15.8	19 bbls
3	Spacer	Displacement	8.3	13 bbls



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6.2 Production Casing**Spacer:**

Total Spacer = 112.29 ft³ = 20.00 bbl

Cement: (5000.00 ft fill)

200.00 ft * 0.2691 ft³/ft * 0 % = 53.82 ft³

4800.00 ft * 0.2526 ft³/ft * 50 % = 1818.72 ft³

Primary Cement = 1872.54 ft³ = 333.49 bbl

Shoe Joint Volume: (0.00 ft fill)

= 0.00 bbl

(Note: DV Tool used)

Primary plus shoe joint

= 1872.54 ft³ = 333.49 bbl

Total Sacks of cement = ±1400.00 sks

Total Pipe Capacity:

5000.00 ft * 0.1305 ft³/ft = 652.5 ft³ = 116.20 bbl

Displacement Volume to Shoe Joint:

Capacity of Pipe - Shoe Joint = 116.20 bbl - 0.00 bbl = 116.0 bbl

Fluid Instructions:**Fluid 1: Water Based Spacer**

Gel Spacer Fluid Density:

8.40 lbm/gal

0.2 gal/bbl LGC-36 UC (Gelling Agent) Fluid Volume:

20 bbl

Fluid 2: Primary Cement

50/50 Poz Premium Fluid Weight

13.50 lbm/gal

0.1 % CFR-3 (Dispersant) Slurry Yield:

1.34 ft³/sk

2 % Calcium Chloride (Accelerator) Total Mixing Fluid:

5.51 Gal/sk

5 lbm/sk Kol-Seal (Lost Circulation Additive) Top of Fluid:

0 ft

0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive) Calculated Fill:

4800 ft

Volume:

333.49 bbl

Calculated Sacks:

±1400.00 sks

Fluid 3: Water Spacer

Displacement Fluid Density:

8.33 lbm/gal

Fluid Volume:

116.20 bbl

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal (Approximate)	Water Requirements
1	Spacer	Gel Spacer	8.4	20 bbls
2	Cement	50/50 Poz Premium	13.5	32 bbls
3	Spacer	Displacement	8.3	21 bbls

Note: A cementing sleeve OR DV Tool will be used to cement the production casing from ≈900' MD/TVD to surface.



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7.) Completion

Well will be completed in cemented casing.

7.1 Stimulation

If required, well will be fracture-stimulated using multi-stage fracturing.

7.2 Tubing

2-7/8", 6.5#, J-55, EUE Tubing will be run from surface to approximately 800'-1,000' MD.

8.) Directional Plan

Please see following pages.

Signa Engineering

San Juan County, NM

Sec. 10-T30N-R16W

NE Hogback Unit #74

Plan A (Lateral)

Plan: Rev A1 Lateral)

Sperry Drilling Services

Proposal Report

25 October, 2013

Well Coordinates: 2,122,018.56 N, 2,526,709.00 E (36° 49' 46.88" N, 108° 30' 15.70" W)

Ground Level: 5,432.00 usft

Local Coordinate Origin:

Centered on Well NE Hogback Unit #74

Viewing Datum:

RKB 15' @ 5447.00usft (Aztec 711)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

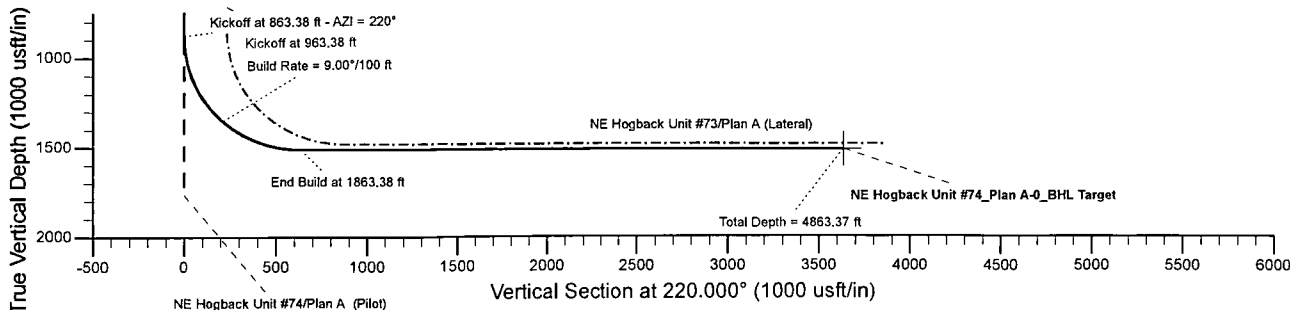
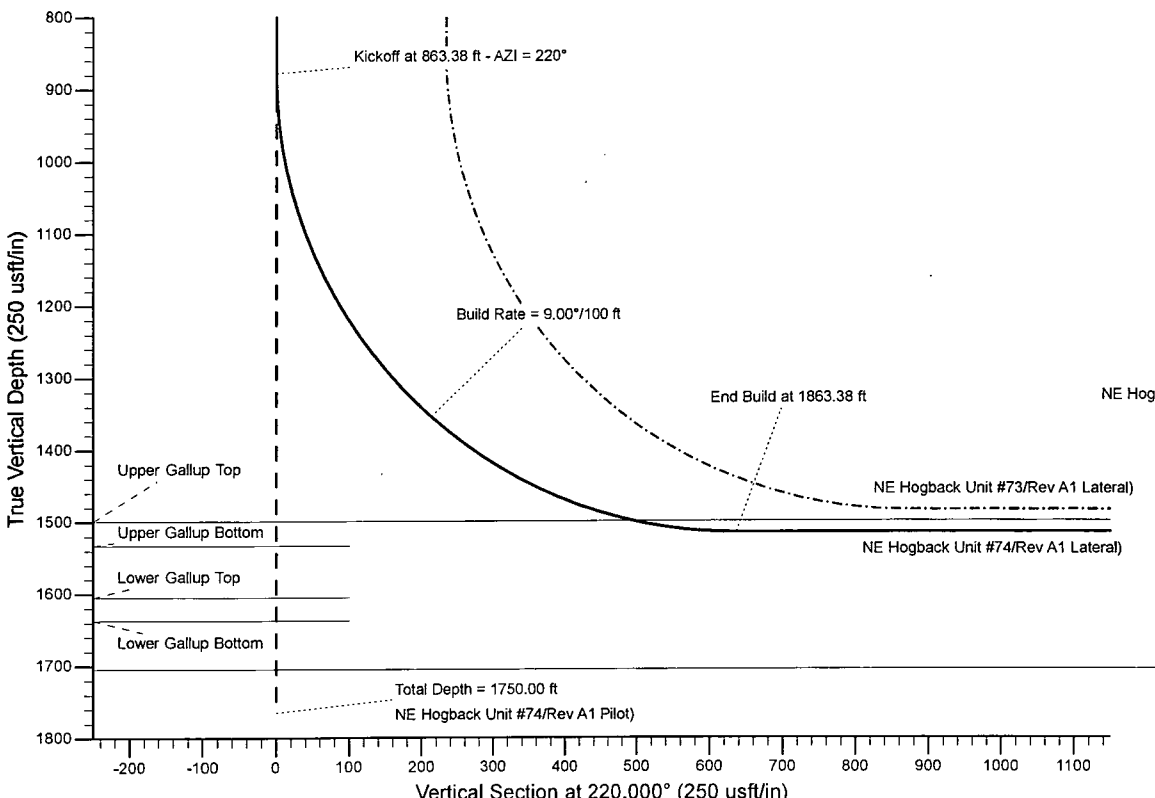
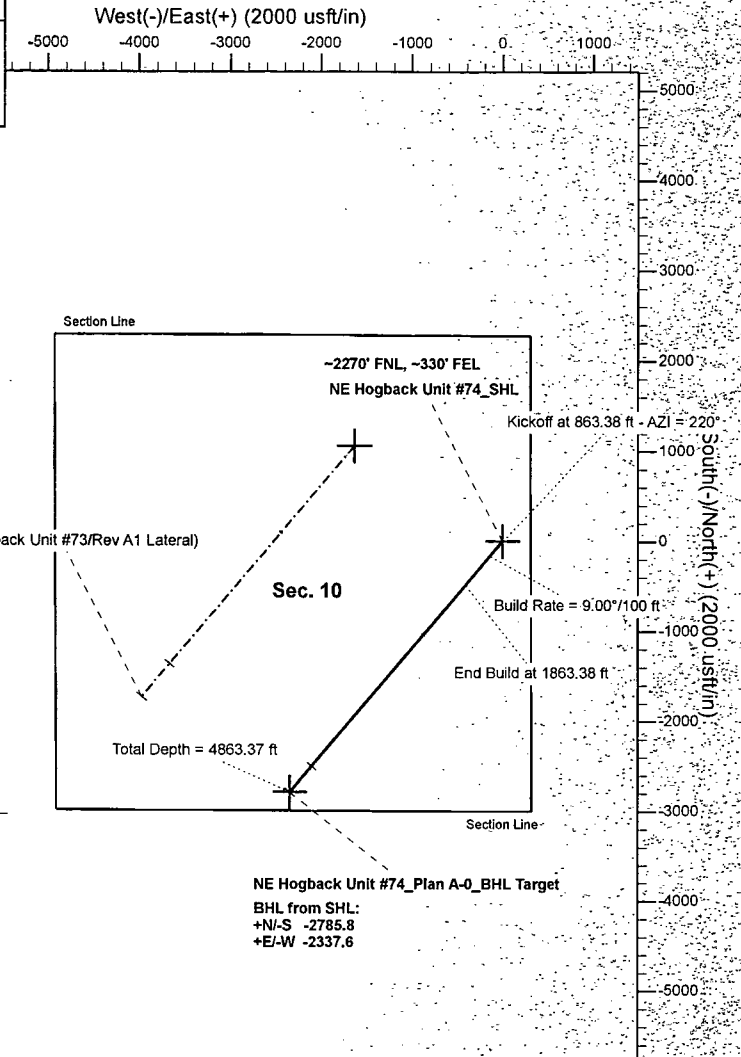
HALLIBURTON

Project: San Juan County, NM
 Site: Sec. 10-T30N-R16W
 Well: NE Hogback Unit #74
 Wellbore: Plan A (Lateral)
 Design: Rev A1 Lateral)

Signa Engineering

HALLIBURTON
 Sperry Drilling

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
2	878.38	0.00	0.000	878.38	0.00	0.00	0.00	0.00	0.00	
3	1878.38	90.00	220.000	1515.00	-487.68	-409.21	9.00	220.00	636.62	
4	4878.37	90.00	220.000	1515.00	-2785.81	-2337.57	0.00	0.00	3636.61	NE Hogback Unit #74_Plan A-0_BHL Target



WELL DETAILS: NE Hogback Unit #74			
Ground Level:		5432.00'	
RKB 15' @ 5447.00usft (Aztec 711)			
Northing	Easting	Latitude	Longitude
2122018.56	2526709.00	36° 49' 46.884 N	108° 30' 15.696 W
Plan: Rev A1 Lateral) (NE Hogback Unit #74/Plan A (Lateral))			
Created By: Jerry Popp		Date: 10/08/2013	
Approved:		Date:	

Plan Report for NE Hogback Unit #74 - Rev A1 Lateral)

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)	Toolface Azimuth (°)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
878.38	0.00	0.000	878.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kickoff at 863.38 ft - AZI = 220°										
900.00	1.95	220.000	900.00	-0.28	-0.24	0.37	9.00	9.00	0.00	220.00
950.00	6.45	220.000	949.85	-3.08	-2.59	4.02	9.00	9.00	0.00	0.00
1,000.00	10.95	220.000	999.26	-8.87	-7.44	11.58	9.00	9.00	0.00	0.00
1,050.00	15.45	220.000	1,047.93	-17.61	-14.78	22.99	9.00	9.00	0.00	0.00
1,100.00	19.95	220.000	1,095.55	-29.25	-24.55	38.19	9.00	9.00	0.00	0.00
1,150.00	24.45	220.000	1,141.83	-43.72	-36.68	57.07	9.00	9.00	0.00	0.00
1,200.00	28.95	220.000	1,186.49	-60.92	-51.12	79.53	9.00	9.00	0.00	0.00
1,250.00	33.45	220.000	1,229.25	-80.76	-67.76	105.42	9.00	9.00	0.00	0.00
1,300.00	37.95	220.000	1,269.85	-103.10	-86.51	134.59	9.00	9.00	0.00	0.00
1,350.00	42.45	220.000	1,308.03	-127.81	-107.25	166.85	9.00	9.00	0.00	0.00
1,400.00	46.95	220.000	1,343.56	-154.75	-129.85	202.01	9.00	9.00	0.00	0.00
1,415.00	48.30	220.000	1,353.67	-163.23	-136.97	213.09	9.00	9.00	0.00	0.00
Build Rate = 9.00°/100 ft										
1,450.00	51.45	220.000	1,376.23	-183.73	-154.17	239.84	9.00	9.00	0.00	0.00
1,500.00	55.95	220.000	1,405.82	-214.59	-180.06	280.13	9.00	9.00	0.00	0.00
1,550.00	60.45	220.000	1,432.17	-247.13	-207.37	322.61	9.00	9.00	0.00	0.00
1,600.00	64.95	220.000	1,455.10	-281.16	-235.92	367.03	9.00	9.00	0.00	0.00
1,650.00	69.45	220.000	1,474.47	-316.46	-265.54	413.11	9.00	9.00	0.00	0.00
1,700.00	73.95	220.000	1,490.17	-352.81	-296.05	460.56	9.00	9.00	0.00	0.00
1,735.35	77.13	220.000	1,499.00	-379.03	-318.05	494.79	9.00	9.00	0.00	0.00
Upper Gallup Top										
1,750.00	78.45	220.000	1,502.10	-390.00	-327.25	509.11	9.00	9.00	0.00	0.00
1,800.00	82.95	220.000	1,510.18	-427.79	-358.96	558.44	9.00	9.00	0.00	0.00
1,850.00	87.45	220.000	1,514.37	-465.95	-390.98	608.25	9.00	9.00	0.00	0.00
1,878.38	90.00	220.000	1,515.00	-487.68	-409.21	636.62	9.00	9.00	0.00	0.00
End Build at 1863.38 ft										
1,900.00	90.00	220.000	1,515.00	-504.24	-423.11	658.24	0.00	0.00	0.00	0.00
2,000.00	90.00	220.000	1,515.00	-580.85	-487.39	758.24	0.00	0.00	0.00	0.00
2,100.00	90.00	220.000	1,515.00	-657.45	-551.67	858.24	0.00	0.00	0.00	0.00
2,200.00	90.00	220.000	1,515.00	-734.05	-615.94	958.24	0.00	0.00	0.00	0.00
2,300.00	90.00	220.000	1,515.00	-810.66	-680.22	1,058.24	0.00	0.00	0.00	0.00
2,400.00	90.00	220.000	1,515.00	-887.26	-744.50	1,158.24	0.00	0.00	0.00	0.00
2,500.00	90.00	220.000	1,515.00	-963.87	-808.78	1,258.24	0.00	0.00	0.00	0.00
2,600.00	90.00	220.000	1,515.00	-1,040.47	-873.06	1,358.24	0.00	0.00	0.00	0.00
2,700.00	90.00	220.000	1,515.00	-1,117.08	-937.34	1,458.24	0.00	0.00	0.00	0.00
2,800.00	90.00	220.000	1,515.00	-1,193.68	-1,001.62	1,558.24	0.00	0.00	0.00	0.00
2,900.00	90.00	220.000	1,515.00	-1,270.29	-1,065.90	1,658.24	0.00	0.00	0.00	0.00
3,000.00	90.00	220.000	1,515.00	-1,346.89	-1,130.17	1,758.24	0.00	0.00	0.00	0.00
3,100.00	90.00	220.000	1,515.00	-1,423.49	-1,194.45	1,858.24	0.00	0.00	0.00	0.00
3,200.00	90.00	220.000	1,515.00	-1,500.10	-1,258.73	1,958.24	0.00	0.00	0.00	0.00
3,300.00	90.00	220.000	1,515.00	-1,576.70	-1,323.01	2,058.24	0.00	0.00	0.00	0.00
3,400.00	90.00	220.000	1,515.00	-1,653.31	-1,387.29	2,158.24	0.00	0.00	0.00	0.00
3,500.00	90.00	220.000	1,515.00	-1,729.91	-1,451.57	2,258.24	0.00	0.00	0.00	0.00
3,600.00	90.00	220.000	1,515.00	-1,806.52	-1,515.85	2,358.24	0.00	0.00	0.00	0.00
3,700.00	90.00	220.000	1,515.00	-1,883.12	-1,580.13	2,458.24	0.00	0.00	0.00	0.00
3,800.00	90.00	220.000	1,515.00	-1,959.73	-1,644.40	2,558.24	0.00	0.00	0.00	0.00
3,900.00	90.00	220.000	1,515.00	-2,036.33	-1,708.68	2,658.24	0.00	0.00	0.00	0.00

Plan Report for NE Hogback Unit #74 - Rev A1 Lateral)

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)	Toolface Azimuth (°)
4,000.00	90.00	220.000	1,515.00	-2,112.93	-1,772.96	2,758.24	0.00	0.00	0.00	0.00
4,100.00	90.00	220.000	1,515.00	-2,189.54	-1,837.24	2,858.24	0.00	0.00	0.00	0.00
4,200.00	90.00	220.000	1,515.00	-2,266.14	-1,901.52	2,958.24	0.00	0.00	0.00	0.00
4,300.00	90.00	220.000	1,515.00	-2,342.75	-1,965.80	3,058.24	0.00	0.00	0.00	0.00
4,400.00	90.00	220.000	1,515.00	-2,419.35	-2,030.08	3,158.24	0.00	0.00	0.00	0.00
4,500.00	90.00	220.000	1,515.00	-2,495.96	-2,094.36	3,258.24	0.00	0.00	0.00	0.00
4,600.00	90.00	220.000	1,515.00	-2,572.56	-2,158.63	3,358.24	0.00	0.00	0.00	0.00
4,700.00	90.00	220.000	1,515.00	-2,649.17	-2,222.91	3,458.24	0.00	0.00	0.00	0.00
4,800.00	90.00	220.000	1,515.00	-2,725.77	-2,287.19	3,558.24	0.00	0.00	0.00	0.00
4,878.37	90.00	220.000	1,515.00	-2,785.80	-2,337.57	3,636.61	0.00	0.00	0.00	0.00
Total Depth = 4863.37 ft										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
878.38	878.38	0.00	0.00	Kickoff at 863.38 ft - AZI = 220°
1,415.00	1,353.67	-163.23	-136.97	Build Rate = 9.00°/100 ft
1,878.38	1,515.00	-487.68	-409.21	End Build at 1863.38 ft
4,878.37	1,515.00	-2,785.80	-2,337.57	Total Depth = 4863.37 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (usft)	+E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	220.000	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	4,878.37	Rev A1 Lateral)	MWD

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,735.35	1,499.00	Upper Gallup Top		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
NE Hogback Unit #74_Plan A-0_BHL Target	1,515.00	-2,785.81	-2,337.57	Point
NE Hogback Unit #74_SHL	15.00	0.00	0.00	Point
NE Hogback Unit #73_Section Lines	-116.00	1,058.79	-1,625.58	Polygon

HALLIBURTON

North Reference Sheet for Sec. 10-T30N-R16W - NE Hogback Unit #74 - Plan A (Lateral)

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 15' @ 5447.00usft (Aztec 711). Northing and Easting are relative to NE Hogback Unit #74

Coordinate System is US State Plane 1983, New Mexico Western Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -107.83°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°

False Easting: 2,723,091.67usft, False Northing: 0.00usft, Scale Reduction: 0.99996079

Grid Coordinates of Well: 2,122,018.56 usft N, 2,526,709.00 usft E

Geographical Coordinates of Well: 36° 49' 46.88" N, 108° 30' 15.70" W

Grid Convergence at Surface is: -0.40°

Based upon Minimum Curvature type calculations, at a Measured Depth of 4,878.37usft

the Bottom Hole Displacement is 3,636.61usft in the Direction of 220.00° (True).

Magnetic Convergence at surface is: -10.35° (25 December 2013, , BGGM2013)

