

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

Form C-101
Revised November 14, 2012

☐ AMENDED REPORT
RCVD AUG 22 '13
OIL CONS. DIV.
DIST. 3

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

¹ Operator Name and Address WPX Energy Production, LLC P.O. Box 640 Aztec, NM 87410		² OGRID Number 120782
		³ API Number 30-043-21168
⁴ Property Code 39909	⁵ Property Name Chaco 2206-16A	⁶ Well No. 222H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
A	16	22N	6W		754	North	287	East	Sandoval

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
E	16	22N	6W		1530	North	280	West	Sandoval

9. Pool Information

Pool Name Lybrook Gallup	Pool Code 42289
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Additional Well Information

¹¹ Work Type N	¹² Well Type O	¹³ Cable/Rotary R	¹⁴ Lease Type S	¹⁵ Ground Level Elevation 7142'
¹⁶ Multiple No	¹⁷ Proposed Depth 10,142' MD / 5,285' TVD	¹⁸ Formation Gallup	¹⁹ Contractor AWS	²⁰ Spud Date 09/15/13
Depth to Ground water +/- 100'		Distance from nearest fresh water well >1000'		Distance to nearest surface water >1000'

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
J-55	12-1/4"	9-5/8"	36#	400'	230	Surface
K-55	8-3/4"	7"	23#	5,765'	1050	Surface
N-80	6-1/8"	4-1/2"	11.6#	10,142'	420	4,700'

Casing/Cement Program: Additional Comments

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 Manufacturer

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure
Double Ram	3000#	2000#

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐, if applicable.

Signature: *Larry Higgins*

Printed name: Larry Higgins

Title: Permit Supervisor

E-mail Address: larry.higgins@wpenergy.com

Date: 08/22/13

Phone: 333-1808

OIL CONSERVATION DIVISION

Approved By:

Chad H. ... 8-29-2013

Title:

SUPERVISOR DISTRICT # 3

Approved Date: **AUG 29 2013**

Expiration Date: **AUG 29 2015**

Conditions of Approval Attached

AUG 29 2013 *ca*

HOLD ON FOR *NSL*

FR

NOTIFY AZTEC OCD 24 HRS
PRIOR TO CASING & CEMENT

Hold C104
for Directional Survey
and "As Drilled" plat

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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 30-043-21168	² Pool Code 42289	³ Pool Name LYBROOK GALLUP
⁴ Property Code 39909	⁵ Property Name CHACO 2206-16A	⁶ Well Number 222H
⁷ GRID No. 120782	⁸ Operator Name WPX ENERGY PRODUCTION, LLC	⁹ Elevation 7142'

¹⁰ Surface Location

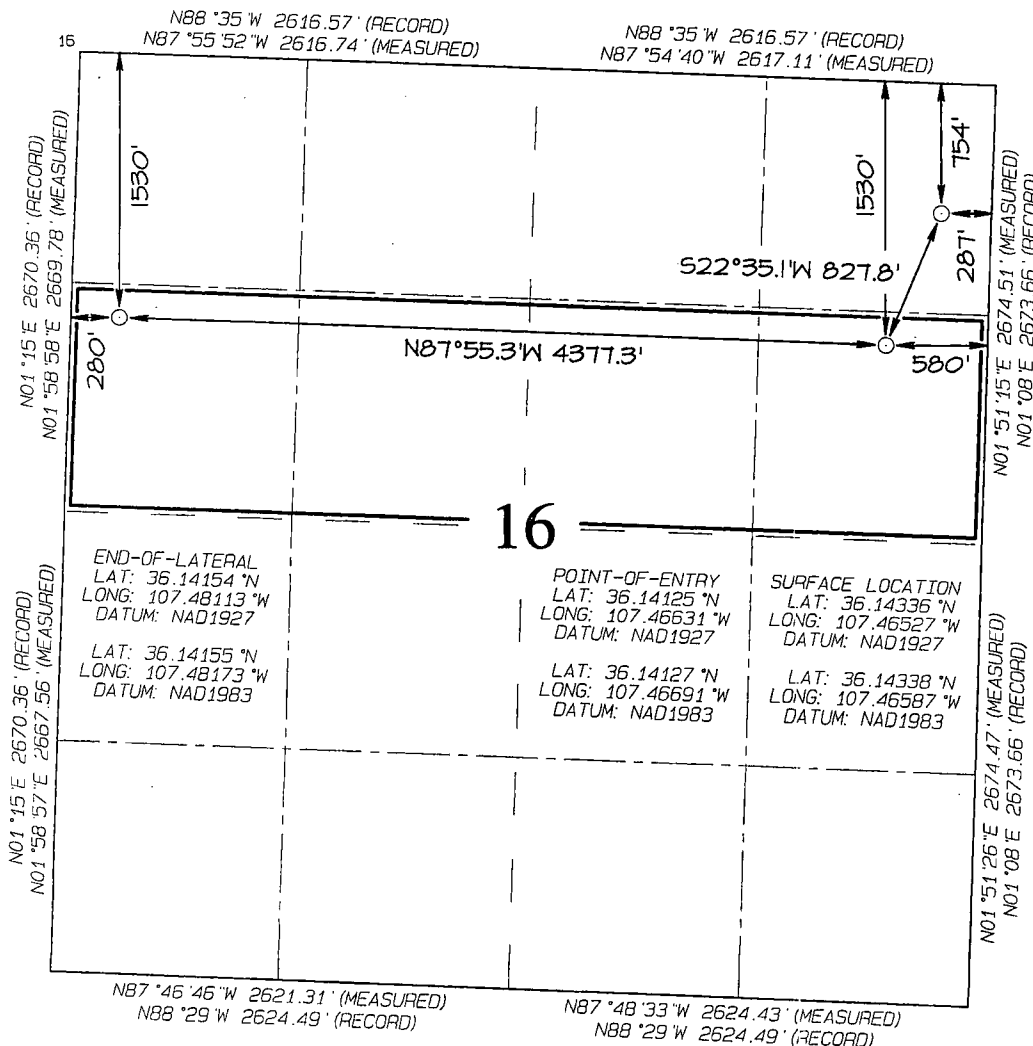
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	16	22N	6W		754	NORTH	287	EAST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	16	22N	6W		1530	NORTH	280	WEST	SANDOVAL

¹² Dedicated Acres 160.0 Acres - (S/2 N/2)	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

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

Signature: *Larry Higgins* Date: 8/22/13

Printed Name: Larry Higgins
E-mail Address: larry.higgins@wpxenergy.com

¹⁸ SURVEYOR CERTIFICATION

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

Date Revised: AUGUST 21, 2013
Date of Survey: JULY 31, 2013

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

WPX ENERGY**Operations Plan**

(Note: This procedure will be adjusted on site based upon actual conditions)

DATE: 8/12/13 **FIELD:** Lybrook Gallup

WELL NAME: Chaco 2206-16A #222H **SURFACE:** State

SH Location: NENE Sec 16-22N-6W **ELEVATION:** 7,142' GR

BH Location: SWNW Sec 16-22N-6W **MINERALS:** State
Sandoval Co, NM

MEASURED DEPTH: 10,142' **LEASE #:** V09210

I. **GEOLOGY:** Surface formation – San Jose

A. **FORMATION TOPS:** (KB)

Name	MD	TVD	Name	MD	TVD
Ojo Alamo	1,249	1,248	Point Lookout	4,214	4,137
Kirtland	1,421	1,416	Mancos	4,311	4,232
Pictured Cliffs	1,828	1,812	Kickoff Point	4,936	4,849
Lewis	1,976	1,956	Target Top	5,510	5,319
Chacra	2,239	2,213	Landing Point	5,765	5,370
Cliff House	3,354	3,299	Target Base	5,915	5,539
Menefee	3,395	3,339			
			TD	10,142	5,285

B. **MUD LOGGING PROGRAM:** Mudlogger on location from surface csg to TD.

C. **LOGGING PROGRAM:** LWD GR from KOP to TD. LWD GR / Sonic will be run in Lateral.

D. **NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. **DRILLING**

A. **MUD PROGRAM:** LSND mud (WBM) will be used to drill the 12-1/4" Surface hole and the 8 3/4" Directional Vertical hole and drill the curve portion of the wellbore. (OBM) will be used to drill the lateral portion of well. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

B. **BOP TESTING:** While drill pipe is in use, the pipe rams and the blind rams will be function tested once each trip. The anticipated reservoir is expected to be less than 1500 psi, so the BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes**. Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. **All tests and inspections will be recorded in the tour book as to time and results.**

NOTE: Vertical portion of the well (8-3/4 in.) will be vertically/directionally drilled as per attached Directional Plan to +/- 4,936'(MD) / 4,849' (TVD). The 8-3/4 in. Curve portion of wellbore will be drilled and landed at +/- 90 deg. at +/- 5,765' (MD) / 5,370' (TVD). 7 in. csg will be set at this point. Will drill the lateral (6-1/8 in. hole) as per the attached Directional Plan to +/- 10,142'(MD) / 5,285' (TVD). Will run 4-1/2 in. Production Casing to TD and Cement.

III. MATERIALS**A. CASING PROGRAM:**

Surface		12.25"		400'+		9 5/8		36#	J-55
Intermediate		8.75"		5,765		7		23#	K-55
Longstring		6.125"		10,142		4 1/2		11.6#	N-80

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing.
2. INTERMEDIATE CASING: 7" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,700 ft., 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft.
3. PRODUCTION CASING: Run 4-1/2" casing with cement nose guide Float Shoe + 1 joint 4-1/2" csg.+ Float Collar. Centralizer program will be determined when Lateral is evaluated by Geoscientists and Reservoir Engineers.

C. CEMENTING:

(Note: Volumes may be adjusted onsite due to actual conditions)

1. SURFACE: 10 bbl Fr Water Spacer + 230 sx (270 cu.ft.) of "Premium Cement" + 2% Calcium Chloride Cement + 0.125# pps of Poly-E-Flake, 15.8 #/gal. The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 600psi. for 30 minutes. Total Volume: (230 sx / 270 cu-ft / 48 Bbls).
2. INTERMEDIATE: 20 bbl (112 cu-ft) Mud Flush III spacer + Lead: 850 sx Foamed 50/50 Poz Cement. 13.0 ppg (Yield :1.43 cu-ft/ sk. / Vol: 1216 cu-ft) + 0.1% Halad 766 + 0.2% Versaset + 1.5% Chem-Foamer 760 + TAIL: 100 sx 13.5 #/gal. (Yield: 1.28 cu-ft / sk / Vol: 128 cu-ft) + 0.2% Versaset + 0.15% HALAD-766. + F. Water Displacement (1,511 cu-ft) + 100 sx Top-Out Cement Premium: Yield: (1.17 cu-ft/ sk (Vol: 117 cu-ft). Est TOC: Surface. Test Casing to 1500 PSI for 30 minutes. Total Volume: (2021 cu-ft/1050 sx/260 bbls).
3. PRODUCTION CASING: **STAGE 1**: 40 bbl (224.6 cu-ft) KCL water Spacer + **STAGE 2**:10 bbl (56.cu-ft) Fr Water Spacer.+ **STAGE 3**:40 bbl 10 ppg (224.6 cu-ft) Tuned Spacer III + 0.2 gal/bbl Musol + 38.7 ppb Barite + 0.5 gal/bbl SEM-7. + **STAGE 4**: 10 bbl Fr Water Spacer.+ **STAGE 5**: Lead Cement, 70 sx Premium cmt + 0.1% Halad-766, Yield 1.16 cu ft/sk, 15.8 #/gal, (70 sx / 81.2 cu ft. / 14.46 bbls) **STAGE 6**: Foamed Lead Cement: 240 sx. 50/50 Poz Standard + 0.2% Versaset + 0.2% HALAD-766 + 1.5% Chem-Foamer 760. Yield 1.43 cu-ft/sk ,13.0 ppg. (240sx / 343.2 cu-ft / 61.1bbls) + **STAGE 7**: Tail Cement : 110 sx 50/50 Poz Premium + 0.2% Versaset + .05% HALAD-766 + .05% SA-1015,Yield 1.3 cu-ft/sk,13.5 ppg. (110 sx / 143 cu ft. / 25.46 bbls) **STAGE 8**: Displace w/+/-162 bbl KCL Water. Total Cement (420 sx / 568.5 cu ft / 101.2 bbls). Mix w/ +/- 98,000 SCF Nitrogen. Est. TOC +/- 4,700 ft. Total Volume: (567.4 cu-ft / 420 sx / 101.1 bbls).

IV. COMPLETION**A. CBL**

1. Run Cement Bond Log and ensure top of cement is above 7" casing shoe.

B. PRESSURE TEST

1. Pressure test 4-1/2" casing to 5000 psi max, hold at 1500 psi for 30 minutes.

C. STIMULATION

1. Stimulate with approximately 2,805,000# 20/40 mesh sand and 340,000# 16/30 mesh sand in 619,113 gallons water with 42,696 mscf N₂ for 17 stages.
2. Isolate stages with flow through frac plug.
3. Drill out frac plugs with CTU and flowback lateral.

D. RUNNING TUBING

1. Production Tubing: Run 2-3/8", 4.7#, N-80, EUE tubing with a SN (1.91" ID) on top of bottom joint. Land tubing at landing point of curve (~5,765' MD).

- Although this horizontal well will be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 B(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 B(2) NMAC, 19.15.16.15 B(2) NMAC, and 19.15.16.15. B(4) NMAC.
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Chaco 2206-16A #222H R0 mdv 5Aug13 Proposal Geodetic Report (Def Plan)



Report Date: August 05, 2013 - 03:05 PM
Client: WPX Energy
Field: NM Sandoval County NAD27
Structure / Slot: WPX Sec 16-22N-6W (Chaco 2206-16A #222H) / Chaco 2206-16A #222H
Well: Chaco 2206-16A #222H
Borehole: Original Hole
UWI / API#: Unknown / Unknown
Survey Name: Chaco 2206-16A #222H R0 mdv 5Aug13
Survey Date: August 05, 2013
Tort / AHD / DDI / ERD Ratio: 117.215' / 5718.376 ft / 6.102' / 1.065
Coordinate Reference System: NAD27 New Mexico State Plane, Central Zone, US Feet
Location Lat / Long: N 36° 8' 36.09600", W 107° 27' 54.97200"
Location Grid N/E Y/X: N 1873637.264 ftUS, E 141179.354 ftUS
CRS Grid Convergence Angle: -0.7168°
Grid Scale Factor: 1.00004734

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 261.916° (True North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 7156.000 ft above MSL
Seabed / Ground Elevation: 7142.000 ft above MSL
Magnetic Declination: 9.475°
Total Gravity Field Strength: 998.4638mgm (9.80665 Based)
Total Magnetic Field Strength: 50162.156 nT
Magnetic Dip Angle: 62.962°
Declination Date: August 05, 2013
Magnetic Declination Model: BGGM 2013
North Reference: True North
Grid Convergence Used: 0.0000°
Total Corr Mag North->True North: 9.4751°
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Surface	0.00	0.00	164.04	0.00	0.00	0.00	0.00	N/A	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
KOP, Build 2°/100'	100.00	0.00	164.04	100.00	0.00	0.00	0.00	0.00	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
	200.00	0.00	164.04	200.00	0.00	0.00	0.00	0.00	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
	300.00	0.00	164.04	300.00	0.00	0.00	0.00	0.00	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
	400.00	0.00	164.04	400.00	0.00	0.00	0.00	0.00	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
	500.00	0.00	164.04	500.00	0.00	0.00	0.00	0.00	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
	550.00	0.00	164.04	550.00	0.00	0.00	0.00	0.00	1873637.26	141179.35	N 36° 8' 36.10"	W 107° 27' 54.97"
	600.00	1.00	164.04	600.00	-0.06	-0.42	0.12	2.00	1873636.84	141179.47	N 36° 8' 36.09"	W 107° 27' 54.97"
	700.00	3.00	164.04	699.93	-0.54	-3.77	1.08	2.00	1873633.48	141180.39	N 36° 8' 36.06"	W 107° 27' 54.96"
	800.00	5.00	164.04	799.68	-1.49	-10.48	3.00	2.00	1873626.75	141182.22	N 36° 8' 35.99"	W 107° 27' 54.94"
	900.00	7.00	164.04	899.13	-2.92	-20.53	5.87	2.00	1873616.66	141184.97	N 36° 8' 35.89"	W 107° 27' 54.90"
	1000.00	9.00	164.04	998.15	-4.83	-33.91	9.70	2.00	1873603.23	141188.62	N 36° 8' 35.76"	W 107° 27' 54.85"
	1100.00	11.00	164.04	1096.63	-7.21	-50.61	14.47	2.00	1873586.48	141193.19	N 36° 8' 35.60"	W 107° 27' 54.80"
Hold 13.05° INC	1200.00	13.00	164.04	1194.44	-10.06	-70.60	20.18	2.00	1873566.42	141198.65	N 36° 8' 35.40"	W 107° 27' 54.73"
	1202.57	13.05	164.04	1196.94	-10.13	-71.15	20.34	2.00	1873565.86	141198.81	N 36° 8' 35.39"	W 107° 27' 54.72"
	1300.00	13.05	164.04	1281.85	-13.15	-92.31	26.39	0.00	1873544.63	141204.59	N 36° 8' 35.18"	W 107° 27' 54.65"
	1400.00	13.05	164.04	1389.27	-16.24	-114.02	32.60	0.00	1873522.84	141210.52	N 36° 8' 34.97"	W 107° 27' 54.57"
	1500.00	13.05	164.04	1486.69	-19.33	-135.73	38.81	0.00	1873501.05	141216.46	N 36° 8' 34.75"	W 107° 27' 54.50"
	1600.00	13.05	164.04	1584.10	-22.43	-157.44	45.01	0.00	1873479.26	141222.40	N 36° 8' 34.54"	W 107° 27' 54.42"
	1700.00	13.05	164.04	1681.52	-25.52	-179.16	51.22	0.00	1873457.47	141228.33	N 36° 8' 34.32"	W 107° 27' 54.35"
	1800.00	13.05	164.04	1778.94	-28.61	-200.87	57.43	0.00	1873435.68	141234.27	N 36° 8' 34.11"	W 107° 27' 54.27"
	1900.00	13.05	164.04	1876.36	-31.70	-222.58	63.64	0.00	1873413.89	141240.20	N 36° 8' 33.89"	W 107° 27' 54.20"
	2000.00	13.05	164.04	1973.77	-34.80	-244.30	69.84	0.00	1873392.10	141246.14	N 36° 8' 33.68"	W 107° 27' 54.12"
	2100.00	13.05	164.04	2071.19	-37.89	-266.01	76.05	0.00	1873370.31	141252.07	N 36° 8' 33.47"	W 107° 27' 54.04"
	2200.00	13.05	164.04	2168.61	-40.98	-287.72	82.26	0.00	1873348.52	141258.01	N 36° 8' 33.25"	W 107° 27' 53.97"
Drop 2°/100'	2300.00	13.05	164.04	2266.02	-44.07	-309.43	88.47	0.00	1873326.73	141263.95	N 36° 8' 33.04"	W 107° 27' 53.89"
	2400.00	13.05	164.04	2363.44	-47.17	-331.15	94.67	0.00	1873304.94	141269.88	N 36° 8' 32.82"	W 107° 27' 53.82"
	2500.00	13.05	164.04	2460.86	-50.26	-352.86	100.88	0.00	1873283.16	141275.82	N 36° 8' 32.61"	W 107° 27' 53.74"
	2600.00	13.05	164.04	2558.27	-53.35	-374.57	107.09	0.00	1873261.37	141281.75	N 36° 8' 32.39"	W 107° 27' 53.67"
	2700.00	13.05	164.04	2655.69	-56.44	-396.28	113.30	0.00	1873239.58	141287.69	N 36° 8' 32.18"	W 107° 27' 53.59"
	2800.00	13.05	164.04	2753.11	-59.54	-418.00	119.50	0.00	1873217.79	141293.62	N 36° 8' 31.96"	W 107° 27' 53.52"
	2900.00	13.05	164.04	2850.52	-62.63	-439.71	125.71	0.00	1873196.00	141299.56	N 36° 8' 31.75"	W 107° 27' 53.44"
	3000.00	13.05	164.04	2947.94	-65.72	-461.42	131.92	0.00	1873174.21	141305.50	N 36° 8' 31.53"	W 107° 27' 53.36"
	3100.00	13.05	164.04	3045.36	-68.82	-483.13	138.13	0.00	1873152.42	141311.43	N 36° 8' 31.32"	W 107° 27' 53.29"
	3200.00	13.05	164.04	3142.77	-71.91	-504.85	144.33	0.00	1873130.63	141317.37	N 36° 8' 31.10"	W 107° 27' 53.21"
	3300.00	13.05	164.04	3240.19	-75.00	-526.56	150.54	0.00	1873108.84	141323.30	N 36° 8' 30.89"	W 107° 27' 53.14"
	3400.00	13.05	164.04	3337.61	-78.09	-548.27	156.75	0.00	1873087.05	141329.24	N 36° 8' 30.67"	W 107° 27' 53.06"
	3500.00	13.05	164.04	3435.02	-81.19	-569.98	162.96	0.00	1873065.26	141335.17	N 36° 8' 30.46"	W 107° 27' 52.99"
	3600.00	13.05	164.04	3532.44	-84.28	-591.70	169.16	0.00	1873043.47	141341.11	N 36° 8' 30.24"	W 107° 27' 52.91"
	3700.00	13.05	164.04	3629.86	-87.37	-613.41	175.37	0.00	1873021.68	141347.05	N 36° 8' 30.03"	W 107° 27' 52.83"
	3800.00	13.05	164.04	3727.27	-90.46	-635.12	181.58	0.00	1872999.89	141352.98	N 36° 8' 29.82"	W 107° 27' 52.76"
	3900.00	13.05	164.04	3824.69	-93.56	-656.83	187.79	0.00	1872978.10	141358.92	N 36° 8' 29.60"	W 107° 27' 52.68"
	4000.00	13.05	164.04	3922.11	-96.65	-678.55	193.99	0.00	1872956.31	141364.85	N 36° 8' 29.39"	W 107° 27' 52.61"
	4100.00	13.05	164.04	4019.52	-99.74	-700.26	200.20	0.00	1872934.52	141370.79	N 36° 8' 29.17"	W 107° 27' 52.53"
	4139.58	13.05	164.04	4058.06	-100.96	-708.85	202.66	0.00	1872925.90	141373.14	N 36° 8' 29.09"	W 107° 27' 52.50"
	4200.00	11.84	164.04	4117.08	-102.75	-721.37	206.24	2.00	1872913.33	141376.56	N 36° 8' 28.96"	W 107° 27' 52.46"
	4300.00	9.84	164.04	4215.29	-105.32	-739.46	211.41	2.00	1872895.18	141381.50	N 36° 8' 28.78"	W 107° 27' 52.39"
	4400.00	7.84	164.04	4314.10	-107.43	-754.24	215.63	2.00	1872880.35	141385.54	N 36° 8' 28.64"	W 107° 27' 52.34"
	4500.00	5.84	164.04	4413.38	-109.06	-765.69	218.91	2.00	1872868.86	141388.68	N 36° 8' 28.52"	W 107° 27' 52.30"
4600.00	3.84	164.04	4513.02	-110.22	-773.81	221.23	2.00	1872860.71	141390.89	N 36° 8' 28.44"	W 107° 27' 52.27"	
4700.00	1.84	164.04	4612.89	-110.90	-778.58	222.59	2.00	1872855.93	141392.20	N 36° 8' 28.40"	W 107° 27' 52.26"	
Hold Vertical	4792.13	0.00	164.04	4705.00	-111.10	-780.00	223.00	2.00	1872854.50	141392.59	N 36° 8' 28.38"	W 107° 27' 52.25"
	4800.00	0.00	164.04	4712.87	-111.10	-780.00	223.00	0.00	1872854.50	141392.59	N 36° 8' 28.38"	W 107° 27' 52.25"
4900.00	0.00	164.04	4812.87	-111.10	-780.00	223.00	0.00	1872854.50	141392.59	N 36° 8' 28.38"	W 107° 27' 52.25"	
KOP, Build 11°/100'	4936.35	0.00	164.04	4849.22	-111.10	-780.00	223.00	0.00	1872854.50	141392.59	N 36° 8' 28.38"	W 107° 27' 52.25"
Landing Point Hold to TD	5000.00	7.00	271.34	4912.72	-107.27	-779.91	219.12	11.00	1872854.64	141388.71	N 36° 8' 28.38"	W 107° 27' 52.30"
	5100.00	18.00	271.34	5010.19	-85.95	-779.40	197.51	11.00	1872855.42	141367.11	N 36° 8' 28.39"	W 107° 27' 52.56"
	5200.00	29.00	271.34	5101.76	-46.67	-778.47	157.70	11.00	1872856.85	141327.31	N 36° 8' 28.40"	W 107° 27' 53.05"
	5300.00	40.00	271.34	5184.04	9.12	-777.15	101.16	11.00	1872858.88	141270.79	N 36° 8' 28.41"	W 107° 27' 53.74"
	5400.00	51.00	271.34	5254.03	79.38	-775.48	29.97	11.00	1872861.44	141199.62	N 36° 8' 28.43"	W 107° 27' 54.61"
	5500.00	62.00	271.34	5309.13	161.52	-773.53	-53.27	11.00	1872864.43	141116.40	N 36° 8' 28.45"	W 107° 27' 55.62"
	5600.00	73.00	271.34	5347.34	252.52	-771.37	-145.49	11.00	1872867.74	141024.21	N 36° 8' 28.47"	W 107° 27' 56.75"
	5700.00	84.00	271.34	5367.24	349.04	-769.08	-243.31	11.00	1872871.25	140926.43	N 36° 8' 28.49"	W 107° 27' 57.94"
	5764.65	91.11	271.34	5370.00	412.72	-767.57	-307.84	11.00	1872873.57	140861.92	N 36° 8' 28.51"	W 107° 27' 58.72"
	5800.00	91.11	271.34	5369.31	447.59	-766.74	-343.18	0.00	1872874.84	140826.60	N 36° 8' 28.51"	W 107° 27' 59.16"
	5900.00	91.11	271.34	5367.37	546.22	-764.40	-443.13	0.00	1872878.43	140726.67	N 36° 8' 28.54"	W 107° 28' 0.37"
	6000.00	91.11	271.34	5365.43	644.85	-762.06	-543.08	0.00	1872882.03	140626.75	N 36° 8' 28.56"	W 107° 28' 1.59"
6100.00	91.11	271.34	5363.48	743.48	-759.72	-643.04	0.00	1872885.62	140526.83	N 36° 8' 28.58"	W 107° 28' 2.81"	
6200.00	91.11	271.34	5361.54	842.11	-757.38	-742.99	0.00	1872889.21	140426.91	N 36° 8' 28.61"	W 107° 28' 4.03"	
6300.00	91.11	271.34	5359.60	940.74	-755.04	-842.						

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7100.00	91.11	271.34	5344.07	1729.79	-736.31	-1642.57	0.00	1872921.53	139527.62	N 36 8 28.81	W 107 28 15.00
	7200.00	91.11	271.34	5342.12	1828.43	-733.97	-1742.53	0.00	1872925.12	139427.70	N 36 8 28.84	W 107 28 16.22
	7300.00	91.11	271.34	5340.18	1927.06	-731.63	-1842.48	0.00	1872928.71	139327.78	N 36 8 28.86	W 107 28 17.43
	7400.00	91.11	271.34	5338.24	2025.69	-729.29	-1942.44	0.00	1872932.30	139227.86	N 36 8 28.88	W 107 28 18.65
	7500.00	91.11	271.34	5336.30	2124.32	-726.95	-2042.39	0.00	1872935.90	139127.94	N 36 8 28.91	W 107 28 19.87
	7600.00	91.11	271.34	5334.36	2222.95	-724.60	-2142.34	0.00	1872939.49	139028.01	N 36 8 28.93	W 107 28 21.09
	7700.00	91.11	271.34	5332.41	2321.58	-722.26	-2242.30	0.00	1872943.08	138928.09	N 36 8 28.95	W 107 28 22.31
	7800.00	91.11	271.34	5330.47	2420.21	-719.92	-2342.25	0.00	1872946.67	138828.17	N 36 8 28.98	W 107 28 23.53
	7900.00	91.11	271.34	5328.53	2518.84	-717.58	-2442.20	0.00	1872950.26	138728.25	N 36 8 29.00	W 107 28 24.75
	8000.00	91.11	271.34	5326.59	2617.48	-715.24	-2542.16	0.00	1872953.85	138628.33	N 36 8 29.02	W 107 28 25.96
	8100.00	91.11	271.34	5324.65	2716.11	-712.90	-2642.11	0.00	1872957.44	138528.41	N 36 8 29.04	W 107 28 27.18
	8200.00	91.11	271.34	5322.70	2814.74	-710.56	-2742.07	0.00	1872961.04	138428.49	N 36 8 29.07	W 107 28 28.40
	8300.00	91.11	271.34	5320.76	2913.37	-708.22	-2842.02	0.00	1872964.63	138328.57	N 36 8 29.09	W 107 28 29.62
	8400.00	91.11	271.34	5318.82	3012.00	-705.88	-2941.97	0.00	1872968.22	138228.65	N 36 8 29.11	W 107 28 30.84
	8500.00	91.11	271.34	5316.88	3110.63	-703.54	-3041.93	0.00	1872971.81	138128.72	N 36 8 29.14	W 107 28 32.06
	8600.00	91.11	271.34	5314.94	3209.26	-701.20	-3141.88	0.00	1872975.40	138028.80	N 36 8 29.16	W 107 28 33.28
	8700.00	91.11	271.34	5312.99	3307.90	-698.85	-3241.83	0.00	1872978.99	137928.88	N 36 8 29.18	W 107 28 34.49
	8800.00	91.11	271.34	5311.05	3406.53	-696.51	-3341.79	0.00	1872982.58	137828.96	N 36 8 29.21	W 107 28 35.71
	8900.00	91.11	271.34	5309.11	3505.16	-694.17	-3441.74	0.00	1872986.18	137729.04	N 36 8 29.23	W 107 28 36.93
	9000.00	91.11	271.34	5307.17	3603.79	-691.83	-3541.70	0.00	1872989.77	137629.12	N 36 8 29.25	W 107 28 38.15
	9100.00	91.11	271.34	5305.23	3702.42	-689.49	-3641.65	0.00	1872993.36	137529.20	N 36 8 29.28	W 107 28 39.37
	9200.00	91.11	271.34	5303.29	3801.05	-687.15	-3741.60	0.00	1872996.95	137429.28	N 36 8 29.30	W 107 28 40.59
	9300.00	91.11	271.34	5301.34	3899.68	-684.81	-3841.56	0.00	1873000.54	137329.36	N 36 8 29.32	W 107 28 41.81
	9400.00	91.11	271.34	5299.40	3998.32	-682.47	-3941.51	0.00	1873004.13	137229.43	N 36 8 29.34	W 107 28 43.02
	9500.00	91.11	271.34	5297.46	4096.95	-680.13	-4041.46	0.00	1873007.72	137129.51	N 36 8 29.37	W 107 28 44.24
	9600.00	91.11	271.34	5295.52	4195.58	-677.79	-4141.42	0.00	1873011.32	137029.59	N 36 8 29.39	W 107 28 45.46
	9700.00	91.11	271.34	5293.58	4294.21	-675.45	-4241.37	0.00	1873014.91	136929.67	N 36 8 29.41	W 107 28 46.68
	9800.00	91.11	271.34	5291.63	4392.84	-673.10	-4341.33	0.00	1873018.50	136829.75	N 36 8 29.44	W 107 28 47.90
	9900.00	91.11	271.34	5289.69	4491.47	-670.76	-4441.28	0.00	1873022.09	136729.83	N 36 8 29.46	W 107 28 49.12
	10000.00	91.11	271.34	5287.75	4590.10	-668.42	-4541.23	0.00	1873025.68	136629.91	N 36 8 29.48	W 107 28 50.34
	10100.00	91.11	271.34	5285.81	4688.73	-666.08	-4641.19	0.00	1873029.27	136529.99	N 36 8 29.51	W 107 28 51.55
Chaco 2206-16A #222H PBLH/TD	10141.61	91.11	271.34	5285.00	4729.78	-665.11	-4682.78	0.00	1873030.77	136488.41	N 36 8 29.51	W 107 28 52.06

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	14.000	1/100.000	30.000	30.000	SLB_MWD-STD-Depth Only	Original Hole / Chaco 2206-16A #222H R0 mdv 5Aug13
	14.000	10141.612	1/100.000	30.000	30.000	SLB_MWD-STD	Original Hole / Chaco 2206-16A #222H R0 mdv 5Aug13

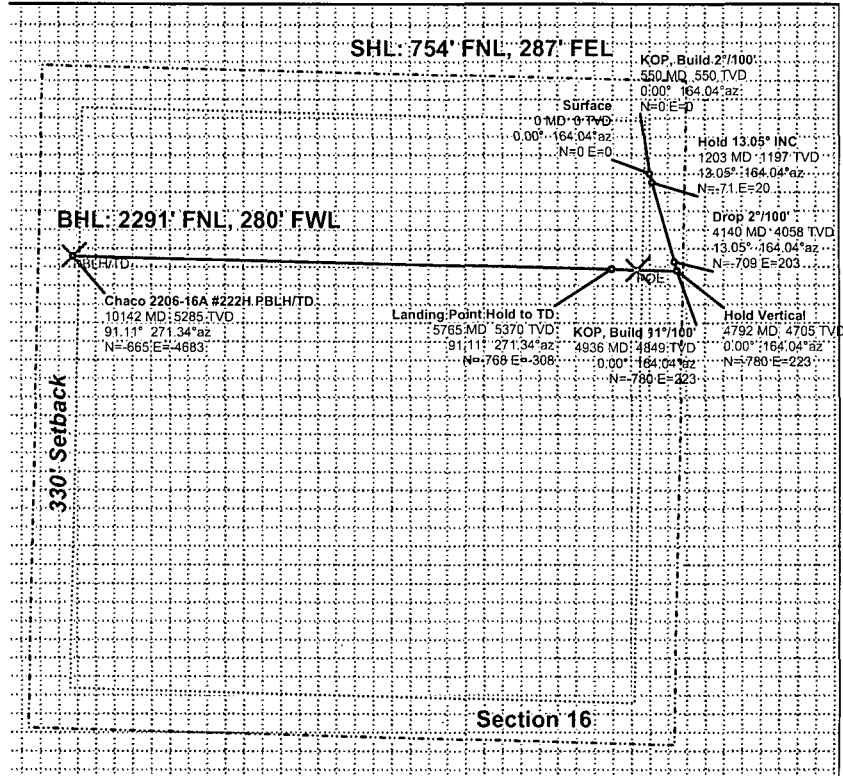
WELL Chaco 2206-16A #222H	FIELD NM Sandoval County NAD27	STRUCTURE Sec 16-22N-6W
Magnetic Parameters Model: BGM 2013 Dip: 62.962° Mag Dec: 9.475° Date: August 05, 2013 FS: 50162.2mT	Surface Location Lat: N 36 8.36.096 Lon: W 107 27.54.972 NAD27 New Mexico State Plane, Central Zone, US Feet Northing: 1873637.28 NUS Easting: 141179.35 NUS Grid Conv: -0.717° Scale Fact: 1.00064734	Miscellaneous Sht: Chaco 2206-16A #222H Plan: RD mdy 5/Aug/13 TVD Ref: RKB(7156ft above MSL) Srv Date: August 05, 2013

Proposal



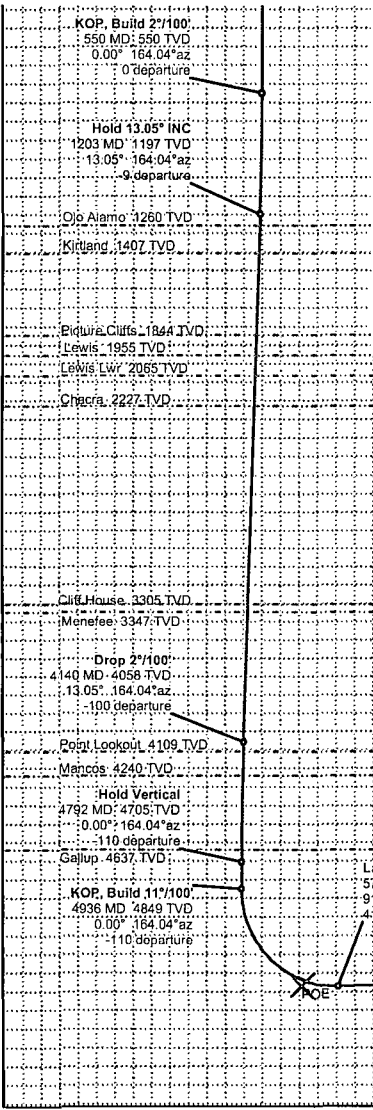
True North
Tot Corr (M>T 9.4751°)
Mag Dec (9.475°)
Grid Conv (-0.717°)

<<< W Scale = 1:1500(ft) E >>>
-4500 -3000 -1500 0 1500



TVD Scale = 1:1000(ft)

1000
2000
3000
4000
5000
6000



Critical Point		Critical Points						
Surface	MD	INCL	AZIM	TVD	YSEC	N(±) S(±)	E(±) W(±)	DLS
Surface	0.00	0.00	164.04	0.00	0.00	0.00	0.00	0.00
KOP, Build 2°/100'	550.00	0.00	164.04	550.00	0.00	0.00	0.00	0.00
Hold 13.05° INC	1202.57	13.05	164.04	1196.94	-10.13	-71.15	20.34	2.00
Drop 2°/100'	4139.56	13.05	164.04	4058.06	-100.96	-708.85	202.66	0.00
Hold Vertical	4792.13	0.00	164.04	4705.00	-111.10	-780.00	223.00	2.00
KOP, Build 11°/100'	4936.35	0.00	164.04	4849.22	-111.10	-780.00	223.00	0.00
Landing Point Hold to TD	5764.65	91.11	271.34	5370.00	412.72	-767.57	-307.84	11.00
Chaco 2206-16A #222H PBLH/TD	10141.61	91.11	271.34	5285.00	4729.78	-665.11	-4682.78	0.00

Quality Control
Date Drawn: August 05, 2013
09:29:46 PM
Drawn by: Matt VanderSchaff
Checked by:
Client OK:

Vertical Section (ft) Azim = 261.92° Scale = 1:1000(ft) Origin = 0 N/-S, 0 E/-W

<<< S Scale = 1:1500(ft) N >>>