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District III
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District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
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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 30-039-31196
⁴ Property Code 46597	⁵ Property Name Chaco 2407-32M	⁶ Well No. 158H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
M	32	24N	7W		396	SOUTH	303	WEST	RIO ARRIBA

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
P	32	24N	7W		580	SOUTH	280	EAST	RIO ARRIBA

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 7031'
¹⁶ Multiple No	¹⁷ Proposed Depth 10,321' MD / 5,645' 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'	190	Surface
K-55	8-3/4"	7"	23#	6,045'	1050	Surface
N-80	6-1/8"	4-1/2"	11.6#	10,321'	420	5,220'

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

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	3000#	2000#	

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

Hold C104

Title: Permit Supervisor

for Directional Survey
and "As Drilled" plat

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

Date: 08/22/13

Phone: 333-1808

OIL CONSERVATION DIVISION

Approved By:

Chuck Lerner 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*

ry

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31196		² Pool Code 42289	³ Pool Name LYBROOK GALLUP
⁴ Property Code 40097	⁵ Property Name CHACO 2407-32M		⁶ Well Number 158H
⁷ OGRID No. 120782	⁸ Operator Name WPX ENERGY PRODUCTION, LLC		⁹ Elevation 7031'

¹⁰ Surface Location

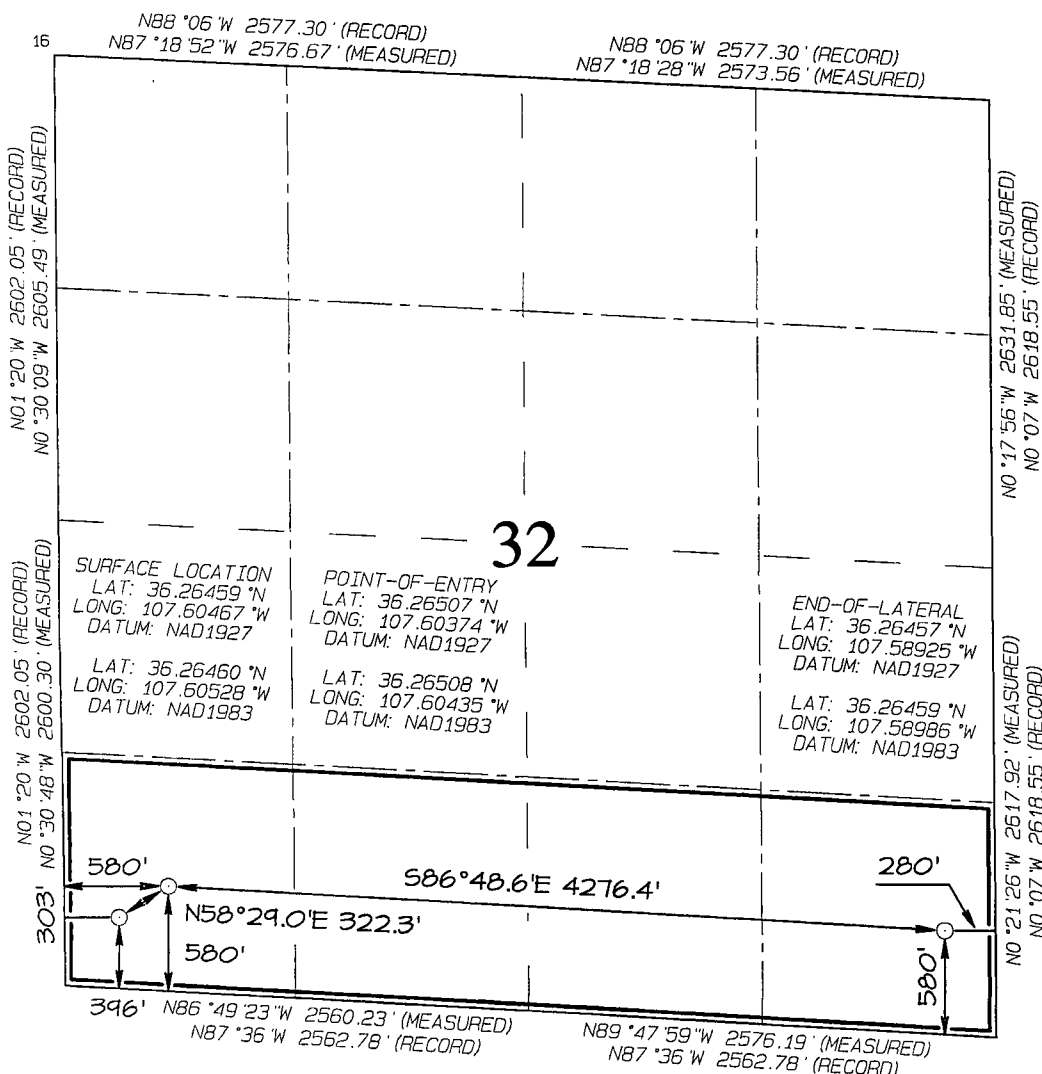
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	32	24N	7W		396	SOUTH	303	WEST	RIO ARRIBA

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	24N	7W		580	SOUTH	280	EAST	RIO ARBITA

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
160.0 Acres - (S/2 S/2)			

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 unless 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 the owner of a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Larry K. King Date 8/22/13

Larry Higgins

Printed Name
larry.higgins@wpenergy.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.

Survey Date: FEBRUARY 18, 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: 8/6/2013 **FIELD:** Lybrook Gallup

WELL NAME: Chaco 2407-32M #158H **SURFACE:** State

SHL: SWSW Sec 32 T24N-R7W **ELEVATION:** 7,031' GR

BHL: SESE Sec 32 T24N-R7W

County: Rio Arriba **MINERALS:** State

MEASURED DEPTH: 10,321' **LEASE #:** E6833-23

I. GEOLOGY: Surface formation – San Jose

A. FORMATION TOPS: (KB)

Name	MD	TVD	Name	MD	TVD
Ojo Alamo	1,395	1,392	Point Lookout	4,391	4,376
Kirtland	1,541	1,537	Mancos	4,591	4,576
Pictured Cliffs	1,996	1,990	Kickoff Point	5,217	5,202
Lewis	2,249	2,242	Target Top	5,729	5,634
Chacra	2,955	2,945	Landing Point	6,045	5,723
Cliff House	3,603	3,590	Target Base	6,045	5,723
Menefee	3,696	3,682			
			TD	10,321	5,645

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

C. LOGGING PROGRAM: MWD: GR for curve and MWD: GR / SONIC 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 water based mud (WBM) will be used to drill the 8 3/4" Vertical/Directional, and Curve portion of the well. Oil based mud (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 1800 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") will be vertically/directionally drilled as per attached Directional Plan to +/- 5,217' MD / 5,202' TVD. The 8 3/4" curve portion of wellbore will be drilled and landed at +/- 90 deg. at +/- 6,045' MD / 5,723' TVD. 7" csg. will be set at this point. Will drill the 6-1/8" Lateral as per the Directional Plan to a total depth of +/-10,321' MD / 5,645' (TVD). Will run 4-1/2" Production Casing to TD and cement.

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

<u>CASING TYPE</u>	<u>HOLE SIZE</u>	<u>DEPTH (MD)</u>	<u>CASING SIZE</u>	<u>WEIGHT</u>	<u>GRADE</u>
Surface	12.25"	+/- 400'	9.625"	36#	J-55
Intermediate	8.75"	6,045'	7"	23#	K-55
Longstring	6.125"	10,321'	4.5"	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. Then run (1) centralizer at 2,700', 2,500', 2,300', 2,000', 1,500', and 1,000'.
3. PRODUCTION CASING: Run 4-1/2" casing with cement nose guide Float Shoe + 1jt. of 4-1/2" casing + Float Collar. Number of centralizers to run will be determined by wellbore condition and 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 + 190 sx (222.3 cu.ft.) of "Premium Cement" + 2% Calcium Chloride Cement + 0.125# pps of Poly-E-Flake, 15.8 #/gal (1.17 cu ft./sk, Vol 39.58 Bbls.). The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 600psi. Total Volume: (222.3 cu-ft/190 sx/39.6 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 / TOTETANK + 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: (1461 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 / 61.1 bbls) + **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 Fr Water. Total Cement (420 sx / 568.5 cu ft / 101.2 bbls). Mix w/ +/- 98,000 SCF Nitrogen. Est. TOC +/- 5,220 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 near landing point of curve (~ 6,000' 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 2407-32M #158H R0 mdv 2Aug13 Proposal Geodetic Report

(Def Plan)



Report Date: August 02, 2013 - 10:08 AM
Client: WPX Energy
Field: NM, Rio Arriba (NAD 27 CZ)
Structure / Slot: WPX Energy 32-24N-7W (Chaco 2407-32M #158H) / Chaco 2407-32M #158H
Well: Chaco 2407-32M #158H
Borehole: Original Hole
UWI / API#: Unknown / Unknown
Survey Name: Chaco 2407-32M #158H R0 mdv 2Aug13
Survey Date: August 02, 2013
Tort / AHD / DDI / ERD Ratio: 102.051' / 5128.839 ft / 5.975 / 0.896
Coordinate Reference System: NAD27 New Mexico State Plane, Central Zone, US Feet
Location Lat / Long: N 36° 15' 52.52400", W 107° 36' 16.81200"
Location Grid N/E Y/X: N 1918313.903 ftUS, E 100634.306 ftUS
CRS Grid Convergence Angle: -0.8014°
Grid Scale Factor: 1.00008251

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 90.041° (True North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 7045.000 ft above Unknown
Seabed / Ground Elevation: 7031.000 ft above Unknown
Magnetic Declination: 9.548°
Total Gravity Field Strength: 998.4851mgm (9.80665 Bases)
Total Magnetic Field Strength: 50214.761 nT
Magnetic Dip Angle: 63.042°
Declination Date: August 02, 2013
Magnetic Declination Model: BGGM 2013
North Reference: True North
Grid Convergence Used: 0.0000°
Total Corr Mag North→True North: 9.5479°
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	307.58	0.00	0.00	0.00	0.00	N/A	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
	100.00	0.00	307.58	100.00	0.00	0.00	0.00	0.00	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
	200.00	0.00	307.58	200.00	0.00	0.00	0.00	0.00	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
	300.00	0.00	307.58	300.00	0.00	0.00	0.00	0.00	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
	400.00	0.00	307.58	400.00	0.00	0.00	0.00	0.00	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
	500.00	0.00	307.58	500.00	0.00	0.00	0.00	0.00	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
KOP, Build 2"/100'	550.00	0.00	307.58	550.00	0.00	0.00	0.00	0.00	1918313.90	100634.31	N 36 15 52.52	W 107 36 16.81
	600.00	1.00	307.58	600.00	-0.35	0.27	-0.35	2.00	1918314.17	100633.96	N 36 15 52.53	W 107 36 16.82
	700.00	3.00	307.58	699.93	-3.11	2.39	-3.11	2.00	1918316.34	100631.23	N 36 15 52.55	W 107 36 16.85
	800.00	5.00	307.58	799.68	-8.64	6.65	-8.64	2.00	1918320.67	100625.76	N 36 15 52.59	W 107 36 16.92
Hold 5.5" INC	825.14	5.50	307.58	824.72	-10.47	8.05	-10.46	2.00	1918322.10	100623.96	N 36 15 52.60	W 107 36 16.94
	900.00	5.50	307.58	899.23	-16.16	12.43	-16.15	0.00	1918326.56	100618.33	N 36 15 52.65	W 107 36 17.01
	1000.00	5.50	307.58	998.77	-23.76	18.28	-23.75	0.00	1918332.51	100610.81	N 36 15 52.70	W 107 36 17.10
	1100.00	5.50	307.58	1098.31	-31.37	24.13	-31.35	0.00	1918338.47	100603.29	N 36 15 52.76	W 107 36 17.19
	1200.00	5.50	307.58	1197.85	-38.97	29.98	-38.95	0.00	1918344.43	100595.78	N 36 15 52.82	W 107 36 17.29
	1300.00	5.50	307.58	1297.39	-46.57	35.83	-46.55	0.00	1918350.38	100588.26	N 36 15 52.88	W 107 36 17.38
	1400.00	5.50	307.58	1396.93	-54.18	41.68	-54.15	0.00	1918356.34	100580.74	N 36 15 52.94	W 107 36 17.47
	1500.00	5.50	307.58	1496.47	-61.78	47.52	-61.75	0.00	1918362.29	100573.22	N 36 15 52.99	W 107 36 17.57
	1600.00	5.50	307.58	1596.01	-69.38	53.37	-69.35	0.00	1918368.25	100565.71	N 36 15 53.05	W 107 36 17.66
	1700.00	5.50	307.58	1695.55	-76.99	59.22	-76.94	0.00	1918374.20	100558.19	N 36 15 53.11	W 107 36 17.75
	1800.00	5.50	307.58	1795.08	-84.59	65.07	-84.54	0.00	1918380.16	100550.67	N 36 15 53.17	W 107 36 17.84
	1900.00	5.50	307.58	1894.62	-92.19	70.92	-92.14	0.00	1918386.11	100543.16	N 36 15 53.23	W 107 36 17.94
	2000.00	5.50	307.58	1994.16	-99.80	76.77	-99.74	0.00	1918392.07	100535.64	N 36 15 53.28	W 107 36 18.03
	2100.00	5.50	307.58	2093.70	-107.40	82.62	-107.34	0.00	1918398.02	100528.12	N 36 15 53.34	W 107 36 18.12
	2200.00	5.50	307.58	2193.24	-115.00	88.47	-114.94	0.00	1918403.98	100520.60	N 36 15 53.40	W 107 36 18.22
	2300.00	5.50	307.58	2292.78	-122.61	94.32	-122.54	0.00	1918409.93	100513.09	N 36 15 53.46	W 107 36 18.31
	2400.00	5.50	307.58	2392.32	-130.21	100.16	-130.14	0.00	1918415.89	100505.57	N 36 15 53.51	W 107 36 18.40
	2500.00	5.50	307.58	2491.86	-137.82	106.01	-137.74	0.00	1918421.84	100498.05	N 36 15 53.57	W 107 36 18.49
	2600.00	5.50	307.58	2591.40	-145.42	111.86	-145.34	0.00	1918427.80	100490.53	N 36 15 53.63	W 107 36 18.59
	2700.00	5.50	307.58	2690.94	-153.02	117.71	-152.94	0.00	1918433.75	100483.02	N 36 15 53.69	W 107 36 18.68
	2800.00	5.50	307.58	2790.48	-160.63	123.56	-160.54	0.00	1918439.71	100475.50	N 36 15 53.75	W 107 36 18.77
	2900.00	5.50	307.58	2890.02	-168.23	129.41	-168.14	0.00	1918445.66	100467.98	N 36 15 53.80	W 107 36 18.87
	3000.00	5.50	307.58	2989.55	-175.83	135.26	-175.73	0.00	1918451.62	100460.47	N 36 15 53.86	W 107 36 18.96
	3100.00	5.50	307.58	3089.09	-183.44	141.11	-183.33	0.00	1918457.57	100452.95	N 36 15 53.92	W 107 36 19.05
	3200.00	5.50	307.58	3188.63	-191.04	146.96	-190.93	0.00	1918463.53	100445.43	N 36 15 53.98	W 107 36 19.14
	3300.00	5.50	307.58	3288.17	-198.64	152.80	-198.53	0.00	1918469.48	100437.91	N 36 15 54.04	W 107 36 19.24
	3400.00	5.50	307.58	3387.71	-206.25	158.65	-206.13	0.00	1918475.44	100430.40	N 36 15 54.09	W 107 36 19.33
	3500.00	5.50	307.58	3487.25	-213.85	164.50	-213.73	0.00	1918481.39	100422.88	N 36 15 54.15	W 107 36 19.42
	3600.00	5.50	307.58	3586.79	-221.45	170.35	-221.33	0.00	1918487.35	100415.36	N 36 15 54.21	W 107 36 19.51
	3700.00	5.50	307.58	3686.33	-229.06	176.20	-228.93	0.00	1918493.30	100407.84	N 36 15 54.27	W 107 36 19.61
	3800.00	5.50	307.58	3785.87	-236.66	182.05	-236.53	0.00	1918499.26	100400.33	N 36 15 54.32	W 107 36 19.70
	3900.00	5.50	307.58	3885.41	-244.26	187.90	-244.13	0.00	1918505.21	100392.81	N 36 15 54.38	W 107 36 19.79
Drop 2"/100'	3914.94	5.50	307.58	3900.28	-245.40	188.77	-245.26	0.00	1918506.10	100391.69	N 36 15 54.39	W 107 36 19.81
	4000.00	3.80	307.58	3985.05	-250.87	192.98	-250.73	2.00	1918510.39	100388.28	N 36 15 54.43	W 107 36 19.87
	4100.00	1.80	307.58	4084.93	-254.74	195.96	-254.60	2.00	1918513.42	100382.45	N 36 15 54.46	W 107 36 19.92
Hold Vertical	4190.00	0.00	307.58	4175.00	-255.87	196.83	-255.73	2.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4200.00	0.00	307.58	4184.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4300.00	0.00	307.58	4284.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4400.00	0.00	307.58	4384.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4500.00	0.00	307.58	4484.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4600.00	0.00	307.58	4584.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4700.00	0.00	307.58	4684.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4800.00	0.00	307.58	4784.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	4900.00	0.00	307.58	4884.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	5000.00	0.00	307.58	4984.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	5100.00	0.00	307.58	5084.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	5200.00	0.00	307.58	5184.91	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
KOP, Build 11"/100'	5217.30	0.00	307.58	5202.22	-255.87	196.83	-255.73	0.00	1918514.30	100381.34	N 36 15 54.47	W 107 36 19.93
	5300.00	9.10	92.39	5284.57	-249.32	196.55	-249.18	11.00	1918513.94	100387.88	N 36 15 54.47	W 107 36 19.85
	5400.00	20.10	92.39	5381.19	-224.18	195.50	-224.04	11.00	1918512.54	100413.00	N 36 15 54.46	W 107 36 19.55
	5500.00	31.10	92.39	5471.24	-181.08	193.71	-180.94	11.00	1918510.14	100456.08	N 36 15 54.44	W 107 36 19.02
	5600.00	42.10	92.39	5551.40	-121.60	191.23	-121.46	11.00	1918506.83	100515.52	N 36 15 54.42	W 107 36 18.30
	5700.00	53.10	92.39	5618.73	-47.94	188.16	-47.80	11.00	1918502.73	100589.14	N 36 15 54.38	W 107 36 17.40
	5800.00	64.10	92.39	5670.76	37.21	184.61	37.35	11.00	1918497.99	100674.23	N 36 15 54.35	W 107 36 16.36
	5900.00	75.10	92.39	5705.57	130.72	180.72	130.85	11.00	1918492.79	100767.68	N 36 15 54.31	W 107 36 15.21
	6000.00	86.10	92.39	5721.88	229.14	176.61	229.27	11.00	1918487.31	100866.04	N 36 15 54.27	W 107 36 14.01
Landing Point, Hold to TD	6044.98	91.05	92.39	5723.00	274.06	174.74	274.19	11.00	1918484.81	100910.93	N 36 15 54.25	W 107 36 13.46
	6100.00	91.05	92.39	5722.00	329.02	172.45	329.14	0.00	1918481.75	100965.86	N 36 15 54.23	W 107 36 12.79
	6200.00	91.05	92.39	5720.17	428.92	168.29	429.04	0.00	1918476.19	101065.69	N 36 15 54.19	W 107 36 11.57
	6300.00	91.05	92.39	5718.35	528.82	164.13	528.94	0.00	1918470.63	101165.53	N 36 15 54.15	W 107 36 10.35
	6400.00	91.05	92.39	5716.53	628.72	159.96	628.83	0.00	1918465.07	101265.37	N 36 15 54.11	W 107 36 9.13
	6500.00	91.05	92.39	5714.70	728.62	155.80	728.73	0.00	1918459.51	101365.20	N 36	

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	91.05	92.39	5703.76	1328.02	130.82	1328.11	0.00	1918426.15	101964.22	N 36 15 53.82	W 107 36 0.60
	7200.00	91.05	92.39	5701.93	1427.92	126.66	1428.01	0.00	1918420.59	102064.06	N 36 15 53.78	W 107 35 59.38
	7300.00	91.05	92.39	5700.11	1527.82	122.50	1527.90	0.00	1918415.03	102163.90	N 36 15 53.73	W 107 35 58.16
	7400.00	91.05	92.39	5698.29	1627.72	118.34	1627.80	0.00	1918409.47	102263.73	N 36 15 53.69	W 107 35 56.94
	7500.00	91.05	92.39	5696.46	1727.61	114.17	1727.70	0.00	1918403.91	102363.57	N 36 15 53.65	W 107 35 55.72
	7600.00	91.05	92.39	5694.64	1827.51	110.01	1827.59	0.00	1918398.35	102463.41	N 36 15 53.61	W 107 35 54.50
	7700.00	91.05	92.39	5692.81	1927.41	105.85	1927.49	0.00	1918392.79	102563.24	N 36 15 53.57	W 107 35 53.28
	7800.00	91.05	92.39	5690.99	2027.31	101.69	2027.39	0.00	1918387.23	102663.08	N 36 15 53.53	W 107 35 52.06
	7900.00	91.05	92.39	5689.17	2127.21	97.52	2127.28	0.00	1918381.67	102762.92	N 36 15 53.49	W 107 35 50.84
	8000.00	91.05	92.39	5687.34	2227.11	93.36	2227.18	0.00	1918376.11	102862.75	N 36 15 53.45	W 107 35 49.62
	8100.00	91.05	92.39	5685.52	2327.01	89.20	2327.08	0.00	1918370.55	102962.59	N 36 15 53.41	W 107 35 48.40
	8200.00	91.05	92.39	5683.69	2426.91	85.03	2426.97	0.00	1918364.99	103062.43	N 36 15 53.36	W 107 35 47.18
	8300.00	91.05	92.39	5681.87	2526.81	80.87	2526.87	0.00	1918359.43	103162.26	N 36 15 53.32	W 107 35 45.96
	8400.00	91.05	92.39	5680.05	2626.71	76.71	2626.77	0.00	1918353.87	103262.10	N 36 15 53.28	W 107 35 44.74
	8500.00	91.05	92.39	5678.22	2726.61	72.55	2726.66	0.00	1918348.31	103361.94	N 36 15 53.24	W 107 35 43.52
	8600.00	91.05	92.39	5676.40	2826.51	68.38	2826.56	0.00	1918342.75	103461.77	N 36 15 53.20	W 107 35 42.30
	8700.00	91.05	92.39	5674.57	2926.41	64.22	2926.46	0.00	1918337.19	103561.61	N 36 15 53.16	W 107 35 41.08
	8800.00	91.05	92.39	5672.75	3026.31	60.06	3026.35	0.00	1918331.63	103661.45	N 36 15 53.12	W 107 35 39.86
	8900.00	91.05	92.39	5670.93	3126.21	55.89	3126.25	0.00	1918326.07	103761.28	N 36 15 53.08	W 107 35 38.64
	9000.00	91.05	92.39	5669.10	3226.11	51.73	3226.15	0.00	1918320.51	103861.12	N 36 15 53.03	W 107 35 37.42
	9100.00	91.05	92.39	5667.28	3326.01	47.57	3326.04	0.00	1918314.95	103960.96	N 36 15 52.99	W 107 35 36.20
	9200.00	91.05	92.39	5665.45	3425.91	43.41	3425.94	0.00	1918309.39	104060.79	N 36 15 52.95	W 107 35 34.98
	9300.00	91.05	92.39	5663.63	3525.81	39.24	3525.84	0.00	1918303.83	104160.63	N 36 15 52.91	W 107 35 33.76
	9400.00	91.05	92.39	5661.81	3625.71	35.08	3625.73	0.00	1918298.27	104260.47	N 36 15 52.87	W 107 35 32.54
	9500.00	91.05	92.39	5659.98	3725.61	30.92	3725.63	0.00	1918292.71	104360.30	N 36 15 52.83	W 107 35 31.32
	9600.00	91.05	92.39	5658.16	3825.51	26.75	3825.53	0.00	1918287.15	104460.14	N 36 15 52.79	W 107 35 30.10
	9700.00	91.05	92.39	5656.34	3925.41	22.59	3925.42	0.00	1918281.59	104559.98	N 36 15 52.74	W 107 35 28.88
	9800.00	91.05	92.39	5654.51	4025.31	18.43	4025.32	0.00	1918276.03	104659.81	N 36 15 52.70	W 107 35 27.66
	9900.00	91.05	92.39	5652.69	4125.21	14.27	4125.22	0.00	1918270.47	104759.65	N 36 15 52.66	W 107 35 26.44
	10000.00	91.05	92.39	5650.86	4225.11	10.10	4225.11	0.00	1918264.91	104859.49	N 36 15 52.62	W 107 35 25.22
	10100.00	91.05	92.39	5649.04	4325.01	5.94	4325.01	0.00	1918259.35	104959.32	N 36 15 52.58	W 107 35 24.00
	10200.00	91.05	92.39	5647.22	4424.91	1.78	4424.91	0.00	1918253.79	105059.16	N 36 15 52.54	W 107 35 22.78
	10300.00	91.05	92.39	5645.39	4524.80	-2.38	4524.80	0.00	1918248.23	105159.00	N 36 15 52.50	W 107 35 21.56
Chaco 2407-32M #158H PBHL/TD	10321.46	91.05	92.39	5645.00	4546.25	-3.28	4546.24	0.00	1918247.03	105180.43	N 36 15 52.49	W 107 35 21.30

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 2407-32M #158H R0 mdv 2Aug13
	14.000	10321.463	1/100.000	30.000	30.000	SLB_MWD-STD	Original Hole / Chaco 2407-32M #158H R0 mdv 2Aug13

WELL	Chaco 2407-32M #158H	FIELD	NM, Rio Arriba (NAD 27 CZ)	STRUCTURE	32-24N-7W
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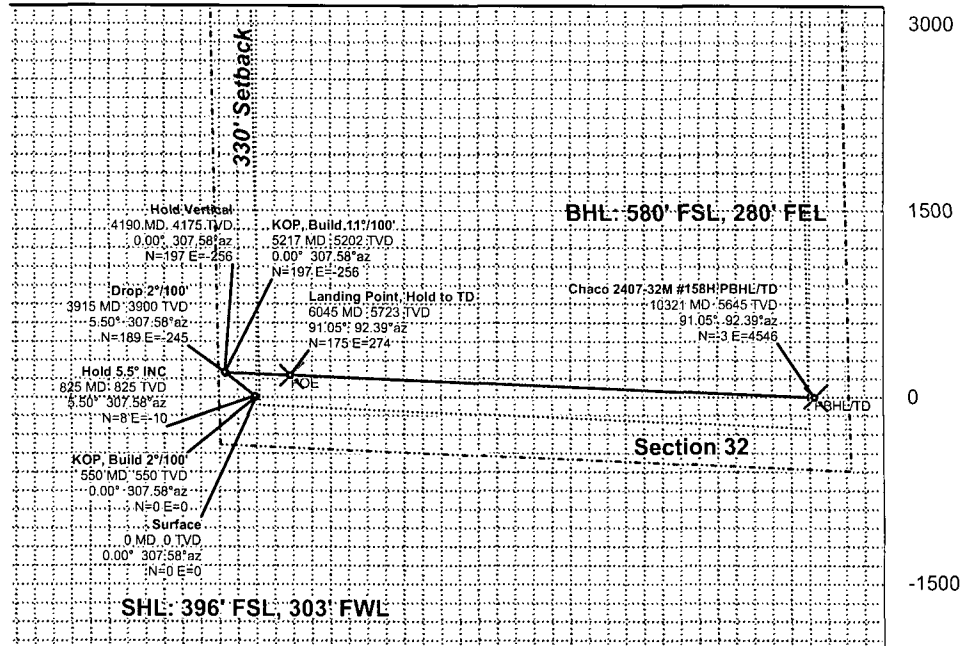
Magnetic Parameters	Model: BGM 2013	Dip: 63.042°	Date: August 02, 2013	Surface Location	Lat: N 36 15 52.524	Long: W 107 36 18.612	NAD27 New Mexico State Plane, Central Zone, US Feet	North: 191813.90 NUS	East: 100634.31 NUS	Grid Conv: -0.801°	Scale Fact: 1.00028251	Miscellaneous	Slot: Chaco 2407-32M #158H	TVD Ref: RK13(7045ft above Unknown)	Srvy Date: August 02, 2013
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Proposal

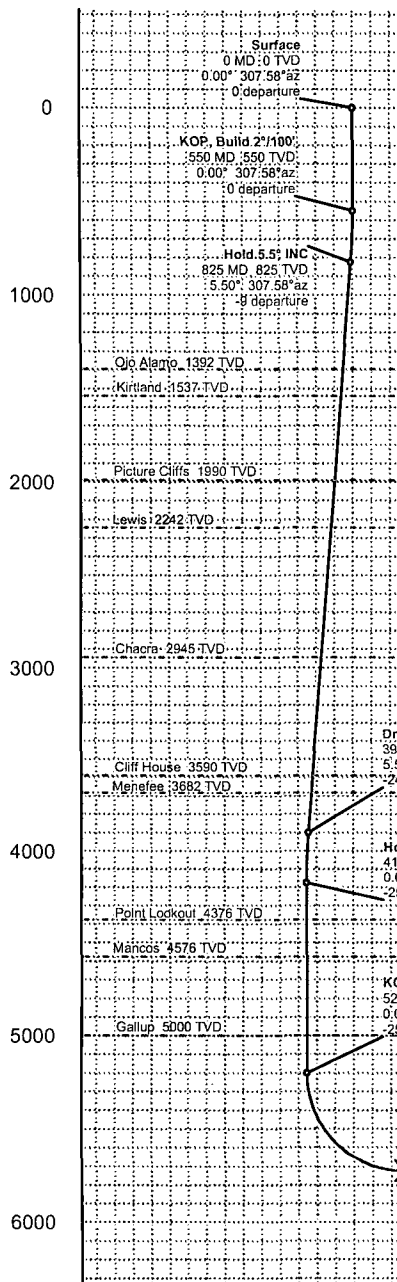


True North
Tot Corr (M->T 9.5479°)
Mag Dec (9.548°)
Grid Conv (-0.801°)

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



TVD Scale = 1:1000(ft)



Critical Point	MD	INCL	AZIM	TVD	VSEC	N(±)/S(±)	E(±)/W(±)	DLS
Surface	0.00	0.00	307.58	0.00	0.00	0.00	0.00	0.00
KOP, Build 2°/100'	550.00	0.00	307.58	550.00	0.00	0.00	0.00	0.00
Hold 5.5° INC	825.14	5.50	307.58	824.72	-10.47	8.05	-10.46	2.00
Drop 2°/100'	3914.94	5.50	307.58	3900.28	-245.40	188.77	-245.26	0.00
Hold Vertical	4190.09	0.00	307.58	4175.00	-255.87	196.83	-255.73	2.00
KOP, Build 11°/100'	5217.30	0.00	307.58	5202.22	-255.87	196.83	-255.73	0.00
Landing Point, Hold to TD	6044.98	91.05	92.39	5723.00	274.06	174.74	274.19	11.00
Chaco 2407-32M #158H PBHL/TD	10321.46	91.05	92.39	5645.00	4546.25	-3.28	4546.24	0.00

Quality Control
Date Drawn: August 02, 2013
10:10:16 AM
Drawn by: Matt VanderSchaaf
Checked by:
Client OK:

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