

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:

Application Type:

☐ P&A ☒ Drilling/Casing Change ☐ Recomplete/DHC
☒ Location Change ☐ Other: Change BHL and SHL

Well information:

WPX Energy
Chaco 2306-19M #190H
30-043-21189
UL M S19 T23N R6W

Conditions of Approval:

Notify NMOCD 24hrs prior to beginning operations

Hold C-104 for NSL, as drilled plat, directional survey

NMOCD Approved by Signature

3-19-14
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

MAR 04 2014

FORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007

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.

SUBMIT IN TRIPLICATE – Other instructions on page 2.

5. Lease Serial No. NMSF-078360
6. If Indian, Allottee or Tribe Name
7. If Unit of CA/Agreement, Name and/or No.
8. Well Name and No. Chaco 2306-19M #190H
9. API Well No. 30-043-21189
10. Field and Pool or Exploratory Area Lybrook Gallup
11. Country or Parish, State Sandoval County, NM

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator
WPX Energy Production, LLC

3a. Address
PO Box 640 Aztec, NM 87410

3b. Phone No. (include area code)
505-333-1808

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sur: 1205' FSL & 243' FWL, sec 19, T23N, R6W – BHL: 1582' FSL & 230' FWL, Sec 24, T23N, R7W

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	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other <u>Sur/BHL/Drilling change</u>
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate 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 recompleation 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.)

WPX plans to move the surface slightly for better rig access and change the lateral on this well as per attached C-102, operations plan and directional plan. No new surface disturbance is required. 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.

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations.

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

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed) Larry Higgins	Title Permit Supervisor
Signature <i>Larry Higgins</i>	Date 3/4/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by <i>William Tambekou</i>	Petroleum Title Engineer	Date 3/14/2014
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 FFD	

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)

NMOCDA

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

RECEIVED

MAR 04 2014

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21189		*Pool Code 42289	*Pool Name LYBROOK GALLUP
*Property Code 39731	*Property Name CHACO 2306-19M		*Well Number 190H
*OGRID No. 120782	*Operator Name WPX ENERGY PRODUCTION, LLC		*Elevation 7012'

10 Surface Location

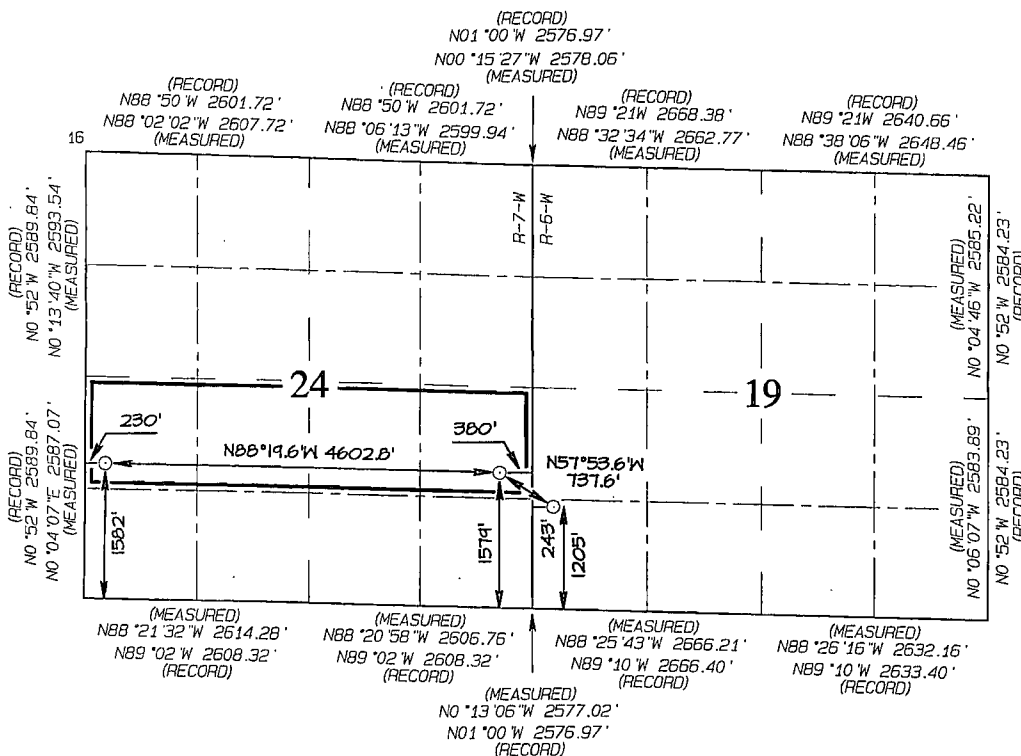
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	19	23N	6W		1205	SOUTH	243	WEST	SANDOVAL

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
L	24	23N	7W		1582	SOUTH	230	WEST	SANDOVAL

12 Dedicated Acres 160.0 Acres N/2 S/2 - Section 24	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



END-OF-LATERAL
1582' FSL 230' FWL
SECTION 24, T23N, R7W
LAT: 36.20859°N
LONG: 107.53455°W
DATUM: NAD1927

POINT-OF-ENTRY
1579' FSL 380' FEL
SECTION 19, T23N, R6W
LAT: 36.20839°N
LONG: 107.51895°W
DATUM: NAD1927

SURFACE LOCATION
1205' FSL 243' FWL
SECTION 19, T23N, R6W
LAT: 36.20733°N
LONG: 107.51682°W
DATUM: NAD1927

LAT: 36.20861°N
LONG: 107.53515°W
DATUM: NAD1983

LAT: 36.20840°N
LONG: 107.51956°W
DATUM: NAD1983

LAT: 36.20735°N
LONG: 107.51742°W
DATUM: NAD1983

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: 3/4/14
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: JANUARY 14, 2014
Survey Date: FEBRUARY 15, 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: 01/16/2014 **FIELD:** Lybrook (Gallup)

WELL NAME: Chaco 2306-19M #190H **SURFACE:** BLM

SH Location: SWSW Sec 19-23N-6W **ELEVATION:** 7,012' GR

BH Location: NWSW Sec 24-23N-7W
Sandoval Co, NM **MINERALS:** BLM

MEASURED DEPTH: 10,535' **LEASE #:** NMSF-078360

I. GEOLOGY: Surface formation – San Jose

A. FORMATION TOPS: (KB)

Name	MD	TVD	Name	MD	TVD
Ojo Alamo	1,396	1,391	Point Lookout	4,230	4,208
Kirtland	1,665	1,658	Mancos	4,426	4,404
Pictured Cliffs	1,952	1,943	Kickoff Point	4,863	4,840
Lewis	2,027	2,018	Target Top	5,679	5,460
Chacra	2,360	2,348	Landing Point	5,932	5,507
Cliff House	3,456	3,436	Target Base	5,932	5,507
Menefee	3,496	3,476			
			TD	10,535	5,438

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

C. LOGGING PROGRAM: LWD GR from surface casing to TD. LWD GR / E- 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, the 8 3/4" Directional Vertical hole, the curve portion of the wellbore. LSND (WBM) or (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 1300 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 directionally drilled as per attached Directional Plan to +/- 4,863' (MD) / 4,840' (TVD). Curve portion of wellbore will be drilled and landed at +/- 90 deg. at +/- 5,932' (MD) / 5,507' (TVD). 7 in. csg will be set at this point. A 6-1/8" Lateral will be drilled as per the attached Directional Plan to +/- 10,535' (MD) / 5,438' (TVD). Will run 4-1/2 in. Production Liner from +/- 5782 ft. to TD and cemented. Liner will be tied back to surface w / 4-1/2" Casing for stimulation / testing, then removed from the well.

III. MATERIALS

A. CASING PROGRAM:

CASING TYPE	OH SIZE (IN)	DEPTH (MD) (FT)	CASING SIZE (IN)	WEIGHT(LB)	GRADE
Surface	12.25"	400'+	9 5/8	36#	J-55
Intermediate	8.75"	5,932'	7	23#	K-55
Prod. Liner	6.125"	5,782' - 10,535'	4-1/2"	11.6#	N-80
Tie-Back String	N/A	Surf. - 5,782'	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 LINER: Run 4-1/2" Liner with cement nose guide Float Shoe + 2jts. of 4-1/2" casing + Landing Collar + 4-1/2" pup joint + (2) RSI (Sliding Sleeves) positioned inside 330ft Hard line. Centralizer program will be determined by Wellbore condition and when Lateral is evaluated by Geoscientists and Reservoir Engineers. Set seals on Liner Hanger. Test TOL to 1500 psi for 15 minutes.
4. TIE-BACK CASING: None

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 + 0.1% Halad 766 + 0.2% Versaset + 1.5% Chem-Foamer 760 (Yield :1.43 cu-ft/ sk. / Vol: 1216 cu-ft / 216.5 Bbls.) + TAIL: 100 sx 13.5 #/gal. + 0.2% Versaset + 0.15% HALAD-766 (Yield: 1.28 cu-ft / sk / Vol: 128 cu-ft / 22.8 Bbls.). + Fresh Water Displacement (1,362 cu-ft / +/- 242 Bbls) + 100 sx Top-Out Cement Premium: Yield: (1.17 cu-ft/ sk / (Vol: 117 cu-ft / 20.8 Bbls). Test Casing to 1500 PSI for 30 minutes. Total Cement Volume: (1050 sx / 1461 cu-ft / 260 bbls). Mix with +/- 84,000 SCF Nitrogen. TOC at surface.
3. PRODUCTION LINER: **STAGE 1**:10 bbl (56.cu-ft) Fr Water Spacer. **STAGE 2**:40 bbl 9.5 ppg (224.6 cu-ft) Tuned Spacer III + 0.5 gal/bbl Musol + 38.75 ppb Barite + 0.5 gal/bbl SEM-7. **STAGE 3**: 10 bbl Fr Water Spacer. **STAGE 4: Lead Cement**: 50 / 50 Poz Premium + 0.2% Versaset + 0.2% Halad -766, Yield 1.43 cu ft/sk, 13.0 ppg, (10 sx / 14.3 cu ft. / 2.5 bbls). **STAGE 5**: 200 sx. Foamed Lead Cement: 50 / 50 Poz Standard + 0.2% Versaset + 0.2% HALAD-766 + 1.5% Chem-Foamer 760. Yield 1.97 cu-ft/sk. 13.0 ppg (200 sx / 394 cu-ft. / 70.2 bbls.). **STAGE 6**: Tail Cement : 100 sx. 50/50 Poz Standard + 0.2% Versaset + 0.05% HALAD-766 + .05% SA-1015, Weight: 13.5 ppg (100 sx / Yield 1.28 cu ft/sk. / 128 cu ft. / 22.8 bbls) **STAGE 7**: Displace w/ +/- 137 bbl Fr Water. Total Cement (310 sx / 536.3 cu ft / 95.5 bbls). Mix Foamed Cement w/ +/- 75,000 SCF Nitrogen. Est. TOC +/- 5,482 ft.

IV. COMPLETION

A. CBL

1. Run CCL for perforating.

B. PRESSURE TEST

1. Pressure test 4-1/2" casing to 4500 psi max, hold at 1500 psi for 30 minutes. Open RSI sleeves.

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 and flowback lateral.

D. RUNNING TUBING

1. Production Tubing: Run 2-7/8", 6.5#, J-55, EUE tubing with a SN on top of bottom joint. Land tubing near Top of Liner point of curve (~5,930' 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.
-

NOTE:

Installation of RSI sleeves at Toe of Lateral.

Proposed Operations:

A 4-1/2" 11.6# N-80 Liner will be run to TD and landed +/- 150 ft. into the 7" 23# K-55 Intermediate casing (set at 5,932 ft. MD) with a Liner Hanger and pack-off assembly then cemented to +/- 300 ft above the liner hanger. TOL will be +/- 5,782 ft. (MD) +/- 77 degree angle. TOC: +/- 5,482 ft. (MD).

After cementing and TOL clean up operations are complete, the TOL will be tested to 1500 psi (per BLM).

A 4-1/2" 11.6# N-80 tie-back string with seal assembly will be run and stung into the PBR of the liner hanger, tested to 1500 PSI and hung off at the surface.

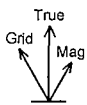
The Drilling Rig will be rigged down at this point and Completion operations will begin. After Stimulation and Testing operations are complete the 4-1/2" tie-back string will be removed from the well.

Note: Changes to formation tops, casing landing points, well TD and Directional Plan

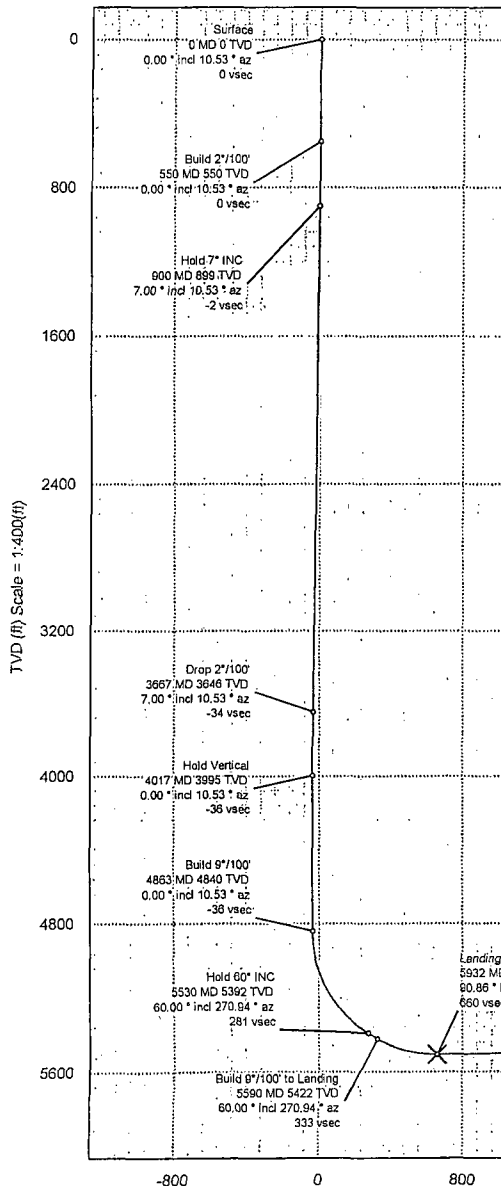
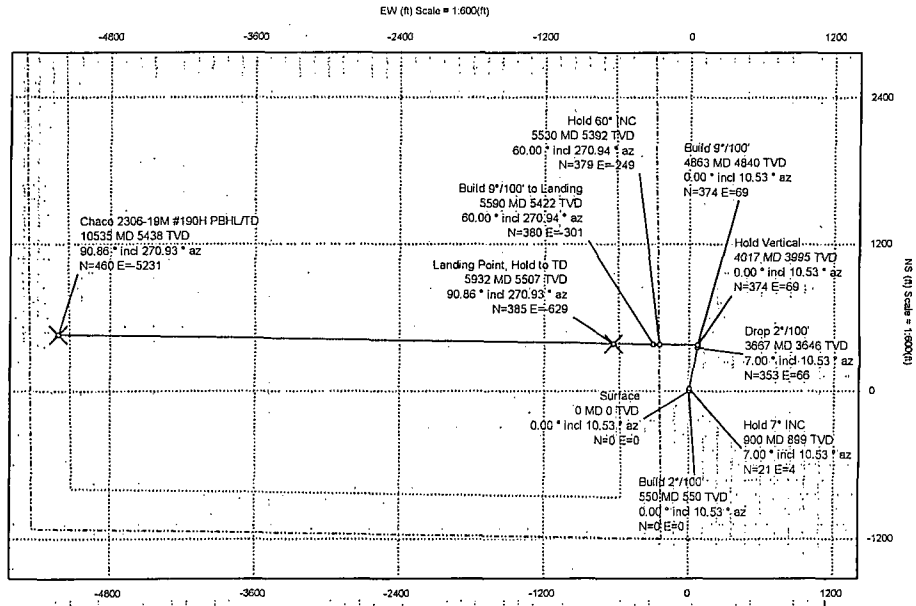
Borehole:	Well:	Field:	Structure:
Original Hole	Chaco 2306-19M #190H	NM Sandoval County NAD27	Sec 19-23N-6W

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Model: BGGM 2013 Dip: 62.996° Date: 08-Jan-2014	NAD27 New Mexico State Plane, Central Zone, US Feet	Slot: Chaco 2306-19M #190H
MagDec: 9.458° FS: 50142.221nT Gravity FS: 998.914mgm (9.80665 Based)	Lat: N 36 12 26.39 Northing: 1897118.778ft Grid Conv: -0.7484°	TVD Ref: RKB(7026ft above MSL)
	Lon: W 107 31 0.55 Easting: 126261.916ftU S Scale Fact: 1.00005984	Plan: Chaco 2306-19M #190H R2 mdv 15Jan14

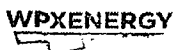
Proposal



True North
Tot Corr (M→T 9.458°)
Mag Dec (9.458°)
Grid Conv (-0.748°)



Surface Location									
Northing: 1897118.778		Easting: 126261.916		Latitude: N 36 12 26.39		Longitude: W 107 31 0.55		VSec Azimuth: 275.027	
Target Description		Grid Coord						Local Coord	
Target Name	Latitude	Longitude	Northing	Easting	TVD	VSec	N(+)/S(-)	E(+)/W(-)	
Chaco 2306-19M #190H PBHLTD	N 36 12 30.93	W 107 32 4.37	1897647.21	121037.55	5438.00	5250.72	460.12	-5230.52	
Chaco 2306-19M #190H POE	N 36 12 30.20	W 107 31 8.22	1897512.11	125638.35	5507.00	659.94	385.13	-628.61	
Chaco 2306-19M #190 Section Line	N 36 12 26.89	W 107 31 0.16	1897169.32	126295.04	7026.00	-27.86	50.97	32.46	
Chaco 2306-19M #190 330' Setback	N 36 12 26.89	W 107 31 0.16	1897169.32	126295.04	7026.00	-27.86	50.97	32.46	
Critical Points									
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS	
Surface	0.00	0.00	10.52	0.00	0.00	0.00	0.00		
Build 2°/100'	550.00	0.00	10.52	550.00	0.00	0.00	0.00	0.00	
Hold 7° INC	900.17	7.00	10.52	899.30	-2.05	21.01	3.90	2.00	
Drop 2°/100'	3667.22	7.00	10.52	3645.70	-34.37	352.72	65.53	0.00	
Hold Vertical	4017.39	0.00	10.52	3995.00	-36.42	373.74	69.43	2.00	
Build 9°/100'	4862.84	0.00	10.52	4840.45	-36.42	373.74	69.43	0.00	
Hold 60° INC	5529.50	60.00	270.93	5391.78	281.08	378.93	-248.83	9.00	
Build 9°/100' to Landing	5589.50	60.00	270.93	5421.78	332.91	379.78	-300.79	0.00	
Landing Point, Hold to TD	5932.39	90.86	270.93	5507.00	659.94	385.12	-628.61	9.00	
Chaco 2306-19M #190H PBHLTD	10535.43	90.86	270.93	5438.00	5250.72	460.13	-5230.52	0.00	



Chaco 2306-19M #190H R2 mdv 15Jan14 Proposal Geodetic Report



(Def Plan)

Report Date: January 15, 2014 - 03:54 PM
Client: WPX Energy
Field: NM Sandoval County NAD27
Structure / Slot: WPX Sec 19-23N-6W (Chaco 2306-19M #190H) / Chaco 2306-19M #190H
Well: Chaco 2306-19M #190H
Borehole: Original Hole
UWI / API#: Unknown / Unknown
Survey Name: Chaco 2306-19M #190H R2 mdv 15Jan14
Survey Date: November 05, 2013
Tort / AHD / DDI / ERD Ratio: 104.889 * / 5880.786 ft / 8.057 / 1.032
Coordinate Reference System: NAD27 New Mexico State Plane, Central Zone, US Feet
Location Lat / Long: N 36° 12' 26.38800", W 107° 31' 0.55200"
Location Grid N/E Y/X: N 1897118.778 ftUS, E 126281.916 ftUS
CRS Grid Convergence Angle: -0.7484 *
Grid Scale Factor: 1.00005984
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 275.027 * (True North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 7026.000 ft above MSL
Seabed / Ground Elevation: 7012.000 ft above MSL
Magnetic Declination: 9.458 *
Total Gravity Field Strength: 998.9139mgn (0.80665 Based)
Gravity Model: DOX
Total Magnetic Field Strength: 50142.221 nT
Magnetic Dip Angle: 62.996 *
Declination Date: January 08, 2014
Magnetic Declination Model: BGGM 2013
North Reference: True North
Grid Convergence Used: 0.0000 *
Total Corr Mag North->True North: 9.4578 *
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	10.52	0.00	0.00	0.00	0.00	N/A	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
	100.00	0.00	10.52	100.00	0.00	0.00	0.00	0.00	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
	200.00	0.00	10.52	200.00	0.00	0.00	0.00	0.00	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
	300.00	0.00	10.52	300.00	0.00	0.00	0.00	0.00	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
	400.00	0.00	10.52	400.00	0.00	0.00	0.00	0.00	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
	500.00	0.00	10.52	500.00	0.00	0.00	0.00	0.00	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
Build 2"/100'	550.00	0.00	10.52	550.00	0.00	0.00	0.00	0.00	1897118.78	126261.92	N 36 12 26.39	W 107 31 0.55
	600.00	1.00	10.52	600.00	-0.04	0.43	0.08	2.00	1897119.21	126262.00	N 36 12 26.39	W 107 31 0.55
	700.00	3.00	10.52	699.93	-0.38	3.86	0.72	2.00	1897122.63	126262.68	N 36 12 26.43	W 107 31 0.54
	800.00	5.00	10.52	799.68	-1.04	10.72	1.99	2.00	1897129.47	126264.05	N 36 12 26.49	W 107 31 0.53
	900.00	7.00	10.52	899.13	-2.05	20.99	3.90	2.00	1897139.72	126266.09	N 36 12 26.60	W 107 31 0.50
Hold 7" INC	900.17	7.00	10.52	899.30	-2.05	21.01	3.90	2.00	1897139.74	126266.09	N 36 12 26.60	W 107 31 0.50
	1000.00	7.00	10.52	998.38	-3.21	32.98	6.13	0.00	1897151.68	126268.47	N 36 12 26.71	W 107 31 0.48
	1100.00	7.00	10.52	1097.64	-4.38	44.97	8.35	0.00	1897163.64	126270.86	N 36 12 26.83	W 107 31 0.45
	1200.00	7.00	10.52	1196.89	-5.55	56.96	10.58	0.00	1897175.60	126273.24	N 36 12 26.95	W 107 31 0.42
	1300.00	7.00	10.52	1296.15	-6.72	68.95	12.81	0.00	1897187.55	126275.63	N 36 12 27.07	W 107 31 0.40
	1400.00	7.00	10.52	1395.40	-7.89	80.93	15.04	0.00	1897199.51	126278.01	N 36 12 27.19	W 107 31 0.37
	1500.00	7.00	10.52	1494.65	-9.05	92.92	17.26	0.00	1897211.47	126280.39	N 36 12 27.31	W 107 31 0.34
	1600.00	7.00	10.52	1593.91	-10.22	104.91	19.49	0.00	1897223.43	126282.78	N 36 12 27.43	W 107 31 0.31
	1700.00	7.00	10.52	1693.16	-11.39	116.90	21.72	0.00	1897235.39	126285.16	N 36 12 27.54	W 107 31 0.29
	1800.00	7.00	10.52	1792.41	-12.56	128.88	23.94	0.00	1897247.35	126287.54	N 36 12 27.66	W 107 31 0.26
	1900.00	7.00	10.52	1891.67	-13.73	140.87	26.17	0.00	1897259.30	126289.93	N 36 12 27.78	W 107 31 0.23
	2000.00	7.00	10.52	1990.92	-14.89	152.86	28.40	0.00	1897271.26	126292.31	N 36 12 27.90	W 107 31 0.21
	2100.00	7.00	10.52	2090.18	-16.06	164.85	30.63	0.00	1897283.22	126294.69	N 36 12 28.02	W 107 31 0.18
	2200.00	7.00	10.52	2189.43	-17.23	176.83	32.85	0.00	1897295.18	126297.08	N 36 12 28.14	W 107 31 0.15
	2300.00	7.00	10.52	2288.68	-18.40	188.82	35.08	0.00	1897307.14	126299.46	N 36 12 28.26	W 107 31 0.12
	2400.00	7.00	10.52	2387.94	-19.57	200.81	37.31	0.00	1897319.10	126301.85	N 36 12 28.37	W 107 31 0.10
	2500.00	7.00	10.52	2487.19	-20.73	212.80	39.53	0.00	1897331.05	126304.23	N 36 12 28.49	W 107 31 0.07
	2600.00	7.00	10.52	2586.45	-21.90	224.79	41.76	0.00	1897343.01	126306.61	N 36 12 28.61	W 107 31 0.04
	2700.00	7.00	10.52	2685.70	-23.07	236.77	43.99	0.00	1897354.97	126309.00	N 36 12 28.73	W 107 31 0.02
	2800.00	7.00	10.52	2784.95	-24.24	248.76	46.22	0.00	1897366.93	126311.38	N 36 12 28.85	W 107 31 0.99
	2900.00	7.00	10.52	2884.21	-25.41	260.75	48.44	0.00	1897378.89	126313.76	N 36 12 28.97	W 107 31 0.96
	3000.00	7.00	10.52	2983.46	-26.58	272.74	50.67	0.00	1897390.85	126316.15	N 36 12 29.09	W 107 31 0.93
	3100.00	7.00	10.52	3082.72	-27.74	284.72	52.90	0.00	1897402.80	126318.53	N 36 12 29.20	W 107 31 0.91
	3200.00	7.00	10.52	3181.97	-28.91	296.71	55.12	0.00	1897414.76	126320.92	N 36 12 29.32	W 107 31 0.88
	3300.00	7.00	10.52	3281.22	-30.08	308.70	57.35	0.00	1897426.72	126323.30	N 36 12 29.44	W 107 31 0.85
	3400.00	7.00	10.52	3380.48	-31.25	320.69	59.58	0.00	1897438.68	126325.68	N 36 12 29.56	W 107 31 0.83
	3500.00	7.00	10.52	3479.73	-32.42	332.68	61.81	0.00	1897450.64	126328.07	N 36 12 29.68	W 107 31 0.80
Drop 2"/100'	3600.00	7.00	10.52	3578.98	-33.58	344.66	64.03	0.00	1897462.60	126330.45	N 36 12 29.80	W 107 31 0.77
	3667.22	7.00	10.52	3645.70	-34.37	352.72	65.53	0.00	1897470.63	126332.05	N 36 12 29.88	W 107 31 0.75
	3700.00	6.35	10.52	3678.26	-34.73	356.47	66.23	2.00	1897474.37	126332.80	N 36 12 29.91	W 107 31 0.74
	3800.00	4.35	10.52	3777.82	-35.63	365.63	67.93	2.00	1897483.51	126334.62	N 36 12 30.00	W 107 31 0.72
	3900.00	2.35	10.52	3877.64	-36.19	371.37	69.00	2.00	1897489.24	126335.76	N 36 12 30.06	W 107 31 0.71
	4000.00	0.35	10.52	3977.61	-36.41	373.68	69.43	2.00	1897491.55	126336.22	N 36 12 30.08	W 107 31 0.70
Hold Vertical	4017.39	0.00	10.52	3995.00	-36.42	373.74	69.43	2.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4100.00	0.00	10.52	4077.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4200.00	0.00	10.52	4177.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4300.00	0.00	10.52	4277.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4400.00	0.00	10.52	4377.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4500.00	0.00	10.52	4477.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4600.00	0.00	10.52	4577.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4700.00	0.00	10.52	4677.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4800.00	0.00	10.52	4777.61	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
Build 9"/100'	4862.84	0.00	10.52	4840.45	-36.42	373.74	69.43	0.00	1897491.60	126336.23	N 36 12 30.08	W 107 31 0.70
	4900.00	3.34	270.93	4877.59	-35.34	373.75	68.35	9.00	1897491.63	126335.15	N 36 12 30.08	W 107 31 0.72
	5000.00	12.34	270.93	4976.55	-21.74	373.98	54.72	9.00	1897492.03	126321.52	N 36 12 30.09	W 107 31 0.98
	5100.00	21.34	270.93	5072.16	7.14	374.45	25.77	9.00	1897492.88	126292.58	N 36 12 30.09	W 107 31 0.24
	5200.00	30.34	270.93	5162.07	50.58	375.16	-17.77	9.00	1897494.16	126249.05	N 36 12 30.10	W 107 31 0.77
	5300.00	39.34	270.93	5244.06	107.51	376.09	-74.84	9.00	1897495.84	126191.99	N 36 12 30.11	W 107 31 1.47
	5400.00	48.34	270.93	5316.10	176.53	377.22	-144.03	9.00	1897497.87	126122.82	N 36 12 30.12	W 107 31 2.31
	5500.00	57.34	270.93	5376.44	255.94	378.52	-223.64	9.00	1897500.21	126043.23	N 36 12 30.13	W 107 31 3.28
	5529.50	60.00	270.93	5391.78	281.08	378.93	-248.83	9.00	1897500.95	126018.04	N 36 12 30.14	W 107 31 3.59
Hold 60" INC Build 9"/100' to Landing	5589.50	60.00	270.93	5421.78	332.91	379.78	-300.79	0.00	1897502.47	125966.10	N 36 12 30.14	W 107 31 4.22
	5600.00	60.94	270.93	5426.95	342.02	379.93	-309.92	9.00	1897502.74	125956.97	N 36 12 30.15	W 107 31 4.33
	5700.00	69.94	270.93	5468.47	432.65	381.41	-400.77	9.00	1897505.41	125866.14	N 36 12 30.16	W 107 31 5.44
	5800.00	78.94	270.93	5495.28	528.64	382.98	-496.99	9.00	1897508.24	125769.94	N 36 12 30.18	W 107 31 6.62
	5900.00	87.94	270.93	5506.66	627.63	384.60	-596.22	9.00	1897511.15	125670.73	N 36 12 30.19	W 107 31 7.83
Landing Point, Hold to TD	5932.39	90.86	270.93	5507.00	659.94	385.12	-628.61	9.00	1897512.10	125638.35	N 36 12 30.20	W 107 31 8.22
	6000.00	90.86	270.93	5505.98	727.37	386.23	-696.20	0.00	1897514.09	125570.78	N 36 12 30.21	W 107 31 9.05
	6100.00	90.86	270.93	5504.48	827.10	387.86	-796.17	0.00	1897517.02	125470.83	N 36 12 30.22	W 107 31 10.27
	6200.00	90.86	270.93	5502.98	926.83	389.48	-896.15	0.00	1897519.96	125370.88	N 36 12 30.24	W 107 31 11.49
	6300.00	90.86										

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 ° ' '')
	6700.00	90.86	270.93	5495.48	1425.50	397.83	-1396.03	0.00	1897534.64	124871.12	N 36 12 30.32	W 107 31 17.59
	6800.00	90.86	270.93	5493.98	1525.24	399.26	-1496.00	0.00	1897537.57	124771.17	N 36 12 30.34	W 107 31 18.81
	6900.00	90.86	270.93	5492.48	1624.97	400.89	-1595.98	0.00	1897540.51	124671.22	N 36 12 30.35	W 107 31 20.03
	7000.00	90.86	270.93	5490.98	1724.70	402.52	-1695.95	0.00	1897543.44	124571.27	N 36 12 30.37	W 107 31 21.25
	7100.00	90.86	270.93	5489.48	1824.44	404.15	-1795.93	0.00	1897546.38	124471.32	N 36 12 30.38	W 107 31 22.47
	7200.00	90.86	270.93	5487.98	1924.17	405.78	-1895.90	0.00	1897549.31	124371.36	N 36 12 30.40	W 107 31 23.69
	7300.00	90.86	270.93	5486.48	2023.90	407.41	-1995.88	0.00	1897552.25	124271.41	N 36 12 30.42	W 107 31 24.91
	7400.00	90.86	270.93	5484.98	2123.64	409.04	-2095.86	0.00	1897555.19	124171.46	N 36 12 30.43	W 107 31 26.13
	7500.00	90.86	270.93	5483.48	2223.37	410.67	-2195.83	0.00	1897558.12	124071.51	N 36 12 30.45	W 107 31 27.34
	7600.00	90.86	270.93	5481.98	2323.10	412.30	-2295.81	0.00	1897561.06	123971.56	N 36 12 30.46	W 107 31 28.56
	7700.00	90.86	270.93	5480.48	2422.84	413.93	-2395.78	0.00	1897563.99	123871.61	N 36 12 30.48	W 107 31 29.78
	7800.00	90.86	270.93	5478.98	2522.57	415.56	-2495.76	0.00	1897566.83	123771.66	N 36 12 30.50	W 107 31 31.00
	7900.00	90.86	270.93	5477.48	2622.31	417.19	-2595.73	0.00	1897569.86	123671.70	N 36 12 30.51	W 107 31 32.22
	8000.00	90.86	270.93	5475.98	2722.04	418.82	-2695.71	0.00	1897572.80	123571.75	N 36 12 30.53	W 107 31 33.44
	8100.00	90.86	270.93	5474.48	2821.77	420.45	-2795.68	0.00	1897575.73	123471.80	N 36 12 30.54	W 107 31 34.66
	8200.00	90.86	270.93	5472.98	2921.51	422.08	-2895.66	0.00	1897578.67	123371.85	N 36 12 30.56	W 107 31 35.88
	8300.00	90.86	270.93	5471.49	3021.24	423.71	-2995.63	0.00	1897581.60	123271.90	N 36 12 30.58	W 107 31 37.10
	8400.00	90.86	270.93	5469.99	3120.97	425.34	-3095.61	0.00	1897584.54	123171.95	N 36 12 30.59	W 107 31 38.32
	8500.00	90.86	270.93	5468.49	3220.71	426.97	-3195.59	0.00	1897587.47	123072.00	N 36 12 30.61	W 107 31 39.54
	8600.00	90.86	270.93	5466.99	3320.44	428.59	-3295.56	0.00	1897590.41	122972.04	N 36 12 30.62	W 107 31 40.76
	8700.00	90.86	270.93	5465.49	3420.17	430.22	-3395.54	0.00	1897593.34	122872.09	N 36 12 30.64	W 107 31 41.98
	8800.00	90.86	270.93	5463.99	3519.91	431.85	-3495.51	0.00	1897596.28	122772.14	N 36 12 30.66	W 107 31 43.20
	8900.00	90.86	270.93	5462.49	3619.64	433.48	-3595.49	0.00	1897599.22	122672.19	N 36 12 30.67	W 107 31 44.42
	9000.00	90.86	270.93	5461.00	3719.38	435.11	-3695.46	0.00	1897602.15	122572.24	N 36 12 30.69	W 107 31 45.64
	9100.00	90.86	270.93	5459.50	3819.11	436.74	-3795.44	0.00	1897605.09	122472.29	N 36 12 30.70	W 107 31 46.86
	9200.00	90.86	270.93	5458.00	3918.84	438.37	-3895.41	0.00	1897608.02	122372.34	N 36 12 30.72	W 107 31 48.08
	9300.00	90.86	270.93	5456.50	4018.58	440.00	-3995.39	0.00	1897610.96	122272.38	N 36 12 30.74	W 107 31 49.30
	9400.00	90.86	270.93	5455.00	4118.31	441.63	-4095.37	0.00	1897613.89	122172.43	N 36 12 30.75	W 107 31 50.52
	9500.00	90.86	270.93	5453.51	4218.04	443.26	-4195.34	0.00	1897616.83	122072.48	N 36 12 30.77	W 107 31 51.74
	9600.00	90.86	270.93	5452.01	4317.78	444.89	-4295.32	0.00	1897619.76	121972.53	N 36 12 30.78	W 107 31 52.96
	9700.00	90.86	270.93	5450.51	4417.51	446.52	-4395.29	0.00	1897622.70	121872.58	N 36 12 30.80	W 107 31 54.18
	9800.00	90.86	270.93	5449.01	4517.25	448.15	-4495.27	0.00	1897625.63	121772.63	N 36 12 30.82	W 107 31 55.40
	9900.00	90.86	270.93	5447.51	4616.98	449.77	-4595.24	0.00	1897628.57	121672.67	N 36 12 30.83	W 107 31 56.62
	10000.00	90.86	270.93	5446.02	4716.71	451.40	-4695.22	0.00	1897631.50	121572.72	N 36 12 30.85	W 107 31 57.84
	10100.00	90.86	270.93	5444.52	4816.45	453.03	-4795.19	0.00	1897634.44	121472.77	N 36 12 30.86	W 107 31 59.06
	10200.00	90.86	270.93	5443.02	4916.18	454.66	-4895.17	0.00	1897637.37	121372.82	N 36 12 30.88	W 107 32 0.28
	10300.00	90.86	270.93	5441.52	5015.91	456.29	-4995.14	0.00	1897640.31	121272.87	N 36 12 30.90	W 107 32 1.50
	10400.00	90.86	270.93	5440.03	5115.65	457.92	-5095.12	0.00	1897643.24	121172.92	N 36 12 30.91	W 107 32 2.72
	10500.00	90.86	270.93	5438.53	5215.38	459.55	-5195.10	0.00	1897646.18	121072.97	N 36 12 30.93	W 107 32 3.94
Chaco 2306-19M #190H PBHL/TD	10535.43	90.86	270.93	5438.00	5250.72	460.13	-5230.52	0.00	1897647.21	121037.55	N 36 12 30.93	W 107 32 4.37

Survey Type: Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	14.000	1/100.000	30.000	30.000	SLB_MWD-STD-Depth Only	Original Hole / Chaco 2306-19M #190H R2 mdv 15Jan14
	1	14.000	10535.429	1/100.000	30.000	30.000	SLB_MWD-STD	Original Hole / Chaco 2306-19M #190H R2 mdv 15Jan14

$$PBHL \left\{ \begin{array}{l} Y-P \ 1205+460.13 = 1665.13 \approx 1665 \text{ ft/s} \quad (\text{Sec: } 24; T: 23N; R: 7W) \\ X-P \ 243+5221.04-5230.52 = 233.52 \approx 234 \text{ ft/w} \quad (\text{Sec: } 24; T: 23N; R: 7W) \end{array} \right.$$

William Tambekau
3/13/2014