

Submit 1 Copy To Appropriate District Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
Revised July 18, 2013

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-045-27535
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Federal 32 6 9
8. Well Number 1
9. OGRID Number 000778
10. Pool name or Wildcat Basin Fruitland Coal

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	
1. Type of Well: Oil Well ☐ Gas Well ☒ Other	
2. Name of Operator BP America Production Company	
3. Address of Operator 737 North Eldridge Pkwy, 12.181A Houston, TX 77079	
4. Well Location Unit Letter A : 512 feet from the North line and 206 feet from the East line Section 09 Township 32N Range 06W NMPM County San Juan	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6105'	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐
CLOSED-LOOP SYSTEM ☒
OTHER: **Sidetrack** ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐
OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

BP America Production Company respectfully requests to sidetrack the subject well into the Fruitland Coal formation.

The surface hole location for the Federal 32 6 9 #1 well reads differently on the attached C-102's due to the increased accuracy of our surveying methods. The existing well location was surveyed by Marshall Lindeen 10/08/2015.

BP has proposed 3 laterals for the subject well:

Lateral 1

Lateral 1 ST 1

Lateral 2

OIL CONS. DIV DIST. 3

NOV 23 2015

Please see the attached drilling plan, directional plans, and C-102 plats.

Spud Date:

05/13/1990

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

Toya Colvin

TITLE Regulatory Analyst

DATE 11/20/2015

Type or print name

Toya Colvin

E-mail address:

Toya.Colvin@bp.com

PHONE:

281-366-7148

For State Use Only

APPROVED BY:

Sundry to withdraw Side-track See next doc.

Conditions of Approval (if any):

AV

NOV 23 2015

Attachment to Sundry
Sidetrack Drilling ProgramBP America Production Company
US Lower 48 Onshore
200 Energy Court
Farmington, NM 87401Federal Unit 32-6-9 #1
Stacked Multi-lateral Fruitland Coal Well
Surface Location: 512' FNL & 206' FEL
Section 9, T32N, R06W
GL Elev = 6105.11'
Lat. = 36.99878212° N
Long. = 107.45504085° W
NAD83
San Juan County, New MexicoProposed Entry Point: 512' FNL – 206' FEL
LAT 1 Proposed Bottom Hole Location: 710' FSL – 1977' FEL
LAT 1 ST 1 Proposed Bottom Hole Location: 644' FSL – 279' FEL
LAT 2 Proposed Bottom Hole Location: 710' FSL – 1977' FEL
Section 9, T32N, R06W
San Juan County, New Mexico

1. Geology:

<u>Formation Tops</u>	<u>Surface (TVD)</u>	<u>Thickness</u>	<u>BHP psi/ft</u>
Animas	11	1619	0.440
Lwr Animas	1630	259	0.440
Kirtland Sh	1889	136	0.440
Farmington Sd	2025	333	0.440
Lwr Kirtland Sh	2358	151	0.440
Fruitland Coal	2509	181	0.440
Lemon Coal Seam	2519	2	0.440
Lwr Lemon Coal Seam	2557	19	0.440
Upper Ignacio Coal Seam	2623	6	0.440
Lower Ignacio Coal Seam	2674	10	0.440
Pictured Cliffs	2690	210	0.440
TOTAL DEPTH	2900		

Note: Geological tops are based on the original Federal 32-6-9 #1 wellbore, GL 6105.11' and proposed 11ft rig KB (6166.11ft).

2. Background Information:

The Federal 32-6-9 #1 is a Fruitland coal producer that was drilled and completed in 1990. The current wellbore status has an unlined openhole section from 2422' to 2739' TD with a fish in the hole @ 2690' MD. It is believed that recovery of the fish would be unsuccessful. The fish coupled with the short TD, will not allow for optimum rod pump placement, isolating the Lwr Lemon and Lwr Ignacio coal seams under coal fines and paraffin.

3. Purpose:

It is proposed, based on strong offset production, to drill 2 stacked laterals from the existing 7" casing, targeting the Lwr. Lemon and Lwr. Ignacio Coal seams, and a new pilot hole from either the existing 7" casing or from LAT 1, run an uncemented preperforated liner for rod pump installation. The additional rathole (through the Pictured Cliffs formation) will allow setting the pump below the deepest coal seam (Lwr. Ignacio) and provide room for coal fines. Based on offset analysis, the Pictured Cliffs formation has demonstrated to not be productive in this area.

4. Basic Sidetrack Drilling Procedure:

Prior to mobilizing the drilling rig on location, wireline logs will be run to determine whip stock placement and casing window depths. The depths proposed below are estimates. Corrections for number of whip stocks, KOPs, landing points will be made based on actual logs. The work-over rig may orient and set the lower most whip stock, mill the casing window and may drill the curve or sidetrack section, depending on rig schedule timelines.

- Run gyro survey, orient Azimuth @ 208° and set whip stock for 7" casing exit #1
- Mill window and TOOH for directional BHA.
- Planned KOP #1 @ +/- 2400' MD / 2400' TVD.
- Drill 6-1/8" hole from 2400' MD / 2400' TVD to 2929' MD / 2900' TVD.
- TOOH & Run 5" pre-perforated liner from 2380' MD to 2929' MD (top of the liner inside the 7" casing)
- Run gyro survey, orient Azimuth @ 208° and set whip stock for 7" casing exit #2
- Mill window and TOOH for directional BHA.
- Planned KOP # 2 @ +/- 2360' MD / 2360' TVD.
- Drill 6-1/8" curve and lateral from 2360' MD / 2360' TVD to TD @ 6303' MD / 2711' TVD.
- TOOH and run 4-1/2" pre-perforated liner from 2370' MD (~10ft outside the 7" casing) to TD @ 6303' MD.
- Run gyro survey, orient and set whip stock for 7" casing exit #3 @ +/-2295' MD
- Mill window and TOOH for directional BHA.
- Planned KOP #3 @ 2295' MD / 2295' TVD.
- Drill 6-1/8" curve and lateral from 2295' MD / 2295' TVD to TD @ 6216' MD / 2618' TVD.
- TOOH and run 4-1/2" pre-perforated liner from 2305' MD (~10ft outside the 7" casing) to TD @ 6216' MD.
- Retrieve all whip stocks(s) except the lower most whip stock.
- Secure well, rig down and move off location.

5. BOP Specifications:

The working pressure of all BOPE shall exceed the anticipated surface pressure to which it may be subjected, assuming a partially evacuated hole with a pressure gradient of 0.22 psi/ft.

Bottom Hole pressure = 2900' TVD x 0.440 psi/ft - 2900' TVD x 0.22 psi/ft = 1276 psi - 638 psi = 638 psi, which is less than 2000 psi working pressure. Therefore, a Class 2 (2000 psi) BOPE system meets the requirements.

The wellhead BOP equipment will be nipped-up on the 7-1/16" 3,000 psi tubing spool (See attachment). All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 50% of rated working pressure for 10 minutes. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly. The New Mexico Oil Conservation Division will be notified 24 hours in advance of testing of BOPE.

6. Casing Program:

Casing & Hole Size	Hole Section	Weight	Grade	Coupling	Setting Depth (MD)	Comments
5-1/2" (6-1/2")	LAT 1 ST 1	15.5 ppf	J55	LT&C	2380'-2929' MD	Pre-perforated / Un-cemented Casing Top of Liner @ 2380' MD (overlap inside 7" casing)
4-1/2" (6-1/8")	LAT 1	10.5 ppf	J55	ST&C	2370'-6303' MD	Pre-perforated / Un-cemented Casing Dropped off in open hole section..
4-1/2" (6-1/8")	LAT 2	10.5 ppf	J55	ST&C	2305' - 6216' MD	Pre-perforated / Un-cemented Casing Dropped off in open hole section.

7. Cement Program:

Interval (MD)	Hole Section	Hole Size	Type	Cement Yield (ft3/sx)	Cement Weight (ppg)	Top of Cement (MD)	Notes
2400'-2929'	Lat #1 ST 1	6-1/2"	N/A	N/A	N/A	N/A	Un-cemented liner
2360'-6303'	Lat #1	6-1/8"	N/A	N/A	N/A	N/A	Un-cemented liner
2295'-6216'	Lat #2	6-1/8"	N/A	N/A	N/A	N/A	Un-cemented liner

The open hole sections will be lined with pre-perforated casing to maintain hole stability and prevent coal fines production and wellbore collapse. The liners are not pressure containing strings. The well will not be fracture stimulated.

8. Mud Program:

Interval (MD)	Hole Section	Hole Size	Type	MW (ppg)	VIS (s/qt)	FL (mL/30 min)	PV (cP)	YP (lbs/100ft ²)	Max Salinity (mg/L)	pH
2400'-2929'	Lat #1 ST 1	6-1/2"	Brine	9.0-9.5	28-34	NC	1	4	125,000	8-9.1
2360'-6303'	Lat #1	6-1/8"	Brine	9.0-9.5	28-34	NC	1	4	125,000	8-9.1
2295'-6216'	Lat #2	6-1/8"	Brine	9.0-9.5	28-34	NC	1	4	125,000	8-9.1

9. Logging Program:

Testing: None planned.

Logging: MWD/LWD (Gamma Ray) for geosteering, from KOP # 1 to TD of LAT 2 @ 6216' MD

Mud Logging: Geologist & a manned mud-logging unit will be operational from KOP #1 to the TD of LAT 2. Gas detection equipment will be utilized in the mud return system and visual mud monitoring equipment will be in place to detect volume changes, indicating loss or gain of the circulating fluid volume.

Coring: None.

Cement Bond Log: Will be run inside the existing 7" casing to determine the casing window exit points.

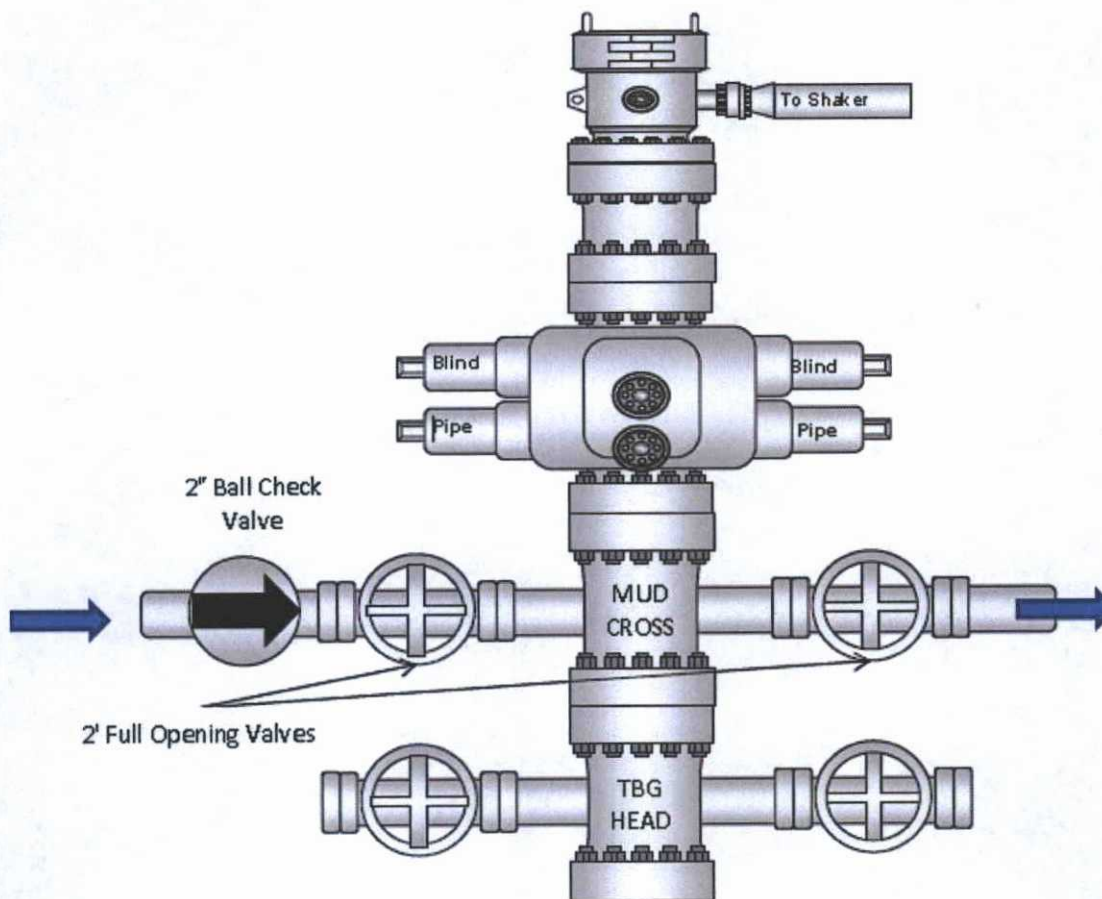
10. Additional Information:

Directional Plans: Directional plans attached.

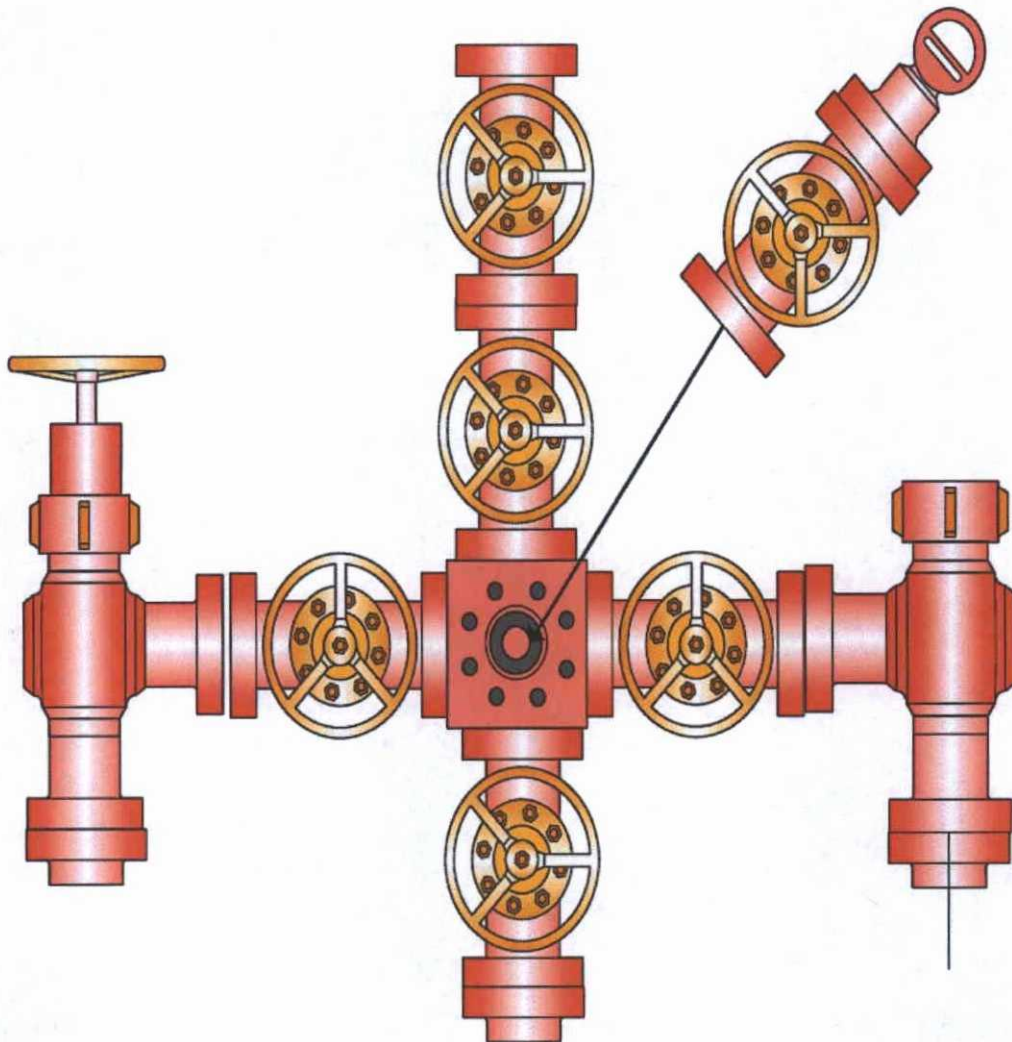
Completion: BP will not complete this well with hydraulic fracturing. It will be produced through the open hole pre-perforated liners. LAT ST 1 will be utilized for artificial lift / rod pump installation to allow for dewatering the coal.

Cuttings Disposal: BP will utilize a closed-loop system for cuttings collection and disposal. No reserve pit required. Drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical.

- Residual fluids will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at Industrial Ecosystem, Inc. waste disposal facilities.
- Remaining cuttings or sludges will be vacuumed from the storage tanks and disposed of at the Envirotech, Inc and/or Industrial Ecosystem, Inc. waste disposal facilities.
- Storage tanks will be removed from the well location during the rig move.



Attachment: Proposed BOP Equipment for Class 2 BOP system.



(Minimum 2")

Proposed 2,000 psi Choke Manifold Stack

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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-27535		² Pool Code 71629	³ Pool Name Basin Fruitland Coal
⁴ Property Code 019081	⁵ Property Name Federal 32-6-9		⁶ Well Number 1 Lat 1 ST 1
⁷ OGRID No. 000778	⁸ Operator Name BP America Production Company		⁹ Elevation 6105

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 (Lot 1)	09	32N	06W		512	North	206	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
H	09	32N	06W		644	North	279	East	San Juan

¹² Dedicated Acres 279.4	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. **OIL CONS. DIV DIST. 3**

NOV 23 2015

SECTION 09, TOWNSHIP 32N, RANGE 06W, N.M.P.M.

LEGEND
 FOUND MONUMENT ○
 SURFACE HOLE LOCATION ●
 PROPOSED BOTTOM HOLE LOCATION x

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 released 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: *Tova Colvin* Date: 11/02/15
 Printed Name: **Tova Colvin**
 E-mail Address: **Tova.Colvin@bp.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 of Survey: 10-08-15
 Signature and Seal of Professional Surveyor: *Marshall W. Lindeen*
 Certificate Number: 17078

FEDERAL 32-6-9 1	NMWS NAD'83	NAD'83	TIES
SURFACE HOLE LOCATION (SHL)	N (Y) = 2,183,108.94' E (X) = 2,833,558.13'	LAT. = 36.99878212°N LON. = 107.45504085°W	FNL = 512' FEL = 206'
PROPOSED ENTRY POINT (EP) LAT 1, LAT 1 ST 1, & LAT 2	N (Y) = 2,183,108.94' E (X) = 2,833,558.13'	LAT. = 36.99878212°N LON. = 107.45504085°W	FNL = 512' FEL = 206'
PROPOSED BOTTOM HOLE LOCATION (BHL) LAT 1	N (Y) = 2,179,790.95' E (X) = 2,831,794.76'	LAT. = 36.98968776°N LON. = 107.46112381°W	FSL = 710' FEL = 1977'
PROPOSED BOTTOM HOLE LOCATION (BHL) LAT 1 ST 1	N (Y) = 2,182,976.49' E (X) = 2,833,487.73'	LAT. = 36.99841909°N LON. = 107.45528373°W	FNL = 644' FEL = 279'
PROPOSED BOTTOM HOLE LOCATION (BHL) LAT 2	N (Y) = 2,179,790.95' E (X) = 2,831,794.76'	LAT. = 36.98968776°N LON. = 107.46112381°W	FSL = 710' FEL = 1977'

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Form C-102
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WELL LOCATION AND ACREAGE DEDICATION PLAT

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⁴ Property Code 019081		⁵ Property Name Federal 32-6-9			⁶ Well Number 1 Lat 1
⁷ OGRID No. 000778		⁸ Operator Name BP America Production Company			⁹ Elevation 6105

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UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A (Lot 1)	09	32N	06W		512	North	206	East	San Juan

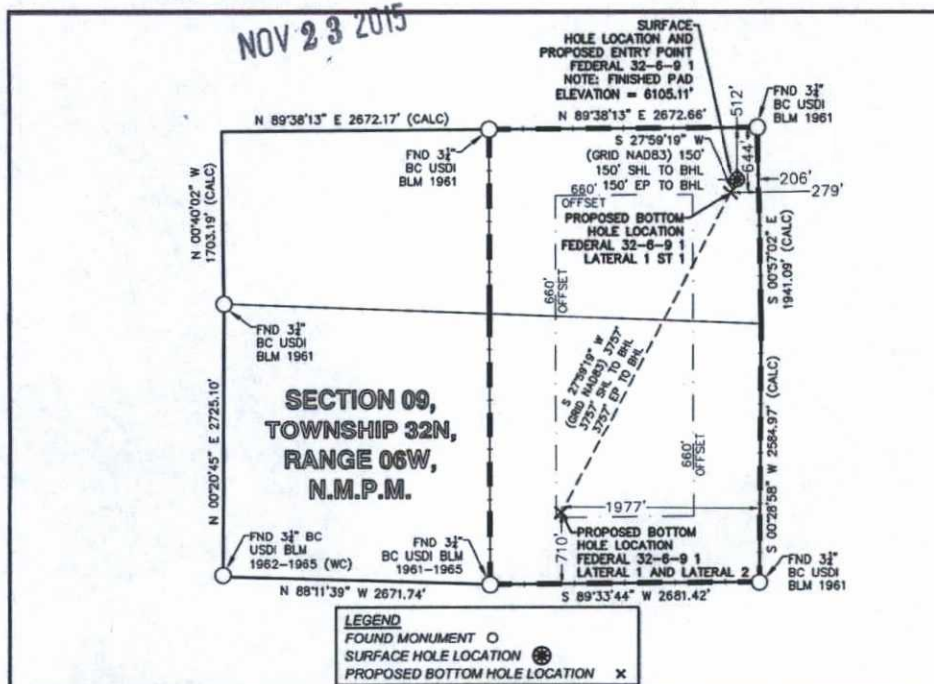
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	09	32N	06W		710	South	1977	East	San Juan

¹² Dedicated Acres 279.4	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this application until all interests have been consolidated or a non-standard unit has been approved by the division.

OIL CONS. DIV. DIST. 3



LEGEND
FOUND MONUMENT ○
SURFACE HOLE LOCATION ●
PROPOSED BOTTOM HOLE LOCATION x

FEDERAL 32-6-9 1	NW/2 NAD'83	NAD'83	TIES
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Tova Colvin 11/02/15
Signature Date

Tova Colvin
Printed Name

Tova.Colvin@bp.com
E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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

10/8/15
Date of Survey
Signature and Seal of Professional Surveyor
Marshall W. Linden
10-30-15
PROFESSIONAL SURVEYOR
17078
Certificate Number

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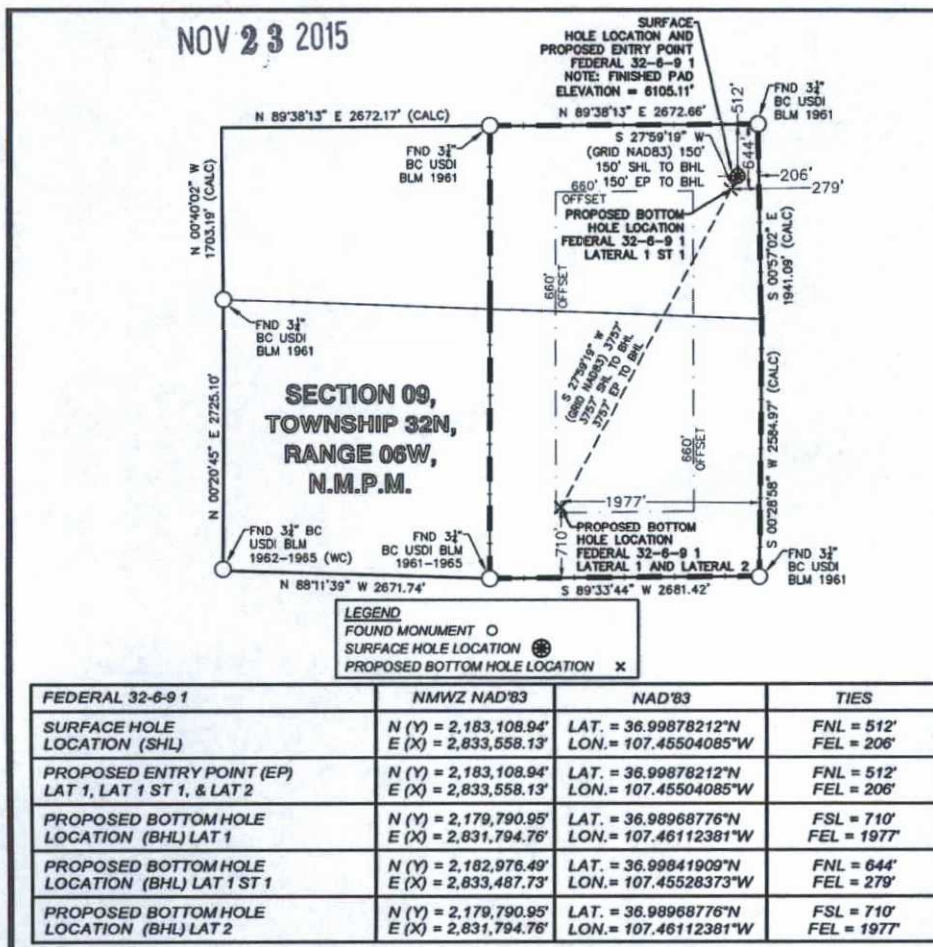
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Printed Name: Tova Colvin

E-mail Address: Tova.Colvin@bp.com

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Signature and Seal of Professional Surveyor: Marshall W. Linden

Certificate Number: 17078

LEGEND

FOUND MONUMENT O

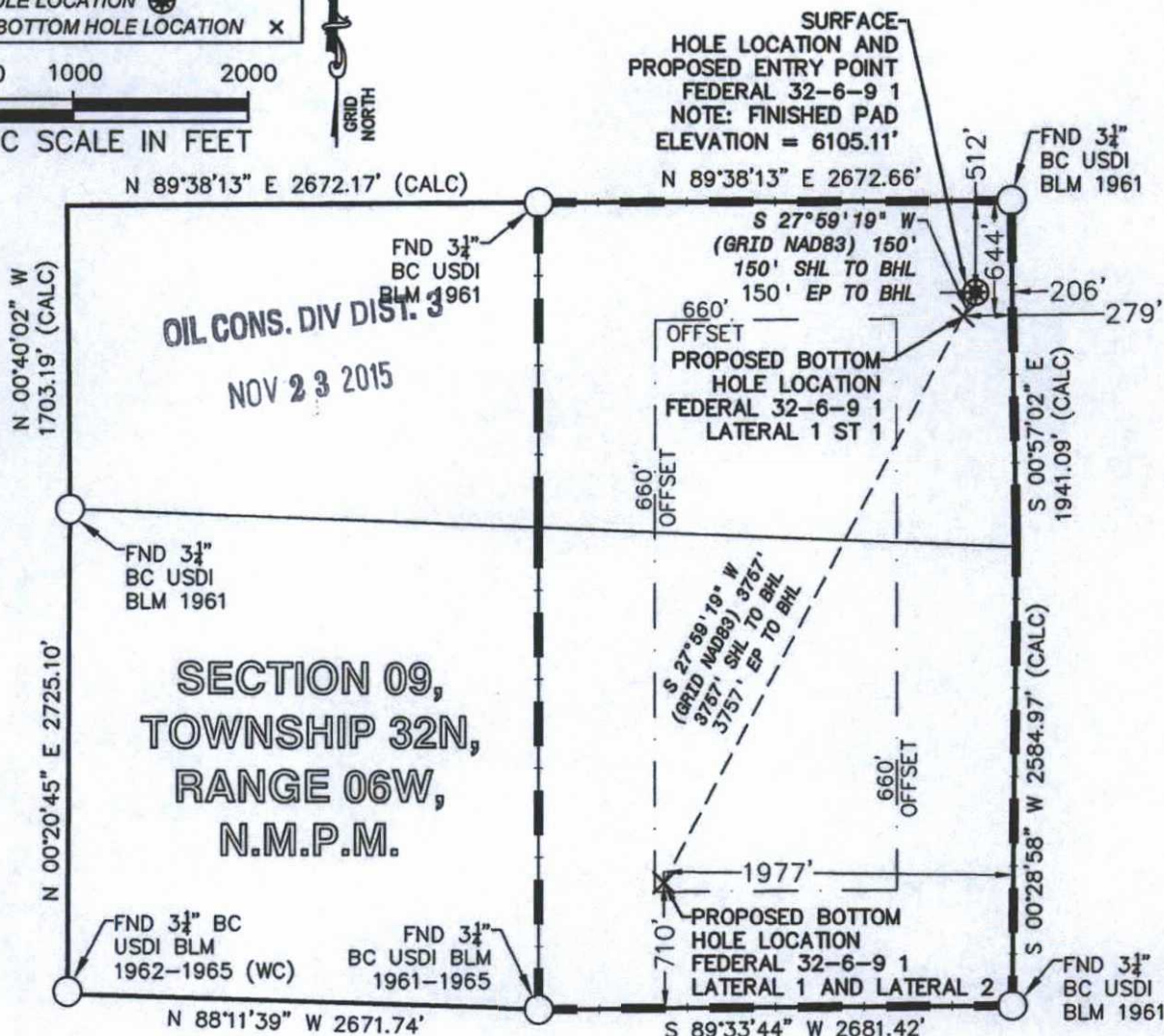
SURFACE HOLE LOCATION

PROPOSED BOTTOM HOLE LOCATION x

0 500 1000 2000

GRAPHIC SCALE IN FEET

GRID NORTH



FEDERAL 32-6-9 1	NMWS NAD'83	NAD'83	TIES
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SURVEYOR'S CERTIFICATE

I, MARSHALL LINDEEN, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF NEW MEXICO, DO 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 NOTES

1. BEARING BASIS FOR THIS SURVEY IS BASED ON THE NORTH AMERICAN DATUM OF 1983, NEW MEXICO STATE PLANE COORDINATE SYSTEM, NEW MEXICO WEST, ZONE 3003.
2. ELEVATION BASIS FOR THIS SURVEY IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID12A).
3. SURVEYED IN THE FIELD ON 10/08/2015.
4. BEARINGS AND DISTANCE SHOWN ARE MEASURED IN THE FIELD UNLESS OTHERWISE NOTED.
5. ALL MEASURED DISTANCES SHOWN ARE GRID USING A COMBINED SCALE FACTOR 0.99963965.



BP AMERICA
PRODUCTION COMPANY
US LOWER 48 ONSHORE

WELL LOCATION PLAT

FEDERAL 32-6-9 1
PART OF
SECTION 09, TOWNSHIP 32N, RANGE 06W,
N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO

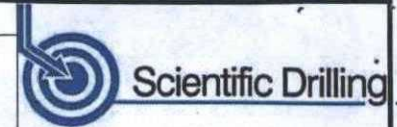
DRAWN BY CFW/RLM	CHECKED BY MWL	SCALE 1"=1000'	DATE 10/30/2015	SHEET 1 OF 1	REVISION
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Company: B.P.
Project: San Juan County, NM NAD83
Site: Federal Pad
Well: Federal 32-6-9 1
Wellbore: Lateral 1
Design: Plan #3

PROJECT DETAILS: San Juan County, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: Grid



Azimuths to Grid North
True North: -0.23°
Magnetic North: 9.04°

Magnetic Field
Strength: 50265.9nT
Dip Angle: 63.62°
Date: 10/23/2015
Model: HDGM

WELL DETAILS: Federal 32-6-9 1

GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 2183108.94 2833558.13 36.9987821 -107.4550409

Plan: Plan #3 (Federal 32-6-9 1/Lateral 1)

Created By: Janie Collins Date: 14:31, November 19 2015

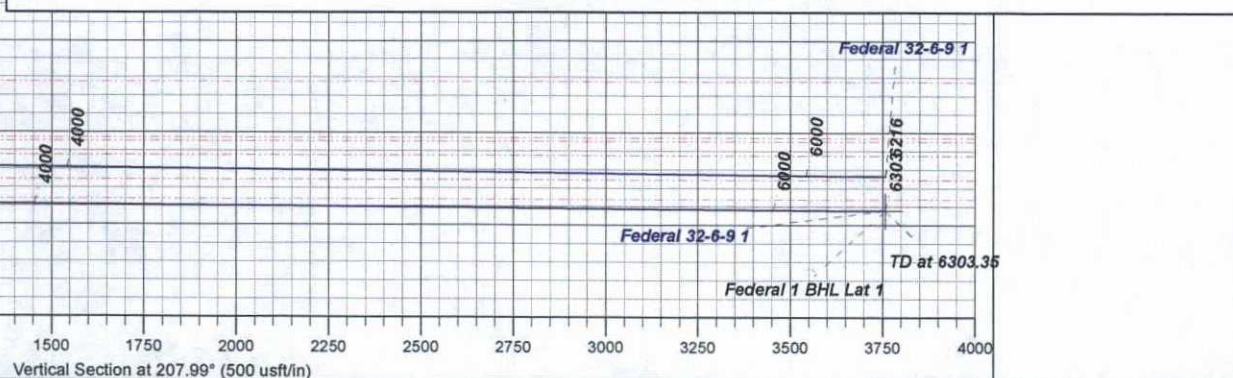
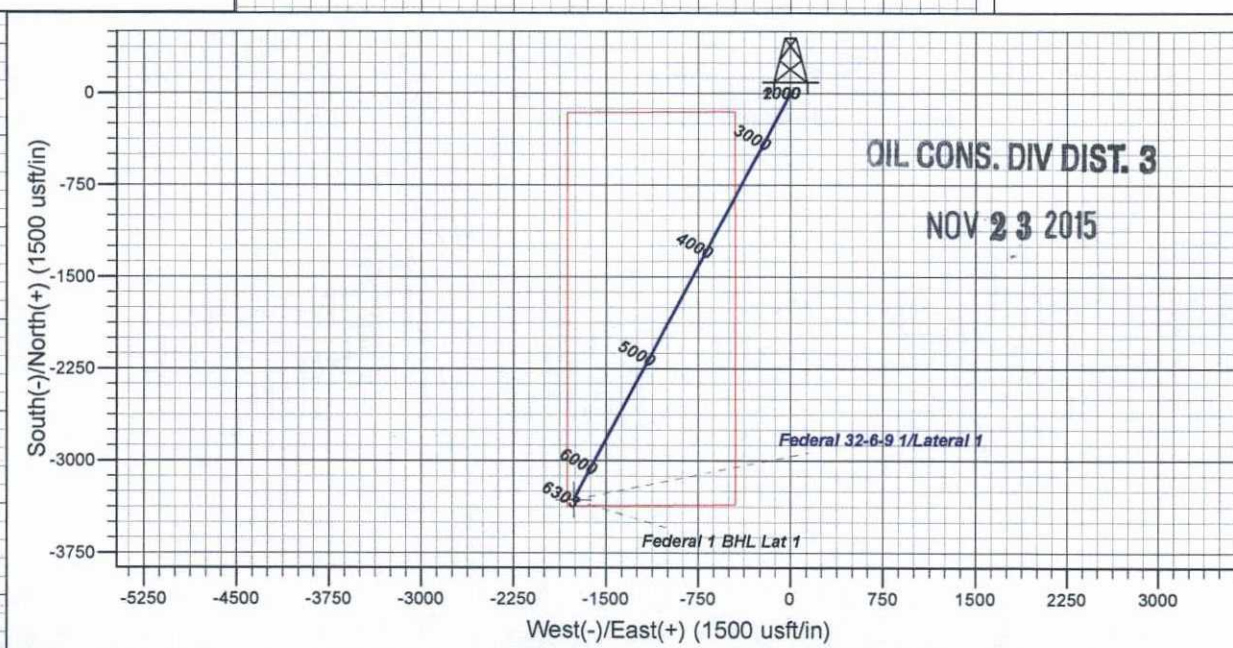
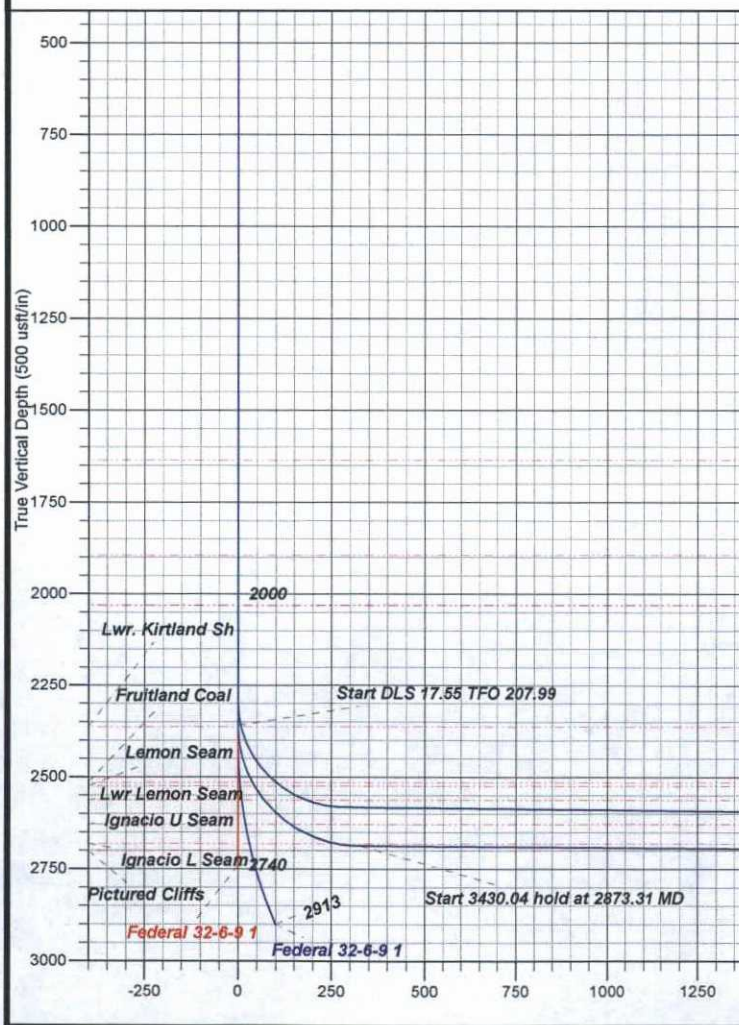
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Federal 1 BHL Lat 1	2711.00	-3317.99	-1763.37	2179790.95	2831794.76	36.9896878	-107.4611238

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeal
2359.52	0.00	0.00	2359.52	0.00	0.00	0.00	0.00	0.00
2869.98	89.58	207.99	2686.00	-286.20	-152.10	17.55	207.99	324.11
6303.43	89.58	207.99	2711.00	-3317.99	-1763.37	0.00	0.00	3757.46

Target Annotation
Start DLS 17.55 TFO 207.99
Federal 1 BHL Lat 1 TD at 6303.35





B.P.

San Juan County, NM NAD83

Federal Pad

Federal 32-6-9 1

Lateral 1

Plan: Plan #3

Standard Planning Report

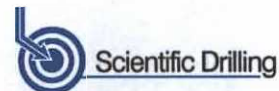
19 November, 2015



Scientific Drilling



NOV 23 2015



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Project	San Juan County, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Federal Pad				
Site Position:		Northing:	2,183,108.94 usft	Latitude:	36.9987821
From:	Map	Easting:	2,833,558.13 usft	Longitude:	-107.4550409
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.23 °

Well	Federal 32-6-9 1					
Well Position	+N/-S	0.00 usft	Northing:	2,183,108.94 usft	Latitude:	36.9987821
	+E/-W	0.00 usft	Easting:	2,833,558.13 usft	Longitude:	-107.4550409
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,105.11 usft

Wellbore	Lateral 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/23/2015	9.27	63.62	50,266

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	2,359.52
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	207.99

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
2,359.52	0.00	0.00	2,359.52	0.00	0.00	0.00	0.00	0.00	0.00	
2,869.98	89.58	207.99	2,686.00	-286.20	-152.10	17.55	17.55	-29.78	207.99	
6,303.43	89.58	207.99	2,711.00	-3,317.99	-1,763.37	0.00	0.00	0.00	0.00	Federal 1 BHL Lat 1



Planning Report



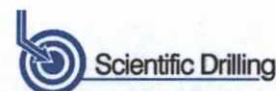
Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,359.52	0.00	0.00	2,359.52	0.00	0.00	0.00	0.00	0.00	0.00
Start DLS 17.55 TFO 207.99									
2,363.00	0.61	207.99	2,363.00	-0.02	-0.01	0.02	17.55	17.55	0.00
Lwr. Kirtland Sh									
2,400.00	7.10	207.99	2,399.90	-2.21	-1.18	2.51	17.55	17.55	0.00
2,500.00	24.65	207.99	2,495.71	-26.28	-13.97	29.76	17.55	17.55	0.00
2,520.44	28.24	207.99	2,514.00	-34.31	-18.24	38.86	17.55	17.55	0.00
Fruitland Coal									
2,531.90	30.25	207.99	2,524.00	-39.26	-20.86	44.46	17.55	17.55	0.00
Lemon Seam									
2,577.93	38.33	207.99	2,562.00	-62.14	-33.03	70.37	17.55	17.55	0.00
Lwr Lemon Seam									
2,600.00	42.20	207.99	2,578.84	-74.73	-39.72	84.63	17.55	17.55	0.00
2,607.02	43.43	207.99	2,583.98	-78.95	-41.96	89.40	17.55	17.55	0.00
Federal 1 LP									
2,674.74	55.32	207.99	2,628.00	-124.26	-66.04	140.71	17.55	17.55	0.00
Ignacio U Seam									
2,700.00	59.75	207.99	2,641.55	-143.07	-76.04	162.02	17.55	17.55	0.00
2,800.00	77.30	207.99	2,678.02	-224.92	-119.54	254.71	17.55	17.55	0.00
2,815.12	79.95	207.99	2,681.00	-238.01	-126.49	269.54	17.55	17.55	0.00
Ignacio L Seam									
2,869.98	89.58	207.99	2,686.00	-286.20	-152.10	324.11	17.55	17.55	0.00
2,873.31	89.58	207.99	2,686.02	-289.14	-153.67	327.44	0.00	0.00	0.00
Start 3430.04 hold at 2873.31 MD									
2,900.00	89.58	207.99	2,686.21	-312.70	-166.19	354.12	0.00	0.00	0.00
3,000.00	89.58	207.99	2,686.94	-401.01	-213.12	454.12	0.00	0.00	0.00
3,100.00	89.58	207.99	2,687.67	-489.31	-260.05	554.12	0.00	0.00	0.00
3,200.00	89.58	207.99	2,688.40	-577.61	-306.97	654.12	0.00	0.00	0.00
3,300.00	89.58	207.99	2,689.13	-665.91	-353.90	754.11	0.00	0.00	0.00
3,400.00	89.58	207.99	2,689.86	-754.21	-400.83	854.11	0.00	0.00	0.00
3,500.00	89.58	207.99	2,690.58	-842.51	-447.76	954.11	0.00	0.00	0.00
3,600.00	89.58	207.99	2,691.31	-930.82	-494.69	1,054.10	0.00	0.00	0.00
3,700.00	89.58	207.99	2,692.04	-1,019.12	-541.62	1,154.10	0.00	0.00	0.00
3,800.00	89.58	207.99	2,692.77	-1,107.42	-588.55	1,254.10	0.00	0.00	0.00
3,900.00	89.58	207.99	2,693.50	-1,195.72	-635.47	1,354.10	0.00	0.00	0.00
4,000.00	89.58	207.99	2,694.23	-1,284.02	-682.40	1,454.09	0.00	0.00	0.00
4,100.00	89.58	207.99	2,694.95	-1,372.32	-729.33	1,554.09	0.00	0.00	0.00
4,200.00	89.58	207.99	2,695.68	-1,460.63	-776.26	1,654.09	0.00	0.00	0.00
4,300.00	89.58	207.99	2,696.41	-1,548.93	-823.19	1,754.09	0.00	0.00	0.00
4,400.00	89.58	207.99	2,697.14	-1,637.23	-870.12	1,854.08	0.00	0.00	0.00
4,500.00	89.58	207.99	2,697.87	-1,725.53	-917.05	1,954.08	0.00	0.00	0.00
4,600.00	89.58	207.99	2,698.59	-1,813.83	-963.97	2,054.08	0.00	0.00	0.00
4,700.00	89.58	207.99	2,699.32	-1,902.13	-1,010.90	2,154.08	0.00	0.00	0.00
4,792.95	89.58	207.99	2,700.00	-1,984.21	-1,054.52	2,247.03	0.00	0.00	0.00
Pictured Cliffs									
4,800.00	89.58	207.99	2,700.05	-1,990.44	-1,057.83	2,254.07	0.00	0.00	0.00
4,900.00	89.58	207.99	2,700.78	-2,078.74	-1,104.76	2,354.07	0.00	0.00	0.00
5,000.00	89.58	207.99	2,701.51	-2,167.04	-1,151.69	2,454.07	0.00	0.00	0.00
5,100.00	89.58	207.99	2,702.24	-2,255.34	-1,198.62	2,554.06	0.00	0.00	0.00
5,200.00	89.58	207.99	2,702.96	-2,343.64	-1,245.55	2,654.06	0.00	0.00	0.00
5,300.00	89.58	207.99	2,703.69	-2,431.94	-1,292.47	2,754.06	0.00	0.00	0.00



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	89.58	207.99	2,704.42	-2,520.25	-1,339.40	2,854.06	0.00	0.00	0.00
5,500.00	89.58	207.99	2,705.15	-2,608.55	-1,386.33	2,954.05	0.00	0.00	0.00
5,600.00	89.58	207.99	2,705.88	-2,696.85	-1,433.26	3,054.05	0.00	0.00	0.00
5,700.00	89.58	207.99	2,706.61	-2,785.15	-1,480.19	3,154.05	0.00	0.00	0.00
5,800.00	89.58	207.99	2,707.33	-2,873.45	-1,527.12	3,254.05	0.00	0.00	0.00
5,900.00	89.58	207.99	2,708.06	-2,961.75	-1,574.05	3,354.04	0.00	0.00	0.00
6,000.00	89.58	207.99	2,708.79	-3,050.06	-1,620.97	3,454.04	0.00	0.00	0.00
6,100.00	89.58	207.99	2,709.52	-3,138.36	-1,667.90	3,554.04	0.00	0.00	0.00
6,200.00	89.58	207.99	2,710.25	-3,226.66	-1,714.83	3,654.04	0.00	0.00	0.00
6,300.00	89.58	207.99	2,710.98	-3,314.96	-1,761.76	3,754.03	0.00	0.00	0.00
6,303.35	89.58	207.99	2,711.00	-3,317.92	-1,763.33	3,757.39	0.00	0.00	0.00
TD at 6303.35									
6,303.43	89.58	207.99	2,711.00	-3,317.99	-1,763.37	3,757.46	0.00	0.00	0.00
Federal 1 BHL Lat 1									

Design Targets

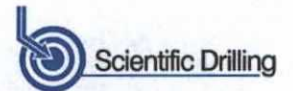
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Federal 1 BHL Lat 1	0.00	0.00	2,711.00	-3,317.99	-1,763.37	2,179,790.95	2,831,794.76	36.9896877	-107.4611239
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
11.00	11.00	Animas		0.00	0.00
1,635.00	1,635.00	Lwr. Animas		0.00	0.00
1,894.00	1,894.00	Kirtland Sh		0.00	0.00
2,030.00	2,030.00	Farmington Ss		0.00	0.00
2,363.00	2,363.00	Lwr. Kirtland Sh		0.00	0.00
2,520.44	2,514.00	Fruitland Coal		0.00	0.00
2,531.90	2,524.00	Lemon Seam		0.00	0.00
2,577.93	2,562.00	Lwr Lemon Seam		0.00	0.00
2,674.74	2,628.00	Ignacio U Seam		0.00	0.00
2,815.12	2,681.00	Ignacio L Seam		0.00	0.00
4,792.95	2,700.00	Pictured Cliffs		0.00	0.00



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 1		
Design:	Plan #3		

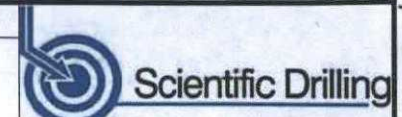
Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,359.52	2,359.52	0.00	0.00	Start DLS 17.55 TFO 207.99
2,873.31	2,686.02	-289.14	-153.67	Start 3430.04 hold at 2873.31 MD
6,303.35	2,711.00	-3,317.92	-1,763.33	TD at 6303.35



Company: B.P.
Project: San Juan County, NM NAD83
Site: Federal Pad
Well: Federal 32-6-9 1
Wellbore: LAT 1 ST 1 *Lateral 2*
Design: PLAN #2

PROJECT DETAILS: San Juan County, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: Grid



Azimuths to Grid North
True North: -0.23°
Magnetic North: 9.02°

Magnetic Field
Strength: 50257.6nT
Dip Angle: 63.62°
Date: 11/19/2015
Model: HDGM

WELL DETAILS: Federal 32-6-9 1

GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 2183108.94 2833558.13 36.998721 -107.4550409

Plan: PLAN #2 (Federal 32-6-9 1/LAT 1 ST 1)

Created By: Janie Collins Date: 9:22, November 20 2015

DESIGN TARGET DETAILS

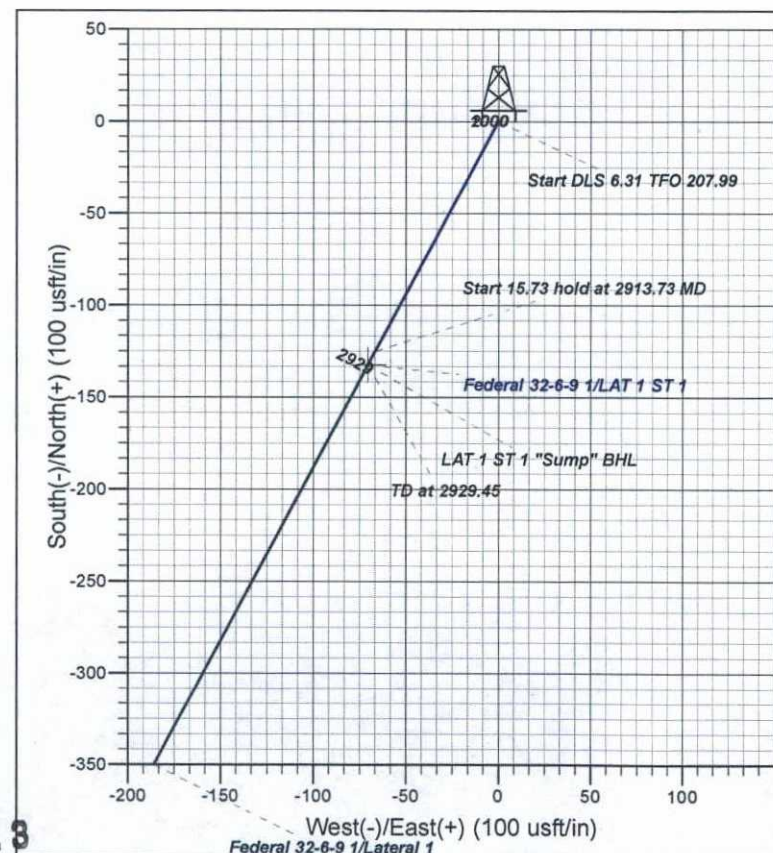
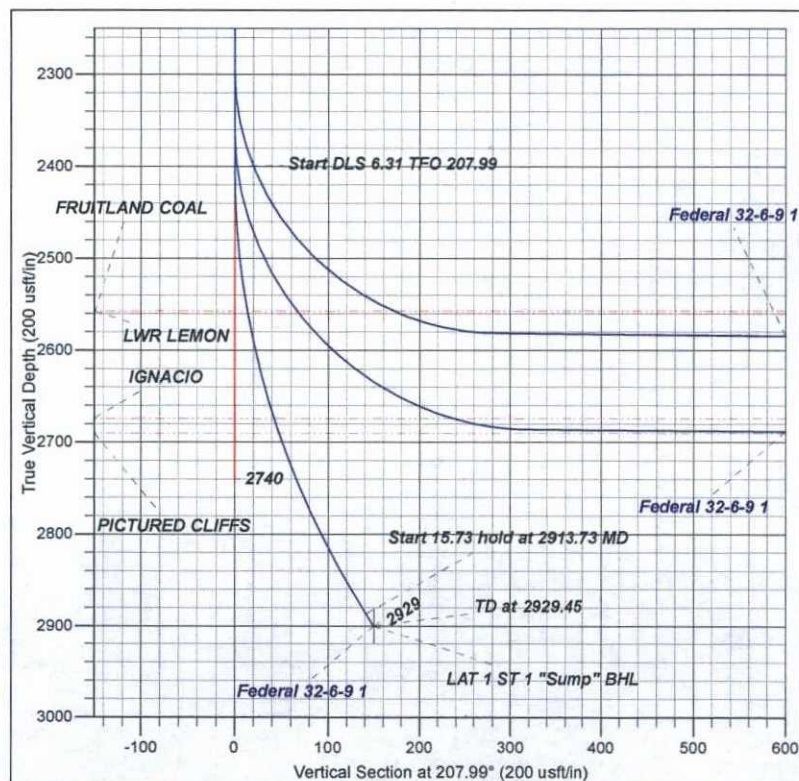
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL	2900.00	-132.45	-70.40	2182976.49	2833487.73	36.9984191	-107.4552837	Point

- plan hits target center

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.00
2913.73	32.43	207.99	2886.73	-125.00	-66.44	6.31	207.99	141.56
2929.45	32.43	207.99	2900.00	-132.45	-70.40	0.00	0.00	150.00

Target	Annotation
LAT 1 ST 1 "Sump" BHL	Start DLS 6.31 TFO 207.99 Start 15.73 hold at 2913.73 MD TD at 2929.45



OIL CONS. DIV DIST. 3

NOV 23 2015



B.P.

San Juan County, NM NAD83

Federal Pad

Federal 32-6-9 1

LAT 1 ST 1

Plan: PLAN #2

Standard Planning Report

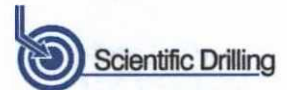
20 November, 2015



NOV 23 2015



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	LAT 1 ST 1		
Design:	PLAN #2		

Project	San Juan County, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site		Federal Pad			
Site Position:		Northing:	2,183,108.94 usft	Latitude:	36.9987821
From:	Map	Easting:	2,833,558.13 usft	Longitude:	-107.4550409
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.23 °

Well	Federal 32-6-9 1					
Well Position	+N/-S	0.00 usft	Northing:	2,183,108.94 usft	Latitude:	36.9987821
	+E/-W	0.00 usft	Easting:	2,833,558.13 usft	Longitude:	-107.4550409
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,105.11 usft

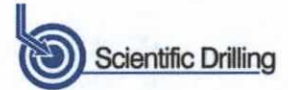
Wellbore	LAT 1 ST 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/19/2015	9.25	63.62	50,258

Design	PLAN #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	2,400.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	207.99

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,913.73	32.43	207.99	2,886.73	-125.00	-66.44	6.31	6.31	-29.59	207.99	
2,929.45	32.43	207.99	2,900.00	-132.45	-70.40	0.00	0.00	0.00	0.00	LAT 1 ST 1 "Sump" B1



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	LAT 1 ST 1		
Design:	PLAN #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
Start DLS 6.31 TFO 207.99									
2,500.00	6.31	207.99	2,499.80	-4.86	-2.58	5.50	6.31	6.31	0.00
2,557.79	9.96	207.99	2,557.00	-12.08	-6.42	13.68	6.31	6.31	0.00
LWR LEMON									
2,560.84	10.15	207.99	2,560.00	-12.55	-6.67	14.22	6.31	6.31	0.00
FRUITLAND COAL									
2,600.00	12.63	207.99	2,598.39	-19.38	-10.30	21.95	6.31	6.31	0.00
2,678.34	17.57	207.99	2,674.00	-37.40	-19.88	42.35	6.31	6.31	0.00
IGNACIO									
2,695.18	18.64	207.99	2,690.00	-42.02	-22.33	47.58	6.31	6.31	0.00
PICTURED CLIFFS									
2,700.00	18.94	207.99	2,694.57	-43.39	-23.06	49.14	6.31	6.31	0.00
2,800.00	25.25	207.99	2,787.17	-76.59	-40.71	86.73	6.31	6.31	0.00
2,900.00	31.57	207.99	2,875.09	-118.58	-63.03	134.29	6.31	6.31	0.00
2,913.73	32.43	207.99	2,886.73	-125.00	-66.44	141.56	6.31	6.31	0.00
Start 15.73 hold at 2913.73 MD									
2,929.45	32.43	207.99	2,900.00	-132.45	-70.40	150.00	0.00	0.00	0.00
TD at 2929.45 - LAT 1 ST 1 "Sump" BHL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
LAT 1 ST 1 "Sump" BHL	0.00	0.00	2,900.00	-132.45	-70.40	2,182,976.49	2,833,487.73	36.9984191	-107.4552838
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,557.79	2,557.00	LWR LEMON		0.00	
2,560.84	2,560.00	FRUITLAND COAL		0.00	
2,678.34	2,674.00	IGNACIO		0.00	
2,695.18	2,690.00	PICTURED CLIFFS		0.00	

Plan Annotations

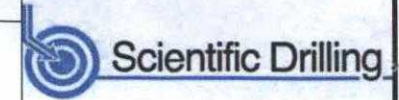
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,400.00	2,400.00	0.00	0.00	Start DLS 6.31 TFO 207.99
2,913.73	2,886.73	-125.00	-66.44	Start 15.73 hold at 2913.73 MD
2,929.45	2,900.00	-132.45	-70.40	TD at 2929.45



Company: B.P.
Project: San Juan County, NM NAD83
Site: Federal Pad
Well: Federal 32-6-9 1
Wellbore: ~~Lateral 2~~ **LAT 1 ST1**
Design: Plan #3

PROJECT DETAILS: San Juan County, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: Grid



Azimuths to Grid North
True North: -0.23°
Magnetic North: 9.04°

Magnetic Field
Strength: 50265.9enT
Dip Angle: 63.62°
Date: 10/23/2015
Model: HDGM

WELL DETAILS: Federal 32-6-9 1

GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 2183108.94 2833558.13 36.9987821 -107.4550409

Plan: Plan #3 (Federal 32-6-9 1/Lateral 2)

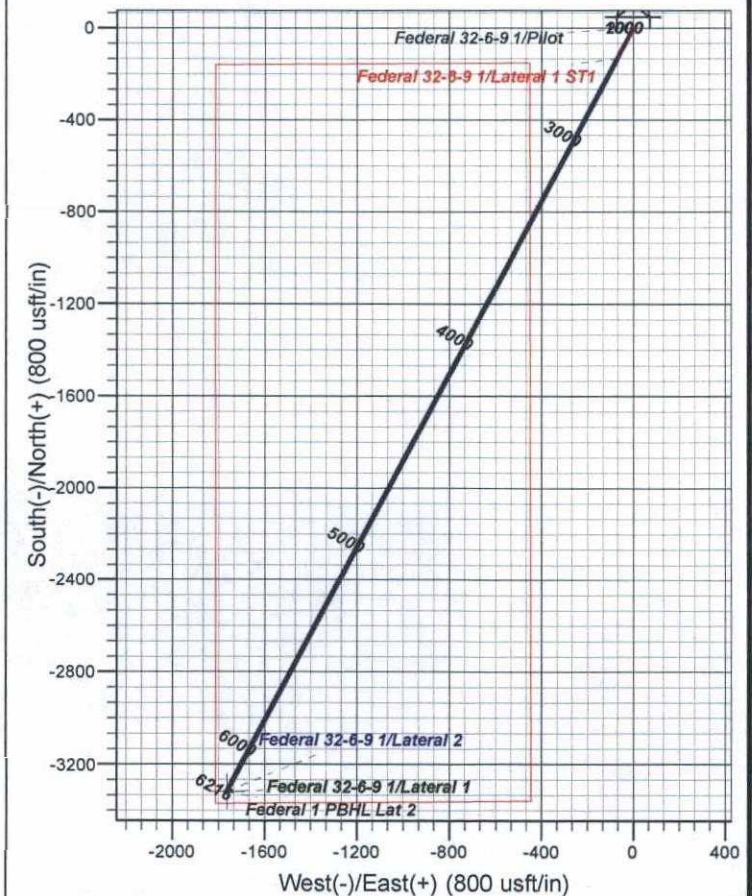
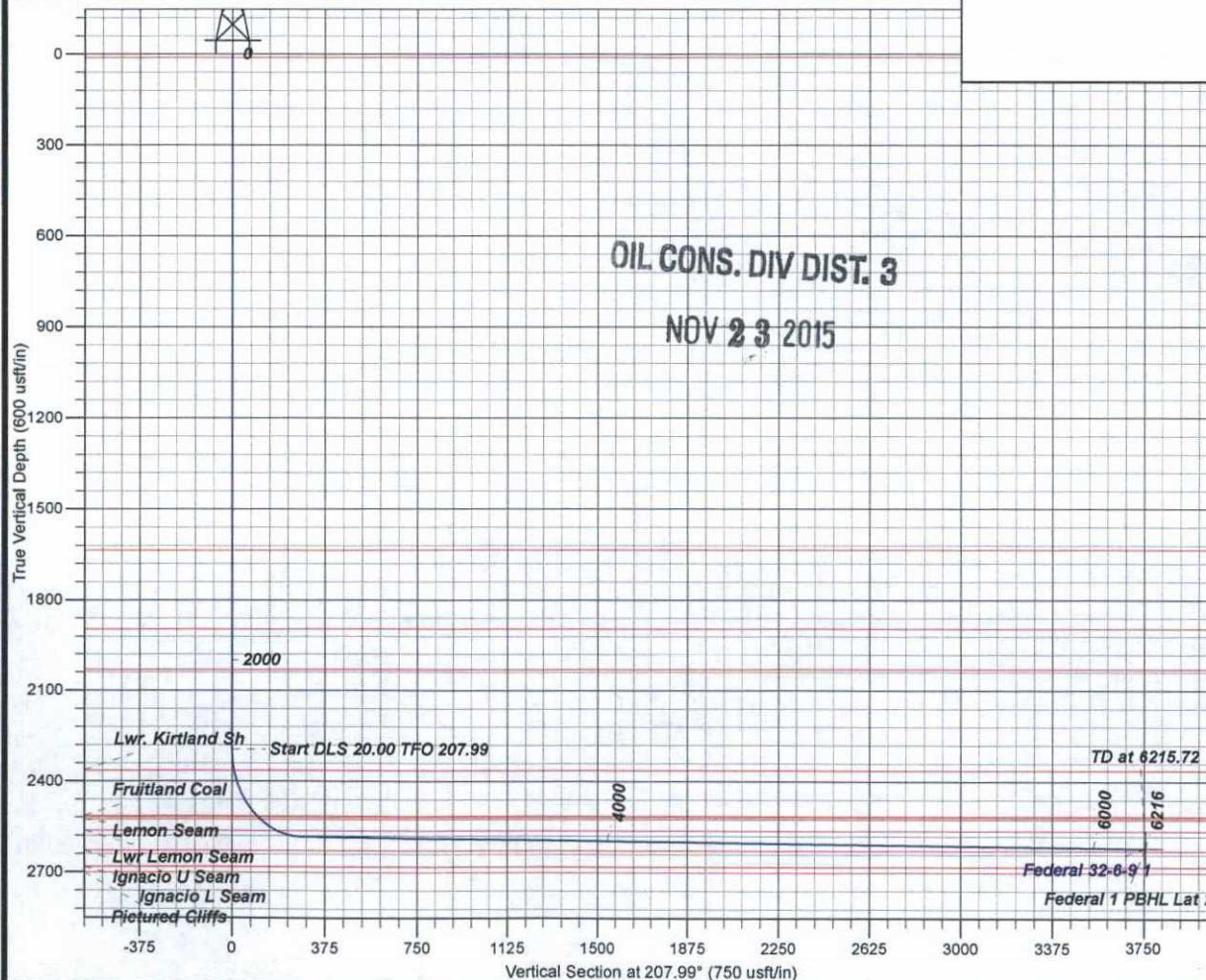
Created By: Janie Collins Date: 12:22, November 02 2015

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Federal 1 PBHL Lat 2	2618.00	-3317.99	-1763.37	2179790.95	2831794.76	36.9896878	-107.4611238

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	Vsect	Target	Annotation
2294.54	0.00	0.00	2294.54	0.00	0.00	0.00	0.00	0.00		
2741.49	89.39	207.99	2581.00	-250.28	-133.01	20.00	207.99	283.43		
6215.72	89.39	207.99	2618.00	-3317.99	-1763.37	0.00	0.00	3757.46	Federal 1 PBHL Lat 2	





B.P.

San Juan County, NM NAD83

Federal Pad

Federal 32-6-9 1

Lateral 2

Plan: Plan #3

Standard Planning Report

02 November, 2015



www.scientificdrilling.com



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Project	San Juan County, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Federal Pad				
Site Position:		Northing:	2,183,108.94 usft	Latitude:	36.9987821
From:	Map	Easting:	2,833,558.13 usft	Longitude:	-107.4550409
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.23 °

Well	Federal 32-6-9 1					
Well Position	+N/-S	0.00 usft	Northing:	2,183,108.94 usft	Latitude:	36.9987821
	+E/-W	0.00 usft	Easting:	2,833,558.13 usft	Longitude:	-107.4550409
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,105.11 usft

Wellbore	Lateral 2				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/23/2015	9.27	63.62	50,266

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	2,294.54	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	207.99	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
2,294.54	0.00	0.00	2,294.54	0.00	0.00	0.00	0.00	0.00	0.00	
2,741.49	89.39	207.99	2,581.00	-250.28	-133.01	20.00	20.00	-34.01	207.99	
6,215.72	89.39	207.99	2,618.00	-3,317.99	-1,763.37	0.00	0.00	0.00	0.00	Federal 1 PBHL Lat 2



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,294.54	0.00	0.00	2,294.54	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	1.09	207.99	2,300.00	-0.05	-0.02	0.05	20.00	20.00	0.00
2,363.67	13.83	207.99	2,363.00	-7.33	-3.90	8.30	20.00	20.00	0.00
Lwr. Kirtland Sh									
2,400.00	21.09	207.99	2,397.63	-16.95	-9.01	19.19	20.00	20.00	0.00
2,500.00	41.09	207.99	2,482.83	-62.32	-33.12	70.57	20.00	20.00	0.00
2,544.55	50.00	207.99	2,514.00	-90.37	-48.03	102.34	20.00	20.00	0.00
Fruitland Coal									
2,560.65	53.22	207.99	2,524.00	-101.52	-53.95	114.96	20.00	20.00	0.00
Lemon Seam									
2,600.00	61.09	207.99	2,545.32	-130.68	-69.45	147.99	20.00	20.00	0.00
2,639.56	69.00	207.99	2,562.00	-162.34	-86.27	183.84	20.00	20.00	0.00
Lwr Lemon Seam									
2,700.00	81.09	207.99	2,577.56	-213.80	-113.63	242.12	20.00	20.00	0.00
2,741.49	89.39	207.99	2,581.00	-250.28	-133.01	283.43	20.00	20.00	0.00
2,800.00	89.39	207.99	2,581.63	-301.94	-160.47	341.94	0.00	0.00	0.00
2,871.34	89.39	207.99	2,582.39	-364.94	-193.95	413.27	0.00	0.00	0.00
Federal 1 LP Lat 2									
2,900.00	89.39	207.99	2,582.69	-390.24	-207.40	441.93	0.00	0.00	0.00
3,000.00	89.39	207.99	2,583.76	-478.54	-254.32	541.92	0.00	0.00	0.00
3,100.00	89.39	207.99	2,584.82	-566.84	-301.25	641.92	0.00	0.00	0.00
3,200.00	89.39	207.99	2,585.89	-655.14	-348.18	741.91	0.00	0.00	0.00
3,300.00	89.39	207.99	2,586.95	-743.44	-395.11	841.91	0.00	0.00	0.00
3,400.00	89.39	207.99	2,588.02	-831.74	-442.03	941.90	0.00	0.00	0.00
3,500.00	89.39	207.99	2,589.08	-920.04	-488.96	1,041.90	0.00	0.00	0.00
3,600.00	89.39	207.99	2,590.15	-1,008.33	-535.89	1,141.89	0.00	0.00	0.00
3,700.00	89.39	207.99	2,591.21	-1,096.63	-582.81	1,241.88	0.00	0.00	0.00
3,800.00	89.39	207.99	2,592.27	-1,184.93	-629.74	1,341.88	0.00	0.00	0.00
3,900.00	89.39	207.99	2,593.34	-1,273.23	-676.67	1,441.87	0.00	0.00	0.00
4,000.00	89.39	207.99	2,594.40	-1,361.53	-723.60	1,541.87	0.00	0.00	0.00
4,100.00	89.39	207.99	2,595.47	-1,449.83	-770.52	1,641.86	0.00	0.00	0.00
4,200.00	89.39	207.99	2,596.53	-1,538.13	-817.45	1,741.86	0.00	0.00	0.00
4,300.00	89.39	207.99	2,597.60	-1,626.43	-864.38	1,841.85	0.00	0.00	0.00
4,400.00	89.39	207.99	2,598.66	-1,714.73	-911.30	1,941.84	0.00	0.00	0.00
4,500.00	89.39	207.99	2,599.73	-1,803.03	-958.23	2,041.84	0.00	0.00	0.00
4,600.00	89.39	207.99	2,600.79	-1,891.32	-1,005.16	2,141.83	0.00	0.00	0.00
4,700.00	89.39	207.99	2,601.86	-1,979.62	-1,052.09	2,241.83	0.00	0.00	0.00
4,800.00	89.39	207.99	2,602.92	-2,067.92	-1,099.01	2,341.82	0.00	0.00	0.00
4,900.00	89.39	207.99	2,603.99	-2,156.22	-1,145.94	2,441.82	0.00	0.00	0.00
5,000.00	89.39	207.99	2,605.05	-2,244.52	-1,192.87	2,541.81	0.00	0.00	0.00
5,100.00	89.39	207.99	2,606.12	-2,332.82	-1,239.79	2,641.81	0.00	0.00	0.00
5,200.00	89.39	207.99	2,607.18	-2,421.12	-1,286.72	2,741.80	0.00	0.00	0.00
5,300.00	89.39	207.99	2,608.25	-2,509.42	-1,333.65	2,841.79	0.00	0.00	0.00
5,400.00	89.39	207.99	2,609.31	-2,597.72	-1,380.58	2,941.79	0.00	0.00	0.00
5,500.00	89.39	207.99	2,610.38	-2,686.02	-1,427.50	3,041.78	0.00	0.00	0.00
5,600.00	89.39	207.99	2,611.44	-2,774.31	-1,474.43	3,141.78	0.00	0.00	0.00
5,700.00	89.39	207.99	2,612.51	-2,862.61	-1,521.36	3,241.77	0.00	0.00	0.00
5,800.00	89.39	207.99	2,613.57	-2,950.91	-1,568.28	3,341.77	0.00	0.00	0.00
5,900.00	89.39	207.99	2,614.64	-3,039.21	-1,615.21	3,441.76	0.00	0.00	0.00
6,000.00	89.39	207.99	2,615.70	-3,127.51	-1,662.14	3,541.75	0.00	0.00	0.00
6,100.00	89.39	207.99	2,616.77	-3,215.81	-1,709.07	3,641.75	0.00	0.00	0.00



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Federal 32-6-9 1
Company:	B.P.	TVD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Project:	San Juan County, NM NAD83	MD Reference:	GL 6105.11' & RKB 11' @ 6116.11usft (Aztec 507)
Site:	Federal Pad	North Reference:	Grid
Well:	Federal 32-6-9 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral 2		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,200.00	89.39	207.99	2,617.83	-3,304.11	-1,755.99	3,741.74	0.00	0.00	0.00
6,215.72	89.39	207.99	2,618.00	-3,317.99	-1,763.37	3,757.46	0.00	0.00	0.00
Federal 1 PBHL Lat 2									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Federal 1 PBHL Lat 2	0.00	0.00	2,618.00	-3,317.99	-1,763.37	2,179,790.95	2,831,794.76	36.9896877	-107.4611239
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
11.00	11.00	Animas		0.00	0.00
1,635.00	1,635.00	Lwr. Animas		0.00	0.00
1,894.00	1,894.00	Kirtland Sh		0.00	0.00
2,030.00	2,030.00	Farmington Ss		0.00	0.00
2,363.67	2,363.00	Lwr. Kirtland Sh		0.00	0.00
2,544.55	2,514.00	Fruitland Coal		0.00	0.00
2,560.65	2,524.00	Lemon Seam		0.00	0.00
2,639.56	2,562.00	Lwr Lemon Seam		0.00	0.00