State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, 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 3160-3 APD form.

Operator Signature Date: 8·2·16
Well information;
Operator BP, Well Name and Number NEBU 604 COM # 2H

API# 30·045·35794, Section 13, Township 31 (N)/S, Range 7 E/(W)

Conditions of Approval: (See the below checked and handwritten conditions)

- [x] Notify Aztec OCD 24hrs prior to casing & cement.
- [x] Hold C-104 for directional survey & "As Drilled" Plat — submit sundry to extend surface casing to 320'
- [x] Hold C-104 for NSL, NSP, DHC
- [ ] Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- [ ] Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - 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
- [ ] Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- [ ] Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- [✓] Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- [✓] Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- [✓] Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

Charles Perrin
NMOCD Approved by Signature

1-20-2017
Date

1220 South St. Francis Drive • Santa Fe, New Mexico 87505
Phone (505) 476-3460 • Fax (505) 476-3462 • www.emnrd.state.nm.us/ocd

NOI 5/16/16
APDP:
MP:
SMA: BLM
BOND: 150,000 yr
CA/PA: CA needed

1040000003842

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM03358
1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	6. If Indian, Allotee or Tribe Name
2. Name of Operator BP AMERICA PROD CO	7. If Unit or CA Agreement, Name and No.
3a. Address 737 North Eldridge Pkwy Houston TX 77079	3b. Phone No. (include area code) (281)366-7148
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface SWNW / 1891 FNL / 594 FWL / LAT 36.901583 / LONG -107.529246 At proposed prod. zone NENE / 222 FNL / 710 FEL / LAT 36.906144 / LONG -107.497711	8. Lease Name and Well No. NEBU 604 COM / 2H
	9. API Well No. 30-045-35794
	10. Field and Pool, or Exploratory BASIN MANCOS
	11. Sec., T. R. M. or Blk. and Survey or Area SEC 13 / T31N / R07W / NMP
14. Distance in miles and direction from nearest town or post office* 26.7 miles	12. County or Parish SAN JUAN / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 710 feet	16. No. of acres in lease 2396.77 / 17. Spacing Unit dedicated to this well 640
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 262 feet	19. Proposed Depth 7117 feet / 16863 feet / 20. BLM/BIA Bond No. on file FED: WY2924
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6500 feet	22. Approximate date work will start* 08/01/2018 / 23. Estimated duration 30 days

OIL CONS. DIV DIST. 3
DEC 22 2016

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name (Printed/Typed)	Date
(Electronic Submission)	Toya Colvin / Ph: (281)366-7148	08/02/2016
Title: Regulatory Analyst		
Approved by (Signature): /s/ Maclew O	Name (Printed/Typed)	Date 12/20/16
Title: AFM	Office: FARMINGTON	

Application approval 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.
Conditions of approval, if any, are attached.

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.

(Continued on page 2)

*(Instructions on page 2)

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"

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

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

NMOCD

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

State of New Mexico
Energy, Minerals & 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	[2] Pool Code	[3] Pool Name
30-045-35794	97232	Mancos Gas

[4] Property Code	[5] Property Name	[6] Well Number
317305	Northeast Blanco Unit 604 Com	2H

[7] OGRID No.	[8] Operator Name	[9] Elevation
000778	BP America Production Company	6500

[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
E	13	31N	07W		1891	North	594	West	San Juan

[11] Bottom Hole Location If Different From Surface

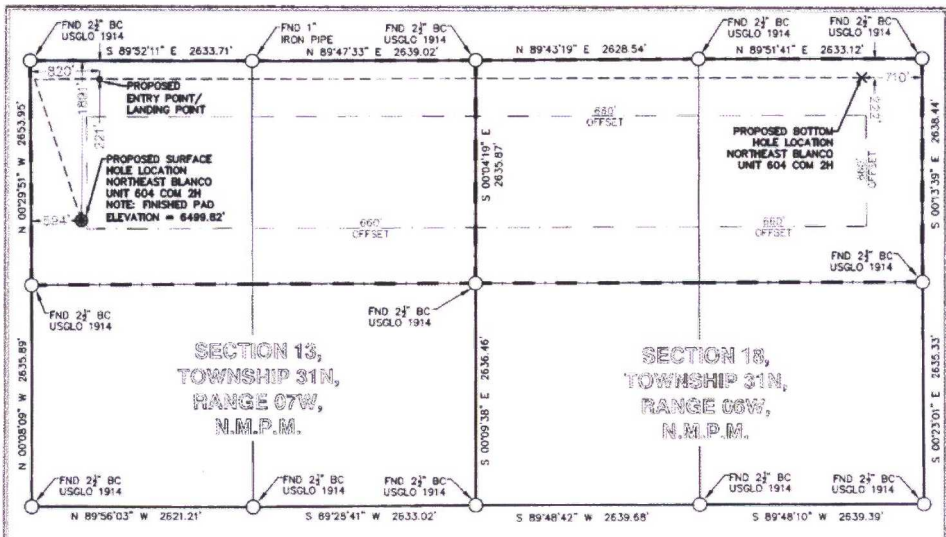
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	18	31N	06W		222	North	710	East	San Juan

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640.00 N/2 - SEC. 13 N/2 - SEC. 18			

OIL CONS. DIV DIST. 3

JAN 09 2017

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.



LEGEND
FOUND MONUMENT ○
PROPOSED SURFACE HOLE LOCATION ⊗
PROPOSED BOTTOM HOLE LOCATION ×

NEBU 604 COM 2H	*NMWZ NAD'83*	*NAD'83*	*TIES*
PROPOSED SURFACE HOLE LOCATION (SHL)	*N (Y) = 2,147,644.56'* *E (X) = 2,812,001.96'*	*LAT. = 36.90158378°N* *LON.= 107.52924637°W*	*FNL = 1891'* *FWL = 594'*
PROPOSED ENTRY POINT (EP)/ LANDING POINT (LP)	*N (Y) = 2,149,313.61'* *E (X) = 2,812,213.30'*	*LAT. = 36.90616637°N* *LON.= 107.52850532°W*	*FNL = 221'* *FWL = 820'*
PROPOSED BOTTOM HOLE LOCATION (BHL)	*N (Y) = 2,149,335.99'* *E (X) = 2,821,216.54'*	*LAT. = 36.90614484°N* *LON.= 107.49771120°W*	*FNL = 222'* *FEL = 710'*

[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.

Toya Colvin 8/01/16
Signature Date

Toya Colvin
Printed Name

toya.colvin@bp.com
E-mail Address

[18] SURVEYOR CERTIFICATION

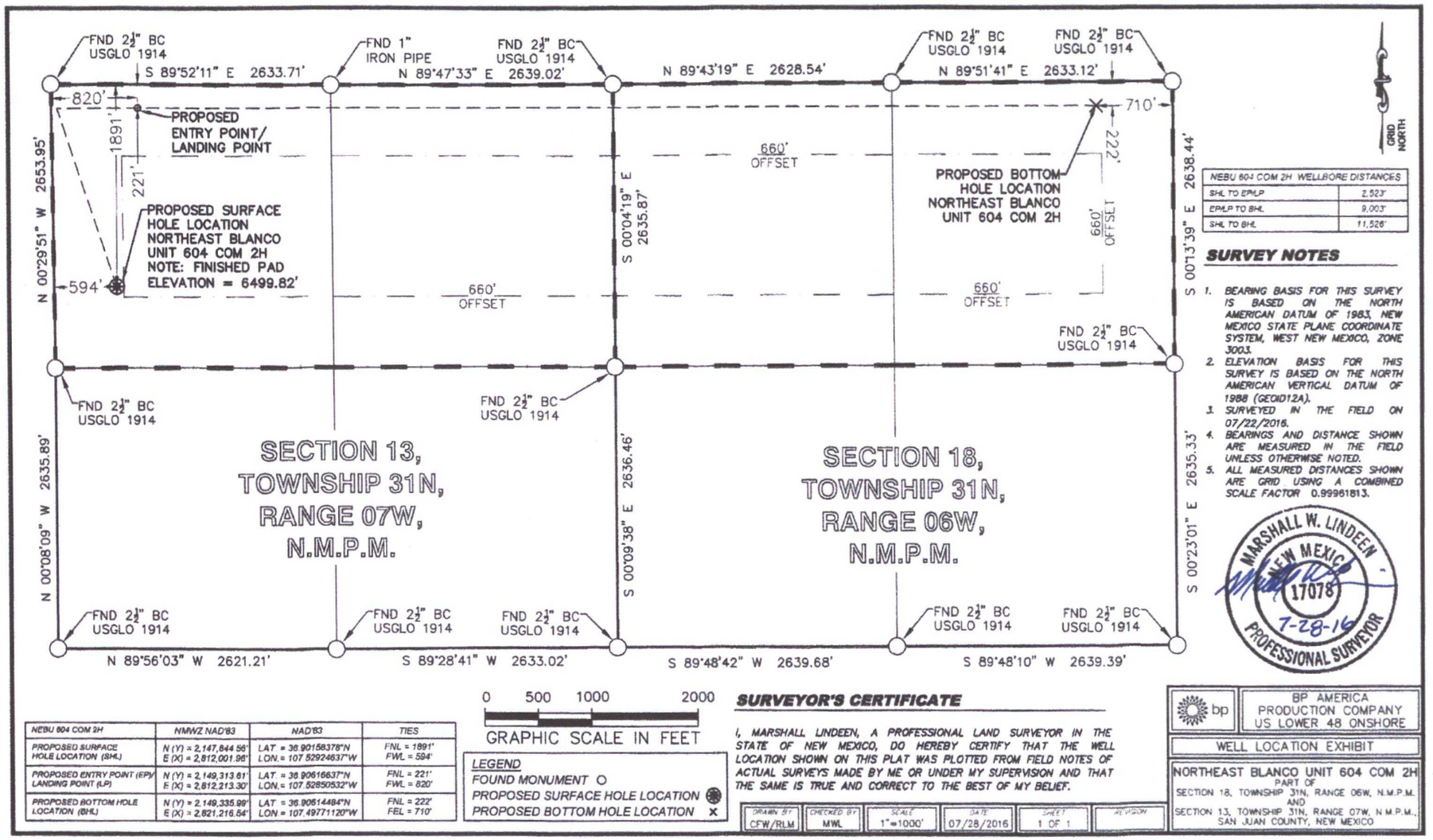
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

7-22-16
Date of Survey

Signature and Seal of Professional Surveyor

MARSHALL W. LINDEEN
NEW MEXICO
17078
7-28-16
PROFESSIONAL SURVEYOR

17078
Certificate Number



NEBU 604 COM 2H WELLBORE DISTANCES	
SHL TO EP/LP	2,523'
EP/LP TO BHL	9,003'
SHL TO BHL	11,526'

SURVEY NOTES

1. BEARING BASIS FOR THIS SURVEY IS BASED ON THE NORTH AMERICAN DATUM OF 1983, NEW MEXICO STATE PLANE COORDINATE SYSTEM, WEST NEW MEXICO, 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 07/22/2016.
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 0.99961813.

MARSHALL W. LINDEEN NEW MEXICO 17078 7-28-16 PROFESSIONAL SURVEYOR

NEBU 604 COM 2H	NMWZ NAD'83	NAD'83	TIES
PROPOSED SURFACE HOLE LOCATION (SHL)	N (Y) = 2,147,844.56' E (X) = 2,812,001.96'	LAT. = 36.90158378°N LON. = 107.52924637°W	FNL = 1891' FWL = 594'
PROPOSED ENTRY POINT (EP)/ LANDING POINT (LP)	N (Y) = 2,149,313.61' E (X) = 2,812,213.30'	LAT. = 36.90616637°N LON. = 107.52850532°W	FNL = 221' FWL = 820'
PROPOSED BOTTOM HOLE LOCATION (BHL)	N (Y) = 2,149,335.99' E (X) = 2,821,216.54'	LAT. = 36.90614484°N LON = 107.49771120°W	FNL = 222' FEL = 710'

0 500 1000 2000
GRAPHIC SCALE IN FEET

LEGEND
FOUND MONUMENT O
PROPOSED SURFACE HOLE LOCATION
PROPOSED BOTTOM HOLE LOCATION ×

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.

DRAWN BY	CHECKED BY	SCALE	DATE	SHEET	REVISION
CFW/RLM	MWL	1"=1000'	07/28/2016	1 OF 1	

BP AMERICA PRODUCTION COMPANY US LOWER 48 ONSHORE

WELL LOCATION EXHIBIT

NORTHEAST BLANCO UNIT 604 COM 2H
PART OF
SECTION 18, TOWNSHIP 31N, RANGE 06W, N.M.P.M.
AND
SECTION 13, TOWNSHIP 31N, RANGE 07W, N.M.P.M.,
SAN JUAN COUNTY, NEW MEXICO

SECTION – 1 – GEOLOGIC FORMATIONS AND CONTENTS

Marker	TVD	MD	Comments	BHP PSI/FT
Tertiary/San Jose Ss	25	25	Wet/aquifer	0.43
Ojo Alamo Ss	2,382	2,446	Wet/aquifer	0.43
Kirtland (Top/Cretaceous)	2,502	2,575	Gas & water-bearing	0.43
Fruitland	2,997	3,106	Gas & water-bearing	0.15
Lemon coal zone	3,192	3,316	Gas & water-bearing	0.07
Ignacio coal zone	3,237	3,364	Gas & water-bearing	0.07
Cotton Wood Coal	3,312	3,445	Gas & water-bearing	0.07
Pictured Cliff Ss	3,332	3,466	Wet	0.12
Cliffhouse Ss	5,412	5,699	Gas- & water-bearing	0.35
Mancos sh	6,172	6,478	Gas-bearing	0.43

Possible Aquifers: San Jose and Ojo Alamo

Oil Shale: None Expected.

Oil & Gas: Primary objective is the Mancos formation from 7,117' TVD (heel) to 7,142' TVD (toe). Landing point is expected to be in the Mancos at 7,117' TVD.

Protection of oil, gas, water, or other mineral bearing formations: Protection shall be accomplished by setting surface casing below base of possible aquifer and cementing surface casing to surface.

SECTION – 2 BOPE

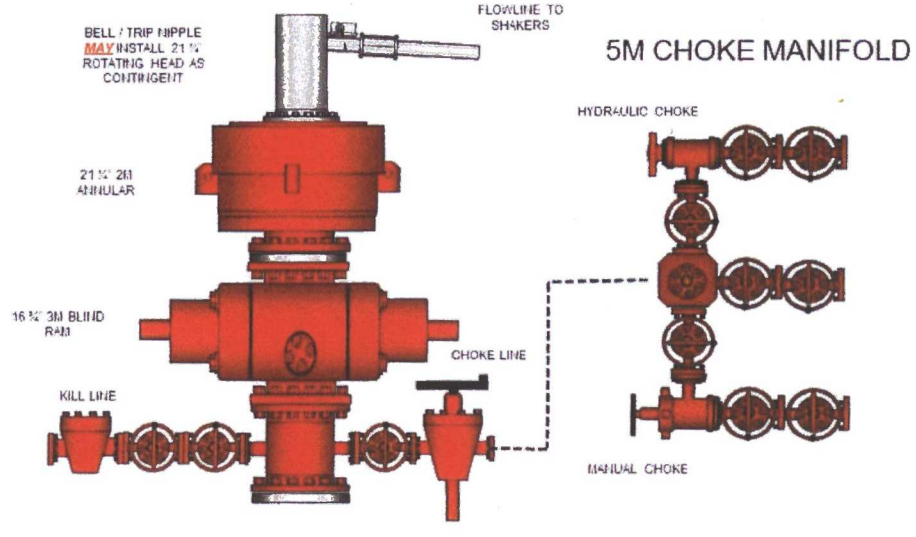
BOP equipment and accessories will meet or exceed BLM requirements outlined in 43 CFR Part 3160.

A 16 ¾" 2M BOPE and 13 5/8" 5M BOPE will be utilized to drill this well. Maximum anticipated surface pressure for the 16 ¾" 2M BOPE is 1,302 psi, maximum anticipated surface pressure for 13 5/8" 5M BOPE is 1,500 psi. The 16 3/4" BOPE will be tested 250 psi (Low) for 5 minutes and 2000 psi (High) for 10 minutes. The 13 5/8" BOPE will be tested 250 psi (Low) for 5 minutes and 5000 psi (High) for 10 minutes. Pressure test surface and intermediate casing(s) to 1500 psi for 30 minutes. All preventers and surface casing will be tested before drilling out of surface casing. 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 & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE.

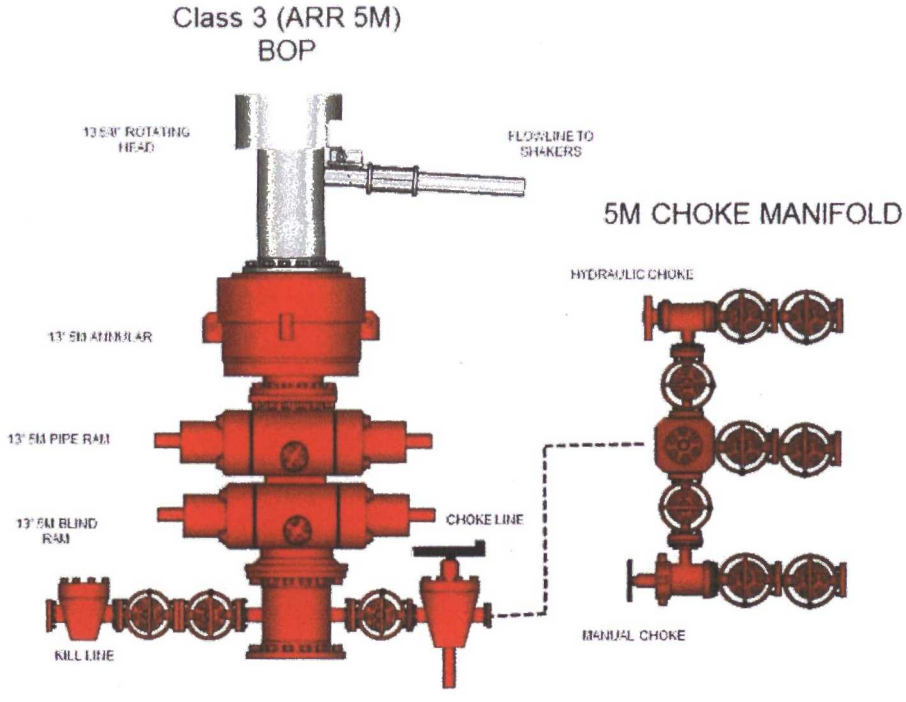
		BHP	MASP
16 3/4" 2M BOPE	6,200' TVD	2,666	1,302
13 5/8" 5M BOPE	7,142' TVD	3,071	1,500

16-3/4" BOPE

Class 2 (AR 2M)
BOP



13-5/8" BOPE



SECTION – 3 Casing

Bit Program

20" Surface Hole = Surface to 300'
14 3/4" = 300' to 4,000' MD = *11 3/4" (TO ACCOMODATE CONTINGENCY STRING IF REQUIRED)
10 5/8"= 4,000 to 6,500' MD = 8 5/8" casing point. (Above KOP)
7-7/8" Curve and Lateral = 6,500' MD (KOP) to 16,863' MD

Casing Program – all casing stings are new casing

Casing & Hole Size	Weight	Grade	Coupling	Setting Depth (MD)	Comments
16" (20")	65 ppf	J55	ST&C	0' - 300'	New casing. Cement to surface. *Surface Casing maybe preset
***11-¾" (14-¾")**	***47 ppf *54 ppf**	***J-55 *K-55**	***BT&C *BT&C**	***0' – 2,500' 2,500' – 4,000'**	***New Casing. Two Stage Cement *Contingency String**
8-5/8" (10-5/8")	32 ppf	N-80HC	BT&C	0' – 6,500'	New Casing. Two Stage Cement to surface
5-1/2" (7-7/8")	20 ppf	P-110	DQX TMK or equivalent	0' – 16,863'	New Casing – Single Stage Cement to overlap previous casing shoe.

Design Factor Table

Casing & Hole Size	Burst	Collapse	Axial	Tri-axial
16" (20") 65 ppf, J55, STC	1.43	2.56	3.75	3.99
***11-¾" (14-¾")** **47 ppf, J55,** **54 ppf, K55** **BTC**	**1.31** **1.51**	**1.34** **1.14**	**3.67** **3.03**	**1.50** **1.60**
8-5/8" (10-5/8") 32 ppf, N80HC, BTC	1.97	1.31	2.70	1.69
5-1/2" (7-7/8") 20 ppf, P110, DQX TMK	1.26	2.49	3.27	2.49

Casing strings below the conductor casing will be tested to .22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield.

Minimum casing design factors used:

Collapse -	1.125
Burst -	1.1
Jt. Strength -	1.40

Surface Casing – Centralizers shall be placed on the first 4 (bottom 4) joints of casing (1 per joint) and 1 every 3rd joint to surface.

Intermediate casing – Centralizers shall be placed on first 3 (bottom 3) joints of casing (1 per joint) and 1 every 3rd joint to surface. (*contingency string will use the same centralizer placement)

Production String – Centralizers will be placed at discretion in lateral to achieve adequate standoff for quality cement job. A toe sleeve will be placed 2 joints above shoe track.

*BP respectfully request to have option to set an 11 ¾" contingency string if severe losses occur while drilling fruitland coal interval. The casing string will cover the fruitland coal interval and shoe will be set at 4,000'. A two stage cement job will be utilized with stage tool at +/- 2700' MD. The following 8 5/8" casing string will have a two stage cement job with stage too at +/- 4,600' MD.

NOTE: If contingency string is not required the 8 5/8" casing will be ran to setting depth and a two stage cement job will be utilized with stage tool at +/- 2700' MD.

NOTE: DV tool placement is described in cement section and will be used at the discretion of the operator if there is evidence of heavy losses and we are concerned that cement will not make it to surface.

*Surface casing maybe preset with a preset rig.

SECTION – 4 Cement

The proposed cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- Pea Gravel or other material shall not be used to fill up around the surface casing in the event cement fall back occurs.

- The surface casing shall in all cases be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface. No more than the top 100' will be remediated with 1" line if fall back occurs. Anything more than 100' will require plan approval to remediate.

- Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

- Cement Volumes may be adjusted based on hole conditions.

Surface Casing Single Stage Job – (0-300'MD/TVD): 20" hole x 16" casing – 100% XS

Cement will be circulated to surface with 405 sx of Class G cement, 15.8 ppg, 1.174 ft3/sk, 94 lbm/sk, 2% CaCl, 0.1250 lbm/sk Poly E Flake, 5.13 Gal/sk fresh water. Volume 471 ft3

Intermediate Casing – Two Stage (0-6,500'MD/6,200'TVD): 14.75" (300' to 4,000') hole x 10.625" (4,000' to 6,500') hole x 8.625" casing Stage tool @ +/- 2,700' MD

Cement will be circulated to surface. Stage 1 Lead – 1075 sx of Poz 12.3 ppg, 1.958 ft3/sk, 61.10 lbm/sk, 0.1250 lbm/sk Poly E Flake, 10.42 Gal/sk fresh water. Tail – 220 sx 15.8 ppg, 1.147 ft3/sk, 94 lbm/sk, 0.10% Halad, 0.150 lbm/sk Poly E Flake, 4.96 Gal/sk freshwater. Stage 2 Lead – 1225 sx of Poz 12.3 ppg, 2.005 ft3/sk, 61.10 lbm/sk, 2% CaCl, 0.1250 lbm/sk Poly E Flake, 10.74 Gal/sk. Tail – 270 sx 15.8 ppg, 1.147 ft3/sk, 94 lbm/sk, 4.99 Gal/sk. Volume 5079 ft3

CONTINGENCY – 11.75" string will be run if we see excessive losses.

Intermediate 1 Casing – Two Stage (0-4,000'MD/3,828'TVD) 14.75" hole X 11.75" casing Stage tool @ +/- 2,700'MD: Contingency String

Cement will be circulated to surface. Stage 1 Lead – 235 sx of Poz 12.3 ppg, 1.958 ft3/sk, 61.10 lbm/sk, 0.1250 lbm/sk Poly E Flake, 10.42 Gal/sk fresh water. Tail – 450 sx 13.5 ppg, 1.317 ft3/sk, 94 lbm/sk, 0.10% Halad, 0.150 lbm/sk Poly E Flake, 4.96 Gal/sk freshwater. Stage 2 Lead – 670 sx of Poz 12.3 ppg, 2.005 ft3/sk, 61.10 lbm/sk, 2% CaCl, 0.1250 lbm/sk Poly E Flake, 10.74 Gal/sk. Tail - 150 sx 15.8 ppg, 1.147 ft3/sk, 94 lbm/sk, 4.99 Gal/sk. Volume 2553 ft3

Intermediate 2 Casing – Two Stage (0-6,500'MD/6,200'TVD) 10.625" hole x 8.625" casing Stage tool @ +/- 4,600'MD:

Cement will overlap previous casing shoe at 3,500' MD. Stage 1 Lead – 130 sx of Poz 12.3 ppg, 1.959 ft3/sk, 61.10 lbm/sk, 0.10% HR-5, 0.1250 lbm/sk Poly E Flake, 10.42 Gal/sk fresh water. Tail – 220 sx 13.5 ppg, 1.317 ft3/sk, 47 lbm/sk, 0.10% HR-5, 0.1250 lbm/sk Poly E Flake, 5.95 Gal/sk freshwater. Stage 2 - Lead – 145 sx of Poz 12.3 ppg, 1.959 ft3/sk, 61.10 lbm/sk, 0.10% HR-5, 0.1250 lbm/sk Poly E Flake, 10.42 Gal/sk fresh water. Tail - 70 sx 15.8 ppg, 1.147 ft3/sk, 94 lbm/sk, 0.10 Halad(R) - 9, 4.98 Gal/sk. Volume 888 ft3

Production Casing – Single Stage Conventional Cement (0' - 16,863' MD/ 7,142' TVD) 7.825" hole x 5.5" casing:

Estimated top of cement at 6,000' MD. 1650 sx of Class G cement, 15.8 ppg, 1.174 ft3/sk, 94 lbm/sk, 2% CaCl, 0.1250 lbm/sk Poly E Flake, 5.13 Gal/sk fresh water Volume 1921 ft3

Cement calculations are used for volume estimation. Well conditions will dictate final cement job design.

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

SECTION – 5 Circulating Medium (Mud Program)

CLOSED-LOOP SYSTEM DESIGN PLAN

The closed-loop system will consist of a series of temporary above-ground storage tanks and/or haul-off bins suitable for holding the cuttings and fluids from drilling operations. The closed- loop system will not entail temporary pits, below-grade storage tanks, below-grade sumps, or drying pads.

Design considerations include:

- The closed-loop system will be signed in accordance with 19.15.17.11 NMAC.
- The closed-loop system storage tanks will be of adequate volume to ensure confinement of all fluids and provide sufficient freeboard to prevent uncontrolled releases.
- Topsoil will be salvaged and stored for use in reclamation activities.

CLOSED-LOOP SYSTEM OPERATING & MAINTENANCE PLAN

The closed-loop system will be operated and maintained to contain liquids and solids; minimize the amount of drilling fluids and cuttings that require disposal; maximize the amount of drilling fluid recycled and reused in the drilling process; isolate drilling wastes from the environment; prevent contamination of fresh water; and protect public health and the environment.

Operation and maintenance considerations include:

- Fluid levels will be maintained to provide sufficient freeboard to prevent over-topping.
- Visual inspections will be conducted on a daily basis to identify any potential leaks and to ensure that the closed-loop system storage tanks have sufficient freeboard to prevent over-topping.
- Only drilling fluids or cuttings intrinsic to, used by, or generated from, drilling operations will be stored in the closed-loop system storage tanks. Hazardous waste, miscellaneous solid waste, and/or debris will not be stored in the storage tanks.
- The OCD District Office will be notified within 48 hours of discovery of a leak in the closed-loop drilling system. If a leak is discovered, all liquid will be removed within 48 hours and the damage repaired.

CLOSED-LOOP SYSTEM CLOSURE PLAN

The closed-loop system will be closed in accordance with 19.15.17.13 NMAC. Closure

considerations include:

- 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 Envirotech, 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.
- The well pad will be reclaimed and seeded in accordance with subsections G, Hand I of 19.15.17.13NMAC.

Mud Tables

Interval (MD)	Hole Section	Hole Size	Type	MW	FL	PV	YP	PH	REMARKS
0'-300'	Surface	20"	FW/Gel	8.4	NC	8	12	9.0	Spud Mud
300'-6,500'	Intermediate	14 ¾" x 10 5/8"	LSND	8.6-9.0	<8	4-6	12-15	10.0	Fresh Water
6,500'-16,863	Production	7-7/8"	OBM	9.0-12.0	<8	14-20	8-14	11.0	OBM

Contingency

Interval (MD)	Hole Section	Hole Size	Type	MW	FL	PV	YP	PH	REMARKS
300'-4,000'	Intermediate 1	14 3/4 "	LSND	8.6-9.0	<8	4-6	12-15	10.0	Fresh Water
4,000'-6,500'	Intermediate 2	10-5/8"	AIR	NC	NC	NC	NC	NC	

Sufficient weighting material will be on hand to weight mud up to 1 PPG over, if required.

The formula for weight up with barite is listed below:
Sacks of Barite per 100 bbl of mud = 1470 x (W2 – W1) ÷ (35 – W2)

Where; W1 = current mud weight

W2 = new mud weight

Sacks = 1470 x (10 – 9)/ (35-10) = 59 sx * 5 (500bbls minimum) = 294sx

Pason Pit Volume Totalizer (PVT) equipment (or equilvant) will be on each pit to monitor pit levels. A trip tank equipped with a Pason PVT will be used to monitor trip volumes.

A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of as outlined is surface use plane location will be lined in accordance with the Surface Use Plan of Operations.

SECTION – 6 Test, Logging & Coring

Testing: None planned.

Logging:

GR – Surface Casing shoe to Pilot Hole TD

Azimuthal and Radial GR – Drilling curve and lateral

Mud Logging:

Geologist & a manned mud-logging unit will be operational @ +/- 3,000' on the [redacted] Hole to TD and of the horizontal hole.

Gas detecting equipment shall be installed in the mud return system for exploratory wells and hydrocarbon gas shall be monitored for pore pressue changes from base of surface casing to TD.

Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.

Coring: None

Cement Bond Log:

BP will run a cement bond log (CBL) if cement returns are not observed on the surface and first intermediate casing strings. The CBL will confirm the quality of cement and the actual top of cement.

SECTION – 7 Pressure

Normal to subnormal pressure gradient to TD.

MASP and casing design parameters determined using 0.43 psi/ft.

Maximum expected BHP @ 7142' TVD: 3,071 psi

Maximum expected BHT @ 7142' TVD: ~200^{o} F

Possible lost circulation in the Fruitland Coal to Mesa Verde (~3,000' to 5,000'). Lost circulation has been successfully mitigated with lost circulation materials in concentrations of up to 30% by volume. Intermediate casing will be set through this interval to +/- 7,000'.

No hydrogen sulfide gas is anticipated, however, if H_2S is encountered, the guidelines in Onshore Order No. 6 will be followed.

Directional Plans: Horizontal directional well, directional plans attached.

Completion:

- **Pressure test**
  - Pressure test production casing to allowable frac pressure or as per BLM requirements
- **Stimulation**
  - well will be stimulated with approximately 35,000,000 pound of proppant in 775,000 bbls of water; the number of stages and the amount of proppant will be adjusted based on the petrophysical properties of the target zone
  - stages will be isolated with plugs
  - plugs will be drilled out
  - flowback well
- **Turn well to production**
  - It is intended to produce the well up the casing, without installing tubing, for at least 60 days or until tubing is needed to unload the well

Timing: BP plans to drill this well in August, 2018
It is anticipated that the drilling of this well will take approximately 30 days.

It is anticipated that completion operations will begin immediately after the well has been drilled depending on stimulation company availability.

Surface Casing Design - Evacuation/Casing Test (collaspe & burst), 100k overpull (tension)

	Collapse	Burst	Tension
Min Safety Factors	1.125	1.000	1.400

	Size	Weight	Grade	Conn	Collapse	Burst	Tension (Pipe Body)	Tension (Connection)
Surface	16	65	J55	STC	630	1,640	736,000	439,000
					80% of Burst =	1,312		

65 pff, J55, STC

	Casing Depth	MW in	MW out	Pres in	Pres out	SF	
Collapse	300	0	15.80	0	246	2.56	Full evacuation with 15.8ppg c
Burst	300	8.3	0	1500	0	1.09	1500psi casing test
		Mud Wt	Air Wt	Bouy Wt	BW +100k		
Tension (Pipe Body)	300	8.3	19,500	17,029	117,029	6.29	100k over pull
Tension (Connection)	300	8.3	19,500	17,029	117,029	3.75	
	BF= 1- (MW)/65.5 =	0.8733					

Intermediate Casing Design - Evacuation/Casing Test (collaspe & burst), 100k overpull (tension)

	Collapse	Burst	Tension
Min Safety Factors	1.125	1.000	1.400

	Btm Interval	Size	Weight	Grade	Conn	Collapse	Burst	Tension (Pipe Body)	Tension (Connection)
Intermediate	2500	11.75	47	J55	BTC	1,510	3,070	737,000	807,000
						80% of Burst =	2,456		

47 ppf J55 BTC

	Measured Depth	TVD	MW in	MW out	Pres in	Pres out	SF	
Collapse	2500	2432	0	9.00	0	1138	1.33	
Burst	2500	2432	9.0	0	1138	0	2.70	
			Mud Wt	Air Wt	Bouy Wt	BW +100k		
Tension (Pipe Body)	2500	2432	9.0	114,304	98,598	198,598	3.71	100k over pull
Tension (Connection)		2432	9.0	114,304	98,598	198,598	4.06	
		BF= 1- (MW)/65.5 =	0.8626					

Intermediate Casing Design - Evacuation/Casing Test (collaspe & burst), 100k overpull (tension)

	Collapse	Burst	Tension
Min Safety Factors	1.125	1.000	1.400

	Btm Interval	Size	Weight	Grade	Conn	Collapse	Burst	Tension (Pipe Body)	Tension (Connection)
Intermediate	4000	11.75	54	K55	BTC	2,070	3,570	850,000	1,079,000
54 ppf K55 BTC						80% of Burst =	2,856		

	Measured Depth	TVD	MW in	MW out	Pres in	Pres out	SF
Collapse	4000	3828	0	9.00	0	1792	1.16
Burst	4000	3828	9.0	0	1792	0	1.99

			Mud Wt	Air Wt	Bouy Wt	BW +100k		
Tension (Pipe Body)	4000	3828	9.0	206,712	178,309	278,309	3.05	100k over pull
Tension (Connection)		3828	9.0	206,712	178,309	278,309	3.88	
		BF= 1- (MW)/65.5 =	0.8626					

Intermediate Casing Design - Evacuation/Casing Test (collaspe & burst), 100k overpull (tension)

	Collapse	Burst	Tension
Min Safety Factors	1.125	1.000	1.400

	Btm Interval	Size	Weight	Grade	Conn	Collapse	Burst	Tension (Pipe Body)	Tension (Connection)
Intermediate	6500	8.625	32	N80HC	BTC	3,800	5,710	732,000	737,000
						80% of Burst =	4,568		

32 ppf N80HC BTC

	Measured Depth	TVD	MW in	MW out	Pres in	Pres out	SF	
Collapse	6500	6200	0	9.00	0	2902	1.31	
Burst	6500	6200	9.0	0	2902	0	1.97	
			Mud Wt	Air Wt	Bouy Wt	BW +100k		
Tension (Pipe Body)	6500	6200	9.0	198,400	171,139	271,139	2.70	100k over pull
Tension (Connection)		6200	9.0	198,400	171,139	271,139	2.72	
		BF= 1- (MW)/65.5 =	0.8626					

Liner Casing Design - Evacuation/Max Mud Wt (collaspe), Max Frac Pres (burst) 100k overp (tensi

	Collapse	Burst	Tension
Min Safety Factors	1.125	1.100	1.400

	Size	Weight	Grade	Conn	Collapse	Burst	Tension (Pipe Body)	Tension (Connection)
Production	5.5	20	P-110	BTC	11,110	12,640	729,000	641,000

20 ppf P-110 BTC

	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF	Notes
Collapse	7142	0	12.00	0	4457	2.49	
Burst	7142	12.0	0	10000	0	1.26	Max Allowable Treating Pressu Pop off valve will be set below
		Mud Wt	Air Wt	Bouy Wt	BW +100k		
Tension (Pipe Body)	7142	9.0	142,840	123,213	223,213	3.27	100k over pull
Tension (Connection)	7142	9.0	142,840	123,213	223,213	2.87	
	BF= 1- (MW)/65.5 =	0.8626					

Company: B.P.
Project: San Juan County, NM NAD83
Site: NEBU 604 Pad
Well: NEBU 604 COM 2H
Wellbore: OH
Design: Plan #1

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

Scientific Drilling

Azimuths to Grid North
True North: -0.18°
Magnetic North: 8.97°

Magnetic Field
Strength: 50141.2nT
Dip Angle: 63.55°
Date: 7/21/2016
Model: HDGM

WELL DETAILS: NEBU 604 COM 2H

GL 6497' & RKB 25' @ 6522.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	2147644.56	2812001.96	36.9015838	-107.5292464

Plan: Plan #1 (NEBU 604 COM 2H/OH)

Created By: Janie Collins Date: 16:22, July 26 2016

DESIGN TARGET DETAILS

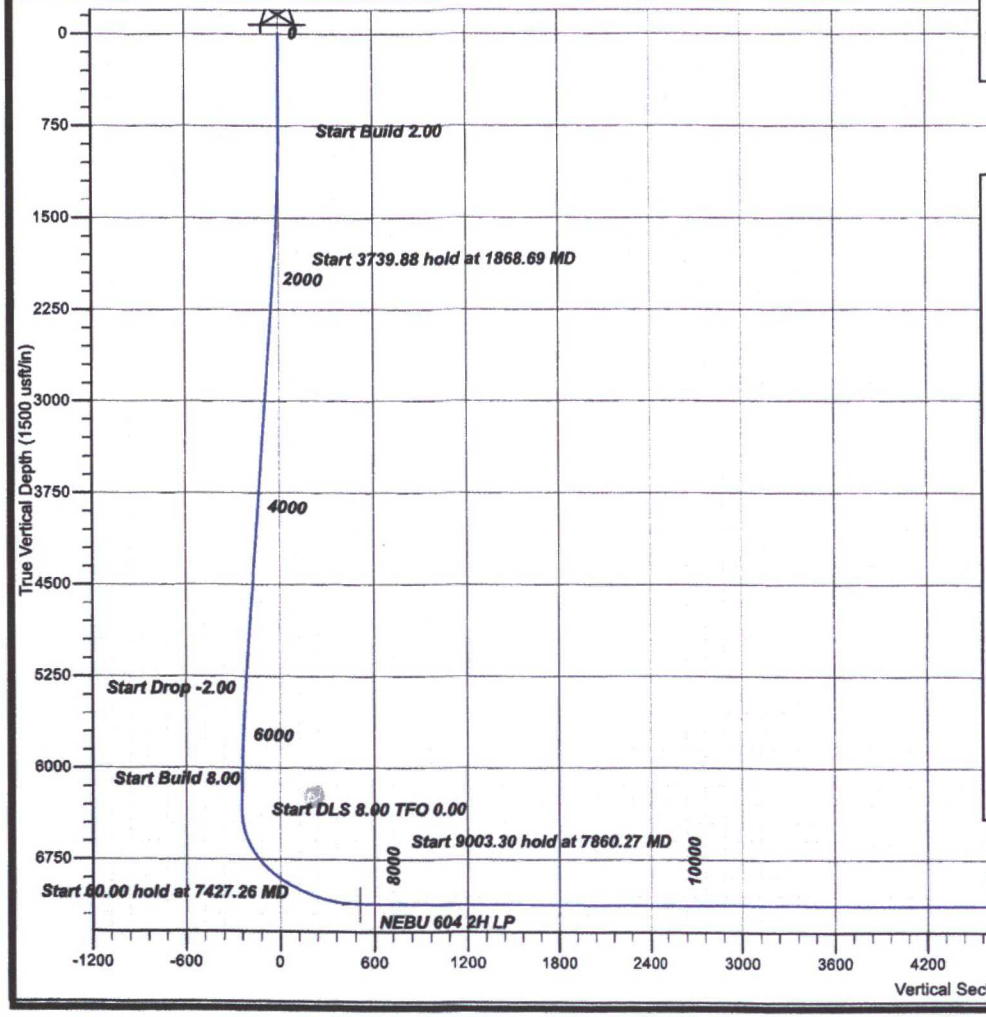
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
NEBU 604 2H PBHL	7142.00	1691.43	9214.58	2149335.99	2821216.54	36.9061448	-107.4977112
NEBU 604 2H LP	7117.00	1669.05	211.34	2149313.61	2812213.30	36.9061664	-107.5285053

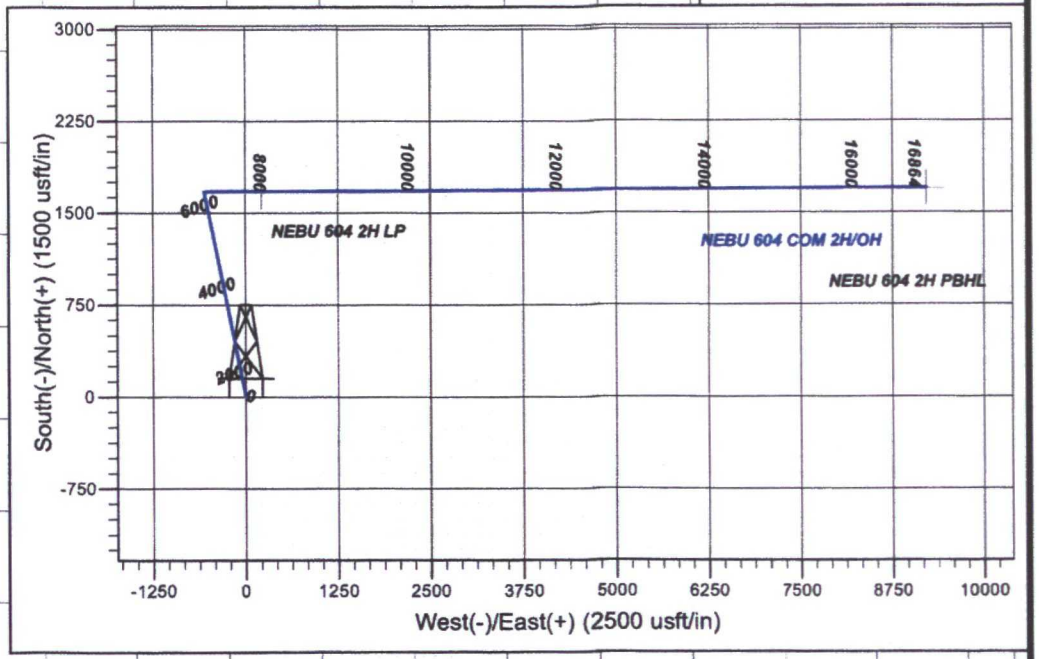
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
1868.69	21.37	341.59	1844.08	186.95	-62.22	2.00	341.59	-27.44	
5608.57	21.37	341.59	5326.73	1480.22	-492.61	0.00	0.00	-217.27	
6577.26	0.00	0.00	6370.81	1667.17	-554.83	2.00	180.00	-244.72	
7427.26	60.00	89.86	6991.06	1668.04	-196.73	8.00	89.86	107.66	
7487.26	60.00	89.86	7021.06	1668.17	-144.77	0.00	0.00	158.79	
7860.27	89.84	89.86	7117.00	1669.05	211.34	8.00	0.00	509.20	
16863.58	89.84	89.86	7142.00	1691.43	9214.58	0.00	0.00	9368.53	NEBU 604 2H PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
25.00	25.00	San Jose Ss
2382.00	2446.34	Ojo Alamo Ss
2502.00	2575.21	Kirtland
2997.00	3106.77	Fruitland
3192.00	3316.17	Lemon Coal Zone
3237.00	3364.49	Ignacio Coal Zone
3312.00	3445.03	Cottonwood Coal Zone
3332.00	3466.51	Pictured Cliffs Ss
3417.00	3557.79	Cahn Coal Zone
5412.00	5699.58	Cliffhouse Ss
6172.00	6478.29	Mancos Shale





bp

B.P.

San Juan County, NM NAD83
NEBU 604 Pad
NEBU 604 COM 2H

OH

Plan: Plan #1

Standard Planning Report

26 July, 2016

Scientific Drilling

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well NEBU 604 COM 2H
Company:	B.P.	**TVD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Project:	San Juan County, NM NAD83	**MD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Site:	NEBU 604 Pad	**North Reference:**	Grid
Well:	NEBU 604 COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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	NEBU 604 Pad				
Site Position:		**Northing:**	2,147,663.38 usft	**Latitude:**	36.9016354
From:	Map	**Easting:**	2,812,008.74 usft	**Longitude:**	-107.5292230
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	0.18 °

Well	NEBU 604 COM 2H				
Well Position	**+N/-S**	-18.82 usft	**Northing:**	2,147,644.56 usft	**Latitude:**	36.9015837
	+E/-W	-6.78 usft	**Easting:**	2,812,001.96 usft	**Longitude:**	-107.5292464
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	6,497.00 usft

Wellbore	OH			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	7/21/2016	9.15	63.55	50,141

Design	Plan #1			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	79.60

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,868.69	21.37	341.59	1,844.08	186.95	-62.22	2.00	2.00	0.00	341.59	
5,608.57	21.37	341.59	5,326.73	1,480.22	-492.61	0.00	0.00	0.00	0.00	
6,677.26	0.00	0.00	6,370.81	1,667.17	-554.83	2.00	-2.00	0.00	180.00	
7,427.26	60.00	89.86	6,991.06	1,668.05	-196.73	8.00	8.00	0.00	89.86	
7,487.26	60.00	89.86	7,021.06	1,668.17	-144.77	0.00	0.00	0.00	0.00	
7,860.27	89.84	89.86	7,117.00	1,669.05	211.34	8.00	8.00	0.00	0.00	
16,863.58	89.84	89.86	7,142.00	1,691.43	9,214.58	0.00	0.00	0.00	0.00	NEBU 604 2H PBHL

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well NEBU 604 COM 2H
Company:	B.P.	**TVD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Project:	San Juan County, NM NAD83	**MD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Site:	NEBU 604 Pad	**North Reference:**	Grid
Well:	NEBU 604 COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00
San Jose Ss									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	2.00	341.59	899.98	1.66	-0.55	-0.24	2.00	2.00	0.00
1,000.00	4.00	341.59	999.84	6.62	-2.20	-0.97	2.00	2.00	0.00
1,100.00	6.00	341.59	1,099.45	14.89	-4.96	-2.19	2.00	2.00	0.00
1,200.00	8.00	341.59	1,198.70	26.45	-8.80	-3.88	2.00	2.00	0.00
1,300.00	10.00	341.59	1,297.46	41.30	-13.74	-6.06	2.00	2.00	0.00
1,400.00	12.00	341.59	1,395.62	59.40	-19.77	-8.72	2.00	2.00	0.00
1,500.00	14.00	341.59	1,493.05	80.74	-26.87	-11.85	2.00	2.00	0.00
1,600.00	16.00	341.59	1,589.64	105.30	-35.04	-15.46	2.00	2.00	0.00
1,700.00	18.00	341.59	1,685.27	133.04	-44.27	-19.53	2.00	2.00	0.00
1,800.00	20.00	341.59	1,779.81	163.93	-54.55	-24.06	2.00	2.00	0.00
1,868.69	21.37	341.59	1,844.08	186.95	-62.22	-27.44	2.00	2.00	0.00
1,900.00	21.37	341.59	1,873.23	197.78	-65.82	-29.03	0.00	0.00	0.00
2,000.00	21.37	341.59	1,966.35	232.36	-77.33	-34.11	0.00	0.00	0.00
2,100.00	21.37	341.59	2,059.47	266.94	-88.84	-39.18	0.00	0.00	0.00
2,200.00	21.37	341.59	2,152.59	301.52	-100.34	-44.26	0.00	0.00	0.00
2,300.00	21.37	341.59	2,245.72	336.10	-111.85	-49.33	0.00	0.00	0.00
2,400.00	21.37	341.59	2,338.84	370.68	-123.36	-54.41	0.00	0.00	0.00
2,446.34	21.37	341.59	2,382.00	386.71	-128.70	-56.76	0.00	0.00	0.00
Ojo Alamo Ss									
2,500.00	21.37	341.59	2,431.96	405.26	-134.87	-59.49	0.00	0.00	0.00
2,575.21	21.37	341.59	2,502.00	431.27	-143.53	-63.30	0.00	0.00	0.00
Kirtland									
2,599.99	21.37	341.59	2,525.08	439.84	-146.38	-64.56	0.00	0.00	0.00
2,699.99	21.37	341.59	2,618.20	474.42	-157.89	-69.64	0.00	0.00	0.00
2,799.99	21.37	341.59	2,711.33	509.00	-169.39	-74.71	0.00	0.00	0.00
2,899.99	21.37	341.59	2,804.45	543.58	-180.90	-79.79	0.00	0.00	0.00
2,999.99	21.37	341.59	2,897.57	578.16	-192.41	-84.87	0.00	0.00	0.00
3,099.99	21.37	341.59	2,990.69	612.74	-203.92	-89.94	0.00	0.00	0.00
3,106.77	21.37	341.59	2,997.00	615.08	-204.70	-90.29	0.00	0.00	0.00
Fruitland									
3,199.99	21.37	341.59	3,083.82	647.32	-215.43	-95.02	0.00	0.00	0.00
3,299.99	21.37	341.59	3,176.94	681.90	-226.94	-100.09	0.00	0.00	0.00
3,316.17	21.37	341.59	3,192.00	687.50	-228.80	-100.91	0.00	0.00	0.00
Lemon Coal Zone									
3,364.49	21.37	341.59	3,237.00	704.21	-234.36	-103.37	0.00	0.00	0.00
Ignacio Coal Zone									
3,399.99	21.37	341.59	3,270.06	716.48	-238.44	-105.17	0.00	0.00	0.00
3,445.03	21.37	341.59	3,312.00	732.06	-243.63	-107.45	0.00	0.00	0.00
Cottonwood Coal Zone									
3,466.51	21.37	341.59	3,332.00	739.48	-246.10	-108.55	0.00	0.00	0.00
Pictured Cliffs Ss									
3,499.99	21.37	341.59	3,363.18	751.06	-249.95	-110.24	0.00	0.00	0.00

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well NEBU 604 COM 2H
Company:	B.P.	**TVD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Project:	San Juan County, NM NAD83	**MD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Site:	NEBU 604 Pad	**North Reference:**	Grid
Well:	NEBU 604 COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
3,557.79	21.37	341.59	3,417.00	771.05	-256.60	-113.18	0.00	0.00	0.00
Cahn Coal Zone									
3,599.99	21.37	341.59	3,456.30	785.64	-261.46	-115.32	0.00	0.00	0.00
3,699.99	21.37	341.59	3,549.43	820.22	-272.97	-120.40	0.00	0.00	0.00
3,799.99	21.37	341.59	3,642.55	854.80	-284.48	-125.47	0.00	0.00	0.00
3,899.99	21.37	341.59	3,735.67	889.38	-295.99	-130.55	0.00	0.00	0.00
3,999.99	21.37	341.59	3,828.79	923.97	-307.49	-135.62	0.00	0.00	0.00
4,099.99	21.37	341.59	3,921.91	958.55	-319.00	-140.70	0.00	0.00	0.00
4,199.99	21.37	341.59	4,015.04	993.13	-330.51	-145.78	0.00	0.00	0.00
4,299.99	21.37	341.59	4,108.16	1,027.71	-342.02	-150.85	0.00	0.00	0.00
4,399.99	21.37	341.59	4,201.28	1,062.29	-353.53	-155.93	0.00	0.00	0.00
4,499.99	21.37	341.59	4,294.40	1,096.87	-365.03	-161.00	0.00	0.00	0.00
4,599.99	21.37	341.59	4,387.52	1,131.45	-376.54	-166.08	0.00	0.00	0.00
4,699.99	21.37	341.59	4,480.65	1,166.03	-388.05	-171.16	0.00	0.00	0.00
4,799.99	21.37	341.59	4,573.77	1,200.61	-399.56	-176.23	0.00	0.00	0.00
4,899.99	21.37	341.59	4,666.89	1,235.19	-411.07	-181.31	0.00	0.00	0.00
4,999.99	21.37	341.59	4,760.01	1,269.77	-422.58	-186.38	0.00	0.00	0.00
5,099.99	21.37	341.59	4,853.13	1,304.35	-434.08	-191.46	0.00	0.00	0.00
5,199.99	21.37	341.59	4,946.26	1,338.93	-445.59	-196.53	0.00	0.00	0.00
5,299.99	21.37	341.59	5,039.38	1,373.51	-457.10	-201.61	0.00	0.00	0.00
5,399.99	21.37	341.59	5,132.50	1,408.09	-468.61	-206.69	0.00	0.00	0.00
5,499.99	21.37	341.59	5,225.62	1,442.67	-480.12	-211.76	0.00	0.00	0.00
5,599.99	21.37	341.59	5,318.74	1,477.25	-491.63	-216.84	0.00	0.00	0.00
5,608.57	21.37	341.59	5,326.73	1,480.22	-492.61	-217.27	0.00	0.00	0.00
5,699.58	19.55	341.59	5,412.00	1,510.41	-502.66	-221.71	2.00	-2.00	0.00
Cliffhouse Ss									
5,699.99	19.55	341.59	5,412.38	1,510.54	-502.70	-221.72	2.00	-2.00	0.00
5,799.99	17.55	341.59	5,507.19	1,540.71	-512.75	-226.15	2.00	-2.00	0.00
5,899.99	15.55	341.59	5,603.04	1,567.73	-521.74	-230.12	2.00	-2.00	0.00
5,999.99	13.55	341.59	5,699.83	1,591.56	-529.67	-233.62	2.00	-2.00	0.00
6,099.99	11.55	341.59	5,797.44	1,612.17	-536.53	-236.64	2.00	-2.00	0.00
6,199.99	9.55	341.59	5,895.74	1,629.53	-542.31	-239.19	2.00	-2.00	0.00
6,299.99	7.55	341.59	5,994.63	1,643.63	-547.00	-241.26	2.00	-2.00	0.00
6,399.99	5.55	341.59	6,093.97	1,654.45	-550.60	-242.85	2.00	-2.00	0.00
6,478.29	3.98	341.59	6,172.00	1,660.62	-552.65	-243.75	2.00	-2.00	0.00
Mancos Shale									
6,499.99	3.55	341.59	6,193.65	1,661.97	-553.10	-243.95	2.00	-2.00	0.00
6,599.99	1.55	341.59	6,293.55	1,666.18	-554.50	-244.57	2.00	-2.00	0.00
6,677.26	0.00	0.00	6,370.81	1,667.17	-554.83	-244.72	2.00	-2.00	0.00
6,699.99	1.82	89.86	6,393.53	1,667.17	-554.47	-244.36	8.00	8.00	0.00
6,799.99	9.82	89.86	6,492.94	1,667.20	-544.34	-234.39	8.00	8.00	0.00
6,899.99	17.82	89.86	6,589.96	1,667.25	-520.48	-210.91	8.00	8.00	0.00
6,999.99	25.82	89.86	6,682.73	1,667.34	-483.34	-174.37	8.00	8.00	0.00
7,099.99	33.82	89.86	6,769.42	1,667.47	-433.66	-125.48	8.00	8.00	0.00
7,199.99	41.82	89.86	6,848.35	1,667.62	-372.39	-65.19	8.00	8.00	0.00
7,299.99	49.82	89.86	6,917.98	1,667.79	-300.74	5.32	8.00	8.00	0.00
7,399.99	57.82	89.86	6,976.97	1,667.99	-220.09	84.67	8.00	8.00	0.00
7,427.26	60.00	89.86	6,991.06	1,668.05	-196.73	107.66	8.00	8.00	0.00
7,487.26	60.00	89.86	7,021.06	1,668.17	-144.77	158.79	0.00	0.00	0.00
7,499.99	61.02	89.86	7,027.32	1,668.20	-133.69	169.69	8.00	8.00	0.00
7,599.98	69.02	89.86	7,069.52	1,668.42	-43.12	258.81	8.00	8.00	0.00
7,699.98	77.02	89.86	7,098.70	1,668.66	52.44	352.84	8.00	8.00	0.00
7,799.98	85.02	89.86	7,114.30	1,668.90	151.13	449.96	8.00	8.00	0.00

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well NEBU 604 COM 2H
Company:	B.P.	**TVD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Project:	San Juan County, NM NAD83	**MD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Site:	NEBU 604 Pad	**North Reference:**	Grid
Well:	NEBU 604 COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
7,860.27	89.84	89.86	7,117.00	1,669.05	211.34	509.20	8.00	8.00	0.00
NEBU 604 2H LP									
7,899.98	89.84	89.86	7,117.11	1,669.15	251.05	548.28	0.00	0.00	0.00
7,999.98	89.84	89.86	7,117.39	1,669.40	351.05	646.68	0.00	0.00	0.00
8,099.98	89.84	89.86	7,117.67	1,669.65	451.05	745.08	0.00	0.00	0.00
8,199.98	89.84	89.86	7,117.95	1,669.89	551.05	843.48	0.00	0.00	0.00
8,299.98	89.84	89.86	7,118.23	1,670.14	651.05	941.88	0.00	0.00	0.00
8,399.98	89.84	89.86	7,118.50	1,670.39	751.05	1,040.28	0.00	0.00	0.00
8,499.98	89.84	89.86	7,118.78	1,670.64	851.05	1,138.68	0.00	0.00	0.00
8,599.98	89.84	89.86	7,119.06	1,670.89	951.04	1,237.08	0.00	0.00	0.00
8,699.98	89.84	89.86	7,119.34	1,671.14	1,051.04	1,335.49	0.00	0.00	0.00
8,799.98	89.84	89.86	7,119.61	1,671.39	1,151.04	1,433.89	0.00	0.00	0.00
8,899.98	89.84	89.86	7,119.89	1,671.63	1,251.04	1,532.29	0.00	0.00	0.00
8,999.98	89.84	89.86	7,120.17	1,671.88	1,351.04	1,630.69	0.00	0.00	0.00
9,099.98	89.84	89.86	7,120.45	1,672.13	1,451.04	1,729.09	0.00	0.00	0.00
9,199.98	89.84	89.86	7,120.72	1,672.38	1,551.04	1,827.49	0.00	0.00	0.00
9,299.98	89.84	89.86	7,121.00	1,672.63	1,651.04	1,925.89	0.00	0.00	0.00
9,399.98	89.84	89.86	7,121.28	1,672.88	1,751.04	2,024.29	0.00	0.00	0.00
9,499.98	89.84	89.86	7,121.56	1,673.13	1,851.04	2,122.69	0.00	0.00	0.00
9,599.98	89.84	89.86	7,121.83	1,673.37	1,951.04	2,221.09	0.00	0.00	0.00
9,699.98	89.84	89.86	7,122.11	1,673.62	2,051.04	2,319.49	0.00	0.00	0.00
9,799.98	89.84	89.86	7,122.39	1,673.87	2,151.03	2,417.89	0.00	0.00	0.00
9,899.98	89.84	89.86	7,122.67	1,674.12	2,251.03	2,516.29	0.00	0.00	0.00
9,999.98	89.84	89.86	7,122.95	1,674.37	2,351.03	2,614.69	0.00	0.00	0.00
10,099.98	89.84	89.86	7,123.22	1,674.62	2,451.03	2,713.10	0.00	0.00	0.00
10,199.98	89.84	89.86	7,123.50	1,674.87	2,551.03	2,811.50	0.00	0.00	0.00
10,299.98	89.84	89.86	7,123.78	1,675.11	2,651.03	2,909.90	0.00	0.00	0.00
10,399.98	89.84	89.86	7,124.06	1,675.36	2,751.03	3,008.30	0.00	0.00	0.00
10,499.98	89.84	89.86	7,124.33	1,675.61	2,851.03	3,106.70	0.00	0.00	0.00
10,599.98	89.84	89.86	7,124.61	1,675.86	2,951.03	3,205.10	0.00	0.00	0.00
10,699.98	89.84	89.86	7,124.89	1,676.11	3,051.03	3,303.50	0.00	0.00	0.00
10,799.98	89.84	89.86	7,125.17	1,676.36	3,151.03	3,401.90	0.00	0.00	0.00
10,899.98	89.84	89.86	7,125.44	1,676.61	3,251.02	3,500.30	0.00	0.00	0.00
10,999.98	89.84	89.86	7,125.72	1,676.85	3,351.02	3,598.70	0.00	0.00	0.00
11,099.98	89.84	89.86	7,126.00	1,677.10	3,451.02	3,697.10	0.00	0.00	0.00
11,199.98	89.84	89.86	7,126.28	1,677.35	3,551.02	3,795.50	0.00	0.00	0.00
11,299.98	89.84	89.86	7,126.55	1,677.60	3,651.02	3,893.90	0.00	0.00	0.00
11,399.98	89.84	89.86	7,126.83	1,677.85	3,751.02	3,992.30	0.00	0.00	0.00
11,499.98	89.84	89.86	7,127.11	1,678.10	3,851.02	4,090.71	0.00	0.00	0.00
11,599.98	89.84	89.86	7,127.39	1,678.35	3,951.02	4,189.11	0.00	0.00	0.00
11,699.98	89.84	89.86	7,127.66	1,678.59	4,051.02	4,287.51	0.00	0.00	0.00
11,799.98	89.84	89.86	7,127.94	1,678.84	4,151.02	4,385.91	0.00	0.00	0.00
11,899.98	89.84	89.86	7,128.22	1,679.09	4,251.02	4,484.31	0.00	0.00	0.00
11,999.98	89.84	89.86	7,128.50	1,679.34	4,351.01	4,582.71	0.00	0.00	0.00
12,099.98	89.84	89.86	7,128.78	1,679.59	4,451.01	4,681.11	0.00	0.00	0.00
12,199.98	89.84	89.86	7,129.05	1,679.84	4,551.01	4,779.51	0.00	0.00	0.00
12,299.98	89.84	89.86	7,129.33	1,680.09	4,651.01	4,877.91	0.00	0.00	0.00
12,399.98	89.84	89.86	7,129.61	1,680.33	4,751.01	4,976.31	0.00	0.00	0.00
12,499.98	89.84	89.86	7,129.89	1,680.58	4,851.01	5,074.71	0.00	0.00	0.00
12,599.98	89.84	89.86	7,130.16	1,680.83	4,951.01	5,173.11	0.00	0.00	0.00
12,699.97	89.84	89.86	7,130.44	1,681.08	5,051.01	5,271.51	0.00	0.00	0.00
12,799.97	89.84	89.86	7,130.72	1,681.33	5,151.01	5,369.91	0.00	0.00	0.00
12,899.97	89.84	89.86	7,131.00	1,681.58	5,251.01	5,468.31	0.00	0.00	0.00
12,999.97	89.84	89.86	7,131.27	1,681.83	5,351.01	5,566.72	0.00	0.00	0.00

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well NEBU 604 COM 2H
Company:	B.P.	**TVD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Project:	San Juan County, NM NAD83	**MD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Site:	NEBU 604 Pad	**North Reference:**	Grid
Well:	NEBU 604 COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
13,099.97	89.84	89.86	7,131.55	1,682.07	5,451.00	5,665.12	0.00	0.00	0.00
13,199.97	89.84	89.86	7,131.83	1,682.32	5,551.00	5,763.52	0.00	0.00	0.00
13,299.97	89.84	89.86	7,132.11	1,682.57	5,651.00	5,861.92	0.00	0.00	0.00
13,399.97	89.84	89.86	7,132.38	1,682.82	5,751.00	5,960.32	0.00	0.00	0.00
13,499.97	89.84	89.86	7,132.66	1,683.07	5,851.00	6,058.72	0.00	0.00	0.00
13,599.97	89.84	89.86	7,132.94	1,683.32	5,951.00	6,157.12	0.00	0.00	0.00
13,699.97	89.84	89.86	7,133.22	1,683.57	6,051.00	6,255.52	0.00	0.00	0.00
13,799.97	89.84	89.86	7,133.49	1,683.81	6,151.00	6,353.92	0.00	0.00	0.00
13,899.97	89.84	89.86	7,133.77	1,684.06	6,251.00	6,452.32	0.00	0.00	0.00
13,999.97	89.84	89.86	7,134.05	1,684.31	6,351.00	6,550.72	0.00	0.00	0.00
14,099.97	89.84	89.86	7,134.33	1,684.56	6,451.00	6,649.12	0.00	0.00	0.00
14,199.97	89.84	89.86	7,134.61	1,684.81	6,550.99	6,747.52	0.00	0.00	0.00
14,299.97	89.84	89.86	7,134.88	1,685.06	6,650.99	6,845.92	0.00	0.00	0.00
14,399.97	89.84	89.86	7,135.16	1,685.31	6,750.99	6,944.33	0.00	0.00	0.00
14,499.97	89.84	89.86	7,135.44	1,685.55	6,850.99	7,042.73	0.00	0.00	0.00
14,599.97	89.84	89.86	7,135.72	1,685.80	6,950.99	7,141.13	0.00	0.00	0.00
14,699.97	89.84	89.86	7,135.99	1,686.05	7,050.99	7,239.53	0.00	0.00	0.00
14,799.97	89.84	89.86	7,136.27	1,686.30	7,150.99	7,337.93	0.00	0.00	0.00
14,899.97	89.84	89.86	7,136.55	1,686.55	7,250.99	7,436.33	0.00	0.00	0.00
14,999.97	89.84	89.86	7,136.83	1,686.80	7,350.99	7,534.73	0.00	0.00	0.00
15,099.97	89.84	89.86	7,137.10	1,687.05	7,450.99	7,633.13	0.00	0.00	0.00
15,199.97	89.84	89.86	7,137.38	1,687.29	7,550.99	7,731.53	0.00	0.00	0.00
15,299.97	89.84	89.86	7,137.66	1,687.54	7,650.99	7,829.93	0.00	0.00	0.00
15,399.97	89.84	89.86	7,137.94	1,687.79	7,750.98	7,928.33	0.00	0.00	0.00
15,499.97	89.84	89.86	7,138.21	1,688.04	7,850.98	8,026.73	0.00	0.00	0.00
15,599.97	89.84	89.86	7,138.49	1,688.29	7,950.98	8,125.13	0.00	0.00	0.00
15,699.97	89.84	89.86	7,138.77	1,688.54	8,050.98	8,223.53	0.00	0.00	0.00
15,799.97	89.84	89.86	7,139.05	1,688.79	8,150.98	8,321.94	0.00	0.00	0.00
15,899.97	89.84	89.86	7,139.32	1,689.03	8,250.98	8,420.34	0.00	0.00	0.00
15,999.97	89.84	89.86	7,139.60	1,689.28	8,350.98	8,518.74	0.00	0.00	0.00
16,099.97	89.84	89.86	7,139.88	1,689.53	8,450.98	8,617.14	0.00	0.00	0.00
16,199.97	89.84	89.86	7,140.16	1,689.78	8,550.98	8,715.54	0.00	0.00	0.00
16,299.97	89.84	89.86	7,140.44	1,690.03	8,650.98	8,813.94	0.00	0.00	0.00
16,399.97	89.84	89.86	7,140.71	1,690.28	8,750.98	8,912.34	0.00	0.00	0.00
16,499.97	89.84	89.86	7,140.99	1,690.53	8,850.97	9,010.74	0.00	0.00	0.00
16,599.97	89.84	89.86	7,141.27	1,690.77	8,950.97	9,109.14	0.00	0.00	0.00
16,699.97	89.84	89.86	7,141.55	1,691.02	9,050.97	9,207.54	0.00	0.00	0.00
16,799.97	89.84	89.86	7,141.82	1,691.27	9,150.97	9,305.94	0.00	0.00	0.00
16,863.58	89.84	89.86	7,142.00	1,691.43	9,214.58	9,368.53	0.00	0.00	0.00
NEBU 604 2H PBHL									

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well NEBU 604 COM 2H
Company:	B.P.	**TVD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Project:	San Juan County, NM NAD83	**MD Reference:**	GL 6497' & RKB 25' @ 6522.00usft
Site:	NEBU 604 Pad	**North Reference:**	Grid
Well:	NEBU 604 COM 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
NEBU 604 2H LP - plan hits target center - Point	0.00	0.00	7,117.00	1,669.05	211.34	2,149,313.61	2,812,213.30	36.9061663	-107.5285054
NEBU 604 2H PBHL - plan hits target center - Point	0.00	0.00	7,142.00	1,691.43	9,214.58	2,149,335.99	2,821,216.54	36.9061448	-107.4977112

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
25.00	25.00	San Jose Ss		0.00	0.00
2,446.34	2,382.00	Ojo Alamo Ss		0.00	0.00
2,575.21	2,502.00	Kirtland		0.00	0.00
3,106.77	2,997.00	Fruitland		0.00	0.00
3,316.17	3,192.00	Lemon Coal Zone		0.00	0.00
3,364.49	3,237.00	Ignacio Coal Zone		0.00	0.00
3,445.03	3,312.00	Cottonwood Coal Zone		0.00	0.00
3,466.51	3,332.00	Pictured Cliffs Ss		0.00	0.00
3,557.79	3,417.00	Cahn Coal Zone		0.00	0.00
5,699.58	5,412.00	Cliffhouse Ss		0.00	0.00
6,478.29	6,172.00	Mancos Shale		0.00	0.00