

**STATE OF UTAH**  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT

<b>APPLICATION FOR PERMIT TO DRILL</b>						<b>1. WELL NAME and NUMBER</b> Kushmaul 5-10C4				
<b>2. TYPE OF WORK</b> DRILL NEW WELL <input checked="" type="checkbox"/> REENTER P&A WELL <input type="checkbox"/> DEEPEN WELL <input type="checkbox"/>						<b>3. FIELD OR WILDCAT</b> ALTAMONT				
<b>4. TYPE OF WELL</b> Oil Well <input type="checkbox"/> Coalbed Methane Well: NO <input type="checkbox"/>						<b>5. UNIT or COMMUNITIZATION AGREEMENT NAME</b>				
<b>6. NAME OF OPERATOR</b> EP ENERGY E&P COMPANY, L.P.						<b>7. OPERATOR PHONE</b> 713 997-5038				
<b>8. ADDRESS OF OPERATOR</b> 1001 Louisiana, Houston, TX, 77002						<b>9. OPERATOR E-MAIL</b> maria.gomez@epenergy.com				
<b>10. MINERAL LEASE NUMBER (FEDERAL, INDIAN, OR STATE)</b> Fee			<b>11. MINERAL OWNERSHIP</b> FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>			<b>12. SURFACE OWNERSHIP</b> FEDERAL <input type="checkbox"/> INDIAN <input type="checkbox"/> STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/>				
<b>13. NAME OF SURFACE OWNER (if box 12 = 'fee')</b> Ronald J. Kushmaul						<b>14. SURFACE OWNER PHONE (if box 12 = 'fee')</b>				
<b>15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee')</b> 1206 North 15th Street, Coeu d'Alene, ID 83814						<b>16. SURFACE OWNER E-MAIL (if box 12 = 'fee')</b>				
<b>17. INDIAN ALLOTTEE OR TRIBE NAME (if box 12 = 'INDIAN')</b>			<b>18. INTEND TO COMMINGLE PRODUCTION FROM MULTIPLE FORMATIONS</b> YES <input type="checkbox"/> (Submit Commingling Application) NO <input checked="" type="checkbox"/>			<b>19. SLANT</b> VERTICAL <input checked="" type="checkbox"/> DIRECTIONAL <input type="checkbox"/> HORIZONTAL <input type="checkbox"/>				
<b>20. LOCATION OF WELL</b>		<b>FOOTAGES</b>		<b>QTR-QTR</b>	<b>SECTION</b>	<b>TOWNSHIP</b>	<b>RANGE</b>	<b>MERIDIAN</b>		
LOCATION AT SURFACE		900 FSL 1750 FWL		SESW	10	3.0 S	4.0 W	U		
Top of Uppermost Producing Zone		900 FSL 1750 FWL		SESW	10	3.0 S	4.0 W	U		
At Total Depth		900 FSL 1750 FWL		SESW	10	3.0 S	4.0 W	U		
<b>21. COUNTY</b> DUCHESNE			<b>22. DISTANCE TO NEAREST LEASE LINE (Feet)</b> 900			<b>23. NUMBER OF ACRES IN DRILLING UNIT</b> 640				
<b>27. ELEVATION - GROUND LEVEL</b> 5981			<b>25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed)</b> 1200			<b>26. PROPOSED DEPTH</b> MD: 12500 TVD: 12500				
<b>28. BOND NUMBER</b> 400JU0708			<b>29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE</b> Duchesne City							
<b>Hole, Casing, and Cement Information</b>										
<b>String</b>	<b>Hole Size</b>	<b>Casing Size</b>	<b>Length</b>	<b>Weight</b>	<b>Grade &amp; Thread</b>	<b>Max Mud Wt.</b>	<b>Cement</b>	<b>Sacks</b>	<b>Yield</b>	<b>Weight</b>
Surf	12.25	9.625	0 - 2100	40.0	N-80 LT&C	0.0	Type V	444	2.37	12.0
							Class G	194	1.3	14.3
I1	8.75	7	0 - 9350	29.0	HCP-110 LT&C	10.4	Class G	528	1.91	12.5
							Class G	304	1.64	13.0
L1	6.125	5	9150 - 12500	18.0	HCP-110 LT&C	12.8	Class G	199	1.47	14.2
<b>ATTACHMENTS</b>										
<b>VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES</b>										
<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER					<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN					
<input checked="" type="checkbox"/> AFFIDAVIT OF STATUS OF SURFACE OWNER AGREEMENT (IF FEE SURFACE)					<input type="checkbox"/> FORM 5. IF OPERATOR IS OTHER THAN THE LEASE OWNER					
<input type="checkbox"/> DIRECTIONAL SURVEY PLAN (IF DIRECTIONALLY OR HORIZONTALLY DRILLED)					<input checked="" type="checkbox"/> TOPOGRAPHICAL MAP					
<b>NAME</b> Maria S. Gomez			<b>TITLE</b> Principal Regulatory Analyst			<b>PHONE</b> 713 997-5038				
<b>SIGNATURE</b>			<b>DATE</b> 12/16/2014			<b>EMAIL</b> maria.gomez@epenergy.com				
<b>API NUMBER ASSIGNED</b> 43013532510000			<b>APPROVAL</b>			 Permit Manager				

**Kushmaul 5-10C4  
Sec. 10, T3S, R4W  
DUCHESNE COUNTY, UT**

**EP ENERGY E&P COMPANY, L.P.**

**DRILLING PROGRAM**

**1. Estimated Tops of Important Geologic Markers**

<u>Formation</u>	<u>Depth</u>
Green River (GRRV)	4,472' TVD
Green River (GRTN1)	5,204' TVD
Mahogany Bench	6,090' TVD
L. Green River	7,448' TVD
Wasatch	9,288' TVD
T.D. (Permit)	12,500' TVD

**2. Estimated Depths of Anticipated Water, Oil, Gas or Mineral Formations:**

<u>Substance</u>	<u>Formation</u>	<u>Depth</u>
	Green River (GRRV)	4,472' MD/TVD
	Green River (GRTN1)	5,204' MD/TVD
	Mahogany Bench	6,090' MD/TVD
Oil	L. Green River	7,448' MD/TVD
Oil	Wasatch	9,288' MD/TVD

**3. Pressure Control Equipment: (Schematic Attached)**

A Diverter Stack on structural pipe from 60' MD/TVD to 2,100' MD/TVD. A 10M BOP stack w/ rotating head, spacer spool, 5M annular, flex rams, blind rams & single w/ flex rams used from 2,100' MD/TVD to 9,350' MD/TVD. A 10M BOP stack w/ rotating head, spacer spool, 5M annular, flex rams, blind rams & single w/ flex rams from 9,350' MD/TVD to TD (12,500' MD/TVD).

The BOPE and related equipment will meet the requirements of the 5M and 10M system.

This well is in surrounded by many wells we have drilled this year. We have pre-set 9-5/8" to around this same depth on many wells with no issues. I have a great handle on MW's & what we should expect in this area.

**There is 1 SWD within 4 miles of our location. The Blue Bench 1-13C5 SWD is 3.52 miles to the West of our location.** It is owned by Pro-Water LLC & is an active SWD well. It has been injecting into the Upper/Middle Green River & Upper-most Lower Green River since 1992. The injection interval is from 4106'-7528'. The injection rate varies from 1500-7000 bbls/day @ 750 psi. The

injection rate is limited by injection pressure (maximum allowable injection pressure looks to be 1000 psi). The pressure dissipates to 150 psi while down on maintenance. Using 150 psi, the EMW @ 4106' is 9.3 ppg. We will not see any pressure from this well since it is 3.52 miles away from us. We have drilled as close as 0.98 miles to this SWD well & on fracture orientation and have not seen any pressure while drilling.

#### **OPERATORS MINIMUM SPECIFICATIONS FOR BOPE:**

The surface casing will be equipped with a flanged casing head of 5M psi working pressure. An 11" 5M x 11" 10M spool, 11" x 10M psi BOP and 5M psi annular will be nipped up on the surface casing and tested to 250 psi low test / 3,000 psi high test for 10 minutes each prior to drilling out. The surface casing will be tested to 1,000 psi. for 30 mins. Intermediate casing will be tested to the greater of 1,500 psi or 0.22 psi/ft. The choke manifold equipment, upper Kelly cock and floor safety valves will be tested to 5M psi. The annular preventer will be tested to 250 psi low test / 4,000 psi high test. The 10M BOP will be installed with rotating head, spacer spool, 5M annular, flex rams, blind rams & single w/ flex rams from surface shoe to TD. The BOPE will be hydraulically operated.

In addition, the BOP equipment will be tested after running intermediate casing, after any repairs to the equipment and at least once every 30 days. Pipe and blind rams will be activated on each trip, annular preventer will be activated weekly and weekly BOP drills will be held with each crew.

#### **Statement on Accumulator System and Location of Hydraulic Controls:**

Precision # 406 is expected to be used to drill the proposed well. Operations will commence after approval of this application. Manual and/or hydraulic controls will be in compliance with 5M and 10M psi systems.

#### **Auxiliary Equipment:**

- A) Pason Gas Monitoring 2,100' - TD
- B) Mud logger with gas monitor – 2,100' to TD
- C) Choke manifold with one manual and one hydraulic operated choke
- D) Full opening floor valve with drill pipe thread
- E) Upper and lower Kelly cock
- F) Shaker, de-sander and centrifuge

#### **4. Proposed Casing & Cementing Program:**

Please refer to the attached Wellbore Diagram.

All casing will meet or exceed the following design safety factors:

- Burst = 1.00
- Collapse = 1.125
- Tension = 1.2 (including 100k# overpull)

Cement design calculations for intermediate and production hole will be based on minimum 10% excess over gauge hole volumes. Actual volumes pumped will be a minimum of 10% excess over caliper volume to designed tops of cement for any section logged. A minimum of 50% excess over gauge volume will be pumped on surface casing.

5. **Drilling Fluids Program:**

Proposed Mud Program:

Interval	Type	Mud Weight
Surface	Air	Air
Intermediate	WBM	9.3 – 10.4
Production	WBM	11.0 – 12.8

Anticipated mud weights are based on actual offset well bottom-hole pressure data. Mud weights utilized may be somewhat higher to allow for trip margin and to provide hole stability for running logs and casing.

Visual mud monitoring equipment will be utilized.

6. **Evaluation Program:**

Logs:

Mud Log: 2,100' MD/TVD – TD

Open Hole Logs: Gamma Ray, Neutron-Density, Resistivity, Sonic, from surface casing shoe to TD.

7. **Abnormal Conditions:**

Maximum anticipated bottomhole pressure calculated at 12,500' TVD equals approximately 8,320 psi. This is calculated based on a 0.6656 psi/ft gradient (12.8 ppg mud density at TD).

Maximum anticipated surface pressure equals approximately 5,570 psi (bottomhole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/ft).

Maximum anticipated surface pressure based on frac gradient at 7" casing shoe is 0.8 psi/ft at 9,350' TVD = 7,480 psi

BOPE and casing design will be based on the lesser of the two MASPs which is 5,570 psi.

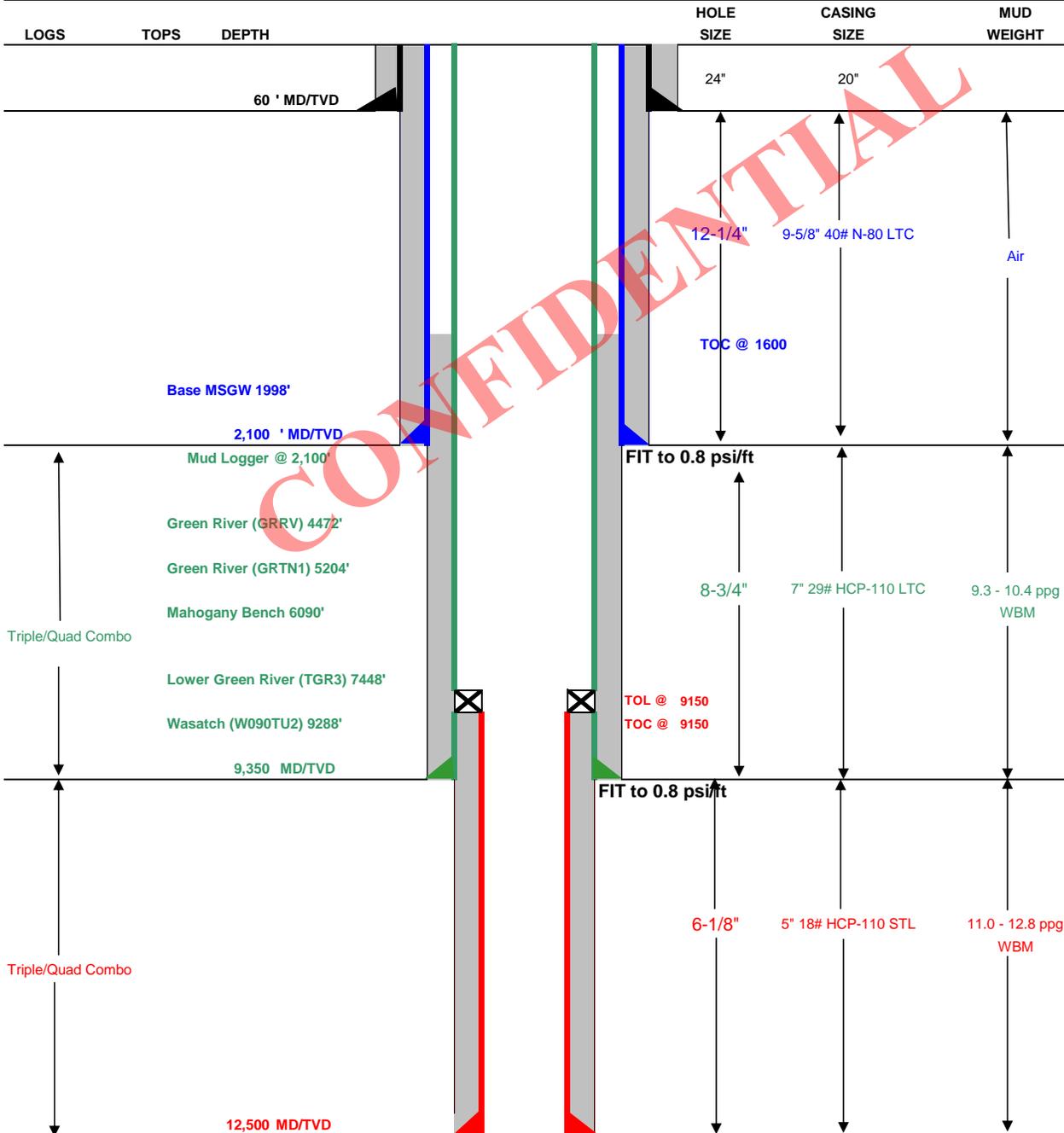
8. **OPERATOR REQUESTS THAT THE PROPOSED WELL BE PLACED ON CONFIDENTIAL STATUS.**



Drilling Schematic

<b>Company Name:</b> EP ENERGY	<b>Date:</b> December 8, 2014
<b>Well Name:</b> Kushmaul 5-10C4	<b>TD:</b> 12,500
<b>Field, County, State:</b> Altamont, Duchesne, Utah	<b>AFE #:</b> TBD
<b>Surface Location:</b> Sec 10 T3S R4W 900' FSL 1750' FWL	<b>BHL:</b> Straight Hole
<b>Objective Zone(s):</b> Green River, Wasatch	<b>Elevation:</b> 5981
<b>Rig:</b> Precision 406	<b>Spud (est.):</b> TBD
<b>BOPE Info:</b> Diverter Stack on structural pipe from 60' to 2,100' . 11 10M BOPE w/ rotating head & 5M annular from 2,100' to 9,350' . 11 10M BOPE w/ rotating head, spacer spool, 5M annular, flex rams, blind rams, single w/ flex rams from 9,350' to TD	

MECHANICAL



**DRILLING PROGRAM**

CASING PROGRAM	SIZE	INTERVAL		WT.	GR.	CPLG.	BURST	COLLAPSE	TENSION
SURFACE	9-5/8"	0	2100	40.00	N-80	LTC	5,750	3,090	737
INTERMEDIATE	7"	0	9350	29.00	HCP-110	LTC	11,220	9,750	797
PRODUCTION LINER	5'	9150	12500	18.00	HCP-110	STL	13,940	15,450	341

CEMENT PROGRAM		FT. OF FILL	DESCRIPTION	SACKS	EXCESS	WEIGHT	YIELD
SURFACE	Lead	1,600	EXTENDACEM SYSTEM: Type V Cement + 20% Enhancer 923 + 2% Cal-Seal 60 + 0.35% Versaset + 0.3% D-Air 5000 + 6% Salt + 2.5% Econolite + 0.125 Poly-E-Flake	444	100%	12.0 ppg	2.37
	Tail	500	HALCEM SYSTEM: Class G Cement + 3 lbm/sk Silicalite Compacted + 1% Salt + 0.3% Econolite + 0.25 lbm/sk Poly-E-Flake + 0.25 lbm/sk Kwik Seal + 0.3% D-AIR 5000	194	50%	14.3 ppg	1.30
INTERMEDIATE	Lead	5,250	EXPANDACEM SYSTEM: Class G Cement 6% Bentonite + 0.2% Econolite + 0.3% Versaset + 0.7% HR-5 + 0.3% Super CBL + 0.2% Halad(R)-322 + 0.125 lbm/sk Poly-E-Flake	528	30%	12.5 ppg	1.91
	Tail	2,500	EXPANDACEM SYSTEM: Class G Cement + 4% Bentonite + 0.25 Poly-E-Flake + 0.1% Halad-413 + 5 lb/sk Silicalite Compacted + 0.15% SA-1015 + 0.3% HR-5	304	30%	13.0 ppg	1.64
PRODUCTION LINER		3,350	EXTENDACEM SYSTEM: Class G Cement + 0.2% Super CBL + 0.55% SCR-100 + 0.3% Halad-413 + 0.125 lbm/sk Poly-E-Flake + 3 lbm/sk Silicalite Compacted + 20% SS-200 + 0.10% SA-1015	199	25%	14.20	1.47

FLOAT EQUIPMENT & CENTRALIZERS	
SURFACE	PDC drillable float shoe, 1 joint casing, PDC drillable float collar. Thread lock all float equipment. Install bow spring centralizers on the bottom 3 joints of casing & every 3rd joint thereafter.
INTERMEDIATE	PDC drillable 10M,P-110 float shoe, 1 joint, PDC drillable 10M, P-110 float collar. Thread lock all float equipment. Maker joint at +/- 7,450'.
LINER	Float shoe, 1 joint, float collar, 1 joint, landing collar. Thread lock all FE. Maker joints every 1000'.

PROJECT ENGINEER(S): Brad MacAfee 713-997-6383

MANAGER: Bob Dodd



**KUSHMAUL 5-10C4**  
**WELL LOCATION: SE/SW SECTION 10, T.3S, R.4W. U.S.B.&M.**  
**DUCHESNE COUNTY, UTAH**

PROCEED IN A NORTHERLY THEN NORTHEASTERLY DIRECTION FROM DUCHESNE, UTAH ALONG HIGHWAY 87 APPROXIMATELY 6.0 MILES TO THE JUNCTION OF THIS ROAD AND 3575 S TO THE SOUTHEAST; TURN RIGHT AND PROCEED IN A SOUTHEASTERLY DIRECTION APPROXIMATELY 0.7 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ACCESS ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY DIRECTION APPROXIMATELY 2.3 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ACCESS ROAD TO THE SOUTH; TURN RIGHT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 0.7 MILES TO THE PROPOSED ACCESS ROAD TO THE EAST; TURN LEFT AND FOLLOW ROAD FLAGS IN AN EASTERLY THEN SOUTHERLY DIRECTION APPROXIMATELY 3,322 FEET TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM BLUEBELL, UTAH TO THE PROPOSED LOCATION IS APPROXIMATELY 9.7 MILES.

CONFIDENTIAL



**OUTLAW**  
**ENGINEERING INC.**

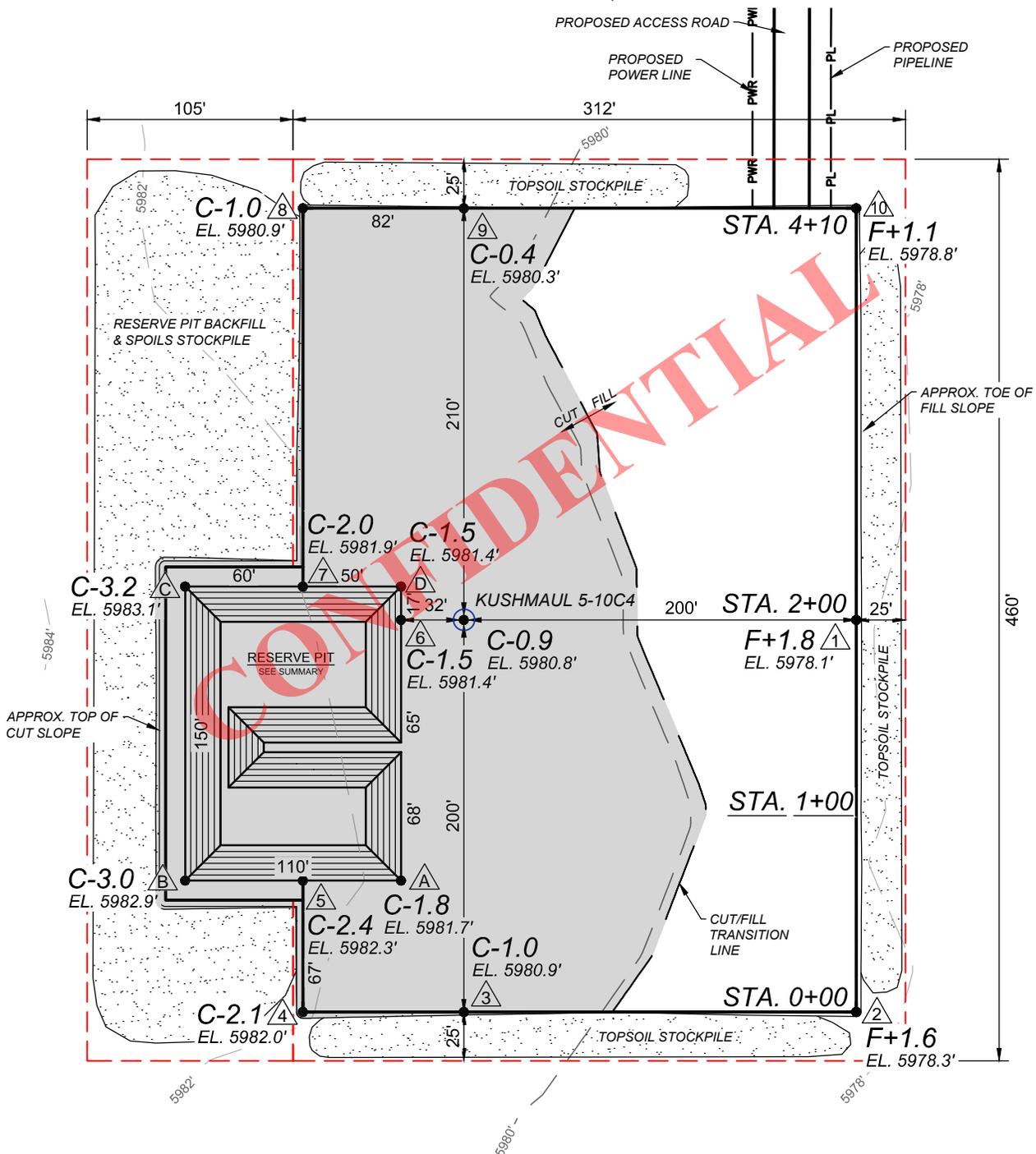
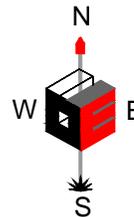
P.O. BOX 1800  
ROOSEVELT, UTAH 84066  
(435) 232-4321



### PROPOSED LOCATION LAYOUT

### KUSHMAUL 5-10C4

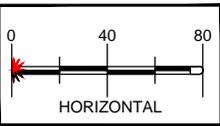
WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH



	EXISTING CONTOURS		CORNER NUMBER
	PROPOSED CONTOURS		CUT/FILL NUMBER
	LIMITS OF DISTURBANCE		EL. 5860.8' EXISTING GRADE
	PROPOSED WELL LOCATION		

**SUMMARY**  
 EXISTING GRADE @ CENTER OF WELL = 5980.8'  
 FINISH GRADE ELEVATION = 5979.9'  
 CUT SLOPES = 1.5 : 1  
 FILL SLOPES = 1.5 : 1  
 TOTAL WELL PAD AREA = 2.93 ACRES  
 TOTAL WELL PAD DISTURBANCE AREA = 4.40 ACRES

**PROPOSED LOCATION LAYOUT**  
**KUSHMAUL 5-10C4**  
 WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH



**\*RESERVE PIT\***  
 12' DEEP  
 SLOPE 1.5:1  
 150' X 110'  
 PIT VOL. = 4,730 CY

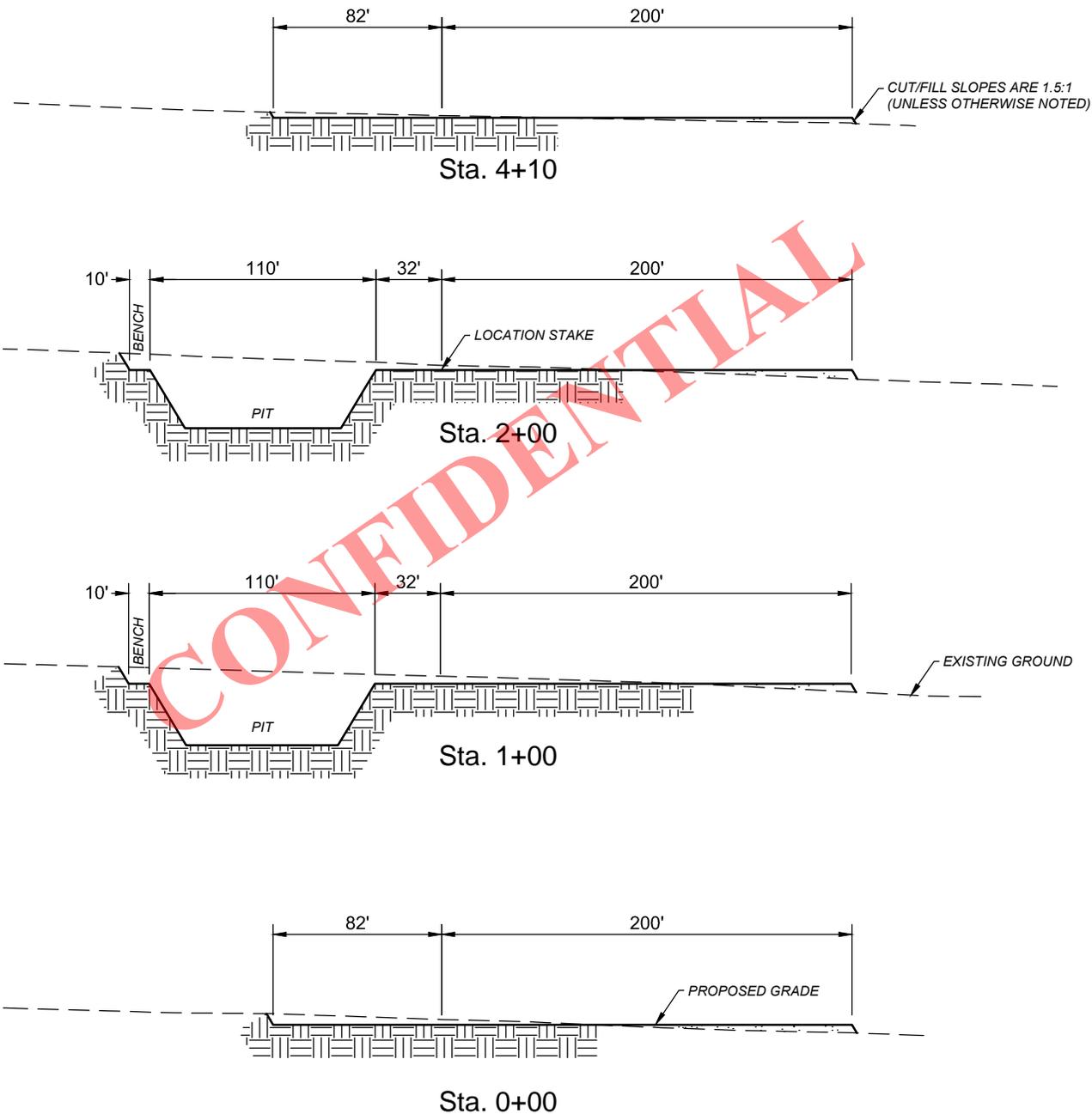
<b>PAD/PIT GRADING</b>	NOVEMBER 7, 2014	SHEET NO. <b>2</b>
	SCALE: 1" = 80'	
	DESIGN: MA,RFII DRAWN: JMH	



**CROSS SECTIONS**

**KUSHMAUL 5-10C4**

WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH



**LEGEND**

- EXISTING CONTOURS
- PROPOSED CONTOURS



CUT  
FILL

**ESTIMATED EARTHWORK QUANTITIES**

\* NO SHRINK OR SWELL FACTORS HAVE BEEN USED  
 (QUANTITIES EXPRESSED IN CUBIC YARDS)

ITEM	CUT	FILL	EXCESS/ IMPORT	6" T.S.*
PAD	2,480	2,480	0	2,430
PIT	4,730	-	0	-

\*(T.S.) = TOPSOIL STRIPPING

**CROSS SECTIONS**

**KUSHMAUL 5-10C4**

WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

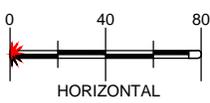


**CROSS  
SECTIONS**

NOVEMBER 7, 2014  
 SCALE: 1" = 80'  
 DESIGN: MA,RFH DRAWN: JMH

SHEET NO.  
**3**

**OUTLAW  
ENGINEERING INC.**  
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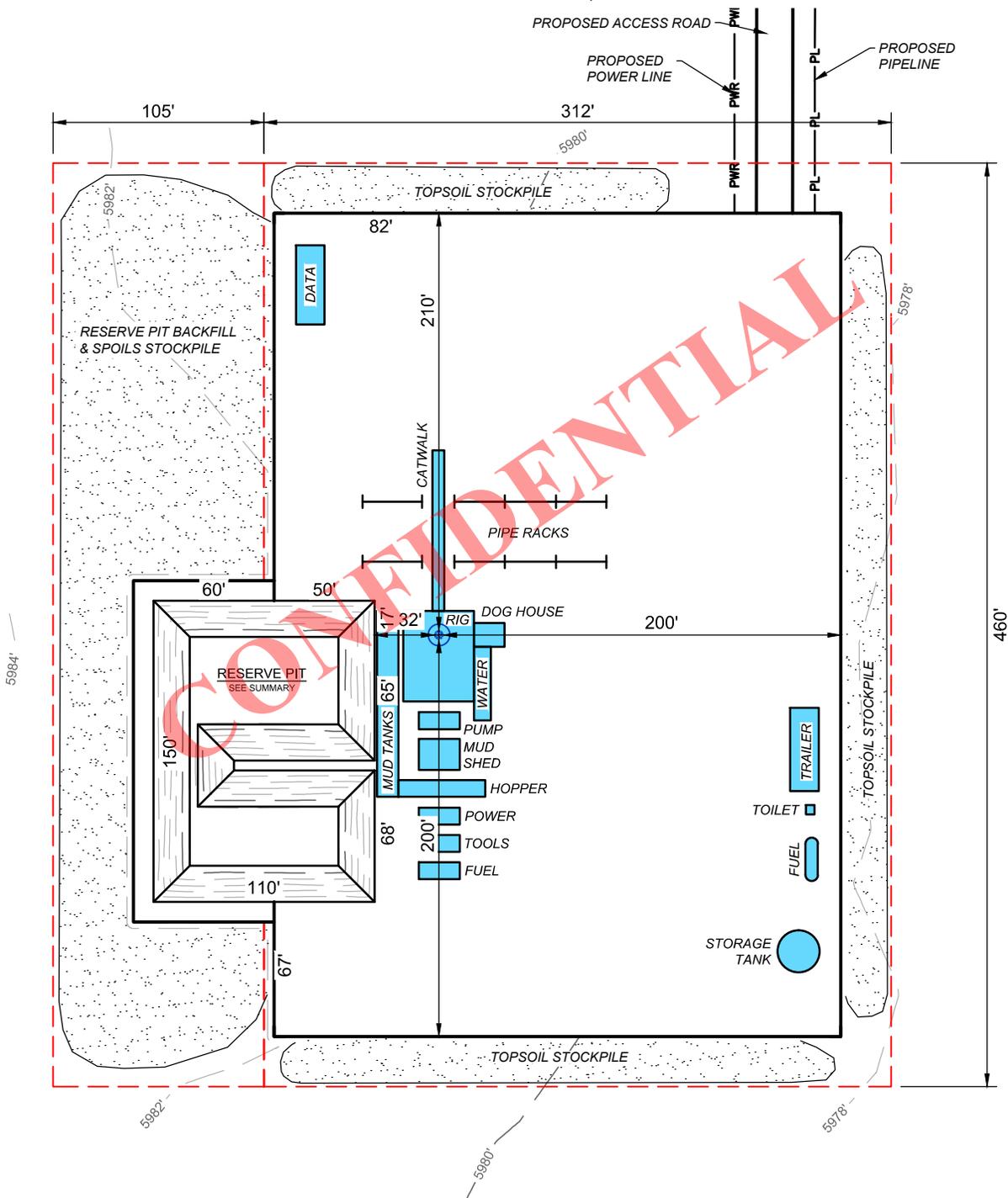
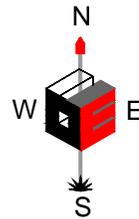




### RIG LAYOUT

### KUSHMAUL 5-10C4

WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

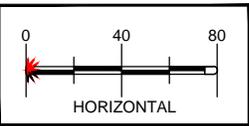


LEGEND		CORNER NUMBER	
	EXISTING CONTOURS		2
	PROPOSED CONTOURS		CUT/FILL NUMBER
	LIMITS OF DISTURBANCE		EL. 5860.8' EXISTING GRADE
			PROPOSED WELL LOCATION

**SUMMARY**  
 SEE CROSS SECTION SHEET FOR QUANTITIES

**RIG LAYOUT**  
**KUSHMAUL 5-10C4**  
 WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

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<b>RIG LAYOUT</b>	NOVEMBER 7, 2014	SHEET NO. <b>4</b>
	SCALE: 1" = 80'	
	DESIGN: MA,RFII DRAWN: JMH	

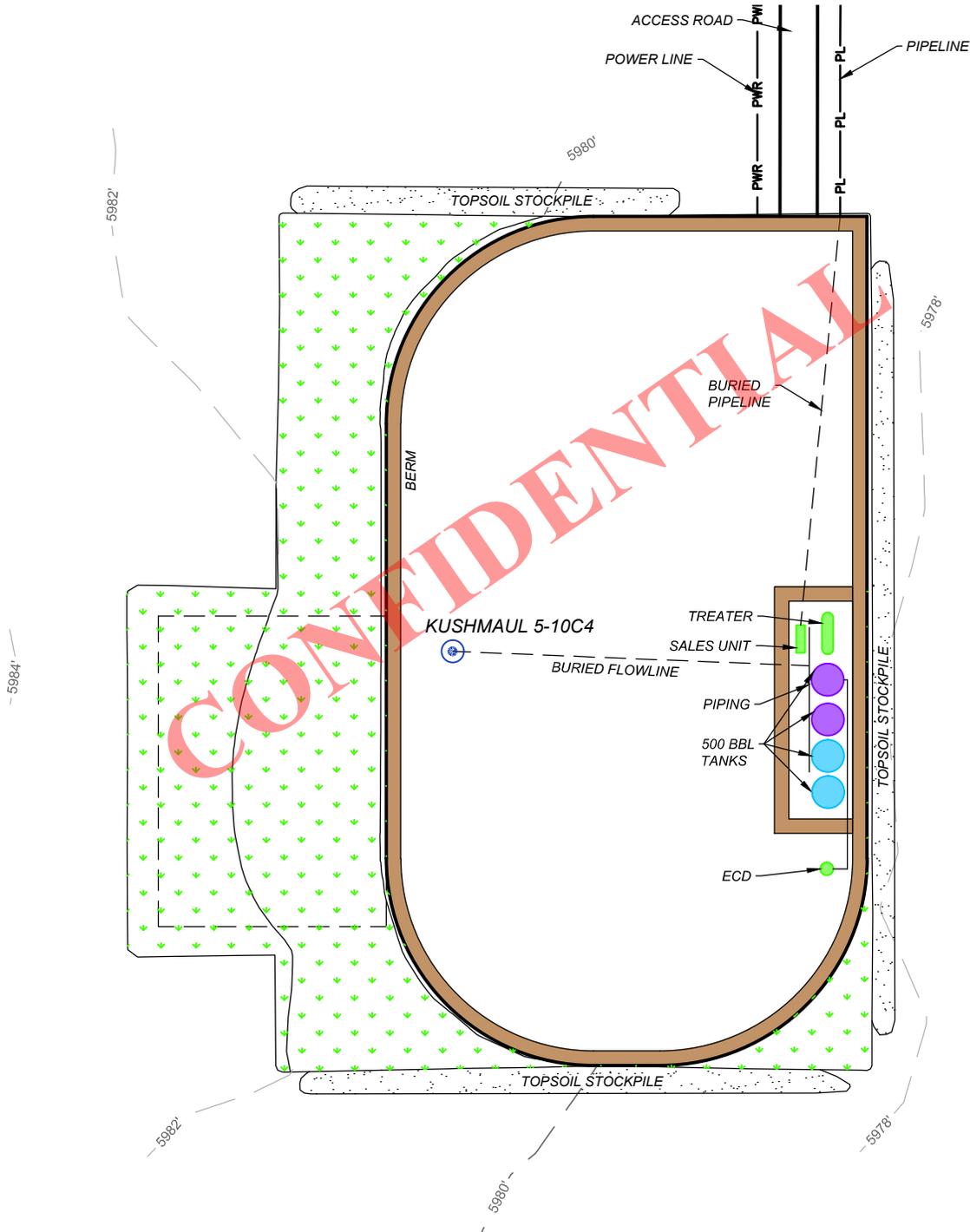


# PRODUCTION FACILITY LAYOUT

## KUSHMAUL 5-10C4

WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.

DUCHESNE COUNTY, UTAH



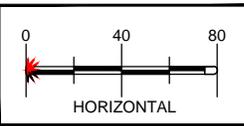
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LEGEND	
	EXISTING CONTOURS
	PROPOSED CONTOURS
	LIMITS OF DISTURBANCE
	BERM
	CORNER NUMBER
	CUT/FILL NUMBER
	EXISTING GRADE
	PROPOSED WELL LOCATION
	RECLAIMED AREA

SUMMARY
APPROX UN-RECLAIMED AREA = 2.04 ACRES
APPROX RECLAIMED AREA = 0.89 ACRES

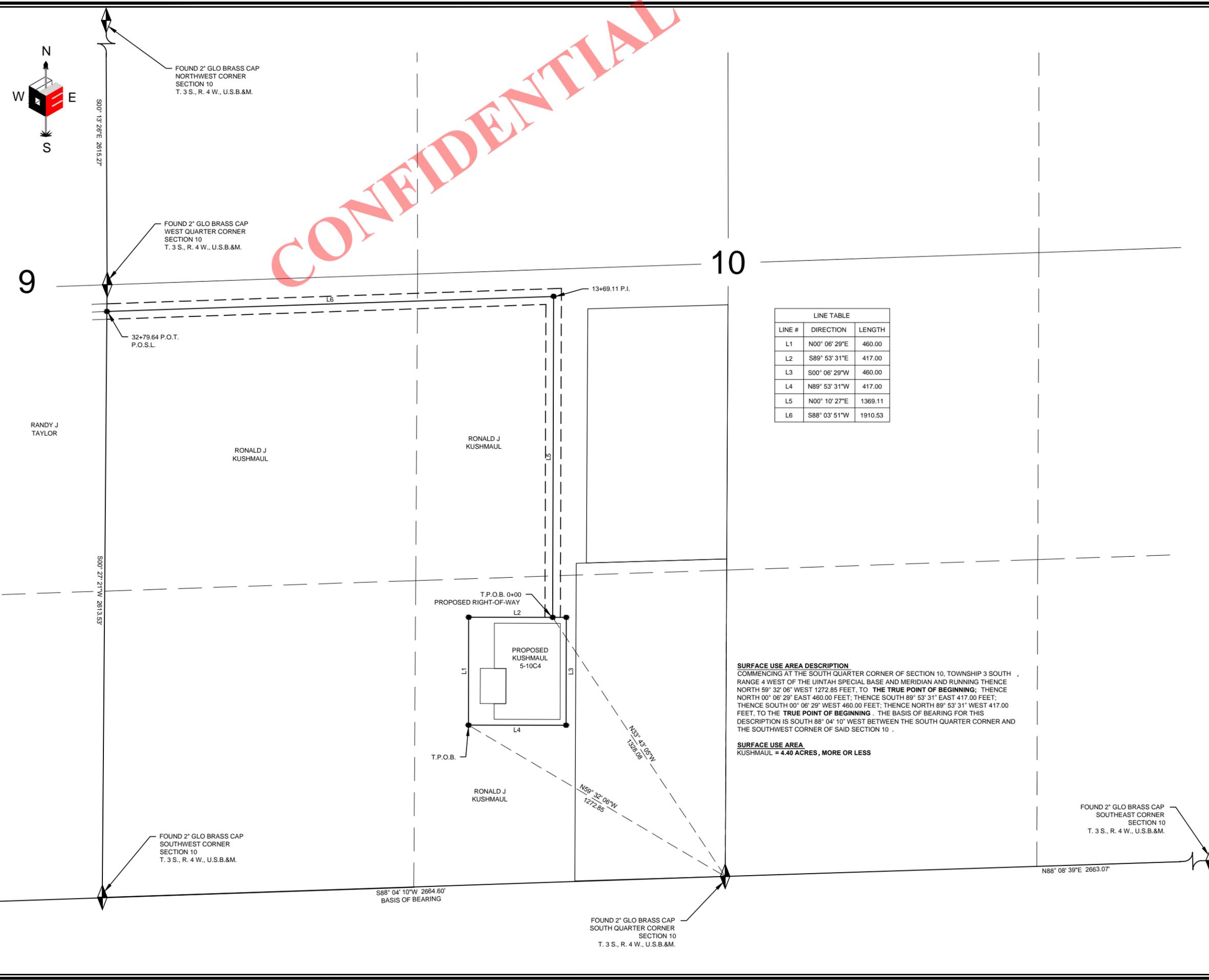
**PRODUCTION FACILITY LAYOUT**  
**KUSHMAUL 5-10C4**  
 WELL LOCATION: SE/SW SECTION 10, T3S, R4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

**OUTLAW ENGINEERING INC.**  
 P.O. BOX 1800  
 ROOSEVELT, UTAH 84066  
 (435) 232-4321



<b>PRODUCTION LAYOUT</b>	NOVEMBER 7, 2014	SHEET NO. <b>5</b>
	SCALE: 1" = 80'	
	DESIGN: MA,RFJII DRAWN: JMH	

CONFIDENTIAL



LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	N00° 06' 29"E	460.00
L2	S89° 53' 31"E	417.00
L3	S00° 06' 29"W	460.00
L4	N89° 53' 31"W	417.00
L5	N00° 10' 27"E	1369.11
L6	S88° 03' 51"W	1910.53

**SURFACE USE AREA DESCRIPTION**  
 COMMENCING AT THE SOUTH QUARTER CORNER OF SECTION 10, TOWNSHIP 3 SOUTH , RANGE 4 WEST OF THE UTAH SPECIAL BASE AND MERIDIAN AND RUNNING THENCE NORTH 59° 32' 06" WEST 1272.85 FEET, TO **THE TRUE POINT OF BEGINNING**; THENCE NORTH 00° 06' 29" EAST 460.00 FEET; THENCE SOUTH 89° 53' 31" EAST 417.00 FEET; THENCE SOUTH 00° 06' 29" WEST 460.00 FEET; THENCE NORTH 89° 53' 31" WEST 417.00 FEET, TO **THE TRUE POINT OF BEGINNING** . THE BASIS OF BEARING FOR THIS DESCRIPTION IS SOUTH 88° 04' 10" WEST BETWEEN THE SOUTH QUARTER CORNER AND THE SOUTHWEST CORNER OF SAID SECTION 10 .

**SURFACE USE AREA**  
 KUSHMAUL = 4.40 ACRES, MORE OR LESS

**EP ENERGY**  
 LOCATION SURFACE AREA AND ACCESS ROAD, PIPELINE, AND POWER LINE CORRIDOR RIGHT-OF-WAY SURVEY ON KUSHMAUL FEE LANDS FOR **KUSHMAUL 5-10C4**  
 LOCATED IN SECTION 10, TOWNSHIP 3 S., RANGE 4 W., U.S.B.&M. DUCHESNE COUNTY, UTAH

**SURVEYOR'S CERTIFICATE**  
 I, DAN E. KNOWLDEN JR. DO HEREBY CERTIFY THAT I AM A REGISTERED LAND SURVEYOR AND THAT I HOLD CERTIFICATE NO. 7173588 AS PRESCRIBED UNDER THE LAWS OF THE STATE OF UTAH AND THAT A SURVEY OF THE DESCRIBED PROPERTY HEREIN WAS PERFORMED UNDER MY DIRECTION.



**ACCESS ROAD, PIPELINE AND POWER LINE CORRIDOR RIGHT-OF-WAY DESCRIPTION**  
 LOCATED IN SECTION 10, TOWNSHIP 3 SOUTH, RANGE 4 WEST OF THE UTAH SPECIAL BASE AND MERIDIAN. RIGHT-OF-WAY CORRIDOR IS 66.00 FEET WIDE, 33.00 FEET ON EACH SIDE OF THE CENTERLINE. SAID CENTERLINE IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE SOUTH QUARTER CORNER OF SECTION 10, TOWNSHIP 3 SOUTH , RANGE 4 WEST OF THE UTAH SPECIAL BASE AND MERIDIAN AND RUNNING THENCE NORTH 33° 43' 05" WEST 1328.08 FEET, TO **THE TRUE POINT OF BEGINNING**; THENCE NORTH 00° 10' 27" EAST 1369.11 FEET; THENCE SOUTH 88° 03' 51" WEST 1910.53 FEET, TO A POINT ON THE WEST LINE OF SAID SECTION 10, AND THE POINT OF TERMINUS. SAID RIGHT-OF-WAY BEING 3,279.64 FEET IN LENGTH, THE SIDE LINES OF WHICH BEING SHORTENED OR ELONGATED TO MEET THE RIGHT-OF-WAY BOUNDARY AND SURFACE USE AREA BOUNDARY. THE BASIS OF BEARING FOR THIS DESCRIPTION IS SOUTH 88° 04' 10" WEST BETWEEN THE SOUTH QUARTER CORNER AND THE SOUTHWEST CORNER OF SAID SECTION 10 .  
 CONTAINING 4.97 ACRES , MORE OR LESS

**RIGHT-OF-WAY LENGTH**  
 KUSHMAUL = 3,279.64 FEET OR 198.77 RODS, MORE OR LESS

**LEGEND**

	= FOUND SECTION CORNER
	= SECTION LINE
	= QUARTER SECTION LINE
	= SIXTEENTH SECTION LINE

SCALE: 1" = 400'  
11X17 SHEET

REVIEWED: DEK | DRAWN: RLH

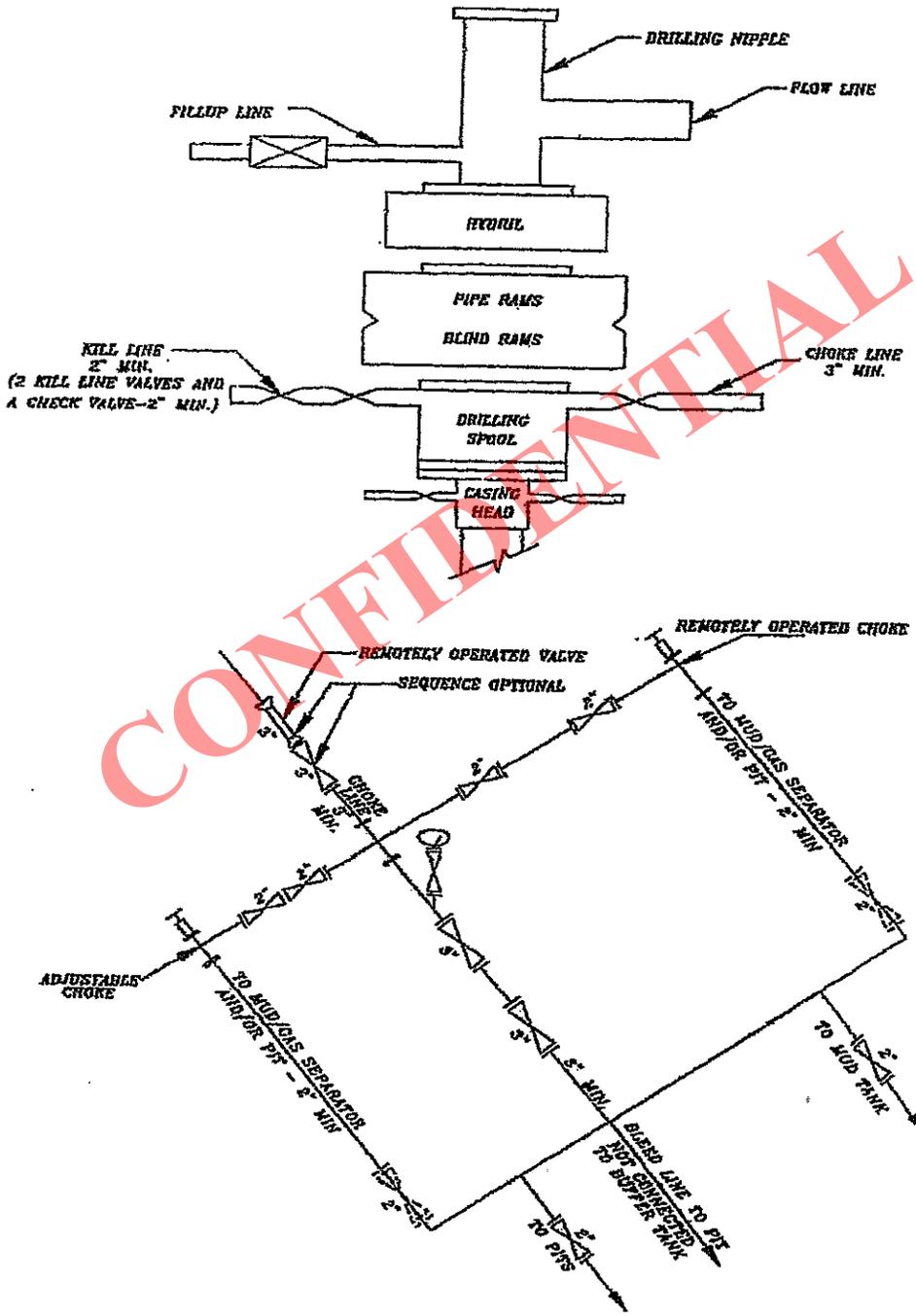
SHEET  
RIGHT-OF-WAY PLAT

**EP ENERGY**

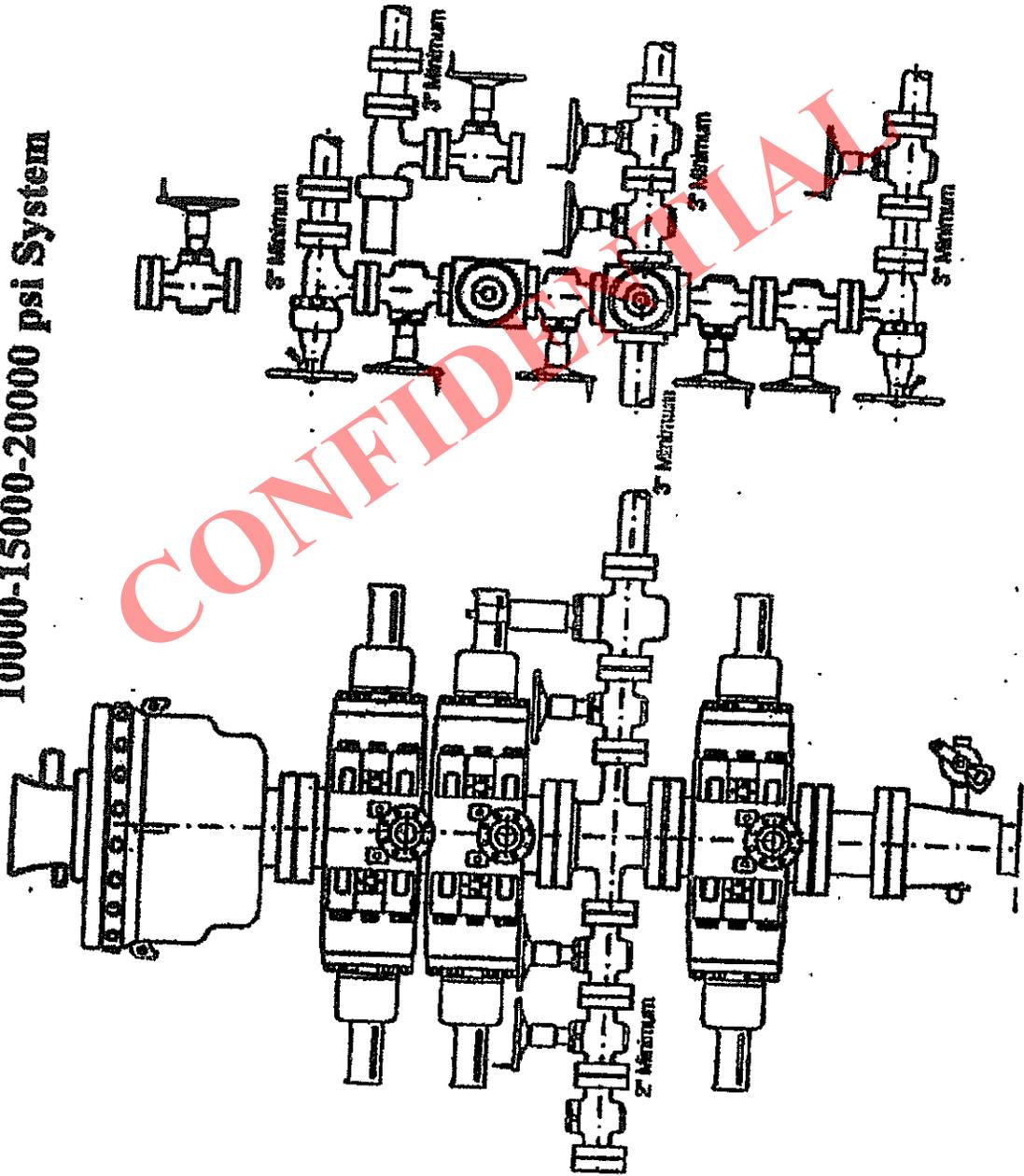
**OUTLAW ENGINEERING INC.**  
 P.O. BOX 1800  
 ROOSEVELT, UTAH 84066  
 (435) 232-4321

PLAT NO. 219A	DATE NOVEMBER 4, 2014	SHEET NO. 1 OF 1
------------------	--------------------------	---------------------

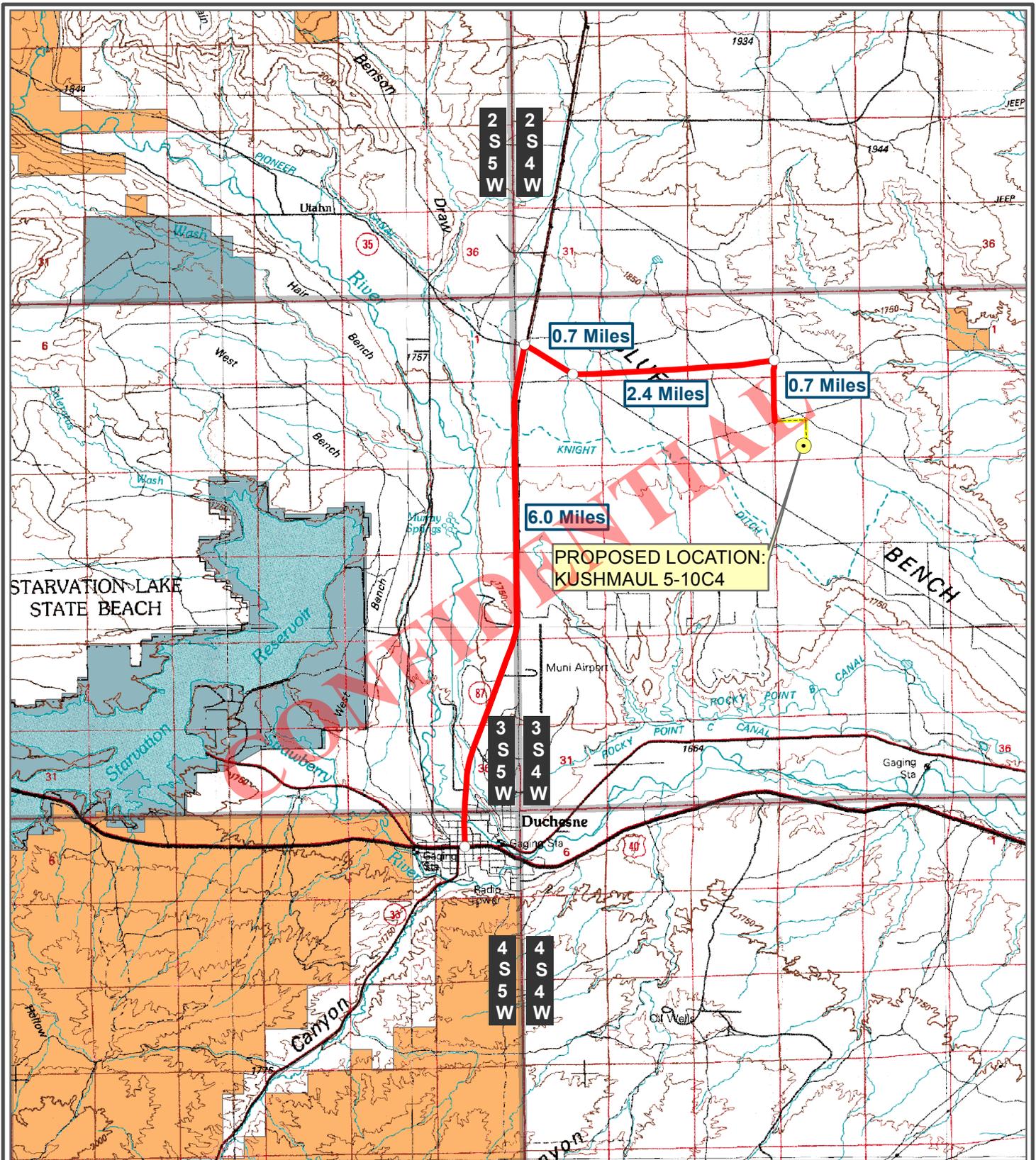
# 5M BOP STACK and CHOKE MANIFOLD SYSTEM



10000-15000-20000 psi System







**OUTLAW ENGINEERING INC.**  
 P. O. BOX 1800  
 ROOSEVELT, UTAH 84066  
 (435) 232-4321

PARCEL INFORMATION SHOWN HAS NOT BEEN SURVEYED BY OUTLAW ENGINEERING, INC. AND MAY NOT REFLECT ACTUAL LOCATION OF PROPERTY LINES

**LEGEND**

- Kushmaul 5-10C4 Site Location
- Proposed Access Road
- Existing Access Road

Federal
  Private
  State
  Tribal

**KUSHMAUL 5-10C4**

WELL LOCATION: SE/SW SECTION 10, T.3S, R.4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

**EP ENERGY**

**Site Location**

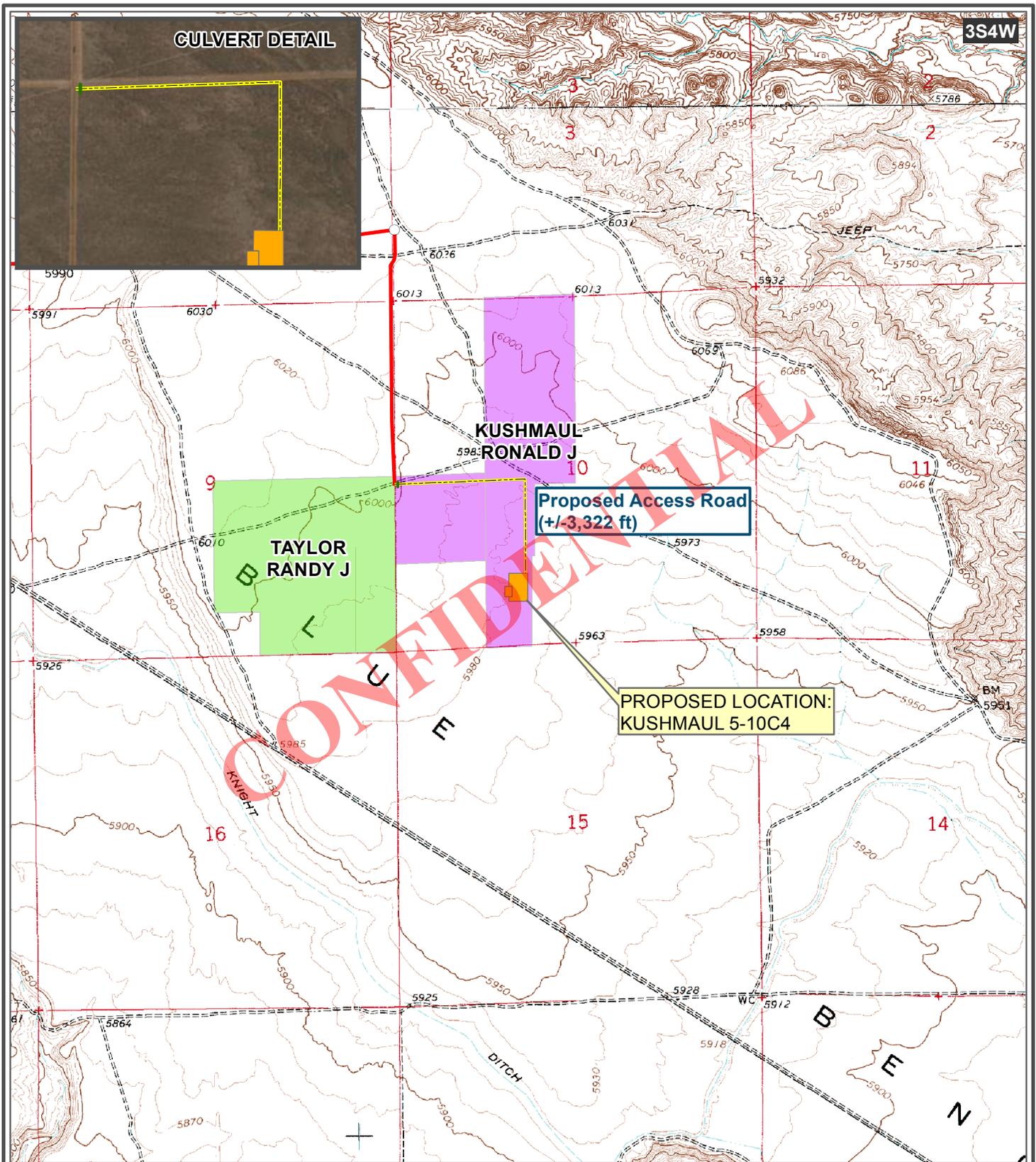
0 2,000 4,000 6,000 8,000 Feet

VERSION: **V1**  
 SURVEYED: **10-22-14**

USGS 7.5' Duchesne NE Quadrangle

NOV 10, 2014  
 SCALE: 1" = 8,342'  
 AUTHOR: BWH

SHEET **A**



**OUTLAW ENGINEERING INC.**

P. O. BOX 1800  
ROOSEVELT, UTAH 84066  
(435) 232-4321



PARCEL INFORMATION SHOWN HAS NOT BEEN SURVEYED BY OUTLAW ENGINEERING, INC. AND MAY NOT REFLECT ACTUAL LOCATION OF PROPERTY LINES

**Proposed Access Road**



VERSION: **V1**  
SURVEYED: **10-22-14**

**LEGEND**

- Proposed Access Road
- Culvert Required
- Existing Access Road
- Proposed Pad

- Federal
- Private
- State
- Tribal

**KUSHMAUL 5-10C4**

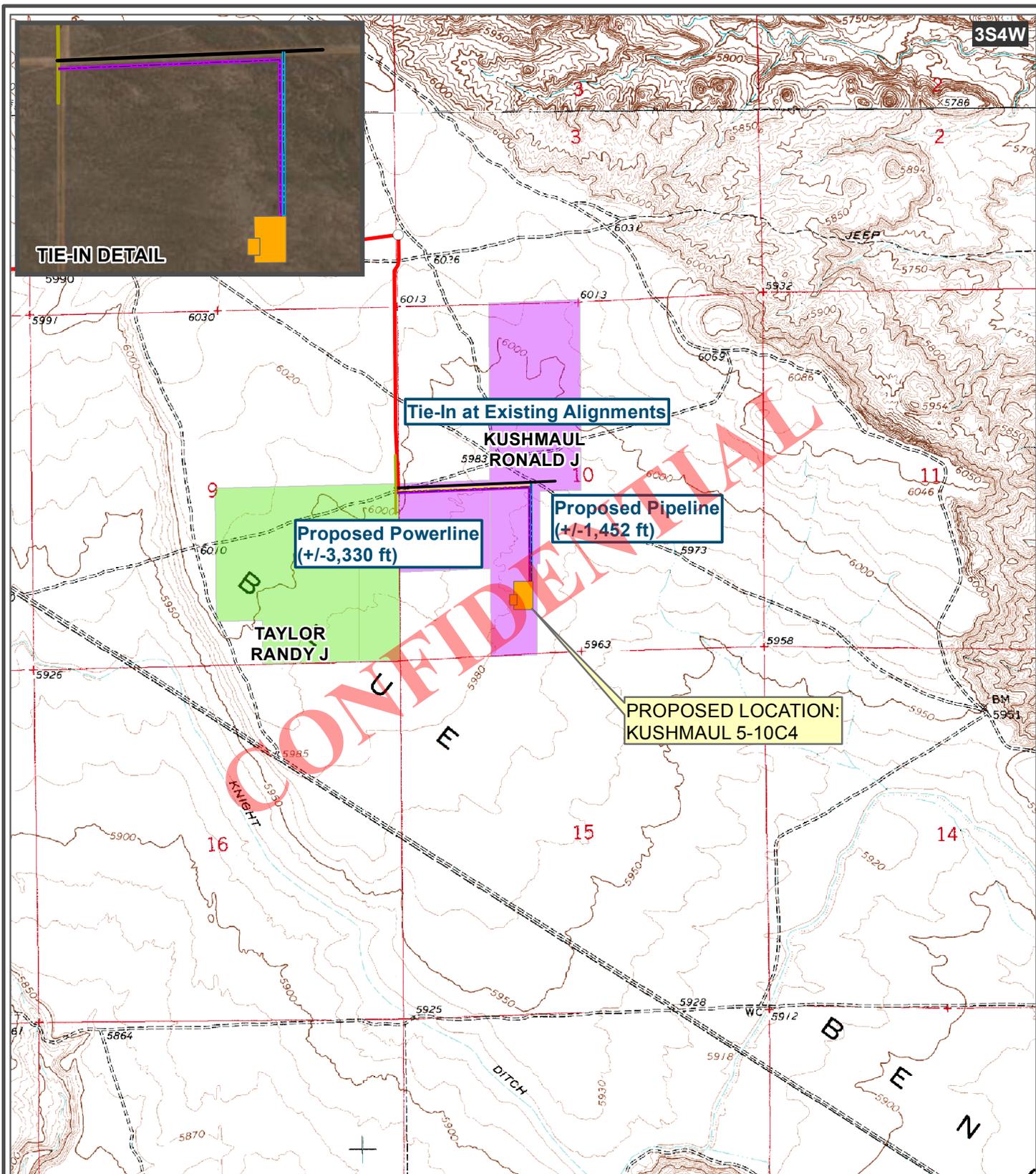
WELL LOCATION: SE/SW SECTION 10, T.3S, R.4W, U.S.B.&M.  
DUCHESE COUNTY, UTAH



USGS 7.5' Duchesne NE Quadrangle  
2014 Google Imagery

NOV 10, 2014  
SCALE: 1" = 2,000'  
AUTHOR: BWH

SHEET  
**B**



**OUTLAW ENGINEERING INC.**  
 P. O. BOX 1800  
 ROOSEVELT, UTAH 84066  
 (435) 232-4321

PARCEL INFORMATION SHOWN HAS NOT BEEN SURVEYED BY OUTLAW ENGINEERING, INC. AND MAY NOT REFLECT ACTUAL LOCATION OF PROPERTY LINES

**Proposed Pipeline & Powerline**

VERSION: **V1**  
 SURVEYED: **10-22-14**

**LEGEND**

- Proposed Pipeline
- Proposed Powerline
- Proposed Access Road
- Existing Pipeline
- Existing Powerline
- Existing Access Road
- Proposed Pad

Federal
  Private
  State
  Tribal

**KUSHMAUL 5-10C4**

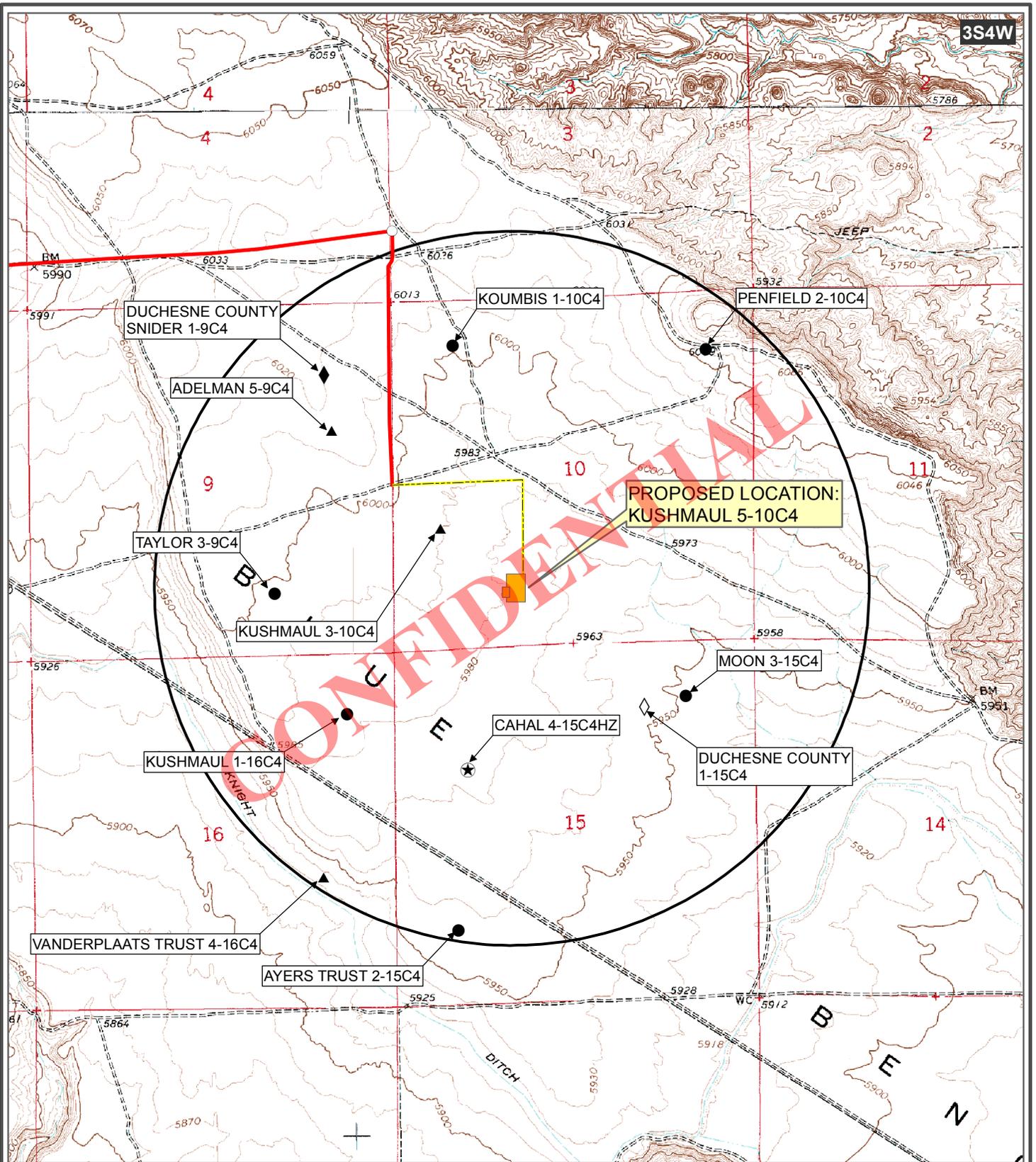
WELL LOCATION: SE/SW SECTION 10, T.3S, R.4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

**EP ENERGY**

USGS 7.5' Duchesne NE Quadrangle 2014 Google Imagery

NOV 10, 2014  
 SCALE: 1" = 2,000'  
 AUTHOR: BWH

SHEET **C**



**OUTLAW ENGINEERING INC.**  
 P.O. BOX 1800  
 ROOSEVELT, UTAH 84066  
 (435) 232-4321

PARCEL INFORMATION SHOWN HAS NOT BEEN SURVEYED BY OUTLAW ENGINEERING, INC. AND MAY NOT REFLECT ACTUAL LOCATION OF PROPERTY LINES

**Surrounding Wells**

VERSION: V1  
 SURVEYED: 10-22-14

**LEGEND**

- ★ New Permit
- ▲ Approved Permit
- Producing
- ◇ Abandoned
- ◆ Plugged & Abandoned
- One Mile Radius

Legend for land ownership: Federal (yellow), Private (white), State (blue), Tribal (orange)

**KUSHMAUL 5-10C4**

WELL LOCATION: SE/SW SECTION 10, T.3S, R.4W, U.S.B.&M.  
 DUCHESNE COUNTY, UTAH

**EP ENERGY**

USGS 7.5' Duchesne NE Quadrangle  
 NOV 10, 2014  
 SCALE: 1" = 2,000'  
 AUTHOR: BWH

SHEET **D**

**AFFIDAVIT OF SURFACE USE AGREEMENT**

Allyson Johnstone personally appeared before me, and, being duly sworn, deposes and says:

1. My name is Allyson Johnstone. I am a Landman for EP Energy E&P Company, L.P., whose address is 1001 Louisiana St., Houston, Texas 77002 (“EP Energy”).
2. EP Energy is the operator of the proposed **Kushmaul 5-10C4** well (the “Well”) to be located in the **SE SW of Section 10, Township 3 South, Range 4 West**, U.S.B.&M., Duchesne County, Utah (the “Drillsite Location”). The surface owner of the Drillsite Location is **Ronald J. Kushmaul**, whose mailing address is 1206 North 15<sup>th</sup> Street, Coeur d’Alene, Idaho 83814-5706 (the “Surface Owner”). The Surface Owner’s telephone number is (208) 644-1855.
3. EP Energy and the Surface Owner have entered into a Surface Use Agreement dated November 24, 2014 to cover any and all injuries or damages of every character and description sustained by the Surface Owner or Surface Owner’s property as a result of operations associated with the drilling of the Well.

FURTHER AFFIANT SAYETH NOT.

*Allyson Johnstone*  
 \_\_\_\_\_  
 Allyson Johnstone

**CONFIDENTIAL**

**ACKNOWLEDGMENT**

STATE OF TEXAS                   §  
   §  
 COUNTY OF HARRIS           §

Sworn to and subscribed before me on this 2nd day of December, 2014, by Allyson Johnstone, as a Landman for EP Energy E&P Company, L.P., a Delaware limited partnership.

*Ginger M. Cearley*  
 \_\_\_\_\_  
 Notary Public in and for the State of Texas

My Commission Expires:

*8/2/2018*



EP Energy E&P Company, L.P.

**Related Surface Information**

1. **Current Surface Use:**

- Livestock Grazing and Oil and Gas Production.

2. **Proposed Surface Disturbance:**

- The road will be crown and ditch. Water wings will be constructed on the access road as needed.
- The topsoil will be windrowed and re-spread in the borrow area.
- New road to be constructed will be approximately .63 miles in length and 66 feet wide.
- All equipment and vehicles will be confined to the access road, pad and area specified in the APD.

3. **Location Of Existing Wells:**

- Existing oil, gas wells within one (1) mile radius of proposed well are provided in EXHIBIT C.

4. **Location And Type Of Drilling Water Supply:**

- Drilling water: Duchesne City Water

5. **Existing/Proposed Facilities For Productive Well:**

- There are no existing facilities that will be utilized for this well.
- A pipeline corridor .28 miles will parallel the proposed access road. The corridor will contain one 4 inch gas line and one 2 inch gas line and one 2 inch Salt Water disposal line. Rehabilitation of unneeded, previously disturbed areas will consist of backfilling and contouring the reserve pit area; backsloping and contouring all cut and fill slopes. These areas will be reseeded. Refer to plans for reclamation of surface for details.
- Upgrade and maintain access roads and drainage control structures (e.g., culverts, drainage dips, ditching, etc.) as necessary to prevent soil erosion and accommodate safe, year-round traffic.

6. **Construction Materials:**

- Native soil from road and location will be used for construction materials along with gravel and/or scoria road base material. In the event that conditions should necessitate graveling of all or part of the access road and location, surfacing materials will be purchased from commercial suppliers in the marketing area.

7. **Methods For Handling Waste Disposal:**

- The reserve pit will be designed to prevent the collection of surface runoff and will be constructed with a minimum of ½ the total depth below the original ground surface on the lowest point with the pit. The pit will be lined with a 20-mil polyethylene to prevent leakage of fluids. The liner will be rolled into place and secured at the ends, i.e. buried on top of the pit berms. Prior to use, the reserve pit will be fenced on three sides; the fourth side will be fenced at the time the rig is removed. Drilling fluids, cuttings and produced water will be contained in the reserve pit (trash will be placed in the trash cage). Fluids in the reserve pit will be allowed to evaporate prior to pit burial.
- Garbage and other trash will be contained in the portable trash cage and hauled off the location to an authorized disposal site. Any trash on the pad will be cleaned up prior to the rig moving off location and hauled to an authorized disposal site.
- Sewage will be handled in Portable Toilets.
- Produced water will be placed in the reserve pit for a period not to exceed ninety days after initial production. Any hydrocarbons produced during completion work will be contained in test tanks and removed from the location at a later date.
- Water from the reserve pit may be used for drilling of additional wells. The water will be trucked along access roads as approved in pertinent APD's

8. **Ancillary Facilities:**

- There will be no ancillary facilities associated with this project.

**9. Surface Reclamation Plans:**

Backfilling of the pits will be done when dry. In the event of a dry hole, the location will be re-contoured, the topsoil will be distributed evenly over the entire location, and the seedbed prepared.

- Seed will be planted after September 15<sup>th</sup>, and prior to ground frost, or seed will be planted after the frost has left and before May 15<sup>th</sup>. Slopes to steep for machinery will be hand broadcast and raked with twice the specified amount of seed.
  1. The construction program and design are on the attached cut, fill and cross sectional diagrams.
  2. Prior to construction, all topsoil will be removed from the entire site and stockpiled. Topsoil for this site is the first 6 inches of soil materials.
  3. After the location has been reshaped and after redistributing the topsoil, the operator will rip and scarify the drilling platform and access road on the contour, to a depth of at least 12 inches.
- Rehabilitation will begin upon the completion of the drilling. Complete rehabilitation will depend on weather conditions and the amount of time required to dry the reserve pit.
  1. All rehabilitation work including seeding will be completed as soon as weather and the reserve pit conditions are appropriate.
  2. Landowner will be contacted for rehabilitation requirements.

**10. Surface Ownership:**

Ronald J. Kushmaul  
1206 North 15<sup>th</sup> Street  
Coeur d' Alene, Idaho 83814-5706

**Other Information:**

- The surface soil consists of clay, and silt.
- Flora – vegetation consists of the following: Sagebrush, Juniper and prairie grasses.
- Fauna – antelope, deer, coyotes, raptors, small mammals, and domestic grazing animals.
- Current surface uses – Livestock grazing and mineral exploration and production.

• **Operator and Contact Persons:**

**Construction and Reclamation:**

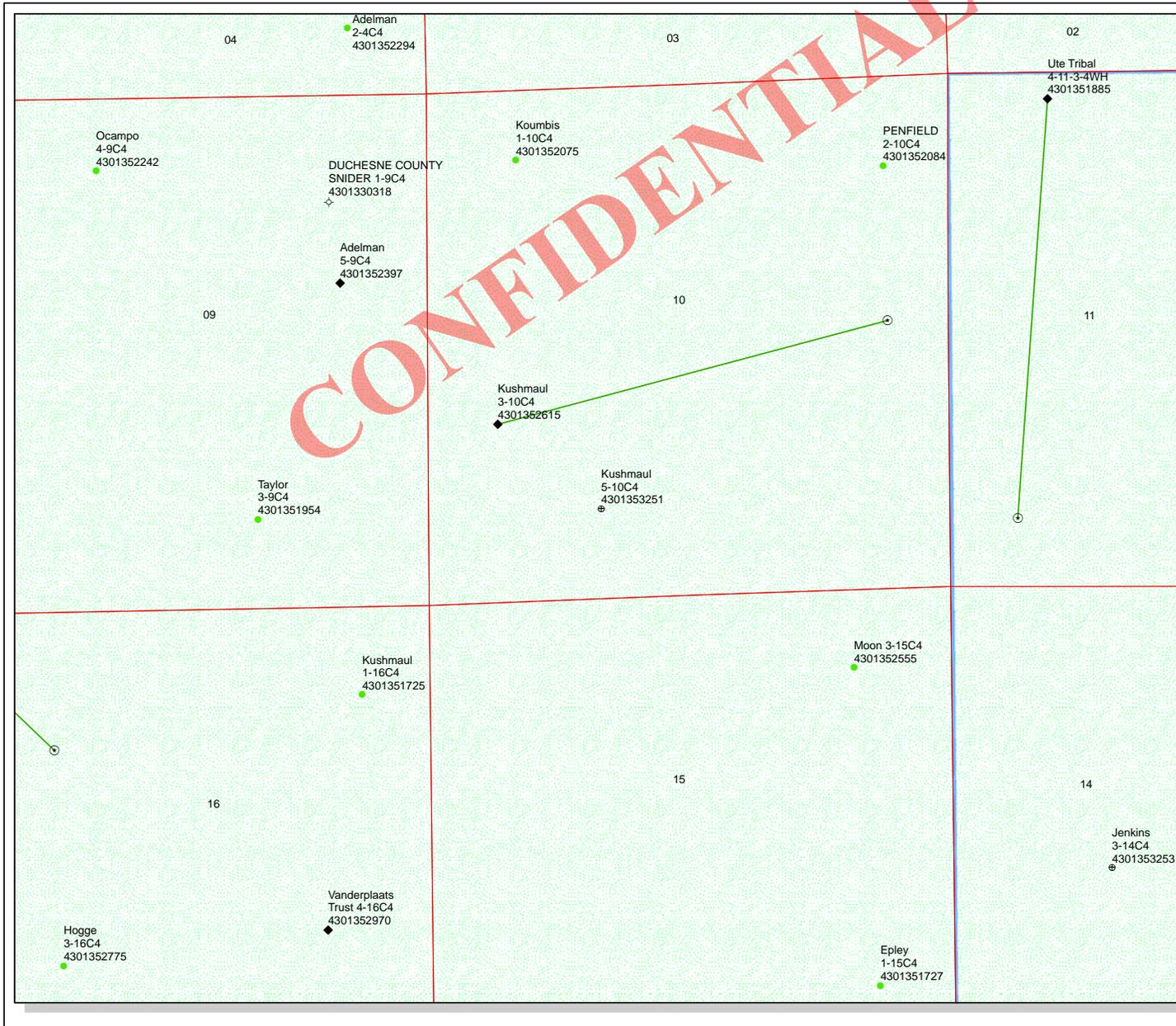
EP Energy E&P Company, L.P.  
Wayne Garner  
PO Box 410  
Altamont, Utah 84001  
435-454-3394 – Office  
435-823-1490 – Cell

**Regarding This APD**

EP Energy E&P Company, L.P.  
Maria S. Gomez  
1001 Louisiana, Rm 2730D  
Houston, Texas 77002  
713-997-5038 – Office

**Drilling**

EP Energy E&P Company, L.P.  
Brad MacAfee – Drilling Engineer  
1001 Louisiana, Rm 2660D  
Houston, Texas 77002  
713-997-6383 – office  
281-813-0902 – Cell



API Number: 4301353251

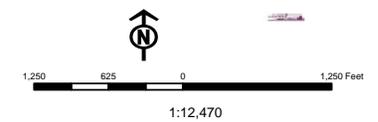
Well Name: Kushmaul 5-10C4

Township: T03.0S Range: R04.0W Section: 10 Meridian: U

Operator: EP ENERGY E&P COMPANY, L.P.

Map Prepared: 12/18/2014  
Map Produced by Diana Mason

Wells Query		Units	
Status	Symbol	STATUS	Symbol
APD - Approved Permit	◆	ACTIVE	▨
DRL - Spudded (Drilling Commenced)	○	EXPLORATORY	▨
GIW - Gas Injection	⚡	GAS STORAGE	▨
GS - Gas Storage	⚡	NF PP OIL	▨
LOC - New Location	⊕	NF SECONDARY	▨
OPS - Operation Suspended	⚠	PI OIL	▨
PA - Plugged Abandoned	⊕	PP GAS	▨
PGW - Producing Gas Well	⚡	PP GEOTHERML	▨
POW - Producing Oil Well	●	PP OIL	▨
SGW - Shut-in Gas Well	⚡	SECONDARY	▨
SOW - Shut-in Oil Well	●	TERMINATED	▨
TA - Temp. Abandoned	○		
TW - Test Well	○	Fields	
WDW - Water Disposal	⚡	STATUS	Symbol
WW - Water Injection Well	⚡	Unknown	▨
WSW - Water Supply Well	●	ABANDONED	▨
		ACTIVE	▨
		COMBINED	▨
		INACTIVE	▨
		STORAGE	▨
		TERMINATED	▨



Well Name	EP ENERGY E&P COMPANY, L.P. Kushmaul 5-10C4 43013532510000			
String	Surf	I1	L1	
Casing Size(")	9.625	7.000	5.000	
Setting Depth (TVD)	2100	9350	12500	
Previous Shoe Setting Depth (TVD)	0	2100	9350	
Max Mud Weight (ppg)	8.3	10.4	12.8	
BOPE Proposed (psi)	500	10000	10000	
Casing Internal Yield (psi)	5750	11220	13940	
Operators Max Anticipated Pressure (psi)	8320		12.8	

Calculations	Surf String	9.625	"
Max BHP (psi)	.052*Setting Depth*MW=	906	
			BOPE Adequate For Drilling And Setting Casing at Depth?
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	654	NO <input type="checkbox"/> diverter, air system, Rotating head reqd.
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	444	YES <input type="checkbox"/> OK <input type="checkbox"/>
			*Can Full Expected Pressure Be Held At Previous Shoe?
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	444	NO <input type="checkbox"/> OK <input type="checkbox"/>
Required Casing/BOPE Test Pressure=		2100	psi
*Max Pressure Allowed @ Previous Casing Shoe=		0	psi *Assumes 1psi/ft frac gradient

Calculations	I1 String	7.000	"
Max BHP (psi)	.052*Setting Depth*MW=	5056	
			BOPE Adequate For Drilling And Setting Casing at Depth?
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	3934	YES <input type="checkbox"/> 10M BOP stack, 5M annular
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	2999	YES <input type="checkbox"/> OK <input type="checkbox"/>
			*Can Full Expected Pressure Be Held At Previous Shoe?
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	3461	NO <input type="checkbox"/> OK <input type="checkbox"/>
Required Casing/BOPE Test Pressure=		7854	psi
*Max Pressure Allowed @ Previous Casing Shoe=		2100	psi *Assumes 1psi/ft frac gradient

Calculations	L1 String	5.000	"
Max BHP (psi)	.052*Setting Depth*MW=	8320	
			BOPE Adequate For Drilling And Setting Casing at Depth?
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=	6820	YES <input type="checkbox"/> 10M BOP stack, 5M annular
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=	5570	YES <input type="checkbox"/> OK <input type="checkbox"/>
			*Can Full Expected Pressure Be Held At Previous Shoe?
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=	7627	YES <input type="checkbox"/> OK <input type="checkbox"/>
Required Casing/BOPE Test Pressure=		9758	psi
*Max Pressure Allowed @ Previous Casing Shoe=		9350	psi *Assumes 1psi/ft frac gradient

Calculations	String		"
Max BHP (psi)	.052*Setting Depth*MW=		
			BOPE Adequate For Drilling And Setting Casing at Depth?
MASP (Gas) (psi)	Max BHP-(0.12*Setting Depth)=		NO <input type="checkbox"/>
MASP (Gas/Mud) (psi)	Max BHP-(0.22*Setting Depth)=		NO <input type="checkbox"/>
			*Can Full Expected Pressure Be Held At Previous Shoe?
Pressure At Previous Shoe	Max BHP-.22*(Setting Depth - Previous Shoe Depth)=		NO <input type="checkbox"/>
Required Casing/BOPE Test Pressure=			psi
*Max Pressure Allowed @ Previous Casing Shoe=			psi *Assumes 1psi/ft frac gradient

EP ENERGY E&P COMPANY, L.P.  
 Kushmaul 5-10C4  
 43013532510000

strip rot head

Formation Depth (MD)  
 0 0

APD

surf

9.625 " Casing

2100 ' MD

2100 ' TVD

Surface ' TOC

1690 ' Tail

17 % Washout

12.25 " Hole

BMSW 2000

GRRV 4472

GRTN1 5204

MHGNY 6090

APD

H<sub>2</sub>O  
 6850'

7 " Casing

9350 ' MD

9350 ' TVD

631 ' TOC

6513 ' Tail

3 % Washout

8.75 " Hole

LWR GR 7448

WSTCH 9288

TOL 9150 ' MD

9150 ' TVD

5 " Liner

12500 ' MD

12500 ' TVD

TOL ' TOC

12500 ' Tail

4 % Washout

6.125 " Hole

WDW Belcher 2-33B4

2.6 mi NW API 4301330907

6786-7708

WDW Lindsay Russell 2-32B4

2.9 mi NW API 4301330371

2464-3720

CONFIDENTIAL

**EP ENERGY E&P COMPANY, L.P.**  
**Kushmaul 5-10C4**  
**43013532510000**

1.125

1

1.8

653	3090	905	3.41	5750	2100	2.74	737	8.77	1833	84.0	73.6
8.3	0.12	3456	40.0	N-80	LTC	444	2.37	194	1.30		
2994	9200	5051	1.82	11220	7619	1.47	797	3.49	7863	271.2	228.5
10.4	0.22	7619	29.0	HCP-110	LTC	528	1.91	304	1.64		
5562	13418	8312	1.61	13940	8312	1.68	495	10.20	11844	60.3	48.6
12.8	0.22	9150	18.0	HCP-110	LTC	199	1.47				

9.625 " Casing

7 " Casing

5 " Liner

# ON-SITE PREDRILL EVALUATION

## Utah Division of Oil, Gas and Mining

**Operator** EP ENERGY E&P COMPANY, L.P.  
**Well Name** Kushmaul 5-10C4  
**API Number** 43013532510000      **APD No** 10889      **Field/Unit** ALTAMONT  
**Location:** 1/4,1/4 SESW      **Sec** 10      **Tw** 3.0S      **Rng** 4.0W      900 FSL 1750 FWL  
**GPS Coord (UTM)** 557367 4453554      **Surface Owner** Ronald J. Kushmaul

### Participants

Randy Fredrick & Kelsey Carter (EP Energy); Dennis Ingram (DOGM)

### Regional/Local Setting & Topography

The Kushmaul 5-10C4 is located in northeastern Utah approximately 6.0 miles north of Duchesne along Highway 87, then east for another 3.1 miles before turning south for another 0.50 miles where the access road is planned to the east. Regionally, this well plots up along the northern reaches of Blue Bench which is mostly flat, bench-like habitat that slopes gently to the south into the Duchesne River Drainage. The topography rises to the north into rocky shelf-like habitat that is commonly found on Black tail Mountain or the southern slopes of the Book Cliffs, then into more bench property that has scattered pinion juniper trees. Approximately 3.5 miles to the west, the topography drops off Blue Bench into the Duchesne River corridor that drains south from the Uinta Mountains. The topography at the proposed location slopes to the east, north/east showing 2.4 feet of cut along the southwestern corners and one to two feet of fill at the eastern corners, with dense sagebrush stands of vegetation.

### Surface Use Plan

#### **Current Surface Use**

Wildlfe Habitat  
Deer Winter Range

#### **New Road Miles**

0.63

#### **Well Pad**

Width 342      Length 410

#### **Src Const Material**

Onsite

#### **Surface Formation**

UNTA

**Ancillary Facilities** N

### Waste Management Plan Adequate?

### Environmental Parameters

**Affected Floodplains and/or Wetlands** N

#### **Flora / Fauna**

Dense sagebrush covering with prickly pear cactus;  
Potential mule deer winter range, coyote, bobcat, rabbit, prairie dog, other smaller mammals, song birds native to region, potential hawk, eagle, or owl habitat minus roosting or perching areas

#### **Soil Type and Characteristics**

Reddish, fine-grained sandy loam with some clays present and underlying cobbles

**Erosion Issues** N

**Sedimentation Issues** N**Site Stability Issues** N**Drainage Diversion Required?** N**Berm Required?** Y**Erosion Sedimentation Control Required?** N**Paleo Survey Run?** N **Paleo Potential Observed?** N **Cultural Survey Run?** N **Cultural Resources?** N**Reserve Pit**

<b>Site-Specific Factors</b>	<b>Site Ranking</b>	
<b>Distance to Groundwater (feet)</b>	>200	0
<b>Distance to Surface Water (feet)</b>	>1000	0
<b>Dist. Nearest Municipal Well (ft)</b>	>5280	0
<b>Distance to Other Wells (feet)</b>	>1320	0
<b>Native Soil Type</b>	High permeability	20
<b>Fluid Type</b>	Fresh Water	5
<b>Drill Cuttings</b>	Normal Rock	0
<b>Annual Precipitation (inches)</b>		0
<b>Affected Populations</b>		
<b>Presence Nearby Utility Conduits</b>	Unknown	10
	<b>Final Score</b>	35 1 Sensitivity Level

**Characteristics / Requirements**

Proposed reserve pit staked off the west side of location in cut, measuring 110' wide by 150' long by 12' deep

**Closed Loop Mud Required?** **Liner Required?** Y **Liner Thickness** 20 **Pit Underlayment Required?**

**Other Observations / Comments**

No issues

Dennis Ingram  
Evaluator

1/20/2015  
Date / Time

**Application for Permit to Drill  
Statement of Basis  
Utah Division of Oil, Gas and Mining**

APD No	API WellNo	Status	Well Type	Surf Owner	CBM
10889	43013532510000	LOCKED	OW	P	No
<b>Operator</b>	EP ENERGY E&P COMPANY, L.P.		<b>Surface Owner-APD</b>	Ronald J. Kushmaul	
<b>Well Name</b>	Kushmaul 5-10C4		<b>Unit</b>		
<b>Field</b>	ALTAMONT		<b>Type of Work</b>	DRILL	
<b>Location</b>	SESW 10 3S 4W U 900 FSL 1750 FWL GPS Coord (UTM) 557368E 4453563N				

**Geologic Statement of Basis**

EP proposes to set 60 feet of conductor and 2,100 feet of surface casing both of which will be cemented to surface. The surface and intermediate holes will be drilled utilizing fresh water mud. The estimated depth to the base of moderately saline ground water is 2,000 feet. A search of Division of Water Rights records indicates that there are 5 water wells within a 10,000 foot radius of the center of Section 10. Wells range between 285 and 650 feet in depth and are used for irrigation, stock watering and domestic. The wells probably produce from the Duchesne River Formation. The Duchesne River Formation is made up of sandstones with interbedded shales and is the most prominent fresh water aquifer in the area. The proposed casing and cement program should adequately protect ground water in this area.

Brad Hill  
APD Evaluator

1/21/2015  
Date / Time

**Surface Statement of Basis**

Undeveloped rangeland, wells permitted or drilled in all directions, no drainages at proposed well site, surface slopes east, northeast in dense sage brush vegetation cover. A reserve pit is proposed off the west side of the location in cut, and will need a 20 mil synthetic liner to help assist containing the drilling fluids. That pit should also be fenced on all sides after the rig moves off to prevent wildlife from entering same. No other issues were noted at the presite meeting.

A presite was done on January 20, 2015 to take input and address issues regarding the construction and drilling of the Kushmaul 5-10C4 well. The permit shows this well a FEE minerals and surface well and therefore the landowner of record was invited by telephone to the presite meeting. The permit shows that EP Energy has submitted a Affidavit dated November 24, 2014 that the operator and surface owner has entered into a landowner or damage agreement. The land needed for the access road is also owned by the same person.

Dennis Ingram  
Onsite Evaluator

1/20/2015  
Date / Time

**Conditions of Approval / Application for Permit to Drill**

Category	Condition
Pits	A synthetic liner with a minimum thickness of 20 mils shall be properly installed and maintained in the reserve pit.
Pits	The reserve pit should be located on the west side of the location.
Surface	The well site shall be bermed to prevent fluids from entering or leaving the pad.

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## WORKSHEET APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 12/16/2014

API NO. ASSIGNED: 43013532510000

WELL NAME: Kushmaul 5-10C4

OPERATOR: EP ENERGY E&amp;P COMPANY, L.P. (N3850)

PHONE NUMBER: 713 997-5038

CONTACT: Maria S. Gomez

PROPOSED LOCATION: SESW 10 030S 040W

Permit Tech Review: 

SURFACE: 0900 FSL 1750 FWL

Engineering Review: 

BOTTOM: 0900 FSL 1750 FWL

Geology Review: 

COUNTY: DUCHESNE

LATITUDE: 40.23054

LONGITUDE: -110.32565

UTM SURF EASTINGS: 557368.00

NORTHINGS: 4453563.00

FIELD NAME: ALTAMONT

LEASE TYPE: 4 - Fee

LEASE NUMBER: Fee

PROPOSED PRODUCING FORMATION(S): GREEN RIVER(LWR)-WASATCH

SURFACE OWNER: 4 - Fee

COALBED METHANE: NO

## RECEIVED AND/OR REVIEWED:

- PLAT
- Bond: STATE/FEE - 400JU0708
- Potash
- Oil Shale 190-5
- Oil Shale 190-3
- Oil Shale 190-13
- Water Permit: Duchesne City
- RDCC Review:
- Fee Surface Agreement
- Intent to Commingle

Commingle Approved

## LOCATION AND SITING:

- R649-2-3.
- Unit:
- R649-3-2. General
- R649-3-3. Exception
- Drilling Unit
- Board Cause No: Cause 139-124
- Effective Date: 11/6/2014
- Siting: 8 WELLS PER SECTION
- R649-3-11. Directional Drill

Comments: Presite Completed

Stipulations: 5 - Statement of Basis - bhll  
12 - Cement Volume (3) - ddoucet  
25 - Surface Casing - ddoucet  
27 - Other - daynedoucet



GARY R. HERBERT  
*Governor*

SPENCER J. COX  
*Lieutenant Governor*

## State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
*Executive Director*

Division of Oil, Gas and Mining

JOHN R. BAZA  
*Division Director*

### Permit To Drill

\*\*\*\*\*

**Well Name:** Kushmaul 5-10C4  
**API Well Number:** 43013532510000  
**Lease Number:** Fee  
**Surface Owner:** FEE (PRIVATE)  
**Approval Date:** 2/26/2015

**Issued to:**

EP ENERGY E&P COMPANY, L.P., 1001 Louisiana, Houston, TX 77002

**Authority:**

Pursuant to Utah Code Ann. 40-6-1 et seq., and Utah Administrative Code R649-3-1 et seq., the Utah Division of Oil, Gas and Mining issues conditions of approval, and permit to drill the listed well. This permit is issued in accordance with the requirements of Cause 139-124. The expected producing formation or pool is the GREEN RIVER(LWR)-WASATCH Formation(s), completion into any other zones will require filing a Sundry Notice (Form 9). Completion and commingling of more than one pool will require approval in accordance with R649-3-22.

**Duration:**

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date

**General:**

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

**Conditions of Approval:**

Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis (copy attached).

A rotating head shall be used when drilling 12.25" hole with air.

Cement volume for the 7" intermediate string shall be determined from actual hole diameter in order to place tail cement from the pipe setting depth back to 6850' MD and lead cement back to 1600' MD as indicated in the submitted drilling plan.

Surface casing shall be cemented to the surface.

**Additional Approvals:**

The operator is required to obtain approval from the Division of Oil, Gas and mining before performing any of the following actions during the drilling of this well:

- Any changes to the approved drilling plan - contact Dustin Doucet
- Significant plug back of the well - contact Dustin Doucet
- Plug and abandonment of the well - contact Dustin Doucet

**Notification Requirements:**

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- Within 24 hours following the spudding of the well - contact Carol Daniels  
OR  
submit an electronic sundry notice (pre-registration required) via the Utah Oil & Gas website  
at <http://oilgas.ogm.utah.gov>
- 24 hours prior to testing blowout prevention equipment - contact Dan Jarvis
- 24 hours prior to cementing or testing casing - contact Dan Jarvis
- Within 24 hours of making any emergency changes to the approved drilling program  
- contact Dustin Doucet
- 24 hours prior to commencing operations to plug and abandon the well - contact Dan Jarvis

**Contact Information:**

The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voicemail message if the person is not available to take the call):

- Carol Daniels 801-538-5284 - office
- Dustin Doucet 801-538-5281 - office  
801-733-0983 - after office hours
- Dan Jarvis 801-538-5338 - office  
801-231-8956 - after office hours

**Reporting Requirements:**

All reports, forms and submittals as required by the Utah Oil and Gas Conservation General Rules will be promptly filed with the Division of Oil, Gas and Mining, including but not limited to:

- Entity Action Form (Form 6) - due within 5 days of spudding the well
- Monthly Status Report (Form 9) - due by 5th day of the following calendar month
- Requests to Change Plans (Form 9) - due prior to implementation
- Written Notice of Emergency Changes (Form 9) - due within 5 days
- Notice of Operations Suspension or Resumption (Form 9) - due prior to implementation
- Report of Water Encountered (Form 7) - due within 30 days after completion
- Well Completion Report (Form 8) - due within 30 days after completion or plugging

Approved By:

**Approved by:**

A handwritten signature in black ink, appearing to read "J. Rogers", written in a cursive style.

For John Rogers  
Associate Director, Oil & Gas

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Carol Daniels <caroldaniels@utah.gov>

SESU SEC 10 TAZS ROYW FEE LEASE

**24hr Notice of Spud**

1 message

LANDRIG009 (Precision 406) <LANDRIG009@epenergy.com>

Wed, Mar 4, 2015 at 3:04 PM

To: "alexishuefner@utah.gov" <alexishuefner@utah.gov>, "MacAfee, Bradley D" <Brad.MacAfee@epenergy.com>, "caroldaniels@utah.gov" <caroldaniels@utah.gov>, "dennisingram@utah.gov" <dennisingram@utah.gov>, "Dodd, Robert W" <Robert.Dodd@epenergy.com>, "Mangum, Danny R (Contractor)" <danny.mangum@epenergy.com>, "Gomez, Maria S" <Maria.Gomez@epenergy.com>, "Derden, Roy Lynn (Contractor)" <Roy.Derden@epenergy.com>

RE: EP ENERGY

KUSHMAUL 5-10C4

API # 43013532510000

ALTAMONT FIELD

DUCHESNE COUNTY

Leon Ross Drilling spudded the well @ 09:00hrs on 3/4/2015. We plan on running and cementing 20" Conductor Casing to +/- 40' within 24hrs.

Regards,

Tony Wilkerson / Bill Owen

EP Energy LLC

PD Rig 406

Rig: 713-997-1220

Cell: 435-823-1764

THIS E-MAIL AND ANY MATERIALS TRANSMITTED WITH IT MAY CONTAIN CONFIDENTIAL OR PROPRIETARY MATERIAL FOR THE SOLE USE OF THE INTENDED RECIPIENT. ANY REVIEW, USE, DISTRIBUTION OR DISCLOSURE BY OTHERS IS STRICTLY PROHIBITED. IF YOU ARE NOT THE INTENDED RECIPIENT, OR AUTHORIZED TO RECEIVE THE INFORMATION FROM THE RECIPIENT, PLEASE NOTIFY THE SENDER BY REPLY E-MAIL AND DELETE ALL COPIES OF THIS MESSAGE.

CONFIDENTIAL

Carol Daniels <caroldaniels@utah.gov>

SESW SEC 10 T03S R04W

## 24hr Notice run & Cement Casing

1 message

LANDRIG009 (Precision 406) <LANDRIG009@epenergy.com>

Mon, Mar 9, 2015 at 11:42 AM

To: "alexishuefner@utah.gov" <alexishuefner@utah.gov>, "MacAfee, Bradley D" <Brad.MacAfee@epenergy.com>, "caroldaniels@utah.gov" <caroldaniels@utah.gov>, "dennisingram@utah.gov" <dennisingram@utah.gov>, "Dodd, Robert W" <Robert.Dodd@epenergy.com>, "Mangum, Danny R (Contractor)" <danny.mangum@epenergy.com>, "Gomez, Maria S" <Maria.Gomez@epenergy.com>, "Derden, Roy Lynn (Contractor)" <Roy.Derden@epenergy.com>

RE: EP ENERGY

KUSHMAUL 5-10C4

API # 43013532510000

ALTAMONT FIELD

DUCHESNE COUNTY

Pro Petro Drilling moved in and commenced drilling the 12¼" surface hole @ 22:15hrs on 3/8/2015. We plan on running and cementing 9-5/8" Surface Casing to +/- 2,100' within 24hrs.

Regards,

Tony Wilkerson / Bill Owen

EP Energy LLC

PD Rig 406

Rig: 713-997-1220

Cell: 435-823-1764

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Carol Daniels <caroldaniels@utah.gov>

*SFSW SEC 10 TQ3S ROY W FEE LEASE*

**Update Kushmaul 5-10C4 API # 43013532510000**

1 message

LANDRIG009 (Precision 406) <LANDRIG009@epenergy.com>

Sun, Mar 15, 2015 at 7:32 PM

To: "alexishuefner@utah.gov" <alexishuefner@utah.gov>, "MacAfee, Bradley D" <Brad.MacAfee@epenergy.com>, "caroldaniels@utah.gov" <caroldaniels@utah.gov>, "dennisingram@utah.gov" <dennisingram@utah.gov>, "Dodd, Robert W" <Robert.Dodd@epenergy.com>, "Mangum, Danny R (Contractor)" <danny.mangum@epenergy.com>, "Gomez, Maria S" <Maria.Gomez@epenergy.com>, "Derden, Roy Lynn (Contractor)" <Roy.Derden@epenergy.com>

RE: EP ENERGY

KUSHMAUL 5-10C4

API # 43013532510000

ALTAMONT FIELD

DUCHESNE COUNTY

We moved in with Precision Drilling Rig 406 on 3/12/15. Nipped Up 11" 10M BOPE. Finished Testing BOPE & 9-5/8" Surface Casing 3/14/15 @ 09:30hrs. Commenced drilling 8 3/4" Intermediate section @ 19:30hrs 3/14/15.

Regards,

Tony Wilkerson / Bill Owen

EP Energy LLC

PD Rig 406

Rig: 713-997-1220

Cell: 435-823-1764

THIS E-MAIL AND ANY MATERIALS TRANSMITTED WITH IT MAY CONTAIN CONFIDENTIAL OR PROPRIETARY MATERIAL FOR THE SOLE USE OF THE INTENDED RECIPIENT. ANY REVIEW, USE, DISTRIBUTION OR DISCLOSURE BY OTHERS IS STRICTLY PROHIBITED. IF YOU ARE NOT THE INTENDED RECIPIENT, OR AUTHORIZED TO RECEIVE THE INFORMATION FROM THE RECIPIENT, PLEASE NOTIFY THE SENDER BY REPLY E-MAIL AND DELETE ALL COPIES OF THIS MESSAGE.

<b>STATE OF UTAH</b> DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	<b>FORM 9</b>
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>  Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	5. LEASE DESIGNATION AND SERIAL NUMBER: Fee
	6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
	7. UNIT or CA AGREEMENT NAME:
1. TYPE OF WELL Oil Well	8. WELL NAME and NUMBER: Kushmaul 5-10C4
2. NAME OF OPERATOR: EP ENERGY E&P COMPANY, L.P.	9. API NUMBER: 43013532510000
3. ADDRESS OF OPERATOR: 1001 Louisiana , Houston, TX, 77002	PHONE NUMBER: 713 997-5038 Ext
4. LOCATION OF WELL FOOTAGES AT SURFACE: 0900 FSL 1750 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: SESW Section: 10 Township: 03.0S Range: 04.0W Meridian: U	9. FIELD and POOL or WILDCAT: ALTAMONT
	COUNTY: DUCHESNE
	STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT Approximate date work will start: <b>4/20/2015</b>	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> CASING REPAIR
<input type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion:	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> CHANGE WELL NAME
<input type="checkbox"/> SPUD REPORT Date of Spud:	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> CONVERT WELL TYPE
<input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> NEW CONSTRUCTION
	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> PLUG BACK
	<input type="checkbox"/> PRODUCTION START OR RESUME	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION
	<input type="checkbox"/> REPERFORATE CURRENT FORMATION	<input type="checkbox"/> SIDETRACK TO REPAIR WELL	<input type="checkbox"/> TEMPORARY ABANDON
	<input type="checkbox"/> TUBING REPAIR	<input type="checkbox"/> VENT OR FLARE	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> WATER SHUTOFF	<input type="checkbox"/> SI TA STATUS EXTENSION	<input type="checkbox"/> APD EXTENSION
	<input type="checkbox"/> WILDCAT WELL DETERMINATION	<input checked="" type="checkbox"/> OTHER	OTHER: <input type="text" value="Initial Completion"/>

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

EP plans to complete into Wasatch. See attached for details.

**Approved by the**  
**April 14, 2015**  
**Oil, Gas and Mining**

Date: \_\_\_\_\_  
 By: DeKQ

NAME (PLEASE PRINT) Maria S. Gomez	PHONE NUMBER 713 997-5038	TITLE Principal Regulatory Analyst
SIGNATURE N/A	DATE 4/7/2015	

## **Kushmaul 5-10C4**

### **Initial Completion**

**API # : 4301353251**

**The following precautions will be taken until the RCA for the Conover is completed:**

1. Review torque turning and running of the 7" and 5" liner of anomalies.
2. Test and chart casing for 30 minutes, noting pressure if any on surface casing.
3. Test all lubricators, valves and BOP's to working pressure.
4. A frac tree with BOP equipment will be utilized during the stimulation treatment.
5. Monitor the surface casing during frac:
  - a. Lay a flowline to the flow back tank and keep the valve open.
  - b. This line will remain in place until a wire line set retrievable packer is in place isolating the casing after the frac.
6. 2 7/8" tubing will be run to isolate the casing during the flow back of the well.
7. Well pressure and annulus pressure would be monitored during this time until the well is ready for pump.

### **Completion Information (Wasatch Formation)**

- |                 |   |
|-----------------|---|
| <b>Stage #1</b> | RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~11590' – 11926' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of THS 30/50. Total clean water volume is 3682 bbls. |
| <b>Stage #2</b> | RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~11202' – 11538' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of THS 30/50. Total clean water volume is 3675 bbls. |
| <b>Stage #3</b> | RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~10860' – 11168' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of THS 30/50. Total clean water volume is 3669 bbls. |
| <b>Stage #4</b> | RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~10572' – 10816' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of THS 30/50. Total clean water volume is 3664 bbls. |
| <b>Stage #5</b> | RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~10309' – 10541' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of TLC 30/50. Total clean water volume is 3659 bbls. |

- Stage #6** RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~10041' – 10263' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of TLC 30/50. Total clean water volume is 3654 bbls.
- Stage #7** RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~9761' – 10003' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of TLC 30/50. Total clean water volume is 3649 bbls.
- Stage #8** RU WL unit with 10K lubricator and test to 10,000 psi with glycol. Perforations from ~9464' – 9726' with ~4000 gallons of 15% HCL acid, ~3000 # of 100 mesh sand and ~150000 # of TLC 30/50. Total clean water volume is 3644 bbls.

### Stimulation Summary

	Top Perf	Btm. Perf	Gross Interval	Plug Depth	Net Perf Length	Total Shots	Perf Intervals	Type of Prop	Lbs of Prop	Lbs/ft	Lbs of 100 Mesh	Gals of HCL (15%)	BBLs of Clean H2O	BBLs of Slurry
Stage #1	11,590	11,926	336	NA	23	69	17	THS 30/50	150,000	446	3,000	4,000	3,682	4,070
Stage #2	11,202	11,538	336	11,553	23	69	17	THS 30/50	150,000	446	3,000	4,000	3,675	4,063
Stage #3	10,860	11,168	308	11,183	23	69	17	THS 30/50	150,000	487	3,000	4,000	3,669	4,057
Stage #4	10,572	10,816	244	10,831	22	66	17	THS 30/50	150,000	615	3,000	4,000	3,664	4,052
Stage #5	10,309	10,541	232	10,556	23	69	17	TLC 30/50	150,000	647	3,000	4,000	3,659	4,036
Stage #6	10,041	10,263	222	10,278	23	69	17	TLC 30/50	150,000	676	3,000	4,000	3,654	4,031
Stage #7	9,761	10,003	242	10,018	23	69	17	TLC 30/50	150,000	620	3,000	4,000	3,649	4,026
Stage #8	9,464	9,726	262	9,741	23	69	17	TLC 30/50	150,000	573	3,000	4,000	3,644	4,021
<b>Average per Stage</b>			<b>273</b>		<b>23</b>	<b>69</b>	<b>17</b>		<b>150,000</b>	<b>564</b>	<b>3,000</b>	<b>4,000</b>	<b>3,662</b>	<b>4,044</b>
<b>Totals per Well</b>			<b>2,182</b>		<b>183</b>	<b>549</b>	<b>136</b>		<b>1,200,000</b>		<b>24,000</b>	<b>32,000</b>	<b>29,296</b>	<b>32,355</b>

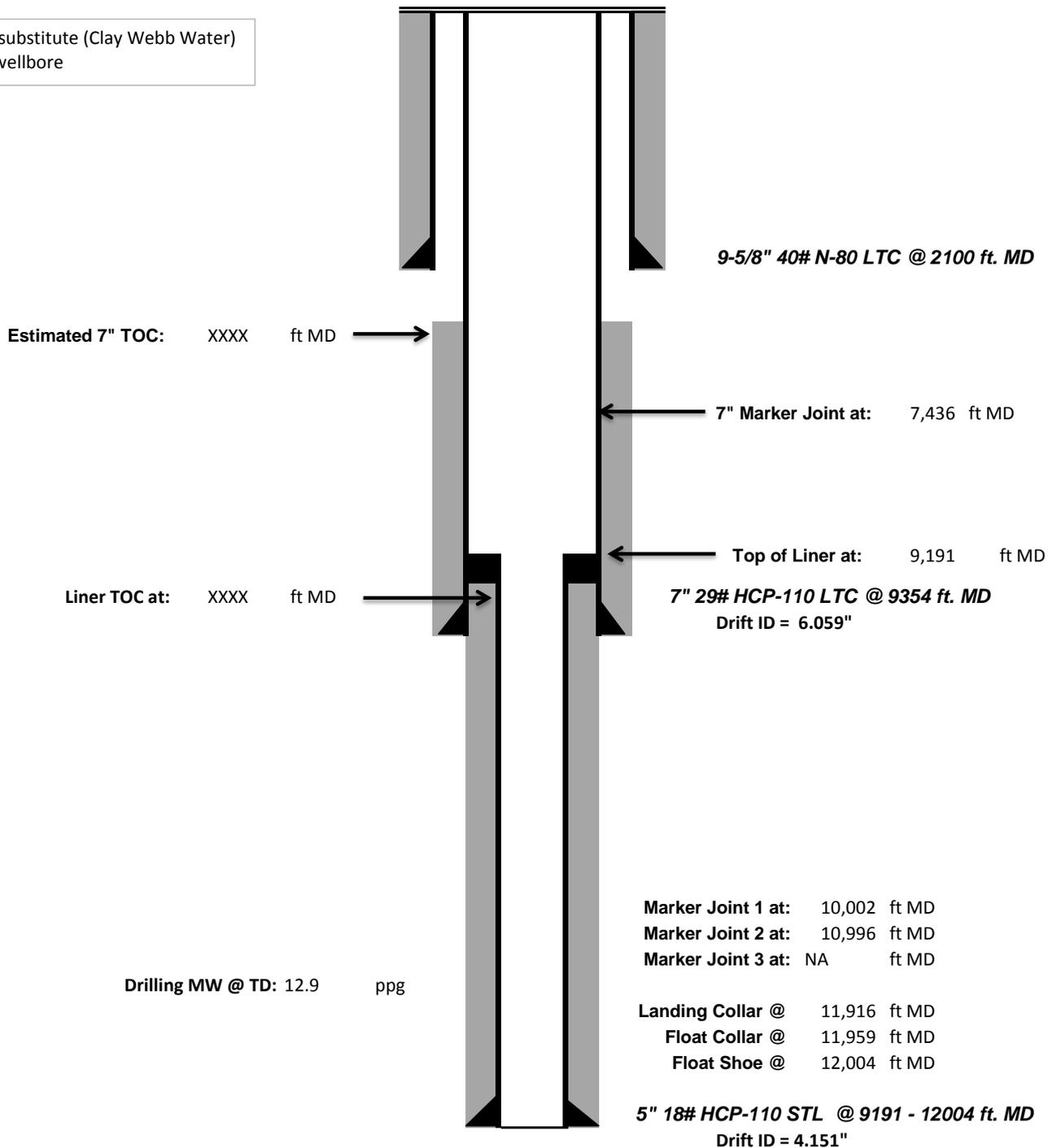


**Pre-Completion Wellbore Schematic**

Well Name: **Kushmaul 5-10C4**  
 Company Name: **EP Energy**  
 Field, County, State: **Altamont, Duchesne, Utah**  
 Surface Location: **Lat: 40°13'49.65" N Long: 110°19'32.34" W**  
 Producing Zone(s): **Wasatch**

Last Updated: **4/6/2015**  
 By: **David Gregory**  
 TD: **12,004**  
 API: **4301353251**  
 AFE: **163452**

8.43 ppg KCL substitute (Clay Webb Water) water in the wellbore



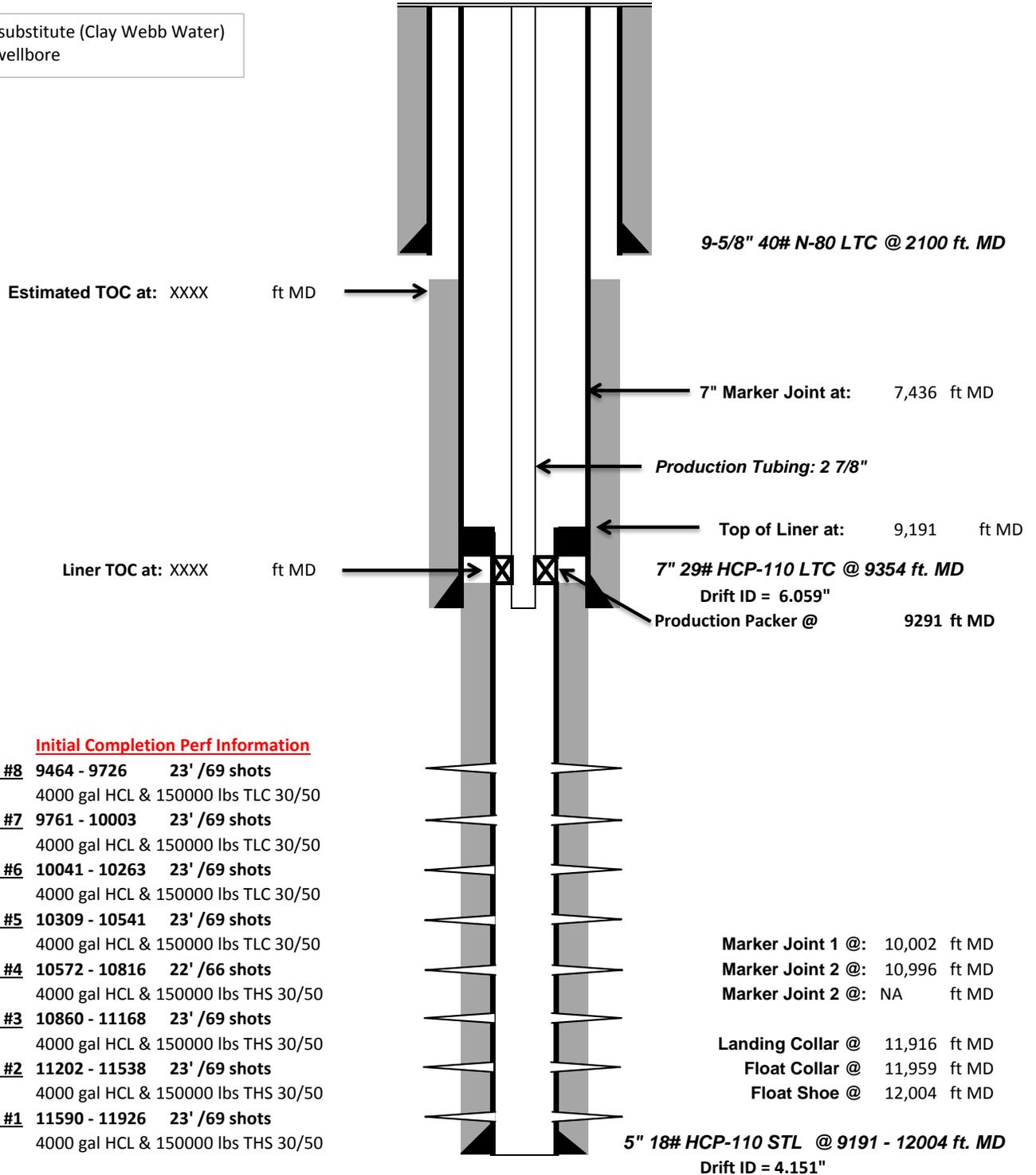


**Post-Completion Wellbore Schematic**

Well Name: **Kushmaul 5-10C4**  
 Company Name: **EP Energy**  
 Field, County, State: **Altamont, Duchesne, Utah**  
 Surface Location: **Lat: 40°13'49.65" N Long: 110°19'32.34" W**  
 Producing Zone(s): **Wasatch**

Last Updated: **4/6/2015**  
 By: **David Gregory**  
 TD: **12,004**  
 API: **4301353251**  
 AFE: **163452**

8.43 ppg KCL substitute (Clay Webb Water) water in the wellbore



**Initial Completion Perf Information**

Stage #	Depth Range (ft)	Shots	Fluid
<b>Stage #8</b>	<b>9464 - 9726</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs TLC 30/50
<b>Stage #7</b>	<b>9761 - 10003</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs TLC 30/50
<b>Stage #6</b>	<b>10041 - 10263</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs TLC 30/50
<b>Stage #5</b>	<b>10309 - 10541</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs TLC 30/50
<b>Stage #4</b>	<b>10572 - 10816</b>	<b>23' /66 shots</b>	4000 gal HCL & 150000 lbs THS 30/50
<b>Stage #3</b>	<b>10860 - 11168</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs THS 30/50
<b>Stage #2</b>	<b>11202 - 11538</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs THS 30/50
<b>Stage #1</b>	<b>11590 - 11926</b>	<b>23' /69 shots</b>	4000 gal HCL & 150000 lbs THS 30/50

CONFIDENTIAL

Carol Daniels unknown <caroldaniels@utah.gov>

SESW SEC 10 T 03S R04W FREE LEASE

## 24 Hour Notice Running casing & cementing

1 message

LANDRIG009 (Precision 406) <LANDRIG009@epenergy.com>

Wed, Mar 25, 2015 at 6:41 AM

To: "alexishuefner@utah.gov" <alexishuefner@utah.gov>, "MacAfee, Bradley D" <Brad.MacAfee@epenergy.com>, "caroldaniels@utah.gov" <caroldaniels@utah.gov>, "dennisingram@utah.gov" <dennisingram@utah.gov>, "Dodd, Robert W" <Robert.Dodd@epenergy.com>, "Mangum, Danny R (Contractor)" <danny.mangum@epenergy.com>, "Gomez, Maria S" <Maria.Gomez@epenergy.com>, "Derden, Roy Lynn (Contractor)" <Roy.Derden@epenergy.com>

RE: EP ENERGY

KUSHMAUL 5-10C4

API # 43013532510000

ALTAMONT FIELD

DUCHESNE COUNTY

We plan on running & cementing 5" 18# HCP-110 STL Production Liner to +/- 12,004' within 24 hours.

Thanks,

Lloyd Rowell / Morgan Harden

EP Energy / PD 406

713-997-1220 (Rig)

435-823-1764 (Cell)

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Carol Daniels <caroldaniels@utah.gov>

SRSW 5-10 T035 R04W FEE LEASE

## 24hr Notice Run & Cement Casing

1 message

LANDRIG009 (Precision 406) <LANDRIG009@epenergy.com>

Fri, Mar 20, 2015 at 3:05 AM

To: "alexishuefner@utah.gov" <alexishuefner@utah.gov>, "MacAfee, Bradley D" <Brad.MacAfee@epenergy.com>, "caroldaniels@utah.gov" <caroldaniels@utah.gov>, "dennisingram@utah.gov" <dennisingram@utah.gov>, "Dodd, Robert W" <Robert.Dodd@epenergy.com>, "Mangum, Danny R (Contractor)" <danny.mangum@epenergy.com>, "Gomez, Maria S" <Maria.Gomez@epenergy.com>, "Derden, Roy Lynn (Contractor)" <Roy.Derden@epenergy.com>

RE: EP ENERGY

KUSHMAUL 5-10C4

API # 43013532510000

ALTAMONT FIELD

DUCHESNE COUNTY

We plan on running & cementing 7" HCP-110 29# LTC Intermediate casing to +/- 9,354' within 24 hours.

Thanks,

Lloyd Rowell / Morgan Harden

EP Energy / PD 406

713-997-1220 (Rig)

435-823-1764 (Cell)

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**STATE OF UTAH**  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

AMENDED REPORT  FORM 8  
(highlight changes)

<b>WELL COMPLETION OR RECOMPLETION REPORT AND LOG</b>		5. LEASE DESIGNATION AND SERIAL NUMBER:
1a. TYPE OF WELL: OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> OTHER _____		6. IF INDIAN, ALLOTTEE OR TRIBE NAME
b. TYPE OF WORK: NEW WELL <input type="checkbox"/> HORIZ. LATS. <input type="checkbox"/> DEEP-EN <input type="checkbox"/> RE-ENTRY <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> OTHER _____		7. UNIT or CA AGREEMENT NAME
2. NAME OF OPERATOR:		8. WELL NAME and NUMBER:
3. ADDRESS OF OPERATOR: CITY _____ STATE _____ ZIP _____ PHONE NUMBER: _____		9. API NUMBER:
4. LOCATION OF WELL (FOOTAGES) AT SURFACE:  AT TOP PRODUCING INTERVAL REPORTED BELOW:  AT TOTAL DEPTH:		10 FIELD AND POOL, OR WILDCAT
		11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:
		12. COUNTY _____ 13. STATE <b>UTAH</b>

14. DATE SPUDDED:	15. DATE T.D. REACHED:	16. DATE COMPLETED: _____ ABANDONED <input type="checkbox"/> READY TO PRODUCE <input type="checkbox"/>	17. ELEVATIONS (DF, RKB, RT, GL):
18. TOTAL DEPTH: MD _____ TVD _____	19. PLUG BACK T.D.: MD _____ TVD _____	20. IF MULTIPLE COMPLETIONS, HOW MANY? *	21. DEPTH BRIDGE MD _____ PLUG SET: TVD _____
22. TYPE ELECTRIC AND OTHER MECHANICAL LOGS RUN (Submit copy of each)		23. WAS WELL CORED? NO <input type="checkbox"/> YES <input type="checkbox"/> (Submit analysis) WAS DST RUN? NO <input type="checkbox"/> YES <input type="checkbox"/> (Submit report) DIRECTIONAL SURVEY? NO <input type="checkbox"/> YES <input type="checkbox"/> (Submit copy)	

**24. CASING AND LINER RECORD (Report all strings set in well)**

HOLE SIZE	SIZE/GRADE	WEIGHT (#/ft.)	TOP (MD)	BOTTOM (MD)	STAGE CEMENTER DEPTH	CEMENT TYPE & NO. OF SACKS	SLURRY VOLUME (BBL)	CEMENT TOP **	AMOUNT PULLED

**25. TUBING RECORD**

SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)

26. PRODUCING INTERVALS					27. PERFORATION RECORD				
FORMATION NAME	TOP (MD)	BOTTOM (MD)	TOP (TVD)	BOTTOM (TVD)	INTERVAL (Top/Bot - MD)	SIZE	NO. HOLES	PERFORATION STATUS	
(A)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
(B)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
(C)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>
(D)								Open <input type="checkbox"/>	Squeezed <input type="checkbox"/>

**28. ACID, FRACTURE, TREATMENT, CEMENT SQUEEZE, ETC. See attached for further information on #27 & #28.**

DEPTH INTERVAL	AMOUNT AND TYPE OF MATERIAL

29. ENCLOSED ATTACHMENTS: All logs are submitted to UDOGM by vendor.  <input type="checkbox"/> ELECTRICAL/MECHANICAL LOGS <input type="checkbox"/> GEOLOGIC REPORT <input type="checkbox"/> DST REPORT <input type="checkbox"/> DIRECTIONAL SURVEY <input type="checkbox"/> SUNDRY NOTICE FOR PLUGGING AND CEMENT VERIFICATION <input type="checkbox"/> CORE ANALYSIS <input type="checkbox"/> OTHER: _____	30. WELL STATUS:
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**31. INITIAL PRODUCTION**

**INTERVAL A (As shown in item #26)**

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

**INTERVAL B (As shown in item #26)**

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

**INTERVAL C (As shown in item #26)**

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

**INTERVAL D (As shown in item #26)**

DATE FIRST PRODUCED:		TEST DATE:		HOURS TESTED:		TEST PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	PROD. METHOD:
CHOKE SIZE:	TBG. PRESS.	CSG. PRESS.	API GRAVITY	BTU – GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES: →	OIL – BBL:	GAS – MCF:	WATER – BBL:	INTERVAL STATUS:

**32. DISPOSITION OF GAS (Sold, Used for Fuel, Vented, Etc.)**

**33. SUMMARY OF POROUS ZONES (Include Aquifers):**

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

**34. FORMATION (Log) MARKERS:**

Formation	Top (MD)	Bottom (MD)	Descriptions, Contents, etc.	Name	Top (Measured Depth)

**35. ADDITIONAL REMARKS (Include plugging procedure)**

**36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.**

NAME (PLEASE PRINT) \_\_\_\_\_ TITLE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

This report must be submitted within 30 days of

- completing or plugging a new well
- drilling horizontal laterals from an existing well bore
- recompleting to a different producing formation
- reentering a previously plugged and abandoned well
- significantly deepening an existing well bore below the previous bottom-hole depth
- drilling hydrocarbon exploratory holes, such as core samples and stratigraphic tests

\* ITEM 20: Show the number of completions if production is measured separately from two or more formations.

\*\* ITEM 24: Cement Top – Show how reported top(s) of cement were determined (circulated (CIR), calculated (CAL), cement bond log (CBL), temperature survey (TS)).

Send to: Utah Division of Oil, Gas and Mining  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Phone: 801-538-5340

Fax: 801-359-3940

**Attachment to Well Completion Report****Form 8 Dated May 12, 2015****Well Name: Kushmaul 5-10C4****Items #27 and #28 Continued****27. Perforation Record**

<b>Interval (Top/Bottom – MD)</b>	<b>Size</b>	<b>No. of Holes</b>	<b>Perf. Status</b>
<b>10302'-10536'</b>	<b>.38</b>	<b>69</b>	<b>Open</b>
<b>10033'-10257'</b>	<b>.38</b>	<b>69</b>	<b>Open</b>
<b>9750'-9995'</b>	<b>.38</b>	<b>69</b>	<b>Open</b>
<b>9454'-9716'</b>	<b>.38</b>	<b>.69</b>	<b>Open</b>

**28. Acid, Fracture, Treatment, Cement Squeeze, Etc.**

<b>Depth Interval</b>	<b>Amount and Type of Material</b>
<b>10567'-10811'</b>	<b>5000 gal acid, 3035# 100 mesh, 150188# 30/50 Prem White PRC</b>
<b>10302'-10536'</b>	<b>5000 gal acid, 3062# 100 mesh, 150093# 30/50 PRC</b>
<b>10033'-10257'</b>	<b>5000 gal acid, 3008# 100 mesh, 149946# 30/50 PRC</b>
<b>9750'-9995'</b>	<b>5000 gal acid, 3025# 100 mesh, 150104# 30/50 PRC</b>
<b>9454'-9716'</b>	<b>5000 gal acid, 5800# 100 mesh, 150297# 30/50 PRC</b>



**Company:** EP Energy **Job Number:** \_\_\_\_\_  
**Well:** Kushmaul 5-10C4 **Mag Decl.:** \_\_\_\_\_  
**Location:** Duchesne, UT **Dir Driller:** \_\_\_\_\_  
**Rig:** Precision 406 **MWD Eng:** \_\_\_\_\_

**Calculation Method** Minimum Curvature  
**Proposed Azimuth** 0.00  
**Depth Reference** KB  
**Tie Into:** Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')		
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth					
<b>Tie In</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>												
1	100.00	0.29	43.46	100.00	100.00	0.18	0.18	N	0.17	E	0.25	43.46	0.29	0.29	43.46
2	200.00	0.31	35.52	100.00	200.00	0.59	0.59	N	0.51	E	0.78	40.68	0.05	0.02	-7.94
3	300.00	0.24	6.23	100.00	300.00	1.02	1.02	N	0.69	E	1.23	33.97	0.16	-0.07	-29.30
4	400.00	0.47	49.45	100.00	400.00	1.50	1.50	N	1.02	E	1.81	34.35	0.34	0.23	43.23
5	500.00	0.55	99.14	100.00	499.99	1.69	1.69	N	1.80	E	2.47	46.91	0.43	0.07	49.69
6	600.00	0.52	158.21	100.00	599.99	1.19	1.19	N	2.44	E	2.72	64.08	0.53	-0.02	59.07
7	700.00	0.42	240.71	100.00	699.99	0.58	0.58	N	2.29	E	2.37	75.72	0.63	-0.10	82.51
8	800.00	0.32	317.76	100.00	799.98	0.61	0.61	N	1.79	E	1.89	71.07	0.47	-0.10	77.05
9	900.00	0.51	34.42	100.00	899.98	1.19	1.19	N	1.85	E	2.20	57.27	0.54	0.19	-283.35
10	1000.00	0.20	189.98	100.00	999.98	1.38	1.38	N	2.07	E	2.49	56.24	0.70	-0.31	155.57
11	1100.00	0.47	184.45	100.00	1099.98	0.80	0.80	N	2.01	E	2.16	68.22	0.27	0.27	-5.53
12	1200.00	0.40	237.44	100.00	1199.98	0.21	0.21	N	1.68	E	1.70	83.00	0.39	-0.07	52.98
13	1300.00	0.47	320.22	100.00	1299.97	0.34	0.34	N	1.13	E	1.18	73.45	0.58	0.07	82.78
14	1400.00	0.26	50.12	100.00	1399.97	0.79	0.79	N	1.04	E	1.31	52.58	0.53	-0.21	-270.10
15	1500.00	0.44	139.84	100.00	1499.97	0.64	0.64	N	1.46	E	1.59	66.22	0.51	0.19	89.72
16	1600.00	0.41	237.75	100.00	1599.97	0.16	0.16	N	1.41	E	1.42	83.56	0.64	-0.04	97.91
17	1700.00	0.41	327.00	100.00	1699.97	0.27	0.27	N	0.92	E	0.95	73.77	0.57	0.00	89.25
18	1800.00	0.40	83.37	100.00	1799.97	0.60	0.60	N	1.07	E	1.23	60.57	0.68	-0.01	-243.63
19	1900.00	0.38	194.37	100.00	1899.97	0.32	0.32	N	1.33	E	1.37	76.41	0.64	-0.02	111.00
20	2000.00	0.23	22.20	100.00	1999.97	0.18	0.18	N	1.33	E	1.34	82.08	0.61	-0.15	-172.17
21	2053.00	0.30	46.17	53.00	2052.96	0.38	0.38	N	1.47	E	1.51	75.52	0.25	0.14	45.23
22	2180.00	0.20	117.60	127.00	2179.96	0.51	0.51	N	1.91	E	1.97	75.05	0.24	-0.08	56.24
23	2276.00	1.30	47.80	96.00	2275.95	1.16	1.16	N	2.86	E	3.09	67.88	1.30	1.15	-72.71
24	2373.00	2.70	30.40	97.00	2372.89	3.87	3.87	N	4.83	E	6.19	51.29	1.56	1.44	-17.94
25	2469.00	2.00	31.50	96.00	2468.81	7.25	7.25	N	6.85	E	9.98	43.38	0.73	-0.73	1.15
26	2566.00	2.80	19.40	97.00	2565.73	10.93	10.93	N	8.52	E	13.86	37.95	0.97	0.82	-12.47
27	2662.00	2.40	23.90	96.00	2661.63	14.98	14.98	N	10.12	E	18.07	34.03	0.47	-0.42	4.69
28	2757.00	3.20	24.60	95.00	2756.51	19.21	19.21	N	12.03	E	22.66	32.05	0.84	0.84	0.74
29	2853.00	2.60	22.70	96.00	2852.39	23.65	23.65	N	13.98	E	27.48	30.59	0.63	-0.63	-1.98
30	2949.00	1.80	22.40	96.00	2948.32	27.06	27.06	N	15.40	E	31.13	29.64	0.83	-0.83	-0.31
31	3045.00	2.80	16.70	96.00	3044.24	30.70	30.70	N	16.64	E	34.92	28.47	1.07	1.04	-5.94
32	3141.00	2.10	16.70	96.00	3140.15	34.63	34.63	N	17.82	E	38.94	27.24	0.73	-0.73	0.00
33	3237.00	3.00	8.30	96.00	3236.06	38.80	38.80	N	18.69	E	43.06	25.72	1.01	0.94	-8.75
34	3333.00	2.40	3.30	96.00	3331.95	43.29	43.29	N	19.17	E	47.34	23.89	0.67	-0.63	-5.21
35	3429.00	2.30	13.10	96.00	3427.87	47.17	47.17	N	19.72	E	51.13	22.69	0.43	-0.10	10.21



**Company:** EP Energy  
**Well:** Kushmaul 5-10C4  
**Location:** Duchesne, UT  
**Rig:** Precision 406

**Job Number:** \_\_\_\_\_  
**Mag Decl.:** \_\_\_\_\_  
**Dir Driller:** \_\_\_\_\_  
**MWD Eng:** \_\_\_\_\_

**Calculation Method** Minimum Curvature  
**Proposed Azimuth** 0.00  
**Depth Reference** KB  
**Tie Into:** Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')		
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth					
36	3525.00	3.30	20.70	96.00	3523.75	51.63	51.63	N	21.14	E	55.79	22.26	1.11	1.04	7.92
37	3621.00	2.90	12.60	96.00	3619.61	56.59	56.59	N	22.64	E	60.95	21.81	0.62	-0.42	-8.44
38	3718.00	2.50	13.40	97.00	3716.51	61.04	61.04	N	23.67	E	65.47	21.19	0.41	-0.41	0.82
39	3813.00	2.90	35.10	95.00	3811.40	65.02	65.02	N	25.53	E	69.85	21.44	1.15	0.42	22.84
40	3910.00	2.50	39.10	97.00	3908.30	68.67	68.67	N	28.28	E	74.26	22.38	0.46	-0.41	4.12
41	4005.00	2.80	26.60	95.00	4003.19	72.35	72.35	N	30.62	E	78.57	22.94	0.68	0.32	-13.16
42	4101.00	1.40	30.10	96.00	4099.13	75.47	75.47	N	32.26	E	82.07	23.14	1.46	-1.46	3.65
43	4196.00	1.40	3.80	95.00	4194.10	77.63	77.63	N	32.92	E	84.32	22.98	0.67	0.00	-27.68
44	4291.00	2.10	4.80	95.00	4289.06	80.52	80.52	N	33.14	E	87.07	22.37	0.74	0.74	1.05
45	4387.00	2.60	19.10	96.00	4384.98	84.33	84.33	N	34.00	E	90.93	21.96	0.80	0.52	14.90
46	4483.00	3.40	27.00	96.00	4480.84	88.92	88.92	N	36.00	E	95.94	22.04	0.94	0.83	8.23
47	4579.00	2.70	22.50	96.00	4576.71	93.55	93.55	N	38.16	E	101.03	22.19	0.77	-0.73	-4.69
48	4675.00	2.40	13.50	96.00	4672.61	97.59	97.59	N	39.50	E	105.28	22.03	0.52	-0.31	-9.38
49	4771.00	3.00	11.20	96.00	4768.50	102.01	102.01	N	40.45	E	109.74	21.63	0.63	0.63	-2.40
50	4867.00	1.70	8.20	96.00	4864.42	105.89	105.89	N	41.15	E	113.60	21.24	1.36	-1.35	-3.13
51	4963.00	2.50	355.90	96.00	4960.36	109.38	109.38	N	41.20	E	116.89	20.64	0.95	0.83	362.19
52	5059.00	3.00	7.10	96.00	5056.25	113.97	113.97	N	41.36	E	121.24	19.95	0.76	0.52	-363.33
53	5155.00	2.00	358.40	96.00	5152.15	118.13	118.13	N	41.62	E	125.25	19.41	1.11	-1.04	365.94
54	5251.00	2.70	5.90	96.00	5248.07	122.06	122.06	N	41.81	E	129.02	18.91	0.79	0.73	-367.19
55	5348.00	1.60	4.10	97.00	5345.00	125.68	125.68	N	42.14	E	132.56	18.54	1.14	-1.13	-1.86
56	5444.00	2.40	15.30	96.00	5440.95	128.96	128.96	N	42.77	E	135.86	18.35	0.92	0.83	11.67
57	5540.00	2.50	18.80	96.00	5536.86	132.88	132.88	N	43.97	E	139.96	18.31	0.19	0.10	3.65
58	5636.00	3.20	10.10	96.00	5632.74	137.50	137.50	N	45.12	E	144.71	18.17	0.86	0.73	-9.06
59	5732.00	2.20	358.40	96.00	5728.63	141.98	141.98	N	45.54	E	149.10	17.78	1.18	-1.04	362.81
60	5828.00	1.80	351.70	96.00	5824.57	145.31	145.31	N	45.27	E	152.20	17.30	0.48	-0.42	-6.98
61	5924.00	1.20	335.00	96.00	5920.54	147.71	147.71	N	44.62	E	154.31	16.81	0.77	-0.63	-17.40
62	6019.00	0.10	208.60	95.00	6015.53	148.54	148.54	N	44.16	E	154.97	16.56	1.33	-1.16	-133.05
63	6116.00	0.80	299.90	97.00	6112.53	148.81	148.81	N	43.54	E	155.04	16.31	0.83	0.72	94.12
64	6212.00	1.10	270.70	96.00	6208.52	149.15	149.15	N	42.03	E	154.96	15.74	0.58	0.31	-30.42
65	6307.00	1.20	257.50	95.00	6303.50	148.95	148.95	N	40.15	E	154.26	15.09	0.30	0.11	-13.89
66	6404.00	1.40	232.70	97.00	6400.47	148.01	148.01	N	38.22	E	152.86	14.48	0.61	0.21	-25.57
67	6500.00	1.50	206.10	96.00	6496.44	146.17	146.17	N	36.73	E	150.71	14.11	0.70	0.10	-27.71
68	6596.00	2.00	193.70	96.00	6592.40	143.41	143.41	N	35.78	E	147.81	14.01	0.65	0.52	-12.92
69	6692.00	2.50	188.30	96.00	6688.33	139.71	139.71	N	35.08	E	144.05	14.10	0.57	0.52	-5.62
70	6788.00	1.70	214.10	96.00	6784.26	136.46	136.46	N	33.98	E	140.63	13.98	1.27	-0.83	26.88
71	6884.00	2.00	220.00	96.00	6880.21	134.00	134.00	N	32.11	E	137.79	13.47	0.37	0.31	6.15
72	6980.00	2.30	207.40	96.00	6976.15	131.01	131.01	N	30.14	E	134.43	12.96	0.58	0.31	-13.13



**Company:** EP Energy  
**Well:** Kushmaul 5-10C4  
**Location:** Duchesne, UT  
**Rig:** Precision 406

**Job Number:** \_\_\_\_\_  
**Mag Decl.:** \_\_\_\_\_  
**Dir Driller:** \_\_\_\_\_  
**MWD Eng:** \_\_\_\_\_

**Calculation Method** Minimum Curvature  
**Proposed Azimuth** 0.00  
**Depth Reference** KB  
**Tie Into:** Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates			Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	
							N/S (ft)	E/W (ft)		Distance (ft)	Direction Azimuth				
73	7075.00	2.60	201.00	95.00	7071.06	127.30	127.30	N	28.49	E	130.45	12.62	0.43	0.32	-6.74
74	7171.00	2.90	196.90	96.00	7166.95	122.95	122.95	N	27.01	E	125.88	12.39	0.37	0.31	-4.27
75	7267.00	2.90	196.00	96.00	7262.82	118.29	118.29	N	25.63	E	121.03	12.23	0.05	0.00	-0.94
76	7363.00	2.90	194.40	96.00	7358.70	113.60	113.60	N	24.36	E	116.18	12.10	0.08	0.00	-1.67
77	7459.00	3.00	189.40	96.00	7454.57	108.77	108.77	N	23.34	E	111.25	12.11	0.29	0.10	-5.21
78	7556.00	3.00	189.10	97.00	7551.44	103.76	103.76	N	22.53	E	106.18	12.25	0.02	0.00	-0.31
79	7652.00	3.20	186.00	96.00	7647.30	98.62	98.62	N	21.85	E	101.01	12.49	0.27	0.21	-3.23
80	7747.00	2.50	182.00	95.00	7742.18	93.91	93.91	N	21.50	E	96.34	12.90	0.77	-0.74	-4.21
81	7844.00	2.70	190.80	97.00	7839.08	89.55	89.55	N	21.00	E	91.98	13.20	0.46	0.21	9.07
82	7940.00	2.80	187.10	96.00	7934.97	85.00	85.00	N	20.29	E	87.39	13.42	0.21	0.10	-3.85
83	8036.00	2.90	191.70	96.00	8030.85	80.30	80.30	N	19.50	E	82.63	13.65	0.26	0.10	4.79
84	8133.00	3.10	188.60	97.00	8127.72	75.30	75.30	N	18.61	E	77.57	13.88	0.27	0.21	-3.20
85	8229.00	3.00	188.50	96.00	8223.59	70.25	70.25	N	17.85	E	72.48	14.26	0.10	-0.10	-0.10
86	8325.00	2.90	195.90	96.00	8319.46	65.43	65.43	N	16.82	E	67.56	14.42	0.41	-0.10	7.71
87	8421.00	3.00	189.70	96.00	8415.33	60.62	60.62	N	15.73	E	62.63	14.55	0.35	0.10	-6.46
88	8516.00	3.00	192.30	95.00	8510.20	55.74	55.74	N	14.78	E	57.67	14.85	0.14	0.00	2.74
89	8612.00	3.20	193.30	96.00	8606.06	50.68	50.68	N	13.63	E	52.48	15.05	0.22	0.21	1.04
90	8708.00	2.50	200.80	96.00	8701.94	46.11	46.11	N	12.27	E	47.72	14.90	0.82	-0.73	7.81
91	8804.00	3.00	202.40	96.00	8797.83	41.83	41.83	N	10.57	E	43.15	14.18	0.53	0.52	1.67
92	8900.00	2.90	209.70	96.00	8893.70	37.40	37.40	N	8.41	E	38.33	12.67	0.40	-0.10	7.60
93	8996.00	3.60	215.50	96.00	8989.55	32.84	32.84	N	5.45	E	33.29	9.43	0.80	0.73	6.04
94	9092.00	2.60	228.10	96.00	9085.41	28.93	28.93	N	2.08	E	29.00	4.12	1.25	-1.04	13.13
95	9189.00	1.40	189.40	97.00	9182.35	26.29	26.29	N	0.25	E	26.29	0.55	1.80	-1.24	-39.90
96	9284.00	1.00	169.30	95.00	9277.33	24.33	24.33	N	0.22	E	24.33	0.51	0.61	-0.42	-21.16
97	9313.00	1.20	161.30	29.00	9306.33	23.79	23.79	N	0.36	E	23.80	0.87	0.87	0.69	-27.59
98	9400.00	1.94	151.47	87.00	9393.29	21.64	21.64	N	1.36	E	21.68	3.59	0.90	0.85	-11.29
99	9500.00	2.32	156.80	100.00	9493.22	18.29	18.29	N	2.96	E	18.53	9.20	0.43	0.38	5.32
100	9600.00	2.96	160.34	100.00	9593.12	13.99	13.99	N	4.63	E	14.74	18.31	0.66	0.64	3.54
101	9700.00	3.03	156.60	100.00	9692.98	9.13	9.13	N	6.55	E	11.24	35.67	0.21	0.07	-3.74
102	9800.00	2.98	159.86	100.00	9792.84	4.26	4.26	N	8.50	E	9.51	63.39	0.18	-0.05	3.27
103	9900.00	2.99	162.93	100.00	9892.71	-0.68	0.68	S	10.16	E	10.18	93.83	0.16	0.01	3.07
104	10000.00	3.05	166.59	100.00	9992.57	-5.76	5.76	S	11.54	E	12.90	116.54	0.20	0.06	3.66
105	10100.00	3.28	170.72	100.00	10092.41	-11.18	11.18	S	12.62	E	16.86	131.52	0.32	0.22	4.13
106	10200.00	3.34	167.42	100.00	10192.25	-16.83	16.83	S	13.72	E	21.71	140.83	0.20	0.06	-3.31
107	10300.00	2.63	169.80	100.00	10292.11	-21.93	21.93	S	14.76	E	26.44	146.07	0.71	-0.70	2.38
108	10400.00	3.03	173.69	100.00	10391.99	-26.82	26.82	S	15.45	E	30.96	150.05	0.44	0.40	3.89
109	10500.00	2.83	170.40	100.00	10491.86	-31.88	31.88	S	16.16	E	35.74	153.13	0.26	-0.20	-3.29



**Company:** EP Energy **Job Number:** \_\_\_\_\_  
**Well:** Kushmaul 5-10C4 **Mag Decl.:** \_\_\_\_\_  
**Location:** Duchesne, UT **Dir Driller:** \_\_\_\_\_  
**Rig:** Precision 406 **MWD Eng:** \_\_\_\_\_

**Calculation Method** Minimum Curvature  
**Proposed Azimuth** 0.00  
**Depth Reference** KB  
**Tie Into:** Gyro/MWD

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')		
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth					
110	10600.00	2.67	171.07	100.00	10591.74	-36.62	36.62	S	16.93	E	40.34	155.19	0.16	-0.15	0.67
111	10700.00	2.45	168.02	100.00	10691.64	-41.02	41.02	S	17.74	E	44.69	156.62	0.26	-0.22	-3.06
112	10800.00	2.71	171.48	100.00	10791.54	-45.44	45.44	S	18.53	E	49.07	157.82	0.30	0.25	3.46
113	10900.00	2.57	170.23	100.00	10891.44	-49.98	49.98	S	19.26	E	53.56	158.93	0.15	-0.14	-1.25
114	11000.00	2.98	174.20	100.00	10991.32	-54.78	54.78	S	19.90	E	58.28	160.03	0.46	0.41	3.98
115	11100.00	2.78	176.08	100.00	11091.19	-59.79	59.79	S	20.33	E	63.15	161.22	0.22	-0.20	1.88
116	11200.00	2.65	168.97	100.00	11191.08	-64.47	64.47	S	20.94	E	67.79	162.01	0.36	-0.14	-7.12
117	11300.00	3.10	173.18	100.00	11290.95	-69.42	69.42	S	21.70	E	72.74	162.64	0.51	0.46	4.22
118	11400.00	3.28	178.33	100.00	11390.80	-74.97	74.97	S	22.11	E	78.16	163.57	0.33	0.17	5.15
119	11500.00	3.40	178.13	100.00	11490.63	-80.79	80.79	S	22.29	E	83.80	164.58	0.12	0.12	-0.20
120	11600.00	2.92	177.63	100.00	11590.48	-86.29	86.29	S	22.49	E	89.17	165.39	0.48	-0.48	-0.50
121	11700.00	3.06	177.10	100.00	11690.34	-91.49	91.49	S	22.73	E	94.27	166.05	0.15	0.15	-0.53
122	11800.00	3.68	173.45	100.00	11790.17	-97.35	97.35	S	23.23	E	100.08	166.58	0.66	0.62	-3.65
123	11843.00	3.79	175.04	43.00	11833.08	-100.13	100.13	S	23.51	E	102.85	166.79	0.35	0.25	3.70
124	12004.00	3.79	175.04	161.00	11993.73	-110.73	110.73	S	24.43	E	113.39	167.56	0.00	0.00	0.00

## CENTRAL DIVISION

ALTAMONT FIELD  
KUSHMAUL 5-10C4  
KUSHMAUL 5-10C4  
DRILLING LAND

### **Operation Summary Report**

Disclaimer: Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

**1 General****1.1 Customer Information**

Company	CENTRAL DIVISION
Representative	
Address	

**1.2 Well Information**

Well	KUSHMAUL 5-10C4		
Project	ALTAMONT FIELD	Site	KUSHMAUL 5-10C4
Rig Name/No.	PRECISION DRILLING/406	Event	DRILLING LAND
Start date	3/13/2015	End date	3/28/2015
Spud Date/Time	3/14/2015	UWI	KUSHMAUL 5-10C4
Active datum	KB @5,998.0ft (above Mean Sea Level)		
Afe No./Description	163452/53523 / KUSHMAUL 5-10C4		

**2 Summary****2.1 Operation Summary**

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
3/11/2015	6:00 6:00	0.00	CASSURF	24		P	57.0	SET 57' 20" STRUCTURAL, SET MOUSE HOLE @ 80'. DRILLED 12¼" HOLE TO 2,157'. RAN & CMT 2,122' 9-5/8" 40# N-80 LT&C. FC @ 2,075', SHOE @ 2,122'. ADDED RKB CORRECTION FOR PD 406.
3/13/2015	6:00 6:00	24.00	MIRU	01		P	2,157.0	MOVE IN & RIG UP. 100% MOVED IN 70% RIGGED UP. RELEASED TRUCKS @ 20:30 HRS 3/12/15.
3/14/2015	6:00 19:30	13.50	MIRU	01		P	2,157.0	MOVE IN & RIG UP. PREP & RAISE DERRICK. PU TDU. 100% RIGGED UP. RUN STEAM LINE & INSULATE PIPING. PERFORM RIG INSPECTION. RIG ON RATE @ 19:30 HRS 3/13/15.
	19:30 3:30	8.00	CASSURF	28		P	2,157.0	NU 11" 10M BOPE & INSTALL FLOW LINE. TORQUE BOLTS W/ WEATHERFORD.
	3:30 6:00	2.50	CASSURF	19		P	2,157.0	TESTED 11" 5M ANNULAR TO 250 / 2,500 PSI AND REMAINING BOPE, FLOOR VALVES, ETC TO 250 / 5,000 PSI. TESTED CHOKE MANIFOLD TO 250 / 10,000 PSI. HELD EACH TEST 10 MINUTES.
3/15/2015	6:00 9:30	3.50	CASSURF	19		P	2,157.0	TESTED 11" 5M ANNULAR TO 250 / 2,500 PSI AND REMAINING BOPE, FLOOR VALVES, ETC TO 250 / 5,000 PSI. TESTED CHOKE MANIFOLD TO 250 / 10,000 PSI. HELD EACH TEST 10 MINUTES. INSTALLED WEAR BUSHING.
	9:30 10:30	1.00	CASSURF	31		P	2,157.0	TEST CASING TO 2,500 PSI FOR 30 MINUTES. TEST GOOD.
	10:30 11:30	1.00	CASSURF	28		P	2,157.0	NU ROT HEAD & INSTALL FLOW LINE.
	11:30 16:00	4.50	CASSURF	14		P	2,157.0	PU 8¾" BHA & SURFACE TEST MWD. TIH TO 2,029'.
	16:00 17:30	1.50	CASSURF	17		P	2,157.0	S & C DRILL LINE.
	17:30 18:00	0.50	CASSURF	12		P	2,157.0	SERVICED RIG & TDU.
	18:00 19:00	1.00	CASSURF	32		P	2,157.0	DRILL OUT CMT, FE & 10'.
	19:00 19:30	0.50	CASSURF	33		P	2,167.0	CBU & PERFORM FIT TO 15.4 EMW WITH 9.7 PPG MUD @ 630 PSI.
	19:30 23:30	4.00	DRLINT1	08		P	2,167.0	DRILLED 2,167' - 2,701'. SPUD @ 19:30 3/14/15.
	23:30 0:00	0.50	DRLINT1	12		P	2,701.0	SERVICED RIG & TDU.
3/16/2015	0:00 6:00	6.00	DRLINT1	07		P	2,701.0	DRILLED 2,701' - 3,470'.
	6:00 14:00	8.00	DRLINT1	07		P	3,470.0	DRILLED 3,470' - 4,430'.
	14:00 14:30	0.50	DRLINT1	12		P	4,430.0	SERVICED RIG & TDU.
	14:30 23:30	9.00	DRLINT1	07		P	4,430.0	DRILLED 4,430' - 5,485'.

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
3/17/2015	23:30 0:00	0.50	DRLINT1	12		P	5,485.0	SERVICED RIG & TDU.
	0:00 6:00	6.00	DRLINT1	07		P	5,485.0	DRILLED 5,485' - 6,157'.
	6:00 8:30	2.50	DRLINT1	07		P	6,157.0	DRILLED 6,157' - 6,521'. DISCHARGE MANIFLOD GASKET WASHED OUT ON # 2 MP.
	8:30 11:00	2.50	DRLINT1	07		P	6,521.0	DRILLED 6,521' - 6,612' WITH 1 MP. LOSING 139 BPH @ 6,534'. PUMPED SAWDUST SWEEPS @ 25 PPB.
	11:00 13:30	2.50	DRLINT1	07		P	6,612.0	DRILLED 6,612' - 6,829'. LOSING 120 - 160 BPH. PUMPED BARACARB 150 & MICA SWEEPS @ 35 PPB.
	13:30 14:00	0.50	DRLINT1	12		P	6,829.0	SERVICED RIG & TDU.
	14:00 23:00	9.00	DRLINT1	07		P	6,829.0	DRILLED 6,829' - 7,500'. LOSING 190 BPH @ 6,866'. PUMPED CEDAR FIBER & BARASEAL SWEEPS @ 35 PPB. HEALED LOSSES. TOTAL MUD LOST 1,112 BBLs.
	23:00 23:30	0.50	DRLINT1	12		P	7,500.0	SERVICED RIG & TDU.
3/18/2015	23:30 6:00	6.50	DRLINT1	07		P	7,500.0	DRILLED 7,500' - 7,950'. AVERAGE LOSS OF 10 BBLs / HR.
	6:00 7:30	1.50	DRLINT1	07		P	8,097.0	DRILLED 7,950' - 8,097'.
	7:30 8:00	0.50	DRLINT1	12		P	8,097.0	SERVICED RIG & TDU.
	8:00 22:30	14.50	DRLINT1	07		P	8,097.0	DRILLED 8,097' - 9,036'.
	22:30 23:00	0.50	DRLINT1	12		P	9,036.0	SERVICED RIG & TDU.
	23:00 5:30	6.50	DRLINT1	07		P	9,036.0	DRILLED 9,036' - 9,354'. TD @ 05:30 HRS 3-18-15.
3/19/2015	5:30 6:00	0.50	DRLINT1	15		P	9,354.0	C & C MUD.
	6:00 12:30	6.50	DRLINT1	15		P	9,354.0	C & C MUD. RAISE MUD WT F/ 9.9 T/ 10.3 PPG. MAX GAS = 8200 UNITS PASON & 3300 UNITS 3RD PARTY. 1' - 5' FLARE.
	12:30 2:30	14.00	DRLINT1	13		P	9,354.0	WIPER TRIP. TOH. TIGHT @ 7,341' - 7,125' 6,207' - 5,810 3,530 - 3,572'. BACK-REAM 5,700' - 3,910' 3,572 - 2,000'. (SWABBING). CHECKED FLOW 9,354, 7,000', 4,900', 2,100', 900'.
	2:30 5:00	2.50	DRLINT1	14		P	9,354.0	L/D RYAN DIRECTIONAL TOOLS & CLEAN FLOOR.
3/20/2015	5:00 6:00	1.00	DRLINT1	13		P	9,354.0	TIH. STAGE IN HOLE BREAK CIRC EVERY 1,000'.
	6:00 18:30	12.50	DRLINT1	13		P	9,354.0	TIH. STAGE IN HOLE BREAK CIRC EVERY 1,000'. WASHED & REAMED 2,606' - 2,640' 6,930' - 7,156'. CIRC BU @ 2000', 6000'.
	18:30 2:00	7.50	DRLINT1	15		P	9,354.0	C & C MUD. MAX GAS = 9,075 UNITS PASON & 2425 UNITS 3RD PARTY. 5 - 8 FLARE. BUILD MW F/ 10.1 PPG T/ 10.3 PPG. CHECKED FLOW (NEG). CIRC BU. MAX GAS 1,188 UNITS PASON & 38 UNITS 3RD PARTY, NO FLARE. CHECKED FLOW (NEG). PUMPED SLUG.
	2:00 6:00	4.00	DRLINT1	14		P	9,354.0	LD DP. CHECK FLOW @ 7,000'.
3/21/2015	6:00 12:30	6.50	DRLINT1	14		P	9,354.0	FINISH L/D DP & BHA. PULL ROTATING RUBBER. CK FLOW @ 9,300', 6,800', 5,014', 2,075', 875'. TIGHT @ F/7,075' T/ 7,055.
	12:30 13:30	1.00	DRLINT1	12		P	9,354.0	PULLED WEAR BUSHING & CLEANED FLOOR.
	13:30 17:30	4.00	EVLINT1	22		P	9,354.0	PJSM. RU & RUN STANDARD QUAD COMBO W/ HALLIBURTON WIRELINE. LOGS WOULD NOT GO DOWN @ 7,062' LOGGED. RD.
	17:30 18:00	0.50	CASINT1	24		P	9,354.0	CHANGED OUT BELLS & ELEVATORS.
	18:00 6:00	12.00	CASINT1	24		P	9,354.0	PJSM. RU & RAN 7" 29# HCP-110 LT&C CSG TO 5,500'. CIRC EVERY 1,000'. CIRC BU @ 2,100'. NO MUD LOSS.
3/22/2015	6:00 16:30	10.50	CASINT1	24		P	9,354.0	RUN 7" 29# HCP- 110 INTERMEDIATE CASING IN HOLE. BREAKING CIRC EVERY 1000'. CIRC BU @ 6,000', 8,000' RUN FS, 1 JT CASING, FC, 45 JTS CASING, MARKER JT., 224 JTS CASING. PU TAG JT TAG BOTTOM, LD TAG JT & PU PUP JT & LANDING JT. SET CASING @ 9,354. WASHED THROUGH TIGHT SPOTS @ (7,047' - 7,084'), & (7,429'-7,451'). LOST 30 BBLs MUD WHILE RUNNING CASING.
	16:30 18:30	2.00	CASINT1	15		P	9,354.0	C & C MUD. RD FRANKS WESTLAKE CASING CREW. MAX GAS 8800 UNITS PASON, 2500 UNITS 3RD PARTY.

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	18:30 22:30	4.00	CASINT1	25		P	9,354.0	PJSM. RIG UP HES CEMENT HEAD. TESTED LINES TO 5,000 PSI. PUMPED 20 BBLS WATER, 40 BBLS 11.5 PPG TUNED SPACER. M&P. 780 SX ( 265 BBLS ) EXTENDACEM LEAD CMT @ 12.5 PPG, 1.91 YLD TAILED WITH 300 SX ( 88 BBLS ) OF EXPANDACEM CMT @ 13 PPG, 1.64 YLD. RELEASED TOP PLUG. DISPLACED WITH 9.9 PPG MUD @ 5 - 3 BPM. HAD PARCIAL RETURNS LAST 145 BBLS OF DISPLACEMENT. NO CEMENT OR SPACER TO SURFACE. FINAL CIRC PRESS 1300 PSI, BUMPED PLUG W/ 1,813 PSI. FLOATS HELD. BLEED BACK 2 BBLS. LOST 100 BBLS MUD WHILE CEMENTING. EST TOP OF CEMENT 4,041'.
	22:30 0:00	1.50	CASINT1	27		P	9,354.0	LANDED CSG ON HANGER. REMOVED LANDING JOINT. RD CASING ELEVATORS, RU 4" DP ELEVATORS. INSTALLED PACKOFF W/ SETTING TOOL. SET LOCK DOWN SCREWS. TESTED PACKOFF T/ 5M PSI FOR 10 MINUTES.
	0:00 1:00	1.00	CASINT1	42		P	9,354.0	INSTALLED 4" XT39 DP TD SAVER SUB. DRESSED FLOOR W/ 4" XT39 DP TOOLS.
	1:00 2:00	1.00	CASINT1	31		P	9,354.0	PJSM. RU WEATHEFORD. TESTED CSG T/ 2500 PSI F/ 30 MIN.
	2:00 6:00	4.00	CASINT1	30		P	9,354.0	INSTALLED TEST PLUG. TESTED PIPE RAMS, LOWER TD VALVE, TIW VALVE , DART VALVE, INSIDE BOP & CHOKE LINE TO 250 PSI / 10,000 PSI. TESTED ANNULAR / UPPER TD VALVE / STAND PIPE / PUMP LINES T/ 250 PSI / 4M PSI. HELD EACH TEST F/ 10 MIN.
3/23/2015	6:00 9:00	3.00	CASINT1	19		P	9,354.0	FINISH TESTING BOPE'S. 11" 5M ANNULAR TO 250 / 4,000 PSI, RAMS & REMAINING BOPE, FLOOR VALVES, ETC TO 250 / 10,000 PSI. HOLD EACH TEST 10 MINUTES.
	9:00 9:30	0.50	CASINT1	12		P	9,354.0	CLEANED FLOOR AND INSTALLED STABBING GUIDE.
	9:30 19:30	10.00	CASINT1	14		P	9,354.0	MU 6-1/8" BHA. TIH PICKING UP 4" DP T/ 9,182'.
	19:30 20:00	0.50	CASINT1	42		P	9,354.0	INSTALLED ROTATING ELEMENT.
	20:00 21:00	1.00	CASINT1	17		P	9,354.0	S & C DRILL LINE. CIRC 9.9 PPG MUD OUT OF HOLE W/ 11.0 PPG MUD.
	21:00 21:30	0.50	CASINT1	31		P	9,354.0	PERFORMED PRE FIT CASING TEST T/ 2125 PSI.
	21:30 23:00	1.50	CASINT1	32		P	9,354.0	DRILLED CEMENT & FLOAT EQUIPMENT.
	23:00 23:30	0.50	DRLPRD	07		P	9,354.0	DRILLED F/ 9,354' T/ 9,364'.
	23:30 0:00	0.50	DRLPRD	15		P	9,364.0	CIRC BU.
	0:00 0:30	0.50	DRLPRD	33		P	9,364.0	PERFORMED FIT TEST. PRESSURED UP T/ 1441 PSI & STARTED PUMPING INTO FORMATION W/ 11.0 PPG MUD (14.0 PPG MWE). SHUT DN. BLED PRESSURE T/ 0 PSI.
	0:30 5:00	4.50	DRLPRD	07		P	9,364.0	DRILLED F/ 9,364' T/ 9,845'.
	5:00 5:30	0.50	DRLPRD	12		P	9,845.0	SERVICED RIG & TD.
	5:30 6:00	0.50	DRLPRD	15		P	9,845.0	C & C MUD.
3/24/2015	6:00 7:00	1.00	DRLPRD	11		P	9,845.0	WIRELINE SURVEY @ 9,820'. 3.28 DEG.
	7:00 12:00	5.00	DRLPRD	07		P	9,364.0	DRILLED F/ 9,845' T/ 10,288'.
	12:00 12:30	0.50	DRLPRD	12		P	10,288.0	SERVICED RIG & TD.
	12:30 13:30	1.00	DRLPRD	43		N	10,288.0	WORK ON TDU. 2" NIPPLE WASHED OUT.
	13:30 1:00	11.50	DRLPRD	07		P	10,288.0	DRILLED F/ 10,288' T/ 11,171'.
	1:00 1:30	0.50	DRLPRD	12		P	11,171.0	SERVICED RIG & TD.
	1:30 6:00	4.50	DRLPRD	07		P	11,171.0	DRILLED F/ 11,171' T/ 11,455'.
3/25/2015	6:00 13:30	7.50	DRLPRD	07		P	11,455.0	DRILLED F/ 11,455' T/ 11,928'.
	13:30 14:00	0.50	DRLPRD	12		P	11,928.0	SERVICED RIG & TD.
	14:00 15:30	1.50	DRLPRD	07		P	11,928.0	DRILLED F/ 11,928' T/ 12,004'. TD @ 15:30 HRS 03/24/15.
	15:30 17:00	1.50	DRLPRD	15		P	12,004.0	C & C MUD. MW 12.7 PPG VIS = 45. BU GAS PASON = 1634 UNITS. 3RD PARTY GAS = 176 UNITS
	17:00 19:00	2.00	DRLPRD	13		P	12,004.0	WIPER TRIP T/ 9,300'. CHECKED FLOW (NEG)
	19:00 21:30	2.50	DRLPRD	13		P	12,004.0	TIH T/ 12,004'.

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	21:30 23:30	2.00	DRLPRD	15		P	12,004.0	C&C MUD. TRIP GAS 9630 UNITS PASON, 2440 UNITS 3RD PARTY. MC 12.1 PPG F/ 12.7 PPG. NO GAINS, NO FLARE. RMW F/ 12.7 PPG T/ 12.9 PPG. CHECKED FLOW (NEG) PUMPED SLUG.
	23:30 6:00	6.50	DRLPRD	13		P	12,004.0	TOH. PULLED 20 STANDS 10,128', CHECKED FLOW (NEG), DROPPED RABBIT. TOH. CHECKED FLOW 9,300', 7,000', 5,000', 2000'.
3/26/2015	6:00 12:00	6.00	EVLPRD	22		P	12,004.0	CLEANED OFF RIG FLOOR. PJSM WITH HES. RU & RUN ULTRA SLIM QUAD COMBO FROM 12,000' TO CSG SHOE. RD LOGGERS. REDUCED MW F/ 12.9 PPG T/ 12.5 PPG WHILE LOGGING.
	12:00 13:00	1.00	CASPRD1	24		P	12,004.0	PJSM. RU CSG CREW & TORQUE TURN.
	13:00 17:30	4.50	CASPRD1	24		P	12,004.0	RAN FS,FC,LC, 67 JTS 5" 18# P-110HC STL LINER. 2 MARKER JTS. MADE UP VERSAFLEX LINER HANGER ASSEMBLY & SETTING TOOL.
	17:30 18:30	1.00	CASPRD1	15		P	12,004.0	INSTALLED ROTATING ELEMENT. CIRC LINER VOLUME @ 2.5 BPM. RD CSG CREW.
	18:30 4:00	9.50	CASPRD1	24		P	12,004.0	TIH W/ 5" LINER ON 4" DP @ 70 FPM TO 9,357'. BREAK CIRC EVERY 10 STANDS. CBU EVERY EVERY 20 STANDS @ 2.5 BPM. MAX GAS 6769 UNITS PASON, 2295 UNITS 3RD PARTY. 11.4 PPG MC. NO FLARE. NO GAINS/ LOSSES.
	4:00 6:00	2.00	CASPRD1	24		P	12,004.0	TIH @ 60 FPM WITH 5" LINER ON 4" DP. BREAK CIRC EVERY 1,000'. PRESENT DEPTH 11,016'.
3/27/2015	6:00 8:30	2.50	CASPRD1	24		P	12,004.0	TIH F/ 11,016' @ 60 FPM WITH 5" LINER ON 4" DP. BREAK CIRC EVERY 1,000'. TAG BTM WITH 10K. NO LOSSES. SPACED OUT & RU CMT HEAD.
	8:30 12:30	4.00	CASPRD1	15		P	12,004.0	CIRC 2X BU. INITIAL RATE 1.1 BPM, INCREASED TO 2.5 BPM, PRESSURE LEVELED OFF AFTER 1 BU. MAX GAS 9,258 UNITS PASON, 2,500 UNITS 3RD PARTY. 11.4 PPG MC. 1-2' FLARE FOR 30 MIN , NO GAIN. BG GAS 3,500 UNITS. FINAL CIRC PRESSURE 410 PSI @ 2.5 BPM. NO LOSSES DURING CIRCULATION.
	12:30 14:30	2.00	CASPRD1	25		P	12,004.0	RU HES & TESTED LINES TO 9,500 PSI. PUMPED 20 BBLS 12.7 PPG TUNED SPACER & 215 SKS ( 58 BBLS) 14.2 PPG WITH 1.52 YIELD EXPANDACEM CMT @ 44% EXCESS. WASHED LINES. DROPPED DP DART. PUMPED 60 BBLS H2O WITH 2% KCL 0.1 % BIOCID, 82 BBLS 12.5 PPG MUD. BUMPED PLUG WITH 2,565PSI @ 14:25 HRS 3/26/15. CHECKED FLOATS, FLOATS HELD, 1.25 BBLS BLED BACK. NO LOSSES DURING CMT OPS. EST TOC 9,186'.
	14:30 15:30	1.00	CASPRD1	25		P	12,004.0	RELEASED BALL, RUPTURE DISC @ 5,377 PSI. PUMPED 50 BBLS, PRESSURED TO 8,798 PSI, EXPANDED HANGER. PULL TESTED LINER WITH 80K OVERPULL. SAT DOWN 90K , RELEASED SETTING TOOL FROM LINER HANGER. LANDED FS @ 12,000', FC @ 11,955', LC @ 11,911'. TOL @ 9,186'. 164' OF LAP. TOTAL LINER 2,813'. MARKER JT TOPS @ 10,992' & 9,998'.
	15:30 17:00	1.50	CASPRD1	15		P	12,004.0	PULLED UP TO TOL. OBSERVED 2 OVERPULLS OF 20K THROUGH SEALS. CIRC 2 TIMES ANNULAR VOLUME. 20 BBLS WEIGHTED SPACER & 10 BBLS WEIGHTED CEMENT TO SURFACE. POSITIVE TEST TOL TO 1,000 PSI FOR 10MIN. TEST OK.
	17:00 20:00	3.00	CASPRD1	15		P	12,004.0	PUMPED 330 BBLS H2O WITH NO ADDITIVES, 300 BBLS H2O WITH 2% KCL 0.1 % BIOCID TILL CLEAN RETURNS. RD HES. FLOW CHECK. WELL STATIC.
	20:00 5:00	9.00	CASPRD1	14		P	12,004.0	LDDP TOTAL 9,196' & LINER SETTING TOOL.
	5:00 6:00	1.00	CASPRD1	14		P	12,004.0	TIH W/ BHA & 24 STANDS 4" DP.

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duratio n (hr)	Phase	Activit y	Sub	OP Code	MD from (ft)	Operation
3/28/2015	6:00 9:30	3.50	CASPRD1	14		P	12,004.0	LD 4" DP & 4 3/4" DC.
	9:30 14:00	4.50	CASPRD1	29		P	12,004.0	ND BOPE.
	14:00 16:00	2.00	CASPRD1	27		P	12,004.0	INSTALLED TBG HEAD & FRAC VALVE. TESTED HEAD TO 5,000 PSI FOR 30MIN. RIG RELEASED @ 16:00 HRS 03/27/15.
	16:00 6:00	14.00	RDMO	02		P	2,004.0	RIG DOWN, PREPARED RIG TO MOVE TO THE ADELMAN 5-9C4.

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## CENTRAL DIVISION

ALTAMONT FIELD  
KUSHMAUL 5-10C4  
KUSHMAUL 5-10C4  
COMPLETION LAND

### **Operation Summary Report**

Disclaimer: Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

**1 General****1.1 Customer Information**

Company	CENTRAL DIVISION
Representative	
Address	

**1.2 Well Information**

Well	KUSHMAUL 5-10C4		
Project	ALTAMONT FIELD	Site	KUSHMAUL 5-10C4
Rig Name/No.		Event	COMPLETION LAND
Start date	4/14/2015	End date	
Spud Date/Time	3/14/2015	UWI	KUSHMAUL 5-10C4
Active datum	KB @5,998.0ft (above Mean Sea Level)		
Afe No./Description	163452/53523 / KUSHMAUL 5-10C4		

**2 Summary****2.1 Operation Summary**

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
4/14/2015	6:00 7:30	1.50	MIRU	28		P		CREW TRAVEL HELD SAFETY MEETING ON MOVING RIG. FILLED OUT JSA.
	7:30 9:00	1.50	MIRU	01		P		MOVED RIG FROM 2-7C4 TO THE 5-10C4 MIRU.
	9:00 10:30	1.50	WOR	16		P		NU BOP, RU RIG FLOOR .
	10:30 16:30	6.00	WOR	24		P		TALLIED AND PU 4 1/8 ROCK BIT, BIT SUB, 95 JTS 2 3/8 L-80 EUE TBG, X-OVER, AND 276-JTS 2 7/8 L-80 EUE TBG, TAGGED @11870' 12' OUT JT # 276, RUN PUMP LINES. CLOSED IN WELL CLOSED AND LOCKED PIPE RAMS, CLOSED CSG VALVES AND INSTALLED NIGHT CAPS, CLOSED TIW VALVE AND INSTALLED NIGHT CAP. SDFN.
4/15/2015	6:00 7:30	1.50	WOR	28		P		CREW TRAVEL HELD SAFETY MEETING ON POWER SWIVEL . FILLED OUT JSA.
	7:30 12:00	4.50	WOR	10		P		RU POWER SWIVEL. WASHED FROM 11870 TO 11931' TBG TALLY ( LANDING COLLAR @ 11916'). CIRCULATE WELLBORE CLEAN W/ 425 BBLS KCL. RD POWER SWIVEL.
	12:00 16:00	4.00	WOR	24		P		LD 278-JTS 2 7/8 L-80 EUE TBG, X-OVER, 95-JTS 2 3/8 L-80 EUE TBG, BIT SUB AND BIT.
	16:00 17:00	1.00	WOR	16		P		ND BOP. CLOSED IN WELL CLOSED 7" MANUAL FRAC VALVE AND INSTALLED NIGHT CAP. CLOSED CSGVALVESAND INSTALLED NIGHT CAPS.
	17:00 18:30	1.50	RDMO	02		P		RIGGED DOWN RIG AND MOVED TO THE 4-12C5. SDFN.
4/16/2015	6:00 12:30	6.50	SITEPRE	18		P		CONTINUE MOVING IN FRAC TANKS & HAULING WTR
	12:30 17:30	5.00	WLWORK	18		P		RU WIRELINE UNIT. RIH & RUN CBL / GR/CCL LOG FROM PBTD @ 11912' WLM, TO 2000' W/ CMT TOP @ 4412' WHILE HOLDING 4000 PSI ON CSG. RD WIRELINE UNIT. SDFN
4/17/2015	6:00 7:30	1.50	SITEPRE	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON PRESSURE TESTING CSG. FILL OUT & REVIEW JSA
	7:30 15:00	7.50	SITEPRE	16		P		PRESSURE TEST CSG TO 9000 PSI FOR 30 MINUTES. TESTED GOOD. NU & TEST FRAC STACK. RUN & TEST FLOW BACK LINES. SDFN
4/18/2015	6:00 7:30	1.50	STG01	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON WIRELINE SAFETY. FILL OUT & REVIEW JSA

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
4/19/2015	7:30 12:00	4.50	STG01	21		P		RU WIRELINE UNIT. RIH & PERFORATE STAGE 1 PERFORATIONS 11590' TO 11909' USING 2-3/4" TITAN PERFECTA SDPGUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING, WHILE HOLDING 1000 PSI ON CSG. PRESSURE DROPPED FROM 1000 PSI TO 900 PSI WHILE PERFORATING. POOH W/ PERF GUN. RD WIRELINE UNIT.
	12:00 18:00	6.00	STG01	18		P		RU BOSQUE CIO2 UNIT & RUN TRANSFER LINES
	6:00 7:30	1.50	STG01	28		P		HOLD SAFETY MEETING ON SLIPS TRIPS & FALLS. FILL OUT & REVIEW JSA
	7:30 15:00	7.50	STG01	18		P		TREAT & TRANSFER 8000 BBLs FRAC WTR FROM STAGING AREA
4/20/2015	15:00 6:00	15.00	STG01	18		P		HEAT FRAC WTR. REFILL STAGING AREA
	6:00 15:00	9.00	STG01	18		P		HEAT WTR IN STAGING AREA. MIRU FRAC EQUIPMENT
4/21/2015	6:00 7:00	1.00	STG01	28		P		HOLDSAFETY MEETING ON FRAC SAFETY. FILL OUT & REVIEW JSA.
	7:00 9:00	2.00	STG01	35		P		PRESSURE TEST LINES.OPEN WELL. SICP 132 PSI. BREAK DOWN STAGE 1 PERFORATIONS @ 4871 PSI, PUMPING 9.6 BPM. BRING RATE UPTO 50 BPM. PUMP 100 TTL BBLs FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 4642 PSI. FG .82. 5 MIN 4556 PSI. 10 MIN 4503 PSI. 15 MINUTE 4476 PSI. TREAT STAGE 1 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3018LBS 100 MESH SAND IN 1/2 PPG STAGE & 149942 LBS THC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4781 PSI. FG .84. AVG RATE 75.5 BPM. MAX RATE 76.9 BPM. AVG PSI 5781 PSI. MAX PSI 7249 PSI. TURN WELL OVER TO WIRE LINE. 3878 BBLs FLUID TO RECOVER.
	9:00 11:00	2.00	STG02	21		P		RIH & SET CBP @ 11552'. PERFORATE STAGE 2 PERFORATIONS 11201' TO 11537' USING 2-3/4" TITAN PERFECTA SDPGUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 4700 PSI TO 4400 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	11:00 12:30	1.50	STG02	35		P		PRESSURE TEST LINES.OPEN WELL. SICP 4300 PSI. BREAK DOWN STAGE 2 PERFORATIONS @ 4840 PSI, PUMPING 9.5 BPM. BRING RATE UPTO 50 BPM. PUMP 98 TTL BBLs FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 4558 PSI. FG .834. 5 MIN 4507 PSI. 10 MIN 4481 PSI. TREAT STAGE 2 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3027 LBS 100 MESH SAND IN 1/2 PPG STAGE & 149990 LBS THC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4752 PSI. FG .851. AVG RATE 75.7 BPM. MAX RATE 76.9 BPM. AVG PSI 5603 PSI. MAX PSI 7222 PSI. TURN WELL OVER TO WIRE LINE. 3830 BBLs FLUID TO RECOVER.
	12:30 14:30	2.00	STG03	21		P		RIH & SET CBP @ 11181'. PERFORATE STAGE 3 PERFORATIONS 10856' TO 11166' USING 2-3/4" TITAN PERFECTA SDPGUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 4700 PSI TO 4600 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	14:30 16:00	1.50	STG03	39		P		PRESSURE TEST LINES.OPEN WELL. SICP 4500 PSI. BREAK DOWN STAGE 3 PERFORATIONS @ 4785 PSI, PUMPING 9.7 BPM. BRING RATE UPTO 50 BPM. PUMP 89 TTL BBLS FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 4546 PSI. FG .846. 5 MIN 4519 PSI. 10 MIN 4505 PSI. TREAT STAGE 3 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3025 LBS 100 MESH SAND IN 1/2 PPG STAGE & 149,900 LBS THC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4546 PSI. FG .861. AVG RATE 75.1 BPM. MAX RATE 75.5 BPM. AVG PSI 5498 PSI. MAX PSI 7277 PSI. TURN WELL OVER TO WIRE LINE. 3805 BBLS FLUID TO RECOVER.
	16:00 17:30	1.50	STG04	21		P		RIH & SET CBP @ 10824'. PERFORATE STAGE 4 PERFORATIONS 10567' TO 10811' USING 2-3/4" TITAN PERFECTA SDP GUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 4700 PSI TO 4600 PSI WHILE PERFORATING. SHUT WELL IN WITH FRAC STACK SHUT & LOCKED & CSNG VALVES CLOSED & CAPPED.
4/22/2015	6:00 6:30	0.50	STG04	28		P		HOLD SAFETY MEETING ON FRAC SAFETY. FILL OUT & REVIEW JSA
	6:30 8:00	1.50	STG04	35		P		PRESSURE TEST LINES TO 9460 PSI.OPEN WELL. SICP 3850 PSI. BREAK DOWN STAGE 4 PERFORATIONS @ 5185 PSI, PUMPING 10.6 BPM. BRING RATE UPTO 50 BPM. PUMP 108 TTL BBLS FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 4444 PSI. FG .85. 5 MIN 4258 PSI. 10 MIN 4154 PSI. TREAT STAGE 4 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3035LBS 100 MESH SAND IN 1/2 PPG STAGE & 150188 LBS PRC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4546 PSI. FG .86. AVG RATE 74.8 BPM. MAX RATE 75.9 BPM. AVG PSI 5462 PSI. MAX PSI 6688 PSI. TURN WELL OVER TO WIRE LINE. 3832 BBLS FLUID TO RECOVER.
	8:00 9:30	1.50	STG05	21		P		RIH & SET CBP @ 10551'. PERFORATE STAGE 5 PERFORATIONS 10302' TO 10536' USING 2-3/4" TITAN PERFECTA SDP GUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 4400 PSI TO 4200 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	9:30 11:00	1.50	STG05	35		P		PRESSURE TEST LINES TO 9460 PSI.OPEN WELL. SICP 4112 PSI. BREAK DOWN STAGE 5 PERFORATIONS @ 4584 PSI, PUMPING 9.6 BPM. BRING RATE UPTO 50 BPM. PUMP 43 TTL BBLS FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 4374 PSI. FG .85. 5 MIN 4230 PSI. 10 MIN 4162 PSI. TREAT STAGE 5 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3062 LBS 100 MESH SAND IN 1/2 PPG STAGE & 150093 LBS PRC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4570 PSI. FG .87. AVG RATE 74.6 BPM. MAX RATE 75.7 BPM. AVG PSI 5289 PSI. MAX PSI 6367 PSI. TURN WELL OVER TO WIRE LINE. 3832 BBLS FLUID TO RECOVER.
	11:00 12:30	1.50	STG06	21		P		RIH & SET CBP @ 10272'. PERFORATE STAGE 6 PERFORATIONS 10302' TO 10257' USING 2-3/4" TITAN PERFECTA SDP GUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 4300 PSI TO 4100 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
	12:30 14:00	1.50	STG06	35		P		PRESSURE TEST LINES TO 9382 PSI.OPEN WELL. SICP 4009 PSI. BREAK DOWN STAGE 6 PERFORATIONS @ 4804 PSI, PUMPING 9.6 BPM. BRING RATE UPTO 50 BPM. PUMP 96.5 TTL BBLS FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 4184 PSI. FG .85. 5 MIN 4011 PSI. 10 MIN 3968PSI. TREAT STAGE 6 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3008 LBS 100 MESH SAND IN 1/2 PPG STAGE & 149946 LBS PRC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4184 PSI. FG .87. AVG RATE 75.5 BPM. MAX RATE 76.2 BPM. AVG PSI 5189 PSI. MAX PSI6154 PSI. TURN WELL OVER TO WIRE LINE. 3809 BBLS FLUID TO RECOVER.
	14:00 16:00	2.00	STG07	21		P		RIH & SET CBP @ 10016'. PERFORATE STAGE 7 PERFORATIONS 9750' TO 9995' USING 2-3/4" TITAN PERFECTA SDP GUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 3400 PSI TO 3200 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	16:00 17:30	1.50	STG07	35		P		PRESSURE TEST LINES TO 9270 PSI.OPEN WELL. SICP 2905 PSI. BREAK DOWN STAGE 7 PERFORATIONS @ 4000 PSI, PUMPING 9.6 BPM. BRING RATE UPTO 50 BPM. PUMP 111 TTL BBLS FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 3677 PSI. FG .80. 5 MIN 3044 PSI. 10 MIN 2963 PSI. TREAT STAGE 7 PERFORATIONS W/ 5000 GALLONS HCL ACID, 3025 LBS 100 MESH SAND IN 1/2 PPG STAGE & 150104 LBS PRC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 4241 PSI. FG .86. AVG RATE 75.7 BPM. MAX RATE 76.3 BPM. AVG PSI 4758 PSI. MAX PSI 5614 PSI. TURN WELL OVER TO WIRE LINE. 3840 BBLS FLUID TO RECOVER.
	17:30 19:00	1.50	STG08	21		P		RIH & SET CBP @ 9731'. PERFORATE STAGE 8 PERFORATIONS 9454' TO 9716' USING 2-3/4" TITAN PERFECTA SDP GUNS, 16 GRAM CHARGES, 3 SPF & 120 DEGREE PHASING. PRESSURE DROPPED FROM 3600 PSI TO 3300 PSI WHILE PERFORATING. TURN WELL OVER TO FRAC CREW
	19:00 21:30	2.50	STG08	35		P		PRESSURE TEST LINES TO 9450 PSI.OPEN WELL. SICP 3300 PSI. BREAK DOWN STAGE 8 PERFORATIONS @ 4434 PSI, PUMPING 10.2 BPM. BRING RATE UPTO 50 BPM. PUMP 123 TTL BBLS FLUID THEN PERFORM STEP RATE SHUT DOWN. ISIP 3697 PSI. FG .82. 5 MIN 3493 PSI. 10 MIN 3374 PSI. TREAT STAGE 8 PERFORATIONS W/ 5000 GALLONS HCL ACID, 5800 LBS 100 MESH SAND IN 1/2 PPG STAGE & 150297 LBS PRC 30/50 SAND IN 1/2 PPG, 1 PPG, 2 PPG & 3 PPG STAGES. ISIP 5035 PSI. FG .96. AVG RATE 75.1 BPM. MAX RATE 76.2 BPM. AVG PSI 5384 PSI. MAX PSI 6957 PSI. 3827 BBLS FLUID TO RECOVER. SHUT WELL IN W/ FRAC VALVE CLOSED, HCR VALVES CLOSED & LOCKED & CSG VALVES CLOSED & CAPPED. SDFN
4/23/2015	6:00 17:00	11.00	CTU	18		P		RD FRAC EQUIPMENT & BOSQUE UNIT. MOVE IN & PARTIALLY RIG UP FRAC EQUIPMENT. STACK & TRANSFER FRAC WTR. SDFN
4/24/2015	6:00 6:30	0.50	CTU	28		P		HOLD SAFETY MEETING ON COIL TBG SAFETY. FILL OUT & REVIEW JSA
	6:30 8:30	2.00	CTU	16		P		RU COIL TBG UNIT. INSTALL COIL CONNECTER. PULL & PRESSURE TEST COIL CONNECTOR. MU MOTOR & BIT ASSEMBLY.FUNTION TEST MOTOR. NU & PRESSURE TEST STACK..
	8:30 17:00	8.50	CTU	10		P		RIH & DRILL CBPS. CLEAN OUT TO 11920'. CIRCULATE CLEAN. POOH TO LINER TOP. CIRCULATE 1 HR. POOH
	17:00 20:00	3.00	CTU	16		P		RD COIL TBG UNIT.
	20:00 6:00	10.00	FB	19		P		FLOW WELL TO FLOW BACK TANK

## 2.1 Operation Summary (Continued)

Date	Time Start-End	Duration (hr)	Phase	Activity	Sub	OP Code	MD from (ft)	Operation
4/25/2015	6:00 6:30	0.50	FB	28		P		HOLD SAFETY MEETING ON FLOW BACK OPERATIONS. FILL OUT & REVIEW JSA
	6:30 6:00	23.50	FB	19		P		FLOW WELL. RECOVERED 24 MCF GAS & 1162 BBLS WTR, FLOWING @ 2800 PSI ON A 12/64" CHOKE
4/26/2015	6:00 6:30	0.50	FB	28		P		HOLD SAFETY MEETING ON FLOW BACK OPERATIONS. FILL OUT & REVIEW JSA
	6:30 6:00	23.50	FB	19		P		FLOW WELL TO PRODUCTION FACILITY. RECOVERED 163 MCF GAS, 312 BBLS OIL & 1174 BBLS WTR FLOWING @ 2650 PSI ON A 12/64" CHOKE
4/27/2015	6:00 6:30	0.50	FB	28		P		HOLD SAFETY MEETING ON FLOW BACK OPERATIONS. FILL OUT & REVIEW JSA
	6:30 6:00	23.50	FB	19		P		FLOW WELL TO PRODUCTION FACILITY. RECOVERED 218 MCF GAS, 313 BBLS OIL & 700 BBLS WTR FLOWING @ 2550 PSI ON A 12/64" CHOKE
4/28/2015	6:00 7:30	1.50	WLWORK	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON WIRELINE SAFETY. FILL OUT & REVIEW JSA
	7:30 10:30	3.00	WLWORK	27		P		RU WIRE LINE UNIT. RIH & SET PKR @ 9290'. POOH W/ SETTING TOOL & RD WIRE LINE UNIT.
	10:30 11:30	1.00	WOR	16		P		ND FRAC STACK. TO FRAC VALVE. NU BOP.
	11:30 12:30	1.00	WOR	18		P		RU RIG
	12:30 17:00	4.50	WOR	24		P		TIH W/ ON / OFF SKIRT, 5 JTS 2-3/8"EUE TBG, X-OVER & 275 JTS 2-7/8"EUE TBG. SDFN W/ PIPE RAMS CLOSED & LOCKED, OFF SIDE CSG VALVE CLOSED & CAPPED & FLOW LINE CSG VALVE CLOSED & MAIN FLOW LINE VALVE CLOSED.
4/29/2015	6:00 7:30	1.50	WOR	28		P		TRAVEL TO LOCATION. HOLD SAFETY MEETING ON PRESSURE TESTING. FILL OUT & REVIEW JSA
	7:30 8:00	0.50	WOR	24		P		TIH W/ 4 JTS 2-7/8"EUE TBG. ENGAGE PKR. RELEASE ON / OFF TOOL. LD 2 JTS TTBG. INSTALL 2', 6', 8' & 10' PUP JT. PU 1 JT TBG.
	8:00 11:00	3.00	WOR	06		P		CIRCULATE PKR FLUID.
	11:00 13:00	2.00	WOR	16		P		ENGAGE PKR. LAND TBG W/ BACK PRESSURE VALVE IN HANGER & 6' X 2-7/8"EUE PUP JT BELOW TBG HANGER. ND BOP. REMOVE BACK PRESSURE VALVE & 6' PUP JT. LAND TBG IN 15K TENSION. INSTALL BACK PRESSURE VALVE IN TBG HANGER. NU WELL HEAD & PLUMB FLOW LINES. PRESSURE TEST ANNULUS TO 2500 PSI. TESTED GOOD. PRESSURE TEST WELL HEAD & FLOW LINES TO 5000 PSI. TESTED GOOD. PUMP OUT PLUG @ 3700 PSI.
	13:00 6:00	17.00	WOR	19		P		FLOW WELL TO PRODUCTION FACILITY

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