

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 5-1-14

Well information;

Operator Encana, Well Name and Number Lybrook PO3-2206 #2H

API# 30-043-21220, Section 3, Township 22 N S, Range 6 E W

Conditions of Approval:

(See the below checked and handwritten conditions)

☒ Notify Aztec OCD 24hrs prior to casing & cement.

☒ Hold C-104 for directional survey & "As Drilled" Plat

☐ Hold C-104 for NSL, NSP, DHC

☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned

☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:

- ☐ A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
- ☐ A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
- ☐ A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C

☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string

☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

** submit sundy + plat
with connect pool - Lybrook **

Chad Bern
NMOCD Approved by Signature

6-12-2014
Date

OIL CONS. DIV DIST. 3

RECEIVED

Form 3160-3
(March 2012)

JUN 06 2014

MAY 02 2014

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFarmington Field Office
Bureau of Land Management

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator Encana Oil & Gas (USA) Inc.

3a. Address 370 17th Street, Suite 1700, Denver, CO
802023b. Phone No. (include area code)
720-876-3448

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 439' FSL and 1192' FEL in Section 3, T22N, R6W SESE

At proposed prod. zone 2347' FNL and 750' FEL in Section 15, T22N, R8W SENE

14. Distance in miles and direction from nearest town or post office*

+/- 58.5 miles for the intersection of US Hwy 550 and US Hwy 64 in Bloomfield, NM

15. Distance from proposed*
location to nearest
property or lease line, ft.
(Also to nearest drig. unit line, if any)

SHL is 439' FSL in Section 3

16. No. of acres in lease
NM 109386- 1286.22
NM 117562- 224017. Spacing Unit dedicated to this well
160 acres E2E2 of Section 10
80 acres E2NE of Section 1518. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft.Lybrook P03-2206 01H is
+/- 30' W of SHL19. Proposed Depth
5368' TVD, 13477' MD20. BLM/BIA Bond No. on file
COB 00023521. Elevations (Show whether DF, KDB, RT, GL, etc.)
GL 7124', KB 7140'22. Approximate date work will start*
10/15/201423. Estimated duration
20 days

24. Attachments

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

1. Well plat certified by a registered surveyor.

2. A Drilling Plan.

3. A Surface Use Plan (if the location is on National Forest System Lands, the
SUPO must be filed with the appropriate Forest Service Office).4. Bond to cover the operations unless covered by an existing bond on file (see
Item 20 above).

5. Operator certification

6. Such other site specific information and/or plans as may be required by the
BLM.

25. Signature

Name (Printed/Typed)
Christopher SimmonsDate
05.01.14Title
Regulatory Analyst

Approved by (Signature)

Name (Printed/Typed)

Date
6/3/14

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to
conduct operations thereon.

Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United
States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

DRILLING OPERATIONS
AUTHORIZED ARE SUBJECT TO
COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS"BLM'S APPROVAL OR ACCEPTANCE OF THIS
ACTION DOES NOT RELIEVE THE LESSEE AND
OPERATOR FROM OBTAINING ANY OTHER
AUTHORIZATION REQUIRED FOR OPERATIONS
ON FEDERAL AND INDIAN LANDS

NMCCD AV

This action is subject to technical
instructions on a per se basis pursuant to
43 CFR 3165.3 and appeal
pursuant to 43 CFR 3165.4

DISTRICT I

1835 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 533-6161 Fax: (505) 533-0720

DISTRICT II

811 E. First St., Artesia, N.M. 88210
Phone: (505) 748-1088 Fax: (505) 748-0720

DISTRICT III

1000 E. Fresno Rd., Aztec, N.M. 87410
Phone: (505) 834-6178 Fax: (505) 834-6170

DISTRICT IV

1830 E. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-8460 Fax: (505) 476-0468

State of New Mexico
Energy, Minerals & Natural Resources Department

RECEIVED

Form C-102

Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION MAY 02 2014

1220 South St. Francis Dr.
Santa Fe, NM 87505

Farmington Field Office AMENDED REPORT
Bureau of Land Management

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-043-21220	² Pool Code 42289	³ Pool Name Lybrook Gallup	⁴ Well Number 02H
⁵ Property Code 313351	⁶ Property Name LYBROOK P03-2208		⁷ Elevation 7124.1'
⁸ GRID No. 282327	⁹ Operator Name ENCANA OIL & GAS (USA) INC.		

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
P	3	22N	6W		439'	SOUTH	1192'	EAST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
H	15	22N	6W		2347'	NORTH	750'	EAST	SANDOVAL

¹²Dedicated Acres PROJECT AREA
160.00 ACRES E/2 E/2 SEC. 10
80.00 ACRES E/2 NE/4 SEC. 15

¹³Joint or Infill¹⁴Consolidation Code¹⁵Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

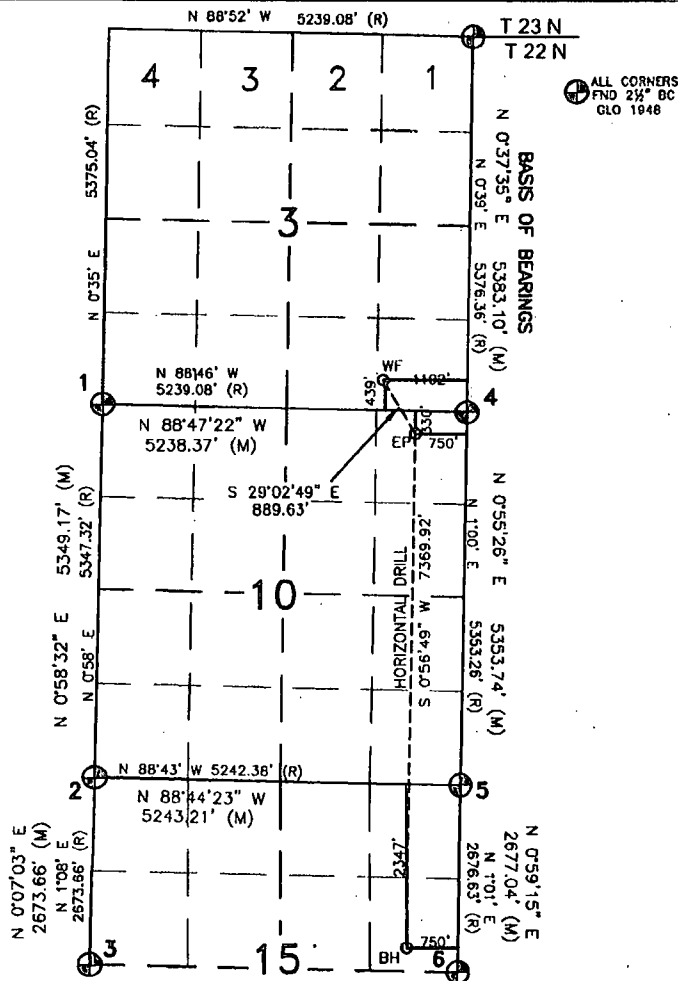
16

- 1 LAT. 36.160110° N (NAD83)
LONG. 107.464533° W (NAD83)
LAT. 36.160095° N (NAD27)
LONG. 107.464533° W (NAD27)
- 2 LAT. 36.145423° N (NAD83)
LONG. 107.464846° W (NAD83)
LAT. 36.145408° N (NAD27)
LONG. 107.464242° W (NAD27)
- 3 LAT. 36.138078° N (NAD83)
LONG. 107.465026° W (NAD83)
LAT. 36.138063° N (NAD27)
LONG. 107.464422° W (NAD27)
- 4 LAT. 36.159800° N (NAD83)
LONG. 107.446799° W (NAD83)
LAT. 36.159785° N (NAD27)
LONG. 107.446195° W (NAD27)
- 5 LAT. 36.145101° N (NAD83)
LONG. 107.447099° W (NAD83)
LAT. 36.145086° N (NAD27)
LONG. 107.446495° W (NAD27)
- 6 LAT. 36.137751° N (NAD83)
LONG. 107.447260° W (NAD83)
LAT. 36.137736° N (NAD27)
LONG. 107.446656° W (NAD27)

WELL FLAG
LAT. 36.161075° N (NAD83)
LONG. 107.450818° W (NAD83)
LAT. 36.161060° N (NAD27)
LONG. 107.450214° W (NAD27)

ENTRY POINT
LAT. 36.158939° N (NAD83)
LONG. 107.449356° W (NAD83)
LAT. 36.158924° N (NAD27)
LONG. 107.448752° W (NAD27)

BOTTOM HOLE
LAT. 36.138704° N (NAD83)
LONG. 107.449780° W (NAD83)
LAT. 36.138689° N (NAD27)
LONG. 107.449176° W (NAD27)



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: Katie Wegner
Date: 5/11/14

Printed Name

Katie.Wegner@encana.com

E-mail Address

SURVEYOR CERTIFICATION

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

SEPTEMBER 9, 2013

Date of Survey

Signature and Seal of Professional Surveyor

DAVID RUSSELL
NEW MEXICO
REGISTERED PROFESSIONAL LAND SURVEYOR
10201
3/23/14
DAVID RUSSELL
Certificate Number 10201

Lybrook P03-2206 02H
SHL: SESE Section 3, T22N, R6W
439 FSL and 1192 FEL
BHL: SENE Section 15, T22N, R6W
2347 FNL and 750 FEL
Sandoval County, New Mexico

Encana Oil & Gas (USA) Inc. Drilling Plan

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Nacimiento Fn.	0
Ojo Alamo Ss.	1,367
Kirtland Shale	1,543
Fruitland Coal	1,704
Pictured Cliffs Ss.	1,920
Lewis Shale	2,020
Cliffhouse Ss.	2,725
Menefee Fn.	3,447
Point Lookout Ss.	4,179
Mancos Shale	4,352
Mancos Silt	4,939
Gallup Fn.	5,213

The referenced surface elevation is 7124', KB 7140'

2. ESTIMATED DEPTH OF POTENTIAL WATER, OIL, GAS, & OTHER MINERAL BEARING FORMATIONS

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,704
Oil/Gas	Pictured Cliffs Ss.	1,920
Oil/Gas	Cliffhouse Ss.	2,725
Gas	Menefee Fn.	3,447
Oil/Gas	Point Lookout Ss.	4,179
Oil/Gas	Mancos Shale	4,352
Oil/Gas	Mancos Silt	4,939
Oil/Gas	Gallup Fn.	5,213

All shows of fresh water and minerals will be reported and protected.

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.

- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-6015'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5815'-13477'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (ppf)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lbs)	Collapse	Burst	Tension
9 5/8"	36	J55	STC	2020	3520	394	1.125	1.1	1.5
7"	26	J55	LTC	4320	4980	367	1.125	1.1	1.5
4.5"	11.6	B80	LTC	6350	7780	201	1.125	1.1	1.5

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

Lybrook P03-2206 02H
 SHL: SESE Section 3, T22N, R6W
 439 FSL and 1192 FEL
 BHL: SENE Section 15, T22N, R6W
 2347 FNL and 750 FEL
 Sandoval County, New Mexico

b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	201 sks	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-6015'	30% open hole excess Stage 1 Lead: 373 sks Stage 1 Tail: 344 sks Stage 2 Lead: 185 sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5815'-13477'	None - External Casing Packers	N/A	N/A	N/A

*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner

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

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

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4873'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5368'/13477'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-5458'/6015'	Fresh Water LSND	8.3-10	40-50	8-10

Lybrook P03-2206 02H
SHL: SESE Section 3, T22N, R6W
439 FSL and 1192 FEL
BHL: SENE Section 15, T22N, R6W
2347 FNL and 750 FEL
Sandoval County, New Mexico

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5458'/6015'- 5368'/13477'	Fresh Water LSND	8.3-10	15-25	<15

c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

✓ d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING, & LOGGING

- a) Drill Stem Testing - None anticipated.
- b) Coring - None anticipated.
- c) Mudd Logging - Mud loggers will be on location from kick off point to TD.
- d) Logging - See below

Cased Hole:

CBL/CCL/GR/VDL will be run as needed for perforating control

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2559 psi based on a 9.0 ppg at 5467' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on December 16, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take approximately 20 days.

LOC: SE/4 SE/4 Sec 3 T22N R6W, 439' F			Encana Natural Gas			ENG: S Kuykendall 5/1/14				
County: New Mexico			WELL SUMMARY			RIG: Aztec 950				
WELL: Lybrook P03-2206 02H						GLE: 6791.8				
						RKBE: 6807.8				
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION	
LWD	LOGGING		TVD	MD		SIZE	SPECS	MUD TYPE	INFORMATION	
			60	60'		30	20" 94# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2		
Multi-Well pad - take survey every stand and run anti-collision report prior to spud	None	Nacimiento 9 5/8" Csg	0 500	500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface - 201 sks of Type III Cement	Fresh wtr 8.3-10	Vertical <1°	
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	1,383 1,559 1,720 1,936 2,036 2,741 3,463 4,195 4,368			8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 717 sksTotal. Stage 1 Lead: 373 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate, Mixed at 12.1 ppg. Yield 2.13 cuft/sk. Stage 1 Tail: 344 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk. 185 Stage 2: 185 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate, Mixed at 12.1 ppg. Yield 2.13 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°	
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fn. 7" Csg	4,873 4,955 5,229 5,458	4,873 6,015'						
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,467 5,368 5,527	13,477		6 1/8	200' overlap at liner top 7462' Drilled Lateral			Horz Inc/TVD 90.7°/5467
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	WBM 8.3-10	TD = 13476.9 MD	

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) NU BOP and surface equipment
- 4) Drill to KOP of 4873', 8 3/4 inch holesize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 6015' MD
- 7) R&C 7" csg, circ cmt to surface, switch to WBM
- 8) Land at 90 deg, drill lateral to 13477' run 4 1/2 inch liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling Minimum Ultimate (psi)	_____	100,000
Coupling or Joint Outside Diameter (ins)	_____	5.000
Drift Diameter (ins)	_____	3.875
Plain End Weight per Foot (lbs)	_____	11.36
Joint Strength (lbs)	_____	201,000
Internal Yield (psi)	_____	7,780
Collapse Rating (psi)	_____	6,350

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

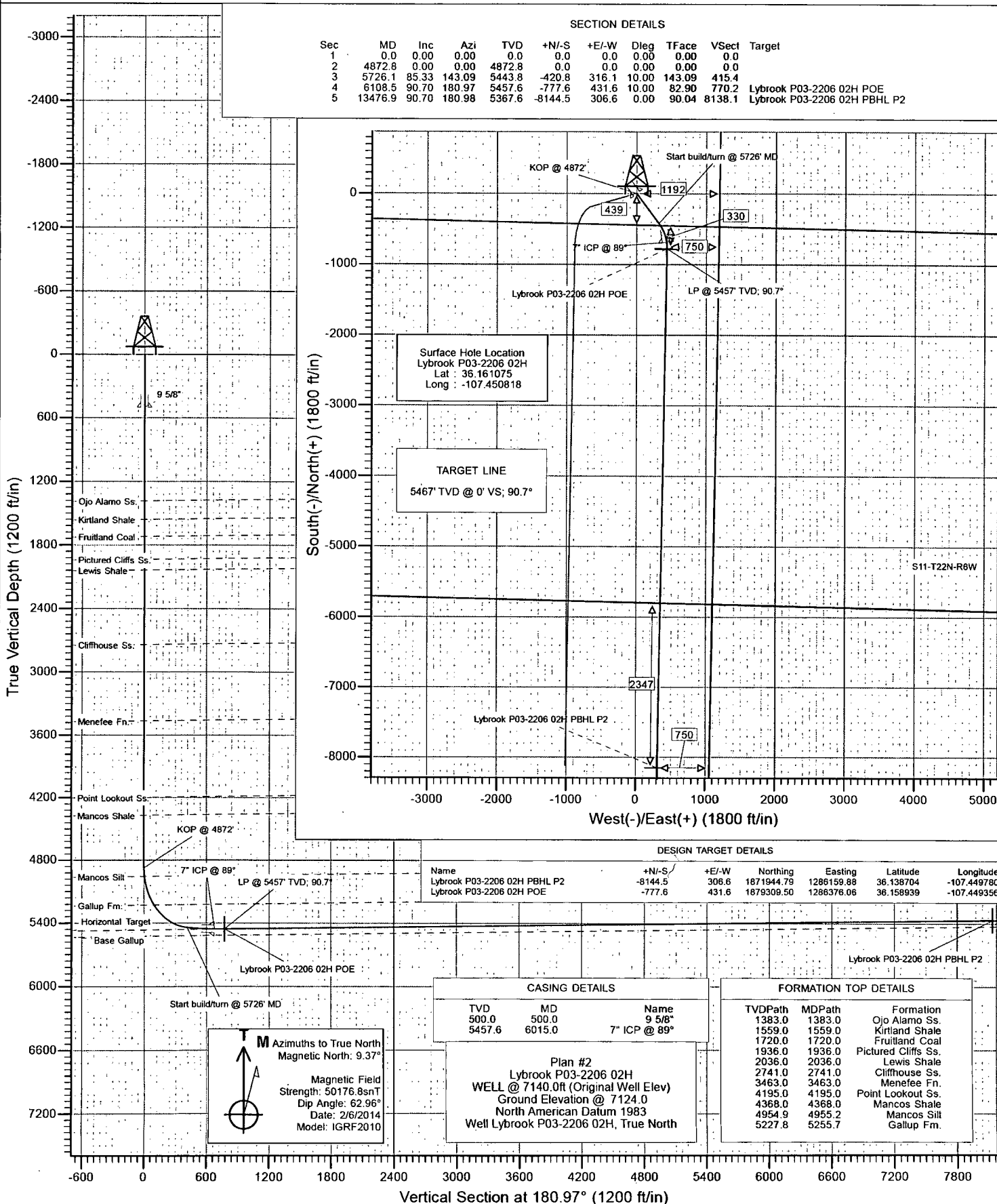
Coupling Thread Fracture Strength	_____	464,000
Pipe Thread Fracture Strength (lbs)	_____	201,000
Pipe Body Plain End Yield (lbs)	_____	267,000
Round Thread Pull-Out (lbs)	_____	219,000
Minimum Make-up Torque (ft-lbs)	_____	1,640
Nominal Make-up Torque (ft-lbs)	_____	2,190
Maximum Make-up Torque (ft-lbs)	_____	2,740
Coupling Internal Yield (psi)	_____	10,660
Pipe Body Internal Yield (psi)	_____	7,780
Leak @ E1 or E7 plane (psi)	_____	17,920
Pipe Hydrostatic Test Pressure @ 80 % SMYS	_____	7,100



Project: Sandoval County, NM
 Site: S3-T22N-R6W
 Well: Lybrook P03-2206 02H
 Wellbore: HZ
 Design: Plan #2



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4872.8	0.00	0.00	4872.8	0.0	0.0	0.00	0.00	0.0	
3	5726.1	85.33	143.09	5443.8	-420.8	316.1	10.00	143.09	415.4	
4	6108.5	90.70	180.97	5457.6	-777.6	431.6	10.00	82.90	770.2	Lybrook P03-2206 02H POE
5	13476.9	90.70	180.98	5367.6	-8144.5	306.6	0.00	90.04	8138.1	Lybrook P03-2206 02H PBHL P2



DESIGN TARGET DETAILS					
Name	+N/-S	+E/-W	Northing	Easting	Latitude
Lybrook P03-2206 02H PBHL P2	-8144.5	306.6	1871944.79	1288159.88	36.138704
Lybrook P03-2206 02H POE	-777.6	431.6	1879309.50	1288376.06	36.158939

CASING DETAILS		
TVD	MD	Name
500.0	500.0	9 5/8"
5457.6	6015.0	7" ICP @ 89°

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1383.0	1383.0	Ojo Alamo Ss.
1559.0	1559.0	Kirtland Shale
1720.0	1720.0	Fruitland Coal
1936.0	1936.0	Pictured Cliffs Ss.
2036.0	2036.0	Lewis Shale
2741.0	2741.0	Cliffhouse Ss.
3463.0	3463.0	Menefee Fn.
4195.0	4195.0	Point Lookout Ss.
4368.0	4368.0	Mancos Shale
4954.9	4955.2	Mancos Silt
5227.8	5255.7	Gallup Fm.

M Azimuths to True North
 Magnetic North: 9.37°
 Magnetic Field
 Strength: 50176.8nT
 Dip Angle: 62.96°
 Date: 2/6/2014
 Model: IGRF2010

Plan #2
 Lybrook P03-2206 02H
 WELL @ 7140.0ft (Original Well Elev)
 Ground Elevation @ 7124.0
 North American Datum 1983
 Well Lybrook P03-2206 02H, True North

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S3-T22N-R6W
 Well: Lybrook P03-2206 02H
 Wellbore: HZ
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
 TVD Reference: WELL @ 7140.0ft (Original Well Elev)
 MD Reference: WELL @ 7140.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Project	Sandoval County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	S3-T22N-R6W				
Site Position:		Northing:	1,880,092.79 ft	Latitude:	36.161075
From:	Lat/Long	Easting:	1,285,923.97 ft	Longitude:	-107.450920
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.71 °

Well	Lybrook P03-2206 02H					
Well Position	+N/-S	0.0 ft	Northing:	1,880,092.42 ft	Latitude:	36.161075
	+E/-W	0.0 ft	Easting:	1,285,954.08 ft	Longitude:	-107.450818
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,124.0 ft	

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/6/2014	9.37	62.96	50,177

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.97

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,872.8	0.00	0.00	4,872.8	0.0	0.0	0.00	0.00	0.00	0.00	
5,726.1	85.33	143.09	5,443.8	-420.8	316.1	10.00	10.00	0.00	143.09	
6,108.5	90.70	180.97	5,457.6	-777.6	431.6	10.00	1.40	9.91	82.90	Lybrook P03-2206 02
13,476.9	90.70	180.98	5,367.6	-8,144.5	306.6	0.00	0.00	0.00	90.04	Lybrook P03-2206 02

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S3-T22N-R6W
 Well: Lybrook P03-2206 02H
 Wellbore: HZ
 Design: Plan #2

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well Lybrook P03-2206 02H
 WELL @ 7140.0ft (Original Well Elev)
 WELL @ 7140.0ft (Original Well Elev)
 True
 Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,383.0	0.00	0.00	1,383.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,559.0	0.00	0.00	1,559.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,720.0	0.00	0.00	1,720.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,936.0	0.00	0.00	1,936.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,036.0	0.00	0.00	2,036.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,741.0	0.00	0.00	2,741.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,463.0	0.00	0.00	3,463.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,195.0	0.00	0.00	4,195.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S3-T22N-R6W
Well: Lybrook P03-2206 02H
Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
TVD Reference: WELL @ 7140.0ft (Original Well Elev)
MD Reference: WELL @ 7140.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,368.0	0.00	0.00	4,368.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4872'
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,872.8	0.00	0.00	4,872.8	0.0	0.0	0.0	0.00	0.00	
4,900.0	2.72	143.09	4,900.0	-0.5	0.4	0.5	10.00	10.00	
4,955.2	8.24	143.09	4,954.9	-4.7	3.6	4.7	10.00	10.00	Mancos Silt
5,000.0	12.72	143.09	4,999.0	-11.2	8.4	11.1	10.00	10.00	
5,100.0	22.72	143.09	5,094.1	-35.5	26.7	35.1	10.00	10.00	
5,200.0	32.72	143.09	5,182.5	-72.7	54.6	71.8	10.00	10.00	
5,255.7	38.29	143.09	5,227.8	-98.5	74.0	97.3	10.00	10.00	Gallup Fm.
5,300.0	42.72	143.09	5,261.5	-121.5	91.3	120.0	10.00	10.00	
5,400.0	52.72	143.09	5,328.7	-180.6	135.7	178.3	10.00	10.00	
5,500.0	62.72	143.09	5,382.0	-248.1	186.4	245.0	10.00	10.00	
5,600.0	72.72	143.09	5,419.9	-322.0	241.9	317.9	10.00	10.00	Start build/turn @ 5726' MD
5,700.0	82.72	143.09	5,441.1	-400.1	300.5	394.9	10.00	10.00	
5,726.1	85.33	143.09	5,443.8	-420.8	316.1	415.4	10.00	10.00	
5,800.0	86.28	150.44	5,449.2	-482.4	356.5	476.3	10.00	1.28	
5,900.0	87.65	160.35	5,454.6	-573.1	398.0	566.3	10.00	1.38	7" ICP @ 89°
6,000.0	89.10	170.25	5,457.4	-669.7	423.3	662.4	10.00	1.45	
6,015.0	89.32	171.73	5,457.6	-684.5	425.7	677.2	10.00	1.47	
6,100.0	90.58	180.13	5,457.7	-769.2	431.7	761.8	10.00	1.47	
6,108.5	90.70	180.97	5,457.6	-777.6	431.6	770.2	10.00	1.47	LP @ 5457' TVD; 90.7°
6,200.0	90.70	180.97	5,456.5	-869.2	430.1	861.8	0.00	0.00	
6,300.0	90.70	180.97	5,455.2	-969.1	428.4	961.7	0.00	0.00	
6,400.0	90.70	180.97	5,454.0	-1,069.1	426.7	1,061.7	0.00	0.00	
6,500.0	90.70	180.97	5,452.8	-1,169.1	425.0	1,161.7	0.00	0.00	
6,600.0	90.70	180.97	5,451.6	-1,269.1	423.3	1,261.7	0.00	0.00	
6,700.0	90.70	180.97	5,450.4	-1,369.1	421.6	1,361.7	0.00	0.00	
6,800.0	90.70	180.97	5,449.1	-1,469.0	419.9	1,461.7	0.00	0.00	
6,900.0	90.70	180.97	5,447.9	-1,569.0	418.2	1,561.7	0.00	0.00	
7,000.0	90.70	180.97	5,446.7	-1,669.0	416.5	1,661.7	0.00	0.00	
7,100.0	90.70	180.97	5,445.5	-1,769.0	414.8	1,761.7	0.00	0.00	
7,200.0	90.70	180.97	5,444.2	-1,868.9	413.1	1,861.7	0.00	0.00	
7,300.0	90.70	180.97	5,443.0	-1,968.9	411.4	1,961.7	0.00	0.00	
7,400.0	90.70	180.97	5,441.8	-2,068.9	409.8	2,061.7	0.00	0.00	
7,500.0	90.70	180.97	5,440.6	-2,168.9	408.1	2,161.7	0.00	0.00	
7,600.0	90.70	180.97	5,439.4	-2,268.9	406.4	2,261.7	0.00	0.00	
7,700.0	90.70	180.97	5,438.1	-2,368.8	404.7	2,361.6	0.00	0.00	
7,800.0	90.70	180.97	5,436.9	-2,468.8	403.0	2,461.6	0.00	0.00	
7,900.0	90.70	180.97	5,435.7	-2,568.8	401.3	2,561.6	0.00	0.00	
8,000.0	90.70	180.97	5,434.5	-2,668.8	399.6	2,661.6	0.00	0.00	
8,100.0	90.70	180.97	5,433.2	-2,768.7	397.9	2,761.6	0.00	0.00	
8,200.0	90.70	180.97	5,432.0	-2,868.7	396.2	2,861.6	0.00	0.00	
8,300.0	90.70	180.97	5,430.8	-2,968.7	394.5	2,961.6	0.00	0.00	
8,400.0	90.70	180.97	5,429.6	-3,068.7	392.8	3,061.6	0.00	0.00	
8,500.0	90.70	180.97	5,428.4	-3,168.7	391.1	3,161.6	0.00	0.00	
8,600.0	90.70	180.97	5,427.1	-3,268.6	389.4	3,261.6	0.00	0.00	
8,700.0	90.70	180.97	5,425.9	-3,368.6	387.7	3,361.6	0.00	0.00	
8,800.0	90.70	180.97	5,424.7	-3,468.6	386.0	3,461.6	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S3-T22N-R6W
Well: Lybrook P03-2206 02H
Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
TVD Reference: WELL @ 7140.0ft (Original Well Elev)
MD Reference: WELL @ 7140.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,900.0	90.70	180.97	5,423.5	-3,568.6	384.3	3,561.6	0.00	0.00	
9,000.0	90.70	180.97	5,422.3	-3,668.6	382.6	3,661.5	0.00	0.00	
9,100.0	90.70	180.97	5,421.0	-3,768.5	380.9	3,761.5	0.00	0.00	
9,200.0	90.70	180.97	5,419.8	-3,868.5	379.2	3,861.5	0.00	0.00	
9,300.0	90.70	180.97	5,418.6	-3,968.5	377.5	3,961.5	0.00	0.00	
9,400.0	90.70	180.97	5,417.4	-4,068.5	375.8	4,061.5	0.00	0.00	
9,500.0	90.70	180.97	5,416.1	-4,168.4	374.1	4,161.5	0.00	0.00	
9,600.0	90.70	180.97	5,414.9	-4,268.4	372.4	4,261.5	0.00	0.00	
9,700.0	90.70	180.97	5,413.7	-4,368.4	370.8	4,361.5	0.00	0.00	
9,800.0	90.70	180.97	5,412.5	-4,468.4	369.1	4,461.5	0.00	0.00	
9,900.0	90.70	180.97	5,411.3	-4,568.4	367.4	4,561.5	0.00	0.00	
10,000.0	90.70	180.97	5,410.0	-4,668.3	365.7	4,661.5	0.00	0.00	
10,100.0	90.70	180.97	5,408.8	-4,768.3	364.0	4,761.5	0.00	0.00	
10,200.0	90.70	180.97	5,407.6	-4,868.3	362.3	4,861.5	0.00	0.00	
10,300.0	90.70	180.97	5,406.4	-4,968.3	360.6	4,961.5	0.00	0.00	
10,400.0	90.70	180.97	5,405.2	-5,068.2	358.9	5,061.4	0.00	0.00	
10,500.0	90.70	180.97	5,403.9	-5,168.2	357.2	5,161.4	0.00	0.00	
10,600.0	90.70	180.97	5,402.7	-5,268.2	355.5	5,261.4	0.00	0.00	
10,700.0	90.70	180.97	5,401.5	-5,368.2	353.8	5,361.4	0.00	0.00	
10,800.0	90.70	180.97	5,400.3	-5,468.2	352.1	5,461.4	0.00	0.00	
10,900.0	90.70	180.97	5,399.0	-5,568.1	350.4	5,561.4	0.00	0.00	
11,000.0	90.70	180.97	5,397.8	-5,668.1	348.7	5,661.4	0.00	0.00	
11,100.0	90.70	180.97	5,396.6	-5,768.1	347.0	5,761.4	0.00	0.00	
11,200.0	90.70	180.97	5,395.4	-5,868.1	345.3	5,861.4	0.00	0.00	
11,300.0	90.70	180.97	5,394.2	-5,968.0	343.6	5,961.4	0.00	0.00	
11,400.0	90.70	180.97	5,392.9	-6,068.0	341.9	6,061.4	0.00	0.00	
11,500.0	90.70	180.97	5,391.7	-6,168.0	340.2	6,161.4	0.00	0.00	
11,600.0	90.70	180.97	5,390.5	-6,268.0	338.5	6,261.4	0.00	0.00	
11,700.0	90.70	180.97	5,389.3	-6,368.0	336.8	6,361.3	0.00	0.00	
11,800.0	90.70	180.97	5,388.0	-6,467.9	335.1	6,461.3	0.00	0.00	
11,900.0	90.70	180.97	5,386.8	-6,567.9	333.4	6,561.3	0.00	0.00	
12,000.0	90.70	180.97	5,385.6	-6,667.9	331.7	6,661.3	0.00	0.00	
12,100.0	90.70	180.97	5,384.4	-6,767.9	330.0	6,761.3	0.00	0.00	
12,200.0	90.70	180.97	5,383.2	-6,867.9	328.3	6,861.3	0.00	0.00	
12,300.0	90.70	180.97	5,381.9	-6,967.8	326.6	6,961.3	0.00	0.00	
12,400.0	90.70	180.97	5,380.7	-7,067.8	324.9	7,061.3	0.00	0.00	
12,500.0	90.70	180.97	5,379.5	-7,167.8	323.2	7,161.3	0.00	0.00	
12,600.0	90.70	180.97	5,378.3	-7,267.8	321.5	7,261.3	0.00	0.00	
12,700.0	90.70	180.97	5,377.1	-7,367.7	319.8	7,361.3	0.00	0.00	
12,800.0	90.70	180.97	5,375.8	-7,467.7	318.1	7,461.3	0.00	0.00	
12,900.0	90.70	180.97	5,374.6	-7,567.7	316.4	7,561.3	0.00	0.00	
13,000.0	90.70	180.97	5,373.4	-7,667.7	314.7	7,661.2	0.00	0.00	
13,100.0	90.70	180.97	5,372.2	-7,767.7	313.0	7,761.2	0.00	0.00	
13,200.0	90.70	180.98	5,370.9	-7,867.6	311.3	7,861.2	0.00	0.00	
13,300.0	90.70	180.98	5,369.7	-7,967.6	309.6	7,961.2	0.00	0.00	
13,400.0	90.70	180.98	5,368.5	-8,067.6	307.9	8,061.2	0.00	0.00	
13,476.9	90.70	180.98	5,367.6	-8,144.5	306.6	8,138.1	0.00	0.00	TD at 13476.9

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S3-T22N-R6W
Well: Lybrook P03-2206 02H
Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
TVD Reference: WELL @ 7140.0ft (Original Well Elev)
MD Reference: WELL @ 7140.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook P03-2206 02H I - plan hits target center - Point	0.00	0.00	5,367.6	-8,144.5	306.6	1,871,944.79	1,286,159.88	36.138704	-107.449780
Lybrook P03-2206 02H I - plan hits target center - Point	0.00	0.00	5,457.6	-777.6	431.6	1,879,309.50	1,286,376.06	36.158939	-107.449356
Lybrook P03-2206 02H I - plan misses target center by 2.0ft at 10800.8ft MD (5400.3 TVD, -5468.9 N, 352.1 E) - Point	0.00	0.00	5,400.3	-5,469.0	354.1	1,874,619.49	1,286,240.47	36.146053	-107.449619

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	0.000	0.000
6,015.0	5,457.6	7" ICP @ 89°	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,383.0	1,383.0	Ojo Alamo Ss.		-0.70	180.95
1,559.0	1,559.0	Kirtland Shale		-0.70	180.95
1,720.0	1,720.0	Fruitland Coal		-0.70	180.95
1,936.0	1,936.0	Pictured Cliffs Ss.		-0.70	180.95
2,036.0	2,036.0	Lewis Shale		-0.70	180.95
2,741.0	2,741.0	Cliffhouse Ss.		-0.70	180.95
3,463.0	3,463.0	Menefee Fn.		-0.70	180.95
4,195.0	4,195.0	Point Lookout Ss.		-0.70	180.95
4,368.0	4,368.0	Mancos Shale		-0.70	180.95
4,955.2	4,955.0	Mancos Silt		-0.70	180.95
5,255.7	5,229.0	Gallup Fm.		-0.70	180.95

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,872.8	4,872.8	0.0	0.0	KOP @ 4872'
5,726.1	5,443.8	-420.8	316.1	Start build/turn @ 5726' MD
6,108.5	5,457.6	-777.6	431.6	LP @ 5457' TVD; 90.7°
13,476.9	5,367.6	-8,144.5	306.6	TD at 13476.9

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S3-T22N-R6W

Lybrook P03-2206 02H

HZ

Plan #2

Anticollision Report

11 April, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook P03-2206 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7140.0ft (Original Well Elev)
Reference Site:	S3-T22N-R6W	MD Reference:	WELL @ 7140.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P03-2206 02H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,243.2ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program	Date	4/11/2014
From (ft)	To (ft)	Survey (Wellbore)
0.0	13,476.3	Plan #2 (HZ)
Tool Name	Description	
Geolink MWD	Geolink MWD	

Summary	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Site Name						
Offset Well - Wellbore - Design						
S3-T22N-R6W						
Lybrook P03-2206 01H - Hz - Plan #2	3,133.4	3,133.4	30.1	19.2	2.767	CC, ES
Lybrook P03-2206 01H - Hz - Plan #2	3,200.0	3,199.5	30.5	19.4	2.748	SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S3-T22N-R6W
Site Error: 0.0ft
Reference Well: Lybrook P03-2206 02H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
TVD Reference: WELL @ 7140.0ft (Original Well Elev)
MD Reference: WELL @ 7140.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S3-T22N-R6W - Lybrook P03-2206 01H - HZ - Plan #2													Offset Site Error: 0.0 ft
Survey Program: D-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-30.1	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-30.1	30.1	29.8	0.29	102.698	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.1	30.1	29.5	0.64	46.884	
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-30.1	30.1	29.1	0.99	30.376	
400.0	400.0	400.0	400.0	0.7	0.7	-90.00	0.0	-30.1	30.1	28.8	1.34	22.465	
500.0	500.0	500.0	500.0	0.8	0.8	-90.00	0.0	-30.1	30.1	28.4	1.69	17.824	
600.0	600.0	600.0	600.0	1.0	1.0	-90.00	0.0	-30.1	30.1	28.1	2.04	14.772	
700.0	700.0	700.0	700.0	1.2	1.2	-90.00	0.0	-30.1	30.1	27.7	2.39	12.612	
800.0	800.0	800.0	800.0	1.4	1.4	-90.00	0.0	-30.1	30.1	27.4	2.74	11.003	
900.0	900.0	900.0	900.0	1.5	1.5	-90.00	0.0	-30.1	30.1	27.0	3.09	9.759	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-90.00	0.0	-30.1	30.1	26.7	3.43	8.767	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-90.00	0.0	-30.1	30.1	26.3	3.78	7.958	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-90.00	0.0	-30.1	30.1	26.0	4.13	7.286	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-90.00	0.0	-30.1	30.1	25.6	4.48	6.719	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-90.00	0.0	-30.1	30.1	25.3	4.83	6.233	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-90.00	0.0	-30.1	30.1	24.9	5.18	5.813	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-90.00	0.0	-30.1	30.1	24.6	5.53	5.446	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-90.00	0.0	-30.1	30.1	24.2	5.88	5.123	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-90.00	0.0	-30.1	30.1	23.9	6.23	4.836	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-90.00	0.0	-30.1	30.1	23.5	6.58	4.579	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-90.00	0.0	-30.1	30.1	23.2	6.93	4.348	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-90.00	0.0	-30.1	30.1	22.8	7.27	4.139	
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-90.00	0.0	-30.1	30.1	22.5	7.62	3.950	
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-90.00	0.0	-30.1	30.1	22.1	7.97	3.777	
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-90.00	0.0	-30.1	30.1	21.8	8.32	3.619	
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-90.00	0.0	-30.1	30.1	21.4	8.67	3.473	
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-90.00	0.0	-30.1	30.1	21.1	9.02	3.338	
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-90.00	0.0	-30.1	30.1	20.7	9.37	3.214	
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-90.00	0.0	-30.1	30.1	20.4	9.72	3.099	
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-90.00	0.0	-30.1	30.1	20.0	10.07	2.991	
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-90.00	0.0	-30.1	30.1	19.7	10.42	2.891	
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	-90.00	0.0	-30.1	30.1	19.3	10.77	2.797	
3,133.4	3,133.4	3,133.4	3,133.4	5.4	5.4	-90.00	0.0	-30.1	30.1	19.2	10.88	2.767 CC, ES	
3,200.0	3,200.0	3,199.5	3,199.5	5.6	5.6	-90.23	-0.1	-30.5	30.5	19.4	11.11	2.748 SF	
3,300.0	3,300.0	3,298.3	3,298.2	5.7	5.7	-91.88	-1.1	-33.9	34.0	22.5	11.46	2.964	
3,400.0	3,400.0	3,396.8	3,396.5	5.9	5.9	-94.34	-3.1	-40.6	40.9	29.1	11.81	3.462	
3,500.0	3,500.0	3,494.6	3,493.7	6.1	6.1	-96.77	-6.0	-50.6	51.3	39.2	12.16	4.220	
3,600.0	3,600.0	3,591.6	3,589.8	6.3	6.3	-98.79	-9.9	-63.7	65.3	52.8	12.52	5.214	
3,700.0	3,700.0	3,687.5	3,684.2	6.4	6.5	-100.36	-14.6	-79.8	82.7	69.8	12.88	6.419	
3,800.0	3,800.0	3,782.2	3,776.7	6.6	6.7	-101.53	-20.2	-98.8	103.5	90.2	13.25	7.810	
3,900.0	3,900.0	3,875.4	3,867.2	6.8	7.0	-102.41	-26.5	-120.4	127.6	114.0	13.63	9.362	
4,000.0	4,000.0	3,966.9	3,955.2	7.0	7.3	-103.08	-33.6	-144.5	154.9	140.9	14.02	11.052	
4,100.0	4,100.0	4,056.6	4,040.7	7.1	7.6	-103.59	-41.3	-170.7	185.4	171.0	14.42	12.857	
4,200.0	4,200.0	4,144.5	4,123.4	7.3	8.0	-103.98	-49.6	-199.0	218.9	204.1	14.84	14.756	
4,300.0	4,300.0	4,230.3	4,203.3	7.5	8.4	-104.30	-58.4	-229.0	255.4	240.1	15.27	16.728	
4,400.0	4,400.0	4,314.0	4,280.3	7.7	8.9	-104.55	-67.6	-260.6	294.6	278.9	15.71	18.755	
4,500.0	4,500.0	4,400.0	4,358.3	7.8	9.4	-104.76	-77.8	-295.3	336.6	320.5	16.18	20.801	
4,600.0	4,600.0	4,474.8	4,425.2	8.0	9.9	-104.92	-87.2	-327.3	381.2	364.6	16.64	22.903	
4,700.0	4,700.0	4,551.8	4,493.1	8.2	10.4	-105.06	-97.4	-362.1	428.3	411.2	17.13	25.003	
4,800.0	4,800.0	4,635.9	4,566.6	8.3	11.1	-105.19	-109.0	-401.6	477.1	459.5	17.66	27.015	
4,900.0	4,900.0	4,723.0	4,642.5	8.5	11.7	-110.24	-121.0	-442.5	526.3	509.5	16.72	31.481	
5,000.0	4,999.0	4,807.0	4,715.8	8.7	12.4	-105.66	-132.6	-481.9	579.1	562.1	17.04	33.983	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S3-T22N-R6W
 Site Error: 0.0ft
 Reference Well: Lybrook P03-2206 02H
 Well Error: 0.0ft
 Reference Wellbore: HZ
 Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
 TVD Reference: WELL @ 7140.0ft (Original Well Elev)
 MD Reference: WELL @ 7140.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Offset Design S3-T22N-R6W - Lybrook P03-2206 01H - Hz - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,094.1	4,884.8	4,783.6	8.9	13.1	101.59	-143.3	-518.4	636.6	619.1	17.49	36.393		
5,200.0	5,182.5	4,953.9	4,843.8	9.2	13.6	97.39	-152.8	-550.9	698.4	680.2	18.15	38.471		
5,300.0	5,261.5	5,012.3	4,894.8	9.7	14.1	92.41	-160.9	-578.3	764.5	745.4	19.10	40.022		
5,400.0	5,328.7	5,058.2	4,934.8	10.4	14.5	86.12	-167.2	-599.9	834.5	814.2	20.30	41.106		
5,500.0	5,382.0	5,090.2	4,962.7	11.4	14.8	78.21	-171.6	-614.9	907.6	886.1	21.49	42.243		
5,600.0	5,419.9	5,107.3	4,977.6	12.7	14.9	68.87	-173.9	-622.9	982.6	960.4	22.18	44.302		
5,700.0	5,441.1	5,109.1	4,979.1	14.1	14.9	58.82	-174.2	-623.7	1,057.7	1,035.7	21.99	48.099		
5,800.0	5,449.2	5,101.2	4,972.3	15.7	14.9	58.49	-173.1	-620.1	1,130.0	1,107.4	22.58	50.031		
5,900.0	5,454.6	5,098.8	4,970.2	17.2	14.9	61.10	-172.8	-619.0	1,195.4	1,171.8	23.64	50.557		

Anticollision Report

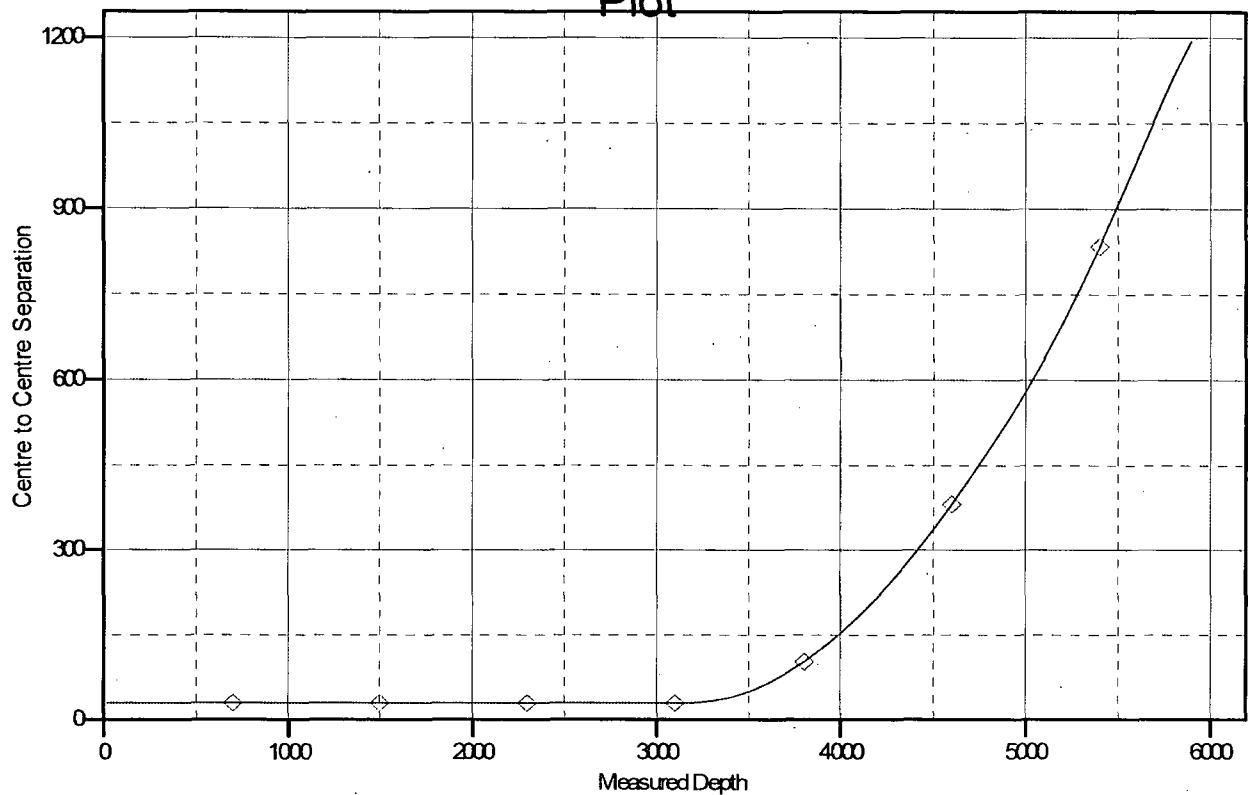
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S3-T22N-R6W
Site Error: 0.0ft
Reference Well: Lybrook P03-2206 02H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook P03-2206 02H
TVD Reference: WELL @ 7140.0ft (Original Well Elev)
MD Reference: WELL @ 7140.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 7140.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook P03-2206 02H
Coordinate System is US State Plane 1983, New Mexico Central Zone
Grid Convergence at Surface is: -0.71°

Ladder Plot



LEGEND

—◆— Lybrook P03-2206 01H, Hz, Plan #2 V0

ENCANA OIL & GAS (USA) INC.

LYBROOK P03-2206 #02H

439' FSL & 1192' FEL

LOCATED IN THE SE/4 SE/4 OF SECTION 3,

T22N, R6W, N.M.P.M.,

SANDOVAL COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 54.5 MILES TO ISR 471 (M.P. 97.1).
- 2) TURN RIGHT ONTO ISR 471 AND GO 4.0 MILES WHERE ACCESS IS STAKED ON RIGHT.

WELL FLAG LOCATED AT LAT. 36.161075° N, LONG. 107.450818° W (NAD 83).

JOB No.: ENC110
DATE: 10/11/13



**Scorpion Survey &
Consulting, L.L.C.**
302 South Ash
Aztec, New Mexico 87410
(505) 334-4007

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook P03-2206 02H

