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MAY 25 2012

Form 3160-3
(August 2007)

UNITED STATES Farmington Field Office
DEPARTMENT OF THE INTERIOR Bureau of Land Management
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NM NM 109389	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No.	
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202		8. Lease Name and Well No. Lybrook D22-2206 01H	
3b. Phone No. (include area code) 720-876-3989		9. ABL Well No. 30-043-21131	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1147' FNL and 187' FWL Section 22, T22N, R6W At proposed prod. zone 660' FNL and 330' FWL Section 21, T22N, R6W		10. Field and Pool, or Expl. WC Gallup	
11. Sec., T. R. M. or Blk. and Survey or Area Section 22, T22N, R6W NMPM		12. County or Parish Sandoval	
13. State NM		14. Distance in miles and direction from nearest town or post office* 60.3 miles SE of Bloomfield, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from west lease line		16. No. of acres in lease 1,080 acres	
17. Spacing Unit dedicated to this well 160 acres		RCVD SEP 4 '12	
18. Distance from proposed location* to nearest well, drilling, completed, west of applied for, on this lease, ft. SHL is +/- 1000' west of Vernaldo 1		19. Proposed Depth 5305' TVD/10393' MD	
20. BLM/BIA Bond No on file COB-000235		OIL CONS. DIV. DIST. 3	
21. Elevations (Show whether DF, KLB, R, GL, etc.) 7187' GL, 7200' KB		22. Approximate date work will start* 10/23/2012	
23. Estimated duration 45 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:

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

25. Signature *Brenda R. Linster* Name (Printed/Typed) Brenda R. Linster Date 05/23/2012

Title Regulatory Advisor

Approved by *[Signature]* Name (Printed/Typed) Date 8/28/12

Title AFM Office PFO

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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

(Continued on page 2)

*(Instructions on page 2)

A COMPLETE C-144 MUST BE SUBMITTED TO AND APPROVED BY THE NMOCD FOR: A PIT, CLOSED LOOP SYSTEM, BELOW GRADE TANK, OR PROPOSED ALTERNATIVE METHOD, PURSUANT TO NMOCD PART 19.15.17, PRIOR TO THE USE OR CONSTRUCTION OF THE ABOVE APPLICATIONS.

Hold C104
for Directional Survey
and "As Drilled" plat

This action is subject to technical and procedural review pursuant to 43 CFR 3160.3 and appeal pursuant to 43 CFR 3165.4

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

NMOCD

SEP 18 2012

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

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

Hold C104
for Directional Survey
and "As Drilled" plat

MAY 25 2012

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3450 Fax: (505) 476-3452

State of New Mexico Field Office
Energy, Minerals & Natural Resources Department
Bureau of Land Management

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

'API Number' 30-043-21131	'Pool Code' 97981	'Pool Name' WC 22NEW022; Gallinule
'Property Code' 39433	'Property Name' LYBROOK D22-2206	'Well Number' 01H
'GRID No.' 282327	'Operator Name' ENCANA OIL & GAS (USA) INC.	'Elevation' 7187'

¹⁰ Surface Location

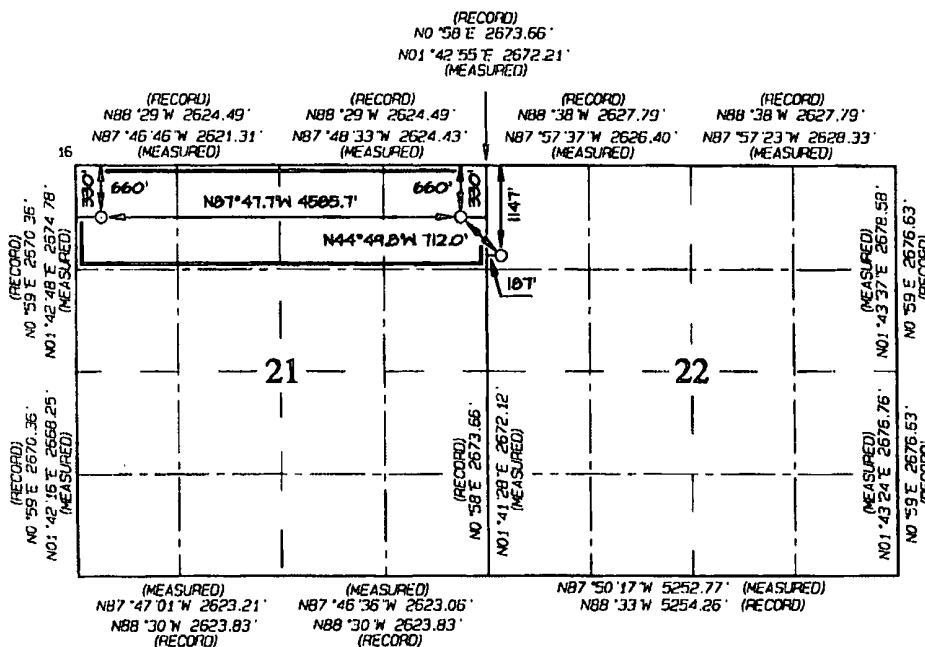
UL or lot no.	Section	Township	Range	Lot Ion	Feet from the	North/South line	Feet from the	East/West line	County
D	22	22N	6W		1147	NORTH	187	WEST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	21	22N	6W		660	NORTH	330	WEST	SANDOVAL

12 Dedicated Acres	160.0 Acres N/2 N/2 - Section 21	13 Joint or Infill	14 Consolidation Code	15 Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



END-OF-LATERAL
660' FNL 330' FWL
SECTION 21. T22N, R5W
LAT: 36.12925 'N
LONG: 107.48128 'W
DATUM: NAD1927

LAT: 36.12927 'N
LONG: 107.48188 'W
DATUM: NAD1983

POINT-OF-ENTRY
660' FNL 330' FEL
SECTION 21, T22N, R6W
LAT: 36.12893°N
LONG: 107.46576°W
DATUM: NAD1927

LAT: 36.12895°N
LONG: 107.46636°W
DATUM: NAD1983

SURFACE LOCATION
1147' FNL 187' FNL
SECTION 22, T22N, R6W
LAT: 36.12756°N
LONG: 107.46404°W
DATUM: NAD1927

LAT: 36.12758°N
LONG: 107.46464°W
DATUM: NAD1983

17 OPERATOR CERTIFICATION

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

Signature
Brenda R. Linster

Printed Name
brenda.linster@encana.com

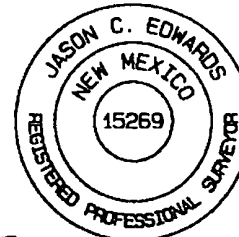
E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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

Date of Survey: MARCH 30, 2012

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

✓

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook D22-2206 01H
1147' ENL & 187' FWL, Section 22, T22N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.12758°N Longitude: 107.46464°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 53.6 miles to Mile Marker 97.7;

Go right (South-easterly) for 4.3 miles to fork in road;

Go left (South-westerly) for 0.2 miles to 4-way intersection;

Go straight (South-westerly) for 1.2 miles to new access on left-hand side of existing roadway which continues for 5287.6' to Encana Lybrook D22-2206 01H location.

Lybrook D22-2206 01H

**SHL: NWNW Section 22, T22N, R6W
1147 FNL and 187 FWL**

**BHL: NWNW Section 21, T22N, R6W
660 FNL and 330 FWL**

**Sandoval County, New Mexico
Lease Number: NM NM 109389**

**Encana Oil & Gas (USA) Inc.
Drilling Plan**

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

<u>Formation</u>	<u>Depth (TVD)</u>
Ojo Alamo Ss.	1243'
Kirtland	1388'
Fruitland Coal	1514'
Pictured Cliffs	1839'
Lewis	1931'
Cliffhouse	2592'
Menefee	3301'
Point Lookout	4102'
Mancos	4277'
Gallup	5096'
Juana Lopez	5701'
Lower Carlile	5834'
Greenhorn	6060'
Graneros	6124'
Dakota	6157'
Morrison	6481'

The referenced surface elevation is 7187', KB 7200'

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

<u>Substance</u>	<u>Formation</u>	<u>Depth (TVD)</u>
Gas	Fruitland Coal	1514'
Gas	Pictured Cliffs	1839'
Gas	Cliffhouse	2592'
Gas	Point Lookout	4102'
Oil/Gas	Mancos	4277'
Oil/Gas	Dakota	6157'

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

3. PRESSURE CONTROL

- Pressure control equipment and configuration will be designed to meet 2M standards.
- Working pressure on rams and BOPE will be 3,000 psi
- Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- Blind and Pipe Rams/BOP will be tested against a test plug to either 70 percent of the casings internal yield pressure or 100 percent of rated working pressure.

Lybrook D22-2206 01H

SHL: NWNW Section 22, T22N, R6W
1147 FNL and 187 FWL

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660 FNL and 330 FWL

Sandoval County, New Mexico

Lease Number: NM NM 109389

- 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 times.
- 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	Hole Size	Csg Size	Weight	Grade
Conductor	0-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	17 1/2"	13 3/8"	48#	H40, STC New
Intermediate	0'-4330'	12 1/4"	9 5/8"	40#	J55, STC New
Production Liner	4130'-10393'	8 1/2"	5 1/2"	17#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lb)	Collapse	Burst	Tension
13 3/8"	48	H40	STC	740	1730	322	1.125	1.1	1.5
9 5/8"	40	J55	STC	2570	3950	452	1.125	1.1	1.5
5 1/2"	17	B80	LTC	6290	7740	320	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 D22-2206 01H**SHL: NWNW Section 22, T22N, R6W
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- b) The proposed cementing program is as follows:

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

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Redi-mix Construction Grade Cement	Surface	None
Surface	500'	291sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 14.6ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	4330'	30% open hole excess Lead: 790sk Tail: 160sk	Lead: PremLite + 3% CaCl + 0.25lb/sk Cello Flake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints; turbolizers at base of Ojo Alamo
Production Liner*	4130'-10393'	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 a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed well will be drilled in two phases. A pilot hole will be drilled in the first phase, followed by kicking off a horizontal lateral in the existing wellbore in the second phase. The intent of drilling a pilot hole is to obtain open hole log and core data. The intent of the second phase of the well is to plug back the pilot hole with cement to the kick off point. After plugging back, the plan is to drill a horizontal lateral from the kick off point in the existing wellbore to the proposed bottom hole location.

Directional plans are attached.

Lybrook D22-2206 01H**SHL: NWNW Section 22, T22N, R6W****1147 FNL and 187 FWL****BHL: NWNW Section 21, T22N, R6W****660 FNL and 330 FWL****Sandoval County, New Mexico****Lease Number: NM NM 109389**

Well Phase	Description	Proposed Depth (TVD/MD)	Formation
1	Vertical Pilot Hole	6581'/6581'	Morrison
2	Horizontal Lateral	5305'/10393'	Gallup

Proposed Plug Back Procedure:

TOPS: TVD
KOP 4800'
Graneros Shale 6124'
Dakota 6157'

Set 3 cement plugs in 8 ½" hole

Plug A: Bottom plug 100' over Graneros

Plug B: Plug across top of Gallup

Plug C: Kick plug at KOP

Plug A

1. TIH to TD of vertical pilot hole at 6581'
2. Spot 280' cement plug from 6301' - 6581'
 - a. 80sx of Class C cement with 1% CaCl + 0.25#/sk celloflake + 0.2% FL (1.38ft³/sk yield, 14.6 ppg)
 - b. Pump displacement and 10 bbl spacer
3. Pull uphole 280' and reverse out
4. Spot 280' cement plug from 6021' - 6301'
 - a. 80 sx of Class C cement with 1% CaCl + 0.25#/sk celloflake + 0.2% FL (1.38ft³/sk yield, 14.6 ppg)
 - b. Pump displacement
5. Pull uphole and reverse out
6. Pump bottoms up 2 times, pull uphole
7. TIH and tag plug, proceed when cement is solid
8. Fill hole and move uphole to spot Gallup plug.

Plug B

1. Spot 100' plug from 5046-5146
 - a. 60sx of Class C cement with 1% CaCl + 0.25#/sk celloflake + 0.2%FL (1.38ft³/sk yield, 14.6 ppg), 100% excess.
 - b. Pump displacement
2. Pull uphole and reverse out
3. Pump bottoms up 2 times, pull uphole
4. TIH and tag plug, proceed when cement is solid
5. Fill hole and move uphole to spot kick plug

Plug C

1. Spot 300' kick plug from 4330' - 4630'
 - a. 78sx of Class C cement (1.52ft³/sk yield, 15.7 ppg)
 - b. Spot tuned spacer
2. Pull uphole and reverse out
3. Pump bottoms up 2 times, pull uphole
4. Tag plug, drill ahead to KOP when cement is solid

Lybrook D22-2206 01H**SHL: NWNW Section 22, T22N, R6W
1147 FNL and 187 FWL****BHL: NWNW Section 21, T22N, R6W
660 FNL and 330 FWL****Sandoval County, New Mexico****Lease Number: NM NM 109389****6. DRILLING FLUIDS PROGRAM**

- a) Phase 1, Vertical Pilot Hole:

Hole Size (in)	TVD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'	Fresh Water	8.3-9.2	38-100	4-28
17 1/2"	0-500'	Fresh Water	8.4-8.6	60-70	NC
12 1/4"	500-4330'	Fresh Water LSND	8.5-8.8	40-50	8-10
8 1/2"	4330-6581'	Fresh Water LSND	8.5-8.8	40-50	8-10

- b) Phase 2, Kick off to Horizontal Lateral:

Hole Size (in)	TVD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
8 1/2"	4430' (KOP)- 10393'	Synthetic Oil Based Mud	8.6-9.0	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, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of 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 and LOGGING

- a) Drill Stem Testing – None anticipated
b) Coring – None planned at this time.
c) Mud Logging – Mud loggers will be on location from Intermediate Casing to TD.
d) Logging – See Below

Open Hole:

Triple combo with Spectral Gamma TD to intermediate casing
Specialty logs will be decided real time by onsite geologists

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 +/- 3080 psi based on a 9.0 ppg at 6581' TVD of the vertical pilot hole. No abnormal pressure or temperatures are anticipated.

Lybrook D22-2206 01H

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Sandoval County, New Mexico

Lease Number: NM NM 109389

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 October 23, 2012. 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 45 days.

LOC: Sec 22-T22N-R6W County: Sandoval WELL: Lybrook D22-2206 #01H			New Mexico Mancos WELL SUMMARY			encana natural gas		ENG: J. Fox/ A. 5/22/12 RIG: GLE: 7187 RKBE:	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW	DEVIATION
			TVD	MD				MUD TYPE	INFORMATION
			60	60'		30	20" 94# 100sx Type I Neat 48.8ppg cmt	Fresh wtr 8.3-9.2 Vis 38-100 YP 4-28 FL 4-28	
Surveys After csg is run	None	Ojo Alamo Kirtland Shale	1,243 1,388			17 1/2	13 3/8" 48ppf H40 STC TOC @ surface	Fresh wtr 8.4-8.6 Vis 40-50 YP 25-35	Vertical <1°
Surveys every 500'	No OH logs	Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh	1514 1839 1931 2592 3301 4102 4277 4330	500 4330		12 1/4	9 5/8" 40ppf J55 STC TOC @ surface	Fresh Wtr 8.5-8.8 Vis 40-50 YP 10-12 FL 8-10	Vertical <1°
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	KICK OFF PT Mancos Silt Gallup Top horz target Base Gallup Juana Lopez Lower Carlile Greenhorn Graneros Dakota Morrison Pilot TD	4430 4842 5096 5341 5410 5701 5834 6060 6124 6157 6481 6581	5808		8 1/2	5 1/2" 17ppf I/L80 LTC Running external swellable csg packers for isolation of prod string 200' overlap at liner top 4590' Lateral	Fresh Wtr LSND-in pilot 8.5-8.8 Switch to OBM at K/O 8.6-9.0 8.6-9.0 OBM	KOP 4430 10 deg/100' 25deg updip 5305'TVD TD = 10393' MD

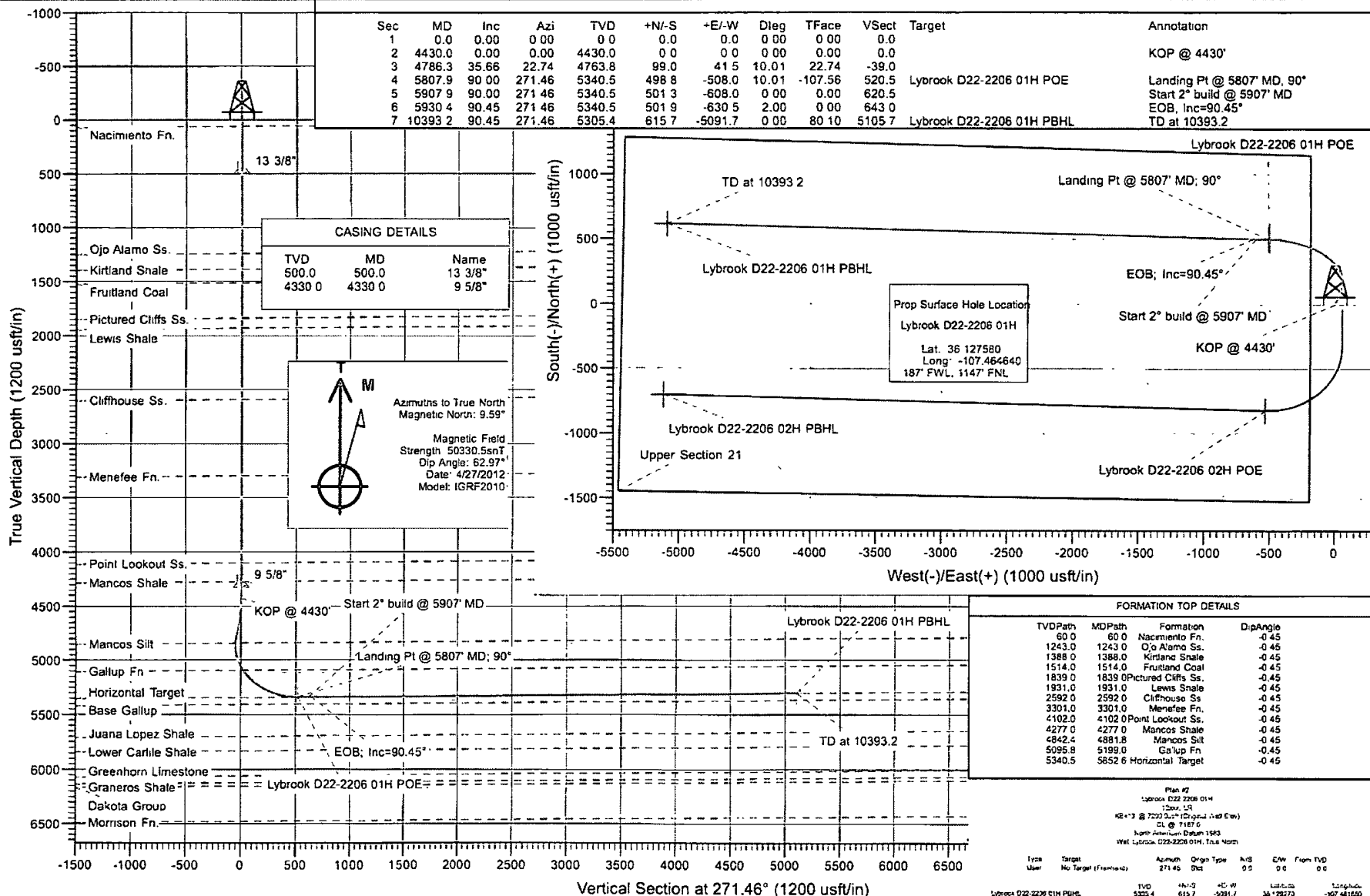
NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 13 3/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to 4330' , 12 1/4" hole size
- 5) R&C 9 5/8" casing, circ cmt to surface
- 6) Drill 8 1/2" hole to TD of vertical pilot
- 7) Run OH logs and plug back vertical pilot
- 8) PU directional tools and kick off, drill to 30 degree inclination and switch to OBM
- 9) Drill curve at 10 deg/100' build rate. Land at 90 deg and drill 4590' lateral
- 10) Run 5 1/2" liner with external swellable casing packers

encana™

natural gas

Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook D22-2206 01H
Wellbore: Hz
Design: Plan #2



Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook D22-2206 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
 TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
 MD Reference: KB=13' @ 7200.0usft (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	Lybrook				
Site Position:		Northing:	1,882,672.69 usft	Latitude:	36.168210
From:	Lat/Long	Easting:	1,287,066.33 usft	Longitude:	-107.447150
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.71 °

Well	Lybrook D22-2206 01H					
Well Position	+N/-S	0.0 usft	Northing:	1,867,946.05 usft	Latitude:	36.127580
	+E/-W	0.0 usft	Easting:	1,281,718.77 usft	Longitude:	-107.464640
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	7,187.0 usft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/27/2012	9.59	62.97	50,330

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	271.46

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,430.0	0.00	0.00	4,430.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,786.3	35.66	22.74	4,763.8	99.0	41.5	10.01	10.01	0.00	22.74	
5,807.9	90.00	271.46	5,340.5	498.8	-508.0	10.01	5.32	-10.89	-107.56	Lybrook D22-2206 01
5,907.9	90.00	271.46	5,340.5	501.3	-608.0	0.00	0.00	0.00	0.00	
5,930.4	90.45	271.46	5,340.5	501.9	-630.5	2.00	2.00	0.00	0.00	
10,393.2	90.45	271.46	5,305.4	615.7	-5,091.7	0.00	0.00	0.00	80.10	Lybrook D22-2206 01

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook D22-2206 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
 TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
 MD Reference: KB=13' @ 7200.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
60.0	0.00	0.00	60.0	0.0	0.0	0.0	0.00	0.00	Nacimiento Fn.
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	13 3/8"
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	
1,243.0	0.00	0.00	1,243.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,388.0	0.00	0.00	1,388.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,514.0	0.00	0.00	1,514.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,839.0	0.00	0.00	1,839.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,931.0	0.00	0.00	1,931.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
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	
2,592.0	0.00	0.00	2,592.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
2,800.0	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	
3,301.0	0.00	0.00	3,301.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
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	
4,102.0	0.00	0.00	4,102.0	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	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook D22-2206 01H
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
MD Reference: KB=13' @ 7200.0usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,277.0	0.00	0.00	4,277.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,330.0	0.00	0.00	4,330.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,430.0	0.00	0.00	4,430.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4430'
4,500.0	7.00	22.74	4,499.8	3.9	1.7	-1.6	10.01	10.01	
4,600.0	17.01	22.74	4,597.5	23.1	9.7	-9.1	10.01	10.01	
4,700.0	27.02	22.74	4,690.1	57.6	24.2	-22.7	10.01	10.01	
4,786.3	35.66	22.74	4,763.8	99.0	41.5	-39.0	10.01	10.01	
4,800.0	35.27	20.49	4,774.9	106.4	44.4	-41.7	10.01	-2.87	
4,881.8	33.86	6.24	4,842.4	151.2	55.2	-51.3	10.01	-1.72	Mancos Silt
4,900.0	33.78	2.98	4,857.5	161.3	56.0	-51.9	10.01	-0.46	
5,000.0	34.84	345.28	4,940.3	216.8	50.2	-44.6	10.01	1.07	
5,100.0	38.26	329.44	5,020.8	271.3	27.1	-20.2	10.01	3.41	
5,199.0	43.40	316.45	5,095.8	322.5	-12.0	20.2	10.01	5.19	Gallup Fn
5,200.0	43.46	316.33	5,096.5	322.9	-12.5	20.7	10.01	5.89	
5,300.0	49.88	305.75	5,165.2	370.3	-67.4	76.8	10.01	6.42	
5,400.0	57.09	297.10	5,224.8	411.9	-136.0	146.4	10.01	7.21	
5,500.0	64.80	289.80	5,273.3	446.4	-216.1	227.4	10.01	7.71	
5,600.0	72.83	283.38	5,309.5	472.8	-305.4	317.3	10.01	8.03	
5,700.0	81.04	277.51	5,332.1	490.4	-401.1	413.4	10.01	8.21	
5,800.0	89.34	271.90	5,340.5	498.5	-500.3	512.8	10.01	8.30	
5,807.9	90.00	271.46	5,340.5	498.7	-508.1	520.7	9.96	8.28	Landing Pt @ 5807' MD; 90° - Lybrook D22-2206
5,852.6	90.00	271.46	5,340.5	499.9	-552.7	565.3	0.01	0.01	Horizontal Target
5,900.0	90.00	271.46	5,340.5	501.1	-600.1	612.7	0.00	0.00	
5,907.9	90.00	271.46	5,340.5	501.3	-608.0	620.6	0.00	0.00	Start 2" build @ 5907' MD
5,930.4	90.45	271.46	5,340.5	501.9	-630.5	643.1	2.00	2.00	EOB; Inc=90.45°
6,000.0	90.45	271.46	5,339.9	503.7	-700.0	712.7	0.00	0.00	
6,100.0	90.45	271.46	5,339.1	506.2	-800.0	812.7	0.00	0.00	
6,200.0	90.45	271.46	5,338.3	508.8	-900.0	912.6	0.00	0.00	
6,300.0	90.45	271.46	5,337.6	511.3	-999.9	1,012.6	0.00	0.00	
6,400.0	90.45	271.46	5,336.8	513.9	-1,099.9	1,112.6	0.00	0.00	
6,500.0	90.45	271.46	5,336.0	516.4	-1,199.9	1,212.6	0.00	0.00	
6,600.0	90.45	271.46	5,335.2	519.0	-1,299.8	1,312.6	0.00	0.00	
6,700.0	90.45	271.46	5,334.4	521.5	-1,399.8	1,412.6	0.00	0.00	
6,800.0	90.45	271.46	5,333.6	524.1	-1,499.8	1,512.6	0.00	0.00	
6,900.0	90.45	271.46	5,332.8	526.6	-1,599.7	1,612.6	0.00	0.00	
7,000.0	90.45	271.46	5,332.1	529.2	-1,699.7	1,712.6	0.00	0.00	
7,100.0	90.45	271.46	5,331.3	531.7	-1,799.7	1,812.6	0.00	0.00	
7,200.0	90.45	271.46	5,330.5	534.2	-1,899.6	1,912.6	0.00	0.00	
7,300.0	90.45	271.46	5,329.7	536.8	-1,999.6	2,012.6	0.00	0.00	
7,400.0	90.45	271.46	5,328.9	539.3	-2,099.5	2,112.6	0.00	0.00	
7,500.0	90.45	271.46	5,328.1	541.9	-2,199.5	2,212.6	0.00	0.00	
7,600.0	90.45	271.46	5,327.3	544.4	-2,299.5	2,312.6	0.00	0.00	
7,700.0	90.45	271.46	5,326.6	547.0	-2,399.4	2,412.6	0.00	0.00	
7,800.0	90.45	271.46	5,325.8	549.5	-2,499.4	2,512.6	0.00	0.00	
7,900.0	90.45	271.46	5,325.0	552.1	-2,599.4	2,612.6	0.00	0.00	
8,000.0	90.45	271.46	5,324.2	554.6	-2,699.3	2,712.6	0.00	0.00	
8,100.0	90.45	271.46	5,323.4	557.2	-2,799.3	2,812.6	0.00	0.00	
8,200.0	90.45	271.46	5,322.6	559.7	-2,899.3	2,912.6	0.00	0.00	
8,300.0	90.45	271.46	5,321.8	562.3	-2,999.2	3,012.6	0.00	0.00	
8,400.0	90.45	271.46	5,321.1	564.8	-3,099.2	3,112.6	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook D22-2206 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
 TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
 MD Reference: KB=13' @ 7200.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
8,500.0	90.45	271.46	5,320.3	567.4	-3,199.2	3,212.6	0.00	0.00	
8,600.0	90.45	271.46	5,319.5	570.0	-3,299.1	3,312.6	0.00	0.00	
8,700.0	90.45	271.46	5,318.7	572.5	-3,399.1	3,412.6	0.00	0.00	
8,800.0	90.45	271.46	5,317.9	575.1	-3,499.0	3,512.6	0.00	0.00	
8,900.0	90.45	271.46	5,317.1	577.6	-3,599.0	3,612.6	0.00	0.00	
9,000.0	90.45	271.46	5,316.3	580.2	-3,699.0	3,712.6	0.00	0.00	
9,100.0	90.45	271.46	5,315.6	582.7	-3,798.9	3,812.6	0.00	0.00	
9,200.0	90.45	271.46	5,314.8	585.3	-3,898.9	3,912.6	0.00	0.00	
9,300.0	90.45	271.46	5,314.0	587.8	-3,998.9	4,012.5	0.00	0.00	
9,400.0	90.45	271.46	5,313.2	590.4	-4,098.8	4,112.5	0.00	0.00	
9,500.0	90.45	271.46	5,312.4	592.9	-4,198.8	4,212.5	0.00	0.00	
9,600.0	90.45	271.46	5,311.6	595.5	-4,298.8	4,312.5	0.00	0.00	
9,700.0	90.45	271.46	5,310.8	598.0	-4,398.7	4,412.5	0.00	0.00	
9,800.0	90.45	271.46	5,310.1	600.6	-4,498.7	4,512.5	0.00	0.00	
9,900.0	90.45	271.46	5,309.3	603.1	-4,598.7	4,612.5	0.00	0.00	
10,000.0	90.45	271.46	5,308.5	605.7	-4,698.6	4,712.5	0.00	0.00	
10,100.0	90.45	271.46	5,307.7	608.2	-4,798.6	4,812.5	0.00	0.00	
10,200.0	90.45	271.46	5,306.9	610.8	-4,898.5	4,912.5	0.00	0.00	
10,300.0	90.45	271.46	5,306.1	613.3	-4,998.5	5,012.5	0.00	0.00	
10,393.2	90.45	271.46	5,305.4	615.7	-5,091.7	5,105.7	0.00	0.00	TD at 10393.2 - Lybrook D22-2206 01H PBHL

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Lybrook D22-2206 01H I	0.00	0.00	5,305.4	615.7	-5,091.7	1,868,625.37	1,276,635.15	36.129270	-107.481880
- plan hits target center									
- Point									
Lybrook D22-2206 01H I	0.00	0.00	5,340.5	498.8	-508.0	1,868,451.13	1,281,217.05	36.128950	-107.466360
- plan misses target center by 0.1usft at 5807.7usft MD (5340.5 TVD, 498.7 N, -508.0 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
4,330.0	4,330.0	9 5/8"	0	0
500.0	500.0	13 3/8"	0	0

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook D22-2206 01H
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
MD Reference: KB=13' @ 7200.0usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
60.0	60.0	Nacimiento Fn		-0.45	271.46
1,243.0	1,243.0	Ojo Alamo Ss.		-0.45	271.46
1,388.0	1,388.0	Kirtland Shale		-0.45	271.46
1,514.0	1,514.0	Fruitland Coal		-0.45	271.46
1,839.0	1,839.0	Pictured Cliffs Ss.		-0.45	271.46
1,931.0	1,931.0	Lewis Shale		-0.45	271.46
2,592.0	2,592.0	Cliffhouse Ss.		-0.45	271.46
3,301.0	3,301.0	Menefee Fn.		-0.45	271.46
4,102.0	4,102.0	Point Lookout Ss.		-0.45	271.46
4,277.0	4,277.0	Mancos Shale		-0.45	271.46
4,881.8	4,842.0	Mancos Silt		-0.45	271.46
5,199.0	5,096.0	Gallup Fn.		-0.45	271.46
5,852.6	5,345.0	Horizontal Target		-0.45	271.46

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,430.0	4,430.0	0.0	0.0	KOP @ 4430'
5,807.9	5,340.5	99.0	41.5	Landing Pt @ 5807' MD; 90°
5,907.9	5,340.5	498.8	-508.0	Start 2° build @ 5907' MD
5,930.4	5,340.5	501.3	-608.0	EOB, Inc=90.45°
10,393.2	5,305.4	501.9	-630.5	TD at 10393.2

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: Lybrook
Site Error: 0.0usft
Reference Well: Lybrook D22-2206 01H
Well Error: 0.0usft
Reference Wellbore: Hz
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
MD Reference: KB=13' @ 7200.0usft (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	Plan #2
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program	Date	5/1/2012
From (usft)	To (usft)	Survey (Wellbore)
0.0	10,393.2	Plan #2 (Hz)
		Tool Name
		MWD
		Description
		Geolink MWD

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Lybrook						
Lybrook D22-2206 02H - Hz - Plan #2	4,430.0	4,432.0	68.9	53.5	4.470	CC, ES
Lybrook D22-2206 02H - Hz - Plan #2	4,450.0	4,452.0	69.0	53.5	4.455	SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: Lybrook
Site Error: 0.0usft
Reference Well: Lybrook D22-2206 01H
Well Error: 0.0usft
Reference Wellbore: Hz
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
MD Reference: KB=13' @ 7200.0usft (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 Lybrook - Lybrook D22-2206 02H - Hz - Plan #2													Offset Site Error:
Survey Program: 0-MWD													0.0 ush
Reference													Offset Well Error:
Offset													0.0 usft
Measured	Vertical	Measured	Vertical	Semi Major Axis		Highside	Distance		Between		Total	Separation	Warning
Depth	Depth	Depth	Depth	Reference	Offset	Toolface	Offset Wellbore Centre	Between	Centres	Ellipses	Uncertainty	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N-S	+E-W	(usft)	(usft)	Axis		
							(usft)	(usft)					
0.0	0.0	2.0	2.0	0.0	0.0	125.51	-40.0	56.1	68.9				
100.0	100.0	102.0	102.0	0.2	0.2	125.51	-40.0	56.1	68.9	68.6	0.31	224.432	
200.0	200.0	202.0	202.0	0.3	0.3	125.51	-40.0	56.1	68.9	68.3	0.66	105.053	
300.0	300.0	302.0	302.0	0.5	0.5	125.51	-40.0	56.1	68.9	67.9	1.01	68.576	
400.0	400.0	402.0	402.0	0.7	0.7	125.51	-40.0	56.1	68.9	67.6	1.35	50.902	
500.0	500.0	502.0	502.0	0.8	0.9	125.51	-40.0	56.1	68.9	67.2	1.70	40.471	
600.0	600.0	602.0	602.0	1.0	1.0	125.51	-40.0	56.1	68.9	66.9	2.05	33.588	
700.0	700.0	702.0	702.0	1.2	1.2	125.51	-40.0	56.1	68.9	66.5	2.40	28.706	
800.0	800.0	802.0	802.0	1.4	1.4	125.51	-40.0	56.1	68.9	66.2	2.75	25.063	
900.0	900.0	902.0	902.0	1.5	1.6	125.51	-40.0	56.1	68.9	65.8	3.10	22.241	
1,000.0	1,000.0	1,002.0	1,002.0	1.7	1.7	125.51	-40.0	56.1	68.9	65.5	3.45	19.990	
1,100.0	1,100.0	1,102.0	1,102.0	1.8	1.9	125.51	-40.0	56.1	68.9	65.1	3.80	18.153	
1,200.0	1,200.0	1,202.0	1,202.0	2.1	2.1	125.51	-40.0	56.1	68.9	64.8	4.15	16.625	
1,300.0	1,300.0	1,302.0	1,302.0	2.2	2.2	125.51	-40.0	56.1	68.9	64.4	4.50	15.334	
1,400.0	1,400.0	1,402.0	1,402.0	2.4	2.4	125.51	-40.0	56.1	68.9	64.1	4.85	14.229	
1,500.0	1,500.0	1,502.0	1,502.0	2.6	2.6	125.51	-40.0	56.1	68.9	63.7	5.19	13.273	
1,600.0	1,600.0	1,602.0	1,602.0	2.8	2.8	125.51	-40.0	56.1	68.9	63.4	5.54	12.437	
1,700.0	1,700.0	1,702.0	1,702.0	2.9	2.9	125.51	-40.0	56.1	68.9	63.0	5.89	11.700	
1,800.0	1,800.0	1,802.0	1,802.0	3.1	3.1	125.51	-40.0	56.1	68.9	62.7	6.24	11.048	
1,900.0	1,900.0	1,902.0	1,902.0	3.3	3.3	125.51	-40.0	56.1	68.9	62.4	6.59	10.481	
2,000.0	2,000.0	2,002.0	2,002.0	3.5	3.5	125.51	-40.0	56.1	68.9	62.0	6.94	9.935	
2,100.0	2,100.0	2,102.0	2,102.0	3.6	3.6	125.51	-40.0	56.1	68.9	61.7	7.29	9.459	
2,200.0	2,200.0	2,202.0	2,202.0	3.8	3.8	125.51	-40.0	56.1	68.9	61.3	7.64	9.027	
2,300.0	2,300.0	2,302.0	2,302.0	4.0	4.0	125.51	-40.0	56.1	68.9	61.0	7.99	8.632	
2,400.0	2,400.0	2,402.0	2,402.0	4.2	4.2	125.51	-40.0	56.1	68.9	60.6	8.34	8.271	
2,500.0	2,500.0	2,502.0	2,502.0	4.3	4.3	125.51	-40.0	56.1	68.9	60.3	8.68	7.938	
2,600.0	2,600.0	2,602.0	2,602.0	4.5	4.5	125.51	-40.0	56.1	68.9	59.9	9.03	7.631	
2,700.0	2,700.0	2,702.0	2,702.0	4.7	4.7	125.51	-40.0	56.1	68.9	59.6	9.38	7.347	
2,800.0	2,800.0	2,802.0	2,802.0	4.9	4.9	125.51	-40.0	56.1	68.9	59.2	9.73	7.084	
2,900.0	2,900.0	2,902.0	2,902.0	5.0	5.0	125.51	-40.0	56.1	68.9	58.9	10.08	6.839	
3,000.0	3,000.0	3,002.0	3,002.0	5.2	5.2	125.51	-40.0	56.1	68.9	58.5	10.43	6.610	
3,100.0	3,100.0	3,102.0	3,102.0	5.4	5.4	125.51	-40.0	56.1	68.9	58.2	10.78	6.396	
3,200.0	3,200.0	3,202.0	3,202.0	5.6	5.6	125.51	-40.0	56.1	68.9	57.8	11.13	6.195	
3,300.0	3,300.0	3,302.0	3,302.0	5.7	5.7	125.51	-40.0	56.1	68.9	57.5	11.49	6.007	
3,400.0	3,400.0	3,402.0	3,402.0	5.9	5.9	125.51	-40.0	56.1	68.9	57.1	11.83	5.829	
3,500.0	3,500.0	3,502.0	3,502.0	6.1	6.1	125.51	-40.0	56.1	68.9	56.8	12.18	5.662	
3,600.0	3,600.0	3,602.0	3,602.0	6.3	6.3	125.51	-40.0	56.1	68.9	56.4	12.52	5.504	
3,700.0	3,700.0	3,702.0	3,702.0	6.4	6.4	125.51	-40.0	56.1	68.9	56.1	12.87	5.355	
3,800.0	3,800.0	3,802.0	3,802.0	6.6	6.6	125.51	-40.0	56.1	68.9	55.7	13.22	5.214	
3,900.0	3,900.0	3,902.0	3,902.0	6.8	6.8	125.51	-40.0	56.1	68.9	55.4	13.57	5.080	
4,000.0	4,000.0	4,002.0	4,002.0	7.0	7.0	125.51	-40.0	56.1	68.9	55.0	13.92	4.952	
4,100.0	4,100.0	4,102.0	4,102.0	7.1	7.1	125.51	-40.0	56.1	68.9	54.7	14.27	4.831	
4,200.0	4,200.0	4,202.0	4,202.0	7.3	7.3	125.51	-40.0	56.1	68.9	54.3	14.62	4.716	
4,300.0	4,300.0	4,302.0	4,302.0	7.5	7.5	125.51	-40.0	56.1	68.9	54.0	14.97	4.606	
4,400.0	4,400.0	4,402.0	4,402.0	7.7	7.7	125.51	-40.0	56.1	68.9	53.6	15.32	4.501	
4,430.0	4,430.0	4,432.0	4,432.0	7.7	7.7	125.51	-40.0	56.1	68.9	53.5	15.42	4.470 CC, ES	
4,450.0	4,450.0	4,452.0	4,452.0	7.7	7.7	103.04	-40.0	56.1	69.0	53.5	15.49	4.455 SF	
4,500.0	4,499.6	4,501.8	4,501.8	7.8	7.8	108.07	-40.0	56.1	70.0	54.3	15.66	4.470	
4,550.0	4,549.1	4,550.0	4,550.0	7.9	7.9	112.01	-40.4	56.1	73.0	57.2	15.81	4.617	
4,600.0	4,597.5	4,592.4	4,592.3	8.0	8.0	119.88	-43.4	56.1	81.5	63.6	15.90	5.123	
4,650.0	4,644.6	4,631.5	4,631.0	8.1	8.1	127.69	-49.0	56.1	97.5	81.6	15.90	6.128	
4,700.0	4,690.1	4,666.0	4,664.7	8.3	8.1	133.60	-56.0	56.1	121.2	105.4	15.82	7.663	

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: Lybrook
 Site Error: 0.0usft
 Reference Well: Lybrook D22-2206 01H
 Well Error: 0.0usft
 Reference Wellbore: Hz
 Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook D22-2206 01H
 TVD Reference: KB=13' @ 7200.0usft (Original Well Elev)
 MD Reference: KB=13' @ 7200.0usft (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 Lybrook - Lybrook D22-2206 02H - Hz - Plan #2													Offset Site Error: 0 0 usft	
Survey Program: 0-MWD													Offset Well Error: 0 0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
4,750.0	4,733.6	4,700.0	4,697.5	8.5	8.2	138.23	-65.0	56.1	151.9	136.3	15.67	9.696		
4,786.3	4,763.8	4,713.4	4,710.3	8.6	8.2	138.59	-69.0	56.1	177.6	162.0	15.59	11.387		
4,800.0	4,774.9	4,719.6	4,716.2	8.7	8.2	143.09	-71.0	56.1	187.9	172.4	15.50	12.119		
4,850.0	4,816.0	4,741.1	4,736.4	8.9	8.3	159.25	-78.4	56.1	227.2	212.0	15.23	14.918		
4,900.0	4,857.5	4,760.8	4,754.6	9.1	8.3	174.95	-85.7	56.1	268.4	253.3	15.13	17.742		
4,950.0	4,899.0	4,778.5	4,770.9	9.4	8.4	-169.87	-92.9	56.2	310.6	295.4	15.23	20.395		
5,000.0	4,940.3	4,800.0	4,790.2	9.6	8.5	-155.81	-102.3	56.2	353.6	338.1	15.54	22.751		
5,050.0	4,981.0	4,800.0	4,790.2	9.9	8.5	-140.71	-102.3	56.2	396.9	380.8	16.08	24.689		
5,100.0	5,020.8	4,821.7	4,809.4	10.2	8.5	-129.23	-112.5	56.2	440.1	423.4	16.67	26.407		
5,150.0	5,059.4	4,833.2	4,819.3	10.5	8.6	-117.88	-118.1	56.2	483.4	466.0	17.34	27.871		
5,200.0	5,098.5	4,850.0	4,833.7	10.8	8.6	-108.72	-126.8	56.2	526.4	508.5	17.97	29.292		
5,250.0	5,131.9	4,850.0	4,833.7	11.2	8.6	-98.43	-126.8	56.2	569.0	550.4	18.63	30.537		
5,300.0	5,165.2	4,850.0	4,833.7	11.6	8.6	-89.44	-126.8	56.2	611.2	592.1	19.17	31.888		
5,350.0	5,196.3	4,866.8	4,847.9	12.0	8.7	-84.06	-135.9	56.2	652.5	632.9	19.59	33.300		
5,400.0	5,224.8	4,872.7	4,852.8	12.5	8.7	-78.14	-139.2	56.2	693.2	673.2	19.94	34.762		
5,450.0	5,250.5	4,877.7	4,856.9	13.0	8.7	-73.04	-142.0	56.2	732.9	712.7	20.20	36.279		
5,500.0	5,273.3	4,881.9	4,860.4	13.6	8.7	-68.65	-144.4	56.2	771.7	751.3	20.39	37.840		
5,550.0	5,293.0	4,885.4	4,863.2	14.2	8.8	-64.90	-146.4	56.2	809.3	788.8	20.53	39.428		
5,600.0	5,309.5	4,900.0	4,875.0	14.9	8.8	-62.85	-155.1	56.2	845.9	825.1	20.75	40.757		
5,650.0	5,322.5	4,900.0	4,875.0	15.7	8.8	-59.90	-155.1	56.2	880.9	860.1	20.80	42.347		
5,700.0	5,332.1	4,900.0	4,875.0	16.4	8.8	-57.49	-155.1	56.2	914.6	893.8	20.83	43.904		
5,750.0	5,338.1	4,900.0	4,875.0	17.3	8.8	-55.54	-155.1	56.2	946.8	925.9	20.85	45.399		
5,800.0	5,340.5	4,900.0	4,875.0	18.1	8.8	-54.02	-155.1	56.2	977.4	956.5	20.88	46.812		
5,807.9	5,340.5	4,900.0	4,875.0	18.2	8.8	-53.82	-155.1	56.2	982.1	961.2	20.88	47.024		

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

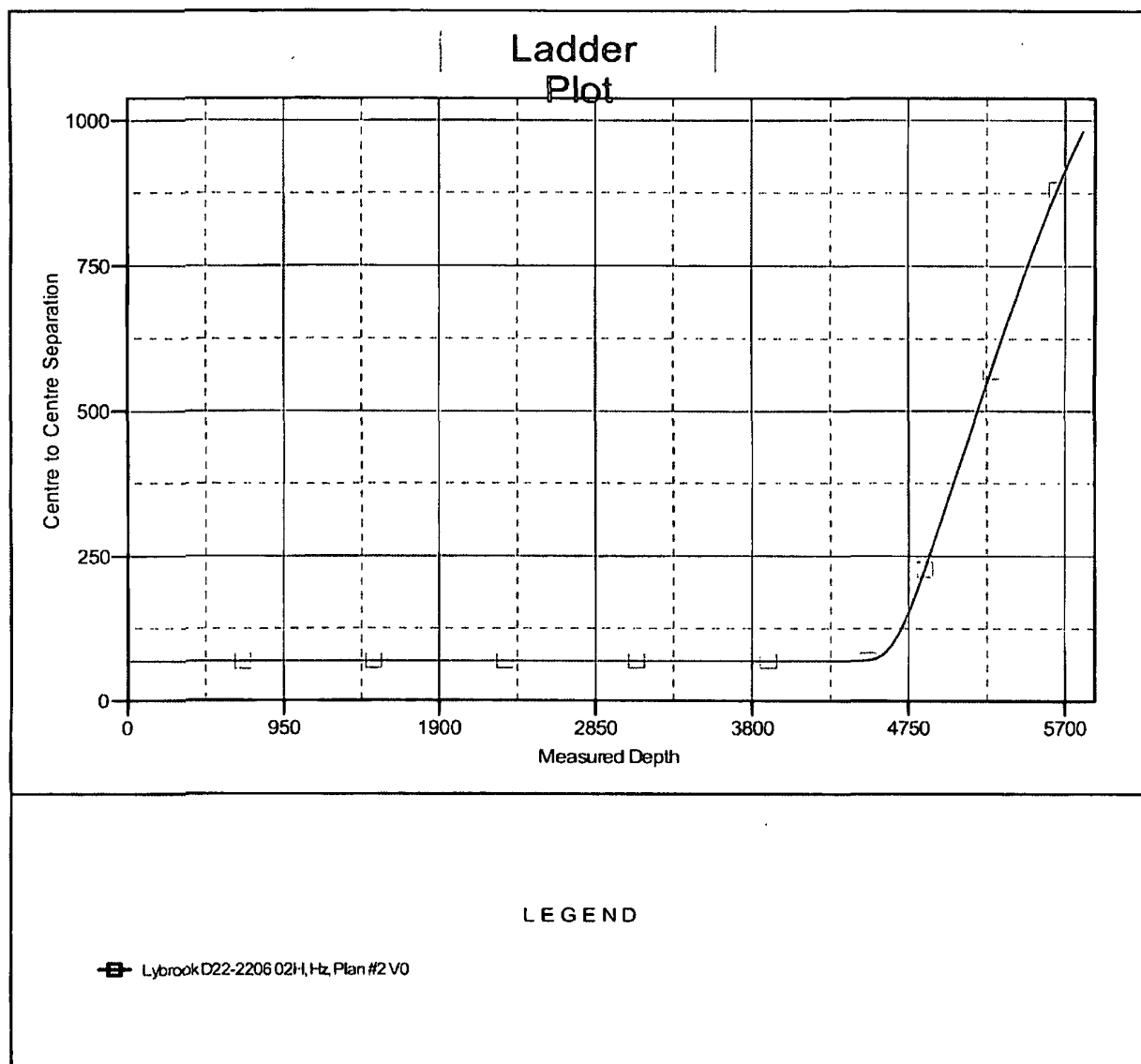
Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: Lybrook
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Local Co-ordinate Reference: Well Lybrook D22-2206 01H
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MD Reference: KB=13' @ 7200.0usft (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 KB=13' @ 7200.0usft (Original Well E)
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook D22-2206 01H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.72°



WELLHEAD BLOWOUT CONTROL SYSTEM



Well name and number:

Lybrook D22-2206 01H

