

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-101
Revised December 16, 2011



APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address Lime Rock Resources II-A, L.P., 1111 Bagby Street, Ste 4600, Houston, Texas 77002		OGRID Number 277558
Property Code 308968		API Number 30-015-90183
Property Name Logan 2 C State		Well No #4

7 Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
C	2	18S	27E	3	990	N	1500	West	EDDY

8 Pool Information

Red Lake, Gloneta-Yeso Northeast	96836
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Additional Well Information

Work Type N	Well Type Oil	Cable/Rotary Rotary	Lease Type State	Ground Level Elevation 3586.7
Multiple No	Proposed Depth 4.770'	Formation Yes	Contractor United Drilling Inc	Spud Date 10-10-2012
Depth to Ground water 40'		Distance from nearest fresh water well 1.89 Miles		Distance to nearest surface water 3.73 Miles

19 Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Conductor	20"	14"	68.7	40	Ready Mix	Surface
Surface	12 1/4"	8 5/8"	24	350	280 sx	Surface
Production	7 7/8"	5 1/2"	17	4770	900 sx	Surface

Casing/Cement Program: Additional Comments

See Attached Well Plan Documentation

Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
XLT 11"	5000 PSI	2000 PSI	National Varco

I hereby certify that the information given above is true and complete to the best of my knowledge and belief
I further certify that the drilling pit will be constructed according to NMOCD guidelines , a general permit , or an (attached) alternative OCD-approved plan .

Signature *Mike Barrett*
Printed name Michael Barrett
Title Production Supervisor
E-mail Address Mbarrett@limerockresources.com
Date 10-5-2012 Phone 575-623-8424

OIL CONSERVATION DIVISION	
Approved By <i>T. C. Shepard</i>	
Title <i>Geologist</i>	
Approved Date <i>10/10/2012</i>	Expiration Date <i>10/10/2014</i>
Conditions of Approval Attached	

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

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-40783		² Pool Code 96836	³ Pool Name Red Lake; Glorieta-Yeso, Northeast
⁴ Property Code 308968	⁵ Property Name LOGAN "2" C STATE		⁶ Well Number 4
⁷ OGRID No. 277558	⁸ Operator Name LIME ROCK RESOURCES II A, LP		⁹ Elevation 3586.7

¹⁰ Surface Location

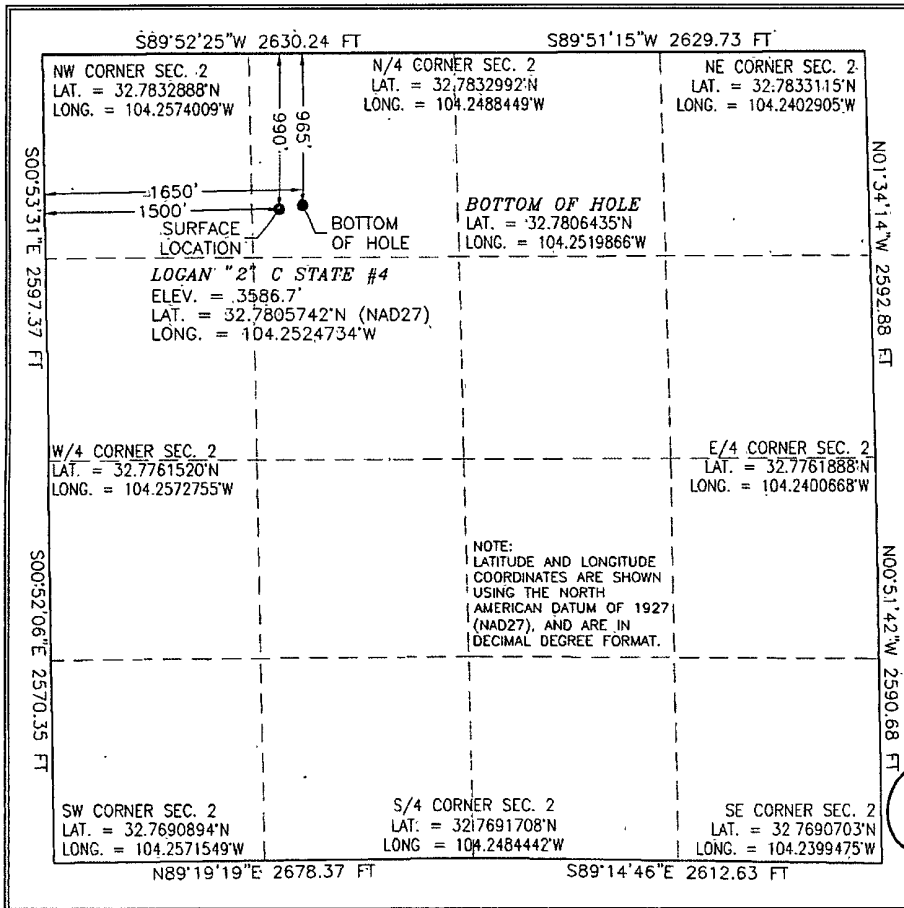
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	2	18 S	27 E		990	NORTH	1500	WEST	EDDY

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
C	2	18 S	27 E		965	NORTH	1650	WEST	EDDY

¹² Dedicated Acres 40.6	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.



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.

Mike Barrett 10-5-2012
Signature Date

Michael Barrett
Printed Name

mbarrett@limerockresources.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.

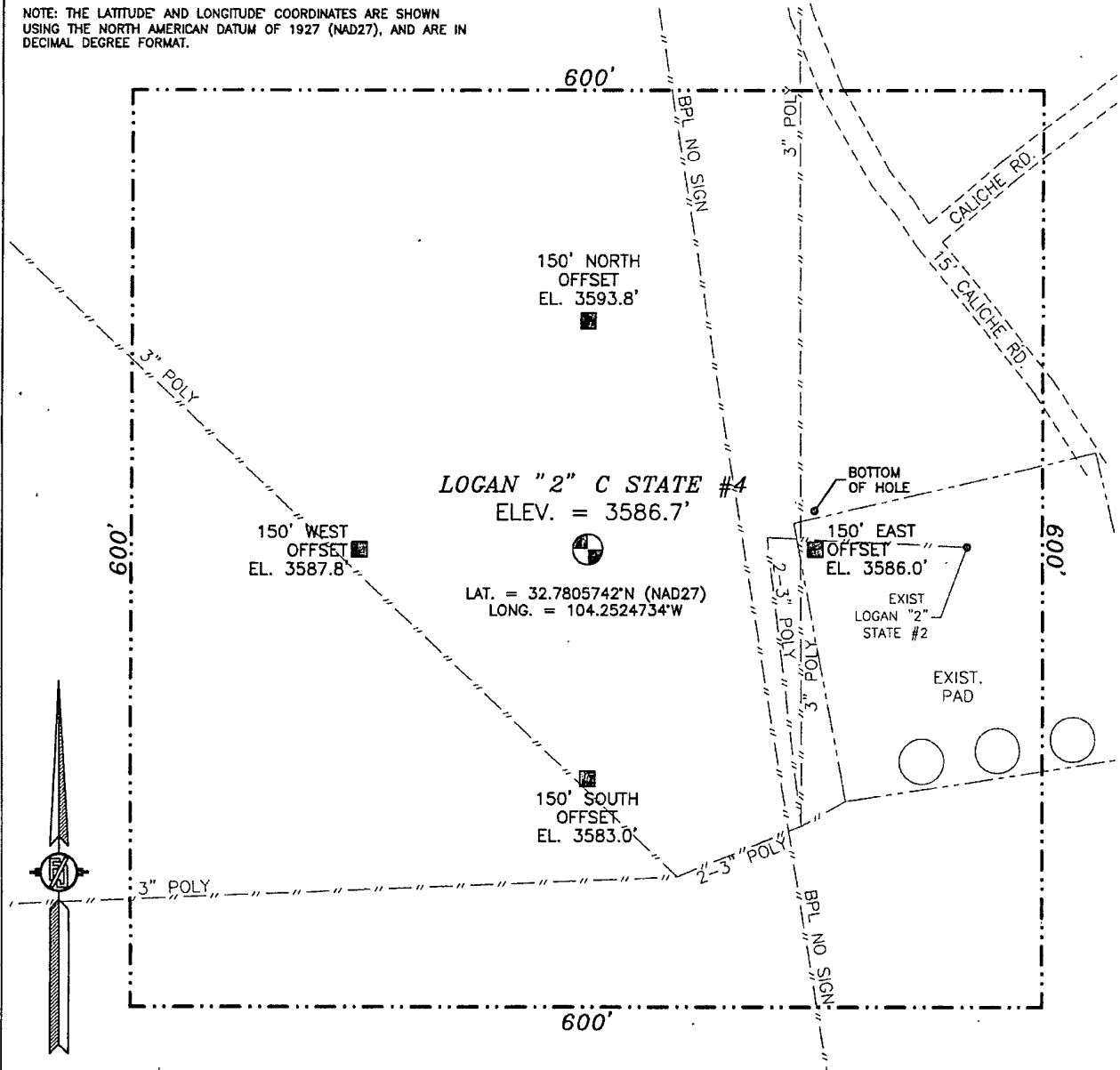
AUGUST 4, 2012
Date of Survey

[Signature]
Signature and Seal of Professional Surveyor

Certificate Number: JARAMILLO, PLS 12797
SURVEY NO. 1081

SECTION 2, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

NOTE: THE LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT.



010 50 100 200
 SCALE 1" = 100'

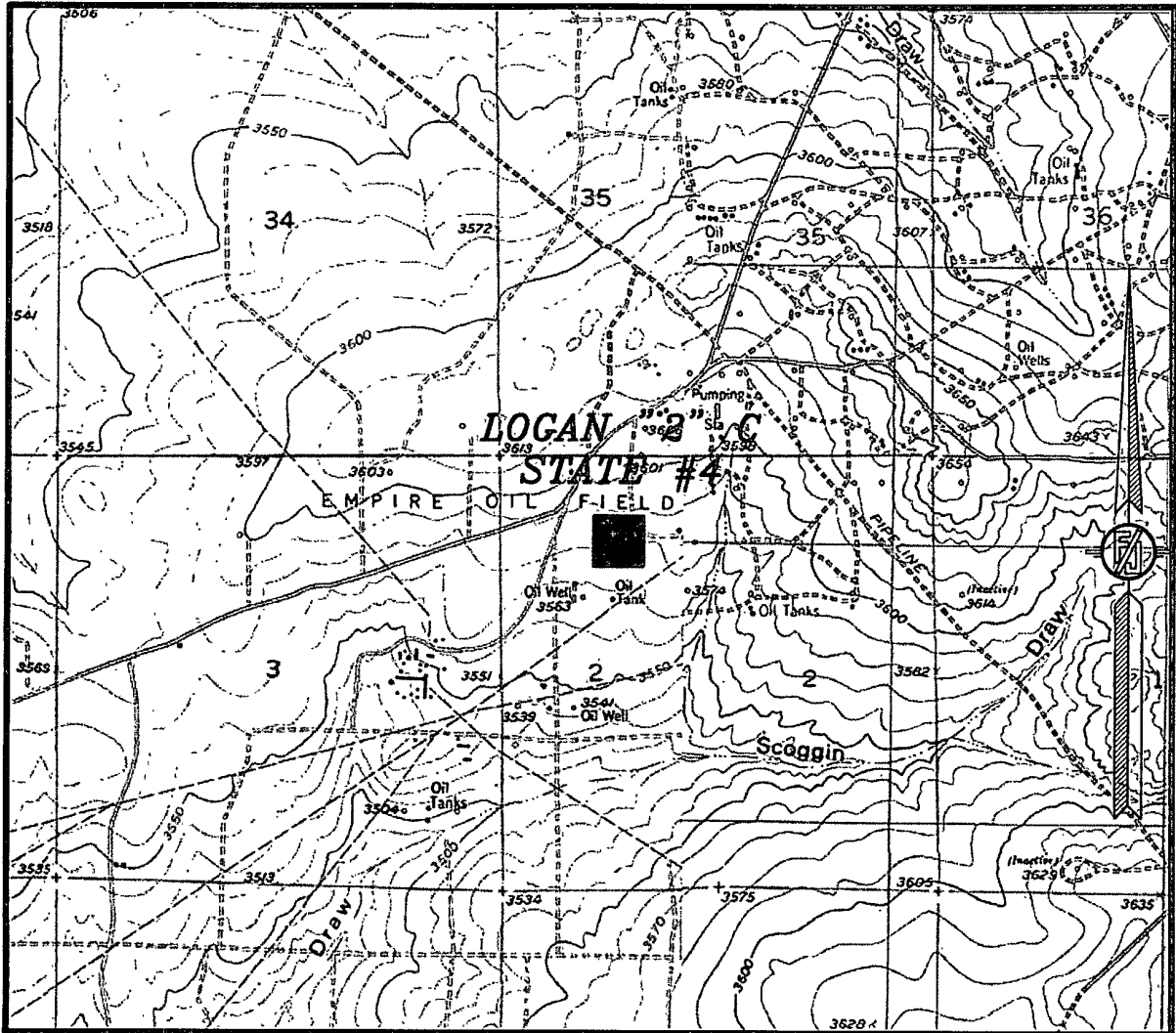
DIRECTIONS TO LOCATION
 FROM PAVED CR. #225 (EMPIRE) AND PAVED CR. 227 (LITTLE DIAMOND) GO NORTHEAST ON CR. 225 0.25 MILES, TURN RIGHT ON CALICHE ROAD AND GO SOUTH 0.25 MILES TO EXIST PAD FOR LOGAN "2" STATE #2 WELL AND FROM THIS WELL LOCATION IS 250' WEST.

LIME ROCK RESOURCES II-A, L.P.
 LOGAN "2" C STATE #4
 LOCATED 990 FT. FROM THE NORTH LINE
 AND 1500 FT. FROM THE WEST LINE OF
 SECTION 2, TOWNSHIP 18 SOUTH,
 RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 4, 2012

SURVEY NO. 1081
 MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

SECTION 2, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 RED LAKE
 SPRING LAKE

NOT TO SCALE

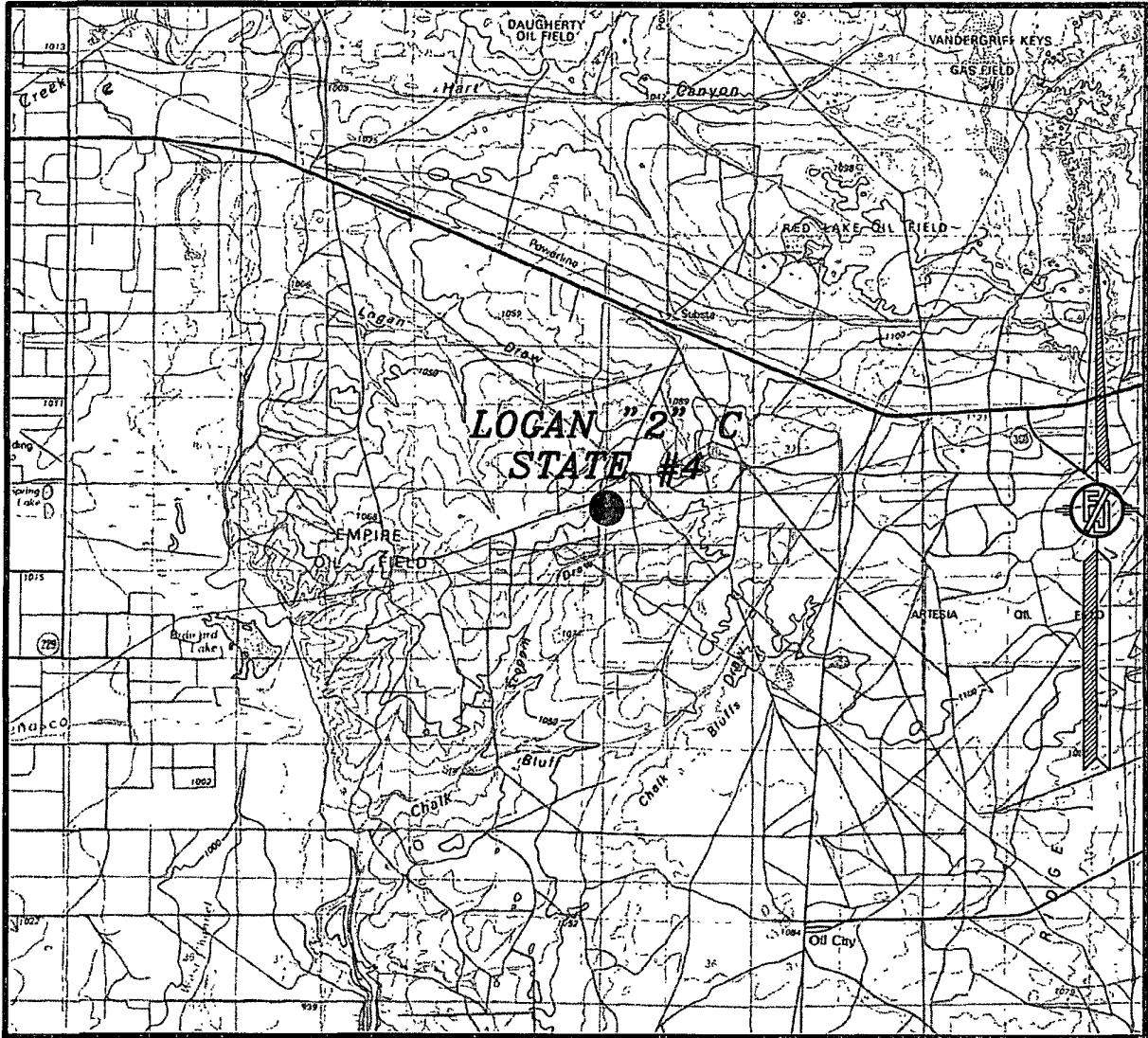
LIME ROCK RESOURCES II-A, L.P.
 LOGAN "2" C STATE #4
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 RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 4, 2012

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MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

SECTION 2, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



NOT TO SCALE

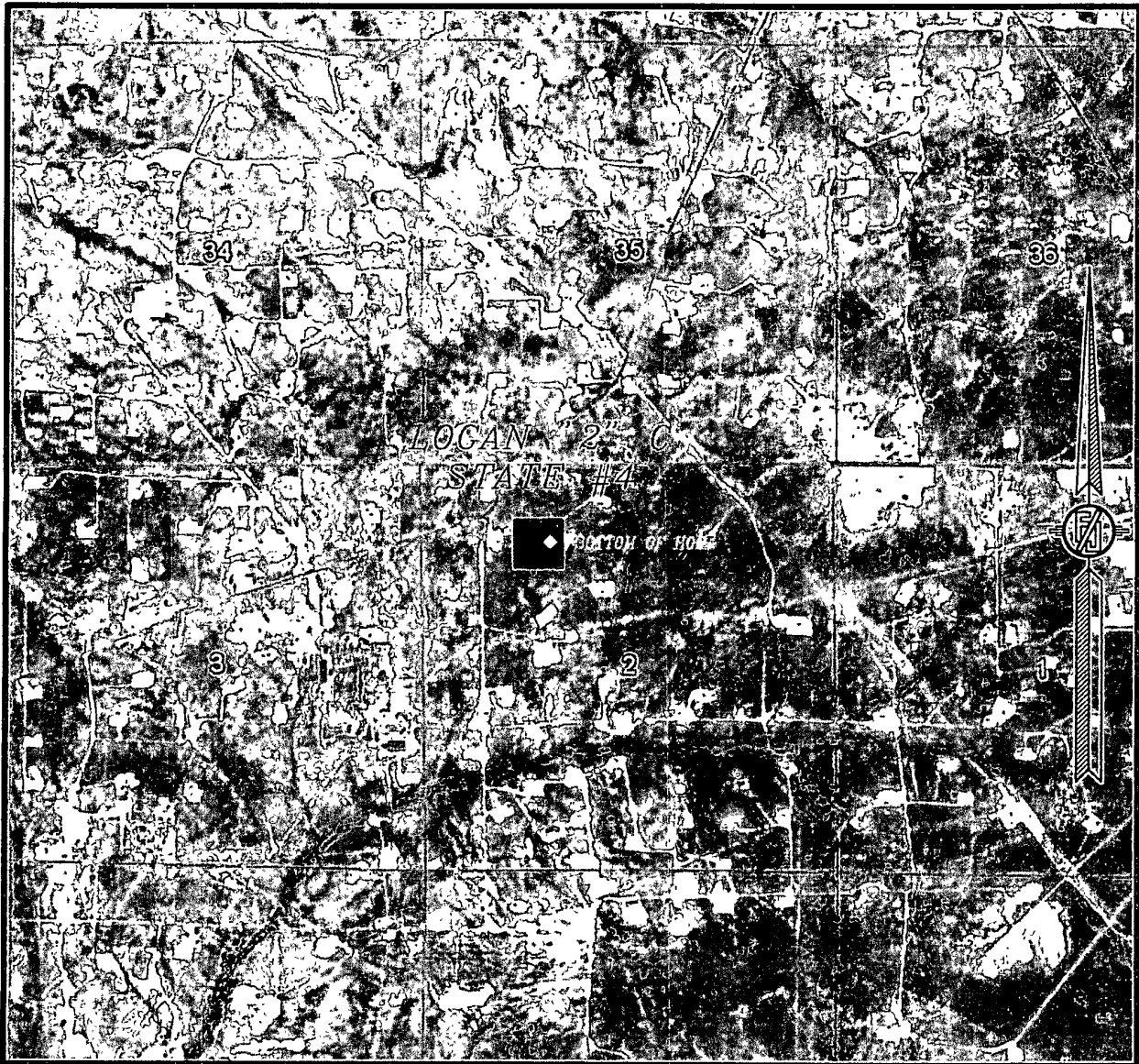
LIME ROCK RESOURCES II-A, L.P.
LOGAN "2" C STATE #4
LOCATED 990 FT. FROM THE NORTH LINE
AND 1500 FT. FROM THE WEST LINE OF
SECTION 2, TOWNSHIP 18 SOUTH,
RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 4, 2012

SURVEY NO. 1081

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 2, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
JUNE 2011

LIME ROCK RESOURCES II-A, L.P.
LOGAN "2" C STATE #4

LOCATED 990 FT. FROM THE NORTH LINE
AND 1500 FT. FROM THE WEST LINE OF
SECTION 2, TOWNSHIP 18 SOUTH,
RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 4, 2012

SURVEY NO. 1081

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

Lime Rock Resources II-A, L.P.
Drilling Plan

Logan 2 C State #4

Surface Location: 990' FNL and 1500' FWL

Bottom Hole Location: 985' FNL and 1650' FWL

C-S2-T18S-R27E

Eddy County, NM

1. The elevation of the unprepared ground is 3586.7' feet above sea level.
2. The geologic name of the surface formation is Quaternary – Alluvium
3. A rotary rig will be utilized to drill the well directionally to 4770' MD and run casing. This equipment will be rigged down and the well will be completed with a workover rig.
4. Proposed total depth is 4770'.
5. Estimated tops of geologic markers:

<u>POI or Formation</u>	<u>MD</u>	<u>TVD</u>	<u>Formation Content</u>
Quaternary – Alluvium	Surface	Surface	NA
Usable Water	40'	40'	Water
Surface Casing Point	350'	350'	Barren
Seven Rivers	374'	374'	Oil/Gas
Kick Off Point	500'	500'	NA
Queen	930'	926'	Oil/Gas
Grayburg	1383'	1366'	Oil/Gas
San Andres	1682'	1664'	Oil/Gas
Glorieta	3080'	3062'	Oil/Gas
Yeso	3216'	3198'	Oil/Gas
Tubb	4618'	4600'	Saltwater
Total Depth	4770'	4751'	Casing Point

6. Proposed Casing and Cement program is as follows:

Type	Hole Size	Casing Size	Weight	Grade	Thread	Depth	Sacks	Density	Yield	Components
Conductor	20	14	68.7	B	Weld	40				Ready Mix to surface
Surface	12 1/4	8 5/8	24	J-55	ST&C	350	280	14.8	1.35	Cl C Cmt + 0.25 lbs/sk Cello Flake + 2% CaCl ₂
Production	7 7/8	5 1/2	17	J-55	ST&C	4770	275	12.8	1.90	(35-65) Poz/Cl C Cmt + 5% NaCl + 0.25 lbs/sk Cello Flake + 5 lbs/sk LCM-1 + 0.4% R-3 + 6% Gel
							625	14.8	1.33	Class C w/ 0.40% R-3 and 1/4 pps cello flake

7. Pressure Control Equipment

The blowout preventer equipment (BOP) will consist of a 2000 psi double ram type preventer, hydraulically operated with blind rams on top and drill pipe rams on bottom. The 5000 psi rate, 11", XLT BOP will be installed on the 8 5/8" surface casing and utilized continuously until the depth is reached, and the BOP will be tested to 250 psi low pressure and 2000 psi high pressure. All casing strings will be tested as per state regulations before cement drill out.

Pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily drilling logs.

The BOP equipment will consist of the following:

- Double ram with blind rams and pipe rams.
- Drilling spool, or blowout preventer with 2 side outlets (choke side shall be a 2 inch minimum diameter, kill side will be at least 2 inch diameter)
- Kill line (2 inch minimum)
- A minimum of 2 choke line valves (2 inch minimum)
- 2 inch diameter choke line
- 2 kill valves, one of which will be a check valve (2 inch minimum)
- 2 chokes
- pressure gauge on choke manifold
- Upper Kelly cock valve with handle available
- Safety valve and subs to fit all drill string connections in use
- All BOPE connections subjected to well pressure will be flanged, welded, or clamped.
- Fill-up line above the uppermost preventer.

8. Proposed Mud Program is as follows

Depth	0-350	350-4500	3350-3650
Mud Type	Fresh Water	Brine	Brine w/ Gel & Starch
Properties			
MW	8.5-9.2	9.8-10.0	9.9-10.2
pH	10	10-11.5	10-11.5
WL	NC	NC	20-30
Vis	28-34	28-32	34-36
MC	NC	NC	1
Solids	NC	<1%	<3%

9. Testing, Logging and Coring Program

Testing Program: No drill stem tests are anticipated.

Electric Logging Program: A Dual laterlog, spectral gamma-ray, neutron-density porosity log will be run from total depth to 1762' TVD.

Coring Program: None

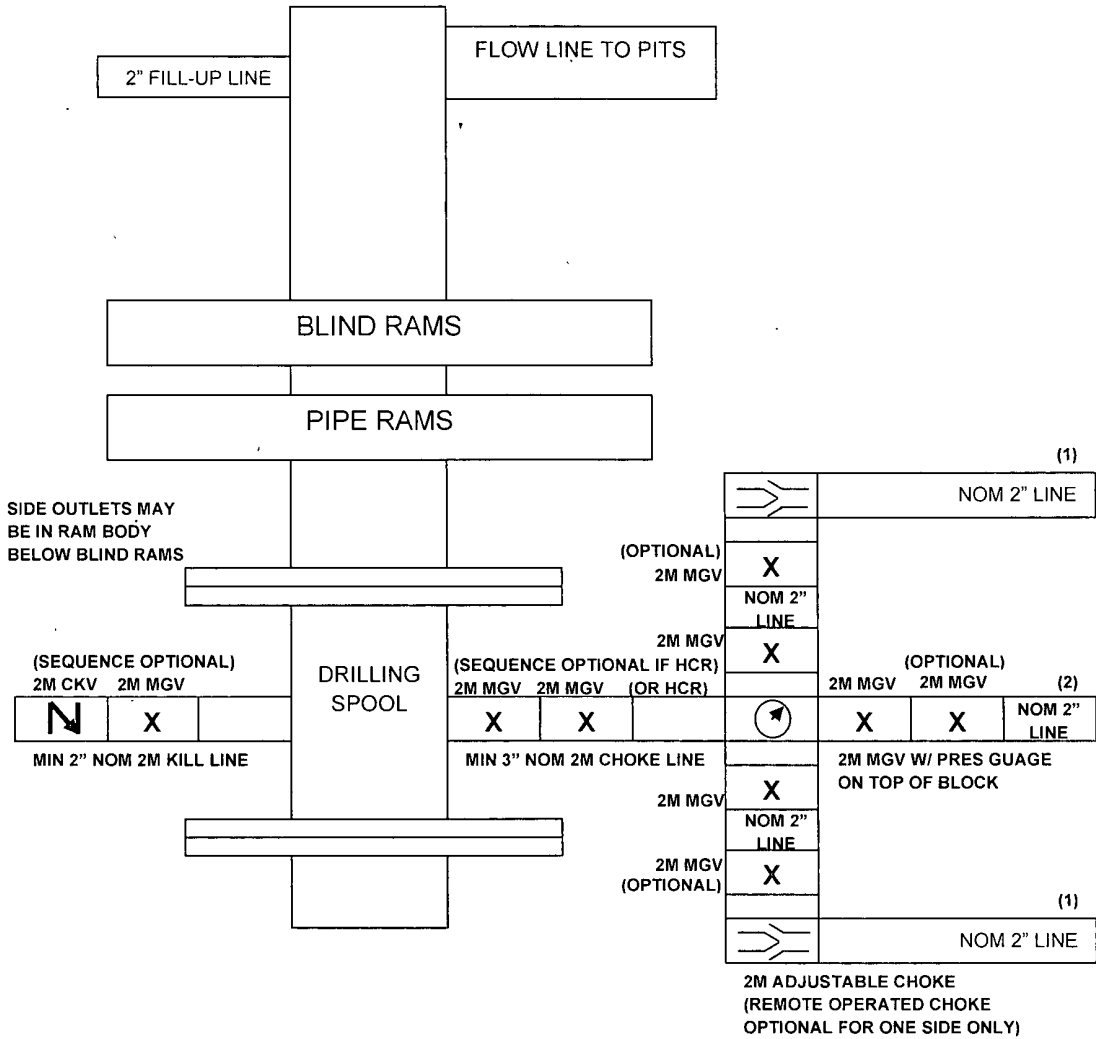
10. Potential Hazards:

No abnormal temperatures or pressures are expected. There is no known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of BLM Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 2099 psi based on 0.44 x TD. The estimated BHT is 135 degrees F.

11. Duration of Operations:

Anticipated spud date will be soon after approval and as soon as a rig will be available. Move in operations and drilling is expected to take 7 days. An additional 20 days will be needed to complete the well and to construct surface facilities.

2M BOP SCHEMATIC



- (1) Line to mud gas separator and/or pit
- (2) Bleed line to pit

MGV = Manual Gate Valve
 CKV = Check Valve
 HCR = Hydraulically Controlled Remote Valve

LIME ROCK RESOURCES

EDDY COUNTY, NM (NAD 27)

SEC. 2 T18S RGE. 27E

LOGAN "2" C STATE 4

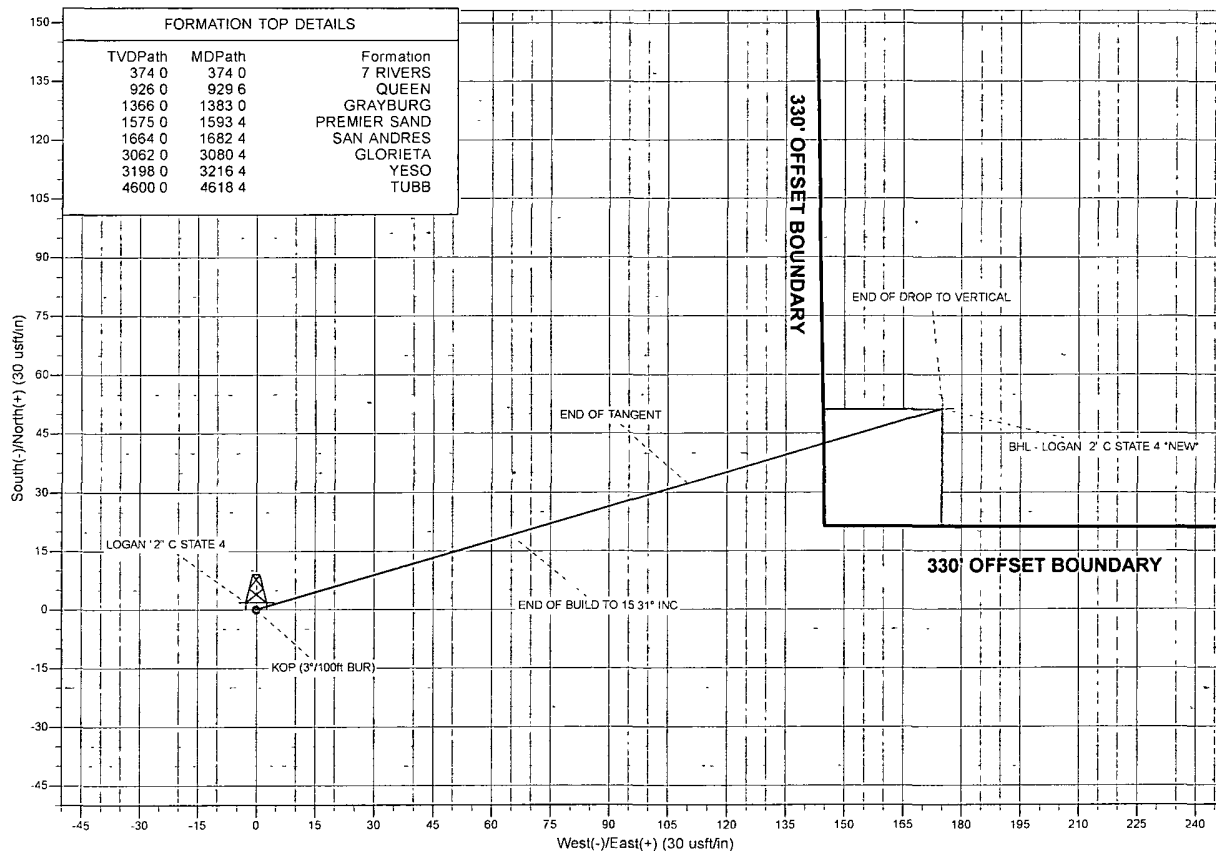
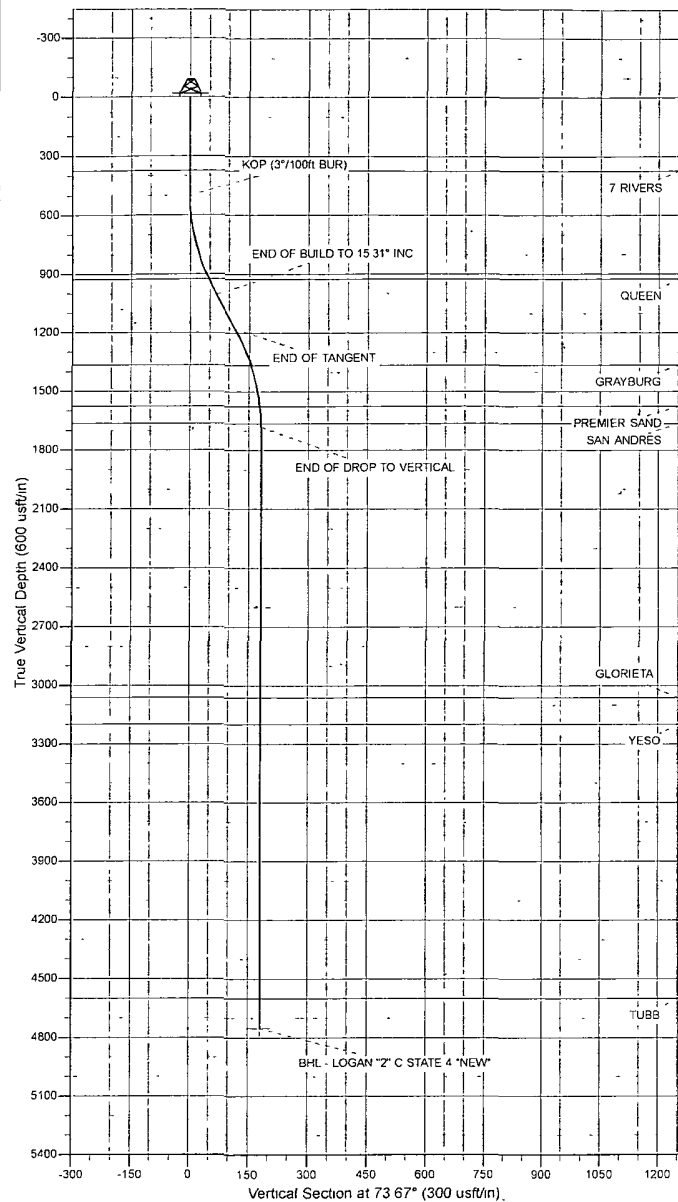
ORIGINAL WELLBORE

03 October, 2012

Plan: PROPOSAL #1



Project: EDDY COUNTY, NM (NAD 27)
 Site: SEC. 2 T18S RGE. 27E
 Well: LOGAN "2" C STATE 4
 Wellbore: ORIGINAL WELLBORE
 Design: PROPOSAL #1



Azimuths to True North
 Magnetic North 7 78°
 Magnetic Field
 Strength 48743 9snT
 Dip Angle 60 55°
 Date 03/10/2012
 Model IGRF2010

ANNOTATIONS							
TVD	MD	Inc	Azi	+N/-S	+E/-W	V Sect	Annotation
500 0	500 0	0 00	0 00	0 0	0 0	0 0	KOP (3"/100ft BUR)
1004 2	1010 3	15 31	73 67	19 1	65 0	67 8	END OF BUILD TO 15 31" INC
1175 7	1188 1	15 31	73 67	32 3	110 1	114 7	END OF TANGENT
1680 0	1698 4	0 00	73 67	51 3	175 1	182 5	END OF DROP TO VERTICAL
4750 0	4768 4	0 00	0 00	51 3	175 1	182 5	BHL - LOGAN "2" C STATE 4

Database:	EDM_5000_1_7	Local Co-ordinate Reference:	Well LOGAN "2" C STATE 4
Company:	LIME ROCK RESOURCES	TVD Reference:	KB-EST @ 3602.7usft (Original Well Elev)
Project:	EDDY COUNTY, NM (NAD 27)	MD Reference:	KB-EST @ 3602.7usft (Original Well Elev)
Site:	SEC. 2 T18S RGE. 27E	North Reference:	True
Well:	LOGAN "2" C STATE 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	EDDY COUNTY, NM (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		Using geodetic scale factor

Site	SEC. 2 T18S RGE. 27E				
Site Position:		Northing:	647,693.35 usft	Latitude:	32° 46' 50.067 N
From:	Lat/Long	Easting:	524,851.48 usft	Longitude:	104° 15' 8.904 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.04 °

Well	LOGAN "2" C STATE 4					
Well Position	+N/-S	0.0 usft	Northing:	647,693.35 usft	Latitude:	32° 46' 50.067 N
	+E/-W	0.0 usft	Easting:	524,851.48 usft	Longitude:	104° 15' 8.904 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,586.7 usft

Wellbore	ORIGINAL WELLBORE				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/10/2012	7.78	60.55	48,744

Design	PROPOSAL #1				
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Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	4,750.0	0.0	0.0	73.67

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (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	-3,602.7	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	-3,102.7	0.0	0.0	0.00	0.00	0.00	0.00	
1,010.3	15.31	73.67	1,004.2	-2,598.5	19.1	65.0	3.00	3.00	0.00	73.67	
1,188.1	15.31	73.67	1,175.8	-2,426.9	32.3	110.1	0.00	0.00	0.00	0.00	
1,698.4	0.00	0.00	1,680.0	-1,922.7	51.3	175.1	3.00	-3.00	0.00	180.00	
4,768.4	0.00	0.00	4,750.0	1,147.3	51.3	175.1	0.00	0.00	0.00	0.00	BHL - LOGAN "2" C

Database:	EDM_5000_1_7	Local Co-ordinate Reference:	Well LOGAN "2" C STATE 4
Company:	LIME ROCK RESOURCES	TVD Reference:	KB-EST @ 3602 7usft (Original Well Elev)
Project:	EDDY COUNTY, NM (NAD 27)	MD Reference:	KB-EST @ 3602 7usft (Original Well Elev)
Site:	SEC 2 T18S RGE 27E	North Reference:	True
Well:	LOGAN "2" C STATE 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey											
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0 0	0 00	0 00	0 0	3,602.70	0 0	0 0	0 0	0 00	0 00	0 00	
100 0	0 00	0 00	100 0	3,502 70	0 0	0 0	0 0	0 00	0 00	0 00	
200 0	0 00	0 00	200 0	3,402 70	0 0	0 0	0 0	0 00	0 00	0 00	
300 0	0 00	0 00	300 0	3,302 70	0 0	0 0	0 0	0 00	0 00	0 00	
7 RIVERS											
374.0	0.00	0.00	374.0	3,228.70	0.0	0.0	0.0	0.00	0.00	0.00	
400 0	0 00	0 00	400 0	3,202 70	0 0	0 0	0 0	0 00	0 00	0 00	
KOP (3°/100ft.BUR)											
500 0	0 00	0 00	500 0	3,102.70	0 0	0 0	0 0	0 00	0 00	0 00	
600 0	3 00	73 67	600 0	3,002.75	0 7	2 5	2 6	3 00	3 00	0 00	
700 0	6 00	73.67	699 6	2,903 07	2 9	10 0	10 5	3 00	3 00	0 00	
800 0	9 00	73.67	798 8	2,803.93	6 6	22 6	23 5	3 00	3 00	0 00	
900 0	12 00	73.67	897 1	2,705.62	11 7	40 1	41 7	3 00	3 00	0 00	
QUEEN											
929.6	12.89	73.67	926.0	2,676.70	13.5	46.2	48.1	3.00	3.00	0.00	
1,000 0	15 00	73.67	994 3	2,608 39	18 3	62 5	65 1	3 00	3 00	0 00	
END OF BUILD TO 15.31° INC											
1,010.3	15.31	73.67	1,004.2	2,598.45	19.1	65.0	67.8	2.99	2.99	0.00	
1,100 0	15 31	73.67	1,090 8	2,511 93	25 7	87 8	91 5	0 00	0 00	0 00	
END OF TANGENT											
1,188.1	15.31	73.67	1,175.7	2,426.96	32.3	110.1	114.7	0.00	0.00	0.00	
1,200 0	14 95	73.67	1,187 2	2,415 47	33 1	113 1	117 8	2 99	-2 99	0 00	
1,300 0	11 95	73.67	1,284 5	2,318 23	39 7	135 4	141 1	3 00	-3 00	0 00	
GRAYBURG											
1,383.0	9.46	73.67	1,366.0	2,236.70	44.0	150.2	156.5	3.00	-3.00	0.00	
1,400 0	8 95	73 67	1,382 8	2,219.90	44 8	152 8	159 2	3 00	-3 00	0 00	
1,500 0	5 95	73.67	1,481 9	2,120 75	48 4	165 2	172 2	3 00	-3 00	0 00	
PREMIER SAND											
1,593.4	3.15	73.67	1,575.0	2,027.70	50.5	172.3	179.6	3.00	-3.00	0.00	
1,600 0	2 95	73 67	1,581 6	2,021 07	50 6	172 7	179 9	3 00	-3 00	0 00	
SAN ANDRES											
1,682.4	0.48	73.67	1,664.0	1,938.70	51.3	175.1	182.4	3.00	-3.00	0.00	
END OF DROP TO VERTICAL											
1,698.4	0.00	73.67	1,680.0	1,922.71	51.3	175.1	182.5	3.00	-3.00	0.00	
1,700 0	0 00	0 00	1,681 6	1,921 11	51 3	175 1	182 5	0 02	-0 02	0 00	
1,800 0	0 00	0 00	1,781 6	1,821 11	51 3	175 1	182 5	0 00	0 00	0 00	
1,900 0	0 00	0 00	1,881 6	1,721 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,000 0	0 00	0 00	1,981 6	1,621 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,100 0	0 00	0 00	2,081 6	1,521 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,200 0	0 00	0 00	2,181 6	1,421 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,300 0	0 00	0 00	2,281 6	1,321 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,400 0	0 00	0 00	2,381 6	1,221 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,500 0	0 00	0 00	2,481 6	1,121 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,600 0	0 00	0 00	2,581 6	1,021 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,700 0	0 00	0 00	2,681 6	921 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,800 0	0 00	0 00	2,781 6	821 11	51 3	175 1	182 5	0 00	0 00	0 00	
2,900 0	0 00	0 00	2,881 6	721 11	51 3	175 1	182 5	0 00	0 00	0 00	
3,000 0	0 00	0 00	2,981 6	621 11	51 3	175 1	182 5	0 00	0 00	0 00	
GLORIETA											
3,080.4	0.00	0.00	3,062.0	540.70	51.3	175.1	182.5	0.00	0.00	0.00	
3,100 0	0 00	0 00	3,081 6	521 11	51 3	175 1	182 5	0 00	0 00	0 00	
3,200 0	0 00	0 00	3,181 6	421 11	51 3	175 1	182 5	0 00	0 00	0 00	
YESO											

Database:	EDM_5000_1_7	Local Co-ordinate Reference:	Well LOGAN "2" C STATE 4
Company:	LIME ROCK RESOURCES	TVD Reference:	KB-EST @ 3602 7usft (Original Well Elev)
Project:	EDDY COUNTY, NM (NAD 27)	MD Reference:	KB-EST @ 3602 7usft (Original Well Elev)
Site:	SEC 2 T18S RGE. 27E	North Reference:	True
Well:	LOGAN "2" C STATE 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,216.4	0.00	0.00	3,198.0	404.70	51.3	175.1	182.5	0.00	0.00	0.00
3,300.0	0.00	0.00	3,281.6	321.11	51.3	175.1	182.5	0.00	0.00	0.00
3,400.0	0.00	0.00	3,381.6	221.11	51.3	175.1	182.5	0.00	0.00	0.00
3,500.0	0.00	0.00	3,481.6	121.11	51.3	175.1	182.5	0.00	0.00	0.00
3,600.0	0.00	0.00	3,581.6	21.11	51.3	175.1	182.5	0.00	0.00	0.00
3,700.0	0.00	0.00	3,681.6	-78.89	51.3	175.1	182.5	0.00	0.00	0.00
3,800.0	0.00	0.00	3,781.6	-178.89	51.3	175.1	182.5	0.00	0.00	0.00
3,900.0	0.00	0.00	3,881.6	-278.89	51.3	175.1	182.5	0.00	0.00	0.00
4,000.0	0.00	0.00	3,981.6	-378.89	51.3	175.1	182.5	0.00	0.00	0.00
4,100.0	0.00	0.00	4,081.6	-478.89	51.3	175.1	182.5	0.00	0.00	0.00
4,200.0	0.00	0.00	4,181.6	-578.89	51.3	175.1	182.5	0.00	0.00	0.00
4,300.0	0.00	0.00	4,281.6	-678.89	51.3	175.1	182.5	0.00	0.00	0.00
4,400.0	0.00	0.00	4,381.6	-778.89	51.3	175.1	182.5	0.00	0.00	0.00
4,500.0	0.00	0.00	4,481.6	-878.89	51.3	175.1	182.5	0.00	0.00	0.00
4,600.0	0.00	0.00	4,581.6	-978.89	51.3	175.1	182.5	0.00	0.00	0.00
TUBB										
4,618.4	0.00	0.00	4,600.0	-997.30	51.3	175.1	182.5	0.00	0.00	0.00
4,700.0	0.00	0.00	4,681.6	-1,078.89	51.3	175.1	182.5	0.00	0.00	0.00
BHL - LOGAN "2" C STATE 4										
4,768.4	0.00	0.00	4,750.0	-1,147.29	51.3	175.1	182.5	0.00	0.00	0.00

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
374.0	374.0	7 RIVERS		0.00		
929.6	926.0	QUEEN		0.00		
1,383.0	1,366.0	GRAYBURG		0.00		
1,593.4	1,575.0	PREMIER SAND		0.00		
1,682.4	1,664.0	SAN ANDRES		0.00		
3,080.4	3,062.0	GLORIETA		0.00		
3,216.4	3,198.0	YESO		0.00		
4,618.4	4,600.0	TUBB		0.00		

Plan Annotations					
MD (usft)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Comment	
500.0	500.0	0.0	0.0	KOP (3°/100ft BUR)	
1,010.3	1,004.2	19.1	65.0	END OF BUILD TO 15.31° INC	
1,188.1	1,175.7	32.3	110.1	END OF TANGENT	
1,698.4	1,680.0	51.3	175.1	END OF DROP TO VERTICAL	
4,768.4	4,750.0	51.3	175.1	BHL - LOGAN "2" C STATE 4	

LIME ROCK RESOURCES II-A, L.P.
LOGAN 2 C STATE #4

**HYDROGEN SULFIDE (H₂S) CONTINGENCY
DRILLING PLAN**

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

This is an open drilling site. H₂S monitoring equipment and emergency response equipment will be rigged up and in use when the company drills out from under surface casing. H₂S monitors, warning signs, wind indicators and flags will be in use.

EMERGENCY PROCEDURES

Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas, or if monitors indicate H₂S is present. Escape will take place via the entry road away from the flare stack, or a foot path marked and designated before the well is spud by on site personnel. Once crews and other personnel are a safe distance, the crews will move to evacuate any persons in the Radius of Exposure, followed by blocking access to the Radius of Exposure.

There are no homes or buildings within the Radius of Exposure ("ROE"), so efforts will be concentrated on evacuating any third parties within the ROE. Immediate response will include evacuation of any persons potentially affected by toxic or flammable gasses. Once evacuation is under way, perimeter monitoring and control of access will be executed to ensure safe areas and stage areas.

In the event of a release of gas containing H₂S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H₂S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
 - o Detection of H₂S, and
 - o Measures for protection against the gas,
 - o Equipment used for protection and emergency response.

H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

Characteristics of H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air= 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air= 1	2ppm	N/A	1000 ppm

Contacting Authorities

Lime Rock Resources personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Lime Rock Resources response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER) and BLM Onshore Order #6.

H₂S Operations

Though no H₂S is anticipated during the drilling operation, this contingency plan will provide for methods to ensure the well is kept under control in the event an H₂S reading of 100 ppm or more are encountered. Once personnel are safe and the proper protective gear is in place and on personnel, the operator and rig crew essential personnel will ensure the well is under control, suspend drilling operations and shut-in the well (unless pressure build up or other operational situations dictate suspending operations will prevent well control), increase the mud weight and circulate all gas from the hole utilizing the mud/gas separator downstream of the choke, the choke manifold and the emergency flare system located 150' from the well. Bring the mud system into compliance and the H₂S level below 10 ppm, then notify all emergency officers that drilling ahead is practical and safe.

Proceed with drilling ahead only after all provisions of Onshore Order 6, Section III.C. have been satisfied.

H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

Company Offices - Lime Rock Houston Office 713-292-9510
 Answering Service(After Hours) 713-292-9555
 Artesia, NM Office 575-748-9724
 Roswell, NM 575-623-8424

KEY PERSONNEL					
Name	Title	Location	Office #	Cell #	Home #
SID ASHWORTH	PRODUCTION ENGINEER	HOUSTON	713-292-9526	713-906-7750	713-783-1959
JERRY SMITH	ASSISTANT PRODUCTION SUPERVISOR	ARTESIA	575-748-9724	505-918-0556	575-746-2478
MICHAEL BARRETT	PRODUCTION SUPERVISOR	ROSWELL	575-623-8424	505-353-2644	575-623-4707
GARY FATHEREE	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	940-389-6044	NA
GARY MCELLAND	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	903-503-8997	NA

Agency Call List		
City	Agency or Office	Telephone Number
Artesia	Ambulance	911
Artesia	State Police	575-746-2703
Artesia	Sheriff's Office	575-746-9888
Artesia	City Police	575-746-2703
Artesia	Fire Department	575-746-2701
Artesia	Local Emergency Planning Committee	575-746-2122
Artesia	New Mexico OCD District II	575-748-1283
Carlsbad	Ambulance	911
Carlsbad	State Police	575-885-3137
Carlsbad	Sheriff's Office	575-887-7551
Carlsbad	City Police	575-885-2111
Carlsbad	Fire Department	575-885-2111
Carlsbad	Local Emergency Planning Committee	575-887-3798
Carlsbad	US DOI Bureau of Land Management	575-887-6544
State Wide	New Mexico Emergency Response Commission ("NMERC")	505-476-9600
State Wide	NMERC 24 hour Number	505-827-9126
State Wide	New Mexico State Emergency Operations Center	505-476-9635
National	National Emergency Response Center (Washington, D.C.)	800-424-8802

H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

Emergency Services				
Name	Service	Location	Telephone Number	Alternate Number
Boots & Coots International Well Control	Well Control	Houston / Odessa	1-800-256-9688	281-931-8884
Cudd Pressure Control	Well Control & Pumping	Odessa	915-699-0139	915-563-3356
Baker Hughes Inc.	Pumping Service	Artesia, Hobbs and Odessa	575-746-2757	SAME
Total Safety	Safety Equipment and Personnel	Artesia	575-746-2847	SAME
Cutter Oilfield Services	Drilling Systems Equipment	Midland	432-488-6707	SAME
Assurance Fire & Safety	Safety Equipment and Personnel	Artesia	575-396-9702	575-441-2224
Flight for Life	Emergency Helicopter Evacuation	Lubbock	806-743-9911	SAME
Aerocare	Emergency Helicopter Evacuation	Lubbock	806-747-8923	SAME
Med Flight Air Ambulance	Emergency Helicopter Evacuation	Albuquerque	505-842-4433	SAME
Artesia General Hospital	Emergency Medical Care	Artesia	575-748-3333	702 North 13 Street