

NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 17 2015

Form C-102

Revised August 1, 2011

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

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

RECEIVED

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-42946	² Pool Code 55510	³ Pool Name Scanlon Draw; Bone Spring
⁴ Property Code 38436	⁵ Property Name EMERALD PWU 20	
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	
		⁶ Well Number 9H
		⁹ Elevation 3347.6

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
D	20	19 S	29 E		940	NORTH	195	WEST	EDDY

11. Bottom Hole Location If Different From Surface

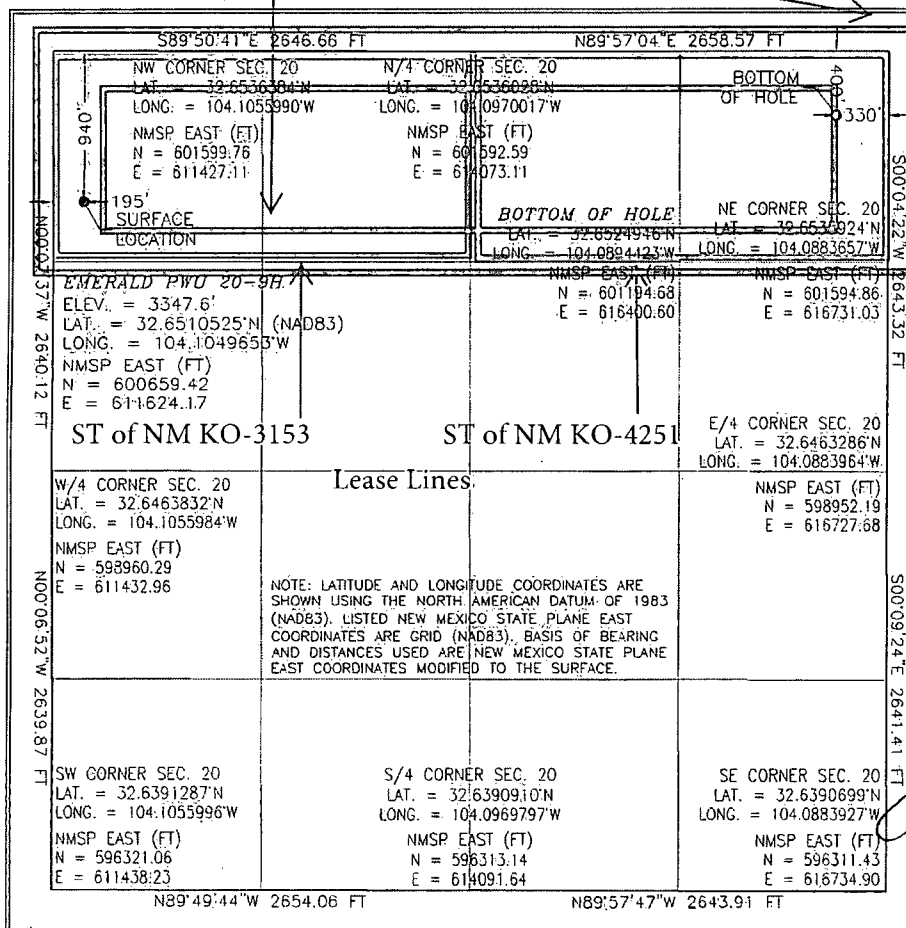
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	20	19 S	29 E		400	NORTH	330	EAST	EDDY

¹² Dedicated Acres 160.00	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order 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.

Completion Interval

Project Area



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.

Linda Good 2/12/2015
Signature Date

Linda Good
Printed Name

linda.good@dvn.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 are true and correct to the best of my belief.

OCTOBER 16 2014
Date of Survey

[Signature]
Signature and Seal of Professional Surveyor

Certificate Number: 1111 MON F. JARAMILLO, PLS 12797
SURVEY NO. 3412

RECEIVED

[illegible]

FROM THE INTERSECTION OF ILLINOIS CAMP ROAD (CR 206) AND
CURRY COMB ROAD (CR 235), GO SOUTHEAST ON CR 235 3.02
MILES TO INTERSECTION OF CR 246 AND CR 235 TURN LEFT ON CR
235 (CURRY COMB ROAD) GO EAST 4.42 MILES TO CALICHE LEASE
ROAD ON RIGHT TURN SOUTH GO ABOUT 0.35 MILES FOLLOW FLAGS
ON RIGHT ABOUT 280 LF TO NORTHEAST CORNER OF PROPOSED PAD

LOCATED 940 FT. FROM THE NORTH LINE
AND 195 FT. FROM THE WEST LINE OF
SECTION 20, TOWNSHIP 19 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

OCTOBER 16, 2014

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

CARLSBAD, NEW MEXICO

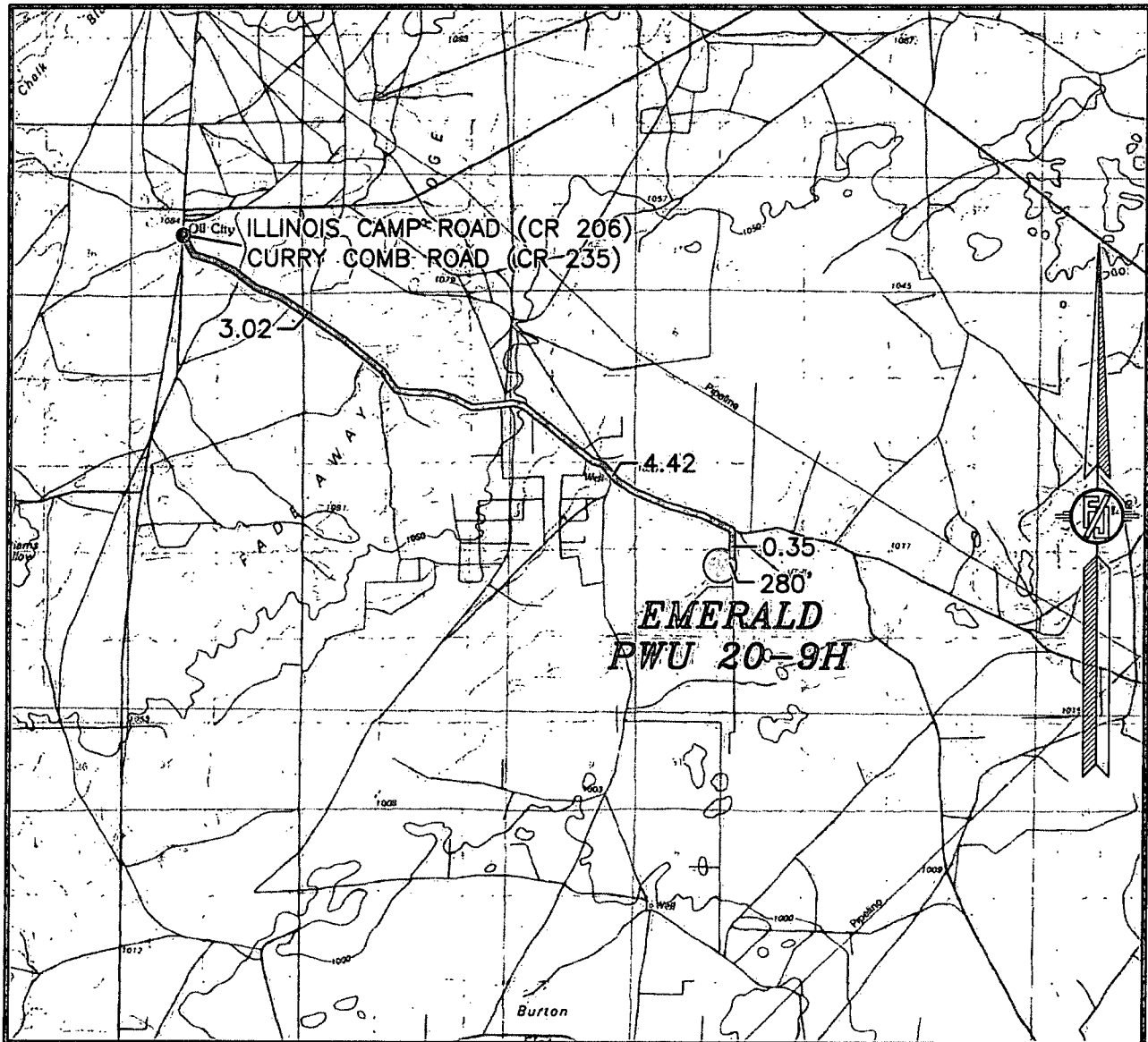
Topographic map of the Emerald PMU 20-9H area. The map shows contour lines, spot elevations, and a proposed 280 LF access road. The map includes a grid with UTM coordinates and various labels such as 'EMERALD PMU 20-9H', 'PROPOSED 280 LF ACCESS ROAD', and 'Gravel Pit'. A north arrow is located in the upper right corner.

NOT TO SCALE

OCTOBER 16, 2014

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

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ILLINOIS CAMP ROAD (CR 206) AND CURRY COMB ROAD (CR 235), GO SOUTHEAST ON CR 235 3.02 MILES TO INTERSECTION OF CR 246 AND CR 235 TURN LEFT ON CR 235 (CURRY COMB ROAD) GO EAST 4.42 MILES TO CALICHE LEASE ROAD ON RIGHT TURN SOUTH GO ABOUT 0.35 MILES FOLLOW FLAGS ON RIGHT ABOUT 280 LF. TO NORTHEAST CORNER OF PROPOSED PAD

DEVON ENERGY PRODUCTION COMPANY, L.P.
EMERALD PWU 20-9H

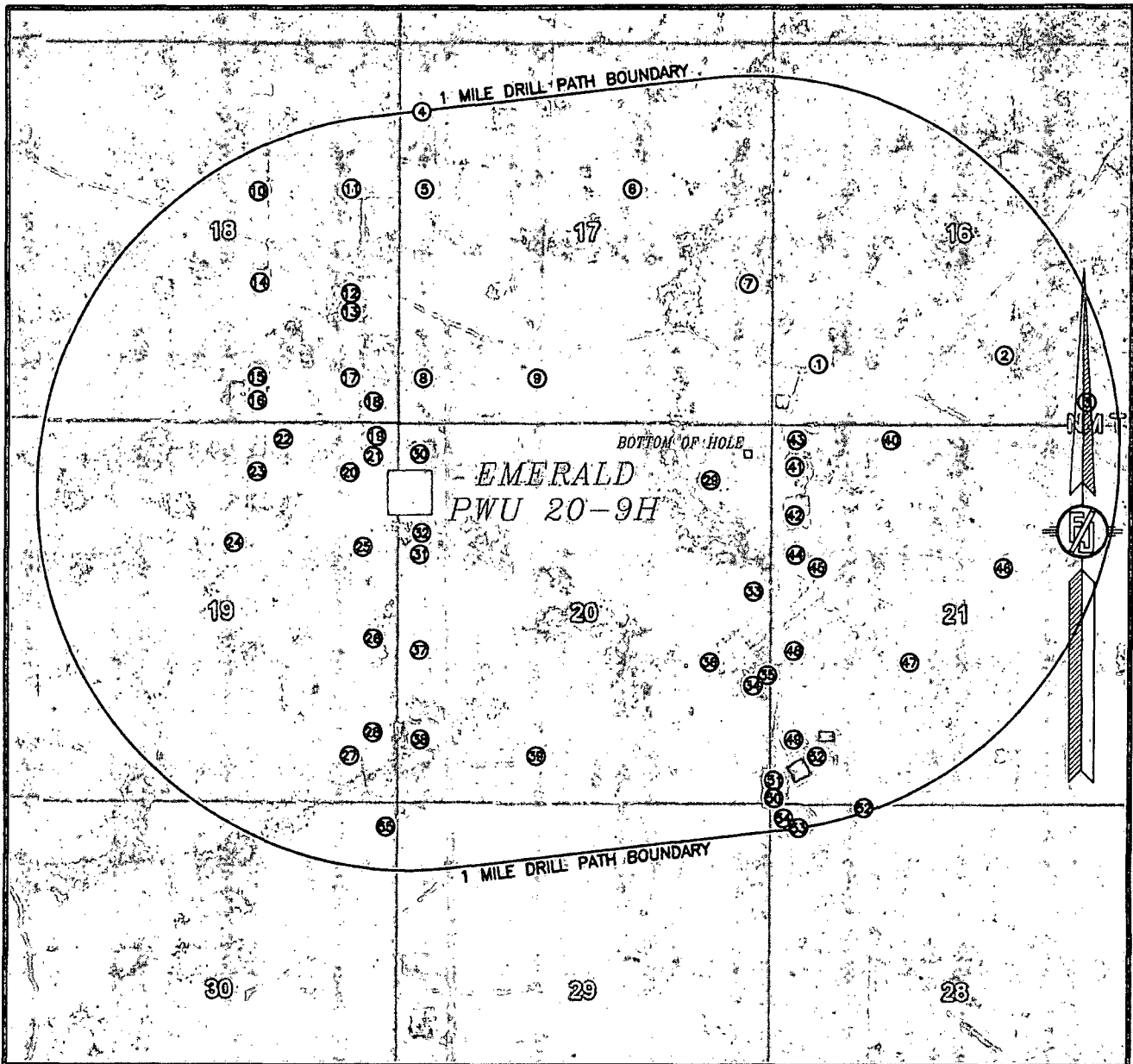
LOCATED 940 FT. FROM THE NORTH LINE
AND 195 FT. FROM THE WEST LINE OF
SECTION 20, TOWNSHIP 19 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

OCTOBER 16, 2014

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

SURVEY NO. 3412
CARLSBAD, NEW MEXICO

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 AERIAL PHOTO



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 MAY 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.
 EMERALD PWU 20-9H

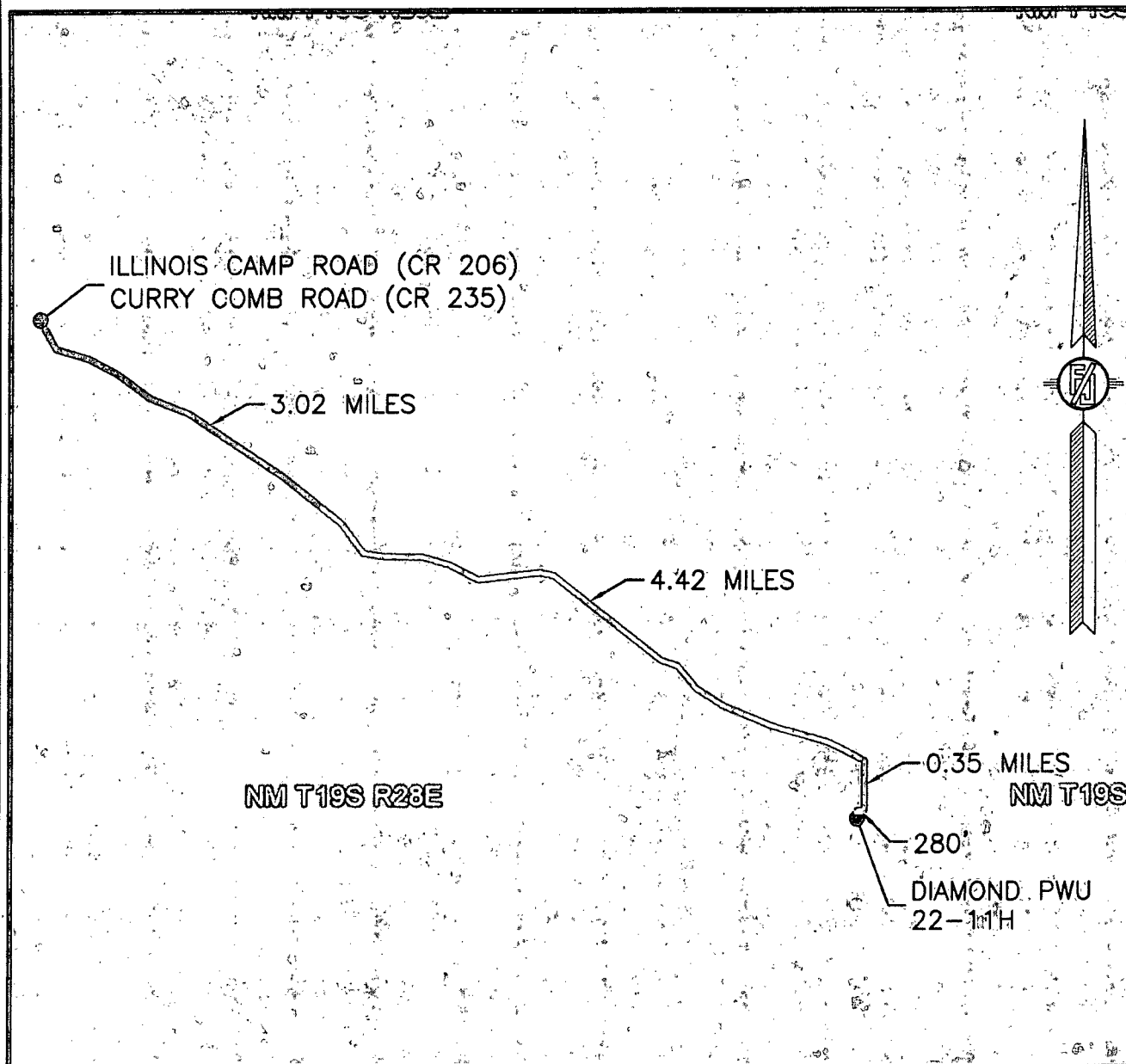
LOCATED 940 FT. FROM THE NORTH LINE
 AND 195 FT. FROM THE WEST LINE OF
 SECTION 20, TOWNSHIP 19 SOUTH,
 RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

OCTOBER 16, 2014

SURVEY NO. 3412

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

SECTION 20, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL ACCESS ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
MAY 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.
EMERALD PWU 20-9H

LOCATED 940 FT. FROM THE NORTH LINE
AND 195 FT. FROM THE WEST LINE OF
SECTION 20, TOWNSHIP 19 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

OCTOBER 16, 2014

SURVEY NO. 3412

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

**SECTION 20, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
WELLS WITHIN 1 MILE DRILL PATH BOUNDARY**

API	Well	Type	ULSTR	Current Operator
1	30-015-30071	PARKWAY 16 STATE COM #001	Gas	M-16-19S-29E [14744] MEWBOURNE OIL CO
2	30-015-22924	STATE 16 A COM #001	Gas	O-16-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
3	30-015-37632	MAGNUM 16 STATE #003	Oil	P-16-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
4	30-015-39164	PARKWAY STATE 17 COM #005H	Oil	D-17-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
5	30-015-38066	PARKWAY STATE 17 COM #003H	Oil	E-17-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
6	30-015-24897	PARKWAY STATE 17 COM #001	Gas	G-17-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
7	30-015-37461	PARKWAY STATE 17 COM #002H	Oil	I-17-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
8	30-015-38039	PARKWAY 17 STATE #004H	Oil	M-17-19S-29E [162683] CIMAREX ENERGY CO. OF COLORADO
9	30-015-21210	UNION TEXAS STATE #001	Gas	N-17-19S-29E [21355] SOUTHWEST ROYALTIES INC
10	30-015-24764	NEW MEXICO DC STATE #003	Oil	G-18-19S-29E [229137] COG OPERATING LLC
11	30-015-23942	NEW MEXICO DC STATE #001	Oil	H-18-19S-29E [229137] COG OPERATING LLC
12	30-015-24401	NEW MEXICO DC STATE #002	Oil	I-18-19S-29E [229137] COG OPERATING LLC
13	30-015-30767	PALMILLO 18 STATE #001	Gas	I-18-19S-29E [14744] MEWBOURNE OIL CO
14	30-015-24884	NEW MEXICO DC STATE #005Y	Oil	J-18-19S-29E [229137] COG OPERATING LLC
15	30-015-36127	NEW MEXICO DC STATE #006	Oil	O-18-19S-29E [229137] COG OPERATING LLC
16	30-015-38258	PHANTOM 18 STATE #002H	Oil	O-18-19S-29E [229137] COG OPERATING LLC
17	30-015-36126	NEW MEXICO DC STATE #007	Oil	P-18-19S-29E [229137] COG OPERATING LLC
18	30-015-39612	PHANTOM 18 STATE #001H	Oil	P-18-19S-29E [229137] COG OPERATING LLC
19	30-015-41972	MARBOB #011H	Oil	A-19-19S-29E [18917] READ & STEVENS INC
Salt Water Disposal				
20	30-015-26040	MARBOB STATE #001	Oil	A-19-19S-29E [18917] READ & STEVENS INC
21	30-015-38455	MARBOB STATE #005H	Oil	A-19-19S-29E [18917] READ & STEVENS INC
22	30-015-41962	MARBOB #010H	Oil	B-19-19S-29E [18917] READ & STEVENS INC
23	30-015-37930	MARBOB STATE #003	Oil	B-19-19S-29E [18917] READ & STEVENS INC
24	30-015-38256	MARBOB STATE #004	Oil	G-19-19S-29E [18917] READ & STEVENS INC
25	30-015-38456	MARBOB STATE #006H	Oil	H-19-19S-29E [18917] READ & STEVENS INC
26	30-015-38457	MARBOB STATE #007H	Oil	I-19-19S-29E [18917] READ & STEVENS INC
27	30-015-33570	MARBOB STATE #002	Oil	P-19-19S-29E [18917] READ & STEVENS INC
28	30-015-38458	MARBOB STATE #008H	Oil	P-19-19S-29E [18917] READ & STEVENS INC
29	30-015-31238	PARKWAY WEST UNIT #011	Oil	A-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
30	30-015-38338	EMERALD PWU 20 #001H	Oil	D-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
31	30-015-38421	EMERALD PWU 20 #002H	Oil	E-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
32	30-015-40025	LONGBOARD PWU 20 #001H	Oil	E-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
33	30-015-40591	AGATE PWU 21 #006H	Oil	H-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
34	30-015-40511	AGATE PWU 21 #007H	Oil	I-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
35	30-015-40587	EMERALD PWU 20 #007H	Oil	I-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
36	30-015-32124	PARKWAY #013	Gas	I-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
37	30-015-39365	EMERALD PWU 20 #003H	Oil	L-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
38	30-015-40037	EMERALD PWU 20 #004H	Oil	M-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
39	30-015-22367	PARKWAY WEST UNIT #005	Gas	N-20-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
40	30-015-38525	PARKWAY 16 STATE COM #003H	Oil	C-21-19S-29E [14744] MEWBOURNE OIL CO
41	30-015-38335	AGATE PWU 21 #001H	Oil	D-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
42	30-015-40590	AGATE PWU 21 #005H	Oil	D-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
43	30-015-38109	PARKWAY 16 STATE COM #002H	Oil	D-21-19S-29E [14744] MEWBOURNE OIL CO
44	30-015-38605	AGATE PWU 21 #002H	Oil	E-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
45	30-015-31295	PARKWAY WEST UNIT #012	Gas	E-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
46	30-015-23109	PARKWAY WEST UNIT #009	Gas	G-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
47	30-015-32663	PARKWAY #019	Oil	K-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
48	30-015-39374	AGATE PWU 21 #003H	Oil	L-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
49	30-015-40134	AGATE PWU 21 #004H	Oil	M-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
50	30-015-40512	AGATE PWU 21 #008H	Oil	M-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
51	30-015-40513	EMERALD PWU 20 #008H	Oil	M-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
52	30-015-33526	PARKWAY WEST UNIT #024	Gas	M-21-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
52	30-015-40217	CORAL PWU 28 #002H	Oil	C-28-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
53	30-015-40206	CORAL PWU 28 #001H	Oil	D-28-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
54	30-015-40509	CORAL PWU 28 #005H	Oil	D-28-19S-29E [6137] DEVON ENERGY PRODUCTION COMPANY, LP
55	30-015-42525	MIRAGE 30 B2AD STATE COM #001H	Oil	A-30-19S-29E [14744] MEWBOURNE OIL CO

**DEVON ENERGY PRODUCTION COMPANY, L.P.
EMERALD PWU 20-9H
LOCATED 940 FT. FROM THE NORTH LINE
AND 195 FT. FROM THE WEST LINE OF
SECTION 20, TOWNSHIP 19 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO**

OCTOBER 16, 2014

SURVEY NO. 3412

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

Devon Energy, Emerald PWU 20-9H

1. Geologic Formations

TVD of target	8,870'	Pilot hole depth	N/A
MD at TD:	13,430'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Rustler	Surface	Barren	
Salt	420	Barren	
Tansil	940	Barren	
Yates	1,080	Barren	
Queen	2,000	Oil	
Grayburg	2,340	Oil	
Delaware	3,290	Oil	
Bone Spring Lm	4,040	Oil	
2nd BS Lm	6,970	Oil	
3rd BS Lm	7,870	Oil	
3rd BS Sd	8,570	Oil	

*H₂S, water flows, loss of circulation, abnormal pressures, etc.

Devon Energy, Emerald PWU 20-9H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	350'	13.375"	48	H-40	STC	4.92	11.05	32.20
12.25"	0	3,200'	9.625"	36	J-55	LTC	1.214	2.12	3.93
8.75"	0	8,400'	7"	29	HCP-110	BTC	2.065	2.52	3.92
8.75"	8,400'	13,430'	5.5"	17	P-110	BTC	1.79	2.21	3.69
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Emerald PWU 20-9H

3. Cementing Program

Casing	# Sk	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
Surf.	400	14.8	6.34	1.34	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake + 1% BWOC Calcium Chloride
Inter.	620	12.9	9.81	1.85	15	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	430	14.8	1.33	6.32	7	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
7 x 5.5" Combo Prod	370	10.4	16.8	3.17	25	Lead: Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake
	1450	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	75%
7 x 5.5" Combo Prod.	2200'	25%

Devon Energy, Emerald PWU 20-9H

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
---	--

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
---	---

Devon Energy, Emerald PWU 20-9H

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly (FMC Uni-head). This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi. - Wellhead will be installed by FMC's representatives. - If the welding is performed by a third party, the FMC's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - FMC representative will install the test plug for the initial BOP test. - FMC will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. - If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. - Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. - Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the FMC Uni-head. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon Energy, Emerald PWU 20-9H

	Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns
	See attached schematic.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	350'	FW Gel	8.6-8.8	28-34	N/C
350'	3,200'	Saturated Brine	10.0-10.2	28-34	N/C
3,200'	13,430'	Cut Brine	8.5-9.3	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
---	-----------------------------

6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

Devon Energy, Emerald PWU 20-9H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	3992 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe

DEVON ENERGY

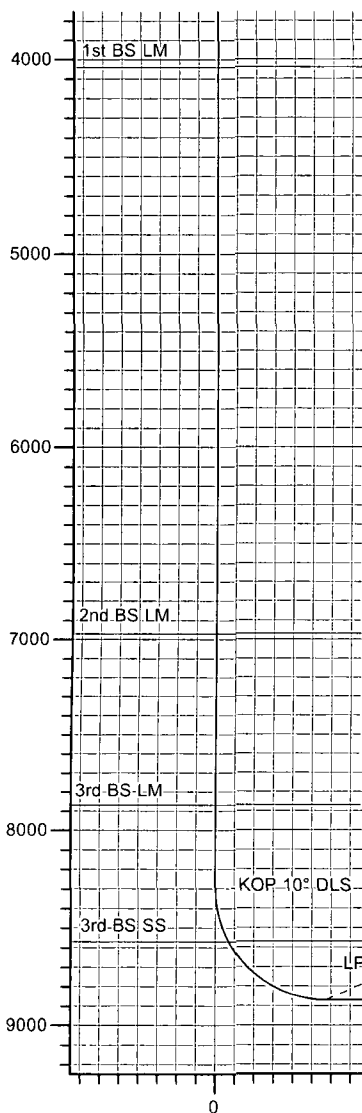
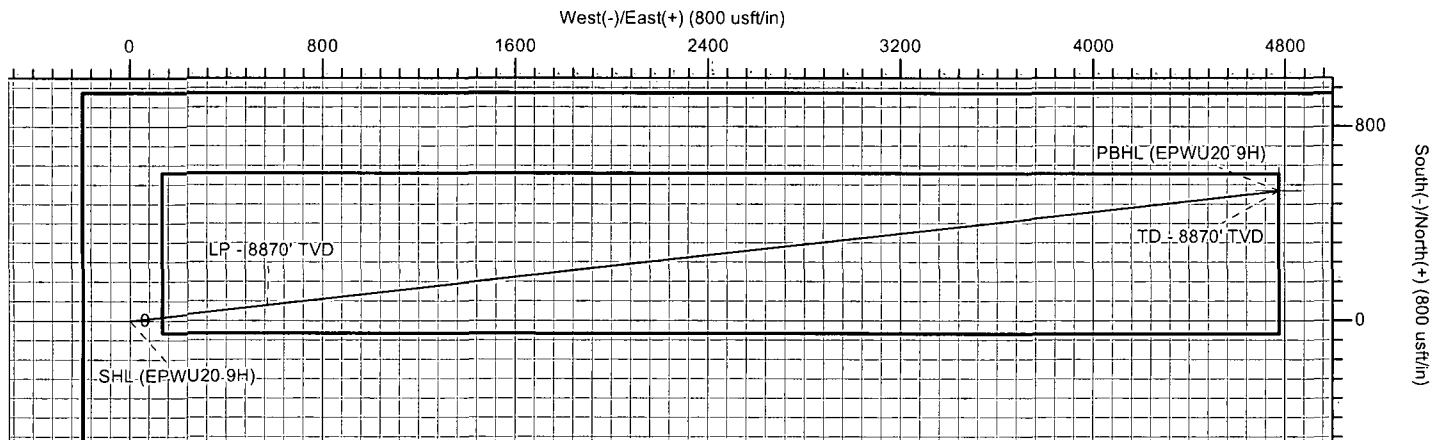
Project: Eddy County, NM (NAD-83)
 Site: Emerald PWU 20
 Well: 9H
 Ilbore: OH
 Design: Plan #1

PROJECT DETAILS: Eddy County, NM (NAD-83)
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone



Azimuths to Grid North
 True North: -0.12°
 Magnetic North: 7.49°

Magnetic Field
 Strength: 48418.4snT
 Dip Angle: 60.40°
 Date: 12/1/2014
 Model: BGGM2014



DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
SHL (EPWU20 9H)	0.00	0.00	0.00	600659.42	611624.17	32° 39' 3.789 N	104° 6' 17.875 W	
PBHL (EPWU20 9H)	8870.00	535.26	4776.43	601194.68	616400.60	32° 39' 8.980 N	104° 5' 21.992 W	

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	8297.04	0.00	0.00	8297.04	0.00	0.00	0.00	0.00	0.00		
3	9197.04	90.00	83.61	8870.00	63.81	569.39	10.00	83.61	572.96		
4	13430.41	90.00	83.61	8870.00	535.26	4776.43	0.00	0.00	4806.33	PBHL (EPWU20 9H)	

FORMATION TOP DETAILS

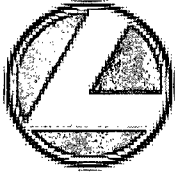
TVDPATH	MDPATH	Formation	DipAngle
420.00	420.00	Salt	0.00
940.00	940.00	Tansil	0.00
1080.00	1080.00	Yates	0.00
2000.00	2000.00	Queen	0.00
2340.00	2340.00	Grayburg	0.00
3290.00	3290.00	Delaware	0.00
4040.00	4040.00	1st BS LM	0.00
6970.00	6970.00	2nd BS LM	0.00
7870.00	7870.00	3rd BS LM	0.00
8570.00	8581.55	3rd BS SS	0.00

Vertical Section at 83.61° (1000 usft/in)



LEAM DRILLING SYSTEMS LLC
 2010 East Davis, Conroe, Texas 77301
 Phone: 936/756-7577. Fax: 936/756-7595

Plan: Plan #1 (9H/OH)
 Emerald PWU 20
 Created By: Brady Deaver
 Date: 14:18, December C



LEAM
Drilling Systems, Inc.

DEVON ENERGY

Eddy County, NM (NAD-83)

Emerald PWU 20

9H

OH

Plan: Plan #1

Standard Planning Report

01 December, 2014


devon

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 9H
Company:	DEVON ENERGY	TVL Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Site:	Emerald PWU 20	North Reference:	Grid
Well:	9H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Eddy County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Emerald PWU 20		
Site Position:		Northing:	600,659.42 usft
From:	Map	Easting:	611,624.17 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Grid Convergence:	0.12 °

Well	9H, 3rd BS SS		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	3,372.60 usft
		Ground Level:	3,347.60 usft

Wellbore	OH		
Logistics	Model Name	Sample Date	Declination
			(°)
	BGGM2014	12/1/2014	7.61
			Dip Angle
			(°)
			Field Strength
			(nT)
			48,418

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			83.61

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,297.04	0.00	0.00	8,297.04	0.00	0.00	0.00	0.00	0.00	0.00	
9,197.04	90.00	83.61	8,870.00	63.81	569.39	10.00	10.00	0.00	83.61	
13,430.41	90.00	83.61	8,870.00	535.26	4,776.43	0.00	0.00	0.00	0.00	PBHL (EPWU20 9H)

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 9H
Company:	DEVON ENERGY	TVD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Site:	Emerald PWU 20	North Reference:	Grid
Well:	9H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (EPWU20 9H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
420.00	0.00	0.00	420.00	0.00	0.00	0.00	0.00	0.00	0.00
Salt									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
940.00	0.00	0.00	940.00	0.00	0.00	0.00	0.00	0.00	0.00
Tansil									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,080.00	0.00	0.00	1,080.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,340.00	0.00	0.00	2,340.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg									
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,290.00	0.00	0.00	3,290.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 9H
Company:	DEVON ENERGY	TVD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Site:	Emerald PWU 20	North Reference:	Grid
Well:	9H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,040.00	0.00	0.00	4,040.00	0.00	0.00	0.00	0.00	0.00	0.00
1st BS LM									
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,970.00	0.00	0.00	6,970.00	0.00	0.00	0.00	0.00	0.00	0.00
2nd BS LM									
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,870.00	0.00	0.00	7,870.00	0.00	0.00	0.00	0.00	0.00	0.00
3rd BS LM									
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,297.04	0.00	0.00	8,297.04	0.00	0.00	0.00	0.00	0.00	0.00
KOP 10° DLS									
8,300.00	0.30	83.61	8,300.00	0.00	0.01	0.01	10.00	10.00	0.00
8,350.00	5.30	83.61	8,349.92	0.27	2.43	2.45	10.00	10.00	0.00
8,400.00	10.30	83.61	8,399.45	1.03	9.17	9.23	10.00	10.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 9H
Company:	DEVON ENERGY	TVD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Site:	Emerald PWU 20	North Reference:	Grid
Well:	9H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,450.00	15.30	83.61	8,448.19	2.26	20.17	20.30	10.00	10.00	0.00
8,500.00	20.30	83.61	8,495.78	3.96	35.35	35.57	10.00	10.00	0.00
8,550.00	25.30	83.61	8,541.86	6.12	54.60	54.94	10.00	10.00	0.00
8,581.55	28.45	83.61	8,570.00	7.71	68.77	69.20	10.00	10.00	0.00
3rd BS SS									
8,600.00	30.30	83.61	8,586.08	8.71	77.76	78.25	10.00	10.00	0.00
8,650.00	35.30	83.61	8,628.10	11.73	104.67	105.32	10.00	10.00	0.00
8,700.00	40.30	83.61	8,667.59	15.14	135.11	135.95	10.00	10.00	0.00
8,750.00	45.30	83.61	8,704.27	18.92	168.86	169.91	10.00	10.00	0.00
8,800.00	50.30	83.61	8,737.85	23.05	205.65	206.94	10.00	10.00	0.00
8,850.00	55.30	83.61	8,768.07	27.48	245.22	246.75	10.00	10.00	0.00
8,900.00	60.30	83.61	8,794.71	32.19	287.25	289.04	10.00	10.00	0.00
8,950.00	65.30	83.61	8,817.56	37.14	331.42	333.50	10.00	10.00	0.00
9,000.00	70.30	83.61	8,836.45	42.29	377.41	379.78	10.00	10.00	0.00
9,050.00	75.30	83.61	8,851.24	47.61	424.86	427.52	10.00	10.00	0.00
9,100.00	80.30	83.61	8,861.80	53.05	473.42	476.38	10.00	10.00	0.00
9,150.00	85.30	83.61	8,868.07	58.57	522.70	525.97	10.00	10.00	0.00
9,197.04	90.00	83.61	8,870.00	63.81	569.39	572.96	10.00	10.00	0.00
LP - 8870' TVD									
9,200.00	90.00	83.61	8,870.00	64.14	572.33	575.92	0.00	0.00	0.00
9,300.00	90.00	83.61	8,870.00	75.27	671.71	675.92	0.00	0.00	0.00
9,400.00	90.00	83.61	8,870.00	86.41	771.09	775.92	0.00	0.00	0.00
9,500.00	90.00	83.61	8,870.00	97.55	870.47	875.92	0.00	0.00	0.00
9,600.00	90.00	83.61	8,870.00	108.68	969.84	975.92	0.00	0.00	0.00
9,700.00	90.00	83.61	8,870.00	119.82	1,069.22	1,075.92	0.00	0.00	0.00
9,800.00	90.00	83.61	8,870.00	130.96	1,168.60	1,175.92	0.00	0.00	0.00
9,900.00	90.00	83.61	8,870.00	142.09	1,267.98	1,275.92	0.00	0.00	0.00
10,000.00	90.00	83.61	8,870.00	153.23	1,367.36	1,375.92	0.00	0.00	0.00
10,100.00	90.00	83.61	8,870.00	164.37	1,466.73	1,475.92	0.00	0.00	0.00
10,200.00	90.00	83.61	8,870.00	175.50	1,566.11	1,575.92	0.00	0.00	0.00
10,300.00	90.00	83.61	8,870.00	186.64	1,665.49	1,675.92	0.00	0.00	0.00
10,400.00	90.00	83.61	8,870.00	197.78	1,764.87	1,775.92	0.00	0.00	0.00
10,500.00	90.00	83.61	8,870.00	208.91	1,864.25	1,875.92	0.00	0.00	0.00
10,600.00	90.00	83.61	8,870.00	220.05	1,963.62	1,975.92	0.00	0.00	0.00
10,700.00	90.00	83.61	8,870.00	231.19	2,063.00	2,075.92	0.00	0.00	0.00
10,800.00	90.00	83.61	8,870.00	242.32	2,162.38	2,175.92	0.00	0.00	0.00
10,900.00	90.00	83.61	8,870.00	253.46	2,261.76	2,275.92	0.00	0.00	0.00
11,000.00	90.00	83.61	8,870.00	264.60	2,361.14	2,375.92	0.00	0.00	0.00
11,100.00	90.00	83.61	8,870.00	275.73	2,460.51	2,475.92	0.00	0.00	0.00
11,200.00	90.00	83.61	8,870.00	286.87	2,559.89	2,575.92	0.00	0.00	0.00
11,300.00	90.00	83.61	8,870.00	298.01	2,659.27	2,675.92	0.00	0.00	0.00
11,400.00	90.00	83.61	8,870.00	309.14	2,758.65	2,775.92	0.00	0.00	0.00
11,500.00	90.00	83.61	8,870.00	320.28	2,858.03	2,875.92	0.00	0.00	0.00
11,600.00	90.00	83.61	8,870.00	331.41	2,957.40	2,975.92	0.00	0.00	0.00
11,700.00	90.00	83.61	8,870.00	342.55	3,056.78	3,075.92	0.00	0.00	0.00
11,800.00	90.00	83.61	8,870.00	353.69	3,156.16	3,175.92	0.00	0.00	0.00
11,900.00	90.00	83.61	8,870.00	364.82	3,255.54	3,275.92	0.00	0.00	0.00
12,000.00	90.00	83.61	8,870.00	375.96	3,354.92	3,375.92	0.00	0.00	0.00
12,100.00	90.00	83.61	8,870.00	387.10	3,454.29	3,475.92	0.00	0.00	0.00
12,200.00	90.00	83.61	8,870.00	398.23	3,553.67	3,575.92	0.00	0.00	0.00
12,300.00	90.00	83.61	8,870.00	409.37	3,653.05	3,675.92	0.00	0.00	0.00
12,400.00	90.00	83.61	8,870.00	420.51	3,752.43	3,775.92	0.00	0.00	0.00
12,500.00	90.00	83.61	8,870.00	431.64	3,851.81	3,875.92	0.00	0.00	0.00
12,600.00	90.00	83.61	8,870.00	442.78	3,951.18	3,975.92	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 9H
Company:	DEVON ENERGY	TVD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3347.6' GL + 25' RKB @ 3372.60usft
Site:	Emerald PWU 20	North Reference:	Grid
Well:	9H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,700.00	90.00	83.61	8,870.00	453.92	4,050.56	4,075.92	0.00	0.00	0.00
12,800.00	90.00	83.61	8,870.00	465.05	4,149.94	4,175.92	0.00	0.00	0.00
12,900.00	90.00	83.61	8,870.00	476.19	4,249.32	4,275.92	0.00	0.00	0.00
13,000.00	90.00	83.61	8,870.00	487.33	4,348.70	4,375.92	0.00	0.00	0.00
13,100.00	90.00	83.61	8,870.00	498.46	4,448.07	4,475.92	0.00	0.00	0.00
13,200.00	90.00	83.61	8,870.00	509.60	4,547.45	4,575.92	0.00	0.00	0.00
13,300.00	90.00	83.61	8,870.00	520.74	4,646.83	4,675.92	0.00	0.00	0.00
13,400.00	90.00	83.61	8,870.00	531.87	4,746.21	4,775.92	0.00	0.00	0.00
13,430.41	90.00	83.61	8,870.00	535.26	4,776.43	4,806.33	0.00	0.00	0.00
TD - 8870' TVD - PBHL (EPWU20 9H)									

Design 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									
SHL (EPWU20 9H)	0.00	0.00	0.00	0.00	0.00	600,659.42	611,624.17	32° 39' 3.789 N	104° 6' 17.875 W
- plan hits target center									
- Point									
PBHL (EPWU20 9H)	0.00	0.00	8,870.00	535.26	4,776.43	601,194.68	616,400.60	32° 39' 8.980 N	104° 5' 21.992 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
420.00	420.00	Salt		0.00		
940.00	940.00	Tansil		0.00		
1,080.00	1,080.00	Yates		0.00		
2,000.00	2,000.00	Queen		0.00		
2,340.00	2,340.00	Grayburg		0.00		
3,290.00	3,290.00	Delaware		0.00		
4,040.00	4,040.00	1st BS LM		0.00		
6,970.00	6,970.00	2nd BS LM		0.00		
7,870.00	7,870.00	3rd BS LM		0.00		
8,581.55	8,570.00	3rd BS SS		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
8,297.04	8,297.04	0.00	0.00	KOP 10° DLS	
9,197.04	8,870.00	63.81	569.39	LP - 8870' TVD	
13,430.41	8,870.00	535.26	4,776.43	TD - 8870' TVD	