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Fort Worth, Texas 76140

817.568.1038 (office)
817.568.1499 (fax)
www.msenergyservices.com

Survey Company: MS Energy Services
MWD Surveyor Name: Josh Mirelez
Survey Type: MWD
Operating Company: Devon Energy Production Co, LP
Well Name & Number: Cotton Draw Unit 272H
API Number: 30-015-43724
Surveyed Depths: 4,319' – 14,752' MD; PTB: 14,872'
Dates Performed: 05/30/2017 – 06/13/2017
Location: Eddy County, NM

I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Energy Services; that I am authorized and qualified to make this report and that I have reviewed this report and find it conforms to the principles and procedures as set forth by MS Energy Services.

Digitally signed by: _____
Title: MWD Field Specialist
Date: 06-22-2017
Email: jmirelez@msenergyservices.com

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 13 2017

RECEIVED



SURVEY CALCULATION PROGRAM

6/22/17 10:11

Company:		Devon Energy Production Co, LP												
Well Name:		Cotton Draw Unit 272H												
Location:		Eddy County, NM												
Rig:		ICD #217					Magnetic Declination:		6.81		REFERENCED TO GRID NORTH			
Job Number:		DDMO-170511												
API #:		30-015-43724												
Vertical Section Azimuth:					181.06		Proposed Direction:		181.06					
Survey Calculation Method:					Minimum Curvature									
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	14,872		88.3		181.4		10095.31		-4827.46		-99.7		4828.48	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure		DLS/ 100	BUR/ 100'			
								Distance	Azm					
TIE IN	4,203	3.13	122.40	4202.14	-6.30	65.31	5.09	65.61	95.51					
1	4,319	3.30	121.90	4317.96	-9.76	70.82	8.45	71.49	97.85	0.15	0.15			
2	4,383	2.90	115.30	4381.86	-11.43	73.85	10.06	74.72	98.80	0.84	-0.63			
3	4,478	2.40	62.20	4476.78	-11.53	77.78	10.09	78.63	98.43	2.54	-0.53			
4	4,573	2.60	50.60	4571.69	-9.23	81.20	7.73	81.73	96.49	0.57	0.21			
5	4,668	2.30	18.60	4666.60	-6.06	83.48	4.51	83.70	94.15	1.45	-0.32			
6	4,762	2.60	349.20	4760.52	-2.17	83.68	0.63	83.71	91.49	1.36	0.32			
7	4,857	4.00	345.50	4855.36	3.15	82.45	-4.68	82.51	87.81	1.49	1.47			
8	4,952	4.30	343.40	4950.11	9.77	80.60	-11.26	81.19	83.09	0.35	0.32			
9	5,047	4.20	344.50	5044.85	16.54	78.65	-17.99	80.37	78.13	0.14	-0.11			
10	5,142	4.10	342.70	5139.60	23.13	76.71	-24.55	80.12	73.22	0.17	-0.11			
11	5,237	4.00	341.70	5234.36	29.52	74.66	-30.90	80.29	68.43	0.13	-0.11			
12	5,332	4.10	342.60	5329.13	35.91	72.60	-37.24	81.00	63.69	0.12	0.11			
13	5,427	4.00	340.60	5423.89	42.27	70.49	-43.57	82.19	59.05	0.18	-0.11			
14	5,522	4.00	340.60	5518.66	48.52	68.29	-49.78	83.77	54.60	0.00	0.00			
15	5,616	4.00	340.40	5612.43	54.70	66.10	-55.92	85.80	50.39	0.01	0.00			
16	5,712	4.20	341.10	5708.18	61.18	63.84	-62.36	88.42	46.22	0.21	0.21			
17	5,806	4.10	340.60	5801.94	67.61	61.61	-68.74	91.47	42.34	0.11	-0.11			
18	5,901	4.70	342.60	5896.66	74.53	59.31	-75.61	95.25	38.51	0.65	0.63			
19	5,996	4.50	333.80	5991.35	81.59	56.50	-82.62	99.24	34.71	0.77	-0.21			
20	6,090	4.20	331.30	6085.08	87.91	53.22	-88.88	102.77	31.19	0.38	-0.32			
21	6,185	3.90	328.00	6179.84	93.71	49.84	-94.61	106.14	28.01	0.40	-0.32			
22	6,280	3.90	328.10	6274.62	99.19	46.42	-100.03	109.51	25.08	0.01	0.00			
23	6,375	4.60	333.10	6369.36	105.33	42.99	-106.11	113.76	22.20	0.83	0.74			
24	6,470	4.80	334.10	6464.04	112.30	39.53	-113.01	119.06	19.39	0.23	0.21			
25	6,565	4.80	333.40	6558.71	119.43	36.02	-120.08	124.74	16.78	0.06	0.00			
26	6,660	4.60	331.80	6653.39	126.34	32.44	-126.92	130.44	14.40	0.25	-0.21			
27	6,755	4.90	336.20	6748.06	133.41	29.00	-133.93	136.53	12.26	0.50	0.32			
28	6,850	4.20	333.90	6842.76	140.25	25.83	-140.70	142.61	10.44	0.76	-0.74			
29	6,944	4.00	339.40	6936.52	146.41	23.16	-146.81	148.23	8.99	0.47	-0.21			
30	7,039	3.70	339.40	7031.31	152.38	20.92	-152.74	153.81	7.82	0.32	-0.32			
31	7,134	4.60	337.30	7126.06	158.76	18.37	-159.08	159.82	6.60	0.96	0.95			
32	7,229	5.10	335.70	7220.72	166.13	15.16	-166.38	166.82	5.21	0.55	0.53			
33	7,324	4.80	340.80	7315.37	173.73	12.12	-173.92	174.15	3.99	0.56	-0.32			



SURVEY CALCULATION PROGRAM

6/22/17 10:11

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Company:	Devon Energy Production Co, LP		
Well Name:	Cotton Draw Unit 272H		
Location:	Eddy County, NM		
Rig:	ICD #217	Magnetic Declination:	6.81
Job Number:	DDMO-170511		
API #:	30-015-43724		
Vertical Section Azimuth:	181.06	Proposed Direction:	181.06

REFERENCED TO GRID NORTH

Survey Calculation Method:				Minimum Curvature							
PTB:	MD		INC		AZM	TVD	N/S	E/W	VS		
	14,872		88.3		181.4	10095.31	-4827.46	-99.7	4828.48		
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100'	BUR/ 100'
34	7,419	4.30	340.80	7410.07	180.84	9.64	-180.99	181.10	3.05	0.53	-0.53
35	7,513	4.00	343.40	7503.82	187.31	7.54	-187.42	187.47	2.31	0.38	-0.32
36	7,609	3.90	345.50	7599.59	193.68	5.77	-193.76	193.77	1.71	0.18	-0.10
37	7,704	3.80	344.80	7694.38	199.85	4.13	-199.89	199.89	1.19	0.12	-0.11
38	7,799	3.20	355.40	7789.20	205.53	3.10	-205.55	205.55	0.86	0.93	-0.63
39	7,893	1.80	358.70	7883.11	209.62	2.85	-209.64	209.64	0.78	1.50	-1.49
40	7,988	0.30	28.80	7978.09	211.33	2.94	-211.35	211.35	0.80	1.63	-1.58
41	8,083	0.50	74.10	8073.09	211.66	3.46	-211.69	211.69	0.94	0.38	0.21
42	8,178	1.10	87.50	8168.08	211.82	4.77	-211.87	211.87	1.29	0.66	0.63
43	8,273	0.60	151.10	8263.07	211.42	5.92	-211.49	211.50	1.60	1.04	-0.53
44	8,368	0.50	164.30	8358.06	210.59	6.27	-210.67	210.68	1.71	0.17	-0.11
45	8,462	0.50	133.70	8452.06	209.91	6.68	-210.00	210.01	1.82	0.28	0.00
46	8,557	0.70	113.20	8547.06	209.39	7.51	-209.50	209.53	2.05	0.31	0.21
47	8,652	1.10	149.70	8642.04	208.38	8.50	-208.50	208.55	2.34	0.72	0.42
48	8,747	1.10	146.00	8737.03	206.83	9.47	-206.97	207.05	2.62	0.07	0.00
49	8,842	0.70	100.10	8832.02	205.98	10.56	-206.14	206.25	2.93	0.83	-0.42
50	8,936	0.50	11.20	8926.01	206.28	11.20	-206.45	206.58	3.11	0.91	-0.21
51	9,032	0.60	42.50	9022.01	207.06	11.62	-207.24	207.39	3.21	0.32	0.10
52	9,127	1.10	92.20	9117.00	207.39	12.87	-207.59	207.79	3.55	0.89	0.53
53	9,222	0.20	83.50	9211.99	207.37	13.94	-207.60	207.84	3.85	0.95	-0.95
54	9,317	0.60	278.70	9306.99	207.47	13.62	-207.69	207.92	3.76	0.84	0.42
55	9,412	0.90	278.70	9401.98	207.66	12.39	-207.85	208.03	3.41	0.32	0.32
56	9,480	0.90	278.40	9469.97	207.82	11.33	-207.99	208.12	3.12	0.01	0.00
57	9,507	0.80	278.40	9496.97	207.87	10.94	-208.04	208.16	3.01	0.37	-0.37
58	9,554	2.20	184.00	9543.96	207.02	10.55	-207.18	207.29	2.92	5.10	2.98
59	9,602	7.40	170.10	9591.77	203.06	11.02	-203.22	203.35	3.11	11.02	10.83
60	9,649	13.50	166.80	9637.97	194.72	12.79	-194.93	195.14	3.76	13.04	12.98
61	9,697	18.00	166.90	9684.16	182.04	15.75	-182.30	182.72	4.95	9.38	9.38
62	9,744	23.00	166.40	9728.17	166.03	19.56	-166.37	167.18	6.72	10.64	10.64
63	9,792	26.90	171.90	9771.69	146.16	23.30	-146.56	148.00	9.06	9.45	8.13
64	9,839	32.50	177.00	9812.50	123.00	25.46	-123.45	125.61	11.69	13.06	11.91
65	9,886	38.30	180.00	9850.80	95.80	26.12	-96.27	99.30	15.25	12.88	12.34
66	9,933	44.10	181.90	9886.15	64.86	25.58	-65.32	69.72	21.52	12.62	12.34
67	9,981	48.90	185.60	9919.19	30.14	23.26	-30.57	38.07	37.65	11.45	10.00



SURVEY CALCULATION PROGRAM

6/22/17 10:11

Company:		Devon Energy Production Co, LP												
Well Name:		Cotton Draw Unit 272H												
Location:		Eddy County, NM												
Rig:		ICD #217					Magnetic Declination:		6.81					
Job Number:		DDMO-170511												
API #:		30-015-43724												
Vertical Section Azimuth:					181.06					Proposed Direction:		181.06		
Survey Calculation Method:					Minimum Curvature									
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	14,872		88.3		181.4		10095.31		-4827.46		-99.7		4828.48	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure		DLS/ 100	BUR/ 100'			
								Distance	Azm					
68	10,028	54.20	186.80	9948.40	-6.43	19.27	6.08	20.31	108.46	11.45	11.28			
69	10,075	60.10	187.20	9973.89	-45.61	14.45	45.33	47.84	162.41	12.57	12.55			
70	10,123	64.70	185.20	9996.12	-87.88	9.88	87.68	88.43	173.59	10.27	9.58			
71	10,171	72.10	183.30	10013.78	-132.36	6.59	132.21	132.52	177.15	15.85	15.42			
72	10,218	79.40	184.20	10025.34	-177.78	3.61	177.68	177.82	178.84	15.64	15.53			
73	10,266	85.80	182.90	10031.52	-225.26	0.67	225.21	225.26	179.83	13.60	13.33			
74	10,290	87.20	181.90	10032.99	-249.20	-0.34	249.16	249.20	180.08	7.16	5.83			
75	10,385	89.30	182.20	10035.89	-344.09	-3.73	344.10	344.11	180.62	2.23	2.21			
76	10,480	90.20	182.80	10036.30	-438.99	-7.88	439.06	439.06	181.03	1.14	0.95			
77	10,575	89.80	182.80	10036.30	-533.88	-12.52	534.02	534.03	181.34	0.42	-0.42			
78	10,670	90.70	183.80	10035.89	-628.72	-17.99	628.94	628.98	181.64	1.42	0.95			
79	10,764	89.70	184.20	10035.56	-722.49	-24.54	722.82	722.91	181.95	1.15	-1.06			
80	10,859	88.50	183.10	10037.05	-817.28	-30.59	817.71	817.85	182.14	1.71	-1.26			
81	10,954	88.10	183.30	10039.87	-912.09	-35.89	912.60	912.80	182.25	0.47	-0.42			
82	11,049	87.80	181.70	10043.27	-1006.94	-40.03	1007.50	1007.73	182.28	1.71	-0.32			
83	11,144	88.70	180.00	10046.17	-1101.88	-41.44	1102.46	1102.66	182.15	2.02	0.95			
84	11,239	89.60	179.30	10047.58	-1196.86	-40.86	1197.41	1197.56	181.96	1.20	0.95			
85	11,334	90.20	180.00	10047.75	-1291.86	-40.28	1292.38	1292.49	181.79	0.97	0.63			
86	11,429	90.00	178.50	10047.58	-1386.85	-39.04	1387.33	1387.40	181.61	1.59	-0.21			
87	11,523	88.90	178.40	10048.48	-1480.81	-36.49	1481.23	1481.26	181.41	1.18	-1.17			
88	11,619	89.40	178.40	10049.91	-1576.76	-33.81	1577.12	1577.12	181.23	0.52	0.52			
89	11,713	89.70	178.70	10050.64	-1670.73	-31.43	1671.02	1671.02	181.08	0.45	0.32			
90	11,808	89.90	177.80	10050.98	-1765.68	-28.53	1765.91	1765.91	180.93	0.97	0.21			
91	11,903	88.70	179.10	10052.14	-1860.64	-25.96	1860.80	1860.82	180.80	1.86	-1.26			
92	11,998	89.50	179.10	10053.63	-1955.61	-24.47	1955.73	1955.77	180.72	0.84	0.84			
93	12,093	88.20	179.60	10055.54	-2050.58	-23.39	2050.67	2050.72	180.65	1.47	-1.37			
94	12,188	88.60	179.40	10058.19	-2145.54	-22.57	2145.59	2145.66	180.60	0.47	0.42			
95	12,285	87.70	180.70	10061.32	-2242.49	-22.65	2242.53	2242.60	180.58	1.63	-0.93			
96	12,378	88.60	180.10	10064.32	-2335.44	-23.30	2335.47	2335.55	180.57	1.16	0.97			
97	12,473	88.90	182.80	10066.39	-2430.38	-25.70	2430.44	2430.51	180.61	2.86	0.32			
98	12,568	88.60	182.20	10068.47	-2525.26	-29.85	2525.38	2525.44	180.68	0.71	-0.32			
99	12,663	89.30	182.90	10070.21	-2620.15	-34.07	2620.33	2620.37	180.75	1.04	0.74			
100	12,758	89.10	181.70	10071.53	-2715.06	-37.88	2715.30	2715.33	180.80	1.28	-0.21			
101	12,853	89.60	182.10	10072.61	-2810.00	-41.03	2810.28	2810.30	180.84	0.67	0.53			



SURVEY CALCULATION PROGRAM

6/22/17 10:11

Company:

Devon Energy Production Co, LP

Well Name:

Cotton Draw Unit 272H

Location:

Eddy County, NM

Rig:

ICD #217

Magnetic Declination:

6.81

Job Number:

DDMO-170511

API #:

30-015-43724

Vertical Section Azimuth:

181.06

Proposed Direction:

181.06

Survey Calculation Method:

Minimum Curvature

PTB:

MD

INC

AZM

TVD

N/S

E/W

VS

14,872

88.3

181.4

10095.31

-4827.46

-99.7

4828.48

#

Depth
Feet

Inc
Degrees

Azm
Degrees

TVD
Feet

N/S
Feet

E/W
Feet

Surface
Vert Sec

Closure
Distance

Azm

DLS/
100

BUR/
100'

102

12,948

88.90

181.00

10073.86

-2904.96

-43.60

2905.27

2905.29

180.86

1.37

-0.74

103

13,043

88.90

180.80

10075.68

-2999.93

-45.09

3000.25

3000.27

180.86

0.21

0.00

104

13,138

87.70

179.60

10078.50

-3094.88

-45.43

3095.20

3095.22

180.84

1.79

-1.26

105

13,233

88.10

180.30

10081.98

-3189.82

-45.34

3190.11

3190.14

180.81

0.85

0.42

106

13,328

89.30

180.00

10084.13

-3284.79

-45.59

3285.07

3285.11

180.80

1.30

1.26

107

13,423

90.40

180.80

10084.38

-3379.79

-46.26

3380.07

3380.11

180.78

1.43

1.16

108

13,518

91.20

180.70

10083.06

-3474.77

-47.50

3475.05

3475.10

180.78

0.85

0.84

109

13,613

90.10

182.60

10081.98

-3569.72

-50.23

3570.04

3570.07

180.81

2.31

-1.16

110

13,708

90.80

182.80

10081.23

-3664.61

-54.71

3665.00

3665.02

180.86

0.77

0.74

111

13,803

89.40

181.70

10081.07

-3759.53

-58.44

3759.97

3759.99

180.89

1.87

-1.47

112

13,898

90.00

181.40

10081.56

-3854.50

-61.01

3854.97

3854.98

180.91

0.71

0.63

113

13,993

90.50

181.50

10081.15

-3949.46

-63.41

3949.96

3949.97

180.92

0.54

0.53

114

14,088

89.80

182.90

10080.90

-4044.39

-67.06

4044.94

4044.95

180.95

1.65

-0.74

115

14,182

88.80

182.10

10082.05

-4138.29

-71.16

4138.90

4138.90

180.99

1.36

-1.06

116

14,277

90.30

182.90

10082.80

-4233.20

-75.30

4233.86

4233.87

181.02

1.79

1.58

117

14,372

90.10

182.40

10082.46

-4328.09

-79.69

4328.83

4328.83

181.05

0.57

-0.21

118

14,467

89.20

183.50

10083.04

-4422.96

-84.58

4423.77

4423.77

181.10

1.50

-0.95

119

14,562

88.20

182.80

10085.20

-4517.79

-89.80

4518.68

4518.69

181.14

1.28

-1.05

120

14,658

87.80

182.10

10088.55

-4613.65

-93.90

4614.59

4614.60

181.17

0.84

-0.42

121

14,752

88.30

181.40

10091.75

-4707.55

-96.77

4708.53

4708.54

181.18

0.91

0.53

REFERENCED TO GRID NORTH