

15- 42920

OXY

Eddy County, NM (NAD 27 NME)

Cypress 34 Fed 11H

Cypress 34 Fed 11H

Wellbore #1

Design: OH

Standard Survey Report

17 February, 2015

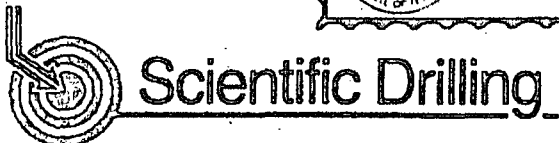
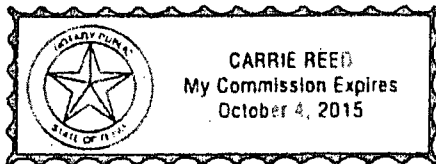
This survey is correct to the best of my knowledge and is supported by actual field data.

L. Wharton

Notarized this date 4th of March, 2015.

Carrie Reed

Notary Signature
County of Midland
State of Texas



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Survey Report

Company:	OXY	Local Co-ordinate Reference:	Well Cypress 34 Fed 11H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3051.10usft
Site:	Cypress 34 Fed 11H	MD Reference:	KB @ 3051.10usft
Well:	Cypress 34 Fed 11H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Project:	Eddy County, NM (NAD 27 NME), New Mexico		
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		

Site:	Cypress 34 Fed 11H		
Site Position:	From: Map	Northings:	461,422.60 usft
		Eastings:	510,997.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 16' 5.005 N
		Longitude:	103° 58' 27.208 W
		Grid Convergence:	0.19°

Well:	Cypress 34 Fed 11H		
Well Position	+N/-S	0.00 usft	Northings:
	+E/-W	0.00 usft	Eastings:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Ground Level:	3,027.10 usft

Wellbore:	Wellbore #1		
Magnetics:	Model Name	Sample Date	Declination
	HDGM	1/15/2015	7.42
			Dip Angle
			60.15
			Field Strength
			48,363

Design:	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(bearing)
			178.33

Survey Program:	Date: 2/17/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
411.00	13,655.00	SDI MWD (Wellbore #1)	SDI MWD
			Description
			SDI MWD - Standard ver 1.0.1

Survey:	Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
	Depth	(°)	(bearing)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
	(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
	411.00	0.18	88.71	411.00	0.01	0.65	-0.01	0.04	0.04	0.00
	503.00	0.56	36.51	503.00	0.38	1.06	-0.37	0.51	0.41	-56.74
	595.00	0.54	38.04	594.99	1.08	1.59	-1.06	0.03	-0.02	1.66
	686.00	0.43	76.69	685.99	1.50	2.19	-1.47	0.37	-0.12	42.47
	777.00	0.29	74.30	776.99	1.64	2.74	-1.61	0.15	-0.15	-2.63
	869.00	0.07	349.45	868.99	1.76	2.98	-1.72	0.32	-0.24	-92.23
	960.00	0.15	13.02	959.99	1.93	2.97	-1.89	0.10	0.09	25.90
	1,050.00	0.43	297.62	1,049.99	2.20	2.70	-2.17	0.46	0.31	-83.78
	1,145.00	0.46	282.69	1,144.98	2.45	2.01	-2.42	0.13	0.03	15.72

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Site:	Cypress 34 Fed 11H	MD Reference:	KB @ 3051.10usft
Well:	Cypress 34 Fed 11H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,239.00	0.39	247.02	1,238.98	2.41	1.35	-2.39	0.29	-0.07	-37.95
1,334.00	0.45	240.61	1,333.98	2.10	0.73	-2.09	0.08	0.08	-6.75
1,428.00	0.41	276.81	1,427.98	1.96	0.07	-1.96	0.29	-0.04	38.51
1,522.00	0.14	309.19	1,521.98	2.07	-0.35	-2.07	0.32	-0.29	34.45
1,617.00	0.24	264.90	1,616.97	2.12	-0.84	-2.13	0.18	0.11	-46.62
1,711.00	0.24	286.07	1,710.97	2.16	-1.02	-2.17	0.09	0.00	22.52
1,805.00	0.15	300.94	1,804.97	2.28	-1.32	-2.29	0.11	-0.10	15.82
1,900.00	0.41	309.45	1,899.97	2.56	-1.69	-2.58	0.28	0.27	8.96
1,994.00	0.21	269.98	1,993.97	2.77	-2.12	-2.80	0.30	-0.21	-41.99
2,089.00	0.27	33.30	2,088.97	2.96	-2.17	-2.98	0.45	0.06	129.81
2,183.00	0.34	43.32	2,182.97	3.35	-1.86	-3.37	0.09	0.07	10.68
2,277.00	0.75	64.35	2,276.96	3.82	-1.11	-3.83	0.48	0.44	22.37
2,372.00	0.83	85.04	2,371.96	4.15	0.13	-4.14	0.31	0.08	21.78
2,466.00	1.17	97.95	2,465.94	4.07	1.76	-4.05	0.43	0.38	13.73
2,560.00	1.09	81.60	2,559.92	4.07	3.60	-4.03	0.35	-0.09	-17.39
2,654.00	1.39	104.93	2,653.90	3.91	5.58	-3.84	0.62	0.32	24.82
2,749.00	1.55	115.45	2,748.87	3.06	7.86	-2.96	0.33	0.17	11.07
2,843.00	1.21	114.60	2,842.84	2.10	9.91	-1.88	0.36	-0.36	-0.90
2,937.00	0.71	131.81	2,936.83	1.30	11.24	-1.16	0.61	-0.53	18.31
3,026.00	0.84	149.12	3,025.82	0.37	11.99	-0.23	0.30	0.15	19.45
3,120.00	0.83	6.58	3,119.82	0.54	12.43	-0.39	1.78	0.10	-151.66
3,215.00	1.09	357.83	3,214.80	2.20	12.48	-2.06	0.23	0.17	-9.19
3,309.00	1.21	4.22	3,308.78	4.09	12.52	-3.94	0.19	0.13	6.80
3,403.00	1.35	356.28	3,402.76	6.18	12.52	-6.03	0.24	0.15	-8.45
3,498.00	1.31	357.50	3,497.74	5.38	12.40	-8.24	0.05	-0.04	1.28
3,592.00	2.38	1.89	3,591.69	11.41	12.42	-11.26	1.15	1.14	4.67
3,686.00	2.47	2.14	3,685.60	15.38	12.58	-15.23	0.10	0.10	0.27
3,781.00	3.14	357.28	3,780.49	20.03	12.51	-19.88	0.75	0.71	-5.12
3,875.00	4.79	354.03	3,874.26	26.50	11.98	-26.36	1.77	1.76	-3.46
3,969.00	6.30	353.22	3,967.82	35.53	10.97	-35.40	1.61	1.61	-0.86
4,064.00	6.18	351.58	4,062.29	45.75	9.61	-45.63	0.24	-0.15	-1.73
4,158.00	5.88	351.33	4,155.74	55.50	8.14	-55.40	0.30	-0.30	-0.27
4,253.00	6.13	0.55	4,250.22	85.38	7.46	-85.29	1.05	0.28	9.71
4,347.00	6.01	1.69	4,343.69	75.32	7.65	-75.22	0.18	-0.13	-1.21
4,441.00	5.83	1.67	4,437.19	85.01	7.93	-84.81	0.19	-0.19	-0.02
4,536.00	5.84	352.85	4,531.70	94.63	7.47	-94.53	0.94	0.01	-9.28
4,630.00	5.41	351.44	4,625.25	103.75	6.22	-103.67	0.48	-0.46	-1.50
4,725.00	5.29	350.55	4,719.83	112.50	4.83	-112.44	0.15	-0.13	-0.84
4,819.00	3.83	352.09	4,813.53	119.89	3.69	-119.83	1.56	-1.55	1.64
4,913.00	2.41	345.81	4,907.39	124.91	2.77	-124.87	1.55	-1.51	-6.68
5,007.00	0.30	334.62	5,001.36	127.05	2.18	-127.02	2.25	-2.24	-11.80
5,101.00	0.08	309.52	5,095.36	127.31	2.03	-127.28	0.24	-0.23	-26.70
5,196.00	0.09	251.04	5,190.36	127.33	1.90	-127.30	0.09	0.01	-61.56
5,290.00	0.15	219.40	5,284.36	127.21	1.76	-127.18	0.09	0.08	-33.66

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Site:	Cypress 34 Fed 11H	MD Reference:	KB @ 3051.10usft
Well:	Cypress 34 Fed 11H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
5,384.00	0.30	130.78	5,378.35	126.96	1.86	-128.93	0.35	0.16	-94.28
5,479.00	0.24	130.12	5,473.35	126.67	2.21	-128.63	0.06	-0.06	-0.69
5,573.00	0.09	138.03	5,567.36	126.48	2.41	-126.45	0.16	-0.16	8.41
5,667.00	0.08	32.91	5,661.36	126.48	2.49	-128.45	0.14	-0.01	-111.83
5,761.00	0.07	153.96	5,755.36	126.49	2.55	-126.45	0.14	-0.01	128.78
5,856.00	0.34	216.72	5,850.36	128.21	2.41	-126.17	0.33	0.28	66.06
5,950.00	0.17	261.84	5,944.35	125.87	2.10	-125.93	0.27	-0.18	48.00
6,044.00	0.18	221.11	6,038.35	125.84	1.87	-125.80	0.13	0.01	-43.33
6,139.00	0.52	181.76	6,133.35	125.29	1.76	-125.28	0.42	0.38	-41.42
6,233.00	0.31	183.00	6,227.35	124.61	1.73	-124.58	0.22	-0.22	1.32
6,327.00	0.74	141.14	6,321.35	123.89	2.10	-123.85	0.58	0.46	-44.53
6,421.00	0.45	138.32	6,415.34	123.14	2.72	-123.10	0.31	-0.31	3.00
6,516.00	0.47	132.77	6,510.34	122.59	3.26	-122.55	0.05	0.02	-5.84
6,610.00	0.67	114.44	6,604.33	122.10	4.04	-122.05	0.29	0.21	-19.50
6,705.00	0.89	136.34	6,699.33	121.46	4.94	-121.39	0.27	0.02	23.05
6,799.00	0.85	117.30	6,793.32	120.73	5.95	-120.65	0.32	0.17	-20.26
6,893.00	0.41	110.34	6,887.31	120.29	6.89	-120.21	0.47	-0.47	-7.40
6,987.00	0.35	341.54	6,981.31	120.45	7.11	-120.36	0.73	-0.06	-137.02
7,082.00	1.35	312.37	7,076.30	121.46	6.19	-121.40	1.11	1.05	-30.71
7,176.00	2.12	295.91	7,170.26	122.99	3.81	-122.93	0.97	0.82	-17.51
7,271.00	1.51	266.15	7,265.21	123.67	0.98	-123.65	1.16	-0.64	-31.33
7,365.00	1.81	259.87	7,359.17	123.31	-1.80	-123.32	0.47	0.43	-6.68
7,459.00	1.89	250.15	7,453.12	122.51	-4.80	-122.56	0.34	-0.02	-10.34
7,553.00	0.97	228.54	7,547.09	121.46	-6.85	-121.53	1.12	-0.98	-22.99
7,647.00	0.20	138.48	7,641.08	120.80	-7.34	-120.88	1.05	-0.82	-94.74
7,742.00	1.47	354.65	7,736.07	121.89	-7.35	-121.97	1.72	1.34	-152.45
7,836.00	1.69	354.60	7,830.04	124.47	-7.59	-124.55	0.23	0.23	-0.05
7,930.00	1.96	349.47	7,923.99	127.43	-8.01	-127.52	0.34	0.29	-5.46
8,024.00	1.04	352.55	8,017.96	128.86	-8.42	-128.95	0.98	-0.98	3.28
8,119.00	0.66	310.92	8,112.95	131.07	-8.94	-131.17	0.74	-0.40	-43.82
8,195.00	0.83	288.40	8,188.94	131.53	-9.80	-131.64	0.44	0.22	-29.63
8,205.00	0.79	266.33	8,198.94	131.55	-9.93	-131.66	3.13	-0.40	-220.70
8,300.00	7.21	181.71	8,293.68	125.66	-11.80	-125.79	7.41	6.76	-78.55
8,394.00	17.50	184.33	8,385.38	105.74	-14.07	-105.90	11.05	10.95	-7.85
8,488.00	27.35	182.83	8,472.17	69.99	-16.21	-70.18	10.50	10.48	-1.60
8,583.00	35.98	181.87	8,552.98	20.22	-18.20	-20.44	9.08	9.06	-1.01
8,677.00	44.93	181.16	8,624.42	-40.67	-19.78	40.44	9.55	9.54	-0.76
8,709.00	47.60	180.63	8,646.54	-63.79	-20.13	63.55	8.43	8.34	-1.66
8,740.00	48.78	180.66	8,667.00	-87.07	-20.40	86.83	7.08	7.06	0.10
8,771.00	50.03	180.29	8,686.97	-110.79	-20.59	110.54	1.20	0.77	-1.19
8,803.00	49.95	180.37	8,707.54	-135.30	-20.73	135.04	0.31	-0.25	0.25
8,834.00	49.62	181.07	8,727.56	-158.97	-21.03	158.71	2.03	-1.06	2.28
8,861.30	51.77	179.85	8,744.85	-180.09	-21.16	179.83	8.84	7.87	-5.21

Survey Report

Company:	OXY	Local Co-ordinate Reference:	Well Cypress 34 Fed 11H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3051.10usft
Site:	Cypress 34 Fed 11H	MD Reference:	KB @ 3051.10usft
Well:	Cypress 34 Fed 11H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	N/S (usft)	E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
HL Entry Point:									
8,866.00	52.14	179.41	8,747.75	-183.79	-21.13	183.53	8.84	7.91	-5.03
8,894.56	54.21	178.56	8,764.87	-206.65	-20.72	206.39	7.64	7.26	-2.97
C34F 11H PP									
8,897.00	54.39	178.49	8,766.29	-208.63	-20.67	208.37	7.64	7.27	-2.89
8,928.00	56.19	177.03	8,783.84	-234.09	-19.67	233.84	6.98	5.81	-4.71
8,960.00	59.53	177.47	8,800.96	-261.15	-18.37	260.92	10.50	10.44	1.38
8,991.00	63.66	177.82	8,815.70	-288.39	-17.25	288.17	13.36	13.32	1.13
9,023.00	67.88	178.97	8,828.83	-317.55	-16.44	317.34	13.59	13.18	3.59
9,054.00	72.46	179.67	8,839.35	-346.70	-16.10	346.49	14.83	14.77	2.26
9,086.00	76.41	179.93	8,847.93	-377.52	-15.99	377.31	12.37	12.34	0.81
9,117.00	78.88	179.76	8,854.57	-407.80	-15.91	407.59	7.99	7.97	-0.55
9,149.00	81.07	178.97	8,860.14	-439.31	-15.56	439.10	7.26	6.84	-2.47
9,180.00	83.54	178.09	8,864.29	-470.02	-14.77	469.81	8.45	7.97	-2.84
9,211.00	86.79	178.44	8,868.90	-500.89	-13.84	500.69	10.54	10.48	1.13
9,243.00	89.52	178.53	8,867.93	-532.86	-12.99	532.67	8.54	8.53	0.28
9,337.00	88.46	178.26	8,869.59	-626.81	-10.36	626.64	1.16	-1.13	-0.29
9,431.00	88.55	177.47	8,872.04	-720.71	-8.86	720.58	0.85	0.10	-0.84
9,526.00	89.87	179.32	8,873.35	-815.68	-4.20	815.55	2.39	1.39	1.95
9,620.00	89.87	179.05	8,873.56	-909.65	-2.88	909.55	0.29	0.00	-0.29
9,714.00	89.43	179.85	8,874.14	-1,003.64	-1.86	1,003.55	0.97	-0.47	0.85
9,808.00	89.08	180.29	8,875.36	-1,097.63	-2.07	1,097.53	0.60	-0.37	0.47
9,903.00	90.48	179.76	8,875.72	-1,192.63	-2.11	1,192.52	1.58	1.47	-0.56
9,997.00	89.87	178.53	8,875.44	-1,286.61	-0.71	1,286.52	1.46	-0.65	-1.31
10,091.00	91.54	177.82	8,874.28	-1,380.55	2.28	1,380.49	1.93	-1.78	-0.78
10,185.00	91.54	177.91	8,871.75	-1,474.46	5.78	1,474.42	0.10	0.00	0.10
10,279.00	91.63	178.79	8,869.15	-1,568.38	8.49	1,568.37	0.94	0.10	0.94
10,374.00	91.10	177.21	8,866.89	-1,663.29	11.80	1,663.32	1.75	-0.56	-1.68
10,468.00	91.36	179.76	8,864.87	-1,757.23	14.29	1,757.28	2.73	0.28	2.71
10,562.00	90.31	180.20	8,863.50	-1,851.22	14.32	1,851.26	1.21	-1.12	0.47
10,657.00	89.87	178.35	8,863.35	-1,946.21	15.52	1,946.25	2.00	-0.46	-1.95
10,751.00	89.52	177.82	8,863.85	-2,040.15	18.66	2,040.23	0.68	-0.37	-0.58
10,845.00	88.29	178.26	8,865.65	-2,134.08	21.88	2,134.19	1.39	-1.31	0.47
10,940.00	87.85	178.35	8,868.85	-2,228.98	24.69	2,229.12	0.47	-0.46	0.09
11,034.00	88.79	178.59	8,871.60	-2,322.91	27.19	2,323.07	1.03	1.00	0.26
11,128.00	89.08	180.02	8,873.35	-2,416.88	28.33	2,417.05	1.55	0.31	1.52
11,223.00	88.46	178.62	8,875.39	-2,511.85	29.46	2,512.02	1.81	-0.65	-1.47
11,317.00	88.29	177.56	8,878.06	-2,605.76	32.59	2,605.96	1.14	-0.18	-1.13
11,411.00	88.20	178.88	8,880.94	-2,699.67	35.51	2,699.90	1.41	-0.10	1.40
11,505.00	89.87	181.25	8,882.52	-2,793.64	35.40	2,793.87	3.08	1.78	2.52
11,600.00	89.87	180.81	8,882.73	-2,888.63	33.70	2,888.82	0.46	0.00	-0.46
11,694.00	89.43	182.13	8,883.31	-2,982.59	31.28	2,982.75	1.48	-0.47	1.40
11,788.00	90.22	180.90	8,883.60	-3,076.56	28.80	3,076.68	1.56	0.84	-1.31
11,883.00	91.10	178.70	8,882.50	-3,171.54	29.13	3,171.67	2.49	0.93	-2.32

Survey Report

Company:	OXY	Local Co-ordinate Reference:	Well Cypress 34 Fed 11H.
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3051.10usft
Site:	Cypress 34 Fed 11H	MD Reference:	KB @ 3051.10usft
Well:	Cypress 34 Fed 11H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

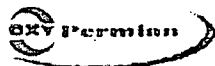
Survey

[illegible]

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		N/S (usft)	E/W (usft)	
8,861.30	8,744.85	-180.09	-21.16	HL Entry Point
13,534.65	8,877.43	-4,821.60	30.22	HL Exit Point
13,594.00	8,877.66	-4,880.95	30.02	MWD Survey
13,655.00	8,877.87	-4,941.95	29.93	Projection to Bit/UD

Checked By: _____ Approved By: _____ Date: _____



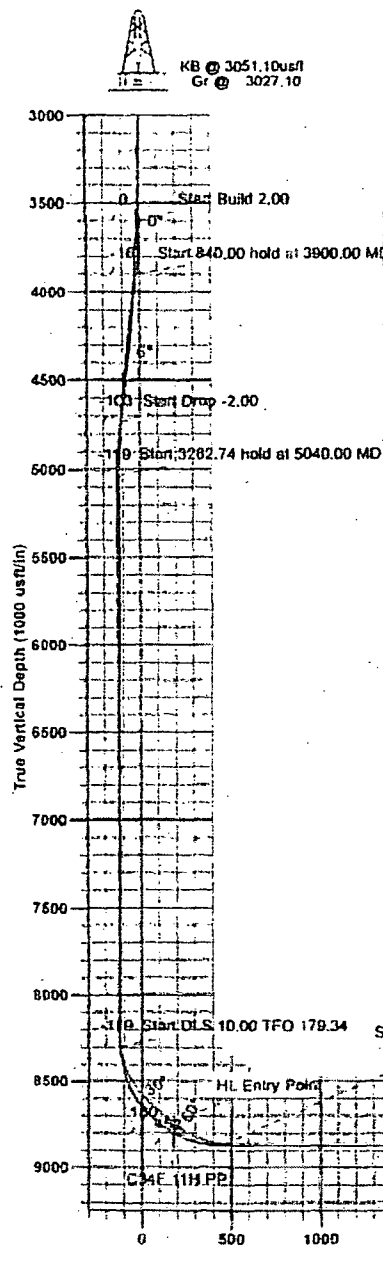
Azimuths to Grid North
True North: -0.19°
Magnetic North: 7.22°

Magnetic Field
Strength: 48362.7nT
Dip Angle: 60.15°
Date: 1/15/2015
Model: HDGM

To convert Magnetic North to Grid, Add 7.22°
To convert True North to Grid, Subtract 0.19°



Cypress 34 Fed 11H
Eddy County, NM (NAD 27 NME)
Northing: 461422.60
Easting: 610997.10
Plan #3



WELL DETAILS Cypress 34 Fed 11H					
		Ground Level: 3027.10		Latitude	
+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.00	0.00	461422.60	610997.10	32° 16' 5.005 N	103° 58' 27.208 W

SECTION DETAILS							
MD*	Inc	Azi	TVD	+N-S	+E-W	Dlog	TFace
							Vsect
							Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3600.00	0.00	0.00	3600.00	0.00	0.00	0.00	0.00
3900.00	0.00	0.00	3899.45	15.59	0.00	2.00	0.00
4740.00	0.00	0.00	4734.85	103.50	0.00	0.00	0.00
5040.00	0.00	0.00	5034.30	119.19	0.00	2.00	180.00
8302.74	0.00	0.00	8297.04	119.19	0.00	0.00	0.00
8201.22	89.85	179.34	8870.00	-452.21	5.57	10.00	179.34
13720.91	89.85	179.34	6882.00	-4971.59	58.50	0.00	0.00

DESIGN TARGET DETAILS					
Name	TVD	+N-S	+E-W	Northing	Easting
C34F 11H PP	8890.00	-180.00	2.19	461242.60	610999.20
C34F 11H LTP	8881.50	-4801.60	56.50	456621.00	611053.60
C34F BHL	6882.00	-4971.59	58.50	456451.01	611055.60

SITE DETAILS:
Cypress 34 Fed 11H
Site Centre Northing: 461422.60
Easting: 610997.10
Positional Uncertainty: 0.00
Convergence: 0.19
Local North: Grid

PROJECT DETAILS:
Eddy County, NM (NAD 27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Etiopoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

