

PATHFINDER

A Schlumberger Company

Reservoir Development

Drilling & Measurements

4301 SW 44th St

Oklahoma City, Oklahoma 73119 USA

Phone: (405) 682-2284

Fax: (405) 682-3937

Accepted for record

WED 7-8-15

Well Reference:

Sec 23, T25S, R27E, Eddy, NM

N 32.10899 W 104.19983

I, Timothy E. Cramer Jr. certify that; I am employed by PathFinder, a division of Schlumberger Technology Corporation; that I did on the day(s) of May 21, 2015 through June 03, 2013, conduct or supervise the taking of the HDS-1 surveys from a depth of 431.00 feet to a depth of 12266.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by PathFinder, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of Chevron USA INC. for the White City 21 25 27 Federal Com 5H Well (Original Hole) API No. 30-015-42975 and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

30-015-42975

By 
Timothy E. Cramer Jr.
MWD

Subscribed and Sworn to before me this 15 day of June (month) 2015 (yr)

My Commission expires:

Jan 15, 2018

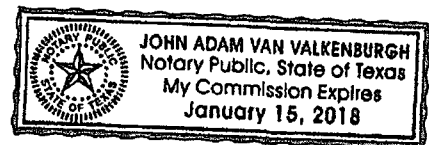
John Van Valkenburg²

Notary Public

Bell County TX

(County State)


(signature)



Reservoir Development

Drilling & Measurements (Anadrill)

4301 SW 44th St

Oklahoma City, Oklahoma 73119 USA

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June 15, 2015

Chevron U.S.A. INC.

MIDLAND, TX 79701

Re:

Sec 23, T25S, R27E, Eddy, NM
N 32.10899 W 104.19983

CLIENT: Chevron USA INC.
WELL: White City 21 25 27 Federal Com 5H
FIELD: Hay Hollow; Bone Springs, N.
RIG: Nabors M51
COUNTY: Eddy
API NO: 30-015-42975
JOB NO: 15MLD2007

Enclosed, please find the original copy of the survey performed on the referenced well by PathFinder, a division of Schlumberger Technology Corporation.
Other information required by your office is as follows.

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Timothy E. Cramer Jr. MWD	White City 21 25 27 Federal Com 5H Original Hole	431.00 Ft to 12266.00 Ft	May 21, 2015 to June 3, 2013	HDS-1

If any other information is required, please contact the undersigned at the above letterhead and phone number.
Sincerely,

Timothy E. Cramer Jr.
Field Specialist I

PathFinder – a Schlumberger company

Survey Report

CHEVRON U.S.A. INC.
 WHITE CITY 21 25 27 FED COM #5H
 EDDY COUNTY, NM
 API#: 30-015-42975 Rig: NABORS M51
 PathFinder Office Supervisor: QUN XU
 PathFinder Field Engineers: T. CRAMER

Survey Horiz. Reference: WELLHEAD
 Ref Coordinates: LAT: 32.6323827 N LON: 104.11594032 W
 GRID Reference: NAD27 new mexico east Transverse Mercator
 Ref GRID Coord: X: 541335.0000 Y: 403401.0000
 North Aligned To: GRID NORTH
 Total Magnetic Correction: 7.50° EAST TO GRID
 Vertical Section Plane: 355.00
 Survey Vert. Reference: 23.00' Rotary Table To Ground
 Altitude: 3128.00' Ground To MSL

Survey Calculations by RX4 using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)
ORIGIN OF WELL AT SURFACE.											
0.00	0.00	231.00	0.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.											
431.00	2.55	25.33	430.86	431.00	8.28	8.67 N	4.10 E	9.59@	25.33	0.59	86.57
522.00	0.70	47.69	521.82	91.00	10.36	10.87 N	5.38 E	12.13@	26.33	2.11	97.41
712.00	0.26	77.38	711.81	190.00	11.12	11.75 N	6.66 E	13.50@	29.55	0.26	104.64
897.00	0.26	4.22	896.81	185.00	11.59	12.26 N	7.10 E	14.16@	30.08	0.17	115.48
1083.00	0.26	355.91	1082.81	186.00	12.43	13.10 N	7.10 E	14.90@	28.46	0.02	122.71
1273.00	1.06	35.89	1272.79	190.00	14.19	14.95 N	8.10 E	17.01@	28.44	0.46	115.48
1464.00	2.11	84.64	1463.73	191.00	15.55	16.71 N	12.64 E	20.95@	37.09	0.85	115.48
1559.00	0.26	163.15	1558.70	95.00	15.35	16.67 N	14.44 E	22.05@	40.90	2.18	115.48
1750.00	1.06	108.83	1749.69	191.00	14.21	15.68 N	16.24 E	22.58@	45.99	0.49	119.09
1940.00	1.67	97.82	1939.64	190.00	12.89	14.74 N	20.64 E	25.37@	54.47	0.35	119.09
2036.00	1.76	92.75	2035.59	96.00	12.38	14.48 N	23.50 E	27.61@	58.36	0.18	115.48
2135.00	1.67	91.43	2134.55	99.00	12.01	14.37 N	26.46 E	30.11@	61.50	0.10	93.80
2326.00	1.76	96.16	2325.46	191.00	11.13	13.99 N	32.16 E	35.07@	66.50	0.09	97.41
2516.00	1.76	86.55	2515.37	190.00	10.49	13.85 N	37.98 E	40.42@	69.96	0.16	101.02
2706.00	1.32	286.58	2705.35	190.00	11.21	14.65 N	38.79 E	41.46@	69.31	1.60	101.02
2897.00	1.32	278.67	2896.30	191.00	12.54	15.61 N	34.51 E	37.87@	65.66	0.10	104.64
3088.00	1.32	277.83	3087.25	191.00	13.55	16.24 N	30.15 E	34.25@	61.69	0.01	108.25
3183.00	1.23	276.70	3182.22	95.00	14.00	16.51 N	28.06 E	32.55@	59.53	0.10	108.25
3278.00	4.31	251.43	3277.10	95.00	13.37	15.49 N	23.66 E	28.28@	56.79	3.41	108.25
3374.00	6.86	244.74	3372.64	96.00	10.54	11.89 N	15.05 E	19.18@	51.68	2.74	108.25
3564.00	6.51	241.85	3561.35	190.00	2.37	1.97 N	4.71 W	5.10@	292.72	0.25	108.25

PathFinder – a Schlumberger company

Survey Report

CHEVRON U.S.A. INC.
 WHITE CITY 21 25 27 FED COM #5H
 EDDY COUNTY, NM
 API#: 30-015-42975 Rig: NABORS M51

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)
3755.00	6.33	240.45	3751.15	191.00	-6.26	8.33 S	23.41 W	24.85@	250.41	0.13	108.25
3945.00	7.91	225.86	3939.70	190.00	-18.86	22.60 S	41.91 W	47.62@	241.66	1.26	111.87
4136.00	7.30	223.41	4129.02	191.00	-35.22	40.57 S	59.68 W	72.17@	235.79	0.36	111.87
4327.00	6.51	219.98	4318.63	191.00	-50.93	57.68 S	74.98 W	94.60@	232.43	0.47	115.48
4518.00	7.83	240.50	4508.16	191.00	-63.99	72.39 S	93.26 W	118.06@	232.18	1.50	115.48
4708.00	7.39	238.46	4696.49	190.00	-74.81	85.15 S	114.94 W	143.05@	233.47	0.27	115.48
4899.00	6.86	235.64	4886.01	191.00	-85.89	98.02 S	134.83 W	166.69@	233.98	0.33	115.48
5089.00	7.47	244.19	5074.53	190.00	-95.85	109.80 S	155.31 W	190.20@	234.74	0.65	115.48
5280.00	8.09	246.18	5263.78	191.00	-104.59	120.63 S	178.78 W	215.68@	235.99	0.35	115.48
5470.00	7.56	243.73	5452.01	190.00	-113.44	131.57 S	202.22 W	241.25@	236.95	0.33	115.48
5661.00	6.95	244.58	5641.48	191.00	-122.03	142.09 S	223.93 W	265.20@	237.60	0.32	119.09
5851.00	6.95	230.98	5830.09	190.00	-132.47	154.26 S	243.24 W	288.03@	237.62	0.86	119.09
6042.00	8.35	223.25	6019.39	191.00	-148.17	171.64 S	261.72 W	312.98@	236.74	0.91	122.71
6232.00	10.29	215.86	6206.88	190.00	-170.20	195.44 S	281.12 W	342.38@	235.19	1.20	122.71
6423.00	9.15	211.57	6395.14	191.00	-195.30	222.21 S	299.06 W	372.58@	233.39	0.71	122.71
6614.00	7.12	213.08	6584.21	191.00	-216.81	245.07 S	313.48 W	397.90@	231.98	1.07	126.32
6709.00	4.84	210.98	6678.69	95.00	-224.69	253.44 S	318.75 W	407.23@	231.51	2.41	126.32
6805.00	2.29	209.12	6774.49	96.00	-229.56	258.59 S	321.77 W	412.80@	231.21	2.66	126.32
6876.00	0.79	194.76	6845.47	71.00	-231.19	260.30 S	322.59 W	414.51@	231.10	2.17	129.94
6936.00	0.88	340.96	6905.46	60.00	-231.14	260.26 S	322.84 W	414.69@	231.13	2.66	119.09
6985.00	6.42	340.43	6954.35	49.00	-228.12	257.32 S	323.88 W	413.66@	231.53	11.31	119.09
7030.00	11.08	343.10	6998.81	45.00	-221.45	250.81 S	325.99 W	411.31@	232.43	10.39	119.09
7081.00	15.74	343.68	7048.40	51.00	-209.86	239.48 S	329.36 W	407.22@	233.98	9.14	122.71
7128.00	20.49	345.30	7093.06	47.00	-195.49	225.40 S	333.24 W	402.31@	235.93	10.16	122.71
7176.00	25.32	349.24	7137.27	48.00	-176.99	207.17 S	337.29 W	395.83@	238.44	10.55	122.71
7223.00	30.16	351.07	7178.85	47.00	-155.20	185.62 S	341.00 W	388.25@	241.44	10.46	122.71
7271.00	33.85	351.52	7219.55	48.00	-129.82	160.48 S	344.84 W	380.36@	245.04	7.70	122.71

PathFinder – a Schlumberger company

Survey Report

CHEVRON U.S.A. INC.
WHITE CITY 21 25 27 FED COM #5H
EDDY COUNTY, NM
API#: 30-015-42975 Rig: NABORS M51

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)
7318.00	38.78	354.44	7257.41	47.00	-102.01	132.87 S	348.20 W	372.69@	249.11	11.11	126.32
7367.00	43.97	359.82	7294.18	49.00	-69.69	100.55 S	349.74 W	363.91@	253.96	12.83	126.32
7414.00	49.86	0.38	7326.27	47.00	-35.51	66.24 S	349.68 W	355.89@	259.27	12.56	126.32
7462.00	55.40	357.25	7355.40	48.00	2.53	28.12 S	350.50 W	351.63@	265.41	12.65	126.32
7510.00	61.38	355.61	7380.55	48.00	43.38	12.65 N	353.07 W	353.29@	272.05	12.79	126.32
7557.00	67.44	355.67	7400.84	47.00	85.74	54.90 N	356.29 W	360.49@	278.76	12.89	126.32
7604.00	75.18	356.58	7415.89	47.00	130.22	99.29 N	359.28 W	372.75@	285.45	16.57	126.32
7652.00	81.69	359.08	7425.51	48.00	177.16	146.25 N	361.05 W	389.55@	292.05	14.49	126.32
7739.00	88.81	1.97	7432.71	87.00	263.39	232.88 N	360.25 W	428.97@	302.88	8.83	122.71
7834.00	88.55	2.79	7434.90	95.00	357.58	327.77 N	356.30 W	484.14@	312.61	0.90	122.71
7929.00	88.64	3.60	7437.23	95.00	451.58	422.60 N	351.01 W	549.36@	320.29	0.86	122.71
8025.00	88.72	2.39	7439.44	96.00	546.62	518.44 N	346.00 W	623.29@	326.28	1.26	126.32
8120.00	90.22	0.26	7440.32	95.00	641.03	613.40 N	343.80 W	703.18@	330.73	2.74	126.32
8215.00	90.84	1.49	7439.44	95.00	735.52	708.38 N	342.35 W	786.77@	334.21	1.45	126.32
8311.00	91.01	1.63	7437.89	96.00	830.88	804.34 N	339.74 W	873.14@	337.10	0.23	129.94
8406.00	91.89	1.98	7435.49	95.00	925.18	899.26 N	336.74 W	960.24@	339.47	1.00	129.94
8502.00	90.22	1.16	7433.72	96.00	1020.53	995.20 N	334.11 W	1049.79@	341.44	1.94	129.94
8596.00	89.60	0.82	7433.87	94.00	1114.02	1089.19 N	332.49 W	1138.80@	343.02	0.75	133.55
8692.00	89.16	359.57	7434.90	96.00	1209.62	1185.18 N	332.16 W	1230.84@	344.34	1.38	129.94
8787.00	88.72	359.01	7436.66	95.00	1304.33	1280.15 N	333.34 W	1322.84@	345.40	0.75	133.55
8882.00	88.46	359.59	7439.00	95.00	1399.04	1375.12 N	334.50 W	1415.22@	346.33	0.67	129.94
8977.00	88.20	0.41	7441.77	95.00	1493.63	1470.08 N	334.50 W	1507.65@	347.18	0.90	133.55
9073.00	89.52	358.78	7443.68	96.00	1589.30	1566.05 N	335.18 W	1601.52@	347.92	2.18	129.94
9168.00	89.87	358.91	7444.18	95.00	1684.09	1661.03 N	337.09 W	1694.89@	348.53	0.39	129.94
9264.00	89.43	356.88	7444.77	96.00	1779.96	1756.96 N	340.62 W	1789.67@	349.03	2.16	129.94
9359.00	90.66	355.66	7444.70	95.00	1874.93	1851.75 N	346.80 W	1883.95@	349.39	1.82	129.94
9454.00	90.40	356.10	7443.82	95.00	1969.91	1946.50 N	353.63 W	1978.36@	349.70	0.54	133.55

PathFinder – a Schlumberger company

Survey Report

CHEVRON U.S.A. INC.
 WHITE CITY 21 25 27 FED COM #5H
 EDDY COUNTY, NM
 API#: 30-015-42975 Rig: NABORS M51

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS (dg/100ft)	TEMP (F)
						(ft)	(ft)	(ft)	(deg)		
9549.00	90.40	356.83	7443.15	95.00	2064.88	2041.32 N	359.48 W	2072.73@	350.01	0.77	133.55
9644.00	90.40	357.41	7442.49	95.00	2159.81	2136.19 N	364.26 W	2167.03@	350.32	0.61	133.55
9741.00	90.04	357.61	7442.12	97.00	2256.72	2233.10 N	368.47 W	2263.30@	350.63	0.42	129.94
9835.00	90.04	358.22	7442.05	94.00	2350.60	2327.04 N	371.89 W	2356.57@	350.92	0.65	133.55
9931.00	90.13	358.27	7441.91	96.00	2446.44	2422.99 N	374.83 W	2451.82@	351.21	0.11	133.55
10026.00	90.04	358.04	7441.77	95.00	2541.30	2517.94 N	377.89 W	2546.14@	351.46	0.26	133.55
10121.00	90.13	358.47	7441.63	95.00	2636.14	2612.90 N	380.78 W	2640.50@	351.71	0.46	133.55
10216.00	89.87	359.00	7441.63	95.00	2730.94	2707.88 N	382.88 W	2734.81@	351.95	0.62	133.55
10311.00	90.04	359.23	7441.70	95.00	2825.70	2802.87 N	384.35 W	2829.09@	352.19	0.30	137.17
10407.00	90.31	359.94	7441.41	96.00	2921.39	2898.86 N	385.04 W	2924.32@	352.43	0.79	133.55
10502.00	90.48	0.22	7440.76	95.00	3016.01	2993.86 N	384.91 W	3018.50@	352.67	0.34	137.17
10597.00	90.75	0.28	7439.74	95.00	3110.61	3088.85 N	384.49 W	3112.69@	352.90	0.29	137.17
10692.00	90.92	0.69	7438.35	95.00	3205.16	3183.84 N	383.69 W	3206.88@	353.13	0.47	137.17
10788.00	90.66	1.00	7437.03	96.00	3300.66	3279.82 N	382.28 W	3302.02@	353.35	0.42	137.17
10883.00	89.78	359.29	7436.66	95.00	3395.27	3374.81 N	382.03 W	3396.37@	353.54	2.02	133.55
10978.00	90.04	359.13	7436.81	95.00	3490.01	3469.80 N	383.34 W	3490.92@	353.70	0.32	137.17
11074.00	90.04	359.97	7436.74	96.00	3585.71	3565.80 N	384.10 W	3586.43@	353.85	0.87	137.17
11169.00	90.22	359.87	7436.53	95.00	3680.36	3660.80 N	384.23 W	3680.91@	354.01	0.22	137.17
11264.00	90.57	0.72	7435.87	95.00	3774.95	3755.80 N	383.74 W	3775.35@	354.17	0.97	140.78
11359.00	90.13	0.93	7435.29	95.00	3869.46	3850.78 N	382.37 W	3869.72@	354.33	0.51	137.17
11455.00	89.69	359.31	7435.44	96.00	3965.07	3946.78 N	382.17 W	3965.24@	354.47	1.75	137.17
11550.00	87.93	357.62	7437.42	95.00	4059.87	4041.72 N	384.72 W	4059.99@	354.56	2.57	137.17
11645.00	88.20	357.13	7440.63	95.00	4154.73	4136.56 N	389.07 W	4154.82@	354.63	0.59	137.17
11740.00	87.93	357.32	7443.83	95.00	4249.61	4231.40 N	393.66 W	4249.67@	354.68	0.35	140.78
11836.00	88.20	357.02	7447.08	96.00	4345.48	4327.23 N	398.40 W	4345.53@	354.74	0.42	137.17
11931.00	89.60	356.38	7448.90	95.00	4440.42	4422.05 N	403.87 W	4440.45@	354.78	1.62	137.17
12026.00	89.96	356.93	7449.26	95.00	4535.38	4516.89 N	409.41 W	4535.40@	354.82	0.69	140.78

PathFinder – a Schlumberger company

Survey Report

CHEVRON U.S.A. INC.
 WHITE CITY 21 25 27 FED COM #5H
 EDDY COUNTY, NM
 API#: 30-015-42975 Rig: NABORS M51

Page 05/05

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)
12122.00	89.78	356.89	7449.48	96.00	4631.33	4612.75 N	414.58 W	4631.34@	354.86	0.19	140.78
12217.00	89.43	357.14	7450.14	95.00	4726.26	4707.61 N	419.53 W	4726.27@	354.91	0.45	140.78
12266.00	89.34	356.79	7450.66	49.00	4775.23	4756.54 N	422.13 W	4775.24@	354.93	0.74	140.78
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 12326'MD.											
12326.00	89.34	356.79	7451.35	60.00	4835.20	4816.44 N	425.49 W	4835.20@	354.95	0.00	0.00