



Approach Resources

Crockett County, Texas (NAD27)

University 45 A

710H

Wellbore #1

Survey: MS MWD

Standard Survey Report

24 January, 2013

Company:	Approach Resources	Local Co-ordinate Reference:	Well 710H
Project:	Crockett County, Texas (NAD27)	TVD Reference:	WELL @ 2715.00usft (Nabors 415)
Site:	University 45 A	MD Reference:	WELL @ 2715.00usft (Nabors 415)
Well:	710H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Well Planning Conroe

Project	Crockett County, Texas (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Well	710H				
Well Position	+N/-S	0.00 usft	Northing:	478,257.47 usft	Latitude: 30° 58' 41.7302 N
	+E/-W	0.00 usft	Easting:	1,704,436.57 usft	Longitude: 101° 16' 35.434 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level: 2,692.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM_2010	12/27/12	6.25	59.36	47,937

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00		182.79

Survey Program	Date	01/24/13			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	5,850.00	MS Gyro (Wellbore #1)	NS-GYRO-MS	North sensing gyrocompassing m/s	
5,862.00	15,092.00	MS MWD (Wellbore #1)	MWD	MWD - Standard	

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)	
5,850.00	0.21	42.08	5,848.85	-13.31	20.99	12.27	0.00	0.00	0.00	
Tie-In to MS Gyro-5850.00' MD										
5,862.00	0.40	112.00	5,860.85	-13.30	21.04	12.26	3.19	1.58	582.67	
5,894.00	0.00	82.90	5,892.85	-13.35	21.14	12.30	1.25	-1.25	0.00	
5,926.00	2.10	235.30	5,924.84	-13.68	20.66	12.66	6.56	6.56	0.00	
5,957.00	6.30	237.60	5,955.75	-14.92	18.76	13.99	13.56	13.55	7.42	
5,989.00	10.70	237.90	5,987.39	-17.44	14.76	16.70	13.75	13.75	0.94	
6,020.00	13.90	241.80	6,017.67	-20.73	9.03	20.26	10.66	10.32	12.58	
6,052.00	17.00	245.10	6,048.51	-24.51	1.40	24.42	10.07	9.69	10.31	
6,083.00	20.40	247.90	6,077.87	-28.45	-7.72	28.80	11.34	10.97	9.03	
6,115.00	23.60	251.40	6,107.54	-32.60	-18.96	33.48	10.80	10.00	10.94	
6,146.00	25.90	245.90	6,135.70	-37.34	-31.02	38.81	10.49	7.42	-17.74	
6,178.00	27.80	240.30	6,164.25	-43.90	-43.89	45.98	9.88	5.94	-17.50	
6,210.00	30.20	236.90	6,192.24	-51.99	-57.12	54.71	9.10	7.50	-10.63	
6,241.00	33.10	234.20	6,218.62	-61.20	-70.52	64.56	10.41	9.35	-8.71	

Company:	Approach Resources	Local Co-ordinate Reference:	Well 710H
Project:	Crockett County, Texas (NAD27)	TVD Reference:	WELL @ 2715.00usft (Nabors 415)
Site:	University 45 A	MD Reference:	WELL @ 2715.00usft (Nabors 415)
Well:	710H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Well Planning Conroe

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)	
6,274.00	36.00	232.00	6,245.80	-72.45	-85.47	76.52	9.57	8.79	-6.67	
6,305.00	37.50	228.00	6,270.64	-84.37	-99.66	89.12	9.11	4.84	-12.90	
6,337.00	38.50	223.90	6,295.86	-98.07	-113.81	103.49	8.48	3.13	-12.81	
6,368.00	40.70	223.00	6,319.75	-112.41	-127.40	118.48	7.33	7.10	-2.90	
6,399.00	43.40	223.20	6,342.77	-127.57	-141.58	134.31	8.72	8.71	0.65	
6,431.00	46.00	223.90	6,365.51	-143.88	-157.09	151.36	8.27	8.13	2.19	
6,463.00	48.70	222.60	6,387.19	-161.03	-173.21	169.27	8.95	8.44	-4.06	
6,494.00	50.80	219.30	6,407.22	-178.90	-188.71	187.87	10.58	6.77	-10.65	
6,526.00	52.70	216.70	6,427.03	-198.70	-204.17	208.41	8.72	5.94	-8.13	
6,558.00	55.30	216.30	6,445.84	-219.51	-219.57	229.94	8.19	8.13	-1.25	
6,589.00	57.00	215.70	6,463.11	-240.34	-234.70	251.48	5.71	5.48	-1.94	
6,621.00	58.80	215.40	6,480.11	-262.40	-250.46	274.28	5.68	5.63	-0.94	
6,652.00	61.50	214.50	6,495.54	-284.43	-265.86	297.04	9.07	8.71	-2.90	
6,684.00	64.40	213.20	6,510.09	-308.10	-281.73	321.45	9.76	9.06	-4.06	
6,716.00	66.90	212.40	6,523.29	-332.61	-297.51	346.69	8.14	7.81	-2.50	
6,747.00	69.50	211.20	6,534.80	-357.07	-312.68	371.86	9.12	8.39	-3.87	
6,779.00	71.50	209.40	6,545.48	-383.11	-327.89	398.62	8.20	6.25	-5.63	
6,810.00	73.00	207.10	6,554.93	-409.12	-341.86	425.27	8.56	4.84	-7.42	
6,842.00	74.00	204.40	6,564.02	-436.75	-355.19	453.52	8.67	3.13	-8.44	
6,873.00	75.00	201.90	6,572.31	-464.21	-366.93	481.52	8.41	3.23	-8.06	
6,905.00	76.20	199.70	6,580.26	-493.19	-377.94	511.00	7.64	3.75	-6.88	
6,934.00	77.00	196.50	6,586.99	-520.00	-386.70	538.20	11.08	2.76	-11.03	
6,966.00	78.50	194.80	6,593.78	-550.11	-395.13	568.69	6.99	4.69	-5.31	
6,998.00	79.40	192.20	6,599.91	-580.64	-402.46	599.54	8.46	2.81	-8.13	
7,029.00	81.20	189.90	6,605.13	-610.63	-408.32	629.78	9.34	5.81	-7.42	
7,061.00	83.60	187.50	6,609.37	-641.98	-413.11	661.33	10.56	7.50	-7.50	
7,092.00	84.70	184.70	6,612.53	-672.64	-416.39	692.11	9.66	3.55	-9.03	
7,124.00	86.20	183.10	6,615.07	-704.46	-418.56	724.00	6.84	4.69	-5.00	
7,156.00	86.60	181.60	6,617.08	-736.37	-419.87	755.94	4.84	1.25	-4.69	
7,187.00	86.50	179.50	6,618.94	-767.31	-420.16	786.86	6.77	-0.32	-6.77	
7,219.00	86.80	179.20	6,620.81	-799.26	-419.80	818.74	1.32	0.94	-0.94	
7,314.00	87.20	179.50	6,625.78	-894.12	-418.72	913.44	0.53	0.42	0.32	
7,408.00	88.70	178.80	6,629.15	-988.05	-417.33	1,007.19	1.76	1.60	-0.74	
7,503.00	89.90	181.20	6,630.31	-1,083.03	-417.33	1,102.06	2.82	1.26	2.53	
7,598.00	90.40	182.00	6,630.06	-1,177.99	-419.98	1,197.04	0.99	0.53	0.84	
7,693.00	89.20	181.40	6,630.39	-1,272.95	-422.80	1,292.02	1.41	-1.26	-0.63	
7,788.00	88.70	180.90	6,632.13	-1,367.91	-424.71	1,386.96	0.74	-0.53	-0.53	
7,882.00	91.40	181.00	6,632.05	-1,461.89	-426.27	1,480.91	2.87	2.87	0.11	
7,977.00	91.90	179.80	6,629.31	-1,556.85	-426.93	1,575.78	1.37	0.53	-1.26	
8,072.00	90.00	179.00	6,627.74	-1,651.82	-425.93	1,670.60	2.17	-2.00	-0.84	
8,167.00	90.10	178.50	6,627.65	-1,746.80	-423.86	1,765.36	0.54	0.11	-0.53	
8,262.00	89.70	178.60	6,627.82	-1,841.77	-421.46	1,860.10	0.43	-0.42	0.11	
8,356.00	89.40	179.00	6,628.56	-1,935.75	-419.49	1,953.87	0.53	-0.32	0.43	

Company:	Approach Resources	Local Co-ordinate Reference:	Well 710H
Project:	Crockett County, Texas (NAD27)	TVD Reference:	WELL @ 2715.00usft (Nabors 415)
Site:	University 45 A	MD Reference:	WELL @ 2715.00usft (Nabors 415)
Well:	710H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Well Planning Conroe

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)
8,451.00	89.30	180.00	6,629.64	-2,030.73	-418.66	2,048.71	1.06	-0.11	1.05
8,546.00	91.90	179.60	6,628.64	-2,125.72	-418.33	2,143.56	2.77	2.74	-0.42
8,641.00	90.50	179.20	6,626.65	-2,220.69	-417.33	2,238.37	1.53	-1.47	-0.42
8,736.00	90.40	179.70	6,625.91	-2,315.68	-416.42	2,333.21	0.54	-0.11	0.53
8,830.00	90.80	180.50	6,624.92	-2,409.68	-416.59	2,427.10	0.95	0.43	0.85
8,925.00	90.40	180.10	6,623.93	-2,504.67	-417.08	2,522.00	0.60	-0.42	-0.42
9,020.00	89.80	181.00	6,623.76	-2,599.66	-418.00	2,616.93	1.14	-0.63	0.95
9,115.00	89.40	180.40	6,624.42	-2,694.65	-419.16	2,711.86	0.76	-0.42	-0.63
9,209.00	88.90	179.60	6,625.82	-2,788.64	-419.16	2,805.74	1.00	-0.53	-0.85
9,304.00	89.00	179.70	6,627.56	-2,883.63	-418.58	2,900.58	0.15	0.11	0.11
9,395.00	88.80	179.30	6,629.31	-2,974.61	-417.78	2,991.42	0.49	-0.22	-0.44
9,487.00	90.20	180.40	6,630.11	-3,066.60	-417.54	3,083.29	1.94	1.52	1.20
9,578.00	89.90	178.50	6,630.03	-3,157.59	-416.67	3,174.13	2.11	-0.33	-2.09
9,670.00	89.80	179.50	6,630.27	-3,249.57	-415.06	3,265.93	1.09	-0.11	1.09
9,760.00	89.10	178.80	6,631.14	-3,339.56	-413.73	3,355.74	1.10	-0.78	-0.78
9,852.00	90.50	180.40	6,631.46	-3,431.55	-413.08	3,447.59	2.31	1.52	1.74
9,942.00	90.40	179.70	6,630.75	-3,521.55	-413.16	3,537.48	0.79	-0.11	-0.78
10,034.00	90.50	181.20	6,630.03	-3,613.54	-413.89	3,629.40	1.63	0.11	1.63
10,126.00	90.60	181.70	6,629.14	-3,705.50	-416.21	3,721.37	0.55	0.11	0.54
10,218.00	90.60	182.40	6,628.18	-3,797.44	-419.50	3,813.36	0.76	0.00	0.76
10,313.00	90.50	182.30	6,627.27	-3,892.36	-423.40	3,908.35	0.15	-0.11	-0.11
10,408.00	90.50	180.30	6,626.44	-3,987.32	-425.55	4,003.31	2.11	0.00	-2.11
10,502.00	90.40	180.90	6,625.70	-4,081.31	-426.54	4,097.24	0.65	-0.11	0.64
10,597.00	91.00	179.50	6,624.54	-4,176.30	-426.87	4,192.13	1.60	0.63	-1.47
10,692.00	90.00	179.90	6,623.71	-4,271.30	-426.37	4,286.99	1.13	-1.05	0.42
10,787.00	89.90	180.20	6,623.79	-4,366.30	-426.46	4,381.88	0.33	-0.11	0.32
10,882.00	89.80	181.00	6,624.04	-4,461.29	-427.45	4,476.81	0.85	-0.11	0.84
10,978.00	90.50	180.10	6,623.79	-4,557.29	-428.37	4,572.73	1.19	0.73	-0.94
11,073.00	91.00	179.20	6,622.55	-4,652.27	-427.79	4,667.58	1.08	0.53	-0.95
11,167.00	90.90	178.90	6,620.99	-4,746.25	-426.23	4,761.37	0.34	-0.11	-0.32
11,262.00	90.30	177.70	6,619.99	-4,841.20	-423.42	4,856.07	1.41	-0.63	-1.26
11,357.00	90.50	177.10	6,619.33	-4,936.10	-419.11	4,950.65	0.67	0.21	-0.63
11,452.00	90.60	177.10	6,618.42	-5,030.97	-414.30	5,045.17	0.11	0.11	0.00
11,547.00	90.60	180.50	6,617.42	-5,125.93	-412.31	5,139.93	3.58	0.00	3.58
11,641.00	91.80	180.20	6,615.46	-5,219.91	-412.89	5,233.82	1.32	1.28	-0.32
11,736.00	91.00	179.80	6,613.13	-5,314.88	-412.89	5,328.68	0.94	-0.84	-0.42
11,831.00	89.70	179.20	6,612.55	-5,409.87	-412.06	5,423.52	1.51	-1.37	-0.63
11,926.00	89.50	178.80	6,613.22	-5,504.85	-410.40	5,518.30	0.47	-0.21	-0.42
12,021.00	90.50	179.80	6,613.22	-5,599.84	-409.24	5,613.13	1.49	1.05	1.05
12,115.00	91.40	179.40	6,611.66	-5,693.83	-408.58	5,706.97	1.05	0.96	-0.43
12,210.00	91.10	179.40	6,609.59	-5,788.80	-407.59	5,801.78	0.32	-0.32	0.00
12,305.00	91.10	179.00	6,607.76	-5,883.77	-406.26	5,896.57	0.42	0.00	-0.42
12,400.00	90.50	178.60	6,606.44	-5,978.74	-404.27	5,991.33	0.76	-0.63	-0.42

Company:	Approach Resources	Local Co-ordinate Reference:	Well 710H
Project:	Crockett County, Texas (NAD27)	TVD Reference:	WELL @ 2715.00usft (Nabors 415)
Site:	University 45 A	MD Reference:	WELL @ 2715.00usft (Nabors 415)
Well:	710H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Well Planning Conroe

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)	
12,495.00	89.80	176.50	6,606.19	-6,073.65	-400.21	6,085.93	2.33	-0.74	-2.21	
12,589.00	88.70	178.80	6,607.42	-6,167.55	-396.36	6,179.54	2.71	-1.17	2.45	
12,684.00	89.30	178.60	6,609.08	-6,262.51	-394.20	6,274.28	0.67	0.63	-0.21	
12,779.00	89.80	180.60	6,609.82	-6,357.50	-393.54	6,369.12	2.17	0.53	2.11	
12,874.00	91.10	180.70	6,609.08	-6,452.49	-394.62	6,464.05	1.37	1.37	0.11	
12,969.00	90.60	180.10	6,607.67	-6,547.48	-395.28	6,558.96	0.82	-0.53	-0.63	
13,064.00	90.30	179.50	6,606.92	-6,642.48	-394.95	6,653.83	0.71	-0.32	-0.63	
13,158.00	90.10	181.20	6,606.59	-6,736.47	-395.52	6,747.74	1.82	-0.21	1.81	
13,253.00	91.40	180.90	6,605.35	-6,831.44	-397.26	6,842.68	1.40	1.37	-0.32	
13,348.00	91.20	181.10	6,603.19	-6,926.40	-398.92	6,937.61	0.30	-0.21	0.21	
13,443.00	91.10	181.50	6,601.29	-7,021.36	-401.08	7,032.56	0.43	-0.11	0.42	
13,538.00	90.70	178.90	6,599.79	-7,116.34	-401.41	7,127.44	2.77	-0.42	-2.74	
13,633.00	90.10	182.20	6,599.13	-7,211.32	-402.32	7,222.36	3.53	-0.63	3.47	
13,728.00	90.20	180.80	6,598.88	-7,306.28	-404.81	7,317.33	1.48	0.11	-1.47	
13,822.00	89.90	179.40	6,598.80	-7,400.28	-404.97	7,411.22	1.52	-0.32	-1.49	
13,917.00	90.00	182.20	6,598.88	-7,495.26	-406.30	7,506.16	2.95	0.11	2.95	
14,012.00	90.80	182.70	6,598.22	-7,590.17	-410.36	7,601.15	0.99	0.84	0.53	
14,107.00	90.60	182.80	6,597.06	-7,685.06	-414.91	7,696.14	0.24	-0.21	0.11	
14,202.00	90.70	182.40	6,595.98	-7,779.95	-419.22	7,791.14	0.43	0.11	-0.42	
14,297.00	90.40	181.50	6,595.07	-7,874.89	-422.46	7,886.12	1.00	-0.32	-0.95	
14,391.00	90.10	180.90	6,594.66	-7,968.87	-424.42	7,980.08	0.71	-0.32	-0.64	
14,486.00	90.20	179.60	6,594.41	-8,063.87	-424.84	8,074.99	1.37	0.11	-1.37	
14,581.00	90.50	178.30	6,593.83	-8,158.85	-423.10	8,169.77	1.40	0.32	-1.37	
14,676.00	90.20	179.20	6,593.25	-8,253.82	-421.03	8,264.53	1.00	-0.32	0.95	
14,770.00	90.70	179.70	6,592.51	-8,347.81	-420.12	8,358.37	0.75	0.53	0.53	
14,865.00	90.80	179.00	6,591.27	-8,442.80	-419.05	8,453.19	0.74	0.11	-0.74	
14,960.00	91.00	178.70	6,589.78	-8,537.77	-417.14	8,547.95	0.38	0.21	-0.32	
15,045.00	91.30	178.40	6,588.07	-8,622.72	-414.99	8,632.70	0.50	0.35	-0.35	
15,092.00	91.30	178.40	6,587.00	-8,669.69	-413.68	8,679.55	0.00	0.00	0.00	
Projection to TD-15092.00' MD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
5,850.00	5,848.85	-13.31	20.99	Tie-In to MS Gyro-5850.00' MD	
15,092.00	6,587.00	-8,669.69	-413.68	Projection to TD-15092.00' MD	