



Weatherford®

Cambrian Management, LTD

Anderson Ranch Unit #17

Lea Co., NM

Section 1

Weatherford (Wft) Final Definitive

Plot & Survey

Anderson Ranch Unit #17
Lea Co, NM



Plan Data for Anderson Ranch Unit #17 ST01

Plan Point Information:										
DogLeg Severity Unit: °/100.00ft				Position offsets from Slot centre						
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS	
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)	
6119.00	89.50	178.32	4721.45	-1653.74	-353.90	707719.26	683358.60	1666.71	0.79	
6300.87	87.35	180.00	4726.45	-1835.51	-351.23	707537.49	683361.27	1848.22	1.50	
6600.87	87.35	180.00	4740.32	-2135.19	-351.23	707237.81	683361.27	2147.66	0.00	
6744.45	89.50	180.00	4744.26	-2278.71	-351.23	707094.29	683361.27	2291.06	1.50	
13179.97	89.50	180.00	4800.00	-8713.98	-350.97	700659.02	683361.53	8721.04	0.00	

Plan Data for Anderson Ranch Unit #17 ST01

Field: Lea Co, NM Nad (27 NMEZ)
Map Unit: USFt Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD27 / New Mexico East

Slot: Anderson Ranch Unit #17

Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 709373.00USft Latitude: 32.948704°
+E/-W: 0.00USft Easting: 683712.50USft Longitude: -103.734459°
Elevation Above VRD: 4273.00USft

Plan Data for Anderson Ranch Unit #17 ST01

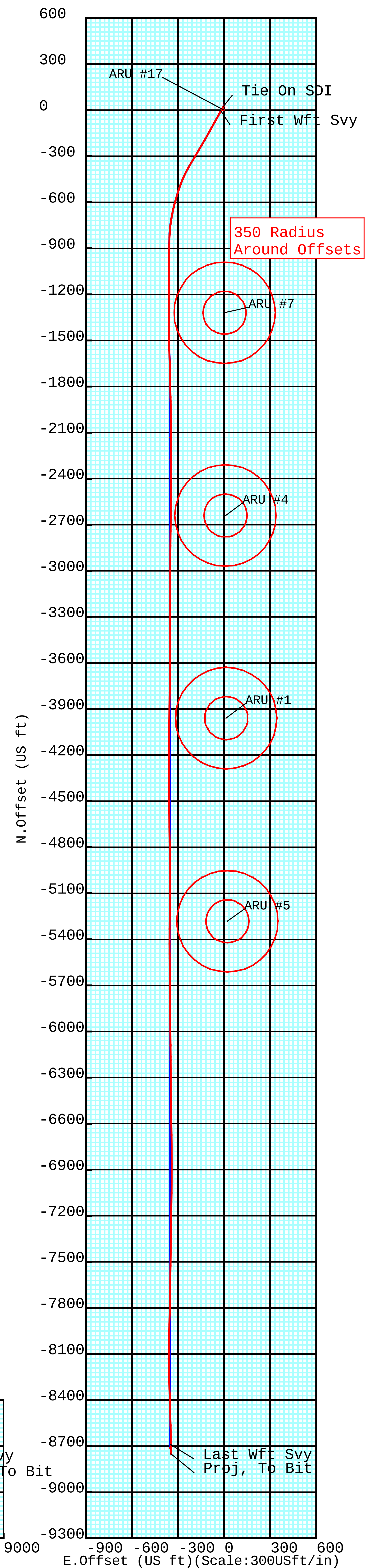
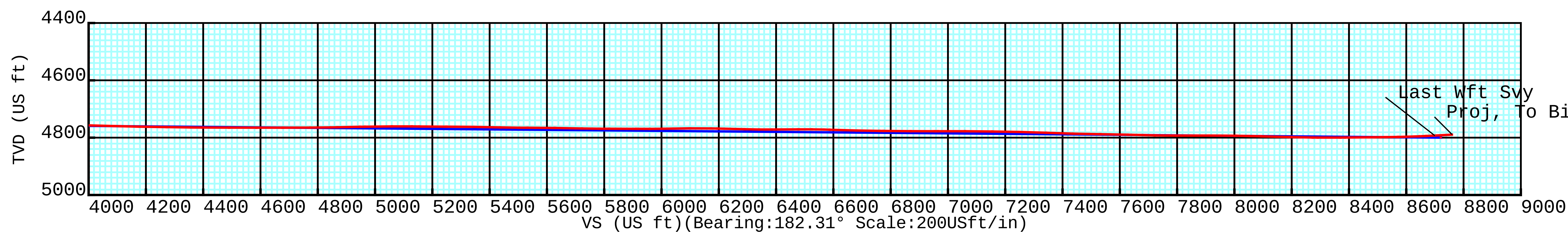
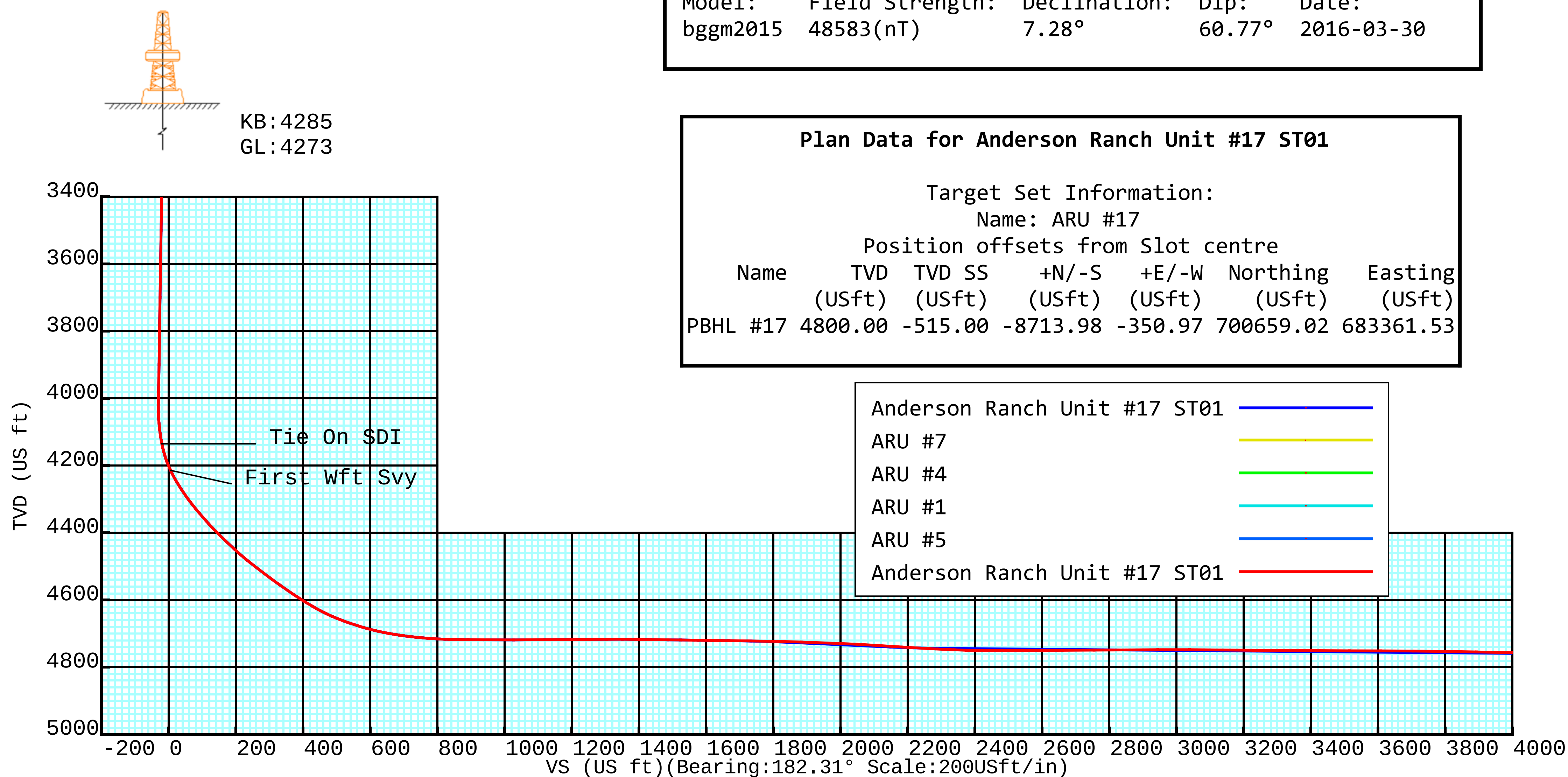
Well: Anderson Ranch Unit #17 ST01

Type: Side-Track
File Number:
Plan Folder: P3 Plan: P3:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: -0.00USft Azimuth: 182.31°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
bggm2015 48583(nT) 7.28° 60.77° 2016-03-30

Plan Data for Anderson Ranch Unit #17 ST01

Target Set Information:
Name: ARU #17
Position offsets from Slot centre
Name TVD TVD SS +N/-S +E/-W Northing Easting
(USft) (USft) (USft) (USft) (USft) (USft)
PBHL #17 4800.00 -515.00 -8713.98 -350.97 700659.02 683361.53

Anderson Ranch Unit #17 ST01
ARU #7
ARU #4
ARU #1
ARU #5
Anderson Ranch Unit #17 ST01





Cambrian
MANAGEMENT, LTD.

5D Survey Report

Cambrian

Field Name: *Lea Co, NM Nad (27 NMEZ)*
Site Name: *Anderson Ranch Unit #17*
Well Name: *Anderson Ranch Unit #17 ST01*
Survey: *Definitive survey*

11 April 2016





Anderson Ranch Unit #17 ST01

Field Name: Lea Co, NM Nad (27 NMEZ)	Map Units: US ft		Company Name: Cambrian	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD27 / New Mexico East			
	Comment:			
Site: Anderson Ranch Unit #17	Units: US ft	North Reference: Grid	Convergence Angle: 0.33	
	Position:	Northing: 709373.00US ft	Latitude: 32° 56' 55.34"	
		Easting: 683712.50US ft	Longitude: -103° 44' 4.05"	
	Elevation above MSL:4273.00 US ft			
Comment:				
Slot: Anderson Ranch Unit #17	Position (Relative to Site Centre)			
	+N/-S: 0.00US ft	Northing: 709373.00US ft	Latitude: 32°56'55.34"	
	+E/-W: 0.00US ft	Easting: 683712.50US ft	Longitude: -103°44'4.05"	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 4273.00US ft			
	Comment:			
Well: Anderson Ranch Unit #17 ST01	Type:Sidetrack		UWI:	
	Parent: Anderson Ranch Unit #17 OH		Tie Point Method: MD	
	File Number:	Comment:		
	Closure Distance:8759.36US ft		Closure Azimuth:182.26°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: -0.00US ft		+E/-W: 0.00US ft	Az: 182.32°

Drill floor: Survey Name: Definitive Survey			
Rig Height (Kelly Bushing): 12.00us ft	Elevation above MSL: 4285.00us ft	Inclination: 0.00°	Azimuth: 0.00°

Survey Name: Definitive Survey			
Date: 29/Mar/2016	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:
Magnetic Model:			
Model Name: bggm2015	Date: 30/Mar/2016	Field Strength: 48583.3nT	Declination: 7.28° Dip: 60.77°
Tie Point:			
MD: 4010.00 US ft	Inclination: 1.57°	Azimuth: 30.15°	TVD: 4009.65 US ft
		North Offset: 30.74 US ft	East Offset: 0.34 US ft

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
GYRO-NS_OW	0.00	4137.00	Gyro
MWD	4137.00	6119.00	Wft MWD Svy (1)
MWD	6119.00	8822.00	Wft MWD Svy (2)
MWD	8822.00	10937.00	Wft MWD Svy (3)
MWD	10937.00	13220.00	Wft MWD Svy (4)

5D Survey Report

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Kelly Bushing)							Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	DLS (°/100US ft)	
0.00	0.00	0.00	-0.00	-0.00	0.00	0.00	
100.00	0.10	180.82	100.00	-0.09	-0.00	0.10	
200.00	0.11	332.39	200.00	-0.09	-0.05	0.20	
300.00	0.18	341.69	300.00	0.14	-0.14	0.07	
400.00	0.29	316.45	400.00	0.48	-0.36	0.15	
500.00	0.18	341.56	500.00	0.81	-0.59	0.15	
600.00	0.03	100.21	600.00	0.95	-0.61	0.20	
700.00	0.07	193.99	700.00	0.89	-0.60	0.08	
800.00	0.16	226.50	800.00	0.73	-0.72	0.11	
900.00	0.13	222.61	900.00	0.56	-0.90	0.03	
1000.00	0.09	152.06	1000.00	0.40	-0.94	0.13	
1100.00	0.17	169.64	1100.00	0.19	-0.87	0.09	
1200.00	0.20	193.94	1200.00	-0.13	-0.89	0.08	
1300.00	0.18	214.50	1300.00	-0.43	-1.02	0.07	
1400.00	0.41	235.61	1399.99	-0.76	-1.40	0.25	
1500.00	0.59	256.32	1499.99	-1.08	-2.20	0.25	
1600.00	0.67	284.35	1599.98	-1.06	-3.26	0.31	
1700.00	0.70	287.29	1699.98	-0.73	-4.41	0.05	
1800.00	0.75	282.96	1799.97	-0.40	-5.64	0.07	
1900.00	0.70	295.54	1899.96	0.01	-6.82	0.17	
2000.00	0.64	287.94	1999.95	0.44	-7.91	0.11	
2100.00	0.87	297.60	2099.95	0.96	-9.11	0.26	
2200.00	0.87	323.52	2199.94	1.93	-10.24	0.39	
2300.00	0.90	333.17	2299.92	3.24	-11.04	0.15	
2400.00	0.89	9.19	2399.91	4.71	-11.27	0.55	
2500.00	0.92	26.84	2499.90	6.19	-10.79	0.28	
2600.00	1.07	26.47	2599.88	7.74	-10.01	0.15	
2700.00	0.85	36.64	2699.87	9.17	-9.15	0.28	
2800.00	0.89	23.18	2799.86	10.48	-8.40	0.21	
2900.00	0.90	4.20	2899.85	11.98	-8.04	0.30	
3000.00	0.89	3.91	2999.83	13.54	-7.93	0.01	
3100.00	1.08	18.37	3099.82	15.21	-7.58	0.31	
3200.00	1.31	23.87	3199.80	17.15	-6.82	0.26	
3300.00	1.23	23.62	3299.77	19.17	-5.92	0.08	
3400.00	1.08	23.85	3399.75	21.02	-5.11	0.15	
3500.00	0.96	28.38	3499.74	22.62	-4.33	0.14	
3600.00	1.06	31.00	3599.72	24.15	-3.46	0.11	
3700.00	1.04	25.83	3699.71	25.76	-2.59	0.10	
3800.00	0.95	37.36	3799.69	27.23	-1.69	0.22	
3900.00	0.94	26.64	3899.68	28.63	-0.82	0.18	
4010.00	1.57	30.15	4009.65	30.74	0.34	0.58	
4137.00	12.56	211.10	4135.75	20.36	-5.95	11.13	Tie On SDI
4223.00	28.44	209.73	4216.04	-5.59	-21.03	18.47	First Wft Svy
4254.00	32.92	209.56	4242.70	-19.34	-28.85	14.45	
4286.00	35.88	208.83	4269.10	-35.12	-37.66	9.34	
4317.00	38.69	209.08	4293.76	-51.55	-46.75	9.08	
4349.00	41.69	208.83	4318.20	-69.62	-56.75	9.39	
4381.00	43.81	208.95	4341.70	-88.63	-67.24	6.63	
4412.00	44.63	209.06	4363.92	-107.54	-77.73	2.66	
4444.00	46.94	208.83	4386.23	-127.61	-88.83	7.24	
4475.00	48.94	209.33	4407.00	-147.72	-100.01	6.56	
4507.00	49.75	209.45	4427.84	-168.88	-111.93	2.55	
4538.00	50.50	209.83	4447.72	-189.55	-123.69	2.60	
4570.00	52.50	210.45	4467.64	-211.21	-136.27	6.43	
4601.00	55.06	210.58	4485.95	-232.75	-148.97	8.26	
4633.00	55.75	210.45	4504.12	-255.45	-162.34	2.18	

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Kelly Bushing)							Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	DLS (°/100US ft)	
4664.00	55.94	209.95	4521.53	-277.62	-175.25	1.47	
4696.00	57.19	210.83	4539.16	-300.65	-188.76	4.53	
4727.00	58.44	211.08	4555.67	-323.15	-202.25	4.09	
4759.00	58.69	210.95	4572.36	-346.55	-216.32	0.85	
4791.00	59.50	209.83	4588.80	-370.23	-230.21	3.93	
4822.00	60.94	207.70	4604.19	-393.82	-243.15	7.56	
4854.00	62.00	205.45	4619.48	-418.96	-255.72	7.01	
4885.00	64.13	203.70	4633.52	-444.09	-267.21	8.52	
4916.00	66.75	201.70	4646.41	-470.10	-278.09	10.29	
4948.00	69.81	199.45	4658.25	-497.93	-288.53	11.58	
4980.00	71.69	197.58	4668.80	-526.58	-298.12	8.06	
5011.00	73.19	196.95	4678.15	-554.80	-306.89	5.21	
5043.00	75.50	196.20	4686.79	-584.33	-315.68	7.56	
5075.00	78.13	194.33	4694.08	-614.38	-323.88	10.00	
5106.00	80.00	192.83	4699.96	-643.97	-331.02	7.68	
5137.00	81.69	191.20	4704.90	-673.90	-337.39	7.53	
5168.00	83.31	190.08	4708.94	-704.11	-343.06	6.34	
5198.00	84.44	188.33	4712.14	-733.55	-347.83	6.92	
5229.00	85.88	186.33	4714.76	-764.18	-351.77	7.93	
5261.00	87.56	183.83	4716.59	-796.00	-354.60	9.40	
5292.00	88.75	181.70	4717.59	-826.95	-356.10	7.87	
5385.00	89.75	180.20	4718.81	-919.92	-357.64	1.94	
5478.00	90.00	179.95	4719.01	-1012.92	-357.76	0.38	
5571.00	90.63	180.20	4718.50	-1105.92	-357.88	0.73	
5662.00	90.06	179.70	4717.95	-1196.92	-357.80	0.83	
5755.00	90.75	180.08	4717.29	-1289.91	-357.62	0.85	
5846.00	88.88	180.58	4717.59	-1380.91	-358.15	2.13	
5937.00	89.50	180.20	4718.87	-1471.90	-358.77	0.80	
6028.00	88.88	177.95	4720.16	-1562.87	-357.30	2.56	
6119.00	89.50	178.33	4721.45	-1653.81	-354.35	0.80	
6177.00	89.31	178.57	4722.05	-1711.79	-352.78	0.53	
6270.00	88.81	178.58	4723.57	-1804.75	-350.46	0.54	
6362.00	87.63	179.33	4726.43	-1896.68	-348.79	1.52	
6454.00	88.00	178.95	4729.94	-1988.61	-347.41	0.58	
6547.00	86.25	179.58	4734.60	-2081.48	-346.22	2.00	
6639.00	86.50	179.45	4740.42	-2173.29	-345.44	0.31	
6734.00	86.94	179.45	4745.86	-2268.13	-344.53	0.46	
6829.00	88.19	180.45	4749.89	-2363.04	-344.45	1.68	
6924.00	90.50	180.70	4750.98	-2458.02	-345.40	2.45	
7019.00	90.31	180.70	4750.31	-2553.01	-346.56	0.20	
7114.00	90.25	180.70	4749.84	-2648.01	-347.72	0.06	
7209.00	90.31	180.70	4749.38	-2743.00	-348.88	0.06	
7304.00	90.31	180.20	4748.86	-2837.99	-349.63	0.53	
7399.00	90.44	180.58	4748.24	-2932.99	-350.27	0.42	
7494.00	89.50	180.20	4748.29	-3027.98	-350.92	1.07	
7589.00	89.50	179.95	4749.12	-3122.98	-351.04	0.26	
7684.00	89.50	180.08	4749.95	-3217.98	-351.07	0.14	
7778.00	89.69	180.08	4750.62	-3311.97	-351.20	0.20	
7873.00	89.69	180.33	4751.13	-3406.97	-351.54	0.26	
7969.00	89.81	180.20	4751.55	-3502.97	-351.98	0.18	
8063.00	89.88	180.45	4751.80	-3596.97	-352.52	0.28	
8159.00	89.50	180.83	4752.32	-3692.96	-353.59	0.56	
8254.00	89.25	180.70	4753.36	-3787.95	-354.86	0.30	
8348.00	88.88	180.83	4754.89	-3881.93	-356.11	0.42	
8443.00	88.63	180.95	4756.96	-3976.89	-357.59	0.29	
8538.00	88.31	180.95	4759.49	-4071.84	-359.16	0.34	
8633.00	89.06	180.33	4761.67	-4166.81	-360.22	1.02	
8728.00	89.00	180.20	4763.28	-4261.80	-360.66	0.15	
8822.00	89.50	179.20	4764.51	-4355.79	-360.17	1.19	

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Kelly Bushing)							Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	DLS (°/100US ft)	
8851.00	89.38	179.20	4764.79	-4384.78	-359.77	0.41	
8946.00	90.25	179.33	4765.10	-4479.77	-358.55	0.93	
9041.00	89.50	179.45	4765.31	-4574.77	-357.54	0.80	
9135.00	90.50	179.20	4765.31	-4668.76	-356.43	1.10	
9230.00	90.00	179.20	4764.89	-4763.75	-355.10	0.53	
9325.00	91.38	179.08	4763.75	-4858.73	-353.68	1.46	
9420.00	90.88	180.20	4761.88	-4953.71	-353.08	1.29	
9515.00	90.50	180.33	4760.73	-5048.70	-353.52	0.42	
9610.00	89.13	180.33	4761.04	-5143.69	-354.07	1.44	
9705.00	90.00	180.45	4761.76	-5238.69	-354.71	0.92	
9800.00	89.19	180.33	4762.43	-5333.68	-355.36	0.86	
9894.00	88.56	179.70	4764.28	-5427.66	-355.38	0.95	
9989.00	90.00	179.95	4765.47	-5522.65	-355.09	1.54	
10084.00	89.13	179.58	4766.19	-5617.65	-354.70	1.00	
10179.00	88.69	179.20	4768.00	-5712.63	-353.69	0.61	
10273.00	90.19	179.08	4768.92	-5806.61	-352.28	1.60	
10368.00	89.31	179.33	4769.33	-5901.60	-350.96	0.96	
10463.00	91.25	179.45	4768.87	-5996.59	-349.95	2.05	
10558.00	90.25	179.70	4767.63	-6091.57	-349.25	1.09	
10652.00	88.94	179.70	4768.29	-6185.57	-348.76	1.39	
10748.00	88.38	179.83	4770.53	-6281.54	-348.36	0.60	
10842.00	90.25	179.58	4771.66	-6375.53	-347.88	2.01	
10937.00	90.50	178.58	4771.04	-6470.51	-346.35	1.09	
11045.00	88.11	179.01	4772.35	-6578.47	-344.08	2.25	
11139.00	88.53	179.46	4775.10	-6672.42	-342.83	0.65	
11234.00	89.72	179.40	4776.55	-6767.41	-341.88	1.25	
11328.00	89.30	180.28	4777.36	-6861.40	-341.62	1.04	
11423.00	90.42	180.21	4777.59	-6956.40	-342.03	1.18	
11518.00	89.51	180.43	4777.65	-7051.40	-342.56	0.99	
11613.00	89.37	181.12	4778.58	-7146.38	-343.84	0.74	
11707.00	88.74	180.92	4780.13	-7240.35	-345.51	0.70	
11801.00	87.76	180.77	4783.00	-7334.30	-346.90	1.05	
11896.00	88.53	180.78	4786.07	-7429.24	-348.18	0.81	
11991.00	89.30	180.53	4787.87	-7524.22	-349.27	0.85	
12086.00	88.39	180.84	4789.79	-7619.19	-350.41	1.01	
12181.00	88.88	181.21	4792.05	-7714.15	-352.10	0.65	
12275.00	90.14	181.24	4792.85	-7808.12	-354.11	1.34	
12370.00	89.93	181.69	4792.79	-7903.09	-356.54	0.52	
12465.00	89.23	181.45	4793.49	-7998.05	-359.15	0.78	
12560.00	88.32	180.86	4795.52	-8093.01	-361.06	1.14	
12655.00	88.53	178.60	4798.13	-8187.96	-360.61	2.39	
12750.00	89.51	177.88	4799.76	-8282.90	-357.70	1.28	
12845.00	90.70	177.91	4799.58	-8377.84	-354.21	1.25	
12939.00	90.28	178.49	4798.78	-8471.79	-351.25	0.76	
13034.00	91.26	178.80	4797.50	-8566.75	-349.01	1.08	
13129.00	92.59	179.05	4794.31	-8661.68	-347.23	1.42	
13160.00	93.08	179.03	4792.78	-8692.64	-346.71	1.58	Last Wft Svy
13220.00	93.08	179.03	4789.56	-8752.54	-345.69	0.00	Proj, To Bit