



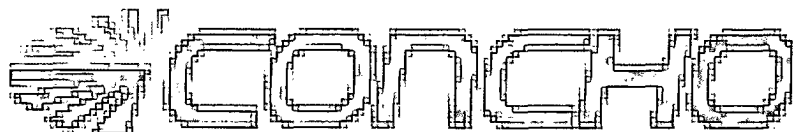
30-015-37724

Ryan Energy Directional Drilling Report

Field: Eddy Co, NM
Site: Yucca State #15
Well: #15
Wellpath: OH

Prepared For:

COG Operating LLC



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MAY 03 2011

NMOCD ARTESIA

Ryan Energy Technology

19510 Oil Center Blvd
Houston, TX 77073
Ph: 281-443-1414
Fx: 281-443-1676

www.ryanenergy.com

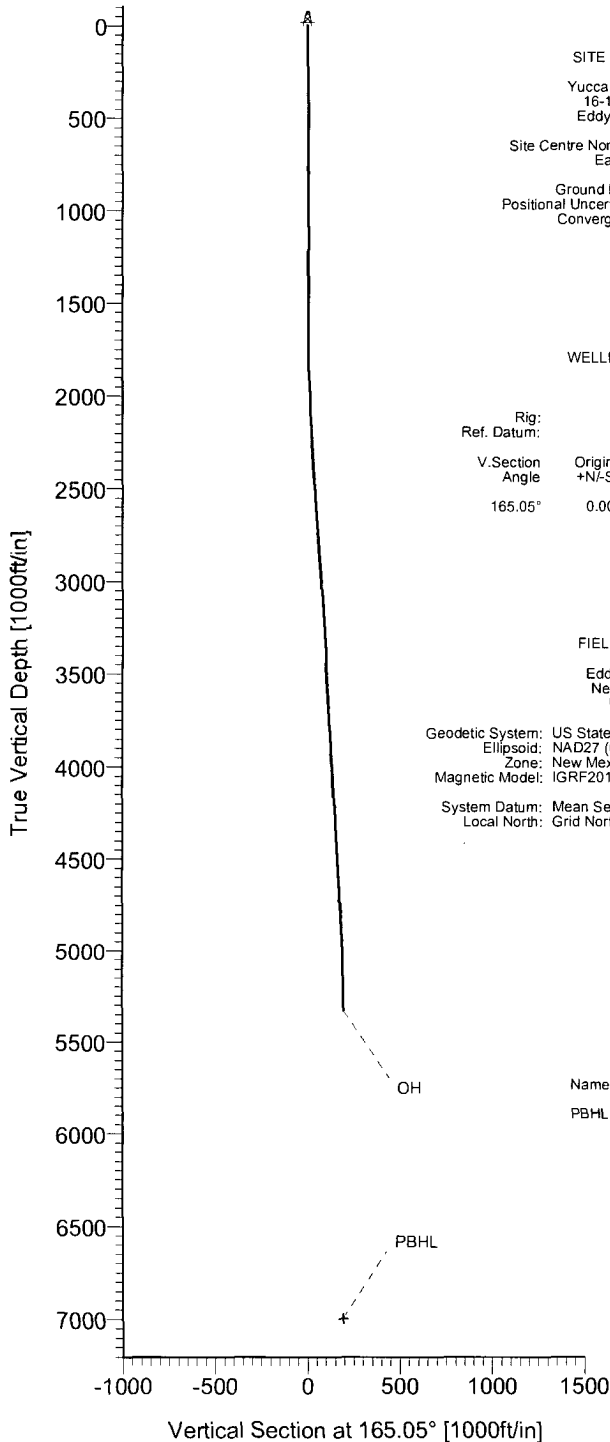


COG Operating LLC

Field: Eddy Co, NM
Site: Yucca State #15
Well: #15
Wellpath: OH



Azimuths to Grid North
True North: -0.24°
Magnetic North: 7.57°
Magnetic Field
Strength: 49005nT
Dip Angle: 60.71°
Date: 3/3/2011
Model: IGRF2010



SITE DETAILS

Yucca State #15
16-17S-31E
Eddy Co, NM

Site Centre Northing: 668102.70
Easting: 638719.10
Ground Level: 3752.00
Positional Uncertainty: 0.00
Convergence: 0.24

WELLPATH DETAILS

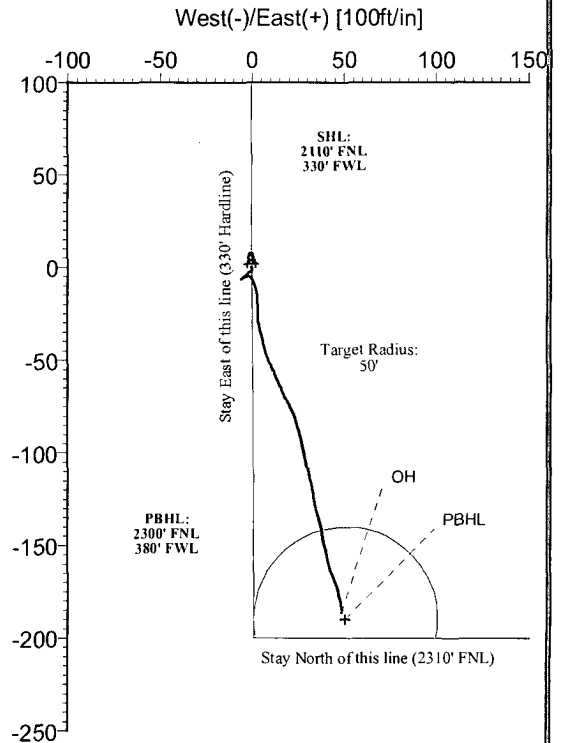
OH

Rig: Basic Drilling 35
Ref. Datum: SITE 3752.00ft
V. Section Angle: 165.05°
Origin +N/-S: 0.00
Origin +E/-W: 0.00
Starting From TVD: 0.00

FIELD DETAILS

Eddy Co, NM
New Mexico
U.S.A.

Geodetic System: US State Plane Coordinate System 1927
Ellipsoid: NAD27 (Clarke 1866)
Zone: New Mexico, Eastern Zone
Magnetic Model: IGRF2010
System Datum: Mean Sea Level
Local North: Grid North



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7000.00	-190.20	50.80	667912.50	638769.90	32°50'07.303N	103°52'53.540W	Point



Ryan Energy Technologies Survey Report



Company: COG Operating LLC	Date: 3/16/2011	Time: 14:43:48	Page: 1
Field: Eddy Co, NM	Co-ordinate(NE) Reference: Site: Yucca State #15, Grid North		
Site: Yucca State #15	Vertical (TVD) Reference: SITE 3752.0		
Well: #15	Section (VS) Reference: Well (0.00N,0.00E,165.05Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Field: Eddy Co, NM New Mexico U.S.A.	Map Zone: New Mexico, Eastern Zone
Map System: US State Plane Coordinate System 1927	Coordinate System: Site Centre
Geo Datum: NAD27 (Clarke 1866)	Geomagnetic Model: IGRF2010
Sys Datum: Mean Sea Level	

Site: Yucca State #15 16-17S-31E Eddy Co, NM	
Site Position:	Northing: 668102.70 ft
From: Map	Latitude: 32 50 9.187 N
Position Uncertainty: 0.00 ft	Longitude: 103 52 54.126 W
Ground Level: 3752.00 ft	North Reference: Grid
	Grid Convergence: 0.24 deg

Well: #15	Slot Name:
Well Position: +N/-S 0.00 ft	Northing: 668102.70 ft
+E/-W 0.00 ft	Latitude: 32 50 9.187 N
Position Uncertainty: 0.00 ft	Longitude: 103 52 54.126 W

Wellpath: OH	Drilled From: Surface
Current Datum: SITE	Tie-on Depth: 0.00 ft
Magnetic Data: 3/3/2011	Above System Datum: Mean Sea Level
Field Strength: 49005 nT	Declination: 7.81 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 60.71 deg
ft	+N/-S
	+E/-W
	Direction
	deg
0.00	0.00
0.00	0.00
0.00	165.05

Survey Program for Definitive Wellpath			Version: 0	
Date: 3/16/2011	Validated: No	Survey	Toolcode	Tool Name
Actual From ft	To ft			
100.00	1755.00	Survey #1 (100.00-1755.00)	Gyro	Gyro
1859.00	5289.00	Survey #2 (1859.00-5289.00)	Ryan MWD	Ryan MWD
5338.00	5338.00	Survey #3 (5338.00-5338.00)	Projection	Projection

Survey										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.20	258.07	100.00	-0.04	-0.17	-0.01	0.20	0.20	0.00	Gyro
200.00	0.30	155.82	200.00	-0.31	-0.23	0.24	0.39	0.10	-102.25	Gyro
300.00	0.35	168.22	300.00	-0.85	-0.06	0.80	0.09	0.05	12.40	Gyro
400.00	0.53	174.27	399.99	-1.61	0.04	1.56	0.19	0.18	6.05	Gyro
500.00	0.76	231.07	499.99	-2.48	-0.43	2.29	0.65	0.23	56.80	Gyro
600.00	1.05	237.28	599.98	-3.40	-1.71	2.84	0.31	0.29	6.21	Gyro
700.00	0.85	229.56	699.96	-4.37	-3.05	3.44	0.24	-0.20	-7.72	Gyro
800.00	0.76	229.09	799.95	-5.29	-4.11	4.05	0.09	-0.09	-0.47	Gyro
900.00	0.62	232.46	899.95	-6.05	-5.04	4.55	0.15	-0.14	3.37	Gyro
1000.00	0.31	235.59	999.94	-6.54	-5.70	4.84	0.31	-0.31	3.13	Gyro
1100.00	0.12	152.80	1099.94	-6.78	-5.87	5.04	0.32	-0.19	-82.79	Gyro
1200.00	0.43	58.35	1199.94	-6.68	-5.50	5.03	0.46	0.31	-94.45	Gyro
1300.00	0.65	38.73	1299.94	-6.04	-4.83	4.59	0.28	0.22	-19.62	Gyro
1400.00	0.62	63.09	1399.93	-5.35	-3.99	4.14	0.27	-0.03	24.36	Gyro
1500.00	0.51	92.16	1499.93	-5.12	-3.07	4.16	0.30	-0.11	29.07	Gyro
1600.00	0.40	72.17	1599.92	-5.03	-2.29	4.27	0.19	-0.11	-19.99	Gyro
1700.00	0.23	69.20	1699.92	-4.85	-1.77	4.23	0.17	-0.17	-2.97	Gyro
1755.00	0.33	115.51	1754.92	-4.88	-1.52	4.33	0.43	0.18	84.20	Gyro
1859.00	0.70	114.90	1858.92	-5.28	-0.68	4.93	0.36	0.36	-0.59	Ryan MWD
1953.00	2.70	160.90	1952.87	-7.61	0.57	7.50	2.42	2.13	48.94	Ryan MWD



Ryan Energy Technologies Survey Report



Company: COG Operating LLC	Date: 3/16/2011	Time: 14:43:48	Page: 2
Field: Eddy Co, NM	Co-ordinate(NE) Reference:	Site: Yucca State #15, Grid North	
Site: Yucca State #15	Vertical (TVD) Reference:	SITE 3752.0	
Well: #15	Section (VS) Reference:	Well (0.00N,0.00E,165.05Azi)	
Wellpath: OH	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2049.00	2.80	162.30	2048.76	-11.98	2.02	12.10	0.13	0.10	1.46	Ryan MWD
2144.00	3.50	178.80	2143.62	-17.09	2.79	17.24	1.20	0.74	17.37	Ryan MWD
2239.00	3.30	178.10	2238.45	-22.73	2.94	22.72	0.22	-0.21	-0.74	Ryan MWD
2334.00	3.20	173.30	2333.30	-28.09	3.34	28.00	0.31	-0.11	-5.05	Ryan MWD
2430.00	3.40	166.70	2429.14	-33.52	4.31	33.50	0.45	0.21	-6.87	Ryan MWD
2526.00	3.20	166.40	2524.98	-38.90	5.59	39.02	0.21	-0.21	-0.31	Ryan MWD
2621.00	3.70	166.00	2619.81	-44.45	6.96	44.74	0.53	0.53	-0.42	Ryan MWD
2715.00	4.60	159.30	2713.56	-50.92	9.02	51.52	1.09	0.96	-7.13	Ryan MWD
2810.00	3.80	153.00	2808.31	-57.29	11.80	58.39	0.97	-0.84	-6.63	Ryan MWD
2905.00	4.80	158.10	2903.04	-63.78	14.71	65.42	1.13	1.05	5.37	Ryan MWD
3000.00	3.90	152.20	2997.76	-70.33	17.70	72.51	1.06	-0.95	-6.21	Ryan MWD
3095.00	3.50	147.60	3092.57	-75.63	20.76	78.43	0.52	-0.42	-4.84	Ryan MWD
3197.00	4.00	165.70	3194.35	-81.71	23.31	84.96	1.25	0.49	17.75	Ryan MWD
3292.00	3.30	164.60	3289.16	-87.56	24.85	91.00	0.74	-0.74	-1.16	Ryan MWD
3388.00	3.20	167.30	3385.00	-92.83	26.18	96.44	0.19	-0.10	2.81	Ryan MWD
3483.00	3.00	166.90	3479.86	-97.84	27.32	101.58	0.21	-0.21	-0.42	Ryan MWD
3579.00	2.80	167.70	3575.74	-102.58	28.39	106.43	0.21	-0.21	0.83	Ryan MWD
3674.00	3.70	165.20	3670.59	-107.81	29.67	111.81	0.96	0.95	-2.63	Ryan MWD
3769.00	3.50	166.70	3765.40	-113.60	31.12	117.78	0.23	-0.21	1.58	Ryan MWD
3865.00	3.70	168.60	3861.21	-119.48	32.40	123.80	0.24	0.21	1.98	Ryan MWD
3958.00	3.50	172.80	3954.03	-125.24	33.35	129.61	0.36	-0.22	4.52	Ryan MWD
4053.00	3.40	164.20	4048.86	-130.83	34.48	135.30	0.55	-0.11	-9.05	Ryan MWD
4148.00	3.30	165.10	4143.69	-136.18	35.95	140.85	0.12	-0.11	0.95	Ryan MWD
4243.00	3.20	167.50	4238.54	-141.41	37.23	146.23	0.18	-0.11	2.53	Ryan MWD
4338.00	3.10	167.20	4333.40	-146.51	38.37	151.45	0.11	-0.11	-0.32	Ryan MWD
4433.00	2.90	166.40	4428.27	-151.35	39.51	156.42	0.22	-0.21	-0.84	Ryan MWD
4528.00	2.90	167.80	4523.15	-156.03	40.58	161.22	0.07	0.00	1.47	Ryan MWD
4623.00	3.10	166.60	4618.02	-160.88	41.68	166.19	0.22	0.21	-1.26	Ryan MWD
4718.00	3.00	160.10	4712.88	-165.72	43.13	171.23	0.38	-0.11	-6.84	Ryan MWD
4813.00	2.90	159.50	4807.76	-170.31	44.81	176.10	0.11	-0.11	-0.63	Ryan MWD
4909.00	2.70	162.80	4903.64	-174.74	46.33	180.78	0.27	-0.21	3.44	Ryan MWD
5004.00	3.00	164.00	4998.52	-179.27	47.68	185.50	0.32	0.32	1.26	Ryan MWD
5100.00	2.50	171.90	5094.41	-183.75	48.67	190.09	0.65	-0.52	8.23	Ryan MWD
5194.00	0.20	196.30	5188.38	-185.94	48.91	192.27	2.47	-2.45	25.96	Ryan MWD
5289.00	0.40	208.80	5283.38	-186.39	48.70	192.65	0.22	0.21	13.16	Ryan MWD
5338.00	0.40	208.80	5332.38	-186.69	48.54	192.89	0.00	0.00	0.00	PROJECTED to TD



Ryan Energy Technologies COMPLETION REPORT



Company: COG Operating LLC	Date: 3/16/2011	Time: 14:47:22	Page: 1
Field: Eddy Co, NM	Co-ordinate(NE) Reference: Site: Yucca State #15, Grid North		
Site: Yucca State #15	Vertical (TVD) Reference: SITE 3752.0		
Well: #15	Section (VS) Reference: Well (0.00N,0.00E,165.05Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Field: Eddy Co, NM New Mexico U.S.A.	Map Zone: New Mexico, Eastern Zone
Map System: US State Plane Coordinate System 1927	Coordinate System: Site Centre
Geo Datum: NAD27 (Clarke 1866)	Geomagnetic Model: IGRF2010
Sys Datum: Mean Sea Level	

Site: Yucca State #15 16-17S-31E Eddy Co, NM	
Site Position:	Northing: 668102.70 ft
From: Map	Easting: 638719.10 ft
Position Uncertainty: 0.00 ft	Latitude: 32 50 9.187 N
Ground Level: 3752.00 ft	Longitude: 103 52 54.126 W
	North Reference: Grid
	Grid Convergence: 0.24 deg

Well: #15	Slot Name:
Well Position: +N/-S 0.00 ft	Northing: 668102.70 ft
+E/-W 0.00 ft	Easting: 638719.10 ft
Position Uncertainty: 0.00 ft	Latitude: 32 50 9.187 N
	Longitude: 103 52 54.126 W

Wellpath: OH	Drilled From: Surface
Current Datum: SITE	Tie-on Depth: 0.00 ft
Magnetic Data: 3/3/2011	Above System Datum: Mean Sea Level
Field Strength: 49005 nT	Declination: 7.81 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 60.71 deg
ft	+E/-W
	ft
0.00	0.00
	0.00
	165.05

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	Clsr Dist. ft	Clsr Azi. deg	DLS deg/100ft	Tool
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.20	100.00	-0.01	258.07	-0.04	-0.17	0.17	258.07	0.20	Gyro
200.00	0.30	200.00	0.24	155.82	-0.31	-0.23	0.39	216.99	0.39	Gyro
300.00	0.35	300.00	0.80	168.22	-0.85	-0.06	0.85	184.36	0.09	Gyro
400.00	0.53	399.99	1.56	174.27	-1.61	0.04	1.61	178.44	0.19	Gyro
500.00	0.76	499.99	2.29	231.07	-2.48	-0.43	2.52	189.73	0.65	Gyro
600.00	1.05	599.98	2.84	237.28	-3.40	-1.71	3.80	206.76	0.31	Gyro
700.00	0.85	699.96	3.44	229.56	-4.37	-3.05	5.33	214.88	0.24	Gyro
800.00	0.76	799.95	4.05	229.09	-5.29	-4.11	6.70	217.88	0.09	Gyro
900.00	0.62	899.95	4.55	232.46	-6.05	-5.04	7.88	219.81	0.15	Gyro
1000.00	0.31	999.94	4.84	235.59	-6.54	-5.70	8.67	221.08	0.31	Gyro
1100.00	0.12	1099.94	5.04	152.80	-6.78	-5.87	8.97	220.89	0.32	Gyro
1200.00	0.43	1199.94	5.03	58.35	-6.68	-5.50	8.65	219.50	0.46	Gyro
1300.00	0.65	1299.94	4.59	38.73	-6.04	-4.83	7.73	218.66	0.28	Gyro
1400.00	0.62	1399.93	4.14	63.09	-5.35	-3.99	6.68	216.73	0.27	Gyro
1500.00	0.51	1499.93	4.16	92.16	-5.12	-3.07	5.97	210.90	0.30	Gyro
1600.00	0.40	1599.92	4.27	72.17	-5.03	-2.29	5.53	204.45	0.19	Gyro
1700.00	0.23	1699.92	4.23	69.20	-4.85	-1.77	5.17	200.02	0.17	Gyro
1755.00	0.33	1754.92	4.33	115.51	-4.88	-1.52	5.12	197.31	0.43	Gyro
1859.00	0.70	1858.92	4.93	114.90	-5.28	-0.68	5.32	187.29	0.36	Ryan MWD
1953.00	2.70	1952.87	7.50	160.90	-7.61	0.57	7.64	175.72	2.42	Ryan MWD
2049.00	2.80	2048.76	12.10	162.30	-11.98	2.02	12.15	170.42	0.13	Ryan MWD
2144.00	3.50	2143.62	17.24	178.80	-17.09	2.79	17.32	170.73	1.20	Ryan MWD
2239.00	3.30	2238.45	22.72	178.10	-22.73	2.94	22.92	172.63	0.22	Ryan MWD
2334.00	3.20	2333.30	28.00	173.30	-28.09	3.34	28.29	173.22	0.31	Ryan MWD
2430.00	3.40	2429.14	33.50	166.70	-33.52	4.31	33.80	172.68	0.45	Ryan MWD
2526.00	3.20	2524.98	39.02	166.40	-38.90	5.59	39.30	171.82	0.21	Ryan MWD
2621.00	3.70	2619.81	44.74	166.00	-44.45	6.96	44.99	171.10	0.53	Ryan MWD



Ryan Energy Technologies COMPLETION REPORT



Company: COG Operating LLC
Field: Eddy Co, NM
Site: Yucca State #15
Well: #15
Wellpath: OH

Date: 3/16/2011 Time: 14:47:22 Page: 2
Co-ordinate(NE) Reference: Site: Yucca State #15, Grid North
Vertical (TVD) Reference: SITE 3752.0
Section (VS) Reference: Well (0.00N,0.00E,165.05Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	Clsr Dist. ft	Clsr Azi. deg	DLS deg/100ft	Tool
2715.00	4.60	2713.56	51.52	159.30	-50.92	9.02	51.71	169.95	1.09	Ryan MWD
2810.00	3.80	2808.31	58.39	153.00	-57.29	11.80	58.49	168.36	0.97	Ryan MWD
2905.00	4.80	2903.04	65.42	158.10	-63.78	14.71	65.46	167.01	1.13	Ryan MWD
3000.00	3.90	2997.76	72.51	152.20	-70.33	17.70	72.52	165.87	1.06	Ryan MWD
3095.00	3.50	3092.57	78.43	147.60	-75.63	20.76	78.43	164.65	0.52	Ryan MWD
3197.00	4.00	3194.35	84.96	165.70	-81.71	23.31	84.97	164.08	1.25	Ryan MWD
3292.00	3.30	3289.16	91.00	164.60	-87.56	24.85	91.02	164.15	0.74	Ryan MWD
3388.00	3.20	3385.00	96.44	167.30	-92.83	26.18	96.45	164.25	0.19	Ryan MWD
3483.00	3.00	3479.86	101.58	166.90	-97.84	27.32	101.59	164.40	0.21	Ryan MWD
3579.00	2.80	3575.74	106.43	167.70	-102.58	28.39	106.44	164.53	0.21	Ryan MWD
3674.00	3.70	3670.59	111.81	165.20	-107.81	29.67	111.82	164.61	0.96	Ryan MWD
3769.00	3.50	3765.40	117.78	166.70	-113.60	31.12	117.78	164.68	0.23	Ryan MWD
3865.00	3.70	3861.21	123.80	168.60	-119.48	32.40	123.80	164.83	0.24	Ryan MWD
3958.00	3.50	3954.03	129.61	172.80	-125.24	33.35	129.61	165.09	0.36	Ryan MWD
4053.00	3.40	4048.86	135.30	164.20	-130.83	34.48	135.30	165.23	0.55	Ryan MWD
4148.00	3.30	4143.69	140.85	165.10	-136.18	35.95	140.85	165.21	0.12	Ryan MWD
4243.00	3.20	4238.54	146.23	167.50	-141.41	37.23	146.23	165.25	0.18	Ryan MWD
4338.00	3.10	4333.40	151.45	167.20	-146.51	38.37	151.45	165.32	0.11	Ryan MWD
4433.00	2.90	4428.27	156.42	166.40	-151.35	39.51	156.42	165.37	0.22	Ryan MWD
4528.00	2.90	4523.15	161.22	167.80	-156.03	40.58	161.22	165.42	0.07	Ryan MWD
4623.00	3.10	4618.02	166.19	166.60	-160.88	41.68	166.19	165.47	0.22	Ryan MWD
4718.00	3.00	4712.88	171.23	160.10	-165.72	43.13	171.24	165.41	0.38	Ryan MWD
4813.00	2.90	4807.76	176.10	159.50	-170.31	44.81	176.10	165.26	0.11	Ryan MWD
4909.00	2.70	4903.64	180.78	162.80	-174.74	46.33	180.78	165.15	0.27	Ryan MWD
5004.00	3.00	4998.52	185.50	164.00	-179.27	47.68	185.50	165.11	0.32	Ryan MWD
5100.00	2.50	5094.41	190.09	171.90	-183.75	48.67	190.09	165.17	0.65	Ryan MWD
5194.00	0.20	5188.38	192.27	196.30	-185.94	48.91	192.27	165.26	2.47	Ryan MWD
5289.00	0.40	5283.38	192.65	208.80	-186.39	48.70	192.65	165.36	0.22	Ryan MWD
5338.00	0.40	5332.38	192.89	208.80	-186.69	48.54	192.90	165.43	0.00	PROJECTED