

HOBBS OCD

FEB 20 2015

RECEIVED



1407 Northpark Dr.
Kingwood, TX 77339
Cell: (281) 851-8112
Efax: (281) 966-1566

Surveying Company: BlueStar MWD
Surveyor and Title/Position: Jeremy Duncan, MWD Engineer
Survey Dates: 23-Oct-14 to 3-Dec-14
Type of Survey: MWD
Operator Name: Endurance Resources
Well (Number): Jaguar State 18 #2H
API Number: 30-025-41428
RKB Elevation: 3704.7 + 21 @3725.70 usft (Patriot 4)
Section: 18
Township: 23 S
Range: 33E
County and State: Lea Co., NM
Measure Depths: 11379 MD to 16397 MD

This information is certified as being true and correct.

A handwritten signature in black ink, appearing to read "Greg Nazzal".

Certification by Greg Nazzal
President

FEB 26 2015

Endurance Resources LLC

Well: Jaguar 18 State Well No. 2H
 Site: Jaguar 18 State
 Project: Lea County, New Mexico
 Design: Surveys Lateral ST01
 Rig: Patriot 4

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
11279.03	11279.50	0.59	140.59	-21.85	16.40	-23.05	93.35	Tie into gyro @ 11279.5 MD
12170.71	13991.00	97.10	350.10	2153.09	-102.52	2154.53	2277.91	Survey @ 13991.00 MD 2484 FSL 1892 FWL

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
12174.03	13959.00	95.00	350.40	2121.72	-97.14	2122.93	2248.09	Tie into lateral @ 13959 MD
12161.77	18456.00	92.10	352.10	4802.28	-351.32	4615.67	4742.53	Survey projected to 16455.00 MD ST1 344 FNL 1660 FWL

RKB Elevation: RKB=3704.7+21 @ 3725.70usft (Patriot 4)

US State Plane 1983

New Mexico Eastern Zone

Northing

473047.14

Easting

783795.75

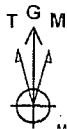
Latitude

32.29842896

Longitude

-103.61338491

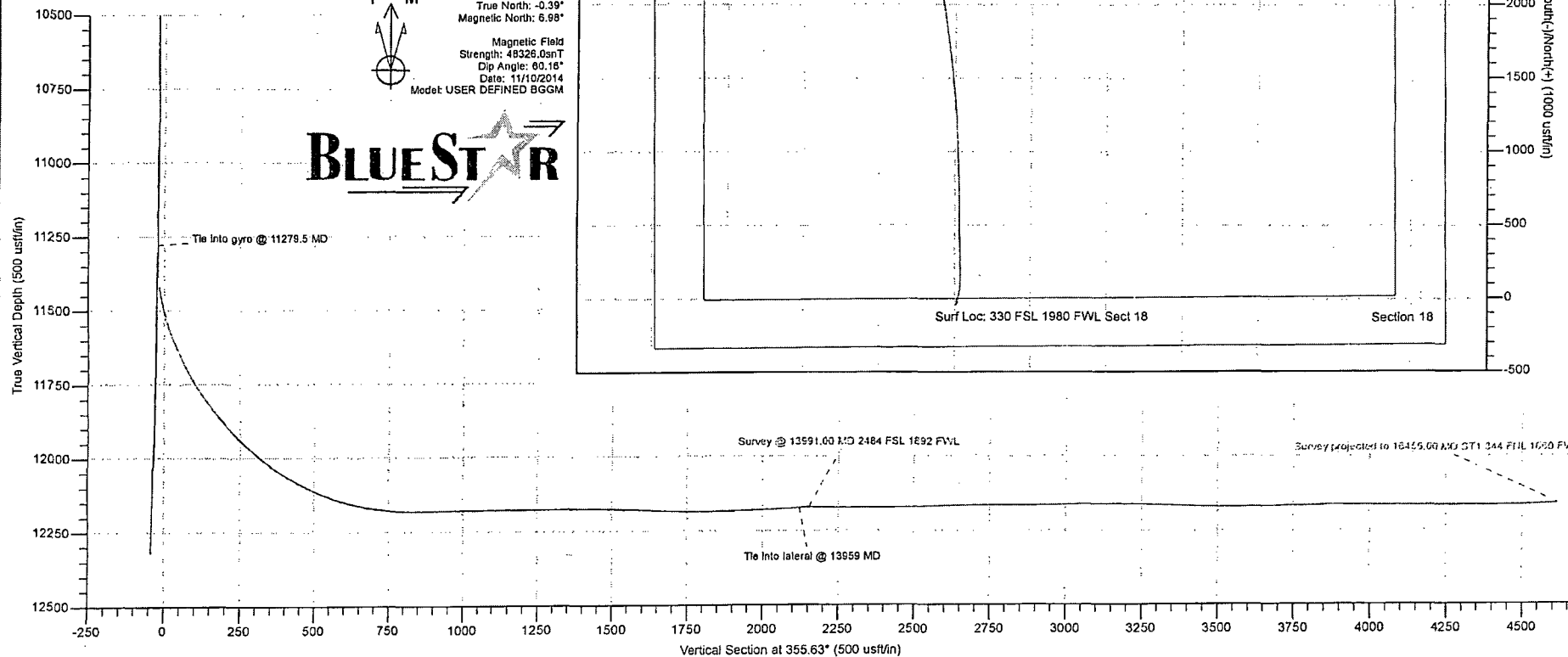
Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Add 8.98°



Azimuths to Grid North
 True North: -0.39°
 Magnetic North: 8.98°

Magnetic Field
 Strength: 48325.0snT
 Dip Angle: 85.16°
 Date: 11/10/2014
 Model: USER DEFINED BGGM

BLUESTAR



Company: Endurance Resources LLC
Project: Lea County, New Mexico
Site: Jaguar 18 State
Well: Jaguar 18 State Well No. 2H
Wellbore: Lateral ST01
Design: Surveys Lateral ST01

Local Co-ordinate Reference: Well Jaguar 18 State Well No. 2H
TVD Reference: RKB=3704.7+21 @ 3725.70usft (Patriot 4)
MD Reference: RKB=3704.7+21 @ 3725.70usft (Patriot 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Dbase Nov0914

Project Lea County, New Mexico

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Jaguar 18 State

Site Position:		Northing:	473,047.14 usft	Latitude:	32.29842696
From:	Map	Easting:	763,795.75 usft	Longitude:	-103.61336491
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well Jaguar 18 State Well No. 2H

Well Position	+N/-S	0.00 usft	Northing:	473,047.14 usft	Latitude:	32.29842696
	+E/-W	0.00 usft	Easting:	763,795.75 usft	Longitude:	-103.61336491
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,704.70 usft

Wellbore Lateral ST01

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2015	7.17	60.16	48,298

Design Surveys Lateral ST01

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 13,959.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	355.53

Standard_report



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Survey Program Date 1/13/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
128.50	11,279.50	Gyro (Original hole)	NS-GYRO-MS	North sensing gyrocompassing m/s
11,347.00	13,959.00	MWD Lat TIP=11279.5 MD (Lateral)	MWD	MWD - Standard
13,991.00	16,456.00	MWD Lat ST1 (Lateral ST01)	MWD	MWD - Standard

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	473,047.14	763,795.75
128.50	0.41	40.74	128.50	0.35	0.30	0.32	0.32	473,047.49	763,796.05
223.00	0.26	56.55	223.00	0.72	0.70	0.19	0.67	473,047.86	763,796.45
317.50	0.22	101.00	317.50	0.81	1.06	0.20	0.72	473,047.95	763,796.81
412.00	0.40	107.39	412.00	0.67	1.55	0.19	0.55	473,047.81	763,797.30
506.50	0.37	104.25	506.49	0.50	2.16	0.04	0.33	473,047.64	763,797.91
601.00	0.30	103.76	600.99	0.37	2.70	0.07	0.15	473,047.51	763,798.45
695.50	0.36	123.51	695.49	0.14	3.18	0.14	-0.11	473,047.28	763,798.93
790.00	0.39	122.42	789.99	-0.19	3.70	0.03	-0.48	473,046.95	763,799.45
884.50	0.33	142.66	884.49	-0.58	4.14	0.15	-0.90	473,046.56	763,799.89
979.00	0.22	130.95	978.98	-0.92	4.44	0.13	-1.26	473,046.22	763,800.19
1,073.50	0.30	128.30	1,073.48	-1.19	4.77	0.09	-1.56	473,045.95	763,800.52
1,168.00	0.97	126.05	1,167.98	-1.81	5.61	0.71	-2.25	473,045.33	763,801.36
1,262.50	0.84	126.42	1,262.47	-2.70	6.82	0.14	-3.22	473,044.44	763,802.57
1,357.00	0.77	162.43	1,356.96	-3.71	7.57	0.53	-4.29	473,043.43	763,803.32
1,451.50	0.49	164.57	1,451.45	-4.71	7.87	0.30	-5.31	473,042.43	763,803.62
1,546.00	0.80	223.25	1,545.95	-5.58	7.52	0.73	-6.15	473,041.56	763,803.27
1,640.50	0.89	247.06	1,640.44	-6.34	6.39	0.38	-6.82	473,040.80	763,802.14
1,735.00	0.42	200.34	1,734.93	-6.95	5.60	0.71	-7.37	473,040.19	763,801.35
1,829.50	0.70	185.23	1,829.43	-7.85	5.42	0.33	-8.25	473,039.29	763,801.17

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Wellbore: Lateral ST01
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TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Jaguar 18 State Well No. 2H
 RKB=3704.7+21 @ 3725.70usft (Patriot 4)
 RKB=3704.7+21 @ 3725.70usft (Patriot 4)
 Grid
 Minimum Curvature
 Dbase Nov0914

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
1,924.00	0.29	121.78	1,923.92	-8.56	5.57	0.66	-8.96	473,038.58	763,801.32
2,018.50	0.77	138.18	2,018.42	-9.15	6.20	0.53	-9.61	473,037.99	763,801.95
2,113.00	0.64	147.02	2,112.91	-10.07	6.91	0.18	-10.58	473,037.07	763,802.66
2,207.50	0.39	180.21	2,207.41	-10.83	7.20	0.40	-11.36	473,036.31	763,802.95
2,302.00	0.46	217.46	2,301.90	-11.46	6.97	0.30	-11.97	473,035.68	763,802.72
2,396.50	0.35	200.30	2,396.40	-12.03	6.64	0.17	-12.51	473,035.11	763,802.39
2,491.00	0.89	206.65	2,490.90	-12.96	6.21	0.58	-13.40	473,034.18	763,801.96
2,585.50	0.36	201.94	2,585.39	-13.89	5.77	0.56	-14.29	473,033.25	763,801.52
2,680.00	0.23	218.82	2,679.89	-14.31	5.54	0.16	-14.70	473,032.83	763,801.29
2,774.50	0.52	276.08	2,774.39	-14.41	4.99	0.47	-14.76	473,032.73	763,800.74
2,869.00	0.14	122.77	2,868.89	-14.43	4.66	0.69	-14.75	473,032.71	763,800.41
2,963.50	0.24	141.62	2,963.39	-14.65	4.88	0.12	-14.98	473,032.49	763,800.63
3,058.00	0.76	219.29	3,057.88	-15.29	4.61	0.79	-15.60	473,031.85	763,800.36
3,152.50	0.67	221.65	3,152.38	-16.19	3.84	0.10	-16.44	473,030.95	763,799.59
3,247.00	0.78	224.76	3,246.87	-17.06	3.02	0.12	-17.24	473,030.08	763,798.77
3,341.50	0.22	172.48	3,341.36	-17.69	2.59	0.71	-17.84	473,029.45	763,798.34
3,436.00	0.49	101.73	3,435.86	-17.95	3.01	0.49	-18.13	473,029.19	763,798.76
3,530.50	0.43	317.50	3,530.36	-17.77	3.17	0.93	-17.97	473,029.37	763,798.92
3,625.00	0.34	272.17	3,624.86	-17.50	2.65	0.33	-17.66	473,029.64	763,798.40
3,719.50	0.58	195.06	3,719.36	-17.95	2.25	0.64	-18.07	473,029.19	763,798.00
3,814.00	0.25	171.44	3,813.85	-18.62	2.15	0.39	-18.73	473,028.52	763,797.90
3,908.50	0.32	198.24	3,908.35	-19.07	2.10	0.16	-19.18	473,028.07	763,797.85
4,003.00	0.04	82.28	4,002.85	-19.32	2.05	0.36	-19.42	473,027.82	763,797.80
4,097.50	0.41	91.88	4,097.35	-19.33	2.42	0.39	-19.46	473,027.81	763,798.17
4,192.00	0.59	97.65	4,191.85	-19.40	3.24	0.20	-19.60	473,027.74	763,798.99
4,286.50	0.97	81.01	4,286.34	-19.34	4.51	0.46	-19.64	473,027.80	763,800.26
4,381.00	0.71	27.88	4,380.83	-18.70	5.58	0.83	-19.08	473,028.44	763,801.33

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 Wellbore: Lateral ST01
 Design: Surveys Lateral ST01

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 TVD Reference: RKB=3704.7+21 @ 3725.70usft (Patriot 4)
 MD Reference: RKB=3704.7+21 @ 3725.70usft (Patriot 4)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Dbase Nov0914

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
4,475.50	0.46	4.30	4,475.33	-17.80	5.88	0.36	-18.21	473,029.34	763,801.63
4,570.00	0.65	101.53	4,569.82	-17.53	6.43	0.89	-17.98	473,029.61	763,802.18
4,664.50	0.81	89.26	4,664.32	-17.63	7.63	0.24	-18.17	473,029.51	763,803.38
4,759.00	0.83	35.86	4,758.81	-17.07	8.70	0.78	-17.69	473,030.07	763,804.45
4,853.50	0.71	25.62	4,853.30	-15.99	9.35	0.19	-16.67	473,031.15	763,805.10
4,948.00	0.56	43.58	4,947.79	-15.12	9.92	0.26	-15.85	473,032.02	763,805.67
5,042.50	0.60	48.05	5,042.29	-14.46	10.61	0.06	-15.24	473,032.68	763,806.36
5,137.00	0.38	55.44	5,136.78	-13.95	11.23	0.24	-14.78	473,033.19	763,806.98
5,231.50	0.74	58.83	5,231.28	-13.46	12.01	0.38	-14.35	473,033.68	763,807.76
5,326.00	0.80	60.12	5,325.77	-12.81	13.11	0.07	-13.79	473,034.33	763,808.86
5,420.50	0.17	61.92	5,420.27	-12.42	13.80	0.67	-13.45	473,034.72	763,809.55
5,515.00	0.58	92.61	5,514.77	-12.37	14.40	0.47	-13.46	473,034.77	763,810.15
5,609.50	0.22	64.75	5,609.26	-12.32	15.05	0.42	-13.45	473,034.82	763,810.80
5,704.00	0.42	290.94	5,703.76	-12.12	14.89	0.63	-13.24	473,035.02	763,810.64
5,798.50	0.26	274.45	5,798.26	-11.98	14.35	0.20	-13.06	473,035.16	763,810.10
5,893.00	0.37	74.25	5,892.76	-11.88	14.43	0.66	-12.96	473,035.26	763,810.18
5,987.50	0.39	62.13	5,987.26	-11.64	15.01	0.09	-12.78	473,035.50	763,810.76
6,082.00	0.36	57.94	6,081.76	-11.33	15.54	0.04	-12.51	473,035.81	763,811.29
6,176.50	0.38	292.18	6,176.25	-11.06	15.51	0.70	-12.23	473,036.08	763,811.26
6,271.00	0.35	291.85	6,270.75	-10.83	14.95	0.03	-11.96	473,036.31	763,810.70
6,365.50	0.34	71.90	6,365.25	-10.64	14.95	0.69	-11.77	473,036.50	763,810.70
6,460.00	0.29	148.89	6,459.75	-10.76	15.34	0.42	-11.92	473,036.38	763,811.09
6,554.50	0.33	144.16	6,554.25	-11.18	15.62	0.05	-12.36	473,035.96	763,811.37
6,649.00	0.33	126.34	6,648.75	-11.56	16.00	0.11	-12.77	473,035.58	763,811.75
6,743.50	0.71	102.84	6,743.24	-11.85	16.79	0.45	-13.13	473,035.29	763,812.54
6,838.00	0.34	126.99	6,837.74	-12.15	17.58	0.45	-13.49	473,034.99	763,813.33
6,932.50	0.43	140.61	6,932.24	-12.60	18.03	0.14	-13.96	473,034.54	763,813.78

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7,027.00	0.37	240.44	7,026.74	-13.02	17.99	0.65	-14.38	473,034.12	763,813.74
7,121.50	0.34	32.54	7,121.24	-12.93	17.88	0.73	-14.29	473,034.21	763,813.63
7,216.00	0.37	22.89	7,215.73	-12.42	18.15	0.07	-13.79	473,034.72	763,813.90
7,310.50	0.38	240.42	7,310.23	-12.29	17.99	0.75	-13.66	473,034.85	763,813.74
7,405.00	0.36	234.91	7,404.73	-12.62	17.48	0.04	-13.94	473,034.52	763,813.23
7,499.50	0.31	28.06	7,499.23	-12.56	17.35	0.69	-13.88	473,034.58	763,813.10
7,594.00	0.33	19.35	7,593.73	-12.08	17.56	0.06	-13.41	473,035.06	763,813.31
7,688.50	0.41	9.38	7,688.23	-11.49	17.71	0.11	-12.83	473,035.65	763,813.46
7,783.00	0.27	5.30	7,782.73	-10.93	17.79	0.15	-12.29	473,036.21	763,813.54
7,877.50	0.33	4.77	7,877.22	-10.44	17.83	0.06	-11.80	473,036.70	763,813.58
7,972.00	0.28	30.46	7,971.72	-9.97	17.97	0.15	-11.34	473,037.17	763,813.72
8,066.50	0.27	277.99	8,066.22	-9.74	17.86	0.48	-11.10	473,037.40	763,813.61
8,161.00	0.31	205.69	8,160.72	-9.94	17.53	0.36	-11.28	473,037.20	763,813.28
8,255.50	0.32	179.96	8,255.22	-10.43	17.42	0.15	-11.76	473,036.71	763,813.17
8,350.00	0.53	326.46	8,349.72	-10.33	17.18	0.86	-11.64	473,036.81	763,812.93
8,444.50	0.35	329.99	8,444.22	-9.72	16.80	0.19	-11.00	473,037.42	763,812.55
8,539.00	0.40	187.79	8,538.72	-9.80	16.61	0.75	-11.06	473,037.34	763,812.36
8,633.50	0.27	180.43	8,633.21	-10.35	16.56	0.14	-11.60	473,036.79	763,812.31
8,728.00	0.30	205.55	8,727.71	-10.79	16.45	0.13	-12.04	473,036.35	763,812.20
8,822.50	0.45	208.46	8,822.21	-11.34	16.17	0.16	-12.57	473,035.80	763,811.92
8,917.00	0.45	201.69	8,916.71	-12.01	15.85	0.06	-13.21	473,035.13	763,811.60
9,011.50	0.78	208.21	9,011.20	-12.92	15.41	0.36	-14.09	473,034.22	763,811.16
9,106.00	1.12	216.57	9,105.69	-14.23	14.56	0.39	-15.32	473,032.91	763,810.31
9,200.50	0.60	253.28	9,200.18	-15.12	13.53	0.78	-16.13	473,032.02	763,809.28
9,295.00	0.52	209.47	9,294.67	-15.63	12.85	0.45	-16.59	473,031.51	763,808.60
9,389.50	0.73	254.04	9,389.17	-16.17	12.06	0.54	-17.06	473,030.97	763,807.81
9,484.00	0.52	264.56	9,483.66	-16.38	11.05	0.25	-17.19	473,030.76	763,806.80

Standard_report



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9,578.50	0.49	238.89	9,578.16	-16.63	10.28	0.24	-17.38	473,030.51	763,806.03
9,673.00	0.51	209.88	9,672.66	-17.20	9.73	0.27	-17.91	473,029.94	763,805.48
9,767.50	0.32	201.43	9,767.15	-17.81	9.42	0.21	-18.49	473,029.33	763,805.17
9,862.00	0.91	163.78	9,861.65	-18.78	9.53	0.72	-19.46	473,028.36	763,805.28
9,956.50	0.67	155.64	9,956.14	-20.00	9.97	0.28	-20.72	473,027.14	763,805.72
10,051.00	0.47	236.90	10,050.64	-20.72	9.87	0.80	-21.42	473,026.42	763,805.62
10,145.50	0.39	256.52	10,145.13	-21.00	9.24	0.18	-21.66	473,026.14	763,804.99
10,240.00	0.44	204.21	10,239.63	-21.41	8.77	0.39	-22.03	473,025.73	763,804.52
10,334.50	0.33	127.18	10,334.13	-21.90	8.84	0.52	-22.53	473,025.24	763,804.59
10,429.00	0.24	105.86	10,428.63	-22.12	9.25	0.15	-22.78	473,025.02	763,805.00
10,523.50	0.89	48.04	10,523.12	-21.69	9.99	0.83	-22.40	473,025.45	763,805.74
10,618.00	0.26	70.03	10,617.62	-21.12	10.73	0.69	-21.89	473,026.02	763,805.48
10,712.50	0.22	71.92	10,712.12	-20.99	11.11	0.04	-21.79	473,026.15	763,806.86
10,807.00	0.41	86.19	10,806.62	-20.91	11.62	0.22	-21.75	473,026.23	763,807.37
10,901.50	0.60	59.15	10,901.11	-20.64	12.38	0.32	-21.54	473,026.50	763,808.13
10,996.00	0.90	77.42	10,995.60	-20.22	13.53	0.40	-21.21	473,026.92	763,809.28
11,090.50	0.70	119.00	11,090.10	-20.34	14.76	0.63	-21.43	473,026.80	763,810.51
11,185.00	0.72	136.09	11,184.59	-21.05	15.67	0.22	-22.20	473,026.09	763,811.42
11,279.50	0.59	140.59	11,279.08	-21.85	16.40	0.15	-23.06	473,025.29	763,812.15
11,347.00	0.40	74.10	11,346.58	-22.06	16.84	0.84	-23.30	473,025.08	763,812.59
11,379.00	2.80	11.20	11,378.57	-21.26	17.10	8.26	-22.53	473,025.88	763,812.85
11,410.00	7.20	10.00	11,409.44	-18.60	17.59	14.20	-19.91	473,028.54	763,813.34
11,442.00	10.10	12.00	11,441.07	-13.88	18.52	9.11	-15.28	473,033.26	763,814.27
11,473.00	12.40	13.00	11,471.48	-7.98	19.83	7.45	-9.50	473,039.16	763,815.58
11,505.00	14.40	10.80	11,502.60	-0.72	21.35	6.45	-2.38	473,046.42	763,817.10
11,536.00	16.30	7.90	11,532.50	7.38	22.67	6.61	5.59	473,054.52	763,818.42
11,568.00	18.70	7.20	11,563.01	16.91	23.93	7.53	15.00	473,064.05	763,819.68

Standard_report



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Wellbore: Lateral ST01
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Survey Calculation Method: Minimum Curvature
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
11,599.00	20.50	8.60	11,592.22	27.21	25.37	6.00	25.15	473,074.35	763,821.12
11,631.00	22.60	9.70	11,621.98	38.82	27.24	6.68	36.57	473,085.96	763,822.99
11,662.00	24.50	9.00	11,650.40	51.04	29.25	6.19	48.60	473,098.18	763,825.00
11,694.00	26.30	8.00	11,679.30	64.61	31.27	5.78	61.98	473,111.75	763,827.02
11,725.00	28.20	6.60	11,706.86	78.69	33.07	6.47	75.87	473,125.83	763,828.82
11,756.00	30.60	4.20	11,733.87	93.84	34.49	8.62	90.86	473,140.98	763,830.24
11,788.00	32.60	1.90	11,761.12	110.58	35.37	7.30	107.48	473,157.72	763,831.12
11,819.00	34.00	0.80	11,787.03	127.59	35.77	4.92	124.42	473,174.73	763,831.52
11,851.00	35.30	359.70	11,813.35	145.79	35.85	4.51	142.55	473,192.93	763,831.60
11,883.00	36.90	358.80	11,839.21	164.64	35.60	5.27	161.36	473,211.78	763,831.35
11,914.00	38.80	359.20	11,863.69	183.65	35.27	6.18	180.35	473,230.79	763,831.02
11,946.00	41.10	0.40	11,888.22	204.20	35.20	7.58	200.84	473,251.34	763,830.95
11,977.00	43.00	0.10	11,911.24	224.96	35.29	6.16	221.53	473,272.10	763,831.04
12,009.00	44.20	359.00	11,934.41	247.03	35.12	4.44	243.54	473,294.17	763,830.87
12,038.00	46.00	359.10	11,954.88	267.57	34.78	6.21	264.04	473,314.71	763,830.53
12,070.00	47.50	359.10	11,976.80	290.87	34.41	4.69	287.30	473,338.01	763,830.16
12,101.00	49.70	359.10	11,997.30	314.12	34.04	7.10	310.51	473,361.26	763,829.79
12,133.00	52.40	359.10	12,017.42	339.00	33.65	8.44	335.35	473,386.14	763,829.40
12,164.00	55.20	358.50	12,035.72	364.01	33.13	9.17	360.32	473,411.15	763,828.88
12,196.00	57.90	357.60	12,053.36	390.69	32.22	8.76	386.99	473,437.83	763,827.97
12,227.00	60.30	357.20	12,069.28	417.26	31.01	7.82	413.57	473,464.40	763,826.76
12,259.00	62.50	357.20	12,084.60	445.32	29.64	6.87	441.66	473,492.46	763,825.39
12,290.00	64.00	357.90	12,098.55	472.98	28.45	5.24	469.32	473,520.12	763,824.20
12,322.00	65.50	358.20	12,112.20	501.90	27.47	4.76	498.23	473,549.04	763,823.22
12,353.00	67.20	359.50	12,124.64	530.29	26.90	6.70	526.58	473,577.43	763,822.65
12,385.00	70.50	0.40	12,136.18	560.13	26.88	10.64	556.33	473,607.27	763,822.63
12,416.00	72.70	1.30	12,145.97	589.54	27.32	7.61	585.62	473,636.68	763,823.07

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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
12,447.00	75.70	1.30	12,154.40	619.36	27.99	9.68	615.29	473,666.50	763,823.74
12,479.00	77.50	0.60	12,161.82	650.48	28.51	6.01	646.28	473,697.62	763,824.26
12,510.00	79.40	359.70	12,168.03	680.85	28.59	6.76	676.55	473,727.99	763,824.34
12,542.00	81.30	358.60	12,173.39	712.39	28.12	6.84	708.03	473,759.53	763,823.87
12,573.00	83.80	357.90	12,177.41	743.11	27.18	8.37	738.74	473,790.25	763,822.93
12,636.00	88.70	357.80	12,181.53	805.92	24.82	7.78	801.53	473,853.06	763,820.57
12,668.00	89.30	357.90	12,182.09	837.89	23.62	1.90	833.50	473,885.03	763,819.37
12,731.00	90.50	358.20	12,182.20	900.85	21.48	1.96	896.44	473,947.99	763,817.23
12,762.00	91.30	358.60	12,181.71	931.83	20.61	2.89	927.39	473,978.97	763,816.36
12,857.00	90.30	357.90	12,180.38	1,026.78	17.71	1.28	1,022.27	474,073.92	763,813.46
12,951.00	91.30	356.40	12,179.07	1,120.65	13.04	1.92	1,116.22	474,167.79	763,808.79
13,046.00	89.80	355.40	12,178.16	1,215.40	6.25	1.90	1,211.21	474,262.54	763,802.00
13,109.00	90.70	355.60	12,177.89	1,278.20	1.30	1.46	1,274.21	474,325.34	763,797.05
13,140.00	91.50	356.10	12,177.29	1,309.11	-0.94	3.04	1,305.21	474,356.25	763,794.81
13,203.00	90.70	355.50	12,176.08	1,371.93	-5.55	1.59	1,368.19	474,419.07	763,790.20
13,235.00	91.20	355.50	12,175.55	1,403.83	-8.06	1.56	1,400.19	474,450.97	763,787.69
13,298.00	88.80	354.10	12,175.55	1,466.56	-13.77	4.41	1,463.18	474,513.70	763,781.98
13,329.00	88.90	354.10	12,176.17	1,497.39	-16.96	0.32	1,494.16	474,544.53	763,778.79
13,392.00	88.10	353.80	12,177.82	1,560.02	-23.60	1.36	1,557.12	474,607.16	763,772.15
13,424.00	87.10	353.10	12,179.16	1,591.78	-27.24	3.81	1,589.07	474,638.92	763,768.51
13,487.00	87.50	353.20	12,182.13	1,654.26	-34.75	0.65	1,651.94	474,701.40	763,761.00
13,518.00	87.90	352.80	12,183.37	1,685.01	-38.52	1.82	1,682.89	474,732.15	763,757.23
13,581.00	88.80	352.70	12,185.19	1,747.48	-46.47	1.44	1,745.79	474,794.62	763,749.28
13,613.00	89.10	352.60	12,185.77	1,779.21	-50.56	0.99	1,777.74	474,826.35	763,745.19
13,676.00	91.70	352.70	12,185.33	1,841.69	-58.62	4.13	1,840.65	474,888.83	763,737.13
13,707.00	92.10	352.60	12,184.31	1,872.41	-62.59	1.33	1,871.60	474,919.55	763,733.16
13,770.00	90.50	353.10	12,182.88	1,934.91	-70.43	2.66	1,934.51	474,982.05	763,725.32

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13,802.00	91.00	353.10	12,182.46	1,966.67	-74.27	1.56	1,966.48	475,013.81	763,721.48
13,896.00	93.60	351.20	12,178.69	2,059.70	-87.09	3.42	2,060.23	475,106.84	763,708.66
13,928.00	94.10	350.80	12,176.54	2,091.24	-92.09	2.00	2,092.05	475,138.38	763,703.66
13,959.00	95.00	350.40	12,174.08	2,121.72	-97.14	3.18	2,122.84	475,168.86	763,698.61
Tie into lateral @ 13959 MD									
13,991.00	90.40	349.40	12,172.57	2,153.18	-102.74	14.71	2,154.64	475,200.32	763,693.01
14,086.00	88.80	348.70	12,173.23	2,246.45	-120.79	1.84	2,249.03	475,293.59	763,674.96
14,149.00	90.00	348.40	12,173.89	2,308.19	-133.29	1.96	2,311.56	475,355.33	763,662.46
14,180.00	90.90	348.40	12,173.65	2,338.56	-139.52	2.90	2,342.32	475,385.70	763,656.23
14,243.00	89.40	350.40	12,173.49	2,400.48	-151.11	3.97	2,404.95	475,447.62	763,644.64
14,275.00	90.40	350.60	12,173.54	2,432.04	-156.39	3.19	2,436.83	475,479.18	763,639.36
14,338.00	92.20	350.50	12,172.11	2,494.16	-166.73	2.86	2,499.57	475,541.30	763,629.02
14,369.00	92.80	350.40	12,170.76	2,524.70	-171.87	1.96	2,530.42	475,571.84	763,623.88
14,432.00	91.00	352.60	12,168.67	2,586.97	-181.18	4.51	2,593.22	475,634.11	763,614.57
14,464.00	91.80	353.00	12,167.89	2,618.71	-185.19	2.79	2,625.18	475,665.85	763,610.56
14,527.00	89.90	354.80	12,166.95	2,681.34	-191.88	4.15	2,688.14	475,728.48	763,603.87
14,558.00	90.30	354.90	12,166.90	2,712.22	-194.66	1.33	2,719.14	475,759.36	763,601.09
14,621.00	90.30	356.10	12,166.57	2,775.02	-199.61	1.90	2,782.14	475,822.16	763,596.14
14,653.00	90.70	356.70	12,166.29	2,806.96	-201.61	2.25	2,814.13	475,854.10	763,594.14
14,716.00	89.80	358.20	12,166.02	2,869.89	-204.42	2.78	2,877.09	475,917.03	763,591.33
14,747.00	89.60	358.90	12,166.18	2,900.88	-205.20	2.35	2,908.05	475,948.02	763,590.55
14,810.00	91.30	359.10	12,165.68	2,963.87	-206.30	2.72	2,970.93	476,011.01	763,589.45
14,842.00	91.90	359.50	12,164.79	2,995.85	-206.69	2.25	3,002.85	476,042.99	763,589.06
14,905.00	90.60	357.60	12,163.42	3,058.81	-208.29	3.65	3,065.74	476,105.95	763,587.46
14,936.00	91.30	357.60	12,162.90	3,089.78	-209.58	2.26	3,096.72	476,136.92	763,586.17
14,999.00	89.50	357.00	12,162.46	3,152.70	-212.55	3.01	3,159.68	476,199.84	763,583.20
15,030.00	90.20	357.00	12,162.54	3,183.66	-214.17	2.26	3,190.67	476,230.80	763,581.58

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15,093.00	88.10	357.10	12,163.48	3,246.57	-217.42	3.34	3,253.64	476,293.71	763,578.33
15,125.00	88.20	357.00	12,164.51	3,278.51	-219.06	0.44	3,285.61	476,325.65	763,576.69
15,188.00	87.70	356.30	12,166.76	3,341.36	-222.74	1.36	3,348.56	476,388.50	763,573.01
15,219.00	87.50	355.90	12,168.06	3,372.26	-224.85	1.44	3,379.53	476,419.40	763,570.80
15,282.00	88.20	355.40	12,170.43	3,435.04	-229.62	1.37	3,442.48	476,482.18	763,566.13
15,314.00	88.40	355.20	12,171.38	3,466.91	-232.24	0.88	3,474.47	476,514.05	763,563.51
15,408.00	90.50	355.50	12,172.28	3,560.59	-239.86	2.26	3,568.46	476,607.73	763,555.89
15,474.00	90.90	355.50	12,171.47	3,626.39	-245.04	0.61	3,634.45	476,673.53	763,550.71
15,506.00	90.90	355.40	12,170.97	3,658.28	-247.58	0.31	3,666.45	476,705.42	763,548.17
15,569.00	91.20	354.90	12,169.81	3,721.04	-252.90	0.93	3,729.44	476,768.18	763,542.85
15,600.00	91.30	354.80	12,169.14	3,751.91	-255.69	0.46	3,760.43	476,799.05	763,540.06
15,663.00	91.90	354.40	12,167.38	3,814.61	-261.61	1.14	3,823.39	476,861.75	763,534.14
15,694.00	92.00	354.20	12,166.32	3,845.44	-264.69	0.72	3,854.37	476,892.58	763,531.06
15,757.00	89.80	354.70	12,165.33	3,908.13	-270.78	3.58	3,917.35	476,955.27	763,524.97
15,789.00	89.60	354.70	12,165.50	3,939.99	-273.74	0.62	3,949.34	476,987.13	763,522.01
15,883.00	88.70	354.60	12,166.90	4,033.57	-282.50	0.96	4,043.32	477,080.71	763,513.25
15,946.00	89.50	354.10	12,167.89	4,096.26	-288.70	1.50	4,106.30	477,143.40	763,507.05
15,978.00	90.60	353.90	12,167.86	4,128.08	-292.05	3.49	4,138.29	477,175.22	763,503.70
16,041.00	91.20	353.50	12,166.87	4,190.69	-298.96	1.14	4,201.25	477,237.83	763,496.79
16,072.00	90.70	353.50	12,166.35	4,221.49	-302.47	1.61	4,232.22	477,268.63	763,493.28
16,135.00	89.20	353.30	12,166.41	4,284.07	-309.71	2.40	4,295.18	477,331.21	763,486.04
16,167.00	89.60	353.10	12,166.74	4,315.84	-313.50	1.40	4,327.15	477,362.98	763,482.25
16,230.00	90.50	352.80	12,166.69	4,378.37	-321.23	1.51	4,390.08	477,425.51	763,474.52
16,261.00	90.50	352.60	12,166.42	4,409.11	-325.17	0.65	4,421.04	477,456.25	763,470.58
16,355.00	91.10	352.30	12,165.11	4,502.29	-337.52	0.71	4,514.90	477,549.43	763,458.23
16,397.00	92.10	352.10	12,163.93	4,543.88	-343.22	2.43	4,556.81	477,591.02	763,452.53

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
16,456.00	92.10	352.10	12,161.77	4,602.28	-351.32	0.00	4,615.67	477,649.42	763,444.43

Survey projected to 16456.00 MD ST1

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
13,959.00	12,174.08	2,121.72	-97.14	Tie into lateral @ 13959 MD
16,456.00	12,161.77	4,602.28	-351.32	Survey projected to 16456.00 MD ST1