

Buckeye Oil Producing

Calhoun, West Virginia (NAD 27)

JM Bennett

JM Bennett #1HA


Wellbore #1

Design: Wellbore #1

DDC Survey Report

01 October, 2014

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WV Department of
Environmental Protection



06/05/2015

Survey Report



Company:	Buckeye Oil Producing	Local Co-ordinate Reference:	Well JM Bennett #1HA
Project:	Calhoun, West Virginia (NAD 27)	TVD Reference:	WELL @ 1019.0usft (Waco #1)
Site:	JM Bennett	MD Reference:	WELL @ 1019.0usft (Waco #1)
Well:	JM Bennett #1HA	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

Project	Calhoun, West Virginia (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia South 4702		

Site	JM Bennett				
Site Position:	Northing:	724,063.00 usft	Latitude:	38° 59' 17.999 N	
From:	Map	Easting:	1,967,824.00 usft	Longitude:	81° 6' 47.481 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.07 °

Well	JM Bennett #1HA					
Well Position	+N-S	0.0 usft	Northing:	724,063.00 usft	Latitude:	38° 59' 17.999 N
	+E-W	0.0 usft	Easting:	1,967,824.00 usft	Longitude:	81° 6' 47.481 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,012.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2014	-8 19	66.60	52,154

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.0	0.0	0.0	320.13	

Survey Program	Date 10/1/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
1,510.0	4,373.0	MWD (Wellbore #1)	MWD default	MWD - Standard

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
FIRST SURVEY @ 1510' MD / 1510' TVD										
1,510.0	0.00	0.00	1,510.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,540.0	0.80	142.10	1,540.0	-0.2	0.1	0.0	2.67	2.67	0.00	
1,572.0	0.70	168.70	1,572.0	-0.5	0.3	-0.6	1.12	-0.31	83.13	
1,604.0	2.00	302.60	1,604.0	-0.4	-0.1	0.2	7.93	4.06	418.44	
1,636.0	2.20	298.60	1,636.0	0.2	-1.1	0.9	0.77	0.63	-12.50	
1,668.0	4.20	309.40	1,667.9	1.2	-2.6	2.6	6.50	6.25	33.75	
1,700.0	4.30	310.50	1,699.8	2.7	-4.9	4.9	1.83	0.31	3.44	
1,731.0	3.80	306.70	1,730.8	4.1	-6.1	7.1	1.83	-1.61	-12.26	
1,763.0	4.90	314.20	1,762.7	5.7	-7.9	9.5	3.86	3.44	23.44	

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Survey Report



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 Site: JM Bennett
 Well: JM Bennett #1HA
 Wellbore: Wellbore #1
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Local Co-ordinate Reference: Well JM Bennett #1HA
 TVD Reference: WELL @ 1019.0usft (Waco #1)
 MD Reference: WELL @ 1019.0usft (Waco #1)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM Compass

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)
1,794.0	8.60	324.40	1,793.4	8.5	-10.2	13.1	12.50	11.94	32.90
1,826.0	12.70	318.10	1,824.9	13.1	-14.0	19.0	13.30	12.81	-19.69
1,857.0	16.60	318.00	1,854.9	18.9	-19.2	26.8	12.58	12.58	-0.32
1,889.0	18.50	319.70	1,885.4	26.2	-25.6	36.5	6.15	5.94	5.31
1,920.0	18.40	319.70	1,914.8	33.6	-31.9	46.3	0.32	-0.32	0.00
1,951.0	20.40	323.30	1,944.0	41.7	-38.3	56.6	7.51	6.45	11.61
1,983.0	22.90	325.80	1,973.8	51.3	-45.1	68.3	8.33	7.81	7.81
2,015.0	22.80	325.80	2,003.3	61.6	-52.1	80.7	0.31	-0.31	0.00
2,046.0	24.10	328.50	2,031.7	72.0	-58.8	92.9	5.44	4.19	8.71
2,078.0	25.90	330.60	2,060.7	83.6	-65.7	106.3	6.27	5.63	6.56
2,110.0	27.10	330.50	2,089.3	96.1	-72.7	120.3	3.75	3.75	-0.31
2,141.0	28.30	331.30	2,116.8	108.7	-79.7	134.5	4.05	3.87	2.58
2,173.0	29.90	333.70	2,144.7	122.5	-86.9	149.7	6.19	5.00	7.50
2,204.0	33.30	336.70	2,171.1	137.2	-93.6	165.3	12.08	10.97	9.68
2,236.0	37.90	336.40	2,197.2	154.3	-101.1	183.2	14.39	14.38	-0.94
2,268.0	43.00	335.30	2,221.5	173.2	-109.6	203.2	16.09	15.94	-3.44
2,299.0	45.40	335.60	2,243.7	192.9	-118.5	224.0	7.77	7.74	0.97
2,330.0	47.20	335.20	2,265.1	213.3	-127.9	245.6	5.88	5.81	-1.29
2,362.0	49.30	335.60	2,286.4	235.0	-137.8	268.7	6.63	6.56	1.25
2,395.0	51.00	334.60	2,307.6	257.9	-148.5	293.2	5.65	5.15	-3.03
2,427.0	53.50	332.70	2,327.2	280.6	-159.7	317.7	9.11	7.81	-5.94
2,457.0	55.10	332.30	2,344.7	302.2	-171.0	341.5	5.44	5.33	-1.33
2,488.0	58.60	334.70	2,361.6	325.4	-182.5	366.8	13.02	11.29	7.74
2,519.0	62.40	336.90	2,376.9	350.1	-193.6	392.8	13.73	12.26	7.10
2,550.0	64.50	338.30	2,390.8	375.7	-204.1	419.2	7.89	6.77	4.52
2,582.0	66.70	335.30	2,404.0	402.5	-215.6	447.1	10.96	6.88	-9.38
2,614.0	68.70	332.10	2,416.1	429.0	-228.7	475.9	11.16	6.25	-10.00
2,646.0	70.20	330.50	2,427.4	455.3	-243.1	505.3	6.62	4.69	-5.00
2,678.0	73.20	329.40	2,437.4	481.6	-258.3	535.2	9.93	9.38	-3.44
2,711.0	76.40	330.10	2,446.1	509.1	-274.4	566.6	9.91	9.70	2.12
2,742.0	79.30	332.30	2,452.6	535.6	-289.0	596.3	11.65	9.35	7.10
2,773.0	81.00	337.70	2,457.9	563.3	-301.9	625.9	18.02	5.48	17.42
2,805.0	83.50	339.70	2,462.2	592.8	-313.0	655.9	9.97	7.81	6.25
2,836.0	87.80	338.30	2,464.6	621.7	-324.5	685.2	14.58	13.87	-4.52
2,868.0	90.90	337.50	2,464.9	651.3	-336.5	715.6	10.00	9.69	-2.50
2,900.0	93.00	334.00	2,463.8	680.5	-349.6	746.4	12.75	6.56	-10.94
2,932.0	92.80	331.40	2,462.2	708.9	-364.3	776.6	7.76	-0.63	-8.13
2,964.0	92.00	333.80	2,460.9	737.3	-379.0	806.8	7.90	7.50	7.50
2,995.0	86.30	332.90	2,461.3	765.0	-392.9	837.0	18.61	-18.39	-2.90
3,027.0	85.30	331.70	2,463.7	793.2	-407.7	870.2	4.87	-3.13	-3.75
3,059.0	87.30	329.80	2,465.7	821.1	-423.3	901.6	8.61	6.25	-5.94
3,091.0	90.20	329.40	2,466.4	848.7	-439.5	933.1	9.15	9.06	-1.25
3,123.0	91.10	327.30	2,466.1	875.9	-456.3	964.8	7.14	2.81	-6.56

Office of the State Auditor
 WV Department of Environmental Protection
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Survey Report

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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)
3,155.0	90.80	326.30	2,465.5	902.7	-473.8	996.6	3.26	-0.94	-3.13
3,186.0	90.70	323.60	2,465.1	928.0	-491.6	1,027.4	8.71	-0.32	-8.71
3,218.0	92.20	319.30	2,464.3	953.1	-511.6	1,059.4	14.23	4.69	-13.44
3,250.0	93.20	317.10	2,462.8	976.9	-532.9	1,091.4	7.54	3.13	-6.88
3,281.0	92.40	319.20	2,461.3	1,000.0	-553.5	1,122.3	7.24	-2.58	6.77
3,313.0	87.40	323.00	2,461.4	1,024.8	-573.6	1,154.3	19.62	-15.63	11.88
3,345.0	85.40	324.50	2,463.4	1,050.6	-592.5	1,186.2	7.81	-6.25	4.69
3,376.0	86.00	322.20	2,465.7	1,075.4	-610.9	1,217.0	7.65	1.94	-7.42
3,408.0	88.50	319.90	2,467.2	1,100.2	-631.0	1,249.0	10.61	7.81	-7.19
3,439.0	88.60	319.60	2,468.0	1,123.9	-651.1	1,280.0	1.02	0.32	-0.97
3,471.0	88.70	319.10	2,468.8	1,148.2	-671.9	1,311.9	1.59	0.31	-1.56
3,503.0	89.50	318.30	2,469.3	1,172.2	-693.0	1,343.9	3.54	2.50	-2.50
3,535.0	89.50	317.10	2,469.5	1,195.9	-714.6	1,375.9	3.75	0.00	-3.75
3,567.0	89.50	317.40	2,469.8	1,219.4	-736.3	1,407.9	0.94	0.00	0.94
3,599.0	90.10	317.20	2,469.9	1,242.9	-758.0	1,439.8	1.98	1.88	-0.63
3,631.0	91.30	316.40	2,469.5	1,266.2	-779.9	1,471.8	4.51	3.75	-2.50
3,663.0	91.60	315.00	2,468.7	1,289.1	-802.2	1,503.7	4.47	0.94	-4.38
3,694.0	91.50	315.50	2,467.9	1,311.1	-824.0	1,534.5	1.64	-0.32	1.61
3,726.0	91.80	315.20	2,467.0	1,333.9	-846.5	1,566.4	1.33	0.94	-0.94
3,758.0	91.90	315.70	2,465.9	1,356.7	-869.0	1,598.3	1.59	0.31	1.56
3,790.0	92.10	316.70	2,464.8	1,379.7	-891.1	1,630.2	3.19	0.63	3.13
3,821.0	90.20	319.30	2,464.2	1,402.8	-911.8	1,661.2	10.39	-6.13	8.39
3,853.0	91.00	321.10	2,463.9	1,427.4	-932.3	1,693.2	6.16	2.50	5.63
3,885.0	91.40	323.70	2,463.2	1,452.7	-951.8	1,725.1	8.22	1.25	8.13
3,917.0	91.70	323.90	2,462.3	1,478.5	-970.7	1,757.0	1.13	0.94	0.63
3,949.0	89.30	323.60	2,462.1	1,504.3	-989.6	1,789.0	7.56	-7.50	-0.94
3,979.0	88.80	324.20	2,462.6	1,528.6	-1,007.3	1,818.9	2.60	-1.67	2.00
4,011.0	87.40	323.40	2,463.6	1,554.4	-1,026.2	1,850.8	5.04	-4.38	-2.50
4,043.0	87.40	320.70	2,465.1	1,579.6	-1,045.9	1,882.8	8.43	0.00	-8.44
4,075.0	89.90	321.40	2,465.8	1,604.4	-1,066.0	1,914.8	8.11	7.81	2.19
4,106.0	93.70	323.40	2,464.8	1,629.0	-1,084.9	1,945.7	13.85	12.26	6.45
4,137.0	94.50	323.10	2,462.6	1,653.8	-1,103.4	1,976.6	2.76	2.58	-0.97
4,169.0	94.30	320.60	2,460.2	1,678.9	-1,123.1	2,008.5	7.81	-0.63	-7.81
4,200.0	94.20	320.20	2,457.9	1,702.7	-1,142.8	2,039.4	1.33	-0.32	-1.29
4,232.0	94.40	318.80	2,455.5	1,726.9	-1,163.5	2,071.3	4.41	0.63	-4.38
4,264.0	94.70	319.70	2,452.9	1,751.1	-1,184.3	2,103.2	2.96	0.94	2.81
4,296.0	94.70	319.40	2,450.3	1,775.4	-1,205.0	2,135.1	0.93	0.00	-0.94
4,328.0	95.00	318.50	2,447.6	1,799.4	-1,226.0	2,167.0	2.96	0.94	-2.81
TD @ 4373' MD / 2444' TVD									
4,373.0	95.00	318.50	2,443.7	1,833.0	-1,247.8	2,198.9	0.00	0.00	0.00

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Project:	Calhoun, West Virginia (NAD 27)	TVD Reference:	WELL @ 1019.0usft (Waco #1)
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Well:	JM Bennett #1HA	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,510.0	1,510.0	0.0	0.0	FIRST SURVEY @ 1510' MD / 1510' TVD
4,373.0	2,443.7	1,833.0	-1,255.7	TD @ 4373' MD / 2444' TVD

Checked By: _____ Approved By: _____ Date: _____

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MAY 04 2015



SURVEY CALCULATION PROGRAM

v1.00.02

OPERATOR:	Buckeye	Supervisors:
WELL:	Bennett #1HA	Jim Cool / Dennis Cottrill
		L. Pennisi /
LOCATION:	Calhoun County, WV	
JOB NUMBER:	AM-140761	
COMMENTS:		
		MAG DEC.(-/+) -8.19
		GRID CORR.(-/+) 0.07
		TOTAL CORR.(-/+) -8.12

DATE: 9/24/2014	TIME: 8:54 AM	GRID
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MINIMUM CURVATURE CALCULATIONS(SPE-3362)	PROPOSED DIRECTION	320.13	TARGET TRACKING TO CENTER
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SVY NUM	MD	INC	TRUE AZM	TVD	SECT	N-S	E-W	DLS/ 100.00	TARGET TRACKING TO CENTER	
									ABOVE(+) BELOW(-)	RIGHT(+) LEFT(-)
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	951.00	0.01
1	1510	0.00	0.00	1510.00	0.00	0.00	0.00	0.00	921.00	0.11
2	1540	0.80	142.10	1540.00	-0.21	-0.17	0.13	2.67	889.00	0.38
3	1572	0.70	168.70	1572.00	-0.60	-0.53	0.30	1.12	857.01	0.45
4	1604	2.00	302.60	1603.99	-0.24	-0.42	-0.13	7.93	825.03	0.29
5	1636	2.20	298.60	1635.97	0.86	0.17	-1.14	0.77	793.09	-0.10
6	1668	4.20	309.40	1667.92	2.58	1.21	-2.58	6.50	761.19	-0.79
7	1700	4.30	310.50	1699.83	4.92	2.73	-4.40	0.40	730.27	-1.38
8	1731	3.80	306.70	1730.75	7.06	4.10	-6.11	1.83	696.36	-2.15
9	1763	4.90	314.20	1762.66	9.45	5.09	-7.94	3.66	667.61	-3.81
10	1794	8.60	324.40	1793.11	13.08	8.50	-10.21	12.50	636.19	-6.55
11	1826	12.70	318.10	1824.88	18.99	13.06	-13.98	13.30	606.23	-9.87
12	1857	16.60	318.00	1854.87	26.82	18.89	-19.22	12.58	575.76	-14.08
13	1889	18.50	319.70	1885.38	36.47	26.16	-25.56	6.15	546.39	-18.49
14	1920	18.40	319.70	1914.79	46.28	33.64	-31.91	0.32	517.19	-23.42
15	1951	20.40	323.30	1944.03	56.56	41.71	-38.30	7.51	487.50	-29.61
16	1983	22.90	325.80	1973.77	68.33	51.33	-45.14	8.33	458.05	-36.34
17	2015	22.80	325.80	2003.26	80.70	61.61	-52.12	0.31	429.66	-43.27
18	2046	24.10	328.50	2031.70	92.94	71.97	-58.81	5.44	400.71	-51.33
19	2078	25.90	330.60	2060.70	106.27	83.63	-65.65	6.27	372.13	-60.03
20	2110	27.10	330.50	2089.33	120.32	96.07	-72.67	3.75	344.74	-68.88
21	2141	28.30	331.30	2116.78	134.47	108.66	-79.68	4.05	316.83	-78.78
22	2173	29.90	333.70	2144.74	149.67	122.46	-86.85	6.19	290.49	-89.71
23	2204	33.30	336.70	2171.14	165.34	137.21	-93.65	12.08	264.55	-102.53
24	2236	37.90	336.40	2197.15	183.21	154.29	-101.06	14.39	240.28	-116.64
25	2268	43.00	335.30	2221.50	203.19	173.23	-109.56	16.09	218.14	-131.23
26	2299	45.40	335.60	2243.72	224.03	192.88	-118.54	7.77	196.81	-146.34
27	2330	47.20	335.20	2265.14	245.65	213.26	-127.87	5.88	175.59	-162.44
28	2362	49.30	335.60	2286.44	268.68	234.97	-137.80	6.63	154.54	-179.42
29	2395	51.00	334.60	2307.59	293.15	257.94	-148.47	5.65	135.04	-195.89
30	2427	53.50	332.70	2327.18	317.75	280.61	-159.71	9.11	117.63	-211.39
31	2457	55.10	332.30	2344.69	341.55	302.22	-170.91	5.44	100.77	-228.25
32	2488	58.60	334.70	2361.64	366.79	325.49	-182.55	10.02	85.61	-246.58
33	2519	62.40	336.90	2376.90	392.76	350.05	-193.57	13.73	71.85	-266.05
34	2550	64.50	338.30	2390.76	419.20	375.89	-204.59	15.93	58.74	-286.22
35	2582	66.70	335.30	2403.98	447.12	402.47	-215.62	10.96	46.70	-306.30
36	2614	68.70	332.10	2415.10	475.81	429.00	-226.64	10.96		

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SURVEY CALCULATION PROGRAM

v1.00.02

OPERATOR:	Buckeye	Supervisors:	
WELL:	Bennett #1HA	Jim Cool / Dennis Cottrill	
		L. Pennisi /	
LOCATION:	Calhoun County, WV		
JOB NUMBER:	AM-140761		

COMMENTS:			
		MAG DEC.(-/+)	-8.19
		GRID CORR.(-/+)	0.07
		TOTAL CORR.(-/+)	-8.12

DATE:	9/24/2014	TIME:	8:54 AM	GRID	
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MINIMUM CURVATURE CALCULATIONS(SPE-3362)	PROPOSED DIRECTION	320.13	TARGET TRACKING TO CENTER
---	---------------------------	--------	----------------------------------

SVY NUM	MD	INC	TRUE AZM	TVD	SECT	N-S	E-W	DLS/ 100.00	ABOVE(+) BELOW(-)	RIGHT(+) LEFT(-)
37	2646	70.20	330.50	2427.36	505.29	455.28	-243.13	6.62	35.58	-324.08
38	2678	73.20	329.40	2437.40	535.22	481.57	-258.35	9.93	25.65	-342.34
39	2711	76.40	330.10	2446.05	566.61	509.08	-274.39	9.91	17.12	-361.39
40	2742	79.30	332.30	2452.58	596.35	535.63	-288.98	11.65	10.71	-380.13
41	2773	81.00	337.70	2457.89	625.86	563.30	-301.88	18.02	5.52	-400.56
42	2805	83.50	339.70	2462.20	655.91	592.84	-313.39	9.97	1.32	-423.26
43	2836	87.80	338.30	2464.55	685.15	621.69	-324.47	14.58	-0.92	-445.48
44	2868	90.90	337.50	2464.91	715.62	651.34	-336.51	10.00	-1.17	-468.07
45	2900	93.00	334.00	2463.83	746.41	680.49	-349.64	12.75	0.04	-489.77
46	2932	92.80	331.40	2462.21	777.00	708.89	-364.30	8.14	-1.78	-510.18
47	2964	92.00	333.80	2460.87	808.82	737.27	-379.01	7.90	3.24	-530.56
48	2995	86.30	332.90	2461.33	838.98	764.96	-392.80	18.01	2.90	-550.62
49	3027	85.30	331.70	2463.67	870.18	793.22	-407.74	4.87	0.67	-570.84
50	3059	87.30	329.80	2465.73	901.56	821.08	-423.34	8.61	-1.27	-590.38
51	3091	90.20	329.40	2466.43	933.11	848.67	-439.53	9.15	-1.85	-609.46
52	3123	91.10	327.30	2466.07	964.78	875.90	-456.32	7.14	-1.36	-627.97
53	3155	90.80	326.30	2465.54	996.56	902.68	-473.84	3.26	-0.71	-645.77
54	3186	90.70	323.60	2465.13	1027.44	928.05	-491.64	8.71	-0.19	-662.17
55	3218	92.20	319.30	2464.32	1059.41	953.06	-511.57	14.23	0.75	-677.41
56	3250	93.20	317.10	2462.82	1091.36	976.89	-532.87	7.54	2.38	-691.01
57	3281	92.40	319.20	2461.30	1122.30	999.95	-553.53	7.24	4.01	-704.17
58	3313	87.40	323.00	2461.36	1154.28	1024.84	-573.61	19.62	4.08	-719.24
59	3345	85.40	324.50	2463.37	1186.15	1050.60	-592.50	7.81	2.19	-735.56
60	3376	86.00	322.20	2465.69	1217.01	1075.39	-610.95	7.65	-0.02	-751.18
61	3408	88.50	319.90	2467.23	1248.97	1100.25	-631.04	10.61	-1.43	-766.21
62	3439	88.60	319.60	2468.01	1279.96	1123.90	-651.06	1.02	-2.10	-780.16
63	3471	88.70	319.10	2468.76	1311.94	1148.17	-671.90	1.59	-2.73	-794.36
64	3503	89.50	318.30	2469.27	1343.93	1172.21	-693.02	3.54	-3.11	-808.23
65	3535	89.50	317.10	2469.55	1375.90	1195.88	-714.55	3.75	-3.26	-821.60
66	3567	89.50	317.40	2469.83	1407.86	1219.37	-736.28	0.94	-3.42	-834.75
67	3599	90.10	317.20	2469.94	1439.82	1242.89	-757.98	1.98	-3.41	-847.92
68	3631	91.30	316.40	2469.55	1471.76	1266.22	-779.88	4.51	-2.89	-860.83
69	3663	91.60	315.00	2468.74	1503.65	1289.11	-802.22	4.47	-1.96	-873.17
70	3694	91.50	315.50	2467.90	1534.53	1311.12	-824.04	1.64	-1.01	-884.91
71	3726	91.80	315.20	2466.98	1566.41	1333.81	-846.52	1.33	0.04	-897.07
72	3758	91.90	315.70	2465.04	1598.28	1356.67	-868.95	1.89	1.15	-909.38
73	3790	92.10	316.70	2464.94	1630.15	1379.22	-892.00	1.50	0.00	-921.69



SURVEY CALCULATION PROGRAM

v1.00.02

OPERATOR:		Buckeye				Supervisors:						
WELL:		Bennett #1HA				Jim Cool / Dennis Cottrill						
						L. Pennisi /						
LOCATION:		Calhoun County, WV										
JOB NUMBER:		AM-140761										
COMMENTS:												
										MAG DEC.(-/+)		-8.19
										GRID CORR.(-/+)		0.07
										TOTAL CORR.(-/+)		-8.12
DATE:		9/24/2014		TIME:		8:54 AM		GRID				
MINIMUM CURVATURE CALCULATIONS(SPE-3362)						PROPOSED DIRECTION			320.13	TARGET TRACKING TO CENTER		
SVY	MD	INC	TRUE	TVD	SECT	N-S	E-W	DLS/		ABOVE(+)	RIGHT(+)	
NUM			AZM					100.00		BELOW(-)	LEFT(-)	
74	3821	90.20	319.30	2464.20	1661.16	1402.78	-911.82	10.39		3.17	-934.98	
75	3853	91.00	321.10	2463.87	1693.15	1427.36	-932.31	6.16		3.63	-949.60	
76	3885	91.40	323.70	2463.20	1725.12	1452.71	-951.82	8.22		4.43	-965.31	
77	3917	91.70	323.90	2462.33	1757.04	1478.52	-970.72	1.13		5.41	-981.69	
78	3949	89.30	323.60	2462.05	1788.97	1504.32	-989.64	7.56		5.82	-998.05	
79	3979	88.80	324.20	2462.55	1818.90	1528.56	-1007.31	2.60		5.43	-1013.45	
80	4011	87.40	323.40	2463.61	1850.82	1554.37	-1026.20	5.04		4.49	-1029.83	
81	4043	87.40	320.70	2465.06	1882.77	1579.57	-1045.86	8.43		3.16	-1045.35	
82	4075	89.90	321.40	2465.82	1914.75	1604.45	-1065.96	8.11		2.53	-1060.39	
83	4106	93.70	323.40	2464.04	1943.70	1628.99	-1084.61	13.03		3.03	-1073.00	
84	4137	94.50	323.10	2462.63	1976.58	1653.77	-1103.37	2.76		5.96	-1091.17	
85	4169	94.30	320.60	2460.17	2008.47	1678.85	-1123.07	7.81		8.54	-1106.57	
86	4200	94.20	320.20	2457.88	2039.38	1702.68	-1142.78	1.33		10.96	-1120.79	
87	4232	94.40	318.80	2455.48	2071.29	1726.94	-1163.50	4.41		13.48	-1135.03	
88	4264	94.70	319.70	2452.94	2103.18	1751.10	-1184.32	2.96		16.14	-1149.14	
89	4296	94.70	319.40	2450.32	2135.07	1775.37	-1205.02	0.93		18.88	-1163.40	
90	4328	95.00	318.50	2447.61	2166.95	1799.42	-1225.96	2.96		21.71	-1177.35	
PTB	4373	95.00	318.50	2443.69	2211.76	1832.99	-1255.66	0.00		25.80	-1196.65	

Company Name: Buckeye Oil Producing
 JM Bennett #1HA
 Calhoun, West Virginia (NAD 27)
 Rtg: Waco #1
 Created By: Jerry Arsenault
 Date: 10/1/2014

JM Bennett #1HA
 Calhoun, West Virginia (NAD 27)
 Q140813 & RM-140761
 Design #1

PROJECT DETAILS: Calhoun, West Virginia (NAD 27)
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: West Virginia South 4702
 System Datum: Mean Sea Level

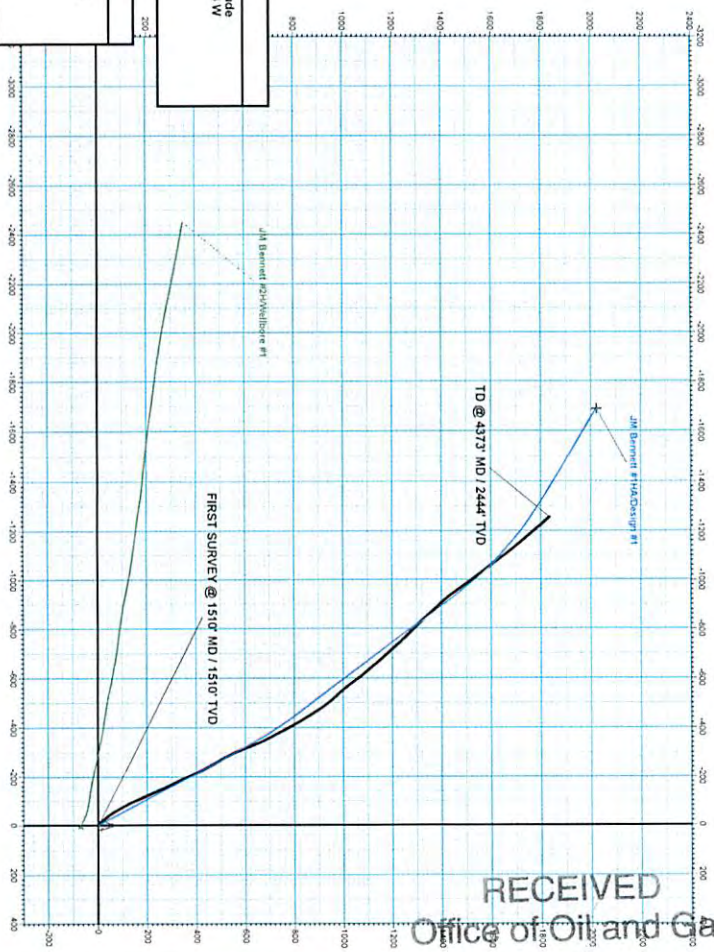


JM Bennett #1HA

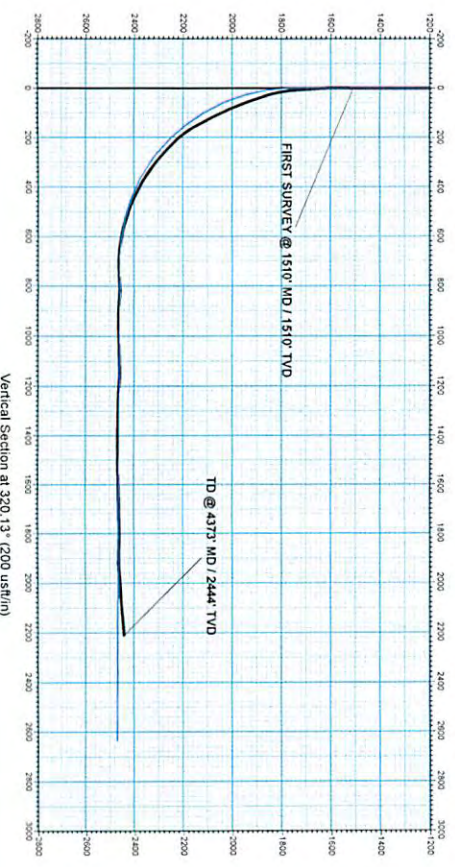
WELL DETAILS: JM Bennett #1HA			
*N/S	E/W	Northing	Longitude
0/0	0/0	72603200	81° 7' 8.904 W
		1987924.003*	99° 17' 59.9 N 81° 6' 47.481 W

DESIGN TARGET DETAILS			
Name	TVD	*N/S	Longitude
PHL JM Bennett #1HA	2469.0	*E/W	81° 7' 8.904 W
	2022.4	North	1996134.97 38° 59' 37.968 N
- plan hits target center			

ANNOTATIONS					
TVD	MD	Inc	AZI	*N/S	*E/W
1510.0	1510.0	0.00	0.00	0.0	0.0
2443.7	4373.0	95.00	318.50	1833.0	-1255.7
				2211.8	2241.7
					TD @ 4373' MD / 2444' TVD



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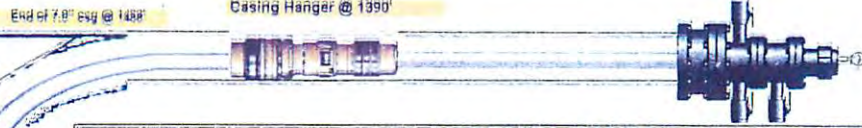
Vertical Section at 320.13° (200 usft/in)

Azimuths to Grid North
 Magnetic North: -8.12°
 Magnetic Field
 Strength: 52153.6snT
 Dip Angle: 66.60°
 Date: 8/27/2014
 Model: IGRF2010

MAY 04 2015

WV Department of
 Environmental Protection

06/05/2015



BOC 2858'

Predator II OH Packer Set @ 2817'

Strata Port 3.65" ID @ 2908' Open @ 1860 psi Use 3.750" ball

Predator II OH Packer Set @ 3090'

Strata Port 3.53" ID @ 3174' Open @ 1860 psi Use 3.625" ball

Predator II OH Packer Set @ 3306'

Strata Port 3.40" ID @ 3397' Open @ 1860 psi Use 3.50" ball

Predator II OH Packer Set @ 3530'

Strata Port 3.28" ID @ 3653' Open @ 1860 psi Use 3.375" ball

Predator II OH Packer Set @ 3795'

Strata Port 3.15" ID @ 3886' Open @ 1860 psi Use 3.250" ball

Predator II OH Packer Set @ 4019'

Strata Port 3.03" ID @ 4110' Open @ 1860 psi Use 3.125" ball

Predator II OH Packer Set @ 4242'

Floated Pump Out Plug @ 4286' Open @ 4624 psi Use 1.25" Ball

DOWN HOLE WELL PROFILE				
WELL NAME	Bannat Hg	DATE	9/25/14	
SUPERVISOR	Maria Lydia	TCOL HAND	David McCullay	
PHONE #	330-466-2853	PHONE #	304-472-6666	
RIG #	WACO 1	FIELD TICKET #	38646	
ELEVATIONS				
	GL ELEV	KB ELEV	RIG KBD	TVD
			7	2460.00
CASING / OPEN HOLE LAYOUT				
	OD (IN)	LANDED DEPTH	WEIGHT (LB/FT)	TOP OF (FTKB)
CASING DESCRIPTION	7	1488.00	20	0
WINDOW DESCRIPTION	6 1/4			1,640.00
OPEN HOLE DESCRIPTION	6 1/4	4360.00	JUNCTION @	1640.00
DESCRIPTION				

Liner Placement Schematic

DOWNHOLE DESCRIPTION FROM BOTTOM UP					
BOTTOM @	DESCRIPTION	LENGTH	ID	OD	
4286.96	4 1/2" Floated Pump Out Plug	0.85	750"	5 000	
4286.10	1 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 1	41 75	4 000	4 500
4243.36	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
4242.20	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
4238.20	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
4236.10	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 2-4	125 25	4 000	4 500
4109.85	7 x 4 1/2" Strata-Port Frac Sleeve w/ 3 031 ID Seat (Open with 3 125" Ball)	3 55	3 031	5 688	
4106.30	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
4103.20	2 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 5-6	83 50	4 000	4 500
4019.70	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
4018.65	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
4014.65	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
4011.45	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 7-9	125 25	4 000	4 500
3886.20	7 x 4 1/2" Strata-Port Frac Sleeve w/ 3 153 ID Seat (Open with 3 250" Ball)	3 55	3 153	5 688	
3882.65	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3879.55	2 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 10-11	83 50	4 000	4 500
3796.05	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
3794.90	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
3790.90	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3787.80	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 12-14	125 25	4 000	4 500
3662.55	7 x 4 1/2" Strata-Port Frac Sleeve w/ 3 281 ID Seat (Open with 3 375" Ball)	3 55	3 281	5 688	
3659.00	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3655.90	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 15-17	125 25	4 000	4 500
3630.65	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
3529.50	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
3525.50	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3522.40	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 18-20	125 25	4 000	4 500
3397.15	7 x 4 1/2" Strata-Port Frac Sleeve w/ 3 405 ID Seat (Open with 3 500" Ball)	3 55	3 405	5 688	
3393.60	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3390.50	2 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 21-22	83 50	4 000	4 500
3307.00	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
3305.85	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
3301.85	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3298.75	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 23-25	125 25	4 000	4 500
3173.50	7 x 4 1/2" Strata-Port Frac Sleeve w/ 3 531 ID Seat (Open with 3 625" Ball)	3 55	3 531	5 688	
3169.95	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3166.85	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 26-28	125 25	4 000	4 500
3041.60	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
3040.45	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
3036.45	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
3033.35	3 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt # 29-31	125 25	4 000	4 500
2908.10	7 x 4 1/2" Strata-Port Frac Sleeve w/ 3 656 ID Seat (Open with 3 750" Ball)	3 55	3 656	5 688	
2904.55	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
2901.45	2 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 32-33	83 50	4 000	4 500
2817.95	7 x 4 1/2" Peak Rotational Centralizer	1 15	3 995	5 750	
2816.80	7 x 4 1/2" Predator II Open Hole Isolation Packer	4 00	3 995	5 688	
2812.80	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
2809.70	34 Joints 4 1/2", 11 6#, N-80 Liner with LTC Threads	Jt# 34-67	1419 50	4 000	4 500
1390.20	7 x 4 1/2" Peak SMP-X Liner Hanger System SN 50150970	9 35	3 995	6 000	
1380.85	4 1/2" P-110 Liner Sub with LTC Threads	3 10	4 000	4 500	
1377.75	33 Joints 4 1/2", 11 6#, P-110 Liner with LTC Threads	Jt# 68-100	1377 75	4 000	4 500
0.00	Landed Casing At ground level	0 00	0 000	0 000	
WEIGHT OF STRING	28536	TOTAL STRING LENGTH	4285.95		
PUSH / PULL TEST		STICK-UP OFF RIG FLOOR	GL		
TOP OF OPEN HOLE PACKER	2817.00	TUBING BOTTOM	4285.95		

Total Drilled Depth 4360'

Office of Oil and Gas
 *** CONFIDENTIAL ***
 MAY 04 2015

WV Department of Environmental Protection

06/05/2015



APPALACHIAN DIRECTIONAL CO

AM-140761

2":100' - MD

9/24/2014 3:30:08 AM

Oper. Company: BUCKEYE
 Country: USA
 State / Province: WV
 County / Parish: CALHOUN
 Started: 09/17/2014 04:00 PM

API/UWI: 47-1304747
 Field: BERE A
 Well: JM BENNETT #1HA
 Rig: WACO #11
 Ended: 09/24/2014 03:00 AM

Personnel

Day Hand: L. PENNISI
 Night Hand: J. JAMES
 Comp. Emp:

Location

Latitude: 38° 59' 17.999" N
 Longitude: 81° 6' 47.481" W
 Elev. GL: 1012'
 Elev. DF: 7'
 Elev. KB: 1019'

Hole Data

Size	From	To
12 3/4	0	336
8 7/8	336	1488
6 1/2	1488	4373

Casing Data

Size	From	To
9 5/8	0	336
7	0	1488

Bit Sizes

Size	From	To
12 3/4	0	336
8 7/8	336	1488
6 1/2	1488	4373

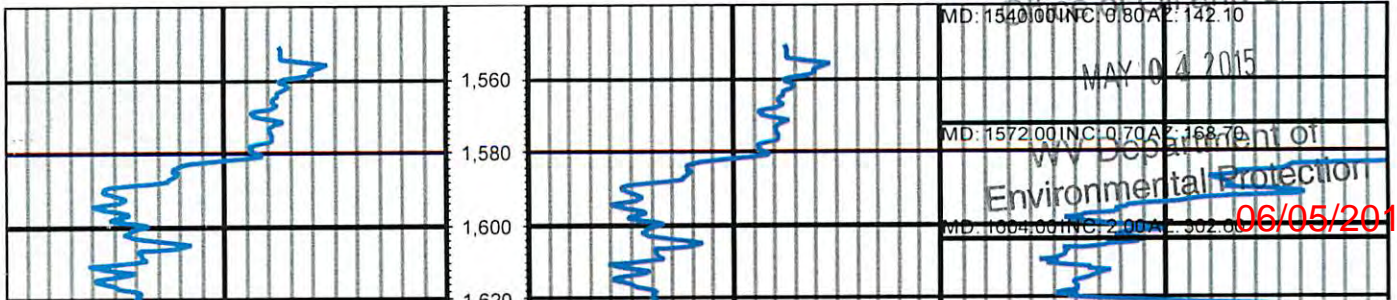
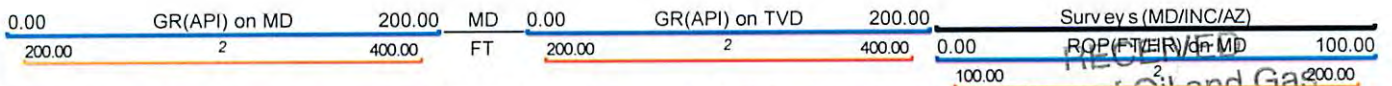
Mud Data

Type	Weight	Density	Viscosity	Rm	Rmf	Rmc	From	To
W. B.	8.5						1583	4373

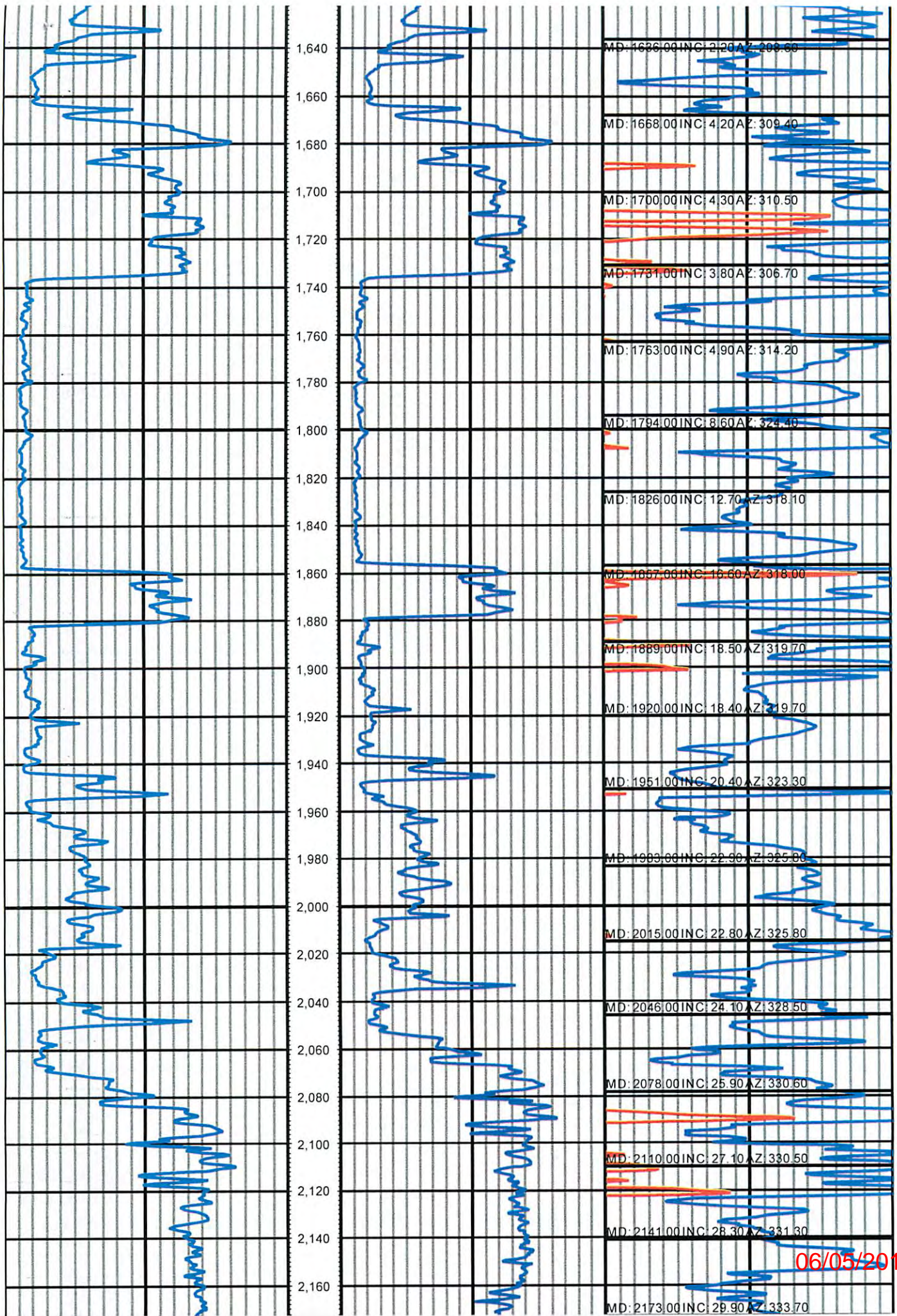
Tool Run Data

Serial Number	Gamma Offset	Resist. Offset	Start Time	Start Depth	End Time	End Depth
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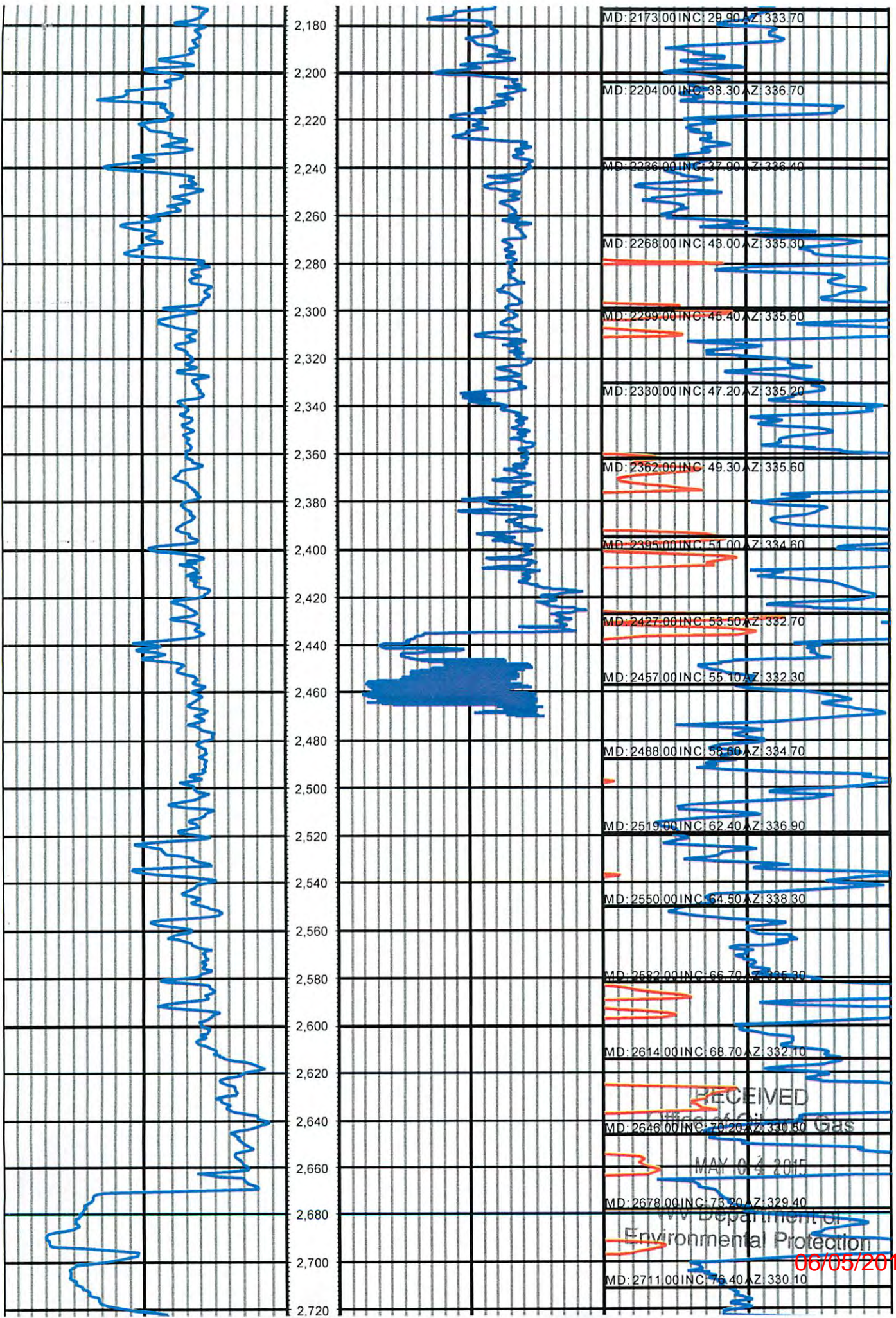
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost damages or expenses incurred or sustained by anyone resulting from an interpretation made by any of our officers, agents, or employees.



Survey s (MD/INC/AZ)
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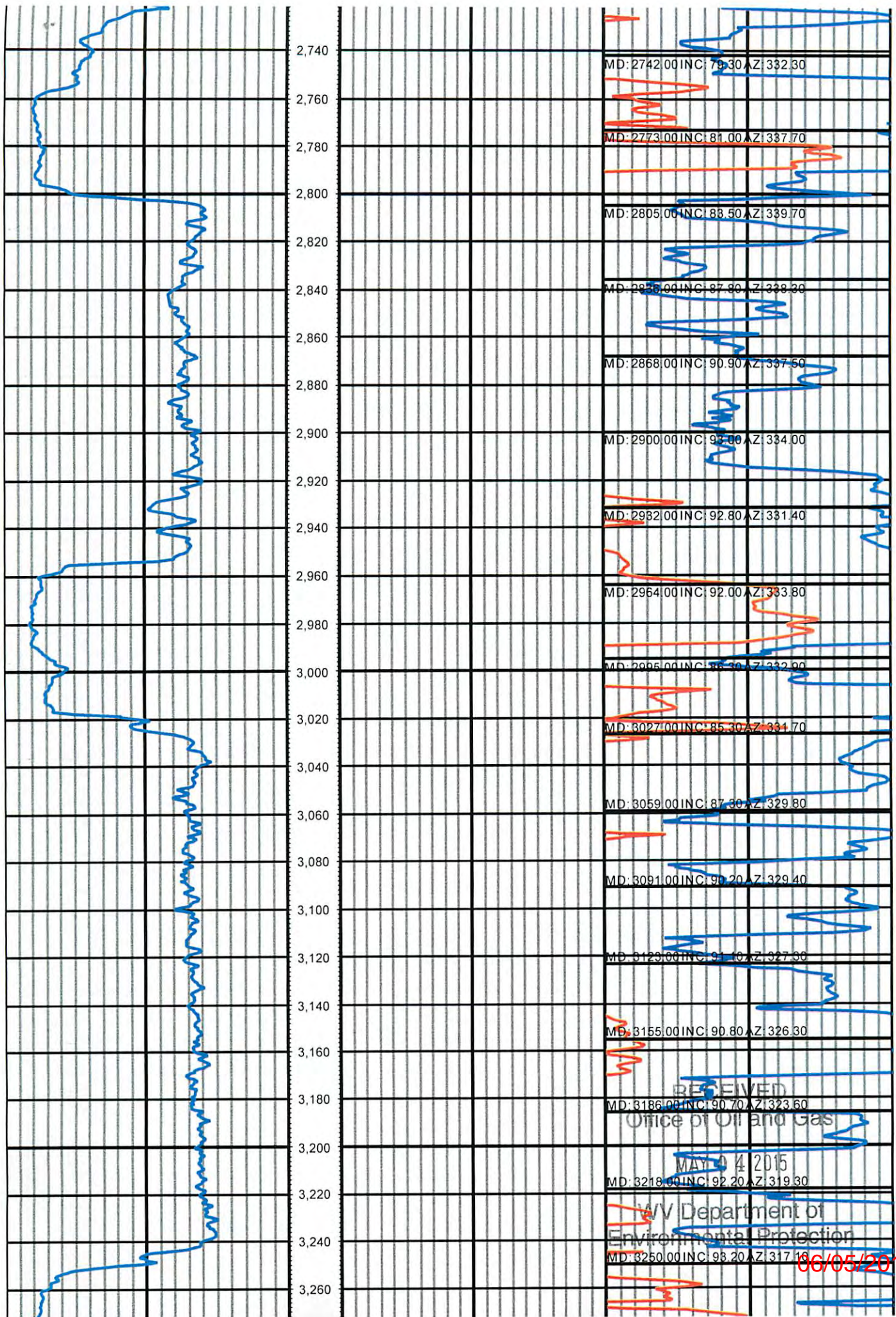
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 MAY 04 2015
 Department of
 Environmental Protection

06/05/2015

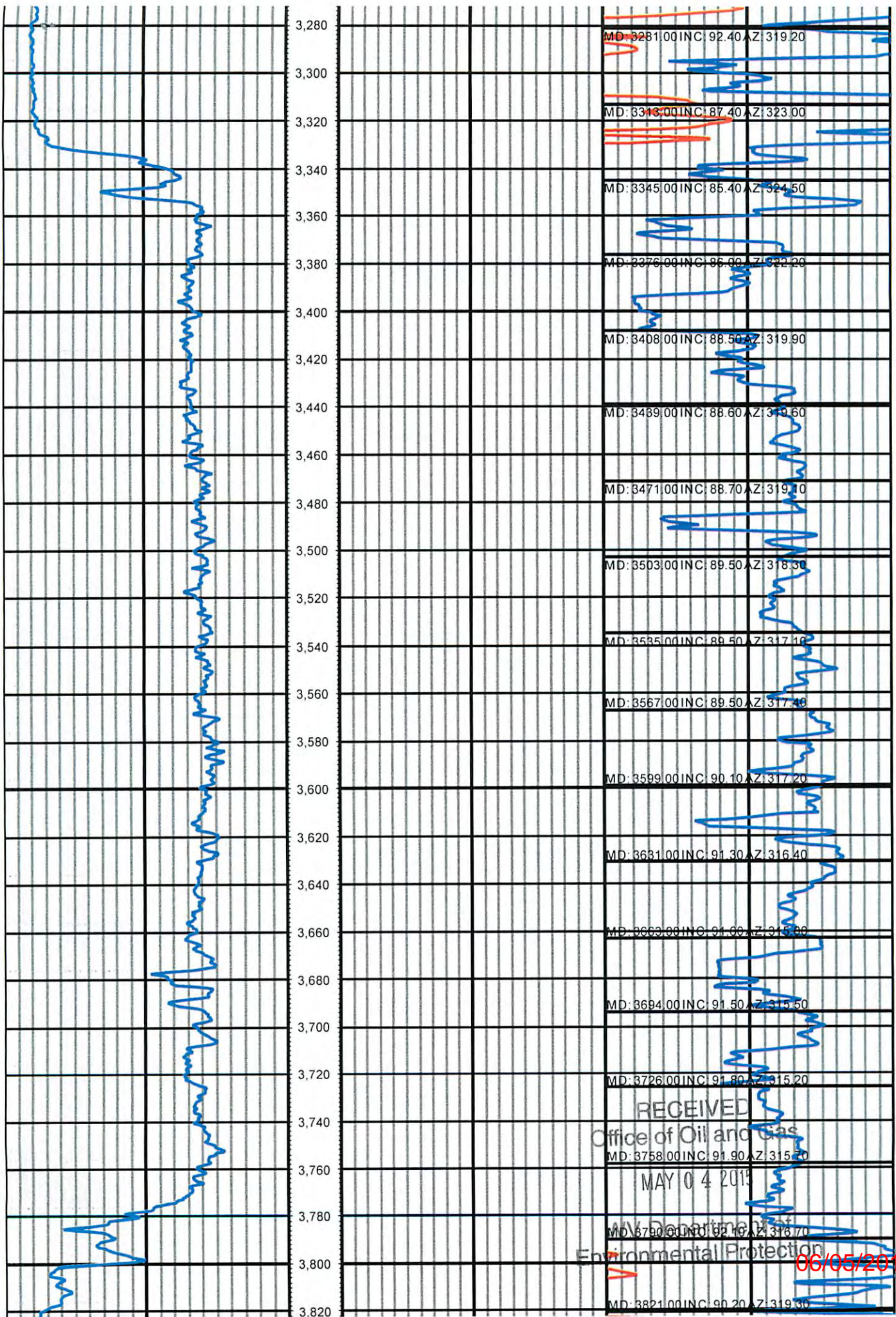
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 Environmental Protection

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Handwritten notes and scribbles, including the number '10' and some illegible markings.

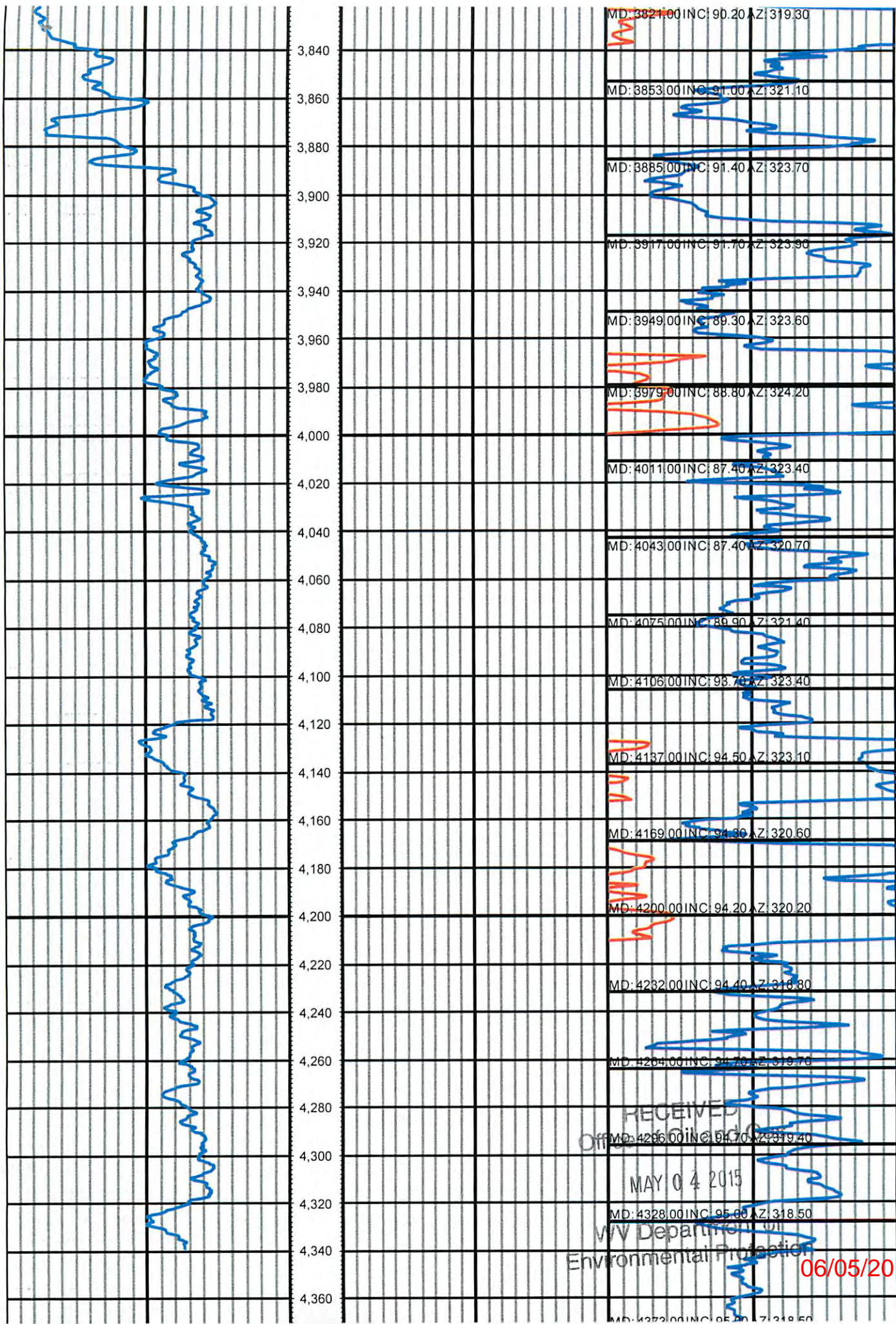


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Environmental Protection

06/05/2015



MD: 3821.00 INC: 90.20 AZ: 319.30

MD: 3853.00 INC: 91.00 AZ: 321.10

MD: 3885.00 INC: 91.40 AZ: 323.70

MD: 3917.00 INC: 91.70 AZ: 323.90

MD: 3949.00 INC: 89.30 AZ: 323.60

MD: 3979.00 INC: 88.80 AZ: 324.20

MD: 4011.00 INC: 87.40 AZ: 323.40

MD: 4043.00 INC: 87.40 AZ: 320.70

MD: 4075.00 INC: 89.90 AZ: 321.40

MD: 4106.00 INC: 98.70 AZ: 323.40

MD: 4137.00 INC: 94.50 AZ: 323.10

MD: 4169.00 INC: 94.30 AZ: 320.60

MD: 4200.00 INC: 94.20 AZ: 320.20

MD: 4232.00 INC: 94.40 AZ: 318.80

MD: 4264.00 INC: 94.70 AZ: 319.70

MD: 4296.00 INC: 94.70 AZ: 319.40

MD: 4328.00 INC: 95.00 AZ: 318.50

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MAY 04 2015

WV Department of Environmental Protection

06/05/2015

MD: 4373.00 INC: 95.50 AZ: 318.50

