

PE file



# Reliance

Well Services, LLC

## 15 BPM X-Link Frac

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HG Energy, LLC  
Treater: Tony Lewellen  
Date: 8/4/2022  
Lease: SB Kinhead  
Well #: 129  
Roane County, WV

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# Reliance

Well Services

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# Reliance

WELL SERVICES, LLC  
670 Charleston Street  
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Elko, NV 89507  
Phone 419 454 1644  
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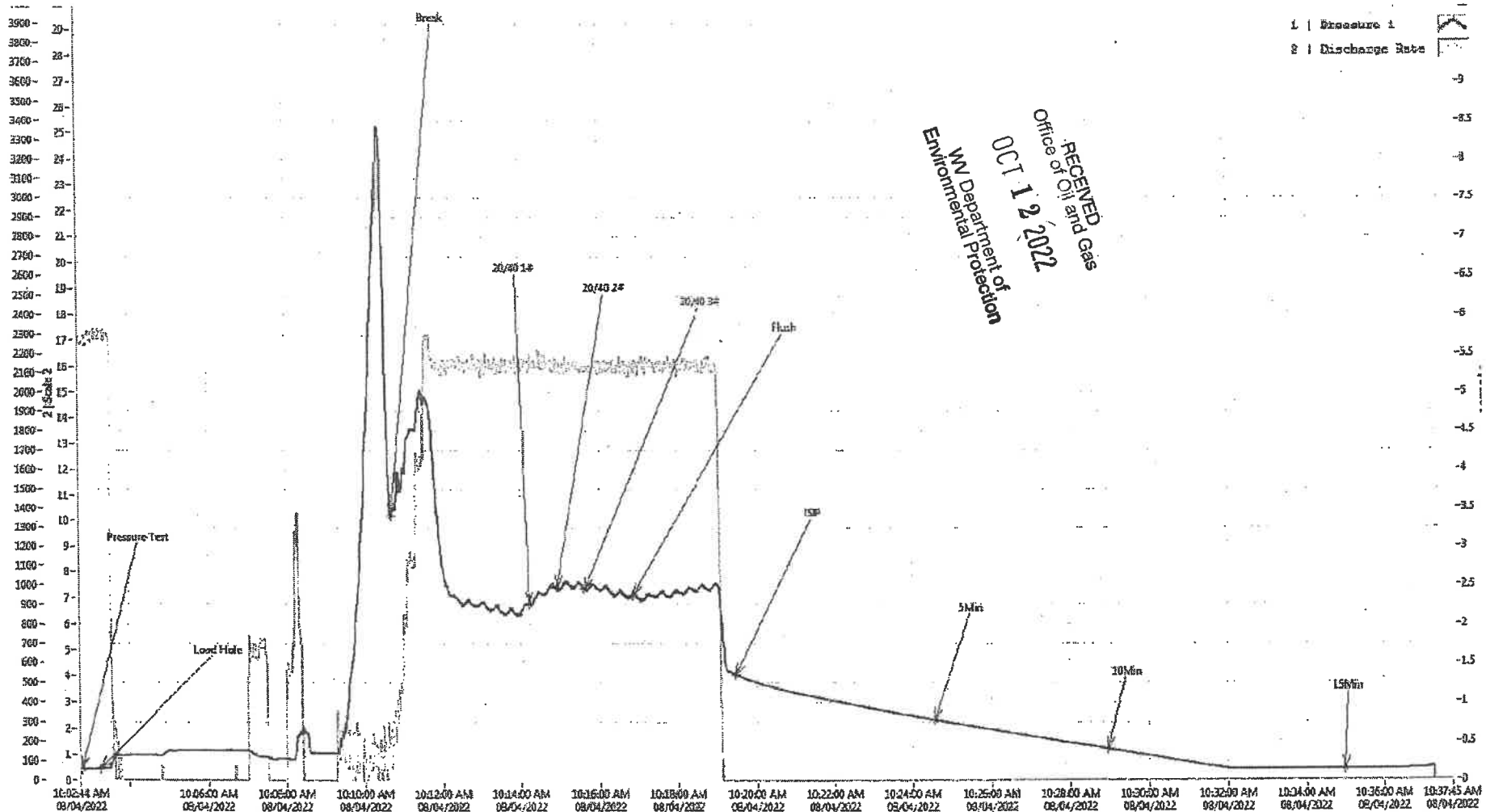
Operator: HG Energy, LLC  
Lease: S.B. Kinhead  
Well #: 129  
Location: Roane County, WV

Supervisor: Tony Lewellen  
Pump Time: 10:01 AM  
Flush Time: 10:19 AM  
Date: 8/4/2022

Stage	Depth	Breakdown (psi)	Clean Vol H2O (bbls)	Slurry Discharge (bbls)	Acid 15% HCL (gals)	(In Acid) 4 AND 1 Acid Inhibitor (gals)	API 20/40 Sand (sacks)	Ave. Treating (psi)	Pro Gel 4.0L Guar Gel (lbs)	GB-LEB Gel Breaker (gals)	BXL-10C X-Linker (gals)	BXL-A Breaker Activator (gals)	AP-1 Breaker (lbs)	Pro CLA Firm LP Clay Control (gals)	Pro NE-1 Biocide/Surfactant (gals)
1	2417	3,373	156	164	<u>250.00</u>	<u>1.25</u>	<u>30.00</u>	942	<u>25.00</u>	<u>0.25</u>	<u>5.00</u>	<u>5.00</u>	<u>5.00</u>	<u>5.00</u>	<u>5.00</u>
	Total				250.00	1.25	30.00		25.00	0.25	5.00	5.00	5.00	5.00	5.00

Comments:  
Stage 1 8/4/2022: Treated per design.

HG ENERGY, LLC – KINKEAD #129 – STAGE 1 COMMENTS



**JOB COMMENTS AND DETAILS**

<b>Job Name</b>	Kinkead #129
<b>Location</b>	Roane County, WV
<b>Company</b>	HG Energy, LLC
<b>Comments</b>	Stage 1 of 1. Treated per design.

**GRAPH NOTES AND RANGES**

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Timestamp	Annotation	Pressure 1	Discharge Rate	Stage Total (bbl)	Grand Total (bbl)	Grand Total (gal)
8/4/2022 10:02:46 AM	Pressure Test	53.78	17.08	12.82	16.60	685.15
8/4/2022 10:03:14 AM	Load Hole	56.93	17.20	20.80	24.58	1020.16
8/4/2022 10:10:41 AM	Break	1359.70	0.57	1.45	36.44	1530.28
8/4/2022 10:14:12 AM	20/40 1#	899.51	16.01	50.19	85.19	3566.57
8/4/2022 10:14:55 AM	20/40 2#	986.11	15.96	11.25	96.71	4050.59
8/4/2022 10:15:37 AM	20/40 3#	975.56	15.88	10.92	107.89	4520.31
8/4/2022 10:16:50 AM	Flush	945.25	16.19	19.18	127.34	5336.89
8/4/2022 10:19:28 AM	ISIP	538.39	0.00	35.97	163.57	6869.98
8/4/2022 10:24:33 AM	5Min	308.54	0.00	35.97	163.57	6869.98
8/4/2022 10:28:55 AM	10Min	159.35	0.00	35.97	163.57	6869.98
8/4/2022 10:35:00 AM	15Min	52.82	0.00	35.97	163.57	6869.98

**Quality Control Job Sheet**

Customer	HG Energy, LLC
Date	8/4/2022
Well	Kinkead #129

**PHYSICAL INVENTORY**

Chemical	Starting Inventory	Final Inventory	Total Pumped
Pro Gel 4.0L	250.00	225.00	25.00
GB-LEB	3.00	2.75	0.25
BXL-10C	15.00	10.00	5.00
BXL-A	15.00	10.00	5.00
AP-1 Breaker	30.00	25.00	5.00
Pro CLA Firm LP	15.00	10.00	5.00
Pro NE-1	15.00	10.00	5.00

Acid	Acid Volume Out	Gals 4 N.1 Added	Acid Volume In	Total
Acid 15%	750	1.25	500	251.25



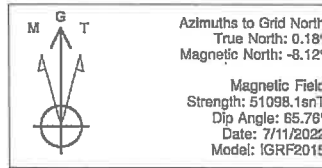
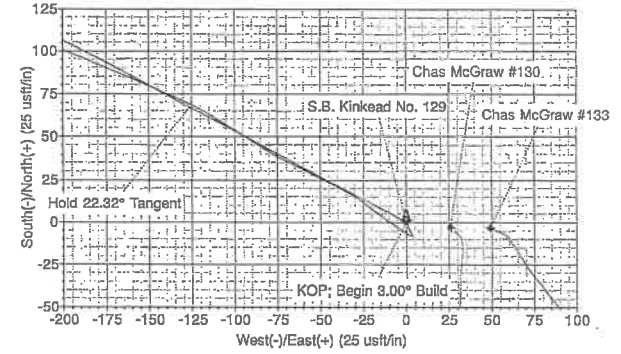
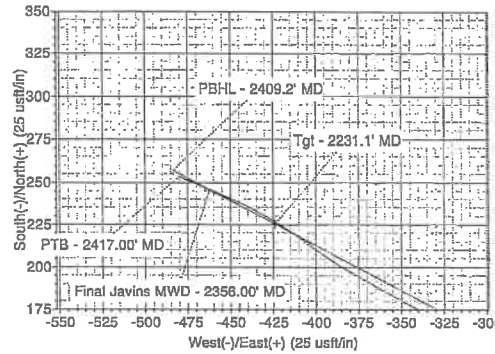
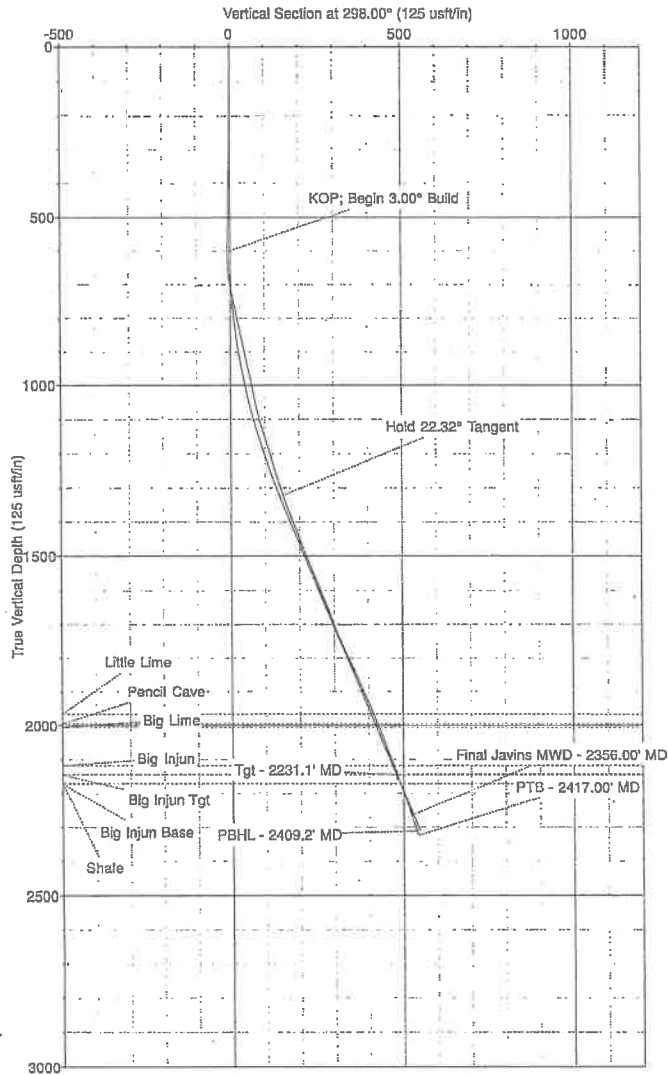
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# HG Energy, LLC

Project: Roane County, WV (UTM 17N - GR10)  
 Site: Chas McGraw/Kinkead  
 Well: S.B. Kinkead No. 129  
 Wellbore: Wellbore #1  
 Design: Design #1

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## S.B. Kinkead No. 129



### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1968.0	2038.7	Little Lime
1996.0	2069.0	Pencil Cave
2006.0	2079.8	Big Lime
2120.0	2203.0	Big Injun
2146.0	2281.1	Big Injun Tgt
2172.0	2269.2	Big Injun Base
2172.0	2269.2	Shale

### CASING DETAILS

TVD	MD	Name	Size
505.0	505.0	7"	7"

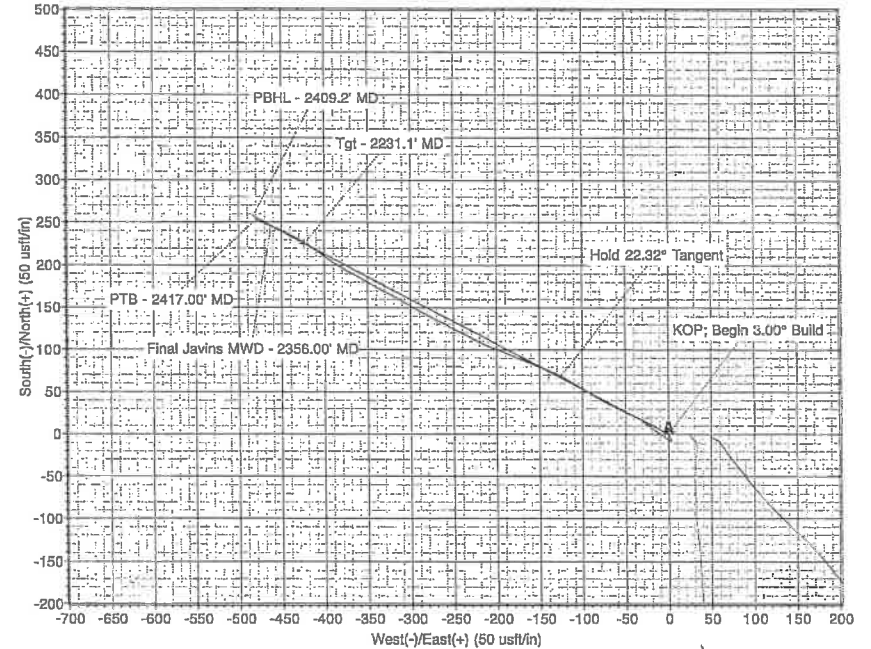


### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	KOP; Begin 3.00° Build
3	1344.0	22.32	298.00	1325.3	67.2	-126.3	3.00	298.00	143.1	Hold 22.32° Tangent
4	2231.1	22.32	298.00	2146.0	225.3	-423.8	0.00	0.00	480.0	Tgt - 2231.1' MD
5	2409.2	22.32	298.00	2310.8	257.1	-483.5	0.00	0.00	547.6	PBHL - 2409.2' MD

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Tgt - S.B. Kinkead No. 129	2146.0	225.3	-423.8	4285246.69	475322.82	38° 42' 55.877 N	81° 17' 1.859 W	Point



# HG Energy, LLC

## HG Energy, LLC

Roane County, WV (UTM 17N - GRID)

Chas McGraw/Kinkead

S.B. Kinkead No. 129

Wellbore #1

Design: Surveys

## Survey Report - Geographic

29 August, 2022

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10/14/2022





<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Well S.B. Kinkead No. 129
<b>Project:</b> Roane County, WV (UTM 17N - GRID)	<b>TVD Reference:</b> WELL @ 1125.0usft (8' RKB)
<b>Site:</b> Chas McGraw/Kinkead	<b>MD Reference:</b> WELL @ 1125.0usft (8' RKB)
<b>Well:</b> S.B. Kinkead No. 129	<b>North Reference:</b> Grid
<b>Wellbore:</b> Wellbore #1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Surveys	<b>Database:</b> EDM 5000.1 Single User Db

<b>Project:</b> Roane County, WV (UTM 17N - GRID)	
<b>Map System:</b> Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b> NAD83 West Virginia - HARN	
<b>Map Zone:</b> Zone 17N (84 W to 78 W)	

**Site:** Chas McGraw/Kinkead

<b>Site Position:</b>	<b>Northing:</b> 4,285,178.00 m	<b>Latitude:</b> 38° 42' 53.662 N
<b>From:</b> Map	<b>Easting:</b> 475,452.00 m	<b>Longitude:</b> 81° 16' 56.501 W
<b>Position Uncertainty:</b> 0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.18 °

**Well:** S.B. Kinkead No. 129

<b>Well Position</b>	<b>+N/-S</b> 0.0 usft	<b>Northing:</b> 4,285,178.00 m	<b>Latitude:</b> 38° 42' 53.662 N
	<b>+E/-W</b> 0.0 usft	<b>Easting:</b> 475,452.00 m	<b>Longitude:</b> 81° 16' 56.501 W
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b> usft	<b>Ground Level:</b> 1,117.0 usft

**Wellbore:** Wellbore #1

<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2015	7/11/2022	(°) -8.29	(°) 65.76	(nT) 51,098

**Design:** Surveys

**Audit Notes:**

<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.0
---------------------	----------------------	--------------------------

<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	297.85

**Survey Program** Date 7/15/2022

<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
(usft) 556.0	(usft) 2,417.0	Javins MWD (Wellbore #1)	MWD	OWSG MWD - Standard

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**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	4,285,178.00	475,452.00	38° 42' 53.662 N	81° 16' 56.501 W
556.0	1.58	154.40	555.9	-6.9	3.3	4,285,175.89	475,453.01	38° 42' 53.593 N	81° 16' 56.459 W
586.0	1.97	150.88	585.9	-7.7	3.7	4,285,175.64	475,453.14	38° 42' 53.585 N	81° 16' 56.453 W
616.0	0.56	184.82	615.9	-8.3	4.0	4,285,175.46	475,453.21	38° 42' 53.579 N	81° 16' 56.450 W
646.0	3.33	293.70	645.9	-8.1	3.2	4,285,175.52	475,452.97	38° 42' 53.581 N	81° 16' 56.460 W
676.0	6.99	300.91	675.8	-6.8	0.8	4,285,175.91	475,452.25	38° 42' 53.594 N	81° 16' 56.490 W
706.0	10.62	305.08	705.4	-4.3	-3.0	4,285,176.68	475,451.08	38° 42' 53.619 N	81° 16' 56.539 W
736.0	12.10	306.28	734.8	-0.9	-7.8	4,285,177.73	475,449.62	38° 42' 53.653 N	81° 16' 56.600 W
766.0	12.01	305.29	764.2	2.8	-12.9	4,285,178.85	475,448.07	38° 42' 53.689 N	81° 16' 56.664 W
796.0	11.98	305.84	793.5	6.4	-18.0	4,285,179.95	475,446.52	38° 42' 53.725 N	81° 16' 56.728 W
826.0	11.51	306.40	822.9	10.0	-22.9	4,285,181.05	475,445.02	38° 42' 53.760 N	81° 16' 56.790 W
856.0	11.63	307.42	852.3	13.6	-27.7	4,285,182.15	475,443.55	38° 42' 53.796 N	81° 16' 56.851 W



**Company:** HG Energy, LLC  
**Project:** Roane County, WV (UTM 17N - GRID)  
**Site:** Chas McGraw/Kinkead  
**Well:** S.B. Kinkead No. 129  
**Wellbore:** Wellbore #1  
**Design:** Surveys

**Local Co-ordinate Reference:** Well S.B. Kinkead No. 129  
**TVD Reference:** WELL @ 1125.0usft (8' RKB)  
**MD Reference:** WELL @ 1125.0usft (8' RKB)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

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**Survey**

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
886.0	11.76	301.38	881.6	17.1	-32.7	4,285,183.20	475,442.02	38° 42' 53.829 N	81° 16' 56.915 W
916.0	12.29	297.37	911.0	20.1	-38.2	4,285,184.13	475,440.36	38° 42' 53.859 N	81° 16' 56.983 W
946.0	11.78	296.71	940.3	23.0	-43.7	4,285,185.00	475,438.67	38° 42' 53.887 N	81° 16' 57.054 W
976.0	11.64	296.18	969.7	25.7	-49.2	4,285,185.82	475,437.00	38° 42' 53.914 N	81° 16' 57.123 W
1,006.0	11.35	297.10	999.1	28.4	-54.5	4,285,186.64	475,435.38	38° 42' 53.940 N	81° 16' 57.190 W
1,036.0	11.39	296.69	1,028.5	31.0	-59.8	4,285,187.46	475,433.77	38° 42' 53.967 N	81° 16' 57.257 W
1,066.0	12.45	295.84	1,057.9	33.8	-65.4	4,285,188.29	475,432.07	38° 42' 53.994 N	81° 16' 57.327 W
1,096.0	14.53	297.44	1,087.0	36.9	-71.6	4,285,189.25	475,430.17	38° 42' 54.024 N	81° 16' 57.406 W
1,126.0	16.85	300.58	1,115.9	40.9	-78.7	4,285,190.45	475,428.01	38° 42' 54.063 N	81° 16' 57.496 W
1,156.0	17.54	301.17	1,144.6	45.4	-86.3	4,285,191.84	475,425.69	38° 42' 54.108 N	81° 16' 57.592 W
1,186.0	17.15	301.96	1,173.2	50.1	-93.9	4,285,193.27	475,423.37	38° 42' 54.154 N	81° 16' 57.688 W
1,216.0	16.81	302.06	1,201.9	54.7	-101.4	4,285,194.68	475,421.10	38° 42' 54.200 N	81° 16' 57.782 W
1,246.0	16.08	302.59	1,230.7	59.3	-108.5	4,285,196.07	475,418.91	38° 42' 54.244 N	81° 16' 57.873 W
1,276.0	16.66	300.73	1,259.5	63.7	-115.7	4,285,197.42	475,416.72	38° 42' 54.288 N	81° 16' 57.964 W
1,306.0	17.92	296.57	1,288.1	68.0	-123.6	4,285,198.72	475,414.34	38° 42' 54.330 N	81° 16' 58.063 W
1,336.0	19.69	293.82	1,316.5	72.1	-132.3	4,285,199.97	475,411.67	38° 42' 54.370 N	81° 16' 58.174 W
1,366.0	20.61	292.36	1,344.7	76.1	-141.8	4,285,201.20	475,408.77	38° 42' 54.410 N	81° 16' 58.294 W
1,396.0	21.30	293.93	1,372.7	80.4	-151.7	4,285,202.49	475,405.76	38° 42' 54.452 N	81° 16' 58.419 W
1,426.0	21.16	293.16	1,400.6	84.7	-161.7	4,285,203.81	475,402.73	38° 42' 54.494 N	81° 16' 58.544 W
1,456.0	21.03	292.25	1,428.6	88.9	-171.6	4,285,205.08	475,399.69	38° 42' 54.535 N	81° 16' 58.670 W
1,486.0	21.61	292.96	1,456.6	93.1	-181.7	4,285,206.36	475,396.62	38° 42' 54.576 N	81° 16' 58.798 W
1,516.0	22.30	292.72	1,484.4	97.4	-192.0	4,285,207.69	475,393.47	38° 42' 54.619 N	81° 16' 58.928 W
1,546.0	22.08	291.13	1,512.2	101.6	-202.5	4,285,208.98	475,390.27	38° 42' 54.660 N	81° 16' 59.061 W
1,576.0	21.87	292.69	1,540.0	105.8	-212.9	4,285,210.25	475,387.10	38° 42' 54.702 N	81° 16' 59.193 W
1,606.0	22.20	295.62	1,567.8	110.4	-223.2	4,285,211.66	475,383.97	38° 42' 54.747 N	81° 16' 59.322 W
1,636.0	22.16	297.11	1,595.6	115.5	-233.4	4,285,213.19	475,380.87	38° 42' 54.796 N	81° 16' 59.451 W
1,666.0	21.85	298.92	1,623.4	120.7	-243.3	4,285,214.80	475,377.85	38° 42' 54.848 N	81° 16' 59.576 W
1,696.0	20.94	299.06	1,651.3	126.1	-252.9	4,285,216.42	475,374.93	38° 42' 54.900 N	81° 16' 59.697 W
1,726.0	20.20	298.03	1,679.4	131.1	-262.1	4,285,217.95	475,372.11	38° 42' 54.950 N	81° 16' 59.814 W
1,756.0	20.86	297.52	1,707.5	136.0	-271.4	4,285,219.45	475,369.27	38° 42' 54.998 N	81° 16' 59.932 W
1,786.0	21.85	298.05	1,735.5	141.1	-281.1	4,285,221.00	475,366.33	38° 42' 55.048 N	81° 17' 0.054 W
1,816.0	22.66	299.67	1,763.2	146.6	-291.0	4,285,222.67	475,363.29	38° 42' 55.102 N	81° 17' 0.180 W
1,846.0	24.54	300.72	1,790.7	152.6	-301.4	4,285,224.51	475,360.13	38° 42' 55.161 N	81° 17' 0.311 W
1,876.0	23.85	300.29	1,818.1	158.9	-312.0	4,285,226.41	475,356.90	38° 42' 55.223 N	81° 17' 0.445 W
1,906.0	23.21	299.88	1,845.6	164.9	-322.4	4,285,228.25	475,353.74	38° 42' 55.282 N	81° 17' 0.576 W
1,936.0	23.37	299.53	1,873.1	170.7	-332.7	4,285,230.04	475,350.60	38° 42' 55.340 N	81° 17' 0.706 W
1,966.0	23.20	298.83	1,900.7	176.5	-343.0	4,285,231.80	475,347.45	38° 42' 55.397 N	81° 17' 0.837 W
1,996.0	23.05	297.87	1,928.3	182.1	-353.4	4,285,233.50	475,344.29	38° 42' 55.452 N	81° 17' 0.968 W
2,026.0	23.20	299.05	1,955.9	187.7	-363.7	4,285,235.22	475,341.13	38° 42' 55.507 N	81° 17' 1.099 W
2,056.0	23.11	300.80	1,983.5	193.6	-374.0	4,285,237.01	475,338.01	38° 42' 55.565 N	81° 17' 1.228 W
2,086.0	21.61	301.66	2,011.2	199.5	-383.7	4,285,238.81	475,335.04	38° 42' 55.623 N	81° 17' 1.352 W
2,116.0	20.84	304.31	2,039.2	205.4	-392.8	4,285,240.61	475,332.26	38° 42' 55.681 N	81° 17' 1.467 W
2,146.0	19.68	306.42	2,067.3	211.4	-401.3	4,285,242.44	475,329.68	38° 42' 55.740 N	81° 17' 1.574 W
2,176.0	19.61	305.70	2,095.6	217.4	-409.5	4,285,244.25	475,327.19	38° 42' 55.799 N	81° 17' 1.677 W
2,206.0	19.81	303.67	2,123.8	223.1	-417.8	4,285,246.01	475,324.66	38° 42' 55.855 N	81° 17' 1.783 W
2,236.0	20.11	299.35	2,152.0	228.5	-426.5	4,285,247.64	475,322.00	38° 42' 55.908 N	81° 17' 1.893 W
2,266.0	19.99	298.71	2,180.2	233.5	-435.5	4,285,249.16	475,319.26	38° 42' 55.957 N	81° 17' 2.007 W
2,296.0	19.31	296.02	2,208.4	238.1	-444.5	4,285,250.57	475,316.53	38° 42' 56.002 N	81° 17' 2.120 W
2,326.0	19.00	293.71	2,236.8	242.3	-453.4	4,285,251.83	475,313.81	38° 42' 56.043 N	81° 17' 2.233 W
2,356.0	18.31	292.91	2,265.2	246.1	-462.2	4,285,252.99	475,311.12	38° 42' 56.080 N	81° 17' 2.344 W
2,417.0	18.31	292.91	2,323.1	253.5	-479.9	4,285,255.27	475,305.74	38° 42' 56.154 N	81° 17' 2.567 W



**Company:** HG Energy, LLC  
**Project:** Roane County, WV (UTM 17N - GRID)  
**Site:** Chas McGraw/Kinkead  
**Well:** S.B. Kinkead No. 129  
**Wellbore:** Wellbore #1  
**Design:** Surveys

**Local Co-ordinate Reference:** Well S.B. Kinkead No. 129  
**TVD Reference:** WELL @ 1125.0usft (8' RKB)  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

### Design Targets

#### Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (m)	Easting (m)	Latitude	Longitude
- Shape									
Actual BHL - 2417.00'	0.00	0.00	2,323.1	253.5	-479.9	4,285,255.27	475,305.74	38° 42' 56.154 N	81° 17' 2.567 W
- actual wellpath hits target center									
- Point									

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,356.0	2,265.2	246.1	-462.2	Final Javins MWD - 2356.00' MD
2,417.0	2,323.1	253.5	-479.9	PTB - 2417.00' MD

Checked By: Chris Thompson    Approved By: Chris Thompson    Date: 8/30/2022

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# HG Energy, LLC

## HG Energy, LLC

Roane County, WV (UTM 17N - GRID)

Chas McGraw/Kinkead

S.B. Kinkead No. 129

Wellbore #1

Design: Surveys

## Javins Survey Report

29 August, 2022

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**Company:** HG Energy, LLC  
**Project:** Roane County, WV (UTM 17N - GRID)  
**Site:** Chas McGraw/Kinthead  
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**Wellbore:** Wellbore #1  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

<b>Project</b>	Roane County, WV (UTM 17N - GRID)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Chas McGraw/Kinthead		
<b>Site Position:</b>		<b>Northing:</b>	4,285,178.00 m
<b>From:</b>	Map	<b>Easting:</b>	475,452.00 m
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	38° 42' 53.662 N
		<b>Longitude:</b>	81° 16' 56.501 W
		<b>Grid Convergence:</b>	-0.18 °

<b>Well</b>	S.B. Kinthead No. 129		
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b> 4,285,178.00 m
	+E/-W	0.0 usft	<b>Easting:</b> 475,452.00 m
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b> usft
			<b>Latitude:</b> 38° 42' 53.662 N
			<b>Longitude:</b> 81° 16' 56.501 W
			<b>Ground Level:</b> 1,117.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	7/11/2022	-8.29	65.76	51,098

<b>Design</b>	Surveys			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	
<b>Tie On Depth:</b>			0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	297.85

<b>Survey Program</b>	Date 7/15/2022			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
556.0	2,417.0	Javins MWD (Wellbore #1)	MWD	OWSG MWD - Standard

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**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	0.00
556.0	1.58	154.40	555.9	-6.9	3.3	-6.2	7.7	154.40	0.28
586.0	1.97	150.88	585.9	-7.7	3.7	-6.9	8.6	154.19	1.35
616.0	0.56	184.82	615.9	-8.3	4.0	-7.4	9.2	154.47	5.13
646.0	3.33	293.70	645.9	-8.1	3.2	-6.6	8.7	158.70	11.84
676.0	6.99	300.91	675.8	-6.8	0.8	-3.9	6.9	173.29	12.37
706.0	10.62	305.08	705.4	-4.3	-3.0	0.7	5.3	215.04	12.28
736.0	12.10	306.28	734.8	-0.9	-7.8	6.5	7.9	263.70	5.00
766.0	12.01	305.29	764.2	2.8	-12.9	12.7	13.2	282.24	0.75
796.0	11.98	305.84	793.5	6.4	-18.0	18.9	19.1	289.67	0.39
826.0	11.51	306.40	822.9	10.0	-22.9	24.9	25.0	293.64	1.61
856.0	11.63	307.42	852.3	13.6	-27.7	30.9	30.9	296.20	0.79
886.0	11.76	301.38	881.6	17.1	-32.7	36.9	36.9	297.54	4.10
916.0	12.29	297.37	911.0	20.1	-38.2	43.2	43.2	297.80	3.30
946.0	11.78	296.71	940.3	23.0	-43.7	49.4	49.4	297.70	1.76
976.0	11.64	296.18	969.7	25.7	-49.2	55.5	55.5	297.57	0.59
1,006.0	11.35	297.10	999.1	28.4	-54.5	61.5	61.5	297.48	1.14
1,036.0	11.39	296.69	1,028.5	31.0	-59.8	67.4	67.4	297.42	0.30
1,066.0	12.45	295.84	1,057.9	33.8	-65.4	73.6	73.6	297.33	3.58
1,096.0	14.53	297.44	1,087.0	36.9	-71.6	80.6	80.6	297.27	7.04
1,126.0	16.85	300.58	1,115.9	40.9	-78.7	88.7	88.7	297.44	8.23
1,156.0	17.54	301.17	1,144.6	45.4	-86.3	97.5	97.5	297.75	2.37
1,186.0	17.15	301.96	1,173.2	50.1	-93.9	106.5	106.5	298.07	1.52
1,216.0	16.81	302.06	1,201.9	54.7	-101.4	115.2	115.2	298.37	1.14
1,246.0	16.08	302.59	1,230.7	59.3	-108.5	123.7	123.7	298.64	2.48
1,276.0	16.66	300.73	1,259.5	63.7	-115.7	132.1	132.1	298.83	2.61
1,306.0	17.92	296.57	1,288.1	68.0	-123.6	141.0	141.0	298.82	5.88

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### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100usft)
1,336.0	19.69	293.82	1,316.5	72.1	-132.3	150.7	150.7	298.58	6.60
1,366.0	20.61	292.36	1,344.7	76.1	-141.8	161.0	161.0	298.23	3.49
1,396.0	21.30	293.93	1,372.7	80.4	-151.7	171.7	171.7	297.91	2.97
1,426.0	21.16	293.16	1,400.6	84.7	-161.7	182.5	182.5	297.65	1.04
1,456.0	21.03	292.25	1,428.6	88.9	-171.6	193.3	193.3	297.38	1.17
1,486.0	21.61	292.96	1,456.6	93.1	-181.7	204.1	204.1	297.12	2.12
1,516.0	22.30	292.72	1,484.4	97.4	-192.0	215.3	215.3	296.90	2.32
1,546.0	22.08	291.13	1,512.2	101.6	-202.5	226.6	226.6	296.65	2.13
1,576.0	21.87	292.69	1,540.0	105.8	-212.9	237.7	237.8	296.43	2.07
1,606.0	22.20	295.62	1,567.8	110.4	-223.2	248.9	249.0	296.33	3.83
1,636.0	22.16	297.11	1,595.6	115.5	-233.4	260.3	260.4	296.33	1.88
1,666.0	21.85	298.92	1,623.4	120.7	-243.3	271.5	271.6	296.40	2.49
1,696.0	20.94	299.06	1,651.3	126.1	-252.9	282.5	282.5	296.50	3.04
1,726.0	20.20	298.03	1,679.4	131.1	-262.1	293.0	293.1	296.57	2.75
1,756.0	20.86	297.52	1,707.5	136.0	-271.4	303.5	303.6	296.61	2.28
1,786.0	21.85	298.05	1,735.5	141.1	-281.1	314.4	314.5	296.65	3.36
1,816.0	22.66	299.67	1,763.2	146.6	-291.0	325.8	325.9	296.73	3.39
1,846.0	24.54	300.72	1,790.7	152.6	-301.4	337.8	337.8	296.85	6.42
1,876.0	23.85	300.29	1,818.1	158.9	-312.0	350.1	350.1	296.98	2.37
1,906.0	23.21	299.88	1,845.6	164.9	-322.4	362.0	362.1	297.09	2.20
1,936.0	23.37	299.53	1,873.1	170.7	-332.7	373.9	373.9	297.17	0.71
1,966.0	23.20	298.83	1,900.7	176.5	-343.0	385.8	385.8	297.23	1.08
1,996.0	23.05	297.87	1,928.3	182.1	-353.4	397.5	397.6	297.26	1.35
2,026.0	23.20	299.05	1,955.9	187.7	-363.7	409.3	409.3	297.30	1.62
2,056.0	23.11	300.80	1,983.5	193.6	-374.0	421.1	421.1	297.37	2.31
2,086.0	21.61	301.66	2,011.2	199.5	-383.7	432.5	432.5	297.47	5.12
2,116.0	20.84	304.31	2,039.2	205.4	-392.8	443.3	443.3	297.61	4.10

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### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100usft)
2,146.0	19.68	306.42	2,067.3	211.4	-401.3	453.6	453.6	297.78	4.57
2,176.0	19.61	305.70	2,095.6	217.4	-409.5	463.6	463.6	297.96	0.84
2,206.0	19.81	303.67	2,123.8	223.1	-417.8	473.6	473.6	298.11	2.38
2,236.0	20.11	299.35	2,152.0	228.5	-426.5	483.8	483.9	298.18	5.02
2,266.0	19.99	298.71	2,180.2	233.5	-435.5	494.1	494.1	298.20	0.83
2,296.0	19.31	296.02	2,208.4	238.1	-444.5	504.2	504.2	298.18	3.77
2,326.0	19.00	293.71	2,236.8	242.3	-453.4	514.0	514.1	298.12	2.73
2,356.0	18.31	292.91	2,265.2	246.1	-462.2	523.6	523.6	298.03	2.45
2,417.0	18.31	292.91	2,323.1	253.5	-479.9	542.7	542.7	297.85	0.00

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,356.0	2,265.2	246.1	-462.2	Final Javins MWD - 2356.00' MD
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