

Cement Post Job Report

Client: PDC Energy

Well Name: Hen 13N

API #: 05-123-51803

Job Date: September 9, 2023

Job Type: New Well - 5.5" Production String

Cement Company & Contact: EXERO Well Integrity -
Cheve Meyer 720-239-3819



ROCK SOLID
WELL INTEGRITY
SOLUTIONS

TREATMENT REPORT

CLIENT	WELL	RIG	JOB TYPE	THREAD TYPE	WELLHEAD CONNECTION
PDC Energy	Hen 13N	Patterson 272	Production	Buttress	5 1/2" Cement Head

WELL MD (FT)	WELL TVD (FT)	DEVIATION (DEG)	NUMBER OF STAGES	BHST (DEG)	BHCT (DEG)
14714	6798	90	1	225	200

PACKER/RETAINER/CIBP/DV TOOL DEPTHS	TOOL TYPE	TOP OF PERFS (FT)	BOTTOM OF PERFS (FT)	NUMBER OF HOLES
	PACKER			

CASING/TUBING/DP DETAILS								
STRING TYPE	GRADE	OD"	WT/FT	ID"	OH SIZE"	% EXCESS LEAD	% EXCESS TAIL	TOTAL DEPTH (FT)
Surface		9.625	36	8.921	13.50			1695
Production	P-110	5.5	20	4.778	20	0	0	14707
MAXIMUM CASING/TUBING/DP PSI			9888			MAXIMUM ANNULAR PSI		8880

Mud Type	OBM	Rotate Y,N	No	Circulation Data				Water Requirements (bbbls)	
Mud ppg	10.6	Rate (rpm)		Circulate Time (hrs)		2		Spacers	140
Flow Temp	151	Torque Val.		Circulation Rate (bpm)		10		Stage 1 Lead	112
Vis. Sec/qt	44	Time (hr)		Full Circulation ? (Y,N,P)		YES		Stage 1 Tail	163
PV (cP)	13	Pipe Reciprocation		Gas Present (Y,N)		No	Units	Stage 2 Lead	
Yield Pt	6	Recip Y,N	No	Centralizers/Plugs				Stage 2 Tail	
10 sec gel	5	Stroke (ft)		Quantity & Type		Customer Provided		Displacement	326
10 min gel	9	Recip time		Top Plug/Type		Customer Provided		Wash up	20
30 min gel	10	Stuck ?		Bottom Plug/Type		Customer Provided		Total + 10% Safety	837

Preflush & Spacers		Stage 1 Lead - Class G		Stage 1 Tail - Class G		Stage 2 Lead		Stage 2 Tail		Displacement	
Spacer 1	Spacer	Density	12.9	Density	13.7	Density		Density		Fluid Type	Water
		Sacks	1276	Sacks	1012	Sacks		Sacks		Dens. ppg	8.34
		Vol/bbbls	256.8	Vol/bbbls	246.9	Vol/bbbls	0.0	Vol/bbbls	0.0	Vol. bbl	326
		Rate	11	Rate	11	Rate		Rate		Rate bpm	10
Spacer 2		Yield	1.13	Yield	1.37	Yield		Yield		Clay Stay?	NO
		Gal/Sk	3.68	Gal/Sk	6.63	Gal/Sk		Gal/Sk		Biocide ?	YES
		% Excess	0	% Excess	0	% Excess		% Excess		Slow @ bbl	307
		TOL (ft)	1990.35	TOT (ft)	8289.35	TOL (ft)		TOT (ft)		Bump PSI	2590

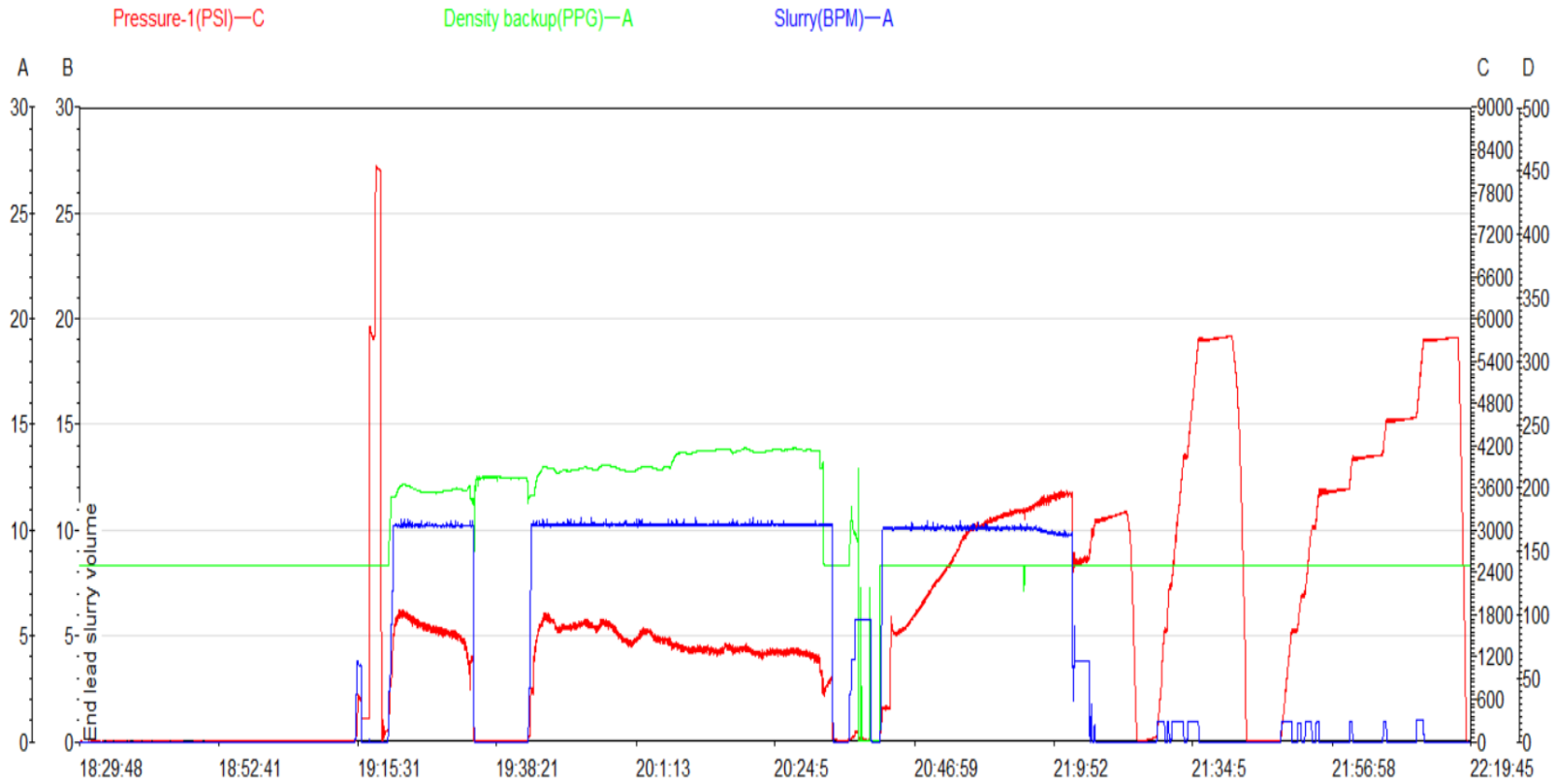
Final Displacement (bbbls)	326
Bump Plug?	YES
Final Bump Pressure (psi)	3100
Full Returns throughout job?	FULL
Vol. away/Time when returns lost	NA
Vol. away when returns were regained	NA
Spacer to Surface?	YES
Spacer volume returned (bbbls)	47
Cement to surface?	NO
Cement volume to surface stage 1	NA
Cement volume to surface stage 2	NA

Surface Top Out Details-Pumped	Job Summary Additional Chems Used	
Cement Type	MFC 47 (gal)	70
Dens. ppg	NA	MFC 67 (gal) 168
Sacks qty	NA	Defoamer (gal) 20
Gal/sk	NA	Biocide (gal) 15
Yield	NA	Corr. Inhib (gal) 0
Lbs. of chloride used	NA	Fiber (lbs) 290
Top out pipe used ?	NA	Chloride (lbs) 0
Feet of top out pipe	NA	Retarder (lbs) 0
Annulus holding?		Clay Stabilizer (gal) 0
Sodium Silicate Used	Other	0

JOB LOG

CLIENT	WELL	RIG	JOB TYPE	START DATE	Ambient Conditions		
PDC Energy	Hen 13N	Patterson 272	Production	9/9/2023	Temp / Hum / Air Press 80 Deg F / 25% / 25.13 in		
DATE (dd/mm)	TIME (hh:mm)	DENSITY (ppg)	RATE (bpm)	VOL. (bbl)	TOTAL VOL.	PRESSURE	TREATMENT COMMENTS
9/9/2023	6:00:00 AM						CREW CALLED OUT FOR AN ON LOCATION TIME OF 2:00 PM
	1:30:00 PM						CREW ARRIVES ON LOCATION/CHECK IN WITH CO REP/CALCULATE JOB
	2:10:00 PM						LANDED CASING AT 14711.27'/CIRCULATE WELL
	2:15:00 PM						SPOT IN AND RIG UP EQUIPMENT
	6:30:00 PM						SAFETY MEETING
	6:55:00 PM	8.3	3.8	3	3	602	FILL LINES
	7:10:00 PM	8.3	1.0	1	1	8290	PRESSURE TEST
	7:15:00 PM	12	10.0	140	140	1446	PUMP 140 BBLS OF SPACER AT 12 PPG
	7:30:00 PM						SHUT IN/DROP BOTTOM PLUG
	7:38:00 PM	12.9	10.0	257	257	1660	PUMP 257 BBLS OF LEAD CEMENT AT 12.9 PPG (1276 SKS, 1.13 YLD, 3.68 GAL/SK, 112 MIXH2O)
	8:00:00 PM	13.7	10.0	247	247	1208	PUMP 247 BBLS OF TAIL CEMENT AT 13.7 PPG (1012 SKS, 1.37 YLD, 6.63 GAL/SK, 160 MIXH2O)
	8:27:00 PM	8.3	10.0	15	15	621	PUMP 15 BBLS OF SUGAR WATER
	8:29:00 PM						SHUT IN/DROP TOP PLUG/WASHUP PUMPS AND LINES
	8:36:00 PM	8.3	10.0	10	10	400	BEGIN DISPLACING WITH FRESHWATER WITH BIOCIDES IN ALL FOR 326 BBLS
	8:40:00 PM	8.3	10.0	7	17	1550	FRESHWATER DISPLACEMENT/CAUGHT CEMENT
	8:42:00 PM	8.3	10.0	23	50	1760	FRESHWATER DISPLACEMENT
	8:47:00 PM	8.3	10.0	50	100	2376	FRESHWATER DISPLACEMENT
	8:52:00 PM	8.3	10.0	50	150	3040	FRESHWATER DISPLACEMENT
	8:54:00 PM	8.3	10.0	50	200	3238	FRESHWATER DISPLACEMENT
	9:02:00 PM	8.3	10.0	50	250	3360	FRESHWATER DISPLACEMENT/NEO FLOW VISIBLE AT THE SHAKERS
	9:05:00 PM	8.3	10.0	20	270	3517	FRESHWATER DISPLACEMENT/FIBER VISIBLE AT THE SHAKERS
	9:06:00 PM	8.3	10.0	10	280	3519	FRESHWATER DISPLACEMENT/SPACER VISIBLE AT THE SHAKERS SWAPPED TO OPEN TOPS
	9:09:00 PM	8.3	3.8	20	300	2690	FRESHWATER DISPLACEMENT/SLOW RATE TO LAND PLUG
	9:12:00 PM	8.3	3.8	26	326	3100	LAND PLUG GOING 500 OVER FCP
	9:19:00 PM	8.3					CHECK FLOATS/RECEIVED 4 BBLS BACK
	9:23:00 PM	8.33	1.0	19	19	5700	SET PACKER PER TOOL HAND
	10:15:00 PM						RIG IN TO FLUSH STACK
	10:25:00 PM						PUMP 40 BBLS OF FRESHWATER TO CLEAN BOP STACK
	11:00:00 PM						RIG DOWN EQUIPMENT/FINISH PAPERWORK/DEPART LOCATION

Hen 13N Production Pump Chart – Pressure / Rate / Density



Chart



Centralizer Depths

Well Name: Hen 13N

Production, Set Depth: 14,707.0ftKB

API 0512351803000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00		Original KB Elevation (ft) 4,807.50		KB-Ground Distance (ft) 28.50		Spud Date 9/7/2023 03:30		Rig Release Date 9/10/2023 01:00		On Production Date Abandon Date	

Casing Run Tally												
Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
7	1	Casing Joints	5 1/2	20.00	P-110	Yes	42.75	Yes			14,628.1	78.94
9	3	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			14,540.1	166.91
11	5	Casing Joints	5 1/2	20.00	P-110	Yes	43.99	Yes			14,452.3	254.73
13	7	Casing Joints	5 1/2	20.00	P-110	Yes	41.97	Yes			14,366.5	340.54
15	9	Casing Joints	5 1/2	20.00	P-110	Yes	43.84	Yes			14,279.8	427.23
17		Marker Joint	5 1/2	20.00	P-110	Yes	22.21	Yes			14,214.5	492.47
19	12	Casing Joints	5 1/2	20.00	P-110	Yes	44.07	Yes			14,126.5	580.52
21	14	Casing Joints	5 1/2	20.00	P-110	Yes	43.95	Yes			14,038.7	668.29
23	16	Casing Joints	5 1/2	20.00	P-110	Yes	39.56	Yes			13,955.3	751.66
25	18	Casing Joints	5 1/2	20.00	P-110	Yes	35.99	Yes			13,876.5	830.50
27	20	Casing Joints	5 1/2	20.00	P-110	Yes	42.56	Yes			13,793.2	913.76
29	22	Casing Joints	5 1/2	20.00	P-110	Yes	44.01	Yes			13,706.7	1,000.27
31	24	Casing Joints	5 1/2	20.00	P-110	Yes	43.00	Yes			13,622.5	1,084.50
33	26	Casing Joints	5 1/2	20.00	P-110	Yes	45.49	Yes			13,534.1	1,172.91
35	28	Casing Joints	5 1/2	20.00	P-110	Yes	41.45	Yes			13,448.8	1,258.17
37	30	Casing Joints	5 1/2	20.00	P-110	Yes	43.15	Yes			13,362.9	1,344.07
39	32	Casing Joints	5 1/2	20.00	P-110	Yes	42.49	Yes			13,276.5	1,430.51
41	34	Casing Joints	5 1/2	20.00	P-110	Yes	42.08	Yes			13,190.0	1,516.96
43	36	Casing Joints	5 1/2	20.00	P-110	Yes	40.25	Yes			13,107.4	1,599.62
45	38	Casing Joints	5 1/2	20.00	P-110	Yes	42.18	Yes			13,021.9	1,685.11
47	40	Casing Joints	5 1/2	20.00	P-110	Yes	44.37	Yes			12,934.1	1,772.92
49	42	Casing Joints	5 1/2	20.00	P-110	Yes	44.09	Yes			12,847.7	1,859.26
51	44	Casing Joints	5 1/2	20.00	P-110	Yes	43.91	Yes			12,760.1	1,946.88
53	46	Casing Joints	5 1/2	20.00	P-110	Yes	42.93	Yes			12,673.1	2,033.91
55	48	Casing Joints	5 1/2	20.00	P-110	Yes	43.40	Yes			12,585.8	2,121.23
57	50	Casing Joints	5 1/2	20.00	P-110	Yes	43.10	Yes			12,500.2	2,206.78
59	52	Casing Joints	5 1/2	20.00	P-110	Yes	41.60	Yes			12,416.3	2,290.74
61	54	Casing Joints	5 1/2	20.00	P-110	Yes	43.62	Yes			12,328.7	2,378.33
63	56	Casing Joints	5 1/2	20.00	P-110	Yes	44.69	Yes			12,240.0	2,467.03
65	58	Casing Joints	5 1/2	20.00	P-110	Yes	44.33	Yes			12,151.9	2,555.11
67	60	Casing Joints	5 1/2	20.00	P-110	Yes	42.50	Yes			12,066.8	2,640.23



Centralizer Depths

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Production, Set Depth: 14,707.0ftKB

API 05123518030000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00	Original KB Elevation (ft) 4,807.50	KB-Ground Distance (ft) 28.50	Spud Date 9/7/2023 03:30	Rig Release Date 9/10/2023 01:00	On Production Date	Abandon Date					

Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
69	62	Casing Joints	5 1/2	20.00	P-110	Yes	44.36	Yes			11,978.3	2,728.70
71	64	Casing Joints	5 1/2	20.00	P-110	Yes	37.71	Yes			11,896.2	2,810.76
73	66	Casing Joints	5 1/2	20.00	P-110	Yes	44.39	Yes			11,809.1	2,897.86
75	68	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			11,722.2	2,984.82
77	70	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			11,634.1	3,072.86
79	72	Casing Joints	5 1/2	20.00	P-110	Yes	40.63	Yes			11,548.7	3,158.35
81	74	Casing Joints	5 1/2	20.00	P-110	Yes	44.36	Yes			11,461.7	3,245.28
83	76	Casing Joints	5 1/2	20.00	P-110	Yes	39.75	Yes			11,377.6	3,329.38
85	78	Casing Joints	5 1/2	20.00	P-110	Yes	44.60	Yes			11,295.7	3,411.33
87	80	Casing Joints	5 1/2	20.00	P-110	Yes	36.75	Yes			11,219.3	3,487.70
89	82	Casing Joints	5 1/2	20.00	P-110	Yes	44.61	Yes			11,130.1	3,576.92
91		Marker Joint	5 1/2	20.00	P-110	Yes	22.67	Yes			11,065.1	3,641.93
93	85	Casing Joints	5 1/2	20.00	P-110	Yes	44.49	Yes			10,976.0	3,730.98
95	87	Casing Joints	5 1/2	20.00	P-110	Yes	44.78	Yes			10,888.7	3,818.31
97	89	Casing Joints	5 1/2	20.00	P-110	Yes	44.84	Yes			10,806.0	3,900.98
99	91	Casing Joints	5 1/2	20.00	P-110	Yes	39.83	Yes			10,721.3	3,985.74
101	93	Casing Joints	5 1/2	20.00	P-110	Yes	43.40	Yes			10,633.8	4,073.16
103	95	Casing Joints	5 1/2	20.00	P-110	Yes	42.18	Yes			10,549.4	4,157.63
105	97	Casing Joints	5 1/2	20.00	P-110	Yes	43.83	Yes			10,461.7	4,245.31
107	99	Casing Joints	5 1/2	20.00	P-110	Yes	43.85	Yes			10,373.8	4,333.23
109	101	Casing Joints	5 1/2	20.00	P-110	Yes	44.19	Yes			10,285.7	4,421.27
111	103	Casing Joints	5 1/2	20.00	P-110	Yes	40.74	Yes			10,203.4	4,503.60
113	105	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			10,118.1	4,588.92
115	107	Casing Joints	5 1/2	20.00	P-110	Yes	36.79	Yes			10,038.3	4,668.72
117	109	Casing Joints	5 1/2	20.00	P-110	Yes	42.96	Yes			9,951.3	4,755.72
119	111	Casing Joints	5 1/2	20.00	P-110	Yes	38.12	Yes			9,869.1	4,837.94
121	113	Casing Joints	5 1/2	20.00	P-110	Yes	44.56	Yes			9,781.8	4,925.23
123	115	Casing Joints	5 1/2	20.00	P-110	Yes	43.46	Yes			9,695.6	5,011.43
125	117	Casing Joints	5 1/2	20.00	P-110	Yes	44.07	Yes			9,607.7	5,099.33
127	119	Casing Joints	5 1/2	20.00	P-110	Yes	44.25	Yes			9,525.7	5,181.28
129	121	Casing Joints	5 1/2	20.00	P-110	Yes	44.05	Yes			9,437.5	5,269.54



Centralizer Depths

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Ground Elevation (ft) 4,779.00		Original KB Elevation (ft) 4,807.50		KB-Ground Distance (ft) 28.50		Spud Date 9/7/2023 03:30		Rig Release Date 9/10/2023 01:00		On Production Date Abandon Date	

Casing Run Tally												
Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
131	123	Casing Joints	5 1/2	20.00	P-110	Yes	44.30	Yes			9,349.1	5,357.87
133	125	Casing Joints	5 1/2	20.00	P-110	Yes	40.06	Yes			9,270.2	5,436.81
135	127	Casing Joints	5 1/2	20.00	P-110	Yes	44.09	Yes			9,182.0	5,525.00
137	129	Casing Joints	5 1/2	20.00	P-110	Yes	39.38	Yes			9,098.9	5,608.06
139	131	Casing Joints	5 1/2	20.00	P-110	Yes	42.60	Yes			9,016.3	5,690.75
141	133	Casing Joints	5 1/2	20.00	P-110	Yes	43.35	Yes			8,928.8	5,778.20
143	135	Casing Joints	5 1/2	20.00	P-110	Yes	43.98	Yes			8,845.7	5,861.30
145	137	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			8,757.5	5,949.47
147	139	Casing Joints	5 1/2	20.00	P-110	Yes	40.28	Yes			8,673.1	6,033.93
149	141	Casing Joints	5 1/2	20.00	P-110	Yes	43.86	Yes			8,589.2	6,117.81
151	143	Casing Joints	5 1/2	20.00	P-110	Yes	44.29	Yes			8,500.6	6,206.37
153	145	Casing Joints	5 1/2	20.00	P-110	Yes	37.88	Yes			8,418.5	6,288.52
155	147	Casing Joints	5 1/2	20.00	P-110	Yes	40.22	Yes			8,338.4	6,368.64
157	149	Casing Joints	5 1/2	20.00	P-110	Yes	43.41	Yes			8,255.6	6,451.42
159	151	Casing Joints	5 1/2	20.00	P-110	Yes	44.07	Yes			8,167.7	6,539.32
161	153	Casing Joints	5 1/2	20.00	P-110	Yes	38.72	Yes			8,084.2	6,622.84
163	155	Casing Joints	5 1/2	20.00	P-110	Yes	43.82	Yes			7,996.1	6,710.94
165	157	Casing Joints	5 1/2	20.00	P-110	Yes	44.03	Yes			7,907.8	6,799.25
167	159	Casing Joints	5 1/2	20.00	P-110	Yes	44.10	Yes			7,824.9	6,882.09
169	161	Casing Joints	5 1/2	20.00	P-110	Yes	44.10	Yes			7,737.0	6,970.01
171	163	Casing Joints	5 1/2	20.00	P-110	Yes	43.82	Yes			7,654.6	7,052.36
173	165	Casing Joints	5 1/2	20.00	P-110	Yes	44.18	Yes			7,569.9	7,137.10
175	167	Casing Joints	5 1/2	20.00	P-110	Yes	43.87	Yes			7,482.0	7,224.99
176		Marker Joint	5 1/2	20.00	P-110	Yes	22.19	Yes			7,459.8	7,247.18
177	168	Casing Joints	5 1/2	20.00	P-110	Yes	40.63	Yes			7,419.2	7,287.81
178	169	Casing Joints	5 1/2	20.00	P-110	Yes	40.49	Yes			7,378.7	7,328.30
179	170	Casing Joints	5 1/2	20.00	P-110	Yes	44.20	Yes			7,334.5	7,372.50
180	171	Casing Joints	5 1/2	20.00	P-110	Yes	44.44	Yes			7,290.1	7,416.94
181	172	Casing Joints	5 1/2	20.00	P-110	Yes	37.19	Yes			7,252.9	7,454.13
182	173	Casing Joints	5 1/2	20.00	P-110	Yes	40.18	Yes			7,212.7	7,494.31
183	174	Casing Joints	5 1/2	20.00	P-110	Yes	44.00	Yes			7,168.7	7,538.31



Centralizer Depths

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Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
184	175	Casing Joints	5 1/2	20.00	P-110	Yes	42.45	Yes			7,126.2	7,580.76
185	176	Casing Joints	5 1/2	20.00	P-110	Yes	36.47	Yes			7,089.8	7,617.23
186	177	Casing Joints	5 1/2	20.00	P-110	Yes	44.37	Yes			7,045.4	7,661.60
187	178	Casing Joints	5 1/2	20.00	P-110	Yes	40.81	Yes			7,004.6	7,702.41
188	179	Casing Joints	5 1/2	20.00	P-110	Yes	42.13	Yes			6,962.5	7,744.54
189	180	Casing Joints	5 1/2	20.00	P-110	Yes	44.11	Yes			6,918.4	7,788.65
190	181	Casing Joints	5 1/2	20.00	P-110	Yes	44.00	Yes			6,874.4	7,832.65
191	182	Casing Joints	5 1/2	20.00	P-110	Yes	42.46	Yes			6,831.9	7,875.11
192	183	Casing Joints	5 1/2	20.00	P-110	Yes	44.38	Yes			6,787.5	7,919.49
193	184	Casing Joints	5 1/2	20.00	P-110	Yes	44.10	Yes			6,743.4	7,963.59
194	185	Casing Joints	5 1/2	20.00	P-110	Yes	42.98	Yes			6,700.4	8,006.57
195	186	Casing Joints	5 1/2	20.00	P-110	Yes	42.75	Yes			6,657.7	8,049.32
196	187	Casing Joints	5 1/2	20.00	P-110	Yes	42.47	Yes			6,615.2	8,091.79
197	188	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			6,571.2	8,135.81
198	189	Casing Joints	5 1/2	20.00	P-110	Yes	44.46	Yes			6,526.7	8,180.27
199	190	Casing Joints	5 1/2	20.00	P-110	Yes	44.01	Yes			6,482.7	8,224.28
200	191	Casing Joints	5 1/2	20.00	P-110	Yes	43.08	Yes			6,439.6	8,267.36
201	192	Casing Joints	5 1/2	20.00	P-110	Yes	42.61	Yes			6,397.0	8,309.97
202	193	Casing Joints	5 1/2	20.00	P-110	Yes	42.90	Yes			6,354.1	8,352.87
203	194	Casing Joints	5 1/2	20.00	P-110	Yes	43.13	Yes			6,311.0	8,396.00
204	195	Casing Joints	5 1/2	20.00	P-110	Yes	43.80	Yes			6,267.2	8,439.80
205	196	Casing Joints	5 1/2	20.00	P-110	Yes	42.67	Yes			6,224.5	8,482.47
206	197	Casing Joints	5 1/2	20.00	P-110	Yes	42.42	Yes			6,182.1	8,524.89
207		Marker Joint	5 1/2	20.00	P-110	Yes	21.30	Yes			6,160.8	8,546.19
208	198	Casing Joints	5 1/2	20.00	P-110	Yes	40.76	Yes			6,120.1	8,586.95
209	199	Casing Joints	5 1/2	20.00	P-110	Yes	40.41	Yes			6,079.6	8,627.36
210	200	Casing Joints	5 1/2	20.00	P-110	Yes	37.72	Yes			6,041.9	8,665.08
211	201	Casing Joints	5 1/2	20.00	P-110	Yes	39.94	Yes			6,002.0	8,705.02
212	202	Casing Joints	5 1/2	20.00	P-110	Yes	43.53	Yes			5,958.5	8,748.55
213	203	Casing Joints	5 1/2	20.00	P-110	Yes	44.27	Yes			5,914.2	8,792.82
214	204	Casing Joints	5 1/2	20.00	P-110	Yes	43.57	Yes			5,870.6	8,836.39



Centralizer Depths

Well Name: Hen 13N

Production, Set Depth: 14,707.0ftKB

API 05123518030000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00		Original KB Elevation (ft) 4,807.50		KB-Ground Distance (ft) 28.50		Spud Date 9/7/2023 03:30		Rig Release Date 9/10/2023 01:00		On Production Date Abandon Date	

Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
215	205	Casing Joints	5 1/2	20.00	P-110	Yes	43.72	Yes			5,826.9	8,880.11
216	206	Casing Joints	5 1/2	20.00	P-110	Yes	44.35	Yes			5,782.5	8,924.46
217	207	Casing Joints	5 1/2	20.00	P-110	Yes	37.39	Yes			5,745.2	8,961.85
218	208	Casing Joints	5 1/2	20.00	P-110	Yes	44.16	Yes			5,701.0	9,006.01
219	209	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			5,657.0	9,050.03
220	210	Casing Joints	5 1/2	20.00	P-110	Yes	37.47	Yes			5,619.5	9,087.50
221	211	Casing Joints	5 1/2	20.00	P-110	Yes	39.42	Yes			5,580.1	9,126.92
222	212	Casing Joints	5 1/2	20.00	P-110	Yes	43.82	Yes			5,536.3	9,170.74
223	213	Casing Joints	5 1/2	20.00	P-110	Yes	39.67	Yes			5,496.6	9,210.41
224	214	Casing Joints	5 1/2	20.00	P-110	Yes	43.85	Yes			5,452.7	9,254.26
225	215	Casing Joints	5 1/2	20.00	P-110	Yes	44.51	Yes			5,408.2	9,298.77
226	216	Casing Joints	5 1/2	20.00	P-110	Yes	42.44	Yes			5,365.8	9,341.21
227	217	Casing Joints	5 1/2	20.00	P-110	Yes	42.34	Yes			5,323.5	9,383.55
228	218	Casing Joints	5 1/2	20.00	P-110	Yes	44.00	Yes			5,279.5	9,427.55
229	219	Casing Joints	5 1/2	20.00	P-110	Yes	37.60	Yes			5,241.9	9,465.15
230	220	Casing Joints	5 1/2	20.00	P-110	Yes	44.12	Yes			5,197.7	9,509.27
231	221	Casing Joints	5 1/2	20.00	P-110	Yes	40.33	Yes			5,157.4	9,549.60
232	222	Casing Joints	5 1/2	20.00	P-110	Yes	44.35	Yes			5,113.1	9,593.95
233	223	Casing Joints	5 1/2	20.00	P-110	Yes	39.96	Yes			5,073.1	9,633.91
234	224	Casing Joints	5 1/2	20.00	P-110	Yes	44.10	Yes			5,029.0	9,678.01
235	225	Casing Joints	5 1/2	20.00	P-110	Yes	44.63	Yes			4,984.4	9,722.64
236	226	Casing Joints	5 1/2	20.00	P-110	Yes	44.00	Yes			4,940.4	9,766.64
237	227	Casing Joints	5 1/2	20.00	P-110	Yes	43.82	Yes			4,896.5	9,810.46
238	228	Casing Joints	5 1/2	20.00	P-110	Yes	44.45	Yes			4,852.1	9,854.91
239	229	Casing Joints	5 1/2	20.00	P-110	Yes	42.12	Yes			4,810.0	9,897.03
240	230	Casing Joints	5 1/2	20.00	P-110	Yes	44.61	Yes			4,765.4	9,941.64
241	231	Casing Joints	5 1/2	20.00	P-110	Yes	43.87	Yes			4,721.5	9,985.51
242	232	Casing Joints	5 1/2	20.00	P-110	Yes	44.03	Yes			4,677.5	10,029.54
243	233	Casing Joints	5 1/2	20.00	P-110	Yes	42.45	Yes			4,635.0	10,071.99
244	234	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			4,591.0	10,116.01
245	235	Casing Joints	5 1/2	20.00	P-110	Yes	41.17	Yes			4,549.8	10,157.18



Centralizer Depths

Well Name: Hen 13N

Production, Set Depth: 14,707.0ftKB

API 05123518030000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00	Original KB Elevation (ft) 4,807.50	KB-Ground Distance (ft) 28.50	Spud Date 9/7/2023 03:30	Rig Release Date 9/10/2023 01:00	On Production Date	Abandon Date					

Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
246	236	Casing Joints	5 1/2	20.00	P-110	Yes	42.43	Yes			4,507.4	10,199.61
247	237	Casing Joints	5 1/2	20.00	P-110	Yes	42.40	Yes			4,465.0	10,242.01
248	238	Casing Joints	5 1/2	20.00	P-110	Yes	44.04	Yes			4,421.0	10,286.05
249	239	Casing Joints	5 1/2	20.00	P-110	Yes	44.37	Yes			4,376.6	10,330.42
250	240	Casing Joints	5 1/2	20.00	P-110	Yes	43.98	Yes			4,332.6	10,374.40
251	241	Casing Joints	5 1/2	20.00	P-110	Yes	44.44	Yes			4,288.2	10,418.84
252	242	Casing Joints	5 1/2	20.00	P-110	Yes	43.16	Yes			4,245.0	10,462.00
253	243	Casing Joints	5 1/2	20.00	P-110	Yes	43.83	Yes			4,201.2	10,505.83
254	244	Casing Joints	5 1/2	20.00	P-110	Yes	44.29	Yes			4,156.9	10,550.12
255	245	Casing Joints	5 1/2	20.00	P-110	Yes	42.85	Yes			4,114.0	10,592.97
256	246	Casing Joints	5 1/2	20.00	P-110	Yes	43.20	Yes			4,070.8	10,636.17
257	247	Casing Joints	5 1/2	20.00	P-110	Yes	43.49	Yes			4,027.3	10,679.66
258	248	Casing Joints	5 1/2	20.00	P-110	Yes	39.72	Yes			3,987.6	10,719.38
259	249	Casing Joints	5 1/2	20.00	P-110	Yes	44.07	Yes			3,943.6	10,763.45
260	250	Casing Joints	5 1/2	20.00	P-110	Yes	43.70	Yes			3,899.9	10,807.15
261	251	Casing Joints	5 1/2	20.00	P-110	Yes	44.28	Yes			3,855.6	10,851.43
262	252	Casing Joints	5 1/2	20.00	P-110	Yes	45.07	Yes			3,810.5	10,896.50
263	253	Casing Joints	5 1/2	20.00	P-110	Yes	43.10	Yes			3,767.4	10,939.60
264	254	Casing Joints	5 1/2	20.00	P-110	Yes	40.95	Yes			3,726.5	10,980.55
265	255	Casing Joints	5 1/2	20.00	P-110	Yes	44.10	Yes			3,682.4	11,024.65
266	256	Casing Joints	5 1/2	20.00	P-110	Yes	44.36	Yes			3,638.0	11,069.01
267	257	Casing Joints	5 1/2	20.00	P-110	Yes	43.71	Yes			3,594.3	11,112.72
268	258	Casing Joints	5 1/2	20.00	P-110	Yes	43.82	Yes			3,550.5	11,156.54
269	259	Casing Joints	5 1/2	20.00	P-110	Yes	44.38	Yes			3,506.1	11,200.92
270	260	Casing Joints	5 1/2	20.00	P-110	Yes	40.90	Yes			3,465.2	11,241.82
271	261	Casing Joints	5 1/2	20.00	P-110	Yes	42.39	Yes			3,422.8	11,284.21
272	262	Casing Joints	5 1/2	20.00	P-110	Yes	43.83	Yes			3,379.0	11,328.04
273	263	Casing Joints	5 1/2	20.00	P-110	Yes	41.46	Yes			3,337.5	11,369.50
274	264	Casing Joints	5 1/2	20.00	P-110	Yes	42.71	Yes			3,294.8	11,412.21
276	265	Casing Joints	5 1/2	20.00	P-110	Yes	42.45	Yes			3,237.8	11,469.17
277	266	Casing Joints	5 1/2	20.00	P-110	Yes	44.11	Yes			3,193.7	11,513.28



Centralizer Depths

Well Name: Hen 13N

Production, Set Depth: 14,707.0ftKB

API 05123518030000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00		Original KB Elevation (ft) 4,807.50		KB-Ground Distance (ft) 28.50		Spud Date 9/7/2023 03:30		Rig Release Date 9/10/2023 01:00		On Production Date Abandon Date	

Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
278	267	Casing Joints	5 1/2	20.00	P-110	Yes	44.03	Yes			3,149.7	11,557.31
279	268	Casing Joints	5 1/2	20.00	P-110	Yes	44.13	Yes			3,105.6	11,601.44
280	269	Casing Joints	5 1/2	20.00	P-110	Yes	44.10	Yes			3,061.5	11,645.54
281	270	Casing Joints	5 1/2	20.00	P-110	Yes	42.26	Yes			3,019.2	11,687.80
282	271	Casing Joints	5 1/2	20.00	P-110	Yes	43.84	Yes			2,975.4	11,731.64
283	272	Casing Joints	5 1/2	20.00	P-110	Yes	45.54	Yes			2,929.8	11,777.18
284	273	Casing Joints	5 1/2	20.00	P-110	Yes	44.07	Yes			2,885.8	11,821.25
285	274	Casing Joints	5 1/2	20.00	P-110	Yes	40.10	Yes			2,845.7	11,861.35
286	275	Casing Joints	5 1/2	20.00	P-110	Yes	43.75	Yes			2,801.9	11,905.10
287	276	Casing Joints	5 1/2	20.00	P-110	Yes	39.93	Yes			2,762.0	11,945.03
288	277	Casing Joints	5 1/2	20.00	P-110	Yes	43.82	Yes			2,718.2	11,988.85
289	278	Casing Joints	5 1/2	20.00	P-110	Yes	41.12	Yes			2,677.0	12,029.97
290	279	Casing Joints	5 1/2	20.00	P-110	Yes	44.11	Yes			2,632.9	12,074.08
291	280	Casing Joints	5 1/2	20.00	P-110	Yes	44.11	Yes			2,588.8	12,118.19
292	281	Casing Joints	5 1/2	20.00	P-110	Yes	44.28	Yes			2,544.5	12,162.47
293	282	Casing Joints	5 1/2	20.00	P-110	Yes	43.72	Yes			2,500.8	12,206.19
294	283	Casing Joints	5 1/2	20.00	P-110	Yes	44.11	Yes			2,456.7	12,250.30
295	284	Casing Joints	5 1/2	20.00	P-110	Yes	44.03	Yes			2,412.7	12,294.33
296	285	Casing Joints	5 1/2	20.00	P-110	Yes	42.62	Yes			2,370.1	12,336.95
297	286	Casing Joints	5 1/2	20.00	P-110	Yes	42.67	Yes			2,327.4	12,379.62
298	287	Casing Joints	5 1/2	20.00	P-110	Yes	43.79	Yes			2,283.6	12,423.41
299	288	Casing Joints	5 1/2	20.00	P-110	Yes	35.29	Yes			2,248.3	12,458.70
300	289	Casing Joints	5 1/2	20.00	P-110	Yes	37.55	Yes			2,210.8	12,496.25
301	290	Casing Joints	5 1/2	20.00	P-110	Yes	44.08	Yes			2,166.7	12,540.33
302	291	Casing Joints	5 1/2	20.00	P-110	Yes	38.22	Yes			2,128.5	12,578.55
303	292	Casing Joints	5 1/2	20.00	P-110	Yes	44.00	Yes			2,084.5	12,622.55
304	293	Casing Joints	5 1/2	20.00	P-110	Yes	42.66	Yes			2,041.8	12,665.21
305	294	Casing Joints	5 1/2	20.00	P-110	Yes	44.22	Yes			1,997.6	12,709.43
306	295	Casing Joints	5 1/2	20.00	P-110	Yes	42.26	Yes			1,955.3	12,751.69
307	296	Casing Joints	5 1/2	20.00	P-110	Yes	42.42	Yes			1,912.9	12,794.11
308	297	Casing Joints	5 1/2	20.00	P-110	Yes	44.21	Yes			1,868.7	12,838.32



Centralizer Depths

Well Name: Hen 13N

Production, Set Depth: 14,707.0ftKB

API 05123518030000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00		Original KB Elevation (ft) 4,807.50		KB-Ground Distance (ft) 28.50		Spud Date 9/7/2023 03:30		Rig Release Date 9/10/2023 01:00		On Production Date Abandon Date	

Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jwry	Connections	Top (ftKB)	Cum Len (ft)
309	298	Casing Joints	5 1/2	20.00	P-110	Yes	44.18	Yes			1,824.5	12,882.50
310	299	Casing Joints	5 1/2	20.00	P-110	Yes	44.00	Yes			1,780.5	12,926.50
311	300	Casing Joints	5 1/2	20.00	P-110	Yes	44.06	Yes			1,736.4	12,970.56
312	301	Casing Joints	5 1/2	20.00	P-110	Yes	44.25	Yes			1,692.2	13,014.81
313	302	Casing Joints	5 1/2	20.00	P-110	Yes	43.27	Yes			1,648.9	13,058.08
314	303	Casing Joints	5 1/2	20.00	P-110	Yes	43.85	Yes			1,605.1	13,101.93
315	304	Casing Joints	5 1/2	20.00	P-110	Yes	44.06	Yes			1,561.0	13,145.99
316	305	Casing Joints	5 1/2	20.00	P-110	Yes	42.67	Yes			1,518.3	13,188.66
317	306	Casing Joints	5 1/2	20.00	P-110	Yes	43.13	Yes			1,475.2	13,231.79
318	307	Casing Joints	5 1/2	20.00	P-110	Yes	43.85	Yes			1,431.4	13,275.64
319	308	Casing Joints	5 1/2	20.00	P-110	Yes	41.21	Yes			1,390.2	13,316.85
320	309	Casing Joints	5 1/2	20.00	P-110	Yes	42.27	Yes			1,347.9	13,359.12
321	310	Casing Joints	5 1/2	20.00	P-110	Yes	41.75	Yes			1,306.1	13,400.87
322	311	Casing Joints	5 1/2	20.00	P-110	Yes	42.66	Yes			1,263.5	13,443.53
323	312	Casing Joints	5 1/2	20.00	P-110	Yes	44.09	Yes			1,219.4	13,487.62
324	313	Casing Joints	5 1/2	20.00	P-110	Yes	43.95	Yes			1,175.4	13,531.57
325	314	Casing Joints	5 1/2	20.00	P-110	Yes	41.75	Yes			1,133.7	13,573.32
326	315	Casing Joints	5 1/2	20.00	P-110	Yes	38.77	Yes			1,094.9	13,612.09
327	316	Casing Joints	5 1/2	20.00	P-110	Yes	40.56	Yes			1,054.4	13,652.65
328	317	Casing Joints	5 1/2	20.00	P-110	Yes	39.10	Yes			1,015.3	13,691.75
329	318	Casing Joints	5 1/2	20.00	P-110	Yes	42.69	Yes			972.6	13,734.44
330	319	Casing Joints	5 1/2	20.00	P-110	Yes	44.08	Yes			928.5	13,778.52
331	320	Casing Joints	5 1/2	20.00	P-110	Yes	43.84	Yes			884.6	13,822.36
332	321	Casing Joints	5 1/2	20.00	P-110	Yes	41.39	Yes			843.3	13,863.75
333	322	Casing Joints	5 1/2	20.00	P-110	Yes	44.20	Yes			799.1	13,907.95
334	323	Casing Joints	5 1/2	20.00	P-110	Yes	38.14	Yes			760.9	13,946.09
335	324	Casing Joints	5 1/2	20.00	P-110	Yes	44.01	Yes			716.9	13,990.10
336	325	Casing Joints	5 1/2	20.00	P-110	Yes	42.52	Yes			674.4	14,032.62
337	326	Casing Joints	5 1/2	20.00	P-110	Yes	41.72	Yes			632.7	14,074.34
338	327	Casing Joints	5 1/2	20.00	P-110	Yes	42.40	Yes			590.3	14,116.74
339	328	Casing Joints	5 1/2	20.00	P-110	Yes	41.19	Yes			549.1	14,157.93



Centralizer Depths

Well Name: Hen 13N

Production, Set Depth: 14,707.0ftKB

API 05123518030000		Surface Legal Location SWNE 8 4N 64W		Field Name Wattenberg		State CO		Well Configuration Type Horizontal			
Ground Elevation (ft) 4,779.00	Original KB Elevation (ft) 4,807.50	KB-Ground Distance (ft) 28.50	Spud Date 9/7/2023 03:30	Rig Release Date 9/10/2023 01:00	On Production Date	Abandon Date					

Casing Run Tally

Run #	Ref #	Item Des	OD (in)	Wt (lb/ft)	Grade	Run?	Len (ft)	Centralized?	Ext Jw/ry	Connections	Top (ftKB)	Cum Len (ft)
340	329	Casing Joints	5 1/2	20.00	P-110	Yes	43.37	Yes			505.7	14,201.30