

Cement Post Job Report

Client: PDC Energy

Well Name: Hen 18N

API #: 05-123-51794

Job Date: September 22, 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 18N	Patterson 272	Production	Buttress	5 1/2" Cement Head

WELL MD (FT)	WELL TVD (FT)	DEVIATION (DEG)	NUMBER OF STAGES	BHST (DEG)	BHCT (DEG)
15237	6846	90	1	225	200

PACKER/RETAINER/CIBP/DV TOOL DEPTHS	TOOL TYPE	TOP OF PERFS (FT)	BOTTOM OF PERFS (FT)	NUMBER OF HOLES
Packer @ 3358' / Wet Shoe Sub @ 15201'	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	12.25			1710
Production	P-110	5.5	20	4.778	20	0	0	15231
MAXIMUM CASING/TUBING/DP PSI			9888			MAXIMUM ANNULAR PSI		8880

Mud Type	OBM	Rotate Y,N	No	Circulation Data				Water Requirements (bbls)	
Mud ppg	10.6	Rate (rpm)		Circulate Time (hrs)		2		Spacers	140
Flow Temp	150	Torque Val.		Circulation Rate (bpm)		10		Stage 1 Lead	112
Vis. Sec/qt	49	Time (hr)		Full Circulation ? (Y,N,P)		Yes		Stage 1 Tail	163
PV (cP)	14	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	4	Stroke (ft)		Quantity & Type		Customer Provided		Displacement	338
10 min gel	10	Recip time		Top Plug/Type		Customer Provided		Wash up	20
30 min gel	13	Stuck ?		Bottom Plug/Type		Customer Provided		Total + 10% Safety	850

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	1097	Sacks		Sacks		Dens. ppg	8.34
		Vol/bbbls	256.8	Vol/bbbls	267.7	Vol/bbbls	0.0	Vol/bbbls	0.0	Vol. bbl	338
		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	318
		TOL (ft)	2002	TOT (ft)	8301	TOL (ft)		TOT (ft)		Bump PSI	2700

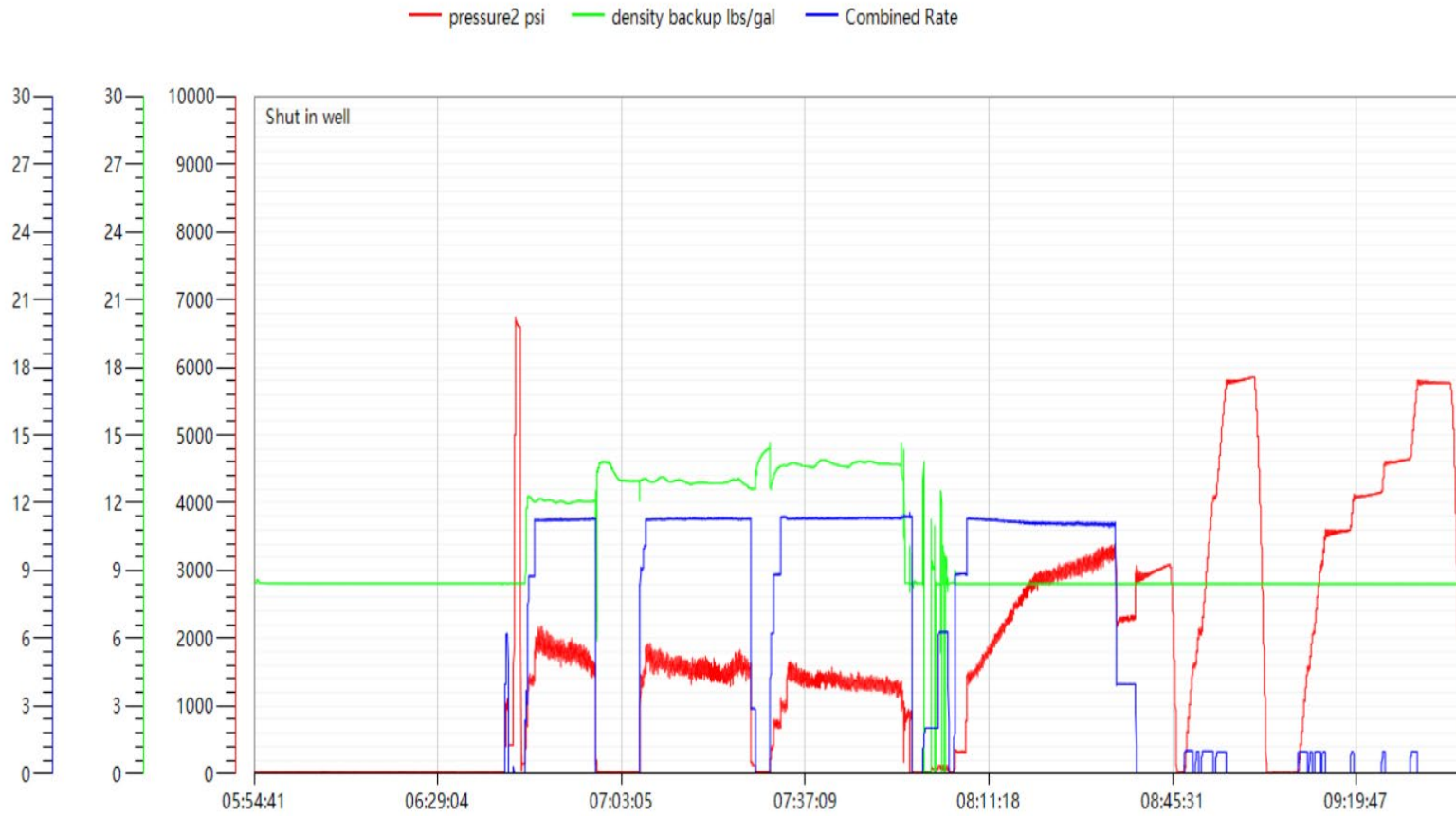
Final Displacement (bbbls)	328
Bump Plug?	Yes
Final Bump Pressure (psi)	3200
Full Returns throughout job?	Full
Vol. away/Time when returns lost	
Vol. away when returns were regained	
Spacer to Surface?	Yes
Spacer volume returned (bbbls)	52
Cement to surface?	No
Cement volume to surface stage 1	
Cement volume to surface stage 2	

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 18N	Patterson 272	Production	9/22/2023	Temp / Hum / Air Press 57 Deg F / 82% / 24.97 in		
DATE (dd/mm)	TIME (hh:mm)	DENSITY (ppg)	RATE (bpm)	VOL. (bbl)	TOTAL VOL.	PRESSURE	TREATMENT COMMENTS
9/22/2023	4:00:00 AM						Arrived on location/ Wait for rig to finish running casing
9/22/2023	4:45:00 AM						Spot equipment
9/22/2023	5:00:00 AM						Rig up/ Wait for rig to finish circulating
9/22/2023	6:00:00 AM						Safety meeting
9/22/2023	6:39:00 AM						Rig up floor
9/22/2023	6:41:00 AM	8.33	6.2	3	3	950	Fill surface lines
9/22/2023	6:42:00 AM	8.33				6500	Pressure test
9/22/2023	6:44:00 AM	12	11.0	140	140	1800	Pump 140 bbl SPACER @ 12# with surfactant and fiber
9/22/2023	6:58:00 AM						Shutdown/ Drop BOTTOM plug
9/22/2023	7:06:00 AM	12.9	11.3	257	257	1700	Pump 257 bbl (1276sks) LEAD cement @12.9#, 1.13Y, 3.68gal/sk TOL @ 2002'
9/22/2023	7:28:00 AM						Shutdown to fix broken valve on cement line coming off of tail bin.
9/22/2023	7:30:00 AM	13.7	11.3	268	268	1400	Pump 268 bbl (1097sks) TAIL cement @ 13.7#, 1.37Y, 6.63gal/sk TOT @ 8301'
9/22/2023	7:55:00 AM	8.33	11.3	15	15	900	Pump 15bbl SUGAR water TOSW @ 14870'
9/22/2023	7:56:00 AM	8.33					Shutdown/ Wash pumps and lines/ Drop TOP plug
9/22/2023	8:05:00 AM	8.33					Pump 338 bbl Freshwater Displacement with biocide in all
9/22/2023	8:06:00 AM	8.33	8.8	10	10	300	Pump Freshwater Displacement
9/22/2023	8:10:00 AM	8.33	11.3	50	50	1600	Pump Freshwater Displacement
9/22/2023	8:14:00 AM	8.33	11.2	100	100	2250	Pump Freshwater Displacement
9/22/2023	8:19:00 AM	8.33	11.1	150	150	2800	Pump Freshwater Displacement
9/22/2023	8:24:00 AM	8.33	11.1	200	200	2950	Pump Freshwater Displacement
9/22/2023	8:28:00 AM	8.33	11.1	250	250	3100	Pump Freshwater Displacement, Spacer to surface @ 286 bbl away, circulate 52 bbl spacer to surface
9/22/2023	8:33:00 AM	8.33	11.0	300	300	3250	Pump Freshwater Displacement
9/22/2023	8:35:00 AM	8.33	4.0	318	318	2200	Pump Freshwater Displacement, Slow rate to 4bbl/min to bump plug
9/22/2023	8:38:00 AM	8.33		338	338	2300-2900	Bump plug/ Shutdown FCP- 2300psi, Bumped to 2900psi
9/22/2023	8:45:00 AM	8.33					Check float, float held, 3.5 bbl back to truck
9/22/2023	8:47:00 AM	8.33	10.0			5700	Set packer per tool hand
9/22/2023	9:37:00 AM	8.33					Bleed pressure/Check float, float held, 6 bbl back to truck
9/22/2023	9:45:00 AM	8.33	10.0	30	30	450	Rig up and flush stack clean
9/22/2023	10:00:00 AM						Rig down
9/22/2023	10:30:00 AM						Depart location

Hen 18N Production Pump Chart – Pressure / Rate / Density





Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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	43.50	Yes			15,152.8	78.21
9	3	Casing Joints	5 1/2	20.00	P-110	Yes	43.34	Yes			15,065.8	165.20
11	5	Casing Joints	5 1/2	20.00	P-110	Yes	44.34	Yes			14,979.5	251.54
13	7	Casing Joints	5 1/2	20.00	P-110	Yes	43.13	Yes			14,891.9	339.12
15	9	Casing Joints	5 1/2	20.00	P-110	Yes	44.89	Yes			14,805.4	425.63
17		Marker Joint A	5 1/2	20.00	P-110	Yes	10.27	Yes			14,750.5	480.55
19	12	Casing Joints	5 1/2	20.00	P-110	Yes	42.81	Yes			14,663.0	568.01
21	14	Casing Joints	5 1/2	20.00	P-110	Yes	42.98	Yes			14,579.0	652.00
23	16	Casing Joints	5 1/2	20.00	P-110	Yes	44.48	Yes			14,492.2	738.76
25	18	Casing Joints	5 1/2	20.00	P-110	Yes	44.67	Yes			14,402.9	828.08
27	20	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			14,313.8	917.23
29	22	Casing Joints	5 1/2	20.00	P-110	Yes	44.82	Yes			14,224.0	1,006.96
31	24	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			14,139.0	1,091.99
33	26	Casing Joints	5 1/2	20.00	P-110	Yes	39.13	Yes			14,056.6	1,174.42
35	28	Casing Joints	5 1/2	20.00	P-110	Yes	43.27	Yes			13,975.9	1,255.10
37	30	Casing Joints	5 1/2	20.00	P-110	Yes	44.40	Yes			13,896.2	1,334.79
39	32	Casing Joints	5 1/2	20.00	P-110	Yes	44.67	Yes			13,807.1	1,423.90
41	34	Casing Joints	5 1/2	20.00	P-110	Yes	40.66	Yes			13,721.6	1,509.42
43	36	Casing Joints	5 1/2	20.00	P-110	Yes	43.37	Yes			13,635.7	1,595.33
45	38	Casing Joints	5 1/2	20.00	P-110	Yes	43.52	Yes			13,550.4	1,680.57
47	40	Casing Joints	5 1/2	20.00	P-110	Yes	44.65	Yes			13,464.0	1,767.02
49	42	Casing Joints	5 1/2	20.00	P-110	Yes	44.90	Yes			13,375.1	1,855.88
51	44	Casing Joints	5 1/2	20.00	P-110	Yes	43.20	Yes			13,287.0	1,943.97
53	46	Casing Joints	5 1/2	20.00	P-110	Yes	44.67	Yes			13,197.7	2,033.29
55	48	Casing Joints	5 1/2	20.00	P-110	Yes	44.53	Yes			13,114.1	2,116.87
57	50	Casing Joints	5 1/2	20.00	P-110	Yes	43.34	Yes			13,025.4	2,205.59
59	52	Casing Joints	5 1/2	20.00	P-110	Yes	44.62	Yes			12,939.4	2,291.63
61	54	Casing Joints	5 1/2	20.00	P-110	Yes	44.53	Yes			12,851.4	2,379.64
63	56	Casing Joints	5 1/2	20.00	P-110	Yes	43.55	Yes			12,763.3	2,467.67
65	58	Casing Joints	5 1/2	20.00	P-110	Yes	41.90	Yes			12,677.9	2,553.09
67	60	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			12,589.0	2,642.02



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 0512351794000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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	43.49	Yes			12,502.0	2,728.98
71	64	Casing Joints	5 1/2	20.00	P-110	Yes	42.55	Yes			12,417.0	2,813.97
73	66	Casing Joints	5 1/2	20.00	P-110	Yes	42.63	Yes			12,331.3	2,899.71
75	68	Casing Joints	5 1/2	20.00	P-110	Yes	43.86	Yes			12,243.3	2,987.66
77	70	Casing Joints	5 1/2	20.00	P-110	Yes	44.55	Yes			12,155.4	3,075.62
79	72	Casing Joints	5 1/2	20.00	P-110	Yes	43.52	Yes			12,068.0	3,162.99
81	74	Casing Joints	5 1/2	20.00	P-110	Yes	42.10	Yes			11,983.4	3,247.64
83	76	Casing Joints	5 1/2	20.00	P-110	Yes	43.44	Yes			11,895.4	3,335.63
85	78	Casing Joints	5 1/2	20.00	P-110	Yes	43.48	Yes			11,807.2	3,423.78
87	80	Casing Joints	5 1/2	20.00	P-110	Yes	43.13	Yes			11,720.6	3,510.41
89	82	Casing Joints	5 1/2	20.00	P-110	Yes	43.43	Yes			11,634.0	3,596.99
91	84	Casing Joints	5 1/2	20.00	P-110	Yes	43.51	Yes			11,547.4	3,683.63
93	86	Casing Joints	5 1/2	20.00	P-110	Yes	44.90	Yes			11,457.6	3,773.45
95	87	Casing Joints	5 1/2	20.00	P-110	Yes	43.04	Yes			11,403.3	3,827.74
97	89	Casing Joints	5 1/2	20.00	P-110	Yes	42.70	Yes			11,318.0	3,912.99
99	91	Casing Joints	5 1/2	20.00	P-110	Yes	42.65	Yes			11,233.4	3,997.64
101	93	Casing Joints	5 1/2	20.00	P-110	Yes	42.53	Yes			11,148.0	4,082.97
103	95	Casing Joints	5 1/2	20.00	P-110	Yes	44.67	Yes			11,060.3	4,170.69
105	97	Casing Joints	5 1/2	20.00	P-110	Yes	44.43	Yes			10,974.3	4,256.67
107	99	Casing Joints	5 1/2	20.00	P-110	Yes	42.65	Yes			10,887.5	4,343.52
109	101	Casing Joints	5 1/2	20.00	P-110	Yes	43.52	Yes			10,800.0	4,431.05
111	103	Casing Joints	5 1/2	20.00	P-110	Yes	45.07	Yes			10,711.4	4,519.62
113	105	Casing Joints	5 1/2	20.00	P-110	Yes	40.57	Yes			10,626.8	4,604.19
115	107	Casing Joints	5 1/2	20.00	P-110	Yes	42.13	Yes			10,540.1	4,690.95
117	109	Casing Joints	5 1/2	20.00	P-110	Yes	44.22	Yes			10,451.2	4,779.82
119	111	Casing Joints	5 1/2	20.00	P-110	Yes	44.63	Yes			10,363.0	4,867.99
121	113	Casing Joints	5 1/2	20.00	P-110	Yes	44.15	Yes			10,276.1	4,954.95
123	115	Casing Joints	5 1/2	20.00	P-110	Yes	44.53	Yes			10,187.1	5,043.93
125	117	Casing Joints	5 1/2	20.00	P-110	Yes	42.68	Yes			10,099.9	5,131.06
127	119	Casing Joints	5 1/2	20.00	P-110	Yes	41.74	Yes			10,014.9	5,216.12
129	121	Casing Joints	5 1/2	20.00	P-110	Yes	42.32	Yes			9,927.9	5,303.09



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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	43.52	Yes			9,839.6	5,391.37
133	125	Casing Joints	5 1/2	20.00	P-110	Yes	44.61	Yes			9,750.4	5,480.65
135	127	Casing Joints	5 1/2	20.00	P-110	Yes	44.84	Yes			9,661.1	5,569.93
137	129	Casing Joints	5 1/2	20.00	P-110	Yes	42.78	Yes			9,574.8	5,656.20
139	131	Casing Joints	5 1/2	20.00	P-110	Yes	44.55	Yes			9,486.8	5,744.25
141	133	Casing Joints	5 1/2	20.00	P-110	Yes	44.47	Yes			9,401.2	5,829.78
143	135	Casing Joints	5 1/2	20.00	P-110	Yes	44.01	Yes			9,312.6	5,918.42
145	137	Casing Joints	5 1/2	20.00	P-110	Yes	44.65	Yes			9,223.9	6,007.11
147	139	Casing Joints	5 1/2	20.00	P-110	Yes	45.01	Yes			9,136.3	6,094.75
149	141	Casing Joints	5 1/2	20.00	P-110	Yes	42.15	Yes			9,049.5	6,181.55
151	143	Casing Joints	5 1/2	20.00	P-110	Yes	44.83	Yes			8,962.0	6,269.01
153	145	Casing Joints	5 1/2	20.00	P-110	Yes	42.46	Yes			8,876.9	6,354.10
155	147	Casing Joints	5 1/2	20.00	P-110	Yes	44.97	Yes			8,791.8	6,439.23
157	149	Casing Joints	5 1/2	20.00	P-110	Yes	42.83	Yes			8,705.4	6,525.57
159	151	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			8,618.0	6,612.97
161	153	Casing Joints	5 1/2	20.00	P-110	Yes	44.34	Yes			8,533.4	6,697.62
163	155	Casing Joints	5 1/2	20.00	P-110	Yes	44.48	Yes			8,444.1	6,786.95
165	157	Casing Joints	5 1/2	20.00	P-110	Yes	39.90	Yes			8,359.3	6,871.72
167	159	Casing Joints	5 1/2	20.00	P-110	Yes	44.84	Yes			8,273.1	6,957.86
169	161	Casing Joints	5 1/2	20.00	P-110	Yes	43.50	Yes			8,184.5	7,046.50
171	163	Casing Joints	5 1/2	20.00	P-110	Yes	44.76	Yes			8,097.0	7,134.03
173	165	Casing Joints	5 1/2	20.00	P-110	Yes	43.21	Yes			8,010.5	7,220.54
175	167	Casing Joints	5 1/2	20.00	P-110	Yes	43.14	Yes			7,926.2	7,304.80
177	169	Casing Joints	5 1/2	20.00	P-110	Yes	43.85	Yes			7,839.2	7,391.81
179	171	Casing Joints	5 1/2	20.00	P-110	Yes	44.85	Yes			7,751.1	7,479.90
181		Marker Joint F	5 1/2	20.00	P-110	Yes	20.75	Yes			7,687.5	7,543.53
182	173	Casing Joints	5 1/2	20.00	P-110	Yes	42.58	Yes			7,644.9	7,586.11
183	174	Casing Joints	5 1/2	20.00	P-110	Yes	43.13	Yes			7,601.8	7,629.24
184	175	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			7,557.2	7,673.76
185	176	Casing Joints	5 1/2	20.00	P-110	Yes	43.83	Yes			7,513.4	7,717.59
186	177	Casing Joints	5 1/2	20.00	P-110	Yes	43.49	Yes			7,469.9	7,761.08



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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)
187	178	Casing Joints	5 1/2	20.00	P-110	Yes	41.20	Yes			7,428.7	7,802.28
188	179	Casing Joints	5 1/2	20.00	P-110	Yes	43.97	Yes			7,384.8	7,846.25
189	180	Casing Joints	5 1/2	20.00	P-110	Yes	42.00	Yes			7,342.8	7,888.25
190	181	Casing Joints	5 1/2	20.00	P-110	Yes	43.52	Yes			7,299.2	7,931.77
191	182	Casing Joints	5 1/2	20.00	P-110	Yes	44.15	Yes			7,255.1	7,975.92
192	183	Casing Joints	5 1/2	20.00	P-110	Yes	40.33	Yes			7,214.8	8,016.25
193	184	Casing Joints	5 1/2	20.00	P-110	Yes	42.97	Yes			7,171.8	8,059.22
194	185	Casing Joints	5 1/2	20.00	P-110	Yes	41.54	Yes			7,130.2	8,100.76
195	186	Casing Joints	5 1/2	20.00	P-110	Yes	42.52	Yes			7,087.7	8,143.28
196	187	Casing Joints	5 1/2	20.00	P-110	Yes	42.67	Yes			7,045.1	8,185.95
197	188	Casing Joints	5 1/2	20.00	P-110	Yes	44.64	Yes			7,000.4	8,230.59
198	189	Casing Joints	5 1/2	20.00	P-110	Yes	44.15	Yes			6,956.3	8,274.74
199	190	Casing Joints	5 1/2	20.00	P-110	Yes	44.13	Yes			6,912.1	8,318.87
200	191	Casing Joints	5 1/2	20.00	P-110	Yes	42.95	Yes			6,869.2	8,361.82
201	192	Casing Joints	5 1/2	20.00	P-110	Yes	39.22	Yes			6,830.0	8,401.04
202	193	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			6,785.9	8,445.06
203	194	Casing Joints	5 1/2	20.00	P-110	Yes	41.45	Yes			6,744.5	8,486.51
204	195	Casing Joints	5 1/2	20.00	P-110	Yes	44.62	Yes			6,699.9	8,531.13
205	196	Casing Joints	5 1/2	20.00	P-110	Yes	42.71	Yes			6,657.2	8,573.84
206	197	Casing Joints	5 1/2	20.00	P-110	Yes	43.34	Yes			6,613.8	8,617.18
207	198	Casing Joints	5 1/2	20.00	P-110	Yes	44.94	Yes			6,568.9	8,662.12
208	199	Casing Joints	5 1/2	20.00	P-110	Yes	44.89	Yes			6,524.0	8,707.01
209	200	Casing Joints	5 1/2	20.00	P-110	Yes	44.51	Yes			6,479.5	8,751.52
210		Marker Joint I	5 1/2	20.00	P-110	Yes	19.65	Yes			6,459.8	8,771.17
211	201	Casing Joints	5 1/2	20.00	P-110	Yes	34.31	Yes			6,425.5	8,805.48
212	202	Casing Joints	5 1/2	20.00	P-110	Yes	44.63	Yes			6,380.9	8,850.11
213	203	Casing Joints	5 1/2	20.00	P-110	Yes	43.50	Yes			6,337.4	8,893.61
214	204	Casing Joints	5 1/2	20.00	P-110	Yes	42.99	Yes			6,294.4	8,936.60
215	205	Casing Joints	5 1/2	20.00	P-110	Yes	44.46	Yes			6,249.9	8,981.06
216	206	Casing Joints	5 1/2	20.00	P-110	Yes	42.56	Yes			6,207.4	9,023.62
217	207	Casing Joints	5 1/2	20.00	P-110	Yes	43.30	Yes			6,164.1	9,066.92



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30	Rig Release Date 9/22/2023 13:00	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)
218	208	Casing Joints	5 1/2	20.00	P-110	Yes	44.54	Yes			6,119.5	9,111.46
219	209	Casing Joints	5 1/2	20.00	P-110	Yes	41.97	Yes			6,077.6	9,153.43
220	210	Casing Joints	5 1/2	20.00	P-110	Yes	41.13	Yes			6,036.4	9,194.56
221	211	Casing Joints	5 1/2	20.00	P-110	Yes	44.17	Yes			5,992.3	9,238.73
222	212	Casing Joints	5 1/2	20.00	P-110	Yes	44.63	Yes			5,947.6	9,283.36
223	213	Casing Joints	5 1/2	20.00	P-110	Yes	44.45	Yes			5,903.2	9,327.81
224	214	Casing Joints	5 1/2	20.00	P-110	Yes	34.23	Yes			5,869.0	9,362.04
225	215	Casing Joints	5 1/2	20.00	P-110	Yes	33.98	Yes			5,835.0	9,396.02
226	216	Casing Joints	5 1/2	20.00	P-110	Yes	44.46	Yes			5,790.5	9,440.48
227	217	Casing Joints	5 1/2	20.00	P-110	Yes	44.12	Yes			5,746.4	9,484.60
228	218	Casing Joints	5 1/2	20.00	P-110	Yes	42.44	Yes			5,704.0	9,527.04
229	219	Casing Joints	5 1/2	20.00	P-110	Yes	44.50	Yes			5,659.5	9,571.54
230	220	Casing Joints	5 1/2	20.00	P-110	Yes	44.51	Yes			5,615.0	9,616.05
231	221	Casing Joints	5 1/2	20.00	P-110	Yes	44.16	Yes			5,570.8	9,660.21
232	222	Casing Joints	5 1/2	20.00	P-110	Yes	37.98	Yes			5,532.8	9,698.19
233	223	Casing Joints	5 1/2	20.00	P-110	Yes	40.15	Yes			5,492.7	9,738.34
234	224	Casing Joints	5 1/2	20.00	P-110	Yes	43.35	Yes			5,449.3	9,781.69
235	225	Casing Joints	5 1/2	20.00	P-110	Yes	44.49	Yes			5,404.8	9,826.18
236	226	Casing Joints	5 1/2	20.00	P-110	Yes	42.53	Yes			5,362.3	9,868.71
237	227	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			5,317.8	9,913.23
238	228	Casing Joints	5 1/2	20.00	P-110	Yes	44.64	Yes			5,273.1	9,957.87
239	229	Casing Joints	5 1/2	20.00	P-110	Yes	41.17	Yes			5,232.0	9,999.04
240	230	Casing Joints	5 1/2	20.00	P-110	Yes	42.69	Yes			5,189.3	10,041.73
241	231	Casing Joints	5 1/2	20.00	P-110	Yes	41.66	Yes			5,147.6	10,083.39
242	232	Casing Joints	5 1/2	20.00	P-110	Yes	45.00	Yes			5,102.6	10,128.39
243	233	Casing Joints	5 1/2	20.00	P-110	Yes	36.48	Yes			5,066.1	10,164.87
244	234	Casing Joints	5 1/2	20.00	P-110	Yes	42.84	Yes			5,023.3	10,207.71
245	235	Casing Joints	5 1/2	20.00	P-110	Yes	38.47	Yes			4,984.8	10,246.18
246	236	Casing Joints	5 1/2	20.00	P-110	Yes	41.71	Yes			4,943.1	10,287.89
247	237	Casing Joints	5 1/2	20.00	P-110	Yes	43.97	Yes			4,899.1	10,331.86
248	238	Casing Joints	5 1/2	20.00	P-110	Yes	43.53	Yes			4,855.6	10,375.39



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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)
249	239	Casing Joints	5 1/2	20.00	P-110	Yes	44.52	Yes			4,811.1	10,419.91
250	240	Casing Joints	5 1/2	20.00	P-110	Yes	36.24	Yes			4,774.9	10,456.15
251	241	Casing Joints	5 1/2	20.00	P-110	Yes	44.54	Yes			4,730.3	10,500.69
252	242	Casing Joints	5 1/2	20.00	P-110	Yes	37.28	Yes			4,693.0	10,537.97
253	243	Casing Joints	5 1/2	20.00	P-110	Yes	41.55	Yes			4,651.5	10,579.52
254	244	Casing Joints	5 1/2	20.00	P-110	Yes	44.62	Yes			4,606.9	10,624.14
255	245	Casing Joints	5 1/2	20.00	P-110	Yes	43.36	Yes			4,563.5	10,667.50
256	246	Casing Joints	5 1/2	20.00	P-110	Yes	43.51	Yes			4,520.0	10,711.01
257	247	Casing Joints	5 1/2	20.00	P-110	Yes	35.74	Yes			4,484.3	10,746.75
258	248	Casing Joints	5 1/2	20.00	P-110	Yes	42.73	Yes			4,441.5	10,789.48
259	249	Casing Joints	5 1/2	20.00	P-110	Yes	44.63	Yes			4,396.9	10,834.11
260	250	Casing Joints	5 1/2	20.00	P-110	Yes	37.84	Yes			4,359.1	10,871.95
261	251	Casing Joints	5 1/2	20.00	P-110	Yes	44.36	Yes			4,314.7	10,916.31
262	252	Casing Joints	5 1/2	20.00	P-110	Yes	41.47	Yes			4,273.2	10,957.78
263	253	Casing Joints	5 1/2	20.00	P-110	Yes	43.14	Yes			4,230.1	11,000.92
264	254	Casing Joints	5 1/2	20.00	P-110	Yes	42.81	Yes			4,187.3	11,043.73
265	255	Casing Joints	5 1/2	20.00	P-110	Yes	38.82	Yes			4,148.5	11,082.55
266	256	Casing Joints	5 1/2	20.00	P-110	Yes	44.57	Yes			4,103.9	11,127.12
267	257	Casing Joints	5 1/2	20.00	P-110	Yes	43.46	Yes			4,060.4	11,170.58
268	258	Casing Joints	5 1/2	20.00	P-110	Yes	42.78	Yes			4,017.6	11,213.36
269	259	Casing Joints	5 1/2	20.00	P-110	Yes	43.55	Yes			3,974.1	11,256.91
270	260	Casing Joints	5 1/2	20.00	P-110	Yes	44.55	Yes			3,929.5	11,301.46
271	261	Casing Joints	5 1/2	20.00	P-110	Yes	44.58	Yes			3,885.0	11,346.04
272	262	Casing Joints	5 1/2	20.00	P-110	Yes	44.34	Yes			3,840.6	11,390.38
273	263	Casing Joints	5 1/2	20.00	P-110	Yes	43.01	Yes			3,797.6	11,433.39
274	264	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			3,753.6	11,477.41
275	265	Casing Joints	5 1/2	20.00	P-110	Yes	44.86	Yes			3,708.7	11,522.27
276	266	Casing Joints	5 1/2	20.00	P-110	Yes	43.11	Yes			3,665.6	11,565.38
277	267	Casing Joints	5 1/2	20.00	P-110	Yes	40.67	Yes			3,625.0	11,606.05
278	268	Casing Joints	5 1/2	20.00	P-110	Yes	43.83	Yes			3,581.1	11,649.88
279	269	Casing Joints	5 1/2	20.00	P-110	Yes	43.24	Yes			3,537.9	11,693.12



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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)
280	270	Casing Joints	5 1/2	20.00	P-110	Yes	43.16	Yes			3,494.7	11,736.28
281	271	Casing Joints	5 1/2	20.00	P-110	Yes	44.23	Yes			3,450.5	11,780.51
282	272	Casing Joints	5 1/2	20.00	P-110	Yes	43.80	Yes			3,406.7	11,824.31
283	273	Casing Joints	5 1/2	20.00	P-110	Yes	41.27	Yes			3,365.4	11,865.58
285	274	Casing Joints	5 1/2	20.00	P-110	Yes	34.60	Yes			3,316.7	11,914.35
286	275	Casing Joints	5 1/2	20.00	P-110	Yes	39.70	Yes			3,277.0	11,954.05
287	276	Casing Joints	5 1/2	20.00	P-110	Yes	39.73	Yes			3,237.2	11,993.78
288	277	Casing Joints	5 1/2	20.00	P-110	Yes	40.37	Yes			3,196.9	12,034.15
289	278	Casing Joints	5 1/2	20.00	P-110	Yes	43.50	Yes			3,153.4	12,077.65
290	279	Casing Joints	5 1/2	20.00	P-110	Yes	43.86	Yes			3,109.5	12,121.51
291	280	Casing Joints	5 1/2	20.00	P-110	Yes	39.04	Yes			3,070.5	12,160.55
292	281	Casing Joints	5 1/2	20.00	P-110	Yes	43.55	Yes			3,026.9	12,204.10
293	282	Casing Joints	5 1/2	20.00	P-110	Yes	43.83	Yes			2,983.1	12,247.93
294	283	Casing Joints	5 1/2	20.00	P-110	Yes	44.82	Yes			2,938.3	12,292.75
295	284	Casing Joints	5 1/2	20.00	P-110	Yes	44.45	Yes			2,893.8	12,337.20
296	285	Casing Joints	5 1/2	20.00	P-110	Yes	44.20	Yes			2,849.6	12,381.40
297	286	Casing Joints	5 1/2	20.00	P-110	Yes	43.53	Yes			2,806.1	12,424.93
298	287	Casing Joints	5 1/2	20.00	P-110	Yes	41.63	Yes			2,764.4	12,466.56
299	288	Casing Joints	5 1/2	20.00	P-110	Yes	44.79	Yes			2,719.7	12,511.35
300	289	Casing Joints	5 1/2	20.00	P-110	Yes	43.29	Yes			2,676.4	12,554.64
301	290	Casing Joints	5 1/2	20.00	P-110	Yes	43.50	Yes			2,632.9	12,598.14
302	291	Casing Joints	5 1/2	20.00	P-110	Yes	44.85	Yes			2,588.0	12,642.99
303	292	Casing Joints	5 1/2	20.00	P-110	Yes	43.50	Yes			2,544.5	12,686.49
304	293	Casing Joints	5 1/2	20.00	P-110	Yes	44.85	Yes			2,499.7	12,731.34
305	294	Casing Joints	5 1/2	20.00	P-110	Yes	43.48	Yes			2,456.2	12,774.82
306	295	Casing Joints	5 1/2	20.00	P-110	Yes	44.01	Yes			2,412.2	12,818.83
307	296	Casing Joints	5 1/2	20.00	P-110	Yes	44.61	Yes			2,367.6	12,863.44
308	297	Casing Joints	5 1/2	20.00	P-110	Yes	42.97	Yes			2,324.6	12,906.41
309	298	Casing Joints	5 1/2	20.00	P-110	Yes	43.24	Yes			2,281.4	12,949.65
310	299	Casing Joints	5 1/2	20.00	P-110	Yes	43.00	Yes			2,238.4	12,992.65
311	300	Casing Joints	5 1/2	20.00	P-110	Yes	42.68	Yes			2,195.7	13,035.33



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 0512351794000		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 9/19/2023 20:30		Rig Release Date 9/22/2023 13:00		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)
312	301	Casing Joints	5 1/2	20.00	P-110	Yes	45.00	Yes			2,150.7	13,080.33
313	302	Casing Joints	5 1/2	20.00	P-110	Yes	44.02	Yes			2,106.7	13,124.35
314	303	Casing Joints	5 1/2	20.00	P-110	Yes	42.14	Yes			2,064.5	13,166.49
315	304	Casing Joints	5 1/2	20.00	P-110	Yes	41.05	Yes			2,023.5	13,207.54
316	305	Casing Joints	5 1/2	20.00	P-110	Yes	42.25	Yes			1,981.2	13,249.79
317	306	Casing Joints	5 1/2	20.00	P-110	Yes	44.89	Yes			1,936.3	13,294.68
318	307	Casing Joints	5 1/2	20.00	P-110	Yes	44.83	Yes			1,891.5	13,339.51
319	308	Casing Joints	5 1/2	20.00	P-110	Yes	43.79	Yes			1,847.7	13,383.30
320	309	Casing Joints	5 1/2	20.00	P-110	Yes	43.13	Yes			1,804.6	13,426.43
321	310	Casing Joints	5 1/2	20.00	P-110	Yes	43.51	Yes			1,761.1	13,469.94
322	311	Casing Joints	5 1/2	20.00	P-110	Yes	44.85	Yes			1,716.2	13,514.79
323	312	Casing Joints	5 1/2	20.00	P-110	Yes	44.46	Yes			1,671.8	13,559.25
324	313	Casing Joints	5 1/2	20.00	P-110	Yes	42.55	Yes			1,629.2	13,601.80
325	314	Casing Joints	5 1/2	20.00	P-110	Yes	43.71	Yes			1,585.5	13,645.51
326	315	Casing Joints	5 1/2	20.00	P-110	Yes	42.15	Yes			1,543.3	13,687.66
327	316	Casing Joints	5 1/2	20.00	P-110	Yes	44.08	Yes			1,499.3	13,731.74
328	317	Casing Joints	5 1/2	20.00	P-110	Yes	42.75	Yes			1,456.5	13,774.49
329	318	Casing Joints	5 1/2	20.00	P-110	Yes	43.51	Yes			1,413.0	13,818.00
330	319	Casing Joints	5 1/2	20.00	P-110	Yes	43.98	Yes			1,369.0	13,861.98
331	320	Casing Joints	5 1/2	20.00	P-110	Yes	44.55	Yes			1,324.5	13,906.53
332	321	Casing Joints	5 1/2	20.00	P-110	Yes	42.40	Yes			1,282.1	13,948.93
333	322	Casing Joints	5 1/2	20.00	P-110	Yes	43.09	Yes			1,239.0	13,992.02
334	323	Casing Joints	5 1/2	20.00	P-110	Yes	42.97	Yes			1,196.0	14,034.99
335	324	Casing Joints	5 1/2	20.00	P-110	Yes	44.11	Yes			1,151.9	14,079.10
336	325	Casing Joints	5 1/2	20.00	P-110	Yes	43.56	Yes			1,108.3	14,122.66
337	326	Casing Joints	5 1/2	20.00	P-110	Yes	43.30	Yes			1,065.0	14,165.96
338	327	Casing Joints	5 1/2	20.00	P-110	Yes	43.60	Yes			1,021.4	14,209.56
339	328	Casing Joints	5 1/2	20.00	P-110	Yes	42.41	Yes			979.0	14,251.97
340	329	Casing Joints	5 1/2	20.00	P-110	Yes	44.54	Yes			934.5	14,296.51
341	330	Casing Joints	5 1/2	20.00	P-110	Yes	43.27	Yes			891.2	14,339.78
342	331	Casing Joints	5 1/2	20.00	P-110	Yes	40.88	Yes			850.3	14,380.66



Centralizer Depths

Well Name: Hen 18N

Production, Set Depth: 15,231.0ftKB

API 05123517940000		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 9/19/2023 20:30	Rig Release Date 9/22/2023 13:00	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)
343	332	Casing Joints	5 1/2	20.00	P-110	Yes	43.68	Yes			806.7	14,424.34
344	333	Casing Joints	5 1/2	20.00	P-110	Yes	42.70	Yes			764.0	14,467.04
345	334	Casing Joints	5 1/2	20.00	P-110	Yes	43.86	Yes			720.1	14,510.90
346	335	Casing Joints	5 1/2	20.00	P-110	Yes	40.57	Yes			679.5	14,551.47
347	336	Casing Joints	5 1/2	20.00	P-110	Yes	34.54	Yes			645.0	14,586.01
348	337	Casing Joints	5 1/2	20.00	P-110	Yes	42.84	Yes			602.1	14,628.85
349	338	Casing Joints	5 1/2	20.00	P-110	Yes	42.84	Yes			559.3	14,671.69
350	339	Casing Joints	5 1/2	20.00	P-110	Yes	43.15	Yes			516.2	14,714.84