



WELL STIMULATION REPORT

Bayswater Exploration

Ruby West 9R

05-123-51842-00

March 09, 2023

HALLIBURTON

Production
Enhancement

Engineering Executive Summary

On Tuesday, December 06, 2022 the stimulation of treatment(s) was performed in the Niobrara formation on the Ruby West 9R well in WELD county, COLORADO.

The proposed treatment(s) consisted of:

23,000	gallons of	15% HCl
0	gallons of	3ppt HVFR(FightR EC-4M)
20,704,565	gallons of	HVFR (FightR EC-4M)
0	gallons of	Pump Down
22,500	gallons of	Treated Water
1,252,800	pounds of	100 Mesh Premium White
15,188,500	pounds of	30/50 Premium White
691,200	pounds of	40/70 Premium White
0	pounds of	SS-200 Premium White

The actual treatment(s) consisted of:

7,987	gallons of	15% HCl
16,445,417	gallons of	3ppt HVFR(FightR EC-4M)
920,782	gallons of	HVFR (FightR EC-4M)
549,444	gallons of	Pump Down
4,330,467	gallons of	Treated Water
1,252,535	pounds of	100 Mesh Premium White
14,635,231	pounds of	30/50 Premium White
693,690	pounds of	40/70 Premium White
0	pounds of	SS-200 Premium White

41 of 45 treatment(s) were fully completed. 0 treatment(s) were skipped, and 4 treatment(s) were screened out or otherwise cut short of design.

The well was first opened Tuesday, December 06, 2022 at 16:14 with an opening pressure of 2,210.0 psi.

The total amount of proppant pumped was 16,581,456.0 lbm with an average concentration of 0.76 ppg and maximum concentration of 2.0 ppg. Treating pressure averaged 6656.56 psi and rate averaged 75.48 bpm.

The operation came offline at 04:12 and the well was shut in Sunday, January 01, 2023 at 04:28 with a final shut-in pressure of 4,065.0 psi. A more detailed description of the actual treatment can be found further down in this report.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well.

Regards,

Thomas Nowak

Chad Lewis

Crew Service Leader

Crew Lead Engineer

WELL COMPLETION DATA

Treatment Interval	Perforation Top (ft)	Perforation Bottom (ft)	Plug Depth (ft)	Vertical Depth (ft)	Perforation Count	Cluster Count	Cluster Spacing	Perforation Phasing	SalesOrder Number
1	17563	17568	17573	7224	22	9	200	120	908283090
2	17351	17525	17530	7224	22	9	200	120	908283090
3	17151	17325	17330	7224	22	9	200	120	908283090
4	16951	17125	17130	7224	22	9	200	120	908283090
5	16751	16925	16930	7224	22	9	200	120	908283090
6	16551	16725	16730	7224	22	9	200	120	908283090
7	16351	16525	16530	7223	22	9	200	120	908283090
8	16151	16325	16330	7221	22	9	200	120	908283090
9	15951	16125	16130	7220	22	9	200	120	908283090
10	15751	15925	15930	7220	22	9	200	120	908283090
11	15551	15725	15730	7220	22	9	200	120	908283090
12	15351	15525	15530	7219	22	9	200	120	908283090
13	15151	15325	15330	7218	22	9	200	120	908283090
14	14951	15125	15130	7217	22	9	200	120	908283090
15	14751	14925	14930	7217	22	9	200	120	908283090
16	14551	14725	14730	7216	22	9	200	120	908283090
17	14351	14525	14530	7215	22	9	200	120	908283090
18	14151	14325	14330	7214	22	9	200	120	908283090
19	13951	14125	14130	7214	22	9	200	120	908283090
20	13751	13925	13930	7213	22	9	200	120	908283090
21	13551	13725	13730	7212	22	9	200	120	908283090
22	13351	13525	13530	7212	22	9	200	120	908283090

WELL COMPLETION DATA

Treatment Interval	Perforation Top (ft)	Perforation Bottom (ft)	Plug Depth (ft)	Vertical Depth (ft)	Perforation Count	Cluster Count	Cluster Spacing	Perforation Phasing	SalesOrder Number
23	13151	13325	13330	7211	22	9	200	120	908283090
24	12951	13125	13130	7210	22	9	200	120	908283090
25	12751	12925	12930	7211	22	9	200	120	908283090
26	12151	12725	12730	7213	22	9	200	120	908283090
27	11951	12125	12130	7216	22	9	200	120	908283090
28	11751	11925	11930	7216	22	9	200	120	908283090
29	11551	11725	11730	7216	22	9	200	120	908283090
30	11351	11525	11530	7215	22	9	200	120	908283090
31	11151	11325	11330	7214	22	9	200	120	908283090
32	10951	11125	11130	7213	22	9	200	120	908283090
33	10751	10925	10930	7213	22	9	200	120	908283090
34	10551	10725	10730	7212	22	9	200	120	908283090
35	10351	10525	10530	7212	22	9	200	120	908283090
36	10151	10325	10330	7213	22	9	200	120	908283090
37	9951	10125	10130	7213	22	9	200	120	908283090
38	9751	9925	9930	7213	22	9	200	120	908283090
39	9551	9725	9730	7213	22	9	200	120	908283090
40	9351	9525	9530	7213	22	9	200	120	908283090
41	9151	9325	9330	7214	22	9	200	120	908283090
42	8951	9125	9130	7214	22	9	200	120	908283090
43	8751	8925	8930	7214	22	9	200	120	908283090
44	8551	8725	8730	7215	22	9	200	120	908283090

WELL COMPLETION DATA

Treatment Interval	Perforation Top (ft)	Perforation Bottom (ft)	Plug Depth (ft)	Vertical Depth (ft)	Perforation Count	Cluster Count	Cluster Spacing	Perforation Phasing	SalesOrder Number
45	8351	8525	8530	7215	22	9	200	120	908283090

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3ppt HVFR(FightR EC-4M)		HVFR (FightR EC-4M)		Pump Down		Treated Water		Total Fluid		Slurry Volume
	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Pumped (gal)
1	1000	1000	0	485726	456820	0	0	0	500	9182	458320	495908	505755.6
2	500	499	0	485938	463530	0	0	22470	500	912	464530	509819	525992.46
3	500	499	0	472867	464180	0	0	20622	500	6124	465180	500112	518184.24
4	500	0	0	504267	463993	0	0	20286	500	4024	464993	528577	563292.24
5	500	499	0	469918	463807	0	0	21000	500	6169	464807	497586	519909.6
6	500	499	0	488178	463621	0	0	19992	500	6446	464621	515115	534318.54
7	500	499	0	469811	463434	0	0	18858	500	5519	464434	494687	514333.68
8	500	499	0	470553	463248	0	0	21630	500	4901	464248	497583	516252.24
9	500	499	0	476755	463062	0	0	18690	500	5098	464062	501042	519650.88
10	500	499	0	491132	462875	0	0	17262	500	8495	463875	517388	535256.4
11	500	499	0	470560	462689	0	0	20496	500	5198	463689	496753	515445.84
12	500	499	0	476172	462503	0	0	14700	500	3991	463503	495362	514964.94
13	500	499	0	459942	462317	0	0	16800	500	6611	463317	483852	501867.24
14	500	0	0	372710	462130	0	0	16422	500	2127	463130	391259	397731.18
15	500	0	0	468931	461944	0	0	16296	500	3758	462944	488985	509191.2
16	500	0	0	295227	461758	0	0	15834	500	97	462758	311158	319481.4
17	500	0	0	473432	461577	0	0	44352	500	3985	462577	521769	540054.48
18	500	0	0	512558	461391	0	0	13650	500	4510	462391	530718	549168.48
19	500	0	0	492217	461205	0	0	15246	500	5180	462205	512643	529950.96
20	500	0	0	488959	461018	0	0	12936	500	4032	462018	505927	522561.9
21	500	250	0	490584	460832	0	0	13188	500	5483	461832	509505	524601.42
22	500	0	0	498918	460646	0	0	13020	500	2345	461646	514283	532113.12

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3ppt HVFR(FightR EC-4M)		HVFR (FightR EC-4M)		Pump Down		Treated Water		Total Fluid		Slurry Volume
	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Pumped (gal)
23	500	499	0	561267	460459	0	0	11550	500	4256	461459	577572	595695.66
24	500	0	0	476581	460273	0	0	12054	500	4675	461273	493310	511577.64
25	500	0	0	531393	460087	0	0	10878	500	5176	461087	547447	564712.26
26	500	0	0	561018	459528	0	0	9534	500	27811	460528	598363	615316.8
27	500	0	0	478910	459342	0	0	10206	500	5751	460342	494867	511336.98
28	500	0	0	451767	459155	0	0	8988	500	4448	460155	465203	479842.86
29	500	0	0	481518	458969	0	0	9408	500	4181	459969	495107	510994.68
30	500	0	0	191608	458783	0	0	7518	500	362509	459783	561635	577455.9
31	500	0	0	0	458597	0	0	8232	500	482745	459597	490977	507045.84
32	500	0	0	0	458410	0	0	6510	500	435424	459410	441934	456584.52
33	500	250	0	0	458224	0	0	7770	500	478403	459224	486423	505137.36
34	500	0	0	0	458038	0	0	6720	500	460668	459038	467388	485033.64
35	500	499	0	0	457851	0	0	6300	500	487685	458851	494484	513744.42
36	500	0	0	485725	457665	0	0	5334	500	4694	458665	495753	514712.52
37	500	0	0	475049	457479	0	0	5334	500	4322	458479	484705	503783.28
38	500	0	0	0	457293	0	0	5166	500	474016	458293	479182	498702.12
39	500	0	0	483253	457106	0	0	4830	500	3644	458106	491727	510927.06
40	500	0	0	469903	456920	0	0	4032	500	1022	457920	474957	492527.28
41	500	0	0	0	456734	0	0	4200	500	481078	457734	485278	504529.2
42	500	0	0	482070	456547	0	0	3318	500	3913	457547	489301	508417.14
43	500	0	0	0	456361	0	0	3066	500	454370	457361	457436	475746.18
44	500	0	0	0	456175	435142	0	2184	500	35489	457175	472815	491931.72

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3ppt HVFR(FightR EC-4M)		HVFR (FightR EC-4M)		Pump Down		Treated Water		Total Fluid		Slurry Volume
	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Pumped (gal)
45	500	0	0	0	455989	485640	0	2562	500	0	456989	488202	507349.92
Total	23000	7987	0	16445417	20704565	920782	0	549444	22500	4330467	20750065	22254097	23053183.02

PROPPANT SUMMARY

Treatment Interval	100 Mesh Premium White		30/50 Premium White		40/70 Premium White		SS-200 Premium White		Total	
	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)
1	43200	43630	149300	149310			0	0	192500	192940
2	43200	39710	341800	348200			0	0	385000	387910
3	43200	43490	341800	342080			0	0	385000	385570
4	43200	44770	341800	344679			0	0	385000	389449
5	43200	43220	341800	341200			0	0	385000	384420
6	43200	43430	341800	341900			0	0	385000	385330
7	43200	43200	341800	341825			0	0	385000	385025
8	43200	43210	341800	341810			0	0	385000	385020
9	43200	43340	341800	341800			0	0	385000	385140
10	43200	43200	341800	341860			0	0	385000	385060
11	43200	43420	341800	341800			0	0	385000	385220
12	43200	43225	341800	341840			0	0	385000	385065
13	43200	43200	341800	341830			0	0	385000	385030
14	43200	43150	341800	218172			0	0	385000	261322
15	43200	43210	341800	341840	0	0	0	0	385000	385050
16	0	0	341800	119010	43200	43610	0	0	385000	162620
17	0	0	341800	341855	43200	43230	0	0	385000	385085
18	0	0	341800	340000	43200	43530	0	0	385000	383530
19	0	0	341800	341890	43200	43480	0	0	385000	385370
20	0	0	341800	329801	43200	43260	0	0	385000	373061
21	0	0	341800	280070	43200	43400	0	0	385000	323470
22	0	0	341800	341880	43200	44590	0	0	385000	386470

PROPPANT SUMMARY

Treatment Interval	100 Mesh Premium White		30/50 Premium White		40/70 Premium White		SS-200 Premium White		Total	
	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)
23	0	0	341800	339750	43200	43440	0	0	385000	383190
24	0	0	341800	341980	43200	43200	0	0	385000	385180
25	0	0	341800	341899	43200	43230	0	0	385000	385129
26	0	0	341800	341980	43200	43310	0	0	385000	385290
27	0	0	341800	342200	43200	43110	0	0	385000	385310
28	0	0	341800	298790	43200	43550	0	0	385000	342340
29	0	0	341800	342340	43200	43360	0	0	385000	385700
30	0	0	341800	341810	43200	43200	0	0	385000	385010
31	0	0	341800	341820	43200	42190	0	0	385000	384010
32	43200	43220	341800	279370	0	0	0	0	385000	322590
33	43200	43240	341800	343330	0	0	0	0	385000	386570
34	43200	43230	341800	341830	0	0	0	0	385000	385060
35	43200	43340	341800	342180	0	0	0	0	385000	385520
36	43200	43380	341800	341820	0	0	0	0	385000	385200
37	43200	43200	341800	341850	0	0	0	0	385000	385050
38	43200	43210	341800	341800	0	0	0	0	385000	385010
39	43200	43310	341800	341980	0	0	0	0	385000	385290
40	43200	43200	341800	314750	0	0	0	0	385000	357950
41	43200	43220	341800	341820	0	0	0	0	385000	385040
42	43200	43380	341800	342170	0	0	0	0	385000	385550
43	43200	43220	341800	331130	0	0	0	0	385000	374350
44	43200	43200	341800	341800	0	0	0	0	385000	385000

PROPPANT SUMMARY

Treatment Interval	100 Mesh Premium White		30/50 Premium White		40/70 Premium White		SS-200 Premium White		Total	
	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)
45	43200	42780	341800	342180	0	0	0	0	385000	384960
Total	1252800	1252535	15188500	14635231	691200	693690	0	0	17132500	16581456

AVG / MAX TECHNICAL DATA

Treatment Interval	Treatment Status	Average Pressure (psi)	Average Slurry Rate (bpm)	Average Proppant Conc (ppg)	Maximum Pressure (psi)	Maximum Slurry Rate (bpm)	Maximum Proppant Conc (ppg)
1	Completed	5593	41.86	0.37	7480	51.54	1
2	Completed	7108	73.98	0.77	8639	81.12	2
3	Completed	6953	76.79	0.78	7380	81.31	2
4	Completed	6330	76.78	0.73	6831	80.94	2
5	Completed	6612	77.03	0.8	7214	80.24	2
6	Completed	6624	77.7	0.81	7368	84.22	2
7	Completed	7039	77.32	0.8	8151	80.85	2
8	Completed	6783	76.9	0.79	7655	80.75	2
9	Completed	7182	77.95	0.78	8225	84.97	2
10	Completed	7068	76.21	0.72	8200	81.5	2
11	Completed	6832	77.49	0.76	8149	82.18	2
12	Completed	6893	75.82	0.79	8298	81	2
13	Completed	6765	77.91	0.79	7824	80.73	2
14	Cut	7436	72.42	0.68	8926	80.69	2
15	Completed	7411	72.59	0.81	8451	79.91	2
16	Cut	7624	67.1	0.54	8996	80.55	2
17	Completed	6807	77.64	0.76	8716	82.82	2
18	Completed	6798	75.33	0.71	7466	80.94	2
19	Completed	7034	78.73	0.78	8728	80.8	2
20	Completed	6851	74.34	0.74	8642	81.03	2
21	Cut	6476	76.51	0.62	7680	80.67	2
22	Completed	7413	76.91	0.73	8821	80.97	2

AVG / MAX TECHNICAL DATA

Treatment Interval	Treatment Status	Average Pressure (psi)	Average Slurry Rate (bpm)	Average Proppant Conc (ppg)	Maximum Pressure (psi)	Maximum Slurry Rate (bpm)	Maximum Proppant Conc (ppg)
23	Completed	7143	67.65	0.67	9017	80.48	2
24	Completed	7093	77.21	0.8	8604	83.03	2
25	Completed	6585	77.01	0.75	8482	81.4	2
26	Completed	6734	67.95	0.65	8742	81.95	2
27	Completed	6203	73.64	0.79	8581	80.74	2
28	Cut	6822	75.3	0.76	8809	81.04	2
29	Completed	6849	77.72	0.79	8798	80	2
30	Completed	6457	73.8	0.64	8707	80.98	2
31	Completed	6570	77.76	0.81	8508	81.62	2
32	Completed	5945	77.81	0.74	7353	81.32	2
33	Completed	6076	78.86	0.82	7900	81.07	2
34	Completed	6021	78.92	0.82	8424	81.99	2
35	Completed	6608	78.37	0.81	8214	80.75	2
36	Completed	6357	78.57	0.85	8488	80	2
37	Completed	6504	78.2	0.8	8265	80	2
38	Completed	6243	78.24	0.85	7354	80.91	2
39	Completed	6305	75.82	0.79	8287	80	2
40	Completed	6480	77.65	0.76	8106	81.11	2
41	Completed	6147	77.9	0.8	7108	82.54	2
42	Completed	6445	78.41	0.8	8111	80	2
43	Completed	5788	77.3	0.8	7381	81.1	2
44	Completed	6066	78.76	0.83	7128	81.09	2

AVG / MAX TECHNICAL DATA

Treatment Interval	Treatment Status	Average Pressure (psi)	Average Slurry Rate (bpm)	Average Proppant Conc (ppg)	Maximum Pressure (psi)	Maximum Slurry Rate (bpm)	Maximum Proppant Conc (ppg)
45	Completed	6470	78.45	0.8	7534	80	2

PRESSURE TECHNICAL DATA

Treatment Interval	Open Well Pressure (psi)	Initial Shut In Pressure (psi)	Fracture Gradient (psi/ft)	Max Annulus Pressure (psi)	5 Min Pressure (psi)	10 Min Pressure (psi)	15 Min Pressure (psi)	Final Shut In Pressure (psi)
1	2210	4271	1.02	264	0	0	0	4174
2	3206	4214	1.02	204	0	0	0	4112
3	2984	4037	0.99	300	0	0	0	3961
4	2914	4154	1.01	178.33	0	0	0	4147
5	3287	4352	1.04	249.4	0	0	0	4342
6	3382	4355	1.04	293.19	0	0	0	4273
7	3565	4028	0.99	203	0	0	0	4027
8	3443	3933	0.98	238	0	0	0	3930
9	3181	4206	1.02	186.26	0	0	0	4193
10	3254	4107	1	259	0	0	0	4049
11	3194	4183	1.01	3	0	0	0	4179
12	3571	4356	1.04	0	0	0	0	4331
13	3525	4280	1.03	0	0	0	0	4266
14	3642	4315	1.03	0	0	0	0	4121
15	3643	4475	1.05	2	0	0	0	4454
16	3013	4246	1.02	47	0	0	0	3603
17	3440	4366	1.04	28	0	0	0	4195
18	3450	4279	1.03	0	0	0	0	4145
19	3563	4041	0.99	2	0	0	0	3959
20	3510	4020	0.99	0	0	0	0	3922
21	3429	3958	0.98	0	0	0	0	3902
22	3546	4110	1	0	0	0	0	4065

PRESSURE TECHNICAL DATA

Treatment Interval	Open Well Pressure (psi)	Initial Shut In Pressure (psi)	Fracture Gradient (psi/ft)	Max Annulus Pressure (psi)	5 Min Pressure (psi)	10 Min Pressure (psi)	15 Min Pressure (psi)	Final Shut In Pressure (psi)
23	3597	4150	1.01	0	0	0	0	4063
24	3591	4047	0.99	0	0	0	0	3995
25	3511	4058	1	0	0	0	0	3964
26	3511	3926	0.98	27	0	0	0	3895
27	3209	3947	0.98	0	0	0	0	3896
28	3440	3913	0.98	19	0	0	0	3871
29	3439	4341	1.03	18	0	0	0	3909
30	3232	4080	1	47	0	0	0	3869
31	3475	4084	1	4	0	0	0	3986
32	3101	3922	0.98	0	0	0	0	3890
33	3254	4256	1.02	0	0	0	0	4175
34	3463	4181	1.01	0	0	0	0	4169
35	3662	4295	1.03	40	0	0	0	3958
36	2725	4260	1.02	0	0	0	0	4226
37	3509	4243	1.02	10	0	0	0	4217
38	3738	4206	1.02	0	0	0	0	4177
39	3879	4329	1.03	0	0	0	0	4313
40	4012	4187	1.01	0	0	0	0	4146
41	3908	4202	1.01	0	0	0	0	4199
42	3559	4069	1	0	0	0	0	4059
43	3506	4060	1	0	0	0	0	4050
44	3358	4818	1.1	0	0	0	0	4322

PRESSURE TECHNICAL DATA

Treatment Interval	Open Well Pressure (psi)	Initial Shut In Pressure (psi)	Fracture Gradient (psi/ft)	Max Annulus Pressure (psi)	5 Min Pressure (psi)	10 Min Pressure (psi)	15 Min Pressure (psi)	Final Shut In Pressure (psi)
45	3408	4205	1.02	53	4111	4085	4067	4065