



WELL STIMULATION REPORT

Bayswater Exploration

Ruby West 5

05-123-51753-00

March 09, 2023

HALLIBURTON

Production
Enhancement

Engineering Executive Summary

On Tuesday, January 03, 2023 the stimulation of treatment(s) was performed in the Niobrara formation on the Ruby West 5 well in WELD county, COLORADO.

The proposed treatment(s) consisted of:

- 23,500 gallons of 15% HCl
- 0 gallons of 3ppt HVFR(FightR EC-4M)
- 11,449,935 gallons of FR Water (FightR EC-1)
- 9,706,383 gallons of HVFR (FightR EC-4M)
- 0 gallons of Pump Down
- 23,000 gallons of Treated Water
- 1,987,200 pounds of 100 Mesh Premium White
- 15,530,300 pounds of 30/50 Premium White
- 0 pounds of 40/70 Premium White
- 0 pounds of SS-200 Premium White

The actual treatment(s) consisted of:

- 999 gallons of 15% HCl
- 22,129,184 gallons of 3ppt HVFR(FightR EC-4M)
- 0 gallons of FR Water (FightR EC-1)
- 0 gallons of HVFR (FightR EC-4M)
- 609,714 gallons of Pump Down
- 61,577 gallons of Treated Water
- 1,958,545 pounds of 100 Mesh Premium White
- 15,451,385 pounds of 30/50 Premium White
- 0 pounds of 40/70 Premium White
- 0 pounds of SS-200 Premium White

45 of 46 treatment(s) were fully completed. 0 treatment(s) were skipped, and 1 treatment(s) were screened out or otherwise cut short of design.

The well was first opened Tuesday, January 03, 2023 at 05:50 with an opening pressure of 1,896.0 psi.

The total amount of proppant pumped was 17,409,930.0 lbm with an average concentration of 0.77 ppg and maximum concentration of 2.0 ppg. Treating pressure averaged 6927.47 psi and rate averaged 76.33 bpm.

The operation came offline at 21:49 and the well was shut in Monday, January 23, 2023 at 22:05 with a final shut-in pressure of 4,369.0 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	17750	17755	17760	7260	22	9	200	120	908283146
2	17538	17712	17717	7261	22	9	200	120	908283146
3	17338	17512	17517	7261	22	9	200	120	908283146
4	17138	17312	17317	7261	22	9	200	120	908283146
5	16938	17112	17117	7262	22	9	200	120	908283146
6	16738	16912	16917	7262	22	9	200	120	908283146
7	16538	16712	16717	7262	22	9	200	120	908283146
8	16338	16512	16517	7263	22	9	200	120	908283146
9	16138	16312	16317	7263	22	9	200	120	908283146
10	15938	16112	16117	7263	22	9	200	120	908283146
11	15738	15912	15917	7263	22	9	200	120	908283146
12	15538	15712	15717	7263	22	9	200	120	908283146
13	15338	15512	15517	7263	22	9	200	120	908283146
14	15138	15312	15317	7264	22	9	200	120	908283146
15	14938	15112	15117	7264	22	9	200	120	908283146
16	14738	14912	14917	7265	22	9	200	120	908283146
17	14538	14712	14717	7265	22	9	200	120	908283146
18	14338	14512	14517	7265	22	9	200	120	908283146
19	14138	14312	14317	7265	22	9	200	120	908283146
20	13938	14112	14117	7265	22	9	200	120	908283146
21	13738	13912	13917	7265	22	9	200	120	908283146
22	13538	13712	13717	7265	22	9	200	120	908283146

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	13338	13512	13517	7265	22	9	200	120	908283146
24	13160	13312	13317	7265	22	9	200	120	908283146
25	12538	12712	12717	7264	22	9	200	120	908283146
26	12338	12512	12517	7264	22	9	200	120	908283146
27	12138	12312	12317	7264	22	9	200	120	908283146
28	11938	12112	12117	7264	22	9	200	120	908283146
29	11738	11912	11917	7265	22	9	200	120	908283146
30	11538	11712	11717	7263	22	9	200	120	908283146
31	11338	11512	11517	7263	22	9	200	120	908283146
32	11138	11312	11317	7263	22	9	200	120	908283146
33	10938	11112	11117	7264	22	9	200	120	908283146
34	10738	10912	10917	7264	22	9	200	120	908283146
35	10538	10712	10717	7263	22	9	200	120	908283146
36	10338	10512	10517	7263	22	9	200	120	908283146
37	10138	10312	10317	7264	22	9	200	120	908283146
38	9938	10112	10117	7265	22	9	200	120	908283146
39	9738	9912	9917	7266	22	9	200	120	908283146
40	9538	9712	9717	7266	22	9	200	120	908283146
41	9338	9512	9517	7270	22	9	200	120	908283146
42	9138	9312	9317	7273	22	9	200	120	908283146
43	8938	9112	9117	7277	22	9	200	120	908283146
44	8738	8912	8917	7279	22	9	200	120	908283146

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	8538	8712	8717	7282	22	9	200	120	908283146
46	8338	8512	8517	7282	22	9	200	120	908283146

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3ppt HVFR(FightR EC-4M)		FR Water (FightR EC-1)		HVFR (FightR EC-4M)		Pump Down		Treated Water		Total Fluid	
	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)
1	1000	499	0	455800			456820	0	0	0	500	10205	458320	466504
2	500	250	0	477750			463530	0	0	21546	500	4781	464530	504327
3	500	250	0	501260			464099	0	0	20622	500	5483	465099	527615
4	500	0	0	472621			463913	0	0	25158	500	5811	464913	503590
5	500	0	0	477263			463727	0	0	23520	500	3484	464727	504267
6	500	0	0	471507			463541	0	0	18774	500	6064	464541	496345
7	500	0	0	470514			463354	0	0	23562	500	3718	464354	497794
8	500	0	0	493334			463168	0	0	18522	500	4605	464168	516461
9	500	0	0	477504			462982	0	0	21336	500	3698	463982	502538
10	500	0	0	472019			462795	0	0	21714	500	9865	463795	503598
11	500	0	0	464669			462609	0	0	20286	500	3863	463609	488818
12	500	0	0	435922			462423	0	0	17808	500	0	463423	453730
13	500	0	0	471165			462237	0	0	53886	500	0	463237	525051
14	500	0	0	482138			462050	0	0	18648	500	0	463050	500786
15	500	0	0	571894			461864	0	0	15162	500	0	462864	587056
16	500	0	0	475938			461678	0	0	18564	500	0	462678	494502
17	500	0	0	482289			461491	0	0	13818	500	0	462491	496107
18	500	0	0	477815			461305	0	0	18438	500	0	462305	496253
19	500	0	0	481879			461119	0	0	14910	500	0	462119	496789
20	500	0	0	472185			460932	0	0	17472	500	0	461932	489657
21	500	0	0	488484			460746	0	0	15708	500	0	461746	504192
22	500	0	0	481465	460560	0	0	0	0	15414	500	0	461560	496879

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3ppt HVFR(FightR EC-4M)		FR Water (FightR EC-1)		HVFR (FightR EC-4M)		Pump Down		Treated Water		Total Fluid	
	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)
23	500	0	0	471567	460374	0	0	0	0	11760	500	0	461374	483327
24	500	0	0	507842	460208	0	0	0	0	11424	500	0	461208	519266
25	500	0	0	468588	459628	0	0	0	0	13356	500	0	460628	481944
26	500	0	0	474109	459442	0	0	0	0	9702	500	0	460442	483811
27	500	0	0	470550	459256	0	0	0	0	13230	500	0	460256	483780
28	500	0	0	499039	459070	0	0	0	0	8988	500	0	460070	508027
29	500	0	0	471866	458883	0	0	0	0	10920	500	0	459883	482786
30	500	0	0	470114	458697	0	0	0	0	8064	500	0	459697	478178
31	500	0	0	475278	458511	0	0	0	0	7266	500	0	459511	482544
32	500	0	0	464518	458324	0	0	0	0	8148	500	0	459324	472666
33	500	0	0	479214	458138	0	0	0	0	6846	500	0	459138	486060
34	500	0	0	455001	457952	0	0	0	0	6930	500	0	458952	461931
35	500	0	0	480295	457766	0	0	0	0	6720	500	0	458766	487015
36	500	0	0	485914	457579	0	0	0	0	8064	500	0	458579	493978
37	500	0	0	487652	457393	0	0	0	0	6426	500	0	458393	494078
38	500	0	0	491156	457207	0	0	0	0	5670	500	0	458207	496826
39	500	0	0	484722	457020	0	0	0	0	6342	500	0	458020	491064
40	500	0	0	467528	456834	0	0	0	0	4956	500	0	457834	472484
41	500	0	0	483089	456648	0	0	0	0	4662	500	0	457648	487751
42	500	0	0	511235	456462	0	0	0	0	3864	500	0	457462	515099
43	500	0	0	513218	456275	0	0	0	0	3528	500	0	457275	516746
44	500	0	0	506679	456089	0	0	0	0	2982	500	0	457089	509661

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3ppt HVFR(FightR EC-4M)		FR Water (FightR EC-1)		HVFR (FightR EC-4M)		Pump Down		Treated Water		Total Fluid	
	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)	Proposed (gal)	Pumped (gal)
45	500	0	0	484838	455903	0	0	0	0	2562	500	0	456903	487400
46	500	0	0	469757	455716	0	0	0	0	2436	500	0	456716	472193
Total	23500	999	0	22129184	11449935	0	9706383	0	0	609714	23000	61577	21202818	22801474

FLUID SYSTEM SUMMARY

Treatment Interval	Slurry Volume
	Pumped (gal)
1	473764.2
2	521409.84
3	545969.76
4	521423.7
5	521416.98
6	514393.74
7	515791.08
8	533754.48
9	521643.36
10	521953.32
11	507180.24
12	466617.06
13	544222.98
14	519610.56
15	605481.24
16	513730.56
17	514501.68
18	514737.72
19	515660.46
20	508275.6
21	522936.96
22	514675.56

FLUID SYSTEM SUMMARY

Treatment Interval	Slurry Volume
	Pumped (gal)
23	500498.88
24	538547.94
25	501081.42
26	501991.98
27	502922.28
28	527388.96
29	500493.84
30	499934.82
31	500307.36
32	492297.96
33	504315
34	479322.06
35	505142.82
36	511780.92
37	512265.18
38	514268.58
39	508717.44
40	490031.64
41	505541.82
42	532258.44
43	533743.56
44	527095.8

FLUID SYSTEM SUMMARY

Treatment Interval	Slurry Volume
	Pumped (gal)
45	505172.64
46	489723.36
Total	23623995.78

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	43260	149300	149300	0	0	0	0	192500	192560
2	43200	43220	341800	342270	0	0	0	0	385000	385490
3	43200	43310	341800	342420	0	0	0	0	385000	385730
4	43200	43400	341800	343660	0	0	0	0	385000	387060
5	43200	43260	341800	342090	0	0	0	0	385000	385350
6	43200	43100	341800	341870	0	0	0	0	385000	384970
7	43200	43630	341800	342390	0	0	0	0	385000	386020
8	43200	43280	341800	341820	0	0	0	0	385000	385100
9	43200	43130	341800	341900	0	0	0	0	385000	385030
10	43200	43380	341800	341750	0	0	0	0	385000	385130
11	43200	43300	341800	341810	0	0	0	0	385000	385110
12	43200	43410	341800	226140	0	0	0	0	385000	269550
13	43200	43220	341800	341850	0	0	0	0	385000	385070
14	43200	43260	341800	342085	0	0	0	0	385000	385345
15	43200	43330	341800	341780	0	0	0	0	385000	385110
16	43200	43150	341800	342340	0	0	0	0	385000	385490
17	43200	43330	341800	341900	0	0	0	0	385000	385230
18	43200	43230	341800	341840	0	0	0	0	385000	385070
19	43200	43190	341800	341810	0	0	0	0	385000	385000
20	43200	43330	341800	343620	0	0	0	0	385000	386950
21	43200	43210	341800	342300	0	0	0	0	385000	385510
22	43200	43430	341800	341840	0	0	0	0	385000	385270

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	43200	43205	341800	341810	0	0	0	0	385000	385015
24	43200	43210	341800	342380	0	0	0	0	385000	385590
25	43200	43200	341800	341820	0	0	0	0	385000	385020
26	43200	43300	341800	335360	0	0	0	0	385000	378660
27	43200	43530	341800	343170	0	0	0	0	385000	386700
28	43200	43210	341800	341810	0	0	0	0	385000	385020
29	43200	43200	341800	341830	0	0	0	0	385000	385030
30	43200	43220	341800	341820	0	0	0	0	385000	385040
31	43200	43240	341800	341810	0	0	0	0	385000	385050
32	43200	43200	341800	341800	0	0	0	0	385000	385000
33	43200	43330	341800	341790	0	0	0	0	385000	385120
34	43200	43220	341800	341800	0	0	0	0	385000	385020
35	43200	43260	341800	341580	0	0	0	0	385000	384840
36	43200	43190	341800	341950	0	0	0	0	385000	385140
37	43200	43230	341800	341830	0	0	0	0	385000	385060
38	43200	43270	341800	341910	0	0	0	0	385000	385180
39	43200	43240	341800	341840	0	0	0	0	385000	385080
40	43200	43250	341800	341840	0	0	0	0	385000	385090
41	43200	43240	341800	341970	0	0	0	0	385000	385210
42	43200	43250	341800	342890	0	0	0	0	385000	386140
43	43200	11400	341800	373960	0	0	0	0	385000	385360
44	43200	43240	341800	341820	0	0	0	0	385000	385060

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	43320	341800	341980	0	0	0	0	385000	385300
46	43200	43230	341800	341830	0	0	0	0	385000	385060
Total	1987200	1958545	15530300	15451385	0	0	0	0	17517500	17409930

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	6701	67.99	0.39	7722	74.6	1
2	Completed	6911	74.04	0.79	7693	80	2
3	Completed	6991	76.87	0.76	7464	80	2
4	Completed	6878	77.84	0.77	8080	81.65	2
5	Completed	6712	78.23	0.76	7653	80	2
6	Completed	7535	77.96	0.79	8433	82.29	2
7	Completed	7695	71.03	0.77	8675	80	2
8	Completed	7384	77	0.77	8056	81.78	2
9	Completed	6965	75.06	0.76	8371	81.4	2
10	Completed	7481	76.13	0.76	8516	80	2
11	Completed	7195	78.03	0.78	8203	80.63	2
12	Screened Out	7815	65.31	0.58	9657	80	2
13	Completed	7485	78.47	0.74	8031	80.9	2
14	Completed	7535	75.75	0.77	7942	80	2
15	Completed	7392	77.53	0.66	8133	85.36	2
16	Completed	7482	78.78	0.79	8462	80	2
17	Completed	7197	78.46	0.79	8138	80	2
18	Completed	7135	79.12	0.79	8408	80.73	2
19	Completed	7215	77.08	0.79	7841	80.65	2
20	Completed	7025	78.75	0.8	7876	82.29	2
21	Completed	7044	77.91	0.78	7918	81.47	2
22	Completed	7265	78.62	0.79	7925	80.89	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	6461	71.98	0.81	7295	81.04	2
24	Completed	6366	76.42	0.75	7486	82.6	2
25	Completed	6829	78.48	0.81	7558	80.98	2
26	Completed	6833	78.48	0.81	7746	80.83	2
27	Completed	7114	78.62	0.81	8572	81.87	2
28	Completed	6547	75.49	0.78	7221	81.04	2
29	Completed	6771	78.92	0.78	7578	81.9	2
30	Completed	6753	78.14	0.83	7361	80.42	2
31	Completed	6495	78.99	0.83	7363	80.92	2
32	Completed	6284	78.35	0.83	7019	80.81	2
33	Completed	6569	78.61	0.81	7215	80.65	2
34	Completed	6568	78.58	0.8	7406	80.77	2
35	Completed	6294	78.03	0.79	7569	80.57	2
36	Completed	6501	77.81	0.81	7668	80.93	2
37	Completed	6639	76.8	0.82	7748	81	2
38	Completed	6598	78.82	0.82	7989	80.58	2
39	Completed	6494	78.28	0.8	7529	80.68	2
40	Completed	6580	79.11	0.84	7830	81.01	2
41	Completed	6587	78.65	0.8	7493	80	2
42	Completed	6386	68.63	0.74	7488	81.19	2
43	Completed	7856	53.47	0.75	8404	60.03	1.66
44	Completed	6519	77.33	0.78	8196	81.1	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	7008	78.93	0.8	8035	80	2
46	Completed	6573	78.33	0.83	7799	80.86	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	1896	4280	1.02	9	0	0	0	4251
2	3721	4530	1.06	7	0	0	0	4470
3	3696	4483	1.05	9	0	0	0	4340
4	3688	4631	1.07	6	0	0	0	4602
5	3796	4500	1.05	9	0	0	0	4455
6	4046	4622	1.07	9	0	0	0	4530
7	4110	4943	1.11	7	0	0	0	4575
8	4151	4528	1.06	7	0	0	0	4513
9	4269	4915	1.11	0	0	0	0	4821
10	4343	4825	1.1	5	0	0	0	4415
11	4149	4874	1.1	3	0	0	0	4837
12	4204	6908	1.38	7	0	0	0	4344
13	4156	4917	1.11	5	0	0	0	4883
14	4242	4732	1.08	5	0	0	0	4718
15	4236	4671	1.08	4	0	0	0	4648
16	4281	4935	1.11	4	0	0	0	4660
17	4334	4626	1.07	6	0	0	0	4552
18	4320	4723	1.08	0	0	0	0	4694
19	4442	4598	1.07	4	0	0	0	4568
20	4358	4675	1.08	4	0	0	0	4659
21	4208	4633	1.07	8	0	0	0	4484
22	4225	4864	1.1	0	0	0	0	4511

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	4938	4609	1.07	7	0	0	0	4576
24	4265	4166	1.01	7	0	0	0	4043
25	4339	4540	1.06	5	0	0	0	4443
26	4269	4482	1.05	6	0	0	0	4413
27	4288	4569	1.06	0	0	0	0	4266
28	4349	4465	1.05	5	0	0	0	4446
29	4275	4489	1.05	0	0	0	0	4465
30	4353	4487	1.05	5	0	0	0	4467
31	4249	4458	1.05	3	0	0	0	4050
32	4410	4555	1.06	6	0	0	0	4486
33	4231	5081	1.13	6	0	0	0	4340
34	4164	4442	1.04	6	0	0	0	4344
35	4228	4474	1.05	5	0	0	0	4428
36	4208	4727	1.08	9.23	0	0	0	4705
37	4696	4452	1.05	8	0	0	0	4445
38	4248	4565	1.06	9	0	0	0	4539
39	4399	4448	1.04	7	0	0	0	4442
40	4310	4423	1.04	8	0	0	0	4316
41	4277	4489	1.05	4	0	0	0	4447
42	4651	4466	1.05	6	0	0	0	4363
43	4310	4511	1.05	5	0	0	0	4501
44	4365	4559	1.06	7	0	0	0	4526

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	4295	4566	1.06	2	0	0	0	4504
46	4467	4542	1.06	8	4447	4400	4378	4369