



WELL STIMULATION REPORT

Bayswater Exploration

Ruby East 1

05-123-51737-00

March 09, 2023

HALLIBURTON

Production
Enhancement

Engineering Executive Summary

On Sunday, February 05, 2023 the stimulation of treatment(s) was performed in the Niobrara formation on the Ruby East 1 well in WELD county, COLORADO.

The proposed treatment(s) consisted of:

24,500	gallons of	15% HCl
1,087,900	gallons of	3gpt FR Water (FightR EC-1)
20,855,594	gallons of	FR Water (FightR EC-1)
0	gallons of	Treated Water
2,032,800	pounds of	100 Mesh Premium White
16,254,700	pounds of	30/50 Premium White

The actual treatment(s) consisted of:

4,990	gallons of	15% HCl
0	gallons of	3gpt FR Water (FightR EC-1)
22,590,076	gallons of	FR Water (FightR EC-1)
782,796	gallons of	Treated Water
2,036,610	pounds of	100 Mesh Premium White
16,223,561	pounds of	30/50 Premium White

48 of 48 treatment(s) were fully completed. 0 treatment(s) were skipped, and 0 treatment(s) were screened out or otherwise cut short of design.

The well was first opened Sunday, February 05, 2023 at 11:54 with an opening pressure of 1,880.0 psi.

The total amount of proppant pumped was 18,260,171.0 lbm with an average concentration of 0.8 ppg and maximum concentration of 4.0 ppg. Treating pressure averaged 7598.87 psi and rate averaged 96.14 bpm.

The operation came offline at 11:28 and the well was shut in Wednesday, March 01, 2023 at 11:45 with a final shut-in pressure of 4,414.0 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,

Tom Nowak

Cat Donley

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	18163	18167	18168	7215	20	9	200	120	908346363
2	17951	18125	18130	7215	27	9	200	120	908346363
3	17751	17925	17930	7216	27	9	200	120	908346363
4	17551	17725	17730	7217	27	9	200	120	908346363
5	17351	17525	17530	7218	27	9	200	120	908346363
6	17151	17325	17330	7220	27	9	200	120	908346363
7	16951	17125	17130	7221	27	9	200	120	908346363
8	16751	16925	16930	7222	27	9	200	120	908346363
9	16551	16725	16730	7223	27	9	200	120	908346363
10	16351	16525	16530	7224	27	9	200	120	908346363
11	16151	16325	16330	7225	27	9	200	120	908346363
12	15951	16125	16130	7226	27	9	200	120	908346363
13	15751	15925	15930	7227	27	9	200	120	908346363
14	15551	15725	15730	7229	27	9	200	120	908346363
15	15351	15525	15530	7230	27	9	200	120	908346363
16	15151	15325	15330	7231	27	9	200	120	908346363
17	14951	15125	15130	7232	27	9	200	120	908346363
18	14751	14925	14930	7233	27	9	200	120	908346363
19	14551	14725	14730	7234	27	9	200	120	908346363
20	14351	14525	14530	7235	27	9	200	120	908346363
21	14151	14325	14330	7236	27	9	200	120	908346363
22	13951	14125	14130	7238	27	9	200	120	908346363

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	13751	13925	13930	7239	27	9	200	120	908346363
24	13551	13725	13730	7240	27	9	200	120	908346363
25	13351	13525	13530	7241	27	9	200	120	908346363
26	13151	13325	13330	7242	27	9	200	120	908346363
27	12951	13125	13130	7243	27	9	200	120	908346363
28	12751	12925	12930	7244	27	9	200	120	908346363
29	12551	12725	12730	7246	27	9	200	120	908346363
30	12351	12525	12530	7247	27	9	200	120	908346363
31	12151	12325	12330	7248	27	9	200	120	908346363
32	11951	12125	12130	7249	27	9	200	120	908346363
33	11751	11925	11930	7250	27	9	200	120	908346363
34	11551	11725	11730	7251	27	9	200	120	908346363
35	11351	11525	11530	7252	27	9	200	120	908346363
36	11151	11325	11330	7253	27	9	200	120	908346363
37	10951	11125	11130	7255	27	9	200	120	908346363
38	10751	10925	10930	7256	27	9	200	120	908346363
39	10551	10725	10730	7257	27	9	200	120	908346363
40	10351	10525	10530	7258	27	9	200	120	908346363
41	10151	10325	10330	7259	27	9	200	120	908346363
42	9951	10125	10130	7260	27	9	200	120	908346363
43	9751	9925	9930	7261	27	9	200	120	908346363
44	9551	9725	9730	7262	27	9	200	120	908346363

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	9351	9525	9530	7264	27	9	200	120	908346363
46	9151	9325	9330	7265	27	9	200	120	908346363
47	8951	9125	9130	7266	27	9	200	120	908346363
48	8751	8925	8930	7267	27	9	200	120	908346363

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3gpt FR Water (FightR EC-1)		FR Water (FightR EC-1)		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)	Pumped (gal)
1	1000	998	0	0	462288	477161	0	0	463288	478159	488964.84
2	500	998	0	0	463060	482523	0	22260	463560	505781	523907.16
3	500	499	0	0	462874	469735	0	21672	463374	491906	510283.62
4	500	0	0	0	462688	465535	0	22218	463188	487753	506490.6
5	500	0	0	0	444559	507620	0	21672	445059	529292	548023.98
6	500	0	25300	0	437155	474507	0	21882	462955	496389	514305.12
7	500	499	25300	0	436969	474513	0	19194	462769	494206	510899.76
8	500	499	25300	0	436783	472175	0	19488	462583	492162	510080.34
9	500	0	25300	0	436597	477914	0	18732	462397	496646	515231.64
10	500	499	25300	0	436410	471666	0	19530	462210	491695	509020.68
11	500	499	25300	0	436224	474952	0	17976	462024	493427	512150.52
12	500	499	25300	0	436038	473407	0	22218	461838	496124	514006.5
13	500	0	25300	0	435851	470000	0	18144	461651	488144	506066.4
14	500	0	25300	0	435665	470894	0	23436	461465	494330	513057.72
15	500	0	25300	0	435478	473280	0	20286	461278	493566	512583.54
16	500	0	25300	0	435292	471985	0	20706	461092	492691	511016.52
17	500	0	25300	0	435106	476619	0	18942	460906	495561	513875.46
18	500	0	25300	0	434920	477372	0	20286	460720	497658	515641.56
19	500	0	25300	0	434733	468867	0	23604	460533	492471	510201.3
20	500	0	25300	0	434547	470174	0	25788	460347	495962	514271.94
21	500	0	25300	0	434361	460537	0	13188	460161	473725	490768.74
22	500	0	25300	0	434175	465921	0	20832	459975	486753	505171.38

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3gpt FR Water (FightR EC-1)		FR Water (FightR EC-1)		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)	Pumped (gal)
23	500	0	25300	0	433988	458697	0	17136	459788	475833	494232.48
24	500	0	25300	0	433802	467094	0	14574	459602	481668	500519.04
25	500	0	25300	0	433616	465871	0	18732	459416	484603	502952.1
26	500	0	25300	0	433429	463600	0	13734	459229	477334	495099.36
27	500	0	25300	0	433243	465567	0	21840	459043	487407	505468.74
28	500	0	25300	0	433057	465434	0	15792	458857	481226	499201.5
29	500	0	25300	0	432871	473713	0	15330	458671	489043	507735.06
30	500	0	25300	0	432684	465663	0	10458	458484	476121	494465.16
31	500	0	25300	0	428646	463157	0	15750	454446	478907	498361.92
32	500	0	25300	0	428460	463843	0	9828	454260	473671	491195.04
33	500	0	25300	0	428274	467762	0	15708	454074	483470	500891.16
34	500	0	25300	0	428087	467313	0	9324	453887	476637	494525.64
35	500	0	25300	0	427901	491805	0	15204	453701	507009	524579.16
36	500	0	25300	0	427715	470810	0	17556	453515	488366	506138.64
37	500	0	25300	0	427529	478820	0	18480	453329	497300	514636.5
38	500	0	25300	0	427342	465779	0	40488	453142	506267	524211.24
39	500	0	25300	0	427156	468679	0	16800	452956	485479	503173.44
40	500	0	25300	0	426970	466739	0	7224	452770	473963	492266.04
41	500	0	25300	0	426783	467165	0	12390	452583	479555	497142.66
42	500	0	25300	0	426597	464731	0	6048	452397	470779	488654.88
43	500	0	25300	0	426411	464007	0	10920	452211	474927	492600.36
44	500	0	25300	0	426225	476663	0	4788	452025	481451	499624.02

FLUID SYSTEM SUMMARY

Treatment Interval	15% HCl		3gpt FR Water (FightR EC-1)		FR Water (FightR EC-1)		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)	Pumped (gal)
45	500	0	25300	0	426038	467425	0	13020	451838	480445	498240.54
46	500	0	25300	0	425852	466515	0	3696	451652	470211	487510.38
47	500	0	25300	0	425666	467246	0	3108	451466	470354	488038.74
48	500	0	25300	0	425479	458621	0	2814	451279	461435	479501.82
Total	24500	4990	1087900	0	20855594	22590076	0	782796	21967994	23377862	24236984.94

PROPPANT SUMMARY

Treatment Interval	100 Mesh Premium White		30/50 Premium White		Total	
	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)
1	42350	42380	150150	151079	192500	193459
2	42350	42640	342650	342600	385000	385240
3	42350	42410	342650	342760	385000	385170
4	42350	42420	342650	342300	385000	384720
5	42350	42380	342650	321560	385000	363940
6	42350	42390	342650	342710	385000	385100
7	42350	42400	342650	343290	385000	385690
8	42350	42390	342650	342720	385000	385110
9	42350	42420	342650	342570	385000	384990
10	42350	42370	342650	342680	385000	385050
11	42350	42350	342650	342910	385000	385260
12	42350	42380	342650	342670	385000	385050
13	42350	42300	342650	342920	385000	385220
14	42350	42400	342650	342670	385000	385070
15	42350	42700	342650	342670	385000	385370
16	42350	42050	342650	343020	385000	385070
17	42350	42400	342650	342140	385000	384540
18	42350	42420	342650	343600	385000	386020
19	42350	42170	342650	345312	385000	387482
20	42350	42460	342650	342720	385000	385180
21	42350	43030	342650	341120	385000	384150
22	42350	42420	342650	343020	385000	385440

PROPPANT SUMMARY

Treatment Interval	100 Mesh Premium White		30/50 Premium White		Total	
	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)
23	42350	42440	342650	341300	385000	383740
24	42350	42580	342650	343680	385000	386260
25	42350	41900	342650	342240	385000	384140
26	42350	42380	342650	342640	385000	385020
27	42350	42220	342650	342480	385000	384700
28	42350	42340	342650	342420	385000	384760
29	42350	42780	342650	343330	385000	386110
30	42350	42160	342650	342680	385000	384840
31	42350	42380	342650	342640	385000	385020
32	42350	42420	342650	342660	385000	385080
33	42350	42380	342650	342700	385000	385080
34	42350	44080	342650	343000	385000	387080
35	42350	42380	342650	342680	385000	385060
36	42350	42320	342650	343100	385000	385420
37	42350	42380	342650	342680	385000	385060
38	42350	42400	342650	342380	385000	384780
39	42350	42400	342650	342690	385000	385090
40	42350	42430	342650	342780	385000	385210
41	42350	42400	342650	342680	385000	385080
42	42350	42460	342650	342720	385000	385180
43	42350	42390	342650	342690	385000	385080
44	42350	42200	342650	342380	385000	384580

PROPPANT SUMMARY

Treatment Interval	100 Mesh Premium White		30/50 Premium White		Total	
	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)	Proposed (lbm)	Pumped (lbm)
45	42350	42400	342650	342690	385000	385090
46	42350	42560	342650	327930	385000	370490
47	42350	42390	342650	342700	385000	385090
48	42350	42160	342650	342650	385000	384810
Total	2032800	2036610	16254700	16223561	18287500	18260171

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	5925	68.95	0.41	7471	71.23	1
2	Completed	6873	97.19	0.81	7688	103.25	2
3	Completed	7519	94.9	0.79	7884	100.5	2
4	Completed	7427	97.67	0.78	8118	109.9	2
5	Completed	7248	94.59	0.74	8983	101.84	2
6	Completed	7703	97.37	0.8	8322	100.74	4
7	Completed	7947	86.44	0.81	8409	93.9	4
8	Completed	7980	93.78	0.82	8341	100.9	4
9	Completed	7886	93.9	0.8	8238	100.31	4
10	Completed	7960	94.94	0.8	8418	100.38	4
11	Completed	7898	94.88	0.82	8353	100.56	4
12	Completed	7924	93.85	0.81	8247	100.73	4
13	Completed	8068	92.83	0.82	8598	100.25	4
14	Completed	7847	95.29	0.81	8417	101.64	4
15	Completed	7693	97.61	0.83	8324	103.03	4
16	Completed	7843	95.24	0.8	8238	100.7	4
17	Completed	7677	96.24	0.83	8929	100.76	4
18	Completed	7658	95.98	0.77	8676	100.57	4
19	Completed	7539	95.21	0.79	8034	100.6	4
20	Completed	7666	96.95	0.79	9054	101.18	4
21	Completed	7693	95.24	0.77	9140	108.04	3.51
22	Completed	7833	98.5	0.79	9197	100.73	3.98

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	7348	98.69	0.76	9167	101.23	3.47
24	Completed	7532	98.42	0.8	9227	101.91	4
25	Completed	7640	98.01	0.81	8508	100.75	3.88
26	Completed	7813	98.36	0.78	8894	100.63	3.77
27	Completed	7661	98.09	0.79	8749	100.7	3.92
28	Completed	7680	98.68	0.79	9027	101.39	3.87
29	Completed	7496	98.65	0.84	8518	100.61	4
30	Completed	7901	98.02	0.8	8993	100.51	3.96
31	Completed	7593	98.51	0.78	8500	100.88	3.94
32	Completed	7184	99.03	0.8	8987	103.56	3.85
33	Completed	7665	95.21	0.81	9175	100.28	4
34	Completed	7612	97.89	0.81	9031	100.45	4
35	Completed	7505	97.7	0.8	8742	100.32	4
36	Completed	7944	97.72	0.82	8694	101	4
37	Completed	8315	94.12	0.81	9153	100.35	4
38	Completed	7630	97.59	0.76	8602	104.65	3.97
39	Completed	7473	99.31	0.82	8995	100.56	4
40	Completed	7405	98.85	0.85	8452	100.32	4
41	Completed	7782	98.14	0.82	9079	100.42	4
42	Completed	7500	98.29	0.83	8983	100.69	4
43	Completed	8021	95.57	0.81	9225	100.39	4
44	Completed	7283	99.29	0.83	8633	100.62	3.86

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	7618	98.87	0.84	8625	101.49	4
46	Completed	7470	98.27	0.82	8539	101.77	2.48
47	Completed	6632	97.32	0.86	8183	100.51	4
48	Completed	7235	98.74	0.84	8562	100.35	4

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	1880	3877	0.97	4	0	0	0	3722
2	3604	4023	0.99	0	0	0	0	3953
3	3516	4469	1.05	0	0	0	0	4369
4	3654	4834	1.1	0	0	0	0	4001
5	3624	4330	1.03	4	0	0	0	4206
6	3807	4434	1.05	0	0	0	0	4383
7	3894	4678	1.08	0	0	0	0	4504
8	4101	4498	1.06	0	0	0	0	4412
9	4115	4412	1.04	4	0	0	0	4290
10	4173	4463	1.05	3	0	0	0	4361
11	4246	5040	1.13	5	0	0	0	4410
12	4205	4709	1.08	7	0	0	0	4650
13	4166	4435	1.05	6	0	0	0	4339
14	4043	4831	1.1	10	0	0	0	4556
15	4014	4511	1.06	4	0	0	0	4431
16	4099	4519	1.06	9	0	0	0	4479
17	4142	3881	0.97	9	0	0	0	4205
18	4196	4618	1.07	0	0	0	0	4570
19	4245	4154	1.01	0	0	0	0	4456
20	4237	4491	1.05	0	0	0	0	4353
21	4278	3948	0.98	6	0	0	0	4241
22	4245	4521	1.06	11	0	0	0	4419

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	4319	4071	1	10	0	0	0	4372
24	4267	4669	1.08	8	0	0	0	4611
25	4282	4583	1.07	11	0	0	0	4439
26	4335	4662	1.08	5	0	0	0	4562
27	4348	3962	0.98	0	0	0	0	3899
28	4321	4769	1.09	0	0	0	0	4719
29	4293	4442	1.05	0	0	0	0	4257
30	4322	4748	1.09	0	0	0	0	4646
31	4362	4621	1.07	0	0	0	0	4304
32	4377	4846	1.1	0	0	0	0	4760
33	4405	4530	1.06	0	0	0	0	4430
34	4361	4589	1.07	0	0	0	0	4508
35	4377	4584	1.06	1	0	0	0	4503
36	4385	4615	1.07	4	0	0	0	4469
37	4410	4575	1.06	4	0	0	0	4473
38	4345	4732	1.08	6	0	0	0	4645
39	4373	4893	1.11	8	0	0	0	4639
40	4538	4625	1.07	9	0	0	0	0
41	4349	4568	1.06	13	0	0	0	4555
42	4352	4485	1.05	11	0	0	0	4413
43	4330	4600	1.07	16	0	0	0	4545
44	4301	4747	1.09	14	0	0	0	4660

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	4318	4645	1.07	3	0	0	0	4553
46	4300	4562	1.06	8	0	0	0	4411
47	4289	4585	1.06	0	0	0	0	4532
48	4357	4432	1.04	0	0	0	0	4414