

Confluence Resources

## Buford 33-10-4L

*Intervals 1-57*

Codell Formation

Weld County, CO

API: 05-123-45542

*Prepared for: Mike Dickinson*

*December 31, 2017*

## Stimulation Treatment Post Job Report

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## Engineering Executive Summary

On December 10, 2017 a stimulation treatment was initiated in the Codell formation on the Buford 33-10-4L well in Weld County, CO. The Buford 33-10-4L was a 57 stage Horizontal Plug and Perf Design. The proposed treatment consisted of:

9,468,509 gallons of FR Water (FightR EC-1)  
3,406,328 gallons of pHaserFrac 20#  
62,500 gallons of Pump Down  
60,000 gallons of 15% HCl Acid  
2,489,100 pounds of 100 Mesh  
13,143,800 pounds of 40/70 White

The actual treatment fully completed 35 of 57 stages. During the treatment 0 stages were skipped, and 22 stages screened out or were otherwise cut short of design. The actual treatment consisted of a Total of 39,318 perfs at 6 SPF and:

14,246,458 gallons of FR Water (FightR EC-1)  
596,513 gallons of pHaserFrac 20#  
2,148 gallons of Water Frac CMHPG 20#  
739,116 gallons of Pump Down  
3,762 gallons of 15% HCl Acid  
2,527,300 pounds of 100 Mesh  
11,645,527 pounds of 40/70 White

A more detailed description of the actual treatment can be found in the attached reports. The following comments were provided to summarize events and changes to the proposed treatment:

The actual pump schedules varied from the design on a consistent basis based on the observed reservoir response in order to maximize treatment effectiveness. Diverter was utilized on 21 of the treatments - it was not used in cases where the proppant concentration was effectively diverting on its own. Due to placement issues arising from reservoir sensitivity, all linear gel and crosslink fluid were cut from the design after interval 7 and only FR water was utilized from that point forward. After the initial calibration stages, the intent was to place an initial 400 sks of 100 mesh proppant followed by 1600-2400 sks of 40/70 proppant.

There were 20 intervals cut short of the 2400 sks 40/70 design due to high treating pressure and one screen-out, which occurred in interval #7. Proppant was cut from the following intervals: 6, 7, 10, 12, 28, 29, 30, 31, 32, 35, 36, 37, 38, 40, 42, 47, 48, 49, 50, 52, 53, and 55. Acid was not used in most of the intervals due to the negative responses it had to treating pressure

Interval 42 was interrupted early in the stage due to a leak that sprung on the discharge pump of the downhole blender. The blender was ultimately swapped out with a new one and the stage was resumed from the start of pad.

Halliburton is strongly committed to quality control on location. Before and after each job all chemicals, proppants, and fluid volumes are measured to assure the highest level of quality control. Tank fluid analysis, crosslink time, and break tests are performed before each job in order to optimize the performance of the treatment fluids.

The BE-7 was cut 1:1 with water and pumped at a doubled setpoint from interval 42 forward.

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. We hope to be your solutions provider for future projects.

Thank you,

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BUFORD 33-10-4L	Zone #	Top Perf (ft)	Bottom Perf (ft)	Perf Density (spf)	Total Perfs
	1	17,458	17,458	6	6
	2	17,306	17,423	6	702
	3	17,146	17,263	6	702
	4	16,986	17,103	6	702
	5	16,826	16,943	6	702
	6	16,666	16,783	6	702
	7	16,506	16,623	6	702
	8	16,346	16,463	6	702
	9	16,186	16,303	6	702
	10	16,026	16,143	6	702
	11	15,866	15,983	6	702
	12	15,706	15,823	6	702
	13	15,546	15,663	6	702
	14	15,386	15,503	6	702
	15	15,226	15,343	6	702
	16	15,066	15,183	6	702
	17	14,906	15,023	6	702
	18	14,746	14,863	6	702
	19	14,586	14,703	6	702
	20	14,282	14,399	6	702
	21	14,122	14,239	6	702
	22	13,811	13,928	6	702
	23	13,651	13,768	6	702
	24	13,491	13,608	6	702
	25	13,331	13,448	6	702
	26	13,171	13,288	6	702
	27	13,011	13,128	6	702
	28	12,851	12,968	6	702
	29	12,691	12,808	6	702
	30	12,531	12,648	6	702
	31	12,371	12,488	6	702
	32	12,211	12,328	6	702
	33	12,051	12,168	6	702
	34	11,891	12,008	6	702
	35	11,731	11,848	6	702
	36	11,571	11,688	6	702
	37	11,411	11,528	6	702
	38	11,251	11,368	6	702
	39	11,091	11,208	6	702
	40	10,931	11,048	6	702
	41	10,771	10,888	6	702
	42	10,611	10,728	6	702
	43	10,451	10,568	6	702
	44	10,213	10,330	6	702
	45	10,053	10,170	6	702
	46	9,893	10,010	6	702
	47	9,733	9,850	6	702
	48	9,573	9,690	6	702
	49	9,361	9,478	6	702
	50	9,201	9,318	6	702
	51	9,041	9,158	6	702
	52	8,881	8,998	6	702
	53	8,721	8,838	6	702
	54	8,561	8,678	6	702
	55	8,401	8,518	6	702
	56	8,241	8,358	6	702
	57	8,081	8,198	6	702