

## MC FA-4230 Foamer in Slick Water Frac Reduces Pressures Frac Rate Increased and Load Return Accelerated

### BACKGROUND

Frac jobs in the area are rate limited due to pumping pressures. If pressures can be reduced, the frac job can proceed at a faster rate.

### ISSUES

The Woodward warehouse performed many slick water fracs for an oil and gas producer in 2007.

### ANALYSIS

The operator used MC M-9008 biocide and MC FA-4230 foamer on each frac application. Multi-Chem averaged 2 fracs treatments per month in the Woodward Shale area.

### RESOLUTION

The MC FA-4230 was started out at .5 gallon per minute through the first part of the fracs. No foamer was added during the acid portion. When the frac pumps were brought up to their established rates (~ 100 barrels/min) friction reducer was added. As the friction reducer was being injected, Multi-Chem increased our MC FA-4230 to 3 to 5 gallons per minute, each time, causing a pump pressure drop which varied between 50 to over 200 PSI. The drop in pressure allowed the pumping services to increase their rate of fracture. At the end of the frac Foamer rates were reduced to 0.5 gallon/min till the job was finished.

### DELIVERED VALUE

The frac engineer asked me what was in the foamer because he had never seen such a drastic drop in the pressures. During flow back of the wells, the load returns much faster than when MC FA-4230 isn't used. Note, there have been circumstances where the water haulers couldn't keep up with the amount of fluid that the wells were bringing back.

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