

20. ND BOP's and NU 7 1/16" 5K PSIG frac spool and valve. Test the frac valve to 4,500 PSIG.
21. RU BJ services to the 5,000 PSIG WP frac valve to pump 2000 gals of spearhead acid and sand frac the Tubb via 5 1/2" L-80 casing. Test the treating line to 5,000 PSIG and re-test the relief valve to 4,300 PSIG. Pump the acid breakdown and the Viking 3500 treatment as per attached BJ Services procedure. **Do not tag the frac with a radioactive isotope.**

Spearhead Acid Procedure

- a.) Establish breakdown rate of 5 bpm with 1000 gals (24 bbls) of slick water. As soon as pump-in rate is established increase rate to 10 BPM and begin pumping the 2,000 gals of 15% NEFE spearhead acid dropping 75, 1.3 SG, 7/8" ball sealers throughout the acid.
- b.) Displace acid to bottom perforation with 150 bbls of 2% KCL slick water. Surge balls off perforations.

Frac Procedure. (No radioactive isotope)

- a.) Pump 1,000 gals (24 bbls) Viking 3500
- b.) Pump 19,000 gals (453 bbls) Viking 3500 Pad containing 0.5 ppg 100 mesh sand with 50 ppt S-8 (silica flour)
- c.) Pump 1,000 gals (24 bbls) Viking 3500 Pad
- d.) Pump 5,000 gals (119 bbls) Viking 3500 with 2 to 4 ppg 16/30 White Sand
- e.) Pump 5,000 gals (119 bbls) Viking 3500 with 4 to 6 ppg 16/30 White Sand
- f.) Pump 5,000 gals (119 bbls) Viking 3500 with 6 to 8 ppg 16/30 White Sand
- g.) Pump 4,000 gals (95 bbls) Viking 3500 with 8 ppg 16/30 AcFrac CR-4000 with 5 gpt activator
- h.) Pump 6,240 gals (148 bbls) Slick Water Flush (2 bbls short of top perf)

TREATING LINE TEST PRESSURE: A minimum 1000 psig over MATP	5000	PSIG
MAXIMUM ALLOWABLE WORKING PRESSURE: Based on weakest component in system – Highest test pressure	4500	PSIG
NITROGEN POP OFF SET PRESSURE: Relief pressure set at the lesser of : 300 psig less than 90% MAWP or, 300 psig over MATP	4300	PSIG
MAXIMUM ALLOWABLE TREATING PRESSURE (MATP): If reached, human action required.	4000	PSIG
MAXIMUM ANTICIPATED TREATING PRESSURE: Based on frac design	3300	PSIG

21. Shut down and record ISIP, 5, 10 and 15 minute pressures. Close the wellhead valve and disconnect BJ from the wellhead.
22. After 4 hours flow back well into the temporary test tank until dead. RD frac valve and spool. If necessary, kill the well with 8.6 ppg brine water prior to rigging down frac valve.
23. NU 5,000 PSIG WP BOP and test to 4,500 PSIG according to SOP's.