

3. TEST RESULTS

3.1. Conclusions

1. Four intervals in the Jurassic section were perforated and tested together. The total net pay of 75 ft did produce hydrocarbons, but at a very small rate. The well was slugging all the time and stabilized rates could not be obtained. The following average rates was recorded:

	OILQ STB/D	GASQ MSCFD	WATQ BHPD	GOR SCF/STB	WHP psi
Pre acid cleanup flow:	167	457	0	2737	870
Post acid cleanup flow:	206	531	112	2577	400

2. The 3 stage mud acid job that was pumped after the cleanup flow did not significantly improve the productivity of the well. It is likely that the well was fractured and that the acid went into the fracture and that the fracture closed afterwards. It had been preferred to do a hydraulic sand fracture job, but the difficulty of cleaning up a sand screen-out prevented such a job.
3. The transient pressure data fits the type curve for a well with wellbore storage and skin for a reservoir with homogeneous behavior. Data from the Post Acid Buildup gives the only reliable results, as this was the only event that reached pseudo radial flow. The permeability that is calculated is based on 75 ft. of net pay.

Results from the Desuperpositioned MDH plot.

ko, md: 0.05
kh, mdft: 3.75
Skin : + 0.7
Ri, ft: 53

4. The reservoir pressure has been determined from the Post Acid Buildup Horner and Modified Horner plots to be 13600 \pm 200 psia at reference depth 15666 ft. (mid. perfs.). The uncertainty in the pressure is related to the effect of the acid job, which over pressurized the reservoir.

5. A reservoir temperature of 350 Deg.F at 15666 ft. has been determined from extrapolation of a stable shut in temperature of 337 Deg F at 15184 ft. (gauge depth).

6. The two RFT surveys performed in 2.12.1980 and 30.12.1980 did not give reliable pressure data. Many of the tests were either dry or no seal, and the pressures that were obtained were supercharged. However, the low mobility measured do confirm the results from the pressure test.

7. Inaccurate measurements of oil, gas and water rates left an uncertainty in the GOR to be used for the recombination of the separator samples. Alternatively PVT data for five std.GOR's between 2227 and 3832 scf/stb have been developed using PVT simulation. The simulation results show that the reservoir fluid teoretically changes character from oil to gas close to a std. GOR of 3832 scf/stb. To determine the GOR and PVT data that should be used for the Transient Pressure Analysis, tubing curve calculations were performed. Good agreement were found between the surface and bottom hole pressure data for a std. GOR of 3007 scf/stb with both the Hagedorn & Brown and the Gray correlation. The corresponding PVT data from the PVT simulation shows that the reservoir fluid is a volatile oil with the following main characteristics:

Std. GOR:	3007 scf/stb
Sep. GOR:	2730 scf/stb (196 psi, 117 Deg F)
Bubble point:	4489 psia
Crit. Temp:	410 Deg.F

8. Drilling reports from 1980 show that 6700 bbls of 16.3 ppg water based mud were lost in the well when drilling out the second sand (zone B). This loss may have damaged the two upper zones or parts of them. However, the results from the pressure test using a net pay thickness of 75 ft. shows a skin of only + 0.7. The radius of investigation from the Post Acid Cleanup was calculated to 50 ft. and it is not likely that the damage would be uniform and reach deeper than 50 ft. It is more likely that the mud was lost in a fracture or in a higher permeable zone which then was completely blocked off. As no production log was run, it is impossible to say which zones the production is coming from and the actual producing thickness is unknown. The main result from the Transient Pressure Analysis is the permeability thickness product of 3.75 mdft. The impact of the lost mud on the initial permeability thickness product for this interval will remain unknown.