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SANTOS LIMITED

E. MEREENIE WELL NO. 39
P4 TSO FRAC TREATMENT

[redacted]

PR 96-70

27 SEPTEMBER 1996

E. MEREENIE WELL NO. 39
P4 TSO FRACTURE TREATMENT

Prepared for:
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SUMMARY

On 17 June 1996, a tip-screenout (TSO) fracture treatment was performed on Santos' East Mereenie Well No. 39 through "P4" sand perforations at 4986-5028 ft. Reservoir properties were estimated to be an average porosity of 5.9%, a net pay thickness of 18.7 ft, a reservoir pressure of 1830 psi (no depletion), and a BHT of 145^{o}F. While the well was pre-frac flow tested at 20-25 bopd on gas lift from the combined P4 and lower P3 zones, a pressure buildup test could not be conducted to determine permeability or skin. With most of the flow coming from the lower P3, though, the permeability in the P4 was expected to be low, i.e. 0.5-1 md. Wellbore deviation through the pay was 9^{o}

Prior to the treatment, pre-frac tests were conducted to evaluate closure stress, fluid efficiency, and fracture geometry for final design formulation. The results indicated a closure pressure of 3400 psi and a fluid efficiency of 0.70 from pressure decline analysis. This gave an efficiency during injection, using the Mereenie correlation of decline to injection efficiency, of 0.35. A reasonably good model history match of the minifrac was obtained with an initial frac interval of only 6 ft, boundary stresses of 4750 psi, modulii values of $7x10^6$ psi (pay) to $8.5x10^6$ psi (barriers), and a leak-off coefficient of 0.0025 ft/sq.rt. minute. This "calibrated" model was used to design the final treatment.

With the desire to minimize fracture growth into the P3-230/250, the final treatment design required 1500 gals of pad and an additional 3900 gals of gel carrying 15,200 lbs of 20/40 Carbo-Lite proppant at 0.5-7 ppg and at a rate of 15 bpm. The model-predicted TSO occurred at the end of the 4 ppg stage and net BHTP went from 1860 to 3480 psi with a corresponding average fracture width increase from 0.05 to 0.10 inches. Other fracture dimensions were a propped half-length of 166 ft, a maximum height of 191 ft (into base of 230/250), an average conductivity of 806 md-ft, and an average in-situ concentration of 0.6 lbs/sq.ft.

The treatment screened-out 180 gals from the end of the flush stage, however, 83% (12,630 lbs) of the designed proppant amount was placed in the fracture with 88% (4750 gals) of the design gel volume. The TSO did occur as predicted, however the net BHTP gain was only 510 psi as compared to the design prediction of 1600 psi. In addition the

complete screenout pressure rise was not evident on the BHP gauges, suggesting that the screenout may have been caused by a bridge or obstruction inside the wellbore. To model history match the treatment required (1) slight adjustments to the stresses and modulii within the P4 and surrounding layers and (2) a reduction in the leak-off coefficient from 0.0025 to 0.00134 ft/sq.rt minute. This reduction in leak-off was also contrary to a formation screenout. Resultant dimensions were a propped half-length of 219 ft, a maximum height of 175 ft, an average conductivity of 586 md-ft, and an average in-situ concentration of 0.4 lbs/sq.ft. In this apparent low permeability zone, this should be an effective stimulation.

DISCUSSION

Introduction:

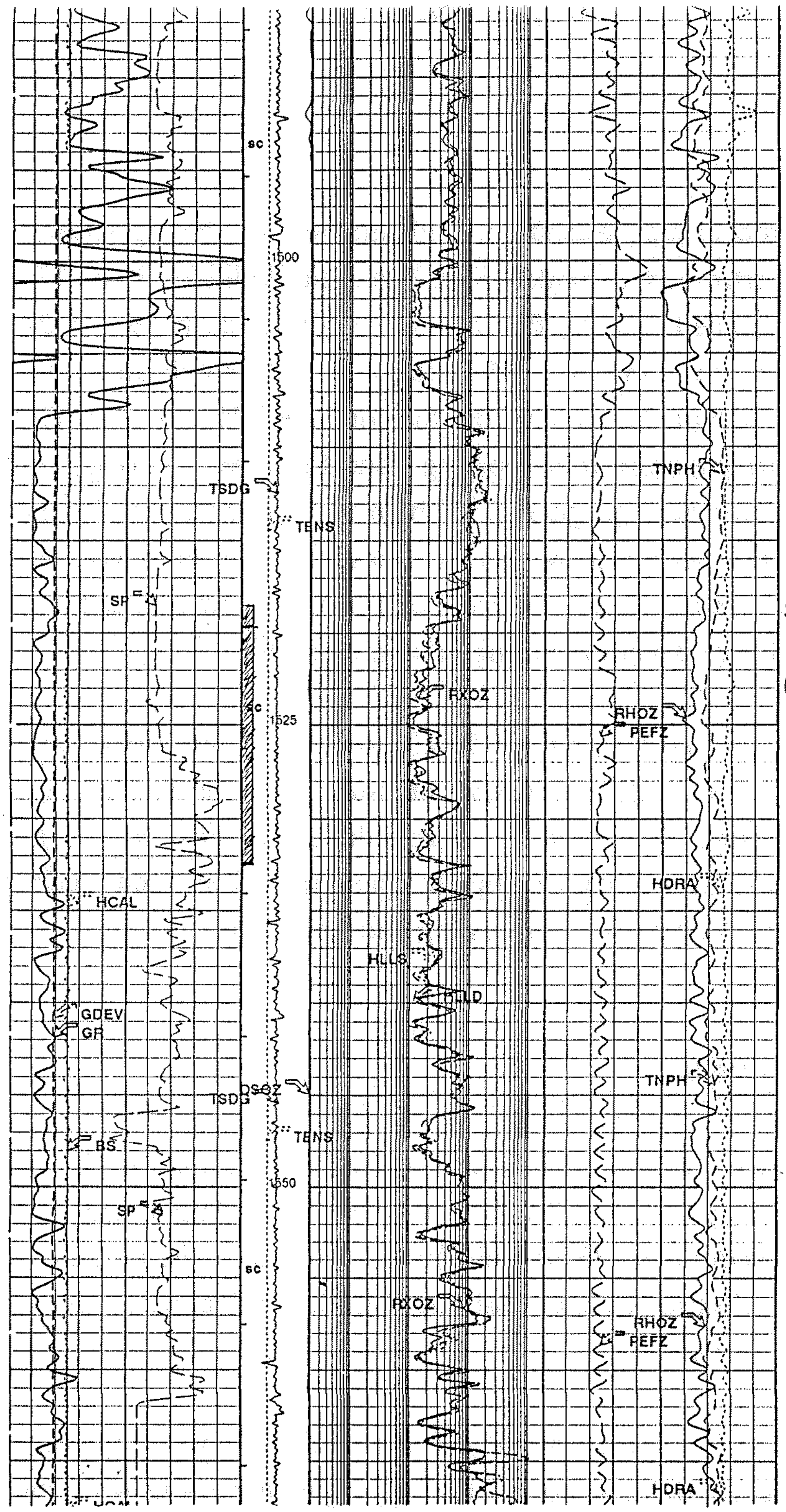
This report details the design, execution, and analysis of the tip-screenout (TSO) fracturing treatment performed in Santos' East Mereenie Well No. 39 on 17 June 1996. The treatment was pumped through Pacoota P4 perforations at 4986-5028 ft (MD), 4908-4950 ft (TVD), as shown in Fig. 1. Well test information indicated this well to be poorer than expected, with pre-frac flow from the combined P4 and lower P3 being only 20-25 bopd with gas lift and most of this coming from the lower P3. Log data found the P4 reservoir to be poorer than prognosed, with an average porosity of only 5.9% and 18.7 ft of net pay. While permeability was not measured directly, it was thought to be low, i.e. estimated 0.5-1 md. Reservoir pressure for the P4 was 1830 psi (virgin) and BHT was 145^{o}F. Wellbore deviation through the pay was 9^{o}.

The fracture treatment, performed by Halliburton, was preceded with pre-frac injection/decline tests to evaluate closure pressure, fluid efficiency, and fracture geometry for final design formulation. Bottomhole pressure was obtained with electronic memory gauges set in the tailpipe for both the testing and main treatment. The following discusses the details of this testing and treatment.

Pre-Frac Test Analysis:

Pre-frac testing consisted of (1) a 10 bbl slick water pump-in/shut-in (PI/SI) test at 5 bpm, (2) a slick water step-rate test (SRT)/SI at rates of 0.5-10 bpm, and (3) a 1500 gal, 30 ppt borate XL gel (Boragel H3595) minifrac at 15 bpm. The first two tests were designed to evaluate closure pressure and the minifrac was used to determine fluid efficiency and fracture geometry.

Fig. 2 shows the gauge BHP for the first PI/SI test. After an initial breakdown of 5153 psi, pressure dropped to about 4480 psi before again increasing with the pressure reaching 5062 psi just prior to shut-down. At shut-down, an ISIP of 4723 psi was measured, as shown in Fig. 3; this giving a downhole excess pressure of 339 psi. From



EM39
Platform
Express

P4
1519.7 - 1532.5 m (MD)
1496.0 - 1508.6 m (TVD)
(4908.4 - 4949.7' TVD)

FIG. 1 - Log section thru pay interval and boundary layers, E. Mereenie #39 (P4).

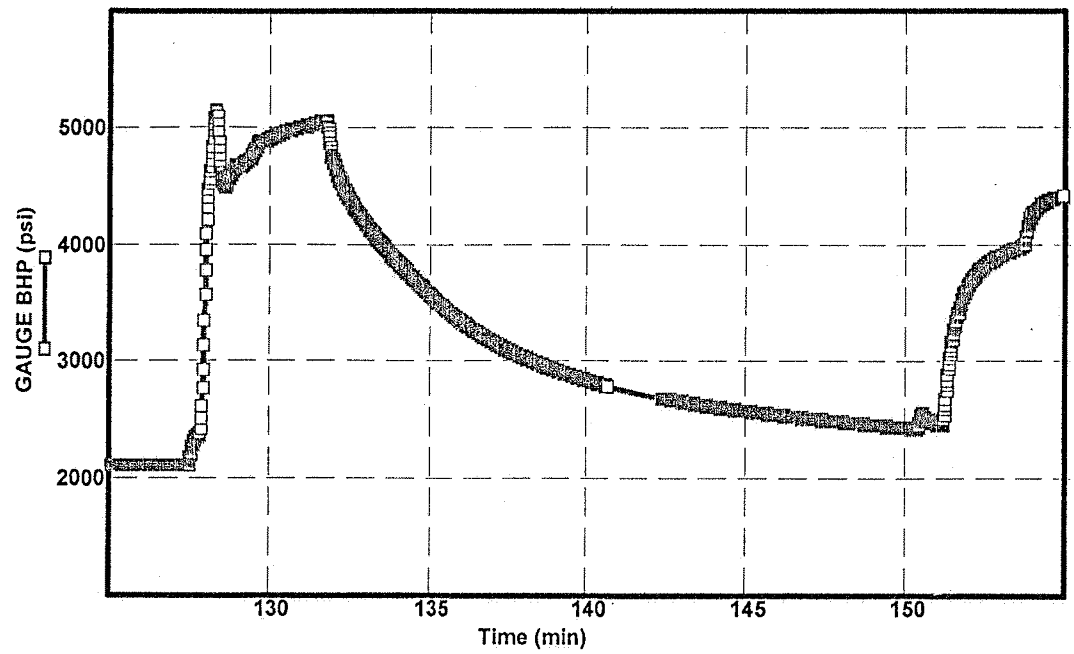


FIG. 2 - Slick water PI/SI test BHP record, E. Mereenie #39 (P4).

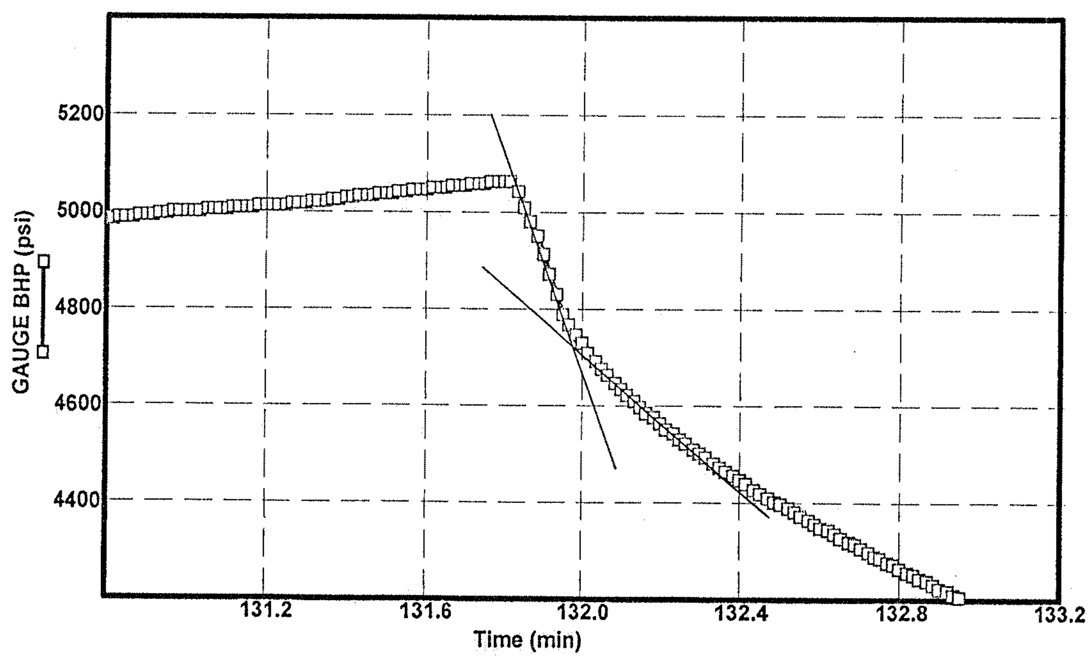


FIG. 3 - Slick water PI/SI test BHP ISIP evaluation, E. Mereenie #39 (P4).

the Horner plot of the pressure decline, Fig. 4, the pressure extrapolated to 2013 psi or higher than the expected reservoir pressure and probably due to insufficient decline data to reach the correct psuedo-steady-state straight line. The square-root of SI time plot indicated two possible closure pressures, one at 4037 psi (Fig. 5) and the other at 3218 psi (Fig. 6). However, on the G-function plot only the lower closure was apparent, i.e. 3298 psi - Fig. 7.

Fig. 8 shows the gauge BHP record for the SRT/SI. At the end of injection, BHP was 5609 psi and the ISIP was 5367 psi (Fig. 9), giving a downhole excess pressure of only 242 psi. From a plot of stabilized BHP versus injection rate, Fig. 10, fracture extension pressure appeared to be at about 4650 psi. The square-root of SI time plot of the pressure decline, Fig. 11, indicated only one possible closure pressure at 3264 psi which was consistent with the lower picks from the previous test. From the G-function plot, Fig. 12, closure was picked at 3217 psi or also consistent with the previous test.

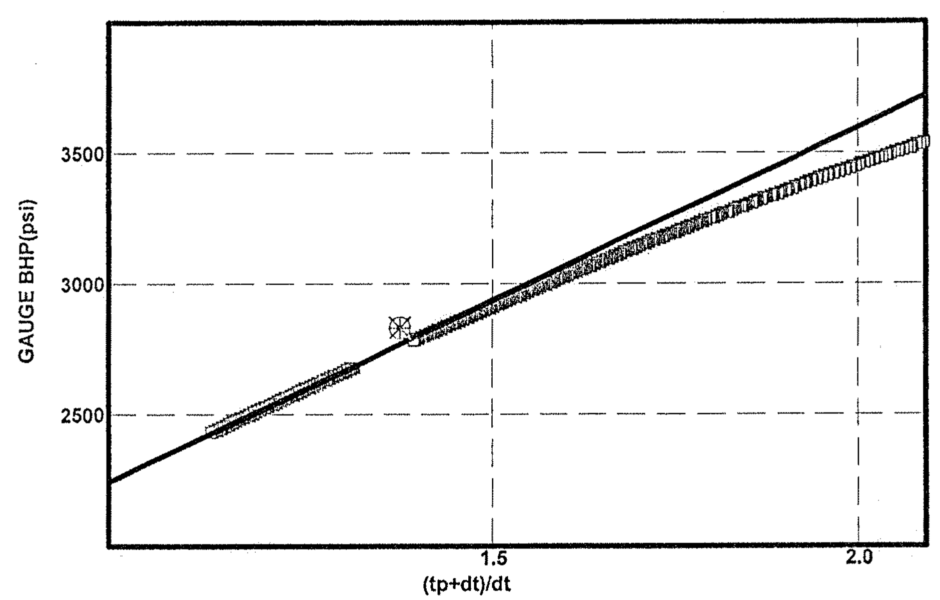


FIG. 4 - Slick water PI/SI test BHP Horner analysis, E. Mereenie #39 (P4).

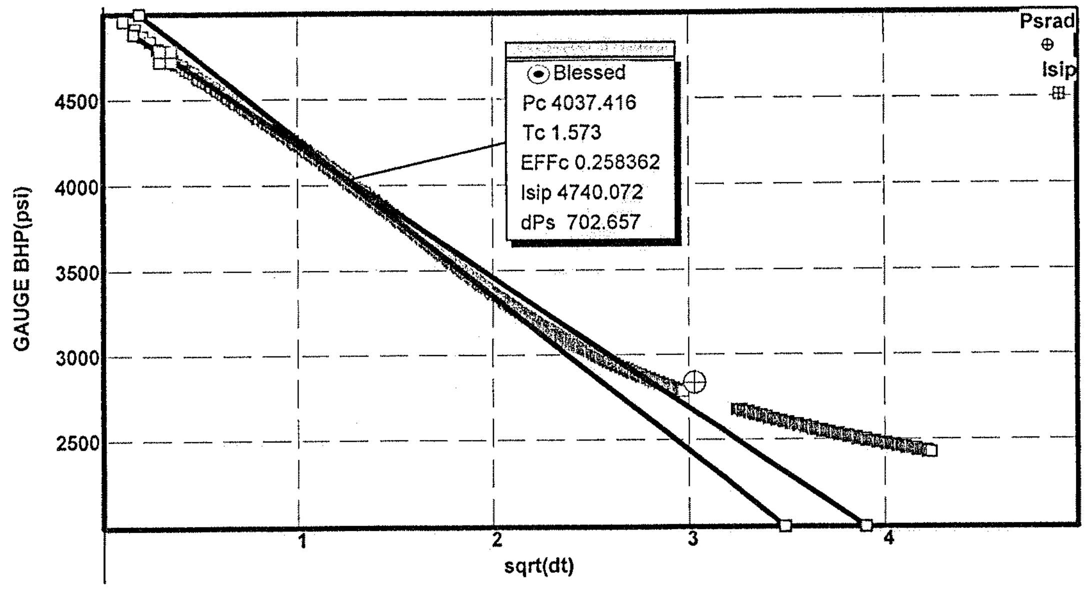


FIG. 5 - Slick water PI/SI test BHP sq.rt. SI time plot #1, E. Mereenie #39 (P4).

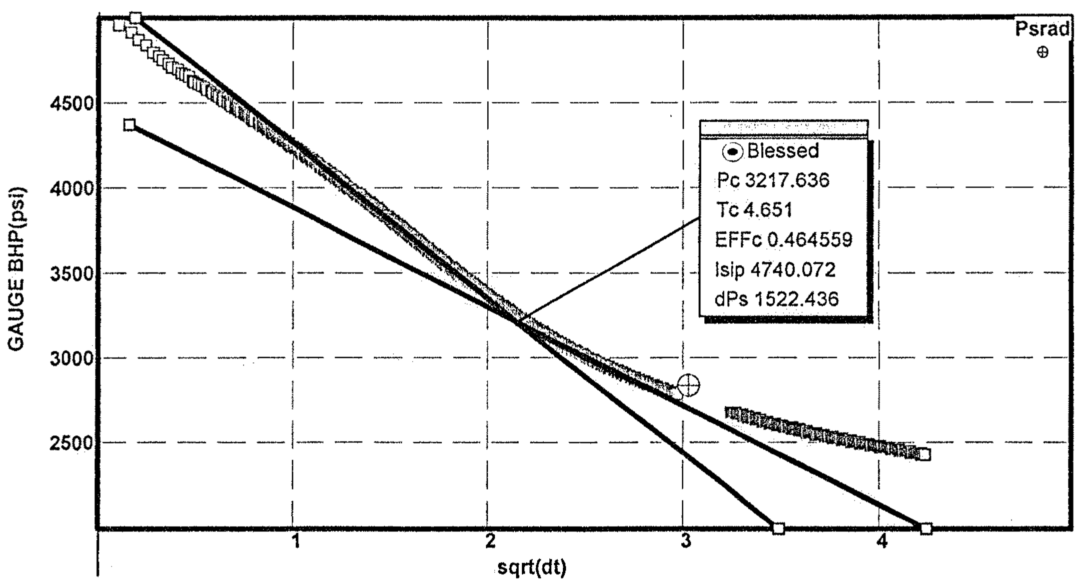


FIG. 6 - Slick water PI/SI test BHP sq.rt. SI time plot #2, E. Mereenie #39 (P4).

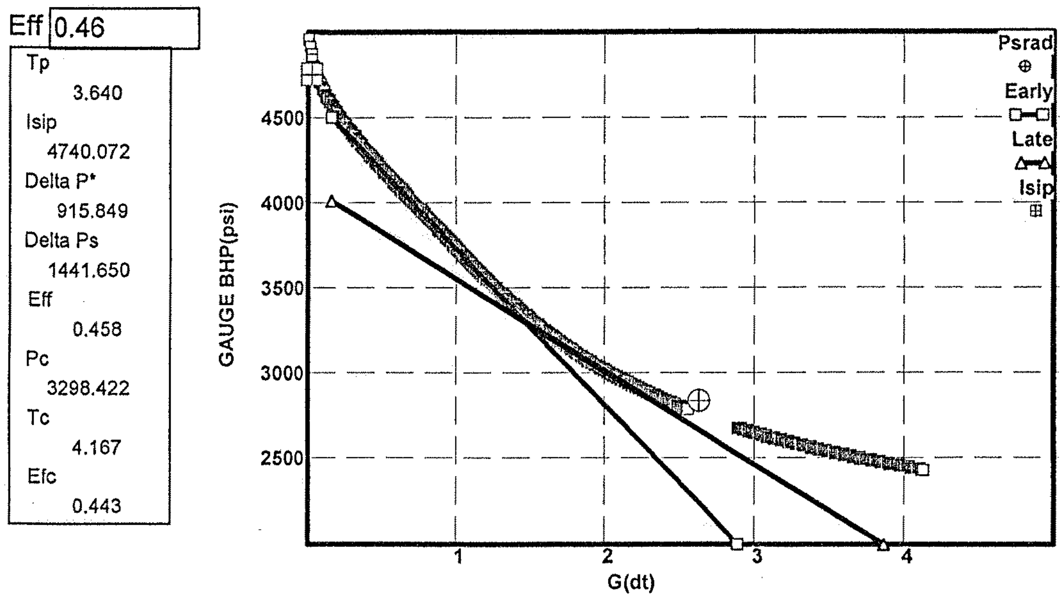


FIG. 7 - Slick water PI/SI test BHP G-function plot, E. Mereenie #39 (P4).

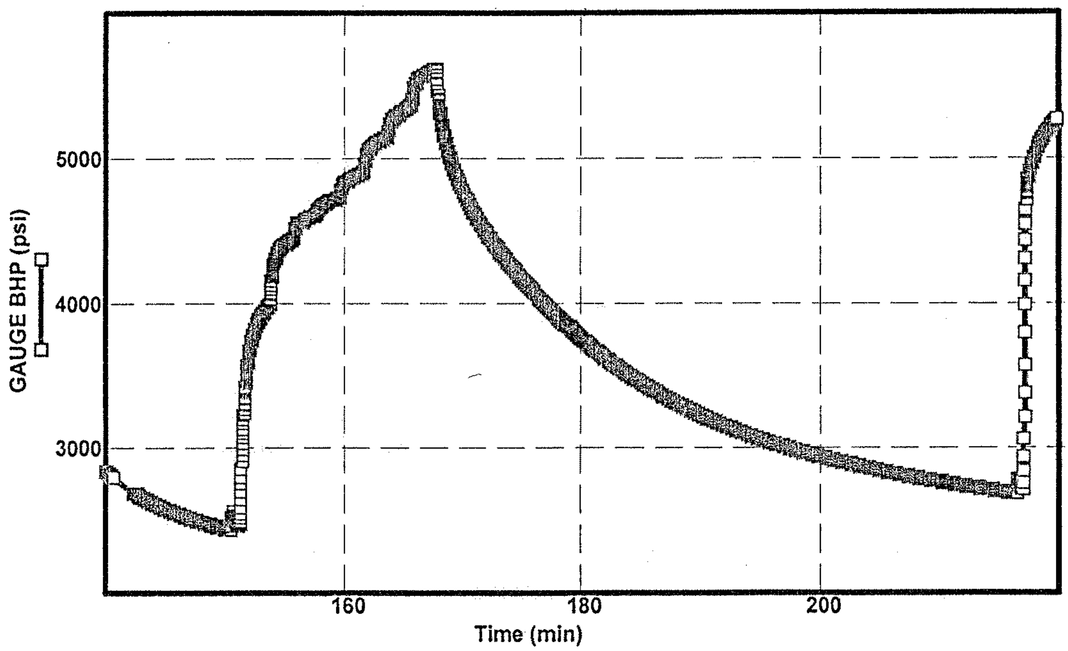


FIG. 8 - Slick water SRT/SI test BHP record, E. Mereenie #39 (P4).

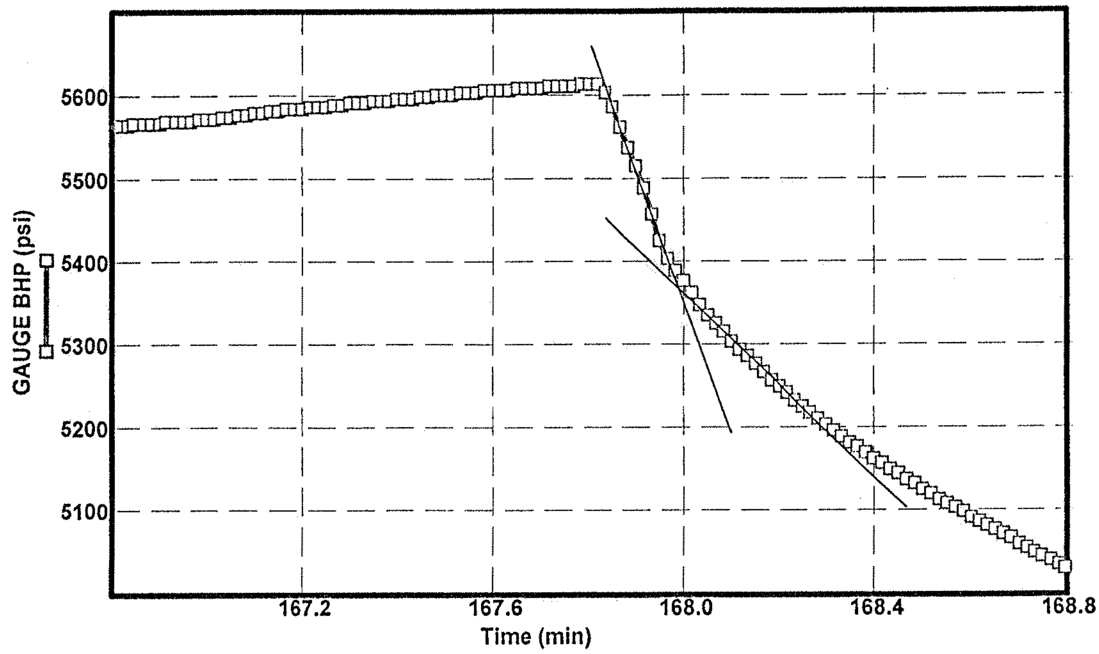


FIG. 9 - Slick water SRT/SI test BHP ISIP evaluation, E. Mereenie #39 (P4).

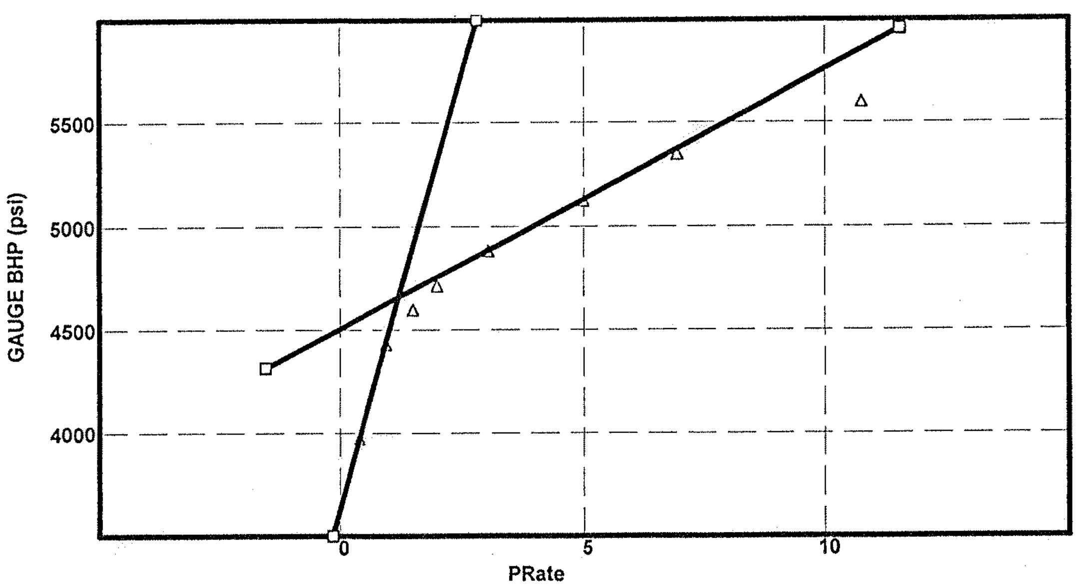


FIG. 10 - Slick water SRT/SI test BHP fracture extension evaluation, E. Mereenie #39 (P4).

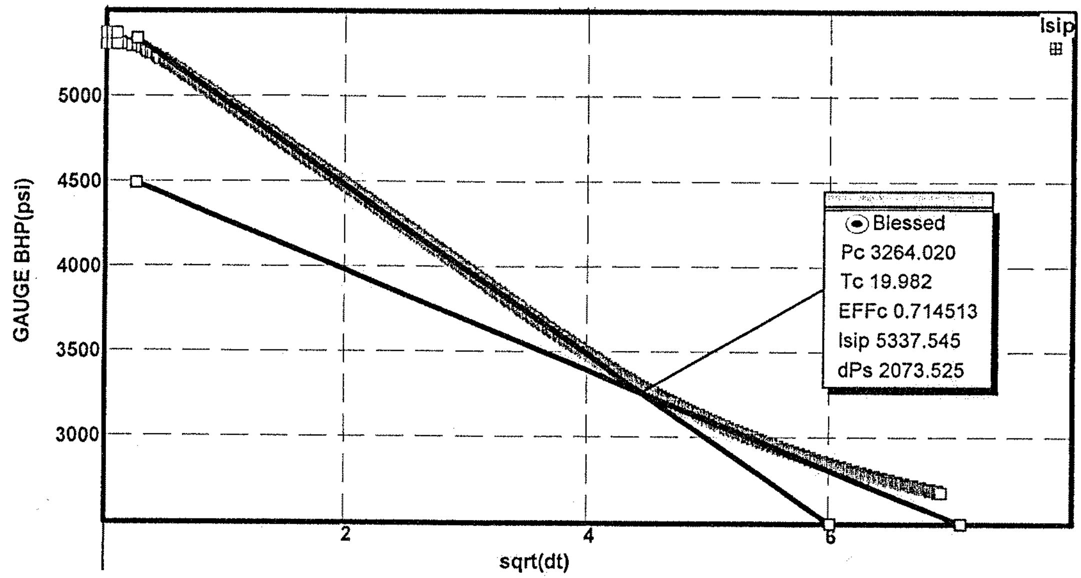


FIG. 11 - Slick water SRT/SI test BHP sq.rt. SI time plot, E. Mereenie #39 (P4).

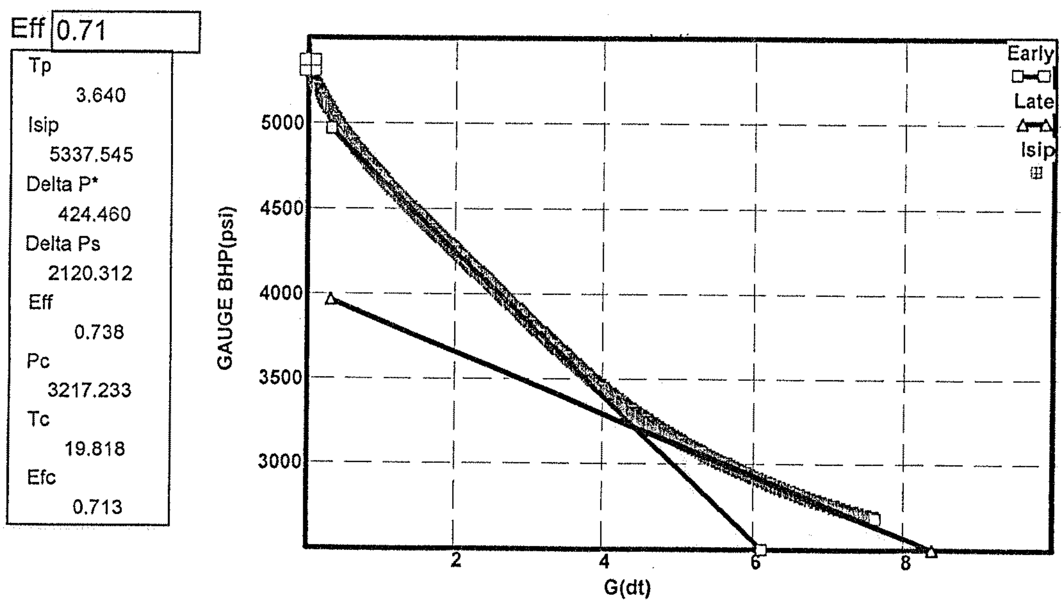


FIG. 12 - Slick water SRT/SI test BHP G-function plot, E. Mereenie #39 (P4).

Fig. 13 shows the gauge BHP record for the minifrac. To minimize the effect of the residual wellbore fluid ahead of the crosslinked gel on determining fluid efficiency, the leading edge of the gel was pumped to near bottom at 5 bpm to bullhead the slick water into the fracture. The XL gel was then injected at 15 bpm. At the end of the minifrac, displaced with slick water to the top perforation, the BHTP was 5929 psi and at shut-down the ISIP was 5670 psi, Fig. 14, indicating a downhole "excess" pressure of only 259 psi.

From the minifrac pressure decline analysis, closure was picked at 3412 psi on the square-root of SI time plot, Fig. 15, which corresponded to a fluid efficiency of 0.69 and a net BHTP (BHTP-closure P) of 2222 psi. From the G-function plot, Fig. 16, closure was picked at 3407 psi with a corresponding fluid efficiency of 0.69 and a net BHTP of about 2227 psi. From the Nolte type-curve match, Fig. 17, the indicated fluid efficiency was 0.72.

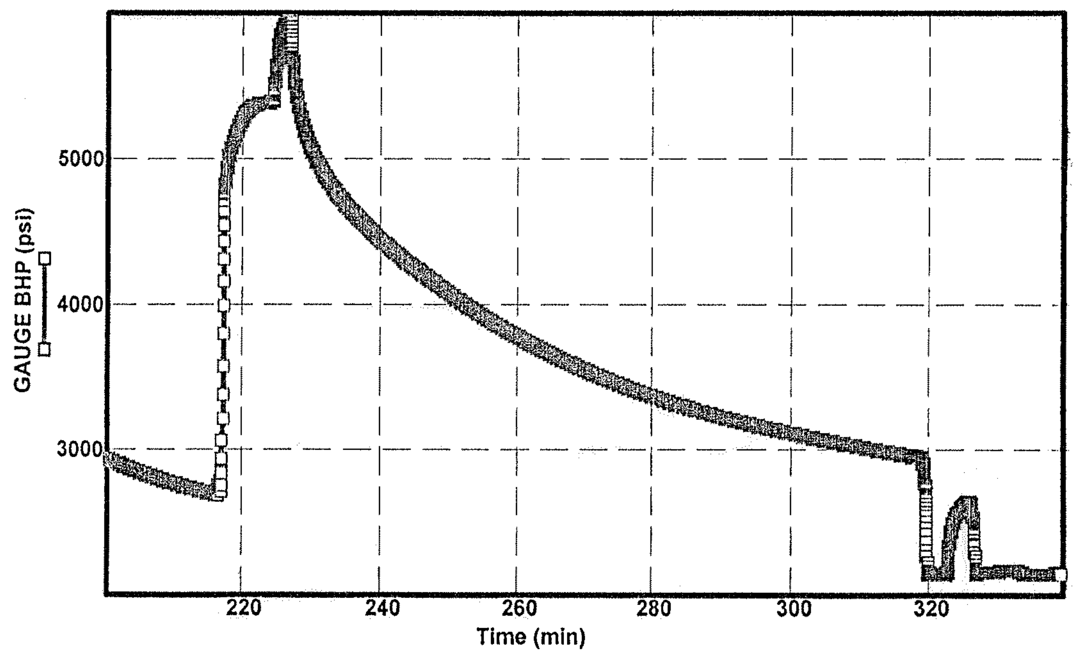


FIG. 13 - Boragel minifrac injection BHP record, E. Mereenie #39 (P4).

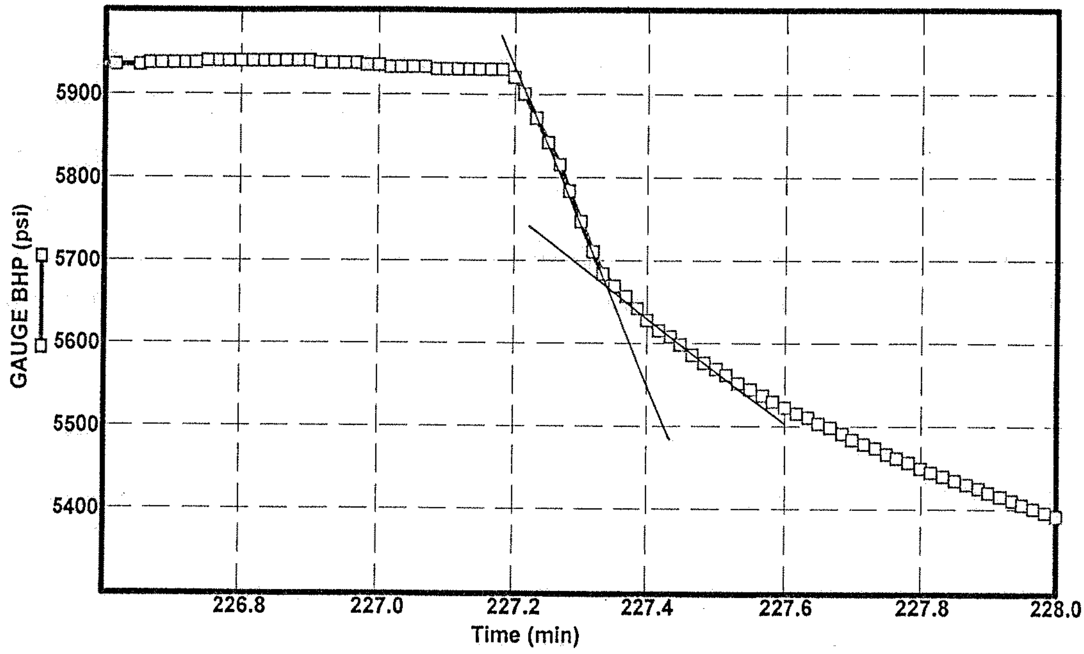


FIG. 14 - Boragel minifrac/SI BHP ISIP evaluation, E. Mereenie #39 (P4).

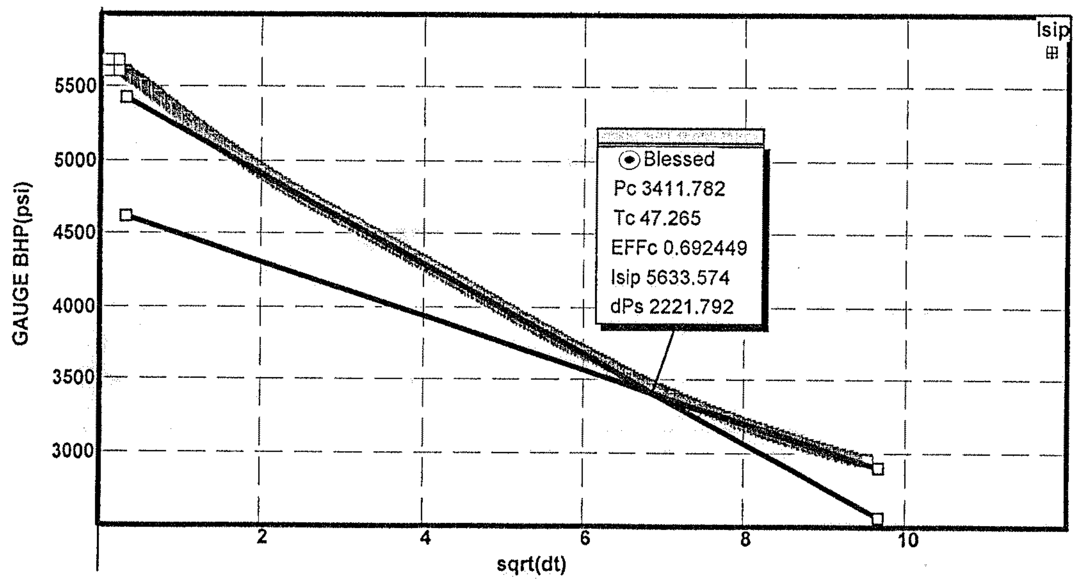


FIG. 15 - Boragel minifrac/SI BHP sq.rt. SI time plot, E. Mereenie #39 (P4).

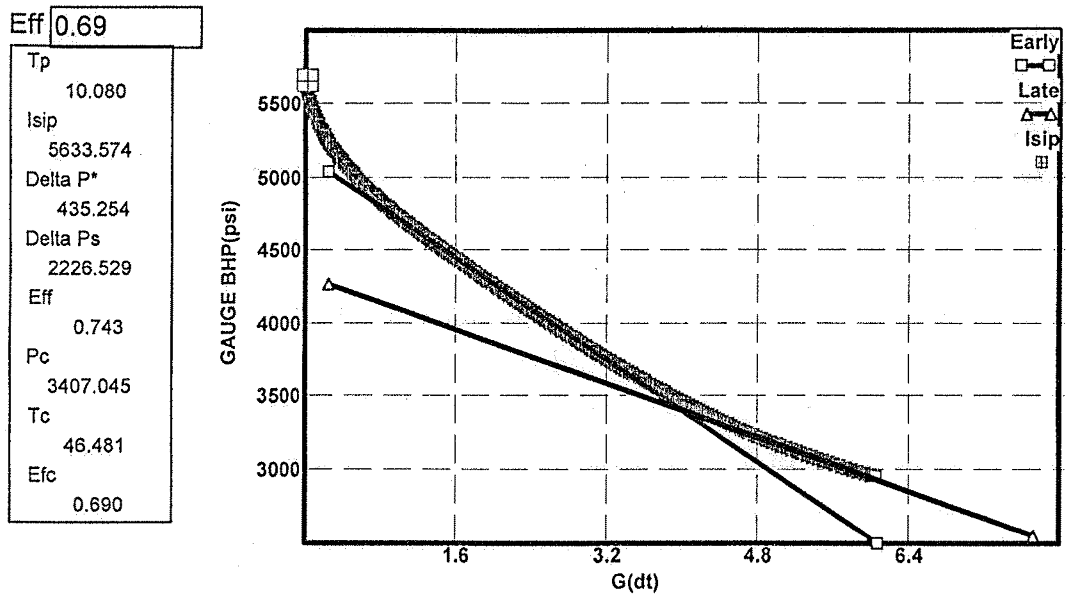


FIG. 16 - Boragel minifrac/SI BHP G-function plot, E. Mereenie #39 (P4).

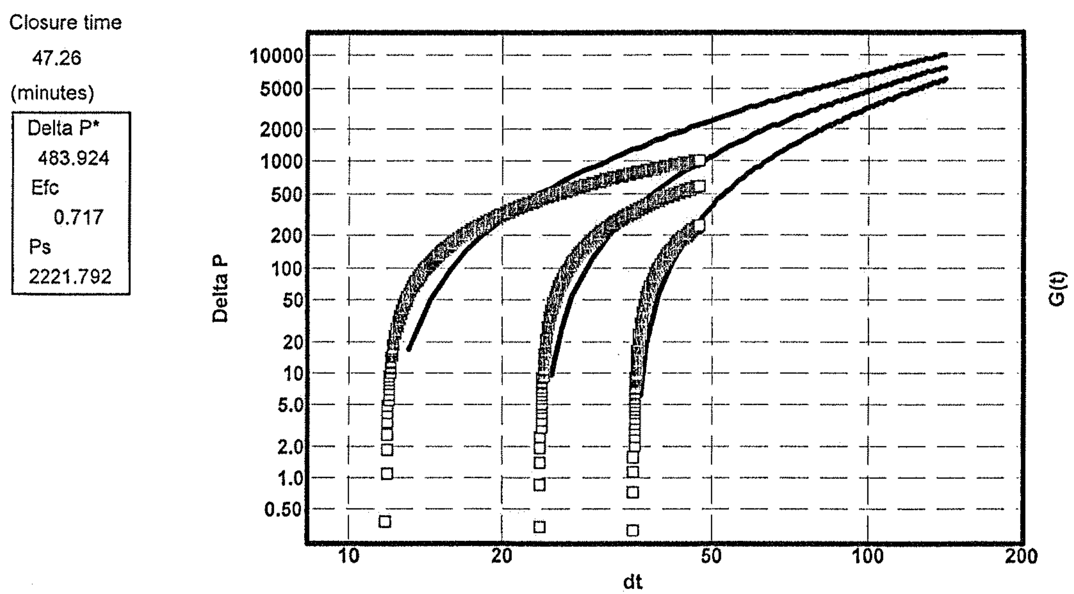


FIG. 17 - Boragel minifrac/SI BHP type-curve match, E. Mereenie #39 (P4).

Based on the combined analysis of the three tests, closure pressure was thought to be at 3400 psi, fluid efficiency from pressure decline analysis was 0.69, and net BHTP for the XL gel at 15 bpm was on the order of 2200 psi. From the established Mereenie correlation of efficiency during injection to that determined from the decline, the injection efficiency was estimated to be 0.35.

To further the minifrac analysis and generate a "calibrated" model for final design evaluation, the minifrac injection profile was history matched. Shown in Fig. 18, the match required to simulate the increasing, high net BHTP and resultant fluid efficiency at the end of injection of 0.35 required (1) a limited fracture initiation interval of only 6 ft, (2) boundary stresses of 4750 psi, (3) a pay zone modulus of $7.0x10^6$ and $8.5x10^6$ psi in the boundaries, and (4) a leak-off coefficient of 0.0025 ft/sq.rt. minute. The model-predicted fracture dimensions were a created half-length of 128 ft and a maximum height at the wellbore of 215 ft as shown in Fig. 19. The model I/O is included in Appendix Table A-1.

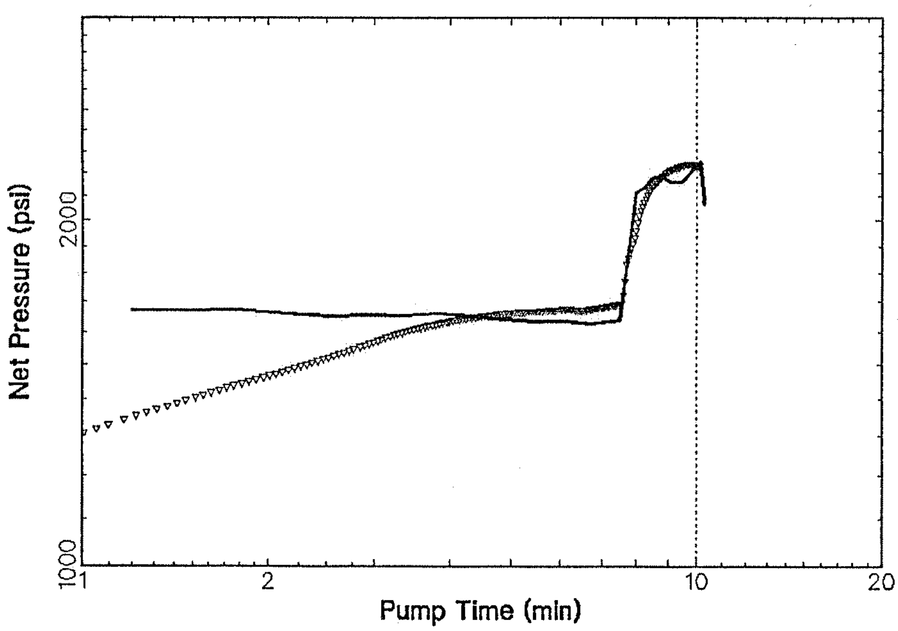


FIG. 18 - Boragel minifrac net BHTP model history match, E. Mereenie #39 (P4).

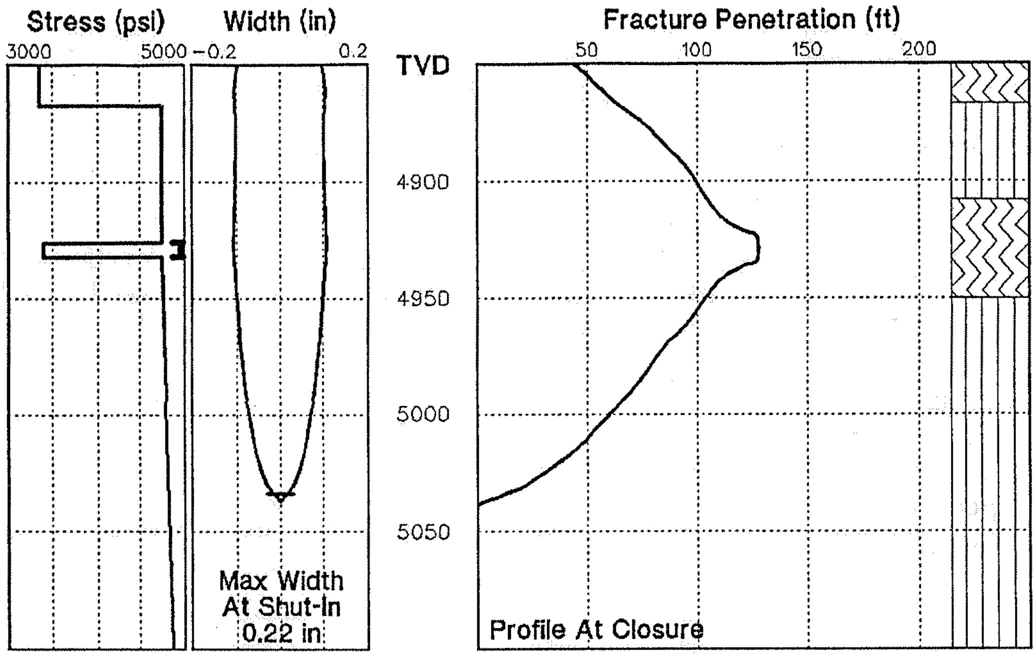


FIG. 19 - Boragel minifrac net BHTP history match predicted geometry, E. Mereenie #39 (P4).

Final Treatment Design:

Using the "calibrated" design model, the final design pad stage was limited to 1500 gals to minimize upward growth into the P3-230/250 sands (Table 1). The slurry stages consisted of an additional 3900 gals of gel carrying 15,200 lbs of 20/40 Carbo-Lite at 0.5-7 ppg. With this pad and the design injection rate of 15 bpm, the model-predicted TSO started at the end of the 4 ppg stage (Fig. 20) and net BHTP increased from 1860 to 3480 psi with a corresponding average fracture width increase from 0.05 to 0.10 inches. At the wellbore, the final predicted average and maximum widths were 0.13 and 0.40 inches. Other modeled dimensions were a propped half-length of 166 ft, a maximum height at the wellbore of 191 ft, an average conductivity of 806 md-ft, and an average in-situ concentration of 0.6 lbs/sq.ft. These are shown in Figs. 21-23 with the model I/O included in Appendix Table A-2.

TABLE 1 - Final treatment design schedule, E. Mereenie #39 (P4).

Fluid Type	Slur. Vol. (gal)	Fluid Vol. (gal)	Prop Conc. (ppg)	Prop Amt. (lbs)	Avg. Q (bpm)	Pump t (min)
Boragel H3595	1500	1500	0.00	0	15.00	2.38
Boragel H3595	409	400	0.50	200	15.00	0.65
Boragel H3595	418	400	1.00	400	15.00	0.66
Boragel H3595	435	400	2.00	800	15.00	0.69
Boragel H3595	566	500	3.00	1500	15.00	0.90
Boragel H3595	588	500	4.00	2000	15.00	0.93
Boragel H3595	610	500	5.00	2500	15.00	0.97
Boragel H3595	758	600	6.00	3600	15.00	1.20
Boragel H3595	785	600	7.00	4200	15.00	1.25
	6069	5400		15200		9.63

Note: Proppant 20/40 Carbo-Lite.

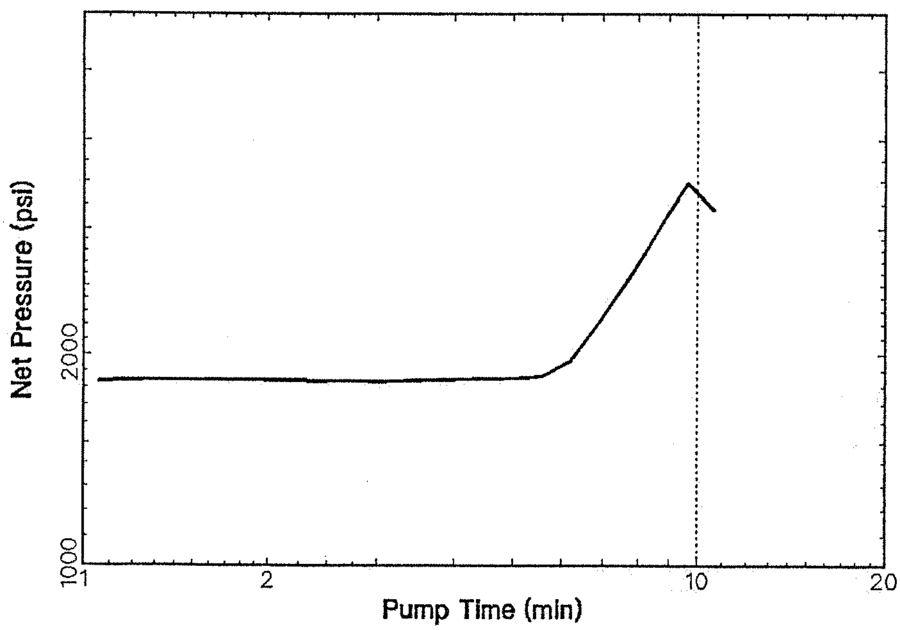


FIG. 20 - Final treatment design predicted net BHTP, E. Mereenie #39 (P4).

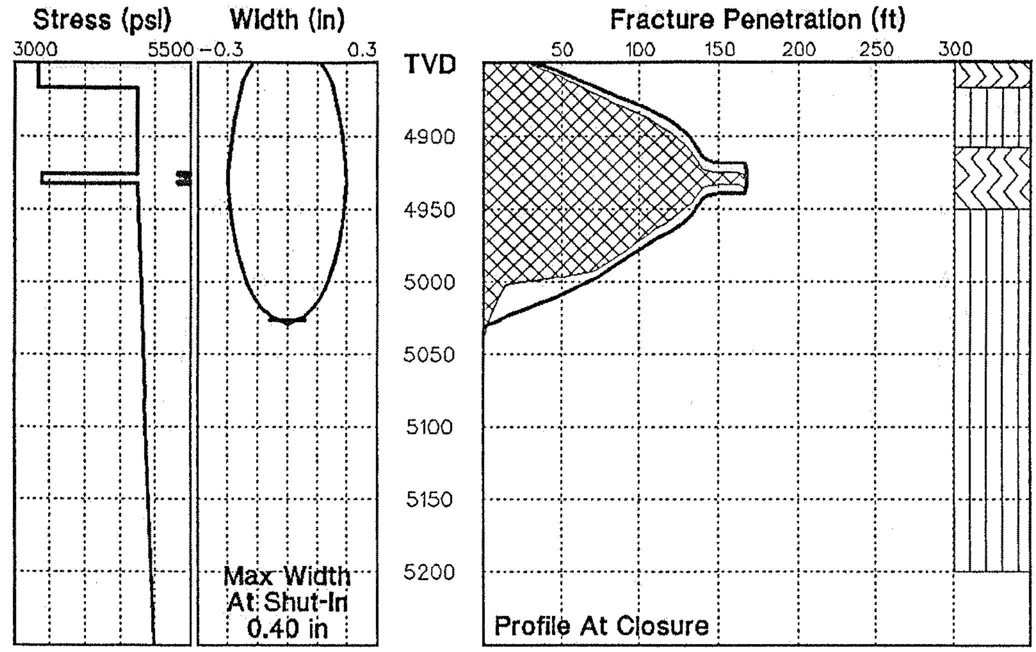


FIG. 21 - Final treatment design predicted fracture geometry, E. Mereenie #39 (P4).

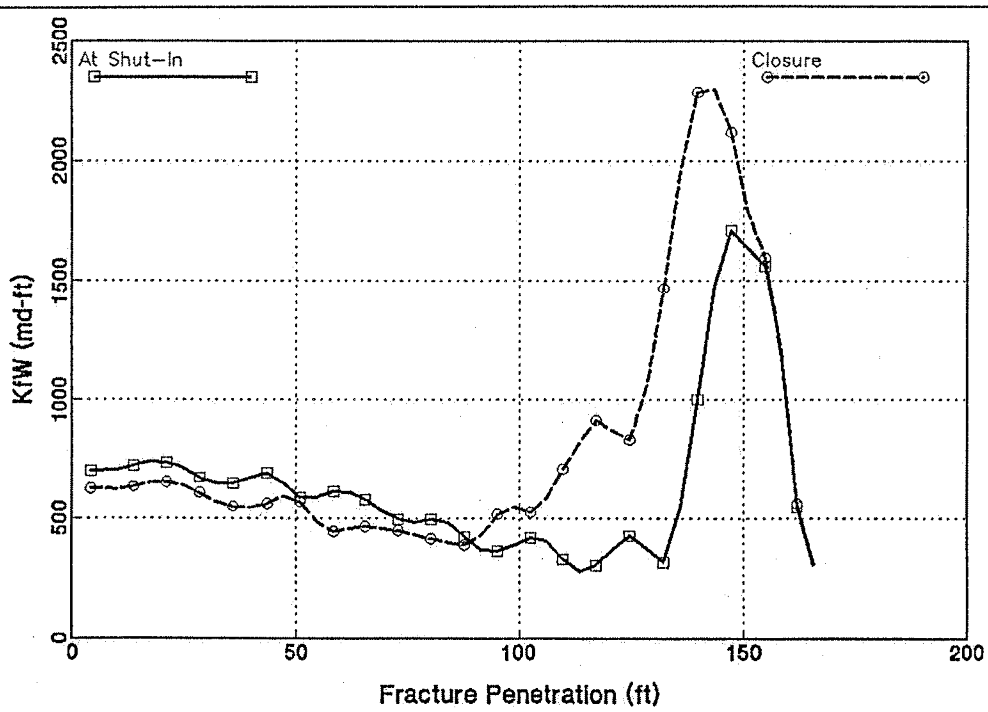


FIG. 22 - Final treatment design predicted fracture conductivity, E. Mereenie #39 (P4).

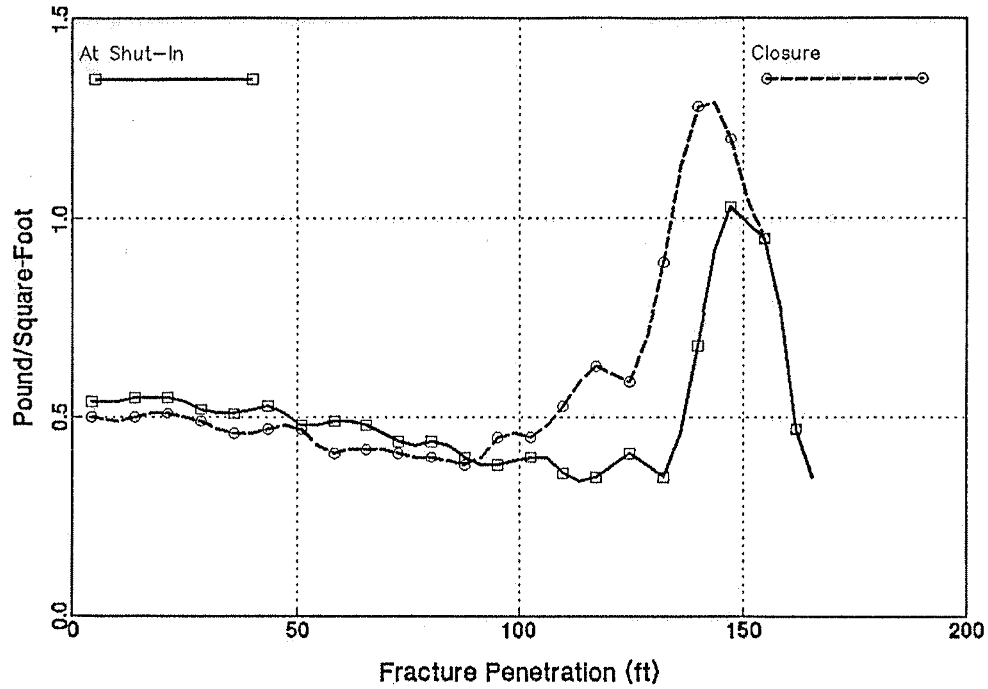


FIG. 23 - Final treatment design predicted in-situ concentration, E. Mereenie #39 (P4).

Treatment Execution:

Samples of the gel were tested on-site prior to the treatment and found to possess the proper characteristics with respect to base gel viscosity, pH, and crosslink. To minimize the effect of the bullheaded residual wellbore fluid ahead of the pad, the pad was pumped to the bottom of the tubing at 5 bpm. The rate was then increased to 15 bpm for the remainder of the treatment. The treatment was pumped without any mechanical or blending mishaps, however, a complete screenout was experienced with only 180 gals of the 1150 gal flush left to pump. Fig. 24 shows the surface treating parameters, with Table 2 showing the surface schedule from Halliburton's computer printout. This indicated a total of 17,698 lbs of proppant pumped with 6025 gals of gel and flush. This was based on the amount of proppant loaded/pumped (18,000 lbs) and accounting for approximately 300 lbs spillage at the surface. This schedule was used to determine the downhole treatment schedule shown in Table 3. From this, a total of 12,632 lbs of proppant (83.1% of design) was placed in the fracture with 4752 gals of gel (88%

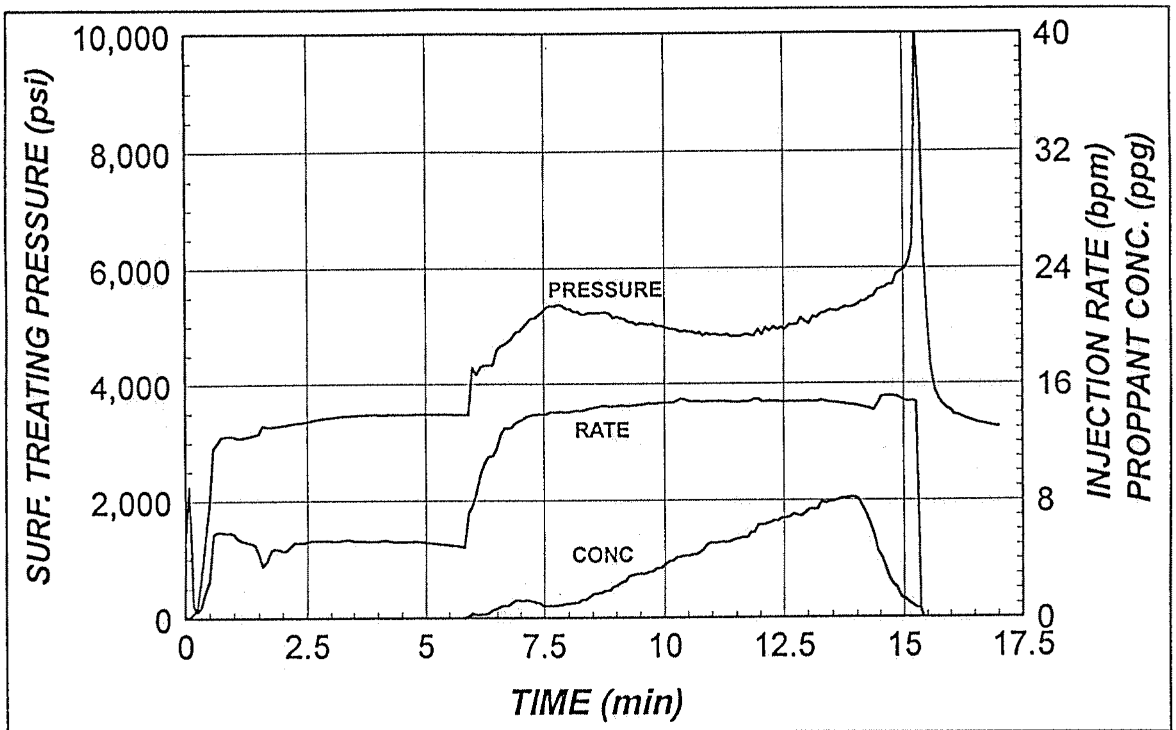


FIG. 24 - Boragel frac treatment summary of surface treating parameters, E. Mereenie #39 (P4).

TABLE 2 - Treatment surface pump schedule, E. Mereenie #39 (P4).

Fluid Type	Slur. Vol. (gal)	Fluid Vol. (gal)	Prop Conc. (ppg)	Prop Amt. (lbs)	Avg. Q (bpm)	Pump t (min)
Slick Water	262	262	0.00	0	4.62	1.35
Boragel H3595	948	948	0.00	0	5.04	4.48
Boragel H3595	185	183	0.26	47	8.81	0.50
Boragel H3595	250	242	0.79	190	12.32	0.48
Boragel H3595	954	911	1.08	985	13.91	1.63
Boragel H3595	445	409	1.98	810	14.45	0.73
Boragel H3595	449	395	3.08	1217	14.58	0.73
Boragel H3595	516	437	4.11	1798	14.74	0.83
Boragel H3595	610	496	5.21	2583	14.77	0.98
Boragel H3595	404	316	6.34	2004	14.80	0.65
Boragel H3595	506	385	7.15	2752	14.75	0.82
Boragel H3595	552	406	8.17	3316	14.60	0.90
Flush	723	635	3.14	1996	14.75	1.17
	6804	6025		17698		15.25

Note: (1) Proppant 20/40 Carbo-Lite.
(2) 18,000 lbs of prop loaded. Approx. 300 lbs spillage at surface.

TABLE 3 - Treatment downhole pump schedule, E. Mereenie #39 (P4).

Fluid Type	Slur. Vol. (gal)	Fluid Vol. (gal)	Prop Conc. (ppg)	Prop Amt. (lbs)	Avg. Q (bpm)	Pump t (min)
WB Fluid	1210	1210	0.00	0	4.95	5.82
WB Fluid	24	24	0.00	0	8.81	0.06
Slick Water	161	161	0.00	0	8.81	0.44
Slick Water	101	101	0.00	0	12.32	0.20
Boragel H3595	149	149	0.00	0	12.32	0.29
Boragel H3595	799	799	0.00	0	13.91	1.37
Boragel H3595	185	183	0.26	47	14.00	0.31
Boragel H3595	250	242	0.79	190	14.45	0.41
Boragel H3595	954	911	1.08	985	14.61	1.55
Boragel H3595	445	409	1.98	810	14.76	0.72
Boragel H3595	449	395	3.08	1217	14.78	0.72
Boragel H3595	516	437	4.11	1798	14.78	0.83
Boragel H3595	610	496	5.21	2583	14.67	0.99
Boragel H3595	404	316	6.34	2004	14.67	0.66
Boragel H3595	506	385	7.15	2752	14.75	0.82
Boragel H3595	41	38	8.17	246	14.75	0.07
	6804	6248		12632		15.26

Note: (1) Proppant 20/40 Carbo-Lite.
(2) Placed 83.1% of design proppant amaount with 88% of design gel volume. Avg. slurry conc. = 3.32 ppg (design = 3.90 ppg).

design). This resulted in an actual average slurry concentration of 3.32 ppg as compared to the design of 3.90 ppg. When compared to the design proppant schedule, Fig. 25, the actual schedule was more aggressive and proppant began nearly 500 gals too early, cutting the effective pad by about one-third. As discussed below, however, this is not felt to have caused the early complete screenout.

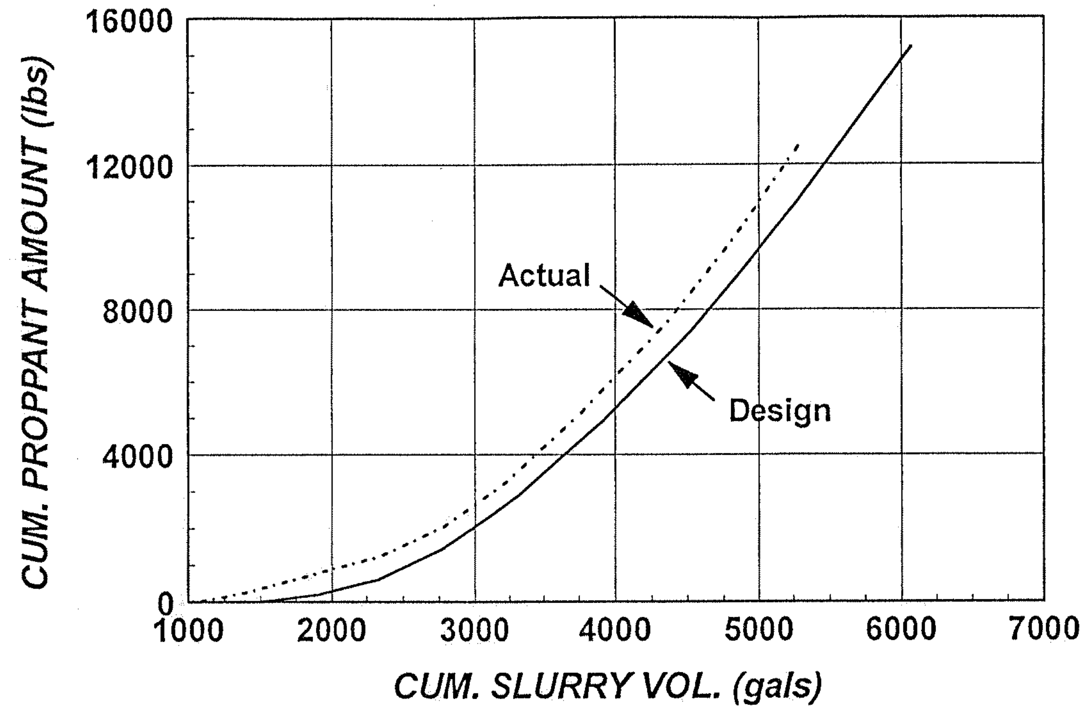


FIG. 25 - Comparison of actual to design prop schedule, E. Mereenie #39 (P4).

Post-Frac Evaluation:

Fig. 26 shows the gauge BHTP record plotted with the corresponding rate and downhole proppant concentration. From this it seemed that the TSO started somewhere around 13 minutes, with a pressure gain of only 510 psi as compared to the design prediction of 1600 psi. The complete screenout and large pressure rise seen at the surface was not apparent on the BHP record. In comparison, the surface pressure rose over 1000 psi during the later half of the treatment (Fig. 24) prior to the complete screenout. This seemed to suggest that the early screenout was not formation related, but instead, caused by a bridge or packing off of proppant inside the wellbore. It is hard to imagine what might have caused this. The same completion was used as on previous treatments, i.e. a perforated joint below the packer and the BHP gauges set in an XN nipple below this. Samples of the gel caught during the treatment all seemed to be crosslinking okay and should have been sufficient to carry proppant with minimal settling in the wellbore.

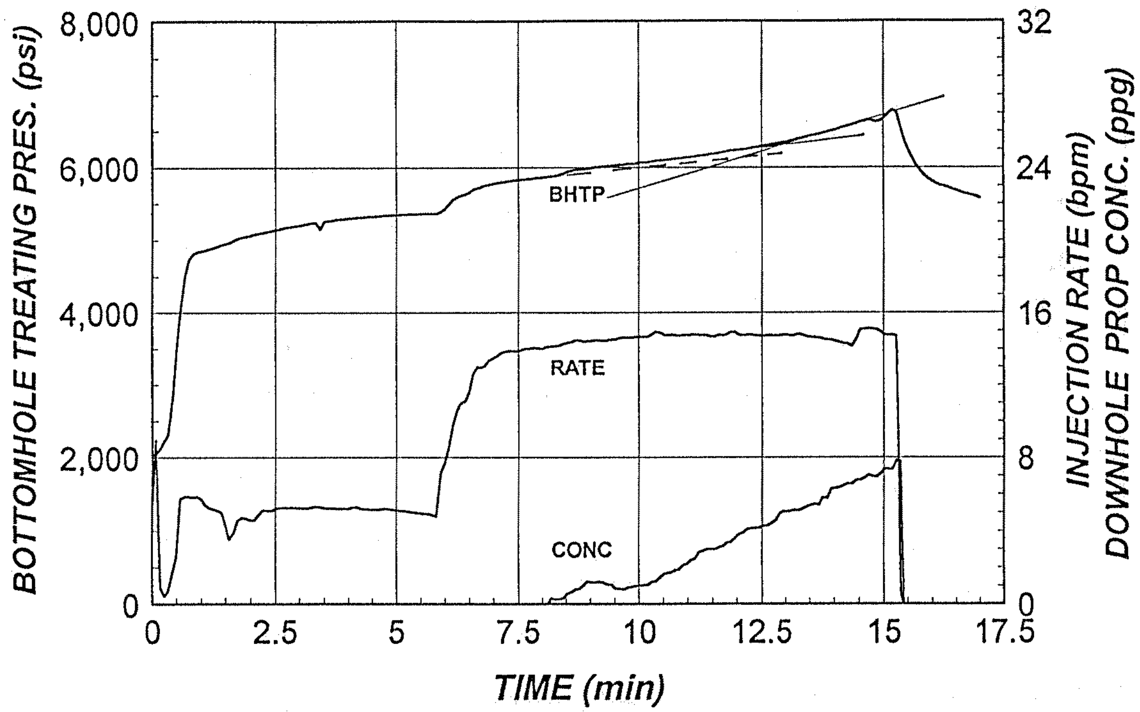


FIG. 26 - Boragel frac treatment summary of bottomhole treating parameters, E. Mereenie #39 (P4).

Following the treatment, the well was left shut-in for nearly 1.5 hours at which time the surface pressure had only bled down to 1800 psi. In order to unseat the packer and reverse out the remaining proppant in the wellbore, a slow bleed-off was, i.e. 0.25-0.5 bpm. When the well was opened at this low rate, there was a fairly sudden drop in surface pressure to 400 psi and then it again stabilized and began a slow decline as the flowback continued. This could have been indicative of a bridge inside the wellbore breaking loose or a higher initial flowback rate, although this supposedly did not occur. Over the next 16 minutes the pressure was bled back to 0 psi and when shut-in, it rebounded to 575 psi in 4 minutes and nearly leveled off. This rebound behavior was indicative of a low permeability reservoir, i.e. the fracture treatment supercharge had not fully dissipated yet. The well was re-opened to flow at 0.25-0.5 bpm to again reduce the pressure to 0 psi and left open while the packer was unseated and the proppant reverse initiated. The gauges were retrieved without any problem and fill was tagged at 5065 ft or below the bottom perforation.

If a bridge were to have occurred in the wellbore, the most likely place would have been between the tailpipe and casing, the minimal clearance being about 1 inch. This however, is far greater than the width of the generated fracture and seems unlikely. The other possibility is that the gauges were not recording accurately, although both gauges seemed to indicate the same pressure behavior making, this also unlikely. From the available data, there is simply no way to tell with any certainty what caused the early screenout.

To history match the downhole pressure behavior, net BHTP was calculated using the closure pressure of 3400 psi and the downhole "excess" pressure of 260 psi from the minifrac for the higher rate, crosslinked gel portion of the treatment. Fig. 27 shows the best model match obtained, with time "0" being when the crosslinked gel pad reached

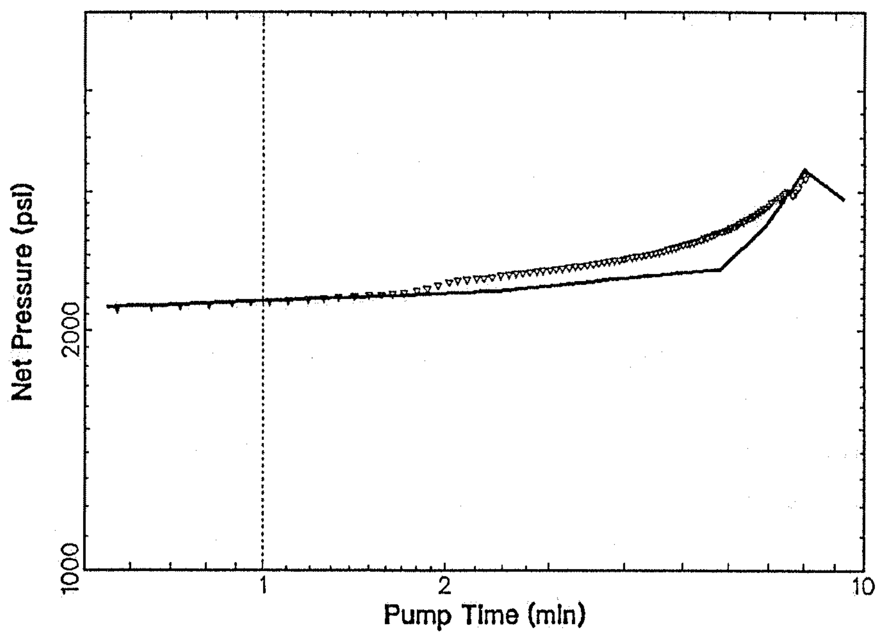


FIG. 27 - Boragel frac treatment post-frac analysis net BHTP history match, E. Mereenie #39 (P4).

the formation. To obtain this match required only minor changes to the final design model, these including (1) making some slight adjustments to the stresses and modulii within the P4 and boundaries and (2) by reducing the leak-off coefficient from 0.0025 to 0.00134 ft/sq.rt. minute. This leak-off reduction was not out of line, given that the higher value was derived by also accounting for the much higher leak-off of the wellbore fluid bullheaded in front of the minifrac. The lower leak-off value is thought to be more representative of the crosslinked gel. This characteristic was also apparent on the EM#38 P4 treatment and, while leak-off of the crosslinked gel appears to be lower than anticipated, both treatments screened-out early. It should be noted, though, that the BHP record on EM#38 did not show the complete screenout either and the TSO pressure gain on this treatment was only on the order of 300 psi. It is possible that the higher modulus environment in the P4 and surrounding layers simply will not allow enough width development to place the higher concentrations of proppant. Also as noted in the EM#38 (P4) post-frac report, this higher modulus/narrower width environment is conducive to higher shear-rates in the fracture; this, in turn, resulting in greater fluid shear-thinning (degradation).

As evident in Fig. 27, the match is very good prior to proppant reaching the formation. At this point pressure rose about 75 psi, indicating apparent increased friction, and it was not until the rate of TSO pressure rise surpassed the rate of friction increase due to increasing proppant concentration, that the match again converged. With this in mind, the simulator predicted pressure profile is thought to be fairly representative of the pressure in the fracture.

From the history match, model-predicted dimensions were a propped half-length of 219 ft (design - 167 ft), a maximum height of 175 ft (design - 191 ft), an average conductivity of 586 md-ft (design - 806 md-ft), and an average in-situ concentration of 0.4 lbs/sf (design - 0.6 lbs/sf). These are shown in Figs. 28-30, with the model I/O included in Appendix Table A-3. The lower conductivity and in-situ conc. were a result of the additional fracture penetration and less proppant placed than the design called for. The top of the modeled fracture was at 4835 ft or well into the P3-230/250. Subsequent fracture treating of the 230/250, though did not see any interference from the P4 fracture, fracture azimuth apparently not in line with the deviated wellbore azimuth and enough displacement existing between the fractures to prevent interference.

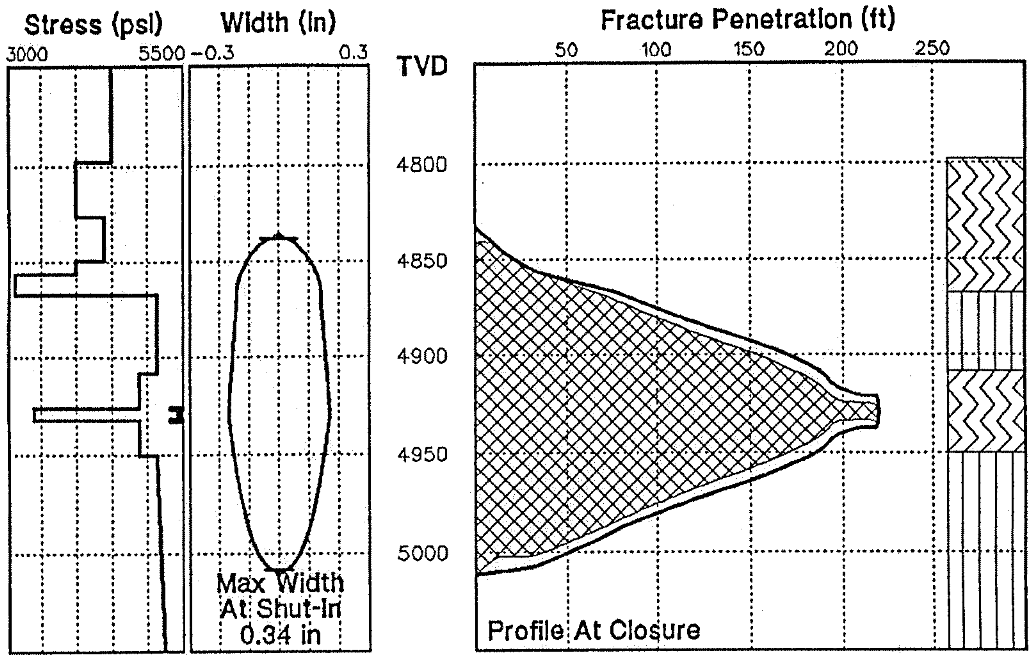


FIG. 28 - Treatment post-frac analysis predicted frac geometry, E. Mereenie #39 (P4).

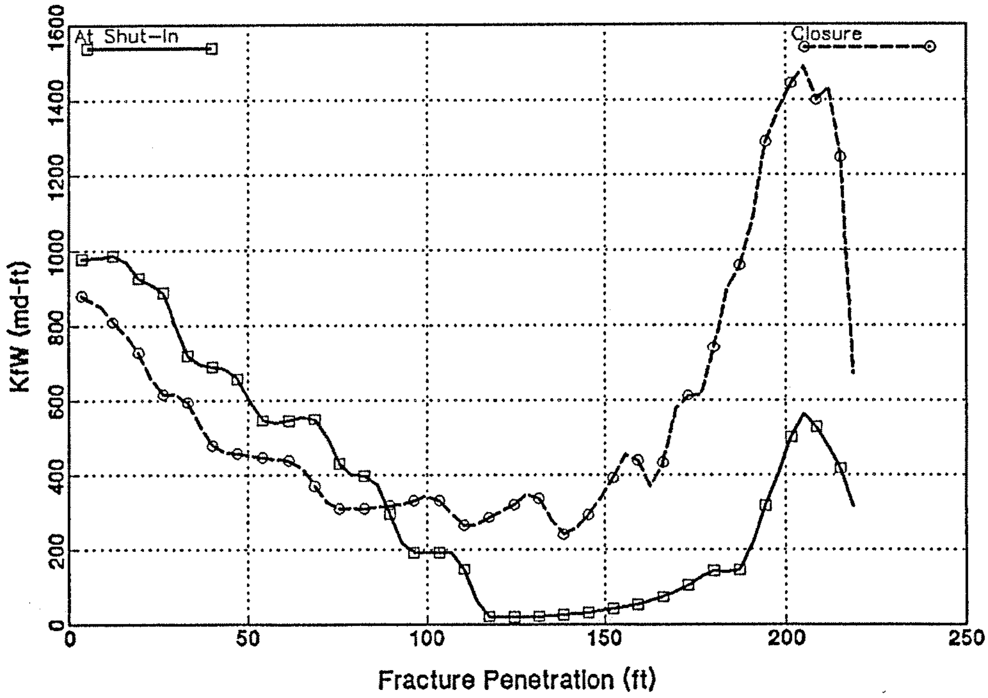


FIG. 29 - Treatment post-frac analysis predicted frac conductivity, E. Mereenie #39 (P4).

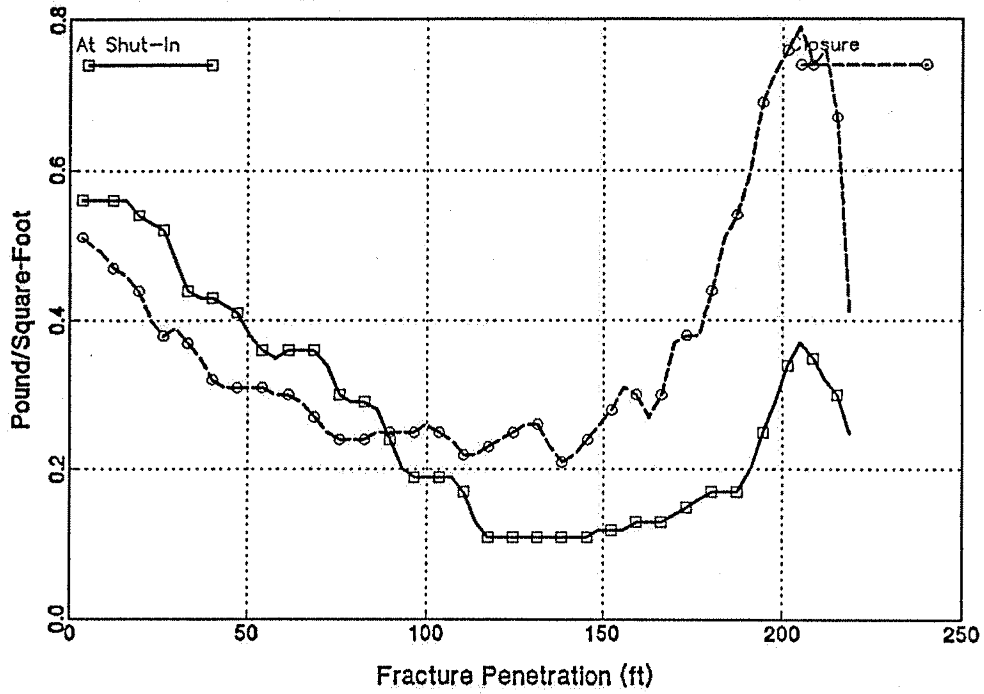


FIG. 30 - Treatment post-frac analysis predicted frac in-situ conc., E. Mereenie #39 (P4).

CONCLUSIONS / RECOMMENDATIONS

From pre-frac test analysis, closure pressure was 3400 psi (0.69 psi/ft), fluid efficiency from pressure decline analysis was 0.70, and net BHTP was on the order of 2200 psi with the XL gel at 15 bpm. Using the Mereenie correlation of fluid efficiency from pressure decline to injection efficiency, the efficiency was reduced to 0.35 for final design formulation. Downhole "excess" pressure during the minifrac was only 260 psi, indicating good wellbore to fracture communication.

The minifrac net BHTP seemed to increase throughout the crosslinked gel phase, suggesting some degree of height confinement. A reasonably good model history match was obtained with an initial frac interval of only 6 ft, boundary stresses of 4750 psi, modulii values of $7x10^6$ psi (pay) to $8.5x10^6$ psi (boundaries), and a leak-off coefficient of 0.0025 ft/sq.rt. minute.

The moderate confinement seen on the minifrac, when coupled with the stress differences and the relatively high modulii, restricted fracture width development. From the minifrac history match, the average width down the fracture was only 0.04 inches. This resulted in a fairly high shear environment, with model-predicted shear-rates of over 200 sec-1. This, in turn, resulted in modeled fluid degradation in the fracture from +/-400 cp at 170 sec-1 to only 100-200 cp.

The treatment was pumped reasonably close to design with a complete screenout occurring only 180 gals from the end of the flush. While it was apparent from BHP that the TSO occurred, the net BHTP gain was only 510 psi prior to termination as compared to the design prediction of 1600 psi. The sudden screenout pressure rise observed at the surface was not evident on the BHP record. This seemed to indicate a bridge within the wellbore, however, there is no real evidence to suggest that this happened.

To model history match the treatment pressure behavior required (1) making some slight adjustments to the stresses and modulii within the P4 and boundaries and (2) reducing the leak-off coefficient from 0.0025 to 0.00134 ft/sq.rt. minute. This reduction in leak-off was contrary to the complete screenout and again suggests that the screenout was not formation related. This same type behavior was observed on the P4 treatment in EM#38, the first modern P4 completion, and can not be readily explained.

From the final treatment history match, model-predicted dimensions were a propped half-length of 219 ft (design - 167 ft), a maximum height of 175 ft (design - 191 ft), an average conductivity of 586 md-ft (design - 806 md-ft), and an average in-situ concentration of 0.4 lbs/sf (design - 0.6 lbs/sf). In this apparent low permeability zone, this should be an effective stimulation. The top of the modeled fracture was well into the P3-230/250; but, due to the wellbore deviation and differences in wellbore and fracture azimuth, this did not interfere with the successful placement of the 230/250 treatment.

APPENDIX A

Fracture Model Simulations

TABLE A-1

Frac Summary * SANTOS - E. MEREENIE #39 (P4) MINIFRAC HISTORY MATCH
Filename: E39LMF.FRK ; Jun 16, 96

Design Data

FLUID LOSS LAYERS:	Top (ft)	Bottom (ft)	Thick (ft)	Loss Coef. (ft/sqrt(min))	Spurt (Gal/100 ft^2)
	4834.0	4867.0	33.0	0.00300	0.30
	4867.0	4908.0	41.0	0.00010	0.00
	4908.0	4950.0	42.0	0.00250	0.20
	4950.0	5200.0	250.0	0.00010	0.00

FORMATION:	Modulus (e6_psi)	7.00
	Perforated Height (ft)	6.0
	Permeability (md)	0.500
TEMPERATURE:	Bottom Hole (deg_F)	145
PRESSURE:	Reservoir Pressure (psi)	1850.0
	Closure Pressure (psi)	3400.0
DEPTH:	Well Depth (ft)	4926.0

FORMATION LAYER DATA - Multi-Layer Height Growth

-----Depth(ft)------ Top	Botm	Thick	-Stress (psi)-- Top	Botm	Gradient (psi/ft)	Modulus (e6_psi)	Toughness (psi/in)
4600.0	4748.0	148.0	2000.0	2000.0	0.000	5.50	3000.0
4748.0	4798.0	50.0	3900.0	3900.0	0.000	7.50	3000.0
4798.0	4826.0	28.0	3350.0	3350.0	0.000	6.50	3000.0
4826.0	4834.0	8.0	4000.0	4000.0	0.000	8.00	3000.0
4834.0	4867.0	33.0	3350.0	3350.0	0.000	7.00	3000.0
4867.0	4926.0	59.0	4750.0	4750.0	0.000	8.50	3000.0
4926.0	4932.0	6.0	3400.0	3400.0	0.000	7.00	3000.0
4932.0			4750.0		0.750	8.50	3000.0

Fluid Pressure Gradient (psi/ft)	0.450
Perforations - Top (ft)	4926
- Bot (ft)	4932
Initial Fracture Top (ft)	4926
Fracture Bottom (ft)	4932

3-D SIMULATOR	Step Size (ft)	4.0
PROGRAM CONTROL	Time Step (min)	1.2

Calculated Results
from 3-D Simulator
STIMPLAN (TM) , NSI , Tulsa,OK
Licensed To: ARCO Exploration & Production Technology

1/2 LENGTH:	'Hydraulic' length (ft)	128.2
	Propped length (ft)	0.0
PRESSURE:	Max Net Pressure (psi)	2249.2
TIME:	Max Exposure to Form. Temp. (min)	1.9
	Time to Close (min)	10.3
RATE:	Fluid Loss Rate during pad (_BPM) ..	0.00
EFFICIENCY:	at end of pumping schedule	0.35
PROPPANT:	Average In Situ Conc. (#/sq ft)	0.0
	Average Conductivity (md-ft)	0
HEIGHT:	Max Fracture Height (ft)	215.5
WIDTH:	Avg width at end of pumping (in) ...	0.04

StimPlan 2.61 (TM). NSI Technologies, Tulsa, OK
Licensed To: ARCO Exploration & Production Technology

WELL ID:		
SANTOS - E. MEREENIE #39 (P4) MINIFRAC HISTORY MATCH		
DEPTH:	Well Depth (ft)	4926
PRESSURE:	Reservoir Pressure (psi)	1850
	Closure Pressure (psi)	3400
TEMPERATURE:	Bottom Hole Temperature (deg_F)	145

** Pumping Schedule **

Sl Vol (MGal)	Fl Vol (MGal)	Conc (_PPG_) Start	End	Rate (_BPM)	Fluid Type	Prop Type	Cum Prop (MLbs)	Pump Time (min)
0.75	0.75	0.0	0.0	4.80	2	1	0.0	3.7
0.76	0.76	0.0	0.0	4.80	2	1	0.0	3.8
0.36	0.36	0.0	0.0	12.79	1	1	0.0	0.7
0.30	0.30	0.0	0.0	14.53	1	1	0.0	0.5
0.30	0.30	0.0	0.0	14.53	1	1	0.0	0.5
0.30	0.30	0.0	0.0	14.53	1	1	0.0	0.5
0.30	0.30	0.0	0.0	14.53	1	1	0.0	0.5

Total Slurry ...	3.1		Total Fluid ...	3.1
Total Proppant ...	0.0		Avg. Conc	0.0
Total Pump Time	10.1	min	Pad %	100.0

Proppant ID No. 1 — 20- 40 Un-Defined

Specific Gravity					2.65
'Damage Factor'					0.70
Proppant Stress (Mpsi)	0	2	4	8	16
KfW @ 2 #/sq ft (md-ft)	4800	3850	2750	990	50

Fluid ID No. 2 — 10#_SLICK_WATER

Specific Gravity 1.04

	@Welbor	@FormTmp	@1Hr	@2Hr	@4Hr	@8Hr
vis (cp @ 170 1/sec) .	100	100	100	100	100	100
non-Newtonian n'	0.90	0.90	0.90	0.90	0.90	0.90
K(lb·sec/ft^2)x1000	3.42	3.42	3.42	3.42	3.42	3.42

Fluid ID No. 1	BORAGEL_H3595					
Specific Gravity					1.04	
	@Welbor	@FormTmp	@1Hr	@2Hr	@4Hr	@8Hr
vis (cp @ 170 1/sec) .	450	400	350	300	10	2
non-Newtonian n'	0.38	0.40	0.41	0.42	0.90	0.95
K(lb·sec/ft^2)x1000	222.67	178.61	148.46	120.88	0.34	0.05

Time History * NSI STIMPLAN 3-D Fracture Simulation
SANTOS - E. MEREENIE #39 (P4) MINIFRAC HISTORY MATCH

Time (min)	Pen (ft)	Pres (psi)	Rate (_BPM)	Prop (_PPG_)	Sl Vol (MGal)	Eff-ciency	Loss (_BPM)	Hght (ft)	W-Avg (in)
0.0	12.0	1968	4.80	0.0	0.0	0.52	2.5	18	0.02
0.1	16.0	1776	4.80	0.0	0.0	0.43	3.1	27	0.01
0.2	20.0	1551	4.80	0.0	0.0	0.34	3.6	32	0.02
0.3	24.0	1664	4.80	0.0	0.1	0.31	3.5	37	0.02
0.4	28.0	1681	4.80	0.0	0.1	0.28	3.8	42	0.02
0.5	32.0	1674	4.80	0.0	0.1	0.25	4.0	48	0.02
0.7	36.0	1676	4.80	0.0	0.1	0.23	3.9	54	0.02
0.9	40.0	1674	4.80	0.0	0.2	0.22	3.8	60	0.02
1.2	44.0	1670	4.80	0.0	0.2	0.22	3.8	65	0.02
1.5	48.0	1670	4.80	0.0	0.3	0.22	3.8	70	0.02
1.8	52.0	1673	4.80	0.0	0.4	0.22	3.8	75	0.02
2.2	56.0	1659	4.80	0.0	0.4	0.21	3.8	81	0.02
2.5	60.0	1650	4.80	0.0	0.5	0.21	3.8	86	0.02
2.9	64.0	1654	4.80	0.0	0.6	0.21	3.8	91	0.02
3.4	68.0	1652	4.80	0.0	0.7	0.21	3.8	95	0.03
3.8	72.0	1659	4.80	0.0	0.8	0.21	3.8	100	0.03
4.3	76.0	1650	4.80	0.0	0.9	0.21	3.8	105	0.03
4.9	80.0	1640	4.80	0.0	1.0	0.21	3.8	110	0.03
5.5	84.0	1633	4.80	0.0	1.1	0.21	3.8	115	0.03
6.1	88.0	1634	4.80	0.0	1.2	0.21	3.8	120	0.03
6.7	92.0	1625	4.80	0.0	1.4	0.21	3.8	124	0.03
7.5	96.5	1638	4.80	0.0	1.5	0.21	3.7	129	0.03
7.8	100.5	1889	12.79	0.0	1.7	0.24	5.1	135	0.03
8.0	104.5	2115	12.79	0.0	1.8	0.27	5.8	143	0.04
8.3	108.5	2137	12.79	0.0	1.9	0.28	6.2	153	0.04
8.5	112.5	2178	14.53	0.0	2.1	0.30	6.8	164	0.04
8.8	116.5	2185	14.53	0.0	2.2	0.31	7.5	174	0.04
9.1	120.5	2163	14.53	0.0	2.4	0.33	8.2	184	0.04
9.5	124.5	2162	14.53	0.0	2.7	0.33	8.4	195	0.04
10.1	128.2	2249	14.53	0.0	3.1	0.35	8.1	216	0.04
10.3	128.2	2069	0.00	0.0	3.1	0.31	20.7	216	0.04
10.6	128.2	1889	0.00	0.0	3.1	0.27	7.5	216	0.03
11.0	128.2	1709	0.00	0.0	3.1	0.24	6.8	216	0.03
11.5	128.2	1529	0.00	0.0	3.1	0.20	6.3	216	0.02
11.7	128.2	1439	0.00	0.0	3.1	0.18	5.9	216	0.02
11.9	128.2	1350	0.00	0.0	3.1	0.17	5.7	216	0.02
12.1	128.2	1260	0.00	0.0	3.1	0.15	5.6	216	0.02
12.4	128.2	1170	0.00	0.0	3.1	0.13	5.4	216	0.01
12.6	128.2	1080	0.00	0.0	3.1	0.11	5.2	216	0.01
12.9	128.2	990	0.00	0.0	3.1	0.09	5.1	216	0.01
13.2	128.2	900	0.00	0.0	3.1	0.08	5.0	216	0.01
13.4	128.2	810	0.00	0.0	3.1	0.06	4.8	216	0.01
13.7	128.2	720	0.00	0.0	3.1	0.04	4.7	216	0.00
14.0	128.2	630	0.00	0.0	3.1	0.03	4.6	216	0.00
14.3	128.2	540	0.00	0.0	3.1	0.02	4.5	216	0.00
14.6	128.2	450	0.00	0.0	3.1	0.01	4.4	216	0.00

GEOMETRY SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) MINIFRAC HISTORY MATCH

Dstnce (ft)	Press (psi)	W-Avg (in)	Q (_BPM)	Sh-Rate (1/sec)	Hght (ft) Total	Up	Dn	Prop	Bank Fraction	Prop (PSF)
4	2246	0.07	7.3	226	216	104	105	184	0.00	0.00
10	2239	0.07	6.6	221	207	99	102	178	0.00	0.00
14	2234	0.07	6.2	220	202	94	102	173	0.00	0.00
18	2229	0.07	5.9	217	198	91	100	170	0.00	0.00
22	2223	0.07	5.6	213	194	89	98	167	0.00	0.00
26	2215	0.07	5.3	216	188	86	95	163	0.00	0.00
30	2207	0.07	4.9	216	183	84	93	159	0.00	0.00
34	2199	0.06	4.6	212	180	83	91	157	0.00	0.00
38	2187	0.06	4.3	218	174	80	88	153	0.00	0.00
42	2173	0.06	4.0	220	169	78	85	149	0.00	0.00
46	2159	0.06	3.7	224	164	75	83	145	0.00	0.00
50	2141	0.05	3.4	257	156	71	79	139	0.00	0.00
54	2123	0.05	3.1	279	148	67	74	133	0.00	0.00
58	2108	0.05	2.9	294	140	64	70	128	0.00	0.00
62	2092	0.04	2.6	340	133	61	67	123	0.00	0.00
66	2072	0.04	2.4	392	126	58	63	117	0.00	0.00
70	2042	0.04	2.2	414	118	55	58	108	0.00	0.00
74	2010	0.04	2.0	478	113	53	54	102	0.00	0.00
78	1976	0.03	1.8	582	105	49	49	92	0.00	0.00
82	1929	0.03	1.7	665	94	45	42	80	0.00	0.00
86	1871	0.03	1.5	738	85	41	38	70	0.00	0.00
90	1804	0.03	1.3	838	76	36	33	60	0.00	0.00
94	1717	0.02	1.2	1094	76	36	33	60	0.00	0.00
99	1459	0.02	1.0	1263	56	26	24	38	0.00	0.00
103	1330	0.02	0.9	1500	46	21	19	29	0.00	0.00
107	1256	0.02	0.7	1398	38	17	15	21	0.00	0.00
111	1213	0.02	0.4	2082	25	10	9	9	0.00	0.00
115	1110	0.01	0.3	3091	23	9	8	9	0.00	0.00
119	995	0.01	0.2	5986	19	7	6	8	0.00	0.00
123	675	0.01	0.2	6536	12	3	3	7	0.00	0.00
126	290	0.01	0.1	9999	12	3	3	7	0.00	0.00

FLUID SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) MINIFRAC HISTORY MATCH

Stage No	Gone	Fluid ID	Prop ID	Pos (ft)	Concentration In	Now	Desgn	Fl Vol (MGal)	Ex Tim (min)	Temp (deg_F)	Visc (cp)	Fall Frac
1	1	2	1	128	0.0	0.0	0.0	0.0	0.2	145	64	0.00
1	1	2	1	128	0.0	0.0	0.0	0.0	0.2	145	64	0.00
1	1	2	1	128	0.0	0.0	0.0	0.0	0.2	145	65	0.00
1	1	2	1	128	0.0	0.0	0.0	0.1	0.3	145	66	0.00
1	1	2	1	128	0.0	0.0	0.0	0.1	0.4	145	66	0.00
1	1	2	1	128	0.0	0.0	0.0	0.1	0.5	145	66	0.00
1	1	2	1	128	0.0	0.0	0.0	0.1	0.5	145	66	0.00
1	1	2	1	128	0.0	0.0	0.0	0.2	0.6	145	67	0.00
1	1	2	1	128	0.0	0.0	0.0	0.2	0.6	145	67	0.00
1	1	2	1	128	0.0	0.0	0.0	0.3	0.7	145	67	0.00
1	1	2	1	128	0.0	0.0	0.0	0.4	0.8	145	67	0.00
1	1	2	1	128	0.0	0.0	0.0	0.4	1.2	145	68	0.00
1	1	2	1	128	0.0	0.0	0.0	0.5	1.3	145	68	0.00
1	1	2	1	128	0.0	0.0	0.0	0.6	1.0	145	68	0.00
1	1	2	1	128	0.0	0.0	0.0	0.7	1.1	145	68	0.00
1	1	2	1	128	0.0	0.0	0.0	0.8	1.7	145	68	0.00
2	1	2	1	128	0.0	0.0	0.0	0.8	1.8	145	68	0.00
2	1	2	1	128	0.0	0.0	0.0	0.9	1.2	145	68	0.00
2	1	2	1	128	0.0	0.0	0.0	1.0	1.9	145	66	0.00
2	1	2	1	128	0.0	0.0	0.0	1.1	1.7	145	66	0.00
2	1	2	1	128	0.0	0.0	0.0	1.2	1.5	145	66	0.00
2	1	2	1	128	0.0	0.0	0.0	1.4	1.6	145	67	0.00
2	1	2	1	128	0.0	0.0	0.0	1.5	1.7	145	67	0.00
3	0	1	1	116	0.0	0.0	0.0	1.5	1.7	145	37	0.00
3	0	1	1	104	0.0	0.0	0.1	1.7	1.4	145	57	0.00
3	0	1	1	83	0.0	0.0	0.2	1.8	1.2	145	102	0.00
3	0	1	1	69	0.0	0.0	0.3	1.9	0.9	145	131	0.00
4	0	1	1	62	0.0	0.0	0.3	1.9	0.5	145	146	0.00
4	0	1	1	55	0.0	0.0	0.3	2.1	0.5	145	162	0.00
4	0	1	1	46	0.0	0.0	0.3	2.2	0.0	145	178	0.00
5	0	1	1	42	0.0	0.0	0.3	2.2	0.0	145	180	0.00
5	0	1	1	35	0.0	0.0	0.3	2.4	0.0	136	181	0.00
5	0	1	1	30	0.0	0.0	0.3	2.5	0.0	88	187	0.00
6	0	1	1	24	0.0	0.0	0.3	2.7	0.0	84	187	0.00
6	0	1	1	16	0.0	0.0	0.3	2.8	0.0	80	185	0.00
7	0	1	1	7	0.0	0.0	0.3	3.0	0.0	74	182	0.00

TABLE A-2

Frac Summary * SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN
Filename: E39LFD.FRK ; Jun 16, 96

Design Data

FLUID LOSS LAYERS:	Top (ft)	Bottom (ft)	Thick (ft)	Loss Coef. (ft/sqrt(min))	Spurt (Gal/100 ft^2)
	4834.0	4867.0	33.0	0.00300	0.30
	4867.0	4908.0	41.0	0.00010	0.00
	4908.0	4950.0	42.0	0.00250	0.20
	4950.0	5200.0	250.0	0.00010	0.00

FORMATION:	Modulus (e6_psi)	7.00
	Perforated Height (ft)	6.0
	Permeability (md)	0.500
TEMPERATURE:	Bottom Hole (deg_F)	145
PRESSURE:	Reservoir Pressure (psi)	1850.0
	Closure Pressure (psi)	3400.0
DEPTH:	Well Depth (ft)	4926.0

FORMATION LAYER DATA - Multi-Layer Height Growth

-----Depth(ft)------ Top	Botm	Thick	-Stress (psi)-- Top	Botm	Gradient (psi/ft)	Modulus (e6_psi)	Toughness (psi/in)
4600.0	4748.0	148.0	2000.0	2000.0	0.000	5.50	3000.0
4748.0	4798.0	50.0	3900.0	3900.0	0.000	7.50	3000.0
4798.0	4826.0	28.0	3350.0	3350.0	0.000	6.50	3000.0
4826.0	4834.0	8.0	4000.0	4000.0	0.000	8.00	3000.0
4834.0	4867.0	33.0	3350.0	3350.0	0.000	7.00	3000.0
4867.0	4926.0	59.0	4750.0	4750.0	0.000	8.50	3000.0
4926.0	4932.0	6.0	3400.0	3400.0	0.000	7.00	3000.0
4932.0			4750.0		0.750	8.50	3000.0

Fluid Pressure Gradient (psi/ft)	0.450
Perforations - Top (ft)	4926
- Bot (ft)	4932
Initial Fracture Top (ft)	4926
Fracture Bottom (ft)	4932

3-D SIMULATOR	Step Size (ft)	3.7
PROGRAM CONTROL	Time Step (min)	7.5

Calculated Results
from 3-D Simulator
STIMPLAN (TM) , NSI , Tulsa,OK
Licensed To: ARCO Exploration & Production Technology

1/2 LENGTH:	'Hydraulic' length (ft)	167.4
	Propped length (ft)	165.6
PRESSURE:	Max Net Pressure (psi)	3479.0
TIME:	Max Exposure to Form. Temp. (min)	5.0
	Time to Close (min)	9.0
RATE:	Fluid Loss Rate during pad (_BPM) ..	9.29
EFFICIENCY:	at end of pumping schedule	0.44
PROPPANT:	Average In Situ Conc. (#/sq ft)	0.6
	Average Conductivity (md-ft)	806
HEIGHT:	Max Fracture Height (ft)	191.1
WIDTH:	Avg width at end of pumping (in) ...	0.10

StimPlan 2.61 (TM). NSI Technologies, Tulsa, OK
Licensed To: ARCO Exploration & Production Technology

WELL ID:
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

DEPTH:	Well Depth (ft)	4926
PRESSURE:	Reservoir Pressure (psi)	1850
	Closure Pressure (psi)	3400
TEMPERATURE:	Bottom Hole Temperature (deg_F)	145

** Pumping Schedule **

Sl Vol (MGal)	Fl Vol (MGal)	Conc (_PPG_) Start	End	Rate (_BPM)	Fluid Type	Prop Type	Cum Prop (MLbs)	Pump Time (min)
1.50	1.50	0.0	0.0	15.00	1	1	0.0	2.4
0.41	0.40	0.5	0.5	15.00	1	1	0.2	0.7
0.42	0.40	1.0	1.0	15.00	1	1	0.6	0.7
0.44	0.40	2.0	2.0	15.00	1	1	1.4	0.7
0.57	0.50	3.0	3.0	15.00	1	1	2.9	0.9
0.59	0.50	4.0	4.0	15.00	1	1	4.9	0.9
0.61	0.50	5.0	5.0	15.00	1	1	7.4	1.0
0.76	0.60	6.0	6.0	15.00	1	1	11.0	1.2
0.79	0.60	7.0	7.0	15.00	1	1	15.2	1.2

Total Slurry ...	6.1	Total Fluid ...	5.4
Total Proppant ...	15.2	Avg. Conc	2.8
Total Pump Time	9.6 min	Pad %	24.7

Proppant ID No. 1 20- 40 CARBO-LITE

Specific Gravity					2.72
'Damage Factor'					0.60
Proppant Stress (Mpsi)	0	2	4	8	16
KfW @ 2 #/sq ft (md-ft)	10500	9200	7600	3200	500

Fluid ID No. 1 BORAGEL_H3595

Specific Gravity					1.04	
	@Welbor	@FormTmp	@1Hr	@2Hr	@4Hr	@8Hr
vis (cp @ 170 1/sec) .	450	400	350	300	10	2
non-Newtonian n'	0.38	0.40	0.41	0.42	0.90	0.95
K(lb·sec/ft^2)x1000	222.67	178.61	148.46	120.88	0.34	0.05

Time History * NSI STIMPLAN 3-D Fracture Simulation
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

Time (min)	Pen (ft)	Pres (psi)	Rate (_BPM)	Prop (_PPG_)	Sl Vol (MGal)	Eff-ciency	Loss (_BPM)	Hght (ft)	W-Avg (in)
0.0	12.0	1446	15.00	0.0	0.0	0.53	7.3	21	0.01
0.0	15.7	1423	15.00	0.0	0.0	0.52	7.0	24	0.01
0.0	19.4	1474	15.00	0.0	0.0	0.50	8.5	34	0.01
0.1	23.1	1478	15.00	0.0	0.0	0.45	9.2	34	0.02
0.1	26.8	1703	15.00	0.0	0.0	0.45	8.3	40	0.02
0.1	30.5	1653	15.00	0.0	0.1	0.41	10.1	49	0.02
0.1	34.2	1656	15.00	0.0	0.1	0.39	10.1	55	0.02
0.2	37.9	1721	15.00	0.0	0.1	0.39	9.2	61	0.02
0.2	41.6	1726	15.00	0.0	0.1	0.38	9.5	66	0.02
0.3	45.3	1743	15.00	0.0	0.2	0.38	9.4	72	0.02
0.3	49.0	1755	15.00	0.0	0.2	0.38	9.1	77	0.02
0.4	52.7	1767	15.00	0.0	0.2	0.39	9.0	82	0.02
0.4	56.4	1778	15.00	0.0	0.3	0.39	9.0	87	0.02
0.5	60.1	1786	15.00	0.0	0.3	0.39	8.9	92	0.02
0.6	63.8	1796	15.00	0.0	0.4	0.39	8.9	97	0.03
0.7	67.5	1802	15.00	0.0	0.4	0.39	8.9	101	0.03
0.8	71.2	1809	15.00	0.0	0.5	0.40	8.7	106	0.03
0.9	74.9	1818	15.00	0.0	0.5	0.40	8.7	110	0.03
1.0	78.6	1825	15.00	0.0	0.6	0.40	8.6	115	0.03
1.1	82.3	1831	15.00	0.0	0.7	0.41	8.6	120	0.03
1.2	86.0	1835	15.00	0.0	0.7	0.41	8.6	124	0.03
1.3	89.7	1839	15.00	0.0	0.8	0.41	8.5	129	0.03
1.4	93.4	1841	15.00	0.0	0.9	0.41	8.5	134	0.03
1.6	97.1	1840	15.00	0.0	1.0	0.41	8.8	138	0.03
1.7	100.8	1839	15.00	0.0	1.1	0.41	8.8	142	0.04
1.9	104.5	1840	15.00	0.0	1.2	0.41	8.9	146	0.04
2.1	108.2	1836	15.00	0.0	1.3	0.41	9.0	149	0.04
2.2	111.9	1837	15.00	0.0	1.4	0.41	9.1	153	0.04
2.4	115.6	1830	15.00	0.0	1.5	0.41	9.3	156	0.04
2.6	119.3	1833	15.00	0.5	1.6	0.41	9.3	159	0.04
2.8	123.0	1834	15.00	0.5	1.8	0.40	9.5	162	0.04
3.0	126.7	1829	15.00	0.5	1.9	0.40	9.5	164	0.04
3.2	130.4	1834	15.00	1.0	2.0	0.40	9.6	167	0.04
3.4	134.1	1836	15.00	1.0	2.2	0.40	9.7	170	0.04
3.7	137.8	1839	15.00	1.0	2.3	0.39	9.8	172	0.04
3.9	141.5	1842	15.00	2.0	2.5	0.39	9.8	175	0.04
4.2	145.2	1846	15.00	2.0	2.6	0.39	10.0	178	0.04
4.4	148.9	1848	15.00	2.0	2.8	0.38	10.0	180	0.04
4.7	152.6	1850	15.00	3.0	3.0	0.38	10.2	183	0.05
5.0	156.3	1852	15.00	3.0	3.1	0.38	10.3	186	0.05
5.3	160.0	1855	15.00	3.0	3.3	0.37	10.4	188	0.05
Bridge Stage 0 at 5 min, at 128.1 (ft), Avg Dia/W 0.03/0.03 in									
5.6	163.7	1863	15.00	4.0	3.5	0.37	10.4	191	0.05
Bridge Stage 0 at 6 min, at 151.3 (ft), Avg Dia/W 0.03/0.01 in									
6.2	167.4	1959	15.00	4.0	3.9	0.37	9.5	191	0.05
Bridge Stage 0 at 6 min, at 133.6 (ft), Avg Dia/W 0.03/0.02 in									
Screen Out in Stage 2 at Time = 6.2 min at 158.2 (ft)									

Time History * NSI STIMPLAN 3-D Fracture Simulation
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

Time (min)	Pen (ft)	Pres (psi)	Rate (_BPM)	Prop (_PPG_)	Sl Vol (MGal)	Eff-ciency	Loss (_BPM)	Hght (ft)	W-Avg (in)
6.9	167.4	2213	15.00	5.0	4.3	0.38	7.7	191	0.06
Bridge Stage 0 at 7 min, at 148.0 (ft), Avg Dia/W 0.03/0.03 in									
7.6	167.4	2495	15.00	5.0	4.8	0.40	6.9	191	0.07
Bridge Stage 0 at 8 min, at 141.2 (ft), Avg Dia/W 0.03/0.03 in									
Screen Out in Stage 2 at Time = 7.6 min at 154.5 (ft)									
8.3	167.4	2811	15.00	6.0	5.2	0.41	6.4	191	0.08
9.0	167.4	3137	15.00	7.0	5.6	0.43	5.9	191	0.09
Screen Out in Stage 3 at Time = 9.0 min at 147.1 (ft)									
9.7	167.4	3479	15.00	7.0	6.1	0.44	5.5	191	0.10
10.6	167.4	3201	0.00	0.0	6.1	0.41	5.3	191	0.09
11.6	167.4	2922	0.00	0.0	6.1	0.37	5.0	191	0.09
12.7	167.4	2644	0.00	0.0	6.1	0.34	4.7	191	0.08
13.8	167.4	2366	0.00	0.0	6.1	0.30	4.4	191	0.07
14.4	167.4	2227	0.00	0.0	6.1	0.28	4.3	191	0.07
15.0	167.4	2087	0.00	0.0	6.1	0.27	4.2	191	0.06
15.6	167.4	1948	0.00	0.0	6.1	0.25	4.1	191	0.06
16.2	167.4	1809	0.00	0.0	6.1	0.23	4.0	191	0.06
16.8	167.4	1670	0.00	0.0	6.1	0.22	3.9	191	0.05
17.5	167.4	1531	0.00	0.0	6.1	0.20	3.8	191	0.05
18.1	167.4	1392	0.00	0.0	6.1	0.19	3.7	191	0.05
18.7	167.4	1252	0.00	0.0	6.1	0.17	3.7	191	0.05

GEOMETRY SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

Dstnce (ft)	Press (psi)	W-Avg (in)	Q (_BPM)	Sh-Rate (1/sec)	------Hght (ft)------- Total	Up	Dn	Prop	Bank Fraction	Prop (PSF)
4	3477	0.13	7.4	76	191	88	97	165	0.00	0.54
10	3474	0.13	6.8	72	185	85	94	161	0.00	0.53
14	3472	0.13	6.5	71	181	83	92	158	0.00	0.55
18	3470	0.13	6.2	70	178	82	90	155	0.00	0.56
21	3468	0.13	5.9	68	175	81	89	154	0.00	0.55
25	3465	0.13	5.7	67	171	79	87	151	0.00	0.55
29	3463	0.13	5.4	65	170	78	86	150	0.00	0.52
32	3461	0.13	5.2	64	166	76	84	147	0.00	0.51
36	3458	0.13	4.9	63	163	75	82	145	0.00	0.51
40	3456	0.13	4.7	61	161	74	81	143	0.00	0.52
43	3454	0.13	4.4	60	157	72	79	140	0.00	0.54
47	3451	0.13	4.2	58	155	71	78	139	0.00	0.52
51	3449	0.13	4.0	56	152	70	76	136	0.00	0.46
55	3446	0.13	3.7	55	147	67	74	133	0.00	0.48
58	3444	0.13	3.5	53	145	66	73	131	0.00	0.50
62	3441	0.13	3.3	52	142	65	71	129	0.00	0.49
66	3438	0.12	3.1	51	137	62	68	125	0.00	0.49
69	3435	0.12	2.9	49	134	61	67	123	0.00	0.45
73	3433	0.12	2.7	48	130	59	65	120	0.00	0.44
77	3429	0.12	2.5	49	125	57	62	115	0.00	0.43
80	3426	0.12	2.3	48	121	56	60	111	0.00	0.44
84	3423	0.12	2.2	49	118	54	57	107	0.00	0.45
88	3419	0.11	2.0	51	112	52	54	100	0.00	0.40
92	3416	0.11	1.9	50	109	51	52	97	0.00	0.36
95	3412	0.11	1.7	50	105	50	50	93	0.00	0.38
99	3408	0.10	1.6	53	99	47	45	86	0.00	0.38
103	3404	0.10	1.4	50	97	47	44	84	0.00	0.41
106	3400	0.10	1.3	51	93	45	42	79	0.00	0.41
110	3395	0.09	1.1	55	85	41	38	71	0.00	0.35
114	3390	0.09	1.0	54	82	39	36	67	0.00	0.32
117	3386	0.09	0.9	51	80	38	35	65	0.00	0.35
121	3380	0.08	0.8	54	73	35	32	57	0.00	0.37
125	3375	0.08	0.7	59	65	31	28	49	0.00	0.43
129	3369	0.07	0.6	59	61	29	26	43	0.00	0.40
132	3361	0.07	0.5	54	57	27	25	40	0.00	0.29
136	3336	0.06	0.4	90	38	17	15	21	0.00	0.43
140	3278	0.05	0.3	153	25	10	9	10	0.02	0.70
143	3198	0.05	0.3	150	24	9	8	9	0.38	0.91
147	3154	0.05	0.2	150	21	8	7	9	0.85	1.14
151	2636	0.04	0.2	202	21	8	7	9	1.00	0.90
154	2574	0.05	0.2	147	21	8	7	9	1.00	1.01
158	1833	0.04	0.1	247	21	8	7	9	1.00	0.89
162	521	0.01	0.1	4099	21	8	7	9	1.00	0.30
166	295	0.02	0.2	2316	21	8	7	9	1.00	0.37

FLUID SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

Stage No	Gone	Fluid ID	Prop ID	Pos (ft)	Concentration In	Now	Desgn	Fl Vol (MGal)	Ex Tim (min)	Temp (deg_F)	Visc (cp)	Fall Frac
1	1	1	1	167	0.0	0.0	0.0	0.0	0.0	145	13	0.00
1	1	1	1	167	0.0	0.0	0.0	0.0	0.1	145	14	0.00
1	1	1	1	167	0.0	0.0	0.0	0.0	0.1	145	14	0.00
1	1	1	1	167	0.0	0.0	0.0	0.0	0.1	145	16	0.00
1	1	1	1	167	0.0	0.0	0.0	0.0	0.1	145	16	0.00
1	1	1	1	167	0.0	0.0	0.0	0.1	0.2	145	17	0.00
1	1	1	1	167	0.0	0.0	0.0	0.1	0.2	145	17	0.00
1	1	1	1	167	0.0	0.0	0.0	0.1	0.2	145	18	0.00
1	1	1	1	167	0.0	0.0	0.0	0.1	0.2	145	18	0.00
1	1	1	1	167	0.0	0.0	0.0	0.2	0.3	145	19	0.00
1	1	1	1	167	0.0	0.0	0.0	0.2	0.3	145	19	0.00
1	1	1	1	167	0.0	0.0	0.0	0.2	0.4	145	20	0.00
1	1	1	1	167	0.0	0.0	0.0	0.3	0.5	145	21	0.00
1	1	1	1	167	0.0	0.0	0.0	0.3	0.6	145	21	0.00
1	1	1	1	167	0.0	0.0	0.0	0.4	0.6	145	22	0.00
1	1	1	1	167	0.0	0.0	0.0	0.4	0.8	145	22	0.00
1	1	1	1	167	0.0	0.0	0.0	0.5	0.8	145	23	0.00
1	1	1	1	167	0.0	0.0	0.0	0.5	0.9	145	23	0.00
1	1	1	1	167	0.0	0.0	0.0	0.6	1.1	145	24	0.00
1	1	1	1	167	0.0	0.0	0.0	0.7	1.1	145	24	0.00
1	1	1	1	167	0.0	0.0	0.0	0.7	1.2	145	24	0.00
1	1	1	1	167	0.0	0.0	0.0	0.8	1.3	145	24	0.00
1	1	1	1	167	0.0	0.0	0.0	0.9	1.4	145	24	0.00
1	1	1	1	167	0.0	0.0	0.0	1.0	1.6	145	25	0.00
1	1	1	1	167	0.0	0.0	0.0	1.1	1.7	145	26	0.00
1	1	1	1	167	0.0	0.0	0.0	1.2	2.1	145	26	0.00
1	1	1	1	167	0.0	0.0	0.0	1.3	2.2	145	26	0.00
1	1	1	1	167	0.0	0.0	0.0	1.4	2.2	145	27	0.00
1	1	1	1	167	0.0	0.0	0.0	1.5	2.3	145	32	0.00
2	1	1	1	167	0.5	45.3	0.0	1.5	2.8	145	32	0.00
2	1	1	1	167	0.5	45.3	0.0	1.6	2.6	145	29	0.00
2	1	1	1	157	0.5	45.3	0.0	1.8	3.7	145	117	0.00
2	1	1	1	156	0.5	45.3	0.0	1.9	3.5	145	105	0.00
3	1	1	1	153	1.0	45.3	0.0	2.0	4.6	145	169	0.00
3	0	1	1	142	1.0	14.4	0.6	2.2	5.0	145	219	0.00
3	0	1	1	133	1.0	5.7	1.2	2.3	4.8	145	344	0.00
4	0	1	1	126	2.0	9.3	1.6	2.4	4.5	145	355	0.00
4	0	1	1	119	2.0	6.9	2.0	2.6	4.2	145	381	0.00
4	0	1	1	113	2.0	5.8	2.3	2.7	3.9	145	371	0.00
5	0	1	1	109	3.0	9.0	2.4	2.7	3.9	145	369	0.00
5	0	1	1	105	3.0	7.8	2.7	2.9	3.4	145	386	0.00
5	0	1	1	98	3.0	6.8	3.1	3.0	2.8	145	384	0.00
5	0	1	1	91	3.0	6.1	3.4	3.2	2.8	145	391	0.00
6	0	1	1	84	4.0	7.6	3.7	3.4	2.1	145	397	0.00
6	0	1	1	74	4.0	6.9	4.0	3.7	1.4	145	400	0.00
7	0	1	1	61	5.0	7.8	4.6	4.1	0.7	145	382	0.00
7	0	1	1	51	5.0	6.9	5.1	4.2	0.7	145	367	0.00
8	0	1	1	44	6.0	8.4	5.1	4.4	0.0	145	356	0.00
8	0	1	1	34	6.0	7.5	5.6	4.8	0.0	97	361	0.00
9	0	1	1	20	7.0	8.1	6.1	5.1	0.0	80	350	0.00
9	0	1	1	7	7.0	7.5	6.6	5.4	0.0	73	337	0.00

PROPPANT SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

Lb/Sq-Ft Lost to Embedment 0.200

Distance (ft)	KfW (md-ft)	Prop Concentration(Total lb/sq foot) Prop ID--> 1
4.2	699	0.54
10.2	702	0.54
13.9	720	0.55
17.6	735	0.55
21.3	733	0.55
25.0	709	0.54
28.7	671	0.52
32.4	648	0.51
36.1	647	0.51
39.8	669	0.52
43.5	688	0.53
47.2	647	0.51
50.9	586	0.48
54.6	586	0.48
58.3	611	0.49
62.0	610	0.49
65.7	581	0.48
69.4	533	0.46
73.1	497	0.44
76.8	486	0.43
80.5	496	0.44
84.2	486	0.43
87.9	424	0.40
91.6	368	0.38
95.3	366	0.38
99.0	389	0.39
102.7	418	0.40
106.4	406	0.40
110.1	329	0.36
113.8	280	0.34
117.5	306	0.35
121.2	372	0.38
124.9	429	0.41
128.6	375	0.38
132.3	320	0.35
136.0	544	0.46
139.7	1002	0.68
143.4	1483	0.92
147.1	1710	1.03
150.8	1636	0.99
154.5	1561	0.95
158.2	1185	0.77
161.9	549	0.47
165.6	310	0.35

Average Conductivity (md-ft) 649

PROPPANT SUMMARY * At Fracture Closure
SANTOS - E. MEREENIE #39 (P4) FINAL TREATMENT DESIGN

Lb/Sq-Ft Lost to Embedment 0.200

Distance (ft)	KfW (md-ft)	Prop Concentration(Total lb/sq foot) Prop ID--> 1
4.2	626	0.50
10.2	623	0.49
13.9	633	0.50
17.6	649	0.51
21.3	652	0.51
25.0	638	0.50
28.7	607	0.49
32.4	570	0.47
36.1	551	0.46
39.8	547	0.46
43.5	562	0.47
47.2	592	0.48
50.9	569	0.47
54.6	488	0.43
58.3	447	0.41
62.0	459	0.42
65.7	467	0.42
69.4	461	0.42
73.1	449	0.41
76.8	433	0.40
80.5	415	0.40
84.2	400	0.39
87.9	389	0.38
91.6	431	0.40
95.3	519	0.45
99.0	547	0.46
102.7	527	0.45
106.4	585	0.48
110.1	708	0.53
113.8	819	0.59
117.5	913	0.63
121.2	868	0.61
124.9	828	0.59
128.6	1062	0.70
132.3	1469	0.89
136.0	1969	1.13
139.7	2287	1.28
143.4	2298	1.29
147.1	2123	1.20
150.8	1789	1.05
154.5	1596	0.95
158.2	1212	0.77
161.9	561	0.47
165.6	317	0.35

Average Conductivity (md-ft) 806

TABLE A-3

Frac Summary * SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION
Filename: EM39LPF.FRK ; Sep 26, 96

Design Data

FLUID LOSS LAYERS:	Top (ft)	Bottom (ft)	Thick (ft)	Loss Coef. (ft/sqrt(min))	Spurt (Gal/100 ft^2)
	4798.0	4867.0	69.0	0.00250	0.30
	4867.0	4908.0	41.0	0.00010	0.00
	4908.0	4950.0	42.0	0.00134	0.00
	4950.0	5200.0	250.0	0.00010	0.00

FORMATION: Modulus (e6_psi) 7.00
Perforated Height (ft) 6.0
Permeability (md) 0.500
TEMPERATURE: Bottom Hole (deg_F) 145
PRESSURE: Reservoir Pressure (psi) 1850.0
Closure Pressure (psi) 3400.0
DEPTH: Well Depth (ft) 4926.0

FORMATION LAYER DATA - Multi-Layer Height Growth

-----Depth(ft)------ Top	Botm	Thick	-Stress (psi)-- Top	Botm	Gradient (psi/ft)	Modulus (e6_psi)	Toughness (psi«in)
4700.0	4748.0	48.0	2000.0	2000.0	0.000	5.50	3000.0
4748.0	4798.0	50.0	4500.0	4500.0	0.000	8.50	3000.0
4798.0	4826.0	28.0	4000.0	4000.0	0.000	7.00	3000.0
4826.0	4833.0	7.0	4400.0	4400.0	0.000	8.00	3000.0
4833.0	4849.0	16.0	4400.0	4400.0	0.000	8.00	3000.0
4849.0	4856.0	7.0	4000.0	4000.0	0.000	7.00	3000.0
4856.0	4867.0	11.0	3080.0	3080.0	0.000	6.50	3000.0
4867.0	4908.0	41.0	5150.0	5150.0	0.000	9.00	3000.0
4908.0	4926.0	18.0	4900.0	4900.0	0.000	8.50	3000.0
4926.0	4932.0	6.0	3400.0	3400.0	0.000	7.00	3000.0
4932.0	4950.0	18.0	4900.0	4900.0	0.000	8.50	3000.0
4950.0			5150.0		1.000	9.00	3000.0

Fluid Pressure Gradient (psi/ft) 0.450
Perforations - Top (ft) 4926
- Bot (ft) 4932
Initial Fracture Top (ft) 4926
Fracture Bottom (ft) 4932

3-D SIMULATOR Step Size (ft) 3.5
PROGRAM CONTROL Time Step (min) 6.4

Calculated Results
from 3-D Simulator
STIMPLAN (TM) , NSI , Tulsa,OK
Licensed To: Internal Use - NSI Technologies

1/2 LENGTH: 'Hydraulic' length (ft) 220.5
Propped length (ft) 218.8
PRESSURE: Max Net Pressure (psi) 3194.7
TIME: Max Exposure to Form. Temp. (min) 5.8
Time to Close (min) 21.6
RATE: Fluid Loss Rate during pad (_BPM) .. 5.69
EFFICIENCY: at end of pumping schedule 0.58
PROPPANT: Average In Situ Conc. (#/sq ft) 0.4
Average Conductivity (md-ft) 586
HEIGHT: Max Fracture Height (ft) 175.3
WIDTH: Avg width at end of pumping (in) ... 0.10

StimPlan 2.60 (TM). NSI Technologies, Tulsa, OK
Licensed To: Internal Use - NSI Technologies

WELL ID:
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

DEPTH:	Well Depth (ft)	4926
PRESSURE:	Reservoir Pressure (psi)	1850
	Closure Pressure (psi)	3400
TEMPERATURE:	Bottom Hole Temperature (deg_F)	145

** Pumping Schedule **

Sl Vol (MGal)	Fl Vol (MGal)	Conc (_PPG_) Start	End	Rate (_BPM)	Fluid Type	Prop Type	Cum Prop (MLbs)	Pump Time (min)
0.15	0.15	0.0	0.0	12.32	1	1	0.0	0.3
0.40	0.40	0.0	0.0	13.91	1	1	0.0	0.7
0.40	0.40	0.0	0.0	13.91	1	1	0.0	0.7
0.18	0.18	0.3	0.3	14.00	1	1	0.1	0.3
0.25	0.24	0.8	0.8	14.45	1	1	0.2	0.4
0.95	0.91	1.1	1.1	14.61	2	1	1.2	1.5
0.45	0.41	2.0	2.0	14.76	2	1	2.1	0.7
0.45	0.40	3.1	3.1	14.78	2	1	3.3	0.7
0.52	0.44	4.1	4.1	14.78	2	1	5.1	0.8
0.61	0.50	5.2	5.2	14.67	2	1	7.7	1.0
0.41	0.32	6.3	6.3	14.67	2	1	9.7	0.7
0.54	0.41	7.2	7.2	14.75	2	1	12.7	0.9

Total Slurry ...	5.3		Total Fluid ...	4.8
Total Proppant ...	12.7		Avg. Conc	2.7
Total Pump Time	8.7	min	Pad %	17.9

Proppant ID No. 1 20- 40 CARBO-LITE

Specific Gravity					2.72
'Damage Factor'					0.60
Proppant Stress (Mpsi)	0	2	4	8	16
KfW @ 2 #/sq ft (md-ft)	10500	9200	7600	3200	500

Fluid ID No. 1 BORAGEL_H3595

Specific Gravity 1.04

	@Welbor	@FormTmp	@1Hr	@2Hr	@4Hr	@8Hr
vis (cp @ 170 1/sec) .	650	600	550	500	10	2
non-Newtonian n'	0.38	0.40	0.41	0.42	0.90	0.95
K(lb*sec/ft^2)x1000	321.64	267.92	233.30	201.47	0.34	0.05

Fluid ID No. 2 BORAGEL_H3595

Specific Gravity 1.04

	@Welbor	@FormTmp	@1Hr	@2Hr	@4Hr	@8Hr
vis (cp @ 170 1/sec) .	800	750	700	500	10	2
non-Newtonian n'	0.38	0.40	0.41	0.42	0.90	0.95
K(lb*sec/ft^2)x1000	395.87	334.90	296.92	201.47	0.34	0.05

Time History * NSI STIMPLAN 3-D Fracture Simulation
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

Time (min)	Pen (ft)	Pres (psi)	Rate (_BPM)	Prop (_PPG_)	Sl Vol (MGal)	Eff-ciency	Loss (_BPM)	Hght (ft)	W-Avg (in)
0.0	10.5	1810	12.32	0.0	0.0	0.76	2.9	18	0.01
0.0	14.0	1675	12.32	0.0	0.0	0.75	3.0	26	0.01
0.0	17.5	1654	12.32	0.0	0.0	0.72	4.0	29	0.02
0.0	21.0	1830	12.32	0.0	0.0	0.70	4.0	33	0.02
0.1	24.5	1858	12.32	0.0	0.0	0.68	4.6	36	0.02
0.1	28.0	1904	12.32	0.0	0.0	0.67	5.0	40	0.02
0.1	31.5	1944	12.32	0.0	0.0	0.64	5.3	43	0.02
0.1	35.0	1954	12.32	0.0	0.1	0.63	5.3	47	0.02
0.1	38.5	1979	12.32	0.0	0.1	0.62	5.0	51	0.02
0.2	42.0	2004	12.32	0.0	0.1	0.62	5.2	54	0.02
0.2	45.5	2015	12.32	0.0	0.1	0.61	5.3	58	0.02
0.2	49.0	2054	13.91	0.0	0.1	0.61	5.4	61	0.03
0.3	52.5	2075	13.91	0.0	0.1	0.61	5.5	64	0.03
0.3	56.0	2087	13.91	0.0	0.2	0.61	5.5	68	0.03
0.3	59.5	2099	13.91	0.0	0.2	0.61	5.6	71	0.03
0.4	63.0	2109	13.91	0.0	0.2	0.60	5.6	73	0.03
0.4	66.5	2126	13.91	0.0	0.2	0.60	5.6	76	0.03
0.5	70.0	2137	13.91	0.0	0.3	0.60	5.6	79	0.03
0.6	73.5	2145	13.91	0.0	0.3	0.60	5.7	82	0.03
0.6	77.0	2152	13.91	0.0	0.3	0.60	5.7	85	0.03
0.7	80.5	2153	13.91	0.0	0.4	0.60	5.7	87	0.04
0.7	84.0	2162	13.91	0.0	0.4	0.60	5.7	90	0.04
0.8	87.5	2167	13.91	0.0	0.5	0.60	5.7	93	0.04
0.9	91.0	2173	13.91	0.0	0.5	0.60	5.7	95	0.04
0.9	94.5	2178	13.91	0.0	0.5	0.60	5.8	98	0.04
1.0	98.0	2183	13.91	0.0	0.6	0.60	5.7	101	0.04
1.1	101.5	2187	13.91	0.0	0.6	0.60	5.8	103	0.04
1.2	105.0	2191	13.91	0.0	0.7	0.60	5.7	106	0.04
1.3	108.5	2197	13.91	0.0	0.7	0.59	5.7	108	0.04
1.4	112.0	2202	13.91	0.0	0.8	0.59	5.7	111	0.04
1.5	115.5	2207	13.91	0.0	0.9	0.59	5.7	114	0.04
1.6	119.0	2211	13.91	0.0	0.9	0.59	5.7	116	0.05
1.7	122.5	2216	14.00	0.3	1.0	0.59	5.7	119	0.05
1.8	126.0	2220	14.00	0.3	1.0	0.59	5.7	121	0.05
1.9	129.5	2223	14.00	0.3	1.1	0.59	5.7	124	0.05
2.0	133.0	2229	14.45	0.8	1.2	0.59	5.8	126	0.05
2.2	136.5	2234	14.45	0.8	1.3	0.59	5.9	129	0.05
2.3	140.0	2236	14.45	0.8	1.3	0.59	5.9	131	0.05
2.4	143.5	2243	14.61	1.1	1.4	0.59	6.0	132	0.05
2.6	147.0	2247	14.61	1.1	1.5	0.59	6.0	134	0.05
2.7	150.5	2253	14.61	1.1	1.6	0.59	6.1	136	0.05
2.8	154.0	2261	14.61	1.1	1.7	0.59	6.1	137	0.05
3.0	157.5	2269	14.61	1.1	1.8	0.59	6.2	139	0.05
3.1	161.0	2277	14.61	1.1	1.9	0.59	6.2	141	0.05
3.3	164.5	2284	14.61	1.1	1.9	0.59	6.3	143	0.05
3.4	168.0	2293	14.61	1.1	2.0	0.58	6.3	144	0.06
3.6	171.5	2301	14.61	1.1	2.1	0.58	6.3	146	0.06

Time History * NSI STIMPLAN 3-D Fracture Simulation
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

Time (min)	Pen (ft)	Pres (psi)	Rate (_BPM)	Prop (_PPG_)	Sl Vol (MGal)	Eff-ciency	Loss (_BPM)	Hght (ft)	W-Avg (in)
3.8	175.0	2310	14.61	1.1	2.2	0.58	6.4	148	0.06
3.9	178.5	2320	14.61	1.1	2.3	0.58	6.5	150	0.06
4.1	182.0	2327	14.76	2.0	2.5	0.58	6.5	152	0.06
4.3	185.5	2332	14.76	2.0	2.6	0.58	6.6	154	0.06
4.5	189.0	2339	14.76	2.0	2.7	0.58	6.7	156	0.06
4.7	192.5	2348	14.76	2.0	2.8	0.57	6.8	158	0.06
4.8	196.0	2351	14.78	3.1	2.9	0.57	6.9	160	0.06
5.1	199.5	2359	14.78	3.1	3.0	0.57	7.0	163	0.06
5.3	203.0	2368	14.78	3.1	3.2	0.57	7.1	165	0.06
5.5	206.5	2373	14.78	4.1	3.3	0.57	7.2	167	0.06
5.8	210.0	2381	14.78	4.1	3.5	0.56	7.3	170	0.06
Bridge Stage 0 at 6 min, at 176.3 (ft), Avg Dia/W 0.03/0.03 in									
6.0	213.5	2387	14.78	4.1	3.6	0.56	7.4	173	0.06
Bridge Stage 0 at 6 min, at 185.4 (ft), Avg Dia/W 0.03/0.02 in									
6.3	217.0	2393	14.78	4.1	3.8	0.56	7.5	175	0.06
Bridge Stage 0 at 6 min, at 197.8 (ft), Avg Dia/W 0.03/0.02 in									
7.5	220.5	2712	14.67	5.2	4.6	0.56	6.1	175	0.08
Bridge Stage 0 at 8 min, at 205.8 (ft), Avg Dia/W 0.03/0.02 in									
Screen Out in Stage 4 at Time = 7.5 min at 215 (ft)									
7.8	220.5	2803	14.67	6.3	4.7	0.57	5.1	175	0.08
Bridge Stage 0 at 8 min, at 200.4 (ft), Avg Dia/W 0.03/0.03 in									
8.0	220.5	2897	14.75	7.2	4.9	0.57	5.0	175	0.09
8.2	220.5	2993	14.75	7.2	5.0	0.57	4.8	175	0.09
8.5	220.5	3093	14.75	7.2	5.2	0.57	4.7	175	0.09
8.8	220.5	3195	14.75	7.2	5.3	0.58	4.4	175	0.10
10.1	220.5	2939	0.00	0.0	5.3	0.53	4.3	175	0.09
11.7	220.5	2684	0.00	0.0	5.3	0.49	3.8	175	0.08
13.4	220.5	2428	0.00	0.0	5.3	0.44	3.4	175	0.08
15.4	220.5	2172	0.00	0.0	5.3	0.40	3.2	175	0.07
16.6	220.5	2045	0.00	0.0	5.3	0.38	3.0	175	0.07
17.9	220.5	1917	0.00	0.0	5.3	0.36	2.8	175	0.07
19.4	220.5	1789	0.00	0.0	5.3	0.34	2.7	175	0.06
20.9	220.5	1661	0.00	0.0	5.3	0.31	2.6	175	0.06
22.6	220.5	1533	0.00	0.0	5.3	0.29	2.5	175	0.06
24.4	220.5	1406	0.00	0.0	5.3	0.27	2.3	175	0.06
26.2	220.5	1278	0.00	0.0	5.3	0.25	2.3	175	0.05
28.2	220.5	1150	0.00	0.0	5.3	0.23	2.2	175	0.05
30.4	220.5	1022	0.00	0.0	5.3	0.20	2.1	175	0.05

GEOMETRY SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

Dstnce (ft)	Press (psi)	W-Avg (in)	Q (_BPM)	Sh-Rate (1/sec)	------Hght (ft)------- Total	Up	Dn	Prop	Bank Fraction	Prop (PSF)
4	3191	0.15	7.4	62	175	91	79	167	0.00	0.56
9	3183	0.15	6.9	60	169	85	78	161	0.00	0.56
12	3178	0.15	6.7	60	167	83	78	159	0.00	0.56
16	3172	0.15	6.4	60	163	80	77	156	0.00	0.57
19	3166	0.15	6.2	59	161	78	77	154	0.00	0.53
23	3160	0.15	6.0	61	158	75	77	152	0.00	0.52
26	3153	0.14	5.8	62	155	73	76	150	0.00	0.54
30	3146	0.14	5.6	64	153	72	76	148	0.00	0.47
33	3139	0.14	5.4	68	151	70	75	145	0.00	0.43
37	3132	0.13	5.2	67	149	69	74	143	0.00	0.43
40	3125	0.13	5.0	67	146	68	72	140	0.00	0.43
44	3118	0.13	4.8	67	144	67	71	138	0.00	0.42
47	3111	0.13	4.7	66	142	66	70	136	0.00	0.42
51	3104	0.13	4.5	67	140	65	68	133	0.00	0.38
54	3097	0.13	4.3	66	138	65	67	131	0.00	0.35
58	3090	0.13	4.2	66	135	64	65	128	0.00	0.35
61	3083	0.13	4.0	66	133	63	64	126	0.00	0.36
65	3076	0.12	3.8	66	131	62	63	123	0.00	0.36
68	3070	0.12	3.7	66	129	61	61	121	0.00	0.36
72	3063	0.12	3.5	65	126	60	60	118	0.00	0.35
75	3056	0.12	3.4	66	124	59	58	115	0.00	0.29
79	3050	0.12	3.2	65	121	59	57	113	0.00	0.29
82	3044	0.12	3.1	66	118	57	55	110	0.00	0.29
86	3037	0.12	3.0	67	116	56	54	107	0.00	0.29
89	3031	0.11	2.8	68	113	55	52	104	0.00	0.24
93	3024	0.11	2.7	69	111	53	51	101	0.00	0.19
96	3018	0.11	2.6	70	108	52	50	98	0.00	0.19
100	3011	0.11	2.5	71	106	51	49	96	0.00	0.19
103	3004	0.10	2.4	72	103	49	47	93	0.00	0.19
107	2997	0.10	2.3	73	101	48	46	90	0.00	0.19
110	2990	0.10	2.1	75	98	47	45	87	0.00	0.19
114	2983	0.10	2.0	75	96	46	44	85	0.00	0.11
117	2976	0.10	1.9	76	93	44	43	82	0.00	0.11
121	2968	0.10	1.8	77	91	43	42	80	0.00	0.11
124	2961	0.09	1.7	78	88	42	40	77	0.00	0.11
128	2953	0.09	1.6	79	86	41	39	75	0.00	0.11
131	2945	0.09	1.5	79	84	40	38	72	0.00	0.11
135	2937	0.09	1.4	81	81	38	37	70	0.00	0.11
138	2928	0.09	1.4	80	80	38	36	68	0.00	0.11
142	2920	0.08	1.3	80	77	36	35	65	0.00	0.11
145	2911	0.08	1.2	80	75	35	34	63	0.00	0.12
149	2902	0.08	1.1	79	73	34	33	61	0.00	0.12
152	2893	0.08	1.0	79	70	33	31	58	0.00	0.12
156	2883	0.08	0.9	79	68	32	30	55	0.00	0.12
159	2874	0.08	0.9	78	65	30	29	52	0.00	0.13
163	2863	0.07	0.8	78	62	29	28	50	0.00	0.13
166	2853	0.07	0.7	78	60	28	26	47	0.00	0.13
170	2842	0.07	0.6	76	58	26	25	44	0.00	0.14
173	2831	0.07	0.6	77	54	25	23	41	0.00	0.15
177	2819	0.07	0.5	74	52	23	22	38	0.00	0.16
180	2808	0.06	0.4	72	49	22	21	35	0.00	0.17
184	2797	0.06	0.3	74	45	20	19	30	0.00	0.17
187	2786	0.06	0.3	70	42	18	17	27	0.00	0.16
191	2775	0.06	0.2	71	37	16	15	22	0.00	0.19
194	2758	0.05	0.2	114	26	10	9	10	0.00	0.27
198	2733	0.04	0.1	102	24	9	9	10	0.00	0.26
201	2673	0.04	0.1	92	22	8	8	10	0.00	0.36
205	2583	0.04	0.1	86	19	7	6	9	0.04	0.37
208	2458	0.04	0.1	91	16	5	5	8	0.17	0.36
212	2304	0.04	0.1	79	16	5	5	8	0.18	0.30
215	2229	0.03	0.0	60	16	5	5	8	0.29	0.34
219	342	0.01	0.0	1024	16	5	5	8	1.00	0.21

FLUID SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

Stage No	Gone	Fluid ID	Prop ID	Pos (ft)	Concentration In	Now	Desgn	Fl Vol (MGal)	Ex Tim (min)	Temp (deg_F)	Visc (cp)	Fall Frac
1	1	1	1	221	0.0	0.0	0.0	0.0	0.1	145	28	0.00
1	1	1	1	221	0.0	0.0	0.0	0.0	0.2	145	31	0.00
1	1	1	1	221	0.0	0.0	0.0	0.0	0.2	145	32	0.00
1	1	1	1	221	0.0	0.0	0.0	0.0	0.2	145	33	0.00
1	1	1	1	221	0.0	0.0	0.0	0.0	0.3	145	34	0.00
1	1	1	1	221	0.0	0.0	0.0	0.0	0.3	145	35	0.00
1	1	1	1	221	0.0	0.0	0.0	0.0	0.3	145	37	0.00
1	1	1	1	221	0.0	0.0	0.0	0.1	0.4	145	39	0.00
1	1	1	1	221	0.0	0.0	0.0	0.1	0.5	145	40	0.00
1	1	1	1	221	0.0	0.0	0.0	0.1	0.5	145	41	0.00
1	1	1	1	221	0.0	0.0	0.0	0.1	0.6	145	43	0.00
2	1	1	1	221	0.0	0.0	0.0	0.1	0.8	145	44	0.00
2	1	1	1	221	0.0	0.0	0.0	0.1	0.7	145	45	0.00
2	1	1	1	221	0.0	0.0	0.0	0.2	0.9	145	46	0.00
2	1	1	1	221	0.0	0.0	0.0	0.2	1.0	145	47	0.00
2	1	1	1	221	0.0	0.0	0.0	0.2	1.2	145	49	0.00
2	1	1	1	221	0.0	0.0	0.0	0.2	1.2	145	49	0.00
2	1	1	1	221	0.0	0.0	0.0	0.3	1.4	145	50	0.00
2	1	1	1	221	0.0	0.0	0.0	0.3	1.6	145	51	0.00
2	1	1	1	221	0.0	0.0	0.0	0.3	1.6	145	51	0.00
2	1	1	1	221	0.0	0.0	0.0	0.4	1.8	145	52	0.00
2	1	1	1	221	0.0	0.0	0.0	0.4	2.0	145	53	0.00
2	1	1	1	221	0.0	0.0	0.0	0.5	2.2	145	54	0.00
2	1	1	1	221	0.0	0.0	0.0	0.5	2.3	145	54	0.00
3	1	1	1	221	0.0	0.0	0.0	0.5	2.5	145	55	0.00
3	1	1	1	221	0.0	0.0	0.0	0.6	2.7	145	56	0.00
3	1	1	1	221	0.0	0.0	0.0	0.6	2.9	145	58	0.00
3	1	1	1	221	0.0	0.0	0.0	0.7	3.0	145	59	0.00
3	1	1	1	221	0.0	0.0	0.0	0.7	3.3	145	60	0.00
3	1	1	1	221	0.0	0.0	0.0	0.8	3.3	145	61	0.00
3	1	1	1	221	0.0	0.0	0.0	0.9	3.6	145	64	0.00
3	1	1	1	221	0.0	0.0	0.0	0.9	3.8	145	98	0.00
4	1	1	1	221	0.3	45.3	0.0	1.0	4.4	145	88	0.00
4	1	1	1	216	0.3	45.3	0.0	1.0	4.3	145	111	0.00
4	0	1	1	213	0.3	7.0	0.3	1.1	5.8	145	476	0.00
5	0	1	1	205	0.8	9.0	0.7	1.2	5.7	145	413	0.00
5	0	1	1	196	0.8	4.8	1.1	1.3	5.4	145	396	0.00
5	0	1	1	187	0.8	3.3	1.6	1.3	5.3	145	474	0.00
6	0	2	1	180	1.1	3.6	2.0	1.4	5.1	145	584	0.00
6	0	2	1	173	1.1	3.0	2.4	1.5	4.8	145	571	0.00
6	0	2	1	166	1.1	2.6	2.8	1.5	4.6	145	565	0.00
6	0	2	1	159	1.1	2.3	3.0	1.6	4.4	145	560	0.00
6	0	2	1	153	1.1	2.2	3.3	1.7	4.3	145	558	0.00
6	0	2	1	146	1.1	2.0	3.5	1.8	4.1	145	555	0.00
6	0	2	1	139	1.1	2.0	3.7	1.9	3.9	145	553	0.00
6	0	2	1	133	1.1	1.9	3.9	1.9	3.7	145	555	0.00
6	0	2	1	127	1.1	1.8	4.0	2.0	3.2	145	560	0.00
6	0	2	1	121	1.1	1.8	4.2	2.1	3.0	145	568	0.00
6	0	2	1	115	1.1	1.7	4.3	2.2	3.0	145	575	0.00
7	0	2	1	109	2.0	3.1	4.4	2.3	2.8	145	582	0.00
7	0	2	1	103	2.0	3.0	4.6	2.4	1.7	145	591	0.00
7	0	2	1	98	2.0	2.9	4.7	2.5	1.7	145	599	0.00
7	0	2	1	92	2.0	2.9	4.8	2.6	1.7	145	608	0.00
8	0	2	1	86	3.1	4.4	4.9	2.7	1.7	145	616	0.00
8	0	2	1	81	3.1	4.3	5.0	2.8	1.7	145	623	0.00
8	0	2	1	75	3.1	4.3	5.1	2.9	1.0	145	626	0.00
9	0	2	1	70	4.1	5.6	5.2	3.0	0.5	145	627	0.00
9	0	2	1	64	4.1	5.4	5.3	3.1	0.3	145	625	0.00
9	0	2	1	58	4.1	5.3	5.5	3.3	0.0	136	625	0.00
9	0	2	1	53	4.1	5.1	5.7	3.4	0.0	88	640	0.00
10	0	2	1	49	5.2	6.5	5.7	3.4	0.0	87	638	0.00
10	0	2	1	39	5.2	6.3	5.9	3.8	0.0	83	640	0.00
11	0	2	1	26	6.3	7.9	5.8	4.0	0.0	79	669	0.00
11	0	2	1	21	6.3	6.9	6.6	4.1	0.0	77	684	0.00
12	0	2	1	16	7.2	7.8	6.7	4.2	0.0	76	685	0.00
12	0	2	1	11	7.2	7.6	6.8	4.3	0.0	74	685	0.00
12	0	2	1	7	7.2	7.5	6.9	4.5	0.0	72	677	0.00
12	0	2	1	2	7.2	7.3	7.1	4.6	0.0	71	673	0.00

PROPPANT SUMMARY * At End of Pumping Schedule
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

Lb/Sq-Ft Lost to Embedment 0.100

Distance (ft)	KfW (md-ft)	Prop Concentration(Total lb/sq foot) Prop ID--> 1
3.5	978	0.56
8.8	983	0.56
12.3	987	0.56
15.8	970	0.56
19.3	927	0.54
22.8	910	0.53
26.3	889	0.52
29.8	801	0.48
33.3	721	0.44
36.8	698	0.43
40.3	691	0.43
43.8	686	0.42
47.3	658	0.41
50.8	596	0.38
54.3	548	0.36
57.8	541	0.35
61.3	547	0.36
64.8	554	0.36
68.3	550	0.36
71.8	502	0.34
75.3	431	0.30
78.8	400	0.29
82.3	400	0.29
85.8	373	0.28
89.3	296	0.24
92.8	220	0.20
96.3	194	0.19
99.8	193	0.19
103.3	194	0.19
106.8	193	0.19
110.3	148	0.17
113.8	63	0.13
117.3	21	0.11
120.8	21	0.11
124.3	21	0.11
127.8	21	0.11
131.3	22	0.11
134.8	23	0.11
138.3	25	0.11
141.8	28	0.11
145.3	32	0.11
148.8	36	0.12
152.3	41	0.12
155.8	47	0.12
159.3	54	0.13
162.8	63	0.13
166.3	74	0.13
169.8	88	0.14
173.3	105	0.15
176.8	127	0.16
180.3	143	0.17
183.8	140	0.17
187.3	146	0.17
190.8	220	0.20
194.3	320	0.25
197.8	403	0.29
201.3	504	0.34
204.8	564	0.37
208.3	529	0.35
211.8	477	0.32
215.3	419	0.30
218.8	319	0.25

Average Conductivity (md-ft) 378

PROPPANT SUMMARY * At Fracture Closure
SANTOS - E. MEREENIE #39 (P4) POST-FRAC EVALUATION

Lb/Sq-Ft Lost to Embedment 0.100

Distance (ft)	KfW (md-ft)	Prop Concentration(Total lb/sq foot) Prop ID--> 1
3.5	880	0.51
8.8	851	0.49
12.3	811	0.47
15.8	777	0.46
19.3	730	0.44
22.8	660	0.40
26.3	618	0.38
29.8	619	0.39
33.3	596	0.37
36.8	532	0.35
40.3	480	0.32
43.8	462	0.31
47.3	458	0.31
50.8	453	0.31
54.3	448	0.31
57.8	443	0.30
61.3	439	0.30
64.8	420	0.29
68.3	372	0.27
71.8	326	0.25
75.3	311	0.24
78.8	312	0.24
82.3	312	0.24
85.8	315	0.25
89.3	320	0.25
92.8	323	0.25
96.3	333	0.25
99.8	344	0.26
103.3	334	0.25
106.8	299	0.24
110.3	267	0.22
113.8	266	0.22
117.3	288	0.23
120.8	303	0.24
124.3	322	0.25
127.8	350	0.26
131.3	338	0.26
134.8	280	0.23
138.3	243	0.21
141.8	257	0.22
145.3	294	0.24
148.8	337	0.26
152.3	394	0.28
155.8	455	0.31
159.3	440	0.30
162.8	371	0.27
166.3	434	0.30
169.8	578	0.37
173.3	614	0.38
176.8	615	0.38
180.3	743	0.44
183.8	900	0.51
187.3	960	0.54
190.8	1089	0.60
194.3	1288	0.69
197.8	1373	0.73
201.3	1444	0.76
204.8	1489	0.79
208.3	1401	0.74
211.8	1435	0.76
215.3	1248	0.67
218.8	674	0.41

Average Conductivity (md-ft) 586

APPENDIX B

Service Co. Treatment Job Log

Customer:	Santos Ltd	Date:	17-Jun-1996
Well Desc:	EAST MEREENIE 39 39	Ticket #:	EMER39F
Formation:	PACOOTA P4	Job Type:	FRACTURE TREATMENT

DATA LISTING

TABLE B-1

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
08:50:34	153	267	0.00	0	8.17	0.00	0.0
08:50:39	153	267	0.00	0	8.18	0.00	0.0
08:50:44	153	267	0.00	0	8.19	0.00	0.0
08:50:49	153	267	0.00	0	8.16	0.00	0.0

==== Stage Total 1667.48 (gal) ====

08:50:52 Stage #2 FILL HOLE PAD 1200g

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
08:50:53	15	267	5.69	11	8.12	0.00	0.0
08:50:58	5	267	9.01	41	8.05	0.00	0.0
08:51:03	82	270	0.54	54	8.12	0.00	0.0
08:51:08	212	273	0.46	55	8.10	0.00	0.0
08:51:13	710	278	0.93	57	8.11	0.00	0.0
08:51:18	1498	297	1.91	63	8.15	0.00	0.0
08:51:23	2057	324	2.60	71	8.16	0.00	0.0
08:51:28	2889	347	5.77	87	8.18	0.00	0.0
08:51:33	3011	373	5.85	107	8.22	0.00	0.0
08:51:38	3113	394	5.84	128	8.24	0.00	0.0
08:51:43	3115	400	5.81	148	8.23	0.00	0.0
08:51:48	3120	398	5.85	169	8.20	0.00	0.0
08:51:53	3057	393	5.68	189	8.21	0.00	0.0
08:51:58	3082	389	5.35	208	8.21	0.00	0.0
08:52:03	3091	383	5.22	226	8.24	0.00	0.0
08:52:08	3104	379	5.16	245	8.24	0.00	0.0
08:52:13	3123	374	5.09	263 262	8.30	0.00	0.0
08:52:18	3143	370	4.92	280	8.24	0.00	0.0
08:52:23	3184	364	4.14	296	8.28	0.00	0.0
08:52:28	3288	358	3.50	309	8.39	0.03	0.1
08:52:33	3266	353	4.02	322	8.42	0.07	1.0
08:52:38	3269	348	4.62	337	8.44	0.11	2.6
08:52:43	3286	341	4.70	354	8.39	0.03	4.5
08:52:48	3298	334	4.65	370	8.36	0.00	4.7
08:52:53	3303	327	4.54	386	8.35	0.00	4.7
08:52:58	3310	319	4.63	402	8.30	0.00	5.1
08:53:03	3322	312	4.93	419	8.36	0.00	5.1
08:53:08	3333	305	5.12	437	8.38	0.01	5.2
08:53:13	3343	298	5.10	455	8.38	0.02	5.4
08:53:18	3351	290	5.11	473	8.45	0.13	7.0
08:53:23	3361	283	5.22	491	8.42	0.07	8.7
08:53:28	3374	275	5.24	509	8.38	0.02	9.3
08:53:33	3390	268	5.25	527	8.35	0.00	9.3
08:53:38	3405	261	5.28	546	8.38	0.02	9.4
08:53:43	3417	254	5.27	564	8.42	0.08	10.8
08:53:48	3425	247	5.23	582	8.35	0.00	11.5
08:53:53	3431	240	5.23	601	8.42	0.07	12.3

Customer:	Santos Ltd	Date:	17-Jun-1996
Well Desc:	EAST MEREENIE 39 39	Ticket #:	EMER39F
Formation:	PACOOTA P4	Job Type:	FRACTURE TREATMENT

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
08:53:58	3439	241	5.23	619	8.41	0.06	13.7
08:54:03	3445	245	5.23	637	8.40	0.05	14.6
08:54:08	3452	241	5.28	656	8.41	0.06	14.9
08:54:13	3458	233	5.32	674	8.40	0.05	15.8
08:54:18	3462	226	5.29	693	8.41	0.06	17.0
08:54:23	3463	222	5.24	711	8.41	0.07	18.4
08:54:28	3463	239	5.23	730	8.41	0.07	18.6
08:54:33	3467	311	5.22	748	8.39	0.03	19.7
08:54:38	3472	327	5.22	766	8.41	0.07	20.3
08:54:43	3475	340	5.22	784	8.45	0.13	22.3
08:54:48	3472	333	5.21	803	8.38	0.02	23.1
08:54:53	3470	325	5.21	821	8.38	0.02	23.5
08:54:58	3470	317	5.26	839	8.38	0.01	23.9
08:55:03	3473	310	5.29	858	8.40	0.05	24.8
08:55:08	3474	303	5.23	876	8.38	0.01	25.2
08:55:13	3473	295	5.17	894	8.39	0.03	26.3
08:55:18	3475	288	5.16	912	8.40	0.05	27.1
08:55:23	3478	282	5.16	930	8.42	0.08	28.5
08:55:28	3478	275	5.16	948	8.39	0.04	29.3
08:55:33	3476	269	5.17	966	8.42	0.07	30.1
08:55:38	3475	262	5.20	985	8.39	0.03	31.0
08:55:43	3476	256	5.20	1003	8.39	0.04	31.7
08:55:48	3479	250	5.15	1021	8.44	0.11	32.8
08:55:53	3481	244	5.11	1039	8.41	0.07	34.2
08:55:58	3481	239	5.10	1057	8.42	0.08	35.4
08:56:03	3481	233	5.08	1075	8.44	0.12	37.7
08:56:08	3479	228	5.02	1092	8.43	0.09	39.5
08:56:13	3477	231	4.98	1110	8.40	0.04	40.5
08:56:18	3475	245	4.98	1127	8.37	0.01	41.0
08:56:23	3475	260	4.98	1145	8.36	0.00	41.0
08:56:28	3477	268	4.94	1162	8.38	0.02	41.2
08:56:33	3476	280	4.89	1179	8.38	0.01	41.6
08:56:38	3476	315	4.83	1196	8.41	0.07	42.7

==== Stage Total 1202.24 (gal) ====

08:56:42 Stage #3 Start Pad

08:56:42	3471	330	4.79	1210	8.42	0.08	43.6
08:56:47	3660	346	7.36	1232	8.46	0.14	46.4
08:56:52	4158	352	7.89	1258	8.56	0.30	53.6
08:56:57	4178	349	8.77	1287	8.51	0.23	61.2
08:57:02	4295	346	9.93	1321	8.53	0.26	69.8
08:57:07	4328	340	10.67	1357	8.53	0.26	79.0
08:57:12	4326	332	10.97	1395	8.58	0.33	90.1
08:57:17	4332	325	11.11	1434	8.74	0.59	110.2
08:57:22	4614	318	11.85	1474	8.78	0.66	135.0
08:57:27	4656	314	12.72	1517	8.85	0.80	166.2

Customer:	Santos Ltd	Date:	17-Jun-1996
Well Desc:	EAST MEREENIE 39 39	Ticket #:	EMER39F
Formation:	PACOOTA P4	Job Type:	FRACTURE TREATMENT

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)

==== Stage Total 343.99 (gal) ====

08:57:32 Stage #4 START SAND @0.5PPG

08:57:31	4690	308	13.00	1554	8.88	0.83	194.9
08:57:36	4737	300	12.94	1599	8.87	0.82	232.2
08:57:41	4802	292	13.08	1645	9.05	1.13	277.3
08:57:46	4883	284	13.41	1691	9.11	1.25	330.2
08:57:51	4910	276	13.46	1738	9.12	1.25	384.0
08:57:56	4984	269	13.61	1785	9.08	1.18	438.4
08:58:01	5052	262	13.80	1834	9.09	1.21	493.1
08:58:06	5208	255	13.83	1882	9.06	1.15	546.7
08:58:11	5210	263	13.89	1930	9.01	1.07	599.1

==== Stage Total 415.82 (gal) ====

08:58:16 Stage #5 INCREASE SAND 1.0PPG

08:58:15	5200	324	13.91	1969	9.00	1.04	638.7
08:58:20	5260	345	13.87	2018	8.89	0.86	682.2
08:58:25	5293	370	13.94	2067	8.87	0.82	721.9
08:58:30	5336	377	14.02	2116	8.88	0.84	761.3
08:58:35	5338	371	14.03	2165	8.93	0.92	801.1
08:58:40	5368	364	14.03	2214	8.92	0.91	842.9
08:58:45	5275	359	14.03	2263	8.97	0.99	886.7
08:58:50	5287	352	14.05	2312	8.97	0.99	933.5
08:58:55	5294	347	14.06	2361	8.98	1.01	980.9
08:59:00	5234	340	14.12	2411	9.00	1.05	1029.9

==== Stage Total 461.15 (gal) ====

08:59:03 Stage #6 INCREASE SAND 2.0PPG

08:59:04	5253	334	14.14	2450	8.99	1.03	1069.2
08:59:09	5197	329	14.15	2500	9.07	1.17	1123.7
08:59:14	5208	324	14.20	2550	9.11	1.24	1181.0
08:59:19	5229	331	14.29	2599	9.24	1.46	1246.4
08:59:24	5222	359	14.34	2650	9.32	1.62	1320.5
08:59:29	5226	385	14.40	2700	9.35	1.67	1398.0
08:59:34	5157	389	14.50	2751	9.38	1.72	1478.3
08:59:39	5230	383	14.48	2801	9.48	1.92	1563.3
08:59:44	5195	378	14.40	2852	9.49	1.94	1650.5

Customer:	Santos Ltd		Date:	17-Jun-1996
Well Desc:	EAST MEREENIE 39 39		Ticket #:	EMER39F
Formation:	PACOOTA P4		Job Type:	FRACTURE TREATMENT

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)

==== Stage Total 441.36 (gal) ====

08:59:46 Stage #7 INCREASE SAND 3.0PPG

08:59:48	5131	373	14.44	2892	9.58	2.09	1727.0
08:59:53	5155	368	14.47	2943	9.62	2.17	1826.6
08:59:58	5079	362	14.48	2993	9.72	2.37	1933.0
09:00:03	5111	357	14.48	3044	9.80	2.51	2043.8
09:00:08	5066	352	14.45	3095	9.95	2.82	2164.5
09:00:13	5075	347	14.48	3145	9.99	2.89	2293.3
09:00:18	5072	342	14.52	3196	10.03	2.97	2426.2
09:00:23	5051	337	14.55	3247	10.03	2.98	2560.1
09:00:28	5028	332	14.61	3298	10.03	2.97	2692.9
09:00:33	5017	328	14.63	3349	10.10	3.12	2831.3
09:00:38	4965	323	14.63	3400	10.20	3.32	2973.3

==== Stage Total 569.41 (gal) ====

09:00:42 Stage #8 INCREASE SAND 3.0PPG

09:00:42	4992	320	14.62	3441	10.21	3.35	3092.3
09:00:47	4992	315	14.67	3493	10.22	3.36	3241.6
09:00:52	4971	311	14.67	3544	10.33	3.60	3398.2
09:00:57	4955	307	14.66	3595	10.42	3.80	3562.9
09:01:02	4945	302	14.67	3647	10.45	3.87	3730.3
09:01:07	4931	298	14.80	3698	10.55	4.08	3903.4
09:01:12	4896	294	14.93	3750	10.57	4.12	4085.7
09:01:17	4916	290	14.89	3802	10.59	4.16	4269.2
09:01:22	4891	286	14.79	3854	10.59	4.18	4450.6
09:01:27	4901	282	14.75	3906	10.63	4.26	4635.4
09:01:32	4862	278	14.79	3958	10.65	4.30	4821.5
09:01:37	4891	275	14.75	4009	10.70	4.41	5010.8

==== Stage Total 588.67 (gal) ====

09:01:40 Stage #9 INCREASE SAND 4.0PPG

09:01:41	4826	272	14.74	4051	10.78	4.59	5165.7
09:01:46	4871	268	14.76	4102	10.93	4.94	5369.0
09:01:51	4843	264	14.76	4154	10.98	5.07	5582.6
09:01:56	4855	260	14.77	4206	10.97	5.04	5797.2
09:02:01	4845	257	14.78	4257	10.99	5.09	6011.6
09:02:06	4840	253	14.77	4309	11.00	5.12	6227.3

Customer: Santos Ltd
Well Desc: EAST MEREENIE 39 39
Formation: PACOOTA P4

Date: 17-Jun-1996
Ticket #: EMER39F
Job Type: FRACTURE TREATMENT

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
09:02:11	4857	250	14.76	4361	11.00	5.11	6441.8
09:02:16	4812	247	14.75	4412	11.04	5.21	6660.0
09:02:21	4831	244	14.70	4464	11.08	5.32	6880.5
09:02:26	4815	241	14.72	4515	11.11	5.38	7102.7
09:02:31	4846	237	14.77	4567	11.14	5.44	7327.5
09:02:36	4861	238	14.75	4619	11.12	5.41	7552.7

==== Stage Total 609.29 (gal) ====

09:02:39 Stage #10 INCREASE SAND 6.0PPG

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
09:02:40	4834	308	14.80	4660	11.28	5.80	7738.5
09:02:45	4833	327	14.92	4712	11.27	5.76	7978.1
09:02:50	4939	349	14.94	4764	11.47	6.29	8230.3
09:02:55	4842	373	14.77	4816	11.48	6.31	8486.8
09:03:00	4967	374	14.75	4868	11.50	6.36	8741.9
09:03:05	4908	371	14.79	4920	11.53	6.44	8999.4
09:03:10	4981	367	14.77	4971	11.59	6.58	9260.2
09:03:15	4931	364	14.76	5023	11.57	6.55	9524.5
09:03:20	4973	361	14.74	5075	11.65	6.76	9789.3
09:03:25	4934	357	14.72	5126	11.65	6.76	10058.0
09:03:30	5018	355	14.76	5178	11.69	6.86	10328.5
09:03:35	5012	351	14.75	5229	11.76	7.04	10603.1
09:03:40	5028	349	14.74	5281	11.73	6.97	10879.6
09:03:45	5131	346	14.75	5333	11.71	6.92	11153.1
09:03:50	5067	343	14.77	5384	11.79	7.13	11432.0

==== Stage Total 765.63 (gal) ====

09:03:52 Stage #11 INCREASE SAND 7.0PPG

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
09:03:54	5030	341	14.77	5426	11.87	7.36	11659.6
09:03:59	5153	338	14.74	5477	11.87	7.36	11946.3
09:04:04	5135	336	14.75	5529	11.87	7.34	12232.8
09:04:09	5203	333	14.82	5581	12.05	7.85	12535.7
09:04:14	5222	331	14.77	5632	12.02	7.77	12835.3
09:04:19	5274	329	14.68	5684	12.07	7.90	13135.7
09:04:24	5254	327	14.66	5735	12.07	7.91	13436.4
09:04:29	5252	325	14.63	5786	12.10	8.00	13738.8
09:04:34	5290	323	14.61	5838	12.15	8.14	14044.4

==== Stage Total 443.01 (gal) ====

Customer:	Santos Ltd		Date:	17-Jun-1996	
Well Desc:	EAST MEREENIE 39 39		Ticket #:	EMER39F	
Formation:	PACOOTA P4		Job Type:	FRACTURE TREATMENT	

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
09:04:36 Stage #12 Start Flush							
09:04:38	5319	321	14.56	5878	12.15	8.14	14288.8
09:04:43	5311	319	14.50	5929	12.17	8.19	14595.3
09:04:48	5325	316	14.50	5980	12.16	8.17	14899.6
09:04:53	5368	313	14.44	6031	12.12	8.07	15202.5
09:04:58	5424	312	14.37	6081	11.96	7.61	15495.9
09:05:03	5416	311	14.32	6131	11.79	7.12	15776.7
09:05:08	5482	308	14.28	6181	11.53	6.44	16033.7
09:05:13	5502	307	14.15	6231	11.21	5.62	16259.7
09:05:18	5618	305	14.55	6281	10.73	4.49	16461.9
09:05:23	5640	303	15.08	6333	10.54	4.04	16648.2
09:05:28	5663	302	15.10	6386	10.20	3.34	16812.3
09:05:33	5712	301	15.13	6439	9.87	2.65	16955.3
09:05:38	5707	300	15.11	6492	9.65	2.24	17072.1
09:05:43	5883	298	15.08	6545	9.54	2.02	17174.0
09:05:48	5941	297	14.94	6597	9.19	1.38	17257.3
09:05:53	5973	297	14.78	6649	9.12	1.26	17321.3
09:05:58	6116	298	14.75	6701	8.99	1.03	17376.2
09:06:03	6422	303	14.78	6753	8.88	0.84	17418.9
09:06:08	10413	461	14.72	6804	8.77	0.65	17454.0
09:06:13	8604	405	0.52	6817	8.78	0.67	17462.1
==== Stage Total 969.08 (gal) ====							
09:06:14 Stage #13 MONITOR P.DECLINE							
09:06:17	6366	427	0.17	6817	8.59	0.35	17462.4
09:06:22	5045	347	0.14	6818	8.53	0.25	17462.5
09:06:27	4270	229	1.13	6820	8.47	0.16	17462.9
09:06:32	3881	246	1.49	6826	8.45	0.12	17463.7
09:06:37	3751	244	0.49	6829	8.45	0.13	17464.0
09:06:42	3655	241	0.00	6829	8.41	0.06	17464.1
09:06:47	3574	237	0.00	6829	8.41	0.07	17464.1
09:06:52	3544	234	0.00	6829	8.43	0.09	17464.1
09:06:57	3469	232	0.00	6829	8.42	0.07	17464.1
09:07:02	3449	232	0.00	6829	8.42	0.08	17464.1
09:07:07	3424	231	0.00	6829	8.39	0.03	17464.1
09:07:12	3393	231	0.00	6829	8.37	0.00	17464.1
09:07:17	3366	230	0.00	6829	8.41	0.07	17464.1
09:07:22	3343	230	0.00	6829	8.40	0.05	17464.1
09:07:27	3323	230	0.00	6829	8.38	0.01	17464.1
09:07:32	3305	230	0.00	6829	8.39	0.03	17464.1
09:07:37	3290	230	0.00	6829	8.36	0.00	17464.1
09:07:42	3276	230	0.00	6829	8.41	0.07	17464.1
09:07:47	3263	231	0.00	6829	8.34	0.00	17464.1

Customer: Santos Ltd
Well Desc: EAST MEREENIE 39 39
Formation: PACOOTA P4

Date: 17-Jun-1996
Ticket #: EMER39F
Job Type: FRACTURE TREATMENT

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
09:07:52	3252	231	0.00	6829	8.42	0.09	17464.1
09:07:57	3241	231	0.00	6829	8.41	0.06	17464.1
09:08:02	3231	232	0.00	6829	8.37	0.00	17464.1
09:08:07	3222	232	0.00	6829	8.35	0.00	17464.1
09:08:12	3214	233	0.00	6829	8.38	0.02	17464.1
09:08:17	3206	233	0.00	6829	8.37	0.00	17464.1
09:08:22	3199	234	0.00	6829	8.45	0.12	17464.1
09:08:27	3193	235	0.00	6829	8.38	0.01	17464.1
09:08:32	3188	235	0.00	6829	8.38	0.02	17464.1
09:08:37	3183	236	0.00	6829	8.41	0.06	17464.1
09:08:42	3178	237	0.00	6829	8.40	0.05	17464.1
09:08:47	3175	237	0.00	6829	8.39	0.02	17464.1
09:08:52	3171	238	0.00	6829	8.34	0.00	17464.1
09:08:57	3169	239	0.00	6829	8.42	0.08	17464.1
09:09:02	3166	240	0.00	6829	8.42	0.09	17464.1
09:09:07	3165	241	0.00	6829	8.43	0.09	17464.1
09:09:12	3164	241	0.00	6829	8.37	0.00	17464.1
09:09:17	3163	242	0.00	6829	8.38	0.02	17464.1
09:09:22	3163	243	0.00	6829	8.38	0.02	17464.1
09:09:27	3163	244	0.00	6829	8.41	0.07	17464.1
09:09:32	3163	245	0.00	6829	8.41	0.06	17464.1
09:09:37	3164	246	0.00	6829	8.42	0.07	17464.1
09:09:42	3165	246	0.00	6829	8.41	0.06	17464.1
09:09:47	3166	247	0.00	6829	8.38	0.02	17464.1
09:09:52	3167	248	0.00	6829	8.41	0.06	17464.1
09:09:57	3169	249	0.00	6829	8.41	0.06	17464.1
09:10:02	3170	250	0.00	6829	8.36	0.00	17464.1
09:10:07	3172	251	0.00	6829	8.44	0.11	17464.1
09:10:12	3173	251	0.00	6829	8.41	0.07	17464.1
09:10:17	3175	252	0.00	6829	8.37	0.00	17464.1
09:10:22	3177	253	0.00	6829	8.37	0.00	17464.1
09:10:27	3178	254	0.00	6829	8.38	0.02	17464.1
09:10:32	3180	255	0.00	6829	8.38	0.01	17464.1
09:10:37	3182	256	0.00	6829	8.39	0.03	17464.1
09:10:42	3183	257	0.00	6829	8.35	0.00	17464.1
09:10:47	3184	257	0.00	6829	8.40	0.04	17464.1
09:10:52	3186	258	0.00	6829	8.34	0.00	17464.1
09:10:57	3187	259	0.00	6829	8.36	0.00	17464.1
09:11:02	3189	260	0.00	6829	8.41	0.07	17464.1
09:11:07	3190	261	0.00	6829	8.41	0.06	17464.1
09:11:12	3191	261	0.00	6829	8.42	0.09	17464.1

09:11:14 Event #10 5 Min Shutin Pres. Tubing Press 3192 (psi)

09:11:16	3192	262	0.00	6829	8.40	0.05	17464.1
09:11:21	3193	263	0.00	6829	8.40	0.05	17464.1
09:11:26	3194	264	0.00	6829	8.38	0.02	17464.1
09:11:31	3195	264	0.00	6829	8.42	0.07	17464.1
09:11:36	3195	265	0.00	6829	8.40	0.05	17464.1

Customer: Santos Ltd
Well Desc: EAST MEREENIE 39 39
Formation: PACOOTA P4

Date: 17-Jun-1996
Ticket #: EMER39F
Job Type: FRACTURE TREATMENT

TIME	Tubing Pr (psi)	Annulus Pr (psi)	Slurry Rt (bpm)	Slry Vol (gal)	Slurry Den (lb/gal)	Sand Conc (lb/gal)	Sand Vol (lb)
09:11:41	3196	266	0.00	6829	8.38	0.01	17464.1
09:11:46	3197	267	0.00	6829	8.37	0.00	17464.1
09:11:51	3197	267	0.00	6829	8.41	0.06	17464.1
09:11:56	3197	268	0.00	6829	8.37	0.00	17464.1
09:12:01	3197	269	0.00	6829	0.00	0.00	17464.1
09:12:06	3197	269	0.00	6829	0.00	0.00	17464.1
09:12:11	3197	270	0.00	6829	0.00	0.00	17464.1
09:12:16	3197	271	0.00	6829	0.00	0.00	17464.1
09:12:21	3197	272	0.00	6829	0.00	0.00	17464.1
09:12:26	3197	272	0.00	6829	0.00	0.00	17464.1
09:12:31	3197	273	0.00	6829	0.00	0.00	17464.1
09:12:36	3197	274	0.00	6829	0.00	0.00	17464.1
09:12:41	3197	274	0.00	6829	0.00	0.00	17464.1
09:12:46	3196	275	0.00	6829	0.00	0.00	17464.1
09:12:51	3196	276	0.00	6829	0.00	0.00	17464.1
09:12:56	3196	277	0.00	6829	0.00	0.00	17464.1
09:13:01	3195	277	0.00	6829	0.00	0.00	17464.1
09:13:06	3195	278	0.00	6829	0.00	0.00	17464.1
09:13:11	3194	278	0.00	6829	0.00	0.00	17464.1
09:13:16	3194	279	0.00	6829	0.00	0.00	17464.1
09:13:21	3193	280	0.00	6829	0.00	0.00	17464.1
09:13:26	3192	281	0.00	6829	0.00	0.00	17464.1
09:13:31	3192	281	0.00	6829	0.00	0.00	17464.1
09:13:36	3191	282	0.00	6829	0.00	0.00	17464.1
09:13:41	3190	282	0.00	6829	0.00	0.00	17464.1
09:13:46	3189	283	0.00	6829	0.00	0.00	17464.1
09:13:51	3189	284	0.00	6829	0.00	0.00	17464.1
09:13:56	3188	285	0.00	6829	0.00	0.00	17464.1
09:14:01	3187	285	0.00	6829	0.00	0.00	17464.1
09:14:06	3186	286	0.00	6829	0.00	0.00	17464.1
09:14:11	3185	286	0.00	6829	0.00	0.00	17464.1
09:14:16	3184	287	0.00	6829	0.00	0.00	17464.1
09:14:21	3184	288	0.00	6829	0.00	0.00	17464.1
09:14:26	3183	288	0.00	6829	0.00	0.00	17464.1
09:14:31	3182	289	0.00	6829	0.00	0.00	17464.1
09:14:36	3181	290	0.00	6829	0.00	0.00	17464.1
09:14:41	3180	290	0.00	6829	0.00	0.00	17464.1
09:14:46	3179	291	0.00	6829	0.00	0.00	17464.1
09:14:51	3178	291	0.00	6829	0.00	0.00	17464.1
09:14:56	3178	292	0.00	6829	0.00	0.00	17464.1
09:15:01	3177	293	0.00	6829	0.00	0.00	17464.1
09:15:06	3176	293	0.00	6829	0.00	0.00	17464.1
09:15:11	3175	294	0.00	6829	0.00	0.00	17464.1
09:15:16	3174	294	0.00	6829	0.00	0.00	17464.1
09:15:21	3173	295	0.00	6829	0.00	0.00	17464.1
09:15:26	3172	295	0.00	6829	0.00	0.00	17464.1
09:15:31	3172	296	0.00	6829	0.00	0.00	17464.1
09:15:36	3171	297	0.00	6829	0.00	0.00	17464.1
09:15:41	3170	297	0.00	6829	0.00	0.00	17464.1
09:15:46	3169	298	0.00	6829	0.00	0.00	17464.1